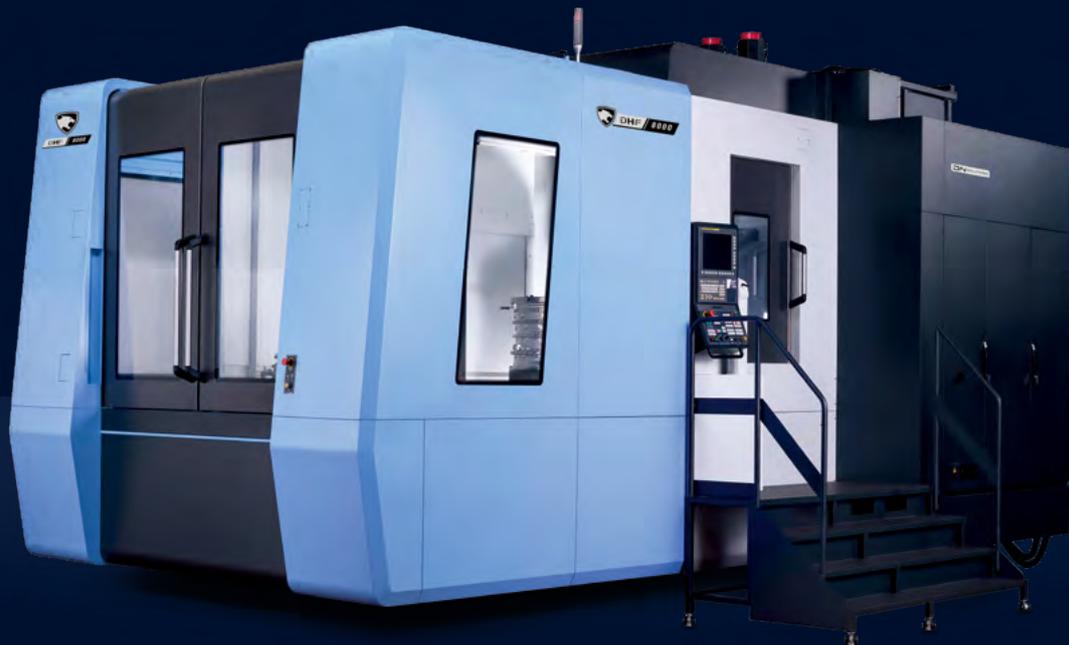




SIMULTANEOUS 5 AXIS HORIZONTAL MACHINING CENTER  
EQUIPPED WITH A NODDING HEAD SPINDLE

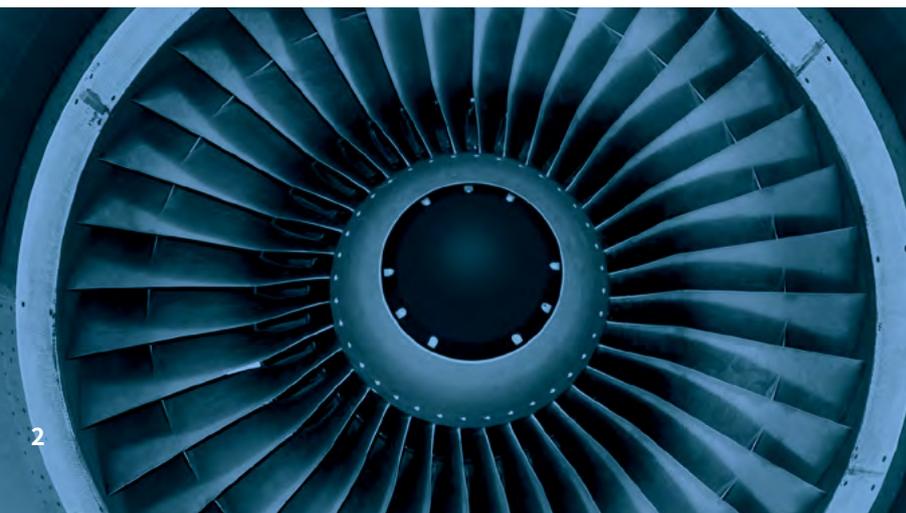
# DHF

8000 • 8000ST



# DHF SERIES · 8000 · 8000ST

The DHF 8000 with its A-axis nodding head spindle is a 5-axis simultaneous horizontal machining center with a highly rigid structure and dual ballscrews on its X and Y axes. The DHF 8000 meets the machining requirements of customers machining a range of materials from hard metals, such as Titanium and Inconel, through to the high-speed machining of Aluminium.



The depth and breadth of DN Solutions's range of vertical and horizontal 5-axis machining centers is second to none. As such, irrespective of whether you are machining small precision medical parts or large aero-engine components, there is a DN Solutions machine that can more than meet your requirements.



### HIGH PRODUCTIVITY, SINGLE SETUP WITH SIMULTANEOUS 5 AXIS MACHINING

- A-axis nodding head spindle
- Travel (x / y / z) : 1450 / 1200 / 1500 mm (57.1 / 47.2 / 59.1 inch)
- Max. Workpiece size : Ø1400 X H1400 mm (Ø55.1 X H55.1 inch)

### HIGH RIGIDITY & COMPACT STRUCTURE

- Y/Z dual ballscrew
- Thermal compensation for spindle and structure
- Cooling system
- Linear scale

### USER-FRIENDLY FEATURES

- Improved rear exit chip disposal
- Power-pack, multi-step TSC
- Easy chip-disposal through PSC (Programmable Shower Coolant).

# BASIC STRUCTURE

To machine high-precision, complex components with intricate shapes and features, DHF 8000 is equipped with A-axis nodding head spindles that facilitate 5-axis simultaneous machining. Dual ballscrews are applied to the X and Y axes to ensure highly-stable machining.

## Travel distance

X-AXIS  
**1450** mm  
 57.1 inch

Y-AXIS  
**1200** mm  
 47.2 inch

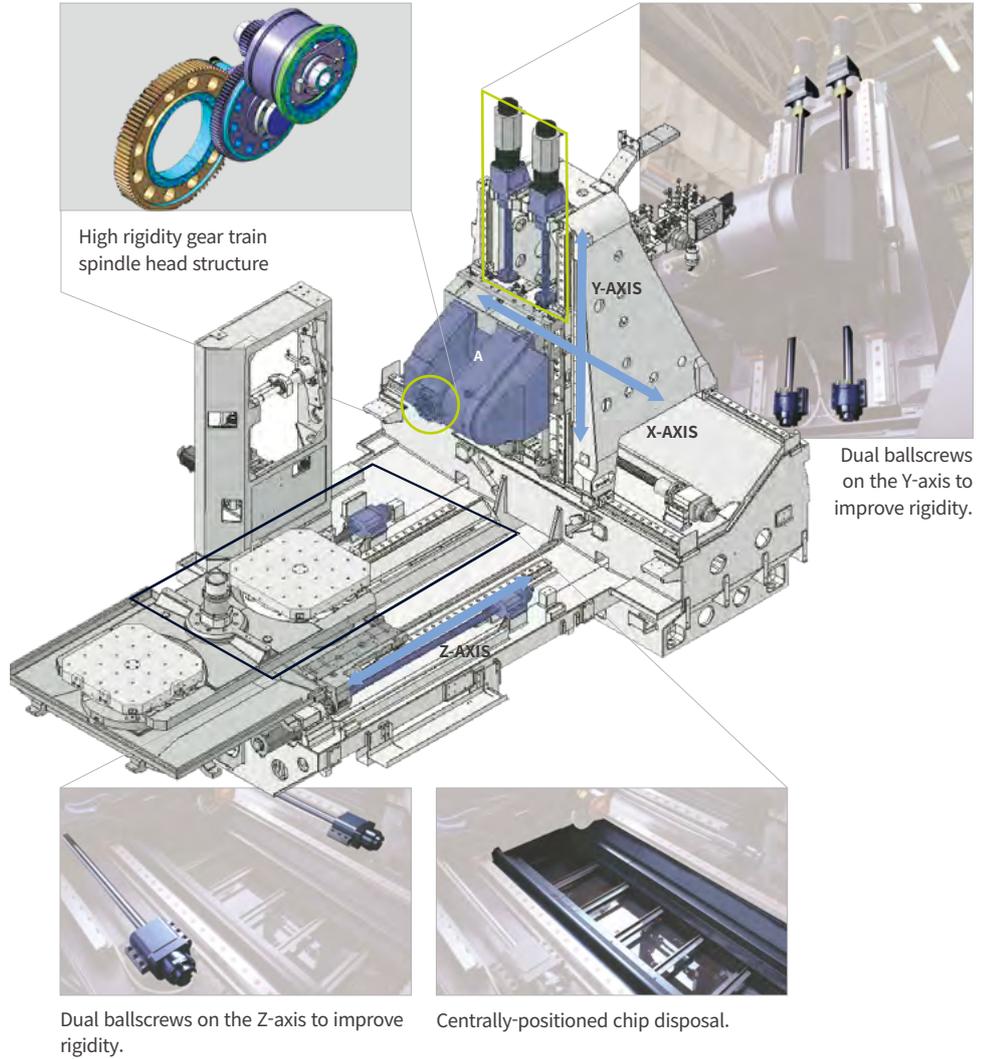
Z-AXIS  
**1500** mm  
 59.1 inch

## Feedrate

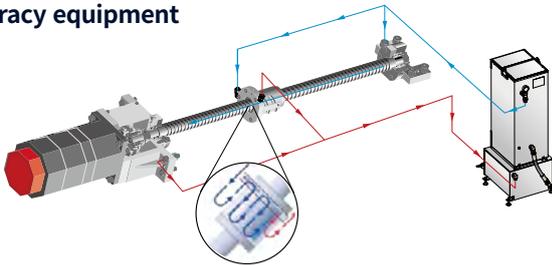
X-AXIS  
**40** m/min  
 1574.8 ipm

Y-AXIS  
**40** m/min  
 1574.8 ipm

Z-AXIS  
**50** m/min  
 1968.5 ipm



## High accuracy equipment



### Cooling system

Significantly reduced thermal displacement of the ballscrews.



### Linear scales

Maintain high precision over long machining runs and extended operation.

## Main products



Titanium blisk



Turbine casing



Fan disk



Spool



Turbine component

# MACHINING AREA

Large working envelope with 800 mm pallet size.

## Max. work size

DHF 8000

**Ø1400 x H1400** mm

Ø55.1 inch x H55.1 inch

DHF 8000ST

**Ø1600 x H1400** mm

Ø63.0 inch x H55.1 inch

## Max. work weight

**2000** kg

4409.2 lb

An automatic twin pallet changer is supplied as standard. DN Solutions's LPS multi-pallet system is also available as an option.

## Pallet size

DHF 8000

**800 x 800** mm

31.5 inch x 31.5 inch

DHF 8000ST

**Ø1000** mm

Ø39.4 inch

## Maximum pallet load

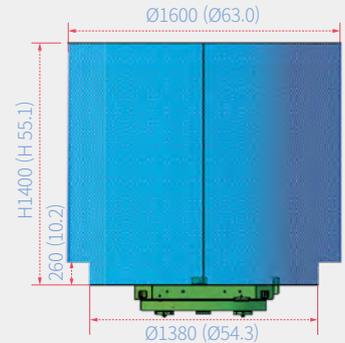
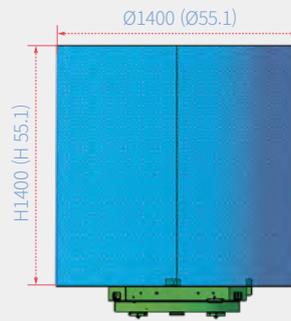
**2000** kg

4409.2 lb

## Pallet change time

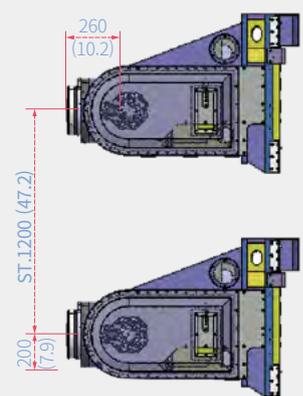
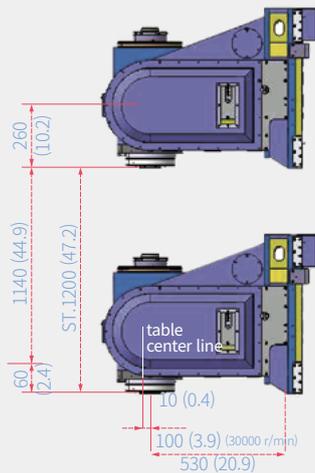
**16** sec

Units : mm (inch)



VERTICAL

HORIZONTAL



# SPINDLE INFORMATION

Excellent cutting performance is assured by using a 2-step geared spindle for machining hard materials, and a high-speed, built-in spindle for machining Aluminium.

## Max. spindle speed

**6000** r/min

HSK only

**15000** r/min option

**30000** r/min option

PSC(Programmable Shower Coolant ) standard

## Max. power

FANUC

**35** kW

46.9 hp

**92/51** kW option

123.4/68.4 hp

SIEMENS

**90/86** kW option

120.7/115.3 hp

## Max. torque

FANUC

**960** N·m

708.5 ft-lb

**147/53.4** N·m option

108.5, 39.4 ft-lb

SIEMENS

**223/49.9** N·m

164.6/36.8 ft-lb

## Tilt angle (A axis)

**-100 ~ 60** deg

## Tool shank

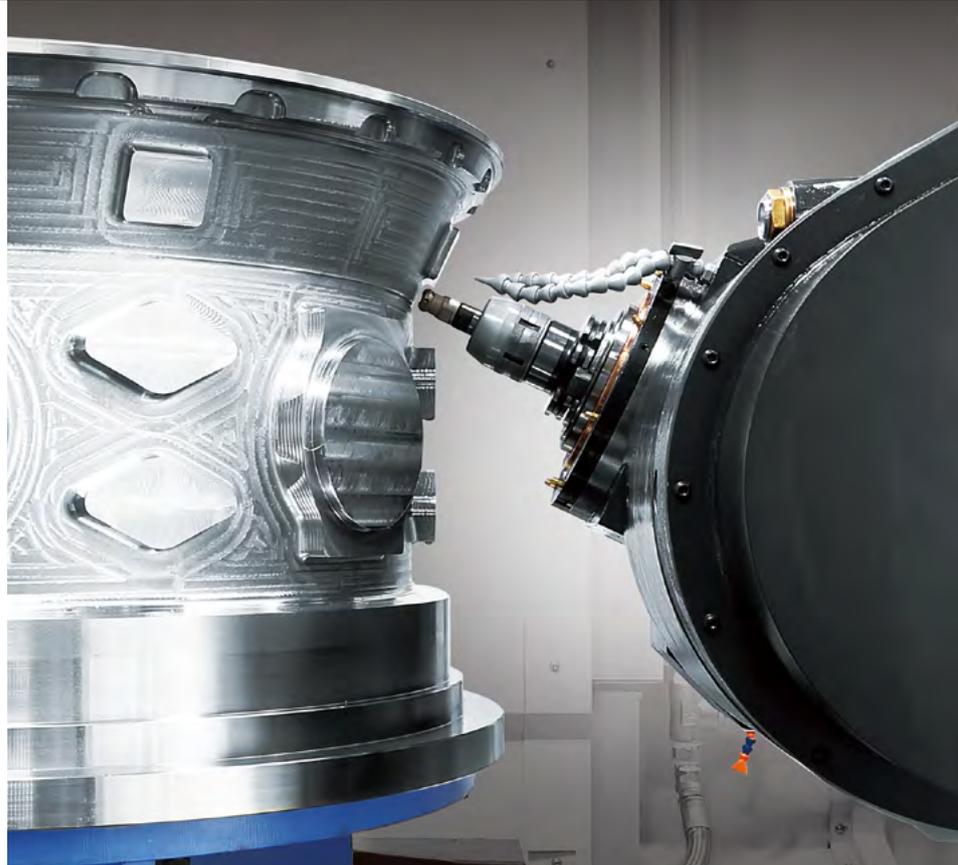
DHF 8000

**BT 50**

**HSK A100/A63**

DHF 8000ST

**HSK-T100**



# CUTTING PERFORMANCE

Impressive machining capability due to machine structure and spindle performance.

## Higher cutting power

High-rigidity machining can be undertaken with speed and precision.

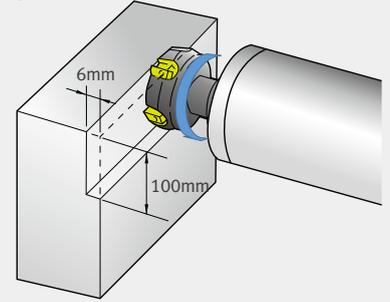
## Cutting capacity

Face milling carbon steel (SM45C) [ø125mm Face mill (8Z)]

	Machining rate	Spindle speed	Feed rate
DHF 8000	1020 cm <sup>3</sup> /min	348 r/min	1700 mm/min

\* The results in the catalogue are provided as examples and should be used as a guide. Different cutting and environmental conditions will deliver different results.

(Motor power : 35/22 kW (46.9/29.5 Hp))



## Tool to tool

**3.5** sec  
**2.4** sec

## Max. tool length

**550** mm  
21.7 inch

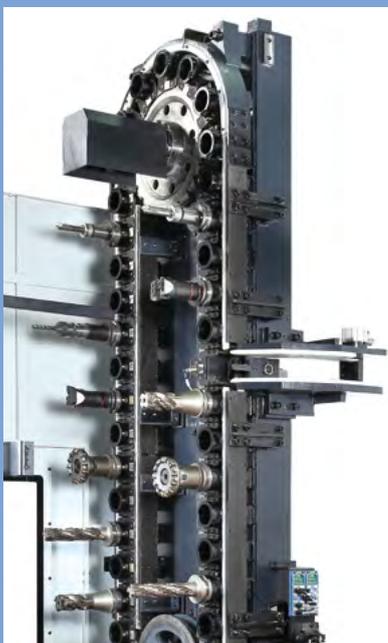
## Max. tool weight

**30** kg 66.1 lb  
**12** kg 26.5 lb (30000 r/min)

# MAGAZINE SPECIFICATIONS

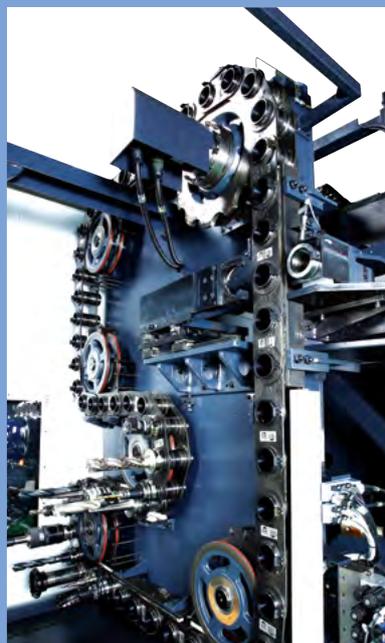
The servo type magazine improves productivity and reliability.

Pot type magazine



30000 r/min 80 / 120 tools

Chain type magazine option



90 / 120 / 150 tools

Matrix type magazine option



196 / 256 / 316 / 376 tools  
30000 r/min 171 / 275 tools

# STANDARD | OPTIONAL SPECIFICATIONS

A range of options is available to suit individual requirements.

Description	Features		DHF 8000	DHF 8000ST
Spindle	6000 r/min	35 kW (46.9 Hp), 960 N·m (708.5 ft-lbs)	●	●
	15000 r/min(SIEMENS)	86 kW (115.3 Hp), 223 N·m (164.6 ft-lbs)	○	○
	15000 r/min(FANUC)	51 kW (68.4 Hp), 147 N·m (108.5 ft-lbs)	○	○
	30000 r/min(SIEMENS)	90 kW (120.7 Hp), 49.9 N.m (36.8 ft-lbs)	○	X
	30000 r/min(FANUC)	90 kW (120.7 Hp), 53.4N.m (39.4 ft-lbs)	○	X
Magazine	Tool storage capacity	60 ea	●	●
		90 / 120 / 150 / 196~376 ea	○	○
		80ea (30000 r/min only)	●	X
		120 / 171 / 275 ea (30000 r/min only)	○	X
Tool shank type	BIG PLUS BT50		●	X
	BIG PLUS CAT50		○	X
	BIG PLUS DIN50		○	X
	HSK A100		○	X
	HSK A63		○	X
	HSK T100		-	○
Coolant	PSC (Programmable shower coolant) (30000 r/min only)		●	●
	FLOOD		●	●
	FLUSHING		●	●
	PROGRAMMABLE TSC		●	●
	SHOWER		○	○
	Coolant level switch : Sensing level - Low / High		●	●
Chip disposal	Chip conveyor	2-step drum type	●	●
	Chip bucket	Forklift type	○	○
		Rotation type	○	○
	Air blower		○	○
	Air gun		○	○
	Coolant gun		○	○
Precision machining option	Linear scale	X / Y / Z-axis	●	●
	DSQ3 (600 Block, High Process CPU, Data Server 1GB)		●	●
	DSQ4 (1000 Block, High Process CPU, Data Server 1GB)		○	○
	Data Server 2G/4G/16GB		○	○
Measurement & automation	Automatic tool measurement	TS27R_RENISHAW	●	X
		Hybrid type_RENISHAW	X	●
	Automatic workpiece measurement	RMP600_RENISHAW	○	○
Others	LED Work light		●	●
	Signal tower		●	●
	Tool load monitoring		●	●
	EZ Guide i		○	○
	Automatic power off		○	○
Customized special option	Spin window for main door (Electric type)		○	○

\* Please contact DN Solutions for detailed specification information.

● Standard ○ Optional X Not applicable

\*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

## Intelligent kinematic compensation for 5-axis machining Recommended Option

For high accuracy 5-axis machining, the Intelligent Kinematic Compensation function is recommended. This function minimizes error in complex 5-axis machining applications by ensuring that the tip of the tool is always in the correct position in relation to the workpiece. In order to take advantage of this function, the following optional items are required.



### Recommended optional items

#### 1. SOFTWARE



FANUC NC ; IKC



HEIDENHAIN NC ; IKC

#### 2. RECEIVER



#### 3. TOUCH PROBE option



#### 4. DATUM BALL option



#### 5. MASTER TOOL option



# PERIPHERAL EQUIPMENT

## Chip conveyor



## Movable units



## Oil skimmer



## Mist collector option



## Chip disposal system



FLUSHING COOLANT



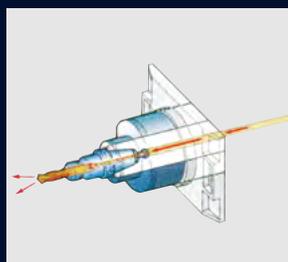
PROGRAMMABLE TSC



SHOWER COOLANT



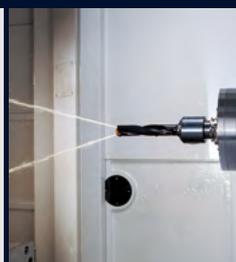
COOLANT GUN option



MQL(MINIMUM QUANTITY LUBRICATION) SYSTEM (MISTING DEVICE) option



PROGRAMMABLE SHOWER COOLANT 30000 R/MIN STANDARD



# 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	F31iB5 PLUS
		DHF 8000
<b>Controlled axis</b>	Controlled axes	5 (X,Y,Z,A,C)
	Simultaneously controlled axes	5 axes
	Additional controlled axis	●
<b>Data input/output</b>	Fast data server	● (1GB)
	Memory card input/output	●
	USB memory input/output	●
	Large capacity memory(2GB)*2	○ Note *2) Available Option only with 15" Touch LCD (iHMI Only)
<b>Interface function</b>	Embedded Ethernet	●
	Fast Ethernet	○
	Enhanced embedded ethernet function	●
<b>Operation</b>	DNC operation	● Included in RS232C interface.
	DNC operation with memory card	●
<b>Program input</b>	Workpiece coordinate system	● G52 - G59
	Addition of workpiece coordinate system	● G54.1 P1 X 48 (48 pairs)
	Tool number command	●
	Tilted working plane indexing command	● G68.2 TWP
<b>Feed function</b>	AI contour control II	● G5.1 Q_, 1000 Blocks
	High smooth TCP	●
<b>Operation Guidance Function</b>	EZ Guide i	●
	iHMI with machining cycle	● Note *1) Only with 15" Touch LCD standard
	EZ Operation package	●
<b>Setting and display</b>	CNC screen dual display function	●
<b>Network</b>	FANUC MTConnect	●
	FANUC OPC UA	●
<b>Others</b>	Display unit	● 15" color LCD with Touch Panel
	Part program storage size & number of registerable programs	● 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 Not Available ⊕ Available

# EZ WORK

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

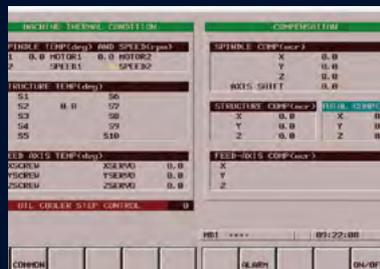
## EZ work

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.



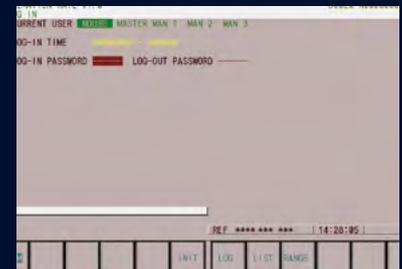
### Tool Load Monitor

Function to automatically monitor abnormal load from wear or breakage of tool



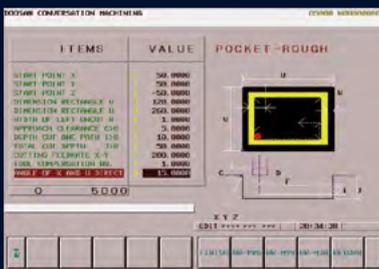
### Thermal Compensation

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



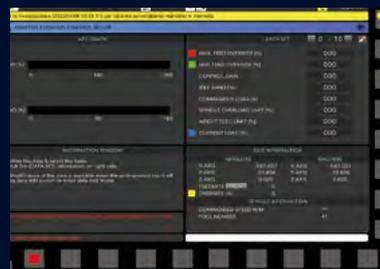
### Operation Rate

Machine operation history management function by date based on load



### Pattern Cycle

A function to automatically create frequently used part programs



### Adaptive Feed Control\_IHMI

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



### IKC (DCP-I)

The function to compensate the position of the workpiece and the tool tip to be constant regardless of the rotation of the rotating shaft error



### 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



### PMC Soft Panel Switch\_IHMI

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



### APC Setting Screen\_IHMI

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

# CONVENIENT OPERATION

## Siemens 840D

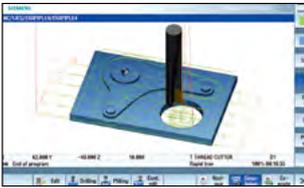
### 15.6" screen + new operation panel

The newly-designed operation panel improves the customer convenience by incorporating and using common-design buttons and layouts, and includes the familiar QWERTY keyboard for fast and easy operation.

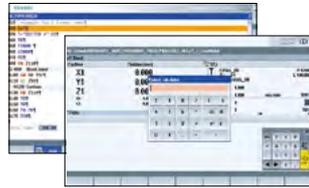
- 15.6" display
- 10MB high capacity user memory
- USB & ethernet (standard)
- QWERTY keyboard (standard)
- High-speed calculation and simulation can be fulfilled by improved processor functionality



### Conversational convenient function



Simulation and machining contour monitoring



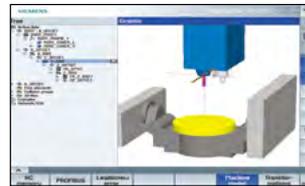
Smart function



Side screen widget



5-axis kinematic measuring cycles



3D collision avoidance and collision avoidance ECO



Shop mill part programming

## NUMERIC CONTROL SPECIFICATIONS

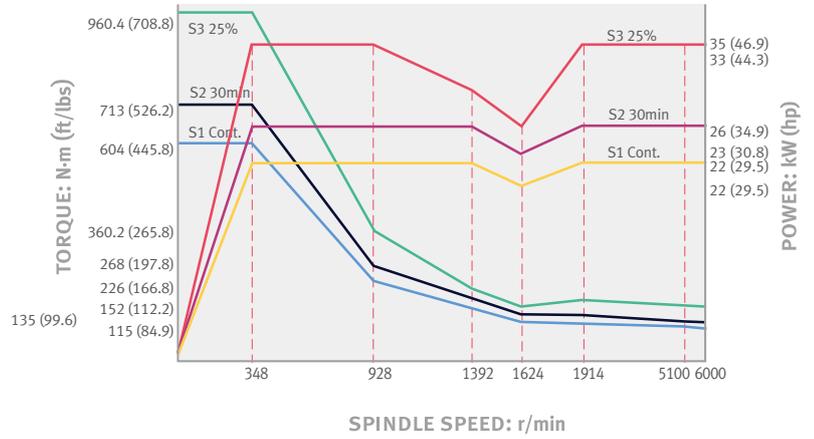
SIEMENS

Item		Specifications	S840Dsl DHF 8000
Controlled axis	Controlled axes	5 axes	●
	Simultaneously controlled axes	5 axes	●
Data input/output	Memory card input/output	(Local drive)	●
	USB memory input/output		●
Interface function	Ethernet	(X130)	●
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	Advanced surface		○
	Top surface		●
Programming & editing function	Look ahead number of block	S/W version 4.8	1000
	3D simulation, finished part		●
	Simultaneous recording		●
	Measure kinematics		●
Operation guidance function	DXF Reader for PC integrated in SINUMERIK Operate		○
	ShopMill		●
Setting and display	EZ Work		●
	Operation via a VNC viewer		●
Network	MTCConnect		⊕
	OPCUA		○
Etc. function	15.6" color display with touch screen		●
	19" color display without touch screen		○
	21.5" color display with touch screen		○
	CNC user memory	10 MB	●
	Expansion by increments	2 ~ 12 MB	○
	Collision avoidance		○
Collision avoidance ECO (machine, working area)		○	

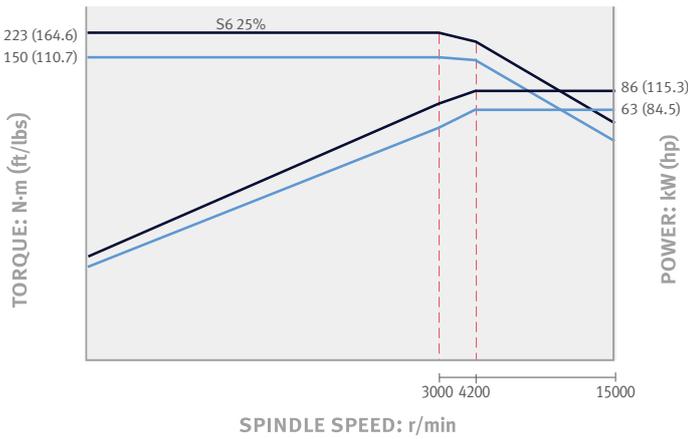
# POWER | TORQUE

## DHF 8000/8000ST

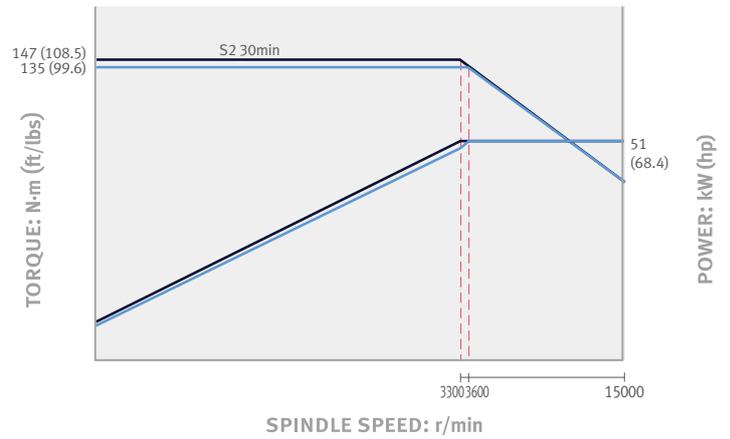
6000 r/min FANUC  
 Power : 35 kW (46.9 Hp)  
 Torque : 960.4 N·m (708.8 ft-lbs)



15000 r/min SIEMENS option  
 Power : 86 kW (115.3 Hp)  
 Torque : 223 N·m (164.6 ft-lbs)

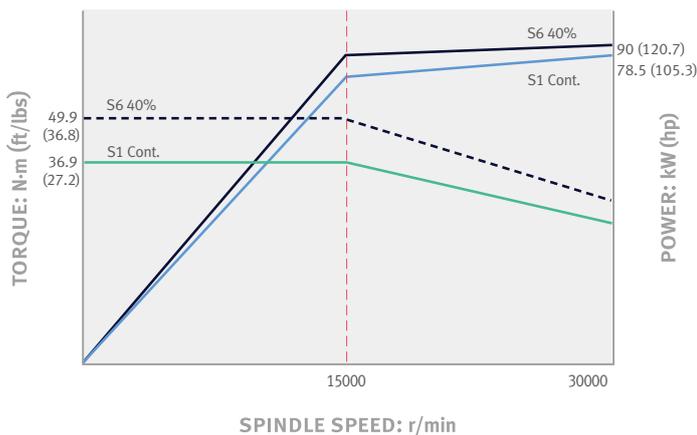


15000 r/min FANUC option  
 Power : 51 kW (68.4 Hp)  
 Torque : 147 N·m (108.5 ft-lbs)

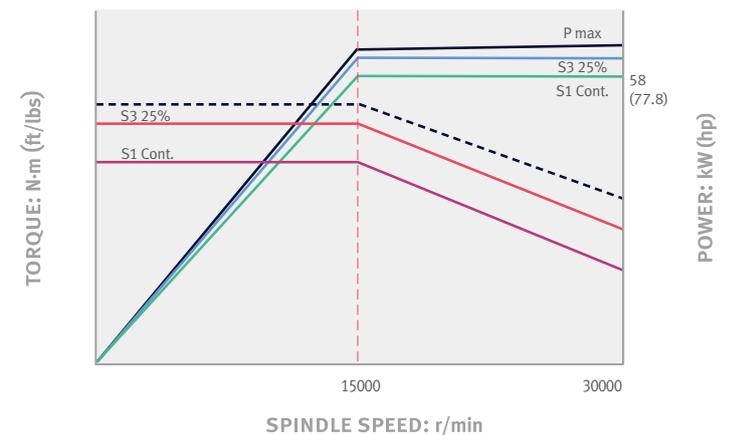


## DHF8000\_30000 r/min

30000 r/min SIEMENS option  
 Power : 90 kW (120.7 Hp)  
 Torque : 49.9 N·m (36.8 ft-lbs)

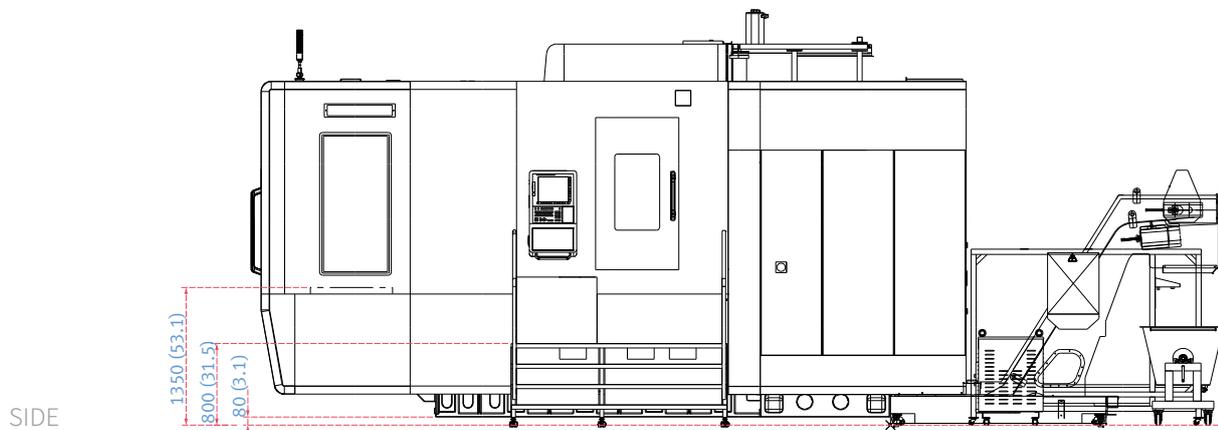
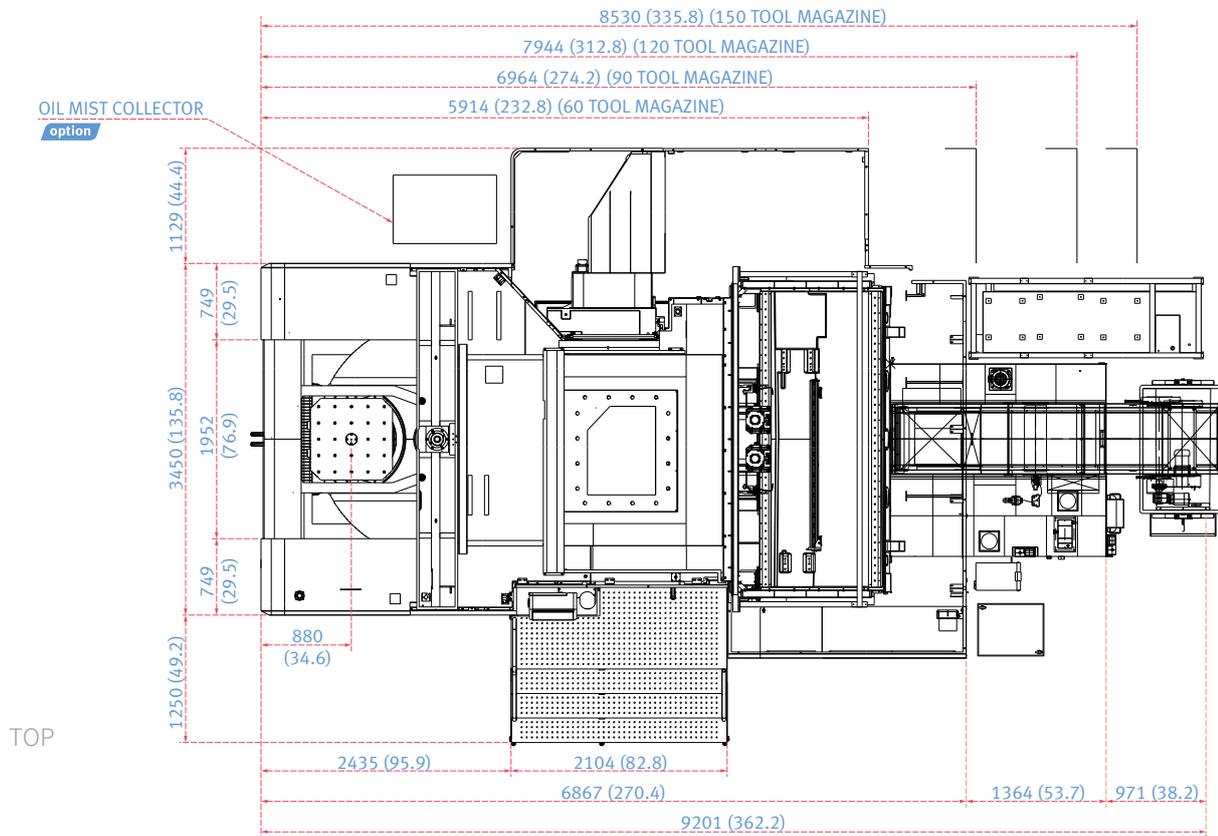


30000 r/min FANUC option  
 Power : 90 kW (120.7 Hp)  
 Torque : 53.4 N·m (39.4 ft-lbs)



# DIMENSIONS

DHF 8000

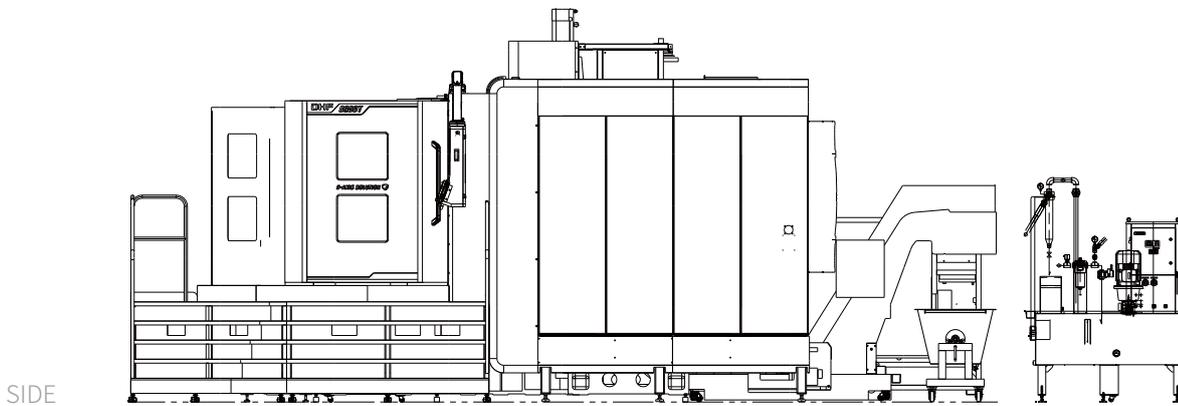
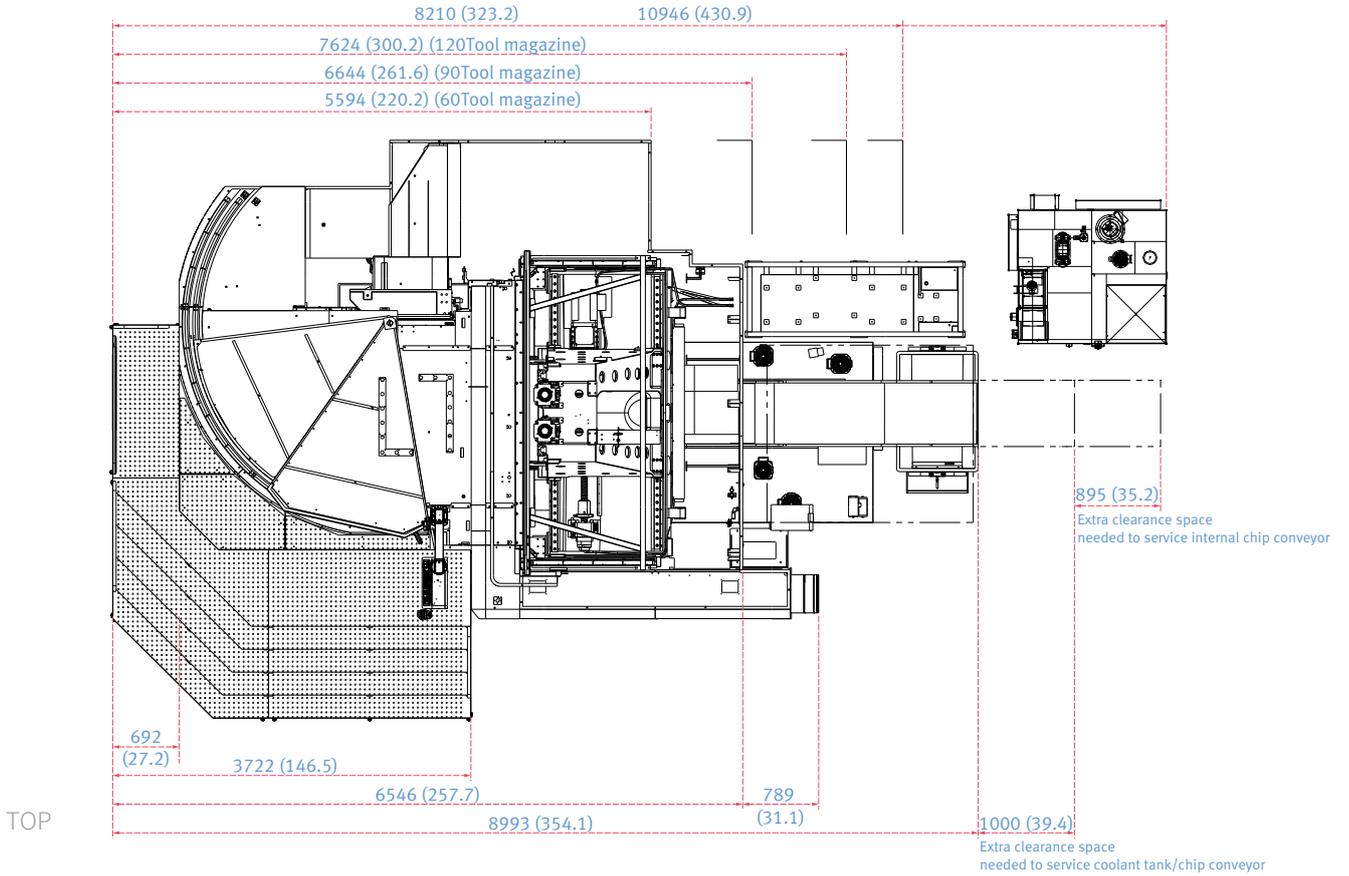


\* Some peripheral equipment can be placed in other areas.

# DIMENSIONS

DHF 8000ST

Units : mm (inch)

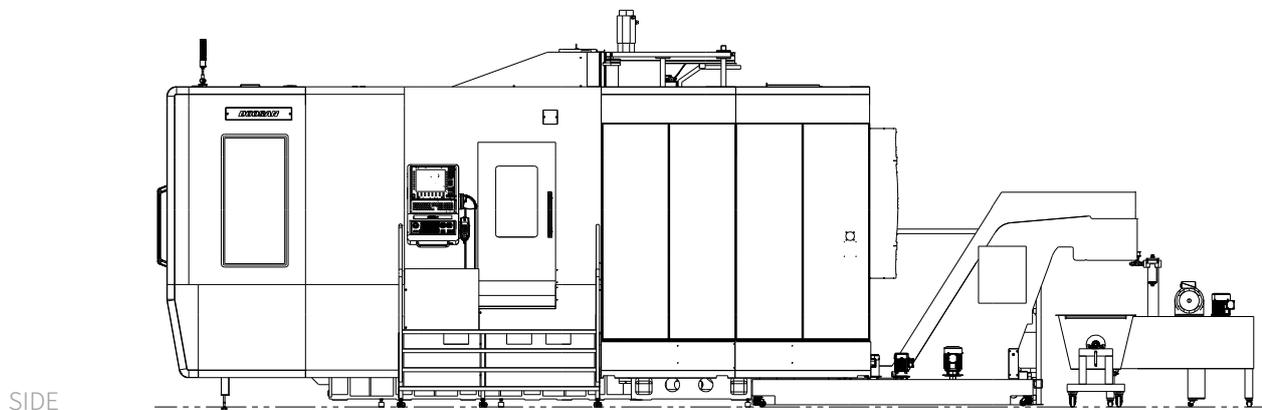
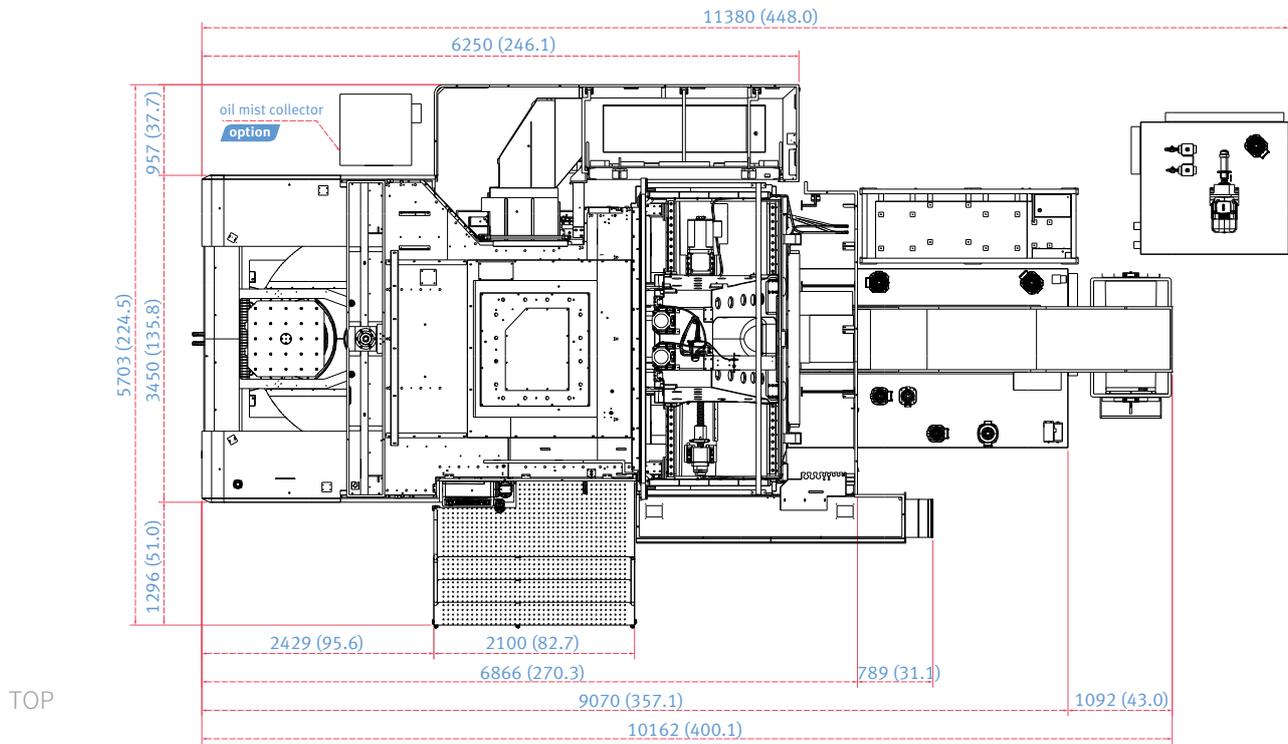


\* Some peripheral equipment can be placed in other areas.

# DIMENSIONS

DHF 8000 30000r/min / PSC

Units : mm (inch)



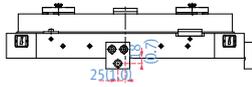
\* Some peripheral equipment can be placed in other areas.

# PALLET | WORKING AREA

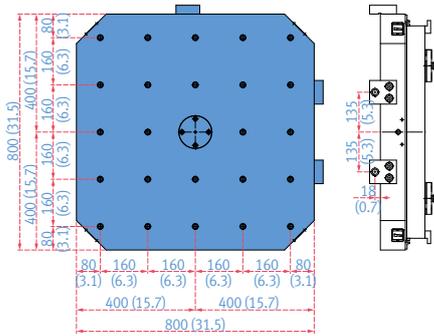
## DHF 8000

Units : mm (inch)

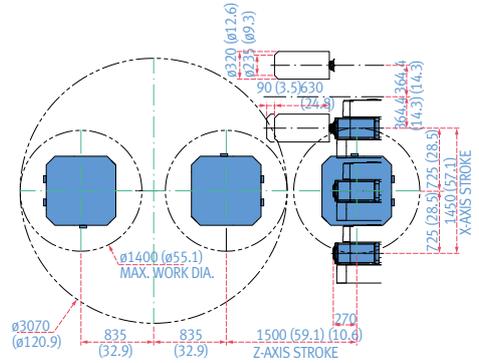
PALLET



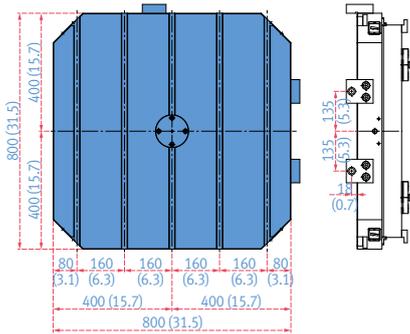
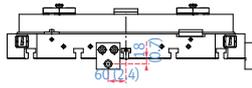
TAP



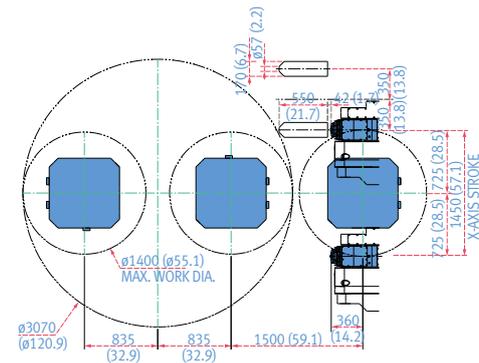
WORKING AREA



T-SLOT



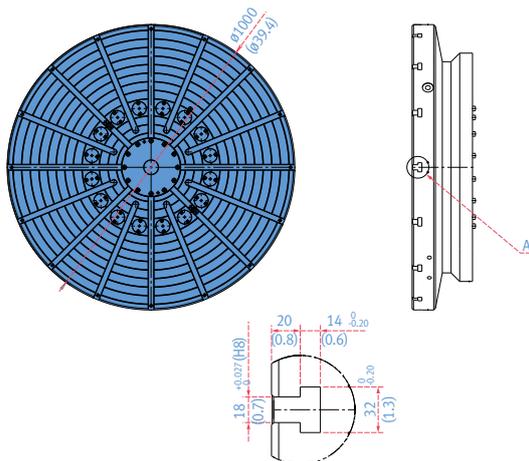
30000 r/min



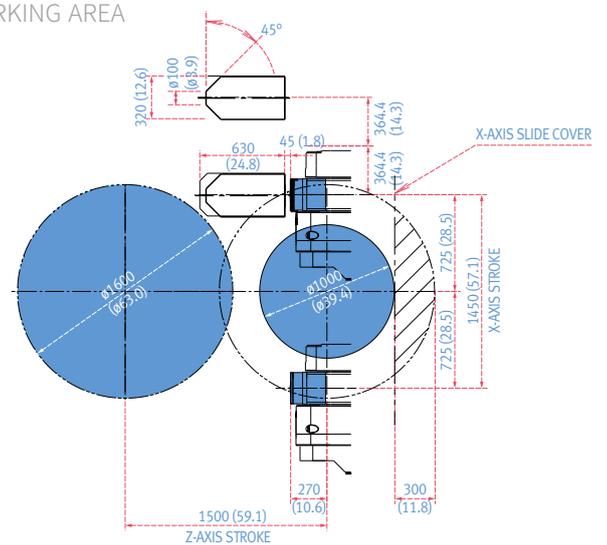
## DHF 8000ST

Unit: mm (inch)

PALLET



WORKING AREA



# MACHINE SPECIFICATIONS

DHF 8000 • 8000ST

Description		Unit	DHF 8000/8000ST	DHF 8000 30000r/min / PSC	
Travel	Travel distance	X-axis	mm (inch)	1450 (57.1)	
		Y-axis	mm (inch)	1200 (47.2)	
		Z-axis	mm (inch)	1500 (59.1)	
	Spindle nose to table center		mm (inch)	-270 ~ 1230 (-10.6 ~ 48.4)	
	Distance from spindle nose to table top		mm (inch)	200 ~ 1400 (7.9 ~ 55.1)	
Table	Pallet size		mm (inch)	800 x 800 (31.5 x 31.5), ø1000 (ø39.4)**	
	Workpiece size		mm (inch)	Ø1400 x H1400 (Ø55.1 x H55.1), Ø1600 x H1400 (Ø63.0 x H55.1)**	
	Maximum workpiece weight		kg (lb)	2000 (4409.2)	
	B-AXIS ROTATING SPEED**		r/min	8 (500**)	
Spindle	Max. spindle speed		r/min	6000 {15000, 30000}*	
	Taper		-	BT50, HSK A100, HSK T100**	HSK A63
	Max. spindle motor power		kW (Hp)	35 {86, 51} (46.9 {115.3, 68.4})*	90 (120.7)
	Max. spindle torque		N·m (ft-lbs)	960 {223, 147} (708.5 {164.6, 108.5})*	53.4, 49.9 (39.4, 36.8)
	A-axis tilting angle		deg	-100 ~ 60	
Feedrate	Rapid traverse rate	X-axis	m/min (ipm)	40 (1574.8)	
		Y-axis	m/min (ipm)	40 (1574.8)	
		Z-axis	m/min (ipm)	50 (1968.5)	
Automatic tool changer (ATC)	Tool storage capacity		ea	60 {90, 120, 150, 196 ~ 376}*	80 {120, 171, 275}*
	Max. tool diameter	Continuous	mm (inch)	125 (4.9)	75 (3.0)
		Without adjacent tools	mm (inch)	320 (12.6)	170 (6.7)
	Max. tool length		mm (inch)	550 (21.7)	
	Max. tool weight		kg (lb)	30 (66.1)	12 (26.5)
	Max. tool moment		N·m (ft-lbs)	34.3 (25.3)	11.8 (8.7)
	Tool change time (Tool-to-tool)		sec	3.5	2.4
Machine dimensions	Height		mm (inch)	4075 (160.4)	
	Length		mm (inch)	11835 (465.9)	
	Width		mm (inch)	5830 (229.5)	
	Weight		kg (lb)	31000 (68342.3)	
Control	CNC system		-	FANUC 31i PLUS {SIEMENS 840D}*	

\* { } : Option  
\*\* Only DHF 8000ST

# WHY 5-AXIS MACHINING?

## Single setup efficiency

5-axis machining allows you to approach the workpiece from all angles, with complete access to five sides of the part in a single setup. This reduces the overall number of part setups compared to traditional machining, which minimizes machine downtime and maximizes chip making time.



## Improved part accuracy

When making parts with multi-sided features using traditional 3-axis machining, multiple part setups are required. This means new inaccuracies can arise each time the workpiece is repositioned. 5-axis machining eliminates stacked tolerances and improves overall part dimensional accuracy.

## Extended machine shop capability

DN Solutions 5-axis machines open up new doors for your machine shop. The increased efficiency will make you instantly more competitive, and full 5-axis machining capabilities give you the opportunity to quote on jobs that previously weren't possible. So, what are you going to make today?



“Compared with similar machines from Japan or Europe, DN Solutions has the same level of precision and quality at a better value for money.”

– *OMGM Group, Italy*

“Our DN Solutions 5-axis is making complex, high precision parts for aerospace and defense. Cycle times have been reduced dramatically.”

– *Aerotech Precision Manufacturing, Great Britain*

# WHY DN SOLUTIONS

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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...



**MACHINE  
GREATNESS™**



WHAT YOU MAKE AND HOW YOU MAKE IT MATTERS—SO MAKE IT  
GREAT WITH DN SOLUTIONS.

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## UNBEATABLE MACHINES

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

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## 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.

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## 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.

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## EXPERT SERVICE

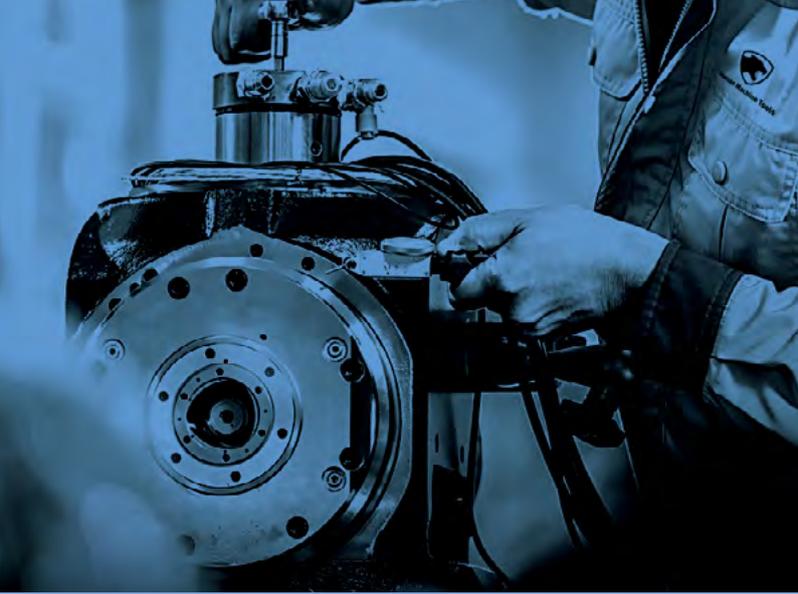
Our dedicated, experienced and knowledgeable team is totally committed to improving your productivity, growth and success.

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# CUSTOMER SUPPORT AND SERVICES

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

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



## FIELD SERVICES

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



## PARTS SUPPLY

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



## TRAINING

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



## TECHNICAL SUPPORT

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

# RESPONDING TO CUSTOMERS ANYTIME, ANYWHERE

## DN Solutions Global Network

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



## Global sales and service support network

<b>4</b>	<b>Corporations</b>
<b>155</b>	<b>Dealer networks</b>
<b>51</b>	<b>Technical centers</b> Technical Center, Sales Support, Service Support, Parts Support
<b>200</b>	<b>Service posts</b>
<b>3</b>	<b>Factories</b>





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\* For more details, please contact DN Solutions.

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