

NMV5000 DCG
NMV5000 DCG HSC
NMV8000 DCG
NMV8000 DCG HSC

High-Precision, 5-Axis Control Vertical Machining Center

NMV5000 DCG / NMV8000 DCG



Three cutting-edge technologies for outstanding performance

The NMV Series 5-axis control vertical machining center, equipped with DMG MORI SEIKI's original technologies: DDM (Direct Drive Motor), which achieves zero backlash and is produced in-house for maximum reliability, DCG (Driven at the Center of Gravity), which controls vibration and improves acceleration, and ORC (Octagonal Ram Construction), which offers high-speed, high-precision feed. It can complete all the machining in one clamping, except for the part being gripped, and achieves high-efficiency, high-quality machining of complex-shaped workpieces. This state-of-the-art 5-axis control machine is equipped with all our cutting-edge technologies, to respond to the need for the increasingly complex workpieces.

Awarded the "37th Machine Design Award
(Minister of Economy, Trade and Industry Prize)"

Received the "2007 (the 3rd) JSME Excellent Product Award"



NMV5000 DCG
NMV5000 DCG HSC

Working surface

φ 500 mm (φ 19.7 in.)

Max. workpiece swing diameter

φ 700 mm (φ 27.5 in.)

Max. workpiece height

450 mm (17.7 in.)

The 2009 (39th) Machine Design Award (Distinctive Merit Award)



NMV8000 DCG/40
NMV8000 DCG/40 HSC
NMV8000 DCG/50

Working surface

φ 800 mm (φ 31.5 in.)

Max. workpiece swing diameter

φ 1,000 mm (φ 39.3 in.)

Max. workpiece height

500 mm (19.6 in.)

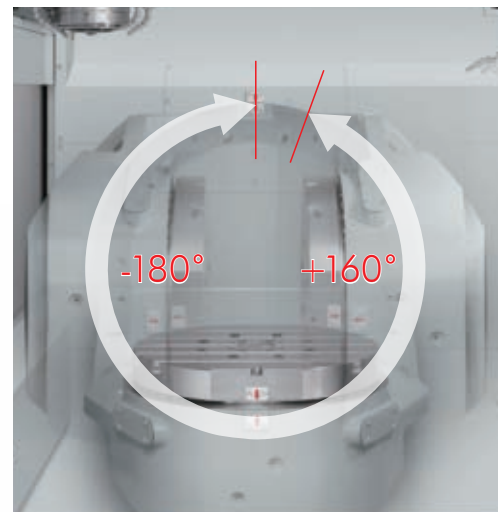
HSC: High Speed Cutting

Outstanding operability

We have reviewed the NMV Series to achieve far better access and operability than earlier 5-axis machines. The excellent access to the spindle and table allows setup such as fixture adjustment and tool change to proceed smoothly, reducing machine down time. Maintenance inside the machine is also easier.

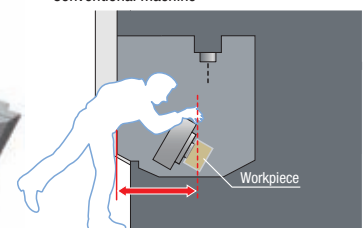
With the tilting table on a conventional machine, which is supported at both sides, the workpiece is at the back when the table is tilted forwards. This makes it hard to access the workpiece and hard to check the machining status. With the NMV Series, access to the workpiece is excellent even when the table is turned, giving easier setup and better visibility.

● Automatic opening/closing protector is standard

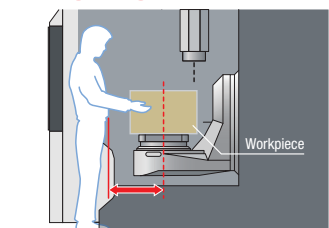


● The photo/diagram show the NMV5000 DCG

Conventional machine



NMV SERIES

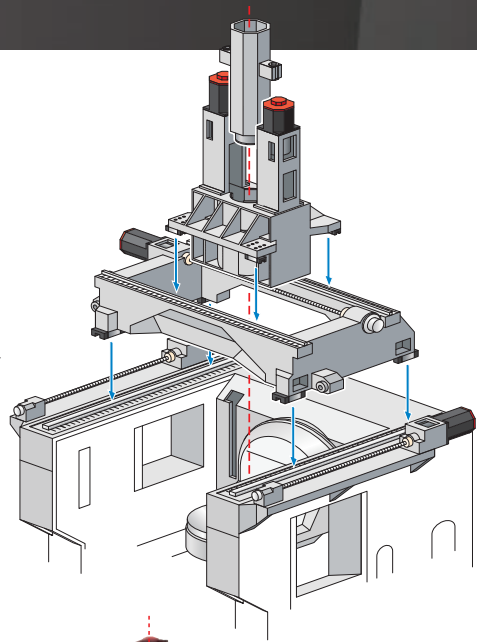
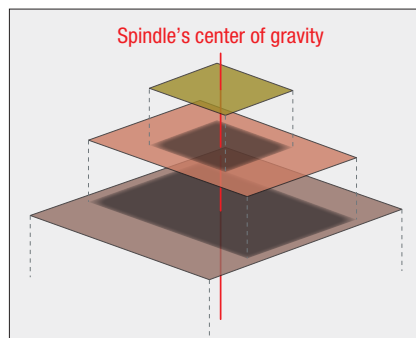


Top Box-in-Box Construction

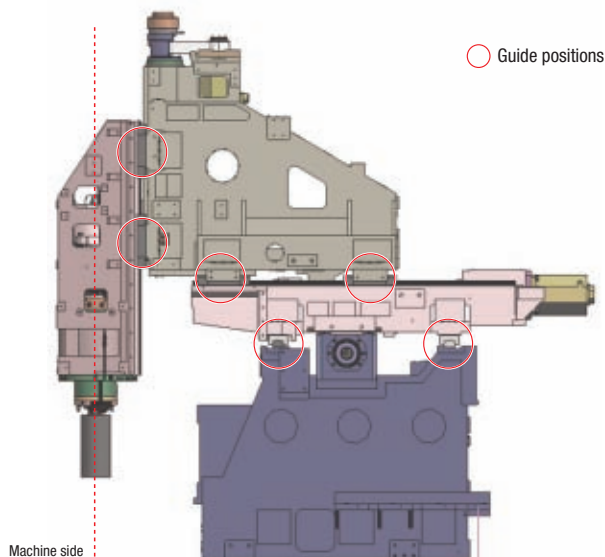
The machine uses the top Box-in-Box Construction that guides and drives the center of gravity of the moving parts with excellent balance. It also improves servo motor's responsiveness, making unprecedented speed and acceleration possible. Also, since the guide parts are fully protected by a cover, they are not affected by temperature changes caused by chips or coolant. What's more, unlike other 5-axis control machines, there is no overhang. This achieves stable feed even at high speeds, and excellent thermal stability thanks to its heat-symmetrical design.

Stable accuracy due to the heat-symmetrical structure

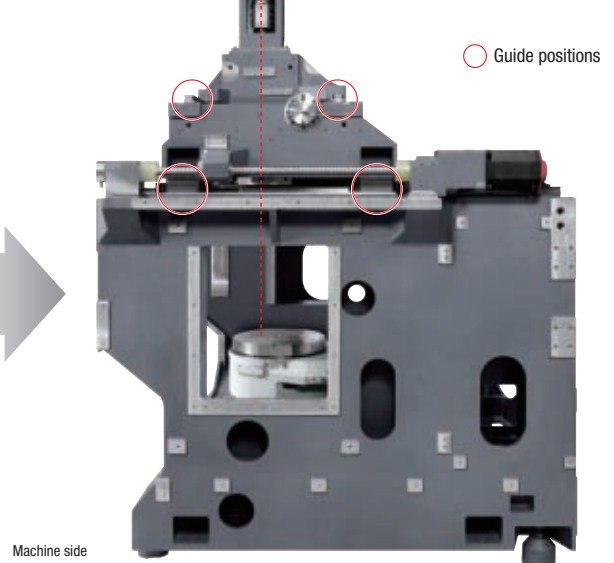
Support structure with no overhang



Conventional machine



NMV SERIES



● The photo/diagram show the NMV5000 DCG



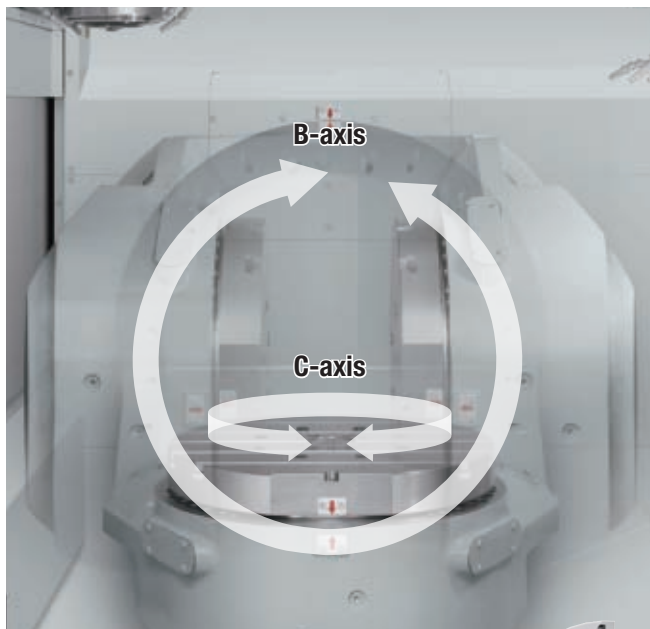
Direct Drive Motor B-axis C-axis

The world's fastest rotary axis drive system, with zero backlash

Transmitting the drive power directly to the rotary axes without using gears eliminates backlash.

Compared with conventional worm gear systems, this dramatically improves transmission efficiency and offers high-speed feed.

And DMG MORI SEIKI makes them in-house, so if they ever do break down, we can fix them quickly, significantly reducing recovery time.



Compared with conventional worm gear systems, transmission efficiency is dramatically improved and high-speed feed is possible.

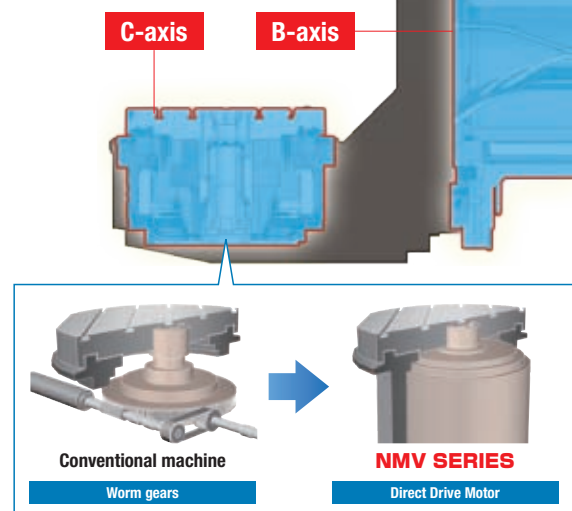
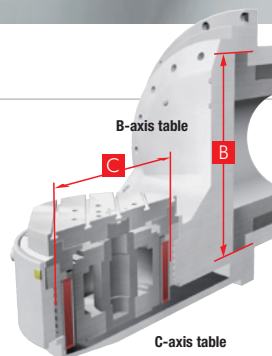


Table-in-Table Construction

The Table-in-Table Construction, in which the C-axis table is placed within the B-axis table, has been adopted. Its highly rigid structure allows stable machining accuracy.



	NMV5000 DCG	NMV8000 DCG
B B-axis bearing diameter	φ 740×φ 560 mm (φ 29.1×φ 22.0 in.)	φ 980×φ 760 mm (φ 38.6×φ 29.9 in.)
C C-axis bearing diameter	φ 435×φ 265 mm (φ 17.1×φ 10.4 in.)	φ 740×φ 560 mm (φ 29.1×φ 22.0 in.)

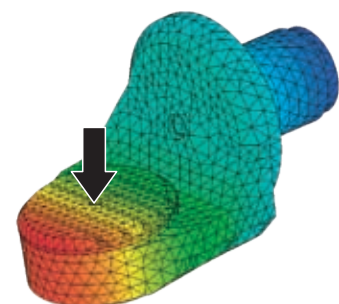
Table rigidity

We used dynamic analysis to design a table with even higher rigidity.

Displacement

NMV5000 DCG
2.0 μm
(F=1,200 N)

NMV8000 DCG
4.0 μm
(F=4,000 N)



DDM: Direct Drive Motor

● The photo/diagram show the NMV5000 DCG

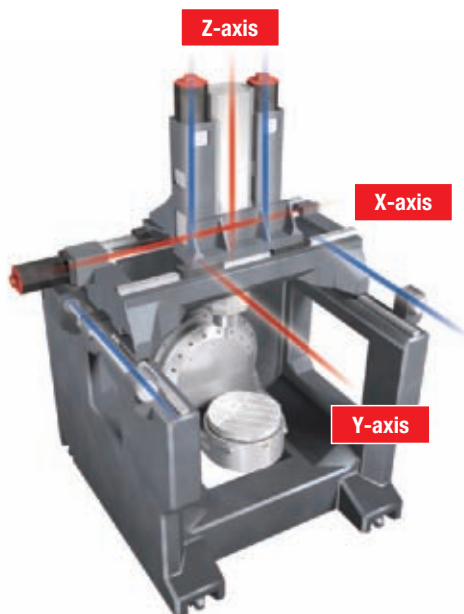
Driven at the Center of Gravity

X-axis Y-axis Z-axis

Minimizing vibration, the greatest enemy of machining, and maximizing acceleration

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.

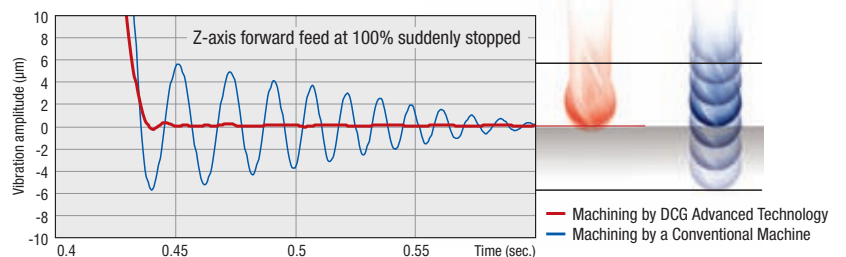
MORI SEIKI
NMV5000 DCG



Restricting vibration

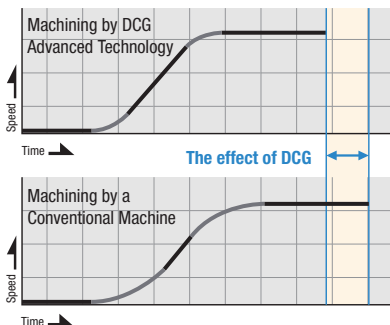
For positioning, machines with DCG virtually eliminate vibration, while machines without DCG continue to vibrate for a long time. It controls the rotational vibration which appears at every acceleration start point, and which is proportional to the distance between the drive point and the center of gravity.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

Residual vibration comparison



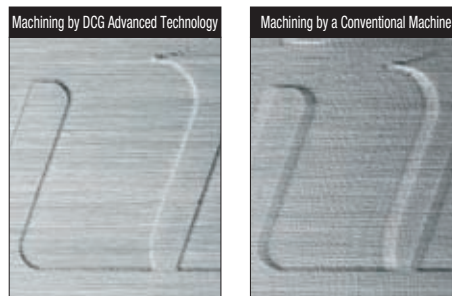
Outstanding acceleration performance

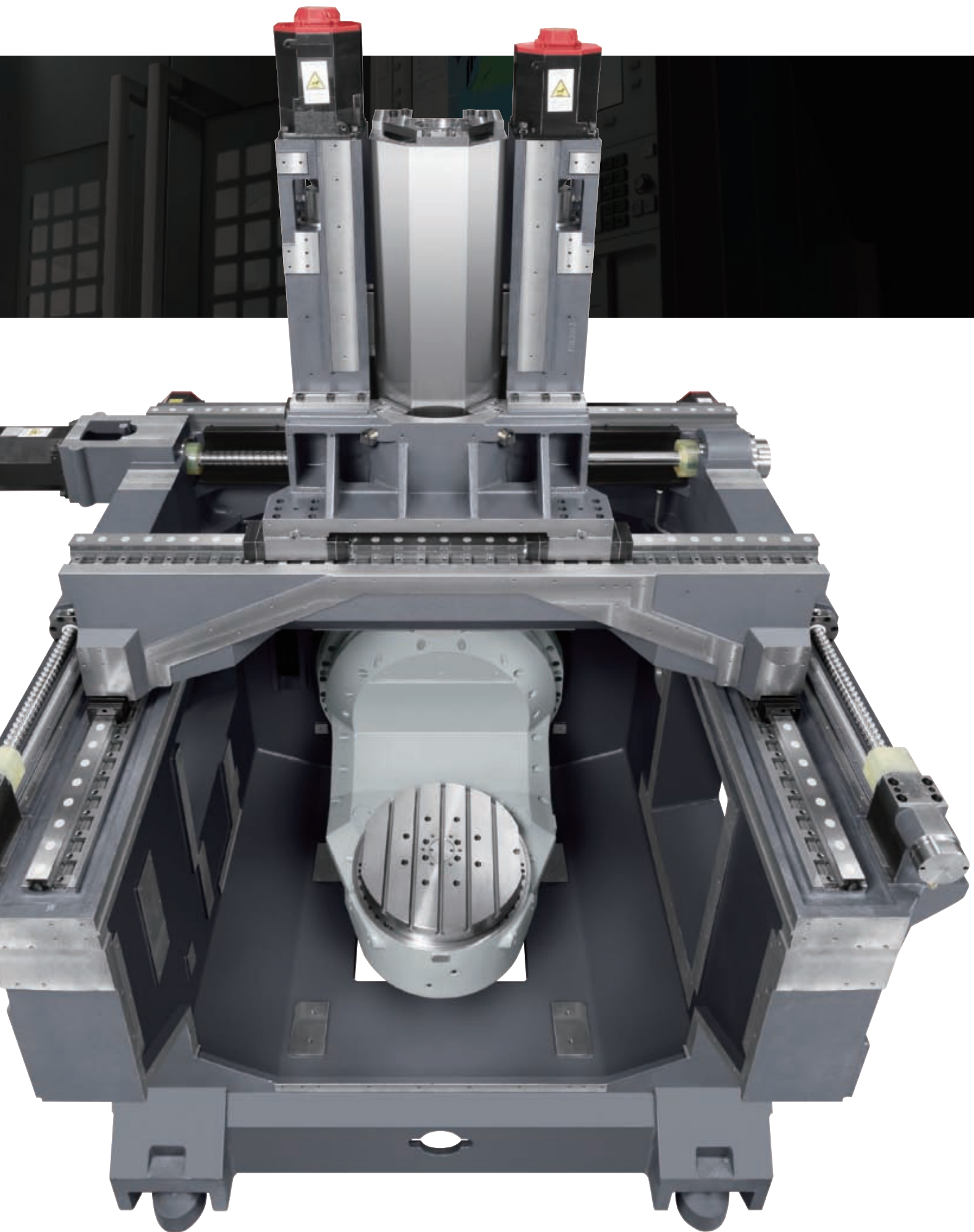
Machining by advanced DCG technology generates little vibration at the beginning of acceleration, and it is possible to accelerate with maximum force from the very start.



Improves surface quality

Curved machined surfaces are actually made up of many very short straight lines, which means the moving component has to change direction ever so slightly at every angle. In order to do this without dropping speed requires very fast acceleration.





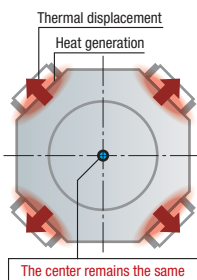
Octagonal Ram Construction Z-axis

A revolutionary structure which controls thermal displacement and offers outstanding straightness

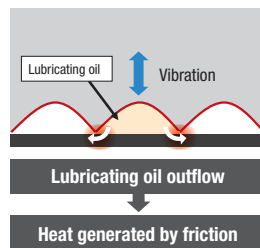
The 4 guideways are located diagonally from each other, so they distort symmetrically in response to the heat generated by high-speed travel. This means that the center stays in the same position, offering high-speed, high-precision feed.

One of the advantages of conventional square guides is their superior damping characteristics. The lubricating oil in the oil pockets which were made by scraping is forced in and out through the gaps because of the contact pressure caused by vibration, and converted into heat. However, when the moving part travels at high speed, the lubricating oil in the oil pockets acts as a wedge, creating sliding resistance. Since the moving part is travelling against this, heat is generated in proportion to the speed.

As a result, only the flat surface heats up, and the slideways warp. DMG MORI SEIKI's ORC has solved this problem of thermal displacement. The slideways, which are located diagonally from each other, offset each other's thermal displacement, because their distortion in response to heat is symmetrical. For this reason, the center of the moving part can be maintained in the same position, achieving high-precision machining during high-speed travel.



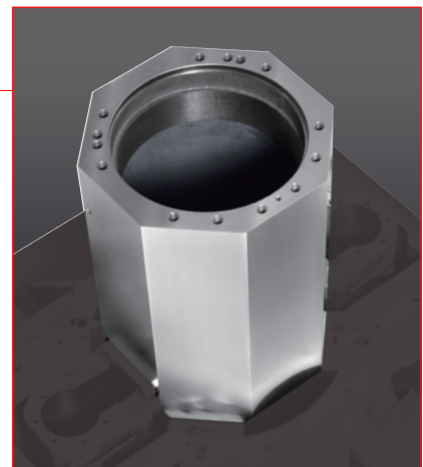
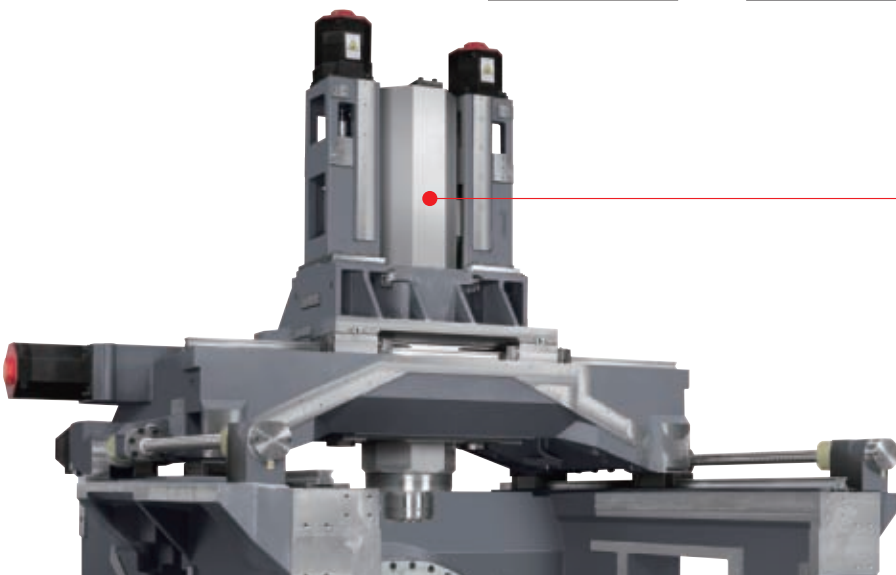
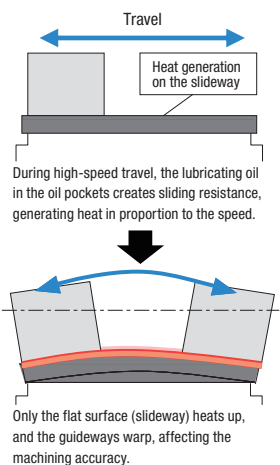
Square guides' excellent damping characteristics

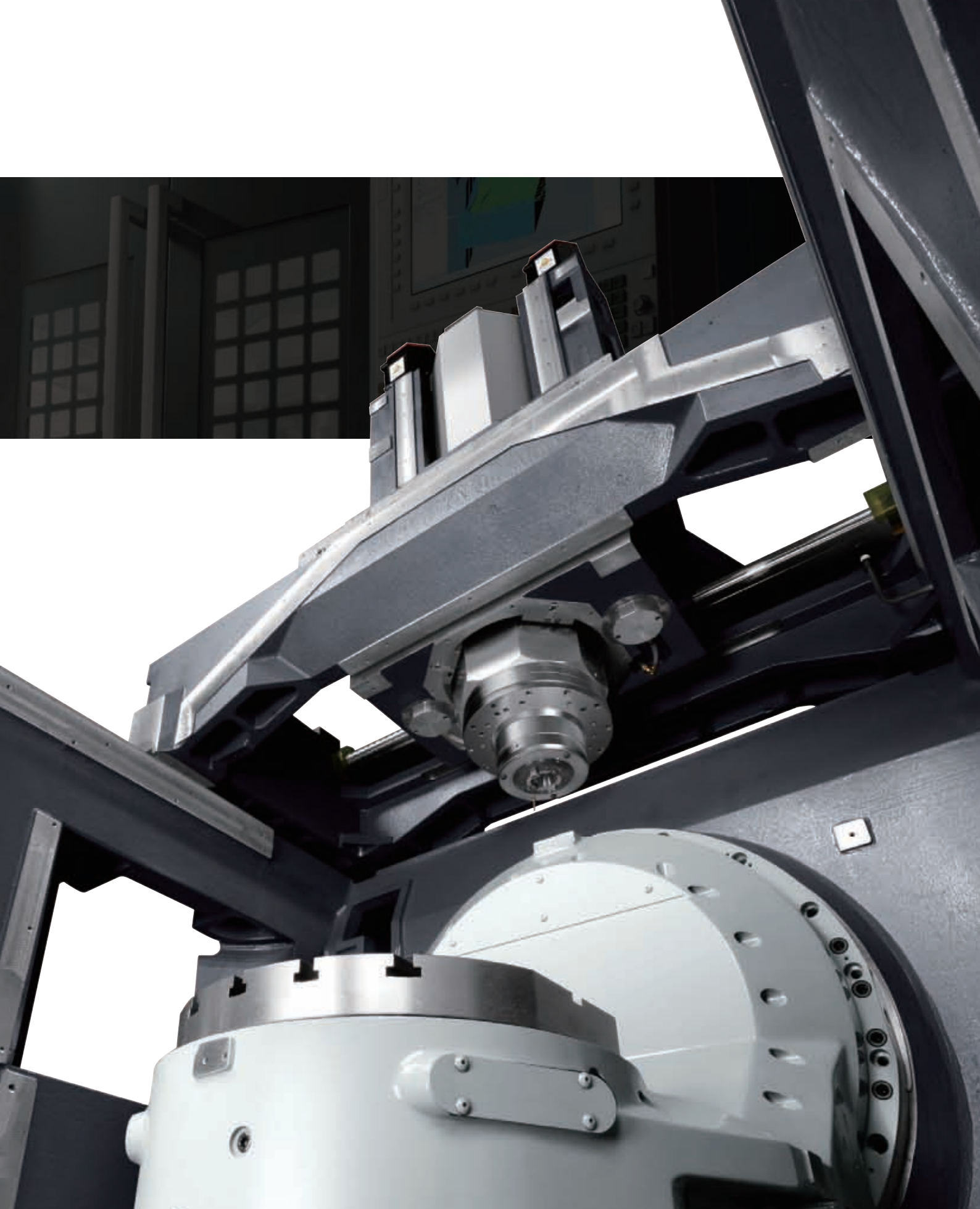


The lubricating oil in the oil pockets which were made by scraping is forced in and out through the gaps because of the contact pressure caused by vibration, generating heat.

II
Vibration is reduced by converting vibrational energy into heat energy. This helps control chattering caused by vibration.

Thermal displacement caused by high-speed travel of square guides

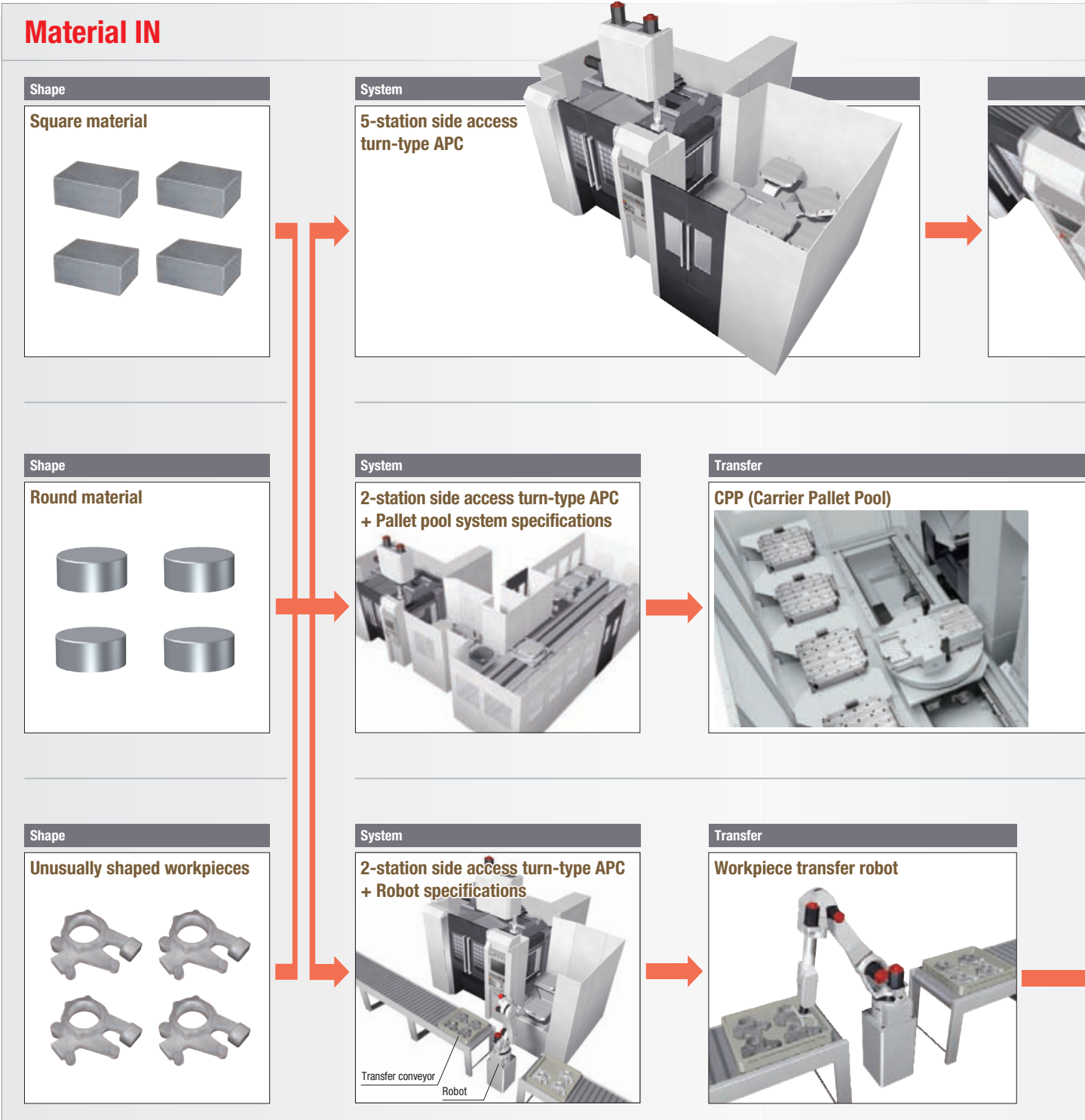




Automatic operation support OP

We have prepared many variations which offer the ideal systems for all shapes of material.

The turning specifications (option) can be selected even with the APC or pallet pool system.

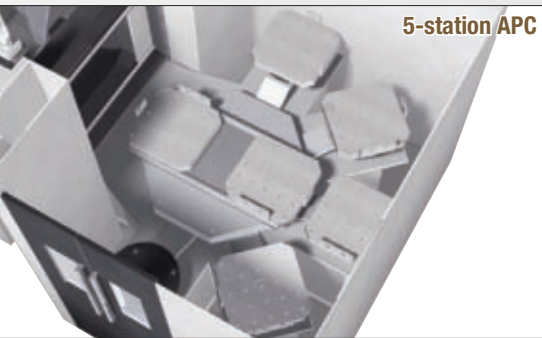


● The photo/diagram show NMV5000 DCG

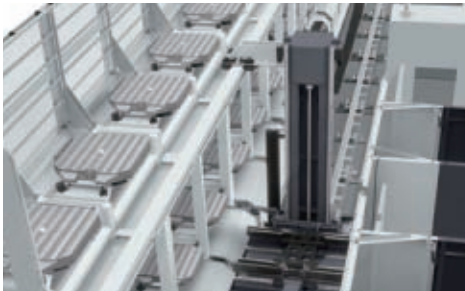
Finished product OUT

Transfer

5-station APC



LPP (Linear Pallet Pool)

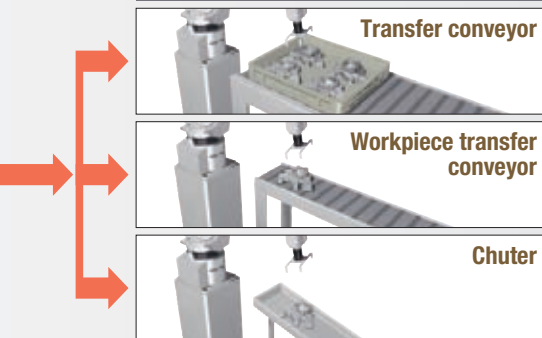


Unloading

Transfer conveyor

Workpiece transfer conveyor

Chuter



Finished product

Workpiece: Housing

Material: Aluminum



Workpiece: Cam

Material: Cast iron



Workpiece: Knuckle

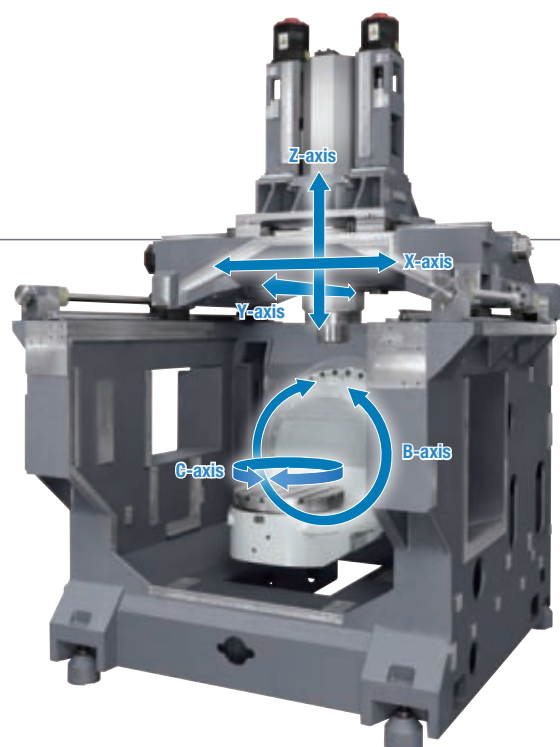
Material: Cast iron



Basic structure

Working area

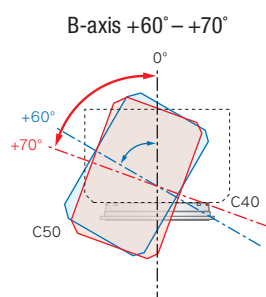
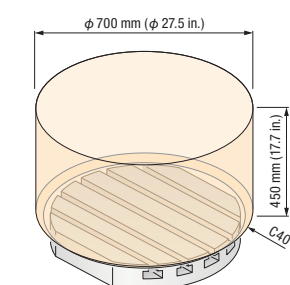
	NMV5000 DCG	NMV8000 DCG
X-axis travel	730 mm (28.7 in.)	1,200 mm (47.2 in.)
Y-axis travel	510 mm (20.1 in.)	920 mm (36.2 in.)
Z-axis travel	510 mm (20.1 in.)	610 mm (24.0 in.)
B-axis travel	+160° — -180°	
C-axis travel	360°	



● The photo/diagram show the NMV5000 DCG

Max. workpiece size

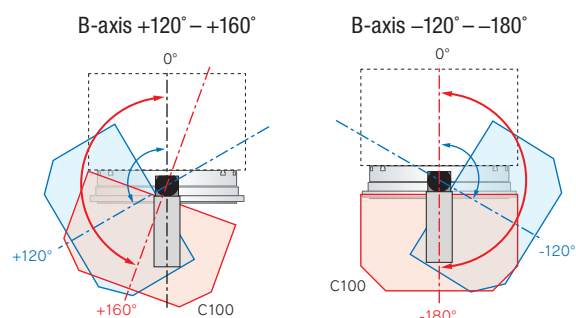
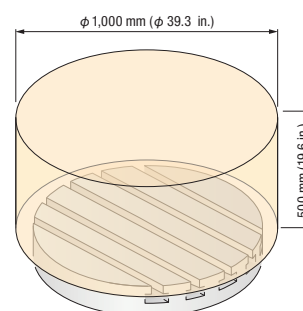
NMV5000 DCG



● When the B-axis rotation is greater than +60°—+70°, C50 or more is necessary.

Table loading capacity		300 kg (660 lb.)
Table working surface		φ 500 mm (φ 19.7 in.)
Table Max. rotational speed	B-axis	F31iA 35 min ⁻¹ , 50 min ⁻¹ OP
		F31iA5 50 min ⁻¹
	C-axis	Table mode 120 min ⁻¹
		Turning mode 500 min ⁻¹ OP , 1,200 min ⁻¹ OP

NMV8000 DCG



● When the B-axis rotation is greater than ±120°, C100 or more is necessary.

Table loading capacity		1,000 kg (2,200 lb.)
Table working surface		φ 800 mm (φ 31.5 in.)
Table Max. rotational speed	B-axis	F31iA 25 min ⁻¹
		F31iA5 25 min ⁻¹
	C-axis	Table mode 50 min ⁻¹
		Turning mode 300 min ⁻¹ OP

- When the C-axis rotates, unbalanced weight of the workpiece (including fixtures) on the table causes vibration, so it may not be possible to rotate at the required speed. In that case, it is necessary to adjust the balance of the workpiece by adding weights to the fixtures.
- For the max. workpiece size for a machine with the APC/pallet pool system, please see page 27.

Spindle

The DDS motor extracts full power across a wide range, from high-speed machining to heavy-duty cutting.

DDS: Direct Drive Spindle



Milling specifications



Turning specifications

Spindle variations	NMV5000 DCG NMV8000 DCG/40		NMV5000 DCG HSC NMV8000 DCG/40 HSC		NMV8000 DCG/50	
	Standard	High output OP	OP		Standard	High output OP High speed OP
Max. spindle speed	12,000 min ⁻¹		20,000 min ⁻¹		10,000 min ⁻¹ 15,000 min ⁻¹	

● When using spindle No. 40 taper at 15,000 min⁻¹ or higher, or spindle No. 50 taper at 10,000 min⁻¹ or higher, please use two-face contact tool.

HSC: High Speed Cutting

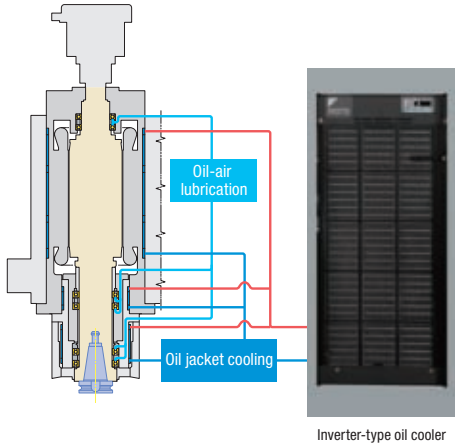
Spindle lubrication

[Oil-air lubrication]

For bearing lubrication, we have adopted a oil-air lubrication system, which supplies minimum amount of lubricating oil and reduces heat generation caused by resistance to stirring. Air enables effective cooling, and the air purge which increases air pressure for bearings prevents foreign matter from getting inside.

[Spindle cooling]

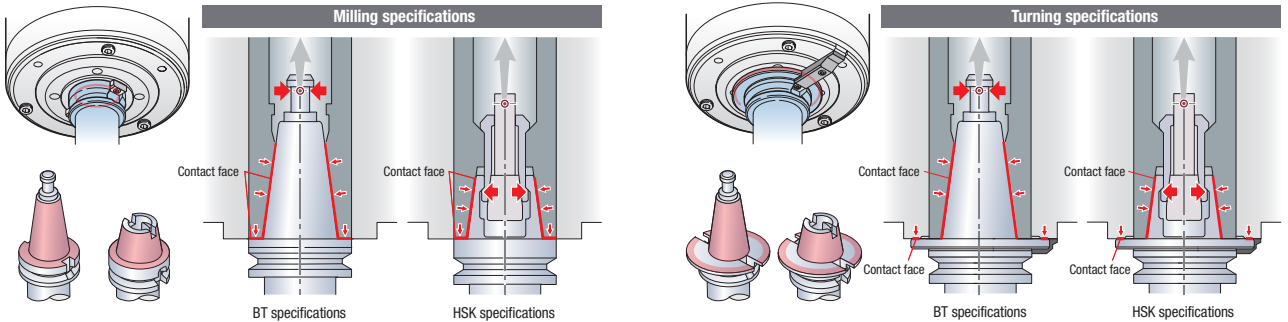
Stator coil in DDS motor: Oil jackets are placed around the stator coil, allowing forced circulation of coolant and prevents heat from spreading.



Inverter-type oil cooler

Two-face contact **OP**

By using two-face contact tool holders, we have improved rigidity, allowing high-precision machining and extending tool life. Please use these tool holders which DMG MORI SEIKI has prepared for turning specifications.



- If you select turning specifications, the through-spindle coolant system is a center-through type only. Please note that to attach turning tools, BT or HSK tool holder (two-face contact), which DMG MORI SEIKI has prepared according to machine specifications, is required.
- When selecting the two-face contact tool specification, be sure to use a two-face contact tool.

Basic structure

ATC

Uses a highly-reliable double-arm ATC, reducing non-cutting time and offering high-efficiency machining. We have also simplified the tool clamping mechanism, improving reliability and ease of maintenance.



ATC

Chain-type

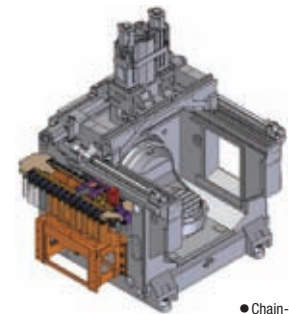
		NMV5000 DCG	NMV8000 DCG/40	NMV8000 DCG/50
Tool storage capacity		31 [61] [91] [121] [181]		31 [61] [91] [121]
Max. tool diameter	With adjacent tools	mm (in.)	φ 90 (φ 3.5)	φ 120 (φ 4.7)
	Without adjacent tools	mm (in.)	φ 125 (φ 4.9)	φ 240 (φ 9.4)
Max. tool length	mm (in.)	300 (11.8)		450 (17.7)
Max. tool mass	kg (lb.)	8 (17.6)		20 (44.0)
Max. tool moment	N·m (ft·lbf)	11 (8.1)	18.5 (13.6)	46.5 (34.3)
Tool-to-tool	sec.	1.8	2.2	3.1

Rack-type

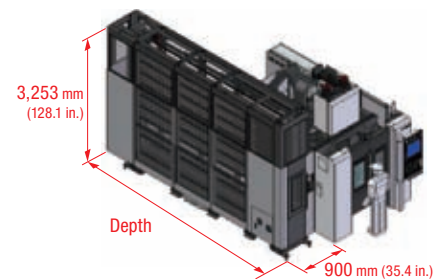
		NMV5000 DCG		
Tool storage capacity	Total	[240]	[300]*	[320]
	φ 70×300 mm (φ 2.8×11.8 in.)	—	284	—
	φ 90×150 mm (φ 3.5×5.9 in.)	135	—	185
	φ 90×300 mm (φ 3.5×11.8 in.)	81	—	111
	φ 125×150 mm (φ 4.9×5.9 in.)	15	—	15
Max. tool mass	kg (lb.)		8 (17.6)	
	mm (in.)	5,019 (197.6)	2,279 (89.7)	6,069 (238.9)
Depth	sec.		1.8	
Tool-to-tool				

[] Option

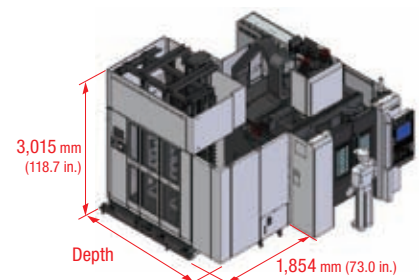
* A pot transfer type magazine is used. The tool storage capacity includes a tool mounted in the spindle.



● Chain-type



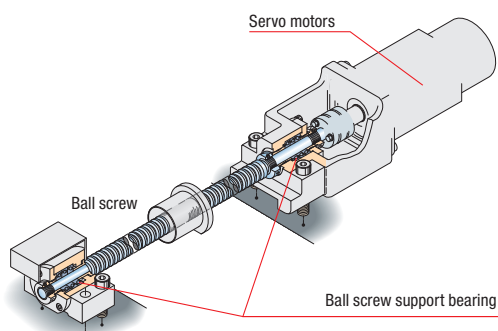
● Rack-type (240, 320 tools)



● Rack-type (300 tools)

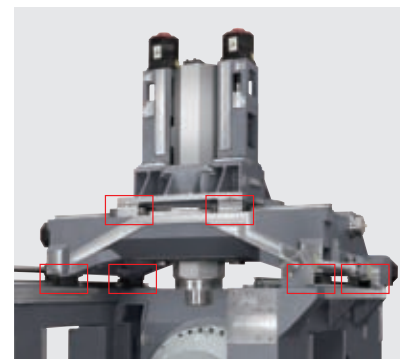
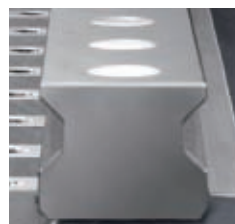
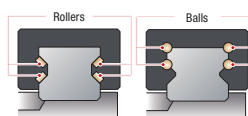
Double-anchor support

Prevents expansion and contraction caused by heat. And by connecting the ball screw directly to the servo motor, it ensures sufficient rigidity.



Rollers guideway

Compared with balls, rollers have far less elastic deformation under load. By placing many rollers inside the slide unit, we have achieved high rigidity.



● The photo/diagram show the NMV5000 DCG

Improved workability, Maintenance

Access to the spindle



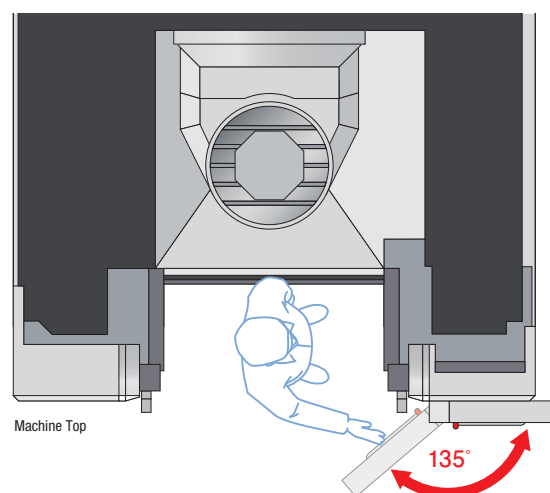
The excellent access to the spindle allows tool replacement and maintenance to be done easily.

Access to the table



The access to the table is good, offering superior operability and setup.

Swivel-type operation panel

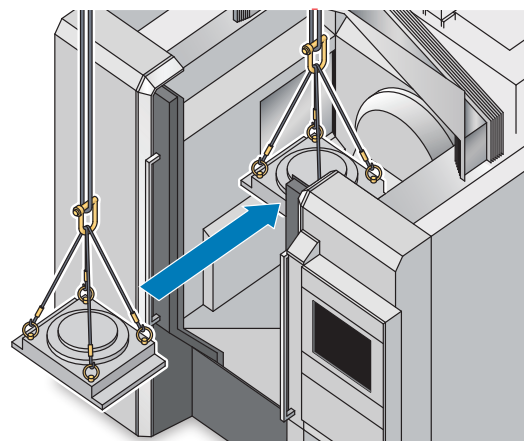
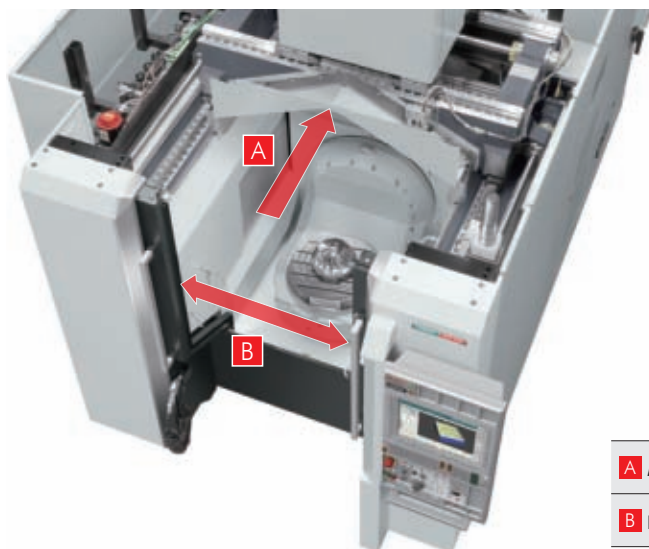


The operation panel which swivels from 0 to 135 degrees improves visibility during operation.

Improved workability, Maintenance

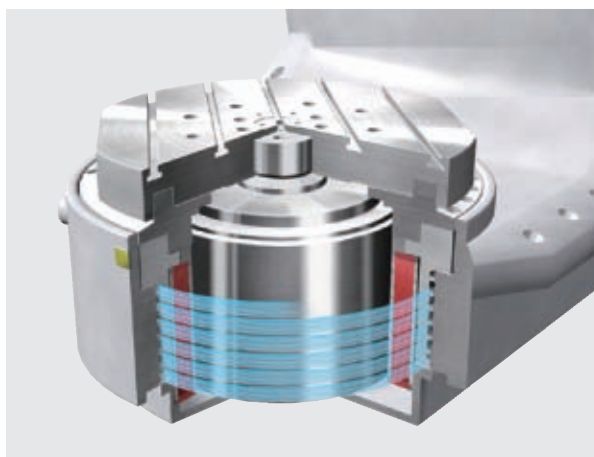
Automatic opening/closing protector

The Y-axis can move further beyond the work envelope.
This allows workpieces to be loaded easily using a crane.



	NMV5000 DCG	NMV8000 DCG
A Automatic opening/closing protector travel	860 mm (33.9 in.)	1,170 mm (46.1 in.)
B Door opening width	926 mm (36.5 in.)	1,106 mm (43.5 in.)

In-house production of DDM (Direct Drive Motor)



Because DMG MORI SEIKI makes them in-house, if they ever do break down we can fix them quickly. MTTR (Mean Time To Repair) is greatly reduced.

Centralized layout of devices



Devices are placed together at the side of the NMV5000 DCG, and the rear of the NMV8000 DCG for easier maintenance.

- The photo/diagram show the NMV5000 DCG
- The machine shown in the photo is equipped with a separate manual pulse handle as an option.

Transfer systems

APC

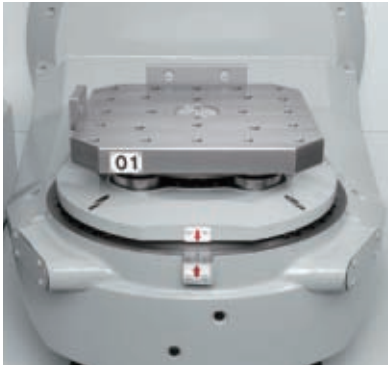
The NMV Series boasts outstanding operability, allowing smooth setups which do not interfere with operation with the standard specifications, and offers excellent access to the spindle and the table even with the APC specifications.

The turning specifications (option) can be selected even with the APC or pallet pool system.



NMV5000 DCG

- For the NMV8000 DCG, 2-pallet and 4-pallet turn-type, side access APC are available as options.
- The machine shown in the photo is equipped with a separate manual pulse handle as an option.



2-station side access turn-type APC OP

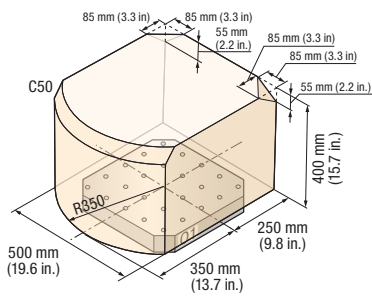


5-station side access turn-type APC OP



[Max. workpiece size]

■ APC <NMV5000 DCG>

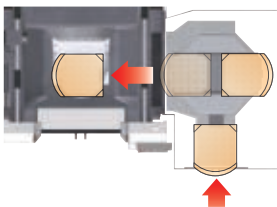


Change time
38 sec.

Pallet working surface
400 mm×400 mm
(15.7 in.×15.7 in.)

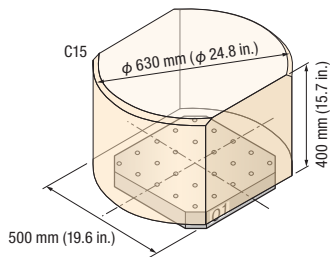
Pallet loading capacity
250 kg (550 lb.)

Viewed from above the machine

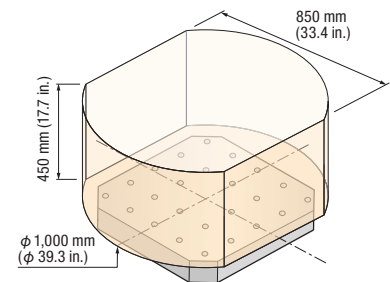


- The picture shows the orientation of a workpiece in the setup station.

■ CPP/LPP <NMV5000 DCG>



■ APC/ CPP/LPP <NMV8000 DCG>

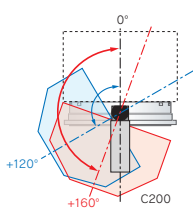


Change time
65 sec.

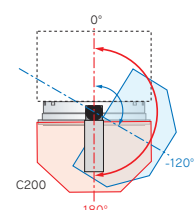
Pallet working surface
630 mm×630 mm
(24.8 in.×24.8 in.)

Pallet loading capacity
700 kg (1,540 lb.)

B-axis +120°—+160°



B-axis -120°—-180°

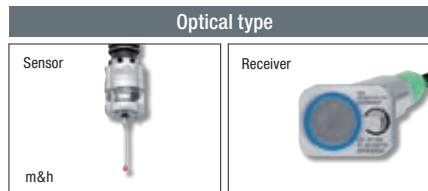
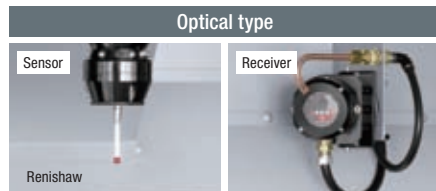


- When the B-axis rotation is greater than $\pm 120^\circ$, C200 or more is necessary.

- For details about workpiece shapes, please consult with our sales representative.
- For details of the edge locator, please refer to the pallet dimension diagrams.

Peripheral equipment

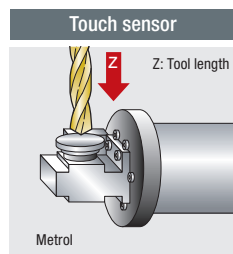
In-machine measuring system (spindle) OP



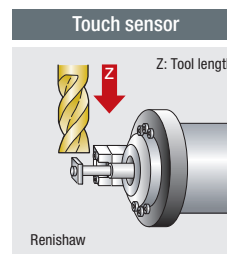
Automatic	■ Centering
	■ Measurement
Manual	The workpiece setter function can be added OP
	Workpiece zero point setting and centering are possible

● The NMV8000 DCG can use Renishaw only.

In-machine measuring system (table) OP

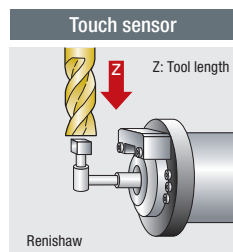


Automatic	■ Tool length measurement
	■ Tool breakage detection
Manual	The tool setter function can be added OP
	Allows tool length offset

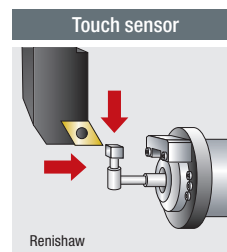


Automatic	■ Tool length measurement
	■ Tool breakage detection
Manual	The tool setter function can be added OP
	Allows tool length offset and tool diameter offset

In-machine measuring system (table) <turning specifications> OP



Automatic	■ Tool length measurement
	■ Tool breakage detection
Manual	Allows tool length offset and tool diameter offset

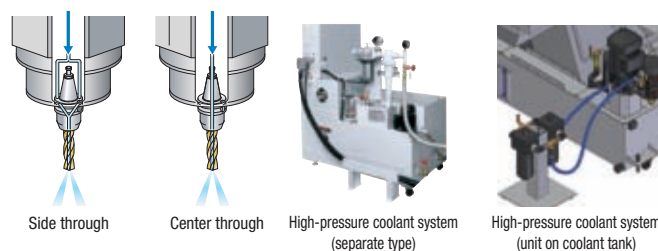


Manual	Allows tool geometry offset
--------	-----------------------------

● The tool setter function is attached.

Through-spindle coolant system OP

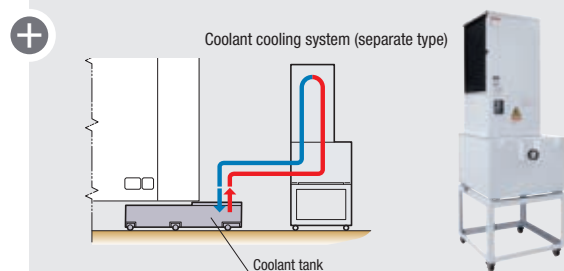
The through-spindle coolant system effectively eliminates chips, cooling the machine point and lengthening the lives of your tools.



Recommended equipment

Coolant cooling system (separate type)

The high-pressure coolant system generates a lot of heat because it discharges coolant at high pressure. The coolant cooling system controls the temperature of the coolant and suppresses temperature increases in the workpiece, tools and table, ensuring stable machining accuracy. This is essential equipment when using high-pressure coolant. A unit with a heater will be customized.



Peripheral equipment

External chip conveyor **OP**

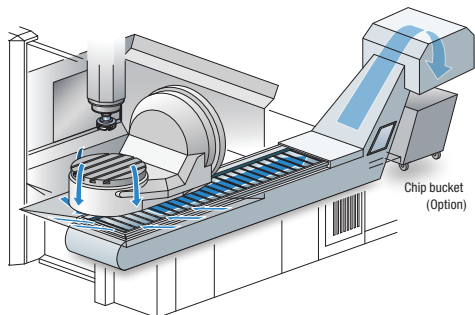
Available specifications	Workpiece material and chip size						
	Steel			Cast iron	Aluminum, non-ferrous metal		
	Long	Short	Powdery	Short	Long	Short	Powdery
Hinge type + Drum filter type	○	○	○	○	○	○	○
Scraper type + Drum filter type	×	○ Please use a steel filter	○	○	×	○	○
Magnet scraper type + Drum filter type	×	◎	◎	◎	×	×	×

Chip size guidelines

Short: Chips shorter than 50 mm (2.0 in.), blocks of chips shorter than $\phi 40$ mm ($\phi 1.6$ in.).

Long: Chips larger than those indicated above.

- The options table shows the general options when using coolant. Changes may be necessary if you are not using coolant, or depending on the amount of coolant, compatibility with machines, or the specifications required.
- Please select a chip conveyor to suit the shape of your chips. When using special or difficult-to-cut material (chip hardness HRC45 or higher), please consult with our sales representative.
- Chip conveyors are available in various types for handling chips of different shape and material. For details, please consult with our sales representative.



Chip disposal



[Table]

By rotating the table, chips fall straight down into the center conveyor.



[Shower coolant] **OP**

As well as preventing chips from scattering during machining, this makes them fall smoothly into the flush coolant system.

- Recommended APC specifications.

Eco-friendly design

Reduced consumption of lubricating oil

[Oil-free type roller guides]

Uses oil-free type roller guides to reduce the amount of lubricating oil.

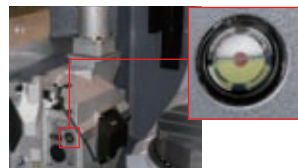
	Conventional machine	NMV5000 DCG
Consumption of lubricating oil	11.87 mL/h	6.08 mL/h

Consumption of lubricating oil per hour

Compared with conventional machine Approx. **1/2**

[Oil-bath ATC]

Uses an oil bath for the ATC unit, which uses less lubricating oil than the conventional oil-drip type.



Reduced consumption of electricity

[Automatic machine light function]

If the operating panel is not touched for a certain amount of time, the interior light turns off. This saves energy and lengthens the life of the machine lights.

[Automatic sleep function]

If the keyboard is not touched for a certain amount of time and NC operation is not being performed, power is cut off to the servo motor, the spindle, the coolant pump and the chip conveyor, thereby saving energy.



Power-saving settings screen

MAPPS IV

A New High-Performance Operating System
for Machining Centers



● 19-inch operation panel

A new 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****

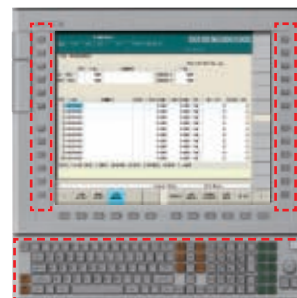
Outstanding operability

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

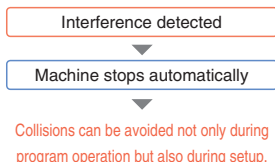
A PC-type keyboard is used as standard, making key input easy. A keyboard with a conventional key layout is also available as an option.



Functions for multi-axis machining

3D interference checking function

Checks for interference in 3D for spindles, tables, tools, workpieces and fixtures. If interference is detected, the machine will stop operation regardless of whether it is in the automatic or manual mode, providing the highest level of protection against interference.

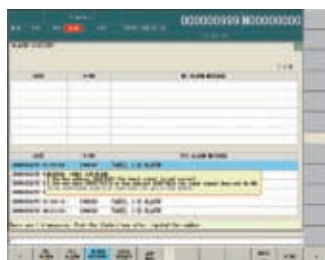


- The 3D interference checking function will check for interference accurately as long as the 3D model exactly matches the actual configuration of the spindles, tables, tools, workpieces and fixtures.
- Customized design is required for special shape. For details, please refer to the description of "3D interference checking function" in the NC control unit specifications.
- A cutting simulation that shows how material is removed as machining proceeds cannot be carried out during a 3D interference check.

Improved ease of maintenance

Alarm help function

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



Improved ease of setup

File display and Memo function

Data necessary for setups such as operating instructions, drawing data and text data can be viewed on MAPPS. Text data is editable.



Viewable file types

- PDF • TXT (Editable)
- Any file that can be displayed with Internet Explorer is available

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

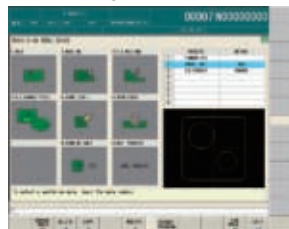
- Inside machine (to check machining)
- Tool magazine (to check cutting tools)
- Chip bucket (to check chip accumulation)

Conversational automatic programming

This function allows users to create programs simply by following the guidance on the screen.

Much of the programming process has been simplified due to the minimal key entry required for even the most complex shapes.

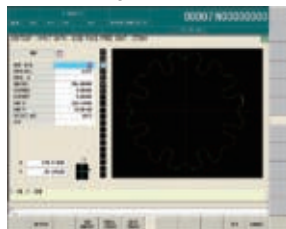
Machining menu



List display function



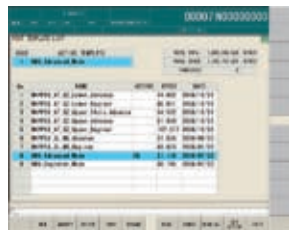
Contour input



Islands, open pockets OP



MORI-POST advanced mode OP



DXF import function OP



MORI Automatic Programming System for Machining Center

MORI-APM OP

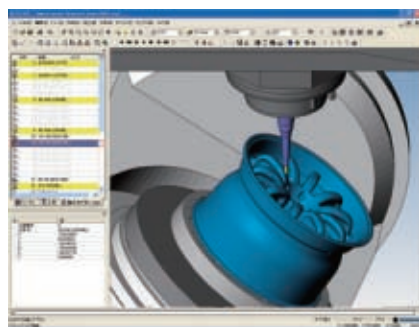
Application systems which let you create machining programs easily on your PC.

- Easy operation, simply by entering the product shapes while following the instructions on the screen.
- Its functions, data and operability are fully compatible with the conversational programming system of the MAPPS IV operating systems.



CAM software

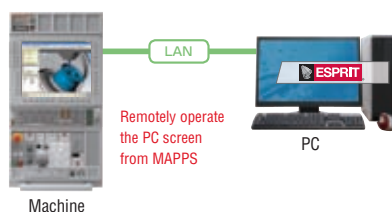
ESPRIT® allows you to create complex 3D programming with high-added value. By just installing the software on your PC with connection to LAN, you will be able to use it. (Once the software is started on the computer, it can be used for up to 7 days without LAN connection)



- **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)

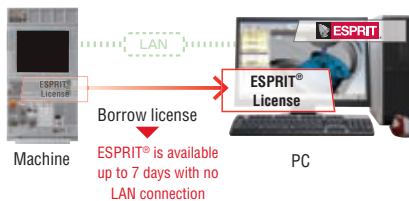
Remote Desktop <Patent pending>

ESPRIT® installed on your PC can be operated from your machine via LAN. (It cannot be simultaneously started up on more than one PC)



License borrowing system

By borrowing the ESPRIT® license from the machine over LAN, ESPRIT® can be run on the PC up to 7 days without LAN connection (or turning on the machine).



Support system

Distributors/Trading companies, DMG MORI SEIKI Technical Centers and ESPRIT® Support Team will answer inquiries about the CAM software.



* Applicable Operating Systems: Windows® Vista Business/Ultimate, Windows® 7 Professional/Ultimate
 ● A PC is required to use ESPRIT®. Please prepare PCs by yourself.

- The photo shown may differ from actual machine.
- Information about the screen is current as of July 2013.

For shorter total production time for all our customers

DMG MORI SEIKI's software Line-up

This network system application achieves fast information sharing and increased production efficiency.

— [Internet]
— [LAN]

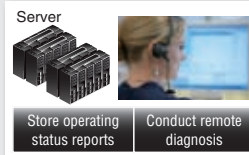
Remote Maintenance/Machine Operation Monitoring Service

MORI-NET Global Edition Advance [OP]

■ Features

- Remote maintenance service by DMG MORI SEIKI Service Center
- Internet-based, high speed (max. 1 Gbps), large capacity network
- No server installation is required — reduction in initial cost
- Download various data from the server located at DMG MORI SEIKI

[DMG MORI SEIKI's Service Center]



[Outside the office]



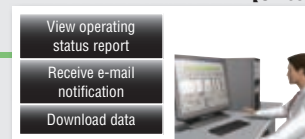
[Plant]



Router

Hub

[Office]



■ Remote alarm support

When an alarm goes off, an alarm notification will be sent to the DMG MORI SEIKI Service Center simply by pressing the "Send e-mail" button on MAPPS. DMG MORI SEIKI service personnel will remotely diagnose the cause of the problem, and quickly provide solutions for machine recovery.

- This service may not be available in some areas. Please contact our sales representative for details.



Machine Operation Monitoring System

MORI-NET LAN Edition [OP]

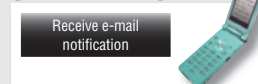
■ Features

- Intra-company network system
- Up to 30 machines can be connected with one server
- The operating status of your machines can be centrally managed in real time

[Company's own server]



[Outside the office]

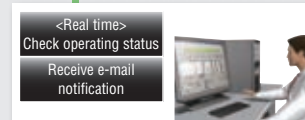


[Plant]



Hub

[Office]



Application for Data Transmission

MORI-SERVER [Standard features]

This enables high-speed transfer of programming data between your office computer and machine, reducing the lead time of pre-machining processes.

MAPPS Screen Remote Control and Browsing Application

MORI-MONITOR [OP]

This is an application which allows you to remotely operate and view the MAPPS screens from your office computer.

Advanced Communication Technology (ACT) connects machine tool and peripheral devices

DMG MORI SEIKI's new proposal, ACT, is designed to strengthen connections between machine tools and peripheral equipment by standardizing communication and software of the entire system. With ACT, standardization of interfaces of peripherals, simplified wiring, and labor saving can be achieved.

— [Internet]
— [LAN]

Industrial Network for Peripheral Equipment Control

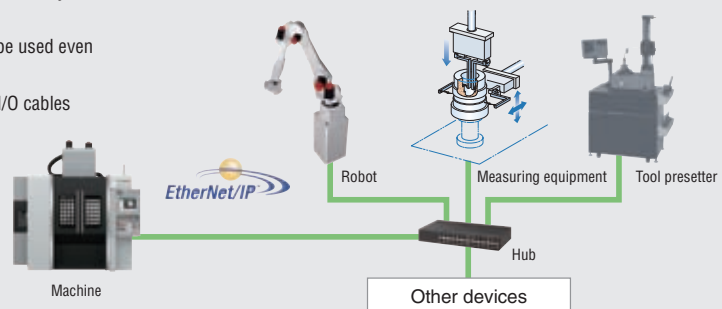
MAPPS EtherNet/IP I/F OP

This industrial network using the standard Ethernet (TCP/IP) offers high speed and reliable connection. Simple Plug and Play connections, which are made available just by connecting to the hub through MAPPS, enable you to build a system easily. The use of standard cables also helps to reduce costs.

■ Features

- Connections between a machine and peripheral equipment become easy because standard LAN cables are used
- Thanks to increased versatility, your peripheral equipment can be used even when the machine tools are replaced by new ones
- Reliability is significantly increased by reducing the number of I/O cables

- Easy system construction
- Connection with existing devices
- Inexpensive devices



Communication Interface for Monitoring Machine Operation

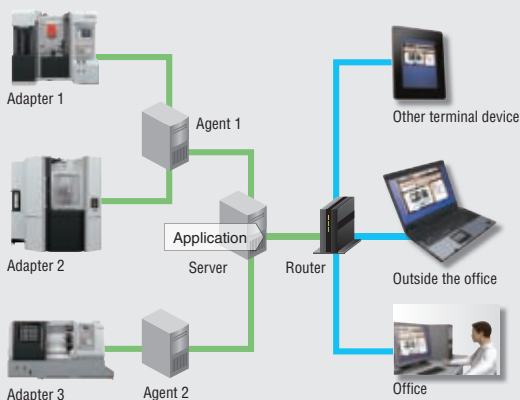
MAPPS MTConnect I/F

MTConnect, which was introduced by the Association for Manufacturing Technology (AMT) in 2008, is a new XML (Extensible Markup Language) based communication protocol that offers an open interface. This interface allows you to build a system to monitor the operating status of your machines.

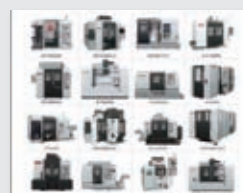
■ Features

- Open communication interface allows you to access to your company's system
- This makes it possible for you to build a system to monitor the operating status of your machines via the Internet

■ System examples



■ Application examples



Your machines are displayed all at once, allowing you to quickly call up the machine you wish to check.



Operating status can be checked in real time.



You can check the operating history on the Gantt chart screen.

- A server and application must be prepared by the customer.
- For introduction of MTConnect, separate consultation is required.

Machine specifications

Item				NMV5000 DCG	NMV5000 DCG HSC
Travel	X-axis travel <longitudinal movement of spindle head>		mm (in.)	730 (28.7)	
	Y-axis travel <cross movement of saddle>		mm (in.)	510 (20.1)	
	Z-axis travel <vertical movement of ram>		mm (in.)	510 (20.1)	
	Distance from table surface to spindle gauge plane <horizontal table position>		mm (in.)	130 – 640 (5.1 – 25.2) [APC: 50 – 560 (2.0 – 22.0)]	
	B-axis travel			+160° – –180°	
C-axis travel				360°	
Table	Height from the floor to the upper face of the table		mm (in.)	870 (34.3) [APC: 950 (37.4)]	
	Table working surface		mm (in.)	φ 500 (φ 19.7)	
	Table loading capacity		kg (lb.)	300 (660) [APC: 250 (550)]	
	Table surface configuration			14 mm (0.6 in.) T-slot ×5	
	Max. workpiece swing diameter		mm (in.)	φ 700 (φ 27.5)	
	Max. workpiece height		mm (in.)	450 (17.7) [APC: 400 (15.7)]	
	Rotational speed of the table	B-axis	min ⁻¹	35 [50]	
C-axis		min ⁻¹	120 [500] [1,200]		
Spindle	Max. spindle speed		min ⁻¹	12,000	[20,000]
	Type of spindle taper hole			No.40 [HSK-A63]	
Feedrate	Rapid traverse rate		mm/min (ipm)	X, Y: 50,000 (1,968.5) Z: 40,000 (1,574.8)	
	Cutting feedrate	With AI contour control	mm/min (ipm)	X, Y: 50,000 (1,968.5) Z: 40,000 (1,574.8)	
			min ⁻¹	B: 13.88 [33.33] C: 120	
		Without AI contour control	mm/min (ipm)	X, Y, Z: 6,000 (236.2)	
	min ⁻¹		B: 5.55 C: 16.66		
Jog feedrate		mm/min (ipm)	X, Y, Z: 0 – 5,000 (0 – 196.9)		
		min ⁻¹	B, C: 0 – 13.88		
ATC	Type of tool shank			BT40* [CAT40] [DIN40] [HSK-A63]	
	Type of retention knob			DMG MORI SEIKI 90° type [45°(MAS-I)] [60°(MAS-II)] [DIN] [Special (center through)]	
	Tool storage capacity			31 [61] [91] [121] [181] (Chain-type) [240] [300] [320] (Rack-type)	
	Max. tool diameter	With adjacent tools	mm (in.)	φ 90 (φ 3.5)	
		Without adjacent tools	mm (in.)	φ 125 (φ 4.9)	
	Max. tool length		mm (in.)	300 (11.8)	
	Max. tool mass		kg (lb.)	8 (17.6)	
	Method of tool selection			Fixed address, shorter route access	
	Tool changing time	Tool-to-tool	s	1.8	
Max. tool moment (from spindle gauge line)		N·m (ft·lbf)	11 (8.1)		
Motors	Spindle drive motor	12,000 min ⁻¹	kW (HP)	18.5/15 (24.7/20) <30 min/cont>	-
		[12,000 min ⁻¹]	kW (HP)	[22/18.5 (30/24.7) <15 min/cont>]	-
		[20,000 min ⁻¹]	kW (HP)	-	[22/11 (30/15) <15 min/cont>]
		[20,000 min ⁻¹]	kW (HP)	-	[22/18.5 (30/24.7) <15 min/cont>]
	Feed motor		kW (HP)	X: 4 (5.3) Y: 4 (5.3)×2 Z: 3 (4.0)×2	
	B-axis table	35 min ⁻¹	kW (HP)	14.9/10.3 (19.9/13.7) <max/cont>	
		[50 min ⁻¹] F31iA5 is standard	kW (HP)	[15.0/14.6 (20/19.5) <max/cont>]	
	C-axis table	120 min ⁻¹	kW (HP)	5.4/5.2 (7.2/6.9) <max/cont>	
[500 min ⁻¹]		kW (HP)	[15.1 (20.1) <cont>]		
	[1,200 min ⁻¹]	kW (HP)	[28.2 (37.6) <cont>]		
Coolant pump motor		kW (HP)	1.2 (1.6)		
Power sources (Standard)	Electrical power supply <cont>		94101A05 kVA	42.4	
	Compressed air supply		MPa (psi), L/min (gpm)	0.5 (72.5), 500 (132) <ANR> <A compressed air supply may be needed, depending on options and peripheral equipment.>	
Tank capacity	Coolant tank capacity		L (gal.)	750 (198.0)	
Machine size	Machine height <from floor>		mm (in.)	3,264 (128.5) <at shipment: 3,175.5 (125.0)>	
	Floor space <width × depth>		mm (in.)	2,771×3,948 (109.1×155.4) <excluding chip conveyor>	
	Mass of machine		kg (lb.)	12,400 (27,280)	
Noise data	A-weighted, time-average radiated sound pressure level		dB	65 – 82 (measurement uncertainty is 4 dB)	

[] Option HSC: High Speed Cutting

NMV5000 DCG (130619)

* When selecting the two-face contact tool specification, be sure to use a two-face contact tool.

● 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.

● Please use a two-face contact tool when using a No. 40 taper spindle at 15,000 min⁻¹ or higher.

● A tool with a mass moment greater than the maximum tool mass moment may cause problems during ATC operations even if it satisfies other conditions.

● 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.

● When the tool tip air blow is regularly used, air supply of more than 300 L/min (79.2 gpm) is separately required.

● 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.

● If you select the turning specification, the through-spindle coolant system is a center-through type only.

Please note that to attach turning tools, either a BT or HSK tool holder (two-face contact), which we have prepared according to machine specifications, is required.

● When the C-axis rotates, unbalanced weight of the workpiece (including fixtures) on the table causes vibration, so it may not be possible to rotate at the required speed.

In that case, it is necessary to adjust the balance of the workpiece by adding weights to the fixtures.

● Noise data: the measurement was performed at the front of the NMV5000 DCG machine with a maximum spindle speed of 12,000 min⁻¹.

For details, please consult with our sales representative.

● The information in this catalog is valid as of July 2013.

Item				NMV8000 DCG/40	NMV8000 DCG/40 HSC	NMV8000 DCG/50		
Travel	X-axis travel <longitudinal movement of spindle head> mm (in.)			1,200 (47.2)				
	Y-axis travel <cross movement of saddle> mm (in.)			920 (36.2)				
	Z-axis travel <vertical movement of ram> mm (in.)			610 (24.0)				
	Distance from table surface to spindle gauge plane <horizontal table position> mm (in.)			200 – 810 (7.9 – 31.9) [APC: 100 – 710 (3.9 – 28.0)]				
	B-axis travel			+160° – –180°				
	C-axis travel			360°				
Table	Height from the floor to the upper face of the table mm (in.)			1,100 (43.3) [APC: 1,200 (47.2)]		1,150 (45.3) [APC: 1,200 (47.2)]		
	Table working surface mm (in.)			φ 800 (φ 31.5)				
	Table loading capacity kg (lb.)			1,000 (2,200) [APC: 700 (1,540)]				
	Table surface configuration			18 mm (0.7 in.) T-slot ×5				
	Max. workpiece swing diameter mm (in.)			φ 1,000 (φ 39.3)				
	Max. workpiece height mm (in.)			500 (19.6) [APC: 450 (17.7)]				
	Rotational speed of the table			B-axis min ⁻¹	25			
C-axis min ⁻¹				50 [300]				
Spindle	Max. spindle speed min ⁻¹			12,000	[20,000]	10,000 [15,000]		
	Type of spindle taper hole			No.40 [HSK-A63]		No.50 [HSK-A100]		
Feedrate	Rapid traverse rate mm/min (ipm)			X, Y, Z: 40,000 (1,574.8)				
	Cutting feedrate	With AI contour control	mm/min (ipm)	X, Y, Z: 40,000 (1,574.8)				
			min ⁻¹	B: 25 C: 50				
		Without AI contour control	mm/min (ipm)	X, Y, Z: 6,000 (236.2)				
			min ⁻¹	B: 15 C: 5				
	Jog feedrate			mm/min (ipm)	X, Y, Z: 0 – 5,000 (0 – 196.9)			
min ⁻¹				B, C: 0 – 13.88				
ATC	Type of tool shank			BT40* [CAT40] [DIN40] [HSK-A63]		BT50* [CAT50] [DIN50] [HSK-A100]		
	Type of retention knob			DMG MORI SEIKI 90° type [45° (MAS-I)] [60° (MAS-II)] [DIN] [Special (center through)]		DMG MORI SEIKI 90° type [45° (MAS-I)] [60° (MAS-II)] [DIN]		
	Tool storage capacity			31 [61, 91, 121, 181]		31 [61, 91, 121]		
	Max. tool diameter	With adjacent tools	mm (in.)	φ 90 (3.5)		φ 120 (4.7)		
		Without adjacent tools	mm (in.)	φ 145 (5.7)		φ 240 (9.4)		
	Max. tool length mm (in.)			450 (17.7)				
	Max. tool mass kg (lb.)			8 (17.6)		20 (44.0)		
	Method of tool selection			Fixed address, shorter route access				
	Tool changing time Tool-to-tool s			2.2		3.1		
Max. tool moment (from spindle gauge line) N·m (ft·lbf)			18.5 (13.6)		46.5 (34.3)			
Motors	Spindle drive motor	10,000 min ⁻¹	kW (HP)	-		30/25 (40/33.3) <30 min/cont>		
		[10,000 min ⁻¹]	kW (HP)	-		[30/25 (40/33.3) <30 min/cont>]		
		12,000 min ⁻¹	kW (HP)	18.5/15 (24.7/20) <30 min/cont>	-		-	
		[12,000 min ⁻¹]	kW (HP)	[22/18.5 (30/24.7) <15 min/cont>]	-		-	
		[15,000 min ⁻¹]	kW (HP)	-		30/25 (40/33.3) <30 min/cont>		
		[20,000 min ⁻¹]	kW (HP)	-	[22/18.5 (30/24.7) <15 min/cont>]		-	
	Feed motor			kW (HP)	X: 7 (9.3) Y: 7 (9.3)×2 Z: 7 (9.3)×2			
	B-axis table		25 min ⁻¹	kW (HP)	22.2/14.8 (29.6/19.7) <max/cont>			
	C-axis table	50 min ⁻¹	kW (HP)	8.3/6.5 (11.1/8.7) <max/cont>				
		[300 min ⁻¹]	kW (HP)	[19.3 (25.7) <cont>]				
[300 min ⁻¹ High-torque]		kW (HP)	38.5 (51.3) <cont>					
Coolant pump motor				kW (HP)	1.2 (1.6)			
Power sources (Standard)	Electrical power supply <cont>			194125A05	kVA	59.6	71.2	
	Compressed air supply			MPa (psi), L/min (gpm)	0.5 (72.5), 500 (132) <ANR> <A compressed air supply may be needed, depending on options and peripheral equipment.>			
Tank capacity	Coolant tank capacity			L (gal.)	940 (248.2): Hinge type + Drum filter type 1,130 (298.3): Scraper type + Drum filter type			
Machine size	Machine height <from floor>			mm (in.)	3,768 (148.3) (at shipment: 3,377 (133.0) <without scale>, 3,541.5 (139.4) <with scale>)			
	Floor space <width × depth>			mm (in.)	3,346×4,993 (131.7×196.6) <excluding chip conveyor>			3,606×4,993 (142.0×196.6) <excluding chip conveyor>
	Mass of machine			kg (lb.)	20,000 (44,000)			21,000 (46,200)
Noise data	A-weighted, time-average radiated sound pressure level			dB	55 – 74 (measurement uncertainty is 4 dB)			

[] Option HSC: High Speed Cutting

NMV8000 DCG (130619)

* When selecting the two-face contact tool specification, be sure to use a two-face contact tool.

● 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.

● When using spindle No. 40 taper at 15,000 min⁻¹ or higher, or spindle No. 50 taper at 10,000 min⁻¹ or higher, please use two-face contact tool.

● A tool with a mass moment greater than the maximum tool mass moment may cause problems during ATC operations even if it satisfies other conditions.

● 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.

● When the tool tip air blow is regularly used, air supply of more than 300 L/min (79.2 gpm) is separately required.

● 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.

● If you select the turning specification, the through-spindle coolant system is a center-through type only.

Please note that to attach turning tools, either a BT or HSK tool holder (two-face contact), which we have prepared according to machine specifications, is required.

● When the C-axis rotates, unbalanced weight of the workpiece (including fixtures) on the table causes vibration, so it may not be possible to rotate at the required speed.

In that case, it is necessary to adjust the balance of the workpiece by adding weights to the fixtures.

● Noise data: the measurement was performed at the front of the NMV8000 DCG/50 machine with a maximum spindle speed of 10,000 min⁻¹.

For details, please consult with our sales representative.

● The information in this catalog is valid as of July 2013.

DMG MORI

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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- The information in this catalog is valid as of October 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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