

#### **Basic Information**

Basic Structure Performance

### Detailed

Optimized Tool **Processing Solution** Capacity Diagram Specifications



# **BM** series

The BM Sereis is a large double-column type machining center designed to process molds. Equipped with a lowvibration built-in spindle, the machining center is suitable for a variety of works from roughing to finishing. The new improved design delivers greater efficiency, thereby raising customers' productivity and creating maximum added value.

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## Equipped with a high-speed, high-rigidity spindle as a standard feature

- 12000 r/min high-speed spindle
- Long-nose type ideal for deep pocket mold cutting
- Equipped with a dual contact spindle as a standard feature for high rigidity and minimum vibration



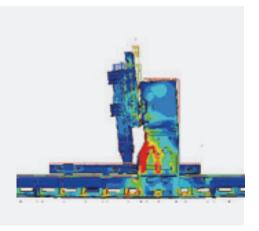
## Standard feed axes equipment for higher level of precision

- All axes provided with a linear scale as a standard feature
- Ball screw bearings and nut cooling system



# Adoption of structure and control solution for high-quality mold cutting

- Covers provided to minimize the impact of ambient temperature
- Thermal displacement compensation for spindle and structure included as a standard feature



#### Sample work



Press mold



Injection mold



Refrigerator mold



Automotive mold



#### **Basic Structure**

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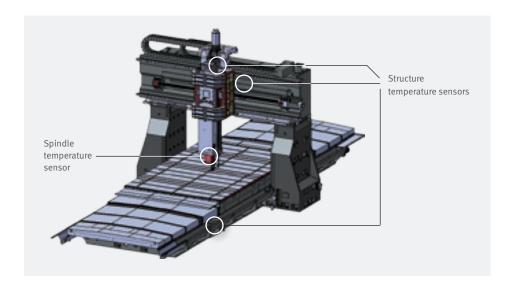
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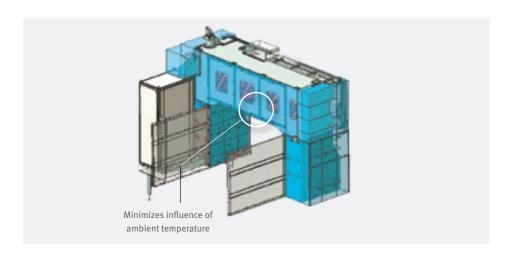
Double-column structure for stable precision level

#### Thermal Displacement Compensation for Spindle and Structure Included as a **Standard Feature**

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



Important parts of the structure are covered to minimize the impact of ambient temperature





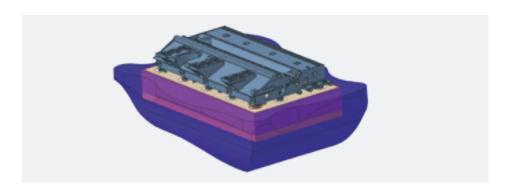
#### **Foundation**

Anchoring is recommended to ensure machining accuracy over a long time.

★ Please consult with Doosan sales technicians regarding ground and operating conditions.

#### **Machine Foundation\***

Since machining accuracy is highly dependent on the machine's foundation, anchoring is recommended to maintain accuracy over a long period of time. The anchor bolts and other related parts for foundation work are supplied as standard items.



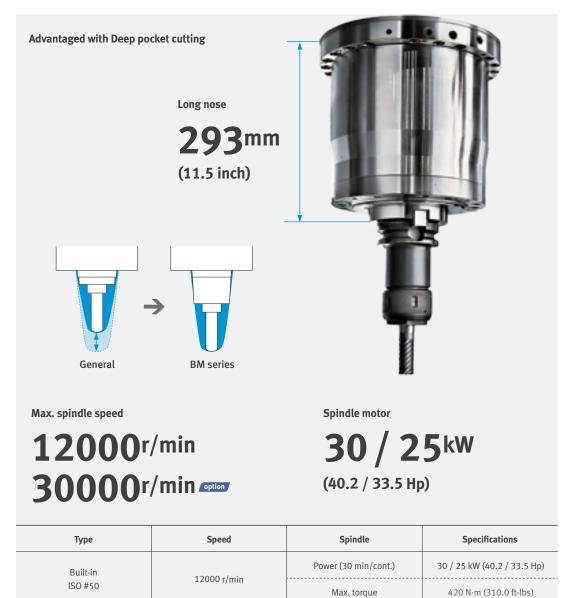


#### **Spindle**

A high-speed, highrigidity built-in spindle is provided as a standard feature to enhance the productivity of machining large works as well as smaller parts.

#### **Built-in Spindle Optimized for Cutting Molds**

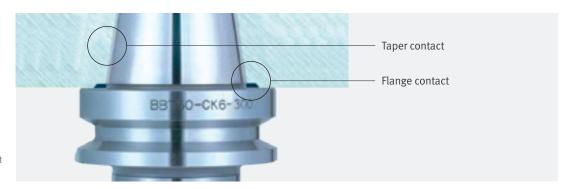
- Vibration and noise minimized with built-in spindle
- Long-nose spindle protrudes by 293 mm (11.5 inch), making it ideal for cutting deep pocket molds
- Dual contact spindle included as a standard feature for high rigidity and vibration



#### **Dual Contact Spindle**

Tool rigidity is enhanced by the firm clamping of the spindle. Tool lifecycle and cut-surface roughness have been improved as a result of the reduced vibration realized by the dual contact spindle.

Max. torque



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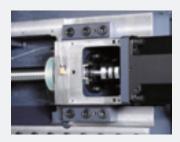
Equipped with roller LM Guideways for increased rigidity and a cooling system as a standard feature to minimize thermal displacement.

#### **Stable and Fast Feed Shaft Structure**

Roller-type LM Guideways deliver high rigidity to guarantee the outstanding accuracy of the linear feed system.

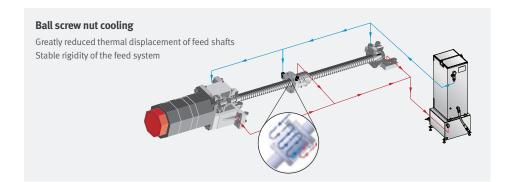
#### High-rigidity feed system structure





Roller guides

Rigid coupling



#### Linear scale – standard for all axes

All axes are equipped with the linear scale as a standard feature to maintain the highest degree of accuracy over many hours of operation.



Additional 200mm (7.9 inch) Y-axis for table self-cutting & extended cutting area.

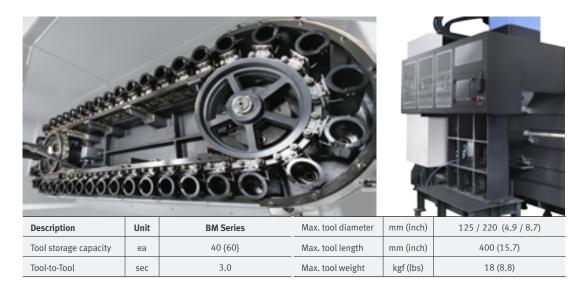


Description	Unit	BM 1530M	BM 2035M	BM2740M
Stroke (X / Y / Z)	mm	3000 / 1550 / 800	3500 / 2050 / 800	4000 / 2700 / 800
Stroke (A / 1 / Z)	(inch)	(118.1 / 61.0 / 31.5)	(137.8 / 80.7 / 31.5)	(157.5 / 106.3 / 31.5)
Rapid traverse (X / Y / Z)	m/min	16 / 16 / 16	16 / 16 / 16	12 / 16 / 16
Kapid traverse (X / Y / Z)	(ipm)	(629.9 / 629.9 / 629.9)	(629.9 / 629.9 / 629.9)	(472.4 / 629.9 / 629.9)

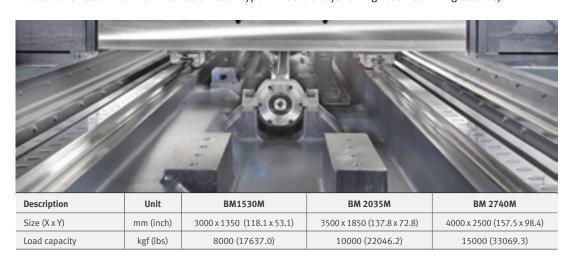


#### **Tool Magazine**

Enhanced productivity realized with the CAM-type tool changer (standard) for quicker tool changing.



The table is fitted with 2 or 3 lanes of roller-type LM Guideways for highest machining stability.





#### **Machining Performance**

Enhanced productivity realized with the CAM-type tool changer (standard) for quicker tool changing.

Cutting Drococs	Tool	Spindle Speed	Feedrate	<b>Cutting Width</b>	<b>Cutting Depth</b>	<b>Cutting capability</b>
Cutting Process	mm (inch)	r/min	mm/min (ipm)	mm (inch)	mm (inch)	cm <sup>3</sup> /min (inch)
		500	2900 (114.2)	100 (3.9)	3.0 (0.1)	820 (50.0)
	D125 (D4.9)	500	1800 (70.9)	100 (3.9)	4.0 (0.2)	720 (43.9)
FACEMILL (SM45C)		500	1300 (51.2)	100 (3.9)	5.0 (0.2)	650 (39.7)
(314145C)		500	1100 (43.3)	100 (3.9)	6.0 (0.2)	660 (40.3)
		400	720 (28.3)	100 (3.9)	7.0 (0.3)	504 (30.8)

<b>Cutting Process</b>	<b>Tool</b> mm (inch)	Cutting Width mm (inch)	Cutting Depth mm (inch)	Cutting capability cm³/min (inch)
II DDIII	D80	500 (2.9)	100 (3.9)	40 (2.4)
U-DRILL	(D3.1)	600 (23.6)	100 (3.9)	40 (2.4)
TAP	M42 x 4.5	113 (4.4)	508 (20.0)	50 (3.1)

<sup>\*</sup> 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.

● Standard ○ Optional

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Various options are available to satisfy the customers' requirements.

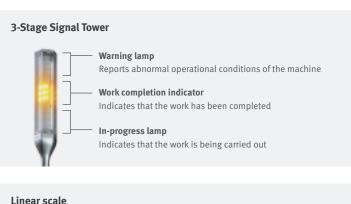
			Standard Optional
NO.	Description	Features	BM Series
1		12000 r/min, 30 / 25 kW (30min / Cont.)	•
2		FLOOD COOLANT PUMP_0.9 kW_0.45 MPA	•
3	Cuindle	FLOOD COOLANT PUMP_3.7 kW_2.0 MPA	0
4	Spindle	THROUGH SPINDLE COOLANT_None	•
5		THROUGH SPINDLE COOLANT_1.5 kW_2.0 MPA	0
6		THROUGH SPINDLE COOLANT_3.7 kW_2.0 MPA	0
7		LINEAR SCALE (X, Y, Z-AXIS)	•
8	Travels	RAISING BLOCK 200 mm	0
9		RAISING BLOCK 300 mm	0
10		MAGAZINE CAPACITY: 40 TOOLS	•
11	Magazine	MAGAZINE CAPACITY: 60 TOOLS	0
12		FANUC 31I-B	•
13		DSQ1 (AICC II_200 BLOCKS)	•
14		DSQ2 (DSQ1 & DATA SERVER 1GB)	0
15	Control System	DSQ3 (DSQ2 & 600 BLOCKS)	0
16		DSQ4 (DSQ3 & 1000 BLOCKS)	0
17		EXTRA M CODE	0
18		FLASH MEMORY CARD	0
19		SEMI SPLASH GUARD	•
20		FULL SPLASH GUARD	0
21		OIL SKIMMER	0
22		COOLANT GUN	•
23		CHIP CONVEYOR	0
24		AIR BLOWER	•
25		AIR GUN	0
26		AIR CONDITIONER	0
27	Others	ELECTRIC CABINET LIGHT	0
28		WORK & TOOL COUNTER	0
29		1 MPG	•
30		3 MPG	0
31		LCD Display MPG	0
32		TRANSFORMER	0
33		3-STAGE SIGNAL TOWER	•
34		WORK LIGHT	•
35		Coolant level switch: Sensing level - Low **	0

#### **Optional Devices**

Various solutions are available for better machining performance and higher-quality.









## **Power saving function**This function saves electricity when the machine is not in use.



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#### **Optimized Tool Processing Solution**

Superior surface finishes and machining accuracy are achieved through using standard processing solutions such as high-speed / highprecision contour control and thermal displacement compensation.

#### High Speed / High Precision Contour Control

• DSQ1

(AICC2 \_ 200 Block + Machining condition selection function)

• DSQ2 option

(DSQ1 + Data server [1GB])

DSQ3 option

(DSQ2 + High speed processing \_ 600 Block)

• DSQ4 option (DSQ3 + High speed processing\_1000 block)



**Specimen** tested : VASE

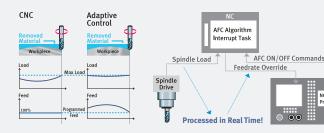
\* DSQ: Doosan Super Quality

With DSQ

#### The Optimal Feed Control option

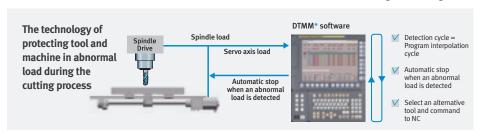
\* DAFC: Doosan Adaptive Feedrate Control

**Optimal feed** control is ensured by real-time spindle load detection.



#### Tool Load Monitoring System (DTMM\*) option

\* DTMM: Doosan Tool load Monitoring for Machining Centers



#### Smart thermal displacement multi compensation technology

\*DSTC: Doosan Smart Thermal Control

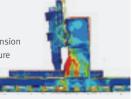
Realizes high-quality, high-precision machining with smoothing thermal displacement compensation of the spindle and structure.

#### **Compensation of static** displacement of spindle

Compensates changes in tool position caused by expansion of the spindle shaft at high speed.

#### Structure thermal displacement compensation

Compensates irregular deflection or expansion of the structure due to ambient temperature using a multiple temperature sensors.



#### Compensation of structure thermal displacement

Thermal error of the spindle caused by heat accumulation is compensated with 5 algorithms including a smoothing function.





Thermal displacement of the Thermal displacement spindle after compensation of spindle Thermal displacement of the spindle before compensation Spindle rotation Time

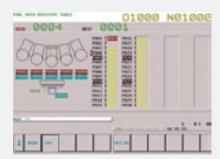
Without smoothing With smoothing



#### **Easy Operation Package**

#### **Operation / Maintenance**

These Doosan software packages have been customized to provide fast and easy setup of tooling, workpiece, and program. These functions minimize the idle time caused by process setup and maximize the machine's productivity.



#### Tool Data Registry Table

Displays the information on the tools in the pot in 2D graphics.



#### Engraving option

Allows character engraving on the workpiece.



#### **ATC Recovery Help**

When ATC is stopped (malfunction or emergency), this function guides the operator to recover the machine back to its normal state.



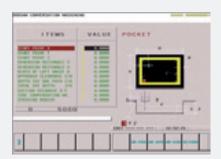
## Renishaw Gui (Tool measure) (Work measure option)

Enables automatic measurement of tool length, tool diameter, and work coordinates, and detects tool damage using an interactive method.



#### **Sensor Status Monitor**

Shows solenoid valve and sensor status without the electric diagram.



#### **Pattern Cycle**

Pattern cycle programs can be created using an interactive way of parameter input.



#### Tool Load Monitor option

Detects tool damage and wear by setting limits on the load for spindle and axis to minimize mechanical damages.



#### Calculator

Provides all functions of a general calculator plus automatic calculation of cutting size and conditions.

#### Power-Torque Diagram / Tool Shank

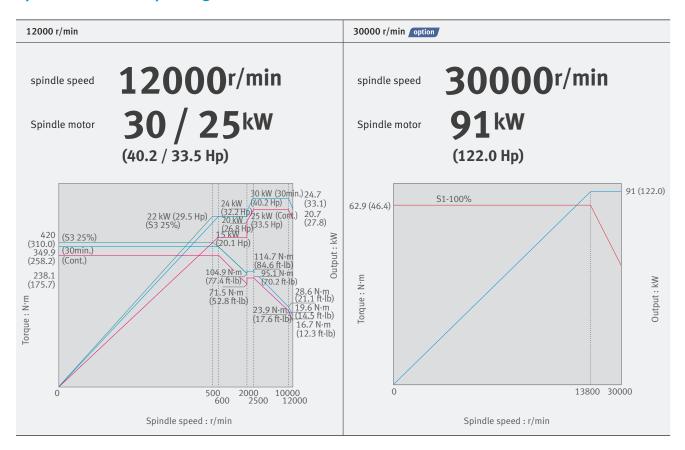
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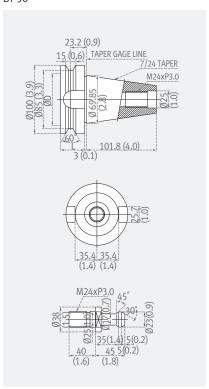
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#### **Spindle Power – Torque Diagram**

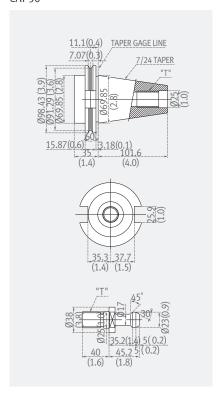


#### **Tool Shank**

BT 50

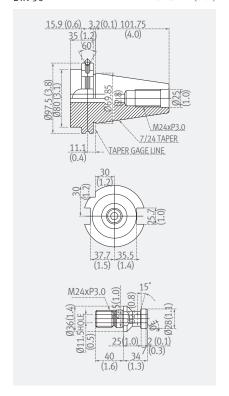


CAT 50



DIN 50

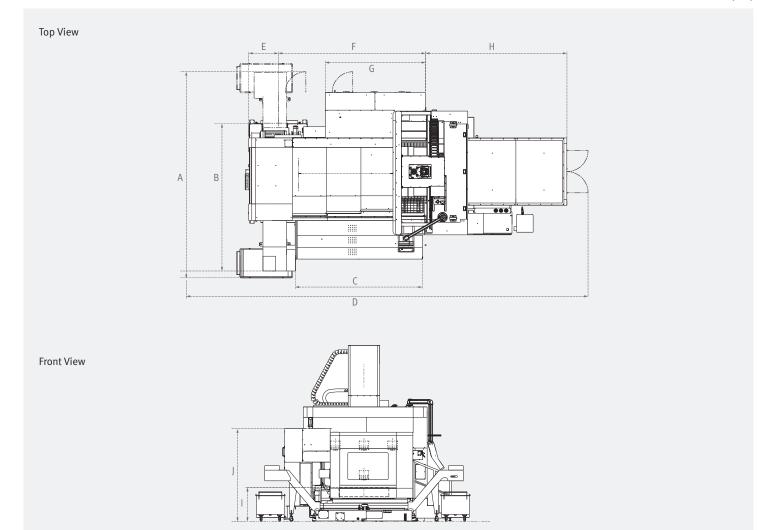
Unit: mm (inch)



#### **External Dimensions / Table**

#### **External Dimensions**

Unit: mm (inch)

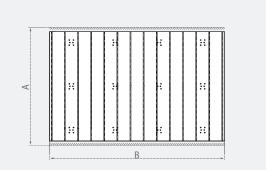


Model	Α	В	С	D	E	F	G	Н	I	J
BM 1530M	5543 (218.2)	4282 (168.6)	2768 (109.0)	10944 (430.9)	677 (26.7)	3985 (156.9)	2715 (106.9)	3826 (150.6)	2520 (99.2)	923 (36.3)
BM 2035M	5943 (234.0)	4682 (184.3)	3000 (118.1)	11963 (471.0)	1036 (40.8)	3985 (156.9)	2715 (106.9)	4246 (167.2)	2520 (99.2)	923 (36.3)
BM 2740M	6636 (261.3)	5042 (198.5)	3500 (137.8)	13459 (529.9)	1772 (69.8)	3983 (156.8)	2712 (106.8)	4733 (186.3)	2550 (100.4)	953 (37.5)

<sup>\*</sup> Some peripheral equipment can be placed in other places

#### **Table**

Unit: mm (inch)



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Model	Α	В	С	T-SLOT distance	Quantity
BM 1530M	1350 (53.1)	3000 (118.1)	210 (8.3)	300	10 ea
BM 2035M	1850 (72.8)	3500 (137.8)	210 (8.3)	300	11 ea
BM 2740M	2500 (98.4)	4000 (157.5)	210 (8.3)	300	14 ea

 $<sup>\</sup>ensuremath{^{**}}$  Providing anchoring bolts. Foundation work must be done.

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#### **Machine Specifications**



Description	on	Unit	BM 1530M	BM 2035M	BM2740M	
Travel	X-axis	mm (inch)	3000 (118.1)	3500 (137.8)	4000 (157.5)	
	Y-axis	mm (inch)	1550 (61.0)	2050 (80.7)	2700 (106.3)	
	Z-axis	mm (inch)	800 (31.5)	800 (31.5)	800 (31.5)	
Table	Spindle to table surface	mm (inch)		1000	150~950 (5.9~37.4)	
	Distance between columns	mm (inch)	1700 (66.9)	2200 (86.6)	2700 (106.3)	
	Table size	mm (inch)	3000 x 1350 (118.1 x 53.1)	3500 x 1850 (137.8 x 72.8)	4000 x 2500 (157.5 x 98.4)	
	Loading capacity	kg (lb)	8000 (17636.7)	10000 (22045.9)	15000 (33068.9)	
	Table surface	-	T-SLOT (10-300 x 24H8)		LOT x 24H8)	
Spindle	Speed	r/min		12000 {30000}*		
	Taper	-	ISO #50, 7/24			
	Max. torque	N∙m (ft-lb)	420 (310.0)			
	Spindle power	kW (Hp)	30 / 25 (40.3 g) [30min / Co			
Feed rate	Rapid feedrate (X / Y / Z)	m/min (ipm)		6 / 16 9.9 / 629.9)	12 / 16 / 16 (472.4 / 629.9 / 629.9)	
	Cutting feedrate	mm/min (ipm)	8000 (	(315.0)	6000 (236.2)	
ATC	Tool shank type	-		BT / CAT / DIN 50	1	
	Tool storage capacity	ea	40 {60}*			
	Max. tool diameter [w/o adjacent tool]	mm (inch)	125 [220] (4.9 [8.7])		))	
	Max. tool length	mm (inch)		400 (15.7)		
	Max. tool weight	kg (lb)		18 (39.7)		
	Max. tool moment	N∙m (ft-lb)		12.74 (9.4)		
	Tool selection type	-		MEMORY RANDOM	I	
	Tool change time (T-T-T)	S	3.0			
Machine	Height	mm (inch)	4770 (187.8)	4770 (187.8)	4675 (184.1)	
Size	Dimension (L x W)	mm (inch)	8690 x 4450 (342.1 x 175.2)	9540 x 4960 (375.6 x 195.3)	10825 x 5535 (426.2 x 217.9)	
	Weight	kg (lb)	29000 (63933.1)	35500 (78262.9)	48000 (105820.3)	

## **FANUC**

No.	Item		Spec.	Fanuc 31i
1		Additional controlled axes	5 axes in total	0
2	Axes Control	Least command increment	0.001 mm / 0.0001"	•
3		Least input increment Interpolation type pitch error compensation	0.001 mm / 0.0001"	0
5		2nd reference point return	G30	0
6		3rd / 4th reference return		0
7		Inverse time feed		0
8		Cylinderical interpolation	G07.1	0
9		Helical interpolation B Smooth interpolation	Only Fanuc 30i	X
11		· ·		
		NURBS interpolation		0
12		Involute interpolation Helical involute interpolation		0
14		Bell-type acceleration / deceleration before look ahead interpolation		0
15		Smooth backlash compensation		•
16	Interpolation &	Automatic corner override	G62	0
17	Feed Function	Manual handle feed rate	x1, x10, x100 (per pulse)	•
18 19		Handle interruption  Manual handle retrace		0
20		Nano smoothing	Al contour control II is required.	0
21		AICC II	200 BLOCK	•
22		AICC II	400 BLOCK	0
23		High-speed processing	600 BLOCK	X
24		DSQ I	AICC II (200block) + Machining condition selection function  AICC II (200block) + Machining condition selection function +	•
25		DSQ II	AICC II (200block) + Machining condition selection function + Data server(1GB)  AICC II with high speed processing (600block) + Machining	0
26		DSQ III	condition selection function + Data server (1GB)  AICC II with high speed processing (1000block)	0
27		DSQ IV	+ Machining condition selection function + Data server (1GB)	0
28	Spindle &	M- code function		•
29	M-code Function	Retraction for rigid tapping	507.577	•
30 31		Rigid tapping  Number of tool offsets	G84, G74 64 ea	
32		Number of tool offsets	99 / 200 / 400 / 499 / 999 / 2000 ea	0
33		Tool nose radius compensation	G40, G41, G42	•
34	Tool Function	Tool length compensation	G43, G44, G49	•
35		Tool life management		•
36 37		Addition of tool pairs for tool life management Tool offset	G45 - G48	0
38		Custom macro	045 - 046	
39		Macro executor		•
40		Part program storage	256KB (640m)	•
41		Part program storage	512KB (1,280m) / 1MB (2,560m) / 2MB (5,120m) / 4MB (1,0240m), 8MB (2,0480m)	0
42		Inch/metric conversion	G20 / G21	•
43	Programming & Editing Function	Number of Registered programs  Number of Registered programs	500 ea 1000 / 4000 ea	0
45	Editing Function	Optional block skip	9 BLOCK	0
46		Playback function	,	0
47		Addition of workpiece coordinate system	G54.1 P1 - 48 (48 pairs)	48 pairs
48		Addition of workpiece coordinate system	G54.1 P1 - 300 (300 pairs)	0
49		Tilted working plane indexin g command Tilted working plane indexing function	G68.2  Programming TWP command on guidance window	O Y
50 51		Embeded Ethernet	Programming TWP command on guidance window	X
52		USB memory interface	Only Data Read & Write	•
53		High speed skip function		0
54		Polar coordinate command	G15 / G16	0
55		Polar coordinate interpolation	G12.1 / G13.1	0
56		Programmable mirror image Scaling	G50.1 / G51.1 G50, G51	0
57 58		Single direction positioning	G60	0
59		Pattern data input		0
60		Jerk control	Al contour control II is required.	0
61	OTHERS	Fast Data server with1GB PCMCIA card		0
62	FUNCTIONS (Operation,	Fast Ethernet		0
63 64	setting	3-dimensional coordinate conversion 3-dimensional tool compensation		0
65	& Display, etc)	Figure copying	G72.1, G72.2	0
66		Machining time stamp function		0
67		Machine alarm diagnosis		Х
68		CNC screen display		•
69 70		CNC screen dual display function One touch macro call		0
70 71		EZ Guide i (Conversational Programming Solution)		0
72		Dynamic graphic display	- Machining profile drawing.     - When the EZ Guide i is used, the Dynamic graphic display cannot application	0

#### **BM** series



Description		Unit	BM 1530M BM 2035M		BM 2740M	
	X-axis	mm (inch)	3000 (118.1) 3500 (137.8)		4000 (157.5)	
Axes Travel Distance	Y-axis	mm (inch)	1550 (61.0) 2050 (80.7)		2700 (106.3)	
	Z-axis	mm (inch)	800 (31.5)			
Table Size (X x Y)		mm (inch)	3000 x 1350 3500 x 1850 (118.1 x 53.1) (137.8 x 72.8)		4000 x 2500 (157.5 x 98.4)	
Distance between co	olumns	mm (inch)	1700 (66.9) 2200 (86.6)		2700 (106.3)	
Table Loading Cap	acity	kg (lb)	8000 (17636.7) 10000 (22045.9)		15000 (33068.9)	
Max. Spindle Speed		r/min	12000 {30000}*			
No. of Tool Storage		ea	40 {60}*			

\* { } : Option

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- \* For more details, please contact Doosan Machine Tools.
- \* The specifications and information above-mentioned may be changed without prior notice.
- \* Doosan Machine Tools Co., Ltd. is a subsidiary of MBK Partners. The trademark **DOOSAN** is used under a licensing agreement with Doosan Corporation, the registered trademark holder.





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# BM 1530/2035/2740

The BM General series are double-column type machining center designed to process general part. High torque spindle and new improved design delivers greater efficiency, there by raising customers' productivity and creating maximum added value.

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#### Equipped with a high-speed, high-rigidity spindle as a standard feature

• Equipped with a dual contact and built-in type spindle as a standard feature for high rigidity and minimum vibration.

#### Stabilize structure for higher level of precision

• Apply double column structure & 3 LM guide way for high precision.

#### Easy operation for improving convinience to use NC system

- Easy operation for user's convenient machine operation.
- The EOP functions for the user-friendliness has improved the convenience of customers.



#### **Basic Structure**

Basic information

Basic Structure Cutting Performance Double-column structure for stable precision level.

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Travel distance (X x Y axis)

BM 1530

3000 x 1550 mm

(118.1 x 61.0 inch)

BM 2035

3500 x 2050 mm

(137.8 x 80.7 inch)

BM 2740

4000 x 2700 mm

(157.5 x 106.3 inch)



BM 1530 & BM 2035 & BM 2740

z axis 800 mm

(31.5 inch)



#### **Spindle**

A high-speed, high- and vibration rigidity built- in spindle is provided as a standard feature to enhance the productivity of machining large works.





Proper table size for large works.



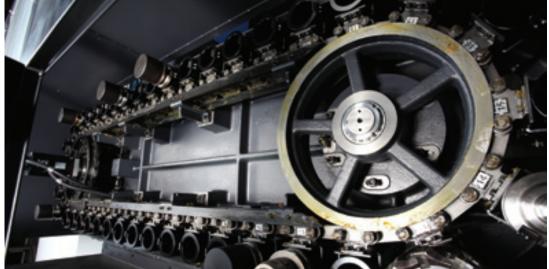


#### Tool change system

Higher productivity can be achieved with the CAM-type tool changer that supports faster tool changing. Tool storage capacity

Tool change time

3.0 s



## review

#### **Foundation**

#### Basic information

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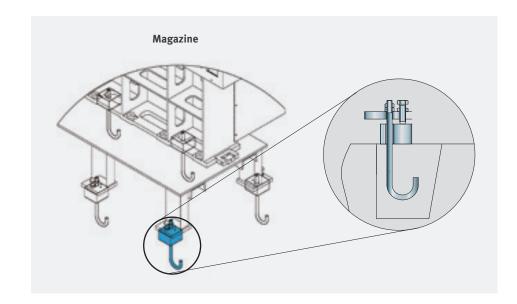
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Anchoring is recommended to ensure machining accuracy over a long time.

\* Please consult with Doosan sales technicians regarding ground and operating conditions.

#### **Machine Foundation\***

We provide the anchor bolts for magazine as a standard feature and the anchor bolts for machine as an option related parts for foundation work are supplied as standard items. Since machining accuracy is highly dependent on the machine's foundation, anchoring is recommended to maintain accuracy over a long period of time.



#### **Cutting Performance**

High cutting performance with high speed built-in spindle.

#### **Machining Performance** (BM 2740)

Face mill (ø125mm) Carb					
Machining rate (cm³/min (inch³/min))	Spindle speed (r/min)	Feedrate (mm/min (ipm))			
595 (36.3)	500	850 (33.5)	7mm (0.3 inch) 100mm (3.9 inch)		
Face mill (ø125mm) Gray	r casting(GC25)				
Machining rate (cm³/min (inch³/min))	Spindle speed (r/min)	Feedrate (mm/min (ipm))			
960 (58.6)	500	1200 (47.2)	(0.3 insh) 100mm (3.9 inch)		
<b>Tap</b> Carbon steel (SM45C)	Tap Carbon steel (SM45C)				
Tool	Spindle speed (r/min)	Feedrate (mm/min (ipm))			
M42 x P4.5	180	810 (31.9)			



Various options are available to satisfy the customers' requirements.

● Standard ○ Optional X Not applicable

				Junaana	О ориона у	Тиот аррисавте
NO.	Description	Features		BM 1530	BM 2035	BM 2740
1	- Spindle	8000 r/min	30/25 kW (40.2/33.5 Hp), 600 N·m (442.8 ft-lbs)	•	•	Х
2	Spiritie	10000 r/min	30/25 kW (40.2/33.5 Hp), 420 N·m (310.0 ft-lbs)	Х	Х	•
3	Manarina	Tool storage capacity	40 ea	•	•	•
4	Magazine	1001 Storage capacity	60 ea	0	0	0
5		BIG PLUS BT50		•	•	•
6	Tool shank type	BIG PLUS CAT50		0	0	0
7		BIG PLUS DIN50		0	0	0
8	Raising Block	200 mm (7.9 inch)		0	0	0
9	Raising Block	300 mm (11.8 inch)		0	0	0
9		FLOOD	0.45 MPa (1.1 kW)	•	•	•
10		12005	0.69 MPa (1.8 kW)	0	0	0
11	- Coolant		None	•	•	•
12	Coolant	TSC	2 MPa (1.5kW)	0	0	0
13			2.0 MPa (4 kW)	0	0	0
14		Coolant level switch : Sensing level - I	.0W **	0	0	0
15		Chip conveyor  Chip bucket	Chip pan	•	•	•
16			Hinged type	0	0	0
17			Forklift type	0	0	0
18	Chip disposal	Chip bucket	Rotating type	0	0	0
19		Air blower		0	0	0
20		Air gun		0	0	0
21		Coolant gun		•	•	•
22	Precision	Linear scale	X / Y / Z axis	0	0	0
23	machining option	AICC I (30 block)		•	•	•
24	орион	AICC II (200 block)		0	0	0
25		Automatic tool measurement	TS27R_RENISHAW	0	0	0
26	Measurement &	natomatic toot measurement	OTS_RENISHAW	0	0	0
28	Automation	Automatic tool breakage detection	Needle	0	0	0
29		Automatic workpiece measurement	OMP60_RENISHAW	0	0	0
30		LED Work light		•	•	•
31		3 Color signal tower		•	•	•
32	Others	Tool load monitoring		•	•	•
33		EZ Guide i		0	0	0
34		Automatic power off		0	0	0
35	Lubrication	Grease		0	0	0
36	Attachment	Manual angle head		0	0	0

#### Basic information

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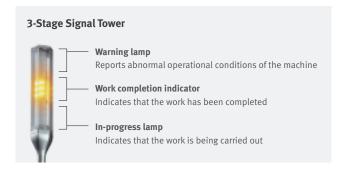
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#### **Optional Devices**

Various solutions are available for better machining performance and higher-quality.









#### Power saving function

This function saves electricity when the machine is not in use.

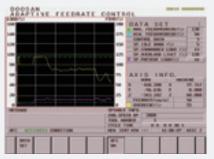




## Easy Operation Package

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

#### **Adaptive Feed Control (AFC)**



Function to control feedrate so that the cutting can be carried out at a constant load

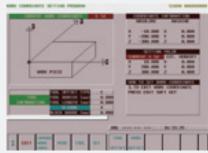
(To adapt to the spindle load set up with constant load feedrate control function)

#### **Tool Load Monitor**



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

#### **Work Offset Setting**



Function to configure various work offset settings

#### **Sensor Status Monitor**



Function to view sensor conditions of the machine

#### **Tool Management**



Function to manage tool information [Tool information]

- Tool No. / Tool name
- Tool condition : normal, large diameter, worn/damaged, used for the first time, anual

#### Pattern Cycle & Engraving



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**

#### **Alarm Guidance**



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

#### 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 / Table

#### **Basic information**

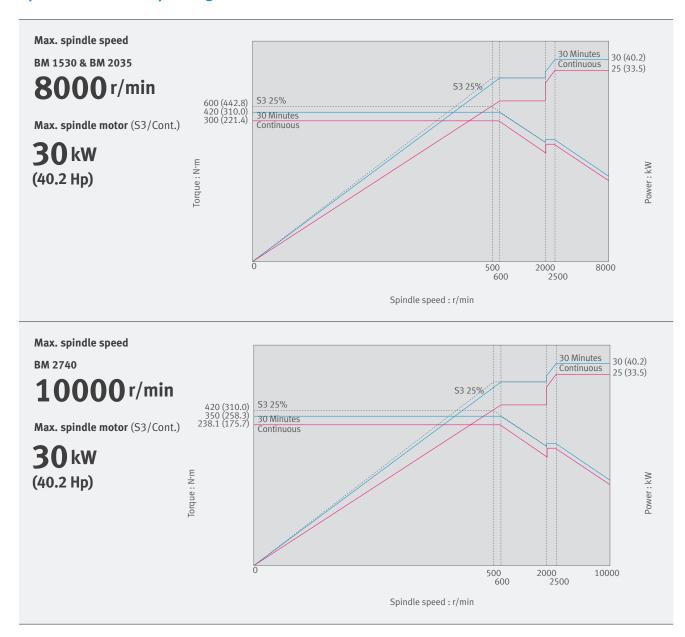
Basic Structure Cutting Performance

#### Detailed Information

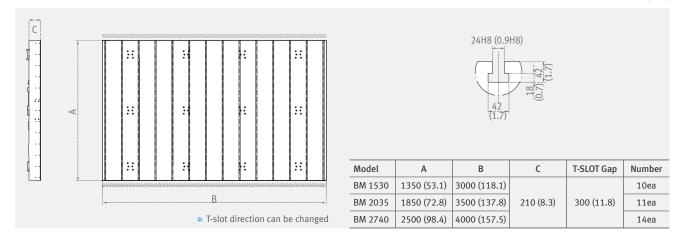
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#### **Spindle Power – Torque Diagram**



**Table** Unit: mm (inch)

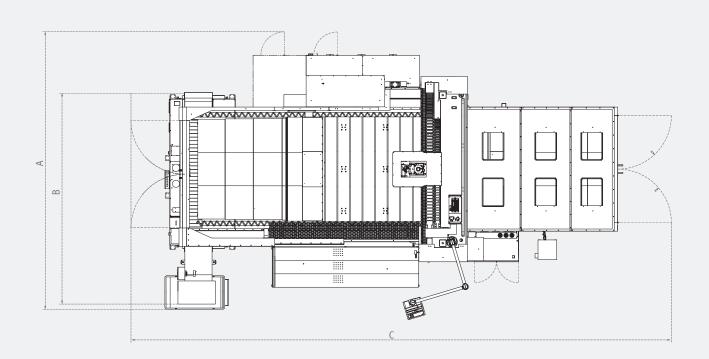


#### **External Dimensions**

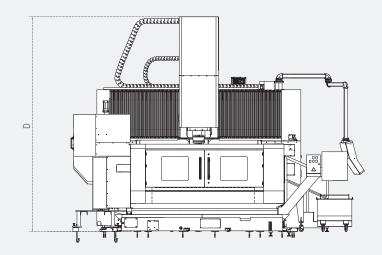
## BM 1530 / 2035 / 2740

Unit: mm (inch)

Top View



Front View



Model	A	В	С	D
BM 1530	5543 (218.2)	4282 (168.6)	10944 (430.9)	4770 (187.8)
BM 2035	5943 (234.0)	4682 (184.3)	11963 (471.0)	4770 (187.8)
BM 2740	6636 (261.3)	5042 (198.5)	13459 (529.9)	4436 (174.6)

 $<sup>\</sup>mbox{\ensuremath{\,^\star}}$  Some peripheral equipment can be placed in other places

 $<sup>\</sup>ensuremath{^{\star\star}}$  Providing anchoring bolts. Foundation work must be done.

#### **Machine Specifications**

#### ${\bf Basic\ information}$

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			1			
Description			Unit	BM 1530	BM 2035	BM 2740
Travels	Travel distance	X axis	mm (inch)	3000 (118.1)	3500 (137.8)	4000 (157.5)
		Y axis	mm (inch)	1550 (61.0)	2050 (80.7)	2700 (106.3)
		Z axis	mm (inch)		800 (31.5)	<u> </u>
	Distance from spindle nose to table top		mm (inch)	200~1000 (7.9~39.4)		150~950 (5.9~37.4)
Table	Distance between columns		mm (inch)	1700 (66.9)	2200 (86.6)	2700 (106.3)
	Table size		mm (inch)	3000 x 1350 (118.1 x 53.1)	3500 x 1850 (137.8 x 72.8)	4000 x 2500 (157.5 x 98.4)
	Table loading capacity		kg (lb)	8000 (17636.7) 10000 (2		22045.9)
	Table type		mm (inch)	T-SLOT (10-300 x 24H8 (10-11.8 x 0.9H8))	T-SLOT (11-300 x 24H8 (11-11.8 x 0.9H8))	T-SLOT (14-300 x 24H8 (14-11.8 x 0.9H8)
Spindle	Max. Spindle speed		r/min	8000		10000
	Taper		-	ISO #50		
	Spindle power (S3/Cont.)		kW (Hp)	30 / 25 (40.2 / 33.5)		
	Max. spindle torque		N∙m (ft-lbs)	600 (442.8)		420 (310)
Feedrates		X axis	m/min (ipm)	16 (629.9)		
	Rapid traverse	Y axis	m/min (ipm)	16 (629,9)		24 (944.9)
	Z axis		m/min (ipm)	16 (6	24 (944.9)	
ATC	Tool storage capacity		ea	40 {60}*		
	Max. tool diameter	Continous	mm (inch)	125 (4.9)		
		Without Adjacent Tools	mm (inch)	220 (8.7)		
	Max. tool length		mm (inch)	400 (15.7)		
	Max. tool weight		kg (lb)	18 (39.7)		
	Max. tool moment		N∙m (ft-lbs)	12.74 (9.4)		
	Tool seletion			MEMORY RANDOM		
	Tool change time (Tool-to-tool)		S	3		
Power source	Electric power supply		kVA	64		
	Compressed air	supply	Mpa (psi)	0.54 (78.3)		
Tank capacity	Coolant tank ca	pacity	L (gal)	490 (129.5) 585 (154.6) 660 (17		660 (174.4)
Machine Dimensions	Height		mm (inch)	4770 (187.8) 443		4436 (174.6)
	Length		mm (inch)	4450 (175.2)	4960 (195.3)	5535 (217.9)
	Width		mm (inch)	8690 (342.1)	9540 (375.6)	10825 (426.2)
	Weight		kg (lb)	29000 (63933.1) 35500 (78262.9) 45000 (		45000 (99206.6)
Control	CNC system		-	Fanuc 32i, DOOSAN Fanuc i Plus		

## **FANUC**

No,	Item		Spec.	DOOSAN Fanuc i Plus	Fanuc 32i
1		Controlled axes	3 (X, Y, Z)	X, Y, Z	X, Y, Z
2	6	Additional controlled axes	5 axes in total	0	0
3	Controlled axis	Least command increment	0.001 mm / 0.0001"	•	•
4	47115	Least input increment	0.001 mm / 0.0001"	•	•
5		Interpolation type pitch error compensation		•	•
6		2nd reference point return	G30	X	•
7	_	3rd / 4th reference return		•	•
8		Inverse time feed		•	0
9	1	Cylinderical interpolation	G07.1	•	0
10		Bell-type acceleration/deceleration before look ahead interpolation		•	0
11	-	Smooth backlash compensation			
12	Interpolation	Automatic corner override	G62	•	•
13	& Feed		x1, x10, x100 (per pulse)	0	0
14	Function	Manual handle feed rate Handle interruption	x1, x10, x100 (per puise)	•	0
15	-	Manual handle retrace			0
16		Manual handle feed 2/3 unit		X	0
17	-		Al contour control II is required.	X	
	-	Nano smoothing	·		0
18	-	AICC I	30 BLOCK	X	•
19		AICC II	200 BLOCK	<b>O</b> 1)	0
20			400 BLOCK	O <sup>1)</sup>	0
21	Spindle &	M- code function		•	•
22	M code Function	Retraction for rigid tapping	50/ 57/	•	•
23	TUITCUOII	Rigid tapping	G84, G74	•	
24	4		64 ea	X	64 ea
25	4	Number of tool offsets	99 ea	X	0
26		Trainer of took on sets	200 ea	X	0
27	Tool		400 ea	400 ea	0
28	Function	Tool nose radius compensation	G40, G41, G42	•	•
29		Tool length compensation	G43, G44, G49	•	•
30		Tool life management		•	•
31		Addition of tool pairs for tool life management		•	0
32		Tool offset	G45 - G48	•	0
33		Custom macro		•	•
34		Macro executor		•	•
35		Extended part program editing		•	•
36			256KB(640m)	X	640 m
37		Part program storage	512KB(1,280m)	X	0
38		Part program storage	1MB(2,560m)	X	0
39	Programming		2MB(5,120m)	5,120 m	0
40	& Editing		400 ea	X	Х
41	Function	Number of Registered programs	500 ea	Х	500 ea
42			1000 ea	1000 ea	0
43		Optional block skip	9 BLOCK	•	0
44		Optional stop	M01	•	•
45		Program file name	32 characters	•	•
46		Playback function		•	0
47		Addition of workpiece coordinate system	G54.1 P1 - 48 (48 pairs)	48 pairs	48 pairs
48		Embeded Ethernet		•	•
49		Graphic display	Tool path drawing	•	•
50	1	Loadmeter display	. <u> </u>	•	•
51	1		10.4" color LCD	X	X
52	1	MDI / DISPLAY unit	15" color LCD	•	•
53	1	·	15" color LCD with Touch Panel	0	Х
54	1	Operation history display		•	•
55	1	DNC operation with memory card		•	•
56	1	Optional angle chamfering / corner R		•	•
57	1	Run hour and part number display		•	•
58	1	High speed skip function			0
59	1	Polar coordinate command	G15 / G16		0
60	1	Polar coordinate command  Polar coordinate interpolation	G12.1 / G13.1	X	0
61	OTHERS	Programmable mirror image	G50.1 / G51.1	^	0
62	FUNCTIONS	Scaling	G50, G51		0
63	(Operation,	Single direction positioning	G60		0
64	setting	Pattern data input			0
65	& Display, etc)	Jerk control	Al contour control II is required.	•	0
66	1	Fast Data server with 1GB PCMCIA card	7.1 contour control in 15 required.		0
63	1	Fast Ethernet			0
64	1	3-dimensional coordinate conversion			0
65	1		G72.1, G72.2		
	+	Figure copying  Machining time stamp function	U/ 2.1, U/ 2.2	0	0
66	1	Machining time stamp function		0	0
67	+	Machine alarm diagnosis		•	X
68	+	CNC screen dual display function		•	•
69	1	CNC screen dual display function	1	•	•
70	4	One touch macro call		•	0
71	4	Machining quality level adjustment	1	•	0
72	4	EZ Guide i (Conversational Programming Solution)		● <sup>2)</sup>	0
73	-	iHMI with Machining Cycle		O <sup>3)</sup>	X
74		MANUAL GUIDE i	1	X	0

**Basic information** 

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Customer Support

# Responding to Customers Anytime, Anywhere

#### 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.



#### **Global Sales and Service Support Network**

Corporations	Dealer Networks	Technical Centers Technical Center: Sales Support, Service Support, Parts Support	Service Post	Factories
4	167	51	200	3

# **Doosan Machine Tools 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



### BM 1530 / 2035 / 2740



Description	Unit	BM 1530	BM 2035	BM 2740	
Max. spindle speed	r/min	8000		10000	
Max. spindle motor power	kW (Hp)	30 (40.2)			
Max. Spindle motor torque	N·m (ft-lbs)	600 (4	420 (310.0)		
Taper	-	ISO #50			
Travel distance (X / Y / Z)	mm (inch)	3000 / 1550 / 800 (118.1 / 61.0 / 31.5)	3500 / 2050 / 800 (137.8 / 80.7 / 31.5)	4000 / 2700 / 800 (157.5 / 106.3 / 31.5)	
Distance between columns	mm (inch)	1700 (66.9.)	2200 (86.6)	2700 (106.3)	
No. of Tool Storage	ea	40 {60}*			
Table size	mm (inch)	3000 x 1350 (118.1 x 53.1)	3500 x 1850 (137.8 x 72.8)	4000 x 2500 (157.5 x 98.4)	

\*{}:Option

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- \* For more details, please contact Doosan Machine Tools.
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