



DBC series

DBC 110S / 110 II / 130 II / 250 II

Horizontal NC Boring Machine



Column Moving Type NC Boring Machine Featuring the Latest Technologies

DBC series

The DBC series, ranging from compact to super-size models, satisfies all our customers' requirements with DOOSAN's advanced technical prowess. A product line-up has been established for processing from middle to large size parts including die / mold parts. We are improving productivity and creating values for our customers on the basis of our design improvements including enhanced operating convenience and efficiency.

DBC 110S / 110 II / 130 II / 250 II



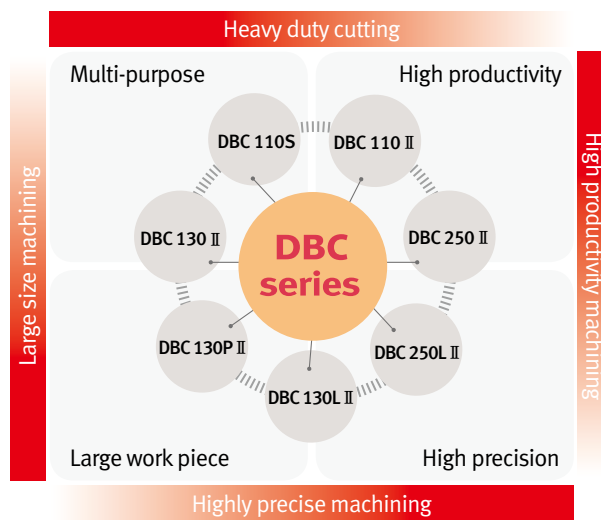
New Line-up & Naming of DBC Series

DBC 130L II

- Revision
- Suffix letter
 - L : Extended stroke
 - P : Plain table
 - S : Compact
- Spindle diameter (mm)
110, 130
Quill diameter (mm)
250
- Machine structure
C : Column moving
- Doosan NC Boring



Product Line up



Speedy response to the market request

1. Full line-up available from compact types with minimized footprints to super-large models, for processing everything from large parts to die / mold applications
2. Diversified production line-up provides high-value-added machining

Customer orientated focus to improvement

1. Productivity improved by providing large capacity work space
2. Enhanced reliability and easy maintenance achieved by simplified design.

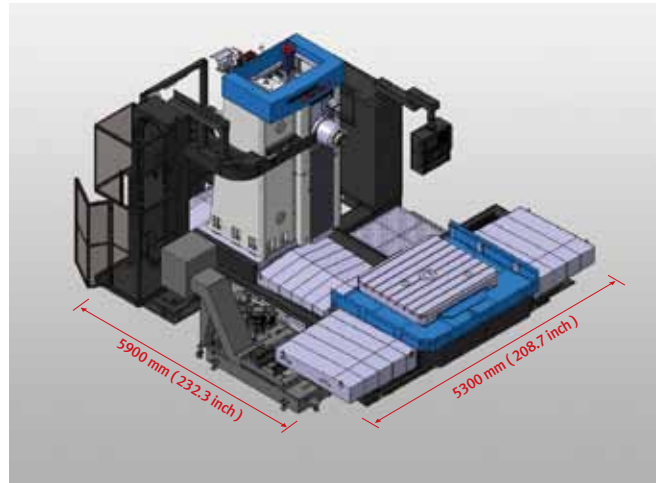
Diverse Line-up

The DBC series provides a full line-up of models covering compact, high-productivity, multi-functional, heavy loads and large work pieces.

DBC series

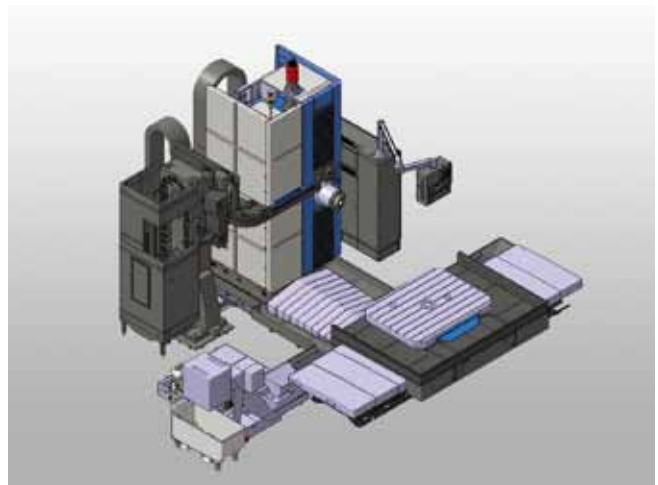
Compact Type Model DBC 110S

- Compact specifications of DBC 110 II offers customers a wide range of options
- Compact structure minimizes machine footprint
- Multi-functional model offers price competitiveness



High Productivity Model NEW DBC 110 II

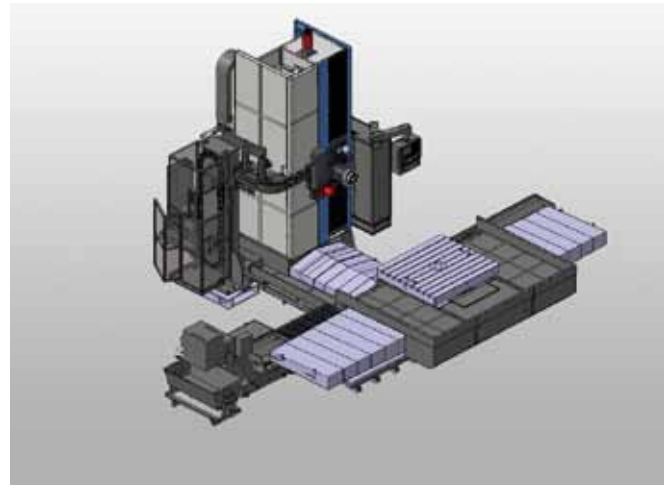
- High-productivity model features high-speed spindle
- Superior for deep cutting – boring operation is possible up to the table center due to W-axis travel





Compact Type Model DBC 130 II / 250 II

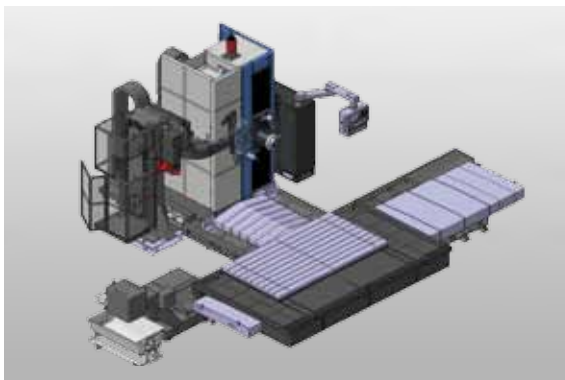
- A steady-seller with more than 1000 sets sold to date. The standard model is regularly upgraded with our accumulated design know-how and production technologies.
- Shortest delivery time by modular production system.



Compact Type Model NEW DBC 130P II

- Work pieces are stably and firmly set up for efficient cutting

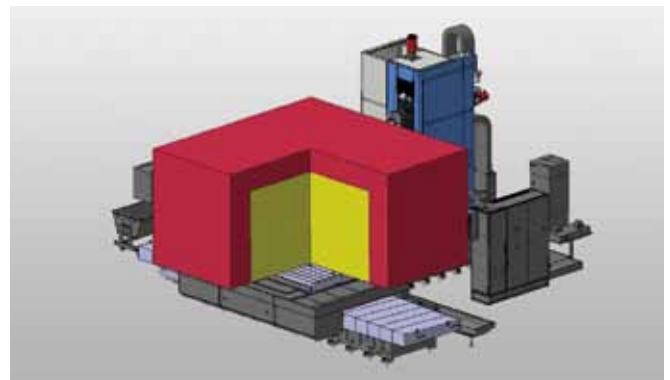
Plain type table	Table length 3000 mm (118.1 inch)	Load capacity 20000 kg (44091.8 lb)
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Large capacity Model NEW DBC 130L II / DBC 250L II

- Medium, large workpieces can be cut.

Travel (mm) X / Y / Z	4000 / 2500 / 2000 mm (157.5 / 98.4 / 78.7 inch)
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Spindle

Nose-type head structure allows easy access to the work piece.
Minimal protrusion of boring spindle enables stable cutting operation.

DBC series



Spindle Head

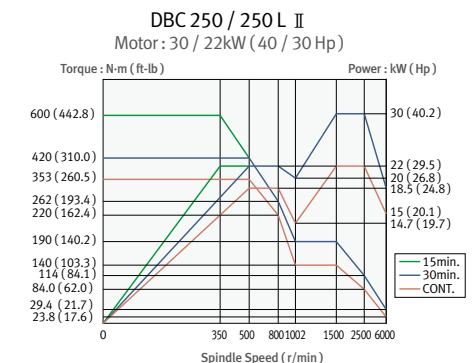
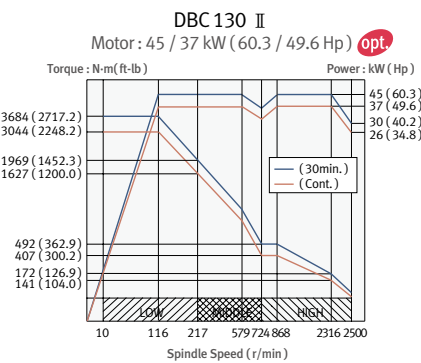
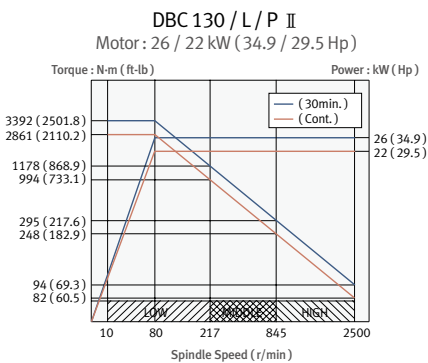
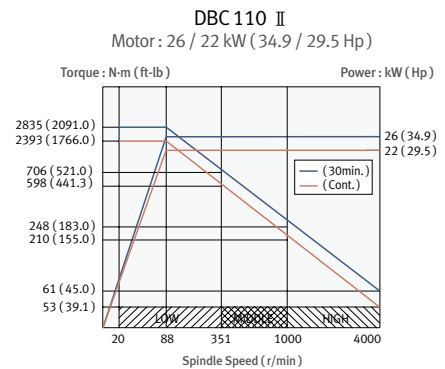
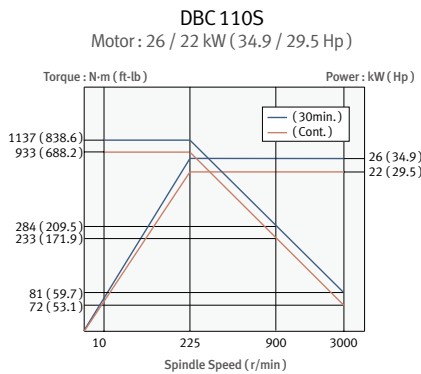
The spindle is supported with double-row cylinder roller bearings and double-row angular contact ball bearings which are lubricated with air oil or oil mist to bear heavy lateral loads. The rigidity of the spindle head of the DBC series has been greatly improved, increasing the cutting capacity with the W-axis protruding more than double that of previous models.

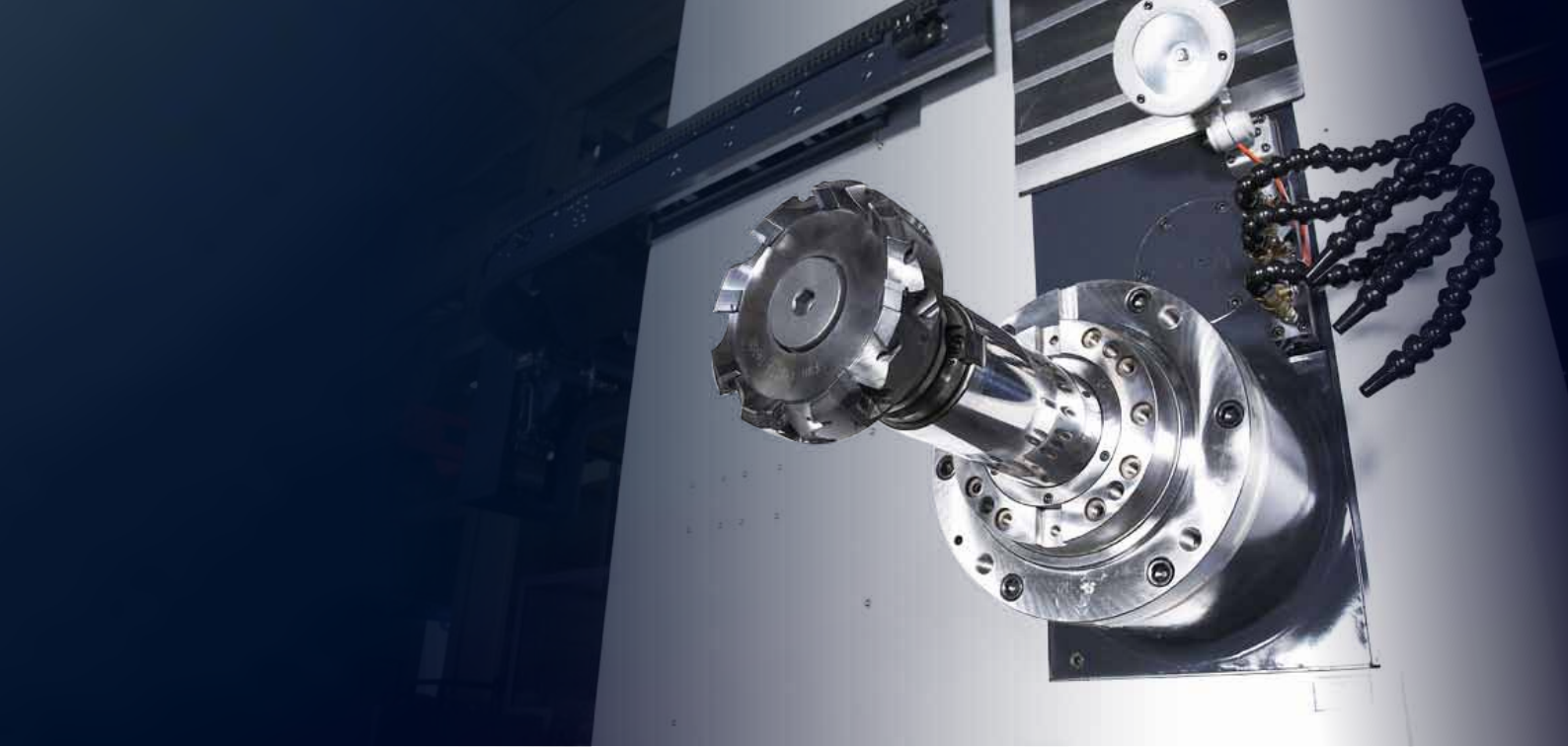
* DBC 110 II, DBC 130 (L / P) II : air oil lubricated, four double-row angular contact ball bearings
DBC 110S : oil mist lubricated, four double-row angular contact ball bearings

Max. spindle speed

DBC 110S	DBC 110 II	DBC 130 / L / P II	DBC 250 / L II
3000 r/min	4000 r/min	2500 r/min	6000 r/min

Spindle power-torque diagram





DBC 110S

High-speed spindle with high-rigidity



High-speed spindle head for heavy duty cutting

Model	Spindle speed (r/min)		Spindle motor (kW (Hp))		Torque [N·m (ft·lb)]
	Standard	Option	Standard	Option	
DBC 110S	3000	-	26/22 (35/30) (30min)	30/22 (40/30) (15min) (AMP UP)	1137 (838.6) ^{std.} 1273 (938.9) ^{opt.}

DBC 110 II

High-speed spindle with high-rigidity



High-speed spindle head for higher productivity

- High-power main spindle available

Model	Spindle speed (r/min)		Spindle motor (kW (Hp))		Torque [N·m (ft·lb)]
	Standard	Option	Standard	Option	
DBC 110 II	4000	-	26/22 (35/30) (30min)	30/22 (40/30) (15min) (AMP UP) 45/37 (30min)	2835 (2091.0) ^{std.} 3259 (2403.7) ^{opt.} 3850 (2839.7) ^{opt.}

DBC 130 / L / P II

Heavy duty cutting spindle with high-rigidity



High-torque spindle head for heavy duty cutting

- High-power main spindle available

Model	Spindle speed (r/min)		Spindle motor (kW (Hp))		Torque [N·m (ft·lb)]
	Standard	Option	Standard	Option	
DBC 130 / L / P II	2500	-	26/22 (35/30) (30min)	30/22 (40/30) (15min) (AMP UP) 45/37 (30min)	3392 (2501.8) ^{std.} 3940 (2906.0) ^{opt.} 3684 (2717.2) ^{opt.}

DBC 250 / L II

High-speed, high-power built-in spindle



High speed Built-in spindle for high precision machining

- Rigid structure for quill 250mm (9.8 inch) feeding
- Greased-type lubrication for the spindle bearings
- Stable thermal growth of the spindle bearings even for long operating times

Model	Spindle speed (r/min)		Spindle motor (kW (Hp))		Torque [N·m (ft·lb)]
	Standard	Option	Standard	Option	
DBC 250 / L II	6000	-	30/22 (40/30) (30min)	-	598 (441)

* For further details, please contact Doosan.

Structure

For heavy work pieces and high processing quality, the design has been improved with a cast structure offering excellent stiffness. Structural analysis of the inner rib structure has further upgraded machine performance.

DBC series

High Rigidity Structure

For heavy work pieces and high processing quality, the design has been improved to deliver excellent dynamic performance cast structure. Structural analysis of the inner rib structure has further upgraded machine performance.

Column Structure

Low center of gravity design minimized vibration. Suitable for heavy loads due to column travel system

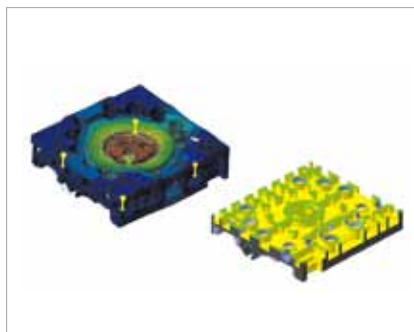


High Rigidity Design of Major Units

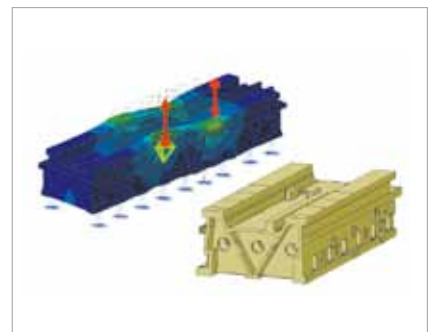
Rigidity is enhanced by optimal design of the machine structure. Great accuracy can be achieved by minimizing deformation caused by heavy load.



Design focused on low center of gravity of column to minimize vibration during column travel.



Deformation caused by heavy work pieces minimized by optimized design of table and table base



Deformation and vibration minimized by M-type design of the ribs inside the bed.



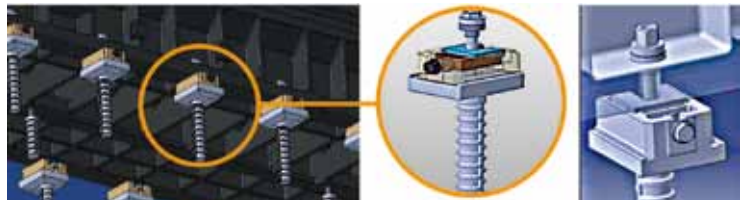
Stable Machine Structure



A highly rigid, stable machine structure has been realized by optimizing the design of the column and bed. Excellent wear resistance and accuracy for machining quality have been achieved by precision grinding after heat treatment.

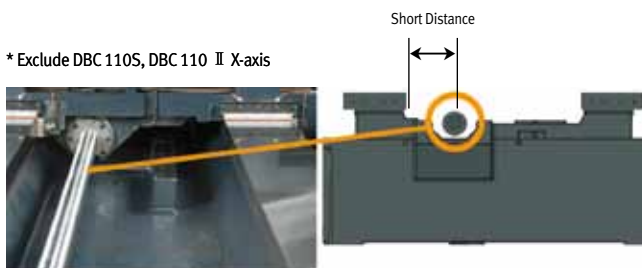
A leveling block is provided to strengthen anchoring force to the foundation, as well as enabling fast and easy installation.

* Except DBC 110S (leveling bolt type).



Designed with narrow guide system to minimise axis torque and ensure smooth motion

Designed with narrow guide system to minimise axis torque and ensure smooth motion



* Exclude DBC 110S, DBC 110 II X-axis

4-row Angular Ball Bearings & Ball Screw

Both ends of the shafts are supported with 4-row angular contact bearings. A low noise, high precision ball screw has been adopted for axis travel.

* Except DBC 110S (3-row angular contact bearings).



Highest Accuracy

Servo load has been reduced to secure stable feed characteristics for heavy work pieces.
Thrust in axis direction has been increased to improve cutting capacity.



DBC series

Rotary Table

* Related patent right reserved.

A high accuracy encoder is installed at the table center to provide precise rotational position (B-axis).

* Except DBC 130P II



High Accuracy Locate Pin for 90 degree table positioning

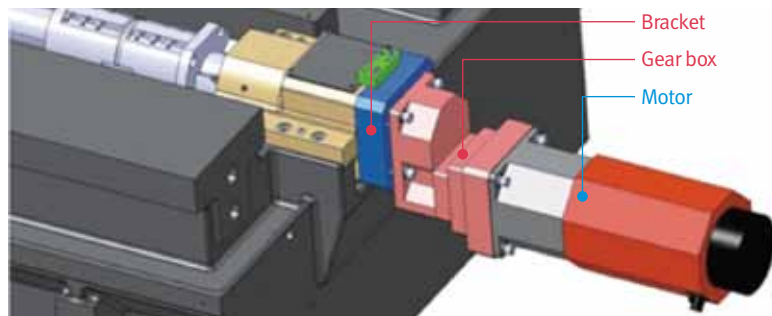
Transfer Axis Speed Reducer (X / Z)

- Servo load has been reduced to secure stable feed characteristics for heavy work pieces (X-axis).
- Thrust in axis direction has been increased to improve cutting capacity (Z-axis).

DBC 130L II / DBC 130P II (X AXIS) / DBC 250L II **std.**

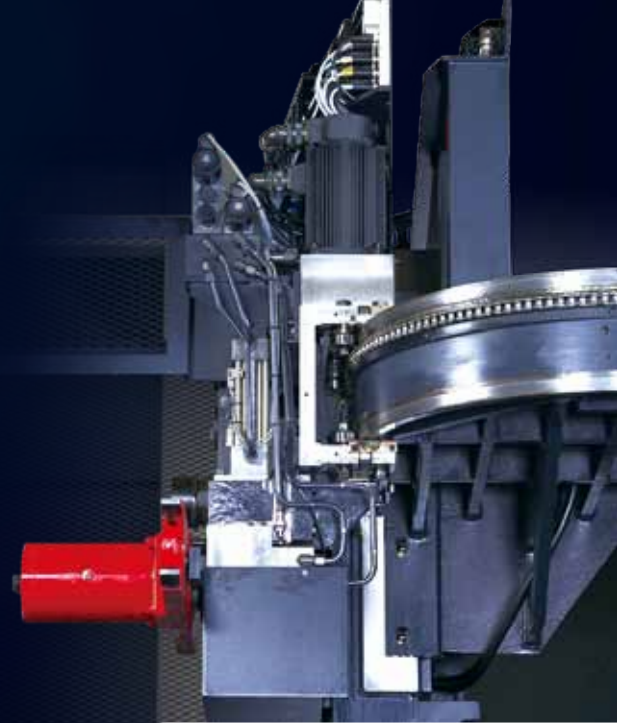
DBC 110S / DBC 110 II / DBC 130 II / DBC 130P II (Z AXIS) / DBC 250 II **opt.**

DBC series



ATC & Magazine

The adoption of a servo-motor for tool magazine and carriage drive greatly reduces hydraulic system load of the entire machine. Machine has been improved by simplifying the structure to minimize the causes of failure.



DBC series

Servo-driven Auto Tool Changer **opt.**

Servo tool magazine & servo carriage



Automatic tool changer

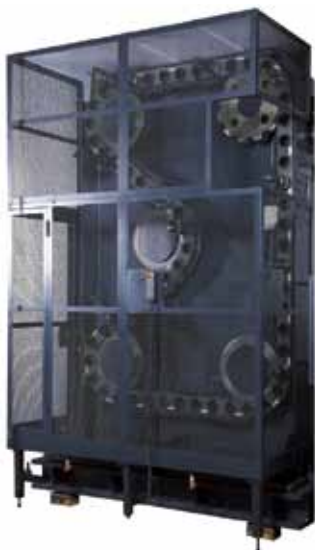


Servo tool magazine



Servo carriage

Acceptable tool dimensions



Tool magazine

	Spec.	Shape
Max. Tool Diameter	Facing Tool D=ø250 mm (9.8 inch)	
	Boring Tool D=ø400 mm (15.8 inch)	
Max. Tool Length	L = 600 mm (23.6 inch)	
Max. Tool Weight	W = 25 kg (55.1lb) W = 30 kg (66.1lb) opt.	

Allowable moment : 34 N·m (25.1 ft·lb)

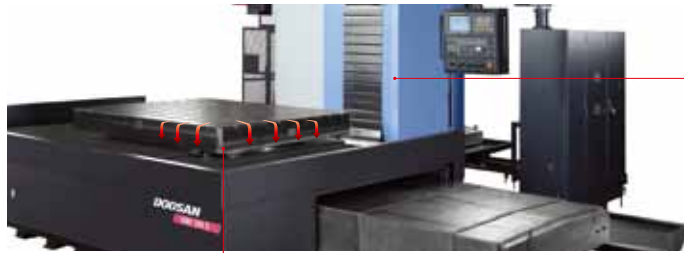
• Please contact our engineer if you wish to extend the boring tool's diameter.

Easy Chip Disposal

Proper chip disposal is very important for productivity and environmental protection. The DBC series provides various chip disposal systems designed to improve productivity and the working environment.

Easy Chip Removal Structure

The completely enclosed DBC series guarantee the confinement of chips and coolant to the inside of the machining area. Chips fall into the removable forward mounted chip pan for easy disposal.



Coolant gun **opt.**

Coolant Splash Guard

Semi Guard
DBC 110S



Coil conveyor **opt.**



Hinged belt conveyor
DBC 110S, DBC 110 II, DBC130/L II
DBC 130P II, DBC 250/L II



Chip pan
Slope-type pan for smooth coolant drain and chip disposal.

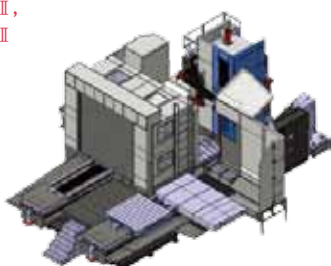
Semi Guard
DBC 110 II



Semi Guard
DBC 130/L/P II,
DBC 250/L II



Semi Guard with auto door
DBC 130 (L) II,
DBC 250 (L) II



Optional Equipment

Special specifications applicable by new development



1. Angle head (Manual) (L=365)
2. Long type angle head (Manual) (L=660)
3. Universal head (Manual)
4. Face plate (Manual)
5. Indexable angle head (90° index)*
6. Spindle support *
* : To use ATC with attached spindle support, Indexable angle head (90° Index) please contact Doosan

7. Facing head (Cogsdill) *
- Manual / Automatic attach available
* : For more details, please contact Doosan.
8. Angle plate (4 types)
• Please contact us for special specifications.
• Please contact us for further information.

Easy Operation Package

Process Monitoring Function

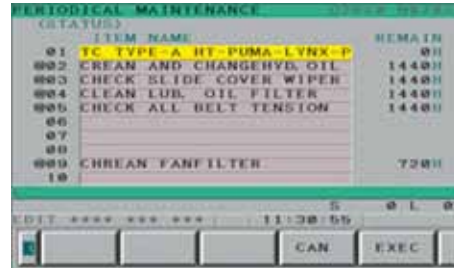
Doosan tool load monitoring std.

- Automatic detection of tool wear and damage under abnormal loads by M-Code command
- Individual work-piece data can be saved



Periodic Checking Function std.

This function informs the operator of equipment status with various instructions, e. g. oil refill, ready for machine service.



Automatic Backlash Compensation std.

After setting up the work piece, feed backlash is automatically detected and compensated by the G-code instruction or function screen.



Easy Pattern Cycle std.



Major processing pattern cycles and programs can be created by entering major factors only. This function is built-in in the CNC, thus reducing programming time greatly and enabling easy application on site. A total of 22 patterns including basic 5 patterns are provided.

Tool Control Function std.

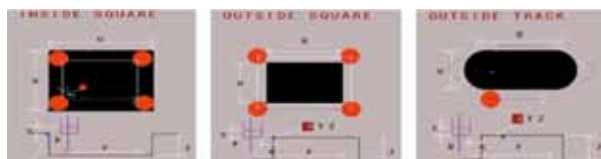
- Tools are protected from abnormal load on the servo shaft, by skipping the tool or generating a freehold alarm.



Drilling pattern



End-mill pattern



Work Load Counter Control std.

When the operator enters the M-code for the weight of the work piece, the system automatically determines the table feed pattern to perform cutting.

M-Code	Work Load	DBC 110S	DBC110 II	DBC130 II	DBC130L II	DBC 130P II	DBC 250 II	DBC 250L II
M380	5 Ton and less	●	●	●	●	●	●	●
M381	10 Ton and less		●	●	●	●	●	●
M382	15 Ton and less			●	●	●	●	●
M383	20 Ton and less				● opt.	●		

Optional Function

Easy Set-up Guidance Touch Sensor (OMP60) opt.

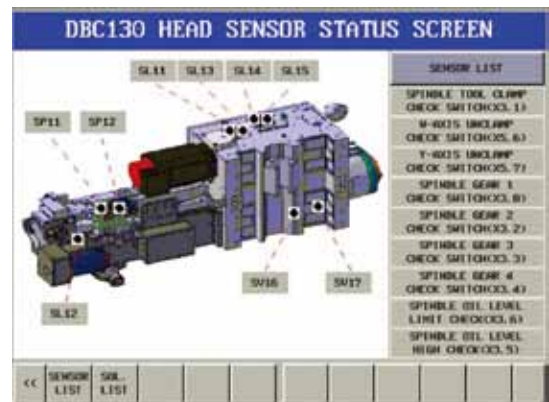
This function enables the simple setting up of work-piece coordinates, using an automatic or semi-automatic measurement probe. When using an auto-measuring probe, place the probe close to the set up surface, elect the setup configuration, and press the cycle start button. The system touches the point and sets the work-piece coordinates automatically.



Support Function for Maintenance

Easy Operation Guidance opt.

Machine faults including problems with the ATC magazine are detected and troubleshooting suggestions are proposed for corrective action. For guidance on easy operation, display windows - including function selection, thermal error setting, program progress display, and operation report display - are provided.



Operating Performance Improvement

Productivity improved by adoption of operator panel design optimized for the operation of large machines

- Mono lever jog switches are provided at the bottom of the main operator panel for easy traverse of the long axis of large machines (standard).
- Pulse handle for the operator's convenience and portable MPG for easy work piece setting are provided as standard features.



Mono lever jog switches



Portable MPG



3 Portable MPG



MPG with LCD display opt.



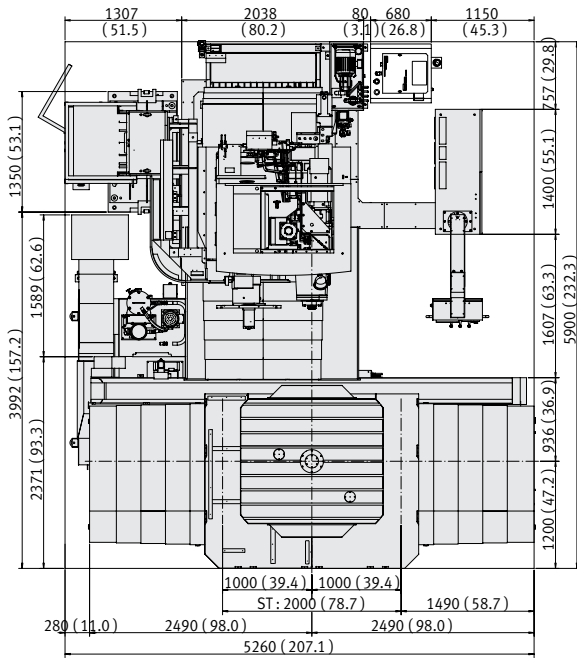
ATC OP panel opt.

External Dimensions & Table Dimensions

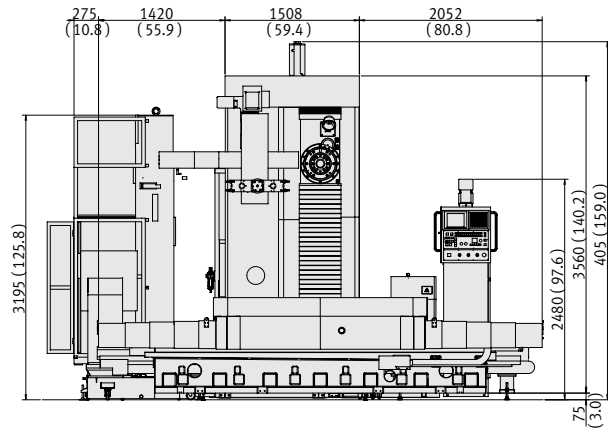
Unit : mm (inch)

DBC 110S

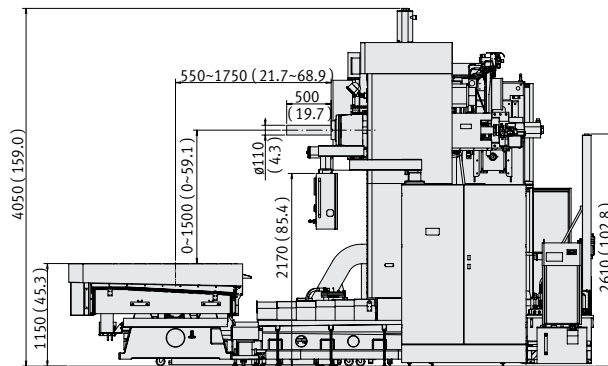
Top View



Front View

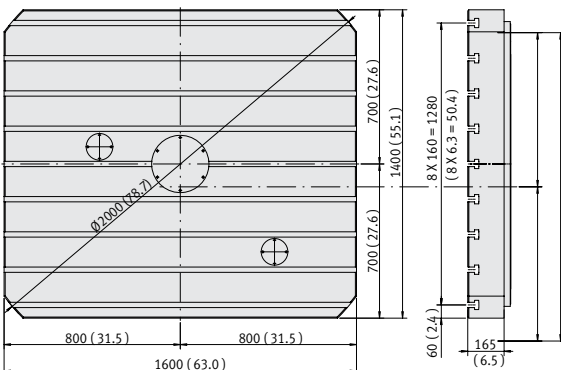


Side View

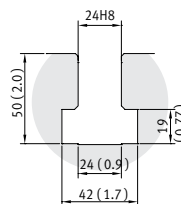


Table

1400 x 1600 (55.1 x 63)



T-Slot



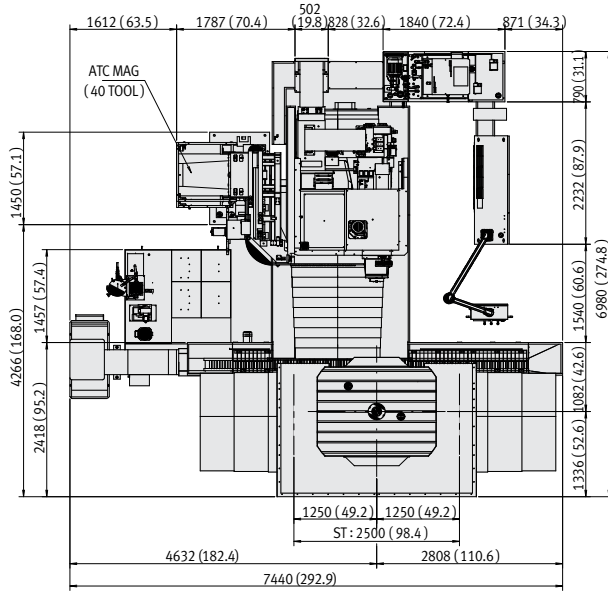
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- For more details, please contact Doosan

External Dimensions & Table Dimensions

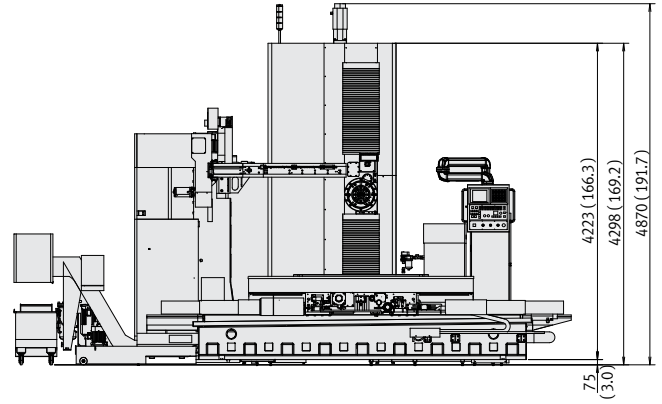
Unit : mm (inch)

DBC 110 II

Top View



Front View



Side View

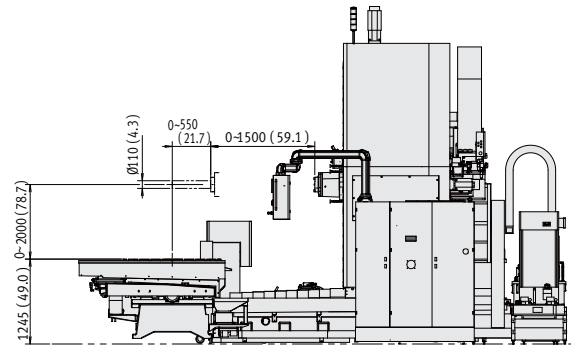
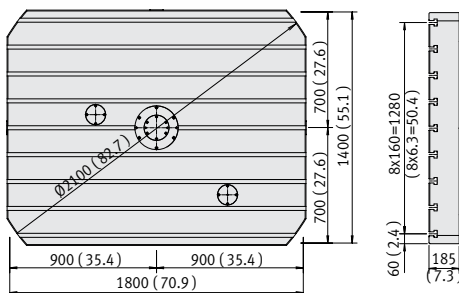


Table **std.**

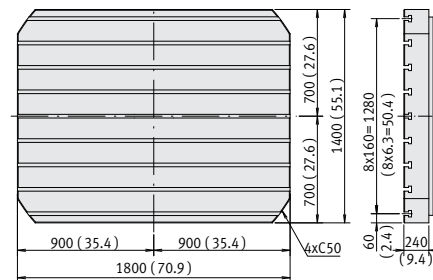
1400 x 1800 (55.1 x 70.9)



T-Slot

APC Table **opt.**

1400 x 1800 (55.1 x 70.9)
APC loading capacity : 6 tons



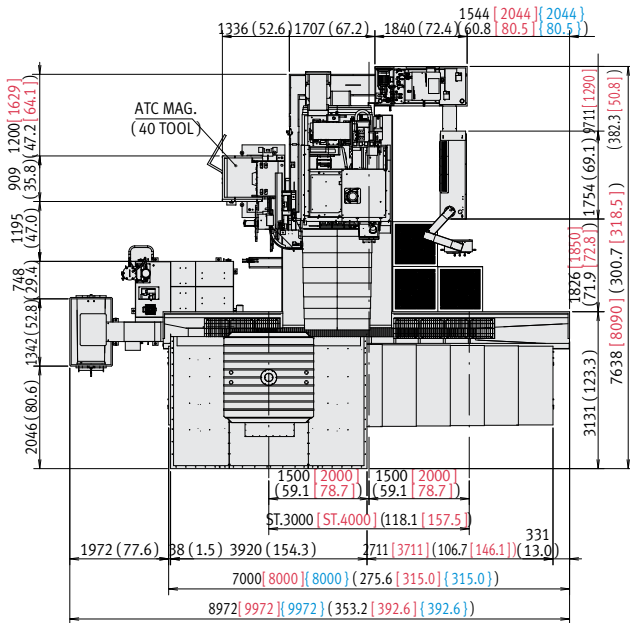
T-Slot

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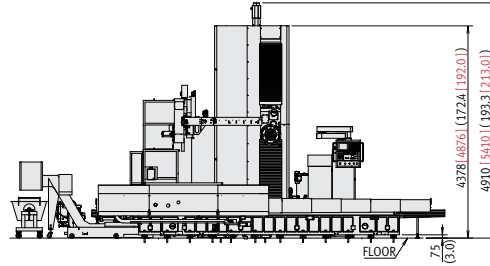
Unit : mm (inch)

DBC 130 / L / P II

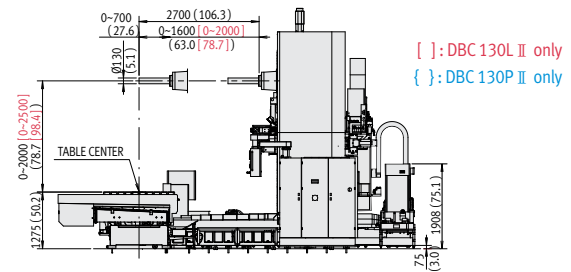
Top View



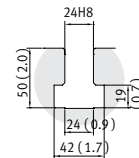
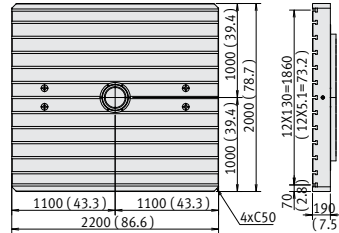
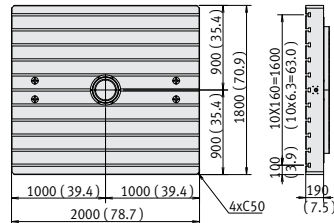
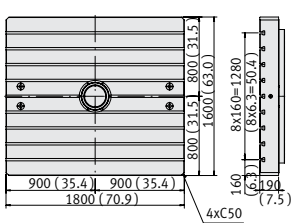
Front View



Side View



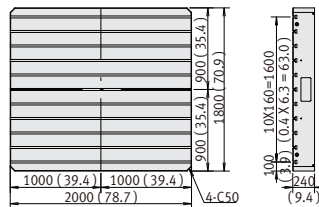
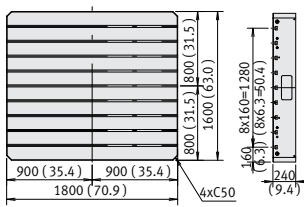
1600 x 1800 (63 x 70.9) **std.** 1800 x 2000 (70.9 x 78.7) **opt.** 2000 x 2200 (78.7 x 86.6) **opt.** T-Slot



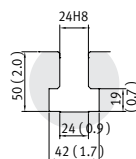
APC Table **opt.**

1600 x 1800 (63.0 x 70.9)
APC loading capacity : 10 tons

1800 x 2000 (70.9 x 78.7)
APC loading capacity : 8 tons



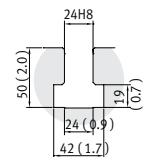
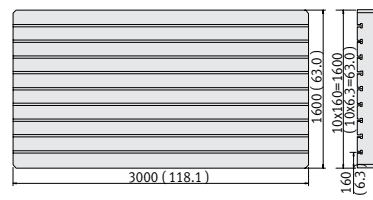
T-Slot



DBC 130P **std.**

1600 x 3000 (63 x 118.1)

T-Slot



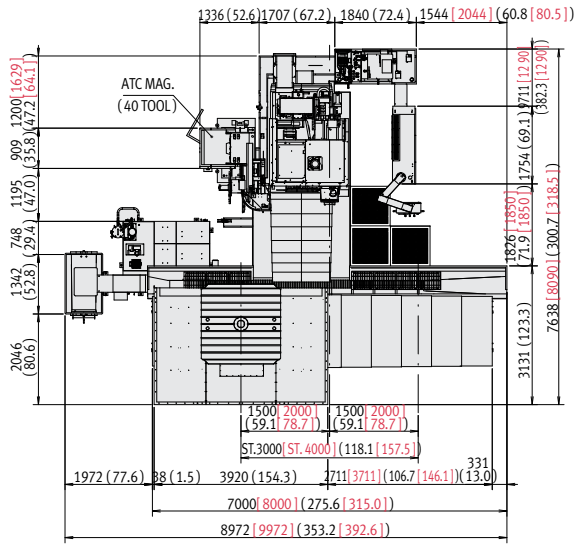
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External Dimensions & Table Dimensions

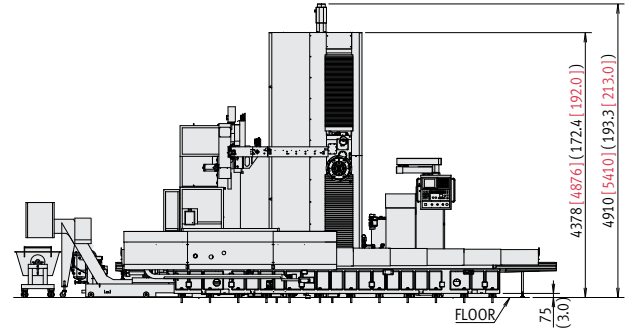
Unit : mm (inch)

DBC 250 / L II

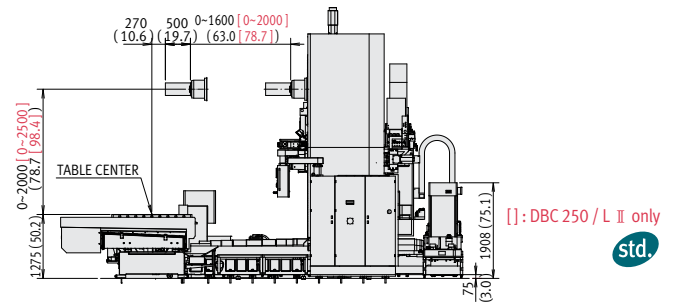
Top View



Front View



Side View

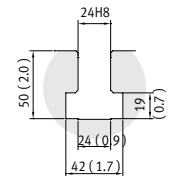
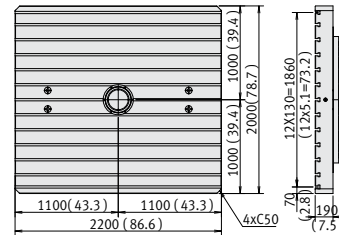
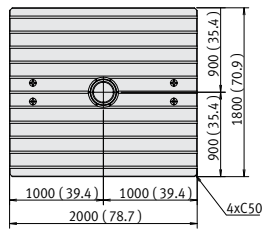
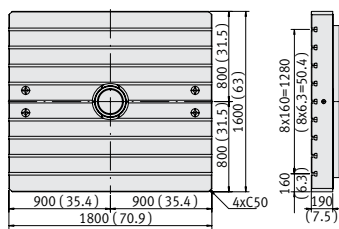


1600 x 1800 (63 x 70.9) **std.**

1800 x 2000 (70.9 x 78.7) **opt.**

2000 x 2200 (78.7 x 86.6) **opt.**

T-Slot

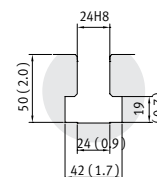
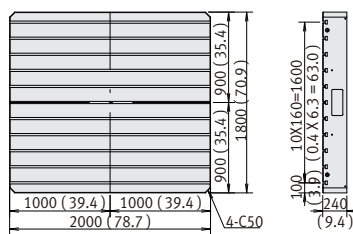
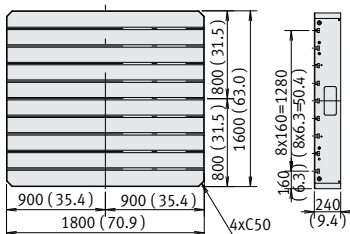


APC Table **opt.**

1600 x 1800 (63.0 x 70.9)
APC loading capacity : 10 tons

1800 x 2000 (70.9 x 78.7)
APC loading capacity : 8 tons

T-Slot



• The specifications and information above-mentioned may be changed without prior notice.
• For more details, please contact Doosan

Machine Specifications

Description		Unit	DBC 110S	DBC 110 II	DBC 130 II	DBC 130L II	DBC 130P II	DBC 250 II	DBC 250L II	
Travels	Travel distance	X-axis	mm (inch)	2000 (78.7)	2500 (98.4)	3000 (118.1)	4000 (157.5)	3000 (118.1)	4000 (157.5)	
		Y-axis	mm (inch)	1500 (59)	2000 (78.7)		2500 (98.4)	2000 (78.7)	2500 (98.4)	
		Z-axis	mm (inch)	1200 (47.2)	1500 (59)	1600 (63)	2000 (78.7)	1600 (63)	2000 (78.7)	
		W-axis	mm (inch)	500 (19.6)	550 (21.7)	700 (27.6)		500 (19.7)		
	Distance from spindle nose to table top	mm (inch)	0~1500 (0~59)	0~2000 (0~78.7)		0~2500 (0~98.4)	100~2100 (3.9~82.7)	0~2000 (0~78.7)	0~2500 (0~98.4)	
	Distance from spindle nose to table center	mm (inch)	550~1750 (21.7~68.9)	550~2050 (22.7~80.7)	700~2300 (27.6~90.5)	700~2700 (27.6~106.3)	700~2300 (27.6~90.5)	770~2370 (30.3~93.3)	770~2770 (30.3~109.1)	
Feedrates	Rapid Traverse Rate	X, Y, Z-axis	m/min (ipm)	12 (472.4)	10 (393.7)	10 / 8 / 10 { 7 / 8 / 10 } (393.7 / 315 / 393.7)	7 / 8 / 10 (276.5 / 315 / 393.7)	10 (393.7)	10 / 8 / 10 (393.7 / 315 / 393.7)	
		W-axis	m/min (ipm)	6 (236.2)				10 (393.7)		
	Cutting feedrate	X, Y, Z-axis	mm/min (ipm)	1 ~ 6000 (1~236.2)		1~4000 (1~157.5)				
Table	Table size	mm (inch)	1400 x 1600 (55.1 x 63)	1400 x 1800 (55.1 x 70.9)	1600 x 1800 { 1800 x 2000, 2000 x 2200 } (55.1 x 70.9 { 70.9 x 78.7, 78.7 x 86.6 })		1600 x 3000 (63 x 118.1)	1600 x 1800 { 1800 x 2000, 2000 x 2200 } (55.1 x 70.9 { 70.9 x 78.7, 78.7 x 86.6 })		
	Swing Diameter	Without semi-S/G	mm (inch)	Ø2550	Ø3400 (Ø133.8)	Ø3900 (Ø153.5)	Ø4800 (Ø188.9)	-	Ø3900 (Ø153.5)	Ø4800 (Ø188.9)
		Semi-S/G	mm (inch)	Ø2100 (Ø82.6)	Ø2250 (Ø88.5)	Ø3400 (Ø133.8)		-	Ø3400 (Ø133.8)	
	Table loading capacity	1400 × 1600 mm	kg (lb)	7000 (15432.1)	-	-	-	-	-	-
		1400 × 1800 mm	kg (lb)	-	10000 (22045.9)	-	-	-	-	-
		1600 × 3000 mm	kg (lb)	-	-	-	-	20000 (44091.8)	-	-
		1600 × 1800 mm	kg (lb)	-	-	15000 (33068.9)		-	15000 (33068.9)	
1800 × 2000 mm		kg (lb)	-	-	13000 (28659.7)	13000 { 20000 } (28659.7 { 44091.8 })	-	13000 (28659.7)		
2000 × 2200 mm	kg (lb)	-	-	12000 (26455.1)	12000 { 19000 } (26455.1 { 41887.2 })	-	12000 (26455.1)			
Spindle	Max. spindle speed	r/min	3000	4000	2500		6000			
	Boring spindle diameter	mm (inch)	110 (4.3)		130 (5.1)		-			
	Quill diameter	mm (inch)	-		-		250 (9.8)			
ATC	Tool Storage capacity	ea	40 / 60 / 90							
	Tool shank		MAS403 BT50							
	Max. tool diameter	mm (inch)	Ø130 { Ø600 } (Ø5.1 { Ø23.6 })							
	Max. tool length	mm (inch)	600 (23.6)							
	Max. tool weight	kg (lb)	25 { 30 } (55.1 { 66.1 })							
	Method of tool selection		Fixed address							
Motors	Spindle motor (30min/cont.) { AMP UP : 15min/cont. }	kw (Hp)	26 / 22 { 30 / 22 } (34.9 / 29.5 { 40.2 / 29.5 })	26 / 22 { 30 / 22 }, { 45 / 37 } (34.9 / 29.5 { 40.2 / 29.5 }) { 60.3 / 49.6 }	26 / 22 { 30 / 22 }, { 45 / 37 } (34.9 / 29.5 { 40.2 / 29.5 }) { 60.3 / 49.6 }			30 / 22 (40.2 / 49.6)		
Power source	Electric power supply (rated capacity)	kVA	70 { 85 }							
Machine Dimensions	Height	mm (inch)	4050 (159.4)	4870 (192.9)	4910 (193.3)	5410 (213.3)	4910 (193.3)		5410 (213.0)	
	Length × Width	mm (inch)	5260 × 5900 (207.1 × 232.2)	7440 × 6980 (275.6 × 271.7)	8970 × 7640 (353.1 × 300.4)	9970 × 8090 (392.5 × 318.5)	9970 × 7640 (392.5 × 300.8)	8970 × 7640 (353.1 × 300.8)	9970 × 8090 (392.5 × 318.5)	
	Weight	kg (lb)	24000 (52910.2)	36000 (79365.2)	43000 (94797.4)	48000 { 50000 } (105821.9 { 110231.1 })	47000 (103616.0)	43000 (94797.4)	48000 (105821.9)	

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 • For more details, please contact Doosan

{ } : Option

Standard Feature & Optional Feature

Standard Feature

- Actual Spindle Speed Display on LCD
- Automatic Backlash Compensation
[Only X-axis, without Linear scale]
- Automatic Table Clamping Unit
- Automatic Table Locating Pin (each 90°)
- Axis Gear Box for Y-axis
- B-axis Rotary Encoder
- Big Plus® Spindle
- Chip Disposal
Air Blow [ONLY DBC 250 (L) II]
Chip conveyor & Chip tray
- Column Guideway Chip cover
- Customer's Manual
- Doosan Tool Load Monitoring
- DSQ1*
- Easy pattern Cycle
- Foot Switch for Tool Unclamp
- Leveling Blocks & Anchoring Bolts [Except DBC 110S]
- Leveling Bolt & Anchoring Bolts [Only DBC 110S]
- Linear Scale Feedback System
Absolute Type
[Only DBC 250 / L II]
- Main OP. Panel
2-Linkage type
- Mono Lever Jog Switches
- Periodical Checking Function
- Portable-MPG
- Self Diagnosis Function
- Signal Tower
- Slide Way Covers (X / Y / Z)
- Spindle Air Curtain [Only DBC 250 / L II]
- Spindle Cooling System
- Spindle Internal Cooling System
[Only DBC 110S, DBC 110 II, DBC 130 / L / P II]
- Spindle Lubrication Device
- Spindle Thermal Compensation System
[Except DBC 250 / L II]
- Table Chip Pan
- Tool Control Function
- Tool KIT
- W-axis Clamp [DBC 250 / L II]
- Work Light (LED Lamp)
- Work Load Counter Control®
- Z-axis Coolant Pan

* Note) DSQ1 : AICC II with High Speed Processing + Machining Condition Selection + Data Server(1GB)

Optional Feature

- 3-MPG (Portable)
- Adaptive Feedrate Control Function
- Add Y Brake
- Additional 6th Axis
Package #1 : Only Wiring
- Air Gun
- Angle Plate
450 X 600 X 400mm / 500 X 1000 X 550mm
750 X 1250 X 750mm / 1000 X 2000 X 1000mm
- APC (APC OP. Panel)
Max. Workpiece Weight DBC 110 II : 5 ton
DBC 130 / L II, 250 / L II : 10 ton
- ATC (ATC OP. Panel) - 40 / 60 / 90 tools
- Attachment
Attachment Ready (Cogsdill)
Indexable Angle Head (90° Index)
[Only DBC 130(L / P) II]
Manual Face Plate (ø650)
Manual Head (L=365)
Manual Long Type (L=660)
Manual Universal Head (L=454)
Spindle Support (DBC 130 / L / P II : L = 310)
(DBC 110 II, DBC 110S : L = 200)
- Auto Power On / Off
- Auto Tool Length Measurement
- Auto Workpiece Measurement
- Center Bush (Ø50mm) [Except DBC 110S]
- Chip Disposal
Chip Bucket 380L
Lift Up Chip Conveyor Hinged Belt Type
Magnetic Scraper Type
- CNC Systems (Heidenhain)
- Coolant Splash Guard
Auto Door Semi Guard
Semi Guard
- Coolant systems
Air Blower [Except DBC250 / L II]
Coolant Gun
High Capacity Type Coolant Pump
Oil Skimmer
TSC-20bar
- DSQ2 *
- DSQ3 *
- Easy Operation Guidance
- Easy Set Up Guidance® (with OMP 60)
- Edge Locator (Table / Pallet)
- Electric Box Aircon
- Electric Box Light
- Electric Leakage Breaker
- Electric Line Filter
- External M-CODE (4ea)
- Linear Scale Feedback System
Absolute Type
[Only DBC 110S, DBC 110 II, DBC 130 / L / P II]
- Machine Warming Up Function
- Master Block gauge for
Auto Workpiece Measurement
- Master Tool for Auto-Tool Length Measurement
- MPG with LCD display
- Operator's Call Buzzer
- Raising Block
- Safety Fence & Interlock Switches
- Speed Limit Control for Attachment
- Test Bar (BT 50)
- Tool Breakage Detect Function
- Total Counter
- Work Counter

* Note) DSQ2 : DSQ1 + Data Server (1GB)
DSQ3 : AICC II with high speed processing + Machine condition selection + Data server (1GB)

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※ For more details, please contact Doosan

NC Unit Specifications

Fanuc 31i

DBC 110 II, DBC 130 / L / P II, DBC 250 / L II

AXES CONTROL

- Controlled axes	5 (X, Y, Z, W, B)
- Simultaneously controllable axes	
- Positioning(G00)/Linear interpolation(G01) : 3 axes	
- Circular interpolation(G02, G03) : 2 axes	
- Backlash compensation	
- Emergency stop / overtravel	
- Follow up	
- Least command increment	0.001mm / 0.0001(inch)
- Least input increment	0.001mm / 0.0001(inch)
- Machine lock	all axes / Z axis
- Mirror image	Reverse axis movement (setting screen and M - function)
- Stored pitch error compensation	
- Pitch error offset compensation for each axis	
- Stored stroke check 1	
	Overtravel controlled by software

INTERPOLATION & FEED FUNCTION

- 2nd reference point return	G30
- AI Contour Control II	200 block preview
- Automatic corner deceleration	
- Circular interpolation	G02, G03
- Control axis detach	
- Dual position feedback	
- Dwell	G04
- Exact stop check	G09, G61 (mode)
- Feed per minute	mm / min
- Feedrate clamp by circular radius	
- Feedrate override (10% increments)	0 - 200%
- Helical interpolation	
- Jog feedrate	0~ 5000 mm/min
- Linear ACC/DEC after interpolation	
- Linear ACC/DEC before interpolation	
- Linear interpolation	G01
- Manual handle feed(1 unit)	
- Manual handle feedrate	0.1 / 0.01 / 0.001mm
- Override cancel	M48 / M49
- Positioning	G00
- Program restart	
- Rapid traverse bell-shaped acceleration / deceleration	
- Rapid traverse override	
	F0 (fine feed), 25 / 50 / 100 %
- Reference point return	G27, G28, G29
- Skip function	G31
- Smooth backlash compensation	
- Thread cutting, synchronous cutting	

SPINDLE & M-CODE FUNCTION

- M- code function	M 3 digits
- Polar coordinate interpolation	G12.1 / G13.1
- Retraction for rigid tapping	
- Rigid tapping	G84, G74
- Scaling	G50, G51
- Spindle orientation	
- Spindle serial output	
- Spindle speed command	S5 digits
- Spindle speed override (10% increments)	
	10 - 150 %
- Spindle output switching	

TOOL FUNCTION

- Cutter compensation C	G40, G41, G42
- Number of tool offsets	200 ea
- Tool length compensation	G43, G44, G49
- Tool number command	T3 digits
- Tool life management	
- Geometry / Wear and Length / Radius offset memory	
- Tool offset memory C	

PROGRAMMING & EDITING FUNCTION

- Absolute / Incremental programming	
	G90 / G91
- Addition of custom macro common variables	
- Additional work coordinate system (48 Pair)	
	G54.1 P1 - 48 pairs
- Auto. Coordinate system setting	
- Background editing	
- Canned cycle	G73, G74, G76, G80 - G89, G99
- Circular interpolation by radius programming	
- Coordinate system rotation	G68, G69
- Custom macro B	
- Custom size 512kb	
- Decimal point input	
- Extended part program editing	
- I / O interface	USB / RS - 232C
- Inch / metric conversion	G20 / G21
- Label skip	
- Local / Machine coordinate system	G52 / G53
- Macro executor	
- Maximum commandable value	
	±99999.999mm (±9999.9999 inch)
- No. of Registered programs	500 ea
- Optional angle chamfering / corner R	
- Optional block skip	
- Optional stop	M01
- Part program storage	256kb (640 m)
- Program number	O4-digits
- Program protect	
- Program stop / end	M00 / M02, M30
- Programmable data input	
	Tool offset and work offset are entered by
	G10, G11
- Sub program	Up to 4 nesting
- Tape code	ISO / EIA Automatic discrimination
- Work coordinate system	G54 - G59

OTHERS FUNCTIONS (Operation, Setting & Display, etc)

- Alarm display	
- Alarm history display	
- Clock function	
- Cycle start / Feed hold	
- Display of PMC alarm message	
	Message display when PMC alarm occurred
- Dry run	
- Ethernet function (Embedded)	
- External data input	
- Graphic display	Tool path drawing
- Help function	

- Loadmeter display	
- MDI / DISPLAY unit	
	10.4" color LCD, Keyboard for data input, soft-keys
- Memory card interface	
- Multi language display	
- Operation functions	
	Tape / Memory / MDI / Manual
- Operation history display	
- Program restart	
- Run hour and part number display	
- Search function	Sequence NO. / Program NO.
- Self - diagnostic function	
- Servo setting screen	
- Single block	

OPTIONAL SPECIFICATIONS

- 3-dimensional coordinate conversion	
- 3-dimensional tool compensation	
- 3rd / 4th reference return	
- Addition of tool pairs for tool life management	
	1024 pairs
- Additional controlled axes	
	max. 6 axes in total
- Additional work coordinate system	
	G54.1 P1 - 300 (300 pairs)
- AI Contour Control II	600 block preview
- Automatic corner override	G62
- Chopping function	G81.1
- Cylindrical interpolation	G07.1
- Data server	
- Dynamic graphic display	
	Machining profile drawing
- Exponential interpolation	
- EZ Guide i (Doosan infracore Conversational Programming Solution)	
	with 10.4" Color TFT
- Figure copying	G72.1, G72.2
- Handle interruption	
- High speed skip function	
- Increment system 1/10	
- Interpolation type pitch error compensation	
- Involute interpolation	G02.2, G03.2
- Machining time stamp function	
- Manual handle feed 2/3 unit	
- No. of Registered programs	
	1000 / 2000 / 4000 ea
- Number of tool offsets	
	400 / 499 / 999 / 2000 ea
- Optional block skip	addition 9 blocks
- Part program storage	
	512kb (1280m) / 1mb (2560m) / 2mb (5120m) / 4mb (10240m) / 8mb (20480m)
- Playback function	
- Polar coordinate command	G15 / G16
- Position switch	
- Programmable mirror image	G50.1 / G51.1
- Single direction positioning	G60
- Stored stroke check 2 / 3	
- Tape format for FS15	
- Tool offset	G45 - G48

NC Unit Specifications

Fanuc 32i

DBC 110S

AXES CONTROL

- Controlled axes	5 (X, Y, Z, W, B)
- Simultaneous controlled axes	Positioning(G00)/Linear interpolation (G01): 3 axes Circular interpolation (G02, G03): 2 axes
- Backlash compensation	
- Emergency stop / overtravel	
- Follow up	
- Least command increment	0.001mm / 0.0001 (inch)
- Least input increment	0.001mm / 0.0001 (inch)
- Machine lock	all axes / Z axis
- Stored pitch error compensation	Pitch error offset compensation for each axis
- Stored stroke check 1	Overtravel controlled by software

INTERPOLATION & FEED FUNCTION

- 2nd reference point return	G30
- Automatic corner deceleration	
- Circular interpolation	G02, G03
- Dwell	G04
- Feed per minute	mm / min(ipm)
- Feedrate clamp by circular radius	
- Feedrate override (10% increments)	0 - 200%
- Helical interpolation	
- Jog feedrate	0 - 5000 mm / min
- Linear ACC/DEC before interpolation	
- Linear interpolation	G01
- Manual handle feedrate	0.1 / 0.01 / 0.001mm
- NANO AICC (AI Contour Control)	200 block preview
- Override cancel	M48 / M49
- Positioning	G00
- Program restart	
- Rapid traverse override	F0 (fine feed), 25 / 50 / 100 %
- Reference point return	G27, G28, G29
- Skip function	G31
- Thread cutting, synchronous cutting	

SPINDLE & M-CODE FUNCTION

- M- code function	M 3 digits
- Polar coordinate interpolation	G12.1 / G13.1
- Rigid tapping	G84, G74
- Scaling	G50, G51
- Spindle orientation	
- Spindle serial output	
- Spindle speed command	S5 digits
- Spindle speed override (10% increments)	10 - 150%

TOOL FUNCTION

- Additional work coordinate system (48 Pair)	G54.1 P1 - 48 pairs
- Auto. Coordinate system setting	
- Background editing	
- Canned cycle	G73, G74, G76, G80 - G89, G99
- Circular interpolation by radius programming	
- Coordinate system rotation	G68, G69
- Custom macro B	
- Custom size	512kb
- I / O interface	USB / RS - 232C
- Inch / metric conversion	G20 / G21
- Local / Machine coordinate system	G52 / G53
- Macro executor	
- Maximum commandable value	±99999.999mm (±9999.9999 inch)

- No. of Registered programs	500 ea
- Optional block skip	
- Optional stop	M01
- Part program storage	256kb (640 m)
- Program number	O4-digits
- Program protect	
- Program stop / end	M00 / M02, M30
- Programmable data input	Tool offset and work offset are entered by G10, G11
- Sub program	Up to 4 nesting
- Tape code	ISO / EIA Automatic discrimination
- Work coordinate system	G54 - G59

OTHERS FUNCTIONS (Operation, Setting & Display, etc)

- Alarm display	
- Cycle start / Feed hold	
- Display of PMC alarm message	Message display when PMC alarm occurred
- Dry run	
- Ethernet function (Embedded)	
- External data input	
- Graphic display	Tool path drawing
- Help function	
- Loadmeter display	
- MDI / DISPLAY unit	10.4" color LCD, Keyboard for data input, soft-keys
- Memory card interface	
- Multi language display	
- Operation functions	Tape / Memory / MDI / Manual
- Program restart	
- Search function	Sequence NO. / Program NO.
- Servo setting screen	

OPTIONAL SPECIFICATIONS

- 3rd / 4th reference return	
- Addition of tool pairs for tool life management	512 pairs
- Additional controlled axes	max. 6 axes in total
- Additional work coordinate system	G54.1 P1 - 300 (300 pairs)
- AI HPCC* (High Precision Contour Control) with 64 bit Risc	600 block preview
- Automatic corner override	G62
- Chopping function	G81.1
- Cylindrical interpolation	G07.1
- EZ Guide i (Doosan infracore Conversational Programming Solution) with 10.4" Color TFT	
- Handle interruption	
- High speed skip function	
- Increment system 1/10	
- Interpolation type pitch error compensation	
- Manual handle feed 2/3 unit	
- Machining time stamp function	
- No. of Registered programs	1000 ea
- Number of tool offsets	400 ea
- Optional block skip addition	9 blocks
- Part program storage	512kb (1280m) / 1Mb (2560m)
- Polar coordinate command	G15 / G16
- Position switch	
- Programmable mirror image	G50.1 / G51.1
- Stored stroke check 2 / 3	
- Tool position offset	G45 - G48

NC Unit Specifications

Heidenhain iTNC 530

DBC series

AXES CONTROL

- Controlled axes	5 (X, Y, Z, W, B)
- Simultaneous controlled axes	Positioning / Linear interpolation 5 axes
	Circular interpolation 2 axes
	Helical interpolation 3 axes
- Backlash compensation	
- Least command increment	0.001mm / 0.0001 (inch)
- Least input increment	0.001mm / 0.0001 (inch)
- Linear axis error compensation	
- Reversal peaks with circular movement compensation	
- Stick-slip friction compensation	

INTERPOLATION & FEED FUNCTION

- Circle	In 3 axes
- Feedforward	
- Feedrate override	0 - 150 %
- Feed hold	std.
- Helix interpolation	
- Manual handwheel feed	1 unit
- Optional block skip	
- Single block	
- Straight line In	5 axes

SPINDLE FUNCTION

- Spindle orientation	
- Spindle position control	
- Spindle speed override	0 - 150%

TOOL FUNCTION

- 3 dimensional tool compensation	
- Number of tool offset	999 ea
- Tool management	

PROGRAMMING & EDITING FUNCTION

- Actual position capture	
- Calculator	
- Comment and structure blocks in the NC program	
- Complete list of all current error messages	
- Context-sensitive help function for error message	
- Datum tables	
- Graphical support for programming cycles	
- Graphic simulation	
- Heidenhain conversation format programming	
- Mathematical function	
- No. of registered program	No limit
- Plane view	
- Programming graphics	
- Programming with variable	Q parameters
- Program memory	Approx 26GB on hard disk
- Returning to the contour	
- The integrated help system TNC guide	

OTHERS FUNCTIONS (Operation, Setting & Display, etc)

- Actual speed display	
- Alarm display	
- Clock function	
- Diagnostic function	
- Display	TFT 15" color
- Ethernet TCP / IP	
- Integrated oscilloscope	
- Log(error message and keystroke) use PCs	
- Trace function	
- USB USB1.1	

OPTIONAL SPECIFICATIONS

- Display	TFT 15" color
- DCM Collision	
- DXF Converter	
- Heidenhain DNC	
- KinematicsOpt	
- Tool touch probes	TT-series, TL Series
- Workpiece touch probes	TS-series



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