

## SIMULTANEOUS 5-AXIS HORIZONTAL MACHINING CENTER WITH LARGE TILTING TABLE





Doosan Machine Tools

## HFP 1540

For machining large complex Aluminum aerospace parts, the HFP1540 maximizes productivity by using a high-speed universal head and a high-efficiency chip removal system. The machine's rigid structure ensures stability and accuracy over long machining runs, and its tilting table and pallet changer deliver the ultimate in productivity and flexibility.





The HFP 1540 features a high-speed universal head designed for machining large aerospace components.



### **HIGH SPEED & PRODUCTIVITY**

- High-speed universal head
  - 30000 r/min
  - 75kW (100.6 Hp)

## STABLE STRUCTURE & LARGER CAPACITY

- Integrated frame
- Table size : 4000 x 1500 mm (157.5 x 59.1 inch)

#### **CHIP DISPOSAL SOLUTION**

- Coolant Tank : 1500 liter (396.3 gallon)
- Paper filter : 30 micron
- SCRAPER TYPE CHIP CONVEYOR
  - Width : 700 mm (27.6 inch)
  - Max. Removal Capacity
  - 7000cm<sup>3</sup>/min (427.2 inch<sup>3</sup>/min)

## **BASIC STRUCTURE**

The integrated structure maximizes the machine's stability and helps deliver high geometric accuracies.

#### **Travel distance** .....

X AXIS	<b>4200</b> mm
	1600 mm
Y AXIS	63 0 inch
	550 mm
Z AXIS	<b>330</b> mm
	21.7 111011
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#### Rapid traverse rate

X AXIS	<b>60</b> m/min
	2362.2 ipm
Y AXIS	<b>40</b> m/min 1574 8 inm
Z AXIS	<b>60</b> m/min
	2362.2 ipm



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### **Table size**

4000 x 1500 mm 157.5 x 59.1 inch

#### Max. weight on table

**3000** kg 6613.8 lb





### HFP1540 operation package

- Post Processor development and inclusion Development and inclusion of a specific Post Processor to enable accurate and time-saving
- Simulation machine file
- Tolerance function

## SPINDLE

The high-speed universal head optimises performance for machining complex aerospace parts.

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## Max. spindle speed

30000 r/min

Max. spindle motor power

**75** kW 100.6 Hp

Tool shank

**HSK A63** 

A-axis tilting angle

+105~-105

### Magazine

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Servo tool magazine for high productivity and reliability

Servo magazine

60 ea 90 / 120 ea option

Drum chip conveyor

High-speed conveyor maximizes chip removal

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Chip conveyor width

**700** mm 27.6 inch

Max. removal capacity

**7000** cm<sup>3</sup>/min 427.2 inch

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## **STANDARD & OPTIONAL SPECIFICATIONS**

A range of options is available to suit individual requirements.

Description	Features		HFP 1540
	HSK-A63 SPINDLE 30K		•
Spindle	Through spindle coolant ready		•
Table	1500 x 4000 mm (59.1 x 157.5 inch)		٠
175.0	Tool magazine capacity	60 Pots	•
ATC & magazine		90 / 120 Pots	0
NC	SIEMENS 840D + 19" SCREEN		•
F	Scale feedback system	Scale feedback system	
reed	B/S SHAFT COOLING		•
	Flood coolant		٠
	Through spindle coolant	70 Bar	•
Coolant	Oil mist collector		0
	Coolant chiller		•
	Coolant level switch : Sensing level - Low / High		٠
	MPG DISPLAY TYPE		•
Electric & sofeware	Thermal compensation		•
	IKC (Intelligent kinematic compensation)	S/W+RECEIVER	•
	Tool measuring system	NC4	0
Measuring system	Work measuring system	RMP 60	•
		RMP 600	0
	Paper filter		•
Chop disposal	Air blow		•
	Shower coolant		•
	APC		0
ETC	Vacuum supply system		•
	Leveling block & anchoring bolts		•
	Spindle monitoring system (15 inch)		0
	HFP operation package		0

\* Please contact DOOSAN to find put more about specifications and options

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.

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<sup>•</sup> Standard • Optional x Not applicable

# PERIPHERAL EQUIPMENT

#### Table vacuum system for workpieces



### Chip removal system



Coolant shower above spindle head



Coolant Gun



Coolant flushing at base of X axis chip cover

### **Detachable chip conveyor**



• The chip conveyor can be separated into 3 discrete pieces as shown above.

• When cleaning the chip conveyor, it is possible to use the vacuum to remove coolant after dismantling section # (1) and opening the top cover.

## CONVENIENT OPERATION **SIEMENS 840D**

#### 19" 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.

- 10MB high capacity user memory
- USB & ethernet (standard)
- QWERTY keyboard (standard) • High-speed calculation and simulation can be fulfilled by

#### **Conversational convenient function**



Simulation and machining contour monitoring



5-axis kinematic measuring cycles







3D collision avoidance and collision avoidance ECO





Shop mill part programming

## NUMERIC CONTROL SPECIFICATIONS

	Item		S840Dsl	
		Specifications	HFP 1540	
Controlled and	Controlled axes	5 axes	•	
Controlled axis	Simultaneously controlled axes	5 axes	•	
Data innut (autnut	Memory card input/output	(Local drive)		
Data input/output	USB memory input/output		•	
Interface function	Ethernet	(X130)	•	
Onematica	On network drive	(without EES option, Extcall)	•	
Operation	On USB storage medium, e.g. memory stick	(without EES option, Extcall)	•	
Des man la sut	Workpiece coordinate system	G54 - G57	•	
Program input	Addition of workpiece coordinate system	G505 - G599	•	
	Advanced surface		0	
Interpolation & feed function	Top surface		•	
	Look ahead number of block	S/W version 4.8	1000	
	3D simulation, finished part		•	
	Simultaneous recording		•	
Programming & eating function	Measure kinematics		•	
	DXF Reader for PC integrated in SINUMERIK Operate		0	
	ShopMill		•	
Operation guidance function	EZ Work		•	
Setting and display	Operation via a VNC viewer		•	
Matural	MTConnect		0	
Network	OPCUA		0	
	15.6" color display with touch screen		Х	
Etc. function	19" color display without touch screen			
	21.5" color display with touch screen		0	
	CNC user memory	10 MB		
	Expansion by increments	2 ~ 12 MB	0	
	Collision avoidance		•	
	Collision avoidance ECO (machine, working area)		Х	

**SIEMENS** 





SPINDLE SPEED: r/min

75 (100.6)



SIDE



TOP





\* Please comply with our company's installation guideline, such as ground condition and anchoring, in order to achieve the maximum precision and performance of the machine.

Units : mm (inch)

## DIMENSIONS

TABLE

Units : mm (inch)



MAX. CUTTING AREA

TOOL INTERFERENCE DIAGRAM



#### **INTERFERENCE AREA (A-AXIS 90DEGREE)**



#### **INTERFERENCE (A-AXIS ODEGREE)**



# MACHINE SPECIFICATIONS

Description			Unit	HFP 1540
Travels	Travel distance	X axis	mm (inch)	4200 (165.4)
		Y axis	mm (inch)	1600 (63.0)
		Z axis	mm (inch)	550 (21.7)
	Distance from spindle nose to table surface		mm (inch)	50 ~ 600 (2.0 ~ 23.6)
	Table size		mm (inch)	4000 x 1500 (157.5 x 59.1)
Table	TAP SIZE x PITCH		mm (inch)	M16 x 200 (M0.6 x 7.9)
	Table loading capacity		kg (lb)	3000 (6613.8)
	Max. spindle speed		r/min	30000
	Max. Spindle power		kW (Hp)	75 (100.6)
Spindle	Max. spindle torque		N∙m (ft-lbs)	48 (35.4)
	A-axis angle		deg	± 105
	C-axis angle		deg	± 360
	Rapid traverse rate	X axis	m/min (ipm)	60 (2362.2)
Feedrates		Y axis	m/min (ipm)	40 (1574.8)
		Z axis	m/min (ipm)	60 (2362.2)
	Type of tool shank	Tool shank	-	HSK-A63
	Tool storage capa.		ea	60 {90, 120}
Automatic tool changer	Max. tool diameter	Continous	mm (inch)	80 (3.1)
	Max. tool length		mm (inch)	300 (11.8)
	Max. tool weight		kg (lb)	4.5 (9.9)
	Tool change time (Tool-to-tool)		sec	6
Machine dimensions	Height		mm (inch)	4205 (165.6)
	Length		mm (inch)	8000 (315.0)
	Width		mm (inch)	18135 (714.0)
	Weight		kg (lb)	74200 (163580.6)
Contrel	NC system			SIEMENS S840D

## 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

Doosan 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, Doosan has the same level of precision and quality at a better value for money."

– OMGM Group, Italy

"Our Doosan 5-axis is making complex, high precision parts for aerospace and defense. Cycle times have been reduced dramatically."

- Aerotech Precision Manufacturing, Great Britain

## WHY DOOSAN?

The Doosan promise, MACHINE GREATNESS, has two important meanings. The first is simple: Doosan 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 Doosan over other options?* 

Here's why ...





**Doosan Machine Tools** 

### WHAT YOU MAKE AND HOW YOU MAKE IT MATTERS—SO MAKE IT GREAT WITH DOOSAN.

#### **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 Doosan 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

### **Doosan Machine Tools' Global Network**

Doosan Machine Tools 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	51	<b>Technical centers</b> Technical center, Sales support, Service support, Parts support
4	Corporations	200	Service posts
167	Dealer networks	3	Factories



## CUSTOMER SUPPORT AND SERVICES

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

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



### Field services

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



### Training

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



### Parts supply

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

### **Technical support**

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

## **Doosan Machine Tools**





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