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Elk Grove Village, IL 60007
630-283-5880

A World Leader of Horizontal Machining Centers

NIIGATA MACHINE TECHNO CO., LTD.
Niigata, Japan

NEW MODELS
HEAVY DUTY HIGH PRODUCTION TYPE HORIZONTAL MACHINING CENTER

HN800-S HN1000-S HN1250-S HN1600-S
S-SERIES
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.

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 SPEED

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 (71.0")  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")

LARGEST WORK ZONE

HIGH PRODUCTIVITY

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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.

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.

SOLID, WELL ENGINEERED COMPONENTS ACHIEVE ENHANCED PRODUCTIVITY

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.

Niigata’s unique design: Bifurcated Bell-shaped Column

STURDY TABLE DESIGN SUPPORT HEAVIER LOAD CAPACITY

The pallet clamping system adopts a stable clamping 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.

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Niigata’s unique design: Bifurcated Bell-shaped Column
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 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.

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.

<table>
<thead>
<tr>
<th>VARIETY OF HIGH PERFORMANCE SPINDLES</th>
<th>SPINDLE SPEED AND TORQUE DIAGRAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>5000min (rpm)</td>
</tr>
<tr>
<td>High Power Spec. (Option)</td>
<td>6000min (rpm)</td>
</tr>
<tr>
<td>Super High Torque Spec. (Option)</td>
<td>15000min (rpm)</td>
</tr>
<tr>
<td>BAR Spindle (W axis) (Option-see P12-P13)</td>
<td>3500min (rpm)</td>
</tr>
</tbody>
</table>

- 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)

EXAMPLE OF HN1000-S’s MACHINING PERFORMANCE

- Milling Cutter
  - Material: S48C (Steel)
  - Tool: φ200-10T Milling Cutter
  - Depth of Cut: 5mm (0.197")
  - Cutting Width: 150mm (5.9")
  - Feed Rate: 875mm/min

- End Milling
  - Material: S48C (Steel)
  - Tool: φ63-T4
  - Spindle Speed: 700/min (707rpm)
  - Feed Rate: 565mm/min
  - Spindle Load: 77%
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.

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

- 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 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)

- PALLET and PALLET CHANGER SYSTEM
  - Carousel Type Multiple Pallet Changer
  - Linear Pallet Magazine (LPM) System with Niigata Intelligent Cell Controller

- COOLANT SYSTEM
  - Spindle Center Through Type
  - Spindle Flange Through Type
  - Overhead Shower Coolant System
  - Shower Coolant and Airblow System
  - Oversized Coolant Tank

- CHIP REMOVAL
  - Lift-Up External Conveyor Hinge-Pan Type
  - Lift-Up External Conveyor with Filtration System
  - Chip Bucket with Caster and Handles

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

- LIFT-UP EXTERNAL CONVEYOR AND COOLANT TANK

- 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
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: L 185mm (7.2 inches) 220mm (8.7 inches)
- Cutting position from spindle surface: L 160mm (6.3 inches) 325mm (12.8 inches)
- Cutting volume: 691mm³/min {42 cu.inch} 605mm³/min {37 cu.inch}
- Tool diameter: 160mm (6.3 inches)
- Width of cut: B 100mm (4 inches)
- Depth of cut: 8mm (0.32 inches)
- Spindle speed: 330min⁻¹
- Feed rate: 720mm/min (28.3 ipm)

**Boring**
- W axis extension: L 365mm (14.4 inches) 535mm (21 inches)
- Cutting position from spindle surface: L 685mm (27 inches) 855mm (33.7 inches)
- Cutting volume: 272mm³/min {17 cu.inch} 188mm³/min {12 cu.inch}
- Bore diameter: 240mm (9.4 inches)
- Depth of cut: 7mm (0.28 inches)
- Spindle speed: 150min⁻¹
- Feed rate: 53mm/min (2.1 ipm)

SUPERIOR FEATURES OVER THE TRADITIONAL BORING MILLS

- **RIGID SPINDLE SNOT**
  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.
LARGEST WORK ENVELOPE IN ITS CLASS
\( \phi 1750\text{mm} \{68.9''\} \) SWING DIAMETER INSIDE MACHINE
LARGEST WORK ENVELOPE IN ITS CLASS
ϕ2300mm{90.6”} SWING DIAMETER INSIDE MACHINE

Maximum Workpiece Envelope

Standard Pallet Top Surface

HN1000-S Plan View

Unit: mm(inch)
LARGEST WORK ENVELOPE IN ITS CLASS
φ2300mm{90.6”} SWING DIAMETER INSIDE MACHINE
LARGEST WORK ENVELOPE IN ITS CLASS
φ3200mm(126.0") SWING DIAMETER INSIDE MACHINE

Maximum Workpiece Envelope

Standard Pallet Top Surface

HN1600-S Plan View

Unit: mm(inch)
### MACHINE SPECIFICATIONS

#### TRAVEL

<table>
<thead>
<tr>
<th>ITEM</th>
<th>HN800-S</th>
<th>HN1000-S</th>
</tr>
</thead>
<tbody>
<tr>
<td>X axis travel (longitudinal table)</td>
<td>±30 mm</td>
<td>±30 mm</td>
</tr>
<tr>
<td>Y axis travel (lateral table)</td>
<td>±20 mm</td>
<td>±20 mm</td>
</tr>
<tr>
<td>Z axis travel (vertical head)</td>
<td>±20 mm</td>
<td>±20 mm</td>
</tr>
</tbody>
</table>

#### SPINDLE

<table>
<thead>
<tr>
<th>ITEM</th>
<th>HN800-S</th>
<th>HN1000-S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spindle drive motor</td>
<td>AC 30 / 22 kW</td>
<td>AC 40 / 30 HP</td>
</tr>
<tr>
<td>Spindle speeds</td>
<td>3500 min⁻¹</td>
<td>3500 min⁻¹</td>
</tr>
<tr>
<td>Spindle nose to table center line</td>
<td>200 ~ 1220 mm</td>
<td>280 ~ 1480 mm</td>
</tr>
<tr>
<td>Spindle max. torque</td>
<td>1836 N</td>
<td>1200 N</td>
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</table>

#### FEEDRATE

<table>
<thead>
<tr>
<th>ITEM</th>
<th>HN800-S</th>
<th>HN1000-S</th>
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<tbody>
<tr>
<td>Rapid traverse X axis</td>
<td>±2000 mm/min</td>
<td>±2000 mm/min</td>
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<tr>
<td>Z axis</td>
<td>±2000 mm/min</td>
<td>±2000 mm/min</td>
</tr>
<tr>
<td>Cutting X, Y, Z</td>
<td>±2000 mm/min</td>
<td>±2000 mm/min</td>
</tr>
</tbody>
</table>

#### TABLE

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<thead>
<tr>
<th>ITEM</th>
<th>HN800-S</th>
<th>HN1000-S</th>
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</thead>
<tbody>
<tr>
<td>Table working surface</td>
<td>800 × 800 mm</td>
<td>1000 × 1000 mm</td>
</tr>
<tr>
<td>Table increments</td>
<td>0.0015 mm</td>
<td>0.003 mm</td>
</tr>
</tbody>
</table>

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<tr>
<td>Table working surface</td>
<td>800 × 800 mm</td>
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<tr>
<td>Table increments</td>
<td>0.0015 mm</td>
<td>0.003 mm</td>
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#### AutoScan Tool changer (ATC)

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<thead>
<tr>
<th>ITEM</th>
<th>HN800-S</th>
<th>HN1000-S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tool magazine capacity</td>
<td>Field Expandable</td>
<td>Field Expandable</td>
</tr>
<tr>
<td>Field Expansion</td>
<td>Metric</td>
<td>Inch</td>
</tr>
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</table>

#### Tool changer (ATC)

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<tr>
<th>ITEM</th>
<th>HN800-S</th>
<th>HN1000-S</th>
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</thead>
<tbody>
<tr>
<td>Tool selection</td>
<td>Short cut random</td>
<td>Short cut random</td>
</tr>
<tr>
<td>Tool change time</td>
<td>0.75 s</td>
<td>1.5 s</td>
</tr>
</tbody>
</table>

#### Pallet changer (APC)

<table>
<thead>
<tr>
<th>ITEM</th>
<th>HN800-S</th>
<th>HN1000-S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of pallets</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Number of pallets</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

#### CONFIGURATION

<table>
<thead>
<tr>
<th>ITEM</th>
<th>HN800-S</th>
<th>HN1000-S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table structure</td>
<td>Flat plate</td>
<td>Flat plate</td>
</tr>
</tbody>
</table>

#### Control

<table>
<thead>
<tr>
<th>ITEM</th>
<th>HN800-S</th>
<th>HN1000-S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>Fanuc 30 iM</td>
<td>Fanuc 30 iM</td>
</tr>
<tr>
<td>Power</td>
<td>95 kVA</td>
<td>121 kVA</td>
</tr>
<tr>
<td>Cutting</td>
<td>±0.003 mm</td>
<td>±0.004 mm</td>
</tr>
</tbody>
</table>

#### NOTE

- Figures in [ ] indicate optional features.
- Metric and Inch values are listed side by side for easy comparison.
- Various tolerances are specified in both millimeters and inches to ensure precision.
- The table includes detailed specifications for different parts of the machine, such as travel ranges, spindle specifications, feed rates, and control options.
- Each section of the specification table is clearly separated, making it easy to navigate and understand the different aspects of the machine.
- The design and specifications focus on accuracy, efficiency, and versatility, catering to the needs of various industrial applications.

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**Figures in [ ] indicate optional features.**