

ISO #50, HIGH PRODUCTIVITY VERTICAL MACHINING CENTER

DNM 650/50 · 750/50II

DNM 650/50II
DNM 750/50II
DNM 750L/50II



DNM #50II series

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.

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

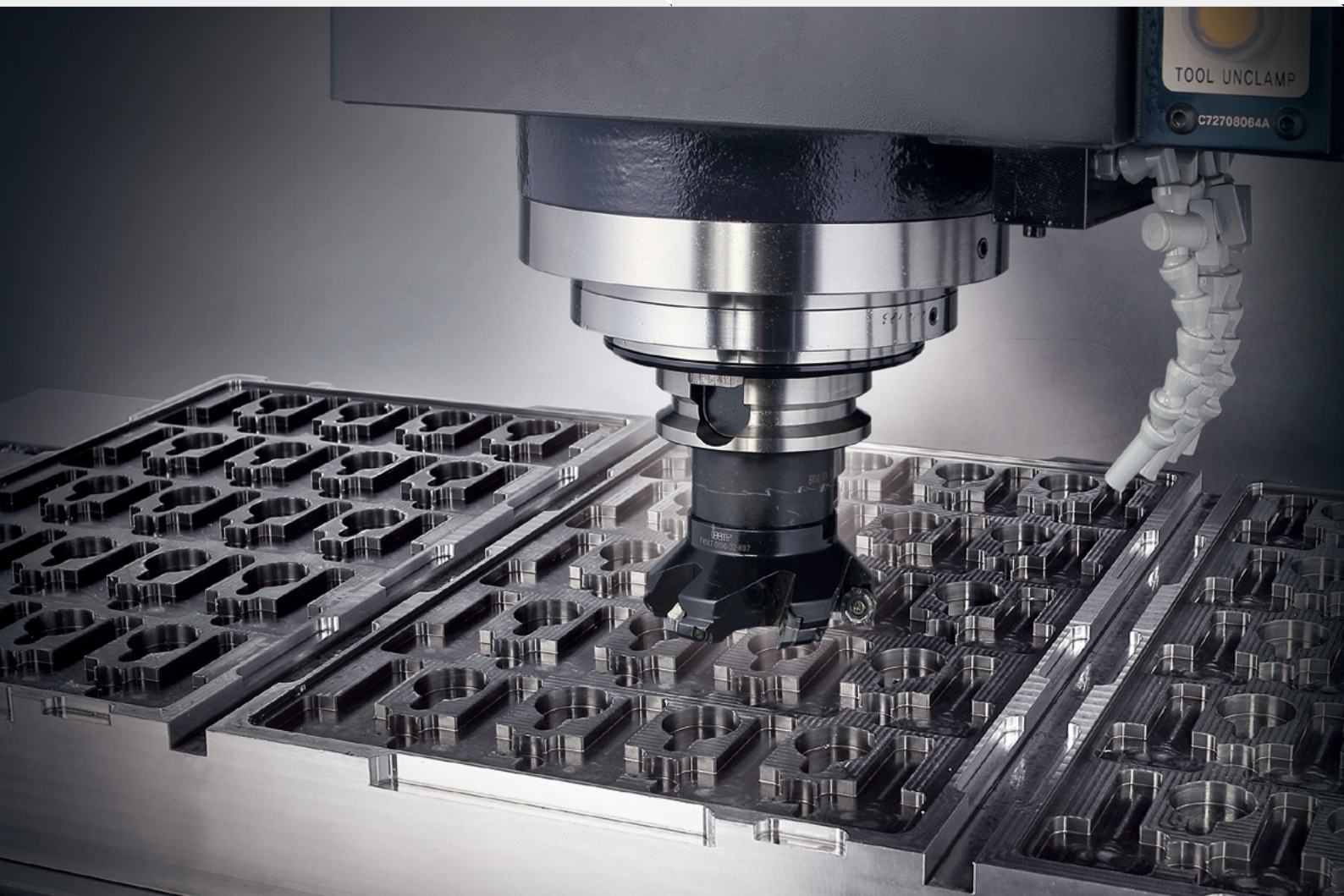


- Directly coupled spindles reduce vibration and noise improving the machine's performance and positively impacting on the machine shop environment.
- Highly rigid columns and Roller LM guideways are incorporated for heavy duty machining operations.

**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 670 to 762 mm in the Y-axis, enabling a wide range of workpieces to be accommodated and processed.

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

Travel distance (X / Y / Z axis)

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)

DNM 750L/50 II

2160 / 762 / 650 mm
(85.0 x 30.0 x 25.6 inch)

Rapid traverse rate (X / Y / Z axis)

DNM 650/50 II

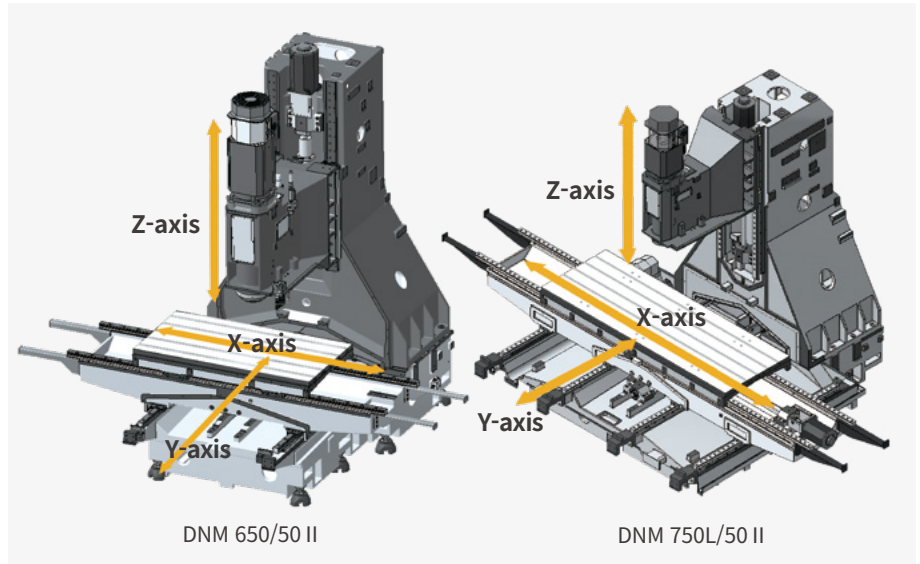
36 / 36 / 30 m/min
(1417.3 / 1417.3 / 1181.1 ipm)

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.



TABLE

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

Table size (A x B)

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 650/50 II

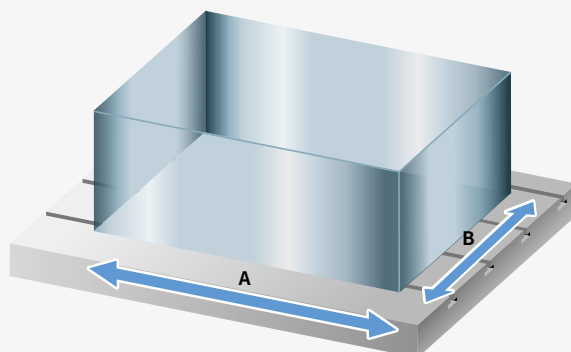
1000 kg
(2204.6 lb)

DNM 750/50 II

1500 kg
(3306.9 lb)

DNM 750L/50 II

1800 kg
(3968.3 lb)



SPINDLE

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

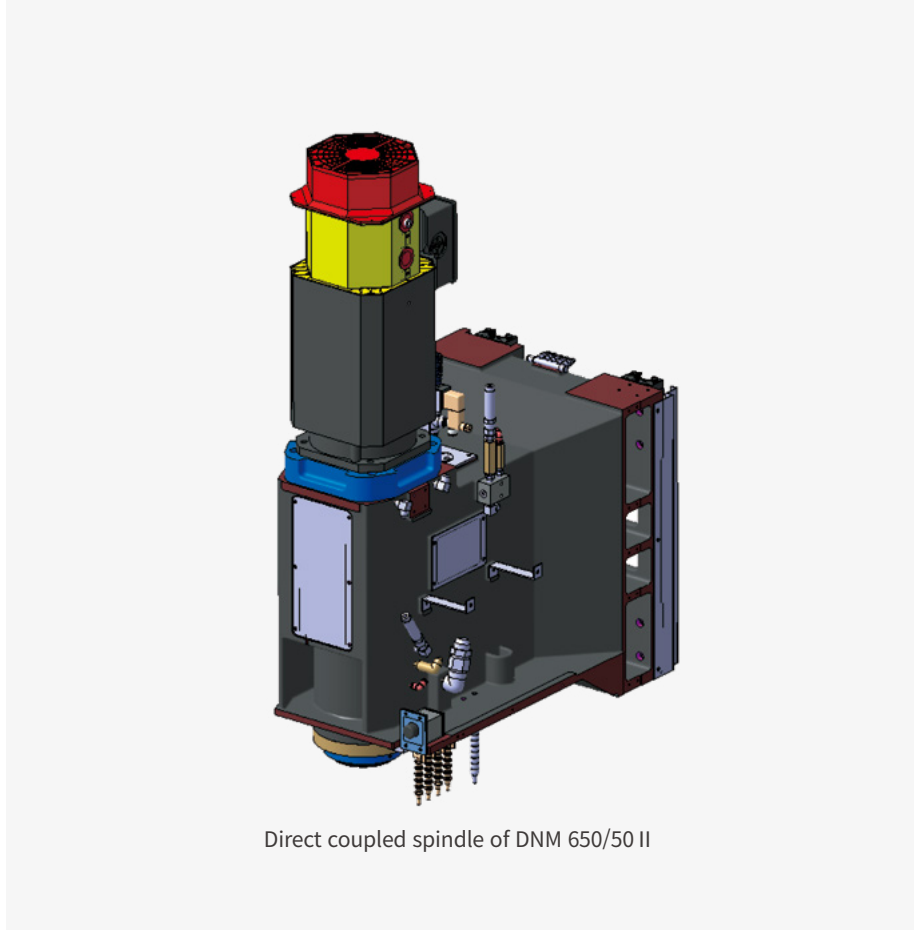
8000 {10000 OPTION} r/min

Max. spindle motor power

22 {26 OPTION} kW
(29.5 {34.9} Hp)

Max. spindle motor torque

353.2 {223 OPTION} N·m
(260.7 {164.6} ft-lbs)



Direct coupled spindle of DNM 650/50 II

TOOL CHANGE SYSTEM (ATC)

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

Tool storage capacity

24 {30 OPTION} ea

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



STANDARD | OPTIONAL SPECIFICATIONS

A range of options is available to suit individual requirements.

Description	Features	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	Tank capacity	40L	●	●	●
	Capacity 60Hz(50Hz)	1.56(1.76) kW	●	●	●
Magazine	Tool storage capacity	24 ea	●	●	●
		30 ea	○	○	○
Tool shank type	BIG PLUS BT50		●	●	●
	BIG PLUS CAT50		○	○	○
	BIG PLUS DIN50		○	○	○
Coolant	Flood (60Hz(50Hz))	0.16(0.12) MPa / 0.4 kW	●	●	●
		1.0(0.75) MPa / 1.1 kW	○	○	○
	TSC** (60Hz(50Hz))	None	●	●	●
		2.0(1.9) MPa / 1.5 kW	○	○	○
		2.0(1.3) MPa / 4.0 kW	○	○	○
		2.0 MPa / 4.0 kW	○	○	○
		3.0(3.0) MPa / 2.9 kW	○	○	○
		7.0 MPa / 7.5 kW	○	○	○
	Shower	0.1 MPa (14.5 psi), 1.1 kW (1.5 Hp)	○	○	○
	Water soluble Coolant Chiller***		○	○	○
Chip disposal	Oil skimmer	Belt type	○	○	○
	Chip pan		●	●	●
	Chip conveyor	Hinged type (Left/Right/Rear)	○	○	○
	Chip bucket	Magnetic scraper type (Left/Right/Rear)	○	○	○
Precision machining option	Linear scale	X / Y / Z axis	○	○	○
	AICC II (200 block)		●	●	●
	Fine surface machining	Look-ahead block is Max.200 -Al 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 & Operatrion tools kit	-	●	●	●
	Air blower		○	○	○
	Air gun		○	○	○
	Coolant gun		○	○	○
Mist collector		○	○	○	
Customized Special Option	Anchoring ⁽¹⁾	Slide clamp & Chemincal anchor bolt	○	○	○
	TSA ⁽²⁾	0.54	○	○	○
	Raising block	150	○	○	○
		200	○	○	○
		300	○	○	○
	Drum chiconveyor	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	Schubert system elektronik GmbH / BK97(Needle tupe in cutting area)	○	○	○	

* Please contact your DN Solutions representative for detailed machine information.

● Standard ○ Optional X N/A


*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 detail information want, consult with DN Solutions service

(2) In case of TSC is not required and only TSA is needed, this option can be selected.

** When using a semi-synthetic type or synthetic type, contact our sales representative or service center in advance.

*** Technical consultation is mandatory for the chilling of non-water soluble coolant

 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

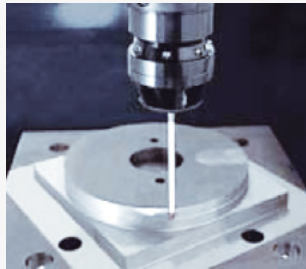
Chip conveyor type	Material	Carbon steel			Cast iron		Aluminium		
		Long	Short	Needle	Short	Sludge	Long	Short	Needle
Hinged belt type		○	△	X	△	X	○	△	X
Scraper type	Normal	X	○	△	○	△	X	△	X
	Magnetic	X	○	○	○	○	-	-	-
Drum filter type	Hinged type	○	△	X	△	X	○	△	X
	Scraper	X	○	△	○	△	X	○	△

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

Measurement & Automation OPTION



Automatic tool measurement



Automatic workpiece measurement

Raised block OPTION

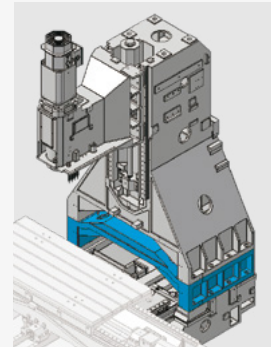
When the distance between the table top and the spindle nose needs to be extended, for example, accommodate a fixture or rotary axis on the table, raised block can be used to extend the distance.

Height

150 mm (5.9 inch)

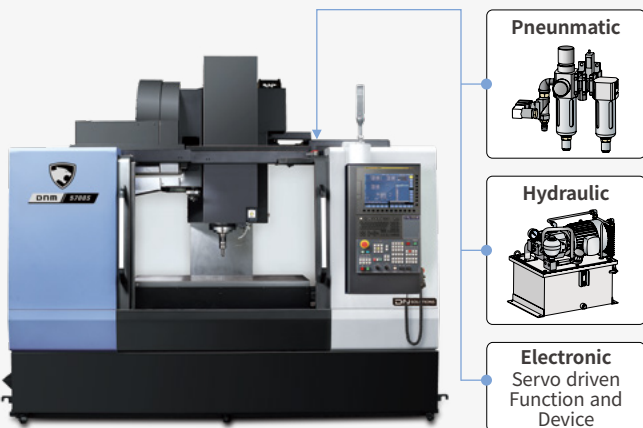
200 mm (7.9 inch)

300 mm (11.8 inch)



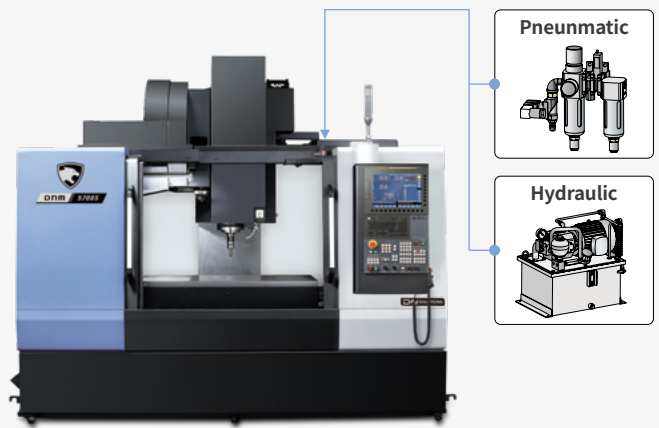
4th axis auxiliary device interface OPTION

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 maximizes customer productivity and convenience.

15 inch screen + New OP

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 and 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	
	Additional controlled Axis	Add 1 Axis (5th Axis)	●	
Data input/output	Fast data server		○	
	Memory card input/output		●	
	USB memory input/output		●	
	Large capacity memory(2GB)*2	Available Option only with 15" Touch LCD (iHMI Only) *2)	○	
Interface function	Embedded Ethernet		●	
	Fast Ethernet		○	
	Enhanced Embedded Ethernet function		●	
Operation	DNC operation	Included in RS232C interface.	●	
	DNC operation with memory card		●	
Program input	Workpiece coordinate system	G52 - G59	●	
	Addition of workpiece coordinate system	G54.1 P1 X 48 (48 pairs)	●	
	Tool number command		T4 digits	
	Tilted working plane indexing command	G68.2 TWP	○	
Feed function	AI contour control I	G5.1 Q_ , 40 Blocks	X	
	AI contour control II	G5.1 Q_ , 200 Blocks	●	
	AI contour control II	G5.1 Q_ , 600 Blocks	X	
	AI contour control II	G5.1 Q_ , 1000 Blocks *1)	X	
	High smooth TCP		X	
Operation guidance function	EZ Guidei (Conversational Programming Solution)		●	
	iHMI with Machining Cycle	Only with 15" Touch LCD standard *2)	X	
	EZ Operation package		●	
Setting and display	CNC screen dual display function		●	
Network	FANUC MTConnect		⊕	
	FANUC OPC UA		⊕	
Others	Display unit	10.4" color LCD	X	
		15" color LCD	X	
		15" color LCD with Touch Panel	●	
	Part program storage size & Number of registerable programs	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

*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

Network: FANUC MTConnect and FANUC OPC UA available.

● Standard ○ Optional X N/A ⊕ Available

CONVENIENT OPERATION

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

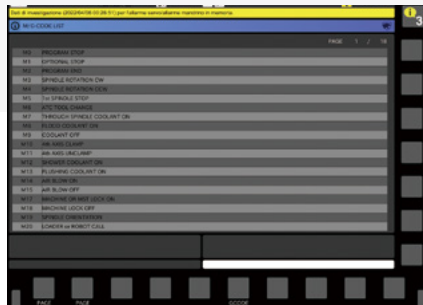
EZ work

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.



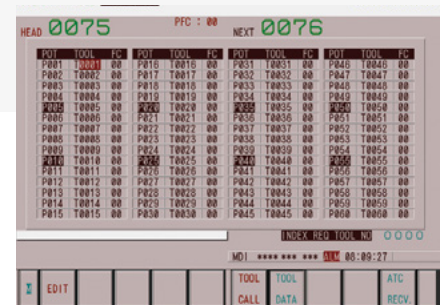
Thermal Compensation

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



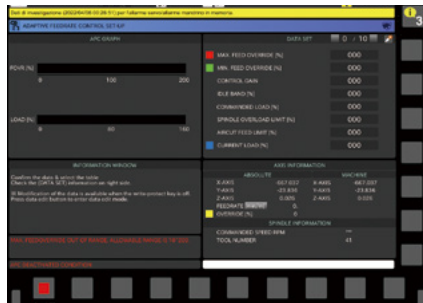
Tool Management

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



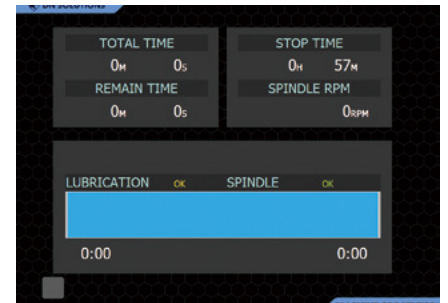
Operation Rate

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)



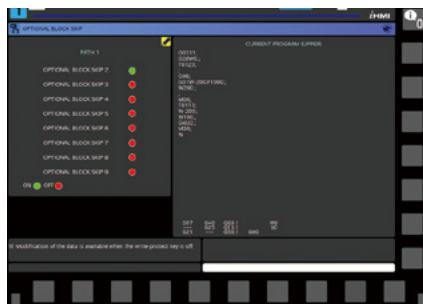
Spindle Warm Up

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

8000 r/min

Max. spindle speed

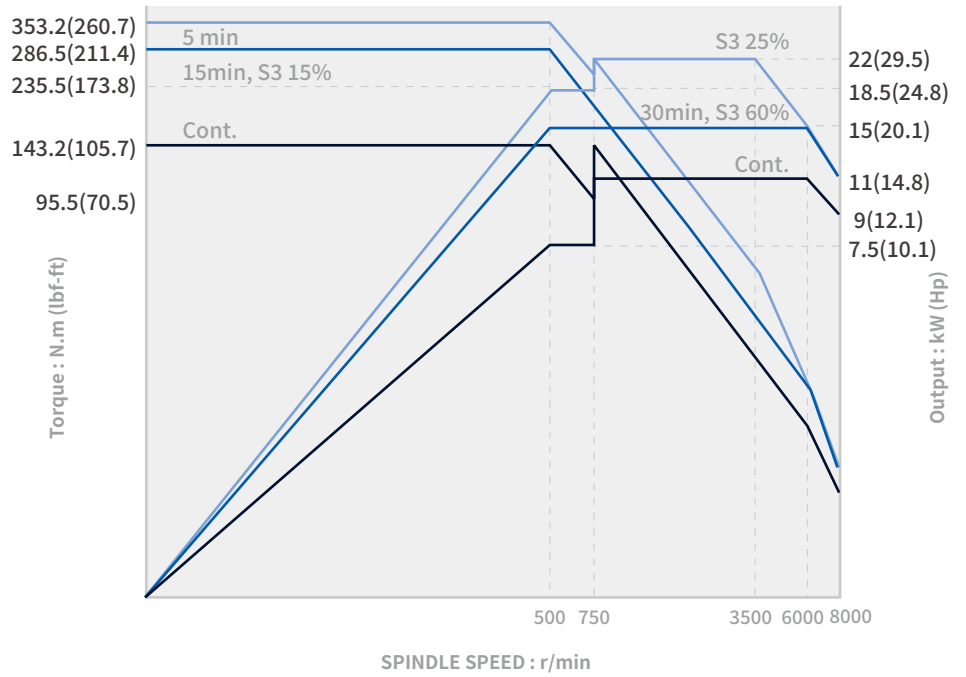
8000 r/min

Max. spindle motor power

22 kW
(29.5 Hp)

Max. spindle motor torque

353.2 N·m
(260.7 ft-lbs)



10000 r/min OPTION

Max. spindle speed

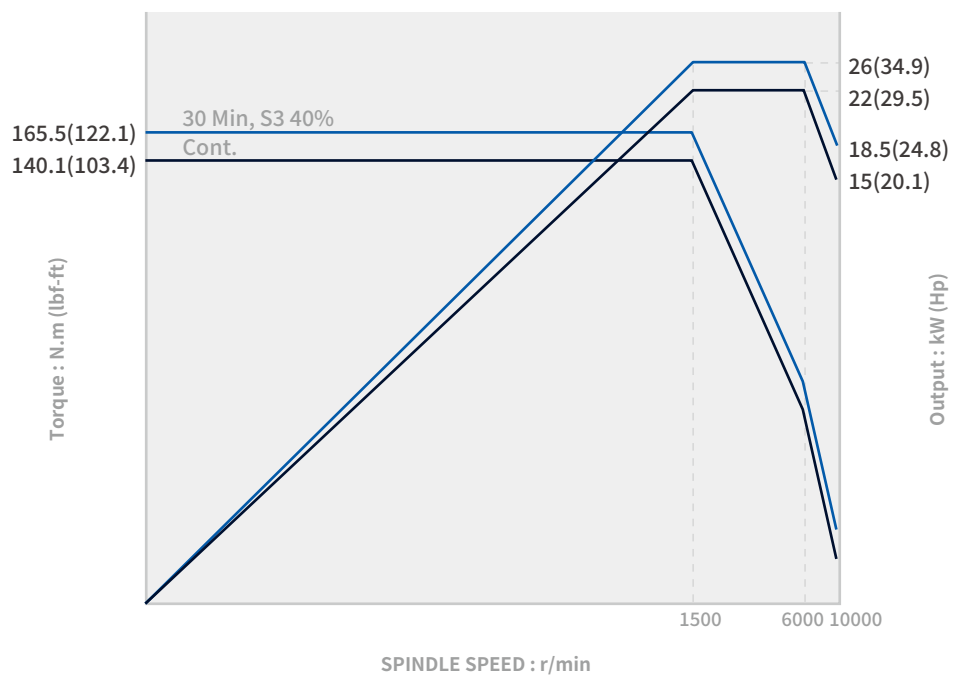
10000 r/min

Max. spindle motor power

26 kW
(34.9 Hp)

Max. spindle motor torque

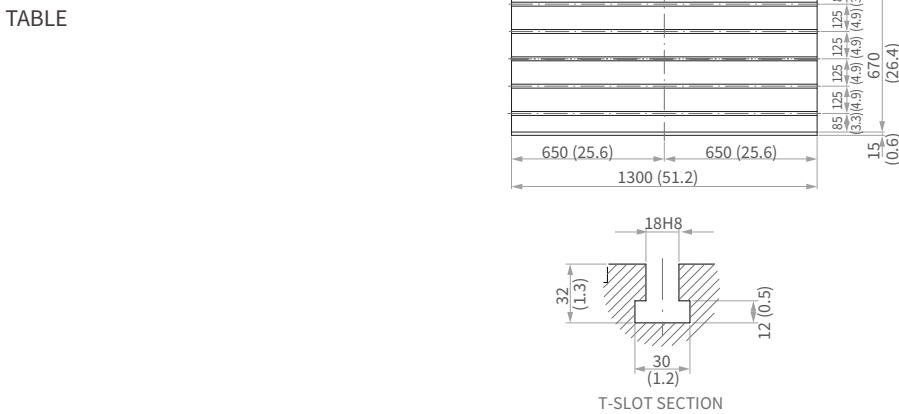
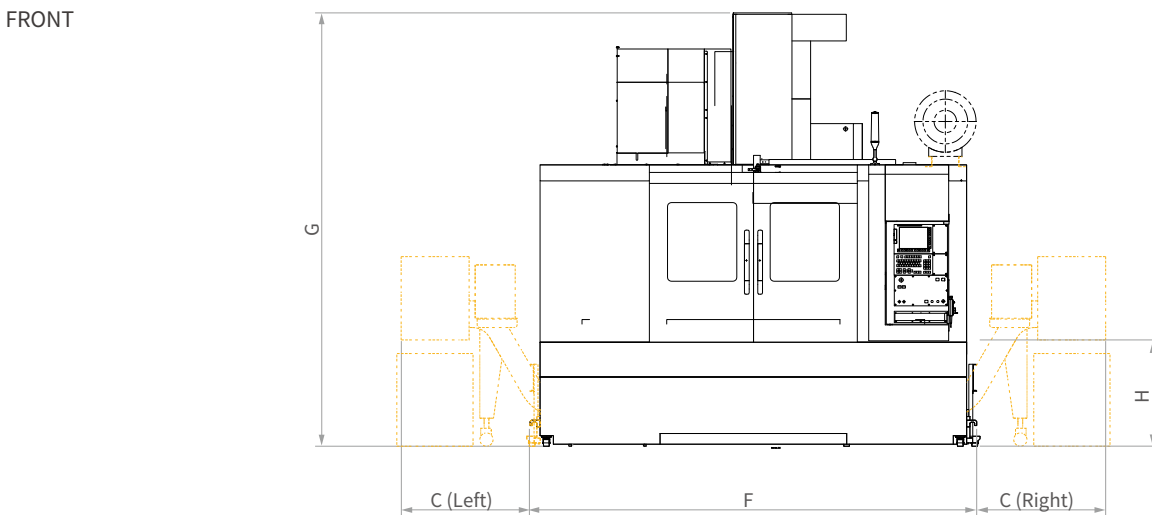
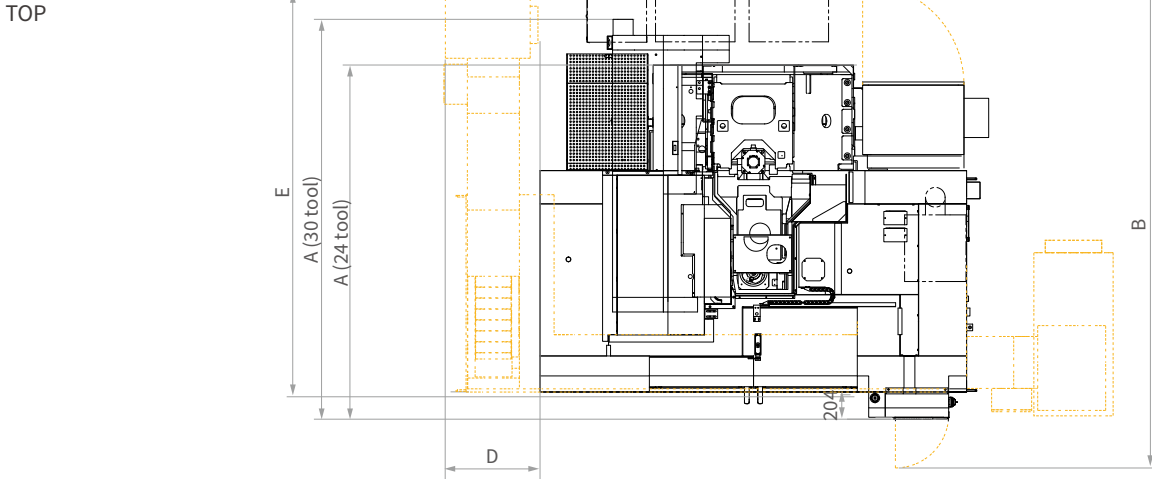
165.5 N·m
(122.1 ft-lbs)



EXTERNAL DIMENSIONS

DNM 650/50 II

Units : mm (inch)



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 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)

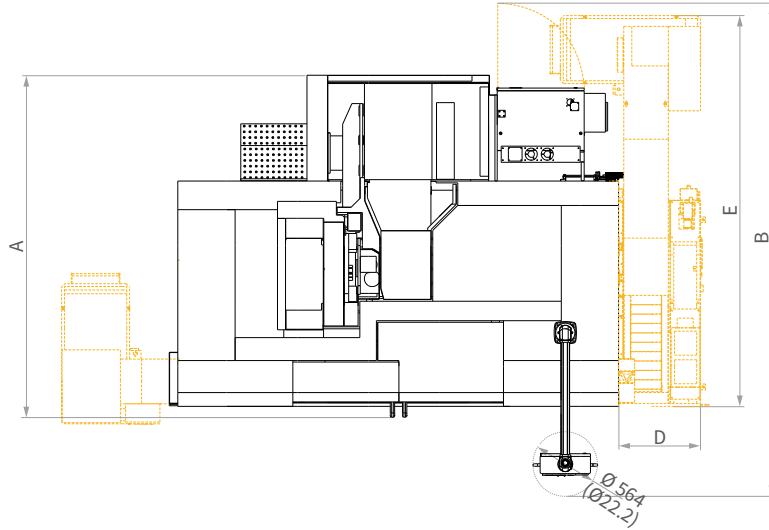
* Some peripheral equipment can be placed in other places

EXTERNAL DIMENSIONS

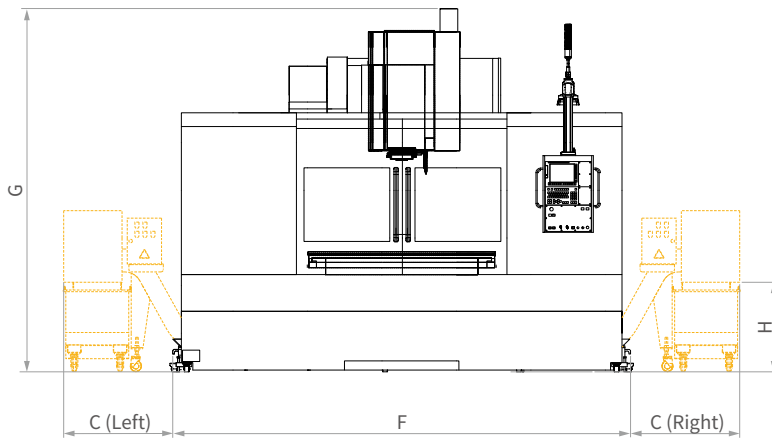
DNM 750/50 II, DNM 750L/50 II

Units : mm (inch)

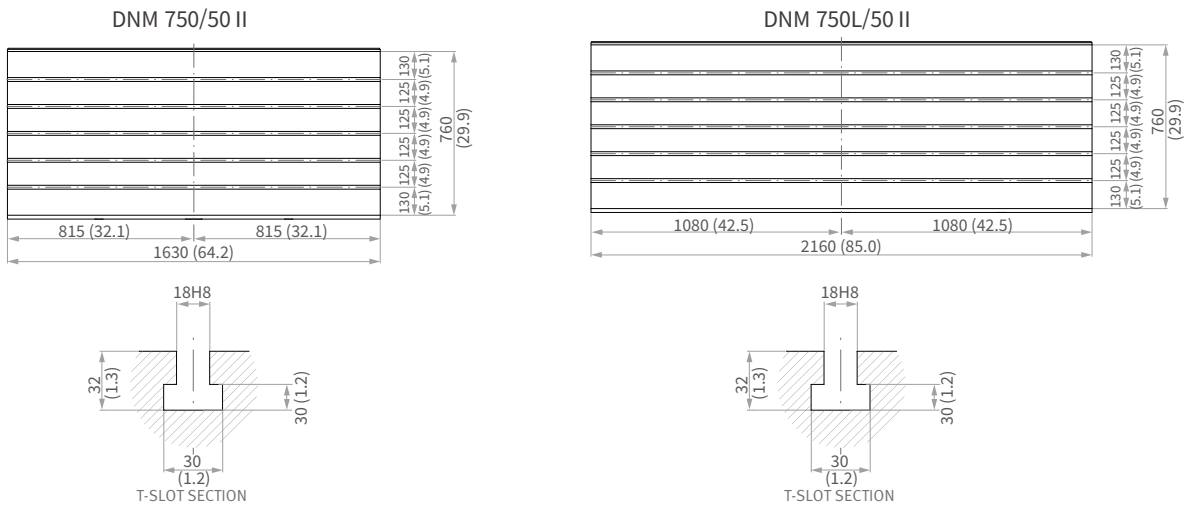
TOP



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 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 650/50 II	DNM 750/50 II	DNM 750L/50 II	
Travels	Travel distance	X axis	mm (inch)	1270 (50.0)	1630 (64.2)	2160 (85.0)
		Y axis	mm (inch)	670 (26.4)	762 (30.0)	762 (30.0)
		Z axis	mm (inch)	625 (24.6)	650 (25.6)	650 (25.6)
	Distance from spindle nose to table top		mm (inch)	200 ~ 825 (7.9 ~ 32.5)	200 ~ 850 (7.9 ~ 33.5)	200 ~ 850 (7.9 ~ 33.5)
Table	Table size		mm (inch)	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)	1000 (2204.6)	1500 (3306.9)	1800 (3968.3)
	Table surface type		mm (inch)	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) {223 (164.6) (S3/S6 25%)}*		
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 {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 selection		-	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}*	53.5	
	Compressed air supply		Mpa (psi)	0.54 (78.3)		
Tank capacity	Coolant tank capacity		L (gal)	410 (108.3)	520 (137.4)	590 (155.9)
Machine Dimensions	Height		mm (inch)	3250 (128.0)	3385 (133.3)	3385 (133.3)
	Length		mm (inch)	3350 (131.9)	3435 (135.2)	3435 (135.2)
	Width		mm (inch)	2740 / 3000 (107.9 / 118.1)	3850 (151.6)	4900 (192.9)
	Weight		kg (lb)	9000 (19841.3)	13800 (30423.8)	15300 (33730.7)
Control	CNC system		-	DN Solutions Fanuc i Plus, HEIDENHAIN TNC 620		

WHY DN SOLUTIONS

The DN Solutions promise, MACHINE GREATNESS, has two important meanings. The first is simple: DN Solutions makes great machines. The second is a challenge to our end-users. With a product line that is this comprehensive, accurate and reliable, we equip our customers to machine greatness. The big question: *Why should you choose DN Solutions over other options?* Here's why...

UNBEATABLE MACHINES

You won't find a more comprehensive range or a better combination of value, performance and reliability anywhere else.

ROBUST PRODUCT LINE

We offer an impressive range of machine models and hundreds of configurations. Whatever your machining needs and requirements, there's a DN Solutions for you.

READILY AVAILABLE - ANYWHERE IN THE WORLD

Machining centres (including 5-axis machines), lathes, multi-tasking turning centres and mill-turn machines, and horizontal borers with best-in-class specifications are all available...ready to install.

EXPERT SERVICE

Our dedicated, experienced and knowledgeable team is totally committed to improving your productivity, growth and success.

RESPONDING TO CUSTOMERS **ANYTIME, ANYWHERE**

DN SOLUTIONS GLOBAL NETWORK

66 COUNTRIES | **140** + SALES NETWORKS | **3** FACTORIES | **6** REGIONAL HQS



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.

	<p>FIELD SERVICES</p> <ul style="list-style-type: none"> • On-site service • Machine installation and testing • Scheduled preventive maintenance • Machine repair service 		<p>PARTS SUPPLY</p> <ul style="list-style-type: none"> • Supplying a wide range of original DN Solutions spare parts • Parts repair service
	<p>TRAINING</p> <ul style="list-style-type: none"> • Programming, machine setup and operation • Electrical and mechanical maintenance • Applications engineering 		<p>TECHNICAL SUPPORT</p> <ul style="list-style-type: none"> • Supports machining methods and technology • Responds to technical queries • Provides technical consultancy



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