JYOTI

VMC 850 nvu

Vertical Machining Centers

jyoti.co.in

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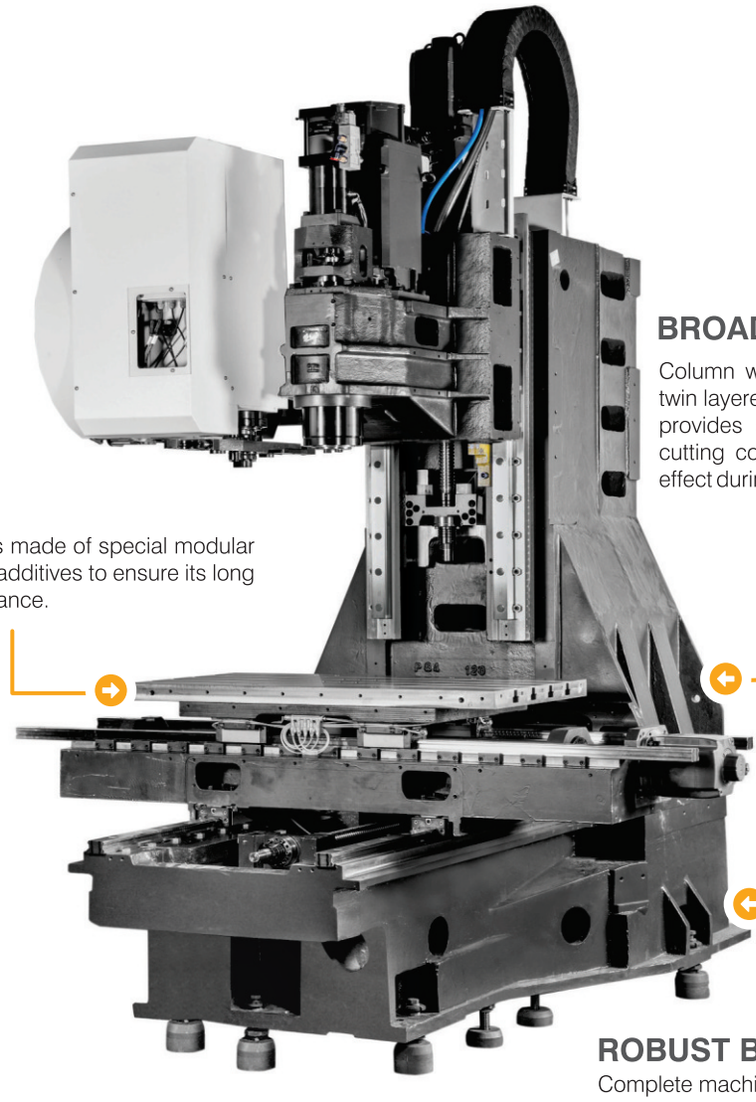
OVERVIEW

To fulfill the demanding market need of high speed, accuracy & reliability, Jyoti has developed much advanced & improved Gen-Next variant and a new *Avatar* of vertical machining center under the performance series. With broad base C-Frame and rigid construction this machine is built to suit high end Die & Mould sector and finest vertical machining requirement. The machine built with much advanced design features with attractive & dynamic look of machine guarding and awesome LED lighting makes the machine outstanding in it's class.



TABLE

The machine table is made of special modular casting with special additives to ensure its long life accurate performance.

BROAD COLUMN

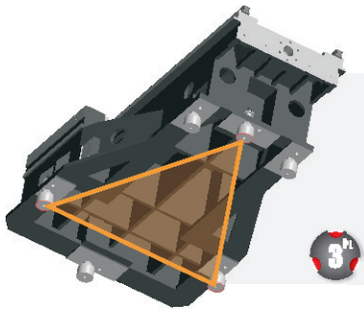
Column with broader base with ribbed stiff twin layered walls eliminates cantilever effect, provides excellent stability under dynamic cutting condition and reduces the vibration effect during extreme position of Z-Axis.

ROBUST BASE

Complete machine structure is made up of graded casting and heat treated. Broad rigid base with heavier cross ribs provides greater damping to avoid effect of vibration.

FEM PROVEN STRUCTURE

The machine offers high cutting rigidity and low vibration to match the requirement of Die-Mould application, such performance is assured due to advanced reinforced design structure assured with FEM analysis.

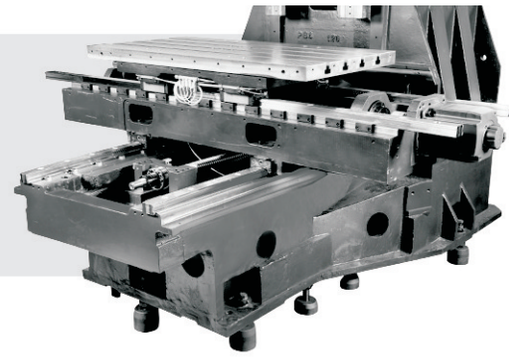


3 - POINT LEVELING

This feature reduces the twisting effect in structure and to have great flexibility for quickly installation and relocation of machine made easy.

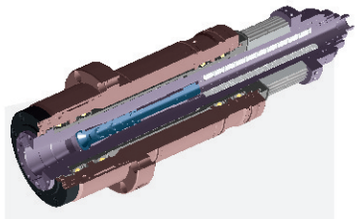
PRECISION LINEAR AXIS

This machine is equipped with high precision P-class linear motion guideways with exceptional static and dynamic stiffness. This arrangement to support efficient rapid motion of all axis with high acceleration rate of **5 m/sec^2** for achieving higher productivity with excellent surface finishing.



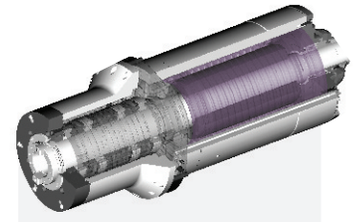
HIGH PERFORMANCE SPINDLE

Spindle for the machines are manufactured with world class facility and assembled under dedicated temperature controlled, dust free assembly shop. Spindles are extensively tested against various performance criteria.



BELT DRIVEN SPINDLE

To get better surface finishing for Die-Mould application, this machine is loaded with specially designed high-speed 10,000 rpm spindle with ceramic bearing. Ceramic bearings to eliminate heat generation during continuous machining at higher rpm application, offers better working life of spindle.

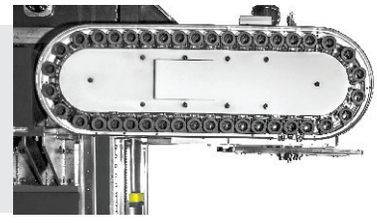


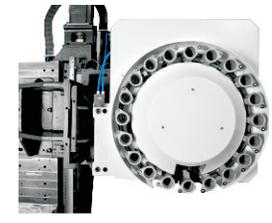
ELECTRO SPINDLE (OPT.)

To meet the demand of advance Die-Mould application, high speed 15,000 or 18,000 rpm motorized spindle is available. The peak speed of motorized spindle is just **2.5 sec**. while deceleration time is only **2 sec**.

AUTOMATIC TOOL CHANGER

A twin arm disc type tool magazine with maximum tool capacity of 20 tools is available with this machine. With just 2.4 sec tool change time to reduce non-productive time. The machine can be selected with a range of 24/40 tools magazine options.





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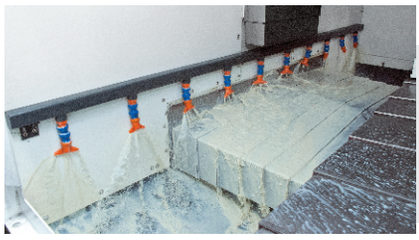
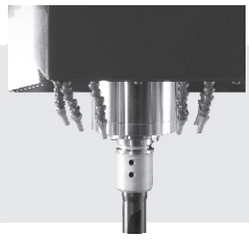
EFFORTLESS OPERATION AND MAINTENANCE

EASY CHIP REMOVAL

The uninterrupted easy chip evacuation is made possible by providing rear side chip tray. Accumulated chips can be easily removed without hampering operating side production activities.





FLUSH COOLANT SYSTEM

Improved high pressure flush coolant system designed to wash away chips effectively from 3-sides of inside machine area to reduce operators stress for cleaning.

Flexible coolant nozzles surrounding the spindle is available to improved tool life.

EASY ACCESSIBILITY FROM TOP

With wide door opening from top and front design, loading/unloading of heavy component made much easy ensuring operators safety. Also loading/unloading possible by crane from top of the machine

TPM COMPLIANCE

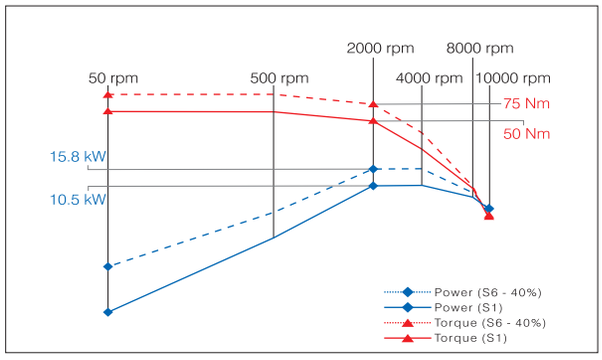
To maintain machine performance for longer life, total productive maintenance concept is adopted for the machine. Check points for assuring TPM such as lubrication, pneumatic and proximities indicators are located at easy visual control and easy approach.

MOVABLE OPERATING PANEL

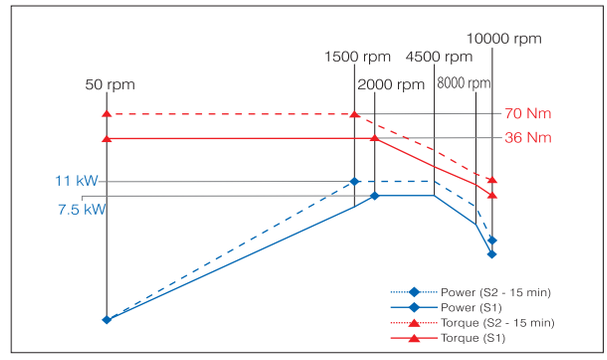
For better visual control on machining area while operating, ergonomically designed movable and tilting operator control panel.

POWER TORQUE DIAGRAM

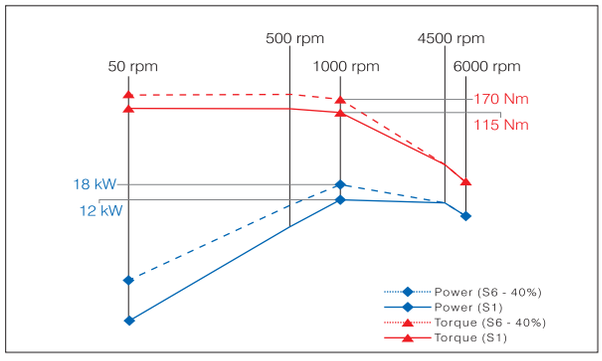
15.8 / 10.5 kW, 10000 rpm (Siemens)



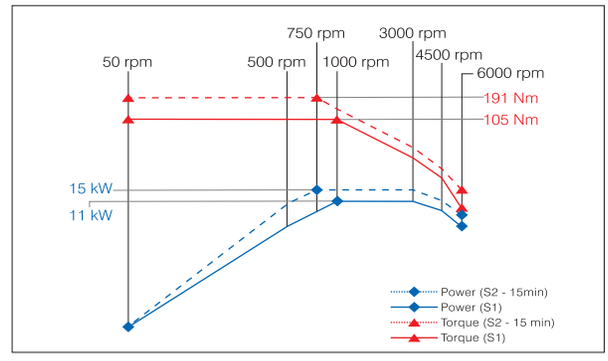
11 / 7.5 kW, 10000 rpm (Fanuc)



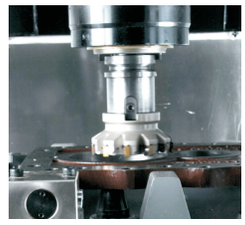
18 / 12 kW, 6000 rpm (Siemens)



15 / 11 kW, 6000 rpm (Fanuc)



CUTTING CAPABILITIES

	Face Milling	Drilling	Tapping
			

Siemens 18/12 kW Motor Power			
Material	**(Cutter Dia, Dept of Cut X MRR)**	**(Dia X Feed)**	**(Size X Pitch)**
Steel	Ø80 mm, 4.5 mm X 240 cu.cm\min	Ø45 mm X 0.16 mm/rev	M22 X 2.5 mm
Cast Iron	Ø80 mm, 5.5 mm X 425 cu.cm\min	Ø52 mm X 0.20 mm/rev	M27 X 3 mm
Aluminium	Ø125 mm, 4.25 mm X 625 cu.cm\min	Ø60 mm X 0.20 mm/rev	M30 X 3.5 mm

Fanuc 15/11 kW Motor Power			
Material	**(Cutter Dia, Dept of Cut X MRR)**	**(Dia X Feed)**	**(Size X Pitch)**
Steel	Ø80 mm, 4.25 mm X 212 cu.cm\min	Ø45 mm X 0.14 mm/rev	M22 X 2.5 mm
Cast Iron	Ø80 mm, 5.25 mm X 383 cu.cm\min	Ø52 mm X 0.18 mm/rev	M27 X 3 mm
Aluminium	Ø125 mm, 4 mm X 586 cu.cm\min	Ø58 mm X 0.20 mm/rev	M30 X 3.5 mm

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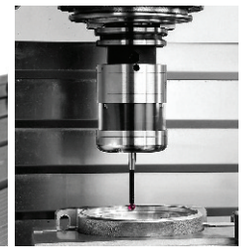
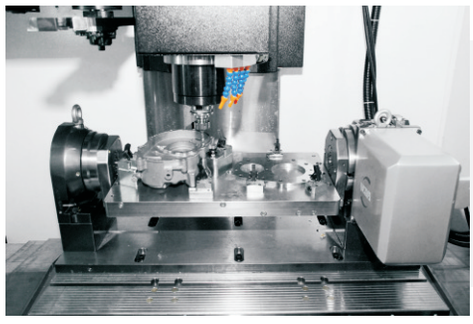
PRODUCTIVITY IMPROVEMENT OPTIONS

Option for CTS is available to providing high pressure filtered coolant exactly to tool tip which minimizes the effect of heat distortion. Application on hard material at low rpm needs higher spindle torque, to fulfill this requirement gear box option is available.

TOOL PROBE & JOB PROBE

The machine is compatible to accommodate various spindle and surface sensing probes. A wide range of tool and job probe with infrared/radio/laser transmission technology to increase spindle & machine utilization and thus reducing nonproductive time associated in context to cycle time.





4th AND 5th AXIS CAPABILITY

To avoid multiple setup and to have multi sides machining, 4th and 5th axis table with high resolution feedback system are compatible with the machine to have maximum application and to achieve flexibility in contouring. Improved productivity would be an added advantage through this option.

SALIENT FEATURES OF CONTROLLER – SIEMENS 828D

Machine from Jyoti CNC are equipped with high performance latest CNC control unit from Fanuc & Siemens, that are easy to understand and operate.

- High Resolution 10.4” Color Screen with Dynamic Graphic Display
- 5MB User Memory
- M-Dynamics Feed Forward Control
- Integrated QWERTY keyboard & Multi Functional Display
- High Speed Rigid Tapping & Thread Milling
- Linear, Circle, Helical & Universal NURBS Interpolation
- Powerful Servo Axis Motors with Super Precision Absolute Encoder
- Advanced Surface Finishing
- Technology Cycles for Drilling/Milling Operations
- Tool Management for Monitoring of Tool life
- Tool Display Unit
- MPG Unit for Operator Easiness
- High Speed Fast Ethernet for Data Communication
- Communication & Data Management Via USB, CF Card & RS 232C
- User Friendly Built-in Calculator

TECHNICAL SPECIFICATION

Table		VMC 850 nvu
Table Size	mm	1000 X 530
T-Slot Dimension	mm	4 X 18 X 100
Distance from Floor to Table	mm	965
Max. Load on Table	kg	500
Capacity		
X-Axis Travel	mm	820
Y-Axis Travel	mm	510
Z-Axis Travel	mm	510
Dis. From Spindle Face to Table Top (Min.-Max.)	mm	150 - 660
Feed (X, Y & Z-Axis)		
Rapid Traverse	m/min	24
Cutting Feed	m/min	10
Main Spindle		
Spindle Speed Range	rpm	10000 (6000)
Spindle Motor Power -Siemens	kW	15.8/10.5 (18/12)
Spindle Motor Power - Fanuc	kW	11/7.5 (15/11)
Spindle Nose		BT - 40
Front Bearing Bore	mm	70
Automatic Tool Changer		
No. of Tools		20
Max. Tool Dia. Pockets (All/Adj. empty)	mm	80 / 125
Max.Tool Weight	kg	7
Max.Tool Length	mm	250
Accuracy (as per VDI/DGQ 3441)		
Positioning Uncertainty (P)	mm	0.010
Repeatability (Ps medium)	mm	0.005
Other Data		
Machine Weight # (Approx.)	Kg	5700
Machine Dimension # (Approx.):		
Length	mm	3700
Width	mm	2030
Height	mm	2830

STANDARD FEATURES

- Fanuc 0i MF or Siemens 828D
- AC Servo Spindle Drive
- AC Servo Axis Drive
- L.M. Guideways
- Work Light
- Auto & Manual Coolant System
- Rear Side Chiptray
- Centralized & Programmable Lubrication
- Laser Calibrated Axis for High Precise Positioning Accuracy
- 10,000 rpm with Ceramic Bearings
- Ring Coolant
- MPG Unit
- Electricals with Quality Devices & Panel A.C

PRODUCTIVITY IMPROVING OPTIONS

- Chip Conveyor
- 24 & 40 Tool ATC
- 15" Touch Screen (Siemens)
- High Torque Spindle Motor
- 4^{th} and 5^{th} Axis Option
- Coolant Gun
- Flush Coolant System
- Extra Daylight Area (200 mm)
- Gear Box
- High Speed Electro Spindle 15,000 & 18,000 rpm with chiller
- Coolant Through Spindle
- Tool Tip Air Nozzle (For Dry Cutting)
- Tool Probe & Job Probe
- Linear Glass Scale
- Oil Skimmer
- Machine Tower Light
- Visiport Window
- Fully Tooled up Solutions to Meet the Customer Needs

Refer machine detail layout for weight & overall space requirements
( ) Optional

ED. 2017/09

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Note: Specified information are subject to change arising out of continuous product improvement without notice. The description standard accessories/feature conforms to its list; not the photo of machine show in the catalogue. Other controller will have different configuration. Machine images are shown with option.

ISO 9001 : 2008