



Doosan Infracore  
Machine Tools

# DB 130 CX / DB 250 CM

Heavy-duty machining with the Power and Accuracy



# Harmonized heavy-duty machining with perfect balance of power & accuracy

DOOSAN has poured all of its efforts and energies to achieve high performance and rigidity. In the meantime, wide selections of optional accessories are available to fulfill your special applications. We guarantee that you will be totally satisfied with DB Series.

**DB 130 CX**  
**DB 250 CM**



## DB 130CX with Semi Splash Guard

Traveling column type(Z-axis) : **1 600 mm**

High torque spindle : **3 356.6 N·m (3 steps gear train)**

Boring spindle diameter : **ø130 mm**

The W-axis clamping for precision is standard.

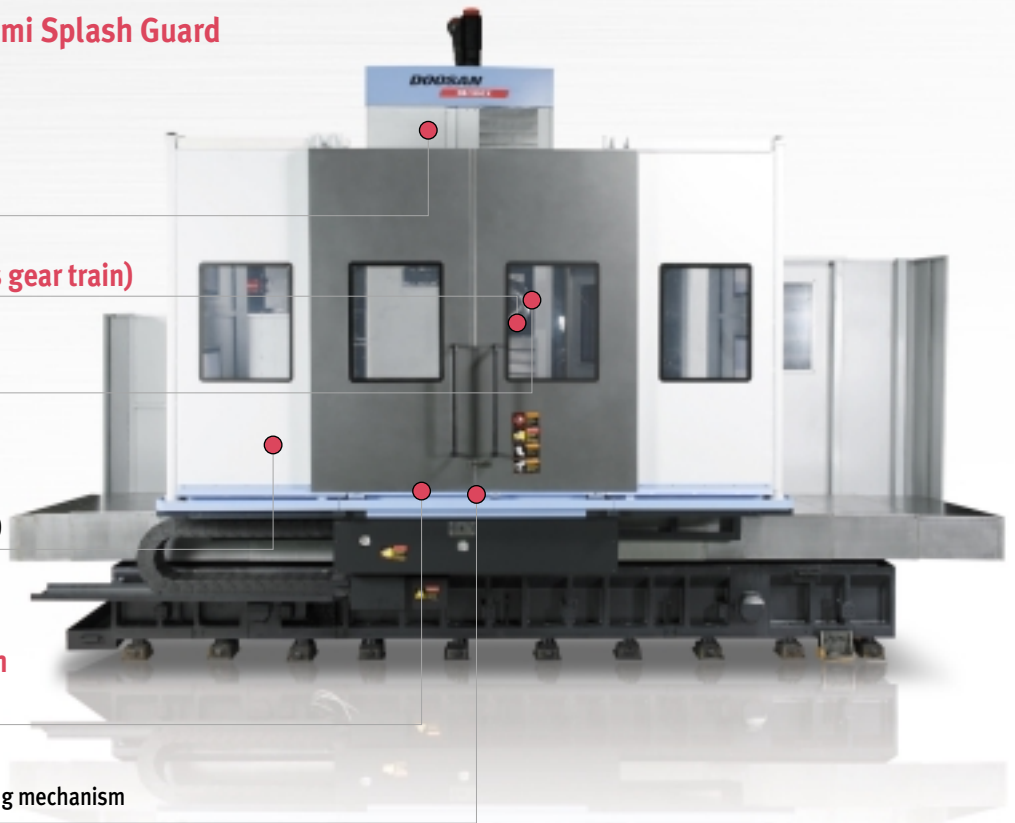
Semi enclosure splash guard for safety (Option)

Wide range of table size : **1 600 × 1 800 mm**

Max. load capacity : **15 000 kg**

Dividing table with automatic backlash adjusting mechanism

(Double pinion drive mechanism with rotary encoder at table center)



## DB 250CM

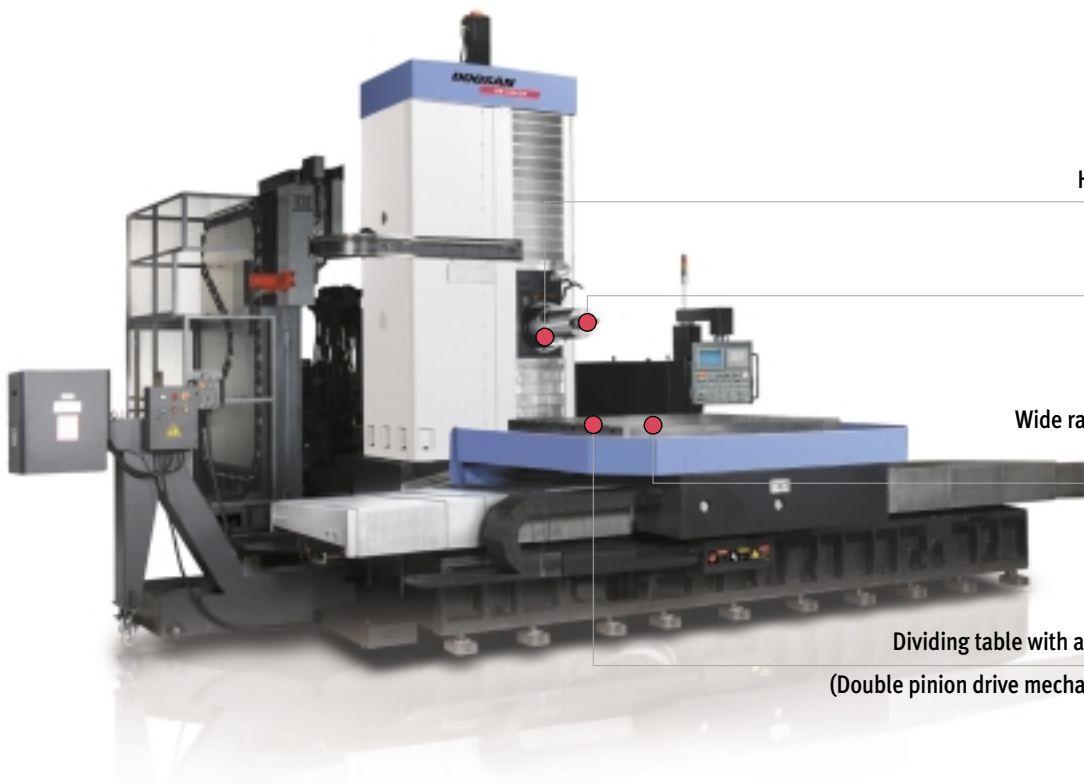
High speed built-in spindle : **6 000 rpm**

Quill diameter : **ø250 mm**

Wide range of table size : **1 600 × 1 800 mm**

Max. load capacity : **15 000 kg**

Dividing table with automatic backlash adjusting mechanism  
(Double pinion drive mechanism with rotary encoder at table center)



# High Speed and Powerful Spindle

## Improved thermal stability through perfect cooling control

Use of ultra precision paired spindle bearings ensures high speed, heavy-duty and high precision machining. Perfectly wrapped cooling system of built-in spindle (On DB 250CM) and thermal compensation dramatically minimize any thermal.

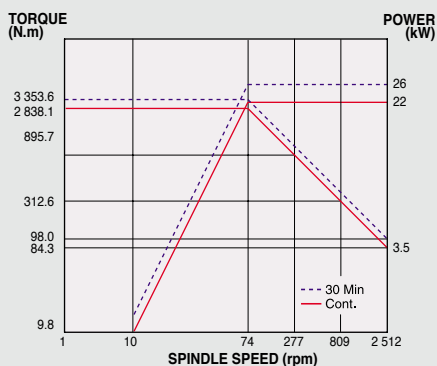
### Max. spindle speed

**DB 130CX 2 500 rpm**

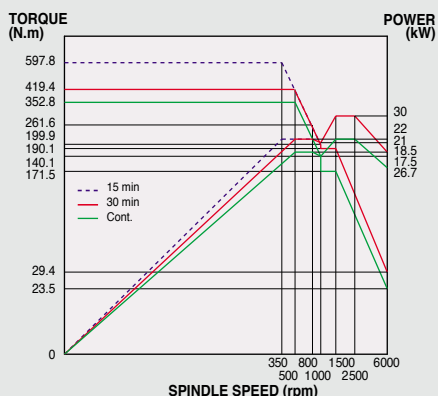
**DB 250CM 6 000 rpm**

### Spindle power-torque diagram

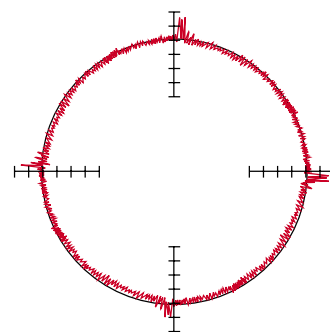
● DB 130CX



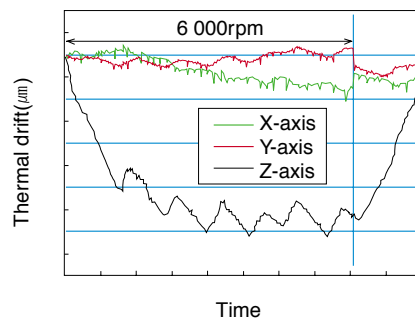
● DB 250CM



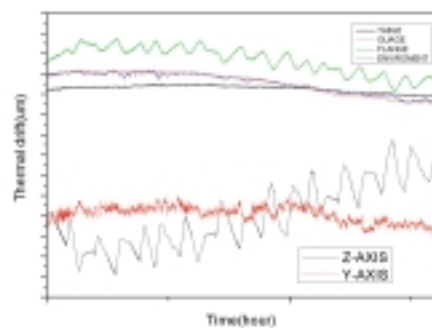
### Precise circular control (X-Y plane) : On DB 250CM



### Thermal expansion at Max. speed of Built-in spindle : On DB 250CM



### Thermal expansion at Max. speed : On DB 130CX (Opt.)



- The cutting test results indicated above are obtained as an example through real test cutting.
- The results may not be obtained due to differences in cutting and environmental conditions during measurement.

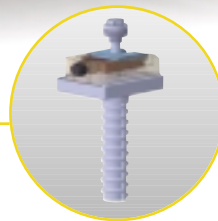
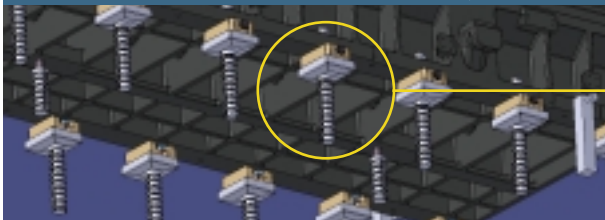
# Machine Structure



Inserted ribs reinforce the structural rigidity and dynamic damping characteristics to external load and flowing stress. In any operating conditions, the machine can be maintained under optimal condition.



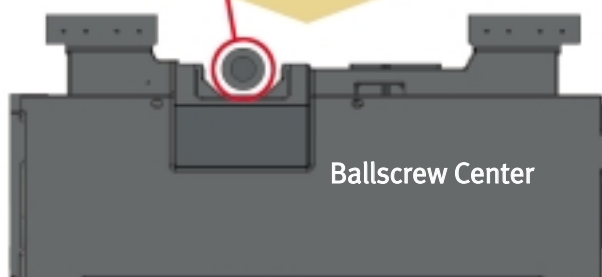
## Strengthened Foundation plan



All foundation level blocks ensure life time guarantee on precision and easy&fast installation work.

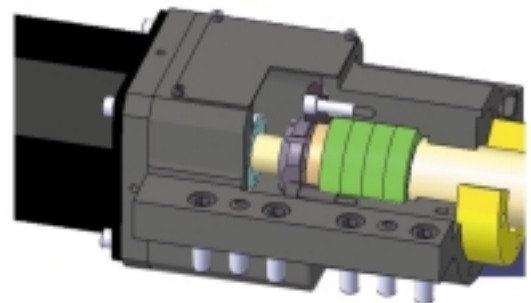
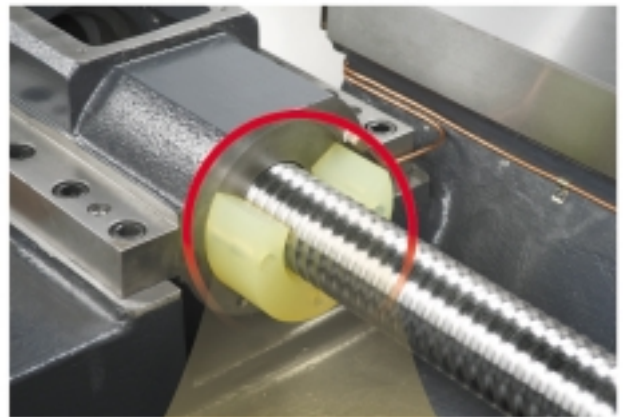
## Enhanced rigidity of the Axes

With due regard to off-centered force made by cutting and each unit operation, driven center of X and Z-axis is designed to minimize twisting moment effect. Especially, the driven center point designed to be near the end cutting point of X-axis has decreased table shaking phenomenon when the table moves on the guide way.



## Big diameter ball screw & 4 rows bearing

The 4 rows bearing has increased machine rigidity and decreased heat generation of ball screw.

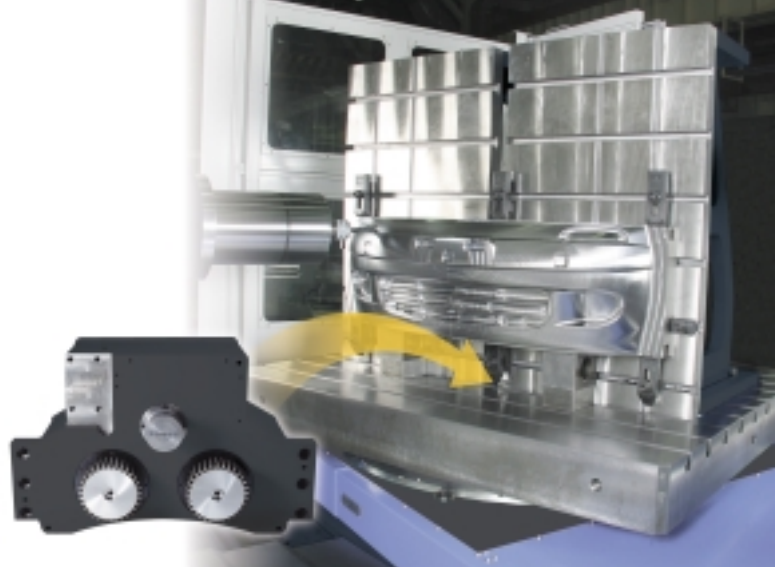


# Rotary Table

Double pinion type

## High precision table $90.0 \pm 5$ sec

The dividing table can be indexed every 0.001 by B-axis direct command. The type of clamp is standard with a highly rigid double pinion type drive system and rotary scale for precision table indexing. Also, high precision indexing at every  $90.0$  is automatically and precisely fixed with a location pins.



# Multi-Cover and Reducer

For machine durability



## Multi-cover

The multi-cover assembly for Y-axis does not allow any chip entering into linear driving units of column, and protects slideways against dust, chips, coolants with prevention of the accumulation of chips on the machine bed. In addition, its application improves appearance of the machine.

## Speed Reducer

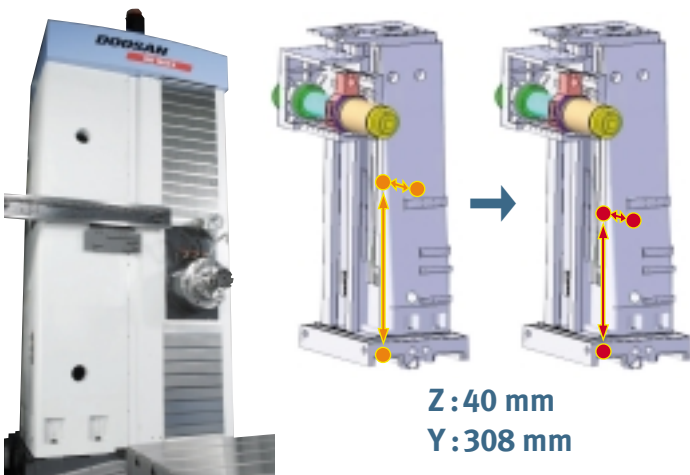
Speed reducer is applied to Y-axis servo driving mechanism to Balance Shock Load vs Running Load. It controls load balancing without any additional balancing weight depending on the load demands and duty cycle of your application.



# Enhanced rigidity

## Rigidity of the Axes

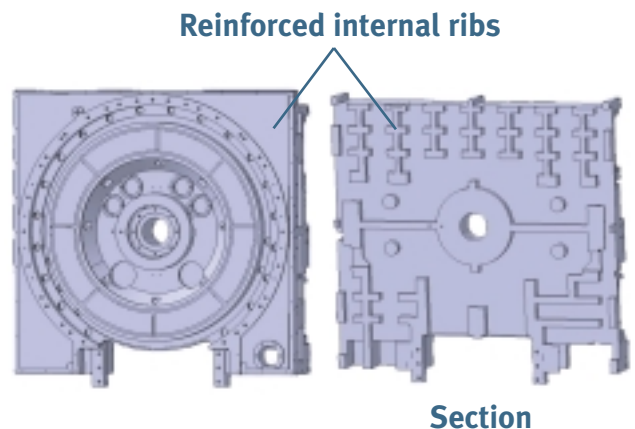
Lowered the center of gravity for minimized the vibration (Z-axis)



→ Minimized initial vibration  
Reduced residual vibration

## Rotary base structure

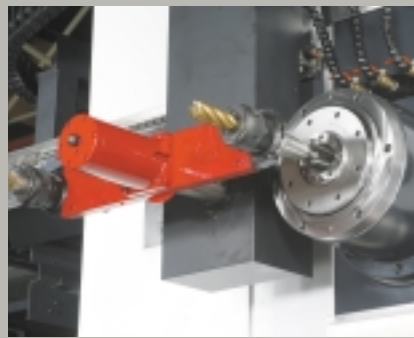
Rotary base has minimized deformation to imbalance setting of work piece



# Various Optional Equipments

Operator's convenience and operability

DB 130CX / 250CM



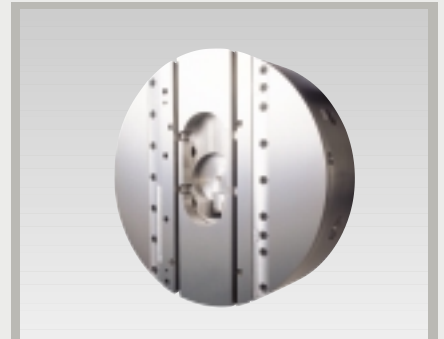
Automatic tool changer



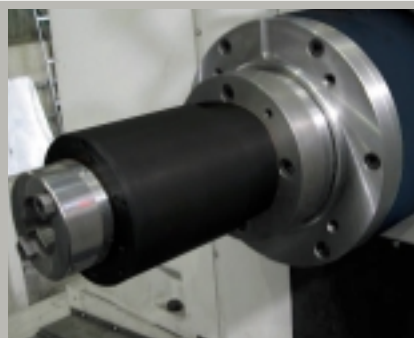
Angular milling attachment  
(DB 130CX only)



Front side screw conveyor (Standard)  
-For easy chip removal



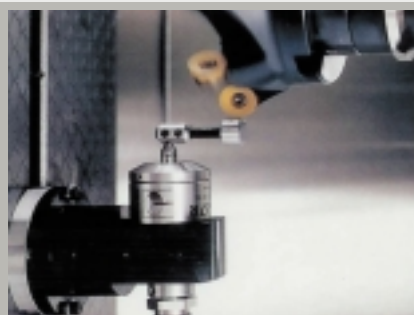
Face plate (DB 130CX only)



Spindle support (DB 130CX only)



Glass scale (DB 250CM : Std, DB 130CX)

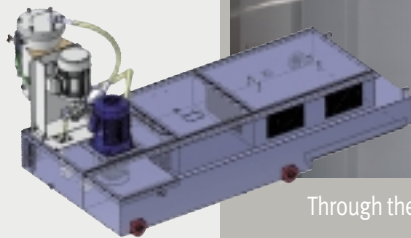


Automatic tool length measurement  
with sensor

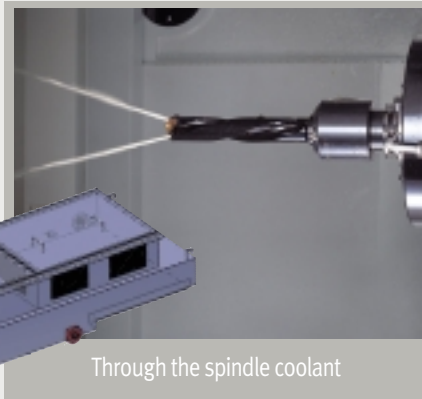


3-MPG





Through the spindle coolant



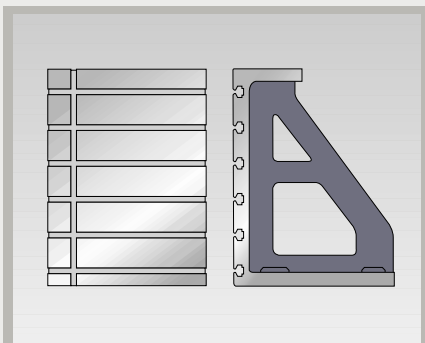
Heidenhain iTNC 530 NC system  
(DB 130CX only)



Floor coolant



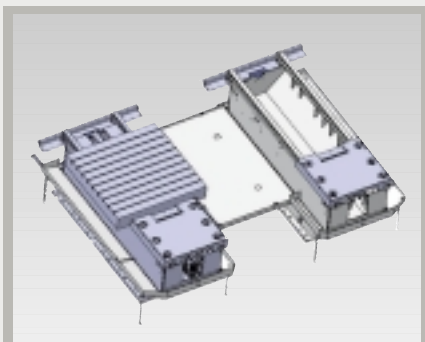
Tool magazine (40/60/90 tools)



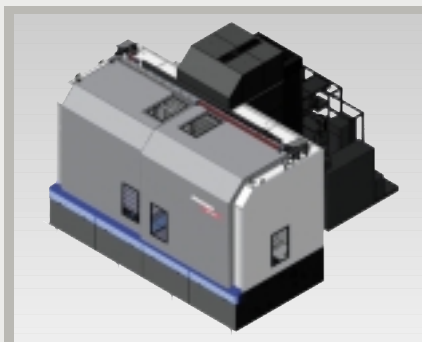
Angle plate



Chip conveyor / Bucket



Automatic pallet changer



Full splash guard



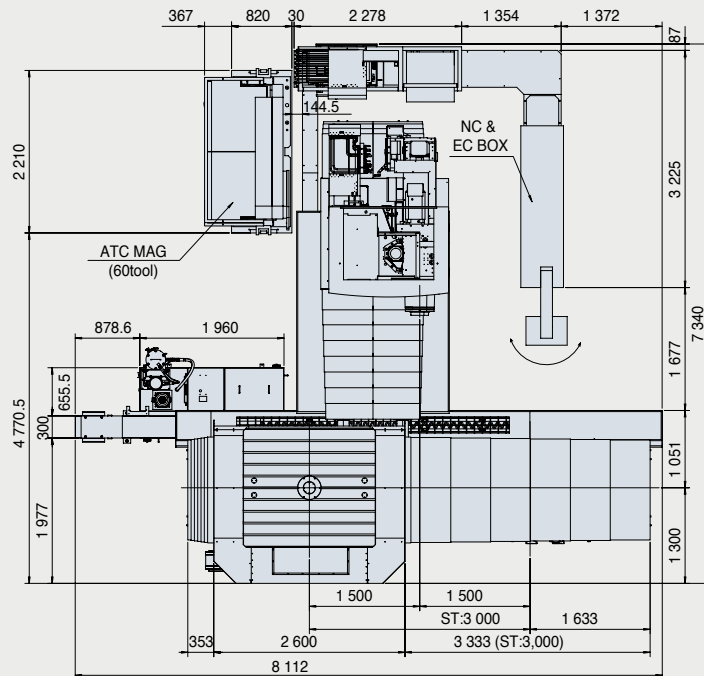
Semi splash guard

# External Dimensions

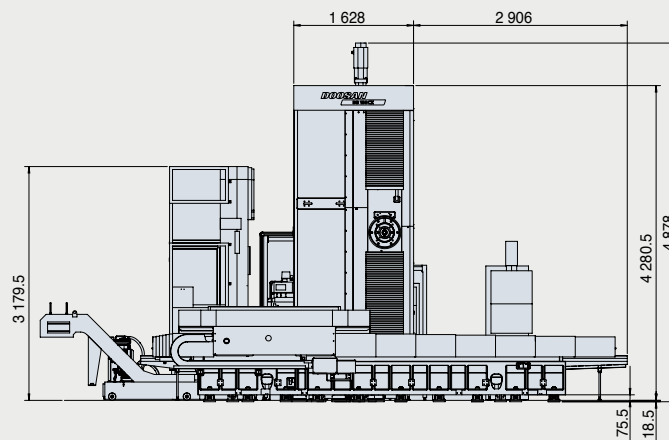
unit : mm

## DB 130CX

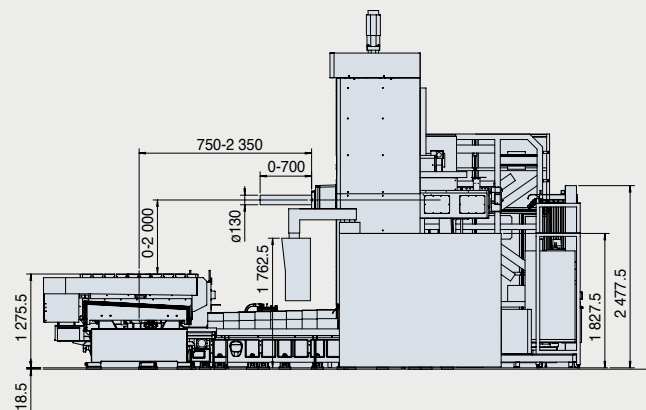
Top View



Front View



Side View



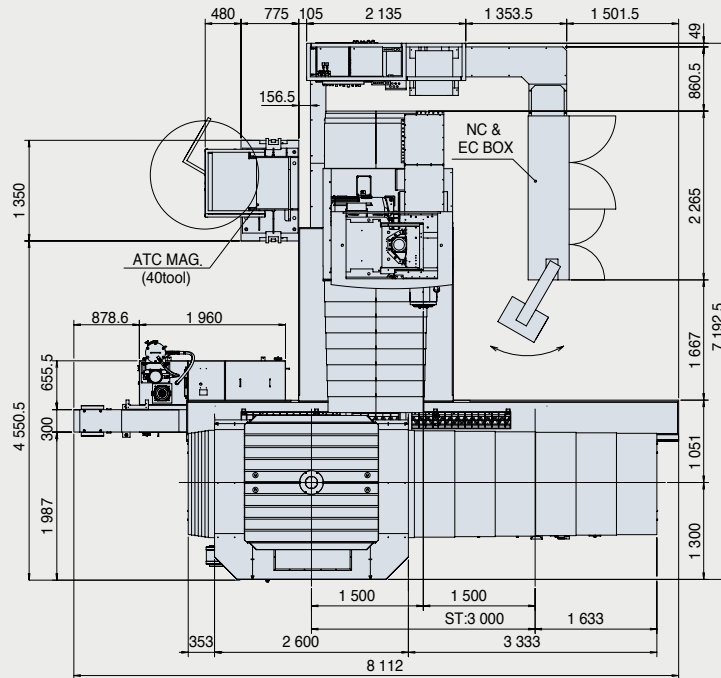
Note : It maybe varied by optional features.

# External Dimensions

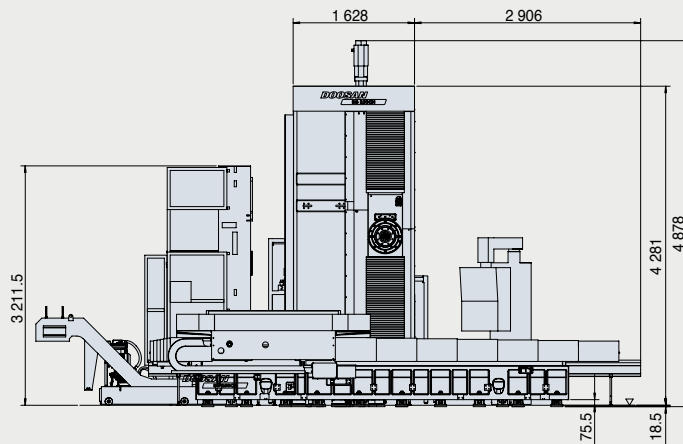
unit : mm

## DB 250CM

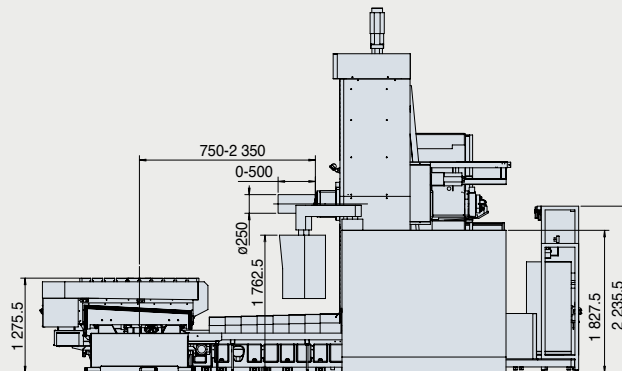
Top View



Front View



Side View

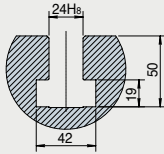
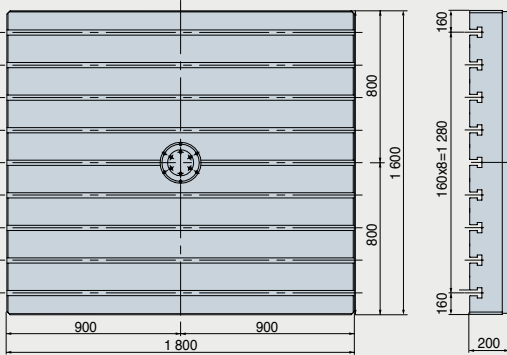


Note : It may be varied by optional features.

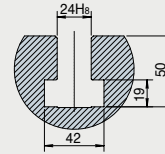
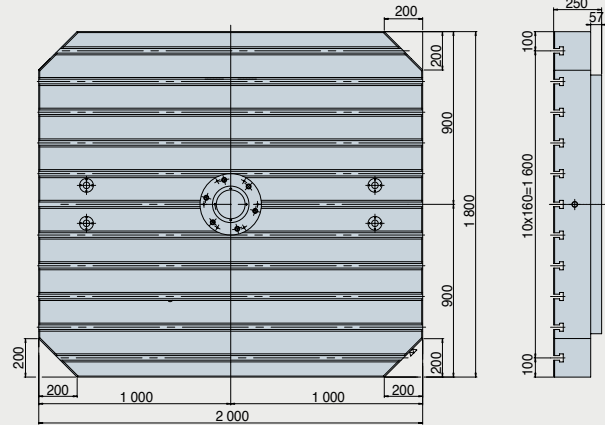
# Table Dimensions

unit : mm

## • Standard



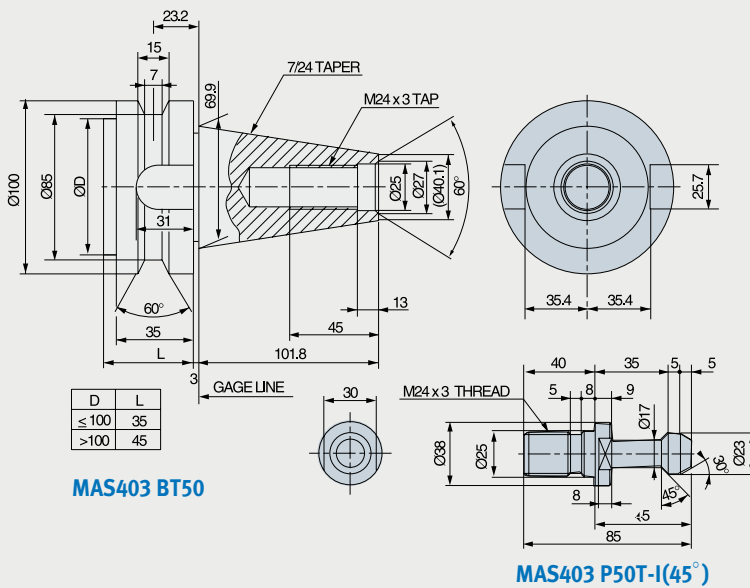
## • Option



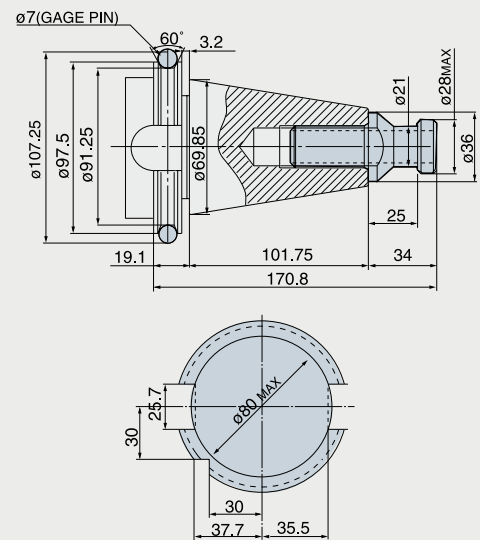
# Tool Shank

unit : mm

## • BT50 Tool (Standard)



## • DIN50 Tool (Option)



# Machine Specifications

Descriptions		DB 130CX	DB 250CM	
<b>Travel</b>	X-axis (table longitudinal)	mm	3 000 {4 000}	
	Y-axis (spindle vertical)	mm	2 000	
	Z-axis (table/column cross)	mm	1 600 {2 000}	
	W-axis (spindle axial)	mm	700	500
	Distance from spindle center to pallet top	mm	0 ~ 2 000	
	Distance from spindle nose to table center	mm	750 ~ 2 350 {2750}	
<b>Table</b>	Table size	mm	1 600 × 1 800 {2 000 × 1 800}	
	Table loading capacity	kg	15 000 {13 000}	
	Table surface		9-24Hs	
	Index degree (by rotary table & indexing pin)	deg	90	
	Continuous dividing table	deg	0.001	
<b>Spindle</b>	Max. spindle speed	rpm	2 500 {3 000}	6 000
	Spindle taper		ISO #50 7/24 Taper	
	Max. spindle torque	N m	3 356.6 {2 895.4}	597.8
	Boring spindle diameter	mm	∅130	-
	Quill diameter	mm	-	∅250
<b>Feedrate</b>	Rapid traverse rate (X/Y/Z/W)	m/min	10/10/10/10	
	Cutting feedrate	mm/min	1~4 000	
<b>Automatic tool changer</b>	Type of tool shank		MAS403 BT50	
	Tool storage capacity		{40/60/90}	
	Max. tool diameter	mm	130	
	Max. tool diameter without adjacent tools	mm	250	
	Max. tool length	mm	600	
	Max. tool weight	kg	25	
<b>Automatic pallet changer</b>	Method of tool selection		{Fixed address}	
	Number of pallet	EA	{2}	
	Type		9-22Hs, {Parallel shuttle}	
	Pallet size	mm	{1 600 × 1 600}	
	Pallet loading capacity	kg	{7 500}	
<b>Motor</b>	Spindle motor (30min)	kW	26	30
	Feed motor (X/Y/Z/B/W)	kW	9.0/9.0/9.0/7.0/4.0	
<b>Power source</b>	Electric power supply (Rated capacity)	kVA	70	
	Compressed air supply	MPa	0.54	
<b>Tank capacity</b>	Coolant tank capacity {Opt}	l	440	
	Lubrication tank capacity	l	11.6 × 2ea	
<b>Machine size</b>	Machine height	mm	4 950	
	Machine dimensions (L×W)	mm	7 500 × 8 200	
	Machine weight	kg	43 000	

Note : { } are optional

## Standard Feature

- Spindle orientation stop device
- Rigid tapping
- Thread cutting device
- Spindle oil cooling unit
- Tool clamp / unclamp device
- Air blowing (DB 250CM)
- Work light
- W-axis clamp device
- Y-axis clamp device
- 0.001° Dividing table
- Chip tray
- Y-axis protective covering from chip
- Chip cover for slide ways
- Manual pulse generator (portable type)
- Operator call lamp (yellow/red/green)
- Glass scale feed back system (DB 250CM)
- Foundation parts
- Level block

## Optional Feature

- Angular milling attachment (DB 130CX only)
- Face plate (DB 130CX only)
- Spindle support (DB 130CX only)
- Semi splash guard
- Full splash guard
- CE Safety fence
- Flood coolant device
- Through the spindle coolant preparation
- Through the spindle coolant system
- Chip bucket
- Chip conveyor
- Oil skimmer
- Air blowing (DB 130CX only)
- Fanuc 16iM NC system
- Heidenhain iTNC 530 NC system (DB 130CX only)
- Glass scale feed back system (DB 130CX)
- Automatic tool changer (ATC)
- Automatic pallet changer (APC)
- Automatic tool length measurement with sensor
- Angle plate
- Table expansion

· We do not responsible for difference between the information in the catalogue and the actual machine.

# NC Unit Specifications (Fanuc 18i-MB) : Std.

<b>AXES CONTROL</b>	
- Controlled axes	5 (X,Y,Z,B,W)
- 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 / 0.000 1"
- Least input increment :	0.001mm / 0.000 1"
- Machine locks	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
<b>INTERPOLATION &amp; FEED FUNCTION</b>	
- 2nd reference point return	G30
- Circular interpolation	G02, G03
- Dwell	G04
- Exact stop check	G09, G61(mode)
- Feed per minute	mm/min
- Feedrate override (10% increments)	0 - 200 %
- Jog override (10% increments)	0 - 200 %
- Linear interpolation	G01
- Manual handle feed (1 unit)	
- Manual handle feedrate	0.1/0.01/0.001 mm
- Override cancel	M48 / M49
- Positioning	G00
- Rapid traverse override	F0 (fine feed), 25 / 50 / 100 %
- Reference point return	G27, G28, G29
- Skip function	G31
<b>SPINDLE &amp; M-CODE FUNCTION</b>	
- M-code function	M 3 digits
- Spindle orientation	
- Spindle serial output	
- Spindle speed command	S5 digits
- Spindle speed override (10% increments)	50 - 150 %
<b>TOOL FUNCTION</b>	
- Cutter compensation C	G40, G41, G42
- Number of tool offsets	99 EA
- Tool length compensation	G43, G44, G49
- Tool number command	T3 digits
<b>PROGRAMMING &amp; EDITING FUNCTION</b>	
- Absolute / Incremental programming	G90 / G 91
- Auto. Coordinate system setting	
- Background editing	
- Canned cycle	G73, G74, G76, G80 - G89, G99
- Circular interpolation by radius programming	
- Custom macro B	
- Decimal point input	
- I / O interface	RS - 232C
- Inch / metric conversion	G20 / G21
- Label skip	
- Local / Machine coordinate system	G52 / G53
- Maximum commandable value	±9 999.999mm (±9 999.999 9 inch)
- No. of Registered programs	125 EA
- Optional block skip	
- Optional stop	M01
- Part program storage	160 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
- Rigid tapping	G84, G74
- Sub program	Up to 4 nesting
- Tape code	ISO / EIA Automatic discrimination

- Thread cutting	
- Work coordinate system	G54 - G59
<b>OTHERS FUNCTIONS (Operation, Setting &amp; Display, etc)</b>	
- Alarm display	
- Alarm history display	
- Clock function	
- Cycle start / Feed hold	
- Display of PMC alarm message	Message display when PMC alarm occurred
- Dry run	
- Graphic display	Tool path drawing
- Help function	
- Load meter display	
- MDI / DISPLAY unit	10.4" color LCD, Keyboard for data input, soft-keys
- Memory card interface	
- 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	
<b>OPTIONAL SPECIFICATIONS</b>	
- 3-dimensional coordinate conversion	
- 3-dimensional tool compensation	
- 3rd / 4th reference return	
- Addition of tool pairs for tool life management	128 / 512 pairs
- Additional controlled axes	max. 6 axes in total
- Additional work coordinate system	G54.1 P1 - 48 ( 48 pairs )
- 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	
- Coordinate rotation	G68, G69
- Cylindrical interpolation	G07.1
- Data server	
- Dynamic graphic display	Machining profile drawing
- Exponential interpolation	
- Extended part program editing	
- F15 tape format	
- Figure copying	G72.1, G72.2
- Handle interruption	
- Helical interpolation	
- High speed skip function	
- Involute interpolation	G02.2, G03.2
- Look ahead control	G08
- Machining time stamp function	
- NANO AICC (AI Contour Control)	80 block preview
- No. of Registered programs	200 / 400 / 1 000 EA
- Number of tool offsets	200 / 400 / 499 / 999 EA
- Optional angle chamfering / corner R	
- Optional block skip addition	9 blocks
- Part program storage	320 / 640 / 1 280 / 2 560 m
- Playback function	
- Polar coordinate command	G15 / G16
- Polar coordinate interpolation	G12.1 / G13.1
- Programmable mirror image	G50.1 / G51.1
- Remote buffer	
- Scaling	G50, G51
- Single direction positioning	G60
- Stored stroke check 2 / 3	
- Tool life management	
- Tool offset memory C	Geometry / Wear and Length / Radius offset memory
- Tool position offset	G45 - G48

# NC Unit Specifications (Heidenhain iTNC 530) : Opt.

## CONTROL SYSTEMS

- Main Computer : MC 422 C with Windows 2000
- Cycle times of main computer
: Block processing time 0.5 ms
- Controller unit : CC 424 B
- Cycle times of controller unit
: Position controller 0.2 ms/0.1 ms
: Speed controller 0.2 ms/0.1 ms
- Visual display unit BF 150 color flat-panel TFT display
- Keyboard : TE 520 B
<b>Inverter systems</b>
- Compact inverters
- Modular inverters
<b>Axes : MC 422 C</b>
- Rotary axes Max. 3
- Synchronized axes
- PLC axes
<b>Spindle</b>
- Operating-mode switchover
- Position-controlled spindle
- Spindle orientation
- Gear stages
- Milling-head change Programmable via PLC
<b>Input resolution and display step</b>
- Linear axes 0.1 µm
- Rotary axes 0.000 1°
<b>Interpolation</b>
- Straight line In 5 axes
- Circle In 3 axes
- Helix
- Spline
<b>Axis control</b>
- With following error
- With feedforward
- Axis clamping
- Maximum feed rate
<b>MACHINE INTERFACING</b>
<b>Error compensation</b>
- Linear axis error
- Nonlinear axis error
- Backlash
- Reversal peaks with circular movement
- Reversal error
- Thermal expansion
- Stick-slip friction
- Sliding friction
<b>Integral PLC</b>
- Program format Statement list
- Program input via TNC
- Program input via PC
- PLC memory Min. 948 MB on hard disk
- Process memory (RAM) 512 KB
- PLC cycle time 10.8 ms
- PLC inputs 24 V DC
- PLC outputs 24 V DC
- Analog inputs ±10 V
- Inputs for thermistors
<b>PLC window</b>
- Small PLC window
- Large PLC window
- PLC soft keys
- PLC positioning
- PLC basic program
<b>Commissioning and diagnostic aids</b>
- TNC diag : Software for diagnostics of digital drive systems

- TNC opt : Software for putting digital control loops into service
- Integrated oscilloscope
- Trace function
- Logic diagram
- Table function
- Log
<b>Data interfaces</b>
- Ethernet (100 BaseT)
- RS-232-C/V.24
- RS-422/V.11
<b>Protocols</b>
- Standard data transfer
- Blockwise data transfer
- Blockwise data transfer during simultaneous program run with program memory on the hard disk
- LSV2
- USB 2

## USER FUNCTIONS

<b>Program entry</b>
- HEIDENHAIN plain language
- smarT.NC
- ISO
<b>Cycle programming</b>
- Standard milling, drilling and boring cycles
- SL cycles
- Touch probe cycles
- OEM cycles
<b>Variant programming</b>
- Q parameters (variables)
- Mathematical functions
<b>Programming aids</b>
- Programming graphics
- Program verification graphics
- Graphical support for cycle programming
- Pocket calculator
- Context-sensitive help for error messages
- Calculation of cutting data
- Machining-time display
<b>Preset tables</b>
<b>Datum tables</b>
<b>Pallet management</b>
<b>Tool management : Tool-life monitoring, replacement tools</b>
<b>Conversational languages : English, German, Czech, French,</b>
Italian, Spanish, Portuguese, Swedish,
Danish, Finnish, Dutch, Polish,
Hungarian, Russian (Cyrillic),
Chinese (traditional, simplified),
further languages as option (e.g. Slovene)

## SOFTWARE OPTIONS

<b>Collision monitoring : Real-time workspace monitoring</b>
with Dynamic Collision Monitoring (DCM)
<b>DXF conversion : Importing and converting of DXF files</b>
<b>Feature Content Level (FCL) : New functions with software updates</b>
<b>HEIDENHAIN-DNC : For access to control information</b>
and functions from PC applications
<b>Conversational language : Additional conversational languages</b>
<b>Electronic handwheels</b>
- One HR 410/HR 420 or
- One HR 130 or
- Up to three HR 150 over HRA 110
<b>Touch probes : TS 220 or TS 640; TT 140</b>
<b>PLC basic program</b>
<b>iTNC programming station : Control software for PCs for programming,</b>
archiving, and training

# DB 130 CX / DB 250 CM



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