JOHNFORD®

Double Column Machining Centers

DMC-900/1200/1500/1600/2100/3100 No.40

DMC-900H/1200H/1500H/1600H/2100H/3100H No.50

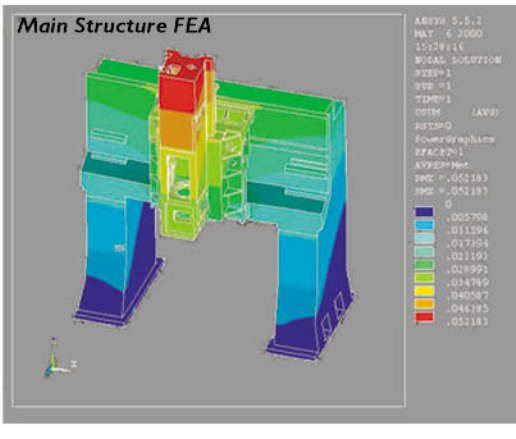
Double Column Machining Cent

Expanding on Our P
This Series of Mid-F
C-Frame Type Mills

DMC-1200H / 3100H

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 then 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.



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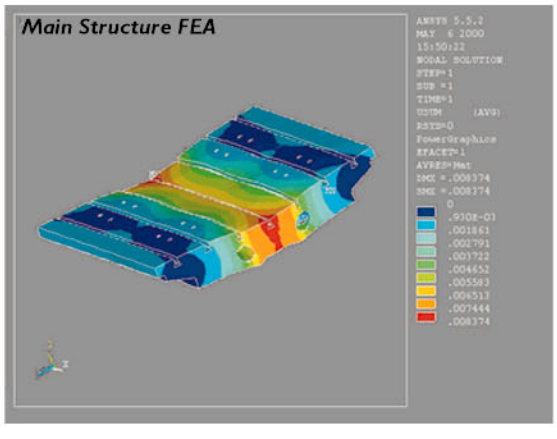
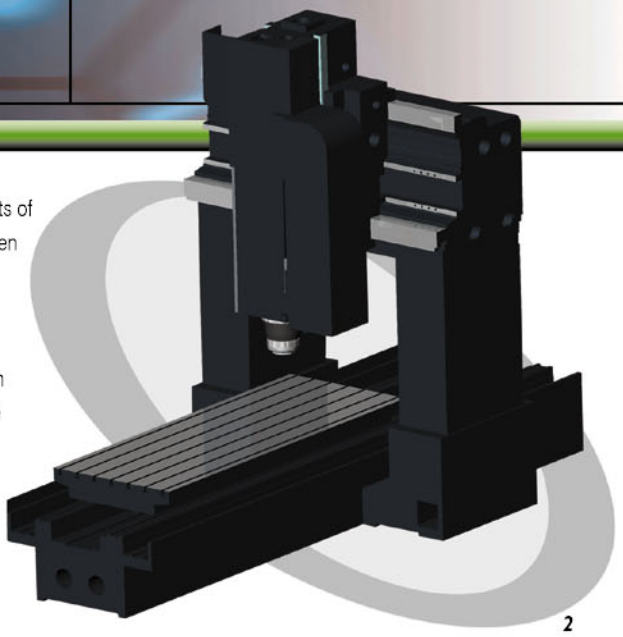
opular DMC Series of Large Frame Bridge Mills,
rame Bridge Mills Can Take The Place of Large
While Still Offering Value Pricing.



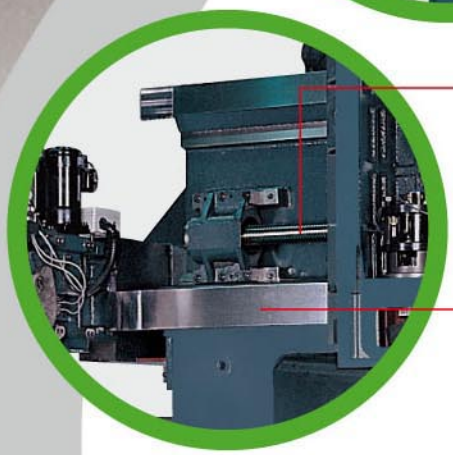
The structures of major components of DMC'S machining centers have been designed with the finite element analysis (FEA). By this way, we refine our design and improve product quality. They can offer high rigidity and good precision that are beyond ordinary.



Setting the Standard.....With So

Extra large milling head with rigid box ways. The head is held by 962 mm (37.9") of the saddle.

- The Y and Z axes use hardened and ground box ways with turcite-B.
- Box structure ram to ensure working stability and accuracy.
- Zero overhang on X, Y, Z travel.
- Hydraulic counter balance provides high stability and smooth operation.



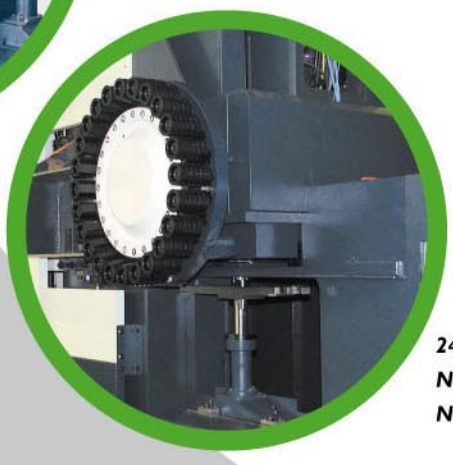
Large diameter Ø50 mm (2") ballscrew in all 3 axes for DMC-900(H) ~1500(H). Ø63 mm (2.5") in the X and Y axes and Ø50 mm (2") in the Z axis for DMC-1600(H) ~ 3100(H). They are pretensioned to eliminate thermal growth.

Distance between the Y-axis rigid box ways is 650 mm (25.6")

32/40/60 Tools (Opt.)

Automatic Tool Changer

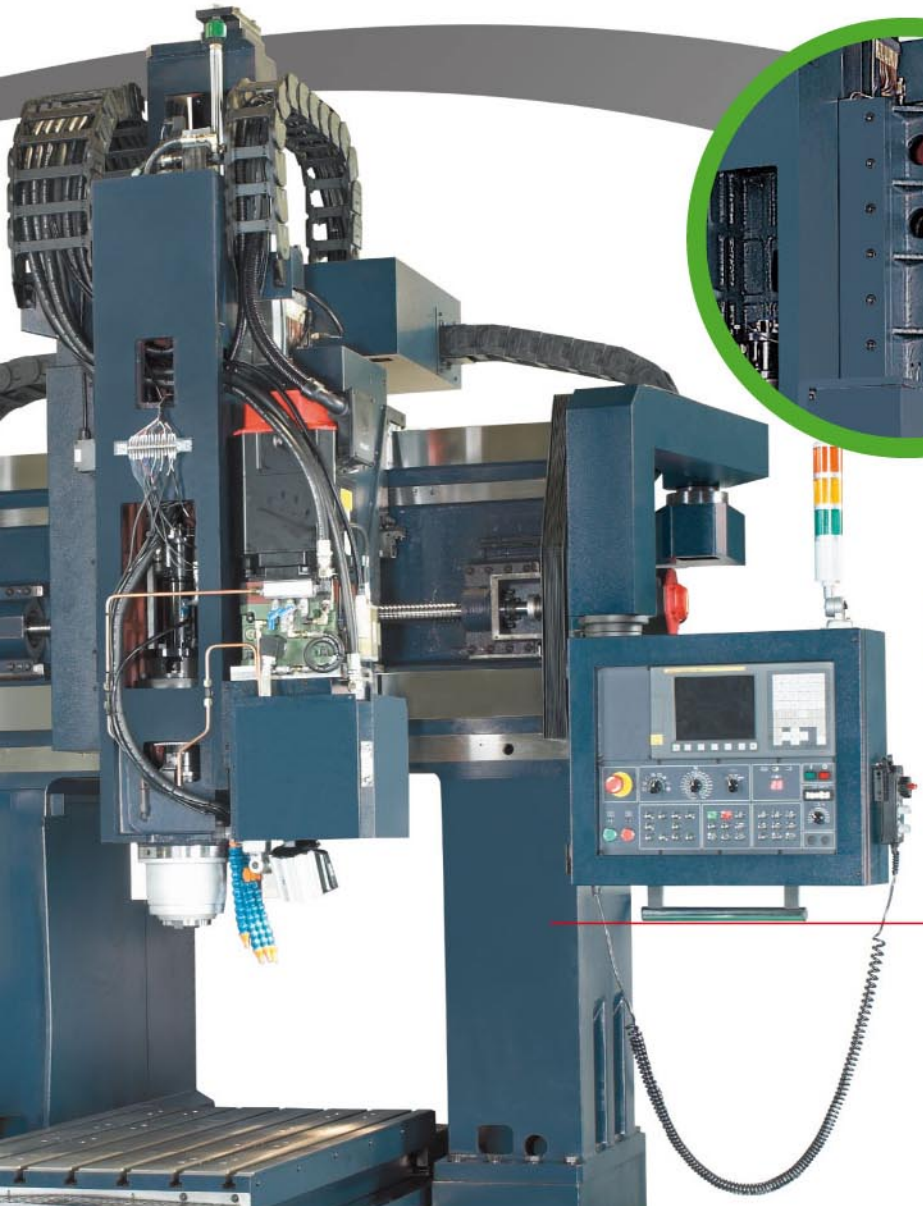
- The time of tool change is only 7 seconds for the tool changer.
- The arm of automatic tool changer is supported with linear ways to ensure rapid and smooth traverse.
- There is no interference occurred in bi-directional tool change.



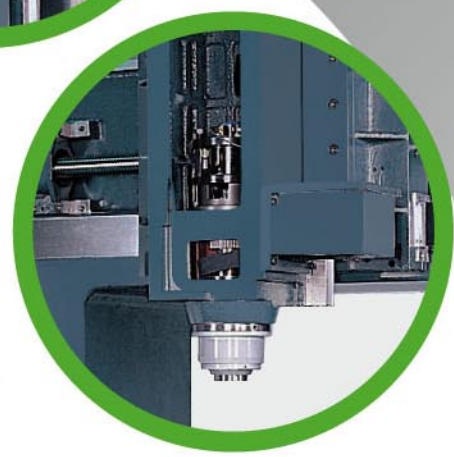
24 Tools (Std.)
No.40: 2.5 sec
No.50: 4 sec

80/120 Tools (Opt.)

lid Construction



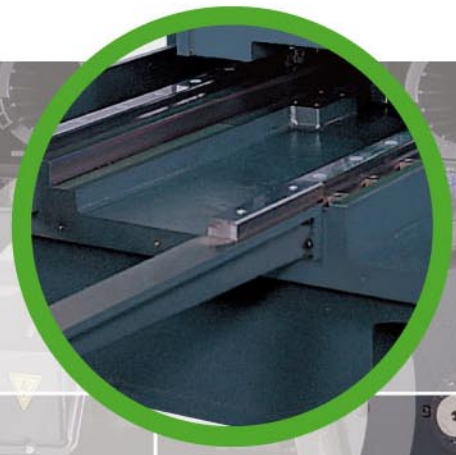
Huge saddle is
800 x 962 mm (31.5" x 37.9")



18.5 kW spindle motor with 2 speed ZF gearbox and 6000 rpm standard on the 50 Taper machines. It comes with a spindle oil cooler too! 578 N.m (426 lb. ft) of Torque at only 305 rpm!

One piece columns and bridge casting for maximum rigidity.

One piece meehanite cast iron base.



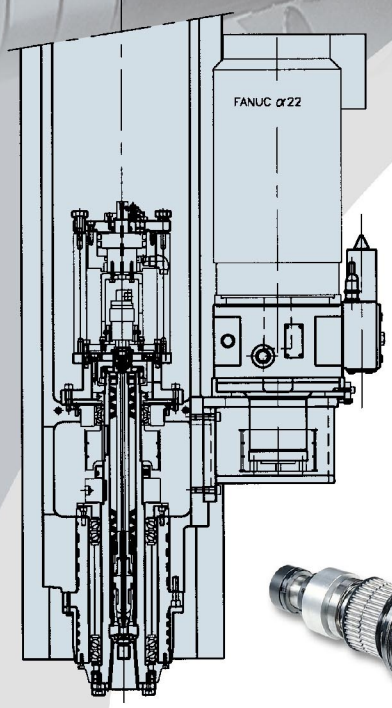
Heavy duty with High rigidity linear ways used on the X axis for speed and precision.

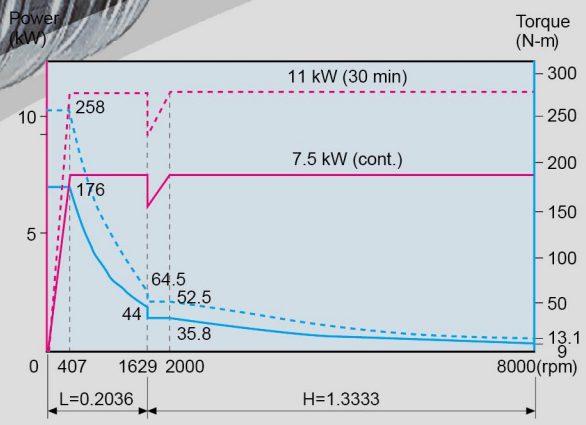
Automatic Tool Change Arm Unit.

Spindle Power & Torque Chart

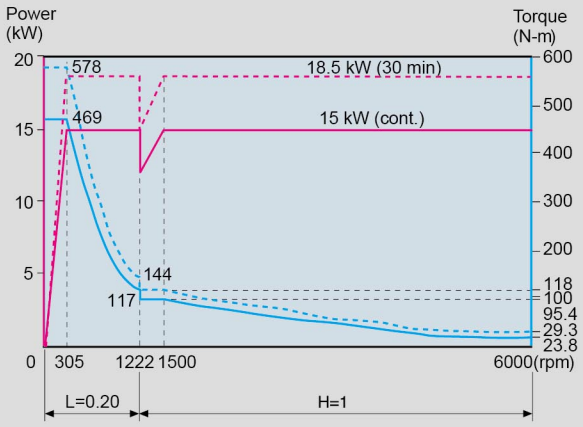
Standard Spindle

There are any other different kinds of spindle speeds for your choice.





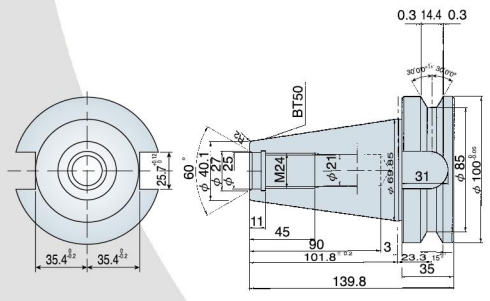
40 Taper Spindle
(Auto Hi-Lo 2 Step Gearbox)



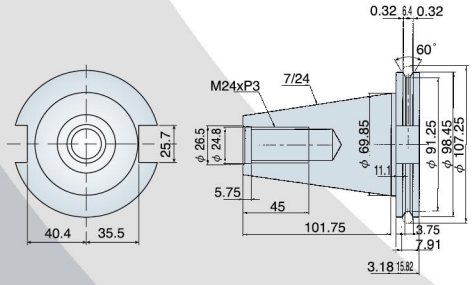
50 Taper Spindle
(Auto Hi-Lo 2 Step Gearbox)

Tool & Pull Stud

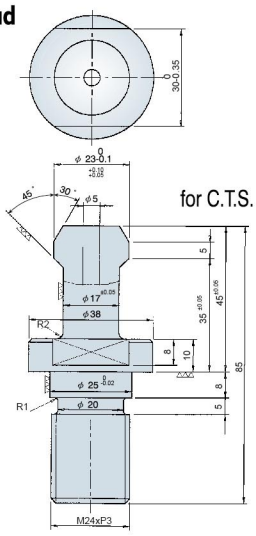
BT-50



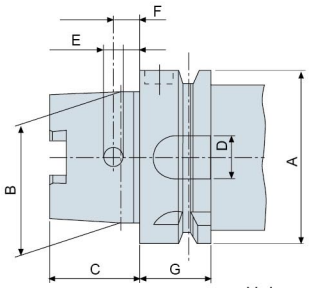
CAT-50



Pull Stud



For BT-50/CAT-50
Tool Shank (Opt.)



Unit: mm

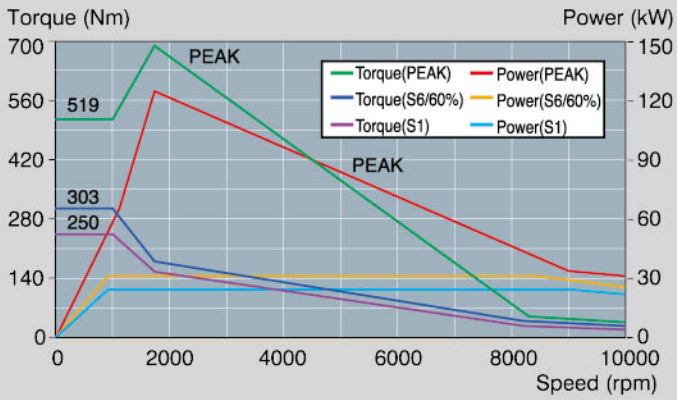
Size \ Model	A63	A100
A	63	100
B	48	75
C	32	50
D	16.12	20.02
E	7.5	12
F	9	15
G	26	29

Spindle Power & Torque Chart

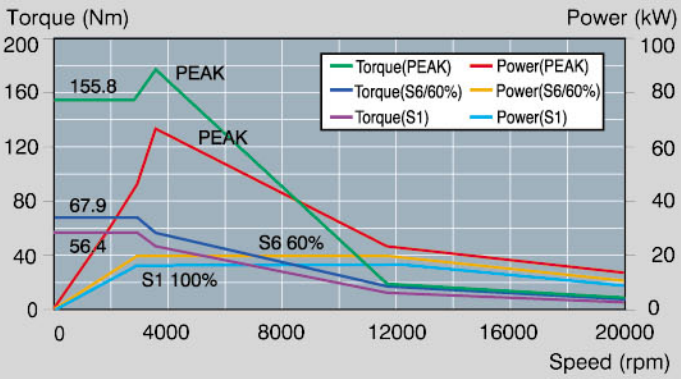
Technical Data

Drive Layout		
Tool system	HSK A63	HSK A100
Power	17 kW	26 kW
Nominal speed	2,880 rpm	992 rpm
Max. Torque	56.4 Nm	303 Nm
Max. Speed	20,000 rpm	10,000 rpm
Control	Fanuc / Siemens / Heidenhain	
Voltage	220V / 380V	400V
Max. Current	90 A / 54 A	125 A
Driver	-	SPM-75 HVI
Clamping system	Spring-mechanical+ Power-mechanical	Hydraulic
Clamping Force	18 kN	45 kN
Tool cleaning	Central + Surrounding	
Spindle bearings	2 x ϕ 70 Hybrid	2 x ϕ 100 Hybrid
Bearing rigidity	Sr 310.2 N/μm	680 N/μm
Bearing lubrication	Grease	
Spindle cooling	Water glycol	
Cooling performance	> 5 kW	> 7 kW
Cooling temperature	The same as machine	
Cooling volume approx	12 ℓ/min	15 ℓ/min
Tool Cooling		
Internal coolant flow	Optional	Standard
Max. Pressure	70 bar	
Suitable for dry operation	Yes	
Air	Possible	
Min. quantities of cooling lubricant	Optional	-

High Speed Spindle (Built-in Motor)(Opt.)



HSK A100 10,000 rpm



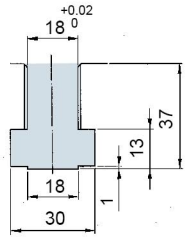
HSK A63 15,000/18,000/20,000 rpm (Oil-air)

Metal Removal Rate		Milling		Milling		Drilling		Threading	
Tool system		HSK A63	HSK A100	HSK A63	HSK A100	HSK A63	HSK A100	HSK A63	HSK A100
Power		17 kW	26 kW	17 kW	26 kW	17 kW	26 kW	17 kW	26 kW
Material		Steel 60-70 kg/mm^2		Aluminum 7075		Steel 60-70 kg/mm^2		Steel 60-70 kg/mm^2	
Machining volume	(cm^3/min)	300	577	1382	1770	259	-	-	-
Tool/edges	(ϕ mm)	ϕ 50 / 4	ϕ 100 / 7	ϕ 80 / 7	ϕ 100 / 7	ϕ 30	ϕ 51	M24	M36
Rotational speed	(min^{-1})	2300	1146	6400	2107	2440	1435	500	330
Cutting speed	(m/min)	360	360	1615	662	230	230	37	37
Cutting B x T	(mm)	40 x 4	80 x 4.5	60 x 3	80 x 5	-	-	-	-
Feed	(mm/min)	1840	1604	7680	4425	366	287	500	1300

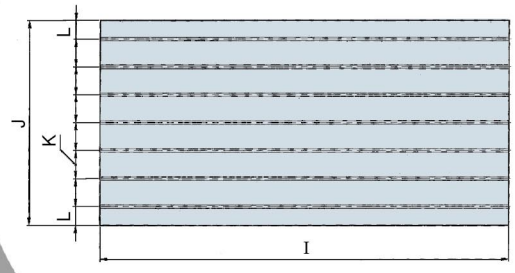
Dimensions

Unit: mm

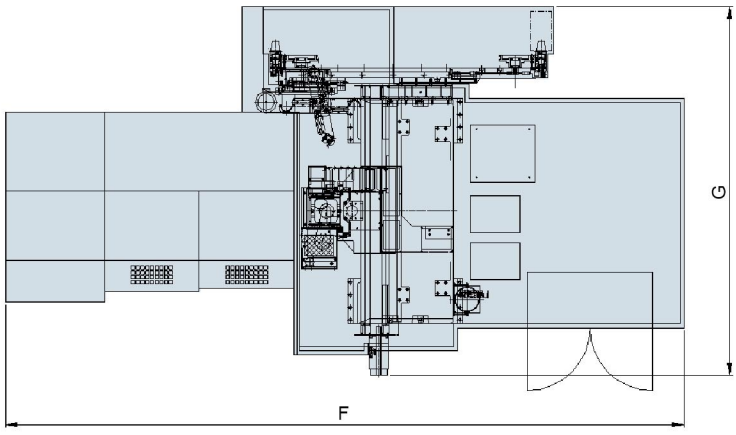
Model / Size	DMC-900/900H	DMC-1200/1200H	DMC-1500/1500H	DMC-1600/1600H	DMC-2100/2100H	DMC-3100/3100H	DMC-4100/4100H
A	800	800	800	800	800	800	855
B	912	912	912	950	950	950	950
C	450	450	450	650	650	650	650
D	2000	2000	2000	2000	2000	2000	2145
E	3780	3780	3780	3835	3835	3835	3880
F	4490	4735	4980	5540	6465	8465	10800
G	3190	3190	3190	3515	3515	3515	3515
H	1060	1060	1060	1300	1300	1300	1300
Table							
I	1000	1300	1600	1700	2200	3200	4200
J	850	850	850	1100	1100	1100	1150
K	125	125	125	150	150	150	150
L	50	50	50	100	100	100	50



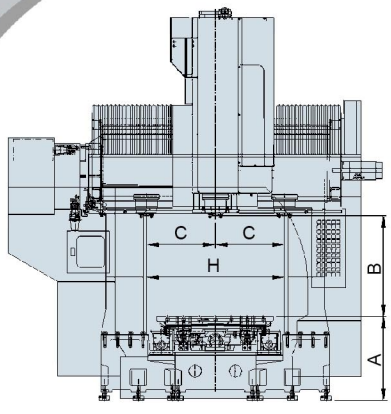
T-Slot



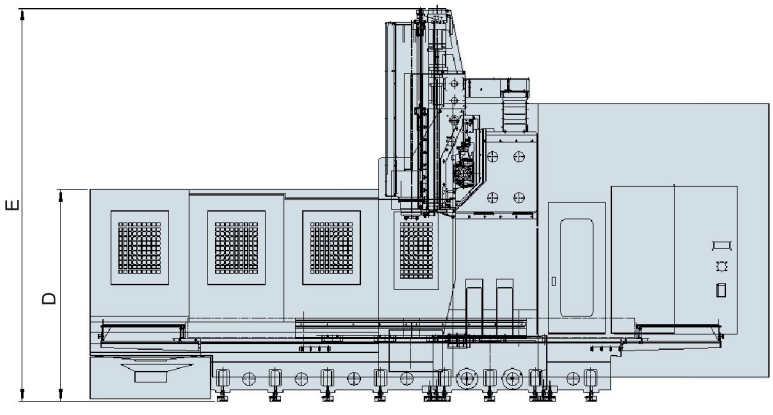
Table



Top View (floor space required)



Front View



Side View

CNC System-FANUC 31*i*-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, PCMCIA slot, USB plug, 512KB (1280M) of memory, Full MDI keyboard, and AICC Ⅱ Contour Control (high speed machining with 200 blocks look ahead) are all standard. Not to mentioned Fanuc's state-of-the-art AC digital servo and spindle systems.

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.

Do You Want to Fly?

With the optional Data Server (up to the maximum capacity of 8 GB for your choice) and high speed processing (maximum 1000 blocks look ahead), you can fly through 3-axis simultaneous movements at 60,000 blocks per minute. Or take it one step further by adding the NURBS and the Nano Smoothing options for even faster contouring with better finishes. Call us for the fastest CNC system on the planet.

Specifications

Model / Item		No.40 / No.50	DMC-900 / DMC-900H	DMC-1200 / DMC-1200H	DMC-1500 / DMC-1500H	DMC-1600 / DMC-1600H	DMC-2100 / DMC-2100H	DMC-3100 / DMC-3100H	DMC-4100 / DMC-4100H
Distance between columns (mm)			1060 (41.7")			1300 (51.2")			
Table size (mm)			1000 x 850 (39.4" x 33.5")	1300 x 850 (51.2" x 33.5")	1600 x 850 (63" x 33.5")	1700 x 1100 (66.9" x 43.3")	2200 x 1100 (86.6" x 43.3")	3200 x 1100 (130" x 43.3")	4200 x 1150 (165.3" x 45.3")
X axis travel (mm)			900 (35.43")	1200 (47.2")	1500 (59.1")	1600 (63")	2050 (80.7")	3050 (120")	4100 (161.4")
Y axis travel (mm)			900 (35.43")			1300 (51.2")			
Z axis travel (mm)			762 (30")			800 (31.5")			
Spindle nose to table (mm)			150~912 (5.9"~35.9")			150~950 (5.9"~37.4")			
Spindle taper			BT-40 / CAT-40	HSK A63 (Opt.)	For DMC-900, 1200, 1500, 1600, 2100, 3100, 4100	BT-50 / CAT-50	HSK A100 (Opt.)		For DMC-900H, 1200H, 1500H, 1600H, 2100H, 3100H, 4100H
Spindle diameter (Bearing) (mm)			70 (2.8")	-		90 (3.5")	-		
Spindle speed (rpm)			8000, 10000 (Opt.) 12000 (Opt.)	15000, 18000, 20000		6000, 8000 (Opt.)	10000		
Spindle motor (kW)			7.5 / 11 Hi Lo Gear	17 / 20 built-in		15 / 18.5 Hi Lo Gear	26 / 31 or 31 / 40 kW built-in		
X-Y-Z rapid traverse (m/min)			24 x 24 x 12			15 x 15 x 12		12 x 15 x 12	
X-Y-Z cutting feed (mm/min)			1~12000			1~10000			
ATC	Adjacent pockets max. tool dia. (mm)		ϕ75 (ϕ3")		For DMC-900, 1200, 1500, 1600, 2100, 3100, 4100	ϕ125 (ϕ5")			For DMC-900H, 1200H, 1500H, 1600H, 2100H, 3100H, 4100H
	No.of tools		Arm type 24 / 32 / 40 (Opt.)			Arm type 24 / 32 / 40 (Opt.)			
	Max. tool diameter (mm)		ϕ100 (ϕ4")			ϕ200 (ϕ7.8")			
	Max. tool length (mm)		320 (12.6")			400 (15.7")			
	Max. tool weight (kg)		10 kg (22 lb)			15 (33 lb)			
	Tool selection		Bi-directional random type, Shortest path						
Table load capacity (kg)			3000 (6600 lb)	3800 (8360 lb)	4600 (10120 lb)	6000 (13200 lb)			
Dimensions (mm)	Length		4000 (157.5")	4735 (186")	4980 (196")	5590 (220")	6515 (257")	8515 (335")	10850 (427")
	Width		3250 (128")			3300 (130")			3515 (138.4")
	Height		3780 mm (148.8")			3835 mm (151")			3880 (1527")
Machine weight (kg)			10000 (22000 lb)	12000 (26400 lb)	15000 (33000 lb)	20400 (45000 lb)	23600 (52000 lb)	26800 (59000 lb)	30100 (66370 lb)

- **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. Heat exchanger
4. Full enclosure
5. Twin screw-type chip conveyors
6. One chain-type chip conveyor
7. Operation box
8. Tools, tool box and various manuals
9. Rigid tapping
10. Spindle oil cooler
11. Working lamps (Two LED lamps)
12. FANUC 0*i*-MF controller

Optional Accessories:

1. Contact tool setting system (Renishaw TS-27R or BULM NT-A2/NT-A3)
2. High pressure coolant thru tool tip
3. High pressure coolant thru spindle
4. Workpiece measuring system (Renishaw OMP-60 or BULM TC-50)
5. Linear scale.
6. 32 / 40 tools or more (BT-50 / CAT-50)
7. 32 tools or more (BT-40 / HSK A63)
8. 15000, 18000, 20000 rpm for HSK A63 built-in spindle
9. 10000 rpm for HSK A100 built-in spindle
10. External coolant flow of spindle
11. Manual guide *i* (0*i*MF)
12. Electronic compensation of thermal expansion.

CNC Control Specs

■ CNC system type

O: Std. △: Opt. -: Nil

Type / Model	DMC - 900 ~ DMC - 4100H
FANUC 0*i*MF	○
FANUC 31*i*MB	△
Heidenhain TNC 640	△
Siemens 840D	△
Siemens 828D	△

■ Fanuc specifications

O: Std. △: Opt. -: Nil

	Item	Specifications		0iMF	31iMB
Display unit	8.4" color LCD			○	-
	10.4" color LCD			△	○
	15" color LCD			△	△
Function	Data Server with 2GB CF card			△	△
	AICC II			△	○
	High speed processing			-	△
	Conversational programming with graphic function	Manual guide 0*i*	0*i*MF	○	-
		Manual guide *i*	31*i*MB 0*i*MF (10.4" LCD)	△	○
	NC program memory	1280 meter (about 512 KB)		○	○

■ Siemens specifications

O: Std. △: Opt. -: Nil

	Item	Specifications	828D	840D
Operation Panel	10.4" color LCD		○	○
	15" color LCD		-	△
	15.6" color LCD		△	-
	Machine panel MCP483C		○	○
	TCU without hard disk	CF card	○	○
	PCU 50 with hard disk		-	△
	Ethernet		○	○
Function	ShopMill programming		○	△
	Automatic residual material detection		△	△
	Universal interpolator NURBS		○	○
	Spline interpolation for 3 - axes		△	△

■ Heidenhain specifications

O: Std. △: Opt. -: Nil

	Item	Specifications	TNC 640
Display unit	Visual display unit 15" TFT display		○
Function	Main computer	0.5 ms block processing time	○
	NC programming memory	21GB on SSDR	○
Option No. 8	●Machining with a rotary table ●Coordinate transformation ●Interpolation - circular in 3 axes with tilted working plane		△
Option No. 9	●Spline interpolation ●5-axis simultaneous machining ●Interpolation - linear in 5 axes		△

Whatever You Need for Milling and Turning We Offer the Best.

JOHNFORD®

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