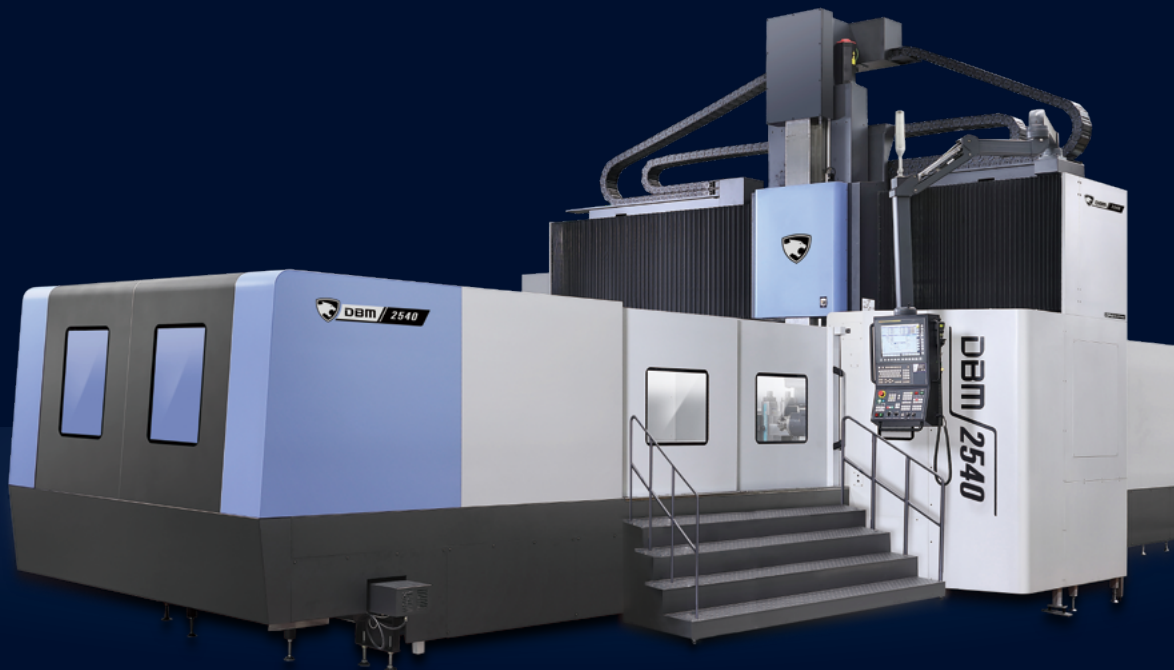




MULTI-PURPOSE DOUBLE COLUMN
MACHINING CENTER WITH UNIVERSAL HEAD

DBM

2030U/2040U • 2540U/2550U • 3050U



DN SOLUTIONS

BASIC STRUCTURE

DBM machines are large, multi-purpose double column machining centers designed for applications that include the heavyduty machining of large parts and high precision dies and molds. With the highest technical specifications in its class, the DBM series provides customers with an extensive range of machining capabilities and functions to help them improve their productivity and performance.

X x Y x Z axes travel

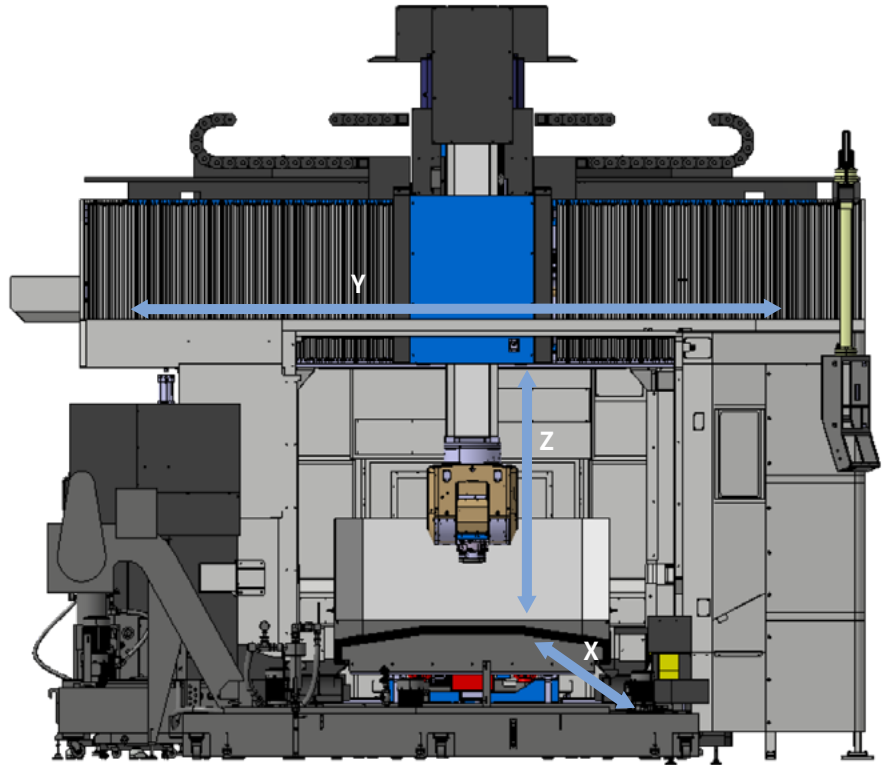
X-axis **3250 / 4250 /
5250** mm

128.0 / 167.3 /
206.7 inch

Y-axis **2500 / 3000 /
3500** mm

98.4/118.1/137.8 inch

Z-axis **800** mm
31.5 inch



Rapid traverse

DBM 2030/2040

X/Y-axis **24** m/min
944.9 ipm

Z-axis **15** m/min
590.6 ipm

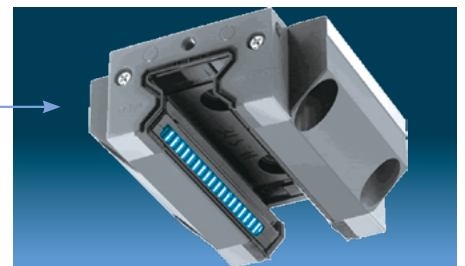
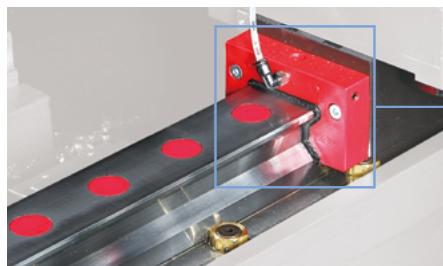
DBM 2540 / 2550 / 3050

X/Y-axis **20** m/min
787.4 ipm

Z-axis **15** m/min
590.6 ipm

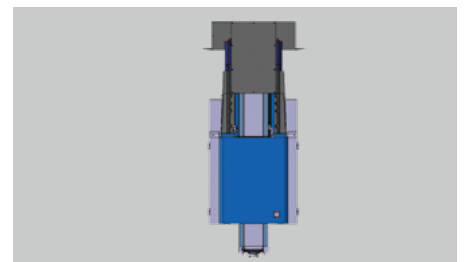
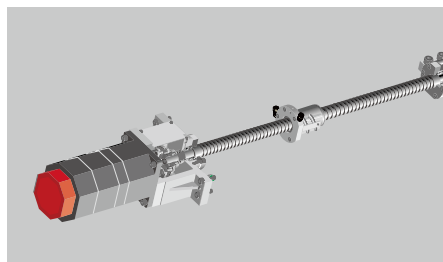
Feed axis construction

Equipped with roller LM guideways for increased rigidity, and a cooling system supplied as standard to minimize thermal displacement of X/Y/Z axes.



Stable and fast guideways

High-rigidity and high-precision roller-type LM guideways



Cutting feedrate

X/Y/Z-axis **10000** mm/min
393.7 ipm

Cooling of ballscrew housing and dual Z-axis ballscrew

- Cooling minimizes thermal displacement on machine axes

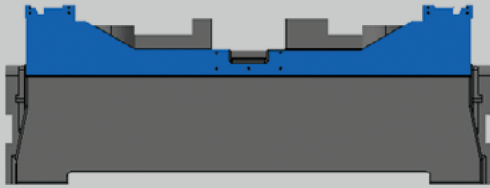
- High-speed, high-accuracy control with Z-axis dual ballscrew

HIGH-RIGIDITY, HIGH-PRECISION STRUCTURE

Designed for the long-term high-precision and heavy-duty machining of large workpieces.

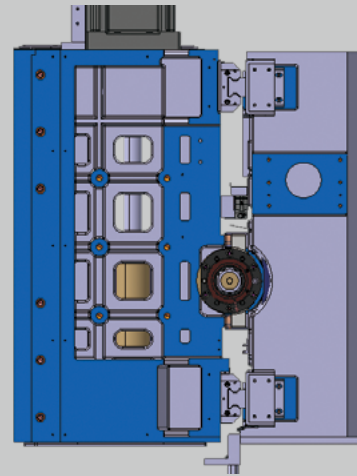
Bed and column structure

- The structure of the DBM series minimizes the effects of vibration on workpieces when being machined. The machines' symmetrical design and rigid construction and the incorporation of effective thermal compensation systems reduces displacement during machining operations.
- The bed has a M-type cast structure - excellent for vibration absorption and for ensuring high precision machining.



Cross-beam structure

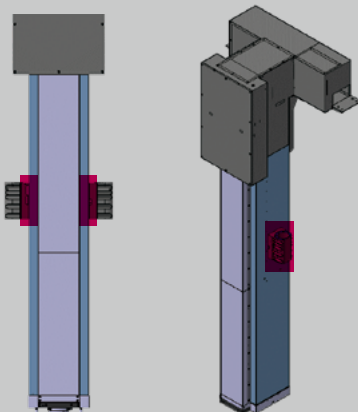
- The cross beam guideway has a L-shaped design for increased rigidity which ensures greater accuracy.



Thermal compensation as standard

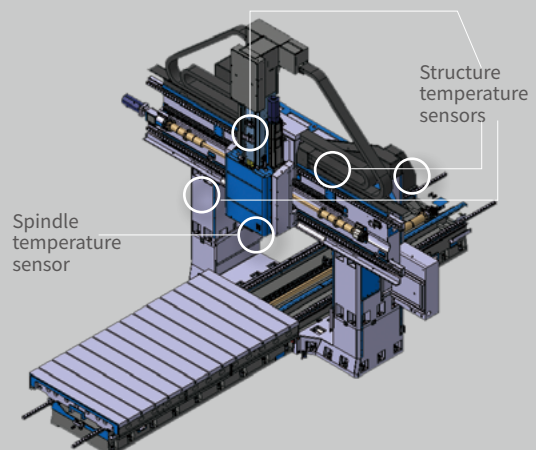
- Thermal compensation

Cooling of the Z-axis nut is provided as standard to prevent thermal impact on the ram spindle



- Thermal compensation - spindle and structure option

Multiple sensors are attached to minimize and compensate for any thermal displacement of the spindle and machine structure.



SPINDLE INFORMATION

High speed, High accuracy built in type universal head

Max. spindle speed

15000 r/min

30000 r/min option

Max. power

45.9/34 kW 61.6/45.6 Hp

90/78.5 kW option

120.7/105.3 Hp

Max. torque

146 N·m 107.7 ft-lbs

49.9 N·m 36.8 ft-lbs option

• C axis 0.001° Continuous



RAM HEAD

The highly-rigid, square-type box guideway ram has a cross section of 380 x 380mm (14.96 x 14.96 inch), which is the biggest in its class. This helps optimize the heavy-duty machining of both vertical and horizontal applications.

Ram size

380 x 380 mm

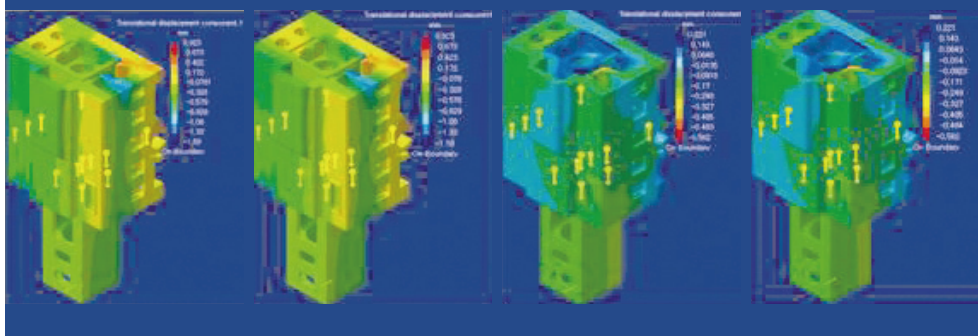
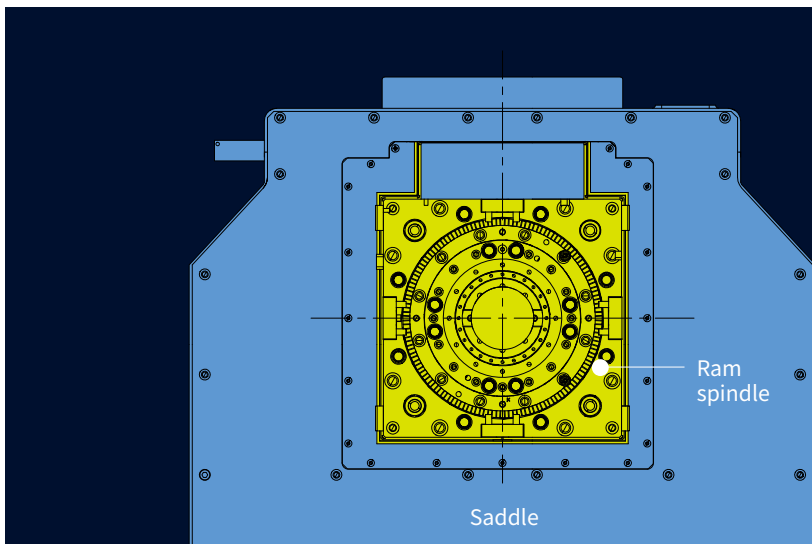
15.0 inch X 15.0 inch

Tool taper

ISO#50

Stress analysis of ram spindle unit

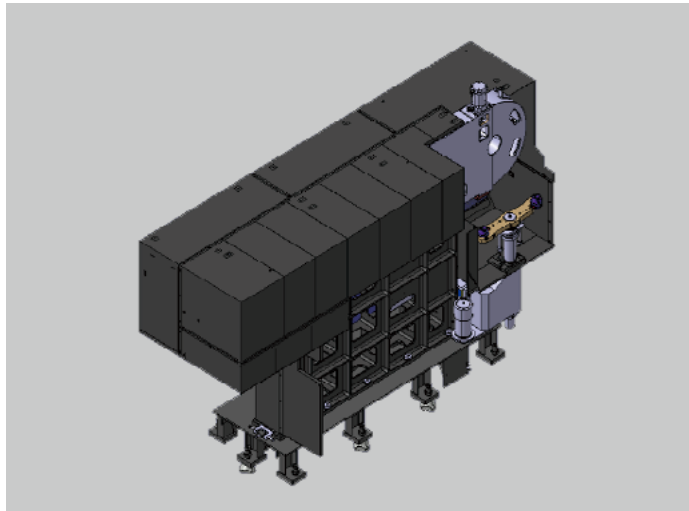
The ram spindle unit, through using stress analysis techniques, has been designed to deliver high-performance under any load.



AUTOMATIC TOOL CHANGER

Automatic tool changer

With CAM type ATC, High productivity. High speed tool change can be realized.



Max. No. of tools	60 EA
Max. tool diameter	80 mm (3.1 inch) [near pot empty : 150 mm (5.9 inch)]
Max. tool length	300 mm (11.8 inch)
Max. tool weight	18 kg (39.7 lb)
Tool selection type	RANDOM
Tool changing time (T-T)	5.5s

High accuracy

To maintain and manage precision performance, various functions are provided as standard.

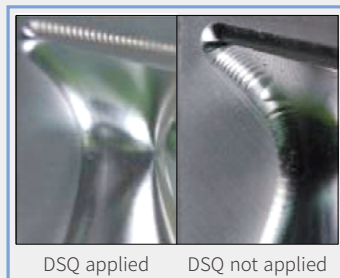
High-speed, high-precision contouring control

- DSQ standard : AICC 1000 block + Machining condition selection function

* DSQ : DN Solutions Super Quality



Verification sample VASE



DSQ applied

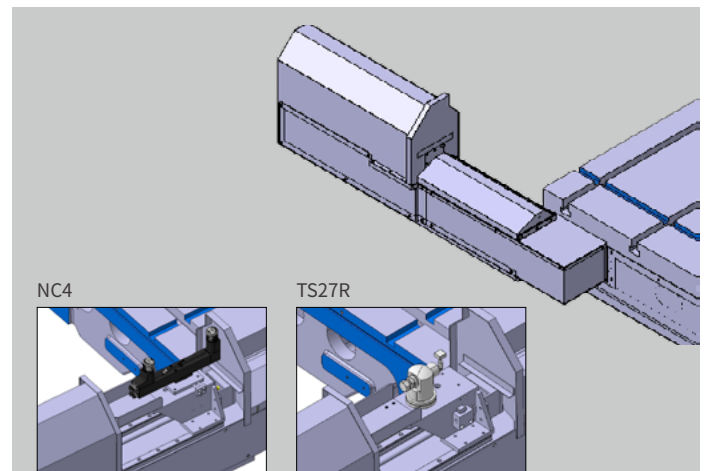
DSQ not applied

Cutting condition selection function

Cutting condition	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10
Quality	Normal								Excellent	
Tool life	Long									Normal
Application	High-speed roughing					High-precision finishing				

- Use the R code in the program to change the cutting conditions by up to 10 steps: improved productivity (high-speed roughing, high-precision finishing).
- Various servo-related NC parameters such as acceleration and deceleration, time constants and maximum cutting feed rates can be set automatically.

Automatic tool measurement

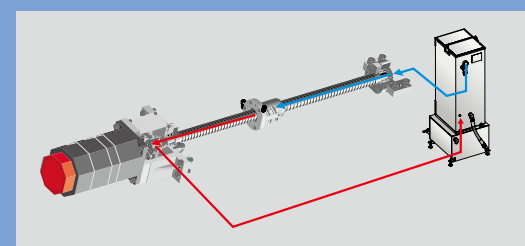


The length of tool set up in the spindle is measured automatically, and a specific tool's offset data is entered automatically.



X/Y/Z-axis linear scale feedback system

The linear scale feedback system provides high positioning accuracy in the X, Y, Z, and W axes.



X/Y/Z-axis ballscrew shaft cooling

The heat generated in the ballscrew is removed by a high-efficiency cooler to minimize any thermal deformation. For fast removal of frictional heat, a hollow ballscrew shaft, allowing cooled oil to flow through it, is used.


STANDARD | OPTIONAL SPECIFICATIONS

A range of options is available to suit individual requirements.

● Standard ○ Optional X N/A

Division	Description		DBM-U series
Spindle	Universal head 15000r/min	45.9/34 kW	●
	Universal head 30000r/min	90/78.5 kW	○
ATC	Tool magazine	60 tools	●
Rotary table	PACKAGE #1 : ONLY WIRING		○
	PACKAGE #2 : HYD. & CONTROL READY		○
	PACKAGE #3 : FULL OPT.		○
High column		+300mm	○
Coolant	Coolant Tank	1600L+500L	●
	FLOOD Coolant	1.8 kW	●
	Coolant gun		●
	Coolant level switch:	Sensing level - Low	●
	Oil skimmer	BELT TYPE	○
	TSC / CYLCONE FILTER	1.5 kW_2.0 MPa	●
	TSC / DUAL BAG FILTER	5.5 kW_7.0 MPa	○
Chip disposal		HINGED PLATE	●
	Lift-up chip conveyor	MAGNETIC SCRAPER	○
		Scraper type with Drum filter	○
	2 side chip conveyor	HINGED PLATE	●
		MAGNETIC SCRAPER	○
	Belows cover	Multicover for Y axis	●
	Slide cover	X-axis	●
	Chip & coolant protect cover	Full splash guard	●
	Chip bucket	Rotating (380L)	○
		Lift type (380L)	○
	AIR PURGE		●
	AIR CURTAIN		●
	AIR GUN		○
	AIR DRYER		○
	TSA(Through Spindle Air)	0.5 Mpa	○
Precision machining option	Spindle Bearing Housing Cooling		●
	Spindle thermal compensation		●
	Linear scale	X / Y/ Z axis	●
	BZ sensor for CS contouring control		●
	Water Chiller for U-head cooling		●
	IKC (Intelligent Kinematic Compensation)	IKC S/W	●
		Datum Ball(D25)	●
		DSQ II : DSQ I+DATA SERVER (1GB)	●
	DSQ (DN Solutions SUPER QUALITY)	DSQ III : DSQ II+HIGH SPEED PROCESSING_600 Block)	○
Measurement & automation	Automatic tool length measurement	TS27R_RENISHAW	○
		NC4_RENISHAW	○
	Automatic workpiece measurement	RMP60_RENISHAW	○
		RMP600_RENISHAW	●
	Automatic workpiece measuring MASTER TOOL	CALIBRATION BLOCK	●
	Auto power on		○
Accessories	Auto power off		●
	Electric cabinet extra light		○
	Air conditioner for electric box		○
	Work light	LED lamps : 4EA	●
	Operator call lamp		●
	Components for installation	leveling blocks and anchoring bolts	●
		Installation tool kit	●
	Components for maintenance	Maintenance tool kit	○
Easy convenient functions	Tool management		○
	Work load balance active control		●
	Cutting load monitoring		●
	Periodic check function		●
	Control box (PENDANT TYPE)	POLE TYPE	●
		PORTABLE TYPE 1-MPG	●
	MPG	MPG WITH LCD DISPLAY	○
		PORTABLE TYPE 3-MPG	○
Installation type		HMOP(Handy Machine Operator's Panel)	○
	UNDER GROUND	FL-960 INSTALL (TABLE TOP_FL0)	●
	GROUND	FL0 INSTALL (TABLE TOP_FL+960)	○
Customized special option	Mist collector	5.5kW	○
	Coolant Chiller		○
	High pressure TSC	70bar	○

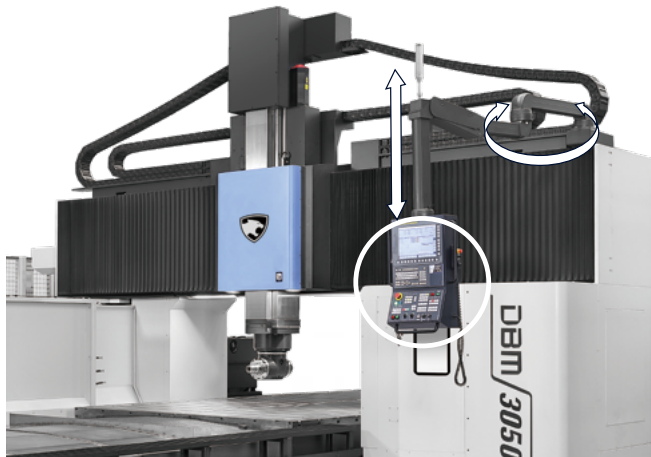
* Please contact your DN Solutions representative for detailed machine information.

 **Fire Safety** | 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

Improved operator convenience

Left-right-up-down and pull-type pendant arm operation panel.

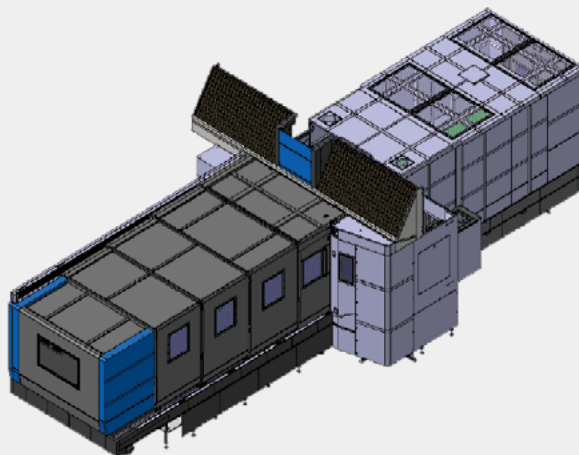
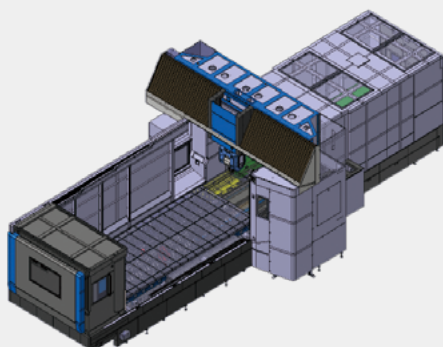


- The pulse handle and manual handle (portable MPG) etc., enable easy job setups can be supplied as a standard feature or as an option.

Hinged Belt	Magnetic Scraper <small>option</small>
 <p>Portable type 1 MPG</p>	 <p>Portable type 3 MPG</p>
Drum Filter (Single type) <small>option</small>	Drum Filter (Double type) <small>option</small>
 <p>MPG with LCD display</p>	 <p>HMOP (Handy Machine Operator's Panel)</p>

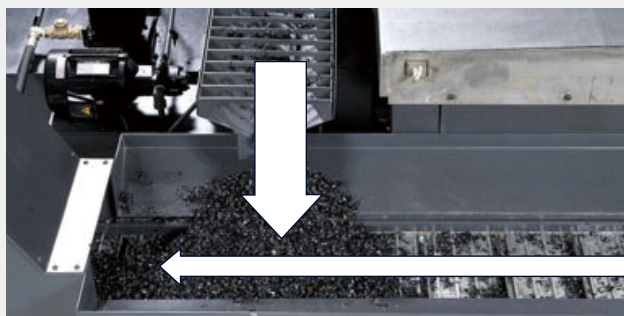
Full splash guard

The Full splash-guard covers the entire cutting area to prevent chips and coolant from flying off during machining operations.



Chip conveyor

Optional chip conveyors are available to evacuate discharged chips and to prevent chips and coolant from falling on the floor.



Lift-up chip conveyor option

- ※ The hinged-plate chip conveyor and the magnetic scraper chip conveyor are available as options.
- ※ The discharge direction can be selected - forward or backward. However, the DBM 2030 only has a forward discharge direction.

Chip bucket option

Forklift type

The bottom of the chip bucket has a space into which forks can be inserted to allow forklift transportation.

Rotation type

The chip bucket is fitted with a rotating joint that allows it to be tilted and emptied quickly.



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
			DBM -U series
Controlled axis	Controlled axes		5 (X,Y,Z,B,C)
	Simultaneously controlled axes		5 axes
	Additional controlled Axis		●
Data input/output	data server		●(1GB)
	Memory card input/output		●
	USB memory input/output		●
	Large capacity memory(2GB)*2	Available Option only with 15" Touch LCD (iHMI Only) *2)	○
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	●
Operation Guidance Function	AI contour control II	G5.1 Q_, 1000 Blocks *1)	●
	High smooth TCP		●
	EZ Guidei (Conversational Programming Solution)		●
	iHMI with Machining Cycle	Only with 15" Touch LCD standard *2)	●
Setting and display	EZ Operation package		●
	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	○

*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.

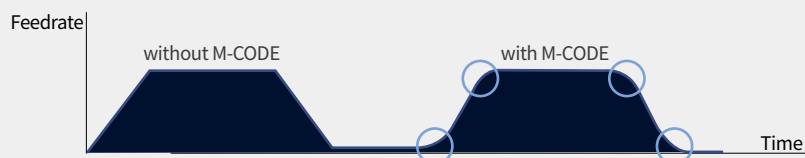
*2) Available Option only with Fanuc i plus iHMI

● Standard ○ Optional ✕ N/A ✳ Available
Network: FANUC MT Connect and FANUC OPC UA available.

CONVENIENT MACHINING

Work load counter control

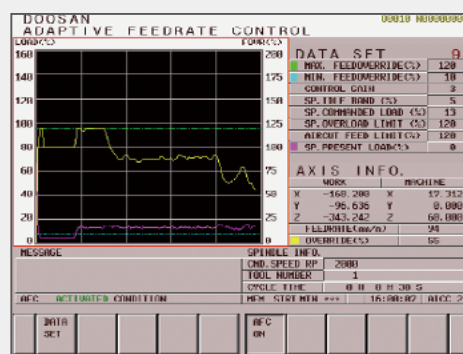
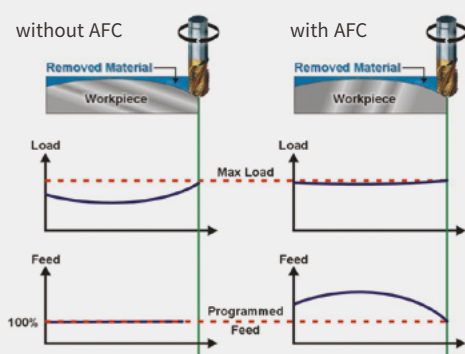
By selecting the appropriate M-Code according to the weight of the workpiece, the machine automatically decides the most effective and efficient moving pattern of the table.



M-Code	Weight of work piece	DBM2540	DBM2550
M380	5 tons(11023.0 lb) or less	●	●
M381	10 tons(22045.9 lb) or less	●	●
M382	15 tons(33068.9 lb) or less	●	●
M383	20 tons(44091.8 lb) or less	●	●

Adaptive feedrate control(AFC)

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



Process monitoring function and manual operation screen

In-process monitoring minimizes the risk of damage to the workpiece during cutting operations.

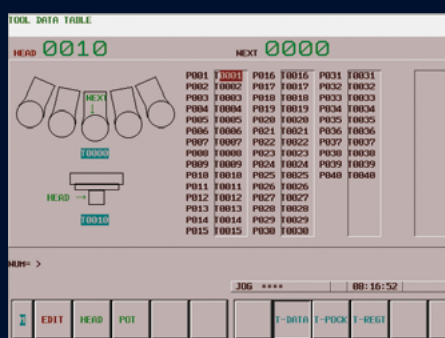
Tool load monitoring

During cutting operations, abnormal loads caused by wear and tear of the tool are detected, and an alarm is triggered to prevent further damage from occurring.

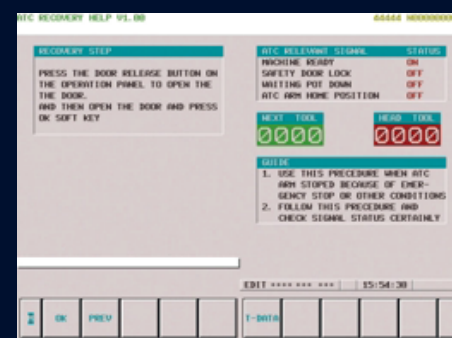


Tool management option

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



ATC manual operation screen



POWER | TORQUE

15000 r/min

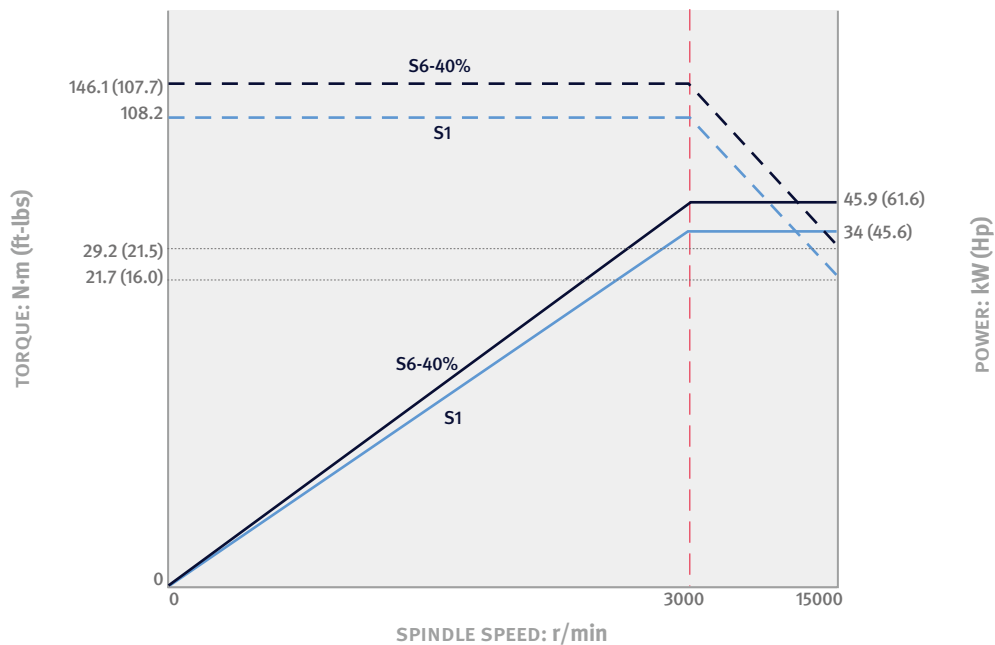
SPEED: **15000** r/min

POWER: **45.9/34** kW

61.6/45.6 kW

TORQUE: **146** N·m

107.7 ft-lbs



30000 r/min option

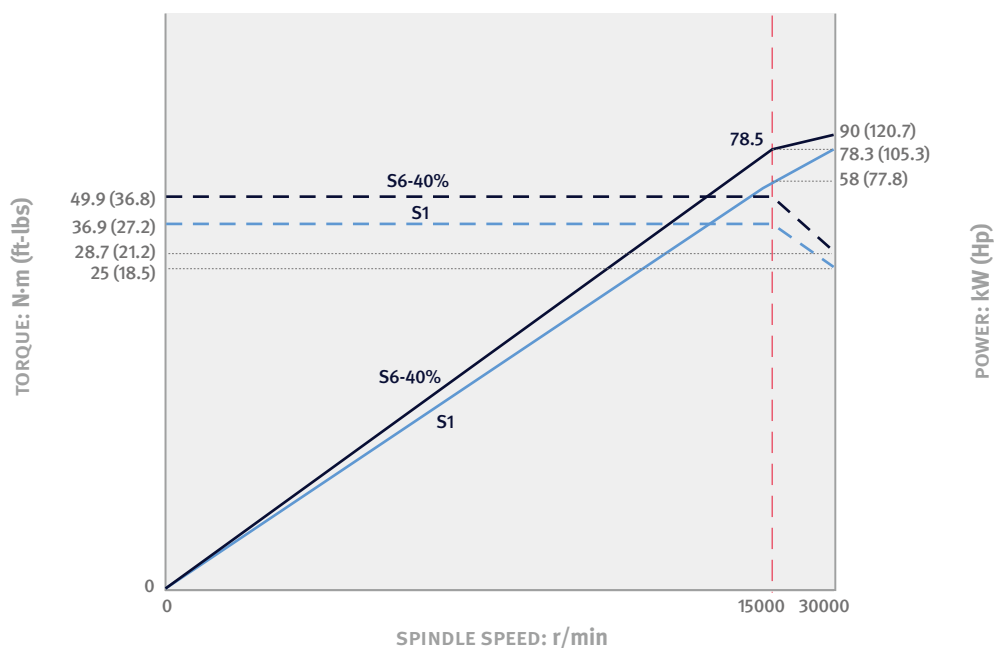
SPEED: **30000** r/min

POWER: **90/78.5** kW

120.7/105.3 kW

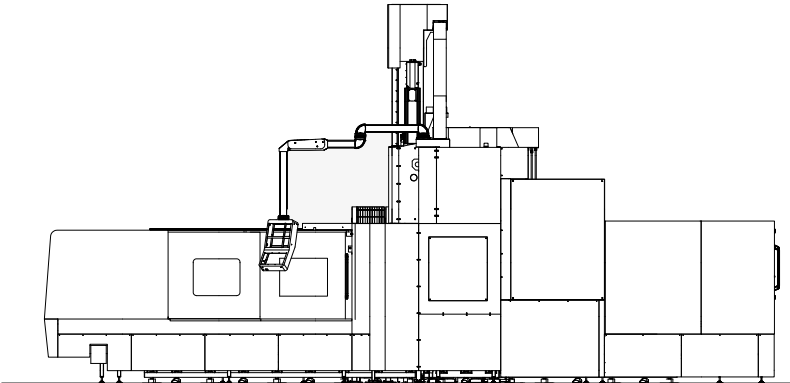
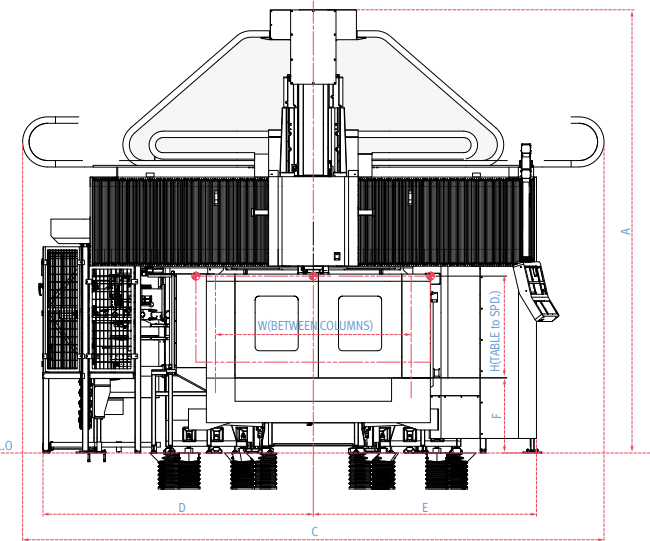
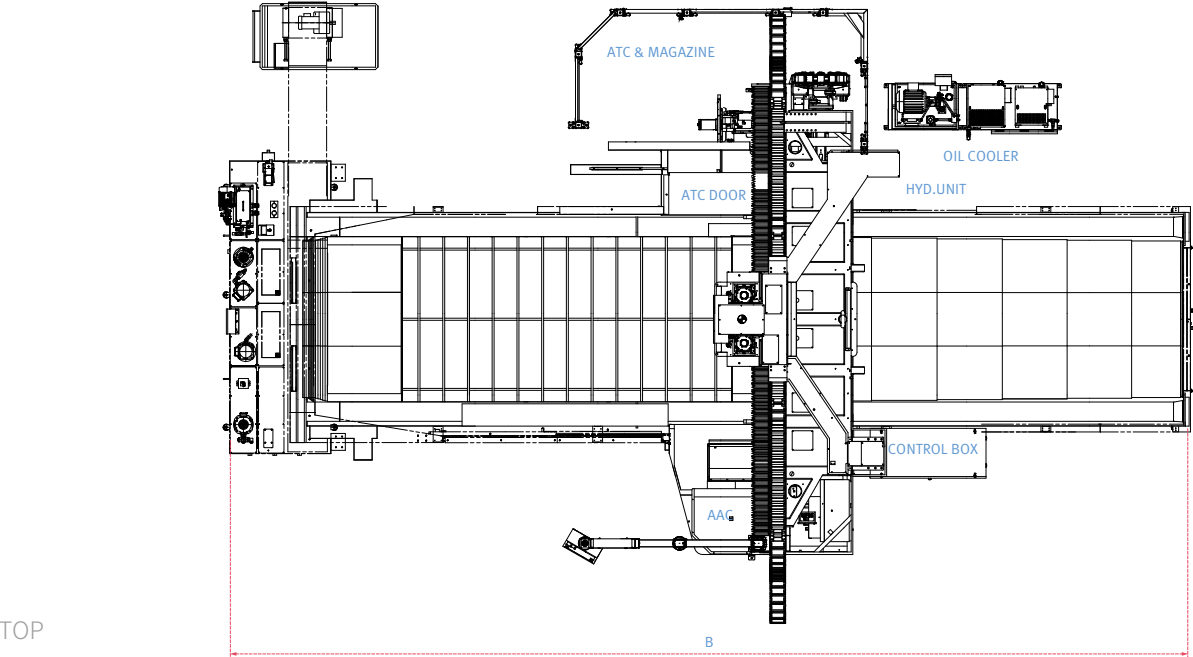
TORQUE: **49.9** N·m

36.8 ft-lbs



DIMENSIONS

Units : mm (inch)



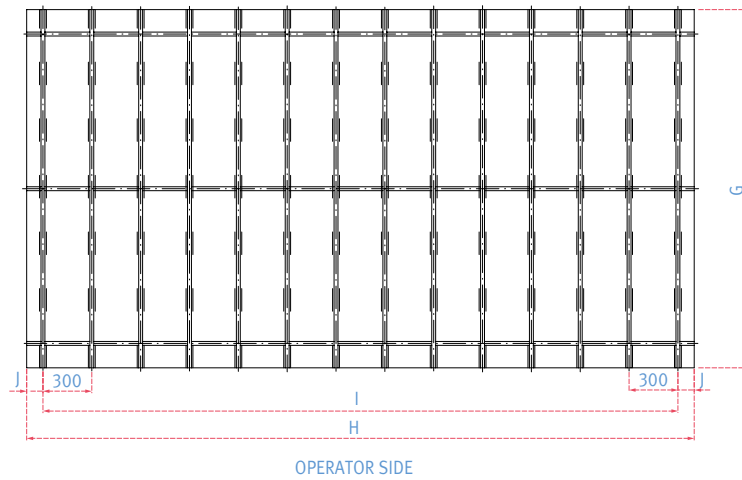
* Some peripheral equipment can be placed in other areas.

Model		A	B	C	D	E	F	H	W
DBM2030U	STD (Z800)	5700 (224.4)	10100 (397.6)	6930 (272.8)	2670 (105.1)	2602 (102.4)	960 (37.8)	900{960} (35.4{37.8})	2000 (78.7)
DBM2040U	STD (Z800)	5700 (224.4)	12100 (476.4)	6930 (272.8)	2670 (105.1)	2602 (102.4)	960 (37.8)	900{960} (35.4{37.8})	2000 (78.7)
DBM2540U	STD (Z800)	5700 (224.4)	12100 (476.4)	7430 (292.5)	2920 (115.0)	2852 (112.3)	960 (37.8)	900{960} (35.4{37.8})	2500 (98.4)
DBM2550U	STD (Z800)	5700 (224.4)	14100 (555.1)	7430 (292.5)	2920 (115.0)	2852 (112.3)	960 (37.8)	900{960} (35.4{37.8})	2500 (98.4)
DBM3050U	STD (Z800)	5700 (224.4)	14100 (555.1)	8600 (338.6)	3170 (124.8)	3102 (122.1)	960 (37.8)	900{960} (35.4{37.8}) 15K(30K)	3000 (118.1)

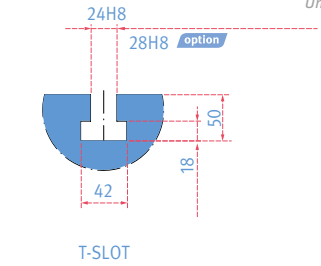
※ The dimensions above are the standard type for each model.

WORK AREA AND TABLE DIMENSIONS

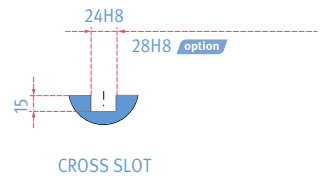
Units : mm (inch)



OPERATOR SIDE

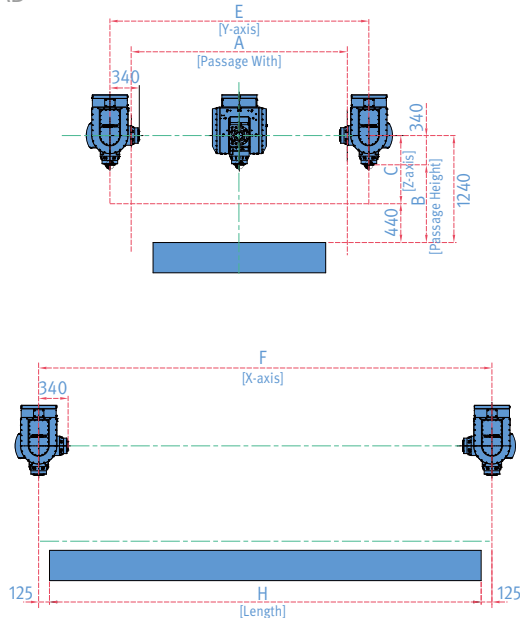


T-SLOT

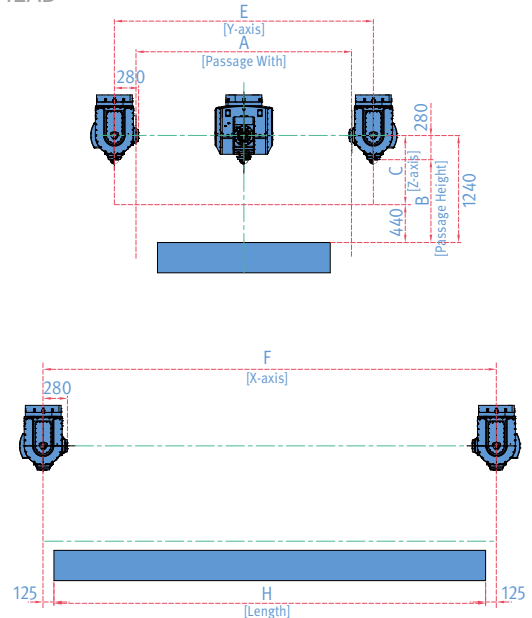


CROSS SLOT

15K HEAD



30K HEAD



MODEL	TABLE TYPE	A	B	C	E	F	G	H	I	J
DBM2030U	15 X 30	2000 (78.7)	900{960} (35.4{37.8})	800 (31.5)	2500 (98.4)	3250 (128.0)	1500 (59.1)	3000 (118.1)	2700 (106.3)	150 (5.9)
DBM2040U	15 X 40	2000 (78.7)	900{960} (35.4{37.8})	800 (31.5)	2500 (98.4)	4250 (167.3)	1500 (59.1)	4000 (157.5)	3600 (141.7)	200 (7.9)
DBM2540U	20 X 40	2500 (98.4)	900{960} (35.4{37.8})	800 (31.5)	3000 (118.1)	4250 (167.3)	2000 (78.7)	4000 (157.5)	3600 (141.7)	200 (7.9)
DBM2550U	20 X 50	2500 (98.4)	900{960} (35.4{37.8})	800 (31.5)	3000 (118.1)	5250 (206.7)	2000 (78.7)	5000 (196.9)	4800 (189.0)	100 (3.9)
DBM3050U	25 X 50	3000 (118.1)	900{960} (35.4{37.8})	800 (31.5)	3500 (137.8)	5250 (206.7)	2500 (98.4)	5000 (196.9)	4800 (189.0)	100 (3.9)

{ } option

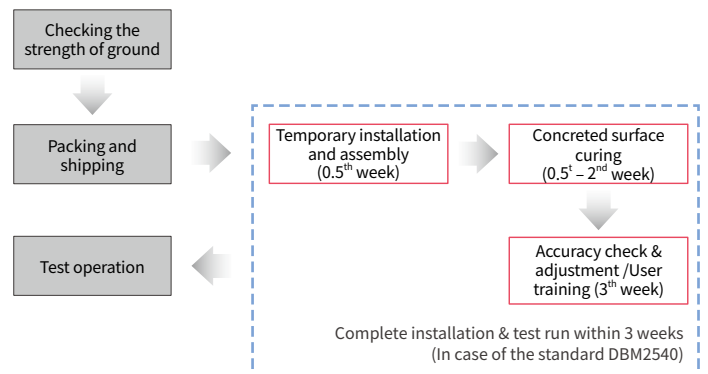
Installation precautions

1. Test for bearing capacity of soil should be taken more than four areas. (In particular, places for bed and column where the loads are concentrated must be tested.)
2. Basically, the bearing capacity of soil should exceed the values determined by DN Solutions. (Test for bearing capacity of soil should follow DN Solutions's standards.)
3. Our engineering team may be available even during the foundation work at customer's request.
4. 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.

Installation & test run

On-site installation and commissioning will be conducted according to a '5-week' schedule. [Excluding the concreted surface curing period (3rd week)]

※ The installation plan may vary according to the size of the machine, optional devices, and the conditions and environment of the site.



MACHINE SPECIFICATIONS

Item			Unit	DBM 2030U	DBM 2040U	DBM 2540U	DBM 2550U	DBM 3050U
Travel	X axis		mm (inch)	3250 (128.0)	4250 (167.3)	4250 (167.3)	5250 (206.7)	5250 (206.7)
	Y axis [ATC&AAC]		mm (inch)	2500 [+200] (98.4 [+7.9])		3000 [+200] (118.1 [+7.9])		3500 [+200] (137.8 [+7.9])
	Z axis		mm (inch)	800 (31.5)				
	Effective width between columns		mm (inch)	2000 (78.7)		2500 (98.4)		3000 (118.1)
	Table to spindle nose		mm (inch)	900 {960} (35.4 {37.8})				
Feedrate	Rapid traverse (X, Y, Z)		m/min (ipm)	24/24/15 (944.9/944.9/590.6)		20/20/15 (787.4/787.4/590.6)		
	Max. cutting feedrate (X, Y, Z)		mm/min (ipm)	10000/10000/10000 (393.7/393.7/393.7)				
Table	Table Size (Width x Length)		mm (inch)	1500x3000 (59.1x118.1)	1500x4000 (59.1x157.5)	2000x4000 (78.7x118.1)	2000x5000 (78.7x196.9)	2500x5000 (98.4x196.9)
	Load Capacity		kg (lb)	15000 (33068.9)	17000 (37478.0)	20000 (44091.8)	25000 (55114.8)	28000 (61728.5)
	T-Slot		mm (inch)	24H ₈ (28H ₈)				
Spindle (U-head)	Ram size		mm (inch)	380 x 380 (15.0 x 15.0)				
	Max. spindle speed		r/min	15000 {30000}				
	Tool taper		-	HSK-A100 {HSK-A63}				
	Spindle drive moto (S3 25%/Cont.)		kW (Hp)	45.9/34 {90/78.5}				
	Max. spindle torque		N · m (ft-lbs)	146 {49.9} (107.7 {36.8})				
	Rotation angle	B axis	deg	±110				
		C axis	deg	±220				
	Rotation speed	B axis	r/min	20				
C axis		r/min	20					
ATC	Tool storage capacity		ea	60				
	Max. tool diameter [continuous]		mm (inch)	80 {150} (3.1 {5.9})				
	Max. tool length		mm (inch)	300 (11.8)				
	Max. tool weight		kg (lb)	18				
	Max. tool moment		N · m (ft-lbs)	29.4 (21.7)				
	Tool selection type			Fixed address				
Machine size	Machine height		mm (inch)	5700 (224.4)				
	Floor space		mm (inch)	6930 X 12265 (272.8 X 482.9)	6930 X 14265 (272.8 X 561.6)	7430 X 14265 (292.5X 561.6)	7430 X 16265 (292.5X 640.4)	8600 X 16265 (338.6X 640.4)
	Machine weight		kg (lb)	37000 (81569.8)	41000 (90388.2)	46000 (101411.1)	50000 (110229.5)	54000 (119047.9)

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.

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		51	Technical centers Technical center, Sales support, Service support, Parts support
4	Corporations	200	Service posts
156	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



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



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