



A World Leader of Horizontal Machining Centers



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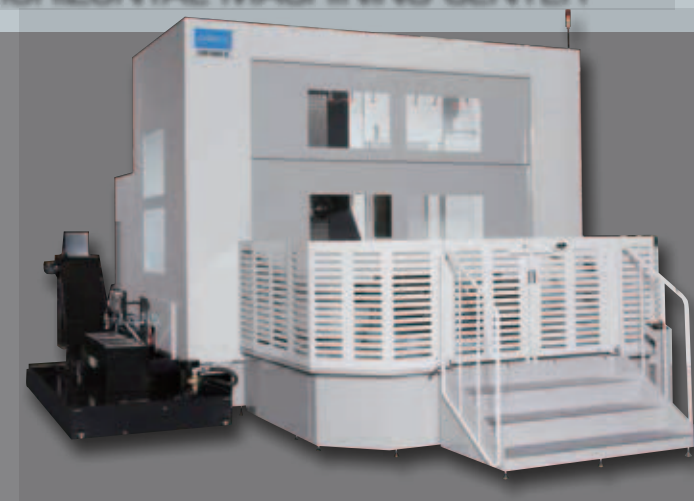
NIIGATA

S-SERIES

HN-S

HN800-S / HN1000-S / HN1250-S / HN1600-S

NEW MODELS — HEAVY DUTY HIGH PRODUCTION TYPE
HORIZONTAL MACHINING CENTER



NIIGATA MACHINE TECHNO CO., LTD.

Niigata, Japan

NIIGATA'S TECHNICAL INNOVATION LEADS
TO A NEW GENERATION
WORLD CLASS PRODUCTIVITY—*NIIGATA MODEL S*

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.

HN800-S

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

Max Workpiece Swing Diameter
1750mm (68.9")

Max Workpiece Height
1400mm (55.1")

HN1000-S

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

Max Workpiece Swing Diameter
2300mm (90.6")

Max Workpiece Height
1850mm (72.8")

HN1250-S

TRAVEL	X axis	2200mm (86.6")
	Y axis	1800mm (70.8")
	Z axis	1200mm (47.2")

Max Workpiece Swing Diameter
2300mm (90.6")

Max Workpiece Height
2000mm (78.7")

HN1600-S

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

Max Workpiece Swing Diameter
3200mm (126")

Max Workpiece Height
3000mm (118.1")

The model S is the result of NIIGATA's constant research and development for profitable machining of large components. Key development criteria for "S" series were: larger capacity, higher productivity, and reduction of cutting and none-cutting time. NIIGATA, a world leader of horizontal machining centers, is proud to declare that the model S, a new design achieving significant performance advances, will satisfy all requirement of your production needs.

NEW

LARGEST WORK ZONE

HIGH PRODUCTIVITY

HIGH SPEED

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NIIGATA'S SOLUTION FOR
EFFICIENT MACHINING OF
LARGE/GIANT COMPONENTS

New S-series employs ultra rigid roller guide system on X and Z axes and hardened and ground box way system on Y axis which maintain Niigata's tradition, maximum machine rigidity and the capability of heavy duty machining even though rapid machine movement is reliably achieved in larger size of horizontal machining centers. The best of both world comes true.

HIGH OUTPUT SOLUTION

High horse power and torque allow you to take full advantage of rigid machine frame. All Niigata models are highly reputed in the market for greater capability of heavy duty, high out-put machining.

PROFITABLE MACHINING OF LARGE COMPONENTS UNRIVALED PRODUCTIVITY—**NIIGATA NEW HN-S SERIES**



- ✓ **LARGEST WORK ZONE**
- ✓ **HIGH PRODUCTIVITY**
- ✓ **HIGH SPEED**

FLEXIBILITY, PRODUCTIVITY AND ACCURACY LEADS TO HIGH PRODUCTION MACHINING

Until knowing capability of new S-Series from Niigata, materializing the capability of new S-Series from Niigata made the industry enjoy flexibility, productivity, and accuracy. The new S-Series with the ability to handle largest part envelope in its class will truly give you a machine with flexibility.

With a faster speed traverse rate in longer axes strokes inside the work zone give you the capability to reduce your cutting and non-cutting times.

Niigata's tradition, highly reputed heavy duty machining capability has been succeeded without any compromise even though Niigata focused and emphasized the speed in the machining of larger components. The heavy duty machining capability and the high production, the harmony of best of the world comes true from NIIGATA. More parts, less machining time and the need for fewer machines adds up to a faster return on your investment and more profits for your company.

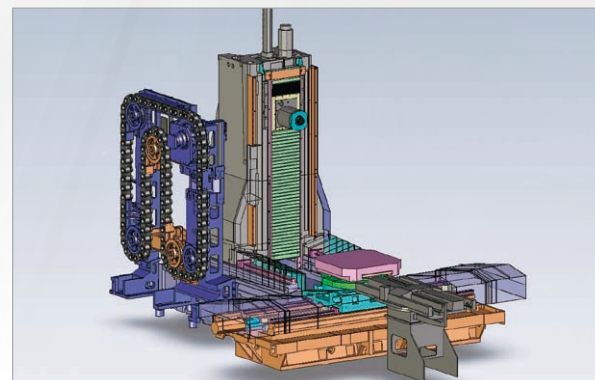
The new "NIIGATA HN-S Series" is the new world leader for the metalworking industries.

SOLID, WELL ENGINEERED COMPONENTS ACHIEVE ENHANCED PRODUCTIVITY

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 new HN-S Series, have been engineered to maximize metal cutting efficiency.



*Niigata's unique design:
Bifurcated Bell-shaped Column*



STURDY TABLE DESIGN SUPPORT HEAVIER LOAD CAPACITY

The pallet clamping system adopts a stable clamber plate that provides super stability of the pallet during heavy duty machining. Pallets are located with precision accuracy by cone-shaped tapered pins. the precision cone positioning system insures long-term accuracy and reliability.



NIIGATA'S UNIQUE DESIGN "HYBRID STYLE" GUIDEWAY SYSTEM

Building on a century of machine tool design and innovation, Niigata is proud to be recognized as a world leader and specialist in horizontal machining centers. Niigata continues to innovate in introducing new S-Series with hybrid style guideway system.

Niigata's unique design on hybrid guideway system employs ultra rigid large roller guide system on X and Z axes to achieve no sacrifice of the capability of heavy duty machining.

And Y axis adopts a hardened and ground box way system which provides a vibration dampening system at the tool point in a wide range of machining needs to improve the accuracy of your workpieces and longevity of the tool lives as well.

HN800-S: 2500kg (5500lbs)
HN1000-S: 3500kg (7700lbs) /
Option 5000kg (11000lbs) *1
HN1250-S: 3500kg (7700lbs) /
Option 5000kg (11000lbs) *1
HN1600-S: 8000kg (17600lbs) /
Option 10000kg (22000lbs)
*1: Available with NC table only

OUTSTANDING CHIP REMOVAL PROVES SUBSTANTIAL MACHINE RIGIDITY

HIGH TORQUE HEAVY DUTY SPINDLE

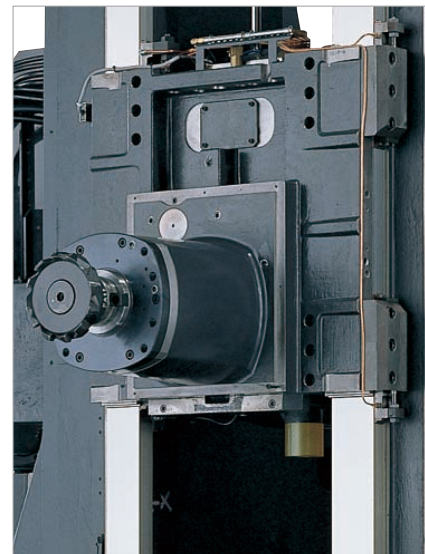
	6000min ⁻¹ (rpm) Standard
POWER	37 kW {50 HP}
TORQUE	1200 N·m {886 ft.lbs}

The rugged and reliable spindle employs wide-spaced, super precision tapered roller and angular contact bearings with a 110mm (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.

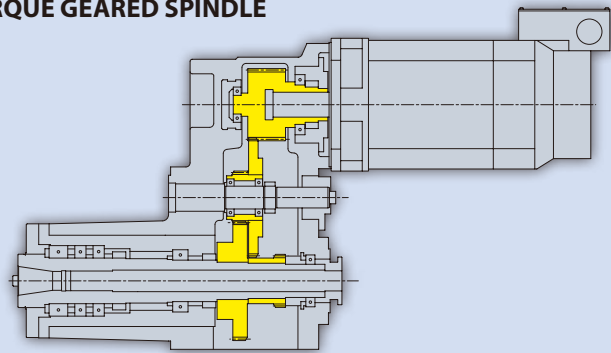
Super High Torque Spec. spindle is also available for the machining needs of the tough materials.



HIGH TORQUE GEARED SPINDLE

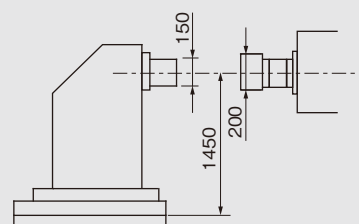
Full 37kW (50HP) cuts are achieved through an advanced (2) range head stock. With only (3) rotating components maximum power is transmitted simply and efficiently to the cutting tool.

HIGH TORQUE GEARED SPINDLE



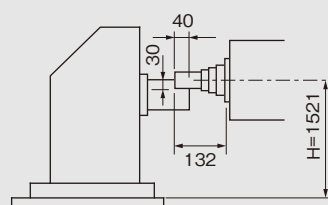
EXAMPLE OF HN1000-S's MACHINING PERFORMANCE

•Milling Cutter



- Material: S48C (Steel)
- Tool: $\phi 200$ -10T Milling Cutter
- Depth of Cut: 5mm (0.197")
- Cutting Width: 150mm (5.9")
- Spindle Speed: 250min⁻¹ (250rpm)
- Feed Rate: 875mm/min

•End Milling



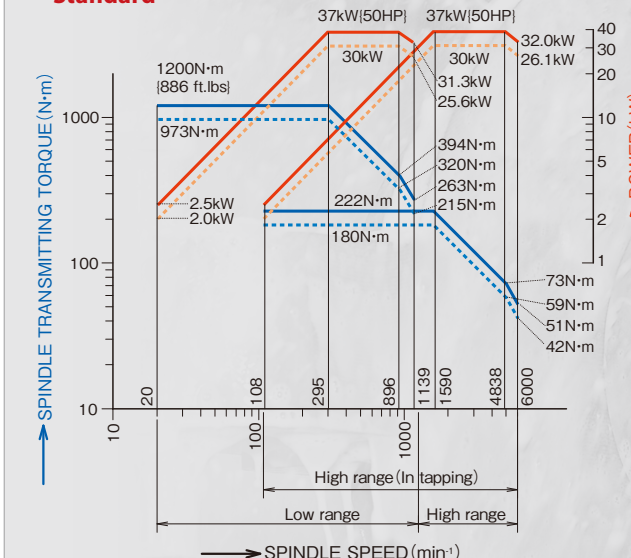
- Material: S48C (Steel)
- Tool: $\phi 63$ -T4
- Spindle Speed: 707min⁻¹ (707rpm)
- Feed Rate: 565mm/min
- Spindle Load: 77%

VARIETY OF HIGH PERFORMANCE SPINDLES

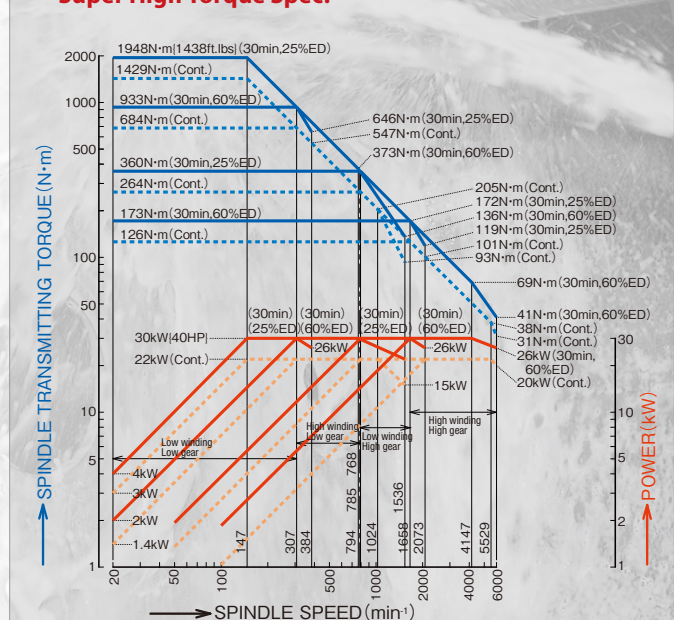
The spindle performance is one of key features of the capability of the machine. The spindle provide Speed, Power, and Accuracy for full range of cutting conditions. The Niigata high performance spindle with the power and torque complement the extremely rigid machine frame structure.

	① 6000min ⁻¹ (rpm) Standard	② 6000min ⁻¹ (rpm) Super High Torque Spec. (Option)	③ 15000min ⁻¹ (rpm) High Power Spec. (Option)	BAR Spindle (W axis) 3500min ⁻¹ (rpm) (Option-see P12-P13)
POWER	37 kW {50 HP}	30 kW {40 HP}	45 kW {60 HP}	30 kW {40 HP}
TORQUE	1200 N·m {886 ft.lbs}	1948 N·m {1438 ft.lbs}	400 N·m {295 ft.lbs}	1836 N·m {1354 ft.lbs}

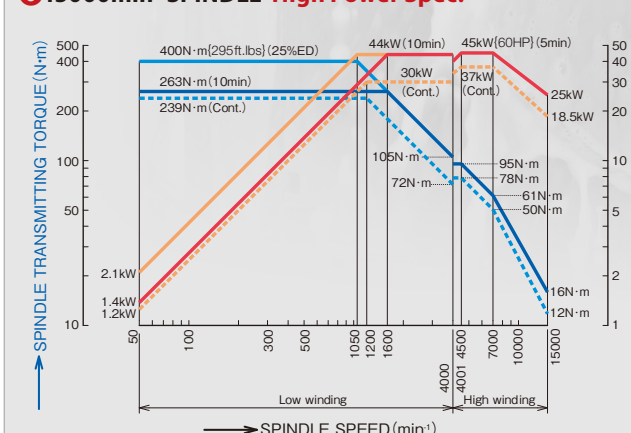
① SPINDLE SPEED AND TORQUE DIAGRAM Standard



② SPINDLE SPEED AND TORQUE DIAGRAM Super High Torque Spec.



③ 15000min⁻¹ SPINDLE High Power Spec.



DESIGN DETAILS FOCUSED ON OPERATOR FRIENDLINESS

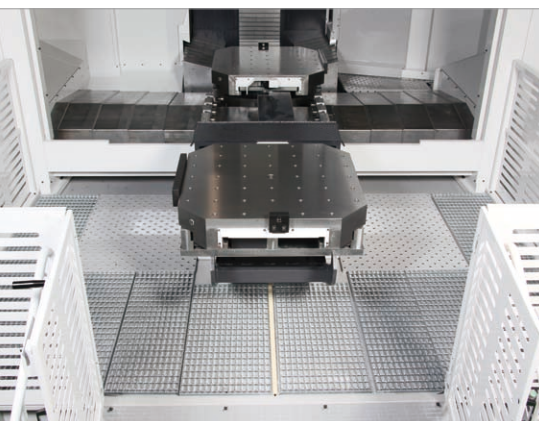


EXCELLENT ACCESSIBILITY TO THE WORK ZONE

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.



CENTRALIZED OPERATOR CONSOLE

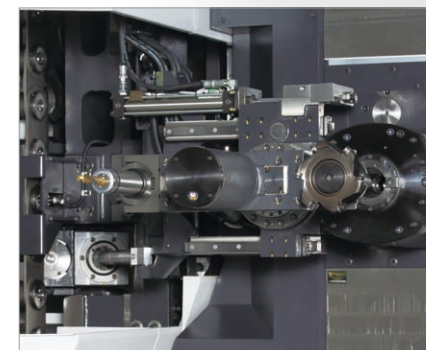
The control panel is strategically located at the most convenient position so the operator can easily monitor the workpiece and machining operations, while utilizing the control functions. Hand held manual pulse generator is compact and light for operator-friendly handling.

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.



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

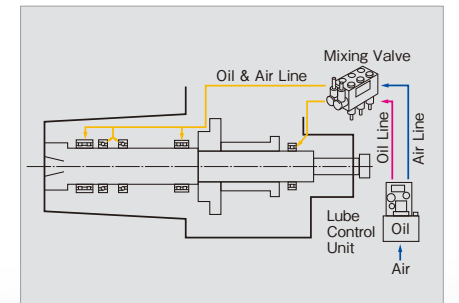
Tool magazine is driven by a servo motor for fast and reliable indexing. An electric servo motor positions the tool loader, insuring fast, smooth motion during a tool change. The tool inspection and loading/unloading during automatic operation are available and are standard features. The tool magazine 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⁻¹(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 HN1600-S)
- Scale Feedback System XYZ axes (Available as an Option on HN800-S)
- 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 HN1000-S and HN1250-S
- 10000kg (22000lbs) on HN1600-S
- Idle Self Rotation on 2APC System (Available on HN800-S Only)

PALLET and PALLET CHANGER SYSTEM

- Carousel Type Multiple Pallet Changer 6/8/10/12 APC System (Only 6 APC with HN1000-S / Not Available on HN1600-S 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

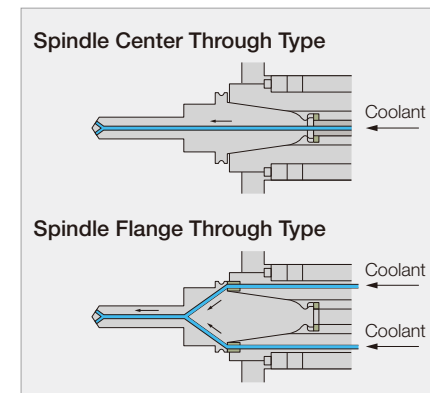
- Advanced Unmanned Monitoring System: Niigata NM24 Monitor Ace
- Spindle Probing System
- Table Probing System
- Tool Breakage Detector System LS-Z Type
- Four Face Part Program Control Function

SPINDLE

- BIG PLUS Spindle
- HSK Spindle
- BAR Spindle - W axis (see P12 - P13)

OPTIONAL FEATURES

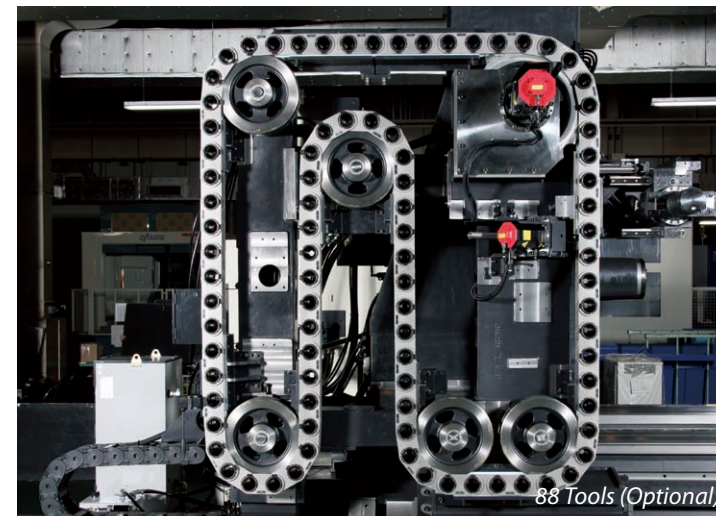
HIGH PRESSURE COOLANT THROUGH SPINDLE



LIFT-UP EXTERNAL CONVEYOR AND COOLANT TANK



NIIGATA HN-SERIES MODULAR DESIGN CONCEPT FIELD EXPANDABLE ATC MAGAZINE



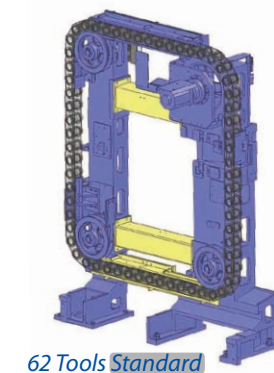
MATRIX TYPE AUTOMATIC TOOL CHANGE SYSTEM



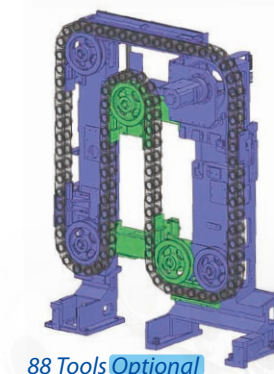
MULTIPLE PALLET MAGAZINE Carousel Type APC System



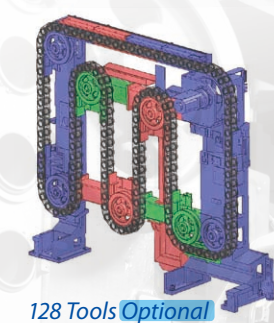
LINEAR PALLET MAGAZINE SYSTEM WITH NIIGATA ICC SYSTEM CONTROLLER



62 Tools Standard

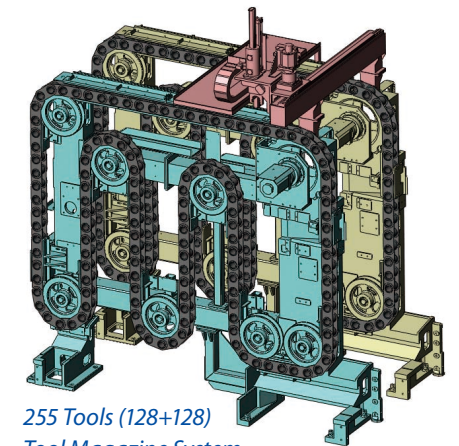


88 Tools Optional



128 Tools Optional

EXAMPLE OF AUTO TOOL CHANGE SYSTEM (Chain Type)



255 Tools (128+128)
Tool Magazine System

ADVANCED UNMANNED MONITORING SYSTEM NIIGATA NM24 MONITOR ACE



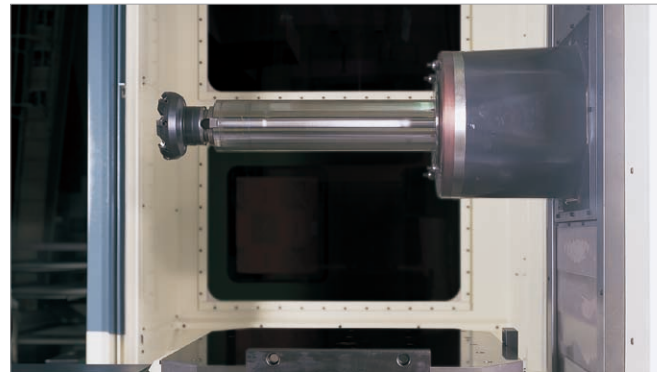
KEY FEATURES

- 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

THE HORIZONTAL BAR CENTER **MODEL: HN-S BAR SERIES** BASED ON NIIGATA'S HEAVY DUTY, HYBRID STYLE, HIGH PRODUCTION HORIZONTAL MACHINING CENTER

BAR/QUILL CAPABILITY ON HORIZONTAL MACHINING CENTER

Niigata's model: HN-S 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.



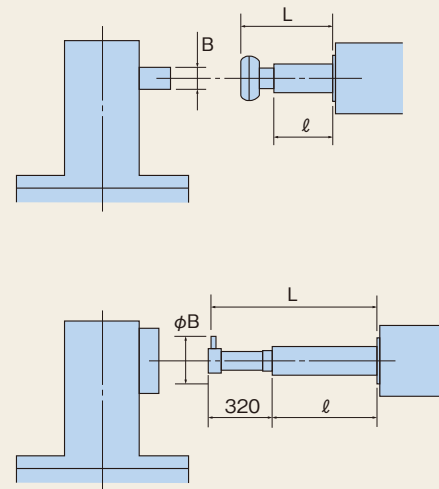
EXAMPLE OF NIIGATA BAR CENTER'S MACHINING PERFORMANCE (Medium Carbon Steel S45C)

Face Mill

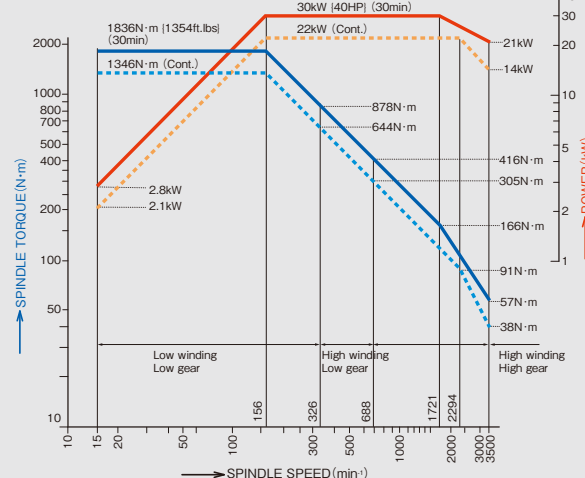
W axis extension	I	55mm {2.2inches}	220mm {8.7inches}
Cutting position from spindle surface	L	160mm {6.3inches}	325mm {12.8inches}
Cutting volume		691mm³/min{42cu.inch}	605mm³/min{37cu.inch}
Tool diameter		160mm {6.3inches}	160mm {6.3inches}
Width of cut	B	120mm {4.7inches}	120mm {4.7inches}
Depth of cut		8mm {0.32inches}	7mm {0.28inches}
Spindle speed		330min⁻¹	300min⁻¹
Feed rate		720mm/min {28.3ipm}	720mm/min {28.3ipm}

Boring

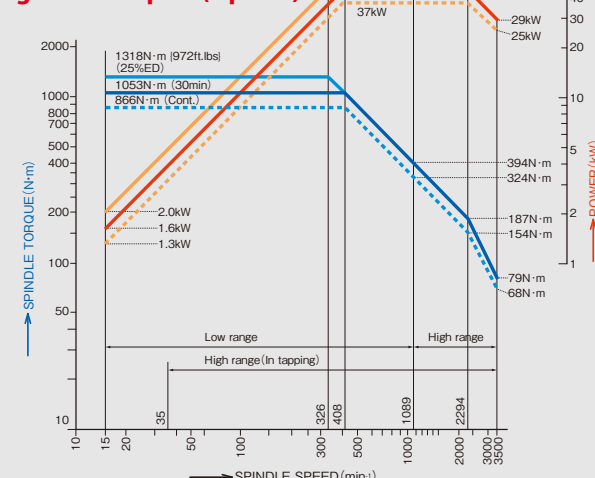
W axis extension	I	365mm {14.4inches}	535mm {21inches}
Cutting position from spindle surface	L	685mm {27inches}	855mm {33.7inches}
Cutting volume		272mm³/min{17cu.inch}	188mm³/min{12cu.inch}
Bore diameter	B	240mm {9.4inches}	228mm {9.0inches}
Depth of cut		7mm {0.28inches}	6mm {0.24inches}
Spindle speed		150min⁻¹	168min⁻¹
Feed rate		53mm/min {2.1ipm}	45mm/min {1.8ipm}



3500min⁻¹ (rpm) Standard



3500min⁻¹ (rpm) High Power Spec. (Option)



SUPERIOR FEATURES OVER THE TRADITIONAL BORING MILLS

•RIGID SPINDLE SNOOT

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.

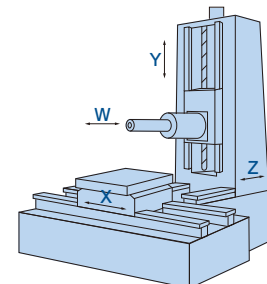
•ERGONOMICALLY SUPERIOR

A full enclosure is standard, along with automatic tool changer and pallet changer to maximize the performance and productivity of your operation.

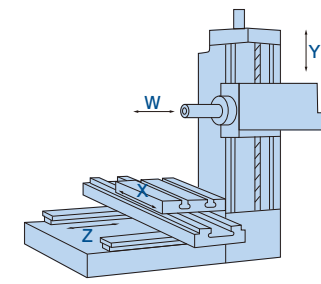
•TRUE COOLANT THRU THE SPINDLE

- Better cutting conditions.
- Longer tool life.
- Superior chip removal.
- Not available from some competitors.
- Special tool holders are not required.

NIIGATA BAR MACHINE

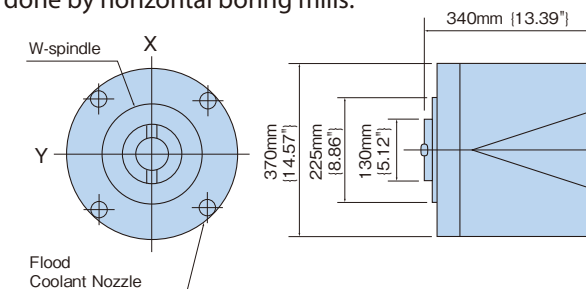


TYPICAL BORING MILL



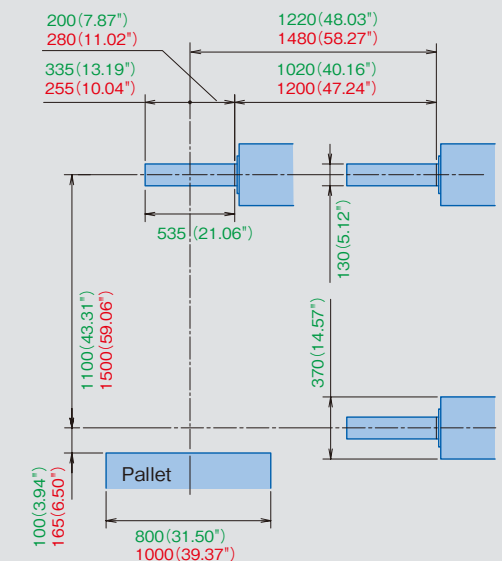
RIGID / HEAD STOCK DESIGN

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



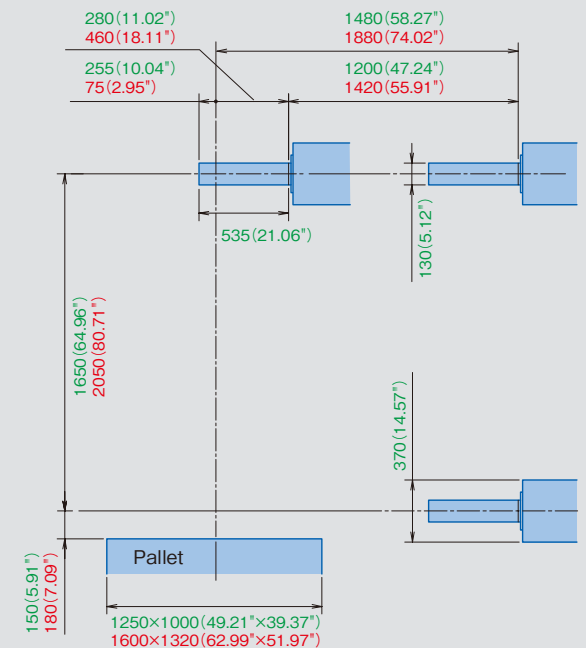
SPINDLE DISTANCES

■ : HN800-S BAR
■ : HN1000-S BAR
Unit:mm (inch)



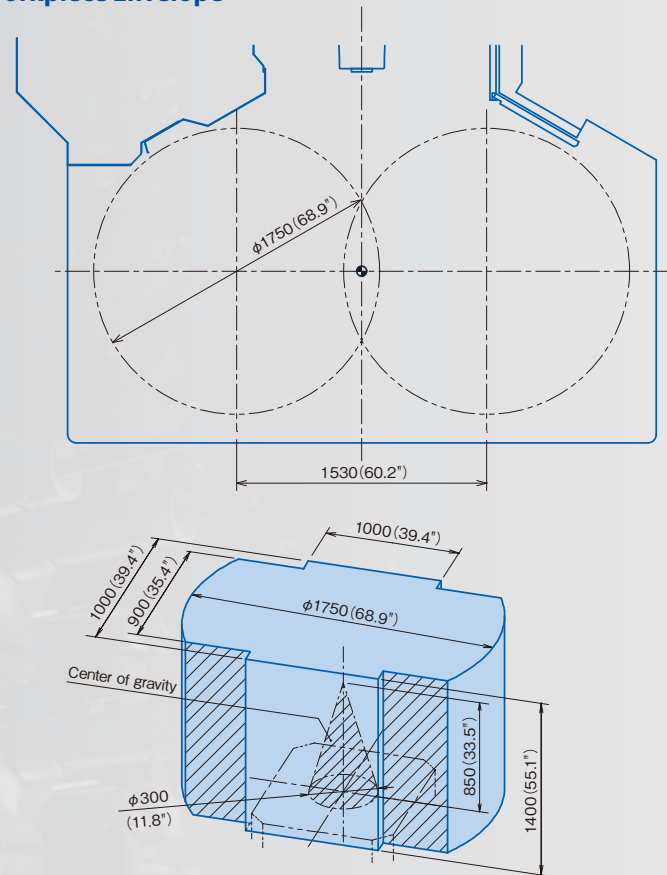
SPINDLE DISTANCES

■ : HN1250-S BAR
■ : HN1600-S BAR
Unit:mm (inch)

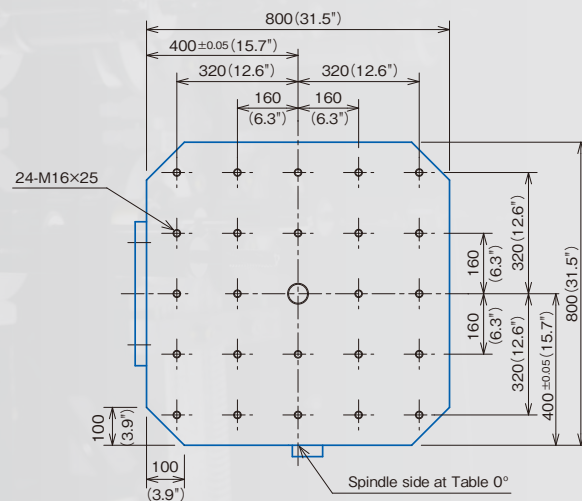


1000

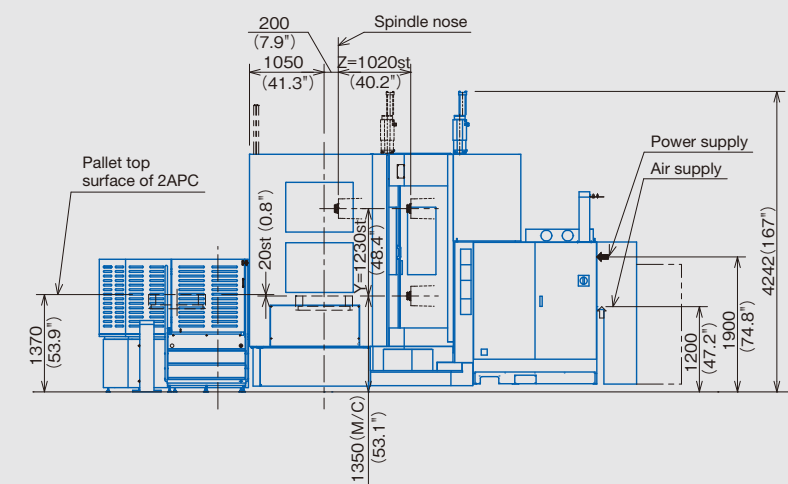
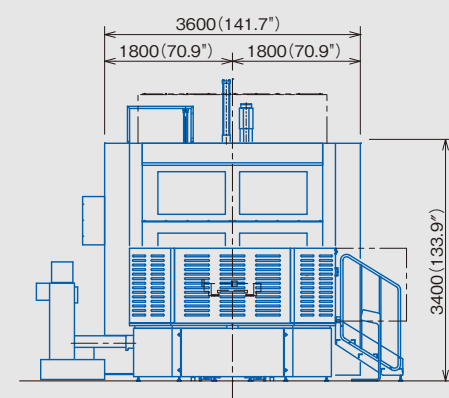
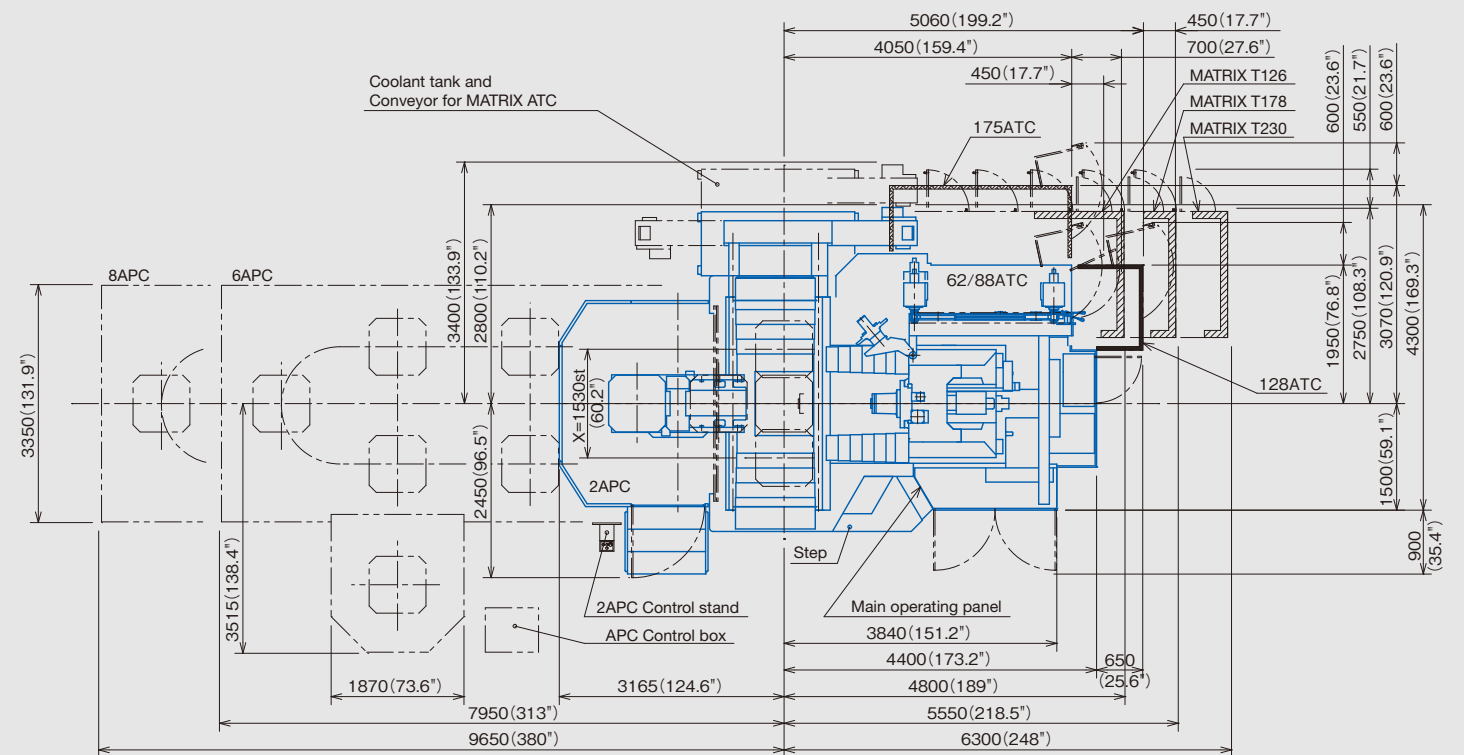
Maximum Workpiece Envelope



Standard Pallet Top Surface



HN800-S Plan View

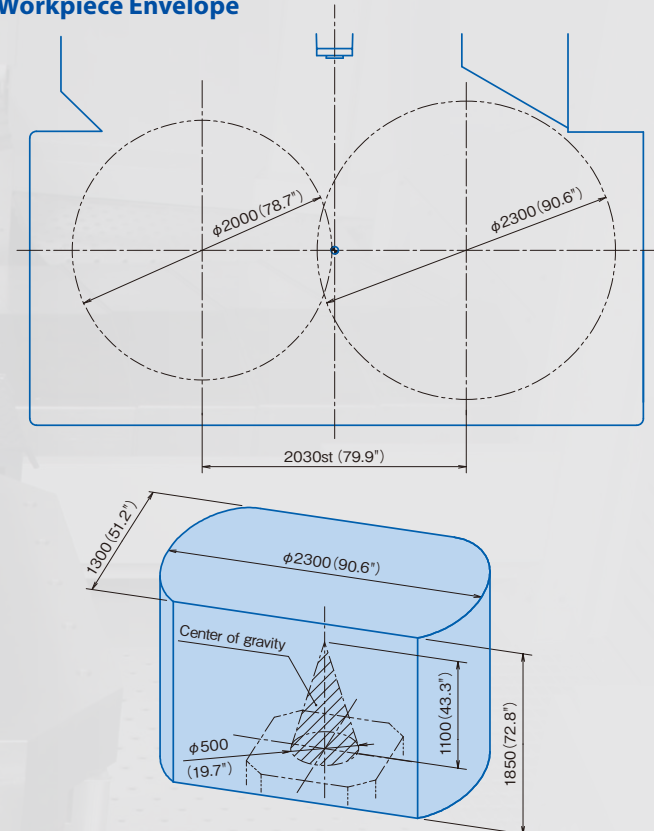


LARGEST WORK ENVELOPE IN ITS CLASS

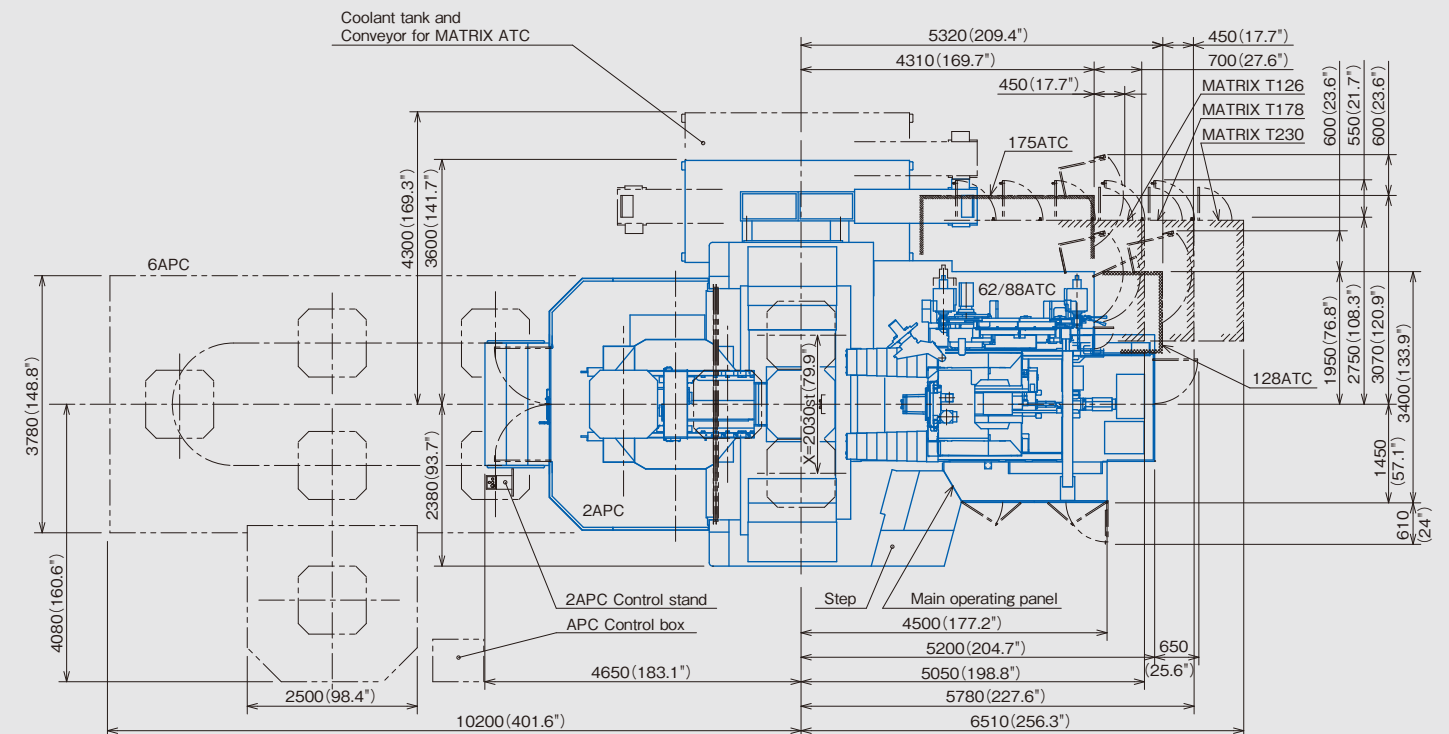
φ2300mm{90.6"} SWING DIAMETER INSIDE MACHINE

Unit : mm(inch)

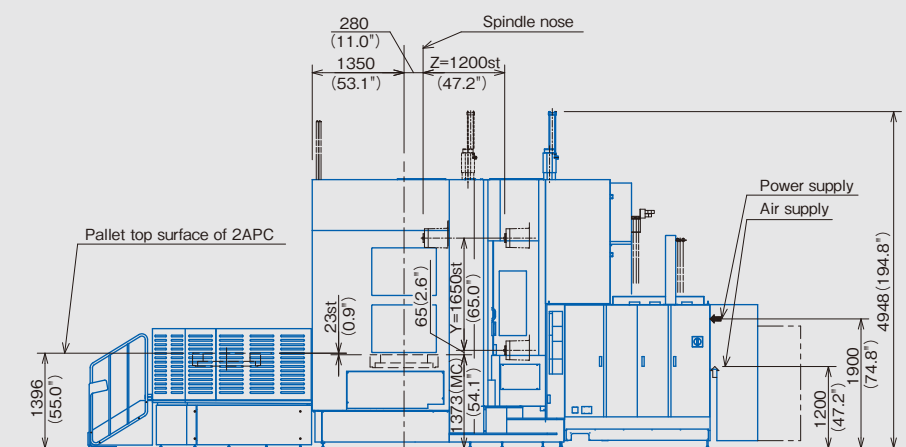
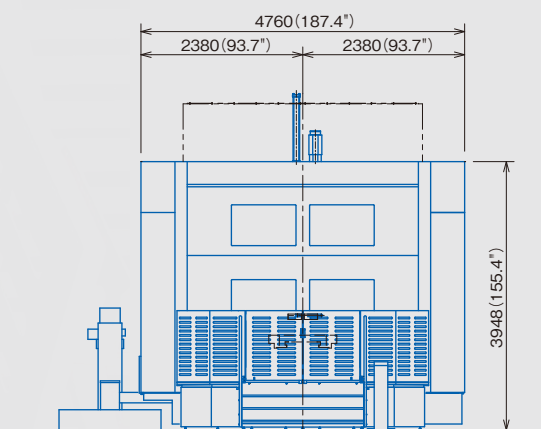
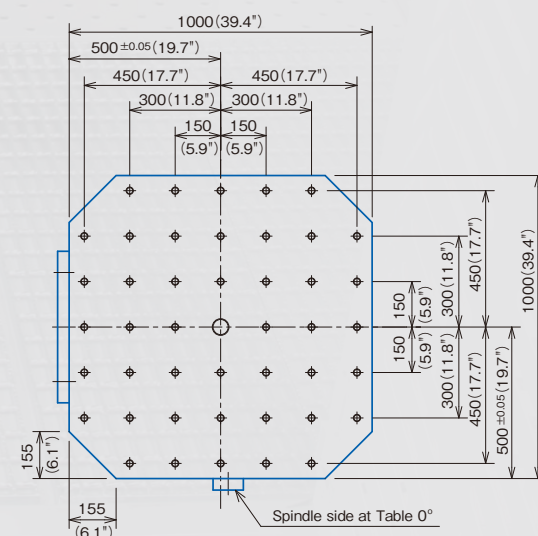
Maximum Workpiece Envelope



HN1000-S Plan View



Standard Pallet Top Surface



LARGEST WORK ENVELOPE IN ITS CLASS

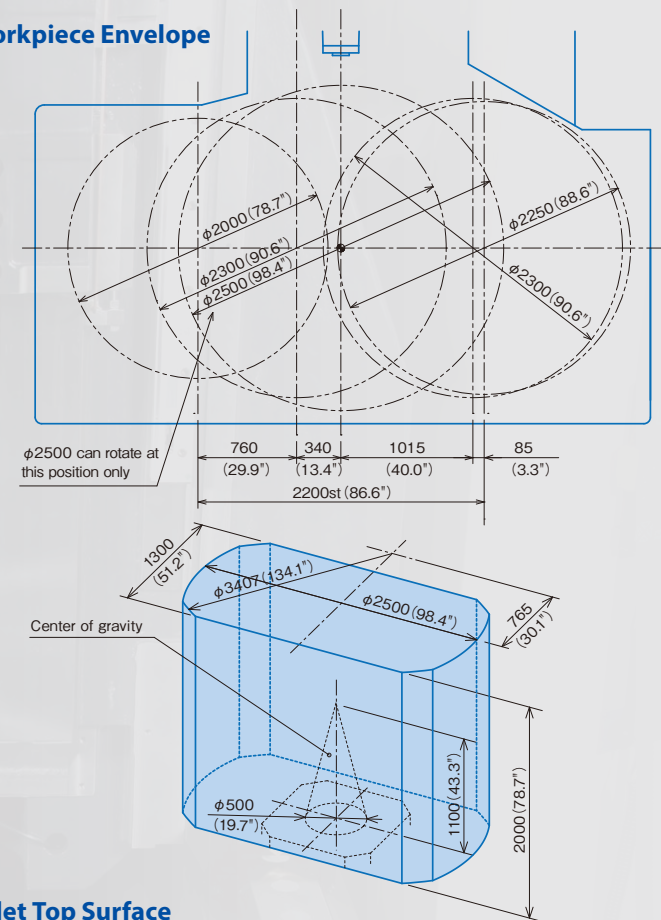
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N/GATA

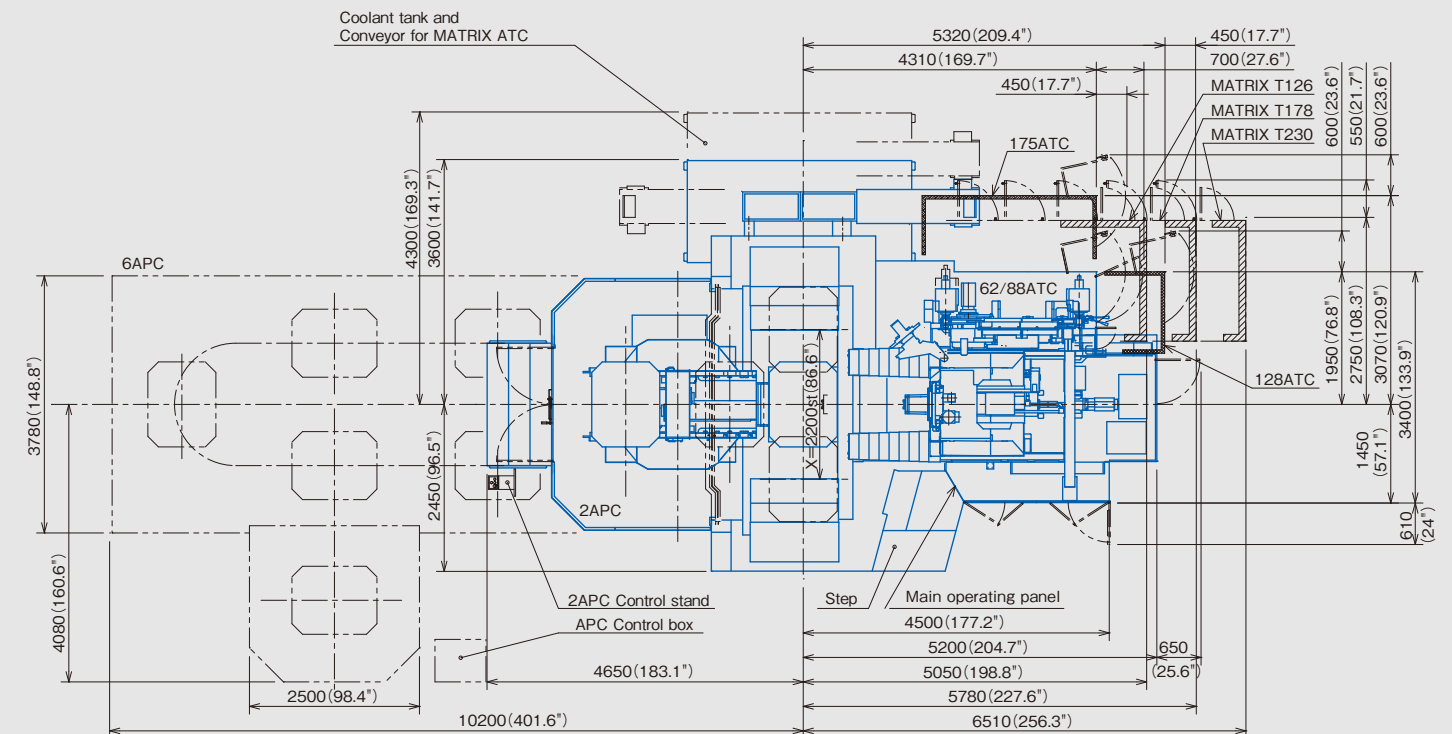
HN1250-S

Unit : mm(inch)

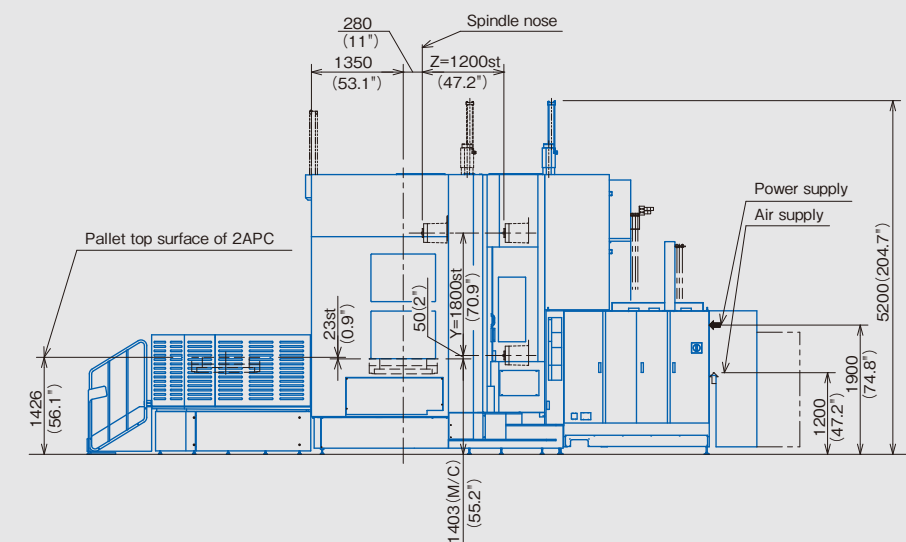
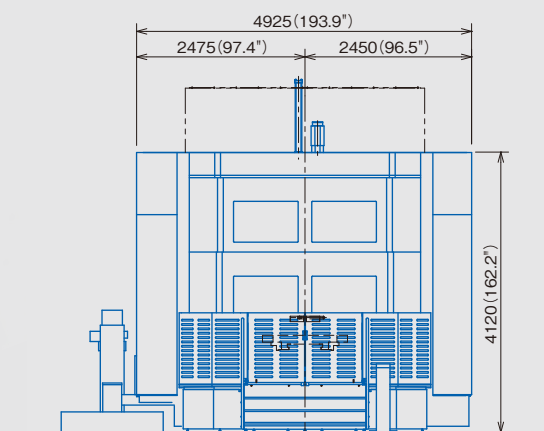
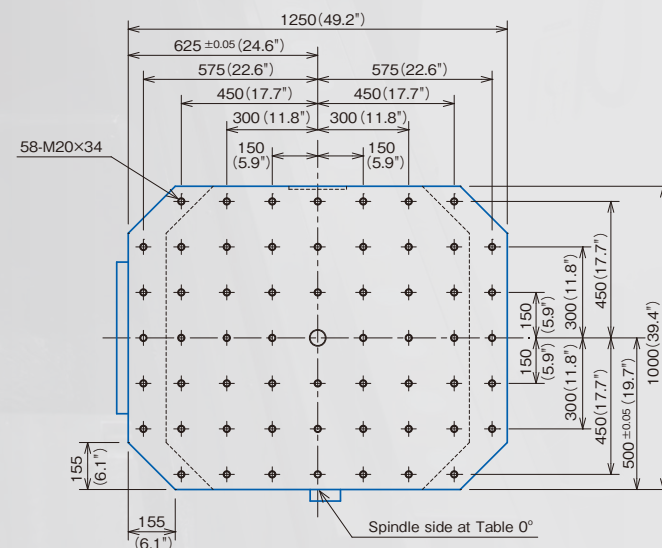
Maximum Workpiece Envelope



HN1250-S Plan View



Standard Pallet Top Surface

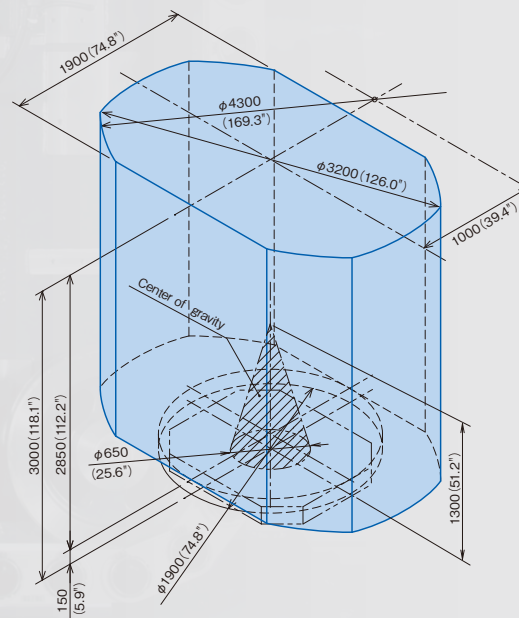
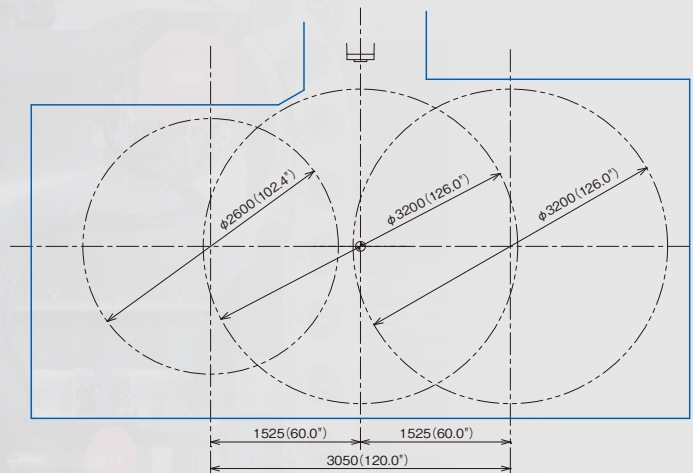


LARGEST WORK ENVELOPE IN ITS CLASS

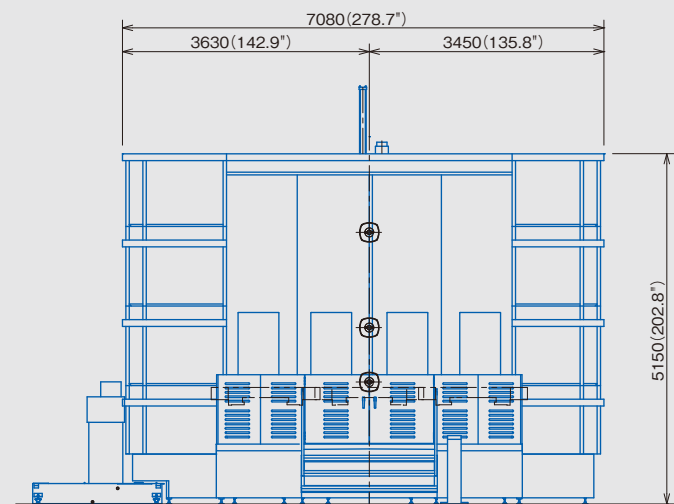
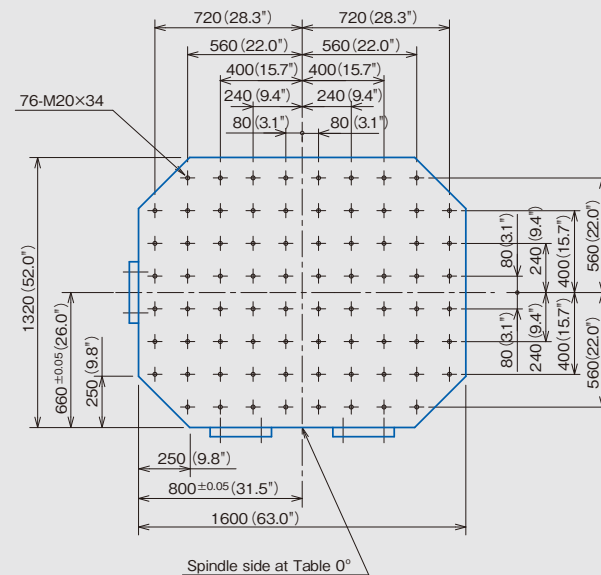
φ3200mm{126.0"} SWING DIAMETER INSIDE MACHINE

Unit : mm(inch)

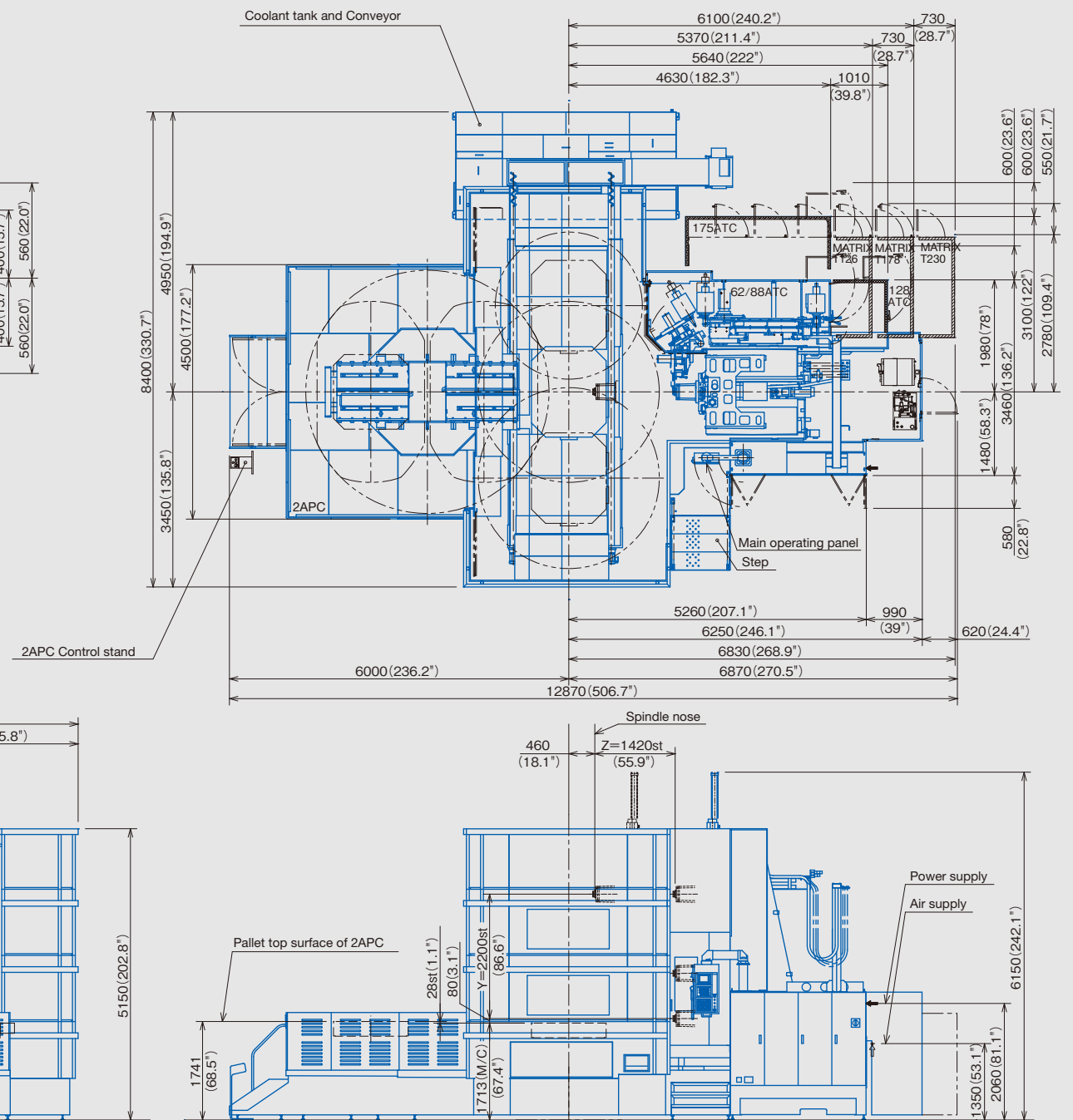
Maximum Workpiece Envelope



Standard Pallet Top Surface



HN1600-S Plan View



	ITEM	HN800-S		HN1000-S	
		Metric	Inch	Metric	Inch
TRAVEL	X axis travel (longitudinal table)	1530 mm	60.2 "	2030 mm	79.92 "
	Y axis travel (vertical head)	1230 mm	48.4 "	1650 mm	64.96 "
	Z axis travel (column in & out)	1020 mm	40.2 "	1200 mm	47.24 "
	Spindle center line to pallet surface	0 ~ 1230 mm	0 ~ 48.43 "	65 ~ 1715 mm	2.56 ~ 67.52 "
	Spindle nose to table center line	200 ~ 1220 mm	7.87 ~ 48.03 "	280 ~ 1480 mm	11.0 ~ 58.27 "
SPINDLE	Spindle drive motor	AC 37 / 30 kW	AC 50 / 40 HP	AC 37 / 30 kW	AC 50 / 40 HP
	Spindle speeds	6000 min ⁻¹	6000 rpm	6000 min ⁻¹	6000 rpm
	Spindle max. torque	1200 N • m	886 ft.lbs	1200 N • m	886 ft.lbs
	Spindle taper	No.50	No.50	No.50	No.50
FEEDRATE	Rapid traverse X axis	41 m/min	1614 ipm	40 m/min	1575 ipm
	Y axis	41 m/min	1614 ipm	40 m/min	1575 ipm
	Z axis	41 m/min	1614 ipm	40 m/min	1575 ipm
	Cutting X - Y - Z	1 ~ 20000 mm/min	0.04 ~ 787 ipm	1 ~ 20000 mm/min	0.04 ~ 787 ipm
	Table index speed / 1° table	12 min ⁻¹	12 rpm	5 min ⁻¹	5 rpm
	NC table	11.1 min ⁻¹	11.1 rpm	4 min ⁻¹	4 rpm
	5000 kg with NC table	N / A	N / A	2 min ⁻¹	2 rpm
	ITEM	HN800-S BAR		HN1000-S BAR	
		Metric	Inch	Metric	Inch
TRAVEL	X axis travel (longitudinal table)	1530 mm	60.2 "	2030 mm	79.92 "
	Y axis travel (vertical head)	1100 mm	43.3 "	1500 mm	59.06 "
	Z axis travel (column in & out)	1020 mm	40.2 "	1200 mm	47.24 "
	W axis travel	535 mm	21.1 "	535 mm	21.1 "
	Spindle center line to pallet surface	100 ~ 1200 mm	3.9 ~ 47.2 "	165 ~ 1665 mm	6.50 ~ 65.55 "
SPINDLE	Spindle nose to table center line	200 ~ 1220 mm	7.87 ~ 48.03 "	280 ~ 1480 mm	11.0 ~ 58.27 "
	Spindle drive motor	AC 30 / 22 kW	AC 40 / 30 HP	AC 30 / 22 kW	AC 40 / 30 HP
	Spindle speeds	3500 min ⁻¹	3500 rpm	3500 min ⁻¹	3500 rpm
	Spindle max. torque	1836 N • m	1354 ft.lbs	1836 N • m	1354 ft.lbs
	Spindle taper	No.50	No.50	No.50	No.50
FEEDRATE	Rapid traverse X axis	41 m/min	1614 ipm	40 m/min	1575 ipm
	Y axis	41 m/min	1614 ipm	40 m/min	1575 ipm
	Z axis	41 m/min	1614 ipm	40 m/min	1575 ipm
	W axis	5 m/min	197 ipm	5 m/min	197 ipm
	Cutting X axis	1 ~ 20000 mm/min	0.04 ~ 787 ipm	1 ~ 20000 mm/min	0.04 ~ 787 ipm
	Y–Z axis	1 ~ 20000 mm/min	0.04 ~ 787 ipm	1 ~ 20000 mm/min	0.04 ~ 787 ipm
	W axis	1 ~ 4000 mm/min	0.04 ~ 157 ipm	1 ~ 4000 mm/min	0.04 ~ 157 ipm
	Table index speed / 1° table	12 min ⁻¹	12 rpm	5 min ⁻¹	5 rpm
	NC table	11.1 min ⁻¹	11.1 rpm	4 min ⁻¹	4 rpm
	5000kg with NC table	N / A	N / A	2 min ⁻¹	2 rpm
TABLE	Table working surface	800 × 800 mm	31.5 × 31.5 "	1000 × 1000 mm	39.4 × 39.4 "
	Table increments	1° [0.001°]	1° [0.001°]	1° [0.001°]	1° [0.001°]
	Maximum mass on pallet	2500 kg	5500 lbs	3500 kg [5000 kg]	7700 lbs [11000 lbs]
AUTOMATIC TOOL CHANGER (ATC)	Tool magazine capacity	62 [88/128/175/255] Field Expandable [126/178/230] Matrix Style	62 [88/128/175/255] Field Expandable [126/178/230] Matrix Style	62 [88/128/175/255] Field Expandable [126/178/230] Matrix Style	62 [88/128/175/255] Field Expandable [126/178/230] Matrix Style
	Tool selection	Short cut random	Short cut random	Short cut random	Short cut random
	Tool shank	BT 50	CT 50	BT 50	CT 50
	Maximum tool length	610 mm	24 "	610 mm	24 "
	Maximum milling cutter dia.	120 mm	4.7 "	120 mm	4.7 "
	Ditto adjacent pockets empty	230 mm	9.1 "	230 mm	9.1 "
	Maximum tool mass (weight)	30 kg [35 kg]	66 lbs [77 lbs]	30 kg [35 kg]	66 lbs [77 lbs]
	Tool change time (tool to tool)	6.5 s	6.5 sec.	6.5 s	6.5 sec.
	Type	Rotary shuttle	Rotary shuttle	Rotary shuttle	Rotary shuttle
	Pallet change time	53 s	53 sec.	75 s	75 sec.
AUTOMATIC PALLET CHANGER (APC)	5000 kg with NC table	N / A	N / A	120 s	120 sec.
	Number of pallets	2	2	2	2
ACCURACY	Positioning / full stroke X - Y - Z	± 0.004 mm	± 0.00016 "	N / A	N / A
	Ditto with scales X - Y - Z	± 0.003 mm	± 0.00012 "	± 0.004 mm	± 0.00016 "
	Repeatability X - Y - Z	± 0.002 mm	± 0.00008 "	N / A	N / A
	Ditto with scales X - Y - Z	± 0.0015 mm	± 0.00006 "	± 0.0015 mm	± 0.00006 "
	Table index 360 position	± 3 "	± 3 "	± 3 "	± 3 "
GENERAL	Machine weight approx.	25000 kg	55000 lbs	35000 kg	77000 lbs
	Power	95 kVA	95 kVA	121 kVA	121 kVA
	Control	Fanuc 30 iM (31 iM)	Fanuc 30 iM (31 iM)	Fanuc 30 iM (31 iM)	Fanuc 30 iM (31 iM)

Figures in [] indicate optional features.

	ITEM	HN1250-S		HN1600-S	
		Metric	Inch	Metric	Inch
TRAVEL	X axis travel (longitudinal table)	2200 mm	86.61 "	3050 mm	120.1 "
	Y axis travel (vertical head)	1800 mm	70.87 "	2200 mm	86.61 "
	Z axis travel (column in & out)	1200 mm	47.24 "	1420 mm	55.9 "
	Spindle center line to pallet surface	50 ~ 1850 mm	1.97 ~ 72.83 "	80 ~ 2280 mm	3.15 ~ 89.76 "
	Spindle nose to table center line	280 ~ 1480 mm	11.0 ~ 58.27 "	460 ~ 1880 mm	18.1 ~ 74.0 "
SPINDLE	Spindle drive motor	AC 37 / 30 kW	AC 50 / 40 HP	AC 37 / 30 kW	AC 50 / 40 HP
	Spindle speeds	6000 min ⁻¹	6000 rpm	6000 min ⁻¹	6000 rpm
	Spindle max. torque	1200 N • m	886 ft.lbs	1200 N • m	886 ft.lbs
	Spindle taper	No.50	No.50	No.50	No.50
FEEDRATE	Rapid traverse X axis	40 m/min	1575 ipm	30 m/min	1181 ipm
	Y axis	40 m/min	1575 ipm	30 m/min	1181 ipm
	Z axis	40 m/min	1575 ipm	30 m/min	1181 ipm
	Cutting X - Y - Z	1 ~ 20000 mm/min	0.04 ~ 787 ipm	1 ~ 15000 mm/min	0.04 ~ 591 ipm
	Table index speed / 1° table	5 min ⁻¹	5 rpm	N / A	N / A
	NC table	4 min ⁻¹	4 rpm	2 min ⁻¹	2 rpm
	5000 kg (HN1250-S), 10000 kg (HN1600-S) with NC table	2 min ⁻¹	2 rpm	N / A	N / A
	ITEM	HN1250-S BAR		HN1600-S BAR	
		Metric	Inch	Metric	Inch
TRAVEL	X axis travel (longitudinal table)	2200 mm	86.61 "	3050 mm	120.1 "
	Y axis travel (vertical head)	1650 mm	64.96 "	2050 mm	80.71 "
	Z axis travel (column in & out)	1200 mm	47.24 "	1420 mm	55.9 "
	W axis travel	535 mm	21.1 "	535 mm	21.1 "
	Spindle center line to pallet surface	150 ~ 1800 mm	5.91 ~ 70.87 "	180 ~ 2230 mm	7.09 ~ 87.80 "
SPINDLE	Spindle nose to table center line	280 ~ 1480 mm	11.0 ~ 58.27 "	460 ~ 1880 mm	18.1 ~ 74.02 "
	Spindle drive motor	AC 30 / 22 kW	AC 40 / 30 HP	AC 30 / 22 kW	AC 40 / 30 HP
	Spindle speeds	3500 min ⁻¹	3500 rpm	3500 min ⁻¹	3500 rpm
	Spindle max. torque	1836 N • m	1354 ft.lbs	1836 N • m	1354 ft.lbs
	Spindle taper	No.50	No.50	No.50	No.50
FEEDRATE	Rapid traverse X axis	40 m/min	1575 ipm	30 m/min	1181 ipm
	Y axis	40 m/min	1575 ipm	30 m/min	1181 ipm
	Z axis	40 m/min	1575 ipm	30 m/min	1181 ipm
	W axis	5 m/min	197 ipm	5 m/min	197 ipm
	Cutting X axis	1 ~ 20000 mm/min	0.04 ~ 787 ipm	1 ~ 15000 mm/min	0.04 ~ 591 ipm
	Y–Z axis	1 ~ 20000 mm/min	0.04 ~ 787 ipm	1 ~ 15000 mm/min	0.04 ~ 591 ipm
	W axis	1 ~ 4000 mm/min	0.04 ~ 157 ipm	1 ~ 4000 mm/min	0.04 ~ 157 ipm
	Table index speed / 1° table	5 min ⁻¹	5 rpm	N / A	N / A
	NC table	4 min ⁻¹	4 rpm	2 min ⁻¹	2 rpm
	5000 kg (HN1250-S), 10000kg (HN1600-S) with NC table	2 min ⁻¹	2 rpm	N / A	N / A
TABLE	Table working surface	1250 × 1000 mm	49.2 × 39.4 "	1600 × 1320 mm	62.99 × 51.97 "
	Table increments	1° [0.001°]	1° [0.001°]	0.001°	0.001°
	Maximum mass on pallet	3500 kg [5000 kg]	7700 lbs [11000 lbs]	8000 kg [10000 kg]	17600 lbs [22000 lbs]
AUTOMATIC TOOL CHANGER (ATC)	Tool magazine capacity	62 [88/128/175/255] Field Expandable [126/178/230] Matrix Style	62 [88/128/175/255] Field Expandable [126/178/230] Matrix Style	62 [88/128/175/255] Field Expandable [126/178/230] Matrix Style	62 [88/128/175/255] Field Expandable [126/178/230] Matrix Style
	Tool selection	Short cut random	Short cut random	Short cut random	Short cut random
	Tool shank	BT 50	CT 50	BT 50	CT 50
	Maximum tool length	610 mm	24 "	610 mm	24 "
	Maximum milling cutter dia.	120 mm	4.7 "	120 mm	4.7 "
	Ditto adjacent pockets empty	230 mm	9.1 "	230 mm	9.1 "
	Maximum tool mass (weight)	30 kg [35 kg]	66 lbs [77 lbs]	30 kg [35 kg]	66 lbs [77 lbs]
	Tool change time (tool to tool)	6.5 s	6.5 sec.	6.5 s	6.5 sec.
	Type	Rotary shuttle	Rotary shuttle	Rotary shuttle	Rotary shuttle
	Pallet change time	75 s	75 sec.	120 s	120 sec.
AUTOMATIC PALLET CHANGER (APC)	5000 kg (HN1250-S), 10000 kg (HN1600-S) with NC table	120 s	120 sec.	N / A	N / A
	Number of pallets	2	2	2	2
ACCURACY	Positioning / full stroke X - Y - Z	N / A	N / A	N / A	N / A
	Ditto with scales X - Y - Z	± 0.004 mm	± 0.00016 "	± 0.005 mm	± 0.0002 "
	Repeatability X - Y - Z	N / A	N / A	N / A	N / A
	Ditto with scales X - Y - Z	± 0.0015 mm	± 0.00006 "	± 0.0020 mm	± 0.00008 "
	Table index 360 position	± 3 "	± 3 "	N / A	N / A
GENERAL	Machine weight approx.	37500 kg	82500 lbs	65000 kg	143000 lbs
	Power	121 kVA	121 kVA	105 kVA	105 kVA
	Control	Fanuc 30 iM (31 iM)	Fanuc 30 iM (31 iM)	Fanuc 30 iM (31 iM)	Fanuc 30 iM (31 iM)