

HIGH PRODUCTIVITY HORIZONTAL MACHINING CENTER

NHP 4000·5000

NHP 4000

NHP 5000/S



NHP 4000 · 5000 · 5000S

NHP 4000/5000 horizontal machining centers, with their stable structures, thermal compensation systems and ability to minimize non-cutting time, deliver unrivalled accuracy and productivity. With grease lubrication used for all ballscrews, the machines are also eco-friendly and are the number one choice for manufacturers machining small and medium sized components.

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**IMPROVED PRODUCTIVITY
BY REDUCING NON-CUTTING
TIME**



- 15000/20000 r/min high speed built-in spindle
- Axis acceleration/deceleration rates of 1G, plus high-speed disc type tool magazine

**RELIABLE AND COMPACT
MACHINE**

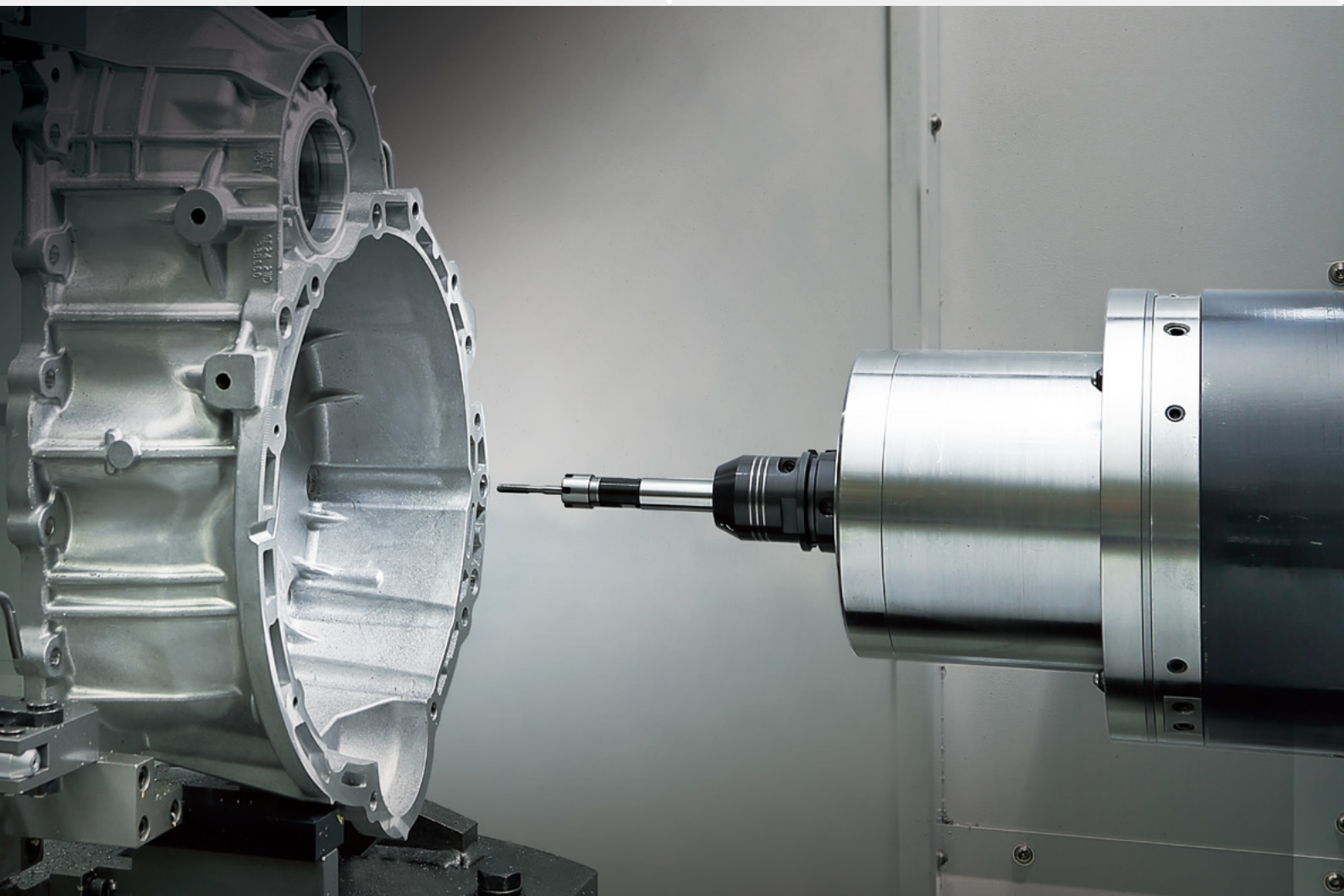


- Proven reliability through multi million test cycles
- Grease lubrication prevents coolant contamination
- Three point bed support structure
(No foundation work, minimum installation time)

**VARIOUS FUNCTIONS
ARE APPLIED TO
ENSURE HIGH PRECISION**



- Spindle thermal compensation system as standard
- Spindle, ballscrew and bearing cooling system as standard



BASIC STRUCTURE

Provides large machining area and three types of table (index, worm/wheel drive, direct drive)

Eco-friendly oil lubrication is applied to all axes as standard and high speed servo motors are installed to improve productivity.

Travel distance (X x Y x Z-axis)

NHP 4000

560 x 640 x 660 mm

(22.0 x 25.2 x 26.0 inch)

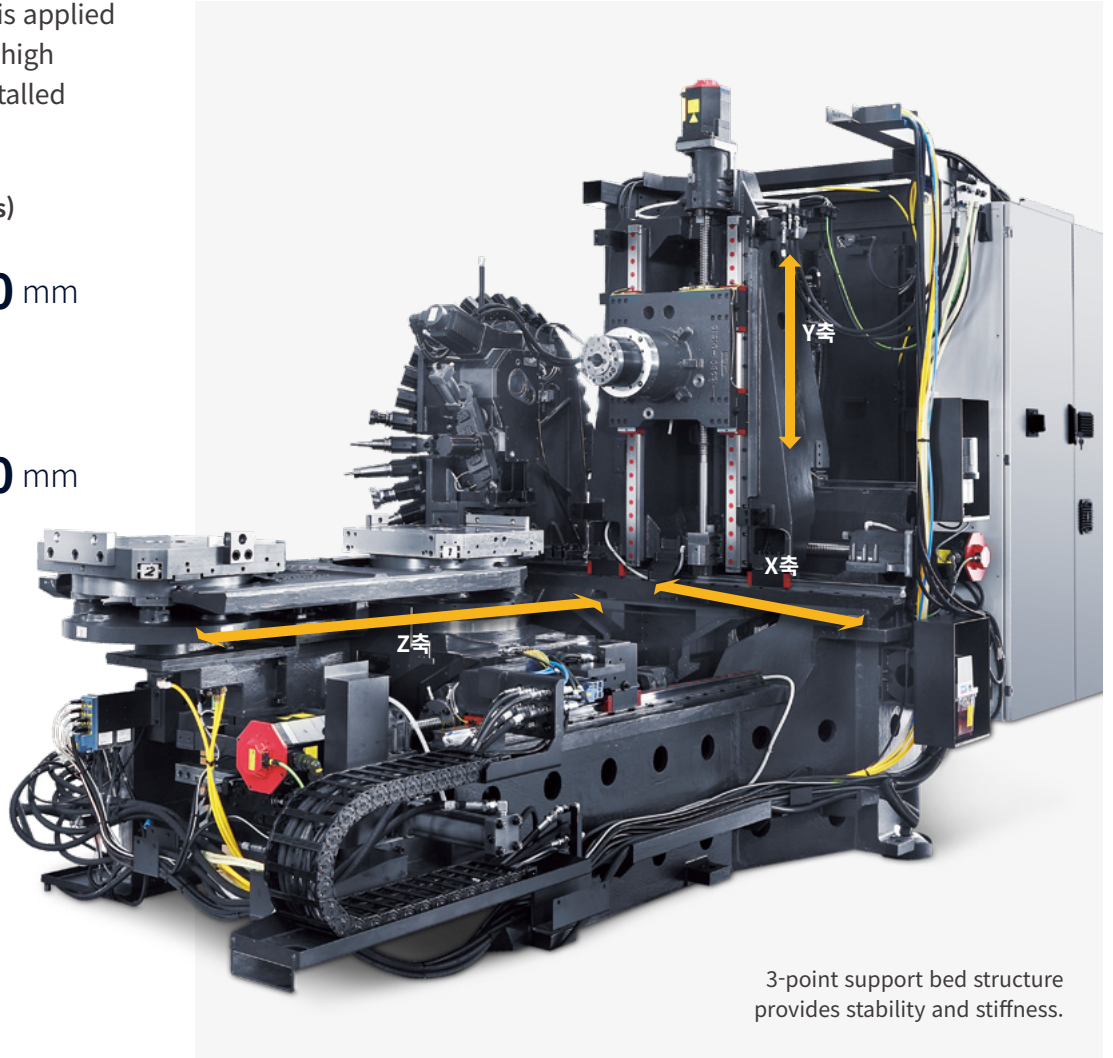
(15% increase over previous model)

NHP 5000

730 x 730 x 880 mm

(28.7 x 28.7 x 34.6 inch)

(10% increase over previous model)



3-point support bed structure provides stability and stiffness.

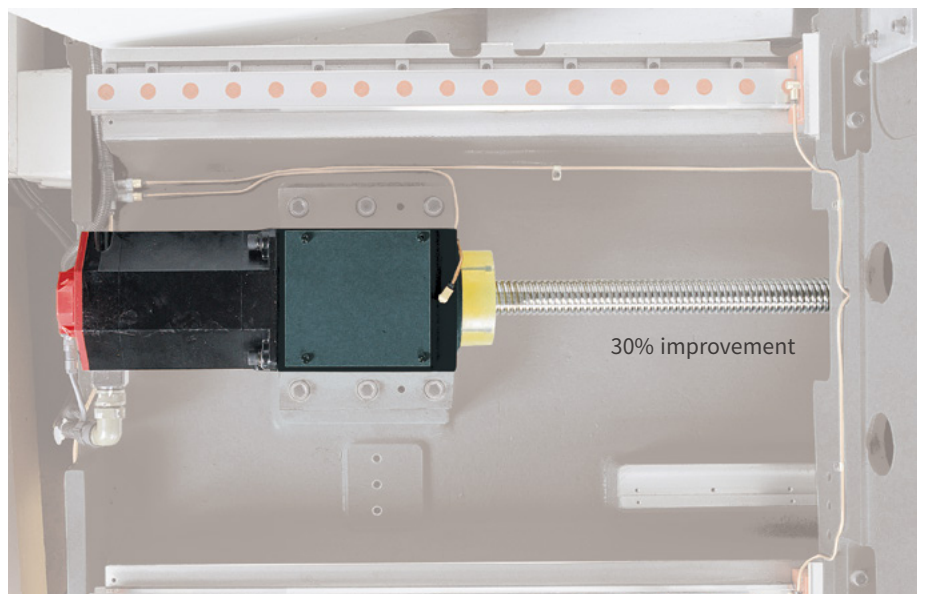
Rapid traverse rate (X / Y / Z-axis)

NHP 4000

1G / 1G / 1G

NHP 5000

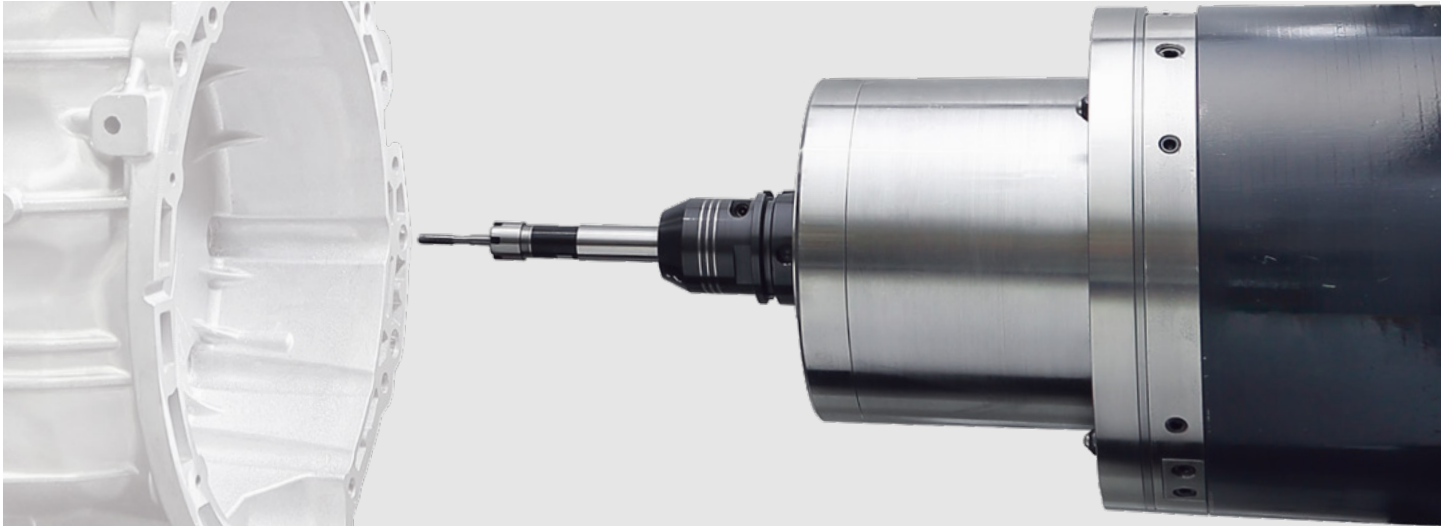
0.9G / 0.8G / 0.8G



30% improvement

SPINDLE

High-speed built-in spindle supplied as standard. Benefits include - noise and vibration reduction, improved accuracies and finishes, longer tool life and increased productivity. In addition, tool change errors are minimized by a tool check analog sensor.



Max. spindle speed

15000 r/min
15000 r/min
20000 r/min

Max. spindle motor power

30 kW (40.2 Hp)
37 kW (49.6 Hp)
37 kW (49.6 Hp)

Max. spindle motor torque

230 N·m (169.7 ft-lbs)
303 N·m (223.6 ft-lbs)
221 N·m (1633.1 ft-lbs)

TABLE

Provides large machining area and three types of table (index, worm/wheel drive, direct drive)

Max. workpiece

NHP 4000

ø630 x H900 mm (An 10% increase over previous model)
 (24.8 x 35.4 inch)

NHP 5000

ø800 x H1000 mm (An 8% increase over previous model)
 (31.5 x 39.4 inch)

Max. workload

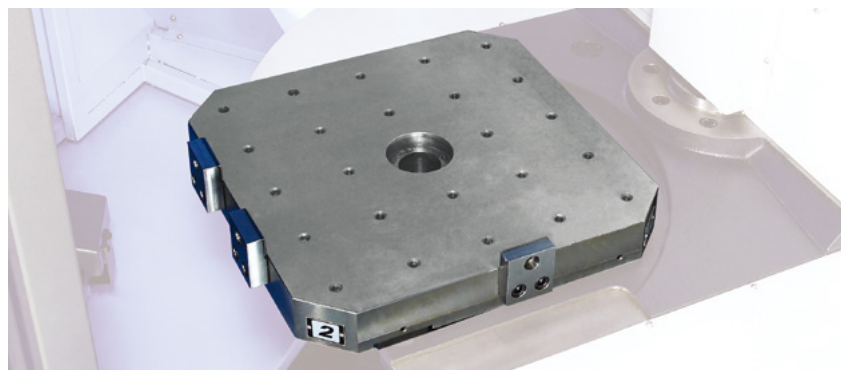
NHP 4000

400 kg (881.8 lb)

NHP 5000

500 kg (1102.3 lb)

700 kg (1543.2 lb) **OPTION**



90 degree indexing time

Previous model

1.9 sec

NHP series

1.4 sec

← **26%** Improved

CUTTING PERFORMANCE

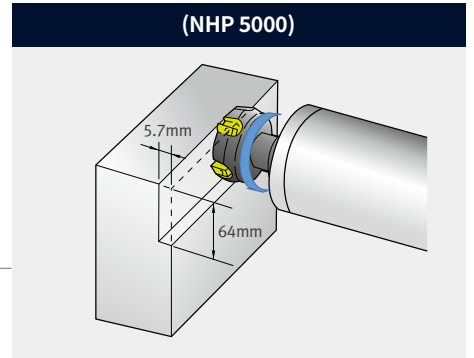
The NHP Series realizes excellent machining performance thanks to its improved structure and comprehensive tooling system.

Higher cutting power

Heavy-duty machining can be carried out with speed and accuracy.

NHP series

Face Mill_Carbon Steel (SM45C) [ø125mm(4.9inch) Face mill (8Z)]



	Machining rate	Spindle speed	Feed rate
NHP series	788 cm ³ /min	1200 r/min	2160 mm/min

* The results presented are provided as an example only. Different cutting and environmental conditions may well give different results.

High productivity

Productivity test

18 % Improved

- Product : Cylinder block
- Material : Aluminum

Cycle time

Previous model	193 sec
NHP series	158 sec

← **35 sec**



Productivity test

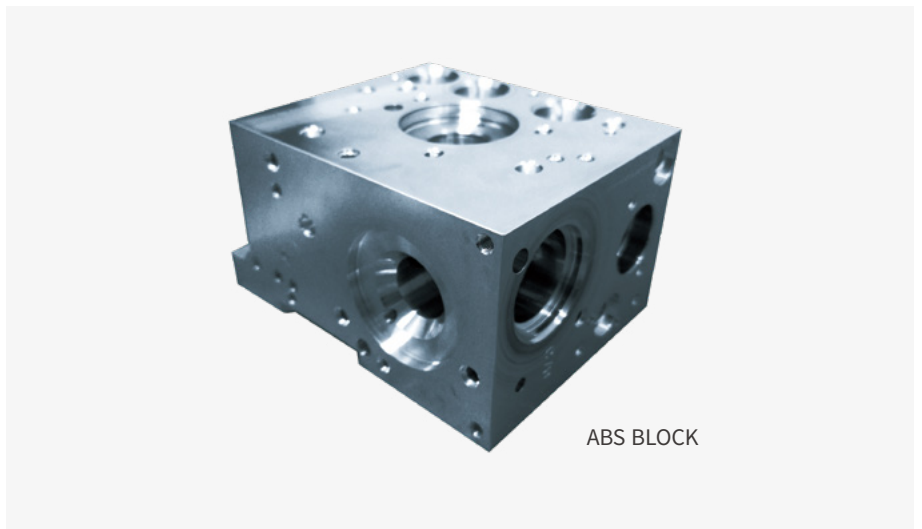
22 % Improved

- Product : ABS block
- Material : Aluminum

Cycle time

Previous model	228 sec
NHP series	178 sec

← **50 sec**



* The results presented are provided as an example only. Different cutting and environmental conditions may well give different results.

MAGAZINE

Tool changeover times have been optimized to reduce non-cutting time.

Disk type

40T OPTION

60T

Chain type

80T OPTION

120T OPTION

Matrix type

171T OPTION

275T OPTION



High-accuracy options are available to provide stability and precision.

Tool to Tool

Previous model 1.0 sec

NHP series 0.9 sec ← **10% Improved**

Chip to Chip*

Previous model 3.8 sec

NHP series 2.3 sec ← **30% Improved**

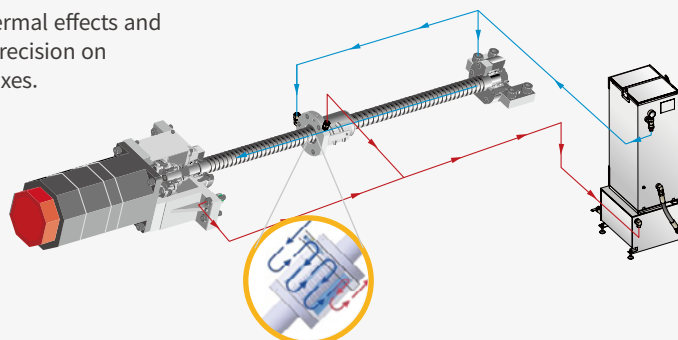
* MAS

Linear scales OPTION

Maintain high precision over long machining runs/operation.

Cooling system

Reduces thermal effects and maintains precision on machine's axes.



STANDARD | OPTIONAL SPECIFICATIONS

A range of options is available to suit individual requirements.

Description	Features		NHP 4000	NHP 5000/S
Spindle	15000 r/min	30/18.5 kW, 230 N·m	●	●
	15000 r/min	37/22 kW, 303 N·m	○	○
	20000 r/min	37/18.5 kW, 221 N·m	○	○
Magazine	Tool storage capacity	40 / 60 / 80 / 120 / 171 / 275 ea	○	○
Tool shank type	BIG PLUS BT40		●	●
	BIG PLUS CAT40/DIN/HSK63A		○	○
Coolant	FLOOD	0.7 MPa (1.1 kW)	●	●
	Water soluble Coolant Chiller**		○	○
	TSC	2 MPa (2.2kW)	○	○
		3 MPa (3.7 kW)	○	○
7 MPa (7.5 kW)		○	○	
Chip disposal	Chip conveyor	Drum type (Hinged)	○	○
		Drum type (Scraper)	○	○
	Chip bucket	Folklift type	○	○
		Rotation type	○	○
	Air gun		○	○
Coolant gun		○	○	
Precision machining option	Linear scale	X / Y / Z-axis	○	○
	AICC II (200Block)		●	●
	AICC II (600Block)		○	○
	AICC II (1000Block)		○	○
Measurement & automation	Automatic tool measurement	TS27R_RENISHAW	○	○
		RMI-Q_ONLY_RENISHAW	○	○
	Automatic workpiece measurement	RMP60_RENISHAW	○	○
		OMP60_RENISHAW	○	○
Others	LED Work light		●	●
	Signal tower		●	●
	Tool load monitoring		●	●
	EZ Guide i		○	○
	Automatic power off		○	○
Customized special option	Tool ID (matrix)		○	○
	Tool Management (TMT1, TMT2, TMT8 DIGIT)		○	○
	Setup shower coolant		○	○
	Auto door w/Safty edge		○	○
	U-axis drive		○	○
	MQL		○	○
	Smart thermal control		○	○
	Internal chip conveyor		○	○
	Spin window for main door (Electric type)		○	○
	Thru pallet fixture line		○	○
	Servo type tool broken detector		○	○
	Coolant level switch		○	○
APC setup auto indexing **		○	○	

* 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

* Please contact DN Solutions to find put more about specifications and options ** NHP5000S is not applicable because it is a single pallet

● Standard ○ Optional X N/A



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

Chip conveyor



Drum filter type **OPTION**



Grease lubrication system

The standard grease lubrication system eliminates the need for an oil skimmer and reduces lubrication costs by about 65% compared to oil lubrication.

Yearly maintenance cost

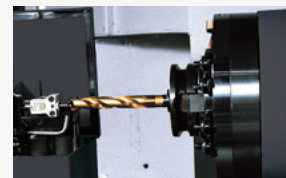
Max. **65%** ↓



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**

Environmentally-friendly equipment



Oil skimmer

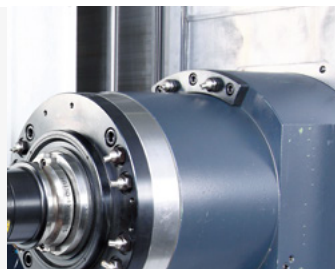


Mist collector **OPTION**

Chip disposal system



FLUSHING COOLANT



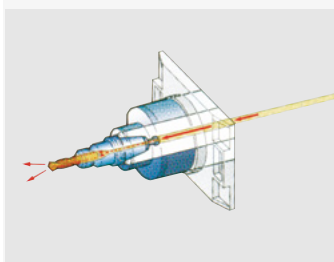
COOLANT SPRAY GUN ON THE SPINDLE HEAD



SHOWER COOLANT **OPTION**



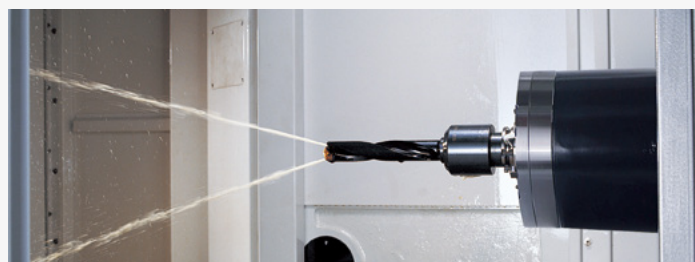
COOLANT GUN **OPTION**



MQL SYSTEM **OPTION**



MISTING DEVICE



COOLANT-THROUGH-SPINDLE SPRAY DEVICE **OPTION**

DN SOLUTIONS MULTI PALLET SYSTEM

NHP 4000 · 5000 LPS, RPS & Single pallet system



EXPANDABLE

Features

- An optimized space-saving design - available at a competitive price
- Optimized AGV of Single Mast & Single Fork Structure
- Simple one-piece installation
- Easy retrofitting to DN Solutions horizontal machining centers
- User friendly intuitive way to register basic information for flexible manufacturing

<p>Simplify AGV</p> <p>15%</p> <p>Reduced length</p>	<p>Improved Cycle Time</p> <p>32%</p>	<p>Reduced footprint</p> <p>10.8%</p>
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LINEAR PALLET SYSTEM

DN Solutions's linear pallet system (LPS), round pallet system (RPS) and single pallet system provide customers with a choice of proven automation solutions.

DN Solutions linear pallet system (LPS 4000/5000)

LPS 4000/5000 are compact and cost-competitive multi-pallet automation systems designed to deliver high-productivity in a compact footprint.

Different pallet sizes are available (400mm x 400mm/ 15.7 inch x 15.7 inch), and (500mm x 500mm/ 19.7 inch x 19.7 inch).

DN Solutions round pallet system (RPS 4000/5000)

This slim, compact multi-pallet system is designed for new 40 taper horizontal machining centres.

DN Solutions single pallet system (NHP 5000S) OPTION

Single table solution that is compact and easy to use.

Optimized carrier

Fork with Telescopic Mechanism

Optimized Design for Space Saving

Features

- An optimized space-saving design - available at a competitive price
- Telescopic fork-like mechanism LPS II
- Simple installation and easy maintenance
- Easy field retrofit to DN Solutions HMC

ROUND PALLET SYSTEM

External dimensions Unit : mm (inch)

* TOP AUTO DOOR IS OPTION

SINGLE PALLET SYSTEM

(Moving distance of coolant tank & chip conveyor) 1260 (49.6)

FANUC 31i PLUS

Fanuc 31i Plus maximizes customer productivity and convenience.

15" Touch screen + New OP

DN Solutions Fanuc 31iB/B5 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 31i Plus

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

USB and PCMCIA card QWERTY keyboard

- EZ-Guide i standard
- Ergonomic operator panel
- 4MB Memory
- Hot keys
- Enhance AICC BLOCK
- Touch pen provided as standard

iHMI touchscreen

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	F31i PLUS NHP4000/5000
Controlled axis	Controlled axes		4 (X,Y,Z,B)
	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	Note *2) Available Option only with 15" Touch LCD (iHMI Only)	○
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 II	G5.1 Q_, 600 Blocks	○
	AI contour control II	G5.1 Q_, 1000 Blocks	●
	High smooth TCP		X
Operation Guidance Function	EZ Guidei (Conversational Programming Solution)		●
	iHMI with Machining Cycle	Note *1) Only with 15" Touch LCD standard	●
	EZ Operation package		●
Setting and display	CNC screen dual display function		●
			●
Network	FANUC MT Connect		⊕
	FANUC OPC UA		⊕
Others	Display unit	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	X
		10240M(4MB)_1000 programs	●
		20480M(8MB)_1000 programs	○
		2560M(1MB)_2000 programs	○
		5120M(2MB)_4000 programs	○
		10240M(4MB)_4000 programs	○
20480M(8MB)_4000 programs	○		

Network: FANUC MTConnect and FANUC OPC UA available.

● Standard ○ Optional X N/A ⊕ Available

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.

Tool support functions



Tool management I

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



Tool management II OPTION

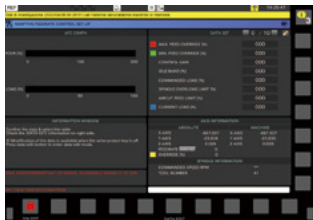
- Tool magazine control
- Tool life management
- Tool life prediction
- Tool state control
- Balluff Tool ID function



Tool load monitor OPTION

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

Productivity improvement functions



Adaptive Feed Control

Function to control feedrate so that the cutting can be carried out at a constant load



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

Pallet magazine support functions



Work Load Control

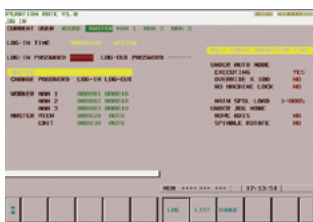
Optimal machining values can be automatically entered into parameters according to the weight of the workpiece placed on the table



PMC Soft Panel Switch

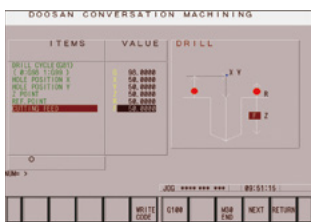
Manual operations that occur continuously in each stages for APC,ATC change command

Operation support, Help desk functions



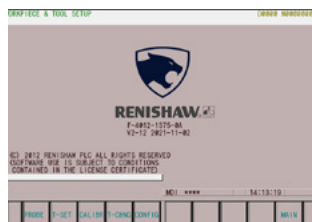
Operation rate

- Measure various machine operating rate
- Support 3 shift operation
- calculate and save 30 days operating rate
- Show data for a specific period



Pattern Cycle

A function to automatically create frequently used part programs.



Renishaw GUI

Renishaw tool length measuring and compensate 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

CONVENIENT OPERATION

SIEMERIK ONE

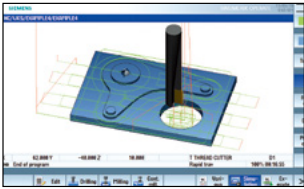
Even Faster & Easier processing + 398mm screen

All programming, set-up, actual machining and verification process are getting easier and faster. Especially, intuitive conversational programming guidance with 3D UI(user interface) on 18.5" large touch screen is helpful for unskilled engineers.

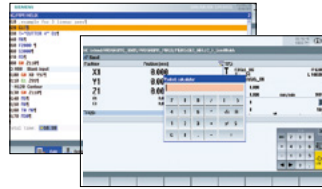
- 18.5 inch touch screen
- 50% improvement in processing speed(compared to S840D)
- Graphic programming
- PLC-based flexible automation/peripheral device expandability



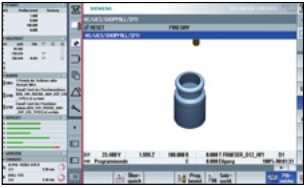
Conversational convenient function



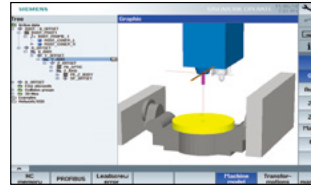
Simulation and machining contour monitoring



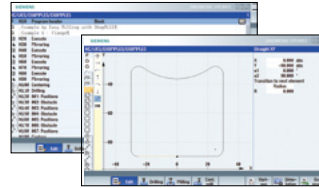
Smart function



Side screen widget



3D collision avoidance and collision avoidance ECO



Shop mill part programming

NUMERIC CONTROL SPECIFICATIONS



Item		Specifications	S-ONE
Controlled axis	Controlled axes		4 axes (X, Y, Z, B)
	Simultaneously controlled axes		4 axes
Data input/output	Memory card input/output	(Local drive)	●
	USB memory input/output		●
Interface function	Ethernet	(X130)	●
	Execution from External Storage(EES)		○
Operation	On network drive	(without EES option, Extcall)	●
	On USB storage medium, e.g. memory stick	(without EES option, Extcall)	●
Program input	Workpiece coordinate system	G54 - G57	●
	Addition of workpiece coordinate system	G505 - G599	●
Interpolation & Feed function	Top surface		○
	Look ahead number of block		1000
Programming & Editing function	3D simulation, finished part		●
	Simultaneous recording		●
Operation Guidance Function	DXF Reader for PC integrated in SINUMERIK Operate		○
	ShopMill		●
Setting and display	EZ Work		●
	Operation via a VNC viewer		●
Network	MTConnect		⊕
	OPCUA		○
Others	18.5" color display with touch screen		●
	21.5" color display with touch screen		○
	CNC user memory	10 MB	●
	Max. CNC user memory	28 MB	○
	Collision avoidance (machine, working area)		○
	Collision avoidance ECO (machine, working area)		○
	Evaluation of internal drive		○
CNC user memory extend		○	
TOOL ID		○	

POWER | TORQUE

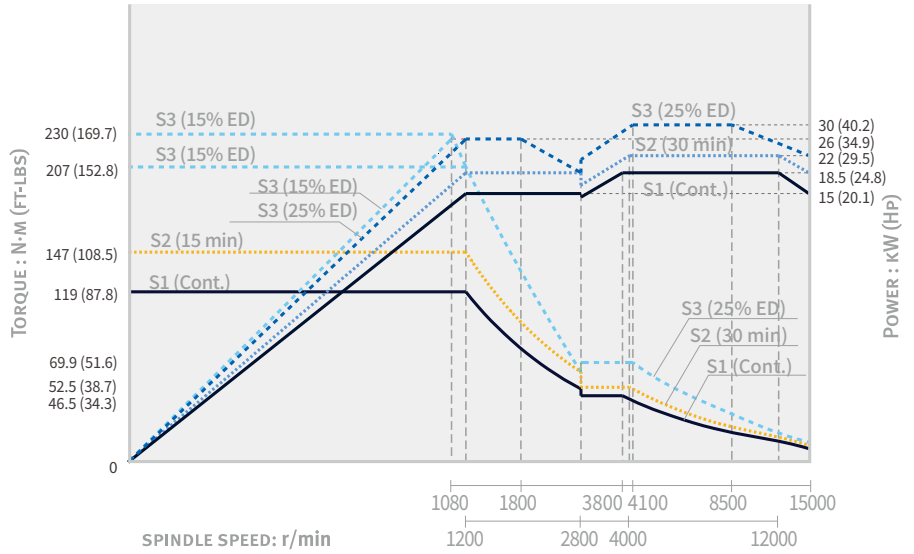
15000 r/min

Power

30 kW
(40.2 Hp)

Torque

230 N·m
(169.7 ft-lbs)



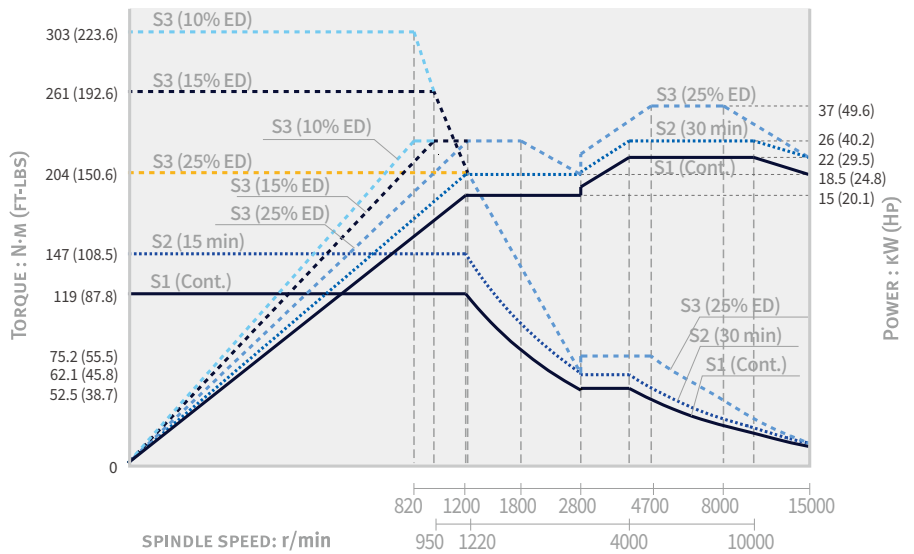
15000 r/min high torque OPTION

Power

37 kW
(49.6 Hp)

Torque

303 N·m
(223.6 ft-lbs)



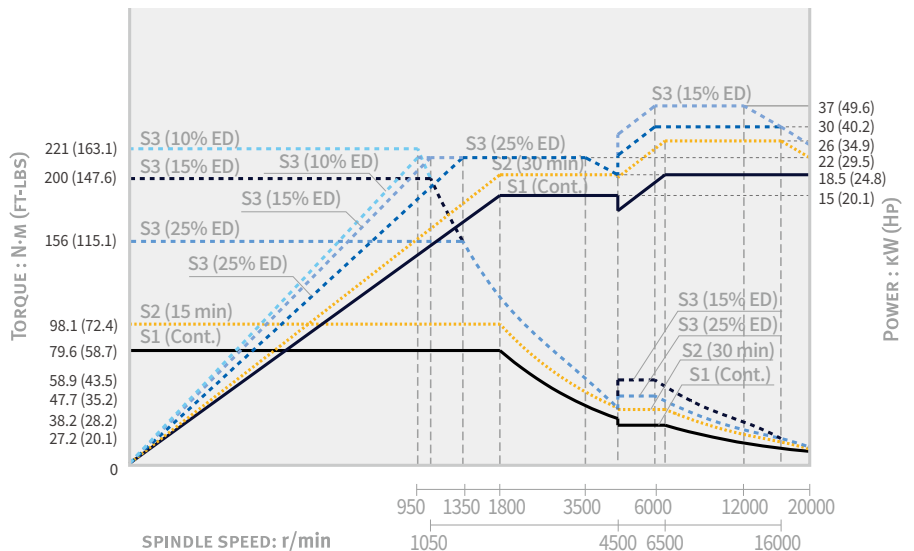
20000 r/min OPTION

Power

37 kW
(49.6 Hp)

Torque

221 N·m
(163.1 ft-lbs)

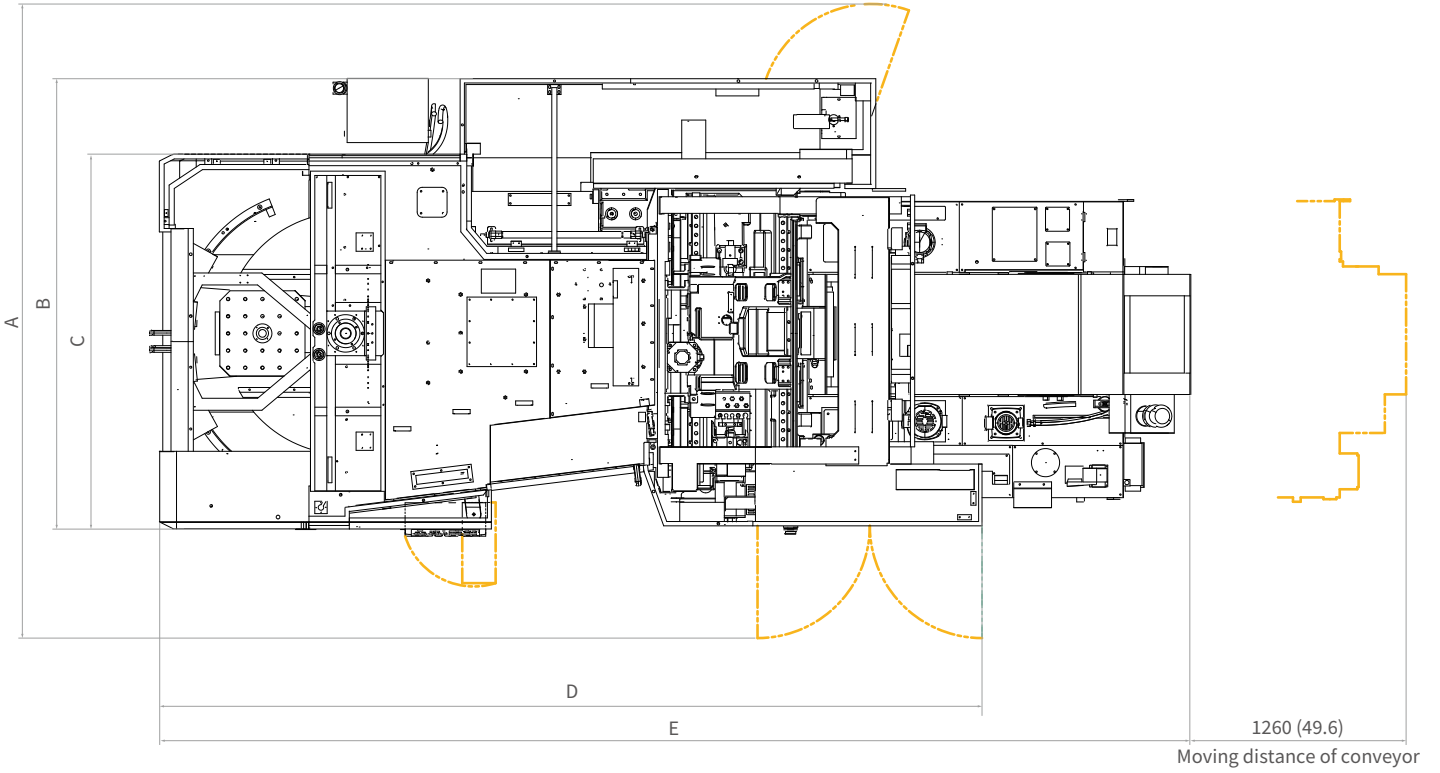


DIMENSIONS

NHP 4000 · 5000

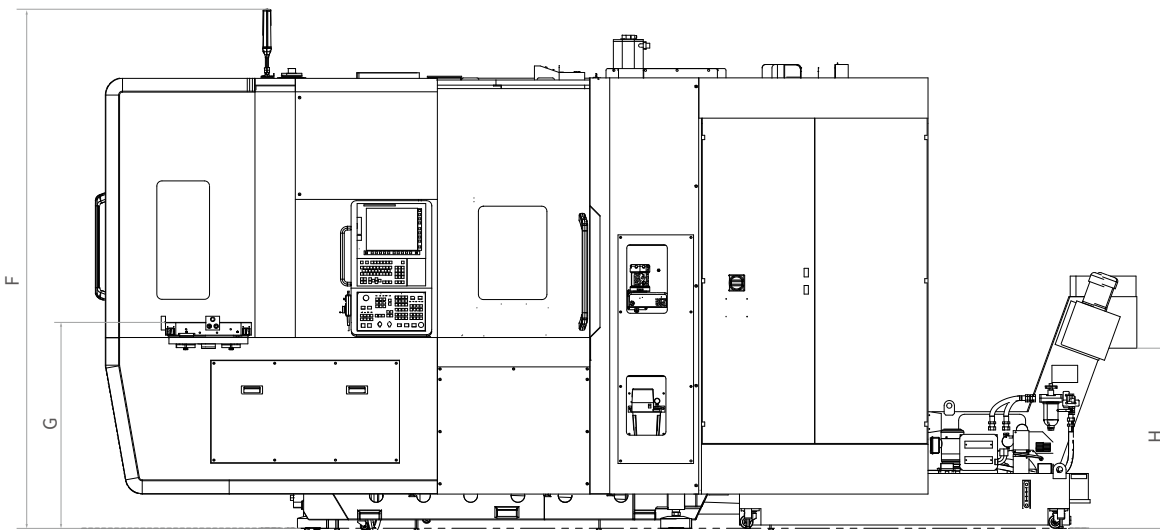
Units : mm (inch)

TOP



1260 (49.6)
Moving distance of conveyor

FRONT



Model	A	B	C	D	E	F	G	H
NHP 4000	3389 (133.4)	2300 (90.6)	1859 (73.2)	4329 (170.4)	4950 {5506}** (194.9 {216.8})	2894 (113.9)	1100 (43.3)	1050 (41.3)
NHP 5000	3694 (145.4)	2680 (105.5)	2184 (86.0)	4792 (188.7)	5450 {6001}** (214.6 {236.3})	3024 (119.1)	1200 (47.2)	1050 (41.3)

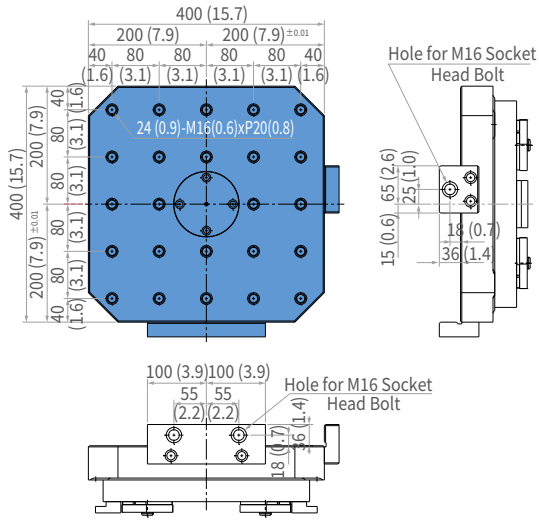
* Some peripheral equipment can be placed in other areas. ** When a long type tank is installed.

PALLET

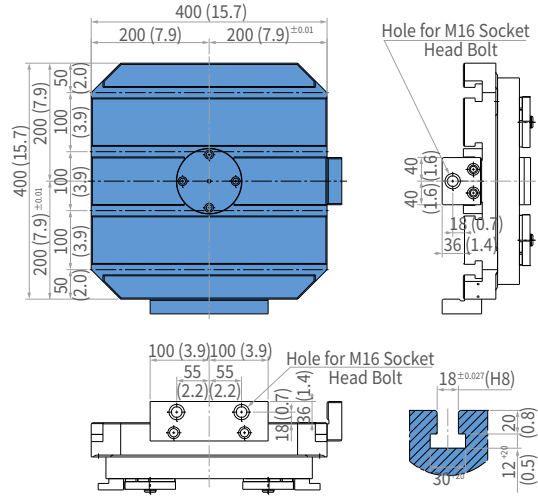
NHP 4000

Units : mm (inch)

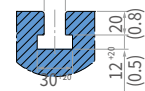
TAP PALLET



T-SLOT PALLET



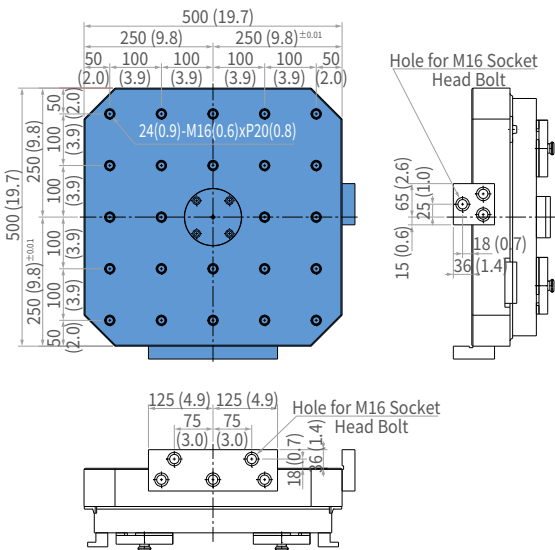
T-SLOT DETAIL



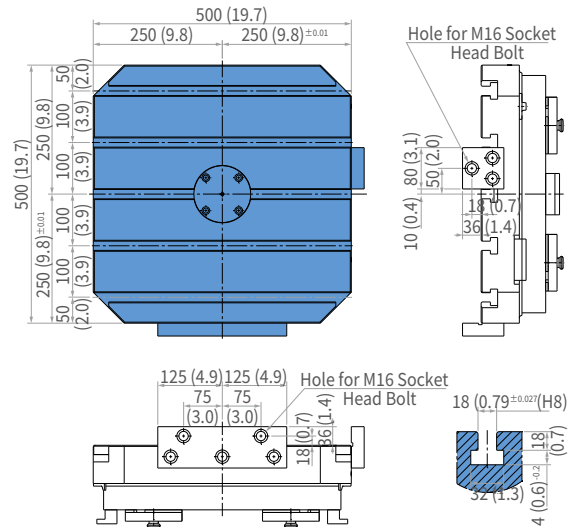
NHP 5000

Units : mm (inch)

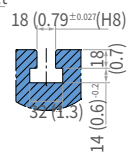
TAP PALLET



T-SLOT PALLET



T-SLOT DETAIL



MACHINE SPECIFICATIONS

Description		Unit	NHP 4000	NHP 5000	NHP 5000S	
Travel	Travel distance	X-axis	mm (inch)	560 (22.0)	730 (28.7)	
		Y-axis	mm (inch)	640 (25.2)	730 (28.7)	
		Z-axis	mm (inch)	660 (26.0)	880 (34.6)	
	Distance from spindle nose to table top		mm (inch)	80 ~ 720 (3.1 ~ 28.3)	80 ~ 810 (3.1 ~ 31.9)	130 ~ 860 (5.1 ~ 35.4)
	Spindle nose to table center		mm (inch)	80 ~ 740 (3.1 ~ 29.1)	100 ~ 980 (3.9 ~ 38.6)	
Table	Pallet size		mm (inch)	400 x 400 (15.7 x 15.7)	500 x 500 (19.7 x 19.7)	500 x 600 (19.7 x 19.7)
	Workpiece size		mm (inch)	ø630 x 900h (ø24.8 x 35.4h)	ø800 x 1000h ø31.5 x 39.4h)	
	Tool storage capacity		kg (lb)	400 (881.8)	500 (1102.3) {700 (1543.2)}*	
	Work inertia ***		N·m ²	108	294	
Spindle	Max. spindle speed		r/min	15000 {20000}*		
	Taper		-	ISO #40		
	Spindle power (S3/Cont.)		kW (Hp)	30/18.5 (40.2/24.8) {37/22 (49.6/29.5), 37/18.5 (49.6/24.8)}*		
	Max. spindle torque		N·m (ft·lbs)	230 (169.7) {303, 221 (223.6, 163.1)}*		
Feedrate	Rapid traverse rate	X-axis	m/min (ipm)	60 (2362.2)		
		Y-axis	m/min (ipm)	60 (2362.2)		
		Z-axis	m/min (ipm)	60 (2362.2)		
	Acc./Dec.	X / Y / Z	G	1 / 1 / 1	0.9 / 0.8 / 0.8	
Automatic tool changer (ATC)	Type of tool shank	Tool shank	-	BT 40 {CAT 40 / DIN / HSK 63A}*		
		Pull stud	-	PS806 (Modified DIN, DIN 69872 #40)		
	Tool storage capa.		ea	40 {60, 80, 120, 171, 275}*		
	Max. tool diameter	Continous	mm (inch)	75 (3.0)		
		Without adjacent tools	mm (inch)	170 (6.7)		
	Max. tool length		mm (inch)	450 (17.7)	550 (21.7)	
	Max. tool weight		kg (lb)	12 (26.5)		
	Max. tool moment		N·m (ft·lbs)	11.8 (8.7)		
Tool change time (Tool-to-tool)		sec	0.9			
Tank capacity	Coolant tank capacity		L (gal)	570 (150.6) {760 (200.8)}		
Machine dimensions	Height		mm (inch)	2690 (105.9)	2880 (113.4)	2880 (113.4)
	Length (/w Chip Conveyor)		mm (inch)	4950 (194.9)	5450 (214.6)	4600 (181.1)
	Width		mm (inch)	2300 (90.6)	2680 (105.5)	2680 (105.5)
	Weight		kg (lb)	9700 (21384.5)	11500 (25352.8)	11500 (25352.8)
Control	NC system		Fanuc 31i Plus {CUFOS, Siemens}*			

{ } : Option

** Please contact DN Solutions to select NHP 5000S.

*** When the workpiece inertia exceeds the specified limit, the M-code for the heaviest workpiece setting in the Work Load Control function must be applied.

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.

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.

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.

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

**Head Office**

19F, 10, Tongil-ro, Jung-gu, Seoul,
Republic of Korea, 04527

Tel: +82-2-6972-0370
Fax: +82-2-6972-0400

DN Solutions America

360 E State PKWY,
Schaumburg, IL. 60173,
United states

Tel: +1-315-265-7500

DN Solutions Europe

Emdener Strasse 24, D-41540
Dormagen, Germany

Tel: +49-2133-5067-100
Fax: +49-2133-5067-111

DN Solutions India

No.82, Jakkuar Village
Yelahanka Hobil,
Bangalore-560064

Tel: +91-80-2205-6900
E-mail: india@dncompany.com

DN Solutions China

Room 101,201,301,
Building 39 Xinzhuan Highway
No.258 Songjiang District
China Shanghai (201612)

Tel: +86 21-5445-1155
Fax: +86 21-6405-1472

DN Solutions Vietnam

M.O.R.E building 2F, 40A-40B Ut
Tich Street, 04 Ward 04,
District Tan Binh District,
Ho Chi Minh City, Vietnam
Tel: +84 28-7304-0163

DN Solutions Mexico

Avenida Parque Bicentenario
#100 Nave M65L3-6,
Fraccionamiento San Isidro
Business Park,
Santa Rosa Jauregui,
Querétaro, México

E-mail: efrain.figueroa@dncompany.com

Sales inquiry

sales@dncompany.com