

**NEW** COMPACT HORIZONTAL MACHINING CENTER









Compact horizontal machining center NHC 4000/5000 is designed to provide maximum productivity, accuracy, and number of convenient features. The compact design offers flexibility to utilize limited factory space efficiently.





## **ENHANCED DESIGN**

A new design was applied considering user convenience, and usability was increased with a touch screen and a wide screen.

## **INCREASED PRODUCTIVITY**

The 15000r/min direct spindle option was added to expand customer choice and productivity was maximized by increasing rapid traverse.

## **IMPROVED ERGONOMICS**

Newly designed operation panel and built-in pallet setup switch further improves ergonomics of the machine.

# **BASIC STRUCTURE**

Highly rigid machine structure and compact design to meet all users' needs.

### **Robust machine structure**

DN Solutions engineers have performed FEM analysis to design the most durable and stable structure. As a result, the machine is capable of extensive heavy cutting process.

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

NHC 4000 600 / 560 / 565 mm 23.6 / 22.0 / 22.2 inch

NHC 5000 850 / 700 / 750 mm 33.4 / 27.5 / 29.5 inch



## High speed roller guides

LM roller guides on all axes increases machine reliability and productivity.

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

NHC 4000 / NHC 5000 48 / 40 / 48 m/min 1889.8 / 1574.8 / 1889.8 ipm

### **Compact design**



#### **Vertical Machining Center**



2 Machines Required





NHC 4000 / NHC 5000



1 Machine Required



2 Operators Required

#### 1 Operator Required

## Max. spindle speed

## 8000 r/min {12000/15000} r/min \_\_\_\_\_

Max. spindle power

18.5 / 11 kW 24.8 / 14.7 Hp

Max. spindle torque

**353.4** N ⋅ m 260.6 ft-lbs **117** N ⋅ m 86.3 ft-lbs option

Туре

## **ISO #40**

## TOOL MAGAZINE

**Tool storage capacity** 

**40 tools** 60 / 80 / 120 / 170 / 262 tools



### High speed spindle

Users can select different types of high performance spindle to meet their machining needs. Standard 8000 r/min spindle can deliver up to 353.4 N·m of torque to perform extreme heavy cutting process, while 15000 r/min spindle option can provide maximum productivity in high speed cutting process.

## Wide range of options to meet more users' needs

Wide selections of tool magazines are available per user's preference. These automatic tool magazines are operated by our newest servo motor to minimize tool change time, and the fixed address tool storage system makes it easy for users to select desired tool without confusion.

### Automatic tool changer (ATC)

Cam-type ATC provides high reliability and durability, and minimizes non-cutting time.



Tool change time 1.5 S

Max. workpiece size



## AUTOMATIC PALLET CHANGER (APC)

More reliable and conveniently designed high speed automatic pallet changer.

## High speed automatic pallet changer

Standard high speed rotary type APC provide extreme reliability and a large work space allows users to easily setup the pallet.

	NHC 4000	NHC 5000
Pallet Size	400 x 400 mm (15.7 x 15.7 inch)	500 x 500 mm (19.7 x 19.7 inch )
Max. Workpiece Size (DXH)	Ø600 x H800 mm (23.6 x 31.5 inch)	Ø800 x H900 mm (31.5 x 35.4 inch)
Max. Load	400 kg (881 lb )	500 kg (1102.3 lb )

# STANDARD | OPTIONAL SPECIFICATIONS

A range of options is available to suit individual requirements.

Division	Option		NHC 4000	NHC 5000
	40 tools		•	•
	60 tools		0	0
Tool Magazine	80 tools		0	0
	120 tools		0	0
	170 tools		0	0
	262 tools		0	0
	BT40		•	•
Tool Specifications	CAT40		0	0
Tool Specifications	DIN40		0	0
	HSK A-63		0	0
Mist Collector	Mist Collector		0	0
	8000 r/min	18.5 / 11 kW	•	•
Spindle	12000 r/min	18.5 / 11 kW	0	0
-p	15000 r/min	18.5 / 11 kW	0	0
	Spindle air curtain		•	•
		2 X 2	0	0
	Hvdraulic fixture line	4 X 4	0	0
Hydraulic fixtures	<b>,</b>	6 X 6	0	0
		8 X 8	0	0
	Hydraulic fixture unit		0	0
Automatic Workpiece	OMP60_RENISHAW		0	0
Measurement Device	RMP60_RENISHAW		0	0
Automatic Tool Measurement	BK 9		0	0
Device	Limit Switch (OMRON)		0	0
	TS27R		0	0
		Hinged type	0	0
Chip Handling System	Chip conveyor	Scraper type	0	0
	Chip bucket		0	0
	Chip bucket		0	0
	FLUOD			
				0
	SHOWER	1.5 kW 2.0 MPA		0
Coolant	TSC	3.0 kW 3.0 MPA		0
cootant		4 0kW 2 0MPA	0	0
		7.5 kW 7.0 MPA	0	0
	Coolant gun		0	0
	Oil skimmer		0	0
	Index table (1°)		•	•
Table	Rotary Table (0.001°)		0	0
	Tapped pallet		•	•
Pallet	T-Slot pallet		0	0
	Pallet air seat		0	0
AIR	AIR GUN		0	0
MPG	Portable MPG		•	•
	Coolant level switch : Sensing level - Low / High		0	0
	Tool ID (Internal-matrix) : Bal	luff Sensor	0	0
	Tool Management (TMT1, TM	T2, TMT8 DIGIT)	0	0
	Ball screw shaft cooling(X/Y/Z	Z axis)	0	0
	Setup shower coolant		0	0
Customized Special Option	Auto door w/Safty edge		0	0
	U-axis drive : DANDREA( TA-C	125)	0	0
	MQL(Maker:VOGEL)		0	0
	Smart thermal control: Senso	r type (Spindle & Structure)	0	0
	TSA		0	0
	Spin window for main door (E	Electric type/ Maker:T2K)	0	0

\* Please contact DN Solutions for detailed specification information.

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

• Standard Optional X Not applicable

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

#### **Diverse Options**

Proper chip disposal is very important for improving productivity and environment. Therefore, we recommend better chip management for users to work in a safer working environment.

#### Chip Conveyor Option



### **Environment-friendly Devices**



Oil skimmer option



Mist Collector option

#### **Measurement Systems**



Auto tool damage detection device I (BK 9) option



Auto tool damage detection device II (OMRON) option



Automatic tool measuring device (TS 27R) option

## **Chip Disposal System**



FLUSHING COOLANT option



FLOOD COOLANT



SHOWER COOLANT option



COOLANT GUN option



COOLANT SPRAY GUN ON THE SPINDLE HEAD



SCREW CONVEYOR



MQL SYSTEM option MISTING DEVICE



SPINDLE-THROUGH COOLANT SPRAY DEVICE (TSC) option

## ROUND PALLET SYSTEM

## RPS 4000 / 5000

Compact size Slim Round Pallet System for New HMC Taper #40 Series.



#### Features

- Optimized slim design for space saving & minimal invest cost
- Telescopic Mechanism Fork
- Simple installation and easy maintenance
- Easy field retrofit to DN Solutions HMC



#### **Machine Specifications**

Description			RPS 4000 / 5000-6P			
			NHC 4000 / NHP 4000	NHC 5000 / NHP 5000		
Pallet Dimens	ion	mm (inch)	400 x 400 (15.7 x 15.7)	500 x 500 (19.7 x 19.7)		
Workpiece Dia	ameter	mm (inch)	600 (23.6)	800 (31.5)		
Workpiece He	ight	mm (inch)	800 (31.5) 900 (35.4)			
Workpiece Weight		kg (lb)	400 (881.8) 500 (1102.3) {700 (1543.2)			
Number of Pa	llets	ea	6			
Magazine Type		-	Buffer Station ty	ype with Carrier		
Operation		-	Easy scheduling operation (Built-in Control)			
Drlving Rotating Axis(X)		-	Servo Motor & Reduction Gear			
Mechanism	Forking Axis(Z)	-	Hydraulic Cylinder & Rack/Pinion			
Dimension (Basic) mm (inch) 3230 x		3230 x 2215 (127.2 x 87.2)	3630 x 2415 (142.9 x 95.1)			

\* { } : Optio, NHP 5000 ONLY

# LINEAR PALLET SYSTEM

### LPS 4000 / 5000

LPS 4000 / 5000 is designed to provide optimized system for the user wants space saving & high productivity linear pallet system in pallet size both 400 and 500 mm x 500 mm (19.7 inch x 19.7 inch) with minimum invest cost.



#### **Features**

- Optimized Slim design for space saving & minimal invest cost
- Optimized AGV of Single Mast & Single Fork Structure
- Simple installation in one piece
- Easy field retrofit to DN Solutions horizontal machining center
- User friendly intuitive way to register basic information for flexible manufacturing



### **Optimized AGV**

• Lifting Axis with Ball Screw & LMG • Optimized AGV of Single Mast & Single Fork Structure



#### **Machine Specifications**

Description		LPS 4000	LPS 5000	
Description		NHP 4000 / HC 400    NHP 5000 / HC 500		
Pallet Dimension	mm (inch)	400 x 400 (15.7 x 15.7) 500 x 500 (19.7 x 19		
Workpiece Diameter	mm (inch)	630 / 600 (24.8 / 23.6)	800 (31.5)	
Workpiece Height	mm (inch)	900 / 800 (35.4 / 31.5)	1000 / 900 (39.4 / 35.4)	
Workpiece Weight	kg (lb)	400 (881.8)	500 (1102.3) {700 (1543.2) : NHP 5000}*	
Travelling (X) Speed	m/min (ipm)	60 [Load], 90 [Unload] (2362.2, 3543.3)		
Lifting (Y) Speed	m/min (ipm)	10 [Load], 20 [Unload] (393.7, 787.4)		
Forking (Z) Speed	m/min (ipm)	20 [Load], 50 [Unload] (787.4, 1968.5)		
Axis Control		Servo		
Forking Type		Single Fork (Tele	escopic Mechanism)	
Turntable Indexing			45	
Power Supply (AGV)		Trol	ley Bar	
Communication (AGV<-> Main Controller)		Optical		
Number of Machines		1 ~ 7 (Aux. +1)		
Number of Setup Stations		1~4		
Number of Pallet	ea	12 ~ 72		
Dimension(Basic)	mm (inch)	6980 [L] x 2400 [W] (274.8 x 94.5)		

Note) Please contact DN Solutions sales representative for further information

# FANUC 32i PLUS

Fanuc 32i Plus maximizes customer productivity and convenience.

### 15" Touch screen + New OP

DN Solutions Fanuc 32i Plus' operation panel enhances operating convenience by incorporating common-design buttons and layout. It features a Qwerty keyboard for fast and easy data input and operation.

#### Fanuc 32i Plus

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

#### USB and PCMCIA card QWERTY keyboard

- EZ-Guide i standard
- Ergonimic operator pane
- 4MB Memory
- Enhance AICC BLOCK
- Touch pen provided as standard

### **PCMCIA Card**

The PCMCIA card enables uploading and downloading of the NC program, NC parameters, tool information, ladder programs, and also supports DNC operation.

#### **USB** Port

The USB memory stick enables uploading and downloading of the NC program, NC parameters, tool information and ladder programs. (DNC operation is not supported.)

## NUMERIC CONTROL SPECIFICATIONS

#### NHC 4000 / NHC 5000 Division Specifications **DN Solutions Fanuc i Plus** Controlled axes 3 (X,Y,Z) **Controlled** axis Simultaneously controlled axes 4 axes Additional controlled Axis Add 1 Axis (5th Axis) Fast data server Data input/output Memory card input/output • USB memory input/output **Embedded Ethernet** • Interface function Fast Ethernet **Enhanced Embedded Ethernet function** . **DNC** operation Included in RS232C interface. Operation DNC operation with memory card G52 - G59 G54.1 P1 X 48 (48 pairs) Workpiece coordinate system Addition of workpiece coordinate system **Program input** T2 digits Tool number command Tilted working plane indexing command G68.2 TWP G5.1 Q\_, 40 Blocks G5.1 Q\_, 200 Blocks Al contour control I х G5.1 Q\_,400Blocks 0 Feed function AI contour control II G5.1 Q\_, 600 Blocks Х G5.1 Q\_, 1000 Blocks Х High smooth TCP Х EZ Guidei (Conversational Programming Solution) **Operation Guidance** iHMI with Machining Cycle Note \*1) Only with 15" Touch LCD standard Function EZ Operation package Setting and display CNC screen dual display function FANUC MTConnect C Network FANUC OPC UA C 10.4" color LCD **Display** unit 15" color LCD 15" color LCD with Touch Panel 640M(256KB)\_500 programs Х 1280M(512KB)\_1000 programs 2560M(1MB)\_1000 programs Others 5120M(2MB)\_1000 programs Part program storage size & Number of 10240M(4MB)\_1000 programs Х registerable programs 20480M(8MB)\_1000 programs Х 2560M(1MB)\_2000 programs 5120M(2MB)\_4000 programs 10240M(4MB)\_4000 programs 20480M(8MB)\_4000 programs

\*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 × N/A ● Available Network: FANUC MT Connect and FANUC OPC UA available.

## FANUC

3



## EZ WORK

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

## EZ work

The EZ work package 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.

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#### **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



#### **Operation Rate**

Machine operation history management function by date based on load



#### Tool load monitor

- Detection of tool damage
- Detection of abnormalities during operation
- Detection of no-load air cutting



#### Adaptive Feed Control Function to control feedrate so that the

cutting can be carried out at a constant load



#### **Tool management I**

- Tool magazine control
- Tool state display
- Fastems Tool Add/Remove 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



Pallet magazine support functions PMC Soft Panel Switch

Manual operations that occur continuously in each stages for APC,ATC change command



### **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



#### **APC Setting Screen**

A simple automation function that supports automatic processing of the next pallet by setting the processing program for each pallet of the equipment including APC in advance

# POWER | TORQUE

## 8000 r/min

Spindle motor : **18.5 / 7.5** kW 24.8 / 10.1 Hp

Power torque : **353.4** N ⋅ m 260.8 ft-lbs



12000 r/min

Spindle motor : **18.5 / 7.5** kW 24.8 / 10.1 Hp

Power torque : **117.0** N · m 86.3 ft-lbs



15000 r/min

Spindle motor : **18.5 / 11** kW 24.8 / 14.7 Hp

Power torque : **117.8** N ⋅ m 86.9 ft-lbs



## DIMENSIONS



FRONT



Model	А	В	С	D	E	F	G	Н	I	J
NHC 4000	2872	2259	1714	R620	4134	4612	5356	2573	1130	800
	(113.1)	(88.9)	(67.5)	(R24.4)	(162.8)	(181.6)	(210.9)	(101.3)	(44.5)	(31.5)
NHC 5000	3309	2678	2084	R629	4877	5292	5940	3007	1160	831
	(130.3)	(105.4)	(82.0)	(R24.8)	(192.0)	(208.3)	(233.9)	(118.4)	(45.7)	(32.7)

\* Some peripheral equipment can be placed in other areas.

# MACHINE SPECIFICATIONS

Description			Unit	NHC 4000	NHC 5000	
Machining		X-axis	mm (inch)	600 (23.6)	850 (33.5)	
Capacity	Travel distance	Y-axis	mm (inch)	560 (22)	700 (27.6)	
		Z-axis	mm (inch)	565 (22.2)	750 (29.5)	
	Distance from spine	lle nose to table center	mm (inch)	150 ~ 715 (5.9 ~ 28.1)	150 ~ 900 (5.9 ~ 35.4)	
	Distance from spine	lle center to table top	mm (inch)	50 ~ 610 (1.9 ~ 24)	50 ~ 750 (1.9 ~ 29.5)	
Feedrate		X-axis	m/min (ipm)	48 (1	.889.8)	
	Rapid Feedrate	Y-axis	m/min (ipm)	40 (1	574.8)	
		Z-axis	m/min (ipm)	48 (1	.889.8)	
	Cutting feedrate		mm/min (ipm)	20000	(787.4)	
Pallet	Pallet type			24-M1	6 X P2.0	
	Pallet indexing ang	le	deg	1 {0	.001}	
	Max. loading capac	ity	kg (lb)	400 (881.8)	500 (1102.3)	
	Max. workpiece size	2	mm (inch)	600 x 800 (23.6 x 31.5)	800 x 900 (31.5 x 35.4)	
	Pallet size		mm (inch)	400 x 400 (15.7 x 15.7)	500 x 500 (19.7 x 19.7)	
Spindle	Max. spindle speed		r/min	8000 {120	000, 15000}	
	Data specification			ISO #40, 7/24 TAPER		
	Max. torque		N∙m (ft-lbs)	353.4 {117}	(260.6 {86.3})	
Automatic Pallet	No. of pallets		ea		2	
Changer (APC)	Pallet change time		S	8	8.5	
	Indexing angle (rota	ation)	deg	9	90	
Automatic Tool	Tool shank type			BT40 {CAT40 / D	0IN 40 / HSK-A63}	
Changer (ATC)	Tool storage	Tool storage		40 {60 /	80 / 120}	
	capacity	Matrix Type	ea	{170 / 262}		
	Max. tool	W/O adjacent tool	mm (inch)	75	(2.9)	
	diameter	With adjacent tool	mm (inch)	140	(5.5)	
	Max. tool length		mm (inch)	300 (11.8)	400 (15.7)	
	Max. tool weight		kg (lb)	10	(22)	
	Max. tool moment		N·m (ft-lbs)	11.8	(8.7)	
	Tool change time(T-T	hange time(T-T-T, tool weight less than 7.5Kg)		1	5	
	Tool change time (C-	T-C, tool weight less than 7.5 Kg)	S		4	
Motor	Spindle motor pow	er	kW (Hp)	18.5 / 11 (24.8 / 14.7)		
Power Source	Power consumption	ı	kVA	Į	58	
	Compressed air pressure		Mpa (psi)	0.54	(78.3)	
Tank Capacity	Coolant tank capacity		L (galon)	550 (145.3)	640 (169.1)	
	Lube tank capacity		L (galon)	1.4	(0.37)	
Machine	Height		mm (inch)	2573 (101.3)	3007 (118.4)	
Dimensions	Length		mm (inch)	5356 (210.9)	5940 (233.9)	
	Width		mm (inch)	2259 (88.9)	2678 (105.4)	
	Weight		kg (lb)	11000 (24250.8)	12500 (27557.8)	

## 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 a	and service support network	51	<b>Technical centers</b> Technical center, Sales support, Service support, Parts support
6	Corporations	204	Service posts
155	Dealer networks	3	Factories
United States Mexico	Europe		Changwon Factory Head Office China Yantai Factory China dia Vietnam

# 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



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



## Parts supply

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

## **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.

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