A World Leader of Horizontal Machining Centers

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NIIGATA UNMANNED MULTI LEVEL SYSTEM

LRQA CERTIFIED ISO 9001 / UKAS MANAGEMENT SYSTEMS 0001

NORTH AMERICA SITE
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2024.08.J

HEAVY DUTY & HIGH PRODUCTIVITY
"HYBRID STYLE"

NEW
HPN800

NIIGATA MACHINE TECHNO CO., LTD.
Niigata Japan

HEAVY DUTY & HIGH PRODUCTIVITY

“HYBRID STYLE”

NEW HPN800

NIIGATA'S NEWEST DESIGN

New HPN800 employs ultra rigid roller guide system on X and Z axes and hardened ground box way system on Y axis which maintain Niigata's tradition, maximum machine rigidity and capability of heavy duty machining. Rapid traverse positioning is reliably achieved on these oversized component horizontal machining centers, the best in performance comes true

HIGH PRODUCTIVITY

Niigata's advance technology and design of the NEW HPN800 brings you unprecedented throughput capabilities to maximize your companies profitability.

HEAVY DUTY

Superior machine rigidity, excellent cutting capability, superior stability and long lasting positioning accuracy.

MAXIMUM WORKPIECE ENVELOPE

Many parts, which previously required a larger machine work envelope are now processed on this machine.

Travel

X axis	1530mm (60.2”)
Y axis	1230mm (48.4”)
Z axis	1220mm (48.0”)

Maximum Workpiece Swing Diameter
1750mm (68.9”)

HYBRID STRUCTURE ENSURE HIGH PRODUCTIVITY & PERFORMANCE

Heavy duty

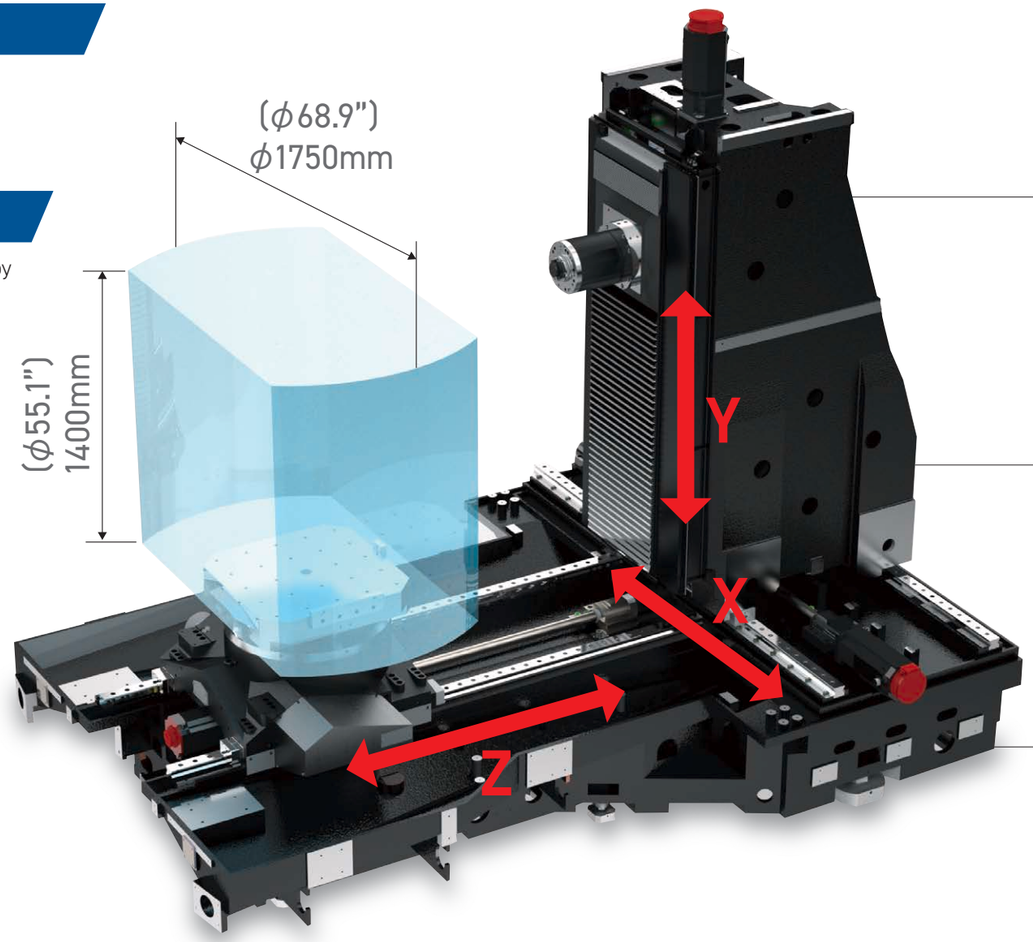
High damping performance
Y-slide way induction
(hardened Box way)

Productivity

Class leading rapid traverse by
X & Z rigid roller guide

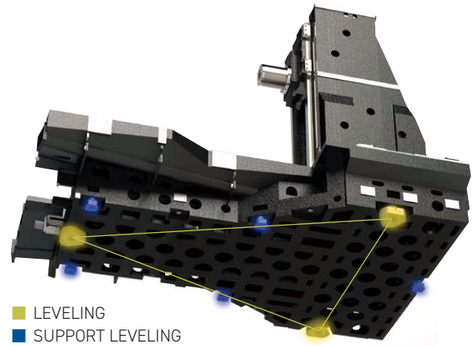
Rigidity

Honeycomb rib
rugged structure
3 point leveling



3 POINT LEVELING

Innovative design with 3 point leveling and 5 point support leveling enables accurate and rigid machining.



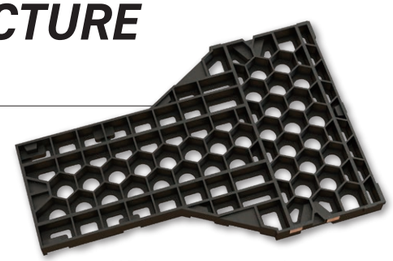
RAPID TRAVERSE

Class leading rapid traverse for increased production capacity

60m/min
(2362 ipm)

HONEYCOMB STRUCTURE MACHINE BASE

One piece T-shaped solid base with honeycomb structure achieves excellent heavy duty machining performance.

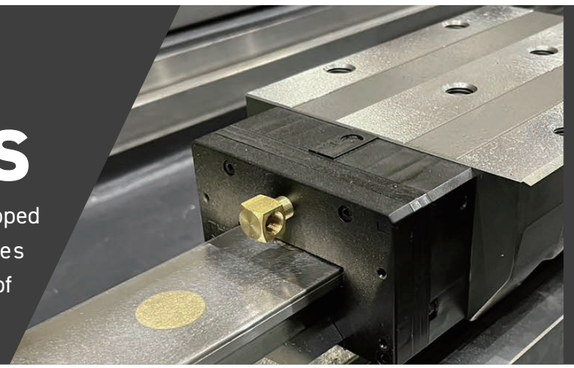


X,Z base cross section

PRODUCTIVITY
×
HEAVY DUTY

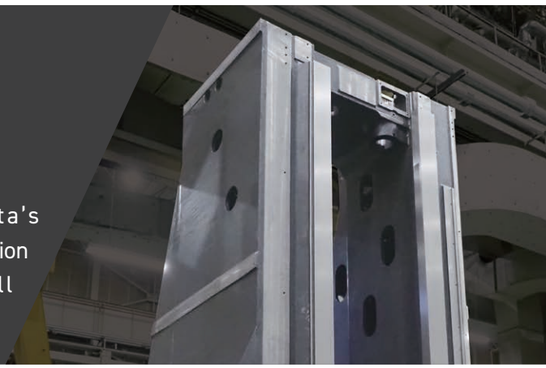
ROLLER GUIDE
X Z-axis

The X-axis and Z-axis are equipped with ultra rigid roller guides ensure high-speed movement of table (Z) and column (X).



BOX WAY
Y-axis

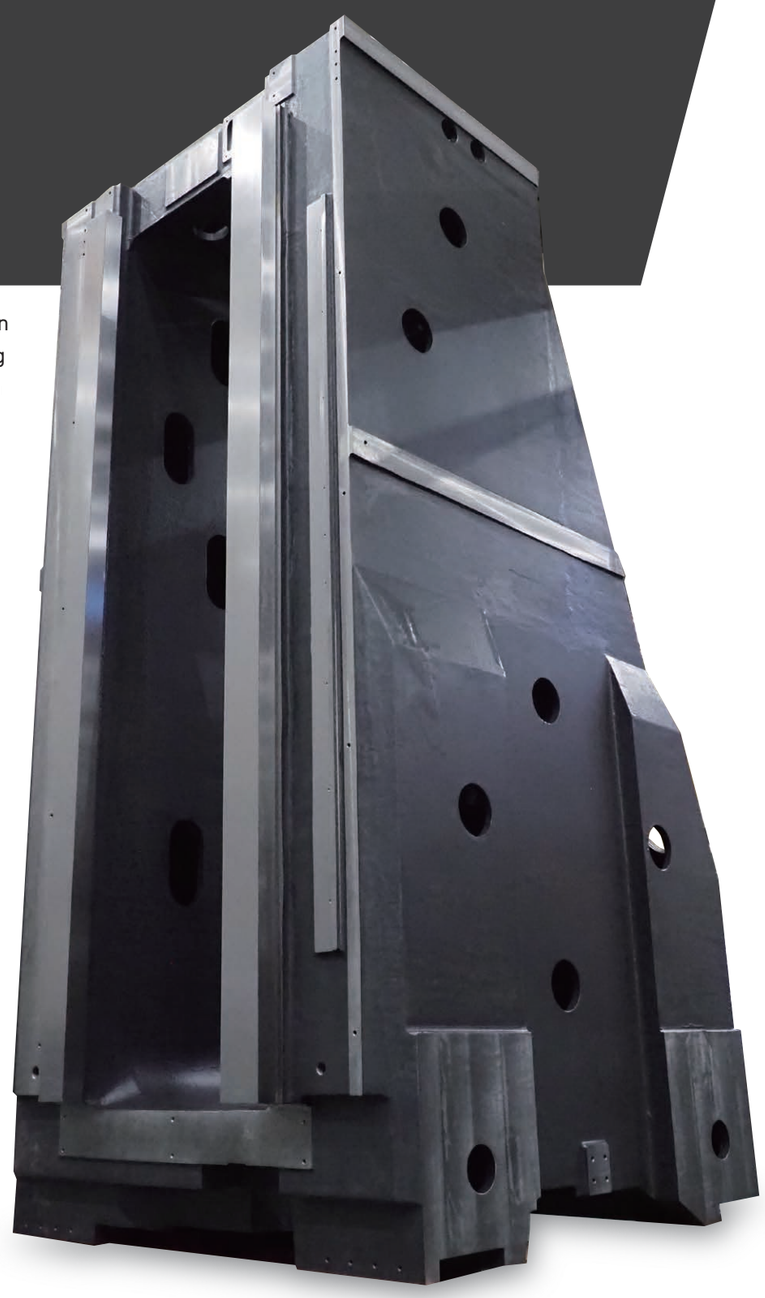
The Y-axis is with Niigata's traditional high-rigidity, induction hardened Boxway for well balanced cutting technology.



SOLID, WELL BALANCED COMPONENTS ACHIEVE ENHANCED PRODUCTIVITY

TRADITIONAL NIIGATA TECHNOLOGY

The Y axis employs our traditional induction hardened and ground box way system, providing vibration dampening at the spindle tool point in a wide variety of machining applications. This improves the cutting result in surface & accuracy of the workpiece and tool life as well.



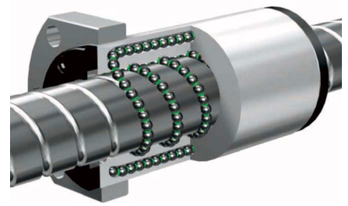
NEW DESIGN COLUMN

Roller guide X & Z axes are no sacrifice of capability on heavy machining. The Y axis provides vibration dampening at the spindle tool point in a wide variety of machining applications. This improves the accuracy of the workpiece and the tool life as well.

BALL SCREW / ROLLER GUIDE

Large diameter ball screw

Large-diameter ball screws with reliability are mounted on each axis to achieve high-precision positioning and heavy-duty cutting.



ULTRA RIGID AND HEAVY LOAD TYPE ROLLER GUIDE WAY SYSTEM

To maximize rigidity and damping, roller bearing guides are adopted on the X and Z axes.

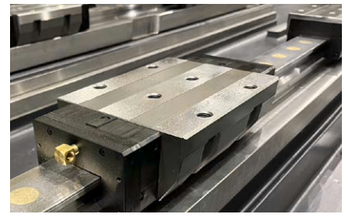
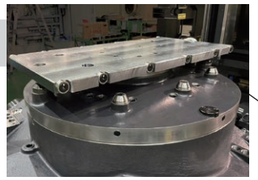


TABLE DESIGN

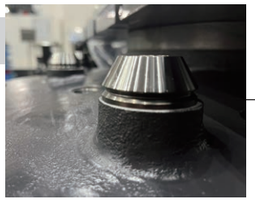
PALLET CLAMPER

Massive Plate system Pallet clamper. Simple design insuring less trouble.



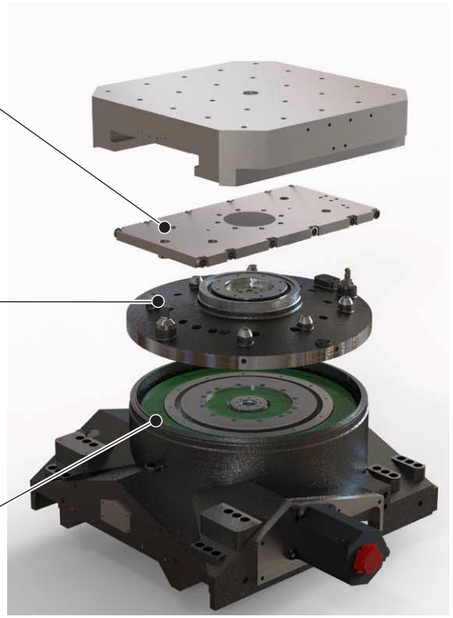
PALLET POSITIONING

Pallet positioning by Taper cone, pallet bushing (6 positions) and air-blow cleans taper-cone surface



NC TABLE

Hand scraped Large diameter slide way system to absorb cutting vibration (NC table option)



SOLID, WELL BALANCED COMPONENTS ACHIEVE ENHANCED PRODUCTIVITY

AUTOMATIC TOOL CHANGER SYSTEM

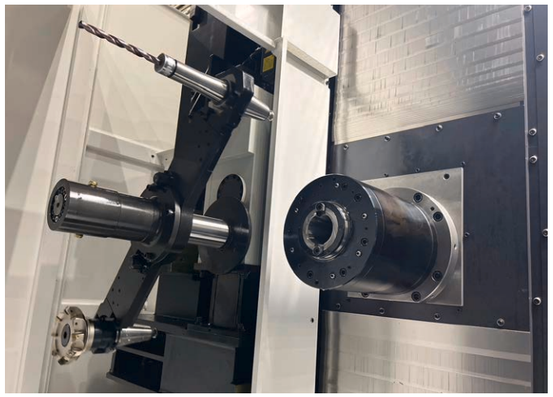
CAM DRIVEN ATC SYSTEM

The CAM DRIVEN ATC has proven to be the most reliable tool exchange mechanism for high speed and heavier tool handling.
It employs servo technology to achieve easier maintenance and operator friendliness.

ATC Time

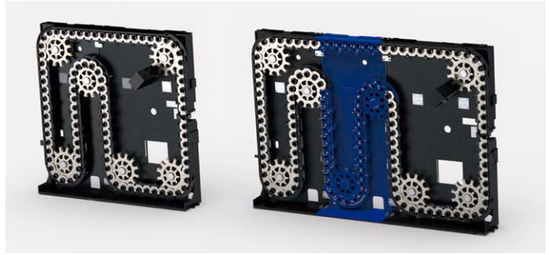
T to T :	C to C :
2.5 sec	5.5 sec

※ UP to 20kg



FIELD EXPANDABLE ATC MAGAZINE

Chain-type ATC magazines are available in 90 standard and 128 unit options and can be expanded on site, allowing customers to increase the number of tools at this machine even after the machine has been delivered.

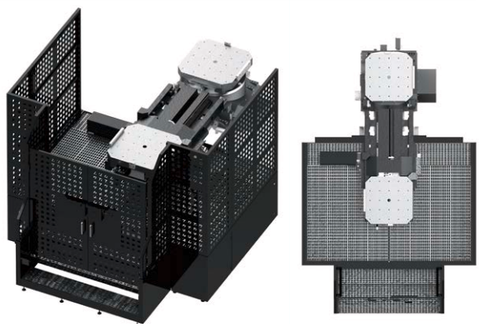


ROTARY SHUTTLE TYPE AUTOMATIC PALLET CHANGER

By its innovative design, this APC system brings a significant reduction in cycle time boosting efficiency.

WORKPIECE SET UP IS SAFE AND EASY

The reliable rotary type pallet changer system accommodates large fixtures and workpieces. Niigata's solution is the walk-around platform, which allows easy set-up and operator safety.



HIGHER RELIABILITY AND EASIER MAINTENANCE

NEW GENERATION OPERATION PANEL WITH 15" COLOR LCD

HPN800 operation panel is equipped with 15" color LCD as standard. The control panel is strategically located at the most convenient position and the operator can easily monitor the workpiece and machining status on monitor screen during program check.

DURABLE WAY COVERS FOR HIGH SPEED POSITIONING

It is simple, yet effective. The heat resistant durable covers are interconnected and provide uniform movement with spindle.

POINT 1 *No collision parts. Fast and silent*

POINT 2 *Durable and smooth movement*

POINT 3 *One sheet cover, minimizes coolant and swarf contamination*

QUICK & EASY INSPECTION

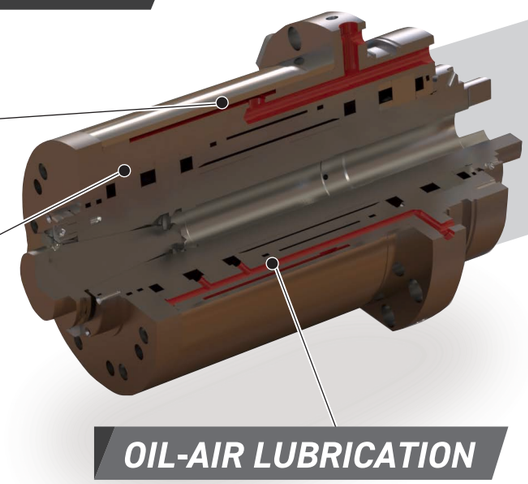
Machine maintenance items such as lubrication units and air devices are all located together at the side of the machine for quick and easy inspection.

CONVENIENT WORK TABLE

Close to the operation panel & door improves workability.

EXCELLENT SPINDLE PERFORMANCE AND VARIETY

NIIGATA'S NEW DESIGN SPINDLE



COOLING JACKET

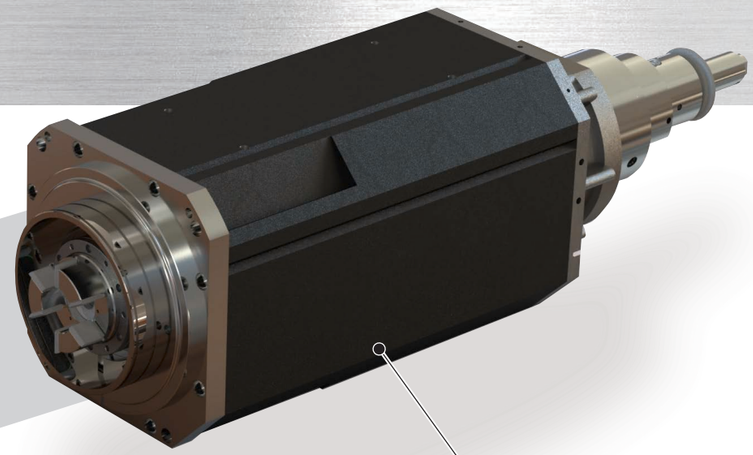
ANGULAR CONTACT BALL BEARING

Large diameter angular ball bearings enable heavy duty cutting force.

OIL-AIR LUBRICATION

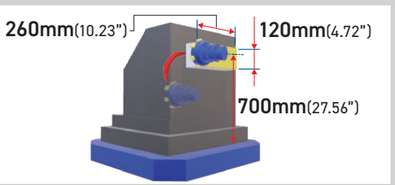
COUPLING

A coupling between the motor and spindl isolates motor heat and motor vibration, which increases spindle performance. It provides excellent maintainability.



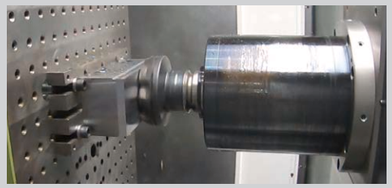
MOTOR

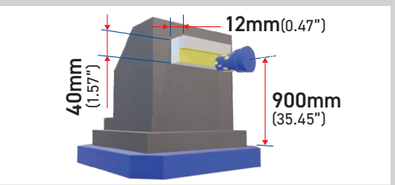
8000 min^{-1} (rpm)
AC 55/37 kW (75/50HP)
1202 N·m (887ft-lbs)



FACE MILLING

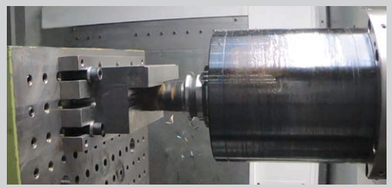
·Material: S48C(Steel)
·Tool: ϕ160mm - 8T(ϕ63" - 8T)
·Depth of Cut: 8mm(0.31")
·Cutting Width: 120mm(4.72")
·Spindle Speed: 300 min^{-1}(rpm)
·Feed Rate: 960 mm/min(37.8ipm)
·Surface speed: 150m/min(492SFM)

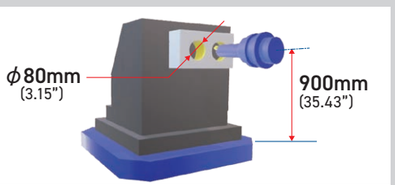




END MILLING

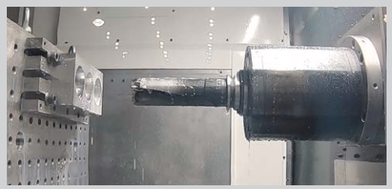
·Material: S48C(Steel)
·Tool: ϕ63mm - 4T(ϕ2.48" - 4T)
·Depth of Cut: 12mm(0.47")
·Cutting Width: 40mm(1.57")
·Spindle Speed: 1000 min^{-1}(rpm)
·Feed Rate: 1780 mm/min(70.0ipm)
·Surface speed: 200m/min(656SFM)





DRILLING

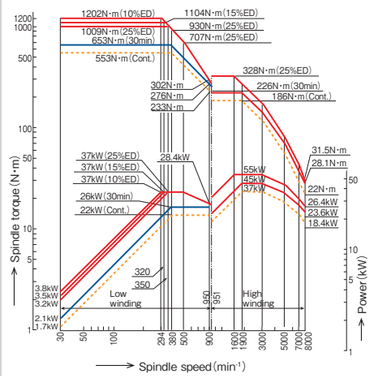
·Material: S48C(Steel)
·Tool: ϕ80mm(ϕ3.15") insert type drill
·Spindle Speed: 915 min^{-1}(rpm)
·Feed Rate: 101 mm/min(3.98")
·Surface speed: 200m/min(656SFM)



STANDARD

8000 min^{-1}(rpm) SPINDLE

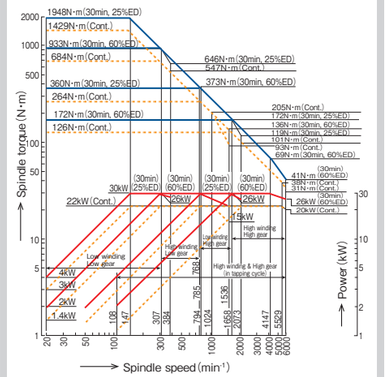
SPINDLE SPEED AND TORQUE DIAGRAM
(8000 min^{-1}, 1202N·m)



HIGH TORQUE

6000 min^{-1}(rpm) SPINDLE

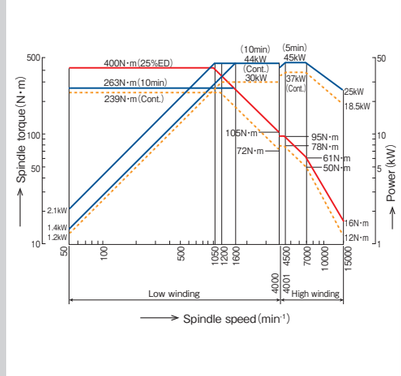
SPINDLE SPEED AND TORQUE DIAGRAM
(6000 min^{-1}, 1948N·m SPINDLE)



HIGH POWER

15000 min^{-1}(rpm) SPINDLE

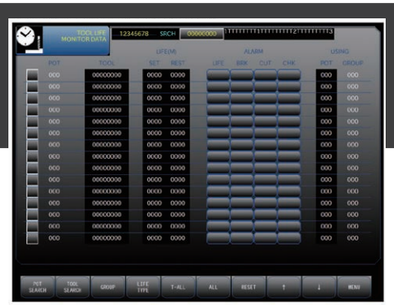
SPINDLE SPEED AND TORQUE DIAGRAM
(15000 min^{-1} SPINDLE)



A VARIETY OF APPLICATIONS

Niigata Monitor Ace

Analyze all data during processing.
Support automatic operation.
Manage all tool information.



Cutting load monitoring

- Spindle & axis load monitoring
- Adaptive control of spindle speed and feedrate

Tool Management

All information (life, spare tool, tool ID.) is memorized

Operation status display

Operation and alarm record display function

Auto continuous function

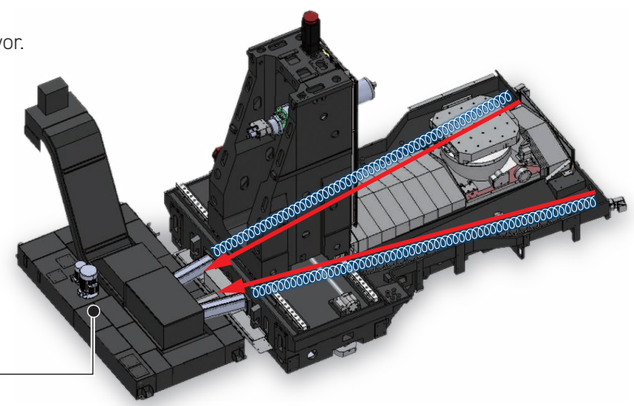
Machine continues production to next operation even when cutting alarm occurs

EXCELLENT CHIP REMOVAL

Large coil augers equipped on Z base (both sides).
The augers remove chips from the machine to the conveyor.

OUTSIDE CHIP CONVEYOR

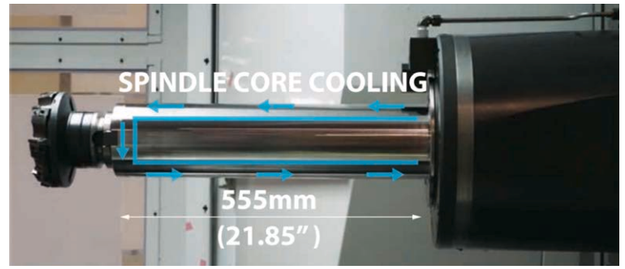
Discharge direction of the outside conveyor can be selected according to the customer's factory layout.

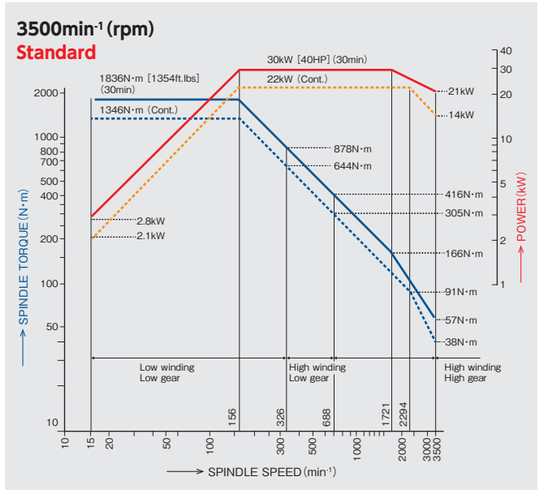


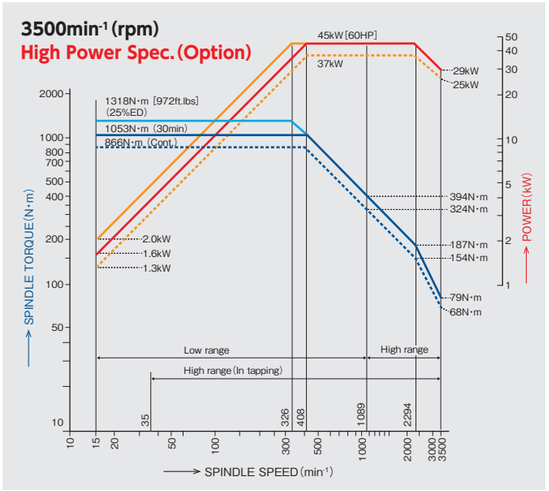
HPN800 BAR

BAR/QUILL CAPABILITY ON HORIZONTAL MACHINING CENTER

HPN800 can be equipped with BAR/QUILL and spindle core cooling system. The new BAR design brings improvement in performance and accuracy compared to traditional horizontal boring mills.







POINT 1 CENTER-MOUNTED SPINDLE

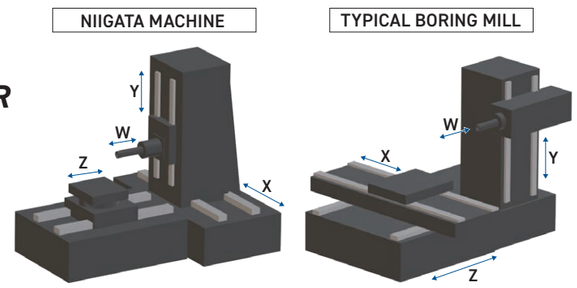
Eliminates the column twist by side-mounted spindle

POINT 2 ERGONOMICALLY SUPERIOR

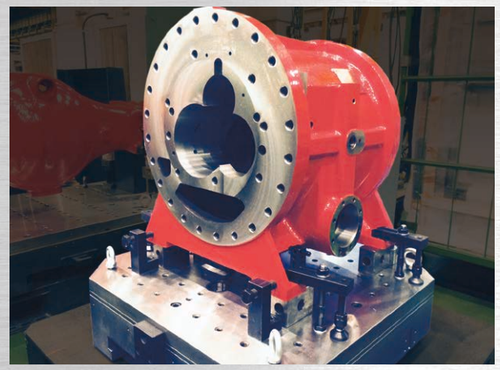
A full enclosure, with ATC and APC are standard to maximize the performance

POINT 3 CENTER THRU COOLANT

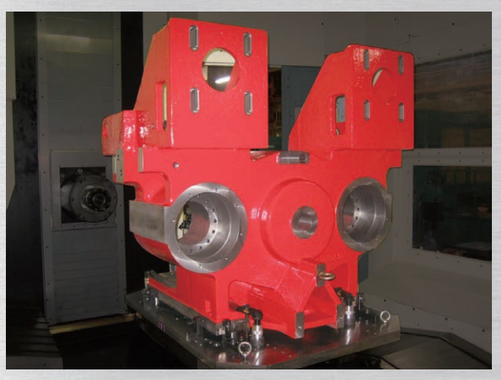
Better cutting performance, longer tool life, superior chip removal



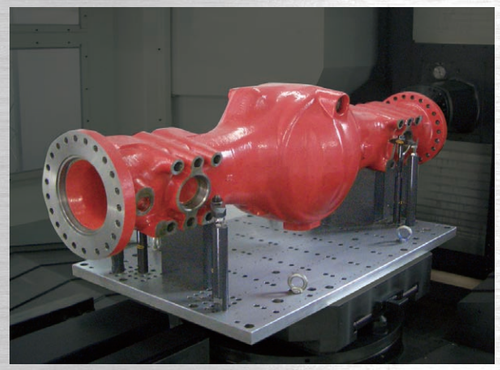
MACHINING EXAMPLES



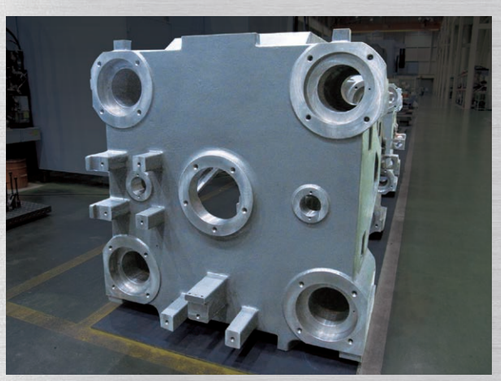
Name: Compressor Case
Material: Casting



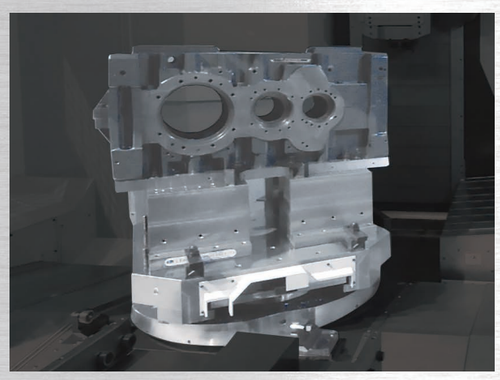
Name: Bearing Housing
Material: Casting



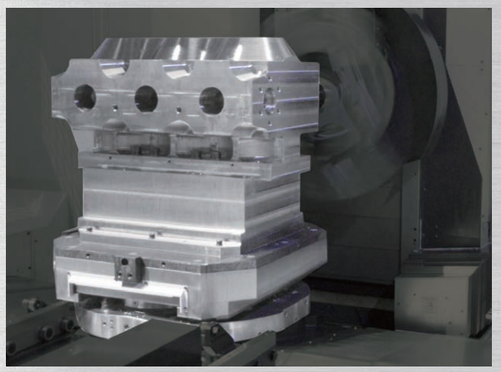
Name: Axle Housing
Material: Ductile Cast Iron



Name: End Plate
Material: Casting



Name: Gear Box
Material: Ductile Cast Iron



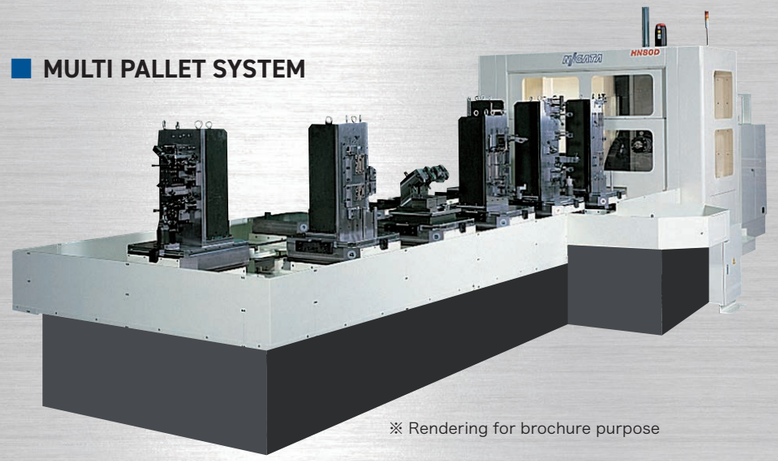
Name: Fluid End
Material: Steel

VARIETY OF APPLICATIONS

LPM SYSTEMS

ROBOT SYSTEMS

MULTI PALLET SYSTEM



※ Rendering for brochure purpose

FMS SYSTEM

WIDE RANGE OF OPTIONS TO ANSWER YOUR INDIVIDUAL MACHINING REQUIREMENTS

STANDARD EQUIPMENT

- Rotary shuttle type Twin Pallets Automatic Pallet Changer with Safety Walk-around Platform
- Two Pallets with threaded holes as per Niigata Standard Configuration
- Automatic Tool Changer with 90 Tool Capacity (ATC)
- 1 Degree Indexing Table with Curvic Coupling
- Spindle Cooling Unit Controlled by a Thermal Sensor in the Machine Base
- Full Enclosure-Type Splash and Chip Guarding System with LED light
- Spiral Chip Augers Built into the Machine Bed sides
- Rigid Tapping
- Manual Pulse Generator with the XYZ axes Position Display
- Spindle Speed / Load Meter with Override on NC Control Display
- Flood Coolant System
- Coolant Tank
- Work Completion and Emergency Lamp
- Automatic Power Off Device
- Door Interlock (at 2APC, SPG, ATC and Electrical Cabinet)
- Self Diagnostics Function
- 2APC Program Number Search Function (with 2APC)
- Fanuc CNC System with 15" Color LCD
- One set of Machine and Fanuc Manuals (1 Printed, and 1 CD)
- Installation Parts

OPTIONAL EQUIPMENT

ATC MAGAZINE
- 128 Tool Magazine

TABLES
- 0.001°(NC Table) / 4th Axis Continuous

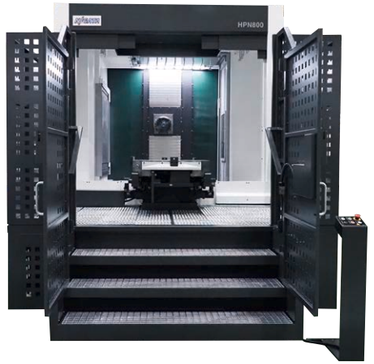
PALLET and PALLET CHANGER SYSTEM
- Carousel Type Multiple Pallet Changer 6/8/10/12 APC System
- Linear Pallet Magazine (LPM) System with Niigata Intelligent Cell Controller (ICC)
- Extra Pallet
- T-slotted Pallet (Restriction of Max Load on the Pallet may apply)
- Four Face Part Program Control Function

CHIP REMOVAL
- Lift-up External Conveyor
- Chip Bucket with Caster and Handles

COOLANT SYSTEM
- Spindle Center Through Coolant Device
- Overhead Shower Coolant System
- Shower Coolant and Air blow System
- Coolant Washing Gun
- Oversized Coolant Tank
- Coolant Low Level Sensing Device

CUTTING MONITORING FUNCTION
- Advanced Unmanned Monitoring System: Niigata Monitor Ace V2
- Spindle Probing System
- Tool Breakage Detector System NSP/LS-Z Type
- Automatic tool length measurement TMS-RX

SPINDLE
- BIG-PLUS Spindle
- HSK Spindle
- BAR Spindle



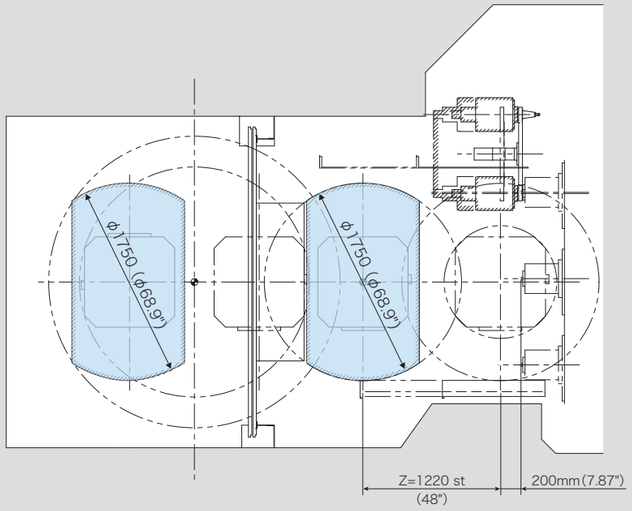
SPECIFICATION

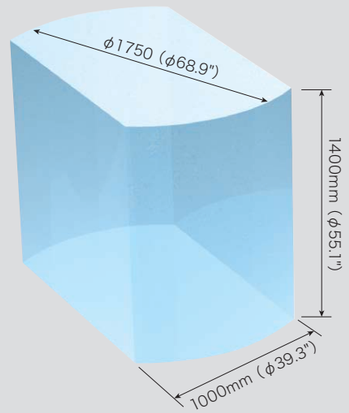
HPN800			
ITEM		Metric	Inch
TRAVEL & WORK CAPACITY	X-axis travel	1530 mm	60.2"
	Y-axis travel	1230 mm	48.4"
	Z-axis travel	1220 mm	48.0"
	Spindle center line to pallet	0～1230 mm	0～48.4"
	Spindle nose to table center line	200～1420 mm	7.87"～55.9"
TABLE	Table working surface	800 × 800 mm	31.5 × 31.5"
	Table increments	1° [0.001]	1° [0.001]
	Maximum mass on pallet	2500 kg	5500 lbs
SPINDLE	Spindle drive motor	AC 55kW	AC 73 HP
	Spindle speeds	8000 min^{-1}	8000 rpm
	Spindle max. torque	1202 N·m	886 ft・lbs
	Spindle taper	No.50	No.50
FEEDRATE	Rapid traverse X axis	60 m/min	2362 ipm
	Y axis	60 m/min	2362 ipm
	Z axis	60 m/min	2362 ipm
	Cutting X-Y-Z	1～20000mm/min	0.04～787 ipm
	NC table	11.1 min^{-1}	11.1 rpm
AUTOMATIC TOOL CHANGER (ATC)	Tool magazine capacity, Chain	90 [128]	90 [128]
	Tool selection	Short cut random selection by pot designation fixed position system	Short cut random selection by pot designation fixed position system
	Tool shank	BT50	CT50
	Maximum tool length	630 mm	24.80"
	Maximum milling cutter dia.	130 mm	5.11"
	Ditto adjacent pockets empty	260 mm	10.23"
	Maximum tool mass (weight)	30 kg	66 lbs
	Tool change time (Tool to Tool)	2.5 sec	2.5 sec
AUTOMATIC PALLET CHANGER (APC)	Type	Rotary shuttle type	Rotary shuttle type
	Number of pallets	2	2
	Positioning / full stroke X-Y-Z	±0.004 mm	± 0.00016"
	Ditto with scales X-Y-Z	±0.003 mm	± 0.00012"
	Repeatability X-Y-Z	±0.002 mm	± 0.00008"
	Ditto with scales X-Y-Z	±0.0015 mm	± 0.00006"
GENERAL	Machine weight approx	31000 kg	68344 lbs
	Machine space W/D	5920 × 10527mm	223.9 / 357.2"
	Ditto H	4000 mm	157.5"
	Floor to table surface	1350 mm	53.9"
	Power	102kVA	102kVA
	Control	Fanuc 31i-B Plus	Fanuc 31i-B Plus

※ All specifications subject to change without notice

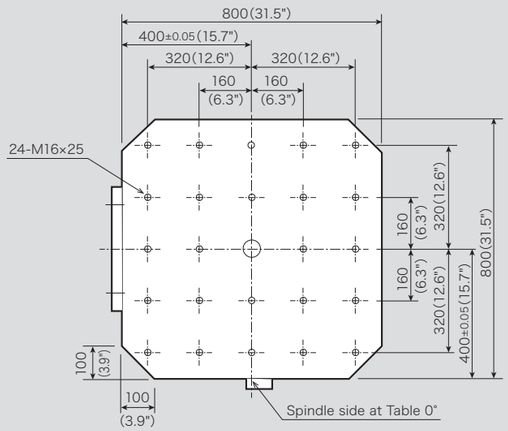
MACHINE DIMENSIONS

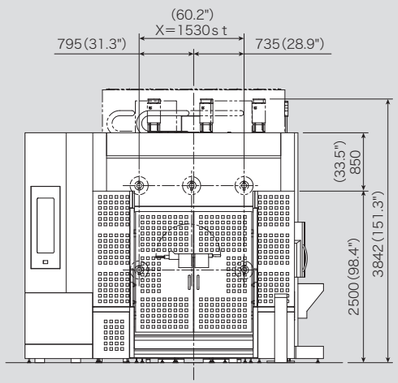
Maximum Workpiece Envelope



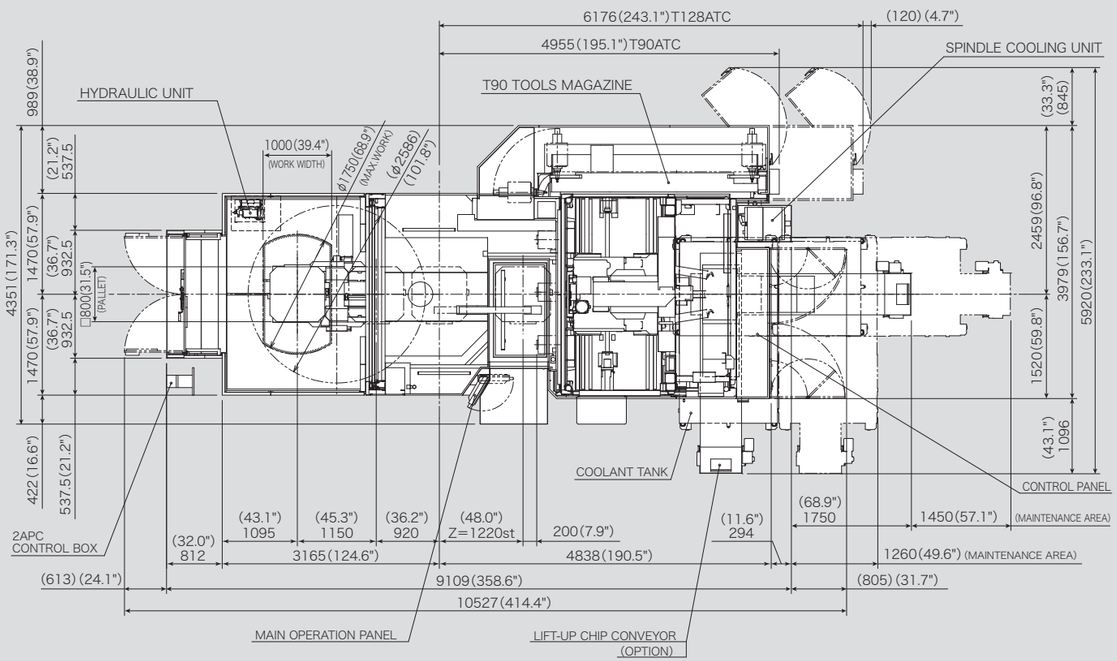


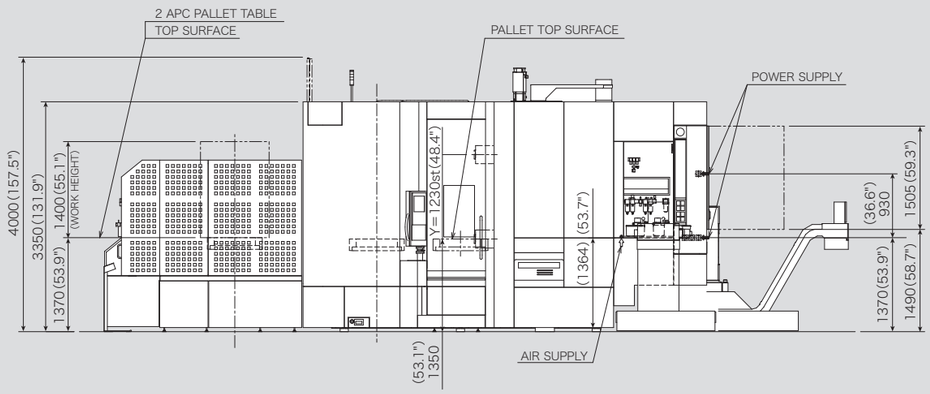
Standard Pallet Top Surface





HPN800 General View





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