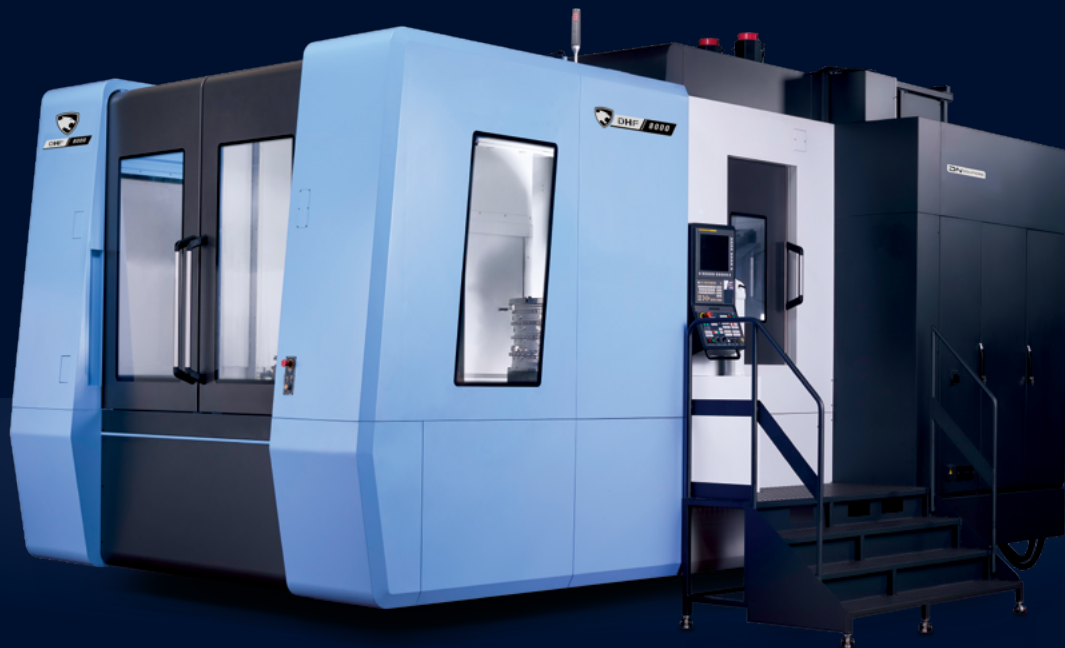




SIMULTANEOUS 5 AXIS HORIZONTAL MACHINING CENTER
EQUIPPED WITH A NODDING HEAD SPINDLE

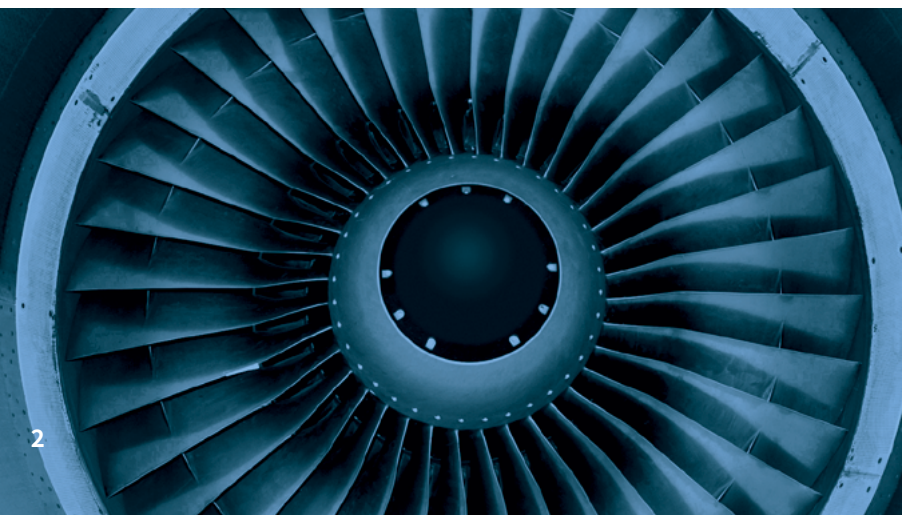
DHF

8000 • 8000ST

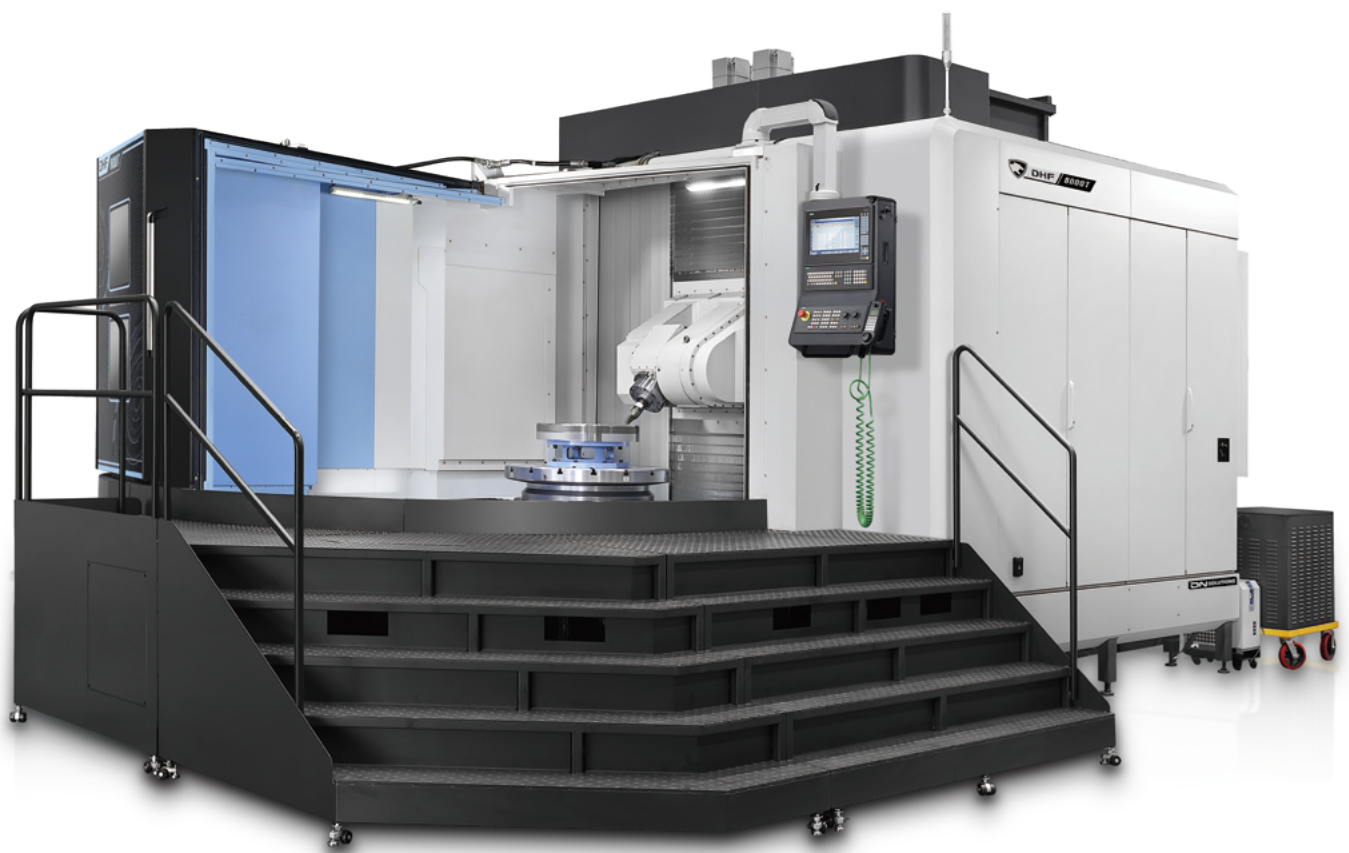


DHF SERIES · 8000 · 8000ST

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

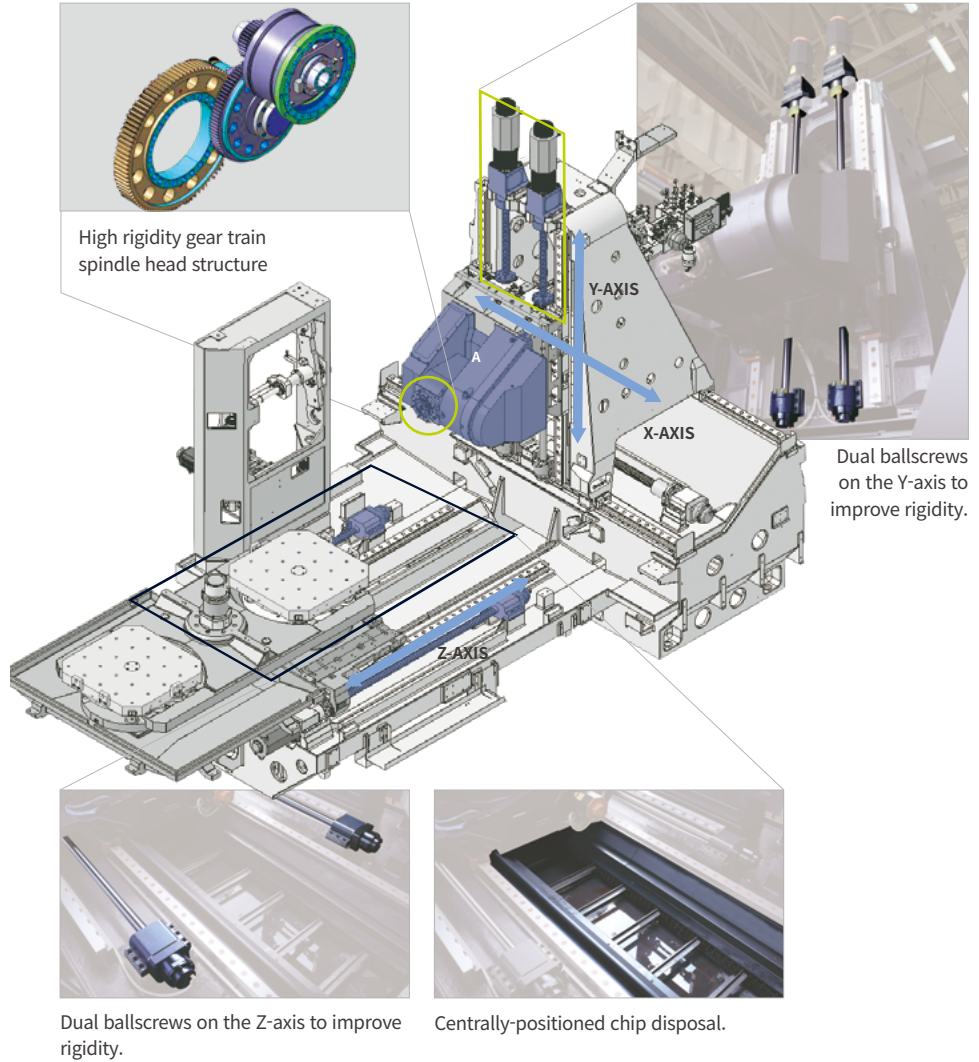
40 m/min
1574.8 ipm

Y-AXIS

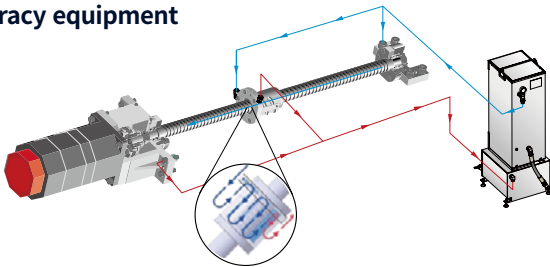
40 m/min
1574.8 ipm

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

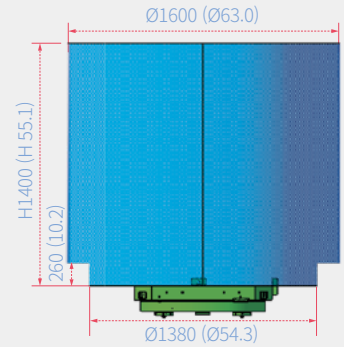
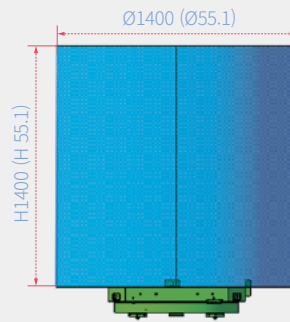
2000 kg

4409.2 lb

Pallet change time

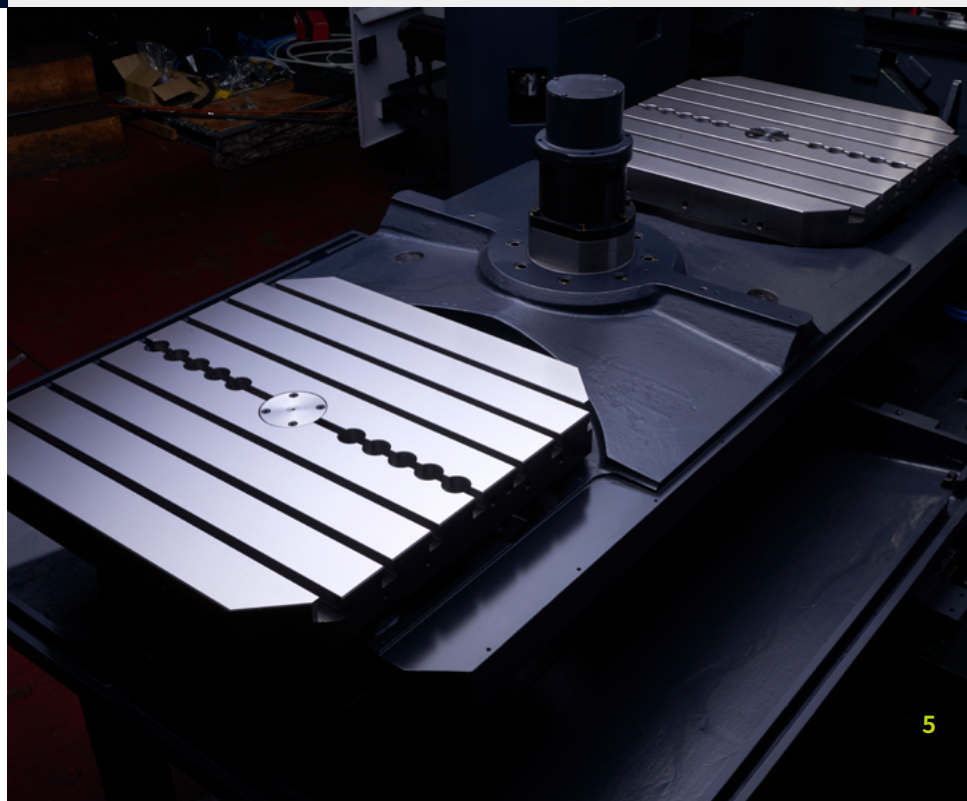
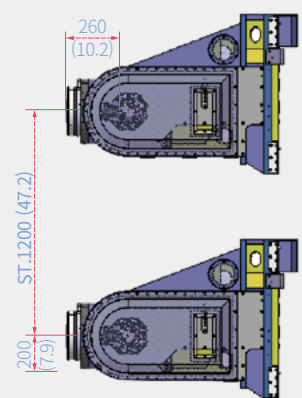
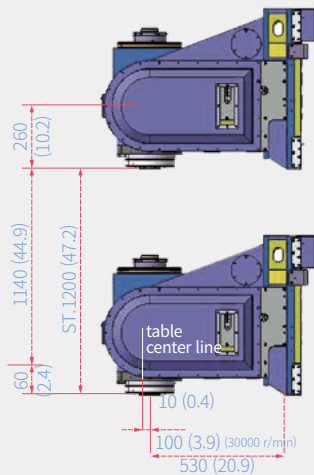
16 sec

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.

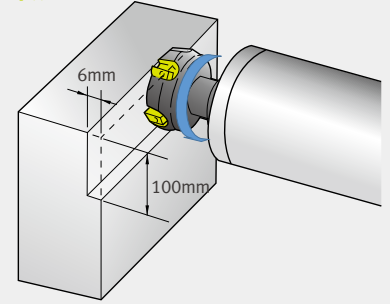
Cutting capacity

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

	Machining rate	Spindle speed	Feed rate
DHF 8000	1020 cm ³ /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

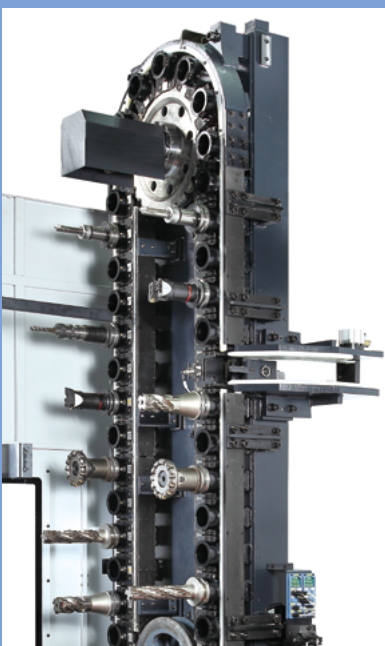
Max. tool weight

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

MAGAZINE SPECIFICATIONS

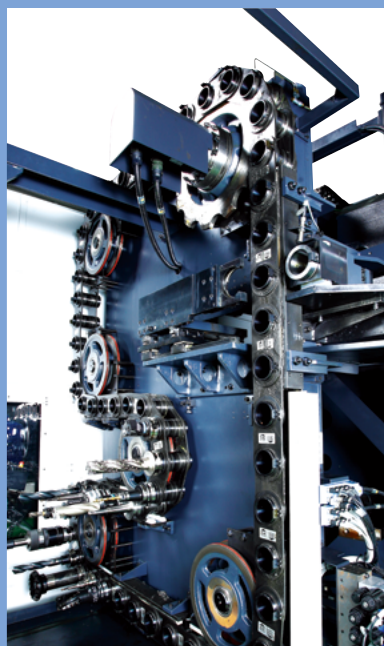
The servo type magazine improves productivity and reliability.

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.

● Standard ○ Optional X Not applicable

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)		○	○

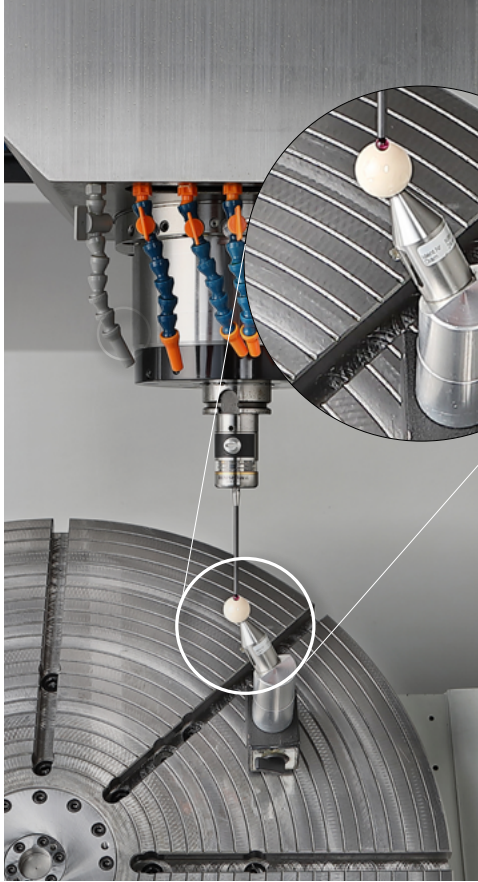
Please contact your **DN Solutions** representative for detailed machine information.

 **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

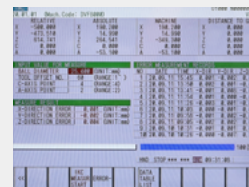
Intelligent kinematic compensation for 5-axis machining Recommended Option

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



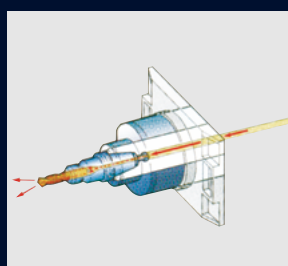
PROGRAMMABLE TSC



SHOWER COOLANT



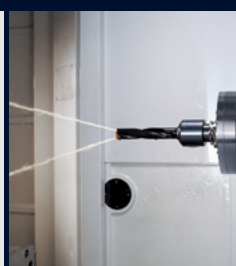
COOLANT GUN option



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



PROGRAMMABLE SHOWER COOLANT
30000 R/MIN STANDARD



FANUC 31i/32i PLUS

Fanuc 31i/32i 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/32i 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	5 (X,Y,Z,A,C)
Controlled axis	Controlled axes		5 (X,Y,Z,A,C)
	Simultaneously controlled axes		5 axes
	Additional controlled axis	Add 1 Axis (5th Axis)	●
Data input/output	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)	○
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_, 1000 Blocks	●
	High smooth TCP		●
Operation Guidance Function	EZ Guide i		●
	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 MTConnect		✚
	FANUC OPC UA		✚
Others	Display unit	15" color LCD with Touch Panel	●
		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.

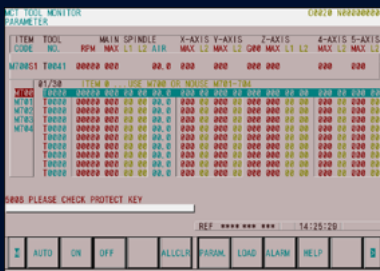
● Standard ○ Optional X Not Available ✚ Available

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



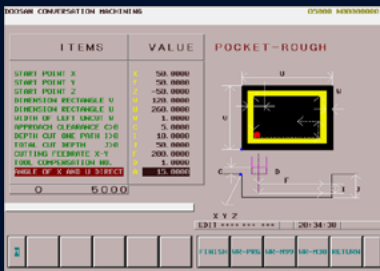
Thermal Compensation

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



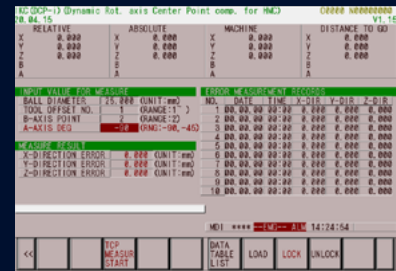
Pattern Cycle

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

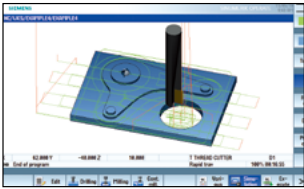
15.6" screen + new operation panel

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.

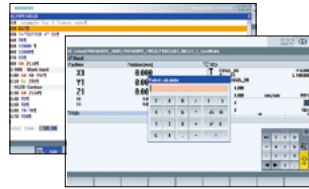
- 15.6" display
- 10MB high capacity user memory
- USB & ethernet (standard)
- QWERTY keyboard (standard)
- High-speed calculation and simulation can be fulfilled by improved processor functionality



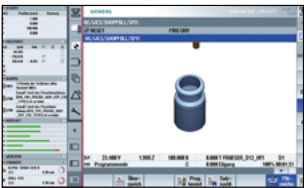
Conversational convenient function



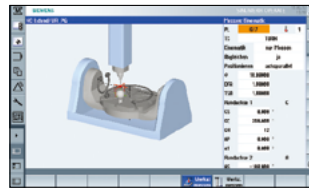
Simulation and machining contour monitoring



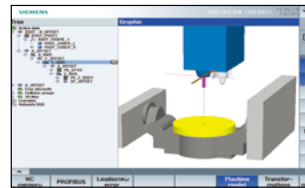
Smart function



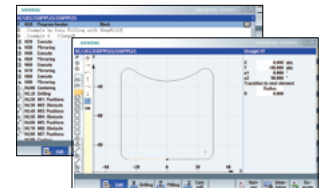
Side screen widget



5-axis kinematic measuring cycles



3D collision avoidance and collision avoidance ECO



Shop mill part programming

NUMERIC CONTROL SPECIFICATIONS

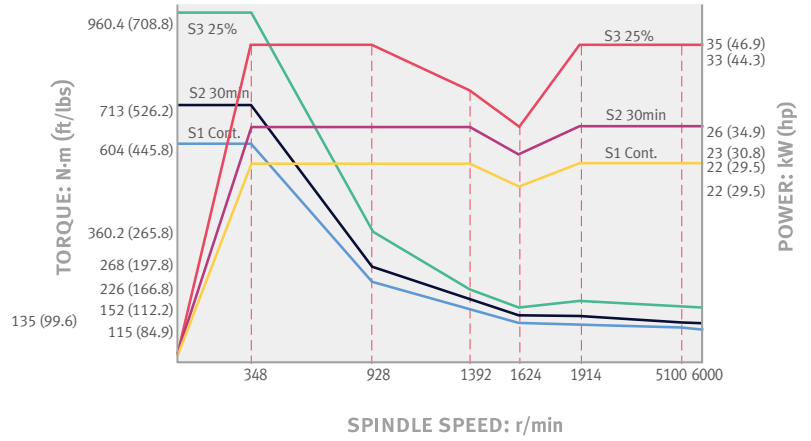
SIEMENS

	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)		○	

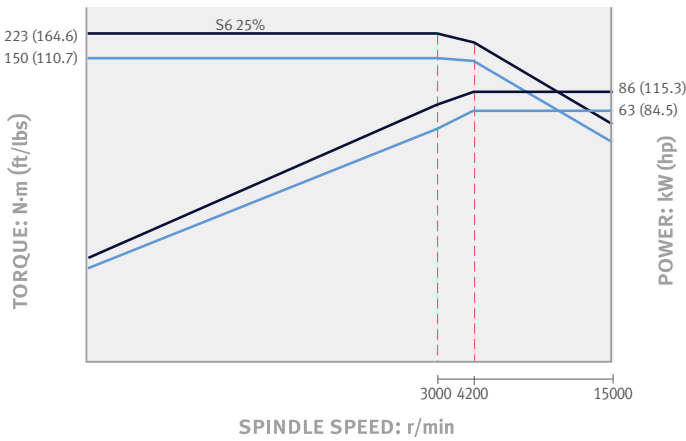
POWER | TORQUE

DHF 8000/8000ST

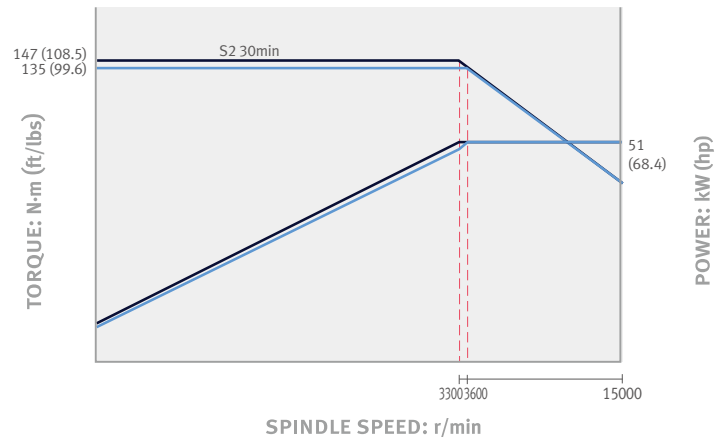
6000 r/min FANUC
 Power : 35 kW (46.9 Hp)
 Torque : 960.4 N·m (708.8 ft-lbs)



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

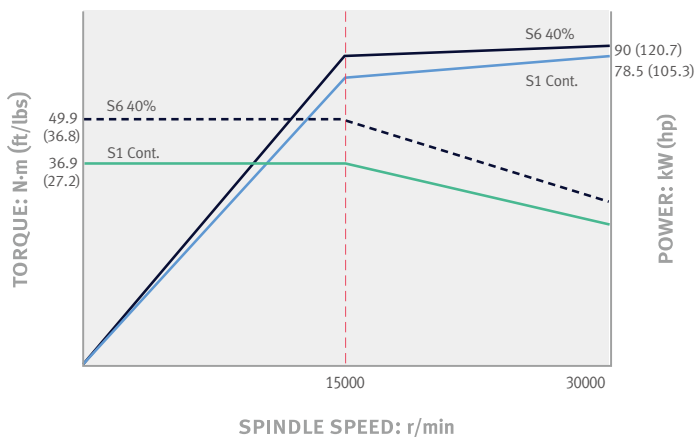


15000 r/min FANUC option
 Power : 51 kW (68.4 Hp)
 Torque : 147 N·m (108.5 ft-lbs)

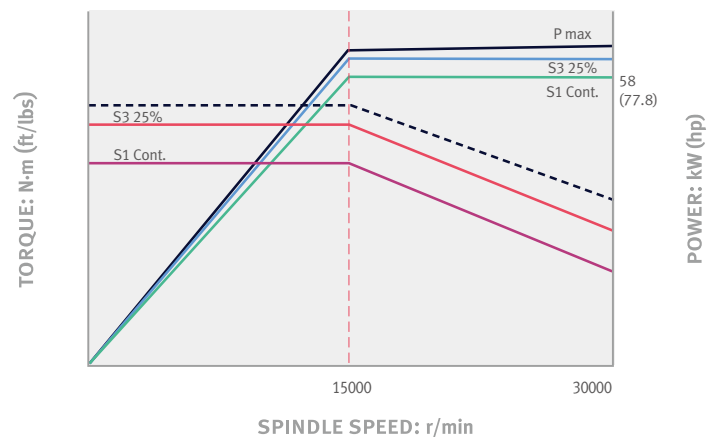


DHF8000_30000 r/min

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

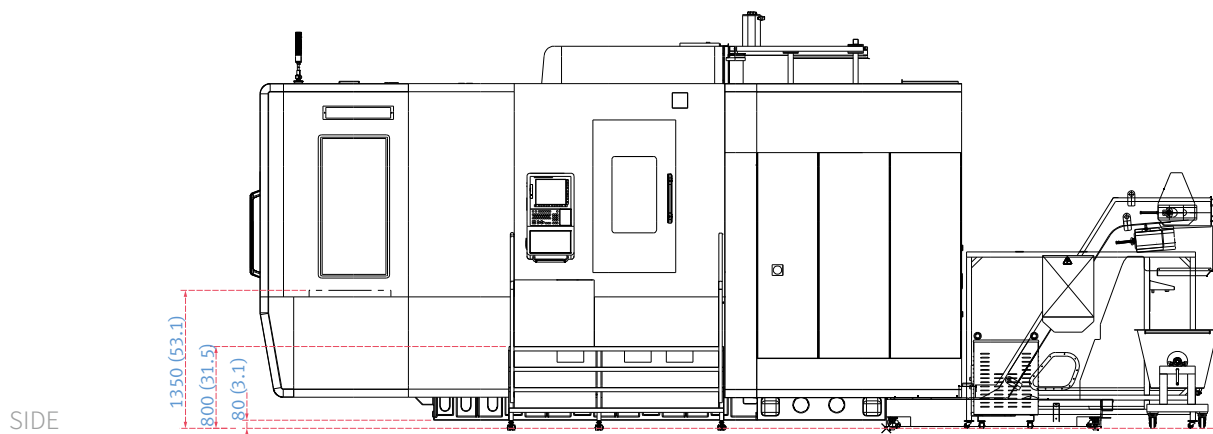
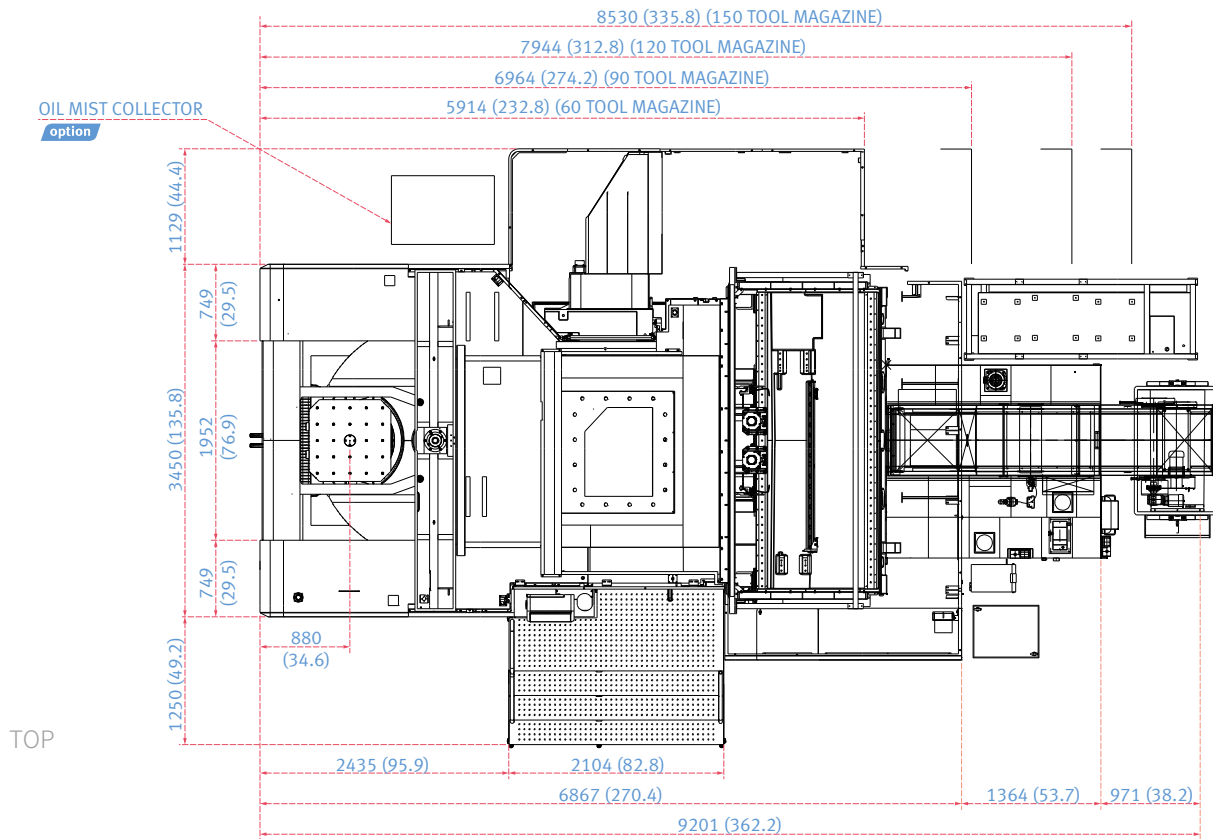


30000 r/min FANUC option
 Power : 90 kW (120.7 Hp)
 Torque : 53.4 N·m (39.4 ft-lbs)



DIMENSIONS

DHF 8000

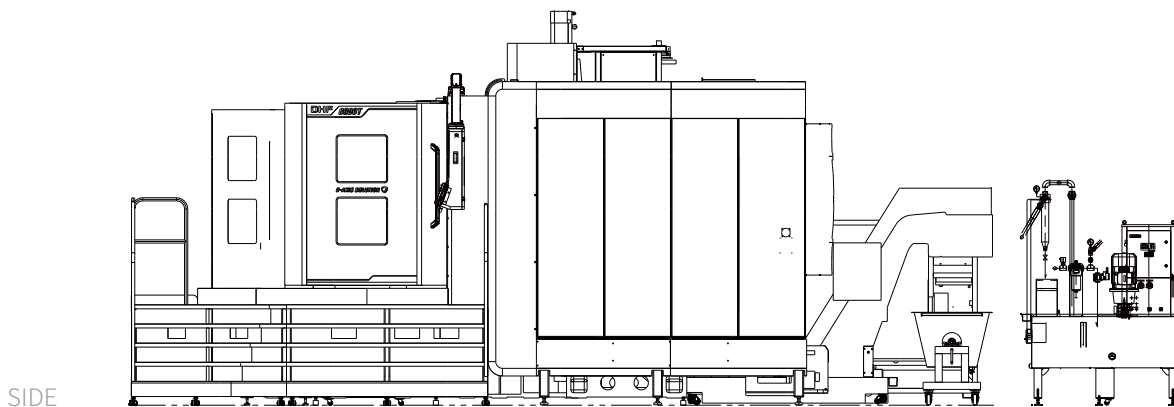
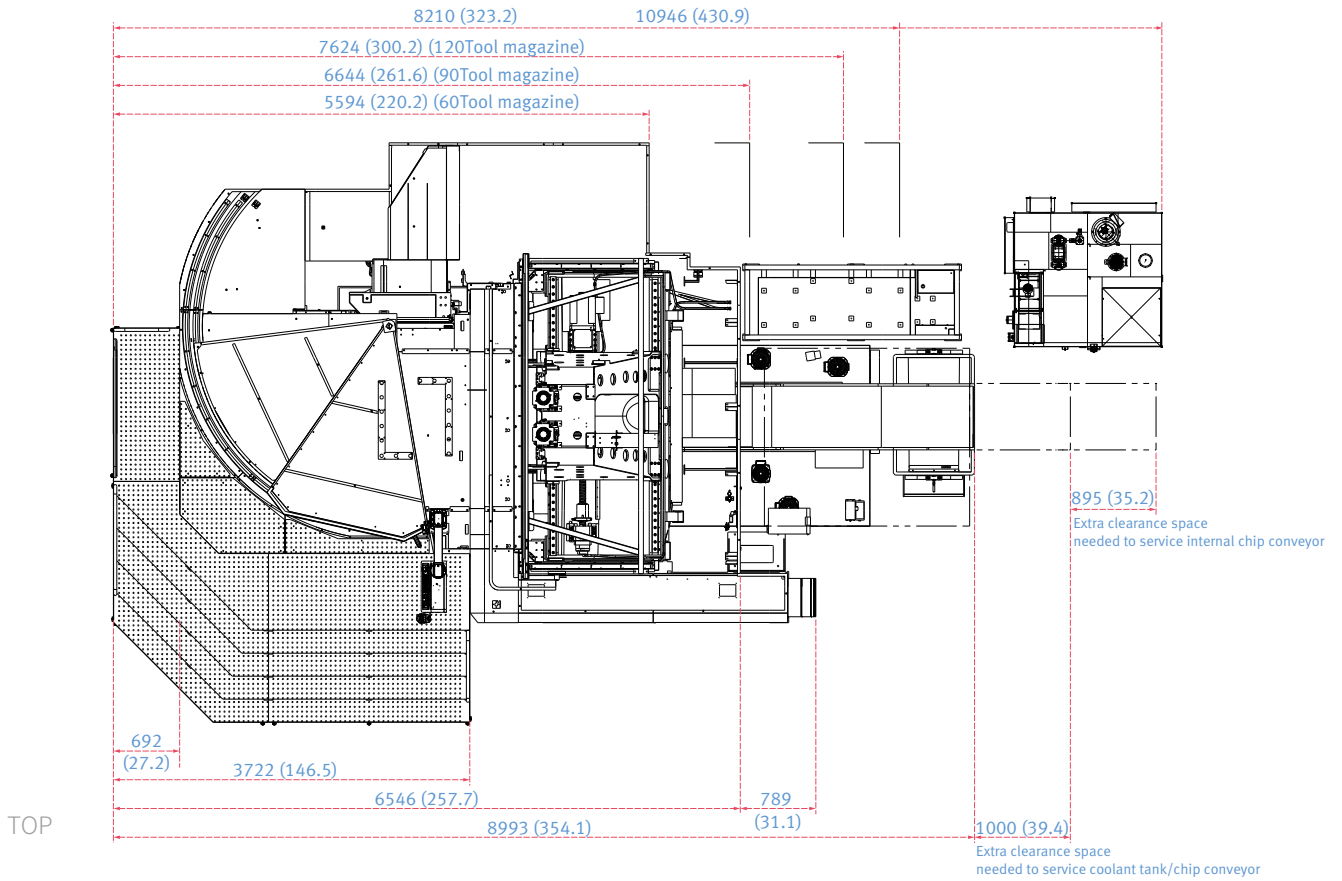


* Some peripheral equipment can be placed in other areas.

DIMENSIONS

DHF 8000ST

Units : mm (inch)

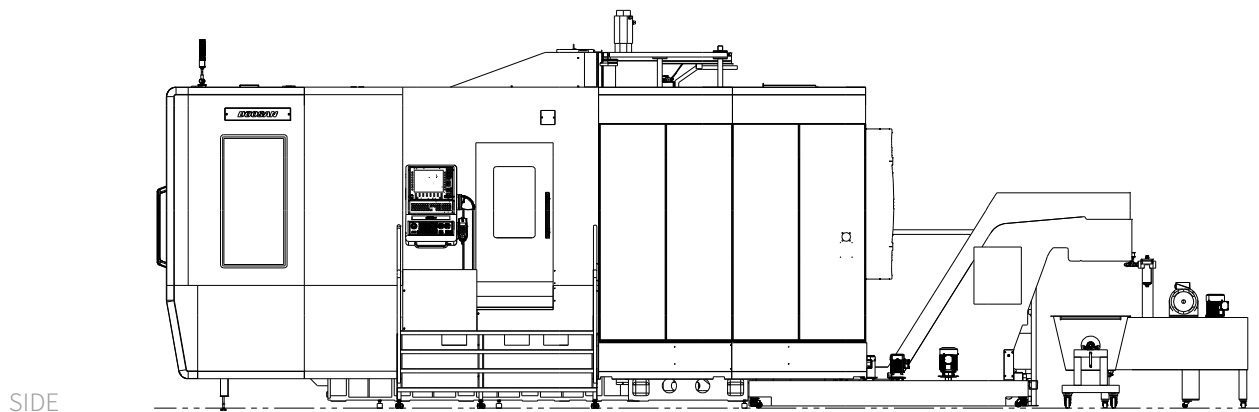
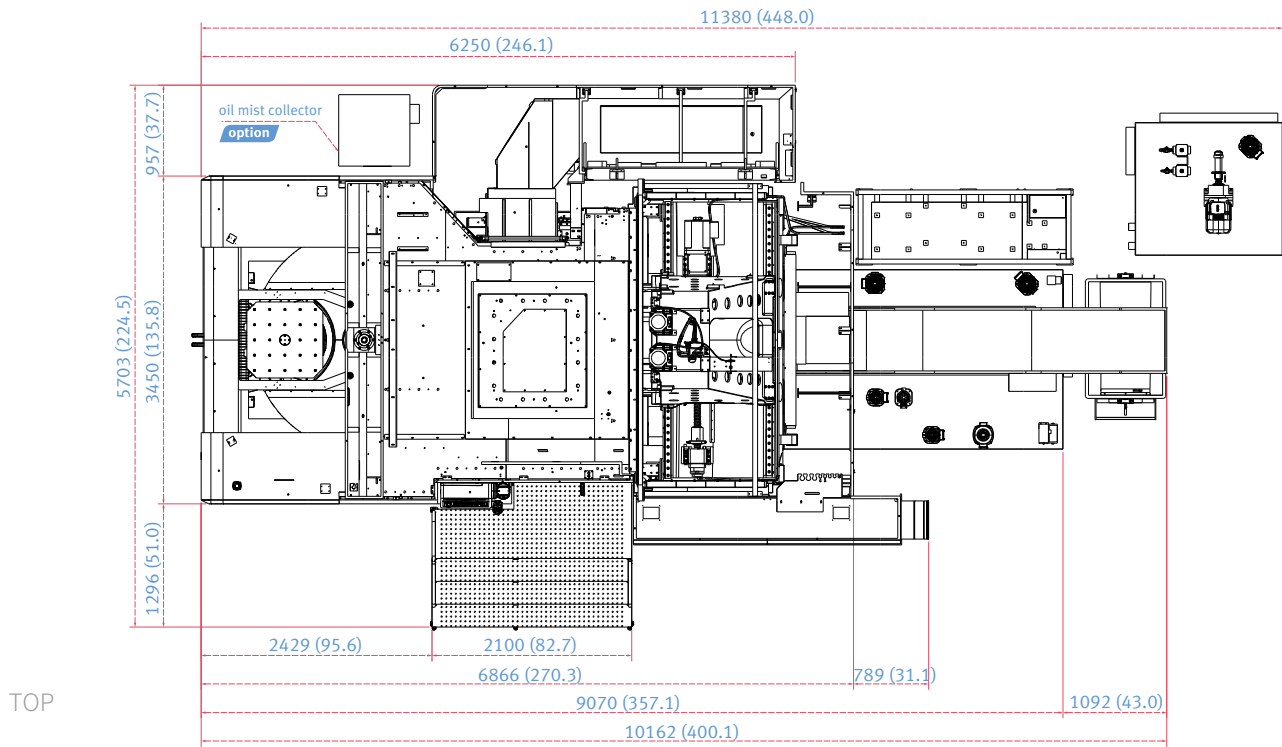


* Some peripheral equipment can be placed in other areas.

DIMENSIONS

DHF 8000 30000r/min / PSC

Units : mm (inch)



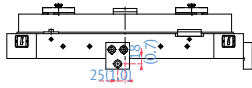
* Some peripheral equipment can be placed in other areas.

PALLET | WORKING AREA

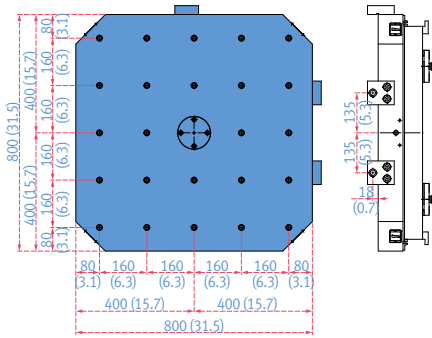
DHF 8000

Units : mm (inch)

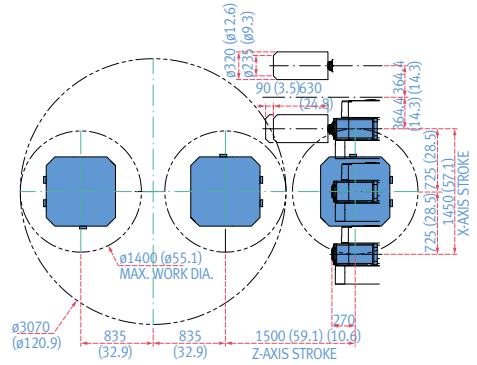
PALLET



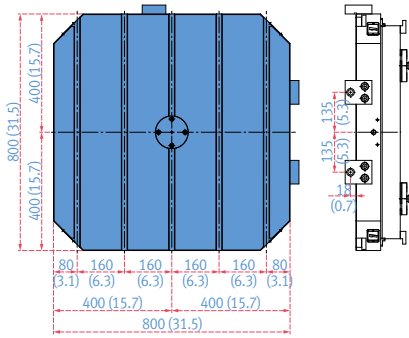
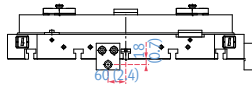
TAP



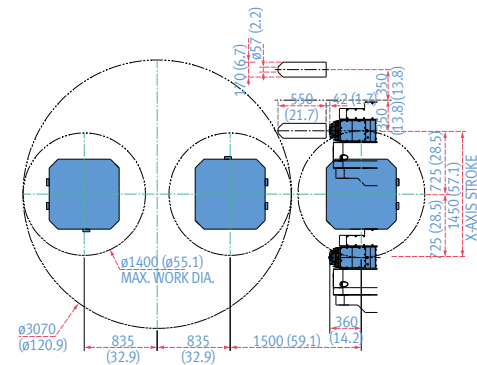
WORKING AREA



T-SLOT



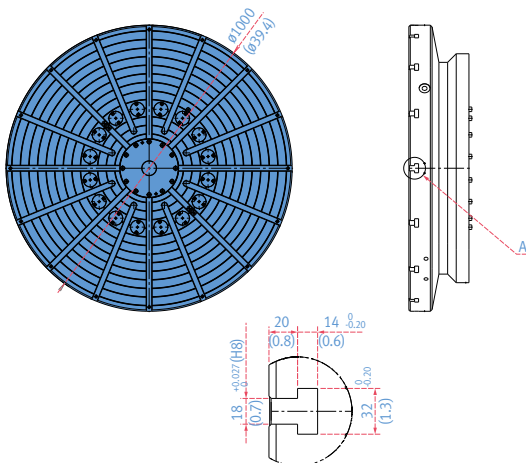
30000 r/min



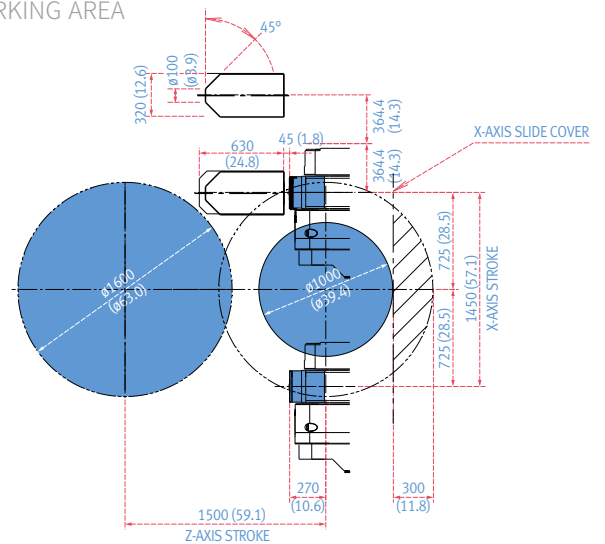
DHF 8000ST

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/32i 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

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.

UNBEATABLE MACHINES

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

ROBUST PRODUCT LINE

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

READILY AVAILABLE - ANYWHERE IN THE WORLD

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

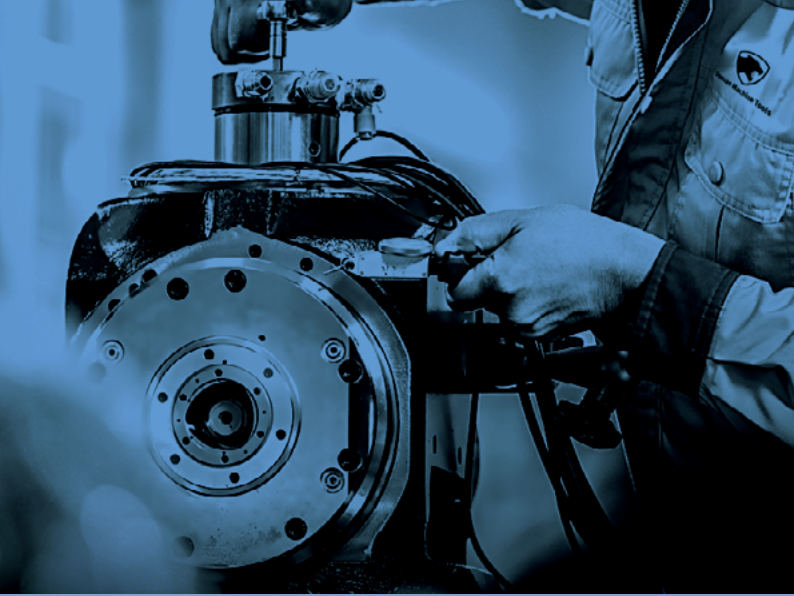
EXPERT SERVICE

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

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

4	Corporations
156	Dealer networks
51	Technical centers Technical Center, Sales Support, Service Support, Parts Support
200	Service posts
3	Factories





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* For more details, please contact DN Solutions.

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