NIIGATA MACHINE TECHNO CO., LTD.
1300 Okayama, Higashi-ku, Niigata city, Niigata pref,
950-0821 Japan
Phone: +81-25-270-9011   Fax: +81-25-271-5827
http://www.n-mtec.com

NIIGATA MACHINE TECHNO USA, INC.
1501 Landmeier Road
Elk Grove Village, IL 60007
630-283-5880

UNRIVALED PERFORMANCE ─ HEAVY DUTY BOXWAY STYLE HORIZONTAL MACHINING CENTER

HN80D-II  HN100D-II  HN130D
HN80D-II BAR  HN100D-II BAR  HN130D BAR
HN80D-II FC  HN100D-II FC  HN130D FC

The contents herein are subject to change without notice.
All non-metric values are converted from metric measurements.
Copyright ©2015 NIIGATA MACHINE TECHNO CO., LTD. All right reserved.

2017.1.1000.SAN

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."

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’’)
- **Height**: 1400mm (55.1’’)

**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’’)
- **Height**: 1850mm (72.8’’)

**HN130D**
- **Travel**
  - X axis: 3050mm (120.1’’)
  - Y axis: 2200mm (86.6’’)
  - Z axis: 1420mm (55.9’’)
- **Max Workpiece Swing Diameter**: 3200mm (126’’)
- **Height**: 3000mm (118.1’’)

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: 1600cm³/min (99 cu.inch)

Super High Torque Heavy Duty Spindle

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

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.

Largest Work Zone

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.
NEWLY ENGINEERED MACHINE RIGIDITY
Niigata's reputation for superior machine rigidity and excellent cutting capability is widely accepted in the marketplace. All major components, such as the spindle, bed, column, and wing-base of the new HN80D-II / HN100D-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 SUPPORTS HEAVIEST LOAD CAPACITY
- HN80D-II: 2500 kg (5500 lbs)
- HN100D-II: 3500 kg (7700 lbs)
  [Optional 5000 kg (11000 lbs)
  On 4th axis table only]
- HN130D: 8000 kg (17600 lbs)
  [Optional 10000 kg (22000 lbs)]
OUTSTANDING CHIP REMOVAL PROVES SUBSTANTIAL MACHINE RIGIDITY

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 monoblock (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.

<table>
<thead>
<tr>
<th>SPINDLE SPEED AND TORQUE DIAGRAM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard</strong></td>
</tr>
<tr>
<td><strong>Super High Torque Spec. (option)</strong></td>
</tr>
</tbody>
</table>

**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)

MACHINING EXAMPLE

Name: Compressor Case
Material: Casting

Name: Axle Housing
Material: Ductile Cast Iron

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 clapper 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 : φ250mm (9.84")
  - V=80m/min (315ipm)
  - F=320m/min (per tip 0.07mm/12.6ipm (per tip 0.028") )
  - t=0.1mm (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.
EXEMPLARY 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.

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.

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.

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.
STANDARD EQUIPMENT

- 6000 min⁻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 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 Cover Type Splash and Chip Guarding System with Fluorescent Work Light (3PG)
- 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
- 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 Type
- Spindle Flange Through Coolant Device
- Coolant Level Low Level Sensing Device
- 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
- 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.)

HIGH PRESSURE COOLANT THROUGH SPINDLE
- Lift-Up External Conveyor Hinge-Pan Type
- Lift-Up External Conveyor with Filtration System
- Chip Bucket with Caster and Handles

EXAMPLE OF AUTO TOOL CHANGE SYSTEM (Chain Type)

Option Features

- High Pressure Coolant Through Spindle
- Linear Pallet Magazine System with Niigata ICC System Controller
- Optional Features
- Standard Equipment
- Optional Features
- Cutting Monitoring Function
- High Pressure Coolant Through Spindle
- Lift-Up External Conveyor and Coolant Tank
- Linear Pallet Magazine System with Niigata ICC System Controller
- Example of Auto Tool Change System (Chain Type)
- Key Features
  - Display on Machine Operational Screen: All Main Features Shown on Machine Operatioinal 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)
In Operation of W axis
In Operation of U axis

AXIS TRAVEL (HN100D-Ⅱ FC with Twin Facing Tool Head)
In Operation of W axis
In Operation of U axis

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.
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)

<table>
<thead>
<tr>
<th>Face Mill</th>
<th>W axis extension</th>
<th>L</th>
<th>Cutting position from spindle surface</th>
<th>L</th>
<th>Cutting volume</th>
<th>B</th>
<th>Depth of cut</th>
<th>Spindle speed</th>
<th>Feed rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>L16mm (0.62inches)</td>
<td>320</td>
<td></td>
<td>80</td>
<td>150min-1</td>
<td>40</td>
<td>7mm (0.28inches)</td>
<td>1000min-1</td>
<td>720mm/min</td>
</tr>
</tbody>
</table>

Superior features over the traditional boring mills

- RIGID SPINDLE SNUIT
  Reduces the need to extend the quill to reach the part.

- 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

3500min⁻¹ (rpm)
Standard

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

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

HN80D-Ⅱ HN80D-Ⅱ FC HN80D-Ⅱ BAR

Maximum Workpiece Envelope

Standard Pallet Top Surface

HN80D-Ⅱ Plan View

Unit : mm(inch)
LARGEST WORK ENVELOPE IN ITS CLASS
φ2300mm(90.6") SWING DIAMETER INSIDE MACHINE

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

HN130D  HN130D FC  HN130D BAR

Maximum Workpiece Envelope  Standard Pallet Top Surface  HN130D Plan View
### MACHINE SPECIFICATIONS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>HN800D-2</th>
<th>HN1000D-2</th>
<th>HN1100D</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TRAVEL</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X axis travel (longitudinal table)</td>
<td>1530 mm</td>
<td>2030 mm</td>
<td>3050 mm</td>
</tr>
<tr>
<td>Y axis travel (spindle quill)</td>
<td>760 mm</td>
<td>1000 mm</td>
<td>1420 mm</td>
</tr>
<tr>
<td>Z axis travel (column in &amp; out)</td>
<td>1020 mm</td>
<td>1200 mm</td>
<td>1420 mm</td>
</tr>
<tr>
<td><strong>TABLE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X axis travel (longitudinal table)</td>
<td>1530 mm</td>
<td>2030 mm</td>
<td>3050 mm</td>
</tr>
<tr>
<td>Y axis travel (spindle quill)</td>
<td>760 mm</td>
<td>1000 mm</td>
<td>1420 mm</td>
</tr>
<tr>
<td>Z axis travel (column in &amp; out)</td>
<td>1020 mm</td>
<td>1200 mm</td>
<td>1420 mm</td>
</tr>
<tr>
<td><strong>TOOL AUTOMATIC CHANGER (ATC)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tool selection</td>
<td>Fixed position</td>
<td>Fixed position</td>
<td>Fixed position</td>
</tr>
<tr>
<td>Tool size</td>
<td>No.50</td>
<td>No.50</td>
<td>No.50</td>
</tr>
<tr>
<td>Number of pallets</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Tool change time (tool to tool)</td>
<td>11.8 s</td>
<td>11.8 s</td>
<td>12.8 s</td>
</tr>
<tr>
<td>Number of tools</td>
<td>80</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td><strong>ACCURACY</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repeatability</td>
<td>X - Y - Z ± 0.002 mm</td>
<td>X - Y - Z ± 0.00008&quot;</td>
<td>N / A</td>
</tr>
<tr>
<td>Repeatability with scale</td>
<td>X - Y - Z ± 0.0015 mm</td>
<td>X - Y - Z ± 0.00006&quot;</td>
<td>± 0.002 mm</td>
</tr>
<tr>
<td>Table index</td>
<td>360 position ± 3&quot;</td>
<td>± 3&quot;</td>
<td>± 3&quot;</td>
</tr>
<tr>
<td><strong>FEEDRATE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rapid traverse</td>
<td>X axis 32 m/min</td>
<td>20 m/min</td>
<td>12 m/min</td>
</tr>
<tr>
<td>Y axis 32 m/min</td>
<td>20 m/min</td>
<td>12 m/min</td>
<td>6 m/min</td>
</tr>
<tr>
<td>Z axis 20 m/min</td>
<td>12 m/min</td>
<td>20 m/min</td>
<td>6 m/min</td>
</tr>
<tr>
<td><strong>AUTOMATIC PALLET CHANGER (APC)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tool selection</td>
<td>Fixed position</td>
<td>Fixed position</td>
<td>Fixed position</td>
</tr>
<tr>
<td>Tool size</td>
<td>No.50</td>
<td>No.50</td>
<td>No.50</td>
</tr>
<tr>
<td>Number of pallets</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Tool change time (tool to tool)</td>
<td>11.8 s</td>
<td>11.8 s</td>
<td>12.8 s</td>
</tr>
<tr>
<td>Number of tools</td>
<td>80</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td><strong>GENERAL</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Machine weight</td>
<td>25000 kg</td>
<td>30000 kg</td>
<td>65000 kg</td>
</tr>
<tr>
<td>Machine space</td>
<td>5490 / 7565 mm</td>
<td>5965 / 9850 mm</td>
<td>8445 / 12245 mm</td>
</tr>
<tr>
<td>Floor to table surface</td>
<td>1300 mm</td>
<td>1290 mm</td>
<td>1615 mm</td>
</tr>
<tr>
<td><strong>CONTROL</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power</td>
<td>78 kVA</td>
<td>78 kVA</td>
<td>75 kVA</td>
</tr>
<tr>
<td>Spindle bar dia.</td>
<td>130 mm</td>
<td>130 mm</td>
<td>130 mm</td>
</tr>
<tr>
<td>Maximum tool length</td>
<td>610 mm</td>
<td>610 mm</td>
<td>610 mm</td>
</tr>
<tr>
<td>Maximum tool mass (weight)</td>
<td>30 kg</td>
<td>30 kg</td>
<td>35 kg</td>
</tr>
<tr>
<td>Table index speed / 1° table</td>
<td>12 min-1</td>
<td>5 min-1</td>
<td>N / A</td>
</tr>
<tr>
<td>Maximum milling cutter dia.</td>
<td>120 mm</td>
<td>120 mm</td>
<td>120 mm</td>
</tr>
<tr>
<td>Table index</td>
<td>360 position ± 3&quot;</td>
<td>± 3&quot;</td>
<td>± 3&quot;</td>
</tr>
<tr>
<td>Diameter adjacent pockets empty</td>
<td>230 mm</td>
<td>230 mm</td>
<td>230 mm</td>
</tr>
<tr>
<td>Power</td>
<td>78 kVA</td>
<td>78 kVA</td>
<td>75 kVA</td>
</tr>
<tr>
<td>Spindle bar dia.</td>
<td>130 mm</td>
<td>130 mm</td>
<td>130 mm</td>
</tr>
<tr>
<td>Maximum tool length</td>
<td>610 mm</td>
<td>610 mm</td>
<td>610 mm</td>
</tr>
<tr>
<td>Maximum tool mass (weight)</td>
<td>30 kg</td>
<td>30 kg</td>
<td>35 kg</td>
</tr>
<tr>
<td>Table index speed / 1° table</td>
<td>12 min-1</td>
<td>5 min-1</td>
<td>N / A</td>
</tr>
<tr>
<td>Maximum milling cutter dia.</td>
<td>120 mm</td>
<td>120 mm</td>
<td>120 mm</td>
</tr>
<tr>
<td>Table index</td>
<td>360 position ± 3&quot;</td>
<td>± 3&quot;</td>
<td>± 3&quot;</td>
</tr>
<tr>
<td>Diameter adjacent pockets empty</td>
<td>230 mm</td>
<td>230 mm</td>
<td>230 mm</td>
</tr>
<tr>
<td>Power</td>
<td>78 kVA</td>
<td>78 kVA</td>
<td>75 kVA</td>
</tr>
<tr>
<td>Spindle bar dia.</td>
<td>130 mm</td>
<td>130 mm</td>
<td>130 mm</td>
</tr>
<tr>
<td>Maximum tool length</td>
<td>610 mm</td>
<td>610 mm</td>
<td>610 mm</td>
</tr>
<tr>
<td>Maximum tool mass (weight)</td>
<td>30 kg</td>
<td>30 kg</td>
<td>35 kg</td>
</tr>
<tr>
<td>Table index speed / 1° table</td>
<td>12 min-1</td>
<td>5 min-1</td>
<td>N / A</td>
</tr>
<tr>
<td>Maximum milling cutter dia.</td>
<td>120 mm</td>
<td>120 mm</td>
<td>120 mm</td>
</tr>
<tr>
<td>Table index</td>
<td>360 position ± 3&quot;</td>
<td>± 3&quot;</td>
<td>± 3&quot;</td>
</tr>
<tr>
<td>Diameter adjacent pockets empty</td>
<td>230 mm</td>
<td>230 mm</td>
<td>230 mm</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>ITEM</th>
<th>HN80D-FC</th>
<th>HN100D-Ⅱ FC</th>
<th>HN130D-Ⅱ FC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TRAVEL</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X axis travel (longitudinal table)</td>
<td>1650 mm</td>
<td>1350 mm</td>
<td>1350 mm</td>
</tr>
<tr>
<td>Y axis travel (longitudinal head)</td>
<td>1600 mm</td>
<td>1600 mm</td>
<td>1600 mm</td>
</tr>
<tr>
<td>Z axis travel (spindle)</td>
<td>1200 mm</td>
<td>1200 mm</td>
<td>1200 mm</td>
</tr>
<tr>
<td>Spindle nose to table center line</td>
<td>125 ~ 1145 mm</td>
<td>205 ~ 1405 mm</td>
<td>385 ~ 1805 mm</td>
</tr>
<tr>
<td><strong>TABLE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum mass allowable</td>
<td>2500 kg</td>
<td>3500 kg</td>
<td>8000 kg</td>
</tr>
<tr>
<td>Spindle drive motor</td>
<td>26/22 kW</td>
<td>35/30 HP</td>
<td>35/30 HP</td>
</tr>
<tr>
<td>Spindle speeds</td>
<td>2500 min-1</td>
<td>2500 rpm</td>
<td>2500 min-1</td>
</tr>
<tr>
<td>Spindle max. torque</td>
<td>659.5 N·m</td>
<td>487 ft·lbs</td>
<td>659.5 N·m</td>
</tr>
<tr>
<td>Facing head dia.</td>
<td>700 mm</td>
<td>700 mm</td>
<td>700 mm</td>
</tr>
<tr>
<td>Facing head speeds</td>
<td>600 min-1</td>
<td>600 rpm</td>
<td>600 min-1</td>
</tr>
<tr>
<td>U axis travel (facing slide)</td>
<td>130 mm</td>
<td>130 mm</td>
<td>130 mm</td>
</tr>
<tr>
<td>Y axis travel (vertical head)</td>
<td>900 mm</td>
<td>1300 mm</td>
<td>1850 mm</td>
</tr>
<tr>
<td><strong>AUTOMATIC TOOL CHANGER (ATC)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of pallets</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Pallet change time</td>
<td>53 s</td>
<td>75 s</td>
<td>120 s</td>
</tr>
<tr>
<td>Tool change (tool to tool)</td>
<td>11.8 s</td>
<td>11.8 s</td>
<td>12.8 s</td>
</tr>
<tr>
<td>Tool change (tool to tool)</td>
<td>11.8 sec</td>
<td>11.8 sec</td>
<td>12.8 sec</td>
</tr>
<tr>
<td><strong>ACCUACY</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spindle bar dia.</td>
<td>130 mm</td>
<td>130 mm</td>
<td>130 mm</td>
</tr>
<tr>
<td>Spindle max. torque</td>
<td>659.5 N·m</td>
<td>487 ft·lbs</td>
<td>659.5 N·m</td>
</tr>
<tr>
<td>Facing head dia.</td>
<td>700 mm</td>
<td>700 mm</td>
<td>700 mm</td>
</tr>
<tr>
<td>Facing head speeds</td>
<td>600 min-1</td>
<td>600 rpm</td>
<td>600 min-1</td>
</tr>
<tr>
<td>U axis travel (facing slide)</td>
<td>130 mm</td>
<td>130 mm</td>
<td>130 mm</td>
</tr>
<tr>
<td>Y axis travel (vertical head)</td>
<td>900 mm</td>
<td>1300 mm</td>
<td>1850 mm</td>
</tr>
<tr>
<td><strong>GENERAL</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Machine weight approx.</td>
<td>26000 kg</td>
<td>31000 kg</td>
<td>31000 kg</td>
</tr>
<tr>
<td>Table working surface</td>
<td>800 x 800 mm</td>
<td>1000 x 1000 mm</td>
<td>1320 x 1320 mm</td>
</tr>
<tr>
<td>Tool selection</td>
<td>Fixed position</td>
<td>Fixed position</td>
<td>Fixed position</td>
</tr>
<tr>
<td>Tool shank</td>
<td>BT50</td>
<td>CT50</td>
<td>BT50</td>
</tr>
<tr>
<td>Maximum tool length</td>
<td>580 mm</td>
<td>580 mm</td>
<td>580 mm</td>
</tr>
<tr>
<td>Maximum mass on pallet</td>
<td>2500 kg</td>
<td>3500 kg</td>
<td>8000 kg</td>
</tr>
<tr>
<td>Number of pallets</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Pallet change time</td>
<td>53 s</td>
<td>75 s</td>
<td>120 s</td>
</tr>
<tr>
<td>Tool change (tool to tool)</td>
<td>11.8 s</td>
<td>11.8 s</td>
<td>12.8 s</td>
</tr>
</tbody>
</table>

---

**EFFICIENT MACHINING OF "DIFFICULT MATERIAL TO CUT" WORLD PRODUCTIVITY — HN-Ti PACKAGE**

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.

---

*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.*

---

**FIGURES:**

- [ ] Figures are optional features.
- [ ] Figures are optional features.
- [ ] Figures are optional features.