

COMPACT HORIZONTAL MACHINING CENTER

# HC 400·500II

**HC 400 II**

**HC 500 II**



# HC 400·500II

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

## CONTENTS

### Product Overview

### Basic Information

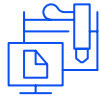
- 04 Basic Structure
- 05 Spindle
- 05 Automatic Pallet Changer
- 06 Tool Magaziner

### Detailed Information

- 07 Standard / Optional Specifications
- 08 Peripheral Equipment
- 09 Pallet Extension System
- 11 FANUC 32i PLUS
- 13 Power | Torque
- 14 External Dimensions
- 15 Machine Specifications

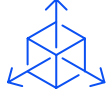


## ENHANCED DESIGN



New aesthetics and simplified design eases machine operation.

## INCREASED PRODUCTIVITY

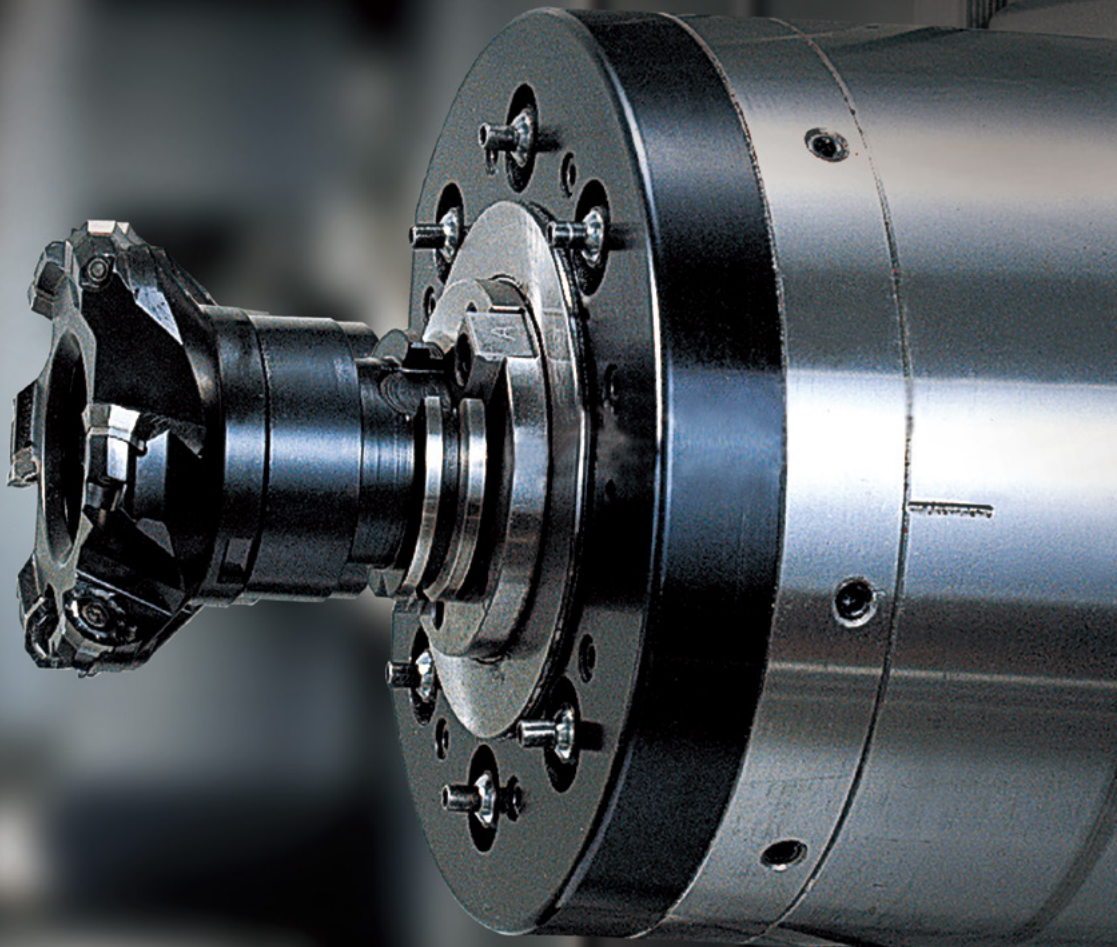


New high speed 12,000rpm spindle, wider selection of tool magazine and automation options further enhances versatility and productivity.

## 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.

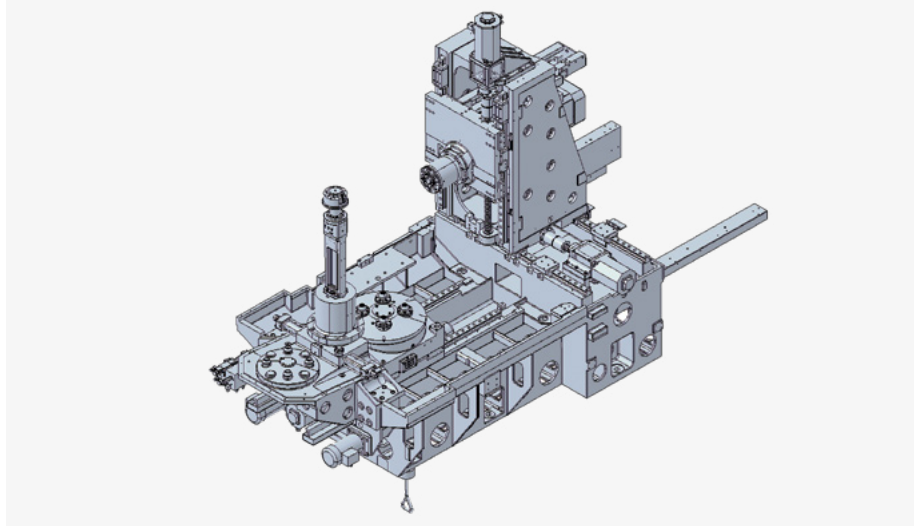
Travel distance (X / Y / Z axis)

HC 400 II

**600 / 560 / 565** mm  
(23.6 / 22.0 / 22.2 inch)

HC 500 II

**850 / 700 / 750** mm  
(33.4 / 27.5 / 29.5 inch)



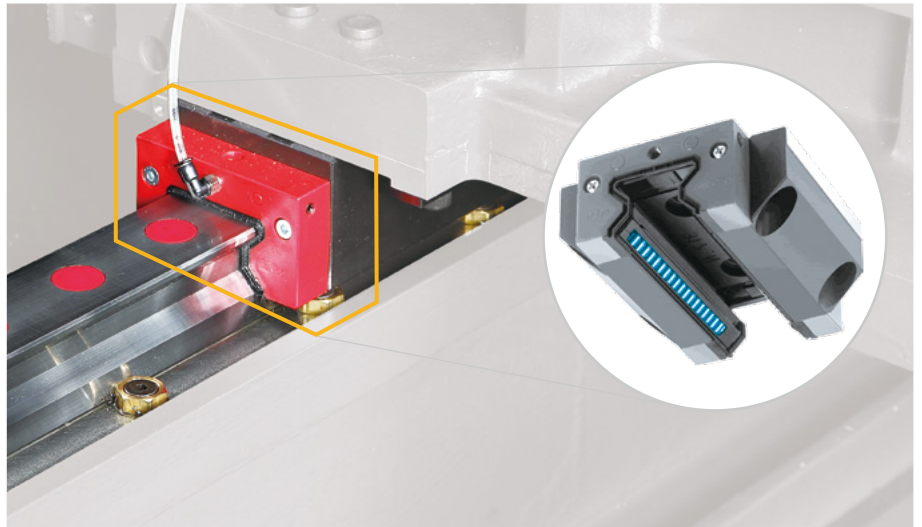
## High speed roller guides

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

Rapid traverse (X / Y / Z axis)

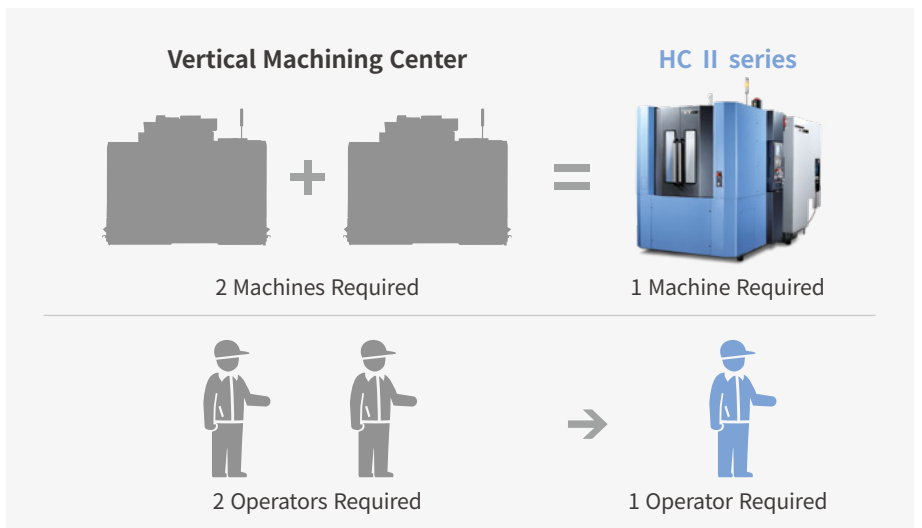
HC 400 II / HC 500 II

**40 / 40 / 40** m/min  
(1574.8 / 1574.8 / 1574.8 ipm)



## Compact design

The compact design allows users to utilize limited factory space efficiently.



# SPINDLE

12000 rpm spindle option has been added for optimum productivity in high speed machining application.

## High speed spindle

Users can select different types of high performance spindle to meet their machining needs. Standard 8,000 rpm spindle can deliver up to 353.4 N·m of torque to perform extreme heavy cutting process, while 12,000rpm spindle option can provide maximum productivity in high speed cutting process.

Max. spindle speed

**8000** {12000 OPTION} r/min

Max. spindle power

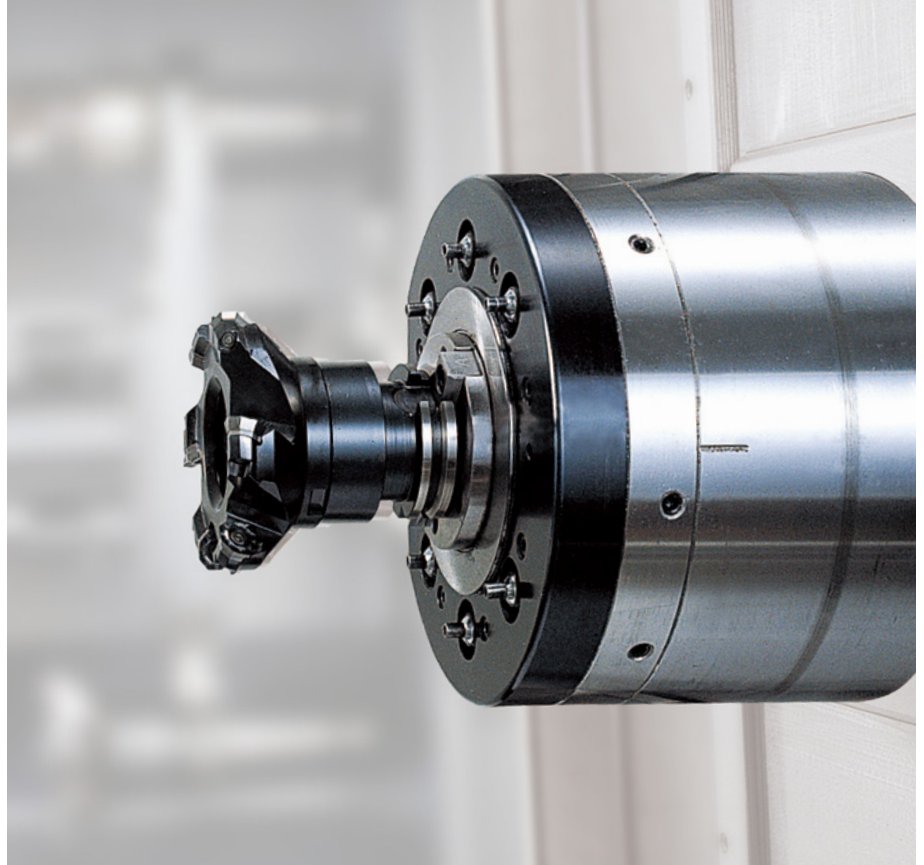
**18.5 / 11** kW  
(24.8 / 14.7 Hp)

Max. spindle torque

**353.4** {117 OPTION} N·m  
(260.6 {86.3 ft-lbs})

Type

**ISO #40**



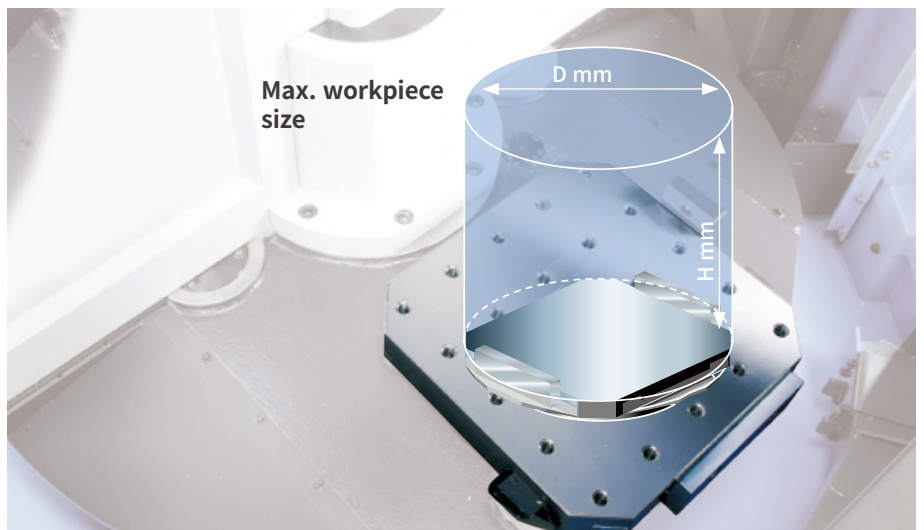
# AUTOMATIC PALLET CHANGER (APC)

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.

	HC 400 II	HC 500 II
<b>Pallet Size</b>	400 x 400 mm (15.7 x 15.7 inch)	500 x 500 mm (19.7 x 19.7 inch)
<b>Max. Workpiece Size (DXH)</b>	Ø600 x H800 mm (23.6 x 31.5 inch)	Ø800 x H900 mm (31.5 x 35.4 inch)
<b>Max. Load</b>	400 kg (881 lb)	500 kg (1102.3 lb)



# TOOL MAGAZINE

TOOL MAGAZINE 80 tool magazine has been added to offer wider range of ATC magazine options.

## 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.

### Tool storage capacity

**40**

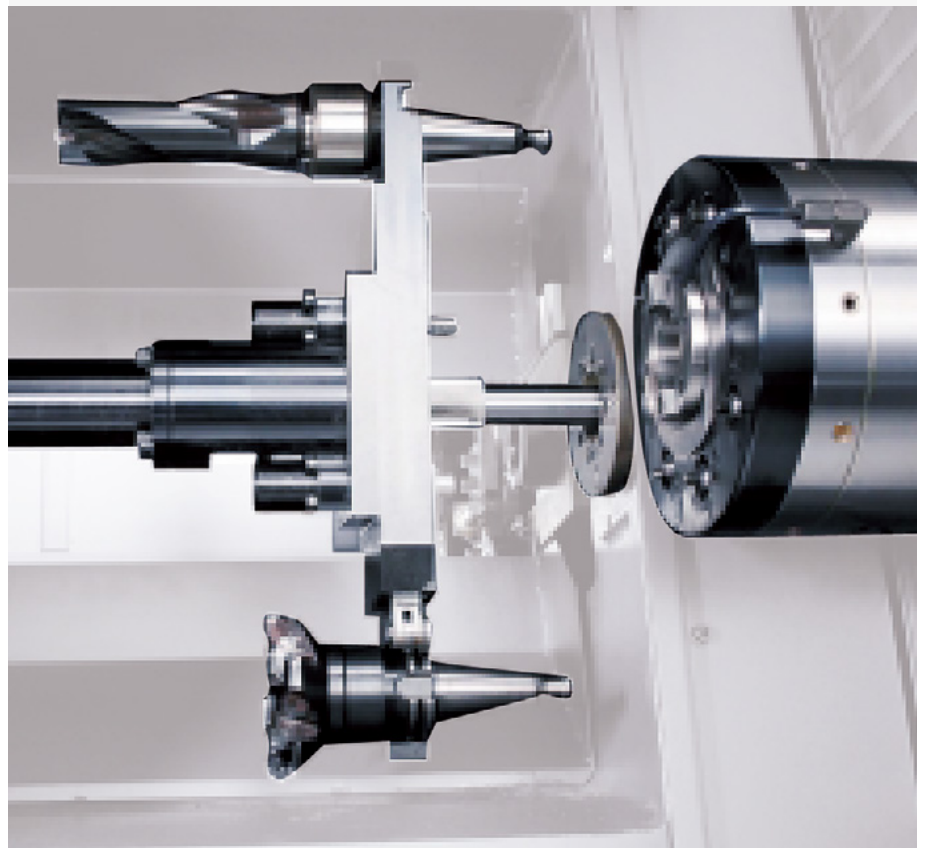
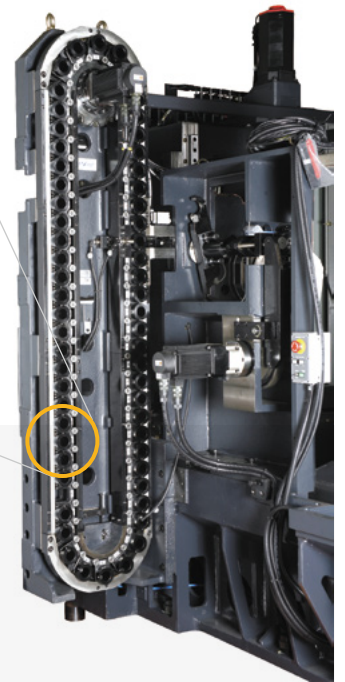
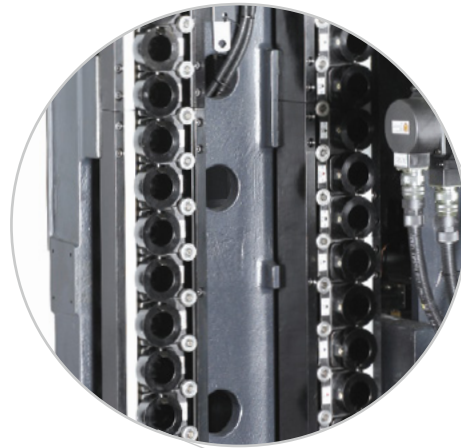
{60/80/120/170/262 OPTION} tools

## Automatic tool changer (ATC)

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

### Tool change time

**1.5 s**



# STANDARD | OPTIONAL SPECIFICATIONS


Diverse optional features are available for customer-specific work applications.

Division	Option	HC 400 II	HC 500 II	
Tool Magazine	40 tools	●	●	
	60 tools	○	○	
	80 tools	○	○	
	120 tools	○	○	
	170 tools	○	○	
	262 tools	○	○	
Tool Specifications	BT40	●	●	
	CAT40	○	○	
	DIN40	○	○	
	HSK A-63	○	○	
Mist Collector	Mist Collector	○	○	
Spindle	8000 r/min	18.5 / 11 kW (24.8 / 14.7 Hp)	●	●
	12000 r/min	18.5 / 11 kW (24.8 / 14.7 Hp)	○	○
	Spindle air curtain		●	●
Hydraulic fixtures	Hydraulic fixture line	2 X 2	○	○
		4 X 4	○	○
		6 X 6	○	○
		8 X 8	○	○
	Hydraulic fixture unit	○	○	
Automatic Workpiece Measurement Device	OMP60_RENISHAW	○	○	
	RMP60_RENISHAW	○	○	
Automatic Tool Measurement Device	BK 9	○	○	
	Limit Switch (OMRON)	○	○	
	TS27R	○	○	
Chip Handling System	Chip conveyor	Hinged type	○	○
		Scraper type	○	○
		Drum type	○	○
	Chip bucket	○	○	
Coolant	FLOOD	●	●	
	FLUSHING	X	○	
	SHOWER	○	○	
	TSC	1.5 kW 2.0 MPA (2 Hp 290 psi)	○	○
		3.0 kW 2.0 MPA (4 Hp 435.1 psi)	○	○
		7.5 kW 2.0 MPA (10 Hp 1015.3 psi)	○	○
	Coolant gun	○	○	
Oil skimmer	○	○		
Table	Index table	●	●	
	Rotary Table	○	○	
Pallet	Tapped pallet	●	●	
	T-Slot pallet	○	○	
AIR	Pallet air seat	○	○	
	AIR GUN	○	○	
MPG	Portable MPG	●	●	
	Coolant level switch : Sensing level - Low / High	○	○	
Customized Special Option	Tool ID (Internal-matrix) : Balluff Sensor	○	○	
	Tool Management (TMT1, TMT2, TMT8 DIGIT)	○	○	
	Ball screw shaft cooling(X/Y/Z axis)	○	○	
	Setup shower coolant	○	○	
	Auto door w/Safety edge	○	○	
	U-axis drive : DANDREA( TA-C125)	○	○	
	MQL(Maker : VOGEL)	○	○	
	Smart thermal control: Sensor type (Spindle & Structure)	○	○	
	TSA	○	○	
	Spin window for main door (Electric type/ Maker:T2K)	○	○	

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

● Standard ○ Optional X N/A

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

 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



Scraper type

Hinge type

Drum filter type

### 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

### Environment-friendly devices



Oil skimmer OPTION

Mist collector 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

# PALLET EXTENSION SYSTEM

DN Solutions Pallet Extension System provides automated solution to maximize productivity. Simple installation and ease of maintenance makes it convenient for users to operate and maintain.

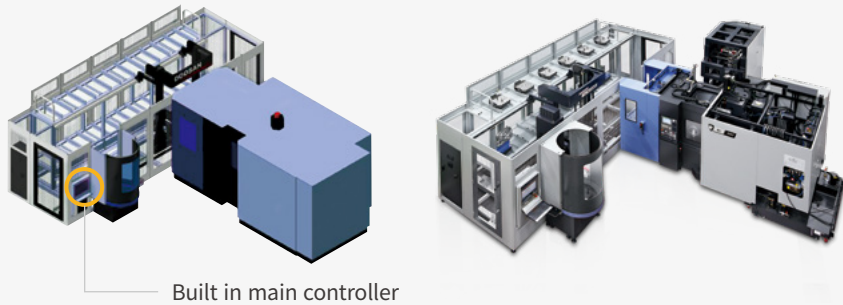
## DN Solutions Linear pallet system [LPS II Compact] OPTION

The LPS II Compact, a compact & economic pallet extension system, is the most affordable solution that is delivered in full assembly.

### Major Features

- Compact size
- Cost effective installation
- Fully assembled delivery
- Convenient operating system (DPMS II)

**LPS II compact**



	LPS 400 II compact HC 400 II	LPS 500 II compact HC 500 II
<b>Compatible model</b>		
Fork type	Single Fork type	
No. of machines	1	
No. of setup stations	1	
No. of pallets	12	
Dimensions (L x W)	7190 mm x 2225 mm (283.1 inch x 87.6 inch)	

## DN Solutions Linear pallet system [LPS II] OPTION

DN Solutions's representative LPS system, designed to provide the optimum automated pallet solution. LPS II is capable of multiple extension and layout change to provide flexible manufacturing solution.

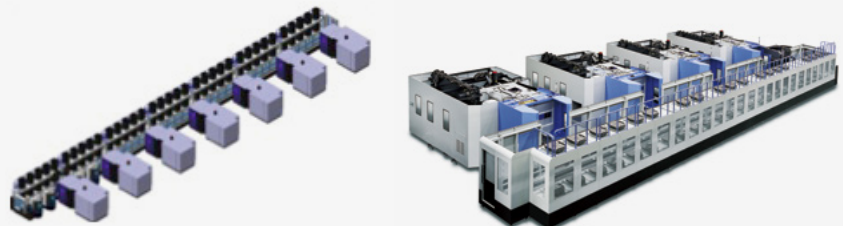
### Major Features

- Expandable System
- Ideal for Managing High Efficiency Manufacturing Parts
- Stable and efficient operation system
- Faster installation and commissioning
- Compatible with all DN Solutions Horizontal Machining Centers
- Easy maintenance

### LPS Standard Control Software

- Stores basic data which can be easily put in to provide flexible production
- Management software for rapid production and changing production quantity
- LPS management solution for fast and flexible production


**LPS II (Linear Pallet System)**



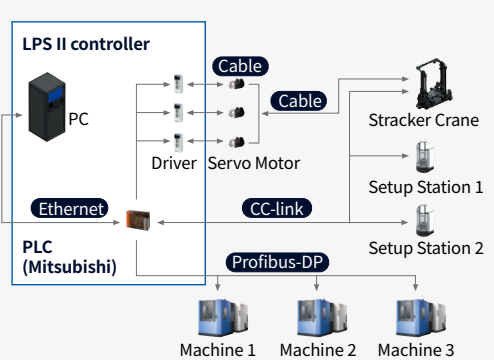
LPS II Model	LPS 400 II HC 400 II	LPS 500 II HC 500 II
<b>Available Model</b>		
Fork type	Twin Fork type	
No. of machines	1 - 7	
No. of setup stations	1 - 4	
No. of pallets	12 ~ 70	
Dimensions (L x W)	7824 mm x 2400 mm (308 inch x 94.5 inch)	

**DN Solutions production management system [DPMS]**

The DPMS is a system designed to ensure effective control and management of the LPS. The main window allows operators to quickly & flexibly manage the system in case of sudden change in output.



**System outline**



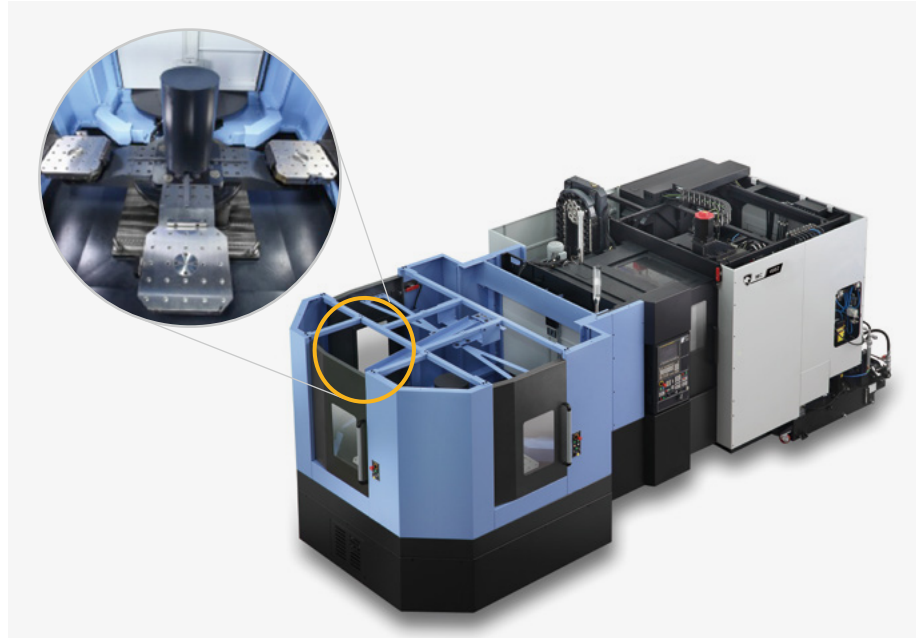
# PALLET EXTENSION SYSTEM

## DN Solutions 5 APC

Compact and simple multiple pallet system that allows users to maximize productivity and efficiency.

### Major Features

- Compact Footprint
- 3 different setup stations maximize efficiency in setup
- Easy on-site installation

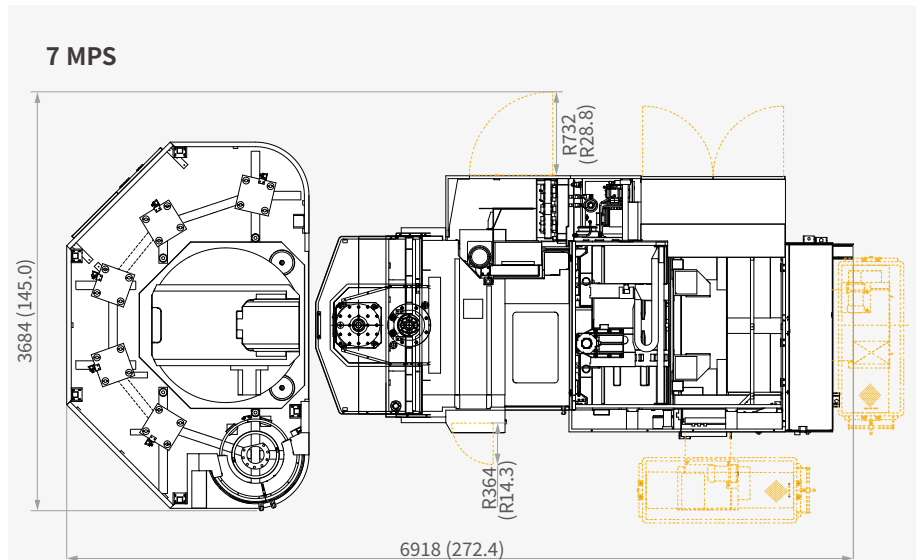


5 APC	HC 400 II / HC 500 II
<b>No. of pallets</b>	5
<b>Length required for installation [L]</b>	6274 mm (247 inch)
<b>Width required for installation [W]</b>	3046 mm (120 inch)

※ Please consult with DN Solutions for putting 500 mm pallet on 5 APC.

## DN Solutions Multiple pallet 7 MPS system [MPS] OPTION

DN Solutions's MPS allows users to program and automate up to 7 pallets. This system is ideal for manufacturing variety of parts in small quantity.



※ Please consult with DN Solutions for putting 500 mm pallet on 7 MPS.

7-MPS	HC 400 II / HC 500 II
<b>No. of pallets</b>	7
<b>Length required for installation [L]</b>	6918 mm (272.3 inch)
<b>Width required for installation [W]</b>	3684 mm (145 inch)

\* Dimensions does not include chip conveyor and MPS foot board.

# DN SOLUTIONS FANUC 32i PLUS

FANUC 31i-B 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-B 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	HC 400 II / HC 500 II		
		0i PLUS	F32iB PLUS	
Controlled axis	Controlled axes	4 (X,Y,Z,B)	4 (X,Y,Z,B)	
	Simultaneously controlled axes	4 axes	4 axes	
	Additional controlled Axis	○	○	
Data input/output	Fast data server	○	○	
	Memory card input/output	●	●	
	USB memory input/output	●	●	
	Large capacity memory(2GB)*2	○	○	
Interface function	Embedded Ethernet	●	●	
	Fast Ethernet	○	○	
	Enhanced Embedded Ethernet function	●	●	
Operation	DNC operation	●	●	
	DNC operation with memory card	●	●	
Program input	Workpiece coordinate system	●	●	
	Addition of workpiece coordinate system	●	●	
	Tool number command	T4 digits	T4 digits	
Feed function	Tilted working plane indexing command	○	○	
	AI contour control I	X	X	
	AI contour control II	●	X	
	AI contour control II	X	●	
	AI contour control II	X	X	
	High smooth TCP	X	X	
Operation guidance function	EZ Guidei (Conversational Programming Solution)	●	○	
	iHMI with Machining Cycle	○	●	
	EZ Operation package	●	●	
Setting and display	CNC screen dual display function	●	●	
Network	FANUC MTConnect	⊕	⊕	
	FANUC OPC UA	⊕	⊕	
Others	Display unit	15" color LCD	X	X
		15" color LCD with Touch Panel	●	●
		640M(256KB)_500 programs	X	●
		1280M(512KB)_1000 programs	X	X
		2560M(1MB)_1000 programs	X	X
		5120M(2MB)_1000 programs	●	X
		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 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

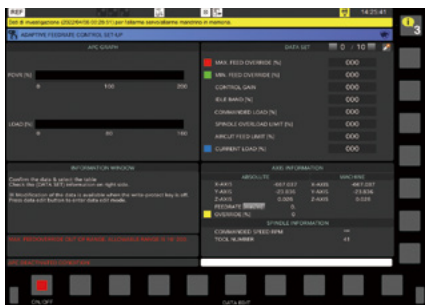
- Tool magazine control
- Tool state display
- Fastems Tool Add/Remove Function



### 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

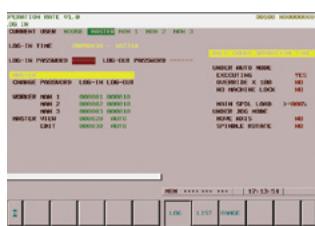
## Pallet magazine support functions



### PMC Soft Panel Switch

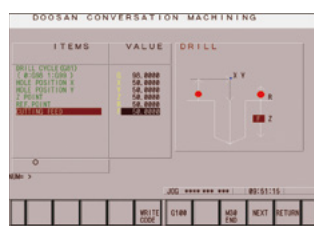
Manual operations that occur continuously in each stages for APC,ATC change command

## 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



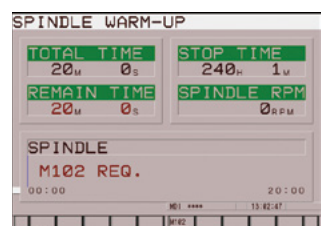
### Pattern Cycle

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

# POWER | TORQUE

Max. spindle speed

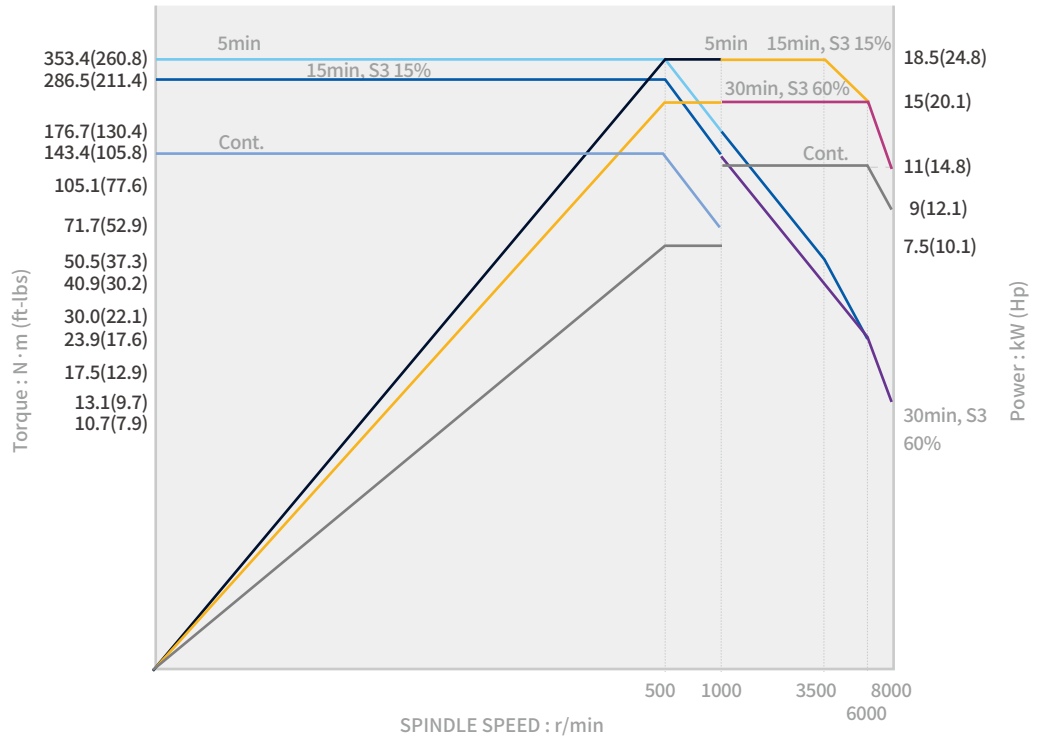
**8000** r/min

Max. spindle power

**18.5 / 11** kW  
(24.8 / 14.8 Hp)

Max. spindle torque

**353.4** N·m  
(260.8 ft-lbs)



Max. spindle speed

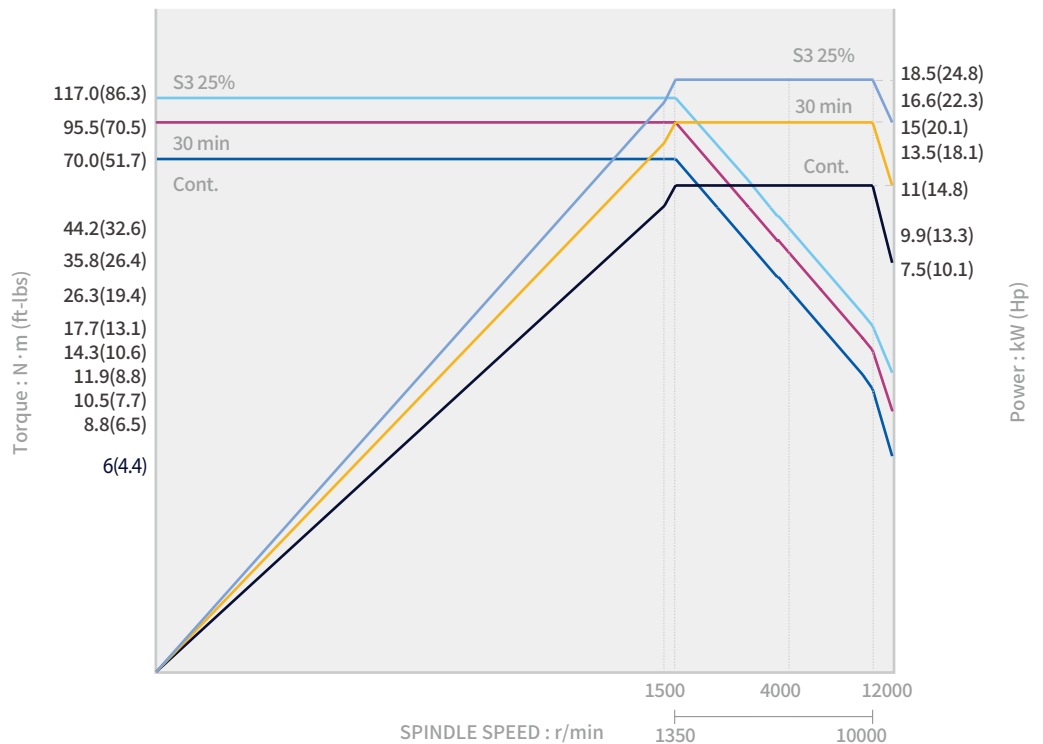
**12000** r/min

Max. spindle power

**18.5 / 11** kW  
(24.8 / 14.8 Hp)

Max. spindle torque

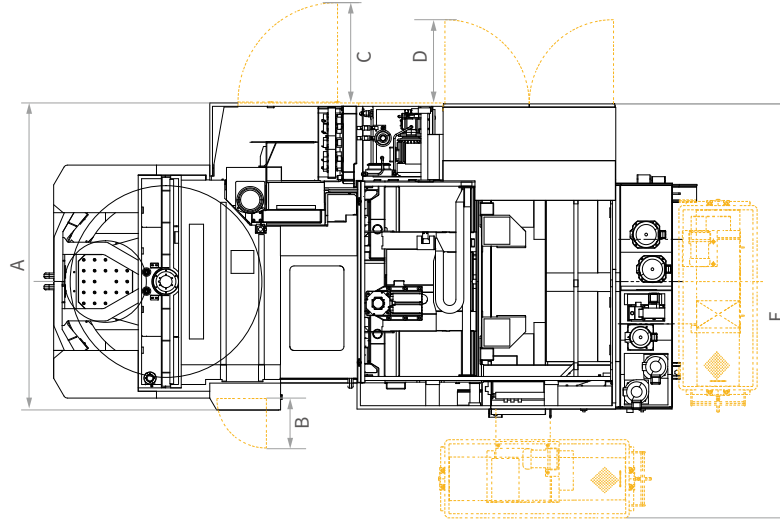
**117.0** N·m  
(86.3 ft-lbs)



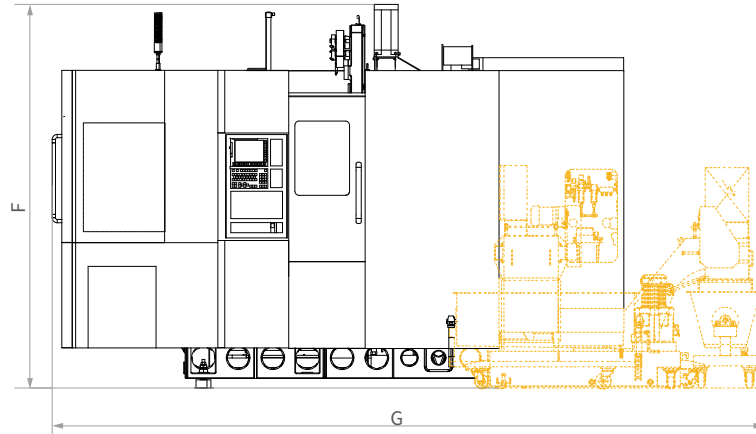
# EXTERNAL DIMENSIONS

Units : mm (inch)

TOP



FRONT

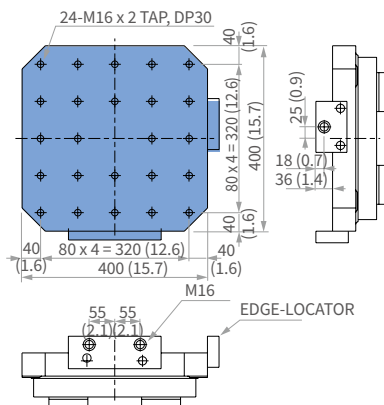


Model	A	B	C	D	E	F	G
HC 400 II	2260 (89)	R 364 (14.3)	R 732 (28.8)	620 (24.4)	3666 (144.3)	2822 (111.1)	5240 (206.3)
HC 500 II	2625 (103.3)	R 364 (14.3)	R 544 (21.4)	630 (24.8)	4093 (161.1)	2993 (117.8)	6073 (239.1)

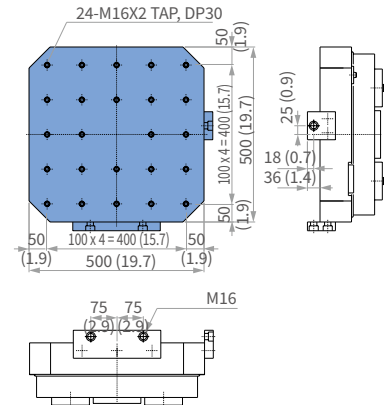
\* Some peripheral equipment can be placed in other areas.

## TABLE

HC 400 II



HC 500 II



# MACHINE SPECIFICATIONS

Description		Unit	HC 400 II	HC 500 II	
<b>Machining Capacity</b>	Travel distance	X-axis	mm (inch)	600 (23.6)	850 (33.5)
		Y-axis	mm (inch)	560 (22)	700 (27.6)
		Z-axis	mm (inch)	565 (22.2)	750 (29.5)
	Distance from spindle nose to table center		mm (inch)	150 ~ 715 (5.9 ~ 28.1)	150 ~ 900 (5.9 ~ 35.4)
	Distance from spindle center to table top		mm (inch)	50 ~ 610 (1.9 ~ 24)	50 ~ 750 (1.9 ~ 29.5)
<b>Feedrate</b>	Rapid Feedrate	X-axis	m/min (ipm)		40 (1574.8)
		Y-axis	m/min (ipm)		40 (1574.8)
		Z-axis	m/min (ipm)		40 (1574.8)
	Cutting feedrate		mm/min (ipm)	20000 (787.4)	
<b>Pallet</b>	Pallet type		24-M16 X P2.0		
	Pallet indexing angle		deg	1 {0.001}	
	Max. loading capacity		kg (lb)	400 (881.8)	500 (1102.3)
	Max. workpiece size		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)
<b>Spindle</b>	Max. spindle speed		r/min	8000 {12000}	
	Data specification		ISO #40, 7/24 TAPER		
	Max. torque		N·m (ft·lbs)	353.4 {117} (260.6 {86.3})	
<b>Automatic Pallet Changer (APC)</b>	No. of pallets		ea	2	
	Pallet change time		s	8	8.5
	Indexing angle (rotation)		deg	90	
<b>Automatic Tool Changer (ATC)</b>	Tool shank type		BT40 {CAT40 / DIN 40 / HSK-A63}		
	Tool storage capacity		ea	40 {60 / 80 / 120}	
		Matrix Type	ea	{170 / 262}	
	Max. tool diameter	W/O adjacent tool	mm (inch)	75 (2.9)	
		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-T, tool weight less than 12K)		s	1.5	
Tool change time (C-T-C, tool weight less than 12K)		s	4		
<b>Motor</b>	Spindle motor power		kW (Hp)	18.5 / 11 (24.8 / 14.7)	
<b>Power Source</b>	Power consumption		kVA	58	
	Compressed air pressure		Mpa (psi)	0.54 (78.3)	
<b>Tank Capacity</b>	Coolant tank capacity		L (gallon)	550 (145.3)	640 (169.1)
	Lube tank capacity		L (gallon)	1.4 (0.37)	
<b>Machine Dimensions</b>	Height		mm (inch)	2830 (111.4)	3000 (118.1)
	Length		mm (inch)	4630 (182.3)	5320 (209.4)
	Width		mm (inch)	2260 (88.9)	2680 (105.5)
	Weight		kg (lb)	11000 (24250.8)	12500 (27557.8)



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