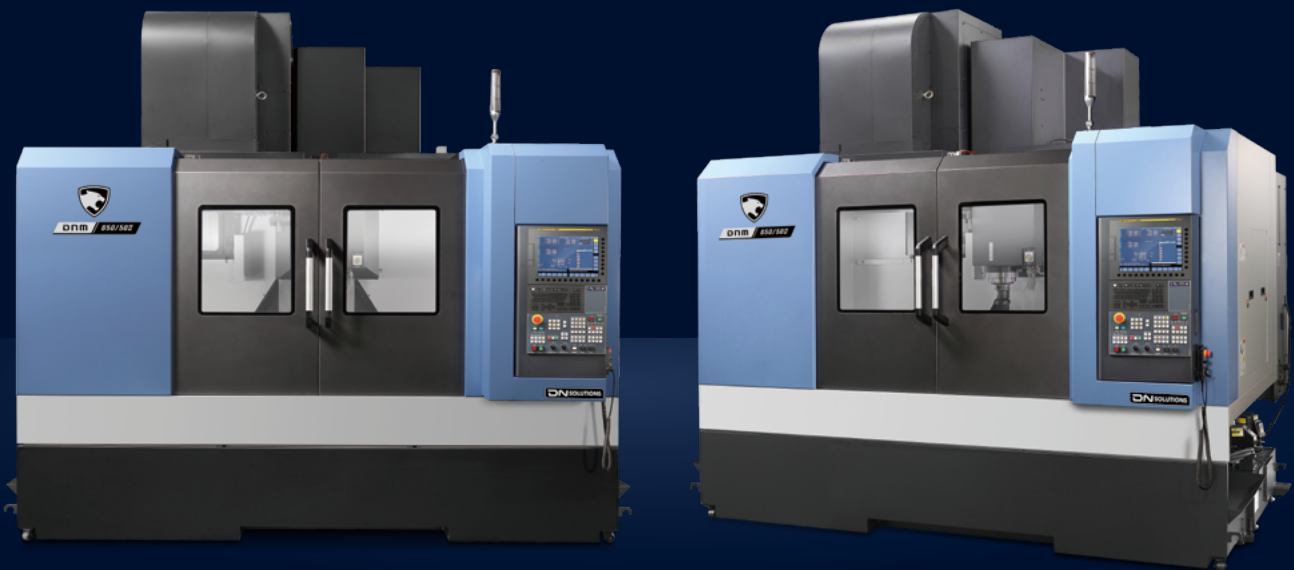




ISO #50, HIGH PRODUCTIVITY  
VERTICAL MACHINING CENTER

# DNM

**500/50 II • 650/50 II • 750/50 II • 750L/50 II**



**DN SOLUTIONS**

# DNM #50II series

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Designed to deliver high performance, DNM 50 II series machines are equipped with directly coupled spindles, highly rigid columns and roller guideways on all their axes. In addition, the machines' Ez work functions improve operator efficiency and ease-of-use.





### DIRECTLY-COUPLED SPINDLES, SUPPLIED AS STANDARD, PROVIDE EXTRA RIGIDITY AND DELIVER HIGH PRODUCTIVITY

- Directly coupled spindles reduce vibration and noise improving the machine's performance and positively impacting on the machine shop environment.
- Highly rigid columns and Roller LM guideways are incorporated for heavy duty machining operations.

### EASY OPERATION OF CNC SYSTEM

- Easy operation ensures user convenience and efficiency
- The Ez work functions are user friendly ensuring ease-of-use.

# BASIC STRUCTURE

A highly rigid column is adopted for heavy duty machining. This machining center provides workpiece capacities from 540 to 762 mm in the Y-axis, enabling a wide range of workpieces to be accommodated and processed.

## Travel distance (X / Y / Z axis)

DNM 500/50 II

**1020 / 540 / 510** mm  
40.2 x 21.3 x 20.1 inch

DNM 650/50 II

**1270 / 670 / 625** mm  
50.0 x 26.4 x 24.6 inch

DNM 750/50 II

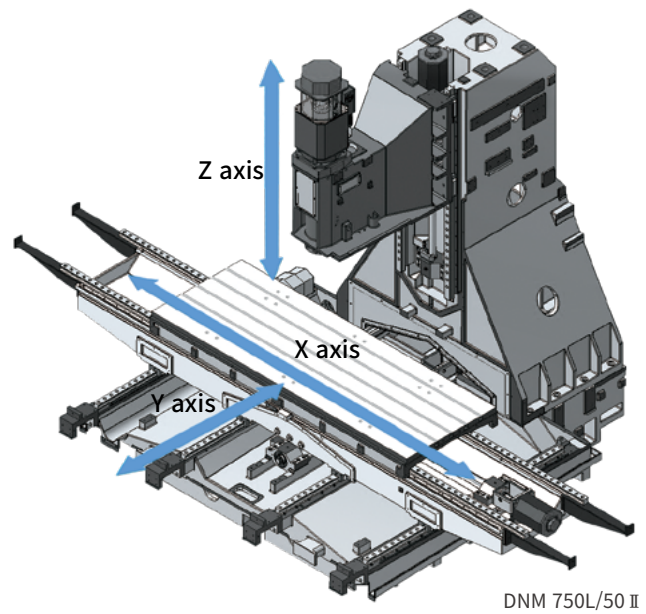
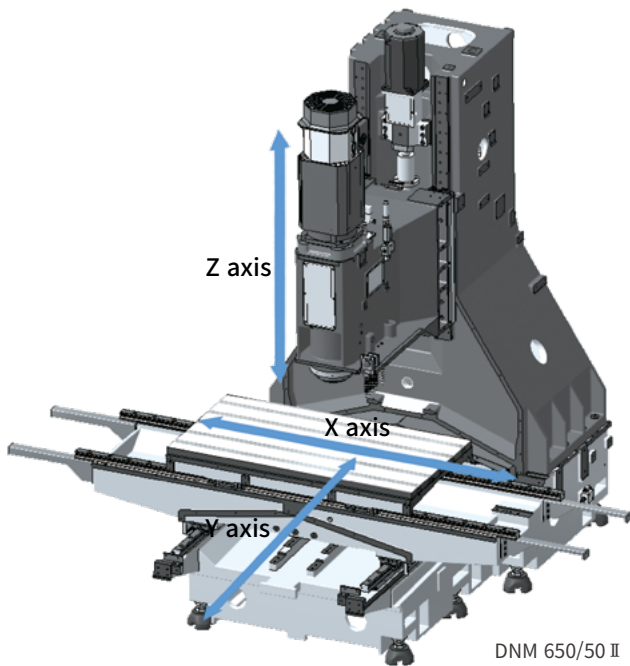
**1630 / 762 / 650** mm  
64.2 x 30.0 x 25.6 inch

## Travel distance (X / Y / Z axis)

DNM 750L/50 II

**2160 / 762 / 650** mm  
85.0 x 30.0 x 25.6 inch

DNM 750L/50 II has adopted 4way Roller LM guide in the Y axis for minimized overhang.



## Rapid traverse rate (X / Y / Z axis)

DNM 500/50 II, DNM 650/50 II

**36 / 36 / 30** m/min  
1417.3 / 1417.3 / 1181.1 ipm

DNM 750/50 II

**30 / 30 / 24** m/min  
1181.1 / 1181.1 / 944.9 ipm

DNM 750L/50 II

**24 / 24 / 24** m/min  
944.9 / 944.9 / 944.9 ipm

## Axis system

Roller LM guideways are adopted as standard on all axes to improve rigidity and for ease of maintenance.

**Roller LM guideway life is twice as long as that of Ball LM guideways.**



# SPINDLE | TABLE

The directly coupled spindle reduces vibration and noise improving the machine's performance and positively impacting on the machine shop environment. The dual contact spindle has been adopted as a standard to ensure high performance during heavy duty machining operations.

## Max. spindle speed

**8000** r/min

**10000** r/min option

## Max. spindle motor power

**22** kW 29.5 Hp

**26** kW 34.9 Hp option

## Max. spindle motor torque

**353.2** N.m 260.7 ft-lbs

**165.5** N.m 122.1 ft-lbs option

## Table size (A x B)

DNM 500/50 II

**1200 x 540** mm 47.2 x 21.3 inch

DNM 650/50 II

**1300 x 670** mm 51.2 x 26.4 inch

DNM 750/50 II

**1630 x 760** mm 64.2 x 29.9 inch

DNM 750L/50 II

**2160 x 760** mm 85.0 x 29.9 inch

## Max. weight on Table

DNM 500/50 II

**800** kg  
1763.7 lb

DNM 750/50 II

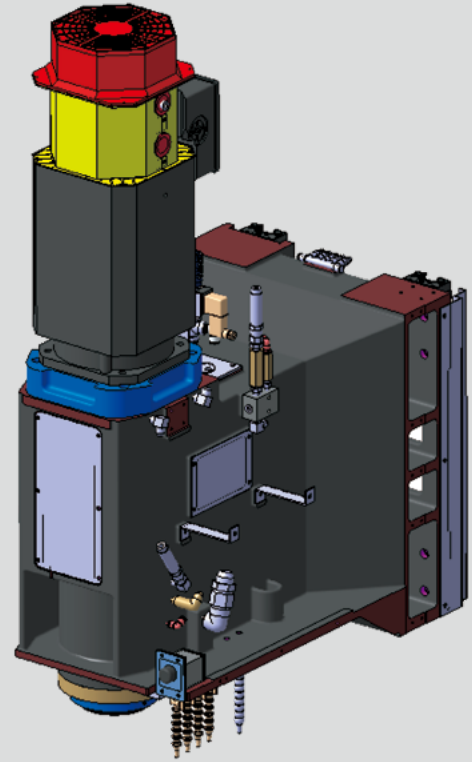
**1500** kg  
3306.9 lb

DNM 650/50 II

**1000** kg  
2204.6 lb

DNM 750L/50 II

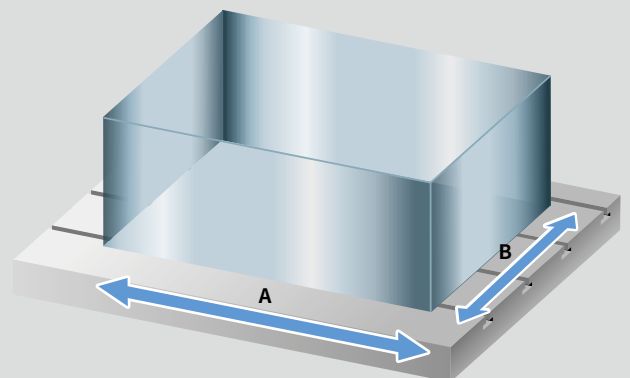
**1800** kg  
3968.3 lb



Direct coupled spindle of DNM 650/50 II

## TABLE

DNM #50 II series machines have good sized worktables enabling a range of workpieces to be machined.



# TOOL CHANGE SYSTEM | MACHINING PERFORMANCE

## Tool change system

Higher productivity can be achieved with the CAM-type tool changer that supports faster tool changing.

### Tool storage capacity

**24 ea / 30 ea** option (Except for DNM 500/50 II)

### Tool to Tool

**2.5 sec**

### Chip-to-Chip\*

**5.5 sec**

\* The Chip-to-Chip time has been tested in accordance with DN Solutions's strict testing conditions, but may vary depending on the user's operating conditions



## Cutting Performance

To provide best cutting performance by #50. Tool change time has been optimized to reduce non cutting time. Result of cutting test on DNM 650/50 II (8000r/min, Direct, 22 / 11kW (29.5 / 14.8Hp))

Face mill (ø125 mm (ø4.9 inch)) Carbon steel (SM45C)			
Chip removal rate (cm <sup>3</sup> /min(inch <sup>3</sup> /min))	Spindle speed (r/min)	Feedrate (mm/min)	
480 (29.3)	500	1600 (63.0)	
Face mill (ø125 mm (ø4.9 inch)) Carbon steel (SM45C)			
Chip removal rate (cm <sup>3</sup> /min(inch <sup>3</sup> /min))	Spindle speed (r/min)	Feedrate (mm/min)	
356 (21.7)	500	594 (23.4)	
U-Drill (ø70 mm) Carbon steel (SM45C)			
Chip removal rate (cm <sup>3</sup> /min(inch <sup>3</sup> /min))	Spindle speed (r/min)	Feedrate (mm/min)	
385 (23.5)	500	100 (3.9)	
Tap Carbon steel (SM45C)			
Tap size (mm)	Spindle speed (r/min)	Feedrate (mm/min)	
M 36 x P 4.0	177	708 (27.9)	

\* The results, indicated in this catalogue are provides as example. They may not be obtained due to differences in cutting conditions and environmental conditions during measurement.

# STANDARD | OPTIONAL SPECIFICATIONS

Various optional features are available to meet customers' specific machining requirements and applications.

Description	Features	DNM 500/50 II	DNM 650/50 II	DNM 750/50 II	DNM 750L/50 II		
Spindle	8000 r/min	22/11 kW (29.5/14.8 Hp) (S3 25%/Cont.)	●	●	●	●	
	10000 r/min	26/22 kW (34.9/29.5 Hp) (S3 40%/Cont.)	○	○	○	○	
Spindle cooling system	8000 r/min	22/11 kW (29.5/14.8 Hp)	●	●	●	●	
	10000 r/min	26/22 kW (34.9/29.5 Hp)	●	●	●	●	
Magazine	Tool storage capacity	24 ea	●	●	●	●	
		30 ea	X	○	○	○	
Tool shank type	BIG PLUS BT50		●	●	●	●	
	BIG PLUS CAT50		○	○	○	○	
	BIG PLUS DIN50		○	○	○	○	
Coolant	FLOOD	0.15 Mpa (21.8 psi), 0.4 kW (0.5 Hp)	●	●	●	●	
		0.7 MPa (101.5 psi), 1.8 kW (2.4 Hp)	○	○	○	○	
	TSC**	None		●	●	●	●
		2 MPa (290.0 psi), 1.5kW (2.0 Hp)		○	○	○	○
		2 MPa (290.0 psi), 4.0 kW (5.4 Hp)		○	○	○	○
		7 Mpa (1015.0 psi), 5.5 kW (7.4 Hp)		○	○	○	○
	SHOWER	0.1 MPa (14.5 psi), 1.1 kW (1.5 Hp)	○	○	○	○	
Oil skimmer	Belt type	○	○	○	○		
Chip disposal	Chip pan		●	●	●	●	
	Chip conveyor	Hinged type (Left/Right/Rear)	○	○	○	○	
		Magnetic scraper type (Left/Right/Rear)	○	○	○	○	
	Chip bucket		○	○	○	○	
Precision machining option	Linear scale	X / Y / Z axis	○	○	○	○	
	AICC II (200 block)		●	●	●	●	
	Fine surface machining	Look-ahead block is Max.200 -AI contour control II+ -Smooth tolerance control+ -Jerk control	●	●	●	●	
Measurement & Automation	Automatic tool measurement	TS27R	○	○	○	○	
		OTS	○	○	○	○	
	Automatic tool breakage detection		○	○	○	○	
	Automatic workpiece measurement	OMP60	○	○	○	○	
Automatic front door with safety device		○	○	○	○		
Accessories	WORK LIGHT	LED LAMP	●	●	●	●	
	OPERATOR CALL LAMP	3-COLOR SIGNAL TOWER(LED)	●	●	●	●	
	LEVELING BLOCK & BOLT	-	●	●	●	●	
	SMART THERMAL CONTROL	SENSORLESS TYPE(ONLY SPINDLE)	●	●	●	●	
	ASSEMBLY & OPERATION TOOLS KIT	-	●	●	●	●	
	Air blower		○	○	○	○	
	Air gun		○	○	○	○	
	Coolant gun		○	○	○	○	
Mist collector		○	○	○	○		
Customized Special Option	ANCHORING <sup>(1)</sup>	SLIDE CLAMP & CHEMINCAL ANCHOR BOLT	○	○	○	○	
	TSA <sup>(2)</sup>	0.54	○	○	○	○	
		150	○	○	○	○	
	RAISING BLOCK	200	○	○	○	○	
		300	○	○	○	○	
	DRUM CHIPCONVEYOR	HINGE TYPE	○	○	○	○	
		SCRAPER TYPE	○	○	○	○	
	20 BAR TSC with INVERTER	50Hz → 60Hz	○	○	○	○	
	ATC AUTO SHUTTER		○	○	○	○	
	TOOL SHANK	HSK-100A	○	○	○	○	
	PICK UP MAGAZINE	INSTALL ON THE TABLE	○	○	○	○	
	TOOL STORAGE CAPACITY	40T / 48T (CHAIN ATC)	○	○	○	○	
	TOOL ID with TOOL PULL OUT SYSTEM	CHAIN ATC(30/40/48T)	○	○	○	○	
	AUTO TOOL LENGTH MEASUREMENT	RENISHAW / LTS	○	○	○	○	
AUTO TOOL BREAKAGE DETECTION	MSC/BK9(NEEDLE TYPE ON MAGAZINE)	○	○	○	○		


\* Please contact DN Solutions for detailed specification information.

● Standard ○ Optional X Not applicable

\*\* If this option is selected, the TSA(Through Spindle Air) Max.pressure is 0.54MP

(1) Please refer to foundation drawing in relation to anchoring. If more detailed information is required consult with DN Solutions service

(2) If TSC is not required - TSA can be selected as an option.

 **Fire Safety Precautions** | There is a high risk of fire when using non-water-soluble cutting fluids, processing flammable materials, neglecting the controlled and careful use of coolants and modifying the machine without the consent of the manufacturer. Always check the SAFETY GUIDELINES carefully before using the machine.

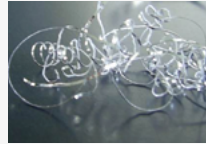
# PERIPHERAL EQUIPMENT

## Oil Cooler

An oil cooler correlated to room temperature can be equipped for a long-term operation at high speed. Cooling oil circulates around the spindle bearings to prevent thermal error of the spindle and maintain machining accuracy.



## Chip conveyor option



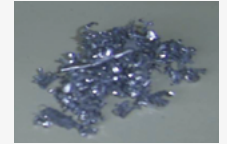
Long



Short



Needle



Sludge

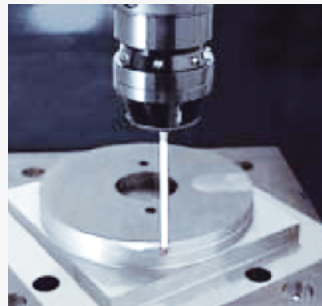
Material		Carbon steel			Cast iron		Aluminium		
		Long	Short	Needle	Short	Sludge	Long	Short	Needle
Chip conveyor type									
Hinged belt type		○	△	X	△	X	○	△	X
Scrapper type	Normal	X	○	△	○	△	X	△	X
	Magnetic	X	○	○	○	○	—	—	—
Drum filter type	Hinged type	○	△	X	△	X	○	△	X
	Scrapper	X	○	△	○	△	X	○	△

○ : Suitable, △ : Possible, X : Not suitable

## Measurement & Automation option



Automatic tool measurement

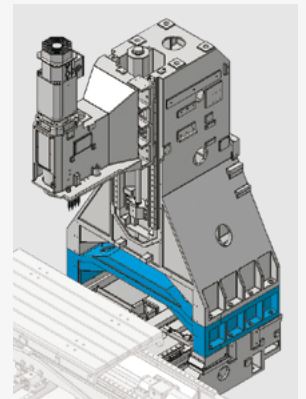


Automatic workpiece measurement

## Raised block option

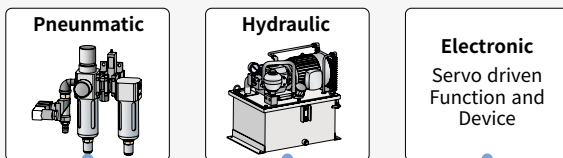
When the distance between the table top and the spindle nose needs to be extended, for example, accommodate a fixture or rotary axis on the table, raised block can be used to extend the distance.

Height **150 mm (5.9 inch)**  
**200 mm (7.9 inch)**  
**300 mm (11.8 inch)**



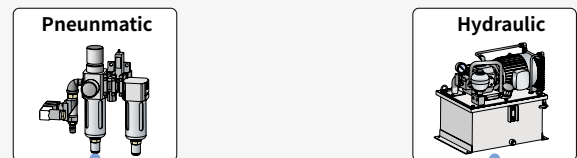
## 4th axis auxiliary device interface option

Users who wish to set up a rotary axis on the table to increase application flexibility are encouraged to contact DN Solutions in advance.



## Hydraulic / Pneumatic fixture line option

The user should prepare pipelines for hydraulic/pneumatic fixtures whose detailed specifications should be determined through discussions with DN Solutions.





# DN SOLUTIONS FANUC i PLUS

DN Solutions Fanuc i Plus is optimized for maximizing customer productivity and convenience.

## 15 inch screen + new operation panel

DN Solutions Fanuc i Plus' operation panel enhances operating convenience by incorporating common-design buttons and layout, and features the Qwerty keyboard for fast and easy operation.

## DN Solutions Fanuc i Plus

- 15 inch color display
- Intuitive and user-friendly design

## USB & PCMCIA card

## QWERTY keyboard

- EZ-guide i standard
- Ergonomic operator panel
- 2MB Memory
- Hot key



## iHMI touchscreen option

iHMI provides an intuitive interface that uses a touchscreen for quick and easy operation.

## Range of applications

Providing various applications related to planning, machining, improvement and utility, for customer convenience.

# NUMERIC CONTROL SPECIFICATIONS

# FANUC

Item	Specifications	DN Solutions Fanuc i (0i Plus) DNM 4digit	
Controlled axis	Controlled axes	3 (X,Y,Z)	
	Simultaneously controlled axes	4 axes	
Data input/output	Additional controlled Axis	●	
	Fast data server	○	
	Memory card input/output	●	
	USB memory input/output	●	
	Large capacity memory(2GB)*2	○	
Interface function	Available Option only with 15" Touch LCD (iHMI Only) *2	○	
	Embedded Ethernet	●	
	Fast Ethernet	○	
Operation	Enhanced Embedded Ethernet function	●	
	DNC operation	Included in RS232C interface.	
	DNC operation with memory card	●	
Program input	Workpiece coordinate system	●	
	Addition of workpiece coordinate system	G52 - G59	
	Tool number command	G54.1 P1 X 48 (48 pairs)	
Feed function	Tool number command	●	
	Tilted working plane indexing command	T4 digits	
	AI contour control I	○	
	AI contour control II	X	
	AI contour control II	●	
Operation guidance function	AI contour control II	X	
	AI contour control II	X	
	High smooth TCP	X	
	EZ Guidei (Conversational Programming Solution)	●	
Setting and display	iHMI with Machining Cycle	○	
	EZ Operation package	X	
Network	Only with 15" Touch LCD standard *2)	●	
	CNC screen dual display function	●	
Others	FANUC MTConnect	●	
	FANUC OPC UA	●	
	Display unit	10.4" color LCD	○
		15" color LCD	X
		15" color LCD with Touch Panel	●
		640M(256KB)_500 programs	X
		1280M(512KB)_1000 programs	X
		2560M(1MB)_1000 programs	X
		5120M(2MB)_1000 programs	●
		10240M(4MB)_1000 programs	X
		20480M(8MB)_1000 programs	X
		2560M(1MB)_2000 programs	X
		5120M(2MB)_4000 programs	X
		10240M(4MB)_4000 programs	X
		20480M(8MB)_4000 programs	X
Part program storage size & Number of registerable programs		X	

\*1) The number of look-ahead blocks may be changed or limited depending on the peripheral device or the configuration of the internal NC system.

\*2) Available Option only with Fanuc i plus iHMI

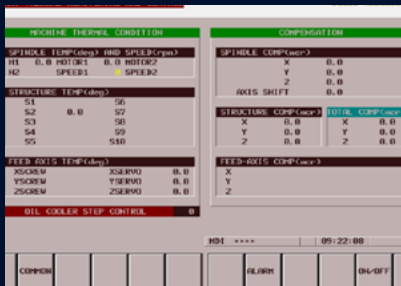
● Standard ○ Optional X N/A ⊕ Available  
Network: FANUC MT Connect and FANUC OPC UA available.

# EZ WORK

The software developed by DN Solutions features numerous functions designed for convenience and ease of operation.

## EZ work

The EZ work delivers speed and efficiency. This menu-driven innovation not only helps customers reduce setup times, but also simplifies common tasks and procedures, reducing the potential for errors. EZ work reduces operating time, protects machinery, enhances quality and speeds up maintenance interventions.



### Thermal Compensation

A function to maintain high-precision machining quality by analyzing and correcting the amount of thermal displacement of a structure through a temperature sensor



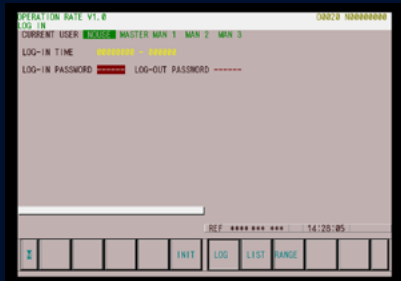
### M/G-Code List

Functional description of M code and G code



### Tool Management

Function to manage tool information [Tool information / Tool No. / Tool condition (normal, large diameter, worn / damaged, used for the rst time, manual) / Tool name]



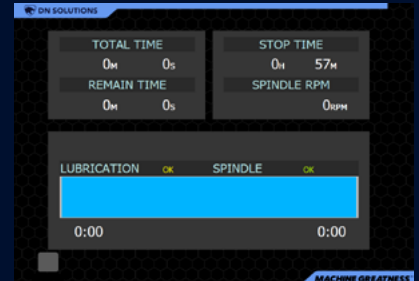
### Operation Rate

Machine operation history management function by date based on load



### Adaptive Feed Control

Function to control feedrate so that the cutting can be carried out at a constant load (To adapt to the spindle load set up with constant load feedrate control function)



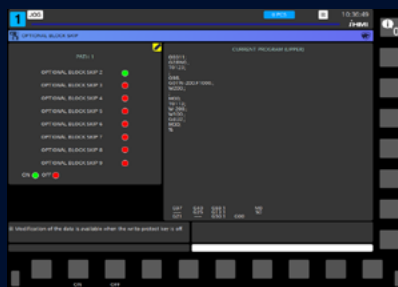
### Spindle Warm Up

A function that assists spindle warm-up for spindle life when the spindle has not been used for a certain period of time



### ATC Recovery

Function to view detailed info with recommended actions and to perform step-by-step operation manually (when an alarm is triggered during an ATC operation)



### Addition of Optional Block Skip

In addition to the OPTIONAL BLOCK SKIP of the operation panel, the function to skip a specific block selected in the machining program

# POWER | TORQUE

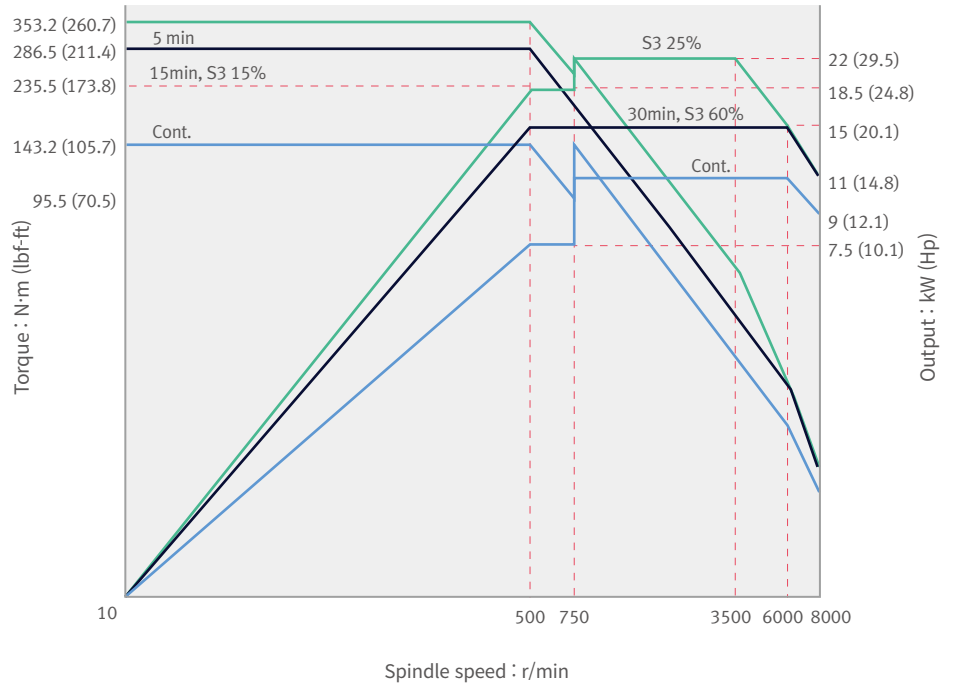
**DNM 500/50 II, DNM 650/50 II, DNM 750/50 II, DNM 750L/50 II**

## 8000 r/min

SPEED: **8000** r/min

POWER: **22** kW  
29.5 Hp

TORQUE: **353.2** N·m  
260.7 ft-lbs

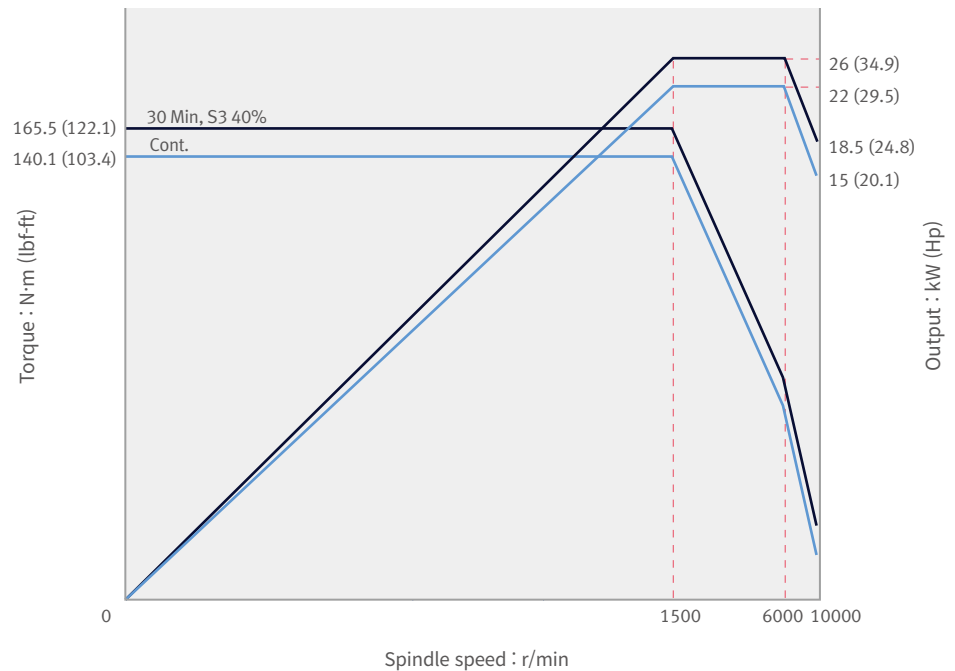


## 10000 r/min option

SPEED: **10000** r/min

POWER: **26** kW  
34.9 Hp

TORQUE: **165.5** N·m  
122.1 ft-lbs

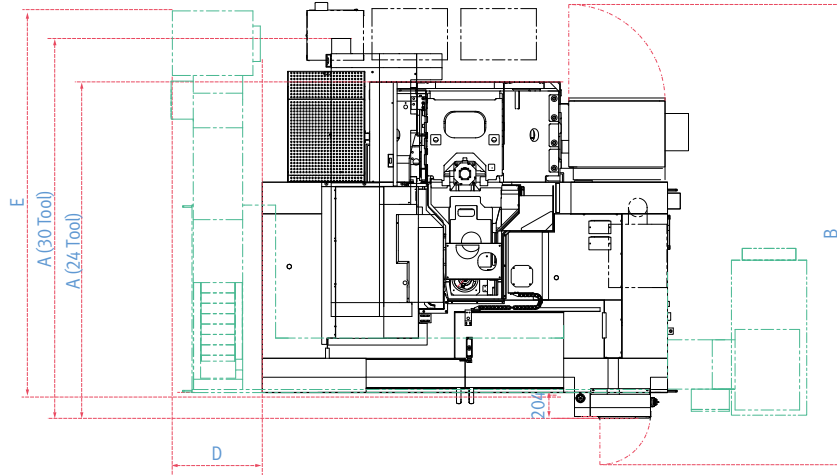


# DIMENSIONS

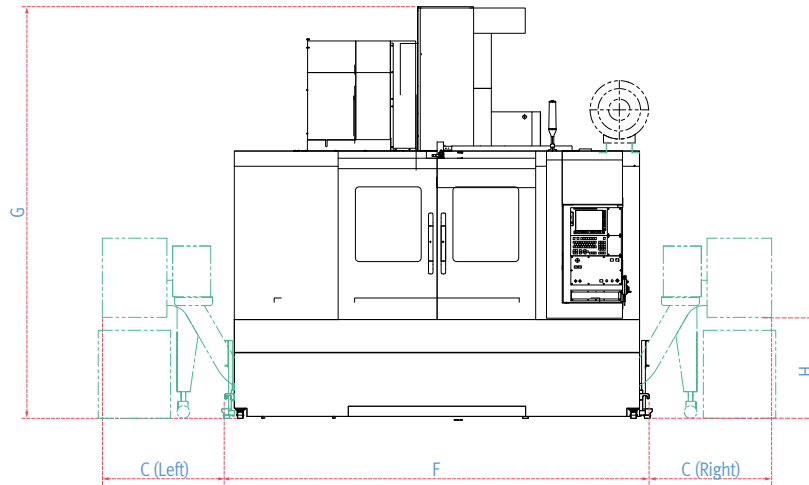
## DNM 500/50 II, DNM 650/50 II

Units : mm (inch)

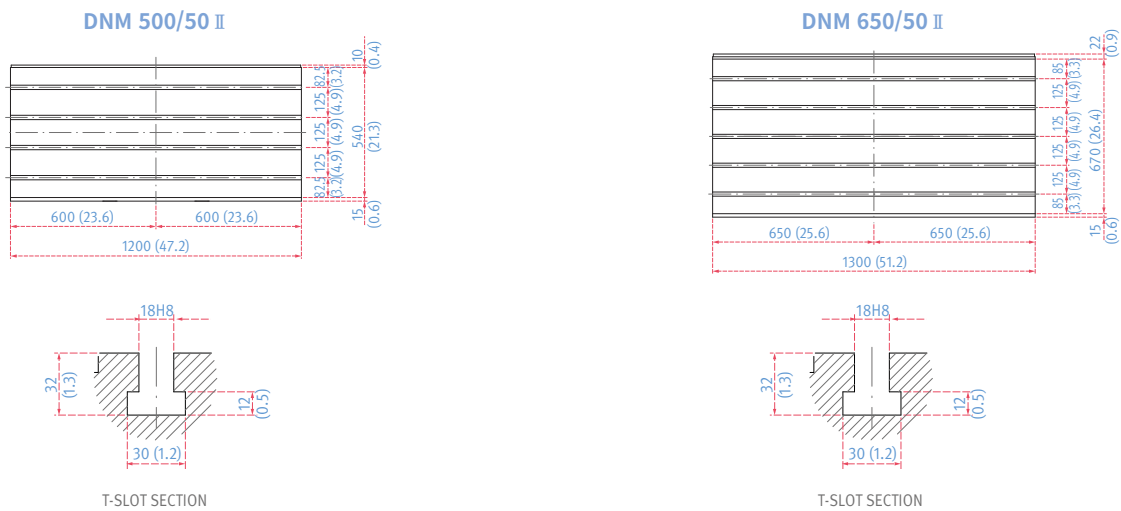
TOP



FRONT



TABLE



Model	A (Length)	B (Max. machine length)	C (Additional width to accommodate the side chip conveyor)	D (Additional width to accommodate the rear chip conveyor)	E (Length to accommodate the rear chip conveyor)	F (Width)	G (Height)	H (Height from the floor to the chip outlet)
DNM 500/50 II	2412 (95.0)	3409 (134.2)	Left & Right : 951 (37.4)	710 (28.0)	3010 (118.5)	3110 (122.4)	3143 (123.7)	805 (31.7)
DNM 650/50 II	2656 (104.6) (24 Tool) 2999 (118.1) (30 Tool)	3633.5 (143.1)	Left & Right : 967.6 (38.1)	710 (28.0)	3010 (118.5)	3350 (131.9)	3250 (128.0)	805 (31.7)

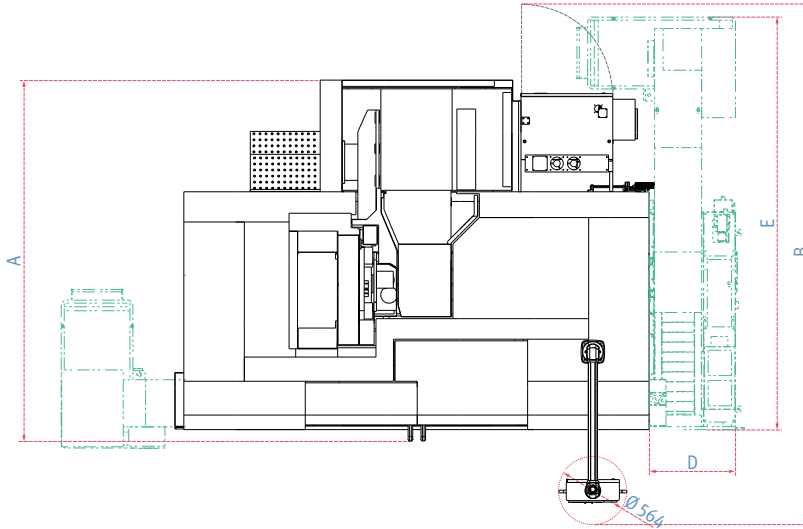
\* Some peripheral equipment can be placed in other places

# DIMENSIONS

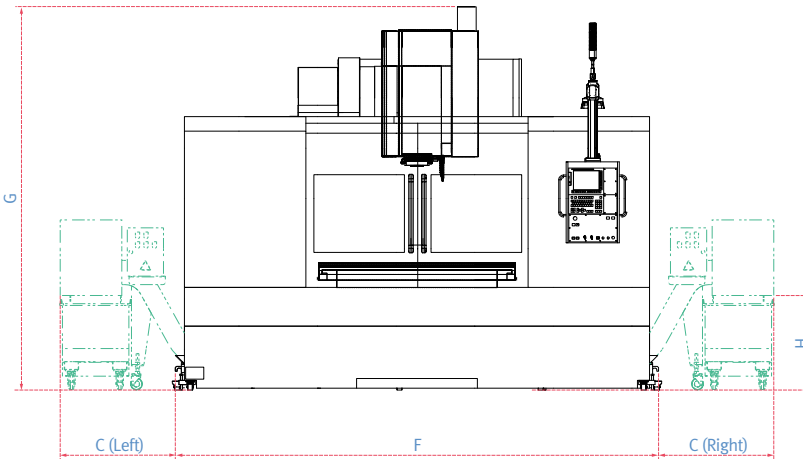
## DNM 750/50 II, DNM 750L/50 II

TOP

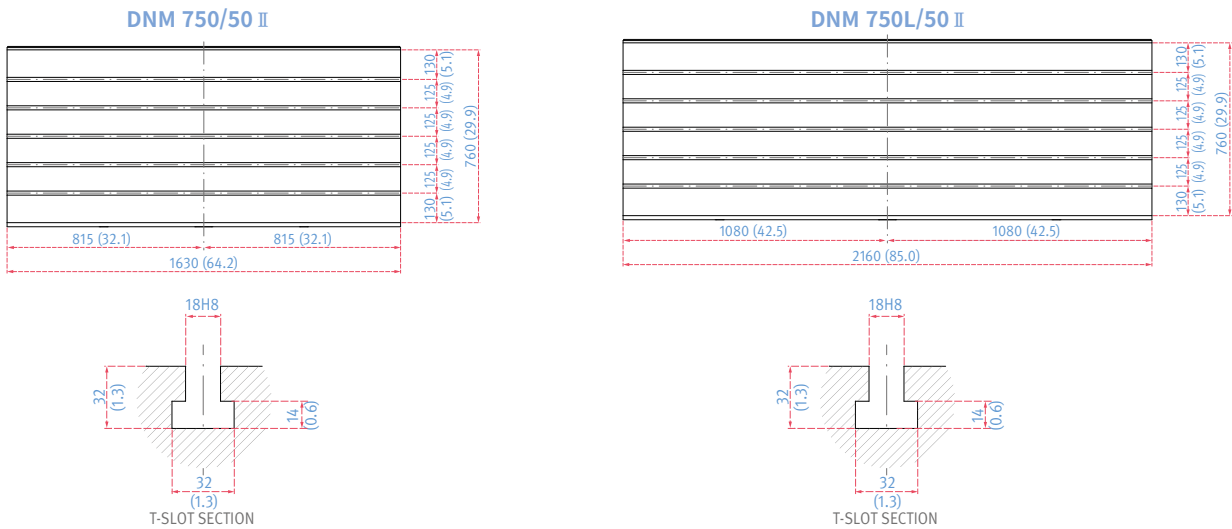
Units : mm (inch)



FRONT



TABLE



Model	A (Length)	B (Max. machine length)	C (Additional width to accommodate the side chip conveyor)	D (Additional width to accommodate the rear chip conveyor)	E (Length to accommodate the rear chip conveyor)	F (Width)	G (Height)	H (Height from the floor to the chip outlet)
DNM 750/50 II	2986 (117.6)	4309 (169.6)	Left & Right : 953 (37.5)	790 (31.1)	3413 (134.4)	4000 (157.5)	3373 (132.8)	805 (31.7)
DNM 750L/50 II	2986 (117.6)	4309 (169.6)	Left & Right : 953 (37.5)	790 (31.1)	3413 (134.4)	5050 (198.8)	3373 (132.8)	805 (31.7)

\* Some peripheral equipment can be placed in other places

# MACHINE SPECIFICATIONS

Description		Unit	DNM 500/50 II	DNM 650/50 II	DNM 750/50 II	DNM 750L/50 II	
Travels	Travel distance	X axis	mm (inch)	1020 (40.2)	1270 (50.0)	1630 (64.2)	2160 (85.0)
		Y axis	mm (inch)	540 (21.3)	670 (26.4)	762 (30.0)	762 (30.0)
		Z axis	mm (inch)	510 (20.1)	625 (24.6)	650 (25.6)	650 (25.6)
	Distance from spindle nose to table top		mm (inch)	200 ~ 710 (7.9 ~ 28.0)	200 ~ 825 (7.9 ~ 32.5)	200 ~ 850 (7.9 ~ 33.5)	200 ~ 850 (7.9 ~ 33.5)
Table	Table size		mm (inch)	1200 x 540 (47.2 x 21.3)	1300 x 670 (51.2 x 26.4)	1630 x 760 (64.2 x 29.9)	2160 x 760 (85.0 x 29.9)
	Table loading capacity		kg (lb)	800 (1763.7)	1000 (2204.6)	1500 (3306.9)	1800 (3968.3)
	Table surface type		mm (inch)	T-SLOT [4-125(4.9) x 18 (0.7) H8]	T-SLOT [5-125 (4.9) x 18(0.7)H8]		
Spindle	Max. spindle speed		r/min	8000 {10000}*			
	Taper		-	ISO #50			
	Spindle power		kW (Hp)	22/11 (29.5/14.8) (S3 25%/Cont.) {26/22 (34.9/29.5) (S3 40%/Cont.)}*			
	Max. spindle torque		N · m (lbf-ft)	353.2 (260.5) (5min) {165.5 (122.0){S3 40%}}*			
Feedrates	Rapid traverse rate	X axis	m/min (ipm)	36 (1417.3)		30 (1181.1)	24 (944.9)
		Y axis	m/min (ipm)	36 (1417.3)		30 (1181.1)	24 (944.9)
		Z axis	m/min (ipm)	30 (1181.1)		24 (944.9)	24 (944.9)
Automatic Tool Changer	Type of tool shank	Tool shank	-	BT 50 {CAT50/DIN50}*			
		Pull stud	-	MAS403 P50T-1 (45°)			
	Tool storage capa.		ea	24	24 {30}*		
	Max. tool diameter	Continous	mm (inch)	125 (4.9)			
		Without Adjacent Tools	mm (inch)	220 (8.7)			
	Max. tool length		mm (inch)	350 (13.8)			
	Max. tool weight		kg (lb)	20 (44.1)			
	Max. tool moment		N · m (lbf-ft)	22 (16.2)			
	Tool seletion		-	MEMORY RANDOM			
	Tool change time (Tool-to-tool)		sec	2.5			
Tool change time (Chip-to-chip)		sec	5.5				
Power source	Electric power supply (Rated capacity)		kVA	36.2 {50.2}*		39.5 {53.5}*	
	Compressed air supply		Mpa (psi)	0.54 (78.3)			
Tank capacity	Coolant tank capacity		L (gal)	300 (79.3)	380 (100.4)	520 (137.4)	590 (155.9)
Machine Dimensions	Height		mm (inch)	3143 (123.7)	3250 (128.0)	3385 (133.3)	3385 (133.3)
	Length		mm (inch)	2412 (95.0)	3350 (131.9)	3435 (135.2)	3435 (135.2)
	Width		mm (inch)	3110 (122.4)	2740 / 3000 (107.9 / 118.1)	3850 (151.6)	4900 (192.9)
	Weight		kg (lb)	6500 (14330.0)	9000 (19841.3)	13800 (30423.8)	15300 (33730.7)
Control	CNC system		-	DN Solutions Fanuc i Plus, HEIDENHAIN TNC 620			

\* { } : Option

# RESPONDING TO CUSTOMERS ANYTIME, ANYWHERE

## DN Solutions Global Network

DN Solutions provides systems-based professional support services, before and after the machine tool sale, by responding quickly and efficiently to customers. By supplying spare parts, product training, field service and technical support, we provide the expert care, attention and assistance our customers expect from a market leader.

Global sales and service support network		<b>51</b>	<b>Technical centers</b> Technical center, Sales support, Service support, Parts support
<b>4</b>	Corporations	<b>200</b>	<b>Service posts</b>
<b>156</b>	Dealer networks	<b>3</b>	<b>Factories</b>



## CUSTOMER SUPPORT AND SERVICES

**We're there for you whenever you need us.**

We help our customers operate at maximum efficiency by providing them with a range of tried, tested and trusted services - from pre-sales consultancy to post-sales support.



### Field services

- On-site service
- Machine installation and testing
- Scheduled preventive maintenance
- Machine repair service



### Parts supply

- Supplying a wide range of original DN Solutions spare parts
- Parts repair service



### Training

- Programming, machine setup and operation
- Electrical and mechanical maintenance
- Applications engineering



### Technical support

- Supports machining methods and technology
- Responds to technical queries
- Provides technical consultancy



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\* For more details, please contact DN Solutions.

\* Specifications and information contained within this catalogue may be changed without prior notice.