



# JET/DMC

High-Speed Vertical Machining Centers  
High-Speed Double Column Machining Centers



**JET-1000 DMC-909/912/915**

# JET-1000

HIGH-SPEED MACHINING CENTERS



*Adhering to our outstanding quality and development experience on the vertical machining centers for many years, the series of vertical high-speed machining centers can provide you faster processing efficiency and more careful machining quality.*

The machine of JET series has the following superior performance different from the traditional machine.

- **Excellent Ergonomics** - The distance between the table and safety door is only 220 mm. It makes users more convenient to carry on the loading and unloading and settlement of the workpiece.
- **Easy Chip Removal** - High-pressure rivers plus twin screw-type conveyors ensure complete chip removal with little manual cleaning.
- **High Rigidity** - Different from the conventional C-type VMCs with a horizontal movable spindle head its center is far from the guide ways, the JET spindle is very close to the guide ways for the best possible rigidity.
- **High-speed Machining** - The Swiss roller-type linear ways used on all 3 axes offer high-loading capacity and accurate displacement for high-speed machining. The overall accuracy is improved over a conventional VMC.

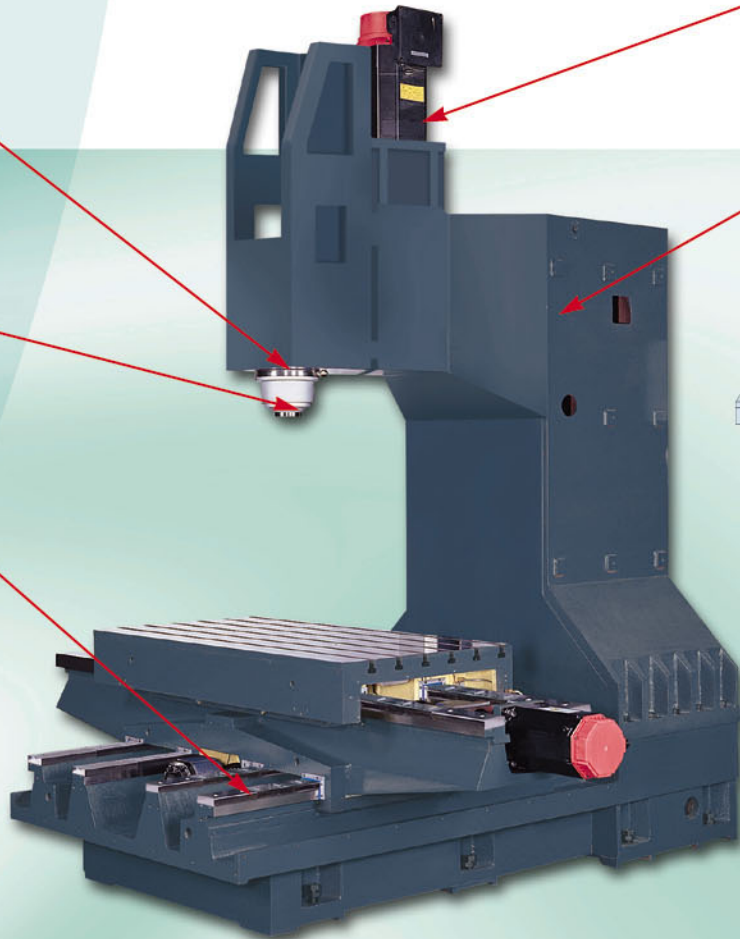
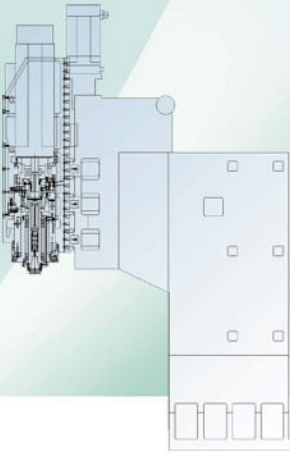


# ADVANCED STRUCTURE

Taper of spindle is BBT-40.  
HSK A63 is optional.

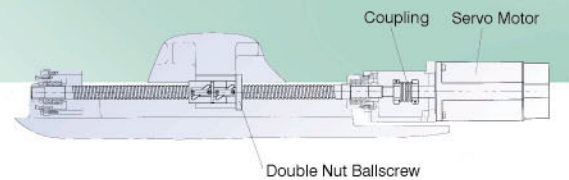
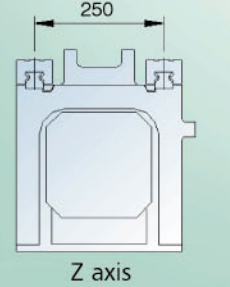
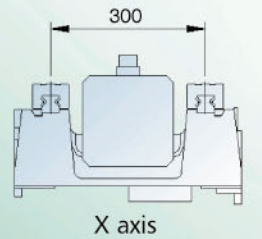
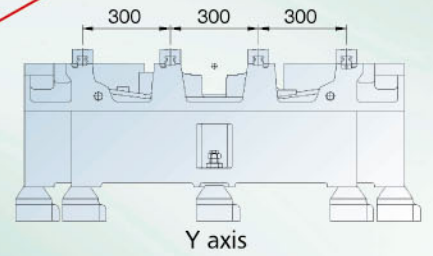
Distance between the spindle center and the Z-axis guide ways is only 180 mm. It provides machine owning much better cutting rigidity and accuracy.

Both of X and Y-axes use the ball-type linear ways and Swiss roller-type linear ways are used on the Z-axis for speed and precision. The rapid traverse for all 3 axes is 24 m/min.



Large power and no weight balance used on the Z-axis design can make the Z-axis movement more stable.

One-piece L-type column for maximum rigidity.



## Lightened Direct-Driving Spindle

The spindle is coupled directly on the motor and driven without the gearbox for low thermal growth.

## Direct Driving Ballscrews

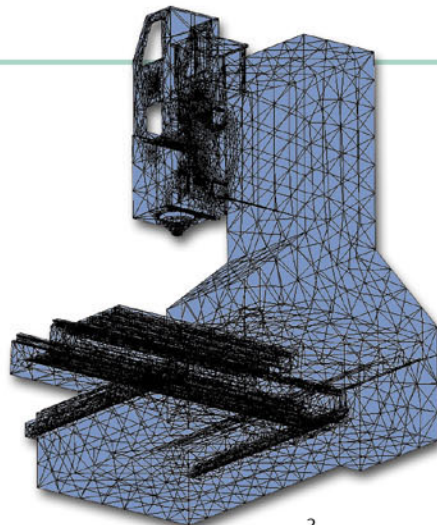
Servo motors couple directly to the ballscrews=Accuracy and precision. Oversized  $\phi 1.77"$  (45mm) pretensioned, double nut ballscrews use on all 3 axes=No Thermal Growth and Accuracy.

## Zero Table Overhand

Super wide linear way arrangement allows the weight of the table and the workpiece to be kept in the travel of saddle and provides machine for rigidity and accuracy.

## Optimal Design for Structure

We cast the main parts of machine with the high-class meehanite cast iron for high rigidity and damping.



## FEA For Structure

The structures of major components for constructing the machine are designed with the finite element analysis (FEA). By this way, we refine our design and improve the quality of machine. It makes the machines high rigidity and good precision that are for beyond ordinary.

# DMC-909 / 912 / 915

HIGH-SPEED MACHINING CENTERS

DMC-909



DMC-912



**Expanding on our popular DMC series of large frame bridge mills, this series of mid-frame bridge mills can take the place of large C-Frame type mills while still offering value pricing.**

**These machines offer distinct advantages over conventional VMC's.**

- **Ergonomics** - much easier to load / unload and set-up.
- **Chip Removal** - twin screw type conveyors plus a caterpillar conveyor ensure complete chip removal with little manual cleaning.
- **Floor Space** - Our double columns consume less floor space than a similar size VMC.
- **Rigidity** - Opposed to large VMC's with a very large spindle center to column distance, the DMC spindle is very close to the bridge for the best possible rigidity.
- **Total Accuracy** - Because the Y and Z axes have fixed loads at all times and the X axis carries the only dynamic load, overall accuracy is improved over a conventional VMC.

# Setting the Standard.... With Solid Construction

Large diameter 50 mm ballscrews are used in X \ Y axes, Z axis is 45 mm for DMC-909~915. They are pretensioned to eliminate thermal growth.

High-rigid roller-type linear ways are used on the Y axis for heavy cutting, and the distance between the ways is 580 mm

Heavy duty and high rigidity roller-type linear ways are used on the X-axis for speed and precision.

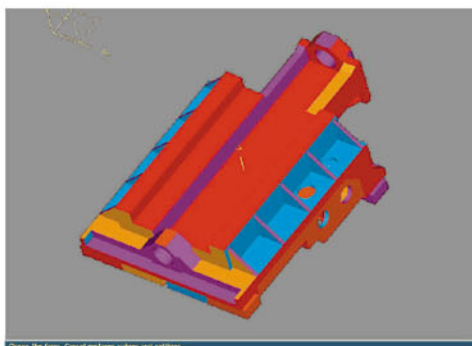
Extra large milling head is with rigid linear ways. The head is held by 480 mm of the saddle.

Huge saddle has a size of 800 mm x 722 mm

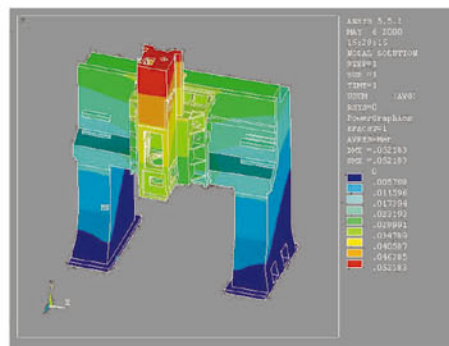
One-piece columns and bridge casting for maximum rigidity.

One-piece meehanite cast iron base.

17/24 kW spindle motor with 15000 rpm standard is used on the 40 Taper machines. It comes with a spindle water cooler, too.



3D Optimal Design



Main Structure FEA

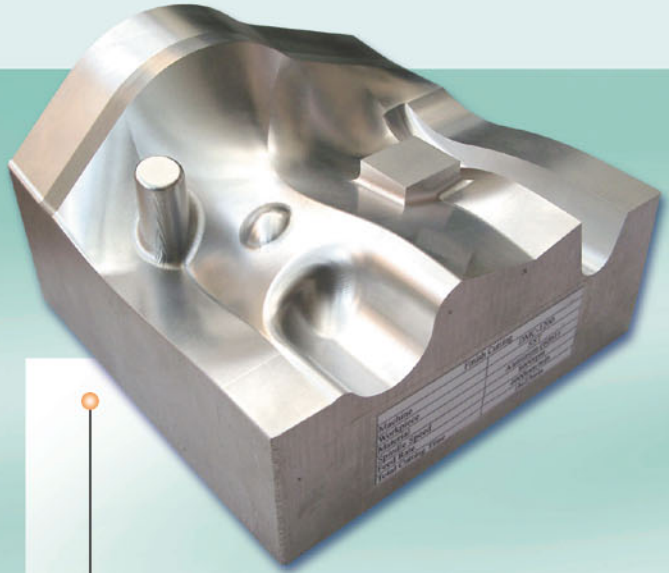
## Built Right....Built to Last!

# MACHINING SAMPLES FOR MOLD & DIE

## HIGH-SPEED MACHINING CENTERS



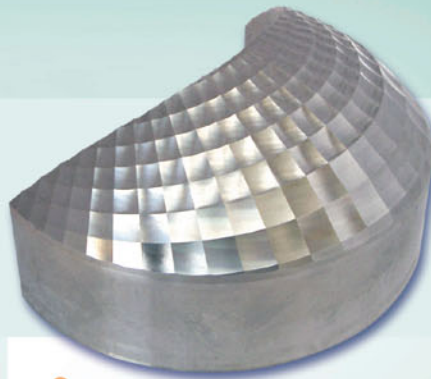
Feed Rate            3000 mm/min  
 Spindle Speed       12000 r.p.m  
 Machining Time     52 min  
 Material              Al Alloy  
 Workpiece            Cell Shell  
 Characteristic       High-Speed 3D Machining



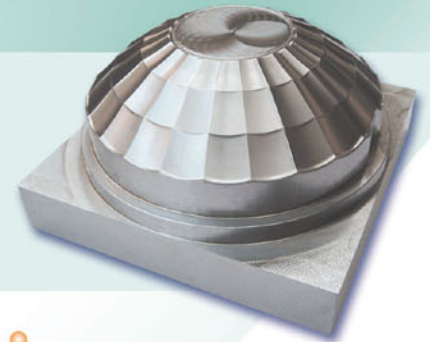
Feed Rate            4000 mm/min  
 Spindle Speed       8000 r.p.m  
 Machining Time     1 hr 23 min  
 Material              Al Alloy (6061)  
 Workpiece            Standard Test Workpiece of SST  
 Characteristic       High-Speed 3D Machining



Feed Rate            1000 mm/min  
 Spindle Speed       13000 r.p.m  
 Machining Time     1 hr 38 min  
 Material              S45C  
 Workpiece            Lampshade of Car  
 Characteristic       Excellent Gloss on Surface

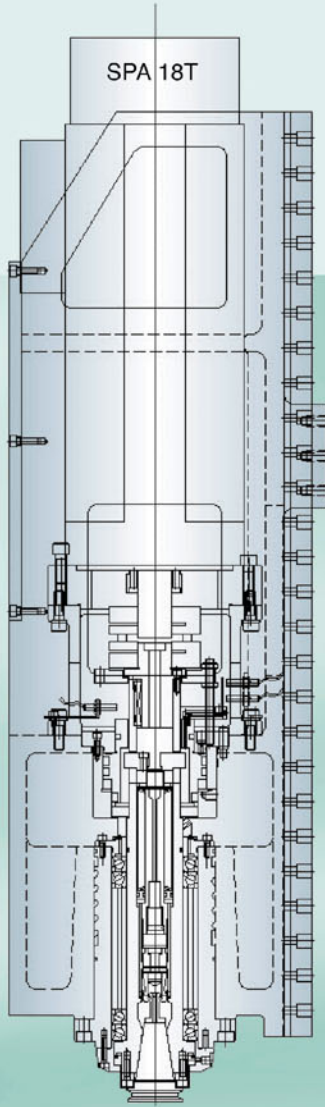


Feed Rate            1000 mm/min  
 Spindle Speed       13000 r.p.m  
 Machining Time     3 hr 46 min  
 Material              P5  
 Workpiece            Lampshade of Car  
 Characteristic       Excellent Gloss on Surface

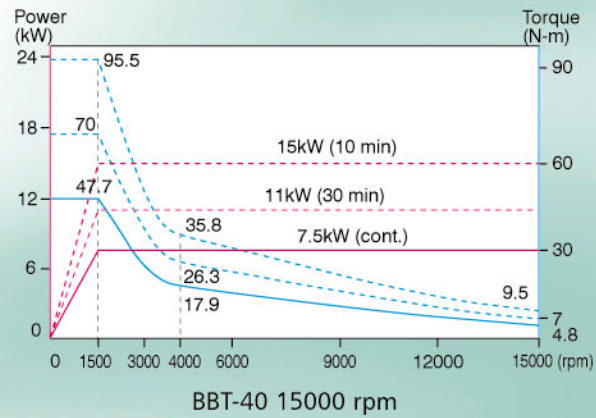


Feed Rate            1000 mm/min  
 Spindle Speed       13000 r.p.m  
 Machining Time     3 hr 03 min  
 Material              T4 , HRC 32  
 Workpiece            Lampshade of Projector  
 Characteristic       Excellent Gloss on Surface





There are many kinds of spindle speed for your choice.



Technical Data

Drive Layout	
Power	7.5 / 15 kW
Nominal Speed	1500 r.p.m.
Max. Torque	95.5 N-m
Max. Speed	15000 r.p.m.
Control	Fanuc / Siemens
Voltage	200 V
Max. Current	56 A
Driver	
Tool System	BBT-40 / HSK A63 (Opt.)
Clamping System	Hydro-mechanical
Clamping Force	10 kN

Spindle Specification	
Spindle Bearing	4x $\phi$ 65 Ceramic Balls
Bearing Rigidity	350 N/ $\mu$ m
Bearing Lubrication	Grease
Spindle Cooling	Oil
Cooling Performance	2 kW
Cooling Temperature	22-25°
Cooling Volume (Approx.)	10 $\ell$ /min

Tool Cooling	
Central Coolant Flow	Optional
Max. Pressure	<70 bar
Air	Possible
Min. Quantities of Cooling Lubricant	Optional

Metal Removal Rate	Milling	Milling	Drilling	Threading
Power	7.5/15 kW	7.5 kW	7.5/15 kW	7.5/15 kW
Material	Steel 60-70 kg/mm <sup>2</sup>	Aluminium	Steel 60-70 kg/mm <sup>2</sup>	Steel 60-70 kg/mm <sup>2</sup>
Machining Volume (cm <sup>3</sup> /min)	150	540	-	-
Tool/Edges ( $\phi$ /mm)	$\phi$ 60 / 6	$\phi$ 60 / 6	$\phi$ 30	M24
Rotational Speed (min <sup>-1</sup> )	1400	2800	350	500
Cutting Speed (m/min)	260	520	33	37
Cutting WidthxDepth (mm)	33 x 3	40 x 4	-	-
Feed Rate (mm/min)	1500	3360	50	500

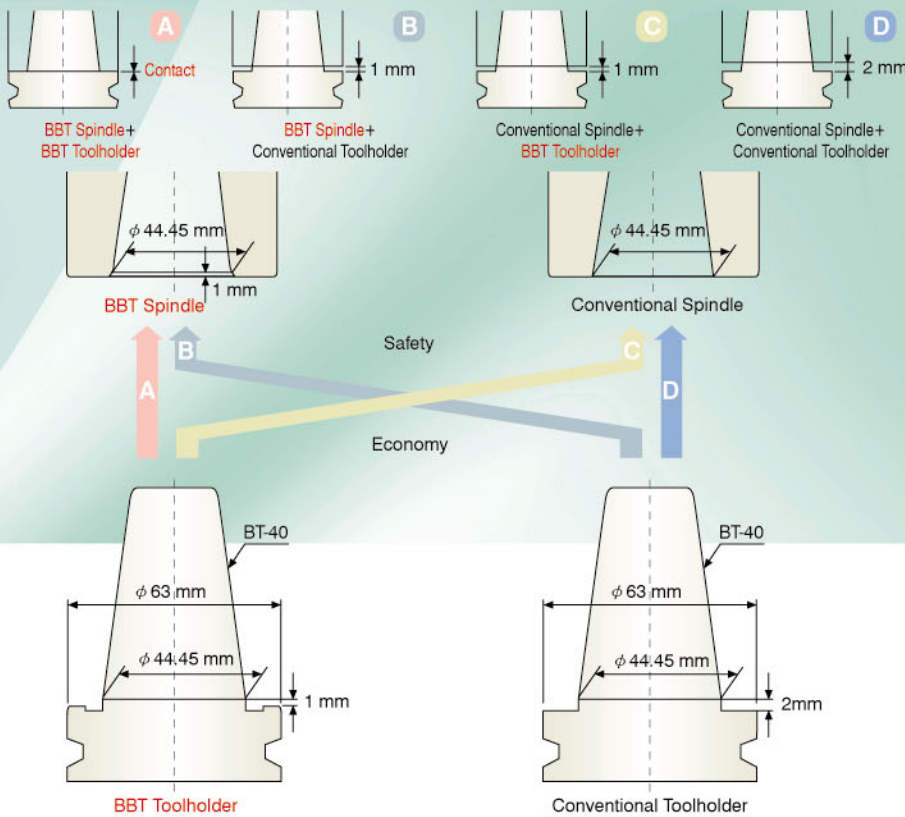
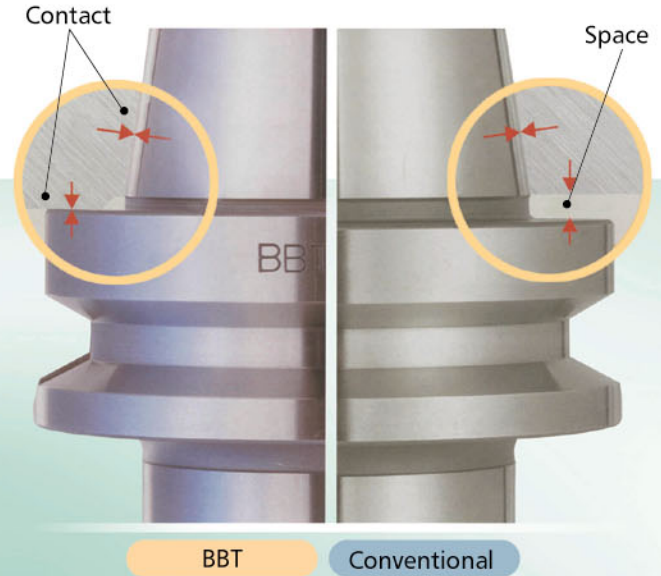


# TOOL SYSTEM (Std.)

## Advantages of BBT Spindle System

### Perfect Interchangeability -

The BBT spindle system has the perfect interchangeability with the conventional toolholders and machines. The conventional toolholders, such as these specifications of JIS-BT, DIN-69871, ISO, CAT-V, and so on, can be used on the BBT spindle system. Alternatively, the BBT toolholders also can be equipped with the conventional spindles.

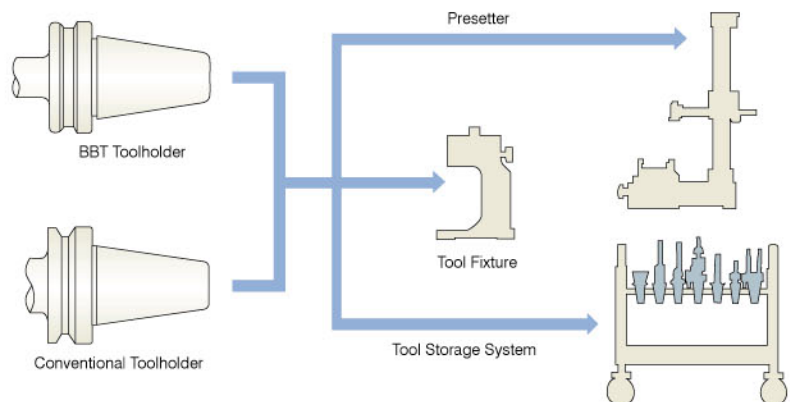


### Existing Accessories Utilized -

You don't need prepare new accessories for the BBT spindle system. The existing accessories, such as presetters, tool fixtures and tool storage systems, can be used with the BBT toolholders. And further, it is not necessary to modify the tool magazines and ATC devices of existing machines.

### Eliminating the Z-axis Movement -

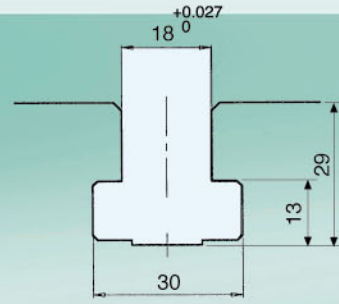
In the high rotary spindle speeds, the mouth of spindle can expand slightly due to the centrifugal force. It will cause the conventional toolholders pulled back into the spindle and make the Z-axis movement. This slight pull back of the cutter can affect dimensional accuracy of the Z-axis. The face contact of BBT spindle system can prevent the toolholder from being drawn back into the spindle.



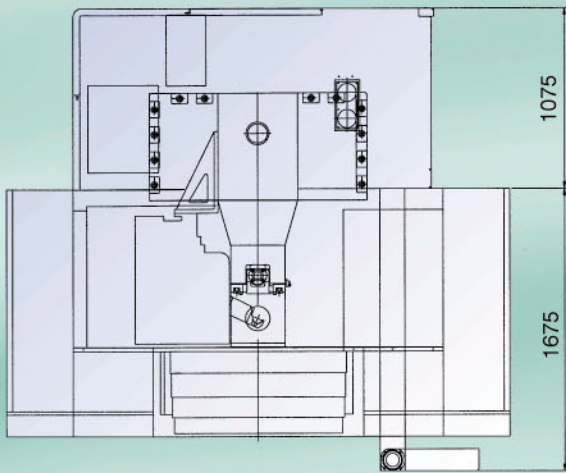
# DIMENSIONS

## JET-1000

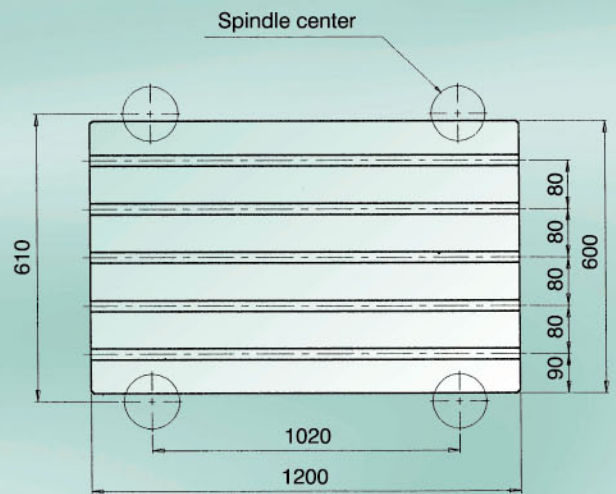
HIGH-SPEED MACHINING CENTERS



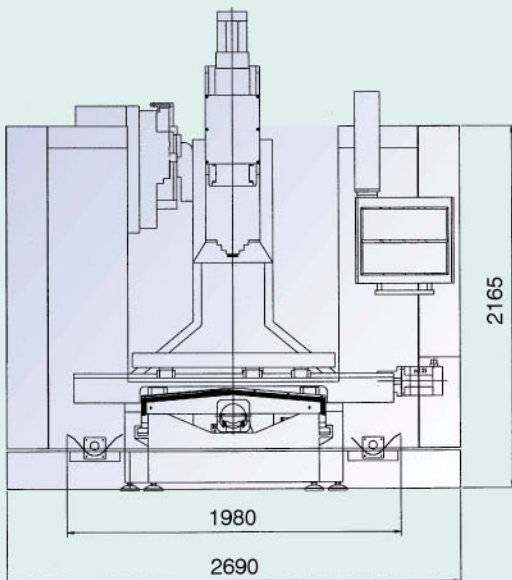
T-Slot



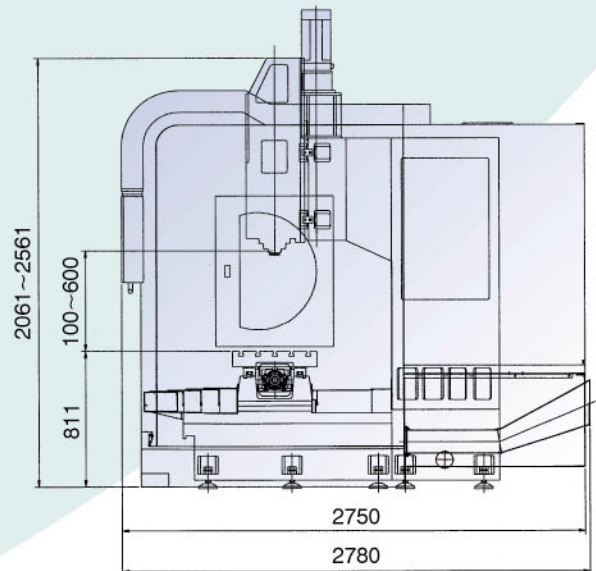
Top View (floor space required)



Table



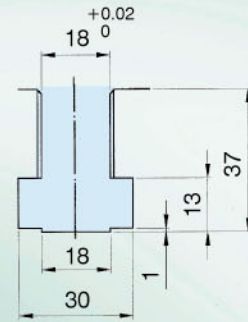
Front View



Side View

# DMC-909/912/915

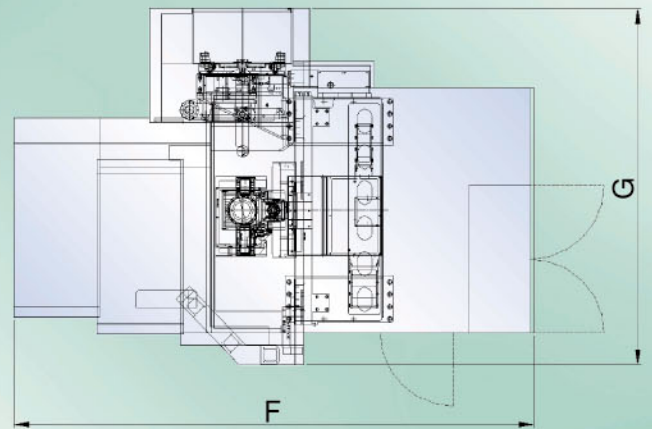
Model \ Size	A	B	C	D	E	F	G	H	I	J	K
DMC- 909	780	600	450	1845	3130	4235	2920	1100	1000	850	125
DMC- 912	780	600	450	1845	3130	4235	2920	1100	1300	850	125
DMC- 915	780	600	450	1845	3130	4755	2920	1100	1600	850	125



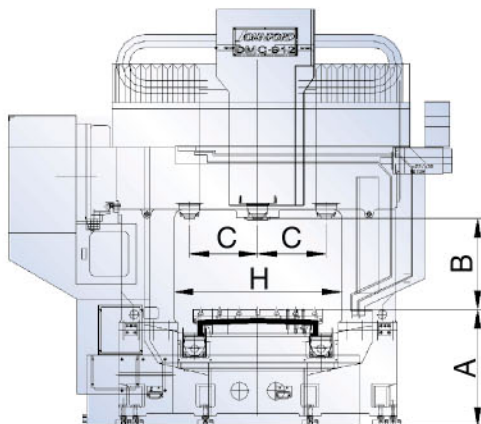
T-Slot



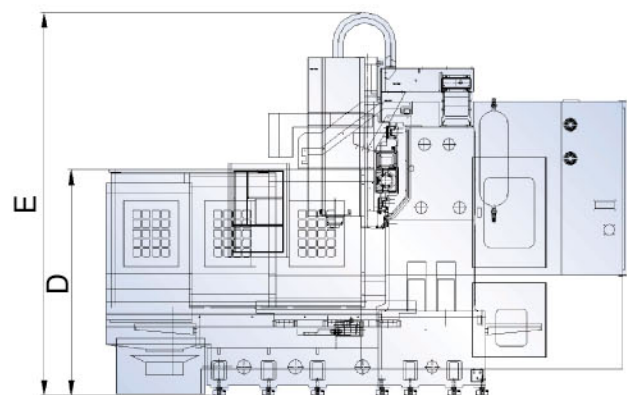
Table



Top View (floor space required)



Front View

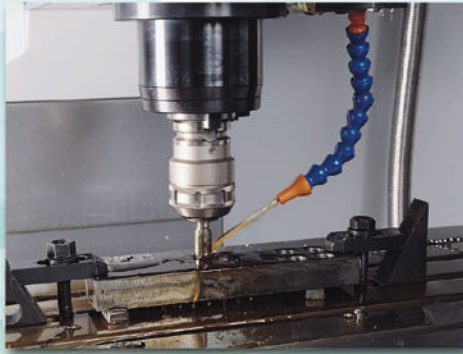


Side View

# ACCESSORIES

HIGH-SPEED MACHINING CENTERS

## Standard Features-Great Equipment



Rigid Tapping



High Pressure Coolant  
(P:3.5 kg/cm<sup>2</sup>, Q:100 ℓ/min)

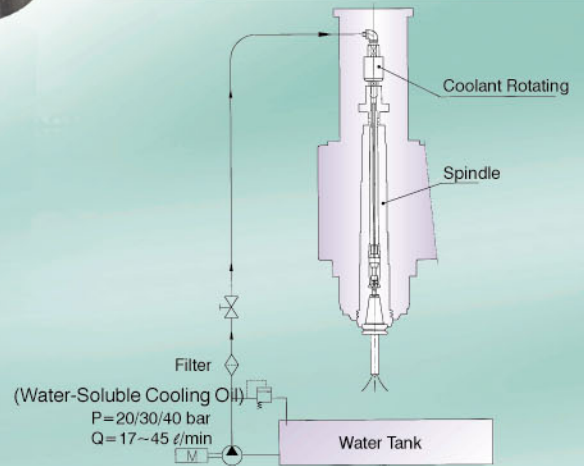


Automatic Chip Removal  
(Screw Type Chip Conveyor)

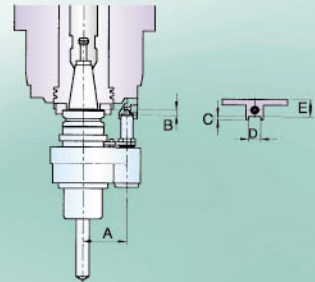
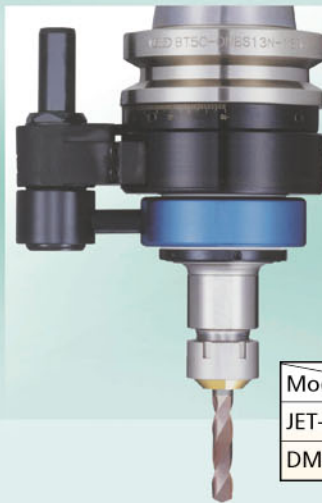


Remote Handwheel

## Coolant Thru Spindle



## Coolant Thru Tool Tip



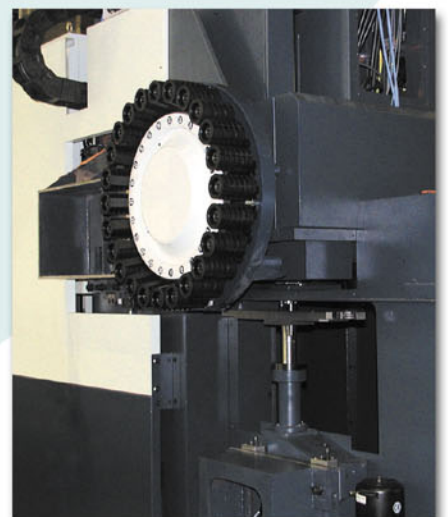
Model	Item	Taper No.	A	B	C	D	E
JET-1000		No.40	65	9	5	18	25.5
DMC-909/912/915		No.40	80	23.5	5	18	36.5

\* No.40 24 Tools (Std.)



### ARM TYPE

\* BBT/CAT-40 24 Tools  
(for JET-1000)



\* Time of Tool Change for  
Standard Type:  
No.40:2.5 sec  
(for DMC-909/912/915)

# CNC SYSTEM-FANUC 18i-MB

We use the FANUC CNC system for reliability, performance, and FANUC's excellent worldwide service. It is up to the machine tool builder that options are resident in the control and we load it up. Others call them options, but we call them standard. Features such as 10.4" color LCD display, Custom Macro B, Helical, 640 m of memory, Canned Cycles, Full MDI keyboard, and AI NANO Contour Control (high speed machining with 180 blocks look ahead) are all standard. Not to mentioned Fanuc's state-of-the-art AC digital servo and spindle systems.



## Do You Want To Fly?

With the optional Data Server (up to the maximum capacity of 1 GB for your choice) and AI NANO HPCC (High Precision Contour Control) with 64-bit RISC processor, you can fly through 3-axis simultaneous movements at 60,000 blocks per minute. Or take it one step further by adding the NURBS option for even faster contouring with better finishes. Call us for the fastest CNC system on the planet.



## Conversational

If ease of programming at the machine is your need, the optional Manual Guide *i* software is what you have been looking for. 10.4" color LCD, tool and material libraries, solid modeling animation, automatic graphical prompt driven programming and simple question and answer format make programming at the machine in a breeze.



# SPECIFICATIONS

Item	Model	JET-1000	DMC-909	DMC-912	DMC-915
Table working surface		1200x600 mm	1000x850 mm	1300x850 mm	1600x850 mm
Longitudinal travel (X-axis)		1020 mm	900 mm	1200 mm	1500 mm
Cross travel (Y-axis)		610 mm	900 mm		
Vertical travel (Z-axis)		500 mm			
Spindle nose to table		100 mm~600 mm	150 mm~650 mm		
Spindle center to slideway		180 mm			
Spindle taper		BBT-40 / HSK A63 (Opt.)			
Spindle speed		60~15000 rpm / 20000 rpm (Opt.)			
Spindle motor		11/15 kW direct driving spindle (Std.)			
		17/24 kW built-in spindle (Opt.)			
X-Y-Z Rapid traverse		24/24/24 m/min			
Cutting feed rate		1~12000 mm/min			
Tool magazine carry		Bi-direction, Change tools in the shortest distance.			
No.of tools		24 Tools for Arm type (Std.)			
		32 Tools or more for Arm type (Opt.)			
Max. tool dia. for Adjacent pockets		75 mm			
Max. tool diameter		100 mm			
Max. tool length		300 mm	320 mm		
Max. tool weight		10 kgs			
Table load capacity		800 kgs	3000 kgs		
Machine weight		8000 kgs	9000 kgs	11000 kgs	14000 kgs
Machine dimensions (LxWxH)		3100x2800x2870 mm	4235x2920x3130 mm	4235x2920x3130 mm	4755x2920x3130 mm
Cutting capacity (S45C)	Milling	240 cc/min			
	Drilling	φ 30 mm			
	Tapping	M30xP3.5			

\* All data subject to change without notice.

\* All the specifications are listed with the FANUC CNC system.

## Standard Accessories

- 1.Coolant system
- 2.Spindle air blast
- 3.Auto lubrication with alarm
- 4.Tools, tool box and various manuals
- 5.Halogen working lamp
- 6.Screw type chip conveyer
- 7.Spindle cooler
- 8.Full enclosure splash guard
- 9.FANUC 0i-MC

## Optional Accessories

- 1.Tool presetter (Renishaw TS-27)
- 2.CNC Rotary table
- 3.High pressure coolant thru tool tip
- 4.High pressure coolant thru spindle (20/30 bar or more)
- 5.Arm type ATC for 32/40 tools or more (BBT-40, HSK A63)
- 6.Chain type chip conveyer
- 7.20000 rpm high-speed built-in spindle (BBT-40, HSK A63)
- 8.Internal cooling ballscrew
- 9.Manual guide 0i (0iMC); Manual guide i (18iMB/21iMB)

# CNC CONTROL SPECS

O: Std. Δ: Opt. -: Nil

Item	Function	Specification	HEIDENHAIN		FANUC			SIEMENS	
			TNC410	i/TNC530	18/MB	21/MB	O/MC	810D	840D
Control axes	Standard number of control axes	axes	4	3	3	3	3	4	4
	No. of simultaneously controlled axes	axes	3	3	3	3	3	4	4
Input commands	Least detection increment	1μ	1μ	0.1μ	1μ	1μ	1μ	1μ	1μ
	Least programmable increment	1μ	1μ	0.1μ	1μ	1μ	1μ	1μ	1μ
	Inch/metric conversion	G20/G21	O	O	O	O	O	O	O
	Absolute/incremental command	G90/G91	O	O	O	O	O	O	O
	Input buffer	word/characters	1024	unlimited	6	6	1	unlimited	unlimited
	Pre-read buffer (No-of block)	block	30	256	180	80	20	100	300
	ISO/EIA automatic identification		O	O	O	O	O	O	O
Interpolation	RS232-C interface		O	O	O	O	O	O	O
	Positioning (interpolation)	G00	O	O	O	O	O	O	O
	Linear interpolation	G01	O	O	O	O	O	O	O
	Circular interpolation	G02/G03	O	O	O	O	O	O	O
	Helical interpolation		O	O	O	O	O	O	O
Program	Rigid Tapping		O	O	O	O	O	O	O
	Memory capacity		256 KB	6 GB	640M	640M	640M	1.5MB	2.5MB
	No. of programs stored		100	unlimited	200	200	200	unlimited	unlimited
Spindle functions	Background editing		O	O	O	O	O	O	O
	S code output 4-digit BCD-binary	S4BCD	O	O	O	O	O	O	O
Feed	Spindle rate	%	0-150		50-150			50-200	50-200
	Per-minute		O	O	O	O	O	O	O
	Rapid traverse rate	low25%,50%,100%	-	-	O	O	O	O	O
	Cutting feed rate	0%-150%	O	O	0-200			O	O
Miscellaneous function	Handle feed rate	x1.x10.x100	-	-	O	O	O	O	O
	M-code	M2(BCD)	O	O	O	O	O	O	O
Coordinate system	Automatic coordinate system setting		-	-	O	O	O	O	O
	Machine coordinate system		O	O	O	O	O	O	O
	Work coordinate system	G54-G59	O	O	O	O	O	O	O
	Coordinate system setting	G92	O	O	O	O	O	O	O
	Manual reference point return		O	O	O	O	O	O	O
	Automatic reference point return	G28/G29	-	-	O	O	O	O	O
	2nd reference point return	G30	-	-	O	O	O	O	O
Tool function	Reference point return verify	G27	-	-	O	O	O	O	O
	Tool command	T2 BCD	O	O	O	O	O	O	O
	Tool length offset	G43/G44/G49	-	-	O	O	O	O	O
	Cutter compensation C	G40/G41/G42	O	O	O	O	O	O	O
Operation	Number of offset sets		999	999	400	400	400	unlimited	unlimited
	Single block		O	O	O	O	O	O	O
	Block skip		O	O	O	O	O	O	O
	Dry run		O	O	O	O	O	O	O
	Machine lock		Δ	Δ	O	O	O	Δ	Δ
	Option stop	M01	O	O	O	O	O	O	O
	Miscellaneous function lock	M.S.T.lock	O	O	O	O	O	O	O
	Manual/Absolute ON/OFF		O	O	O	O	O	O	O
Programming support function	PLC switch		O	O	O	O	O	O	O
	Sub-program control	M98, M99	O	O	O	O	O	O	O
	Corner chamfering/corner rounding		O	O	Δ	Δ	O	O	O
	Canned cycle for drilling	G80-G89	O	O	O	O	O	O	O
	Automatic corner override		O	O	Δ	Δ	O	O	O
	User macro		O	O	O	O	O	O	O
	No. of variable command sets		unlimited	unlimited	500	500	500	unlimited	unlimited
	Backlash compensation		O	O	O	O	O	O	O
	Memory-type pitch error compensation		O	O	O	O	O	O	O
	Coordinate system rotation	G68/G69	O	O	Δ	Δ	O	O	O
Measurement function	Scaling	G50/G51	O	O	Δ	Δ	O	O	O
	Polar coordinate command	G15/G16	O	O	Δ	Δ	O	O	O
	Skip function		O	O	O	O	O	O	O
Safe protect	Tool length automatic measurement		O	O	Δ	Δ	Δ	O	O
	Emergency stop		O	O	O	O	O	O	O
	Travel protected		O	O	O	O	O	O	O
Other	Program protected		O	O	O	O	O	O	O
	CRT		10.4" LCD	15" LCD	10.4"LCD	10.4"LCD	7.2" MONO LCD	10.4"LCD	10.4"LCD
	MDI	Full key	O	O	O	O	Small type	O	O
	Languages	English/Japaness	10	10	7	7	7	7	7
	Parts count		O	O	O	O	O	-	-
	Run hour display and parts count		O	O	O	O	O	-	-
	Graphic display		O	O	O	O	O	O	O
	4th axis interface		O	Δ	O	O	O	O	O
	Menu programming		O	O	O	O	O	O	O
	Conversational programming with graphic function	Manual guide	O	O	Δ	Δ	Δ	Δ	Δ
	Mirror function		O	O	O	O	O	O	O
	Chinese. French. German. Italian. Spanish		O	O	O	O	O	O	O
	High-precision contour control	64 bit RISC	-	Δ	Δ	-	-	Δ	Δ
	Data server (HD)		-	O	Δ	Δ	Δ	Δ	Δ
	ETHERNET		-	O	O	O	Δ	Δ	Δ

\* All data subject to change without notice.

# JOHN FORD®

**Whatever you need  
for milling and turning  
we offer the best.**



# JOHN FORD®

**ROUNDTOP MACHINERY INDUSTRIES CO., LTD.**  
1056, Chungshan Rd., Shengkang Hsiang, Taichung Hsien, Taiwan R.O.C.  
Tel: 886-4-2562-4721 Fax: 886-4-2561-3886  
<http://www.johnford.com.tw> E-mail: [johnford@johnford.com.tw](mailto:johnford@johnford.com.tw)