DOOSAN

DVF 5000

Compact, Simultaneous
5-Axis Machine for
High-Speed Multitasking
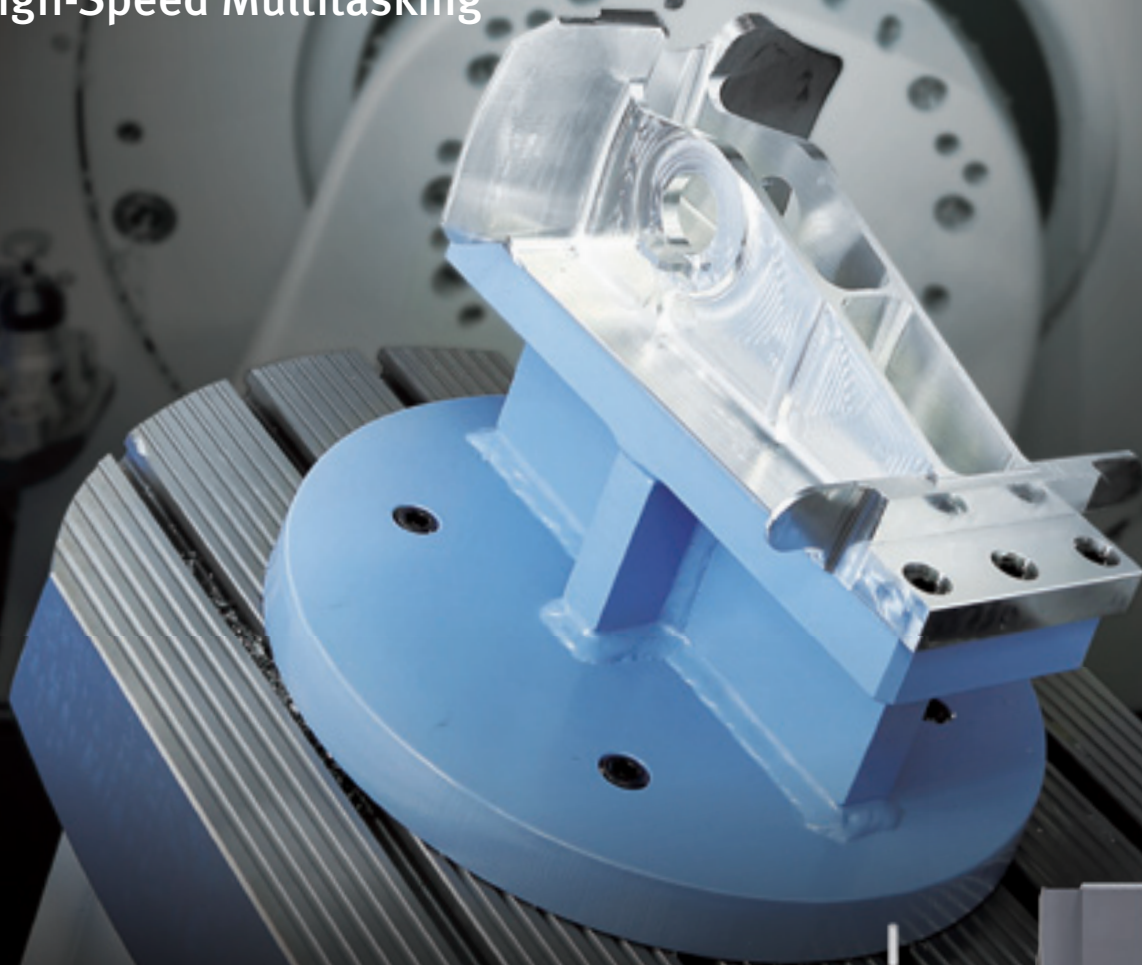
MACHINE
GREATNESS™

DVF 5000

The new Doosan DVF 5000 5 axis machining center provides world class productivity and reliability for simultaneous 5 axis machining operations. It's stable structure and compact footprint is ideal for production of small to medium size workpieces with complex shapes. The DVF5000 also includes an eco-friendly all-grease lubrication system.

Contents

High productivity & speed Simultaneous 5-Axis Machine

- 12000 / 18000 r/min high speed spindle
- Ø500 mm (19.7 inch) 2-axis tilting table
  (option : Ø630mm (Ø24.8 inch))
  - Max. workpiece weight 400kg (881.8 lb)

User friendly machine

- Compact footprint
- Grease lubrication system
- Easy operator access to machine
- Compact automation system (AWC)

High precision function

- Spindle & Structure Thermal Compensation
- Spindle Cooling Standard
  (Option : ballscrew shaft cooling system)

Machine configuration

Provides high rigidity
and easy operator
access.

Travel distance

X axis **625** mm
(24.6 inch)

Y axis **450** mm
(17.7 inch)

Z axis **400** mm
(15.7 inch)

Rapid traverse

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

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

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

Z-axis Y-axis

X-axis

C -axis : ±360

B -axis
-30 ~ + 110

Spindle

We provide stable
machining performance
with high speed direct
and built-in spindle.

Fanuc

12000 r/min
18.5 kW /**118** N·m
(24.8 Hp / 87.1 ft-lbs)

18000 r/min *option*
22 kW /**118** N·m *option*
(29.5 Hp / 87.1 ft-lbs)

HEIDENHAIN

12000 r/min
17 kW /**109** N·m
(22.8 Hp / 80.4 ft-lbs)

18000 r/min *option*
30 kW/**155** N·m *option*
(40.2 Hp / 114.4 ft-lbs)
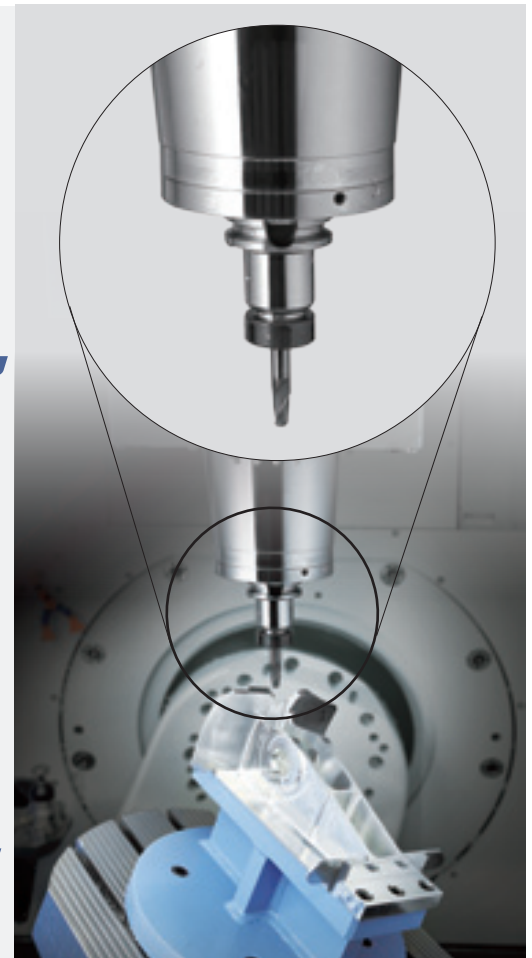
Tool Magazine

Servo tool magazine as standard for high productivity and reliability.

Servo Magazine

30 ea

(40/60/90/120 ea) _option_

Tool to Tool

1.3 sec

Table

Provides stable machining performance with a wide machining area and trunnion support option.

Table size

ø 500 x 450 mm
(ø 19.7 x 17.7 inch)

ø 630 x 450 mm _option_
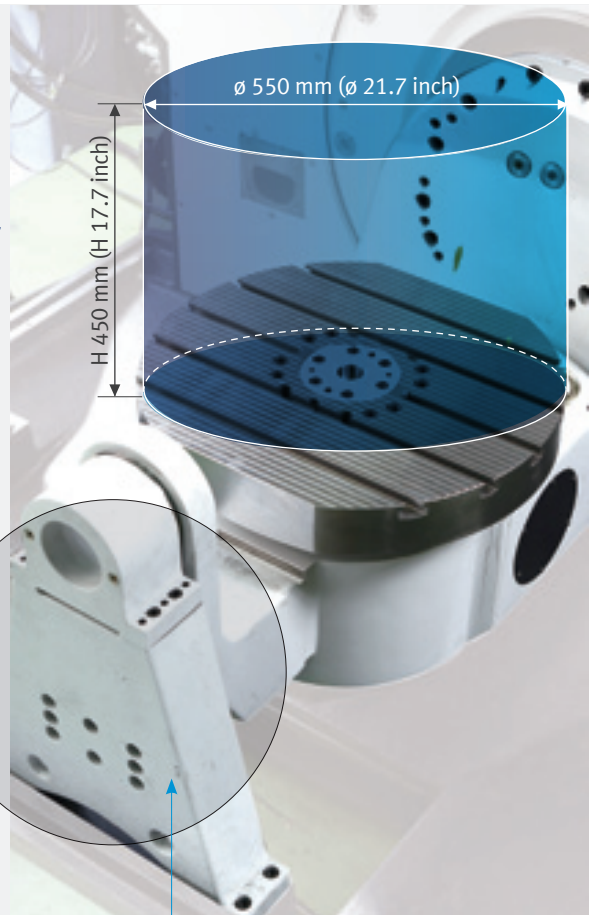**(ø 24.8 x 17.7 inch)**

Max. workpiece size

ø 550 x h 450 mm
(ø 21.7 x 17.7 inch)

Max. Work load

400 kg
(881.8 lb)

(with trunnion support)

ø 550 mm (ø 21.7 inch)

H 450 mm (H 17.7 inch)

Trunnion support

Product Preview

Basic information

Basic Structure
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Options
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AWC

Optimized solution
with compact
automation.
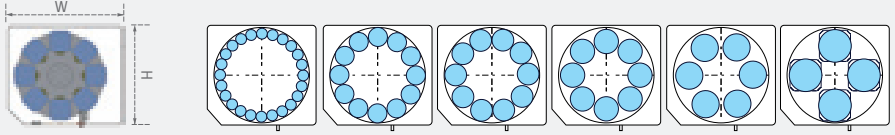
Max. workpiece dimensions	Unit	Count	Max. loading	Max. construction height on the pallet
150 x 150 (5.9x5.9) or ø 180 (7.1)	mm (inch)	24	40kg (88.2lb)	
250 x 250 (9.8x9.8) or ø 300 (11.8)	mm (inch)	12	130kg (286.6lb)	
320 x 320 (12.6x12.6) or ø 360 (14.2)	mm (inch)	10		350mm (13.8inch)
350 x 350 (13.8x13.8) or ø 400 (15.7)	mm (inch)	8	250kg (551.1lb)	
400 x 400 (15.7x15.7) or ø 450 (17.7)	mm (inch)	6		
500 x 500 (19.7x19.7) or ø 550 (21.7)	mm (inch)	4		

350 mm (13.8 inch)

550 mm (21.7 inch)

w/ Pallet
250 kg (551.1 lb)

W X H = 1,900 X 1,700 (74.8 X 66.9)
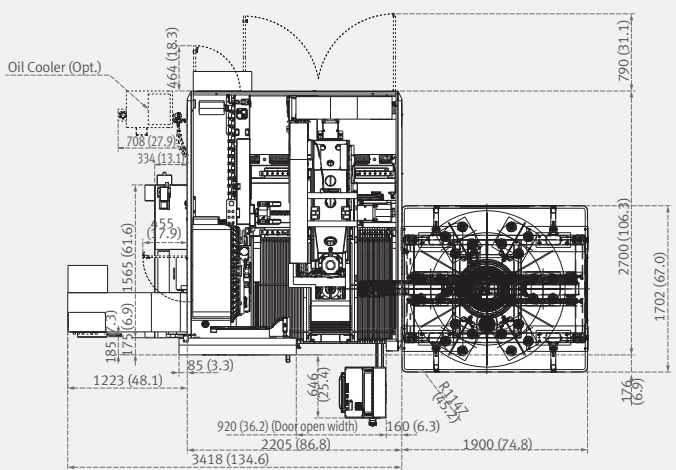
| 150 X 150 (5.9 X 5.9) | 250 X 250 (9.8 X 9.8) | 320 X 320 (12.6 X 12.6) | 350 X 350 (13.8 X 13.8) | 400 X 400 (15.7 X 15.7) | 500 X 500 (19.7 X 19.7) |

External Dimensions

Unit: mm (inch)
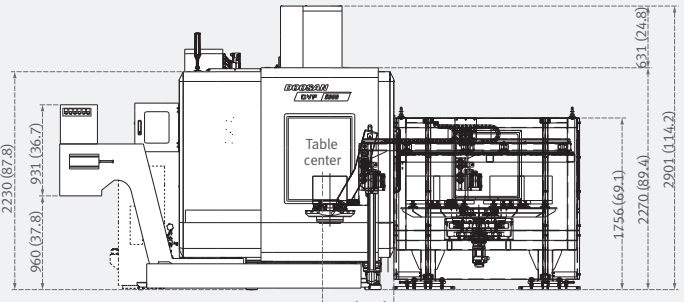
Top View

Oil Cooler (Opt.)

464 (18.3)
790 (31.1)
708 (27.9)
334 (13.1)
455 (17.9)
1565 (61.6)
2700 (106.3)
1702 (67.0)
185 (7.3)
175 (6.9)
176 (6.9)
1223 (48.1)
85 (3.3)
646 (25.4)
R1147
920 (36.2) (Door open width)
160 (6.3)
2205 (86.8)
1900 (74.8)
3418 (134.6)

Front View

631 (24.8)
2230 (87.8)
931 (36.7)
Table center
2270 (89.4)
2901 (114.2)
1756 (69.1)
960 (37.8)
730 (28.7)
(1:20 rate)

Cutting Performance

From high speed machining to heavy duty cutting, diverse machining operations are possible for a wide variety of complex workpiece shapes.

Machining Performance

Max. chip throughput

Item	Material (SM45C)	Condition
Machining removal rate	599 cm³/min (36.6 inch³/min)	Ø80mm (3.15 in.) Face Mill (6Z)
feedrate	4680 mm/min (184.3 ipm)	
depth of cut	2 mm (0.1 inch)	

Item	Material (AL6061)	Condition
Machining removal rate	1814 cm³/min (110.7 inch³/min)	Ø80mm (3.15 in.) Face Mill (6Z)
feedrate	9450 mm/min (372.0 ipm)	
depth of cut	3 mm (0.1 inch)	

* The results, indicated in this catalogue are provides as example. They may not be obtained due to differences in cutting conditions and environmental conditions during measurement.

Machining Examples

Item	Door Handle (Aerospace)
Material	Aluminum
Cycle time	3 hour 30 min
Tool	Ø12 (0.5) x R2 Endmill
Spindle speed	8000 r/min
Feed rate	1800 mm/min (70.9 ipm)

Ball Bar Measurement Test

Higher roundness accuracy is realized by the advanced design of machine structure and Doosan control system.

X-Y Plane

Roundness

3.8 μm

Feedrate

4000mm/min

(157.5 ipm)

+Y

+X

Product Preview

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Standard / Optional Specifications
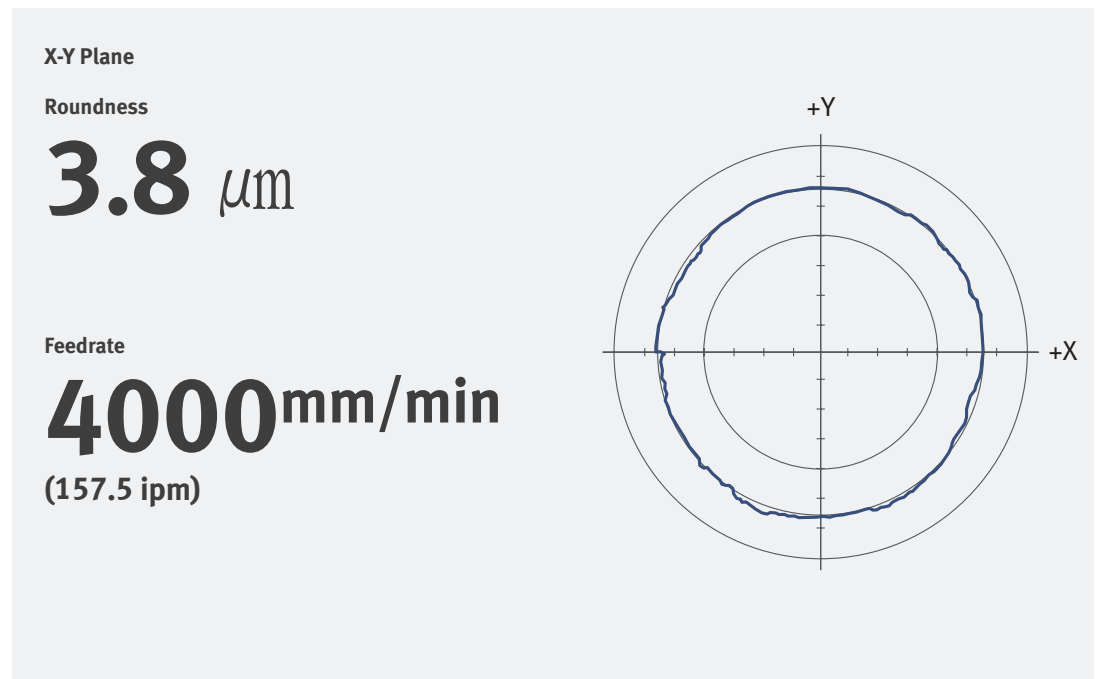
Various optional features are available to satisfy customers' specific machining applications.

● Standard ○ Optional X Not applicable

NO.	Description	Features		DVF 5000
1	Spindle	12000 r/min		●
2		18000 r/min		○
3	Magazin	Tool storage capacity	30ea	●
4			40 / 60 / 90 / 120ea	○
5	Tool shank type	BIG PLUS BT40		●
6		CAT40 / DIN / HSK A63		○
7	Coolant	FLOOD	1.1 KW_0.7 MPA_30 L/MIN	●
8		TSC	None	●
9			1.5 KW_2.0 MPA_BUILT-IN FILTER	○
10			2.2 KW_3.0 MPA_BUILT-IN FILTER	○
11			3.7 KW_7.0 MPA_BUILT-IN FILTER	○
12		OIL SKIMMER	None	●
13			BELT TYPE	○
14		Coolant level switch : Sensing level - Low / High**		
15	Chip disposal	Chip conveyor	CHIP PAN	●
16			HINGED BELT_LEFT SIDE	○
17		Chip bucket	Folklift type	○
18			Rotation type	○
19		Air gun		○
20		Coolant gun		○
21	Precision machining options	Linear scale	X / Y / Z axis	○
22	Measurement & Automation	IKC READY	S/W ONLY	●
23			RENISHAW (RMI-Q) + S/W	○
24			HEIDENHAIN (SE660) + S/W	○
25			BLUM (RC66) + S/W	○
26		DATUM BALL FOR IKC	NONE	●
27			DATUM BALL_D25	○
28		TOUCH PROBE FOR IKC	NONE	●
29			RMP60_RENISHAW	○
30			TS460_HEIDENHAIN	○
31			TC60_BLUM	○
32		Automatic tool measurement	NONE	●
33			TS27R_RENISHAW	●
34			RTS_RENISHAW	○
35			NC4_RENISHAW	○
36			TT160_HEIDENHAIN	○
37			ZX SPEED_BLUM	○
38		MASTER TOOL	NONE	●
39			MASTER TOOL	○
40	Others	LED Work light		●
41		3 Color signal tower		●
42		Tool load monitoring		●
43		EZ Guide i		○
44		Automatic power off		●
45	Customized special option	Front _ Auto door (w/safty edge)	-	○
46		Right side _ Auto door (w/safty edge)	-	○
47		Roof_ Auto door	-	○
48		15K Directed connected spindle	BT / CAT / DIN / HSK	○
49		Automatic workpiece changer	4 / 6 / 8 / 10 / 12 / 24	○
50		Rotary joint for table	Fixture line thru rotary table center (Max.HYD 4port & PNE 2port)	○
51		Paper filter with TSC	20 / 30 / 70 BAR	○
52		IKC(Intelligent Kinematic Compensation)	DCP-i	○
53			Kinematic OPT.	○

✳ Please contact DOOSAN to select detail specifications. ✳✳ Special Quotation.

Peripheral Equipment

Tool length measuring

Maximum workpiece limit

Automatic tool breakage detection (Touch type)

Ø550 x 240 mm (21.7 x 9.4 inch)

Automatic tool breakage detection (Laser type / Rotating touch type)

Ø550 x 450 mm (21.7 x 17.7 inch)

Limited use of Max workpiece
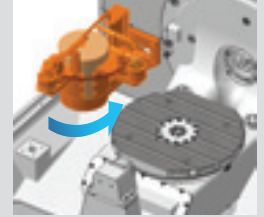
Renishaw(TS27R)

Heidenhain (TT160)

Blum (ZX Speed)

Non Limited use of Max workpiece

Renishaw(NC4S)

✳ When using Tool Length Measurement, contact Doosan for detailed capacity diagram

Intelligent Kinematic Compensation for 5-axis

For high accuracy 5 axis machining, Intelligent Kinematic Compensation function is recommended. This function minimizes error in complex 5 axis machining applications by maintaining the tool point in the correct position relative to the workpiece. In order to use this function, the following optional items are required.

Recommended optional items

1. Software

FANUC NC: DCP-i (Developed by DOOSAN)

Heidenhain NC: Kinematic opt

2. Receiver
Recommended Option

3. Touch Probe
Recommended Option

4. Datum ball
Recommended Option
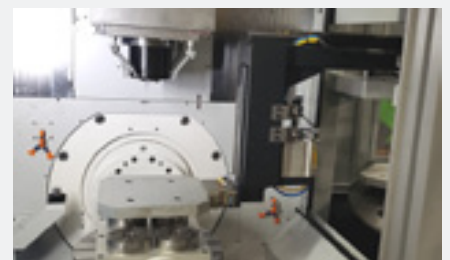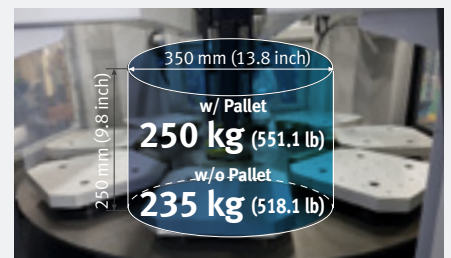
5. Automatic Tool Measurement

6. Master Tool
Recommended Option

AWC system option

The optimized solution to realize compact automation system through automatic work-piece change system.

350 mm (13.8 inch)
250 mm (9.8 inch)

w/ Pallet
250 kg (551.1 lb)

w/o Pallet
235 kg (518.1 lb)

DOOSAN Fanuc i Plus

DOOSAN Fanuc i Plus is optimized for maximizing customer productivity and convenience.

15 inch screen + New OP

DOOSAN Fanuc i Plus' operation panel enhances operating convenience by incorporating common-design buttons and layout, and features the Qwerty keyboard for fast and easy operation.

DOOSAN Fanuc i Plus
• 15 inch color display
   Intuitive and user-friendly design

USB & PCMCIA card QWERTY keyboard
• EZ-guide i standard
• Ergonimic operator panel
• 2MB Memory
• Hot key

iHMI Touch screen `option`

iHMI provides an intuitive interface that utilizes a touch screen for quick and easy operation and provides a variety of applications that can help machine operation.

• **PLANNING**
   Tool information such as tool offset and tool life can be checked and set, and scheduler function is provided.

• **MACHINING**
   MDI, EDIT, MEM, JOG screen can be changed by using touch function, and it is quick and easy to move to sub menu by using soft key.

• **IMPROVEMENT**
   User can set up to record data for analysis and monitor the specific signals by setting up the maintenance and inspection function. Also user can add items.

• **UTILITY**
   View and search PDF and TEXT files, create notes from text / images / drawings, and link to web pages.
   For users who are familiar with the DDOOSAN Fanuc i Plus screen, the screen can be switched.

SIEMENS 840D

SIEMENS CNC optimized for DOOSAN machine tools maximizes users' productivity.

15.6 inch screen + New OP

The newly-designed operation panel enhances operating convenience by incorporating common-design buttons and layout, and features the Qwerty keyboard for fast and easy operation.

15.6-inch display

- 10MB high capacity user memory
- USB & Ethernet (standard)
- QWERTY Keyboard (standard)
- High speed calculation and simulation can be fulfilled by improved processor skill

Conversational Convenient function

The machining monitoring function developed on the basis of the Shop Mill – an interactive machining support function of SIEMENS – provides users with cutting, servicing and maintenance screens for easy and convenient machine operation.
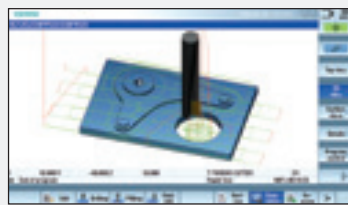
Simulation and machining contour monitoring
Simulation results with different views can be checked.
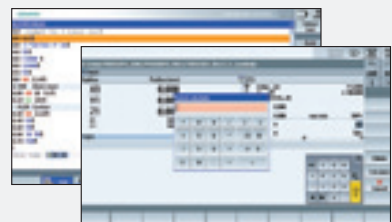
Smart function
Color highlighting is provided for each processing code function, and the calculator can be used easily by using the pocket calculator on display.

Shop Mill Part Programming
It helps to write the part program and shorten the writing time.
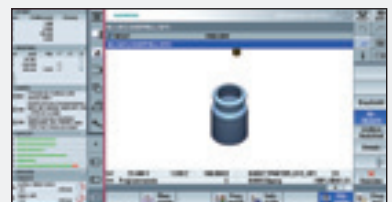
Side screen widget
Through the side widget, operator can easily monitor the current machining status.

5-axis kinematic measuring cycles
This function automatically measures and corrects the rotation axis center, increasing 5-axis machining accuracy.
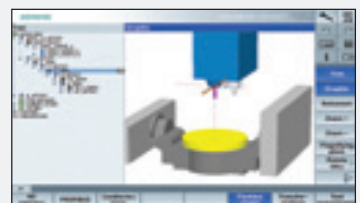
3D Collision Avoidance_Collision Avoidance ECO
Detect collisions in real time. Detection is possible in all operation modes.

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◆ **Easy Operation Package**

The software developed by Doosan's own technology provides numerous functions designed for convenient operation.

Easy Operation Package (EOP)

Setting up of tools, work pieces and programs, as well as troubleshooting for abnormal condition of main machine elements is designed to minimize waiting time, maximize operational efficiency, and enhance operator convenience.
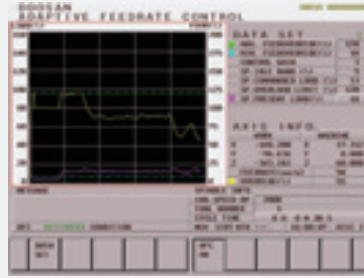
Adaptive Feed Control (AFC)

Function to control feedrate so that the cutting can be carried out at a constant load
(To adapt to the spindle load set up with constant load feedrate control function)

Tool Management

Function to manage tool information
[Tool information]
- Tool No.
- Tool condition : normal, large diameter, worn/ damaged, used for the first time, manual
- Tool name

Tool Load Monitor

Function to automatically monitor tool load
(Different loads can be set for one tool according to M700 ~ M704)

Pattern Cycle (Engraving funtion : `option`)

Function to create frequently-used cutting programs automatically
- Pattern Cycle: creates a program for a pre-defined shape
- Engraving: creates a program for cutting a shape described with characters (option)

Work Offset Setting

Function to configure various work offset settings

Alarm Guidance

Function to show detailed info on frequently triggered alarms and recommended actions

Sensor Status Monitor

Function to view sensor conditions of the machine
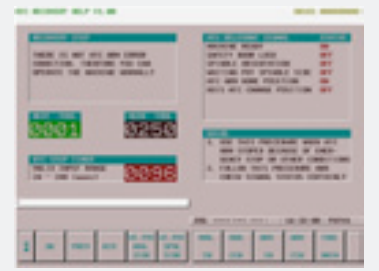
ATC Recovery

Function to view detailed info with recommended actions and to perform step-by-step operation manually (when an alarm is triggered during an ATC operation)

Power-Torque Diagram

FANUC
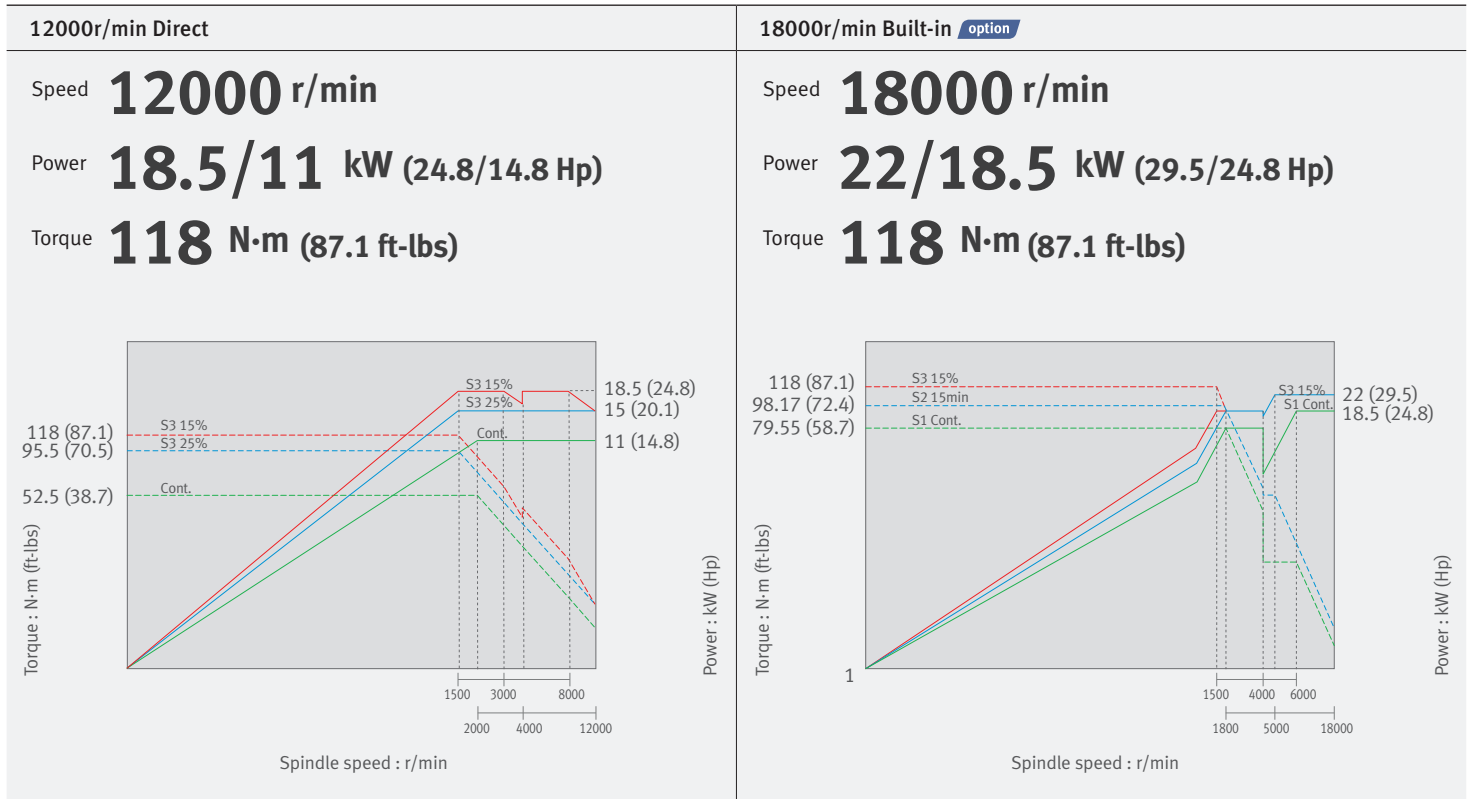
12000r/min Direct

Speed **12000** r/min

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

Torque **118** N·m (87.1 ft-lbs)

18000r/min Built-in `option`

Speed **18000** r/min

Power **22/18.5** kW (29.5/24.8 Hp)

Torque **118** N·m (87.1 ft-lbs)

HEIDENHAIN

12000r/min Direct

Speed **12000** r/min

Power **17/10** kW (22.8/13.4 Hp)

Torque **109** N·m (80.4 ft-lbs)

18000r/min Built-in `option`

Speed **18000** r/min

Power **30/24** kW (40.2/32.2 Hp)

Torque **155** N·m (114.4 ft-lbs)

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Power-Torque Diagram

SIEMENS

12000r/min Direct

Speed **12000** r/min

Power **14/9.5** kW (18.8/12.7 Hp)

Torque **79** N·m (58.3 ft-lbs)

Spindle speed : r/min
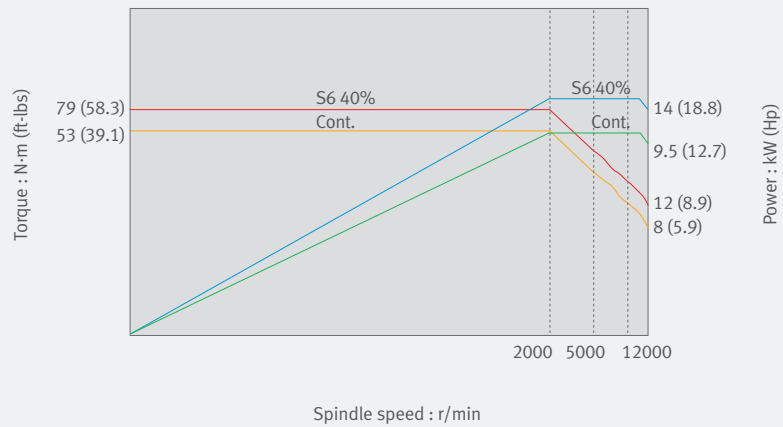
20000r/min Built-in

Speed **20000** r/min

Power **30/24** kW (40.2/32.2 Hp)

Torque **155** N·m (114.4 ft-lbs)

Spindle speed : r/min
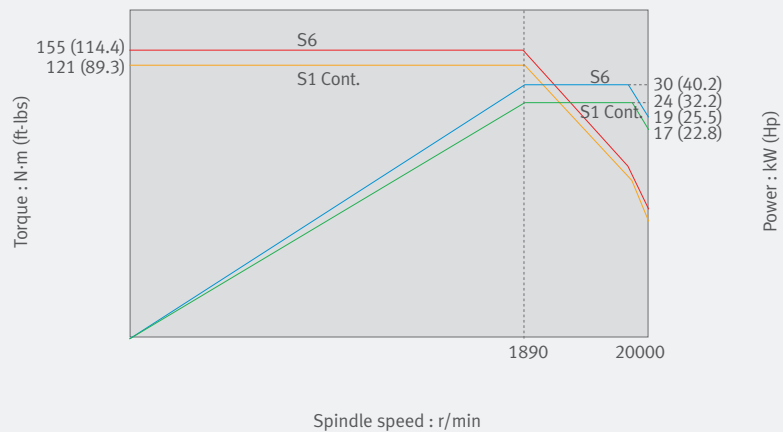
External Dimensions

DVF 5000

Top View

Oil cooler (opt.)

464 (18.3)

790 (31.1)

708 (27.9)

334 (13.1)

2700 (106.3)

1565 (61.6)

455 (17.9)

185 (7.3)
175 (6.9)

85 (3.3)

646 (25.4)

R 1147 (45.2)

1223 (48.1)

920 (36.2) (Door open width)

160 (6.3)

2205 (86.8)

3418 (134.6)

4284 (168.7)

Front View

DOOSAN
DVF 5000

Table Center

631 (24.8)

931 (36.7)

2230 (87.8)

2901 (114.2)

2270 (89.4)

960 (37.8)

1257 (49.5)

53 (2.1)

730 (28.7)
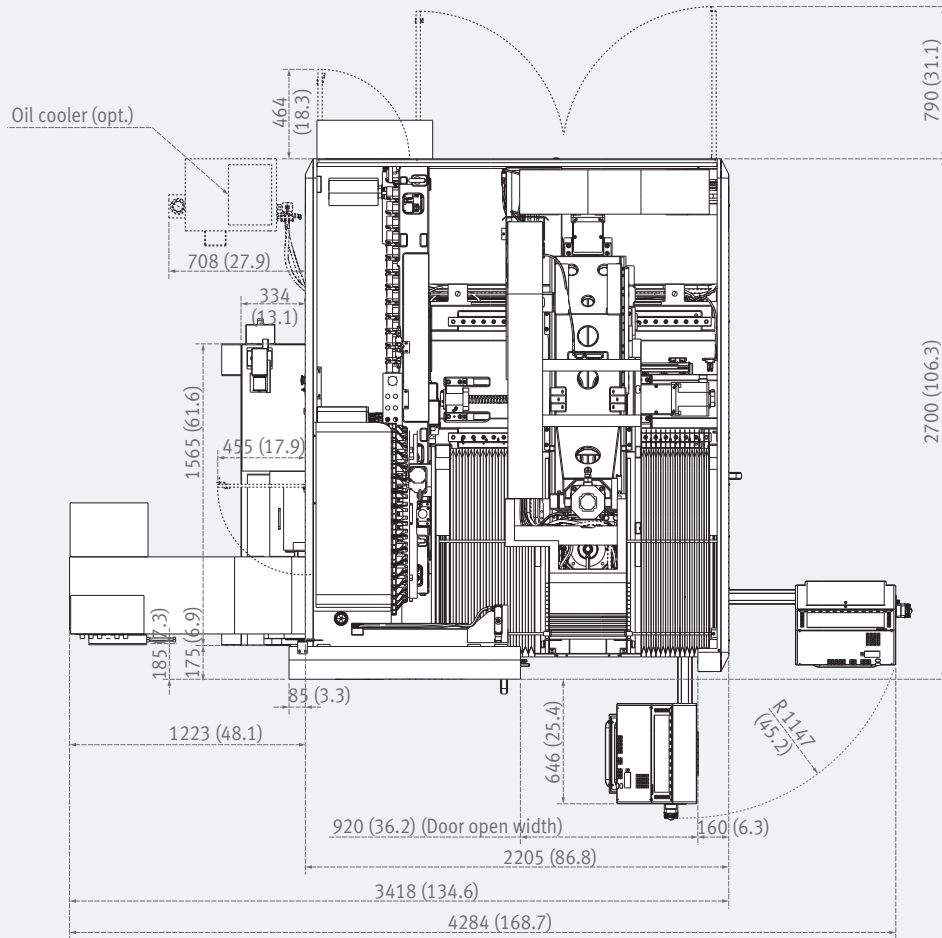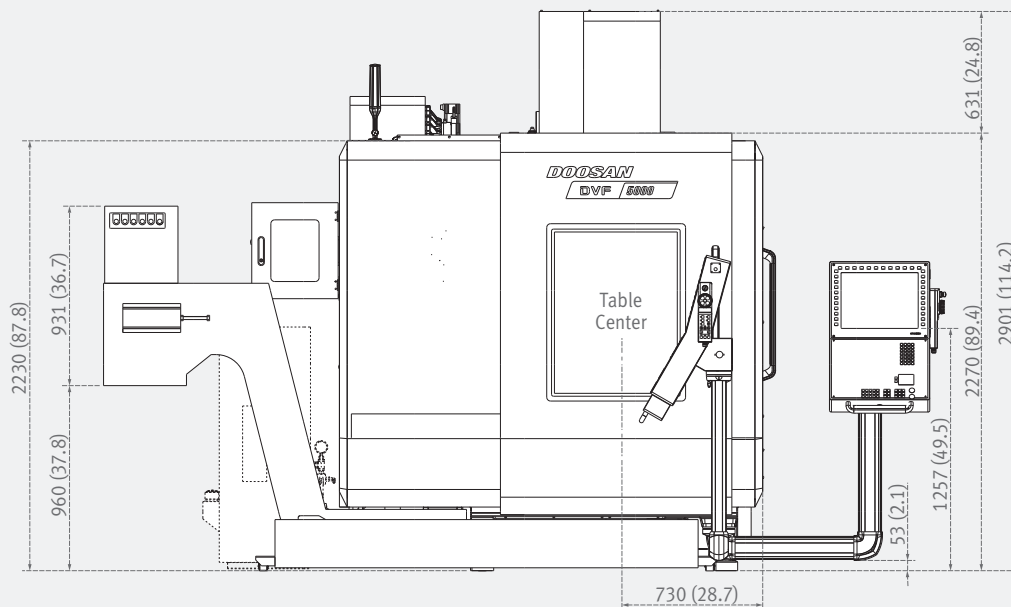
(1:20 rate)

* Some peripheral equipment can be placed in other places

Interference diagram

DVF 5000

Unit : mm (inch)
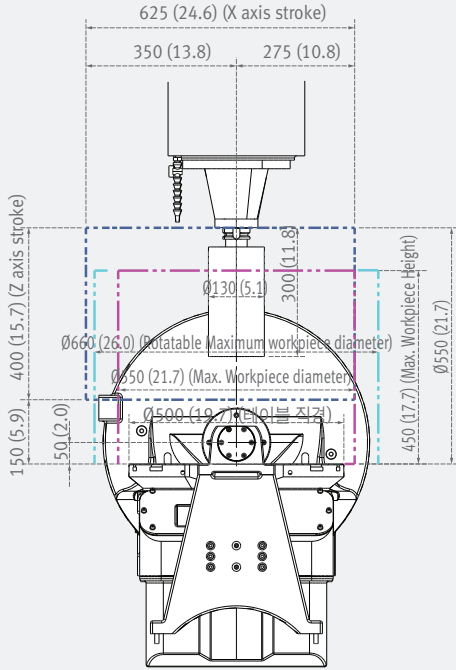
Front view (1:10)
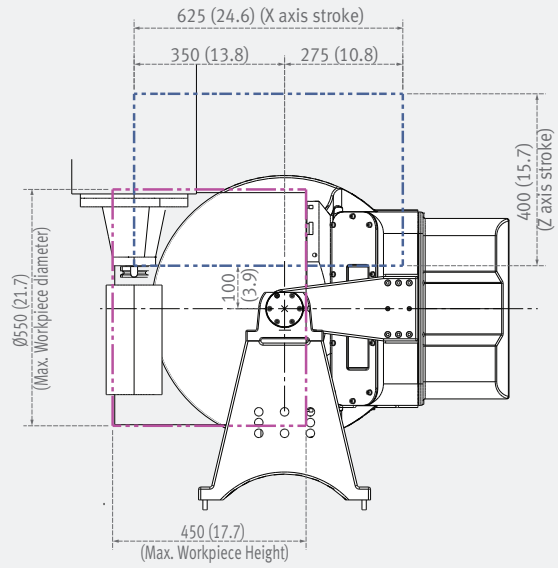
Front view (1:10)
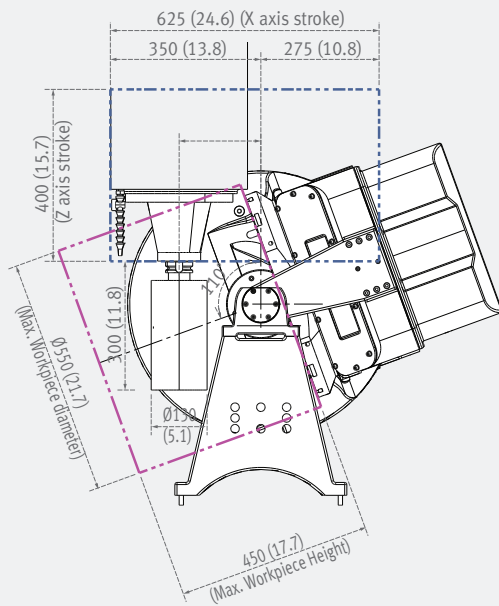
Front view (1:10)
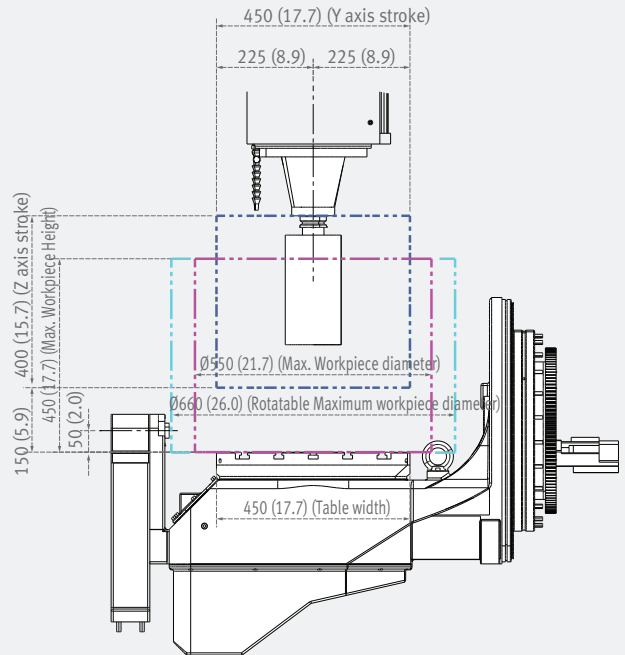
Right view (1:10)

Machine Specifications

DVF 5000

Description			Unit	DVF 5000
Travels	Travel distance	X axis	mm (inch)	625 (24.6)
		Y axis	mm (inch)	450 (17.7)
		Z axis	mm (inch)	400 (15.7)
		B axis	deg	-30 ~ +110
		C axis	deg	360
Table	Table size		mm (inch)	ø 500 x 450 {ø 630 x 450}* (ø 19.7 x 17.7 {ø 24.8 x 17.7})
	Max. workpiece size		mm (inch)	ø 550 x h 450 (ø 21.7 x h 17.7)
	Table loading capacity		kg (lb)	400 (881.8)
Spindle	Max. spindle speed		r/min	12000 {18000}*
	Max. spindle power (S3/Cont.)		kW (Hp)	Fanuc : 18.5 {22}* (24.8 {29.5}) H/H : 17 {30}* (22.8 {40.2})
	Max. spindle torque		N·m (ft-lbs)	Fanuc : 118 {118}* (87.1 {87.1}) H/H : 109 {155}* (80.4 {114.4})
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)	40 (1574.8)
		B axis	r/min	20
		C axis	r/min	20
Automatic Tool Changer	Type of tool shank	Tool shank	-	ISO #40
	Tool storage capa.		ea	30 {40, 60, 90, 120}*
	Max. tool diameter	Continous	mm (inch)	75 (3.0)
		Without adjacent tools	mm (inch)	125 (4.9)
	Max. tool length		mm (inch)	300 (11.8)
	Max. tool weight		kg (lb)	8 (17.6)
	Tool change (Tool-to-Tool)		sec	1.3
Tank capacity	Coolant tank capacity		L (gal)	350 (92.5)
Machine Dimensions	Height		mm (inch)	2890 (113.8)
	Length		mm (inch)	2205 (86.8)
	Width		mm (inch)	2700 (106.3)
	Weight		kg (lb)	7500 (16534.4)
Control	NC system		-	Doosan Fanuc i Plus / DOOSAN FANUC 31i / HEIDENHAIN TNC640

*{ } : Option

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Specifications

Customer Support
Service

DVF 5000

NC Unit Specifications

FANUC

● Standard ○ Optional X N/A

No.	Item		Spec.	DOOSAN Fanuc i Plus	FANUC 31iB5
1	Controlled axis	Controlled axes	5 (X, Y, Z, C,B)	X, Y, Z, C,B	X, Y, Z, C, B
2		Additional controlled axes	5 axes in total	STD.	STD.
3		Simultaneously controlled axes	Positioning(G00)/Linear interpolation(G01) : 3 axes Circular interpolation(G02, G03) : 2 axes	X	X
4			Positioning(G00)/Linear interpolation(G01) : 4 axes Circular interpolation(G02, G03) : 2 axes	●	X
5			Positioning(G00)/Linear interpolation(G01) : 5 axes Circular interpolation(G02, G03) : 2 axes	X	●
6		Control axis detach		●	X
7		Backlash compensation		●	●
8		Emergency stop / overtravel		●	●
9		HRV control	HRV 3+	●	●
10		Least command increment	0.001 mm / 0.0001"	●	●
11		Least input increment	0.001 mm / 0.0001"	●	●
12		Increment system C	IS-C	●	○
13		Machine lock	all axes / Z axis	●	●
14		Mirror image	Reverse axis movement (setting screen and M - function)	●	●
15		Stored pitch error compensation	Pitch error offset compensation for each axis	X	●
16		Interpolation type pitch error compensation		●	○
17		Inclined Rotary Axis Control		X	○
18		Stored stroke check1	Overtraval controlled by software	●	●
19		Position switch		●	●
20		Incremental pulse coder		X	X
21		Absolute pulse coder		●	●
22	Interpolation & Feed function	2nd reference point return	G30	●	●
23		3rd / 4th reference return		●	●
24		Circular interpolation	G02, G03	●	●
25		Nano interpolation		●	●
26		Inverse time feed		●	○
27		Cylinderical interpolation	G07.1	●	○
28		Linear interpolation	G01	●	●
29		Helical interpolation		●	●
30		Helical interpolation B	Only Fanuc 30i	X	○
31		Smooth interpolation		X	○
32		NURBS interpolation		X	○
33		Exponential interpolation		X	○
34		Involute interpolation		X	○
35		Helical involute interpolation		X	○
36		Bell-type acceleration/deceleration before look ahead interpolation		●	●
37		Smooth backlash compensation		●	●
38		Dwell	G04	●	●
39		Exact stop check	G09, G61 (mode)	●	●
40		Feed per minute	mm / min	●	●
41		Feedrate override	0 - 200 % (10% unit)	●	●
42		Jog override	0 - 200 % (10% unit)	●	●
43		Automatic corner override	G62	●	○
44		Automatic corner deceleration		●	●
45		Cutting feedrate clamp		●	●
46		Rapid traverse bell-shaped acceleration/ deceleration		●	●
47	Interpolation & Feed function	Manual handle feed	Max. 3unit	1 unit	1 unit
48		Manual handle feed rate	x1, x10, x100 (per pulse)	●	●
49		Handle interruption		●	○
50		Manual handle retrace		○	○
51		Manual handle feed 2/3 unit		X	○
52		Override cancel	M48 / M49	●	●
53		Positioning	G00	●	●
54		Rapid traverse override	F0 (fine feed), 25 / 50 / 100 %	●	●
55		Reference point return	G27, G28, G29	●	●
56		Skip function	G31	●	●
57		Nano smoothing	AI contour control II is required.	X	●
58		Nano smoothing 2	AI contour control II is required. Only Fanuc 31i-B5 and 30i	X	○
59		AI APC	20 BLOCK	X	X
60		AICC I	30 BLOCK	X	X
61		AICC I	40 BLOCK	X	X
62		AICC II	200 BLOCK	●	●
63		AICC II	400 BLOCK	X	○
64		High-speed processing	600 BLOCK	X	○
65		Look-ahead blocks expansion	1000 BLOCK	X	○
66		DSQ I	AICC II (200block) + Machining condition selection function	X	●

● Standard ○ Optional X N/A

No.	Item		Spec.	TNC 640
1	Controlled axis	Controlled axes	3 axes	X
2			4 axes	X
3			5 axes	X, Y, Z, C, B
4		Additional controlled axes	6 axes	X
5		Simultaneously controlled axes	Controlled axes	●
6		Controlled axes	Max. 18 axes in total	OPT(Max. 18 axes)
7		Least command increment	0.0001 mm (0.0001 inch), 0.0001°	●
8		Least input increment	0.0001 mm (0.0001 inch), 0.0001°	●
9		Maximum commandable value	±99999.999mm (±3937 inch)	●
10		Axis feedback control	Double-speed control loops for high-frequency spindles and torque/linear motors	○
11		MDI / DISPLAY unit	15.1 inch TFT color flat panel	●
12			19 inch TFT color flat panel	○
13		Program memory for NC programs	SSDR	21GB
14		Block processing time		0.5 ms
15		Cycle time for path interpolation	CC 61xx	3 ms
16		Encoders	Absolute encoders	EnDat 2.2
17	Interpolation	Straight line		5 AXES
18		Circle		3 axes
19		Helix, Combination of circular and linear motion		●
20		Spline interpolation		●
21	Configuration	Machine parameters	Numerical structure	X
22			Tree structure with symbolic names of the parameters	●
23			Tabular representation	X
24	Commissioning and diagnostics	Integrated oscilloscope		●
25		OnLine monitor (OLM)		●
26		BUS diagnostics		●
27		DriveDiag		●
28		ApiData function		●
29		Trace function		●
30		Table function		●
31		Logic diagram		●
32		I/O-Force List		●
33		Log		●
34		Machine operating panel	TE 735	●
35			TE 745	○
36		Electronic handwheels	HR 410	●
37		Data interfaces	Ethernet interface	●
38			USB interface (USB 2.0)	●
39	Machine functions	Feedrate override	0 - 150 % (10% unit)	●
40		Spindle orientation		●
41		Spindle speed command	S5 digits	●
42		Spindle speed override	0 - 150 %	●
43		Monitoring functions	Position monitoring	●
44			Movement monitoring	●
45			Standstill monitoring	●
46			Positioning window	●
47			Temperature monitoring	●
48			Amplitude of encoder signals	●
49			Edge separation of encoder signals	●
50			Nominal speed value	●
51			Buffer battery	●
52			Run-time of PLC program	●
53			Emergency-stop monitoring	●
54			Internal power supply and housing fan	●
55		Gantry axes and master-slave torque control		●
56		Look-ahead (Intelligent path control by calculating the path speed ahead of time)	Max. 1024 blocks.	X
57			Max. 5000 blocks.	●
58		ADP (Advanced Dynamic Prediction)		●
59		HSC filters		●
60		Switching the traverse ranges		●
61		C-axis operation	Spindle motor drives the rotary axis	●
62	User functions	Program input	According to ISO	●
63			With smarT.NC	X
64			With smartSelect	●
65		Position entry	Nominal positions for lines and arcs in Cartesian coordinates	●
66			Incremental or absolute dimensions	●
67			Display and entry in mm or inches	●

Product Preview

Basic information

Basic Structure
Cutting
Performance

Detailed
Information

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Specifications

Customer Support
Service

DVF 5000

NC Unit Specifications

SIEMENS

● Standard ○ Optional X N/A

No.	Item		Spec.	S840D
1	Controlled axes		4 axes	X
2			5 axes	X, Y, Z, C, B
3	Controlled axis	Additional controlled axes	Max. 31 axes in total(S840Dsl) /Max. 5 axes in total(S828D)	○
4		Simultaneously controlled axes	Positioning(G00)/Linear interpolation(G01) : 5 axes Circular interpolation(G02, G03) : 2 axes	●
5		Backlash compensation		●
6		Emergency stop / overtravel		●
7		Least command increment	0.001mm (0.0001 inch)	●
8		Least input increment	0.001mm (0.0001 inch)	X
9			0.0001mm (0.0001 inch)	●
10		Maximum commandable value	±99999.999mm (±3937 inch)	●
11		Machine lock (PRT)	All axes	●
12		Position switching signals/cam controller		●
13		Absolute encoder		●
14		Travel to fixed stop with Force Control		○
15		Dry run		●
16		Feedrate/Rapid override	0 - 120 %	●
17		Reference point return	G75 FP=1	●
18		2nd reference point return	G75 FP=2	●
19		3rd / 4th reference return	G75 FP=3, 4	●
20		Advanced surface		●
21		Top surface		○
22		Linear interpolation	Max. 4	●
23		Circular interpolation	G02, G03	●
24		Inverse time feedrate	G93	●
25		Helical interpolation		●
26		Universal interpolator NURBS		●
27		Polynomial interpolation		○
28	Interpolation & Feed Function	Spline interpolation (A, B and C splines)		●
29		Involute interpolation		○
30		Dwell	G04	●
31		Separate path feed for corners and chamfers		●
32		Reposition		●
33		Acceleration with Jerk limitation		●
34		Compressor for 3-axis machining		●
35		Compressor for 5-axis machining		●
36		Temperature compensation		●
37		Positioning	G00	●
38		Look ahead number of block	S/W version 4.5	150
39			S/W version 4.7	1000
40			S/W version 4.8	1000
41		Cartesian point-to-point (PTP) travel		●
42		TRANSMIT/cylinder surface transformation		●
43		Inclined axis		X
44		Inclined axis TRAANG after TRANSMIT/TRACYL		●
45		Spindle speed, digital setpoint		●
46		Spindle speed, max. programmable value range	106 ... 0.0001 (display: ± 999999999.9999)	●
47		Spindle override	50 - 120 %	●
48		Automatic gear state selection		●
49	Spindle & M code Function	Oriented spindle stop		●
50		Spindle speed limitation min./max.		●
51		Constant cutting rate		●
52		Spindle control via PLC (Positioning, oscillation)		●
53		Changeover to axis mode		●
54		Tapping with compensating chuck/rigid tapping		●
55		Tool radius compensations in plane	With approach and retract strategies	●
56			With transition circle/ellipse on outer edges	●
57		3D Tool radius compensation		●
58		Number of tools/cutting edges in tool list	256/512	X
59			600/1500	●
60	Tool Function	Tool length compensation		●
61		Operation with tool management		●
62		Tool list		●
63		Tool offset selection via T and D numbers		●
64		Replacement tools for tool management		●
65		Monitoring of tool life and workpiece count		●
66		Manual measurement of tool offset		●
67		Programming language (DIN 66025 and high-level language expansion)		●
68		Main program call from main program and subprogram		●
69		Subprogram levels and interrupt routines, max.		16/2
70		Number of subprogram passes <= 9999		●
71		Number of levels for skip blocks		8
72		Number of levels for skip blocks, maximum 10		X
73		Polar coordinates		●
74		1/2/3-point contours		●
75		Dimensions metric/inch, changeover manually or via program		●
76		Auxiliary function output	Dynamic preprocessing memory FIFO	●
77	Programming & Editing Function		Via H word, max. range: REAL ± 3.4028 ex 38, INT -231 ... 231-1	●
78			User variables, configurable	●
79			Read/write system variables	●
80			Indirect programming	●
81			Program jumps and branches	●
82			Program coordination with WAIT, START, INIT	●
83		CNC High-level language with	Arithmetic and trigonometric functions	●
84			Compare operations and logic combinations	●
85			Macro techniques	●
86			Control structures IF-ELSE-ENDIF	●
87			Control structures WHILE, FOR, REPEAT, LOOP	●
88			STRING functions	●

No.	Item		Spec.	S840D
89	Program functions		Dynamic preprocessing memory FIFO	●
90			Frame concept	●
91			Inclined-surface machining with swivel cycle	●
92			Axis/spindle replacement	●
93			Geometry axes, switchable online in the CNC program	●
94			Program preprocessing	●
95	Online ISO dialect interpreter			●
96	Program/workpiece management		Parts programs on (PPU or NCU), max. number	1000
97			Workpieces on (PPU or NCU), max. number	250
98			Workpieces on Hard disk, max. number	○
99			In additional HMI user memory on CF card	●
100			On additional plug-in CF card	X
101			On integral Hard disk PCU50.5	○
102			On USB storage medium (e.g. disk drive, USB stick)	●
103			On network drive	●
104			Templates for workpieces, programs and INI files	●
105			Job lists	●
106	Basic frames, max. number			16
107	Settable offsets, max. number		G54, G55, G56 ...	100
108	Zero/work offsets, programmable (frames)			●
109	Scratching, determining zero/work offset			●
110	Work offsets, external via PLC			●
111	Global and local user data			●
112	Global program user data			●
113	Display system variables			○
114	Program editor		Programming support for cycles program (Program Guide)	●
115			Dual editor	●
116			CNC editor with editing functions: Marking, copying, deleting	●
117			Programming graphics/free contour input (contour calculator)	●
118			Screens for 1/2/3-point contours (contour definition programming)	●
119			Support for parameter input Animated Elements	●
120			Shopturn/ShopMill Machining step programming	●
121	Technology cycles for drilling/milling			●
122	Pocket milling free contour and islands stock removal cycle			●
123	Residual material detection			●
124	Access protection for cycles			○
125	Programming support can be extended, e.g. customer cycles			●
126	Quck view for mold making program			●
127	2D simulation			●
128	3D simulation, finished part			●
129	Simultaneous recording			●
130	Measure kinematics			●
131	DXF Reader for PC integrated in SINUMERIK Operate			○
132	JOG		Handwheel selection	●
133			Switchover: inch/metric	●
134			Manual measurement of zero/work offset	●
135			Manual measurement of tool offset	●
136			Automatic tool/workpiece measurement	●
137			Reference point approach, automatic/via CNC program	●

(Item group label for 89–131: **Programming & Editing function**; for 132–137: **Others functions (Operation, setting & Display, etc)**)

No.	Item		Spec.	S840D
138	MDA		Input in text editor	●
139			Save MDA program	●
140			Input screen forms for technology and positioning, cycle support	●
141	Teach-in			●
142	Automatic		Execution from USB interface on operator panel front	●
143			Execution from HMI memory on NCU CF card	●
144			Execution from network drive	●
145			Execution from Hard disk (PCU50.5)	○
146			Program control	●
147			Program editing	●
148			Overstoring	X
149			DRF offset	●
150			Block search with/without calculation	●
151	CNC user memory expanded for programs		‹ 100MB	○
152	Execution from external storage EES			○
153	Repos (repositioning on the contour)		With operator command/semi-automatically	●
154			Program-controlled	●
155	Preset		Set actual value	●
156	15.6" color display with touch screen			●
157	18.5" color display with touch screen			○
158	Plain text display of user variables			●
159	Multi-channel display			○
160	2D representation of 3D protection areas/work areas			●
162	Access protection, 7 levels			●
163	Operating software languages		Ch_S, En, Fr, Gr, It, Sp	●
164			Ch_T, Kr, Pt	○
165			Additional languages, use of language extensions	○
166	Working area limitation			●
167	"Limit switch monitoring			●
168	(Software and hardware limit switches)"			●
169	Axis limitation from the PLC			●
170	Alarms and messages			●
171	Action log can be activated for diagnostic purposes			●
172	PLC status			○
173	Remote Control System (RCS) remote diagnostics		RCS Host remote diagnostics function	●
174			RCS Commander (viewer function)	●
175	Integrated service planner for the monitoring of service intervals			●
176	Automatic measuring cycles			X
177	Easy Extend			○
178	Contour handwheel			●
179	Integrate screens in SINUMERIK Operate with SINUMERIK Integrate Run MyScreens			●
180	Cross-mode actions (ASUPs and synchronized actions in all operating modes)			●
181	Axis collision protection PROT			●
182	Collision avoidance ECO (machine, working area)			○
183	MDynamics 3-axis			X
184	MDynamics 5-axis			●

(Item group label for 138–184: **Others functions (Operation, setting & Display, etc)**)

Responding to Customers Anytime, Anywhere

AMERICA   EUROPE
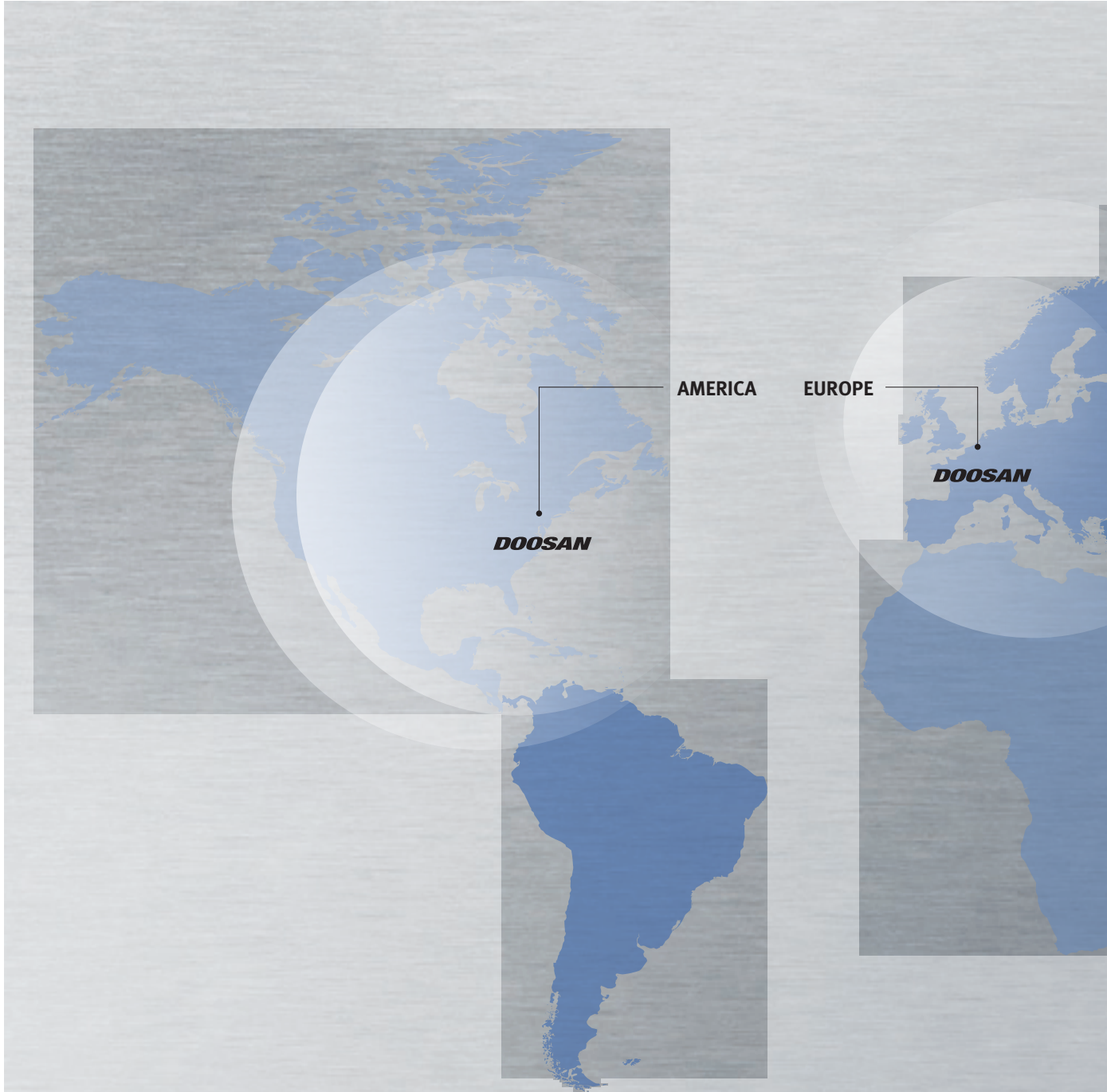
DOOSAN

DOOSAN

Global Sales and Service Support Network

Corporations	Dealer Networks	Technical Centers	Service Post	Factories
4	164	51	198	3

Technical Center: Sales Support, Service Support, Parts Support

Doosan Machine Tools' Global Network, Responding to Customer's Needs nearby, Anytime, Anywhere
Doosan machine tools provides a system-based professional support service before
and after the machine tool sale by responding quickly and efficiently to customers' demands.
By supplying spare parts, product training, field service and technical support, we can provide top class
support to our customers around the world.

CHINA (Shanghai)

CHINA (Yantai)

DOOSAN

DOOSAN

Head Office
Changwon Factory

DOOSAN

INDIA
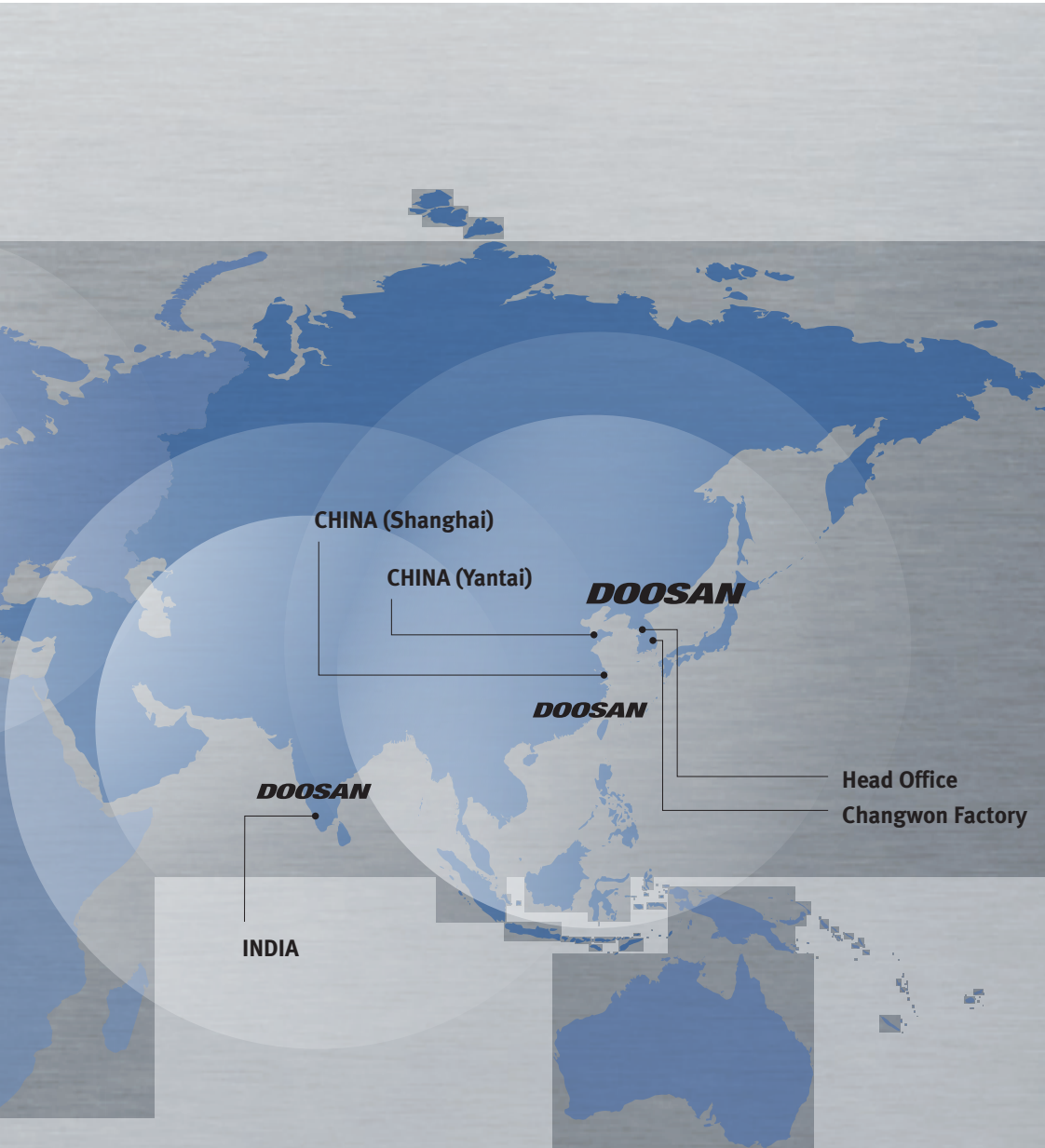
Customer Support Service

We help customers to achieve success by providing a variety of professional services from pre-sales consultancy to post-sales support.

Supplying Parts

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

Field Services

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

Technical Support

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

Training

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

Major Specifications

DVF 5000

Description			Unit	DVF 5000
Travel	Travel distance	X-axis	mm (inch)	625 (24.6)
		Y-axis	mm (inch)	450 (17.7)
		Z-axis	mm (inch)	400 (15.7)
		B-axis	deg	-30 ~ +110
		C-axis	deg	360
Feedrate	Rapid traverse	X-axis	m/min (ipm)	40 (1574.8)
		Y-axis	m/min (ipm)	40 (1574.8)
		Z-axis	m/min (ipm)	40 (1574.8)
		B-axis	r/min	20
		C-axis	r/min	20
Spindle	Max. Spindle Speed		r/min	12000 {18000}*
	Max. Spindle Power		kW (Hp)	Fanuc : 18.5 {22}* (24.8 {29.5}) H/H : 17 {30}* (22.8 {40.2})
	Max. Spindle Torque		N·m (lbf-ft)	Fanuc : 118 {118}* (87.1 {87.1}) H/H : 109 {155}* (80.4 {114.4})
	Tool shank		-	ISO #40
Table	Table size		mm (inch)	ø 500 x 450 {ø 630 x 450}* (ø 19.7 x 17.7 {ø 24.8 x 17.7})
	Max. Work size		mm (inch)	ø 550 x h 450 (ø21.7 x h 17.7)
	Max. Work load		kg (lb)	400 (881.8)
ATC	Tool capacity		ea	30 {40, 60, 90, 120}*
Machine Dimensions	Length x Width		mm (inch)	2205 x 2700 (86.8 x 106.3)

*{ } Option

Doosan Machine Tools

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⚠ **Fire Safety Precautions** | There is a high risk or fire when using non-water-soluble cutting fluids, processing flammable materials, neglecting use coolants and modifying the machine without the consent of the manufacturer. Please check the SAFETY GUIDANCE carefully before using the machine.