



A World Leader of Horizontal Machining Centers



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HN SERIES

# HN-D

**HN80D-II / HN100D-II / HN130D** HN80D-II BAR / HN100D-II BAR / HN130D BAR  
HN80D-II FC / HN100D-II FC / HN130D FC

**UNRIVALED PERFORMANCE** — HEAVY DUTY BOXWAY STYLE  
HORIZONTAL MACHINING CENTER



**NIIGATA MACHINE TECHNO CO., LTD.**

Niigata, Japan

# WORLD CLASS PRODUCTIVITY—NIIGATA MODEL D-II

NIIGATA's world famous and highly regarded horizontal machining center Model D-II is reengineered as "A World Class Machining Center."

The Model D-II is the result of NIIGATA's constant research and development for profitable machining of large components. Key development criteria for the "D-II" series were: larger capacity, higher productivity, and increased accuracies. NIIGATA, a world leader of horizontal machining centers, is proud to declare that the model D-II, a new design achieving significant performance advances, will satisfy all requirements of your production needs.

## LARGEST WORK ENVELOPE IN ITS CLASS

Niigata is known for large envelopes in each model. Consider the travel and workpiece size below. Many parts, which previously required one size larger machine, now will fit on this Niigata workhorse. The upgraded capacity offers superior price/performance and quicker ROI.

### HN80D-II

TRAVEL	X axis	1530mm (60.2")
	Y axis	1230mm (48.4")
	Z axis	1020mm (40.2")

Max Workpiece Swing Diameter	1750mm (68.9")
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Height	1400mm (55.1")
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### HN100D-II

TRAVEL	X axis	2030mm (79.9")
	Y axis	1650mm (65.0")
	Z axis	1200mm (47.2")

Max Workpiece Swing Diameter	2300mm (90.6")
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Height	1850mm (72.8")
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### HN130D

TRAVEL	X axis	3050mm (120.1")
	Y axis	2200mm (86.6")
	Z axis	1420mm (55.9")

Max Workpiece Swing Diameter	3200mm (126")
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Height	3000mm (118.1")
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**LARGEST WORK ZONE**  
**HEAVY DUTY**  
**MACHINE RIGIDITY**

## HEAVY DUTY BOXWAY STYLE MACHINE CONSTRUCTION

As Niigata's tradition, guide ways are a combination of hardened and ground ways and hand-scraped turcite ways that provide superior stability and vibration dampening characteristics as well as a long life-cycle. The cross section of the rectangular guide ways are thick and wide for maximum machine rigidity.

## HIGH OUTPUT SOLUTION

High horse power and torque allow you to take full advantage of the rigid machine frame.

Chip removal in steel (S50C) is: 1600cm<sup>3</sup>/min (99 cu.inch)

## SUPER HIGH TORQUE HEAVY DUTY SPINDLE

6000min<sup>-1</sup> (rpm), 1948N·m (1438 ft·lbs) Super High Torque Spindle is available (option) for cutting of "DIFFICULT-TO-MACHINE" material.



# SOLID, WELL BALANCED COMPONENTS ACHIEVE ENHANCED PRODUCTIVITY

## NEWLY ENGINEERED MACHINE RIGIDITY

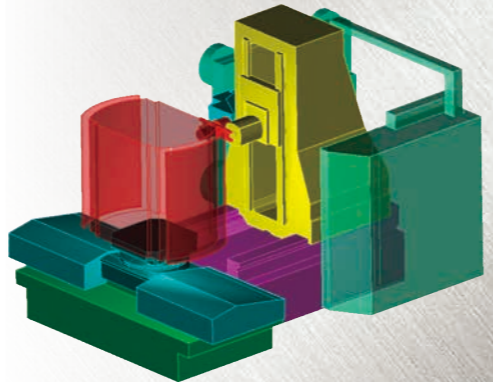
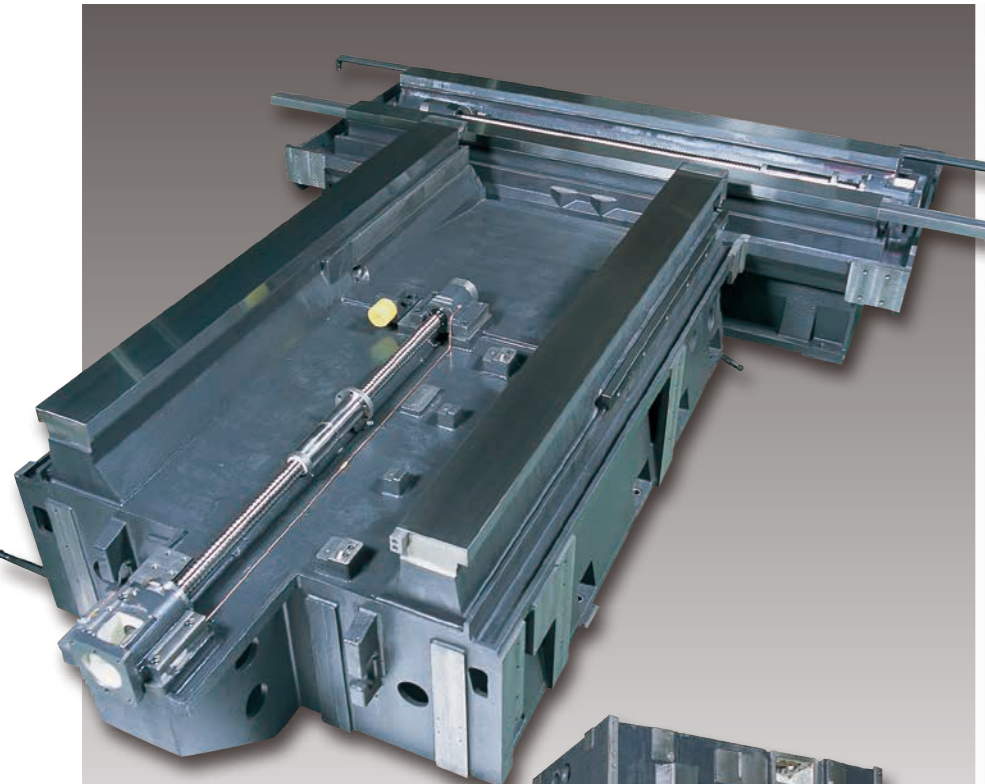
Niigata's reputation for superior machine rigidity and excellent cutting capability is widely accepted in the market place. All major components, such as the spindle, bed, column, and wing-base of the new HN80 D-II / HN100 D-II machines, have been engineered to maximize metal cutting. Solid, well-balanced components, meet a wide variety of production needs.

## FULL RIB CONSTRUCTION MAXIMIZES RIGIDITY

Accuracy and heavy duty machining demand a stable massive frame to fully utilize its capability. Structural strength of each component has been maximized by thickwalled castings together with extensive use of ribs.

## STURDY TABLE DESIGN SUPPORT HEAVIER LOAD CAPACITY

- HN80 D-II : 2500 kg (5500 lbs)
- HN100 D-II : 3500 kg (7700 lbs)  
[Optional 5000 kg (11000 lbs)  
On 4th axis table only]
- HN130 D : 8000 kg (17600 lbs)  
[Optional 10000 kg (22000 lbs)]



Niigata's unique design:  
Bifurcated Bell-shaped  
Column

HN80D-II

# OUTSTANDING CHIP REMOVAL PROVES SUBSTANTIAL MACHINE RIGIDITY

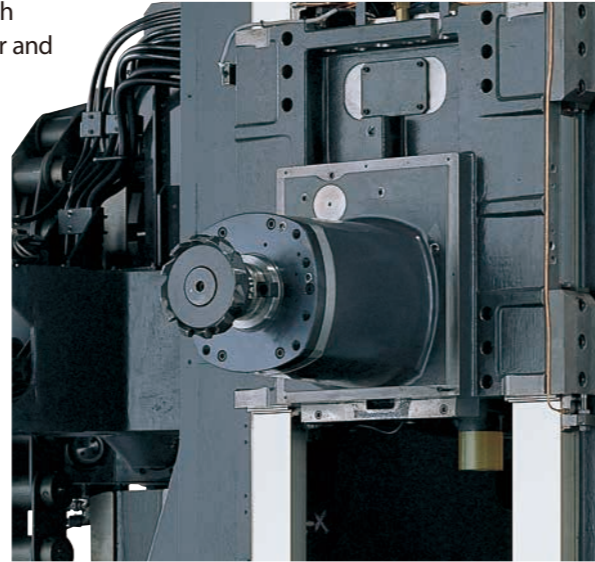
# MACHINING EXAMPLE



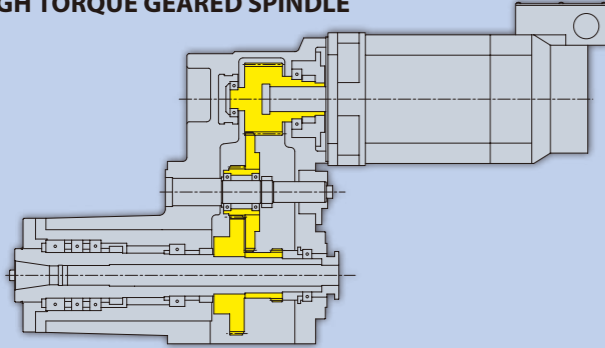
## HIGH TORQUE HEAVY DUTY SPINDLE

The rugged and reliable spindle employs wide-spaced, super precision tapered roller and angular contact bearings with a 110 mm (4.33") diameter (ID). The spindle head stock is mono-cast (single piece) castings to achieve heavy and powerful milling capability and greater accuracy than bolt-together

type spindle heads. This high performance spindle, power and torque complements the extremely rigid machine frame. Super High Torque Spec. spindle is also available for the machining needs of the tough materials.



## HIGH TORQUE GEARED SPINDLE

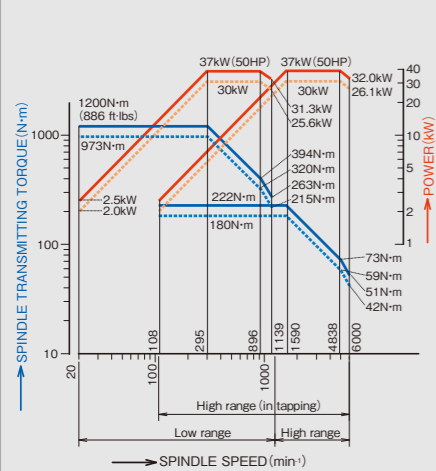


## HIGH TORQUE GEARED SPINDLE

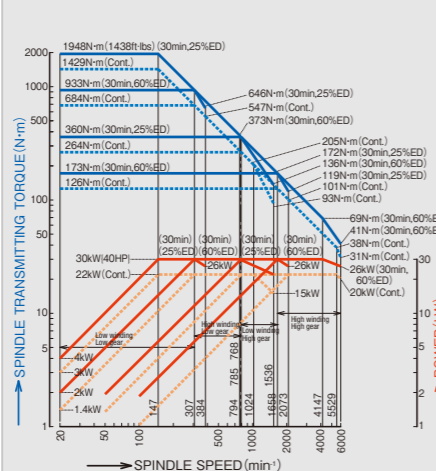
Full 37kW (50HP) cuts are achieved through an advanced (2) range head stock. With only (3) rotating components maximum power is transmitted simply and efficiently to the cutting tool.

	① 6000 min <sup>-1</sup> (rpm) Standard	② 6000 min <sup>-1</sup> (rpm) Super High Torque spec. (option)	③ 6000 min <sup>-1</sup> (rpm) Super High Power spec. (option)
POWER	37 kW (50 HP)	30 kW (40 HP)	45 kW (60 HP)
TORQUE	1200 N·m (886 ft·lbs)	1948 N·m (1438 ft·lbs)	1400 N·m (1033 ft·lbs)

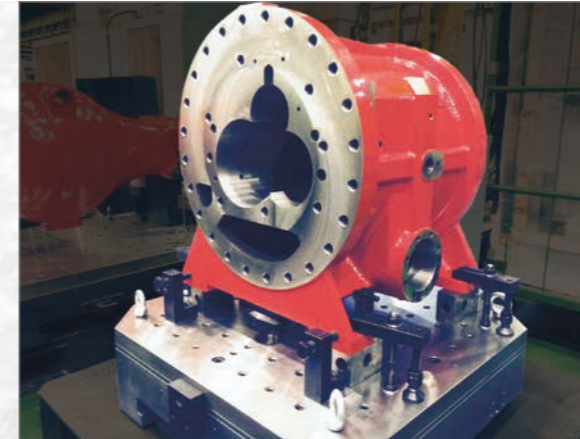
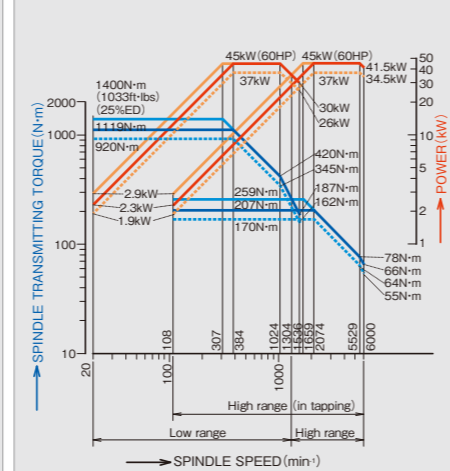
## ① SPINDLE SPEED AND TORQUE DIAGRAM Standard



## ② SPINDLE SPEED AND TORQUE DIAGRAM Super High Torque spec.



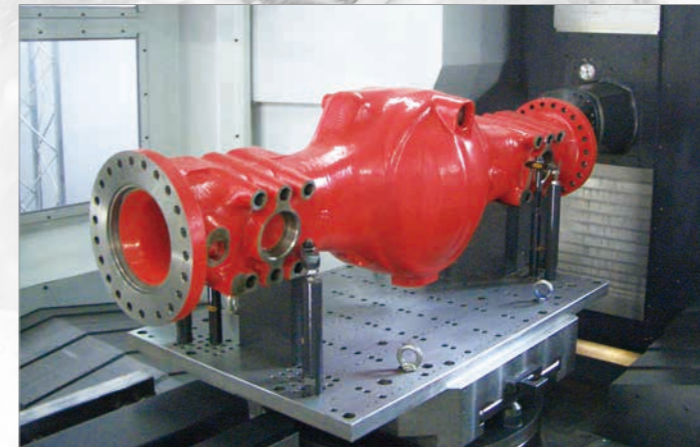
## ③ SPINDLE SPEED AND TORQUE DIAGRAM Super High Power spec.



Name : Compressor Case  
Material : Casting



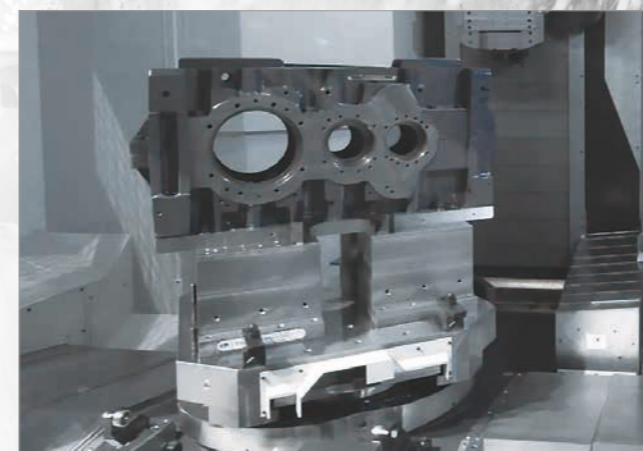
Name : Bearing Housing  
Material : Casting



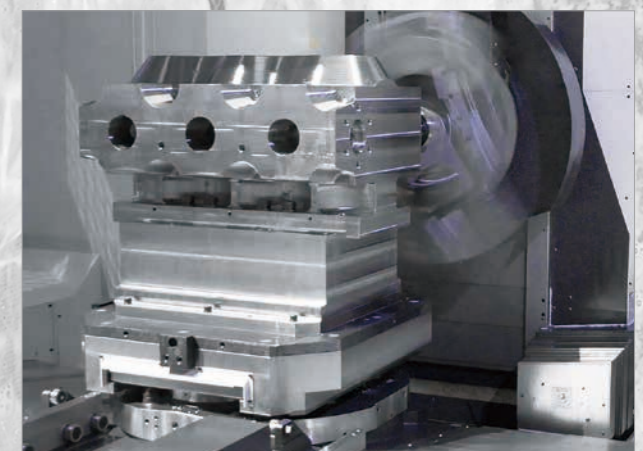
Name : Axle Housing  
Material : Ductile Cast Iron



Name : End Plate  
Material : Casting

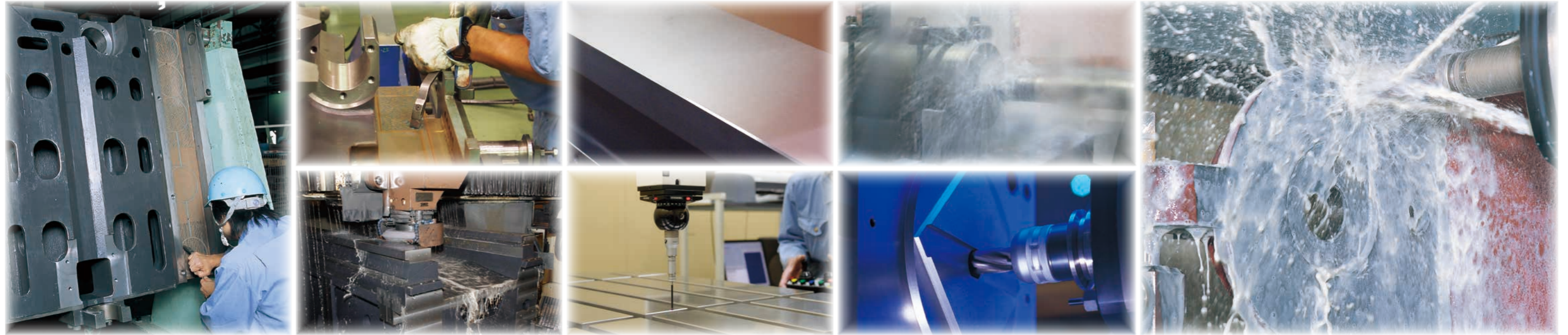


Name : Gear Box  
Material : Ductile Cast Iron



Name : Fluid End  
Material : Steel

# DESIGNED AND BUILT FOR FINE PRECISION ACCURACY



## CRAFTSMANSHIP—HAND-MADE FINISH PROCESS

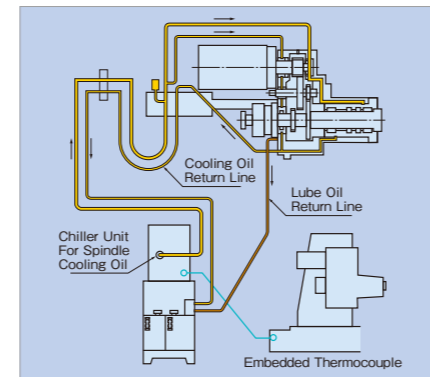
### PRECISION PALLET POSITIONING

Pallets are located with precision accuracy by cone-shaped tapered pins and bushings, (6) sets for HN80D-II and (10) sets for HN100D-II. The precision cone positioning system insures long-term accuracy and reliability. The pallet clamping system adopts a stable clamping plate that provides super stability of the pallet during heavy duty machining. Jets of

air discharge from the tapered cones when the pallet is changed. This assures proper clamping and helps to clean the bottom of the bushing and the tapered surfaces. AC servo provides fast bi-directional table indexing. The large diameter curvic coupling provides extremely accurate positioning of the table.

### NIIGATA'S UNIQUE SPINDLE HEAD COOLING TECHNOLOGY

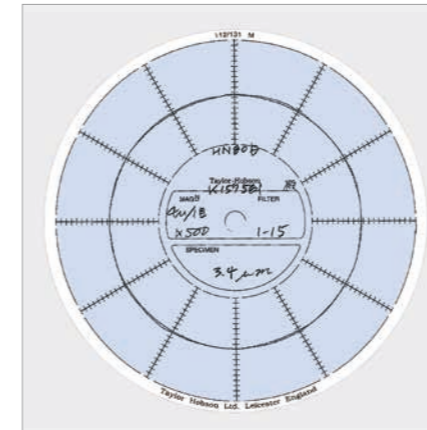
Niigata's unique cooling system minimizes thermal distortion during heavy load on the spindle. A large volume of temperature controlled spindle cooling oil is circulated around the spindle bearings and gear box. A thermo-couple temperature sensor is embodied into the machine base to control oil temperature to coordinate with the base of the machine.



## EXACTING ACCURACY

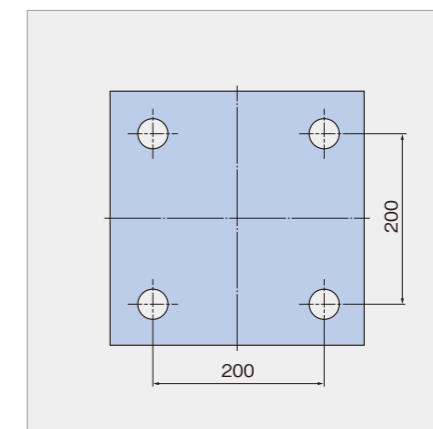
### •Accuracy of circular interpolation (end mill)

Roundness (tolerance) 0.020mm (0.00078")  
 (Actual record) 0.0034mm (0.00013")  
 Material : FC200 (cast iron)  
 Processing dia :  $\phi 250$ mm (9.84")  
 $V=80$ m/min (315ipm)  
 $F=320$ m/min (per tip 0.07mm) (12.6ipm (per tip 0.028"))  
 $t=0.1$ mm (0.004")



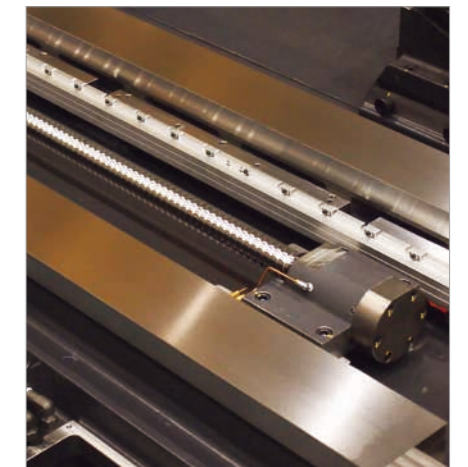
### •Positioning accuracy

Actual record 0.005mm (0.00020")  
 Material FC200 (cast iron)  
 Hole to hole 200mm (7.87")



### SCALE FEEDBACK SYSTEM

HN100D-II is equipped with optical scale feedback system (on X,Y,Z axis) as standard (available on HN80D-II as an option). This feature provides consistent long life dynamic machine accuracy.



(Data by HN80D-II with scale feedback system)

## DESIGN DETAILS FOCUSED ON OPERATOR FRIENDLINESS



### CENTRALIZED OPERATOR CONSOLE

The control panel is strategically located at the most convenient position so the operator can easily monitor the workpiece and machining operations, while utilizing the control functions.

Hand held manual pulse generator is compact and light for operator-friendly handling.

(OP: New HMI & New Operation Panel is available.)

### SAFE AND CONVENIENT SET-UP OF TOOLING

The tool magazine is on the side of the machine, outside the chip enclosure, and away from the cutting area. This design permits easy accessibility for tool inspection and replacement.

Jog rotation of the tool magazine during automatic cycles facilitates tool inspection and changeover to maximize utilization. The load/unload station is located at a comfortable height for operator safety and ease.

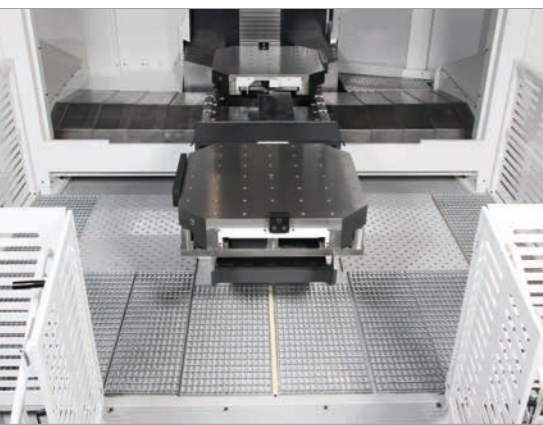


### EXCELLENT ACCESSIBILITY TO THE WORK ZONE

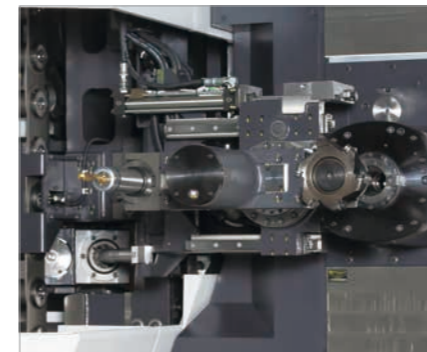
Large sliding operator door allows easy and safe access to the machining area. A slanted ceiling of the enclosure minimizes coolant dropping on the operator.

### WORK SETUP 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.



## HIGH RELIABILITY AND EASE OF MAINTENANCE



### QUICK & EASY INSPECTION

Machine maintenance items such as lubrication control units and devices are all assembled together at the rear of the machine for quick and easy inspection.

### OIL-AIR LUBRICATION SYSTEM

This system automatically assures constant lubrication to the spindle bearings to prevent premature failure (versus grease packed bearings which require periodic repacking).

### FAST AND RELIABLE TOOL CHANGE SYSTEM

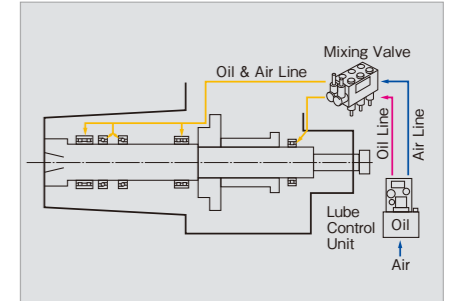
Tool magazine is driven by a servo motor for fast and reliable indexing. An electric servo motor positions the tool loader, insuring fast, smooth motion during a tool change. The tool inspection and loading/unloading during automatic operation are available and are standard features. The tool magazine and the changer are free standing and are covered with a full enclosure. The ATC system is field expandable.

### EXCELLENT CHIP REMOVAL

Independent Z axis telescopic slide way covers and a chip scraper between the Z ways force the chips to drop into the large coil chip augers. Roof-shaped telescopic covers protect the X axis ways. These features provide automatic chip evacuation from the inside of machining area.

### THE FULLY ENCLOSED SPLASH GUARD

Total enclosure contains all fluids and chips in machine area. Operator comfort and safety are NIIGATA's continual theme.



# WIDE RANGE OF OPTIONS TO ANSWER YOUR INDIVIDUAL MACHINING REQUIREMENTS



## STANDARD EQUIPMENT

- 6000min<sup>-1</sup>(rpm) 37kW (50HP) Two Geared Spindle
- Rotary Type Twin Pallets Automatic Pallet Changer with Safety Walk-around Platform (2APC)
- Two Pallets with Tap and Holes as Per Niigata Standard Configuration
- Automatic Tool Changer with 62 Tools Capacity (ATC)
- 1 Degree Indexing Table with Curvic Coupling (NC Table Only on HN130D)
- Scale Feedback System XYZ axes (Available as an Option on HN80D-II)
- Spindle Cooling Unit Controlled by a Thermal Sensor in the Machine Base
- Full Enclosure-Type Splash and Chip Guarding System with Fluorescent Work Light (SPG)
- Front and Rear Spiral Chip Augers Built into the Machine Bed
- 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 10.4" Color LCD
- One set of Machine and Fanuc Manuals (1 Printed, and 1 CD)
- Installation Parts

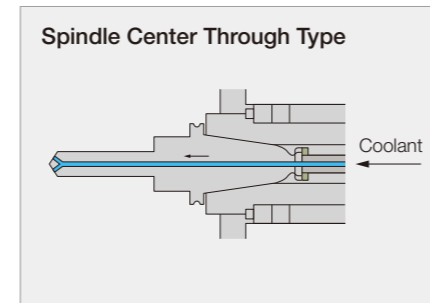
## OPTIONAL FEATURES

- ATC MAGAZINE (Field Expandable)**
- 88 Tools Magazine
  - 128 Tools Magazine
  - 175 Tools Magazine (88 + 88 Tools)
  - 255 Tools Magazine (128 + 128 Tools)
  - Matrix Style ATC System (126/178/230 Tools)
  - Max Tool Weight 35kg (77lbs) Capability
- TABLES**
- 0.001°(NC Table) / 4th Axis Continuous
  - 5 Axis Application (Table on Table)
  - Max Load Capacity on the Pallet (Require to Purchase NC Table)
    - 5000kg (11000lbs) on HN100D-II
    - 10000kg (22000lbs) on HN130D
  - Idle Self Rotation on 2APC System (Available on HN80D-II Only)
- PALLET and PALLET CHANGER SYSTEM**
- Carousel Type Multiple Pallet Changer 6/8/10/12 APC System (Only 8 APC with HN80D-II / Only 6 APC with HN100D-II / Not Available on HN130D at All)
  - 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)
- COOLANT SYSTEM**
- Spindle Center Through Coolant Device
  - Spindle Flange Through Coolant Device
  - Overhead Shower Coolant System
  - Shower Coolant and Airblow System
  - Coolant Washing Gun
  - Oversized Coolant Tank
  - Coolant Low Level Sensing Device
- CHIP REMOVAL**
- Lift-Up External Conveyor Hinge-Pan Type
  - Lift-Up External Conveyor with Filtration System
  - Chip Bucket with Caster and Handles

- CUTTING MONITORING FUNCTION**
- Advanced Unmanned Monitoring System: Niigata NM24 Monitor Ace
  - Spindle Probing System
  - Table Probing System
  - Tool Breakage Detector System LS-Z Type
  - Four Face Part Program Control Function
- SPINDLE**
- BIG PLUS Spindle
  - HSK Spindle
  - BAR Spindle - W axis

## OPTIONAL FEATURES

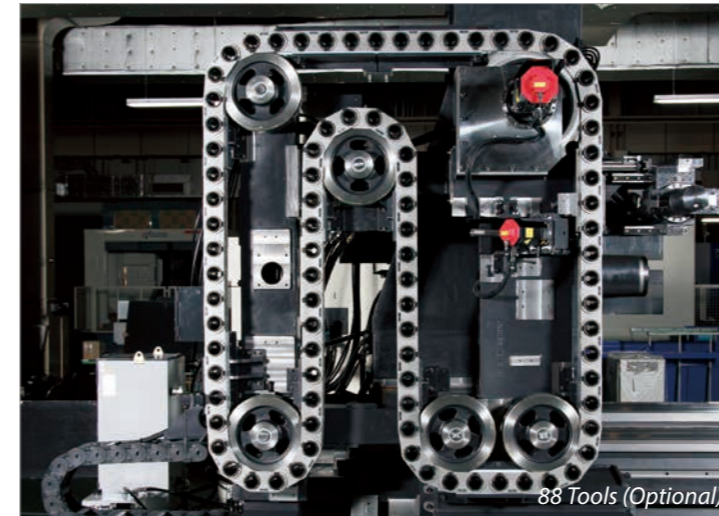
### HIGH PRESSURE COOLANT THROUGH SPINDLE



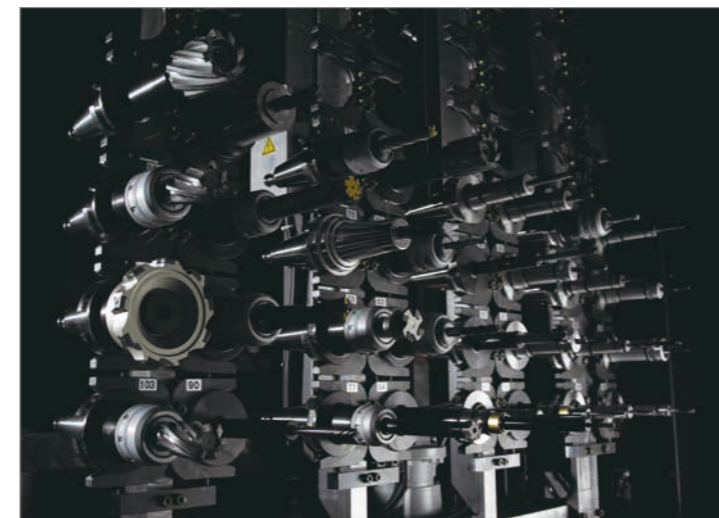
### LIFT-UP EXTERNAL CONVEYOR AND COOLANT TANK



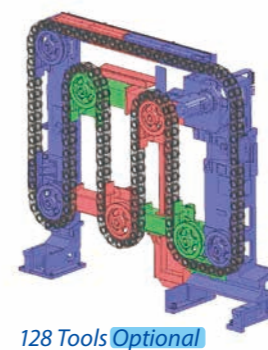
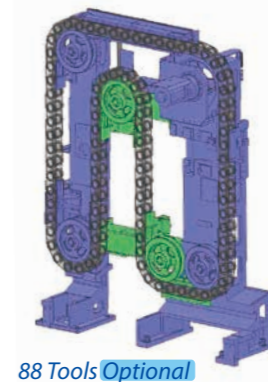
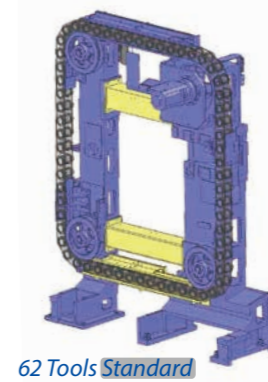
### NIIGATA HN-SERIES MODULAR DESIGN CONCEPT FIELD EXPANDABLE ATC MAGAZINE



### MATRIX TYPE AUTOMATIC TOOL CHANGE SYSTEM



### LINEAR PALLET MAGAZINE SYSTEM WITH NIIGATA ICC SYSTEM CONTROLLER



### EXAMPLE OF AUTO TOOL CHANGE SYSTEM (Chain Type)



### ADVANCED UNMANNED MONITORING SYSTEM NIIGATA NM24 MONITOR ACE



### KEY FEATURES

- Display on Machine Operational Screen: All Main Features Shown on Machine Operational Screen (Fanuc CNC Control)
- Cutting Monitor: Max Spindle Load / Feed Axis Load / Adaptive Control / FN Adaptive Control
- Tool Management: Tool Life Monitor / Spare Tool Function / Tool Number Conversion
- Automatic Continuous Machining: Spare Tool Conversion / Pallet Skip
- Operations Record Display: Machining Record / Alarm Record / Tool Life (OP: New Niigata Monitor Ace is available for New HMI only.)

# THE VERSATILE HORIZONTAL FACING CENTER **MODEL HN-D -II FC SERIES**

## Developed Based On NIIGATA's Heavy Duty Box Way Style Horizontal Machining Center

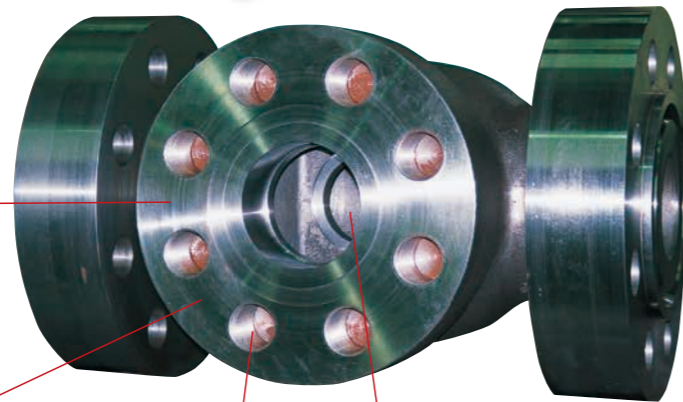


### INCREASE YOUR PRODUCTION BY MACHINING IN SINGLE SET-UP WITH NIIGATA'S HN80D-II /100D-II FC FACING CENTER

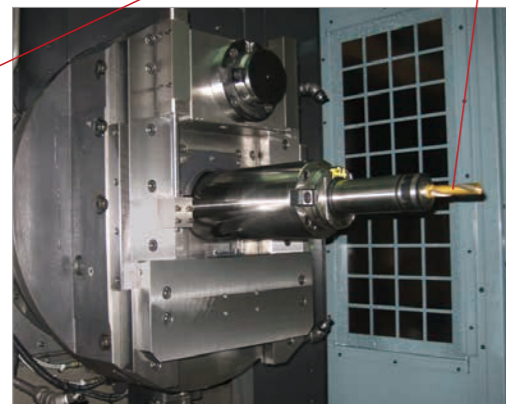
Turning, facing, boring and milling capabilities are all combined in one machine for complete machining in single set-up. Built-in, CNC-controlled boring and facing head utilize the versatility of combined turning operations with machining center operations. Single set-up approach for the machining of valve bodies, pump bodies, bearing housing, differential or axle housing, clutch housing, etc.



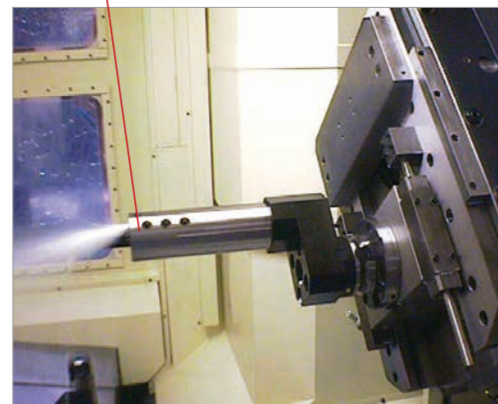
Milling Cutter in extended bar



Turning and back facing



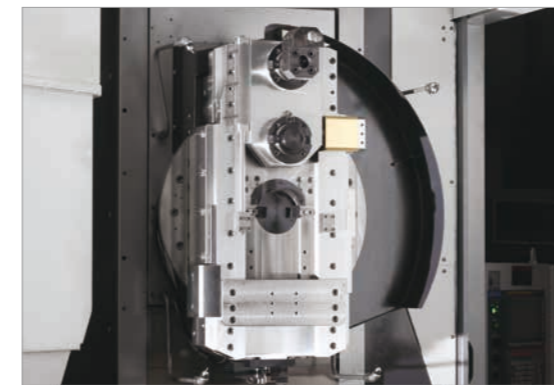
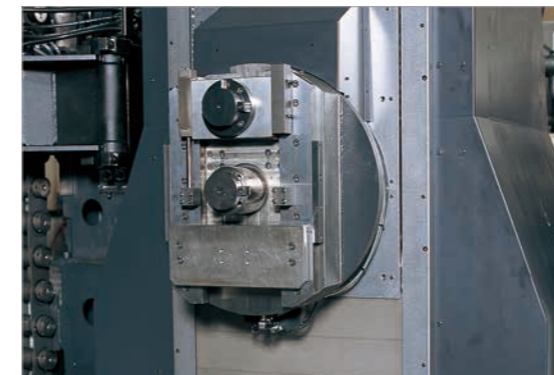
Drilling of holes in the flange



Grooving and Threading

### RIGID, WELL-BALANCED SPINDLE DESIGN MAXIMIZES PERFORMANCE

The HN80D-II FC/100D-II FC headstock with large diameter bearings support the facing head throughout the drive train. 130 mm (5.12") diameter spindle quill is integral to the facing head, and is fully supported as a W-axis, and is the largest of any machine in its class.

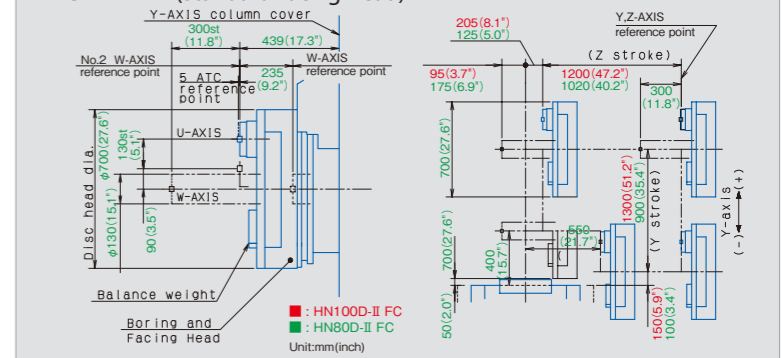


The torque rating of 1486 N-m (1098 ft-lbs) makes this HN80D-II FC/100D-II FC one of the most rigid machines in the market.

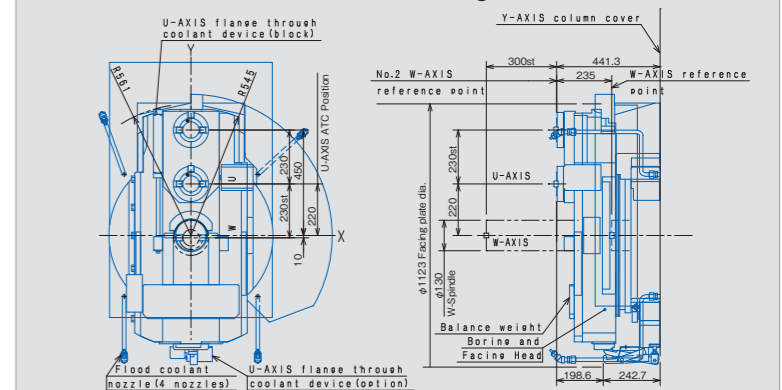
The new "Twin Facing Tool Head" equips wider face unit and more

capable U axis travel, compared to standard face unit. This design fulfills Turning and Facing potential to wider work piece or flange face, and allows shorter length U tool holder for more efficient machining.

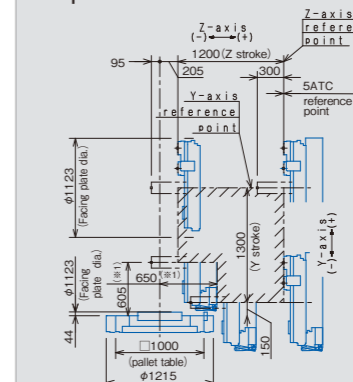
#### AXIS TRAVEL (Standard Facing Head)



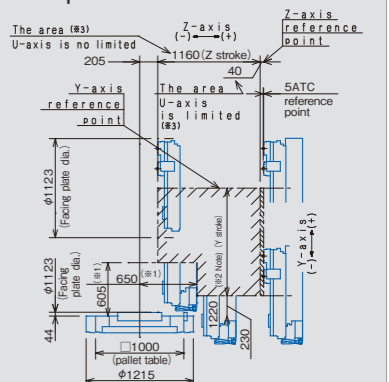
#### AXIS TRAVEL (HN100D-II FC with Twin Facing Tool Head)



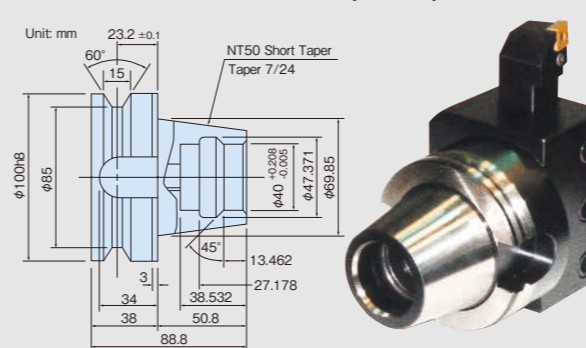
#### In Operation of W axis



#### In Operation of U axis



#### TURNING TOOL HOLDERS (U-AXIS)



#1 Note: The area Y, Z-axis are not available due to the interference with the pallet. U-axis head and U-axis tool.  
 #2 Note: Please note that face plate and tool interference with Z-axis reference point when U-out is in operation in Y-stroke over 1040mm.  
 #3 Note: Face plate interference with SPG when U-out is in operation in max tool at vicinity of Z-axis zero position. U-axis is limited at ATC position in Z-axis this area.



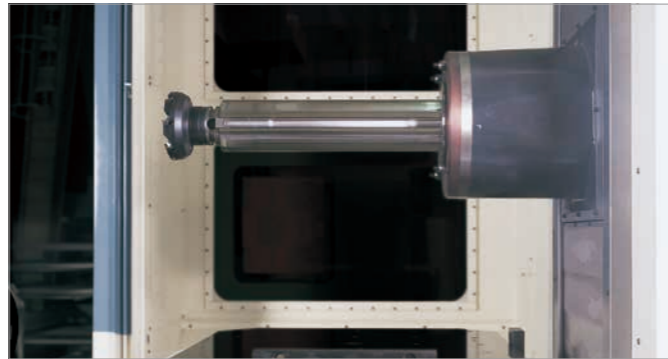
# THE HORIZONTAL BAR CENTER **MODEL HN-D-II BAR SERIES**

## Developed Based On NIIGATA's Heavy Duty Box Way Style Horizontal Machining Center



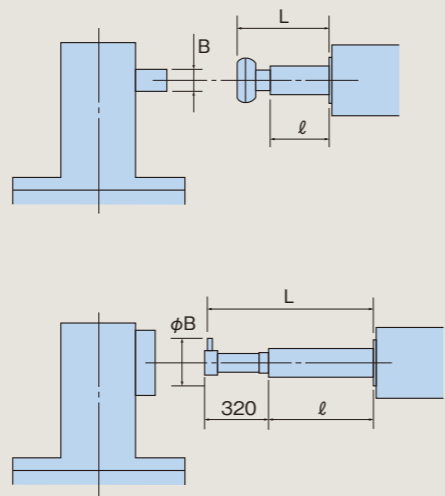
### BAR/QUILL CAPABILITY ON HORIZONTAL MACHINING CENTER

Niigata's model: HN-D-II Series machining centers, always known for rugged, high speed, reliable performance, can be equipped with a BAR/QUILL style spindle. The BAR versions bring long-sought improvements in performance and accuracy to the work traditionally done by horizontal boring mills.



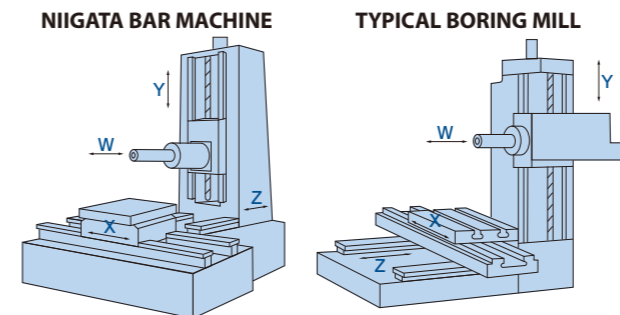
### EXAMPLE OF NIIGATA BAR CENTER'S MACHINING PERFORMANCE (Medium Carbon Steel S45C)

Face Mill			
W axis extension	l	55mm (2.2inches)	220mm (8.7inches)
Cutting position from spindle surface	L	160mm (6.3inches)	325mm (12.8inches)
Cutting volume		691mm <sup>3</sup> /min(42cu.inch)	605mm <sup>3</sup> /min(37cu.inch)
Tool diameter		160mm (6.3inches)	160mm (6.3inches)
Width of cut	B	120mm (4.7inches)	120mm (4.7inches)
Depth of cut		8mm (0.32inches)	7mm (0.28inches)
Spindle speed		330min <sup>-1</sup>	300min <sup>-1</sup>
Feed rate		720mm/min (28.3ipm)	720mm/min (28.3ipm)
Boring			
W axis extension	l	365mm (14.4inches)	535mm (21inches)
Cutting position from spindle surface	L	685mm (27inches)	855mm (33.7inches)
Cutting volume		272mm <sup>3</sup> /min(17cu.inch)	188mm <sup>3</sup> /min(12cu.inch)
Bore diameter	B	240mm (9.4inches)	228mm (9.0inches)
Depth of cut		7mm (0.28inches)	6mm (0.24inches)
Spindle speed		150min <sup>-1</sup>	168min <sup>-1</sup>
Feed rate		53mm/min (2.1ipm)	45mm/min (1.8ipm)



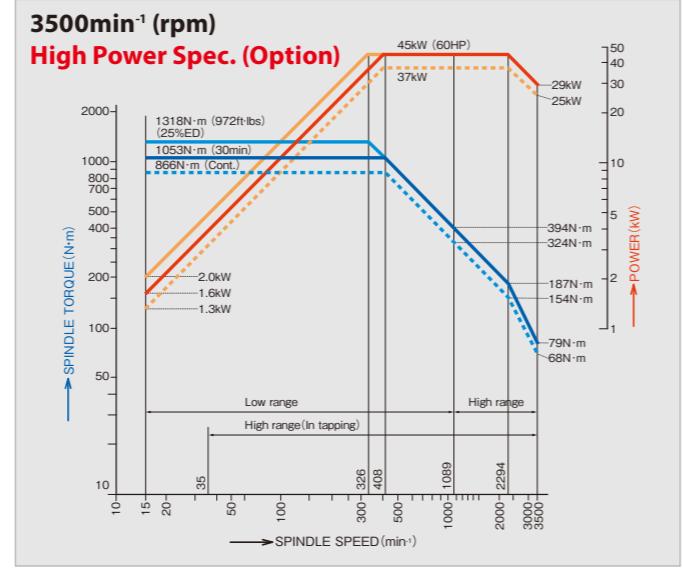
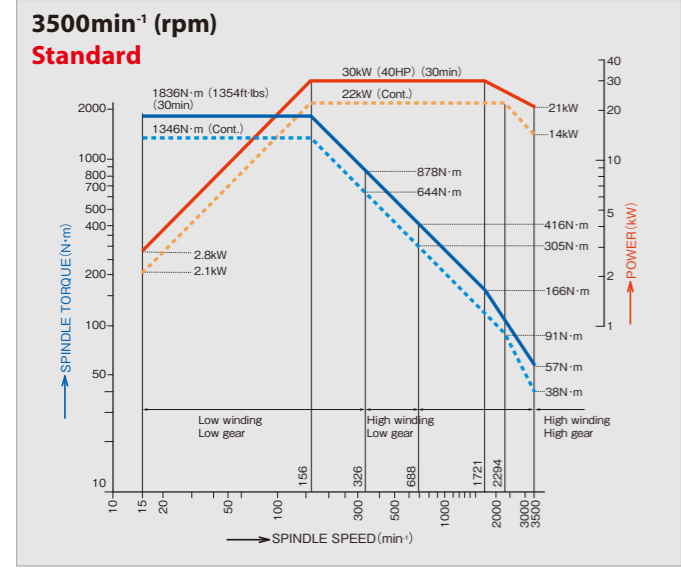
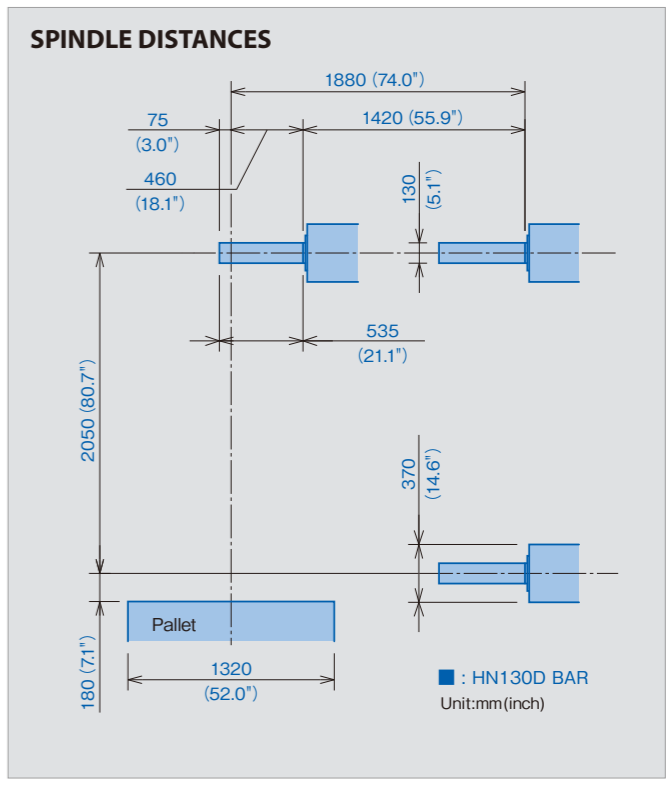
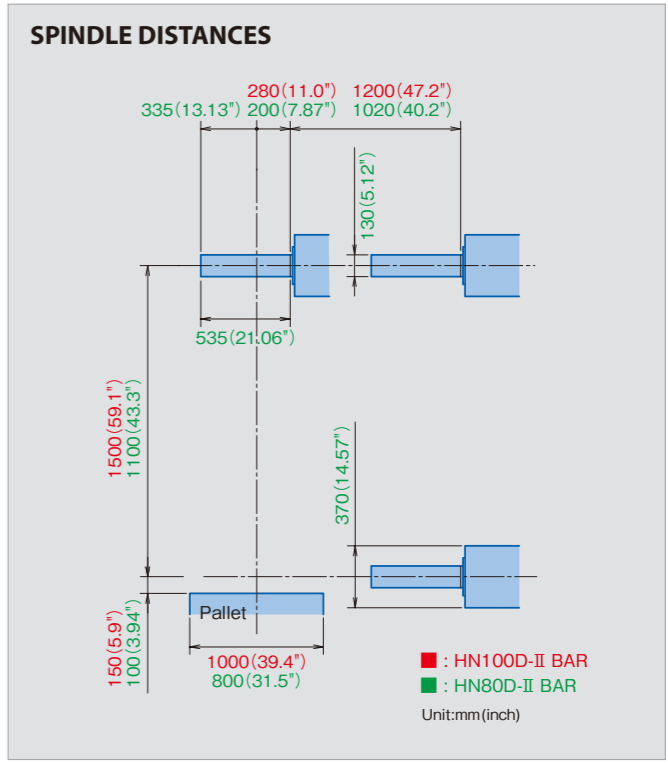
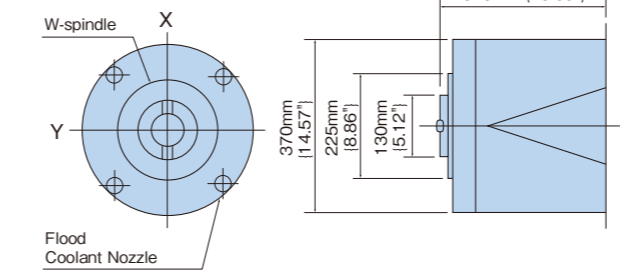
### SUPERIOR FEATURES OVER THE TRADITIONAL BORING MILLS

- RIGID SPINDLE SNOUT**  
Reduces the need to extend the quill to reach the part; provides a high radial load capability for heavy milling cuts.
- CENTER-MOUNTED SPINDLE**  
Eliminates the column twist of side-mounted spindle.
- COLUMN FEED**  
Superior accuracy and rigidity vs. table-fed machines, with compound slides (stacked X and Z axes).
- FASTER TRAVERSE AND FEED SPEEDS**  
Higher productivity, more parts per shift, faster ROI vs. horizontal boring mills.
- ERGONOMICALLY SUPERIOR**  
A full enclosure is standard, along with automatic tool changer and pallet changer to maximize the performance and productivity of your operation.
- TRUE COOLANT THRU THE SPINDLE**
  - Better cutting conditions.
  - Longer tool life.
  - Superior chip removal.
  - Not available from some competitors.
  - Special tool holders are not required.



### RIGID / HEAD STOCK DESIGN

The BAR versions bring long-sought after improvements in performance and accuracy to the work traditionally done by horizontal boring mills.



# LARGEST WORK ENVELOPE IN ITS CLASS

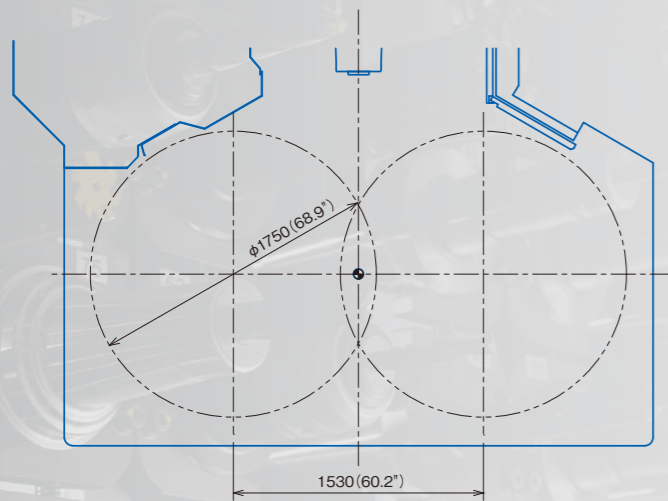
## φ1750mm(68.9") SWING DIAMETER INSIDE MACHINE



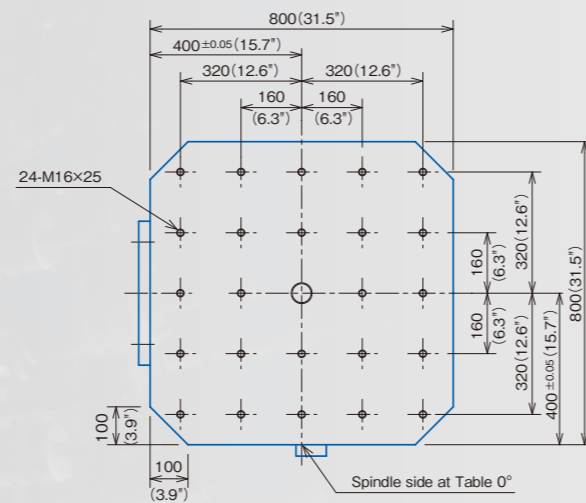
Unit : mm(inch)

### HN80D-II HN80D-II FC HN80D-II BAR

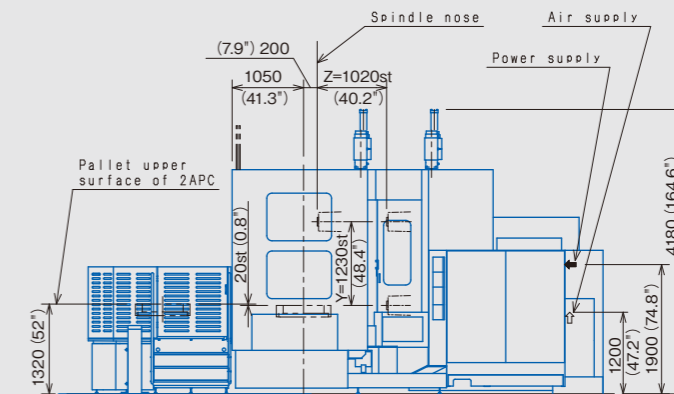
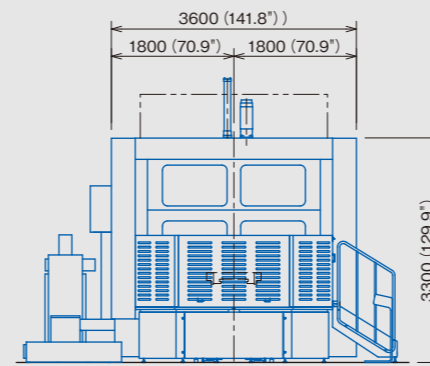
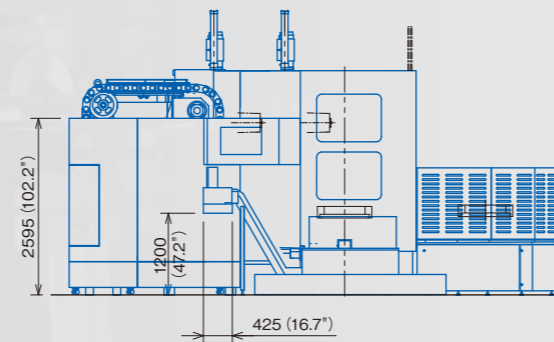
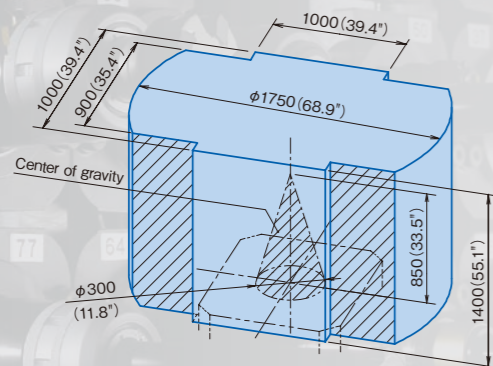
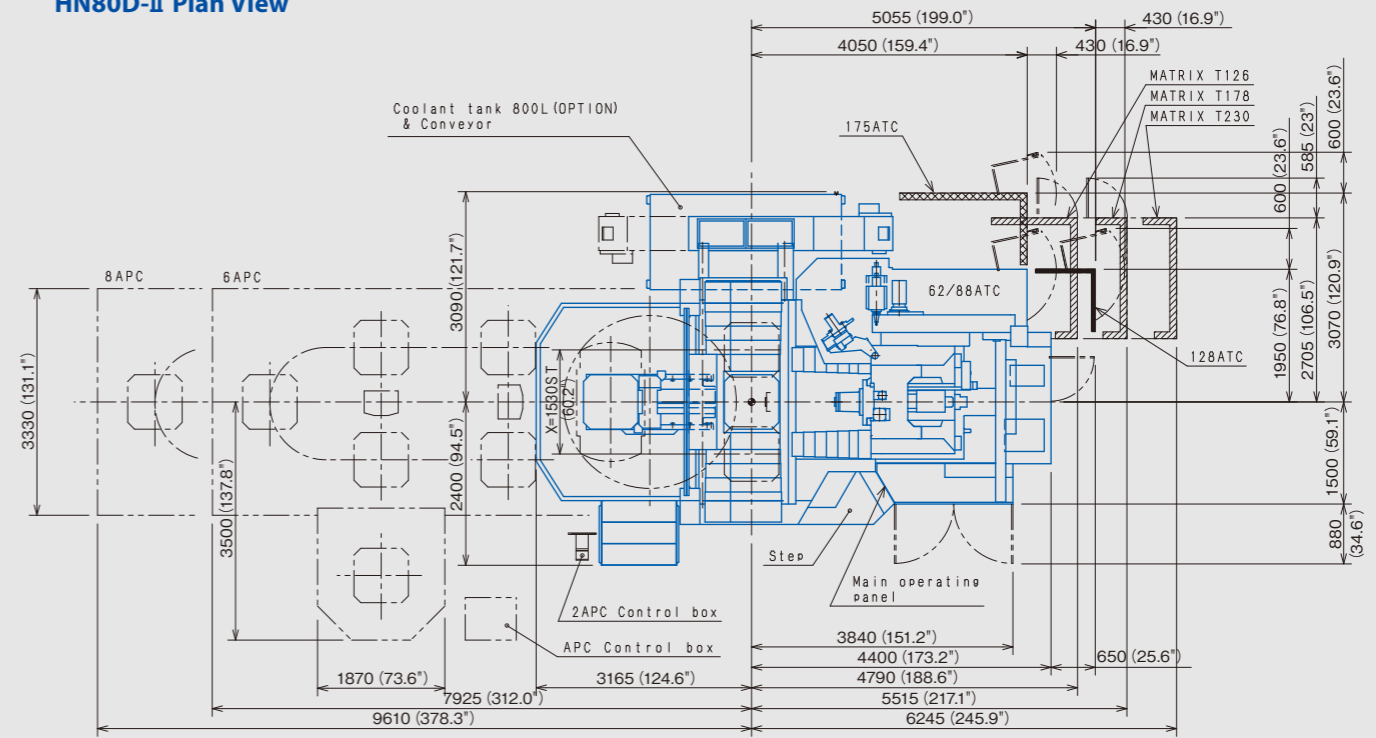
Maximum Workpiece Envelope



Standard Pallet Top Surface



HN80D-II Plan View



# LARGEST WORK ENVELOPE IN ITS CLASS

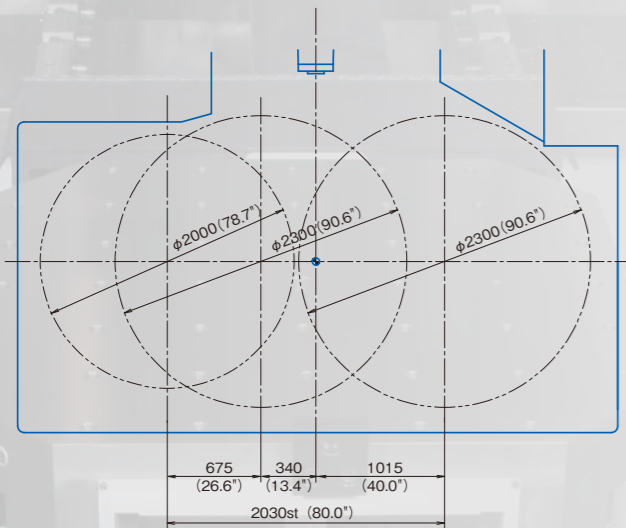
## φ2300mm(90.6") SWING DIAMETER INSIDE MACHINE



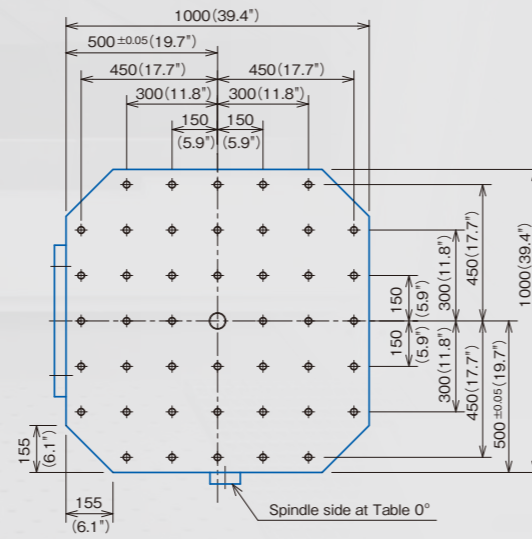
Unit : mm(inch)

### HN100D-II HN100D-II FC HN100D-II BAR

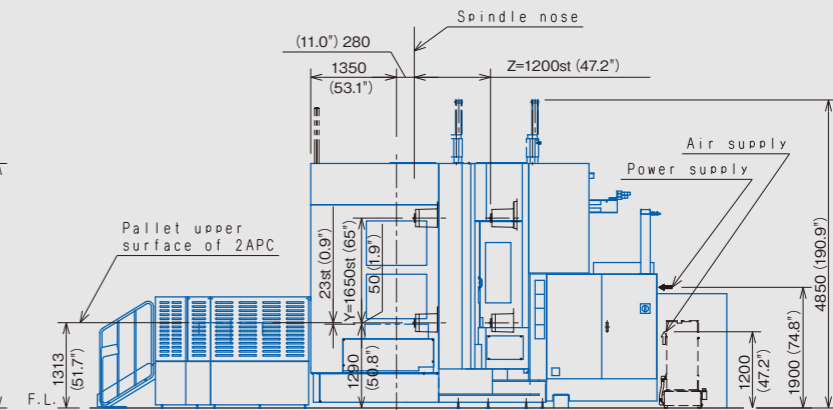
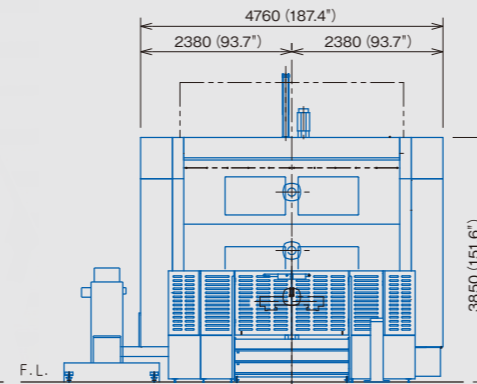
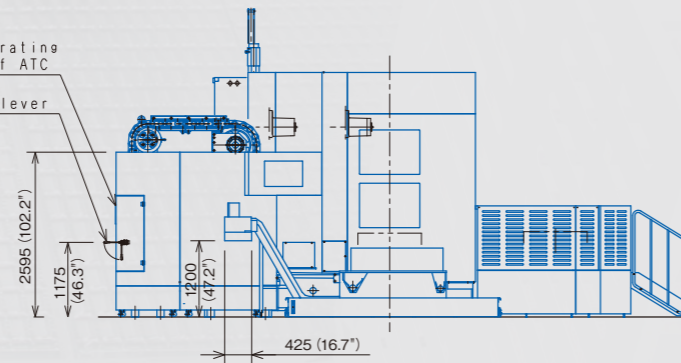
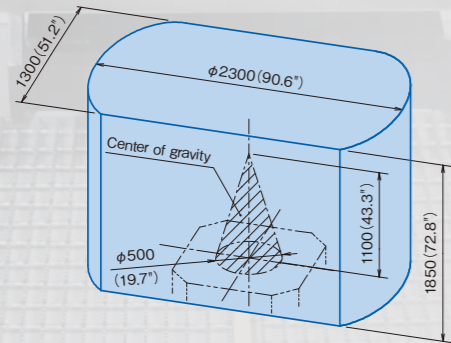
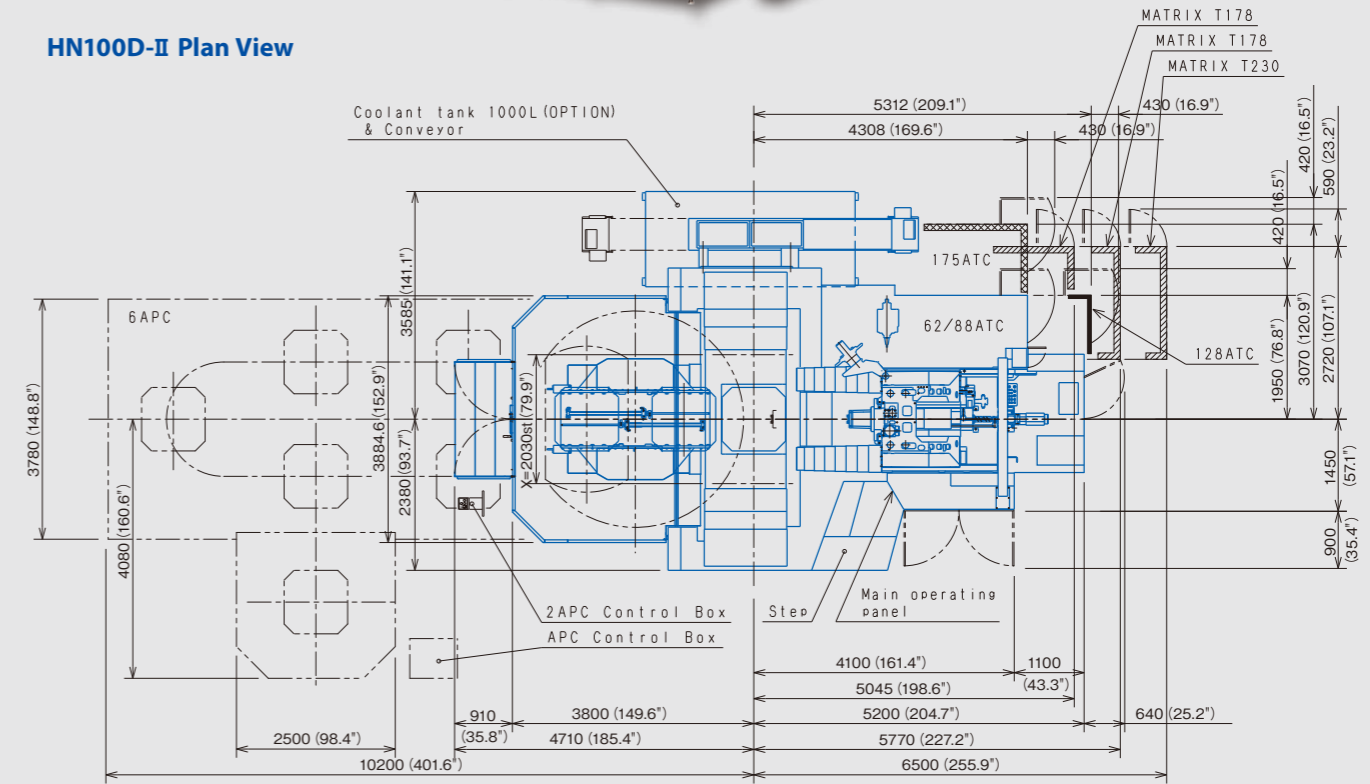
Maximum Workpiece Envelope



Standard Pallet Top Surface



HN100D-II Plan View



# LARGEST WORK ENVELOPE IN ITS CLASS

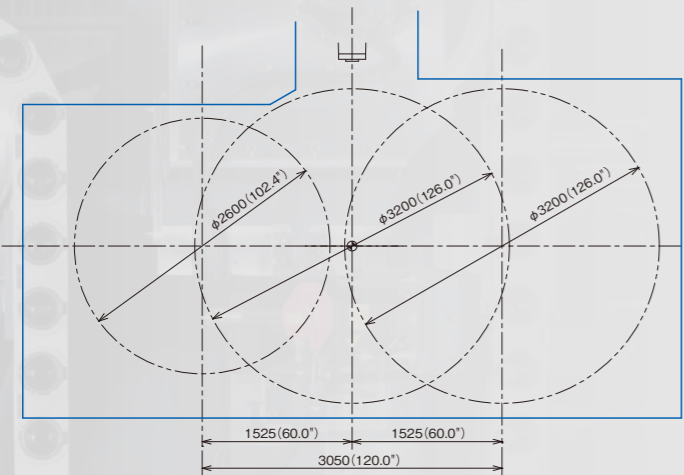
## φ3200mm(126.0") SWING DIAMETER INSIDE MACHINE



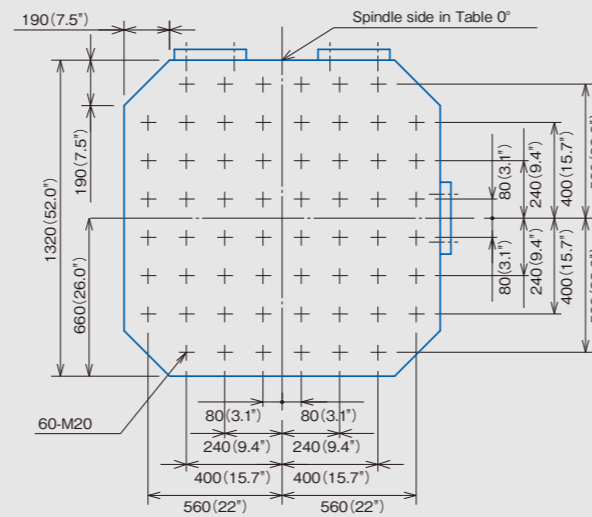
Unit : mm(inch)

### HN130D HN130D FC HN130D BAR

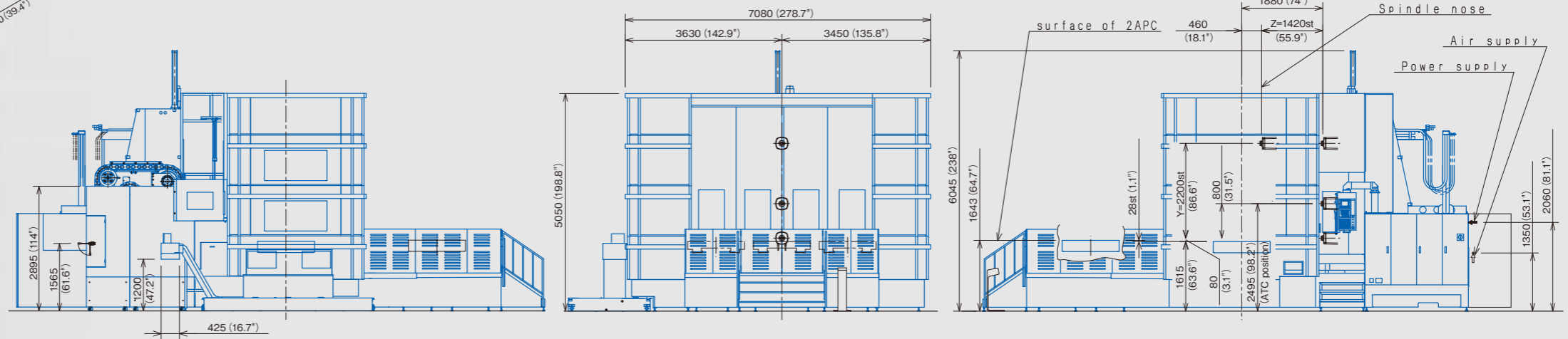
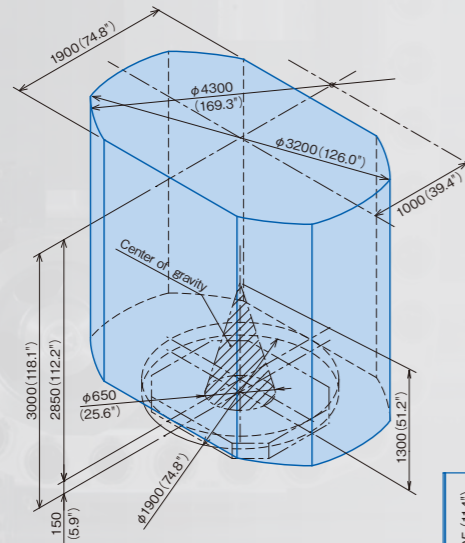
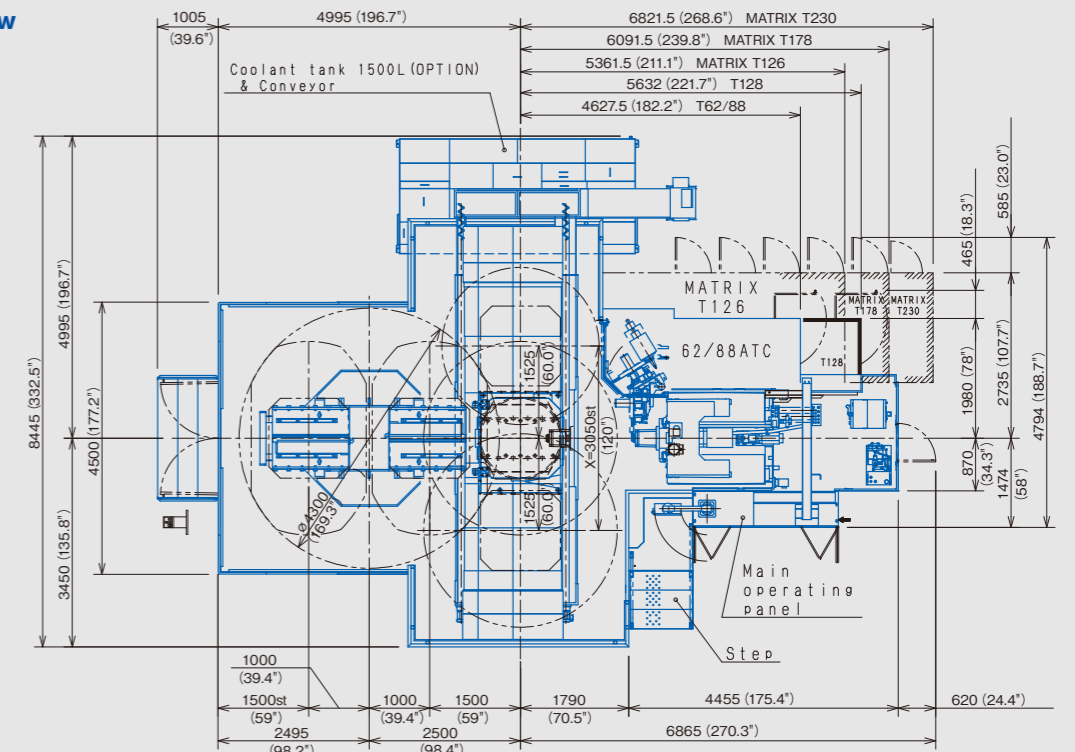
Maximum Workpiece Envelope



Standard Pallet Top Surface



HN130D Plan View



# MACHINE SPECIFICATIONS



ITEM	HN80D-II		HN100D-II		HN130D		
	Metric	Inch	Metric	Inch	Metric	Inch	
TRAVEL	X axis travel (longitudinal table)	1530 mm	60.2"	2030 mm	79.92"	3050 mm	120.1"
	Y axis travel (vertical head)	1230 mm	48.4"	1650 mm	64.96"	2200 mm	86.6"
	[OP]	[1650 mm] (*1)	[64.96"] (*1)	[1800 mm]	[70.9"]		
	Z axis travel (column in & out)	1020 mm	40.2"	1200 mm	47.24"	1420 mm	55.9"
	[OP]	[1200 mm] (*1)	[47.24"] (*1)				
	Spindle center line to pallet surface	0 ~ 1230 mm	0 ~ 48.4"	50 ~ 1700 mm	1.96 ~ 66.92"	80 ~ 2280 mm	3.15 ~ 89.8"
Spindle nose to table center line	200 ~ 1220 mm	7.9 ~ 48.0"	280 ~ 1480 mm	11.0 ~ 58.24"	460 ~ 1880 mm	18.1 ~ 74.0"	
TABLE	Table working surface	800 x 800 mm	31.5 x 31.5"	1000 x 1000 mm	39.37 x 39.37"	1320 x 1320 mm	52.0 x 52.0"
	Table increments	1°	1°	1°	1°	0.001°	0.001°
	[OP]	[0.001°]	[0.001°]	[0.001°]	[0.001°]		
	Maximum mass on pallet	2500 kg	5500 lbs	3500 kg	7700 lbs	8000 kg	17600 lbs
[OP]			[5000 kg] (*2)	[11000 lbs] (*2)	[10000 kg]	[22000 lbs]	
SPINDLE	Spindle drive motor	AC 37/30 kW	AC 50/40 HP	AC 37/30 kW	AC 50/40 HP	AC 37/30 kW	AC 50/40 HP
	[OP]	[AC 30/22 kW]	[AC 40/30 HP]	[AC 30/22 kW]	[AC 40/30 HP]	[AC 30/22 kW]	[AC 40/30 HP]
	Spindle speeds	6000 min <sup>-1</sup>	6000 rpm	6000 min <sup>-1</sup>	6000 rpm	6000 min <sup>-1</sup>	6000 rpm
	Spindle max. torque	1200 N·m	886 ft·lbs	1200 N·m	886 ft·lbs	1200 N·m	886 ft·lbs
	[OP]	[1948 N·m]	[1438 ft·lbs]	[1948 N·m]	[1438 ft·lbs]	[1948 N·m]	[1438 ft·lbs]
Spindle taper	No.50	No.50	No.50	No.50	No.50	No.50	
FEEDRATE	Rapid traverse X axis	32 m/min	1260 ipm	20 m/min	787 ipm	18 m/min	709 ipm
	Y axis	32 m/min	1260 ipm	20 m/min	787 ipm	12 m/min	472 ipm
	Z axis	32 m/min	1260 ipm	20 m/min	787 ipm	12 m/min	472 ipm
	Cutting X axis	1 ~ 15000 mm/min	0.04 ~ 590 ipm	1 ~ 6000 mm/min	0.04 ~ 236 ipm	1 ~ 8000 mm/min	0.04 ~ 315 ipm
	Y axis	1 ~ 15000 mm/min	0.04 ~ 590 ipm	1 ~ 6000 mm/min	0.04 ~ 236 ipm	1 ~ 8000 mm/min	0.04 ~ 315 ipm
	Z axis	1 ~ 15000 mm/min	0.04 ~ 590 ipm	1 ~ 6000 mm/min	0.04 ~ 236 ipm	1 ~ 8000 mm/min	0.04 ~ 315 ipm
	Table index speed / 1° table	12 min <sup>-1</sup>	12 rpm	5 min <sup>-1</sup>	5 rpm	N / A	N / A
	NC table	11.1 min <sup>-1</sup>	11.1 rpm	4 min <sup>-1</sup>	4 rpm	2 min <sup>-1</sup>	2 rpm
	5000 kg with NC table [OP]	N / A	N / A	[2 min <sup>-1</sup> ]	[2 rpm]	-	-
	Tool magazine capacity	62	62	62	62	62	62
AUTOMATIC TOOL CHANGER (ATC)	[OP]	[88/128/175/255]	[88/128/175/255]	[88/128/175/255]	[88/128/175/255]	[88/128/175/255]	[88/128/175/255]
	Field expandable	Field expandable	Field expandable	Field expandable	Field expandable	Field expandable	Field expandable
	[OP]	[126/178/230/308]	[126/178/230/308]	[126/178/230/308]	[126/178/230/308]	[126/178/230]	[126/178/230]
	Matrix style	Matrix style	Matrix style	Matrix style	Matrix style	Matrix style	Matrix style
	Tool selection	Fixed position	Fixed position	Fixed position	Fixed position	Fixed position	Fixed position
	Tool shank	BT50	CT50	BT50	CT50	BT50	CT50
	[OP]	[HSK A100]	[HSK A100]	[HSK A100]	[HSK A100]	[HSK A100]	[HSK A100]
	Maximum tool length	610 mm	24"	610 mm	24"	610 mm	24"
	Maximum milling cutter dia.	120 mm	4.7"	120 mm	4.7"	120 mm	4.7"
	Ditto adjacent pockets empty	230 mm	9.1"	230 mm	9.1"	230 mm	9.1"
Maximum tool mass (weight)	30 kg	66 lbs	30 kg	66 lbs	30 kg	66 lbs	
[OP]	[35 kg]	[77 lbs]	[35 kg]	[77 lbs]	[35 kg]	[77 lbs]	
Tool change time (tool to tool)	6.5 s	6.5 sec.	6.5 s	6.5 sec.	12.8 s	12.8 sec.	
AUTOMATIC PALLET CHANGER (APC)	Type	Rotary shuttle	Rotary shuttle	Rotary shuttle	Rotary shuttle	Rotary shuttle	Rotary shuttle
	Pallet change time	53 s	53 sec.	75 s	75 sec.	120 s	120 sec.
	5000 kg with NC table [OP]	N / A	N / A	[120 s]	[120 sec.]	-	-
Number of pallets	2	2	2	2	2	2	
ACCURACY	Positioning / full stroke X - Y - Z	± 0.004 mm	± 0.00016"	N / A	N / A	N / A	N / A
	Ditto with scales X - Y - Z	± 0.003 mm	± 0.00012"	± 0.004 mm	± 0.00016"	± 0.005 mm	± 0.0002"
	Repeatability X - Y - Z	± 0.002 mm	± 0.00008"	N / A	N / A	N / A	N / A
	Ditto with scales X - Y - Z	± 0.0015 mm	± 0.00006"	± 0.0015 mm	± 0.00006"	± 0.002 mm	± 0.00008"
	Table index 360 position	± 3"	± 3"	± 3"	± 3"	N / A	N / A
	Positioning with scale B	-	-	-	-	± 7"	± 7"
	Repeatability with scale B					± 4"	± 4"
GENERAL	Machine weight approx.	25000 kg	55000 lbs	30000 kg	66000 lbs	65000 kg	143000 lbs
	Machine space W / D	5490 / 7565 mm	216.1 / 297.8"	5965 / 9850 mm	234.8 / 387.8"	8445 / 12245 mm	332.5 / 482.1"
	Ditto H	4180 mm	164.6"	4850 mm	190.9"	6045 mm	238.0"
	Floor to table surface	1300 mm	51.2"	1290 mm	50.8"	1615 mm	63.6"
	Power	78 kVA	78 kVA	78 kVA	78 kVA	75 kVA	75 kVA
	Control	FANUC	FANUC	FANUC	FANUC	FANUC	FANUC

Figures in [ ] indicate optional features. (\*1) Y & Z wide or Z wide only. (\*2) Require to purchase 0.001° table (NC table).

ITEM	HN80D-II BAR		HN100D-II BAR		HN130D BAR		
	Metric	Inch	Metric	Inch	Metric	Inch	
TRAVEL	X axis travel (longitudinal table)	1530 mm	60.2"	2030 mm	79.92"	3050 mm	120.1"
	Y axis travel (vertical head)	1100 mm	43.3"	1500 mm	59.06"	2050 mm	80.7"
	[OP]	[1500 mm] (*1)	[59.06"] (*1)	[1650 mm]	[64.96"]		
	Z axis travel (column in & out)	1020 mm	40.2"	1200 mm	47.24"	1420 mm	55.9"
	[OP]	[1200 mm] (*1)	[47.24"] (*1)				
	W axis travel (spindle quill)	535 mm	21.1"	535 mm	21.1"	535 mm	21.1"
Spindle center line to pallet surface	100 ~ 1200 mm	3.9 ~ 47.2"	150 ~ 1650 mm	5.9 ~ 64.96"	180 ~ 2230 mm	7.09 ~ 87.8"	
Spindle nose to table center line	200 ~ 1220 mm	7.87 ~ 48.03"	280 ~ 1480 mm	11.0 ~ 58.24"	460 ~ 1880 mm	18.1 ~ 74.0"	
TABLE	Table working surface	800 x 800 mm	31.5 x 31.5"	1000 x 1000 mm	39.37 x 39.37"	1320 x 1320 mm	52.0 x 52.0"
	Table increments	1°	1°	1°	1°	0.001°	0.001°
	[OP]	[0.001°]	[0.001°]	[0.001°]	[0.001°]		
	Maximum mass on pallet	2500 kg	5500 lbs	3500 kg	7700 lbs	8000 kg	17600 lbs
[OP]			[5000 kg] (*2)	[11000 lbs] (*2)	[10000 kg]	[22000 lbs]	
SPINDLE	Spindle drive motor	AC 30/22 kW	AC 40/30 HP	AC 30/22 kW	AC 40/30 HP	AC 30/22 kW	AC 40/30 HP
	[OP]	[AC 45/37 kW]	[AC 60/50 kW]	[AC 45/37 kW]	[AC 60/50 kW]	[AC 45/37 kW]	[AC 60/50 kW]
	Spindle speeds	3500 min <sup>-1</sup>	3500 rpm	3500 min <sup>-1</sup>	3500 rpm	3500 min <sup>-1</sup>	3500 rpm
	Spindle max. torque	1836 N·m	1354 ft·lbs	1836 N·m	1354 ft·lbs	1836 N·m	1354 ft·lbs
	[OP]	[1318 N·m]	[972 ft·lbs]	[1318 N·m]	[972 ft·lbs]	[1318 N·m]	[972 ft·lbs]
Spindle taper	No.50	No.50	No.50	No.50	No.50	No.50	
Spindle bar dia.	130 mm	5.12"	130 mm	5.12"	130 mm	5.12"	
FEEDRATE	Rapid traverse X axis	32 m/min	1260 ipm	20 m/min	787 ipm	18 m/min	709 ipm
	Y axis	20 m/min	787 ipm	20 m/min	787 ipm	12 m/min	472 ipm
	Z axis	20 m/min	787 ipm	20 m/min	787 ipm	12 m/min	472 ipm
	W axis	5 m/min	197 ipm	5 m/min	197 ipm	5 m/min	197 ipm
	Cutting X axis	1 ~ 15000 mm/min	0.04 ~ 590 ipm	1 ~ 6000 mm/min	0.04 ~ 236 ipm	1 ~ 8000 mm/min	0.04 ~ 315 ipm
	Y axis	1 ~ 10000 mm/min	0.04 ~ 394 ipm	1 ~ 6000 mm/min	0.04 ~ 236 ipm	1 ~ 8000 mm/min	0.04 ~ 315 ipm
	Z axis	1 ~ 10000 mm/min	0.04 ~ 394 ipm	1 ~ 6000 mm/min	0.04 ~ 236 ipm	1 ~ 8000 mm/min	0.04 ~ 315 ipm
	W axis	1 ~ 4000 mm/min	0.04 ~ 157 ipm	1 ~ 4000 mm/min	0.04 ~ 157 ipm	1 ~ 4000 mm/min	0.04 ~ 157 ipm
	Table index speed / 1° table	12 min <sup>-1</sup>	12 rpm	5 min <sup>-1</sup>	5 rpm	N / A	N / A
	NC table	11.1 min <sup>-1</sup>	11.1 rpm	4 min <sup>-1</sup>	4 rpm	2 min <sup>-1</sup>	2 rpm
5000 kg with NC table [OP]	N / A	N / A	[2 min <sup>-1</sup> ]	[2 rpm]	-	-	
AUTOMATIC TOOL CHANGER (ATC)	Tool magazine capacity	62	62	62	62	62	62
	[OP]	[88/128/175/255]	[88/128/175/255]	[88/128/175/255]	[88/128/175/255]	[88/128/175/255]	[88/128/175/255]
	Field expandable	Field expandable	Field expandable	Field expandable	Field expandable	Field expandable	Field expandable
	[OP]	N / A	N / A	N / A	N / A	[126/178/230/308]	[126/178/230/308]
	N / A	N / A	N / A	N / A	Matrix style	Matrix style	
	Tool selection	Fixed position	Fixed position	Fixed position	Fixed position	Fixed position	Fixed position
	Tool shank	BT50	CT50	BT50	CT50	BT50	CT50
	Maximum tool length	610 mm	24"	610 mm	24"	610 mm	24"
	Maximum milling cutter dia.	120 mm	4.7"	120 mm	4.7"	120 mm	4.7"
	Ditto adjacent pockets empty	230 mm	9.1"	230 mm	9.1"	230 mm	9.1"
Maximum tool mass (weight)	30 kg	66 lbs	30 kg	66 lbs	30 kg	66 lbs	
[OP]	[35 kg]	[77 lbs]	[35 kg]	[77 lbs]	[35 kg]	[77 lbs]	
Tool change time (tool to tool)	11.8 s	11.8 sec.	11.8 s	11.8 sec.	12.8 s	12.8 sec.	
AUTOMATIC PALLET CHANGER (APC)	Type	Rotary shuttle	Rotary shuttle	Rotary shuttle	Rotary shuttle	Rotary shuttle	Rotary shuttle
	Pallet change time	53 s	53 sec.	75 s	75 sec.	120 s	120 sec.
	5000 kg with NC table [OP]	N / A	N / A	[120 s]	[120 sec.]	-	-
Number of pallets	2	2	2	2	2	2	
ACCURACY	Positioning / full stroke X - Y - Z	± 0.004 mm	± 0.00016"	N / A	N / A	N / A	N / A
	Ditto with scales X - Y - Z	± 0.003 mm	± 0.00012"	± 0.004 mm	± 0.00016"	± 0.005 mm	± 0.0002"
	Repeatability X - Y - Z	± 0.002 mm	± 0.00008"	N / A	N / A	N / A	N / A
	Ditto with scales X - Y - Z	± 0.0015 mm	± 0.00006"	± 0.0015 mm	± 0.00006"	± 0.002 mm	± 0.00008"
	Table index 360 position	± 3"	± 3"	± 3"	± 3"	N / A	N / A
	Positioning with scale B	-	-	-	-	± 7"	± 7"
	Repeatability with scale B					± 4"	± 4"
GENERAL	Machine weight approx.	26000 kg	57200 lbs	30500 kg	67100 lbs	66000 kg	145200 lbs
	Machine space W / D	5490 / 7715 mm	216.1 / 303.7"	5965 / 9850 mm	234.8 / 387.8"	8445 / 12245 mm	332.5 / 482.1"
	Ditto H	4180 mm	164.6"	4850 mm	190.9"	6045 mm	238.0"
	Floor to table surface	1300 mm	51.2"	1290 mm	50.8"	1615 mm	63.6"
	Power	69 kVA	69 kVA	69 kVA	69 kVA	67 kVA	67 kVA
	Control	FANUC	FANUC	FANUC	FANUC	FANUC	FANUC

# MACHINE SPECIFICATIONS

ITEM		HN80D-II FC		HN100D-II FC		HN130D FC	
		Metric	Inch	Metric	Inch	Metric	Inch
TRAVEL	X axis travel (longitudinal table)	1530 mm	60.2 "	2030 mm	79.92 "	3050 mm	120.1 "
	Y axis travel (vertical head)	900 mm	35.4 "	1300 mm	51.1 "	1850 mm	76.8 "
	[OP]	[1300 mm] (*1)	[51.1 "] (*1)				
	Z axis travel (column in & out)	1020 mm	40.2 "	1200 mm	47.24 "	1420 mm	55.9 "
	[OP]	[1200 mm] (*1)	[47.24 "] (*1)				
	W axis travel (spindle quill)	300 mm	11.8 "	300 mm	11.8 "	300 mm	11.8 "
	U axis travel (facing slide)	130 mm	5.1 "	130 mm	5.1 "	130 mm	5.1 "
	Spindle center line to pallet surface	100 ~ 1000 mm	3.9 ~ 39.4 "	150 ~ 1450 mm	5.9 ~ 57.0 "	180 ~ 2030 mm	7.09 ~ 79.9 "
Spindle nose to table center line	125 ~ 1145 mm	4.9 ~ 45.1 "	205 ~ 1405 mm	8.0 ~ 55.3 "	385 ~ 1805 mm	15.2 ~ 71.1 "	
TABLE	Table working surface	800 x 800 mm	31.5 x 31.5 "	1000 x 1000 mm	39.37 x 39.37 "	1320 x 1320 mm	52.0 x 52.0 "
	Table increments	1°	1°	1°	1°	0.001°	0.001°
	[OP]	[0.001°]	[0.001°]	[0.001°]	[0.001°]		
	Maximum mass on pallet	2500 kg	5500 lbs	3500 kg	7700 lbs	8000 kg	17600 lbs
[OP]			[5000 kg] (*2)	[11000 lbs] (*2)	[10000 kg]	[22000 lbs]	
SPINDLE	Spindle drive motor	AC 26/22 kW	AC 35/30 HP	AC 26/22 kW	AC 35/30 HP	AC 26/22 kW	AC 35/30 HP
	Spindle speeds	2500 min <sup>-1</sup>	2500 rpm	2500 min <sup>-1</sup>	2500 rpm	2500 min <sup>-1</sup>	2500 rpm
	Spindle max. torque	659.5 N·m	487 ft·lbs	659.5 N·m	487 ft·lbs	659.5 N·m	487 ft·lbs
	Spindle taper	No.50	No.50	No.50	No.50	No.50	No.50
	Facing head speeds	600 min <sup>-1</sup>	600 rpm	600 min <sup>-1</sup>	600 rpm	600 min <sup>-1</sup>	600 rpm
	Spindle bar dia.	130 mm	5.12 "	130 mm	5.12 "	130 mm	5.12 "
	Facing head dia.	700 mm	27.6 "	700 mm	27.6 "	700 mm	27.6 "
	FEEDRATE	Rapid traverse X axis	32 m/min	1260 ipm	20 m/min	787 ipm	18 m/min
Y axis		15 m/min	787 ipm	15 m/min	591 ipm	12 m/min	472 ipm
Z axis		20 m/min	787 ipm	15 m/min	591 ipm	12 m/min	472 ipm
U axis		5 m/min	197 ipm	5 m/min	197 ipm	5 m/min	197 ipm
W axis		5 m/min	197 ipm	5 m/min	197 ipm	5 m/min	197 ipm
Cutting X axis		1 ~ 15000 mm/min	0.04 ~ 590 ipm	1 ~ 6000 mm/min	0.04 ~ 236 ipm	1 ~ 8000 mm/min	0.04 ~ 315 ipm
Y axis		1 ~ 10000 mm/min	0.04 ~ 394 ipm	1 ~ 6000 mm/min	0.04 ~ 236 ipm	1 ~ 8000 mm/min	0.04 ~ 315 ipm
Z axis		1 ~ 10000 mm/min	0.04 ~ 394 ipm	1 ~ 6000 mm/min	0.04 ~ 236 ipm	1 ~ 8000 mm/min	0.04 ~ 315 ipm
U axis		1 ~ 4000 mm/min	0.04 ~ 157 ipm	1 ~ 4000 mm/min	0.04 ~ 157 ipm	1 ~ 4000 mm/min	0.04 ~ 157 ipm
W axis		1 ~ 4000 mm/min	0.04 ~ 157 ipm	1 ~ 4000 mm/min	0.04 ~ 157 ipm	1 ~ 4000 mm/min	0.04 ~ 157 ipm
Table index speed / 1° table		12 min <sup>-1</sup>	12 rpm	5 min <sup>-1</sup>	5 rpm	N / A	N / A
NC table		11.1 min <sup>-1</sup>	11.1 rpm	4 min <sup>-1</sup>	4 rpm	2 min <sup>-1</sup>	2 rpm
5000 kg with NC table [OP]		N / A	N / A	[2 min <sup>-1</sup> ]	[2 rpm]	-	-
AUTOMATIC TOOL CHANGER (ATC)		Tool magazine capacity	62	62	62	62	62
	[OP]	[88/128/175/255]	[88/128/175/255]	[88/128/175/255]	[88/128/175/255]	[88/128/175/255]	[88/128/175/255]
	Field expandable	Field expandable	Field expandable	Field expandable	Field expandable	Field expandable	Field expandable
	Tool selection	Fixed position	Fixed position	Fixed position	Fixed position	Fixed position	Fixed position
	Tool shank	BT50	CT50	BT50	CT50	BT50	CT50
	Maximum tool length	580 mm	22.8 "	580 mm	22.8 "	580 mm	22.8 "
	Maximum milling cutter dia.	120 mm	4.7 "	120 mm	4.7 "	120 mm	4.7 "
	Ditto adjacent pockets empty	230 mm	9.1 "	230 mm	9.1 "	230 mm	9.1 "
	Maximum tool mass (weight)	30 kg	66 lbs	30 kg	66 lbs	30 kg	66 lbs
	[OP]	[35 kg]	[77 lbs]	[35 kg]	[77 lbs]	[35 kg]	[77 lbs]
Tool change time (tool to tool)	11.8 s	11.8 sec.	11.8 s	11.8 sec.	12.8 s	12.8 sec.	
AUTOMATIC PALLET CHANGER (APC)	Type	Rotary shuttle	Rotary shuttle	Rotary shuttle	Rotary shuttle	Rotary shuttle	Rotary shuttle
	Pallet change time	53 s	53 sec.	75 s	75 sec.	120 s	120 sec.
	5000 kg with NC table [OP]	N / A	N / A	[120 s]	[120 sec.]	-	-
	Number of pallets	2	2	2	2	2	2
ACCURACY	Positioning / full stroke X - Y - Z	± 0.004 mm	± 0.00016 "	N / A	N / A	N / A	N / A
	Ditto with scales X - Y - Z	± 0.003 mm	± 0.00012 "	± 0.004 mm	± 0.00016 "	± 0.005 mm	± 0.0002 "
	Repeatability X - Y - Z	± 0.002 mm	± 0.00008 "	N / A	N / A	N / A	N / A
	Ditto with scales X - Y - Z	± 0.0015 mm	± 0.00006 "	± 0.0015 mm	± 0.00006 "	± 0.002 mm	± 0.00008 "
	Table index 360 position	± 3 "	± 3 "	± 3 "	± 3 "	N / A	N / A
	Positioning with scale B	-	-	-	-	± 7 "	± 7 "
	Repeatability with scale B					± 4 "	± 4 "
	GENERAL	Machine weight approx.	26000 kg	57200 lbs	31000 kg	68200 lbs	66500 kg
Machine space W / D		5490 / 7565 mm	216.1 / 297.8 "	5965 / 9850 mm	234.8 / 387.8 "	8445 / 12245 mm	332.5 / 482.1 "
Ditto H		4000 mm	157.5 "	4715 mm	185.6 "	5740 mm	226.0 "
Floor to table surface		1300 mm	51.2 "	1290 mm	50.8 "	1615 mm	63.6 "
Power		64 kVA	64 kVA	64 kVA	64 kVA	62 kVA	62 kVA
Control		FANUC	FANUC	FANUC	FANUC	FANUC	FANUC

Figures in [ ] indicate optional features. (\*1) Y & Z wide only. (\*2) Require to purchase 0.001° table (NC table).

# NIIGATA'S TECHNICAL SOLUTION FOR THE MACHINING OF "DIFFICULT MATERIAL TO CUT" WORLD PRODUCTIVITY — HN-Ti PACKAGE



## EFFICIENT MACHINING OF "DIFFICULT MATERIAL TO CUT":

Global industrial demand to machine hard metals has been drastically increased based upon historical material innovation for the production industries. Niigata has classified the materials as "Difficult material to cut" such as Titanium, Inconel and Hastelloy, etc.

Niigata's constant research and development achieved the solution for high efficient and profitable parts machining for these hard materials.

As a world leader of the horizontal machining center, NIIGATA is proud to declare that HN-Ti Package will satisfy all requirements of your production needs with "Difficult material to cut".

## THE MACHINE DESIGN CRITERIA:

Niigata's tradition, true Heavy Duty BOX WAY style Horizontal Machining Center model HN-series are highly regarded worldwide as most capable hard metal cutting HMC in the industry. The fundamental of the machine design have been proved already for hard metal machining. Key development criteria for Ti Package is to enhance and up-grade key machine components to achieve the following machine capabilities.

- ✓ **Low frequency machining.**
- ✓ **Superior rigidity and stiffness of the machine.**
- ✓ **Greater axes thrust.**
- ✓ **High torque traditional geared spindle with the interface with tool.**
- ✓ **Longevity of the tool life.**
- ✓ **High-volume, high-pressure spindle through coolant improves tool life by eliminating heat and evacuating chips.**