



HIGH PRODUCTIVITY TWIN SPINDLE,
MOVING COLUMN VMC

VC

4000D-2SP



DN SOLUTIONS

VC 4000D-2SP

'VC 4000D-2SP' series is a vertical machining center with Y-axis 400mm class suitable for mass production with two spindles. W-axis is added for precision and quick offset compensation of the workpiece. Reinforced structure is adopted to maintain stable performance and precision. In addition, sufficient door width is ensured, so that the accessibility of automation equipment is excellent.





OPTIMIZED DESIGN CONCEPT FOR HIGH PRODUCTIVITY

- By incorporating twin spindles, two parts can be machined simultaneously. In addition, by using high acc/dec axis traverse rates and high speed ATC/APC, non cutting time is reduced to a minimum, providing efficiency improvements of between 2 and 3 times compared to conventional machines.

HIGH STABILITY AND PRECISION

- In order to maintain stable precision during high speed operations, a high attenuation mineral cast bed has been used. Spindle cooling, multi-sensor type thermal compensation are all supplied as standard.

FLEXIBILITY FOR CUSTOMIZATION

- Provides 10mm of W-axis which is advantageous for offset correction.
- The VC4000D-2SP is available with a range of dual table specifications to suit customer's requirements, and is also suitable for automation using a robot or gantry loader.

BASIC STRUCTURE

The VC 4000D-2SP has a travelling column design with a 400mm Y-axis stroke. Its automatic pallet changer (APC) has a compact footprint and is easy to operate. The mineral cast bed delivers outstanding stability.



Travel distance

X axis

630 mm 24.8 inch

Y axis

400 mm 5.7 inch

Z axis

360 mm 14.2 inch

W axis

10 mm (-5 ~ +5 mm)
0.4 inch (-0.2 ~ +0.2 inch)

Axis system

생산성 향상을 위해 이송축의 가속/감속 성능을 높여 생산성을 극대화하고 강성을 증대 하였습니다.

MACHINING AREA | APC

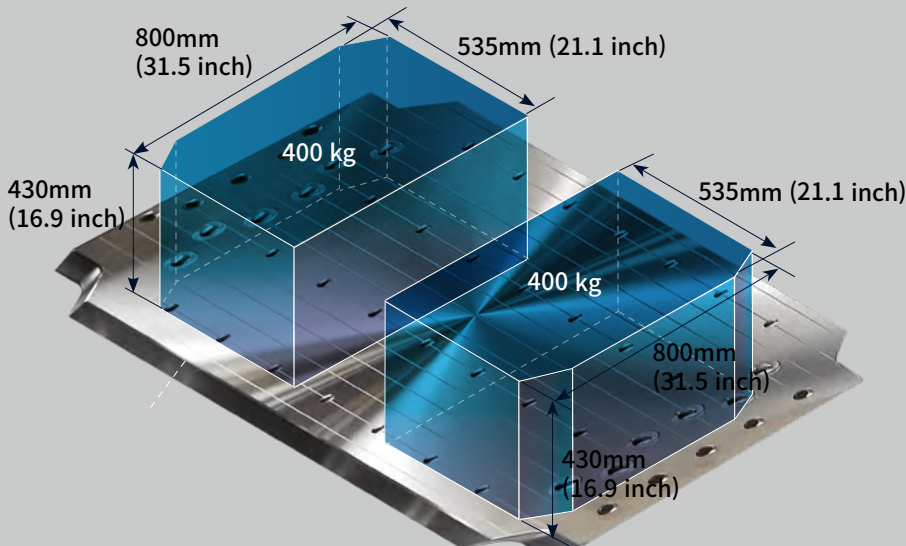


Table size (A x B)

800 x 535 mm
31.5 x 21.1 inch

Max. workpiece size (L x H x W)

800 x 430 x 535 mm
31.5 x 16.9 x 21.1 inch

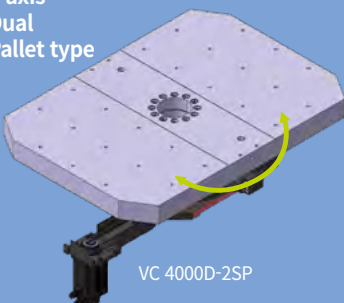
Table loading capacity

2 x 400 kg 881.8 lb

Automatic pallet changer (APC) options

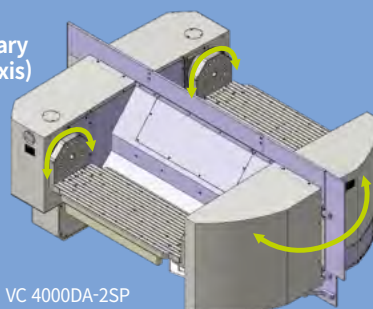
APC change time is 5 seconds. The structure is stable and is optimized for high productivity.

3 axis
Dual
Pallet type

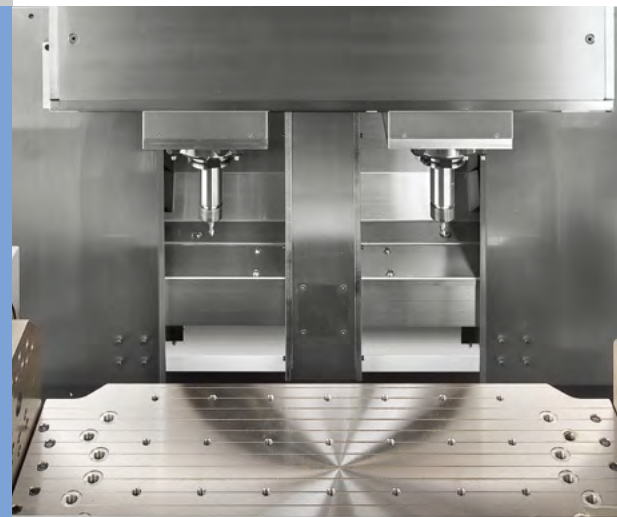


VC 4000D-2SP

4 axis
2 - 4Axis Rotary
Table (A/U-Axis)

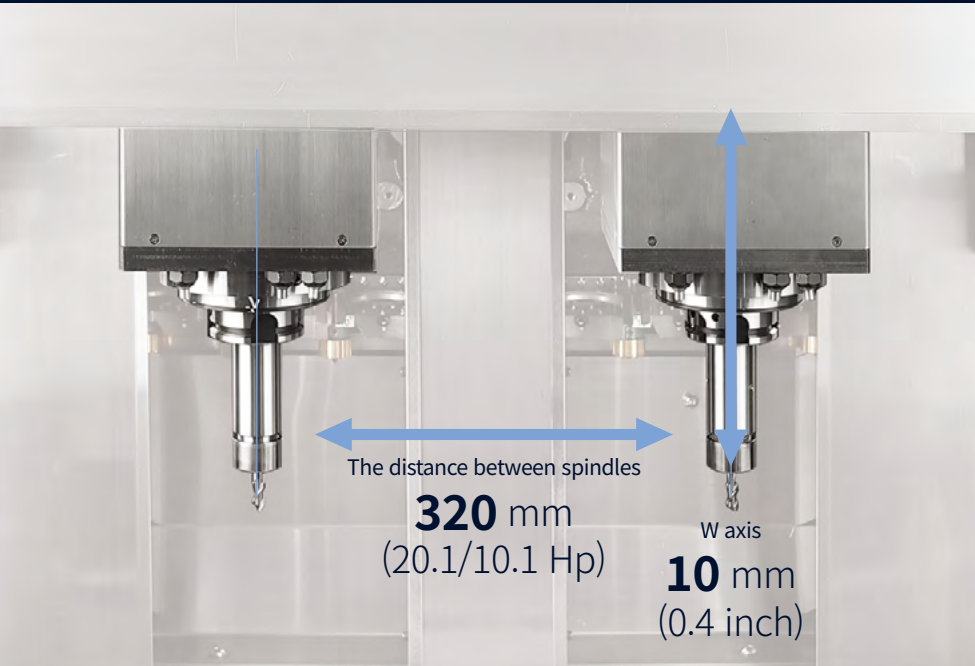


VC 4000DA-2SP

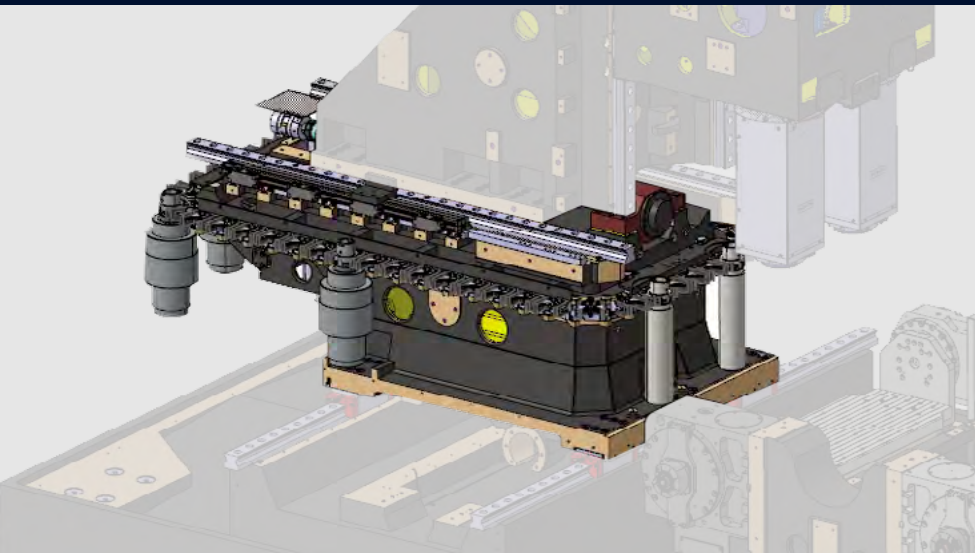


SPINDLE

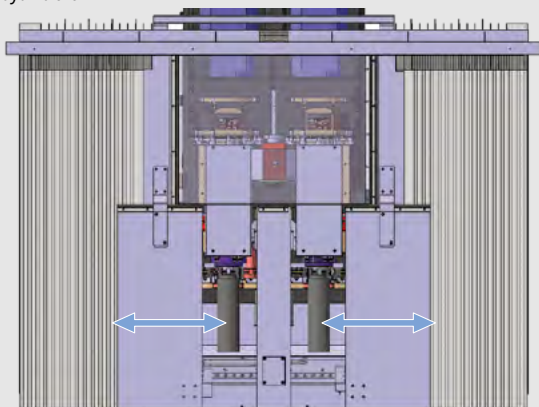
For excellent productivity, quiet working environment, and excellent machining accuracy, HSK 63A grade direct-connected spindle is applied as standard and spindle cooling can be applied as an option.



TOOL MAGAZINE



Auto door optimized for high speed tool change
- LM & pneumatic cylinders



Max. spindle speed

12000 r/min

Max. spindle power

13 kW 17.4 Hp

Max. spindle torque

82.8 N.m 61.1 ft-lbs

Improved processing convenience

Improved machining performance by applying 2 x 6 cutting oil nozzles.

Tool changer (ATC)

The tool magazines are positioned at the base of the travelling column to eliminate any effect on high speed machining operations and the machine's performance. 24 tools are available for each spindle.

Tool storage capacity

24*2 ea

Tool change time

4.9 s T-T-T

6.3 s C-T-C

Stability of magazine operation

- . Apply tool detecting ultrasonic sensor
- . Auto door for tool change

STANDARD | OPTIONAL SPECIFICATIONS


A range of options is available to suit individual requirements.

Description	Features		VC 4000D-2SP
Spindle	12000 r/min, 15/7.5 KW		●
Magazine	Tool storage capacity	24 *2 ea	●
Tool shank type	HSK63A		●
Machine cover type	Splash guard_with top		●
Coolant	Flood coolant	1.5 KW-0.45 MPA-100 L/MIN	●
		2.2 KW-0.54 MPA-100 L/MIN	○
	TSC coolant	4.0 KW-2.0 MPA-CYCLONE FILTER	○
	Tank direction	REAR SIDE	●
	Shower coolant		●
	Coolant chiller		○
Chip disposal	Chip conveyor	Scraper type_Rear side	●
	Chip bucket	Folklift-300L	○
		Rotation-300L	○
	Coolant gun		○
Air gun		○	
Precision machining option	Linear scale (X/Y/Z AXIS)		○
	AICC	AICC II-200 Blocks	●
Maesurement & Automation	Automatic front door	With safty device	○
	Test bar	Test bar gauge	○
	DN Solutions Tool load monitoring		○
	Automatic power off		○
	Shunt trip coil		○
	Automatic tool measurement	NC4-Renishaw	○
Others	Oil skimmer	Belt type	○
	Mist collector	2.2 kW-Water soluble	○
	Air conditioner		○
	Electric cabinet light		○
	Electric line filter		○
	Extra M code_4ea		○
	MPG	1 MPG-Portable type	●
		1 MPG-Portable_w/enable type	○
	SIGNAL TOWER	3 color-(Red, Yellow, Green)	●
		3 Color-(R.Y.G)-w/buzzer	○
	Flash memory card &adapter	1GB	○
		2GB	○
	Power back-up module		○
	EZ GUIDE I		●
	Part program storage	5120M(2MB)-1000 ea	●
	Data server	Function & memory card-1GB	○
Number of tool offsets	400 pairs	○	
Customized Special Option	Drum chip conveyor	Hinge type	○
		Scraper type	○
	Smart thermal control	Sensor type (only spindle)	○
	Servo auto door (w/safety edge)	Servo motor & ball screw driven	○

* Please contact DN Solutions for detailed specification information.

● Standard ○ Optional X Not applicable

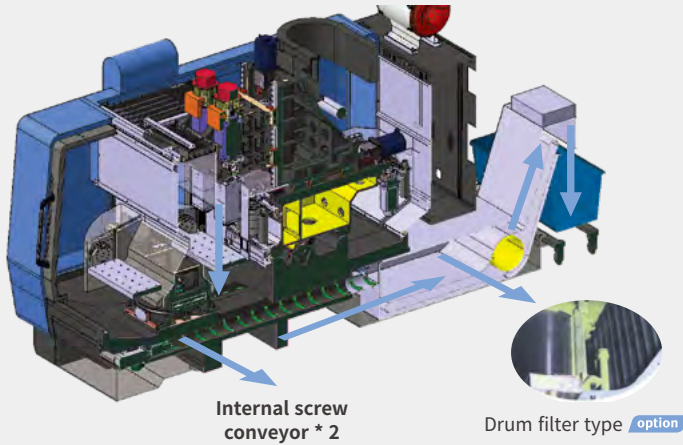
*When using a semi-synthetic type or synthetic type, contact our sales representative or service center in advance.

 **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

Chip conveyor

Internal screws (2ea) and chip conveyor are provided as standard



Flushing & shower coolant

Shower Coolant is provided as standard

Flushing & Shower



TSC **option**

The through-spindle-coolant (TSC) system delivers higher machining efficiencies



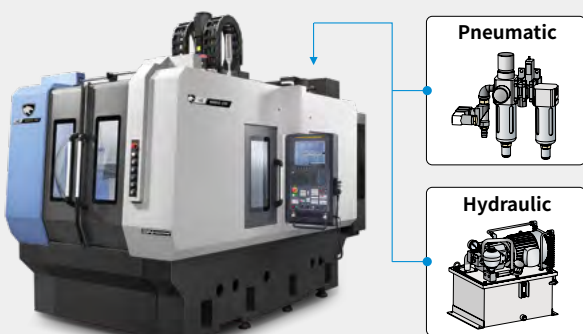
Oil cooler

An oil cooler, correlated to room temperature, can be used for long-term operation at high speed. Cooling oil circulates around the spindle bearings to prevent thermal displacement of the spindle and to maintain machining accuracy



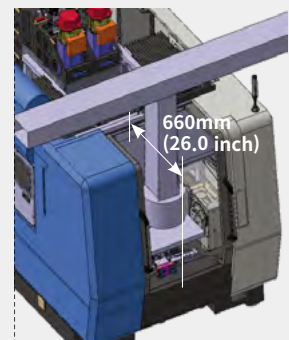
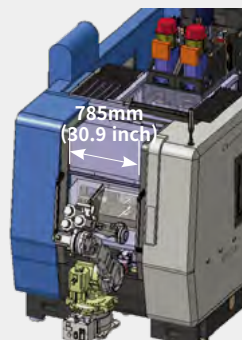
Hydraulic / Pneumatic fixture line **option**

The user can prepare pipelines for hydraulic/pneumatic fixtures whose detailed specifications should be first determined through discussions with DN Solutions



Automation system **option**

- Sufficient door opening width to secure robot accessibility
- Specially designed top of the door to ensure Gantry loader access



DN SOLUTIONS FANUC i PLUS

DN Solutions Fanuc i Plus maximizes customer productivity and convenience.

15" Screen + New OP

DN Solutions Fanuc i 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.

DN Solutions Fanuc i Plus

- 15-inch color display
- Intuitive and user-friendly design

USB and PCMCIA card QWERTY Keyboard

- EZ-guide i standard
- Ergonomic operator panel
- 2MB Memory
- Hot keys



iHMI touchscreen option

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	DN Solutions Fanuc i (0i PLUS) VC 4000D-2SP
Controlled axis	Controlled axes		3 (X,Y,Z,W)
	Simultaneously controlled axes		4 axes
Data input/output	Additional controlled Axis	Add 1 Axis (5th Axis)	●
	Fast data server		○
	Memory card input/output		●
	USB memory input/output		●
Interface function	Large capacity memory(2GB)*2	Available Option only with 15" Touch LCD (iHMI Only) *2)	○
	Embedded Ethernet		●
	Fast Ethernet		○
Operation	Enhanced Embedded Ethernet function		●
	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		●
Feed function	Tilted working plane indexing command	G68.2 TWP	○
	AI contour control I	G5.1 Q_, 40 Blocks	X
	AI contour control II	G5.1 Q_, 200 Blocks	●
	AI contour control II	G5.1 Q_, 600 Blocks	X
	AI contour control II	G5.1 Q_, 1000 Blocks *1)	X
	High smooth TCP		X
Operation guidance function	EZ Guidei (Conversational Programming Solution)		●
	iHMI with Machining Cycle	Only with 15" Touch LCD standard *2)	X
	EZ Operation package		●
Setting and display	CNC screen dual display function		●
Network	FANUC MTConnect		⊕
	FANUC OPC UA		⊕
Others	Display unit	10.4" color LCD	X
		15" color LCD	X
		15" color LCD with Touch Panel	●
	Part program storage size & Number of registerable programs	640M(256KB)_ 500 programs	X
		1280M(512KB)_ 1000 programs	X
		2560M(1MB)_ 1000 programs	X
		5120M(2MB)_ 1000 programs	●
		10240M(4MB)_ 1000 programs	X
		20480M(8MB)_ 1000 programs	X
		2560M(1MB)_ 2000 programs	X
		5120M(2MB)_ 4000 programs	X
		10240M(4MB)_ 4000 programs	X
		20480M(8MB)_ 4000 programs	X

*1) The number of look-ahead blocks may be changed or limited depending on the peripheral device or the configuration of the internal NC system.
*2) Available Option only with Fanuc i plus iHMI

● Standard ○ Optional X N/A ⊕ Available
Network: FANUC MT Connect and FANUC OPC UA 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.

User convenience

User convenience has been significantly enhanced with a new operation panel.



Work Offset Setting

Function to configure various work offset settings.



Tool management

This function controls information on the tools in the tool magazine pots.



ATC Recovery

In the event of an error during ATC (automatic tool changer) operation, follow the on-screen instructions for an easy and prompt solution.



Tool Load Monitoring

During cutting operation, abnormal load caused by wear and tear of the tool is detected and an alarm is triggered to prevent further damage.



Adaptive Feed Control(AFC)

If tool overload is detected during operation, the feed rate is controlled to prevent the tool from being damaged.



Thermal compensation function

A thermal error compensation function is provided to optimize machine accuracy over long periods.

Swivel operator panel

The operation panel is capable of swiveling by 90 degrees to enhance convenience.



Portable MPG

The portable MPG allows the user to set up workpieces more easily.

PCMCIA card

The PCMCIA card enables uploading and downloading of the NC program, NC parameters, tool information, and ladder programs, and also supports DNC operation.

USB port

Upload/download of NC software programs, NC parameters, tool information and ladder program using a USB drive is allowed, but DNC operation is not supported.



POWER | TORQUE | TABLE

POWER & TORQUE

MAX. SPINDLE SPEED:

12000 r/min

MAX. SPINDLE TORQUE:

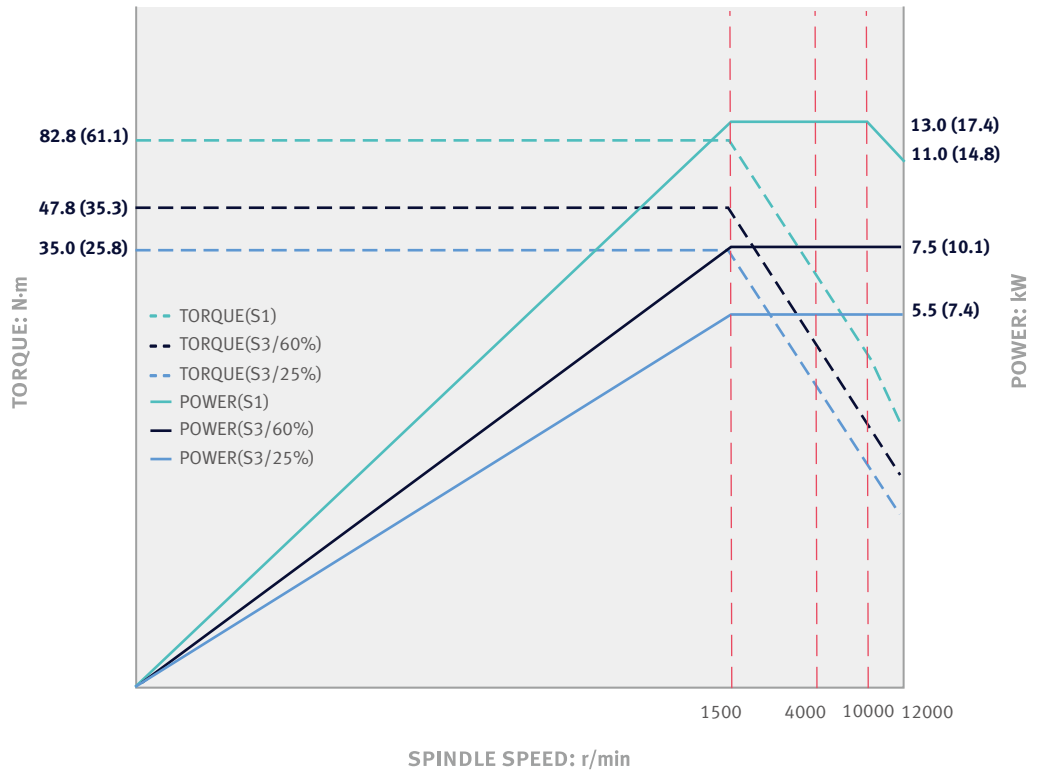
13 kW

17.4 Hp

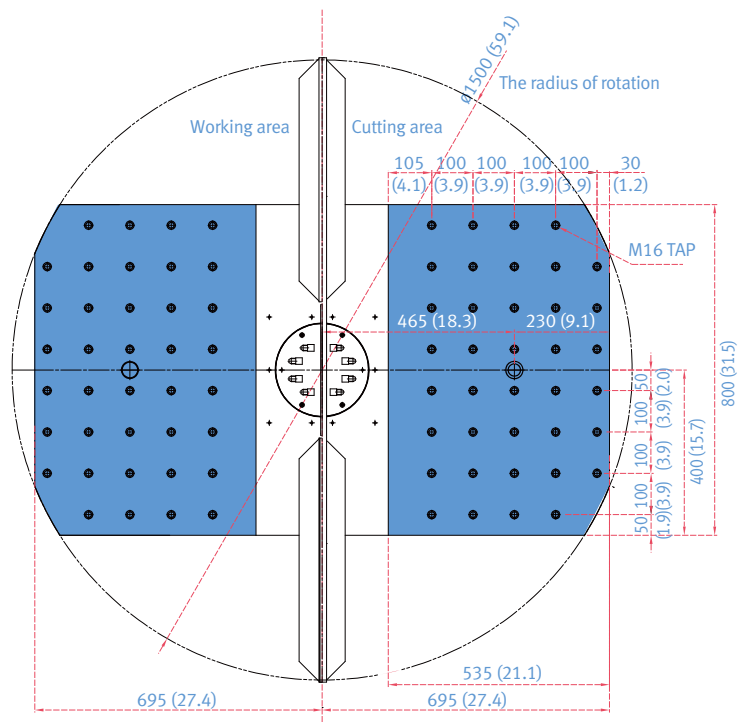
MAX. SPINDLE POWER:

82.8 N·m

61.1 ft-lbs



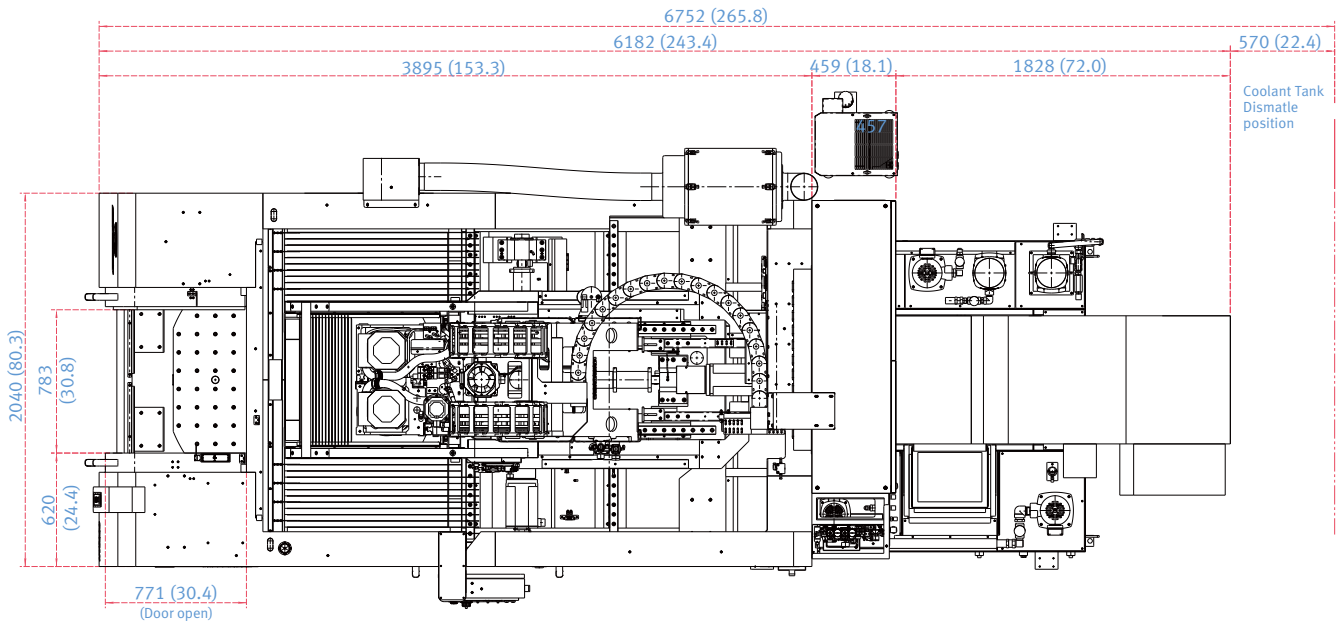
TABLE



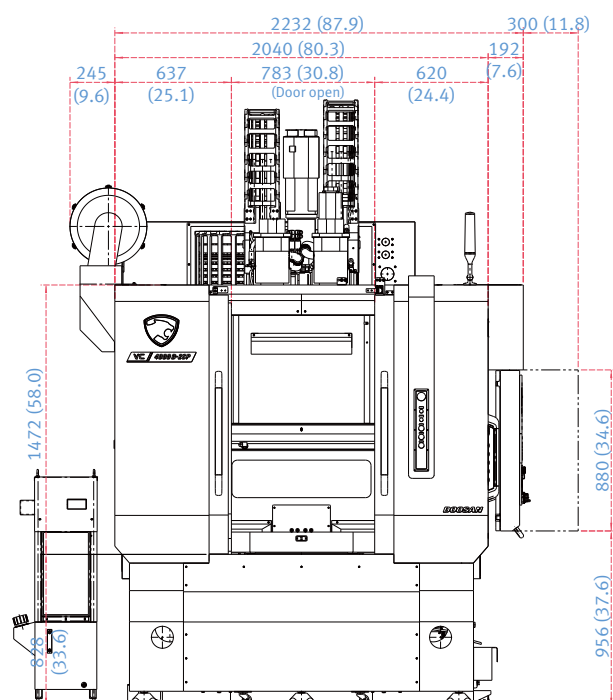
DIMENSIONS

Units : mm (inch)

TOP



FRONT



* Some peripheral equipment can be placed in other areas.

MACHINE SPECIFICATIONS

Description		Unit	VC 4000D-2SP	
Capacity	Travel distance	X-axis travel	mm (inch) 630 (24.8)	
		Y-axis travel	mm (inch) 400 (15.7)	
		Z-axis travel	mm (inch) 360 (14.2)	
		W-axis	mm (inch) 10 (0.4)	
	Table top - spindle		mm (inch)	250 ~ 610 (9.8 ~ 24.0)
	Distance between spindle		mm (inch)	320 (12.6)
Table	Table size		mm (inch) 2-800 x 535 (31.5 x 21.1)	
	Max workpiece weight		kg (lb) 2-400 (881.8)	
	Table type		mm 2X38-M16xP2.0 TAP	
Spindle	Max. spindle speed		r/min 12000	
	Tool shank type		- HSK-A 63	
	Max. spindle power		kW (Hp) 13 (17.4)	
	Max. spindle torque		N · m (lbf-ft) 82.8 (61.1)	
Feedrate	Rapid traverse (X,Y,Z)		m/min (ipm) 48 / 48 / 48 (1889.8 / 1889.8 / 1889.8)	
	Max cutting Feed		m/min (ipm) 24 (944.9)	
	Axis acceleration (X,Y, Z)		m/s ² 4 / 6 / 9	
ATC	Tool shank type		- HSK-A 63	
	Max. tool diameter	Continuous	mm (inch) 78 (3.1)	
		Without adjacent tools	mm (inch) 140 (5.5)	
	Tool storage capacity		ea 2-24	
	Max. tool length		mm (inch) 300 (11.8)	
	Max. tool weight		kg (lb) 10 (22.0)	
	Tool selection		- FIXED ADDRESS	
	Tool change time		s 4.9	
	Chip to chip time		s 6.3	
Power	Electric power supply		Kva 63.6	
	Compressed air supply		Mpa 0.54	
Machine size	Dimensions (Length x Width x Height)		mm (inch) 6182 x 2232 x 3310 (243.4 x 87.9 x 130.3)	
	Weight		kg (lb) 12000 (26455.1)	
CNC	NC system		- DN Solutions FANUC i Plus	

*{ } : Option

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.

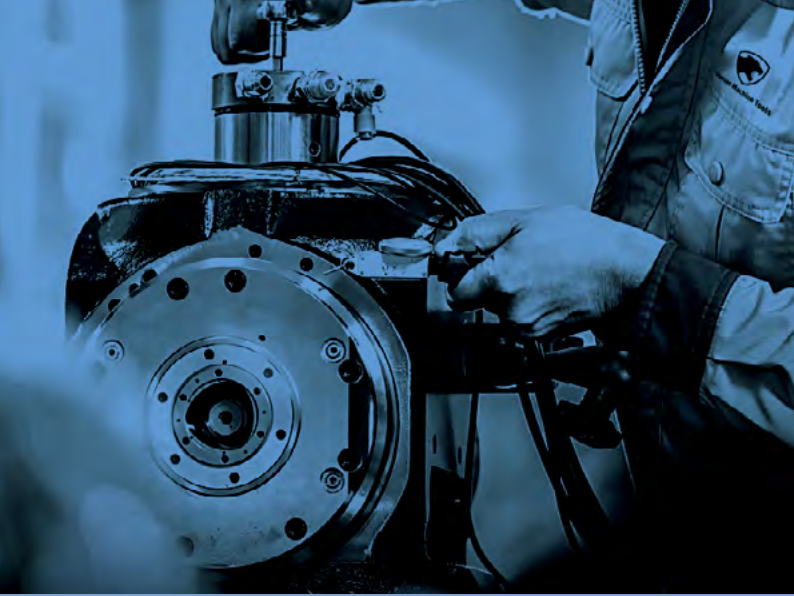
EXPERT SERVICE

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
155	Dealer networks
51	Technical centers Technical Center, Sales Support, Service Support, Parts Support
200	Service posts
3	Factories





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