

Pioneers of the Vertical Machining Center

Matsuura introduce Our Latest Technology - V.Plus Series

Matsuura Pioneering Machine Tool Excellence Since 1935

Pioneers in the development and manufacture of high quality CNC vertical machining center's, Matsuura have been at the forefront of providing excellence through innovation since 1935. Matsuura's first vertical, the **MC-750V** was introduced to much global acclaim in 1974 and set the benchmark for precision, quality and productivity. To date Matsuura have supplied in excess of 15,000 vertical machines to every conceivable industry the world over, manufacturing every possible component. Because of our prestigious heritage and established global customer base, we are recognised as a technology leader in todays world of high performance machining. Matsuura customers demand and receive high accuracy, high speed and reliability from our products, with after sales service and applications support that is second to none in the global machine tool supply industry.



MC-750V : 1974

30 Years at the Forefront of Vertical CNC Machine Design & Manufacture

15,300 Vertical Machines Supplied to Global Industries Since 1974
(Year in 2004)

Hand Built to Exacting Quality Standards

Vertical Machining Center V.Plus Series

The **V.Plus** - Matsuura's latest vertical series incorporates all of our hard won knowledge & experience gained from over 30 years of supplying high performance verticals to the worlds leading industries. Designed from "the ground up", the **V.Plus Series** has taken full advantage of the latest technology & design processes to ensure that it is ready for all applications - no matter how arduous the machining environment, nor how difficult the job. All Matsuura machines are handbuilt by Matsuura Engineers to strict & exacting quality standards - assuring our customers of years of high speed, high accuracy & highly reliable service & operation.



Vertical Machining Center

V.Plus-660

Travel (X/Y/Z) : 660/550/500 mm
: (25.98/21.65/19.68 in.)

Table Size : 940 x 550 mm
: (37.00 x 21.6 in.)

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



Vertical Machining Center

V.Plus-800

Travel (X/Y/Z) : 800/550/500 mm
: (31.40/21.65/19.68 in.)

Table Size : 1,150 x 550 mm
: (45.27 x 21.65 in.)

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



Vertical Machining Center

V.Plus-1000

Travel (X/Y/Z) : 1,020/550/500 mm
: (40.15/21.65/19.68 in.)

Table Size : 1,150 x 550 mm
: (45.27 x 21.65 in.)

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



Highly Rigid Construction, Ultra Precision Assembly

FEM-Analysis



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

Stable, Robust Bed



- The massive bed, supported at 6 points offers total stability - despite the vast inertia forces generated by all axes during rapid acc/dec.

Z-axis Box Slide Way



- Widely spaced, rectangular section column guideways on the Z axis are traditionally finished by hand scraping to minimize wear, offer life long accuracy & to accommodate the powerful headstock/spindle assembly.

Reliable, High Quality



- Grease lubrication is utilized for all axes ballscrews, & on X & Y linear guides.

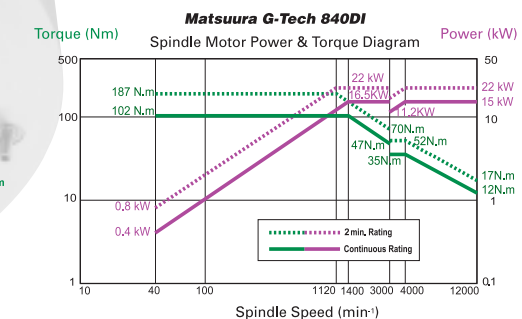
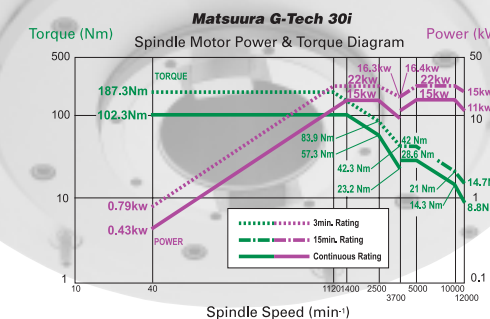


- To support longevity, & maintain high accuracy for the life of the machine, parallelism & straightness of the linear guides is set to within 2 μ m during manufacture. (Full stroke)

Powerful, Versatile, Unique Matsuura Hi-Tech Spindle



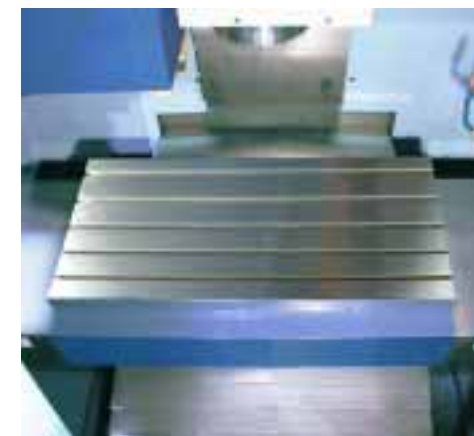
- **Spindle Taper** : BT40 Double Contact
- **Spindle Speed** : 12,000 min⁻¹
- **Motor Power** : 15/22kW (30HP)
- **Max. Torque** : 187 Nm/1,120 min⁻¹



- 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 μ m (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 build-up 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. The clamping force is 14.7kN. This results in excellent material removal rates and surface finish.

Clean and Efficient Swarf Management



- Highly accurate telescopic guards are used on all axes, assuring minimum drag, deflection, vibration & noise, in addition to protecting the guideways from the ingress of swarf & chips.

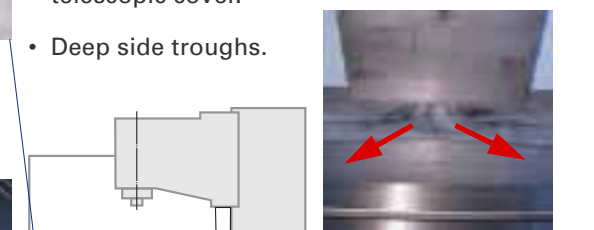


Chip Flow (Y-axis front)



Chip Flow (Y-axis left & right)

- 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.



Chip Flush (Y-axis rear)



- Chip Bucket
- Coolant Tank (400L)

Latest High Performance Control System “Matsuura G-Tech”

Powerful, High Performance Matsuura G-Tech Controls

Matsuura G-Tech 30i



Matsuura G-Tech 840DI



Compensating for any Geometric Error Between the Machining Program & Actual Machined Profile

Machining for General Parts or Mold & Die

IZ-1/15F

Machining for more Complex, Precision Parts

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.

Machining for General Parts or Mold & Die

Advanced Zee LagY

Machining for more Complex, Precision Parts

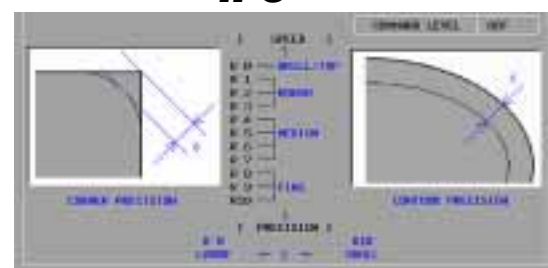
IZ-1/COMP

- (Max.5,000 Block Look Ahead + Spline Interpolation)
- After compressing a maximum of 50 blocks & engaging the 100 Block Look Ahead function, IZ-1/COMP interpolates & applies to the B-Spline to the nearest point selected.

Option

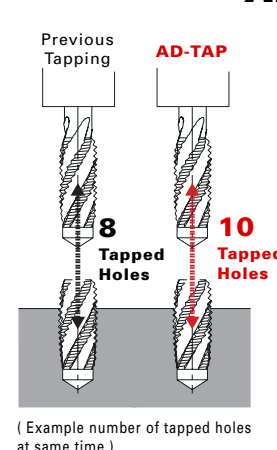
Solution for High Speed and High Accuracy Machining

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)

Reliable High Performance

Rapid Traverse (X/Y/Z)

50 / 50 / 30 m/min (1,968.5/1,968.5/1,181.1 ipm)

Feedrate (X/Y/Z)

50 / 50 / 30 m/min (1,968.5/1,968.5/1,181.1 ipm)

Rapid Traverse Acceleration

0.8 G (Average 0.5 G)

Feedrate Acceleration

0.8 G (Average 0.3 G)



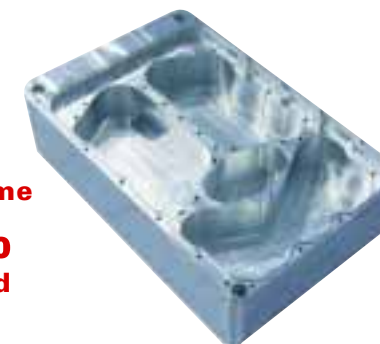
- The compact, digital technology feed motors generate extremely high levels of acceleration. This achieves vast reductions of cutting, positioning & non-cutting times.

Comparison of Rapid Traverse/Feedrate with Previous Model

	Previous Model		V.Plus-800
Rapid Traverse	30 m/min (1,181.1 ipm)	1.6 times	50 m/min (1,968.5 ipm)
Max. Acc. of Rapid Traverse	0.4G	2 times	0.8 G
Max. Feedrate	15 m/min (590.5 ipm)	3.3 times	50 m/min (1,968.5 ipm)
Max. Acc. of Feedrate	0.17G	4.7 times	0.8 G

Comparison of Cycle Time

Cycle Time
25% reduced



POCKET MACHINING DEMO

Size	: W295 X D195 X H75 mm (W11.6 x D7.67 x H2.95 in.)
Material	: Aluminum (A7075)
No. of Tools	: 9 tools

Intelligent Functionality : Simple, Quick, Easy to use

'Handy Man II' provides major saving by reducing setup, programing, operation and maintenance times. Please refer the special brochure.

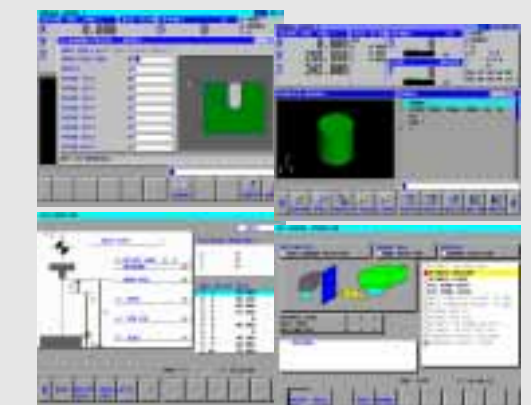
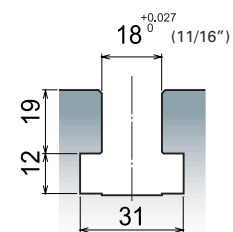
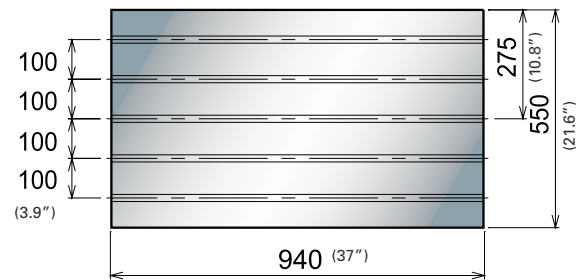


Table Surface

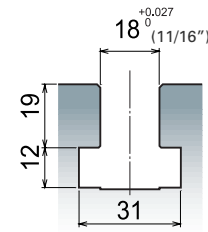
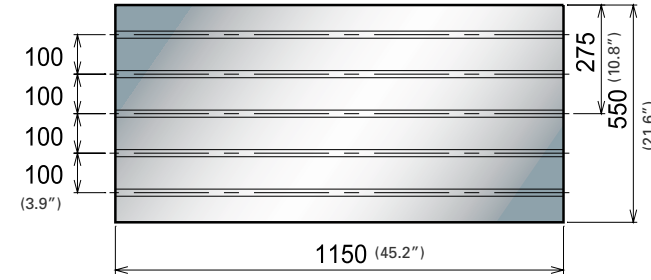
V.Plus-660



T-Slot Details

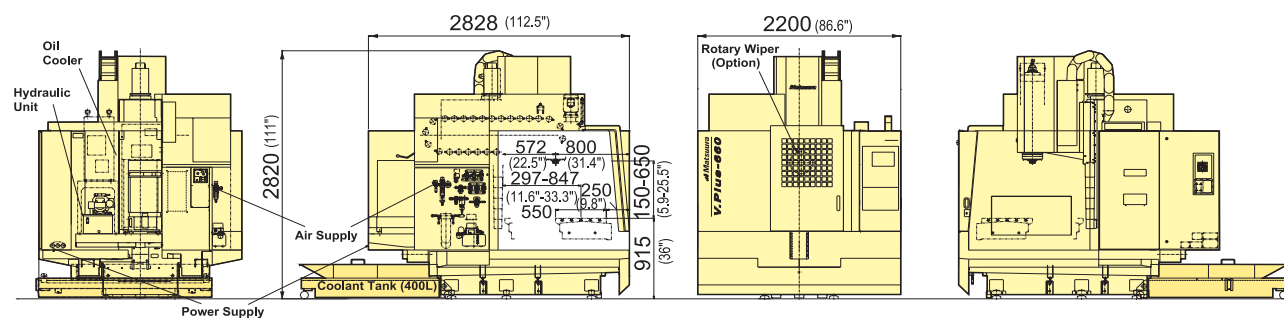
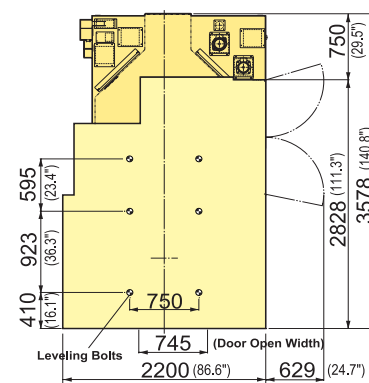
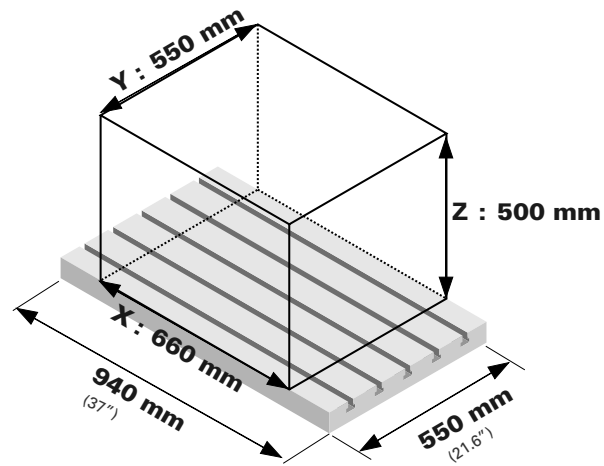
Table Surface

V.Plus-800 V.Plus-1000

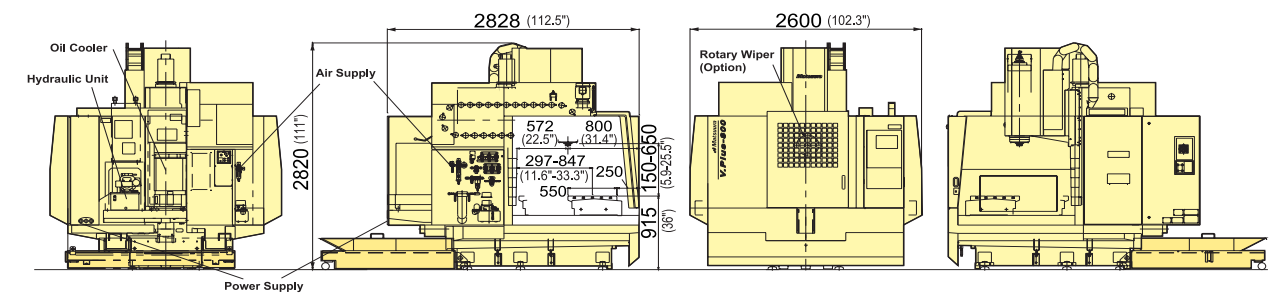
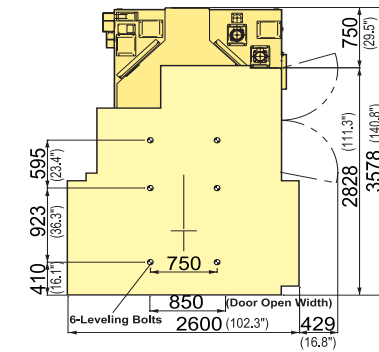
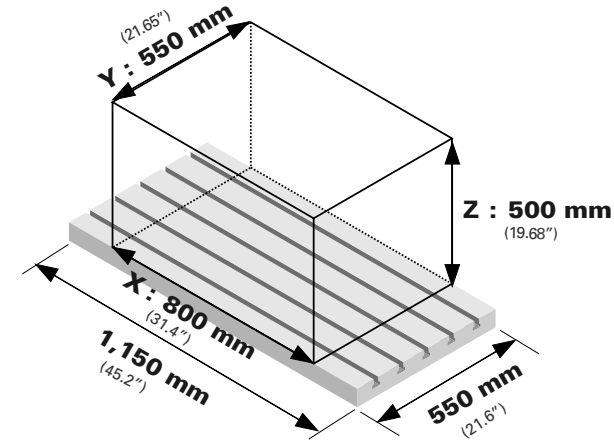


T-Slot Details

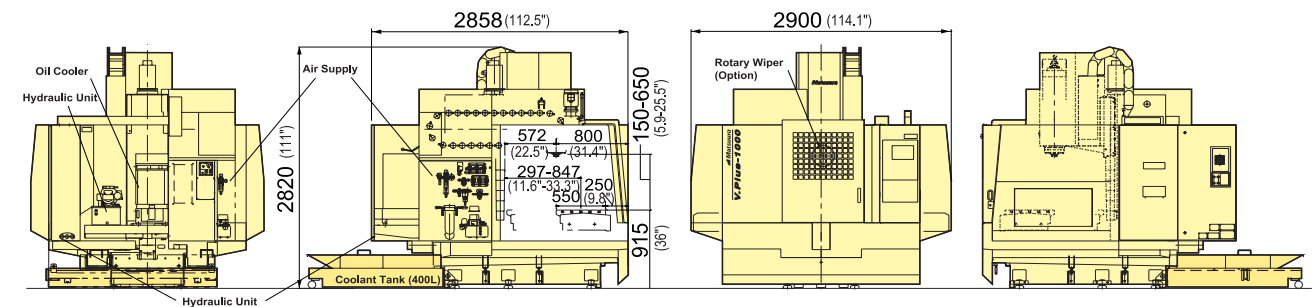
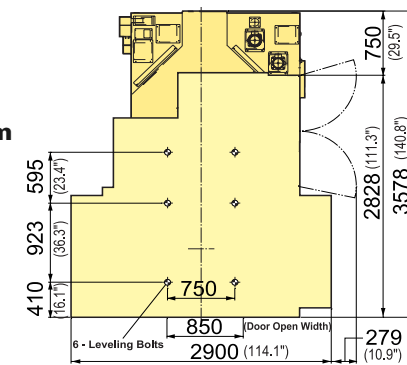
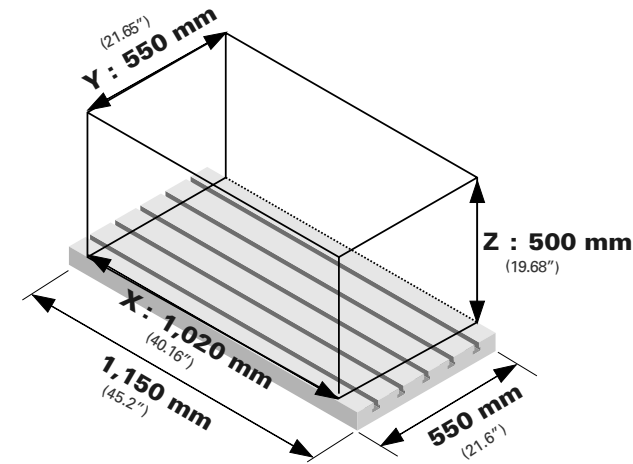
V.Plus-660 Outline



V.Plus-800 Outline



V.Plus-1000 Outline



Standard Machine Specifications

	V.Plus-660	V.Plus-800	V.Plus-1000
TRAVEL			
X-axis Travel	660 mm (25.9 in.)	800 mm (31.4 in.)	1,000 mm (40.16 in.)
Y-axis Travel	550 mm (21.65 in.)		
Z-axis Travel	500 mm (19.68 in.)		
TABLE			
Working Surface	940 x 550 mm (37 x 21.6 in.)	1,150 x 550 mm (45.27 x 21.65 in.)	
Loading Capacity	500 kg (1,100 lb.)		
SPINDLE			
Speed Range	40 - 12,000 min ⁻¹		
Spindle Taper	7/24 taper JIS BT40		
Bearing Inner Diameter	ø80 mm (ø3.15 in.)		
Bearing Lubrication	Grease		
Motor Power	15 / 22 kW (30 HP)		
Max. Spindle Torque	187 Nm/1,120 min ⁻¹		
FEEDRATE			
Rapid Traverse (X/Y/Z)	50,000/50,000/30,000 mm/min (1,968.5/1,968.5/1,181.1 ipm)		
Feedrate(X/Y)	1 - 50,000 mm/min (0.1 - 1,968.5 ipm)		
Feedrate (Z)	1 - 30,000 mm/min (0.1 - 1,181.1 ipm)		
AUTOMATIC TOOL CHANGER			
Type of Tool Shank	JIS B 6339 tool shank 40T		
Type of Retention Knob	JIS B 6339 pullstud 40P		
Tool Storage Capacity	30 pcs		
Max. Tool Diameter	96 mm (3.77 in.)		
	175 mm (When the pockets on both sides are empty)		
Max. Tool Length	350 mm (13.7 in.)		
Max. Tool Weight	10 kg (22 lb.)		
Method of Tool Selection	Memory random selection, Bidirectional magazine rotation		
Tool Changing Time	Tool to Tool : 0.9 sec. (Tool weight less than 5kg) Tool to Tool : 1.8 sec. (Tool more less than 5kg)		
	Chip to Chip : 2.8 sec. (Tool weight less than 5kg)		
POWER SUPPLY			
Electrical Power Supply	43 kVA		
Compressed Air Supply	0.54 - 0.93 MPa		
Coolant tank Capacity	400 L (105 gal.)		
MACHINE SIZE			
Mass of Machine	6,000 kg (1,300 lb.)		
CONTROL			
Control System	Matsuura G-Tech 30i /840DI		
STANDARD ACCESSORIES			
• Total Enclosure Guard & Top Side Cover	• Spindle Overload Protection		
• Magazine Cover	• 9 Sorts of M-Code Counters		
• ATC Auto Door	• Work Light		
• Synchronized Tapping Function	• Standard Mechanical Tools & Tool Box		
• AD TAP Function	• Machine Color Paint		
• IPC Function	• Levelling Pads & Bolts		
• Spindle Oil Cooler	• Chip flow (Y-axis Cover & Side Trough)		
• Coolant unit (Chip Rear Disposal)	• Coolant Nozzle Unit		
• Lubrication Unit	• Handy Man II		

Standard NC Specifications

Matsuura G-Tech 30i

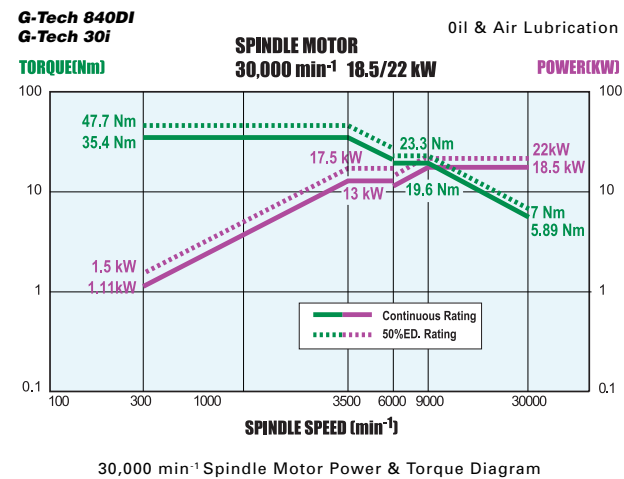
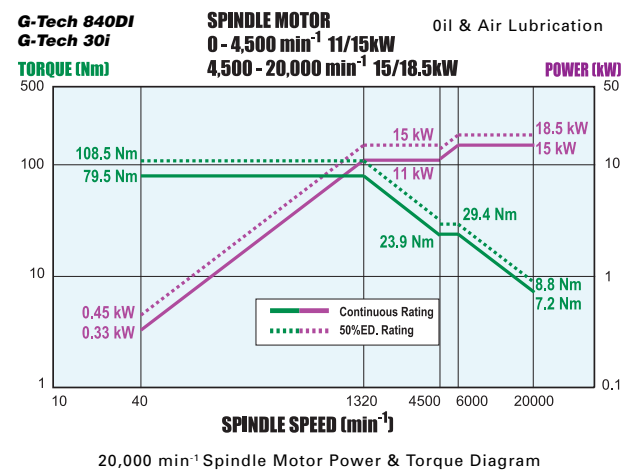
CONTROLLED AXES		TOOL OFFSET	
Controlled Axes	3-axes : X/Y/Z	Tool Offset Memory C	Offset for figure & Wear (D/H Code)
Simultaneous All-axes Expansion Linear interpolation, Positioning		Tool Offset Number Addition	Total 99
PROGRAMMING METHOD		COORDINATE SYSTEM	
Least Input Increment	0.001mm (0.0001 in.)	Manual Reference Point Return	
Least Command Increment	0.001 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	G54-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 & Cutting Feed : Linear acc./dec.	PROGRAMMING SUPPORT FUNCTION	
Rapid Feed Override	0, 1, 25, 50 & 100%	Circular Interpolation by Radius R	
Feed Rate Override	0 - 200%, 10% each	Canned Cycle	G73, G74, G80-G87, G89
Override Cancel		Sub Program Calling (Quadruple)	
PART PROGRAM STORAGE & EDIT		Exact Stop Check	G09, G61
Program Memory	(512 KB) 1,280 m	Exact Stop Mode	G61, G64
Expansion of Number of Programs (1000 pcs.)		Programmable Data Input G10	
Part Program Storage & Editing		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	
Run Hour/Parts Number Display		AUTOMATIC SUPPORT FUNCTION	
Back Ground Graphic Function		Skip Function	G31
I / O FUNCTION & DEVICES		SAFETY / MAINTENANCE	
Reader Punch Interface (1,2 ch.)	RS-232C	Emergency Stop	
Internalized Ethernet	100/10 BASE-T	Over Travel	
DNC Operation, Data Input/OutputMemory Card, Compact Flash Card		Stored Stroke Check1	
STM Function		Self Diagnosis Function	
Spindle Function (S Function) S 5 Digits Command		Stroke Limit Check Before Move	
Spindle Speed Override	50 - 120% (Increment 10%)		
Tool Function	T4 Digits Command		
Miscellaneous Function	M3 Digits Command		

The specifications of the **Matsuura G-Tech 840DI** differ slightly in detail to the **Matsuura G-Tech 30i**. Please call for details.

Options (1)

Spindles

- 20,000 min⁻¹
- 30,000 min⁻¹



Number of Tools

- 40 tools
- 80 tools

Operation / Maintenance

- Coolant Flow Checker
- 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
- Auto Grease Supply Unit (X/Y)

Safety Features

- Door Interlock for Total Splash Guard

High Accuracy Control

- Scale Feedback System (X/Y, Z, X/Y/Z)
- Thermal Displacement Compensation Function



80 tool Magazine



8 Sets of Extra M Function



Weekly Timer



Rotary Wiper



Auto Grease Supply Unit (X/Y)



Scale Feedback System

Options (2)

Tool Management / Workpiece Measurement

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



In-Process Measurement + Broken Tool Laser Detection



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



Touch Probe



Example of 4/5th Table Installing

Others

- High Column (+150 mm)
- Z-axis Stroke Extension (150 mm)
- Additional Axis (4/5th Table)

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, Drum filter)
- Chip Bucket
- Air Blow for Chip Swarf Removal
- Workpiece Cleaning Gun



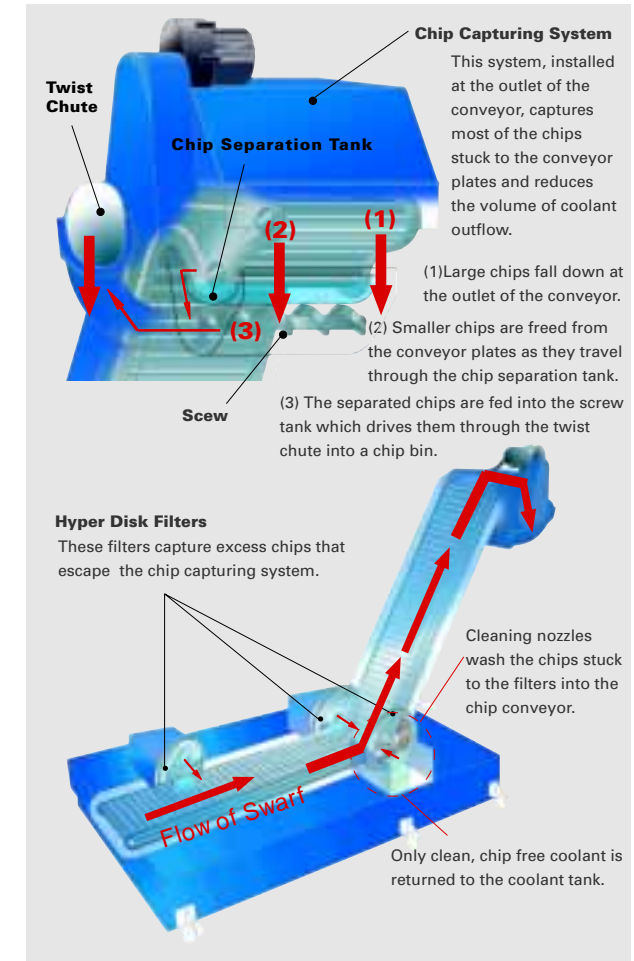
Spiral Chip Conveyor (Right & Left)



Workpiece Cleaning Gun



High Pressure Coolant Unit





Matsuura

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ISO9001 ISO14001 OHSAS18001

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MATSUURA MACHINERY GmbH

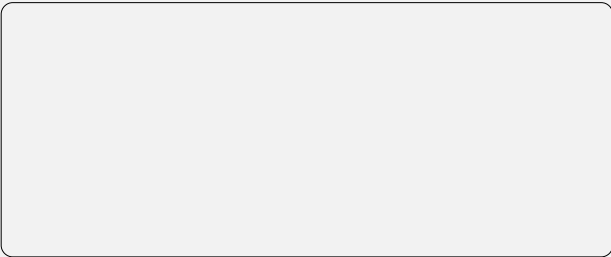
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- Product specifications and dimensions are subject to change without prior notice.
- The photos may show optional accessories.
- Products are subject to all applicable export control laws and regulations.

Class Leading Vertical Machining Centers

V.Plus Series



V.Plus-660



V.Plus-800



V.Plus-1000



Matsuura