

High-Precision Vertical Compact Machining Center for Die & Mold Manufacturers

NVD1500 DCG HSC

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Machine for dies and molds/ precision parts which offers the world's best quality.



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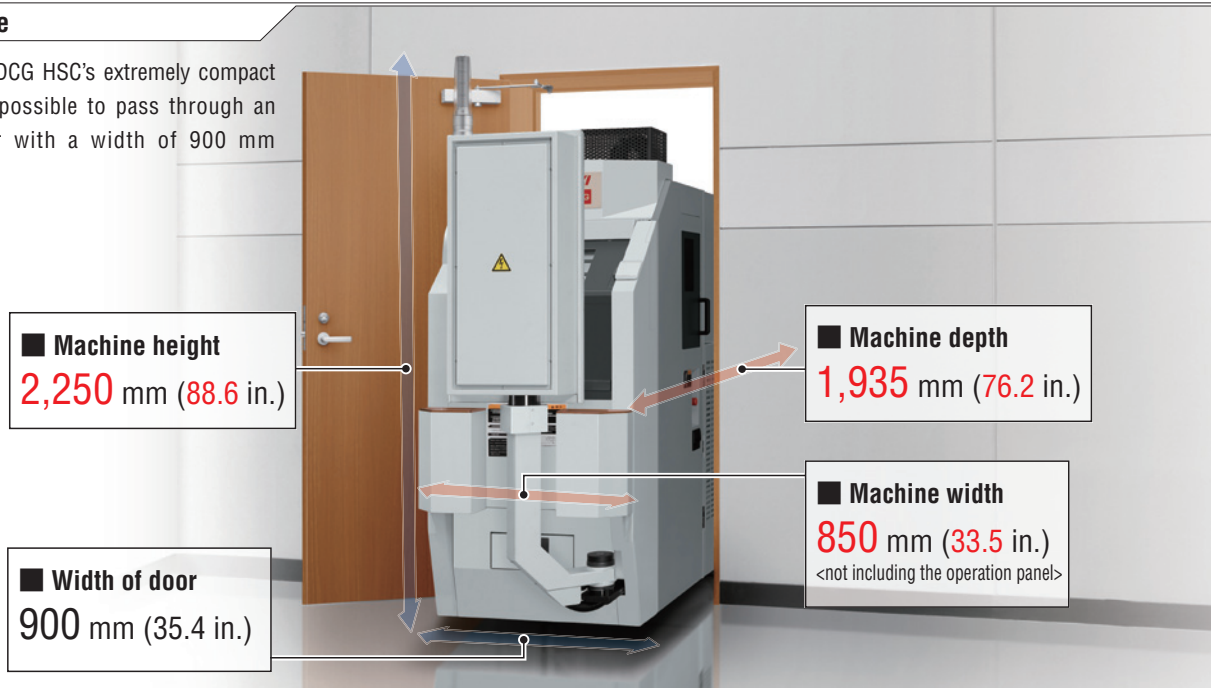
The NVD1500 DCG HSC has achieved revolutionary space savings with a machine width of 850 mm (33.5 in.). That limited space is packed with various features for high precision, including one of the DMG MORI SEIKI's original technologies of DCG (Driven at the Center of Gravity). The NVD1500 DCG HSC, a high-precision vertical machining center for dies and molds, offers high-quality machining of small dies and molds, electrodes, and precision parts. Its compact body and high-quality machining go beyond the conventional concept of machine tools.

● Figures in inches were converted from metric measurements.

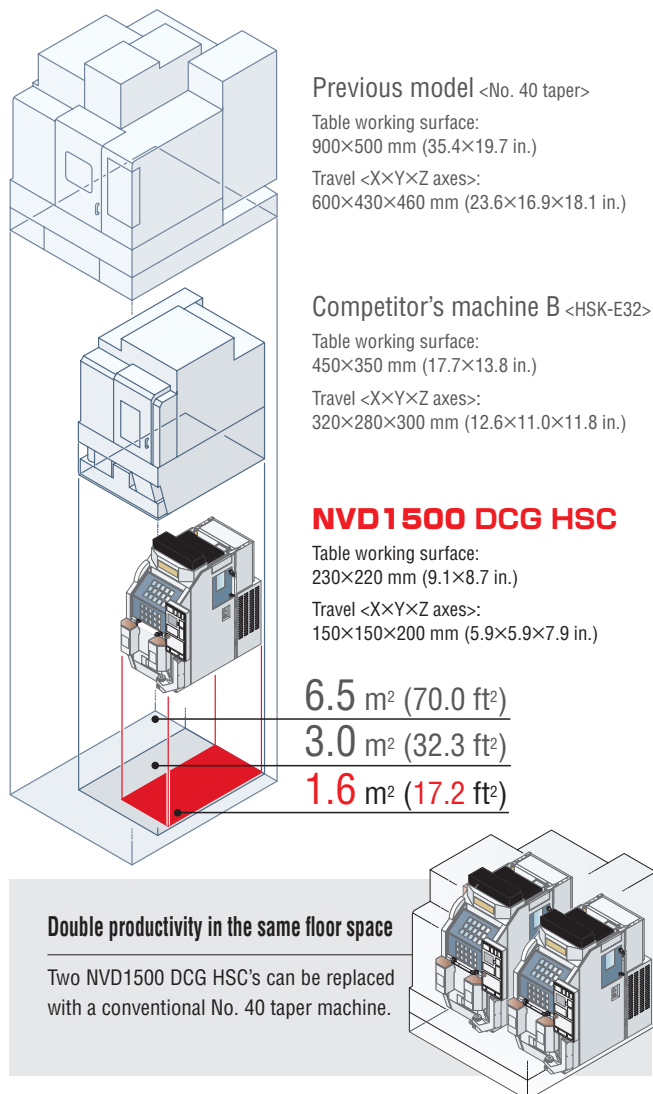
Features of the NVD1500 DCG HSC

Machine size

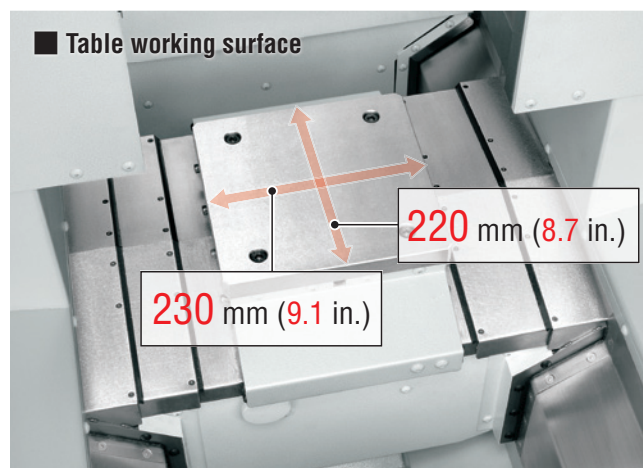
The NVD1500 DCG HSC's extremely compact body made it possible to pass through an ordinary door with a width of 900 mm (35.4 in.).



Floor space comparison



Working area



While having a compact body, it secures wide work envelope.

Travel <X, Y and Z axes>

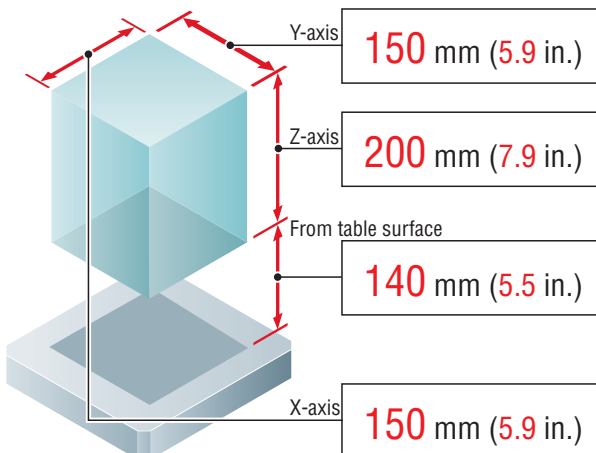


Table loading capacity

50 kg (110 lb.)

- The colors and configurations shown in the photographs or illustrations may differ from those of the actual product.
- HSC: High Speed Cutting



DCG®
Driven at the Center of Gravity

Driven at the Center of Gravity

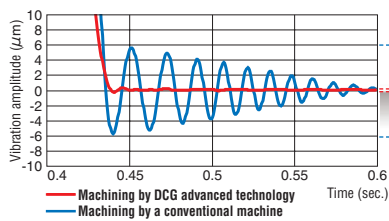
Our DCG technology controls vibration, which is one of the main enemies of high speed and high precision, by driving structural parts at their center of gravity.

Vibration Controlled

For positioning, machines with DCG virtually eliminate vibration, while machines without DCG continue to vibrate for a long time. DCG controls the rotational vibration which appears at every acceleration start point, and which is proportional to the distance between the drive point and the center of gravity. This prevents deterioration of the quality of the machined surface.

Residual vibration comparison

Rapid traverse rate 100% (stopped in the Z-axis direction)



(machine type: NV4000 DCG)

Machining by
DCG advanced
technology

Machining by a
conventional
machine

Machining by DCG
advanced technology

Machining by a
conventional machine

DCG effect

- Improved surface quality
- Outstanding acceleration
- Improved roundness
- Longer tool life

■ Rapid traverse rate <X, Y and Z axes>

15 m/min (590.6 ipm)

■ Feedrate <X, Y and Z axes>

15 m/min (590.6 ipm)
<with AI contour control>

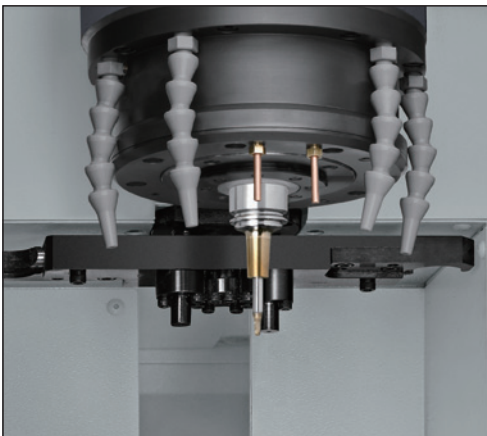
■ Max. acceleration

X and Y axes **0.80** G {7.81 m/s² (25.6 ft/s²)}

Z-axis **1.06** G {10.42 m/s² (34.2 ft/s²)}



Spindle



■ Max. spindle speed

24,000 min⁻¹

40,000 min⁻¹ **OP**

■ Spindle acceleration time

1.86 sec. (0→24,000 min⁻¹)

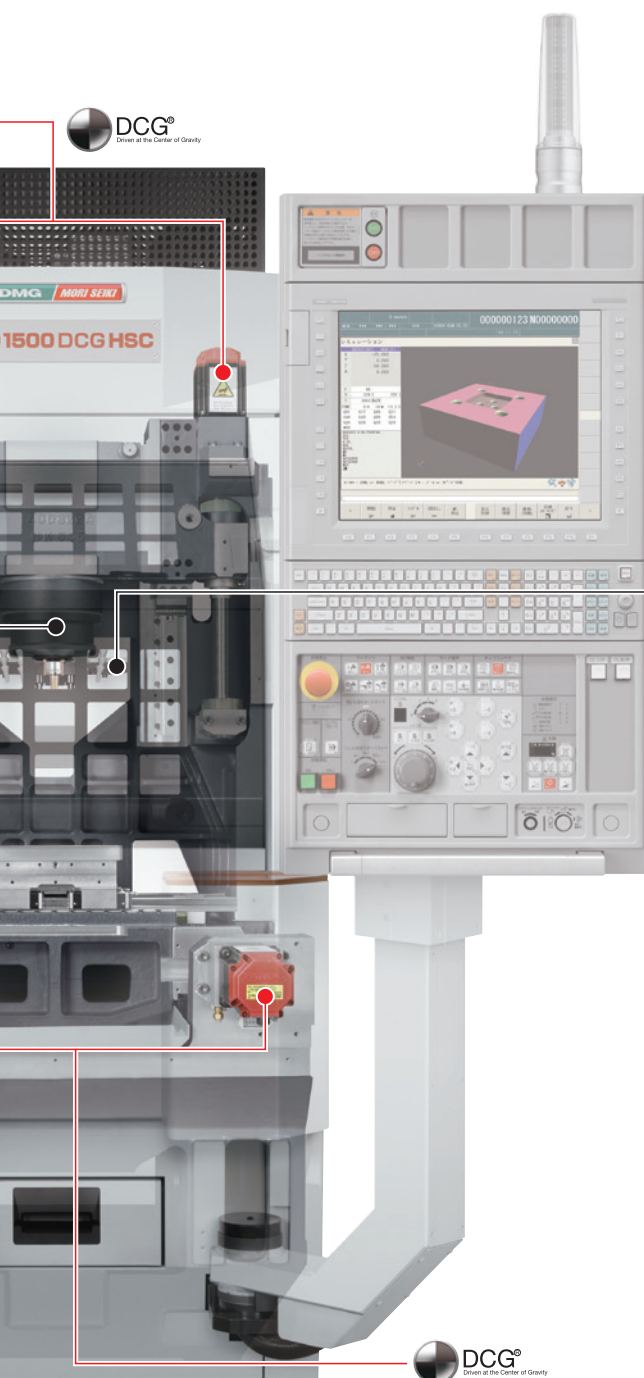
■ Spindle deceleration time

1.38 sec. (24,000 min⁻¹→0)

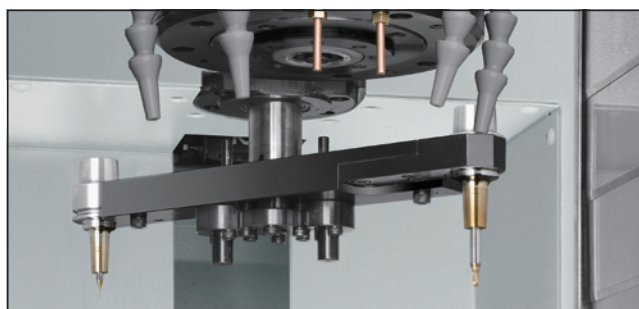
Spindle lubrication



Oil feed is kept to a minimum to reduce frictional loss.



ATC



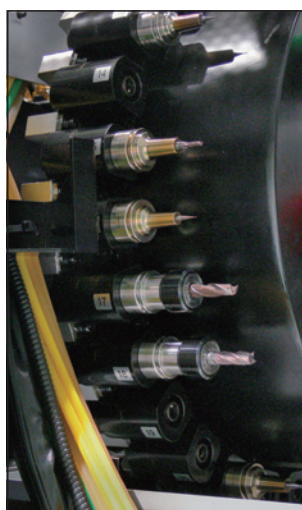
Our original ATC contributes significantly to reducing non-cutting time.

■ Tool changing time

3.5 sec. Cut-to-cut (chip-to-chip)

1.7 sec. (tool-to-tool)

Magazine



Ample tool storage capacity to suit customers' needs.

■ Tool storage capacity

30 tools

60 tools **OP**

Two-face contact specifications

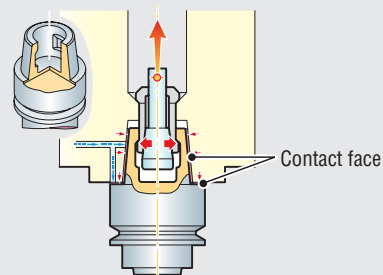
Tool rigidity has been improved by contact of both the spindle taper and the tool flange. This offers not only longer tool life, but also excellent cutting power and machining precision.



Actual size

■ Type of tool shank

HSK-E32



Contact face

Improved workability, Maintenance

When developing the NVD1500 DCG HSC, we focused on improving usability as well as making the overall design more compact. As a result, the compact body delivers the advantages of easier setup and maintenance.

Close access table

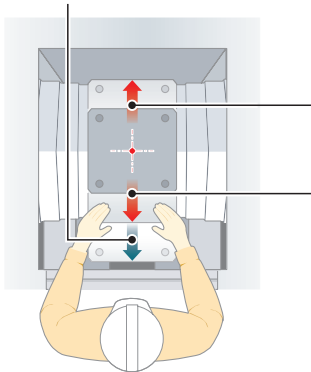


■ Y-axis travel <machining range>

150 mm (5.9 in.)

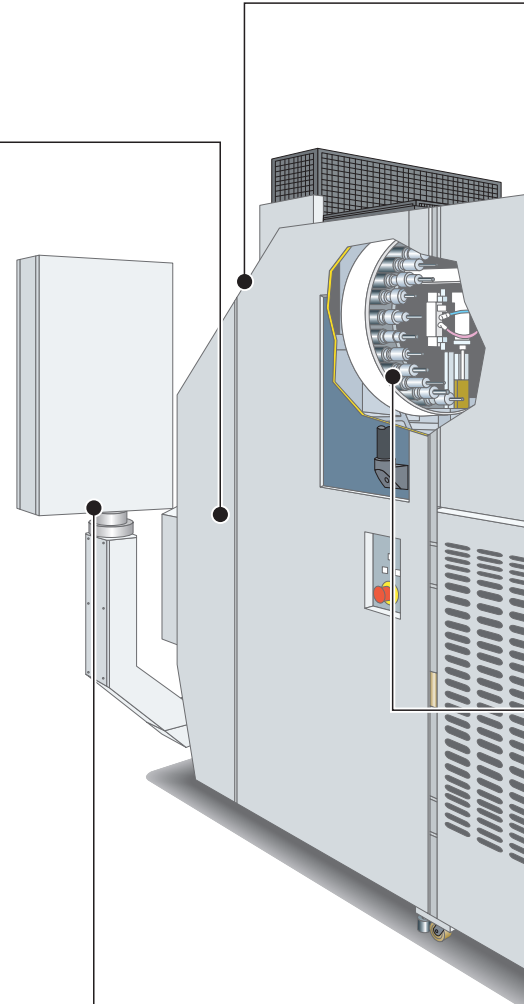
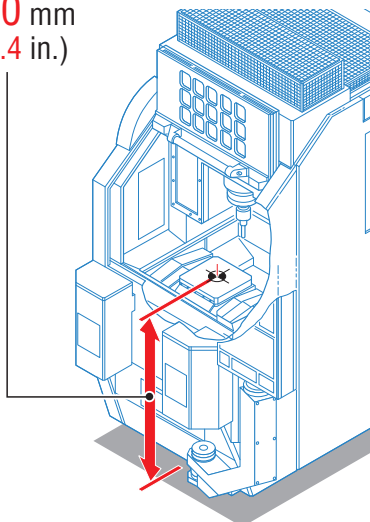
■ Travel amount for setup

+100 mm (+3.9 in.)

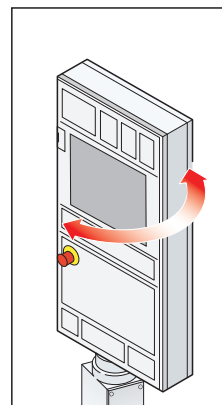
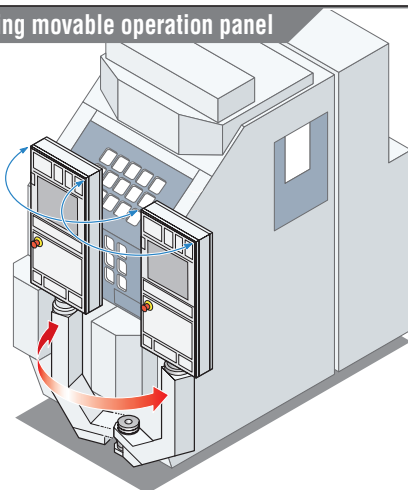


■ Height of table top surface

950 mm (37.4 in.)



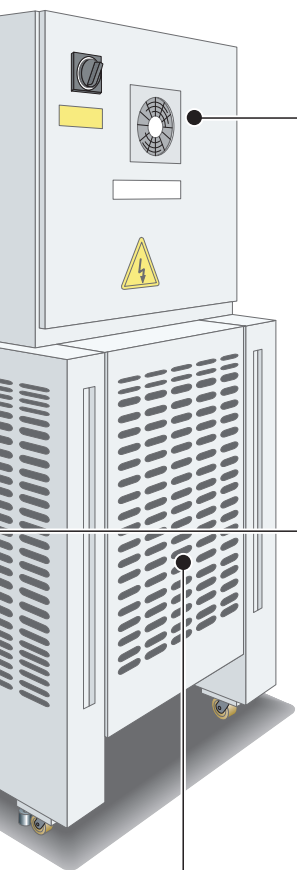
Space-saving movable operation panel



The easy-to-use operation panel swivels 135°. Since it can be swiveled to the front of the machine together with the supporting post, it does not take up any extra space.

■ Operation panel swivel range

0°—135°



Compact control panel

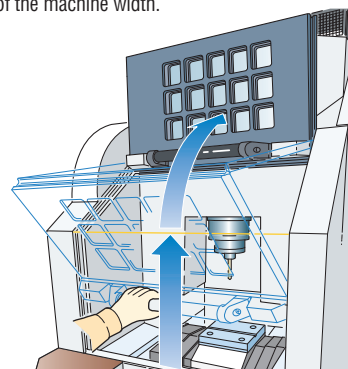
A slim electrical cabinet closes the proximity between you and the insides of the machine during maintenance.

■ Depth
355 mm
(14.0 in.)



Vertical folding door

Developing a new type of door that folds vertically allows for a broader opening space. This also contributes to a narrowing of the machine width.



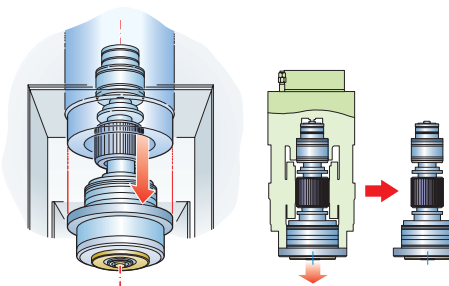
Transparent magazine

Visibility of the magazine has been improved with the addition of a door with a window.



Replacement of spindle unit

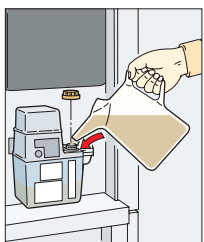
By changing the spindle unit to a cartridge, which even includes the rear bearings, we have dramatically reduced replacement time. The replacement spindles have already been broken in, so they can be up and running quickly.



Maintenance behind the machine

Right rear:

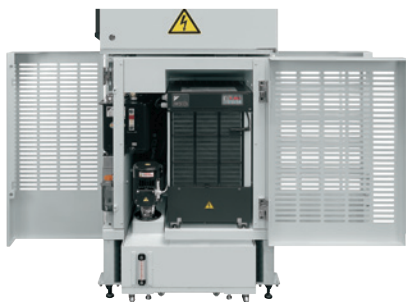
Oil supply port (oil cooler, lubricating oil unit)



The filler opening is placed at just the right height to make maintenance easier.

Machine rear:

Oil cooler, Coolant pump



Left rear:

Centralized layout of maintenance devices



Controls are all placed together to facilitate maintenance.

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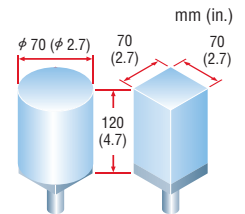
AWC specifications



The AWC (Automatic Workpiece Changer) is compatible with unmanned night-time operation and comes in an extremely compact body. The machine has a changer unit built in on the left side, and is also equipped with a pneumatic chuck for fixtures, chuck air interface and workpiece seating detection.

Specifications

Workpiece storage	24 pcs.
Max. workpiece size <including pallet dimensions>	Round workpieces: $\phi 70 \times 120$ mm ($\phi 2.7 \times 4.7$ in.) Square workpieces: $70 \times 70 \times 120$ mm ($2.7 \times 2.7 \times 4.7$ in.)
Max. workpiece mass	5 kg (11 lb.)
Workpiece change repeatability	$\pm 1 \mu\text{m}$



Features

- Changer unit
- Pneumatic chuck fixture (pneumatic/workpiece holding interface)
- Internal side shutter

Separately arranged parts

- Pallet
- Drawbar

Workstocker

This workstocker can hold a maximum of 24 workpieces, and is suitable for unmanned operation at night.

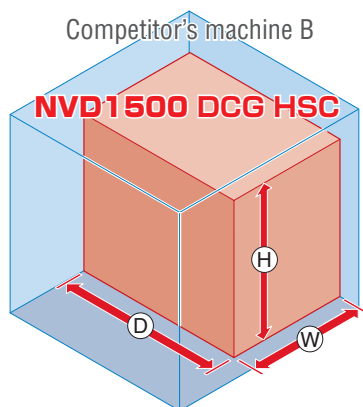


Workpiece changer



Changer using a workpiece change arm and a drawbar. Workpiece change repeatability is $1 \mu\text{m}$.

Floor space comparison



W (machine width)

1,530 mm
(60.2 in.)
<not including the operation panel>

D (machine depth)

1,935 mm
(76.2 in.)

H (machine height)

2,250 mm
(88.6 in.)

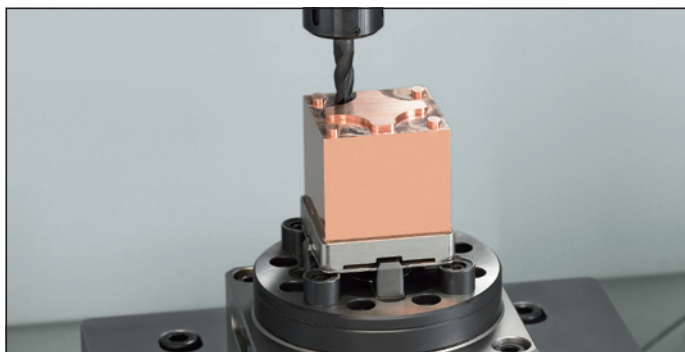
Floor space

Competitor's machine B
5.2 m² (56.0 ft²)

NVD 1500 DCG HSC
3.0 m² (32.3 ft²)

● HSC: High Speed Cutting

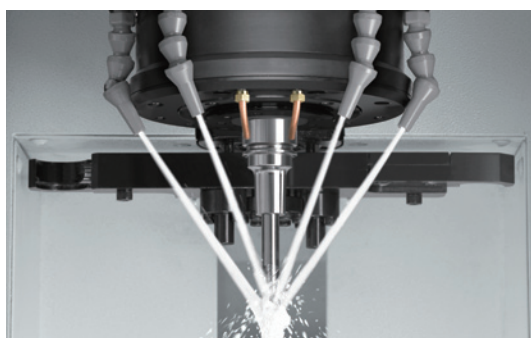
Peripheral equipment



A variety of highly reliable peripheral equipment provides customers with the ideal production environment.

Coolant

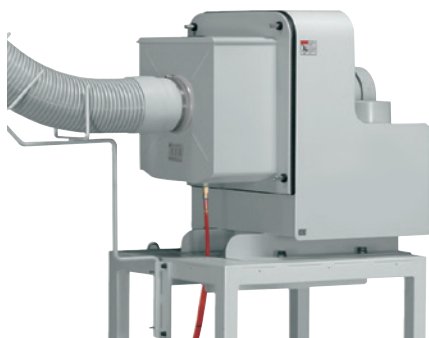
Comes standard with four coolant nozzles.



Oil mist collector

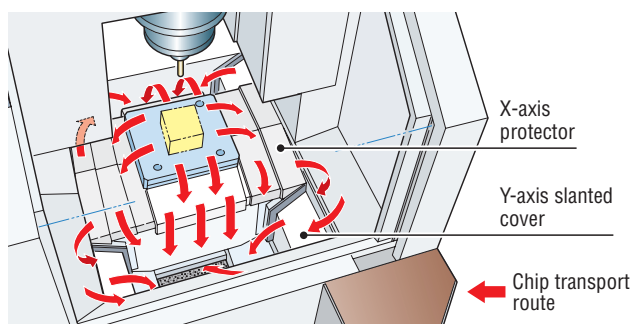
OP

Powerful vacuum sucks out chips and oil mist that accumulate inside the machine.



Center trough, Slanted cover

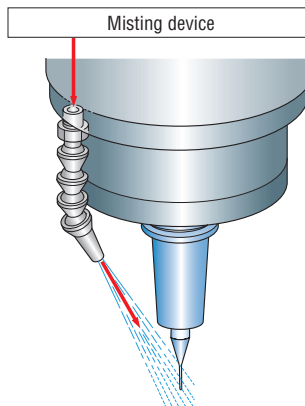
In addition to the center trough design, using a highly reliable Y-axis tilted cover and X-axis protector improves chip disposal performance.



Semi dry unit

OP

Supplies air and oil mist to the cutting tip. This unit is also eco-friendly.



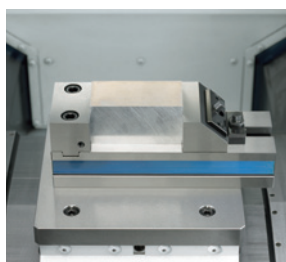
Chip receiver

Equipped with a chip collector that can be pulled out of the front of the machine. This design allows the tray to come out for easier operation.

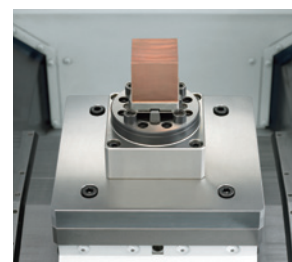


Table

A wide variety of table variations are available to match all customer workpiece types.



Vise specs



Pneumatic chuck fixture specs OP

MAPPS IV

High-Performance Operating System
for Machining Centers



● 19-inch operation panel

High-performance operating system that pursues ease of use, and combines the best hardware in the industry with the advanced application/network systems.

- ▶ Outstanding operability thanks to upgraded hardware
- ▶ Enhanced functionality by using CAM software
- ▶ New functions for easier setup and maintenance
- ▶ Various types of monitoring, including internal monitoring, are possible on the screen (option)
- ▶ In the event of trouble, DMG MORI SEIKI's remote maintenance service solves it smoothly **MORI-NET Global Edition Advance** OP

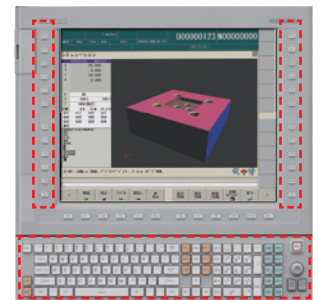
Outstanding operability

Vertical soft-keys

Vertical soft-keys are arranged on the left and right sides of the screen. The vertical soft-keys can be used as option buttons or shortcut keys to which you can assign your desired screens and functions, allowing you to quickly display the screen you want.

Keyboard

A PC-type keyboard is used as standard, making key input easy. A keyboard with a conventional key layout is also available as an option.



Advanced hardware

Reduction of drawing time

Shorter drawing time was achieved thanks to increased CPU performance.

MAPPS III	68 sec.	Approx. Reduced by 33%
MAPPS IV	45 sec.	

Main specifications

Main memory	2 GB
User area	Standard: 6 GB
Interface	<ul style="list-style-type: none"> • USB 2.0 6 ports (Screen side: 2, Bottom of operation panel: 1, Back of operation panel: 3) • LAN 2 ports (1000BASE-T) • RS-232-C port
Soft-keys	Left/right 12 keys Bottom 12 keys

Faster creation of programs

CAM software ESPRIT

ESPRIT® allows you to create complex 3D programming with high-added value. By just installing the software on your PC with connection to LAN, you will be able to use it. (Once the software is started on the computer, it can be used for up to 7 days without LAN connection.)

- Postprocessor as standard
- CAM software will be ready to use once your machine is installed
- Cost for introducing CAM software can be saved
- ESPRIT® data can be modified on the machine
(through Remote Desktop connection*)
- The software can be installed on multiple PCs on the network
(It cannot be simultaneously started up on more than one PC)
- 2-year warranty support (including free update)

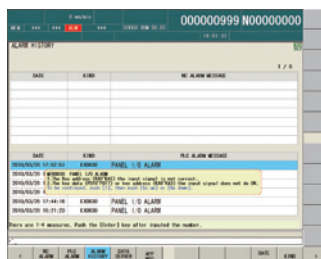
* Applicable Operating Systems: Windows® Vista Business / Ultimate, Windows® 7 Professional / Ultimate

● A PC is required to use ESPRIT®. Please prepare PCs by yourself.

Improved ease of maintenance

Alarm help function

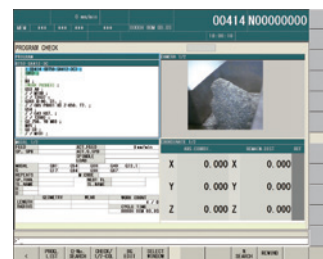
When an alarm occurs, MAPPS identifies the cause of the trouble and provides solutions.



Improved work efficiency

Fixed-point in-machine camera OP Consultation is required

Images taken by cameras installed inside/outside the machine can be viewed on the programming screen. This function is useful for maintenance.



Examples of camera locations

- Inside machine
(to check machining)
- Tool magazine
(to check cutting tools)
- Chip bucket
(to check chip accumulation)

Machine specifications

Item		NVD1500 DCG HSC	
Travel	X-axis travel <longitudinal movement of table>	mm (in.)	150 (5.9)
	Y-axis travel <cross movement of saddle>	mm (in.)	150 (5.9) <+100 (+3.9) (travel amount for setup)>
	Z-axis travel <vertical movement of spindle head>	mm (in.)	200 (7.9)
	Distance from table surface to spindle gauge plane	mm (in.)	140–340 (5.5–13.4)
Table	Working surface	mm (in.)	230×220 (9.1×8.7)
	Table loading capacity	kg (lb.)	50 (110)
	Table surface configuration		Custom-made
	Distance from table surface to floor surface	mm (in.)	950 (37.4)
Spindle	Max. spindle speed	min ⁻¹	24,000 [40,000]
	Number of spindle speed ranges		1
	Type of spindle taper hole		HSK-E32
	Spindle bearing inner diameter	mm (in.)	50 (2.0) [40 (1.6) <40,000 min ⁻¹ specifications>]
Feedrate	Rapid traverse rate	mm/min (ipm)	X, Y, Z: 15,000 (590.6)
	Cutting feedrate	mm/min (ipm)	1–15,000 (0.04–590.6) <with AI contour control>
	Jog feedrate	mm/min (ipm)	0–5,000 (0–197.0) <20 steps>
ATC	Type of tool shank		HSK-E32
	Tool storage capacity		30 [60]
	Max. tool diameter	mm (in.)	40 (1.5) [30 (1.1): <40,000 min ⁻¹ specifications>]
	Max. tool length	mm (in.)	150 (5.9)
	Max. tool mass	kg (lb.)	1 (2.2) <total weight of tools up to 21 (46.2)> [total weight of tools up to 42 (92.4) <60 tools>]
	Method of tool selection		Technical memory random
	Tool changing time (tool-to-tool)	s	1.7
Motor	Tool changing time <cut-to-cut (chip-to-chip)>	s	3.5
	Spindle drive motor	kW (HP)	5.5/5.5/3.7 (7.5/7.5/5) <15%ED/25%ED/cont> [7.5/5.5 (10/7.5) <10 min/cont> (after winding change)]
	Feed motor	kW (HP)	X: 0.5 (0.7), Y, Z: 0.75 (1)×2
Power sources	Coolant pump motor <50 Hz/60 Hz>	kW (HP)	0.325 (0.43)/0.520 (0.69)
	Electrical power supply (cont) <talk to one of our representatives for additional options>	I94054A04 kVA	10.8 [13.04 <40,000 min ⁻¹ specifications>]
	Compressed air supply <standard>	MPa (psi), L/min (gpm)	0.5 (72.5), 110 (29.0) [when the tool tip air blow is regularly used, air supply of more than 370 L/min (97.7 gpm) is separately required.] <ANR>
Tank capacity	Coolant tank capacity	L (gal.)	105 (27.7)
Machine size	Machine height	mm (in.)	2,250 (88.6) [2,380 (93.7) <60 tools>]
	Floor space <width (not including the operation panel)×depth>	mm (in.)	850×1,935 (33.5×76.2) [1,204×1,935 (47.4×76.2) <60 tools>]
	Mass of machine	kg (lb.)	2,500 (5,500) [2,875 (113.2) <60 tools>]
Noise data	A-weighted, time-average radiated sound pressure level	dB	55–72 (Measurement uncertainty is 4 dB)

[] Option

NVD1500DCG (100518)

- Max. spindle speed: depending on restrictions imposed by the workpiece clamping device, fixture and tool used, it may not be possible to rotate at the maximum spindle speed.
- ANR: ANR refers to a standard atmospheric state; i. e., temperature at 20 °C (68 °F), absolute pressure at 101.3 kPa (14.7 psi) and relative humidity at 65%.
- Power sources, machine size: the actual values may differ from those specified in the catalogue, depending on the optional features and peripheral equipment.
- Compressed air supply: please be sure to supply clean compressed air <air pressure: 0.7 MPa (101.5 psi), pressure dew point: 10 °C (50 °F) or below>.
- A criterion capacity to select a compressor is 90 L/min (23.8 gpm) per 0.75 kW (1 HP). However, this figure may differ depending on the type of compressors and options attached.
- For details, please check the compressor specifications.
- Noise data: the measurement was performed at the front of the machine with a maximum spindle speed of 24,000 min⁻¹.
- The information in this catalog is valid as of November 2013.

HSC: High Speed Cutting

2-year warranty, twice the peace of mind.

For machines delivered outside of Japan, parts relating to machine breakdown will be guaranteed free for 2 years from the date of installation, and labor costs to repair will be free for 1 year. Please contact our sales representative for details.



<Precautions for Machine Relocation>

EXPORTATION: All contracts are subject to export permit by the Government of Japan. Customer shall comply with the laws and regulations of the exporting country governing the exportation or re-exportation of the Equipment, including but not limited to the Export Administration Regulations. The Equipment is subject to export restrictions imposed by Japan and other exporting countries and the Customer will not export or permit the export of the Equipment anywhere outside the exporting country without proper government authorization. To prevent the illegal diversion of the Equipment to individuals or nations that threaten international security, it may include a "Relocation Machine Security Function" that automatically disables the Equipment if it is moved following installation. If the Equipment is so-disabled, it can only be re-enabled by contacting DMG MORI SEIKI or its distributor representative. DMG MORI SEIKI and its distributor representative may refuse to re-enable the Equipment if it determines that doing so would be an unauthorized export of technology or otherwise violates applicable export restrictions. DMG MORI SEIKI and its distributor representative shall have no obligation to re-enable such Equipment. DMG MORI SEIKI and its distributor representative shall have no liability (including for lost profits or business interruption or under the limited service warranty included herein) as a result of the Equipment being disabled.

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- If you have any questions regarding the content, contact our sales representative.
- The information in this catalog is valid as of December 2013. Designs and specifications are subject to changes without notice.
- The machines shown in the catalog may differ from the actual machines. The location and the size of the nameplates may also differ from the actual machines, or the nameplates may not be attached to some machines.
- DMG MORI SEIKI is not responsible for differences between the information in the catalog and the actual machine.

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