

NX Series

High Performance Double Column Vertical Machining Centers

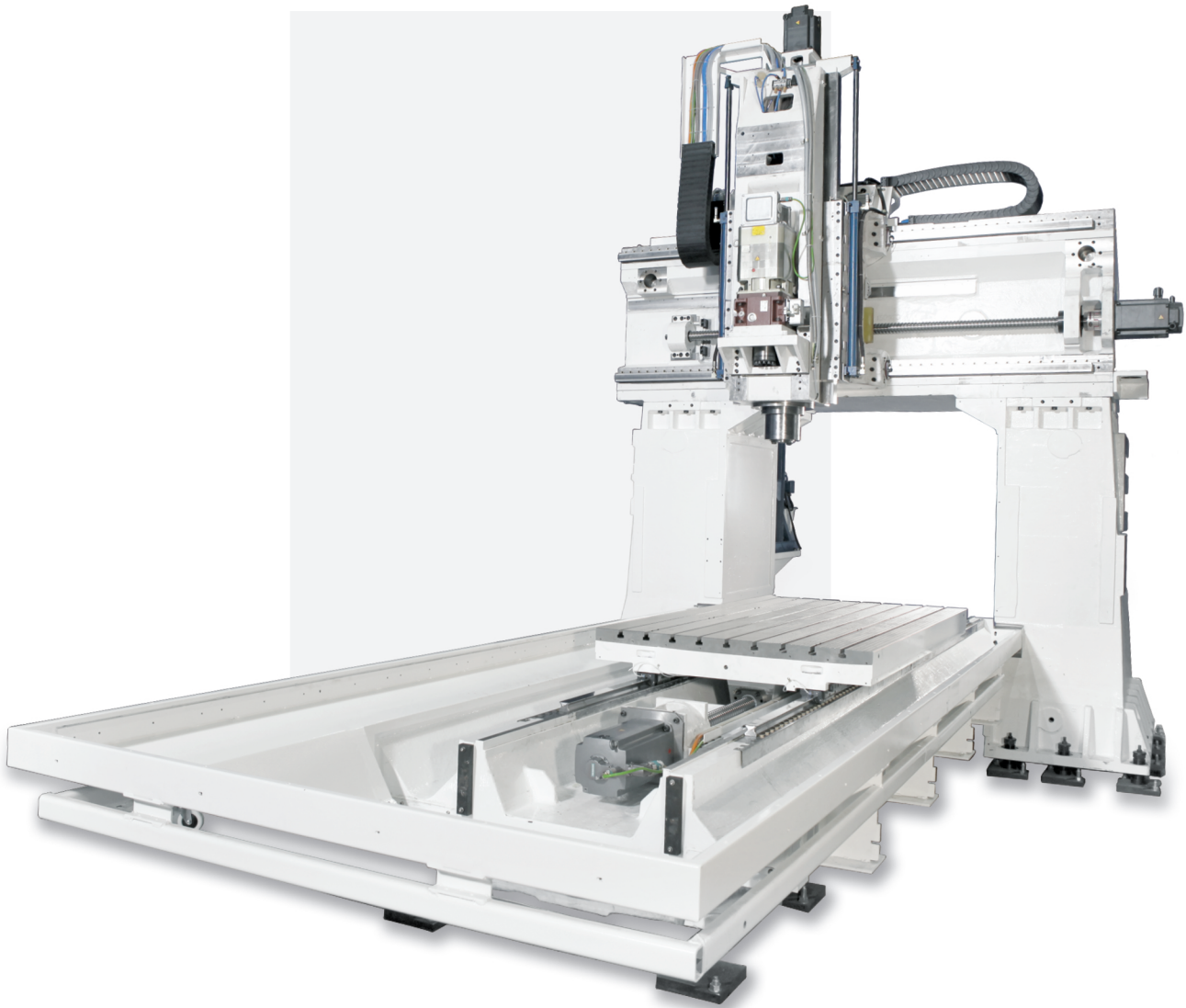


NX Series

High Performance Double Column Vertical Machining Center

OVERVIEW

NX Series Heavy Duty Double Column Vertical Machining Centers is ideal for multi axis heavy machining both in roughing and in finishing operations for bigger components greatly increasing work envelop, permitting larger parts to be machined, and a wider range of tool lengths can be used in the same setup. Combination of this series design concept, Achieved dynamics and accuracy results in very high quality surfacing even for complex workpiece such as injection moulds, forging dies, large plates, heavy engineering work pieces to help keep pace with growing market applications.



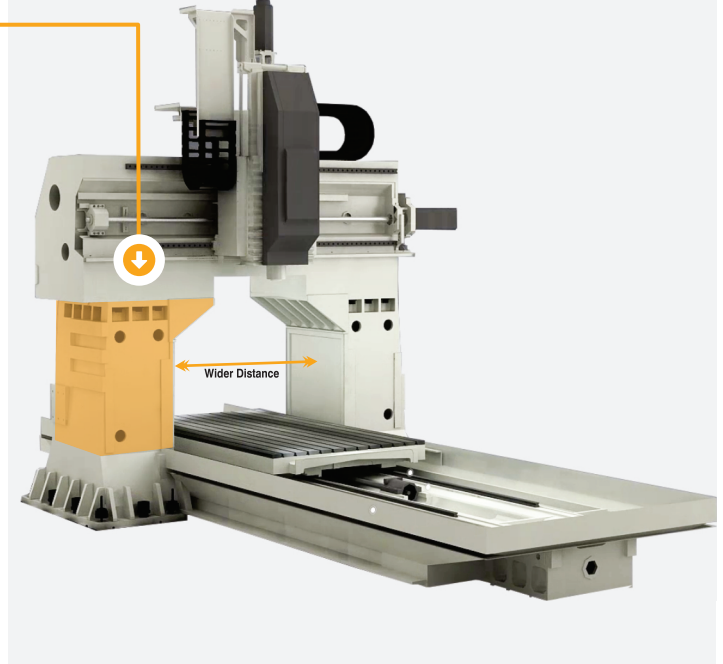
STRUCTURE : RIGIDITY AND ACCURACY

- Double Column structure with Y-Axis on rigid cross-beam, X-Axis moving table and Z-axis on Ram Type Head with better reach to table area.
- Structure is made out of Cast iron which is capable to provide high mechanical performance which maximizes the rigidity of structure and allows optimum harmonic stability and maximum damping demanding cutting conditions.
- Machine can be placed on foundation with weight equally distributed over fixing points enabling extreme rigidity and very high geometrical stability.



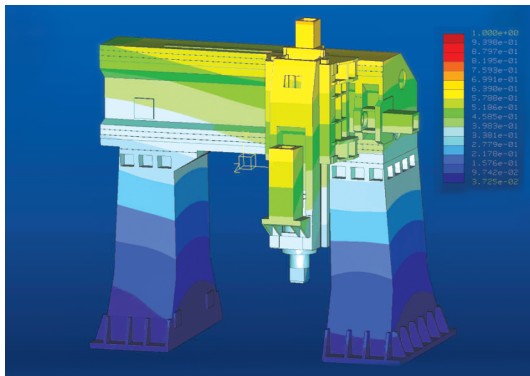
HEAVY CROSS BEAM & BROADER COLUMN

- The columns are oversized and broad in design to support the cross beam by evenly distributing the dynamics of Y - axis and Z - axis while machining.
- The column casting is designed with angular ribs to provide better rigidity and support to the heavy cross beam
- By adding the optional column riser of 200 / 350 mm enhances the machining day light area for larger jobs.
- Heavier and ribbed structure of cross beam effectively reduces the vibration while heavy machining and enhances the accuracy of the job. Ribbed structure also helps in better surface finish during finishing operation.



WIDER GAP BETWEEN COLUMNS

- Wide gap is maintained between both the columns enabling it to accommodate and machine large size components.
- NX Series is designed for large size mould base machining.
- NX Series has table load capacity of upto **10 tonne**.

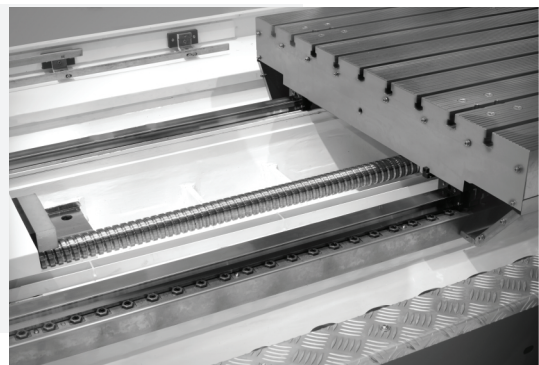


FINITE ELEMENT ANALYSIS

Entire structure has been designed and tested by stringent FEM analysis for optimum performance under practical working conditions. NX Series comes up with super rigid columns has ability to sustain heavy load cutting during demanding conditions.

PRECISION LINEAR AXES

- Precision Class Linear Motion (Roller Type) Guideways in X & Y Axis enabling higher rapids for better productivity and accuracy life.
- An exclusive design of moving RAM in Z-Axis increases the dynamic characteristics and ensures rigidity, stability and vibration free cutting,
- Pre-loaded ballscrews with integrated system of compensation and Pre-loaded bearings to remove inversion backlash, axial stress and compensates effect of thermal expansion on ballscrews enabling a high quality of surfacing

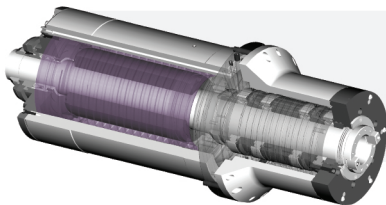
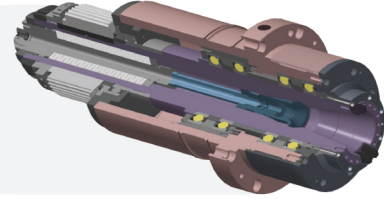


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PERFORMANCE SPINDLE

- High Torque Vertical Spindle has been designed and manufactured in-house at Jyoti CNC in a dedicated dust free, temperature controlled assembly shop. Where spindles are extensively tested for various performance criteria.
- Life time greased angular contact bearings are used for higher stability during heavy cutting load conditions.

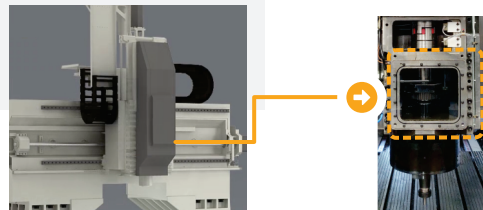


ELECTRO SPINDLE

- High Power or High Torque Spindles with different taper options are available to match different application needs.
- High Speed **10,000 / 15,000 / 18,000 rpm** motorized spindle are available which are manufactured for high speed machining.

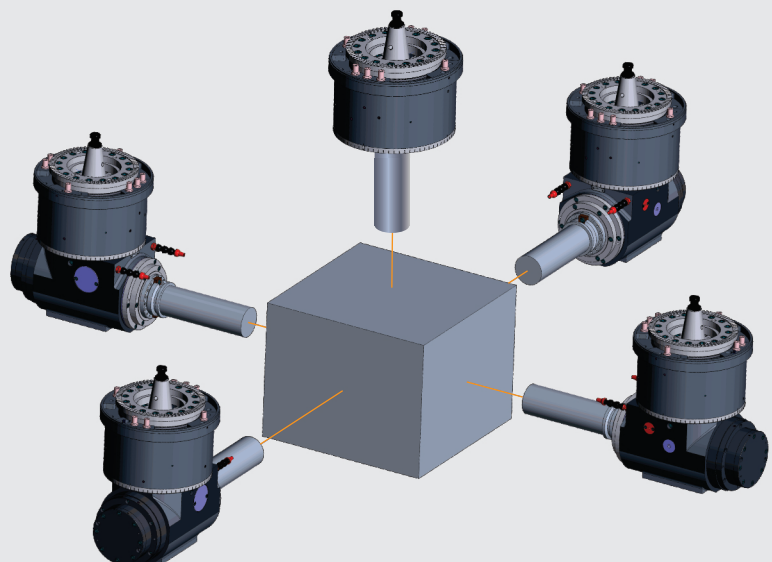
HIGH TORQUE GEARED HEAD

For higher torque at low rpm application, we offer geared head spindles which provides an edge during demanding applications like large size milling cutters, rigid tapping and large size boring operations.



5 FACE MACHINING

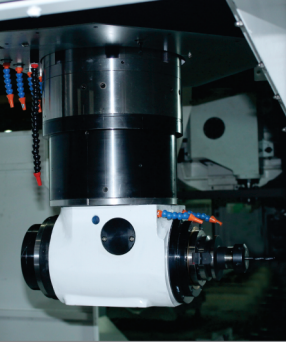
- The ability to machine multiple face of large workpiece in a single setup allows to reduce the unwanted setups hence saving setup time.
- Higher accuracy is achieved by excluding multiple setups.
- Productivity is increased by reduction in non-machining time, as changing the setup of huge components take longer time and increases the chances of clamping errors.

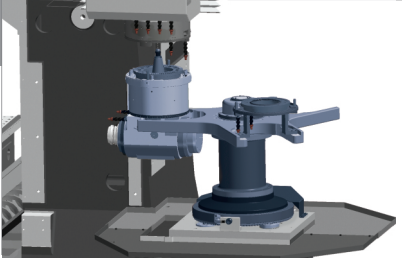





PRODUCTIVITY IMPROVING OPTION

HEAD OPTIONS


|  | 90° Auto Indexing Head | | |
|---|---------------------------------|------|-------------------------|
| | Taper Size | | BT 50 |
| | Spindle Speed | rpm | 3000 |
| | Max. Tool Length | mm | 300 |
| | Spindle Power (Fanuc / Siemens) | kW | [22/18.5] / [32.3/21.5] |
| | Head Clamping | | Hydraulic |
| | Head Indexing | Deg. | 5° |
| <ul style="list-style-type: none"> 5-Face automatic indexing head is designed and manufactured in-house in controlled temperature dust free environment, head is tested through series of performance criteria. As name is itself show indexing is automatic, through program clamp of head is done through hydraulic. Auto indexing head position locked by 2-piece hirth coupling assure accurate indexing position under heavy machining condition. Gear head spindle is an essential spindle to fulfill the high torque requirement of horizontal position. | | | |

| Parking Station |  |
|--|---|
| <ul style="list-style-type: none"> Automatic head changer is the head changing compartment fitting in the machine for parking of angular head. Fully automated head compartment is fitted with protective cover and independent moveable door, which opens only while switching the head, to prevent chips form entering the angle head. | |

| 90° Manual Head | | |
|--|-----|-------------------------|
| Taper Size | | BT 50 |
| Spindle Speed | rpm | 2000 |
| Max. Tool Length | mm | 300 |
| Spindle Power (Fanuc/Siemens) | kW | [22/18.5] / [32.3/21.5] |
| Indexing / Changing | | Manual |
| <ul style="list-style-type: none">■ Manual head is capable of machining side face with desired indexing.■ Clamping of this head is done by mounting it on spindle face manually by fasteners. | | |



| Multi Angular Milling Head | | |
|--|-----|-------------------------|
| Taper Size | | BT 50 |
| Spindle Speed | rpm | 1200 |
| Max. Tool Length | mm | 300 |
| Spindle Power (Fanuc/Siemens) | kW | [22/18.5] / [32.3/21.5] |
| Indexing / Changing | | Manual |
| <ul style="list-style-type: none">■ Clamping of this head is done by mounting it on spindle face manually by fasteners.■ This head helps in machining those parts of workpiece which are difficult to access. | | |



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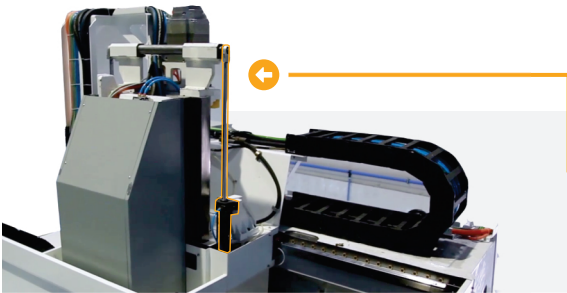
AUTOMATIC TOOL CHANGER

- 24 Tools, Twin arm type ATC with disc type magazine for BT 50 taper.
- Higher tool storage capacity options with 40, 60 and 120 tools available with different spindle taper combination.
- Tool magazine outside of working area.

| ATC Specification (Standard) | | |
|--|----|-----------|
| Number of Tools | | 24 |
| Tool Diameter (All) | mm | 125 |
| Tool Diameter (Adj. Empty) | mm | 250 |
| Max. Tool Length | mm | 350 |
| Tool Weight | kg | 15 |
| ATC Type | | Disc Type |
| <ul style="list-style-type: none">■ NX series is equipped with 24 tool drum type ATC for automatic loading and unloading of the tool.■ Interference free tool changing area | | |



| ATC Specification (Optional) | | | H / V Type |
|--|----|---------|------------|
| Number of Tools | | 40 / 60 | 60 / 120 |
| Tool Diameter (All) | mm | 125 | 125 |
| Tool Diameter (Adj. Empty) | mm | 250 | 250 |
| Max. Tool Length | mm | 350 | 350 |
| Tool Weight | kg | 15 | 15 |
| <ul style="list-style-type: none">■ 60/120 tool ATC can be offered as Horizontal / Vertical type ATC which helps to change tool in Horizontal / Vertical position respectively.■ 60/120-tool H-V type ATC is available exclusively with NVU guarding only.■ Interference free tool changing area | | | |



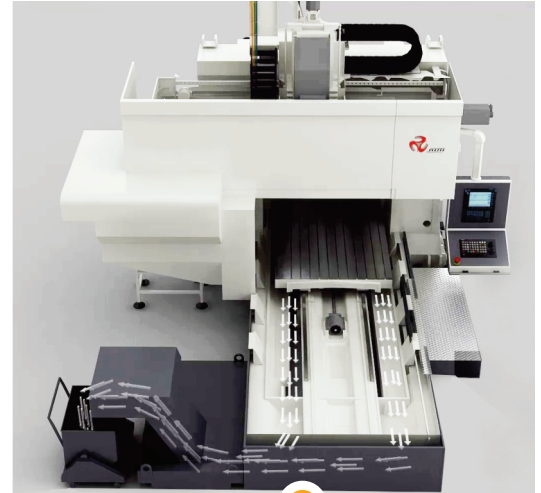
HYDRAULIC COUNTER BALANCE

Hydraulic Counter Balance will positively holds pressurised load and will prevent the vertical drop during emergency stop, smooth motion during machine movement and better stability while actual machining at higher parameters.



CHIP EVACUATION

- High pressure head coolant which helps to evacuate the chips which accumulates on the job.
- Flush coolant carries the chips towards both auger conveyors which leads to evacuation of chips efficiently from the machining area.
- The augers discharge's the chips to the third cross conveyor which removes the chips from the machine.



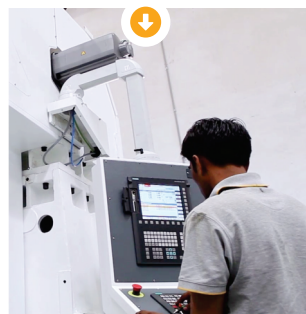
Very large accessibility to the table and the workpiece from top and side of the machine thanks to a large opening of doors and possibility to load with lifting equipment



Half Guarding is offered as a standard guarding

EASY MAINTENANCE

- Safe guard ensuring a safety of the machine, operator and surrounding.
- NX series machine are designed with special care for easy approach and access for preventive maintenance check points for lubrication, pneumatics, electrical panel and proximities within reach of operator.

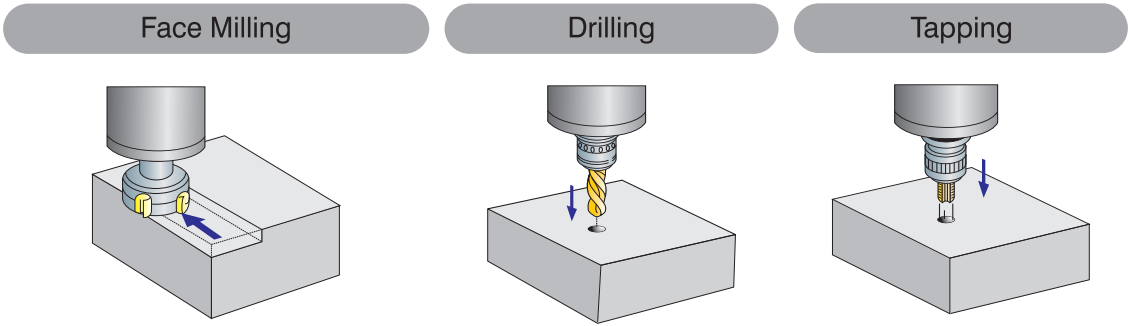


Operator panel with swing arm for easy accessibility to working area enabling better operator friendly operation.

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CUTTING CAPABILITIES



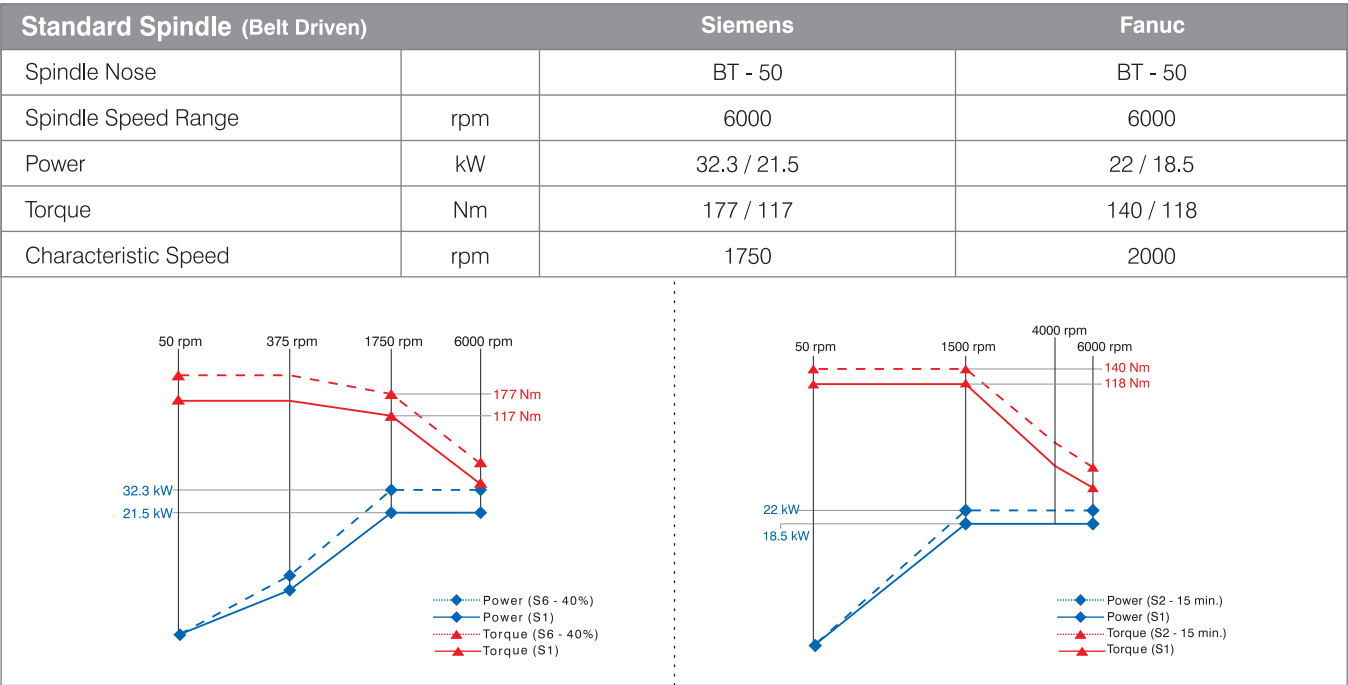
Siemens 32.3/21.5 kW Motor Power with Geared Head

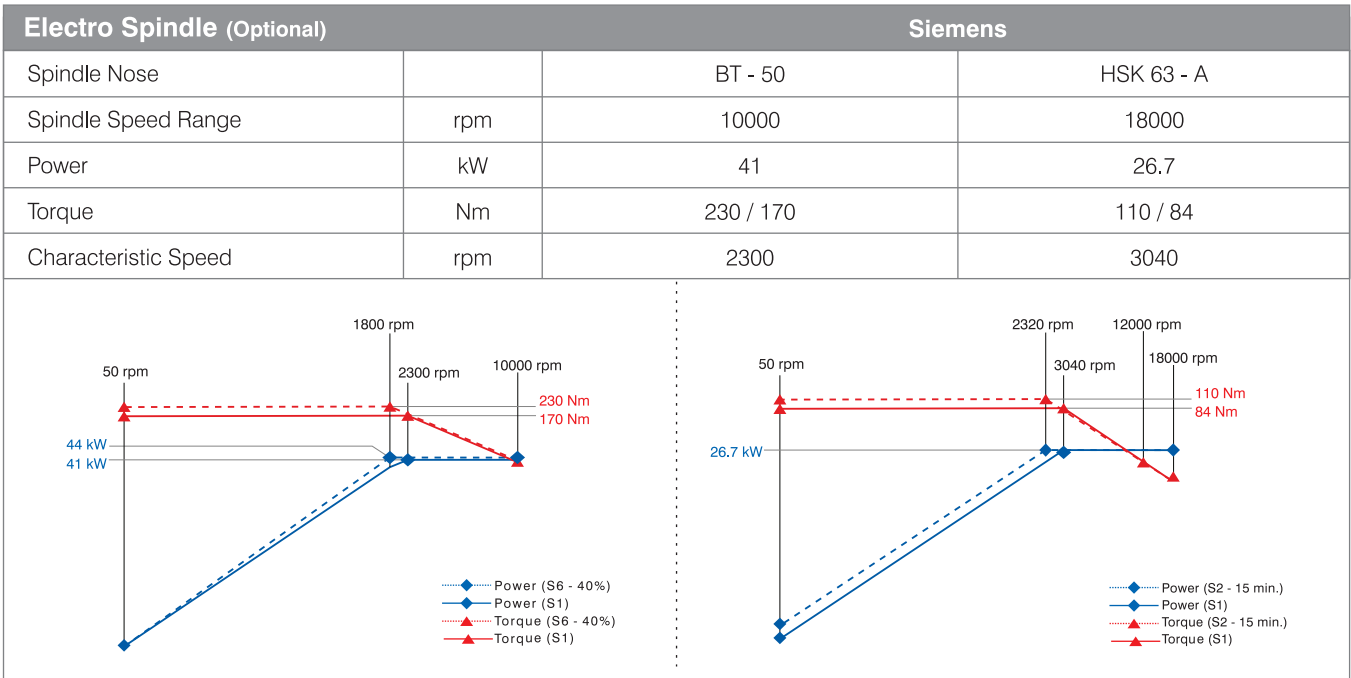
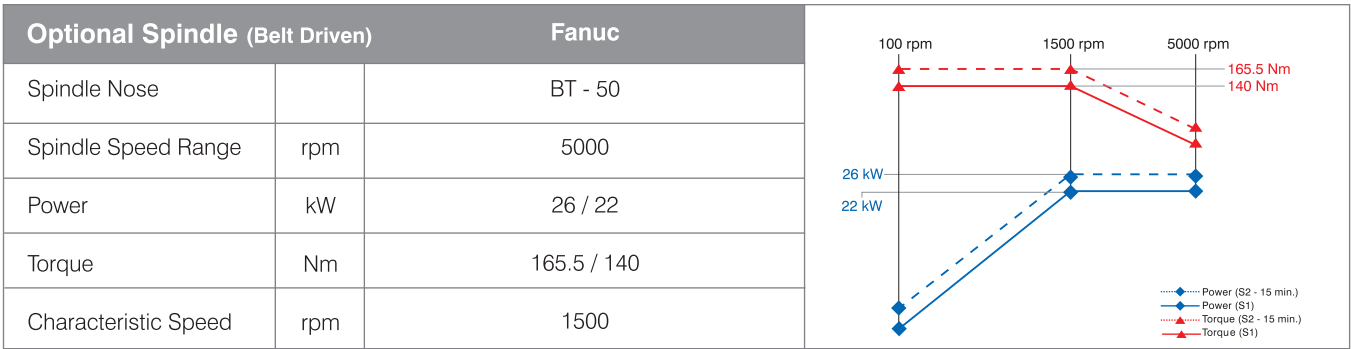
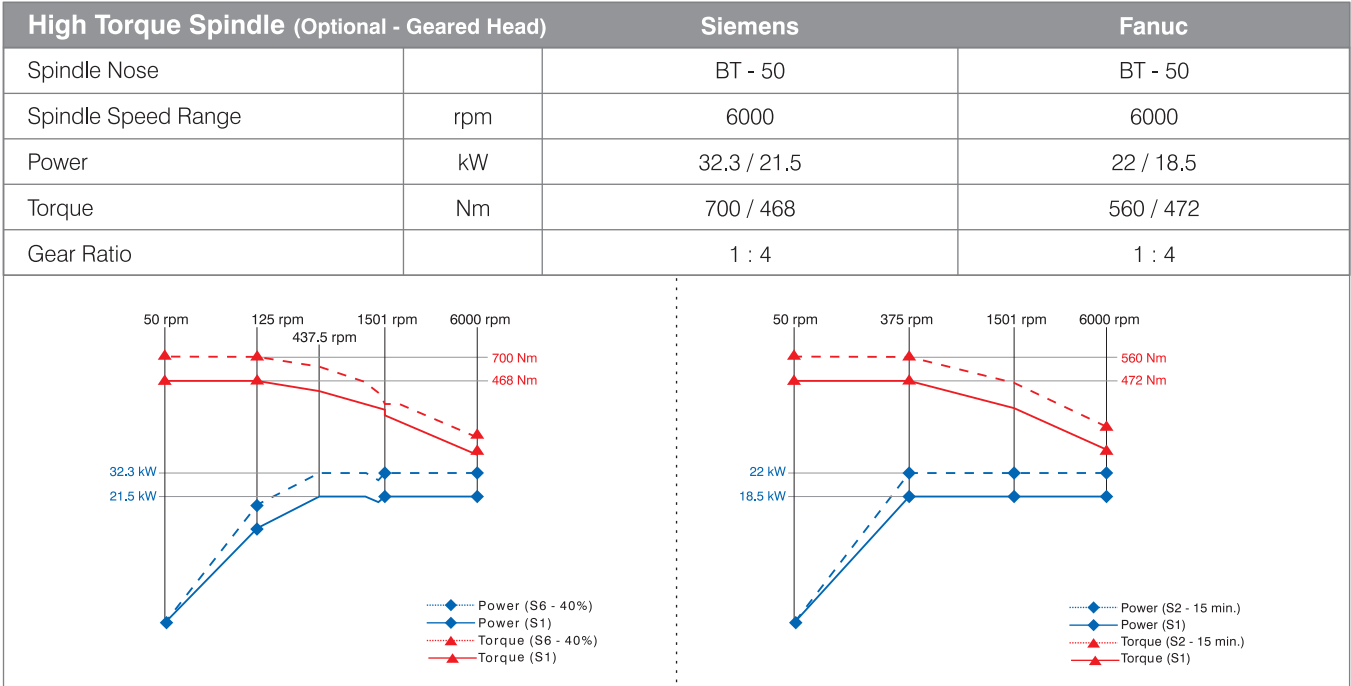
| Material | (Cutter Dia, Dept of Cut X MRR) | (Dia X Feed) | (Size) |
|-----------|---------------------------------|----------------------|--------|
| Steel | Ø125 mm, 8 mm X 513 cu.cm\min | Ø105 mm X 0.1 mm/rev | M33 |
| Cast Iron | Ø125 mm, 8.2 mm X 526 cu.cm\min | Ø105 mm X 0.1 mm/rev | M36 |
| Aluminium | Ø160 mm, 8 mm X 1015 cu.cm\min | Ø125 mm X 0.1 mm/rev | M39 |

Fanuc 22/18.5 kW Motor Power with Geared Head

| Material | (Cutter Dia, Dept of Cut X MRR) | (Dia X Feed) | (Size) |
|-----------|---------------------------------|-----------------------|--------|
| Steel | Ø125 mm, 6.5 mm X 360 cu.cm\min | Ø90 mm X 0.1 mm/rev | M30 |
| Cast Iron | Ø125 mm, 7 mm X 410 cu.cm\min | Ø100 mm X 0.1 mm/rev | M33 |
| Aluminium | Ø160 mm, 7 mm X 700 cu.cm\min | Ø110 mm X 0.12 mm/rev | M36 |

POWER TORQUE DIAGRAM





NOTE - More options of electro spindle are available as per the application.

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7th SENSE

We lead the fourth industrial revolution in CNC automation and manufacturing with 7th SENSE. The next generation's i4.0 tool that redefines the conventional PPC model to Plan. Produce. Complete.



The Next-Gen Industry 4.0 Tool.

Redefining PPC
Plan. Produce. Complete.

Cockpit

Comprehensive Dashboard

OEE

Live Overall Equipment Efficiency

Production

Scheduling & Productivity Monitoring

Live

Machine Monitoring

Reports

Intelligent Reports

Health

Health Monitoring

Tool

Tool Life Management

Big Data

Cloud / Local data Management

Master Modules & Productivity Features

- Machine, Part, Shift Management
- Production Scheduling Tool
- Daily Production & Virtualization
- Daily Task Manager / Reports
- Alarm Logs
- Dedicated operator Screen**
- Live Breakdown Alarms
- Virtual Screen
- Live Production & Machine Monitoring
- Planned Downtime Management
- Downtime & Productivity Alerts
- User Management (Operator, Supervisor etc.)

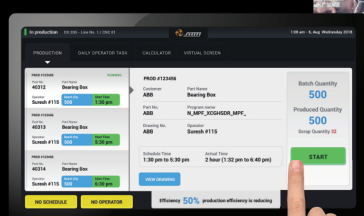
Health Monitoring Features*

- Live Machine Health Monitoring
- Machine Health Alarms Logs & Analysis
- Spindle : Bearing Temperature, Head Stock Temperature, Vibration, Load, Power Utilization, Run Hours
- Coolant : Flow, Pressure, Temperature & Coolant Level
- Hydraulic : Pressure Status, Oil Level Status, Oil Temperature
- Gear Box : Lubrication Temperature, Oil Level and Filter Obstruct
- Axis Lubrication : Oil & Pressure Level
- Pneumatic Pressure
- Electrical Cabinet Temperature

Reports & Analysis

OEE, Down Time Analysis, Availability Chart, Good/Scrap Parts, Machine Utilization, Production Trend, Speed-loss Analysis, Cycle Time Analysis, QMS***

Smart Operator Panel



- Live production update
- Live machine schedule screen
- Live Downtime Reasons
- Drawing View in single tap
- Daily operator task
- Customized Screen availability



TECHNICAL SPECIFICATION

| Table | | NX 2215 | NX 3215 | NX 3222 | NX 4222 |
|--------------------------------------|-------|--------------|--------------|---------------|---------------|
| Table Size | mm | 2200 x 1250 | 3000 x 1250 | 3000 x 2000 | 3500 x 2000 |
| T-Slot Dimension | mm | 9 x 18 x 125 | 9 x 18 x 125 | 12 x 22 x 160 | 12 x 22 x 160 |
| Dist. From Floor to Table | mm | 790 | 790 | 920 | 920 |
| Max. Load on Table | kgf | 6000 | 8000 | 10000 | 10000 |
| Distance Between Column | mm | 1600 | 1600 | 2500 | 2500 |
| Capacity | | | | | |
| X-Axis Travel | mm | 2200 | 3200 | 3200 | 4200 |
| Y-Axis Travel | mm | 1500 | 1500 | 2760 | 2760 |
| Z-Axis Travel | mm | 800 [1000] | 800 [1000] | 800 [1000] | 800 [1000] |
| Dist. From Spindle Face to Table Top | mm | 200 | 200 | 200 | 200 |
| Rapid Traverse (X, Y & Z Axis) | m/min | 20/20/15 | 15/20/15 | 15/15/15 | 15/15/15 |
| Cutting Feed Rate | m/min | 10 | 10 | 10 | 10 |
| Main Spindle | | | | | |
| Spindle Motor Speed | rpm | 6000 | 6000 | 6000 | 6000 |
| Spindle Motor Power - Fanuc | kW | 22 / 18.5 | 22 / 18.5 | 22 / 18.5 | 22 / 18.5 |
| Spindle Motor Power - Siemens | kW | 32.3 / 21.5 | 32.3 / 21.5 | 32.3 / 21.5 | 32.3 / 21.5 |
| Front Bearing Bore | mm | 100 | 100 | 100 | 100 |
| Spindle Taper | | BT - 50 | BT - 50 | BT - 50 | BT - 50 |
| Automatic Tool Changer | | | | | |
| No. of Tools | | 24 | 24 | 24 | 24 |
| Max. Tool Dia.(Adj. Empty) | mm | 250 | 250 | 250 | 250 |
| Tool Dia. (All Pockets Full) | mm | 125 | 125 | 125 | 125 |
| Max. Tool Length | mm | 350 | 350 | 350 | 350 |
| Max. Tool Weight | kg | 15 | 15 | 15 | 15 |
| Change Time : | | | | | |
| Tool to Tool - Chip to Chip | Sec | 6 - 15 | 6 - 15 | 6 - 15 | 6 - 15 |
| Accuracy (as per VDI/DGQ 3441) | | | | | |
| Positioning Uncertainty (P) | mm | 0.020 | 0.020 | 0.020 | 0.020 |
| Repeatability (Ps Medium) | mm | 0.008 | 0.008 | 0.008 | 0.008 |
| Other Data: | | | | | |
| Machine Weight # (Approx.) | kg | 26500 | 28500 | 34800 | 37100 |

STANDARD FEATURES

- The CNC System offered SIEMENS 828D or FANUC 0i MF PLUS
- AC Spindle Drive & Servo Axis Drive
- L.M. Roller Type Guideways (X & Y Axis)
- Auto & Manual Coolant System
- Centralized & Programmable Lubrication
- Laser Calibrated Axis for High Precise Positing Accuracy and Repeatability.
- Electricals with Quality Devices & Panel with A.C.
- Work Light
- Chip Conveyor

PRODUCTIVITY IMPROVING OPTIONS

- Linear Glass Scale
- BBT Spindle Taper
- Coolant Through Spindle
- Extra Day light (200mm)
- Extra Day light 350mm for NX 3222 & NX 4222
- Z-Axis Travel (1000mm)
- Tool Probe & Job Probe
- Oil Mist Collector System
- Horizontal & Vertical ATC with AHC
- Coolant Gun & Air Gun
- Rotary Table
- Full Cover Enclosures (nvu Series image is shown on cover page)
- Tool Tip Air Nozzle (For Dry Cutting)
- Visiport Window
- 15" Touch Screen (Siemens)
- Fully Toolled up Solution to Meet Customer Needs

Refer machine detail layout for weight & overall space requirements
[] Optional

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App



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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.

