



Double Column Machining Centers



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

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

Double Column *M*achining *C*ent



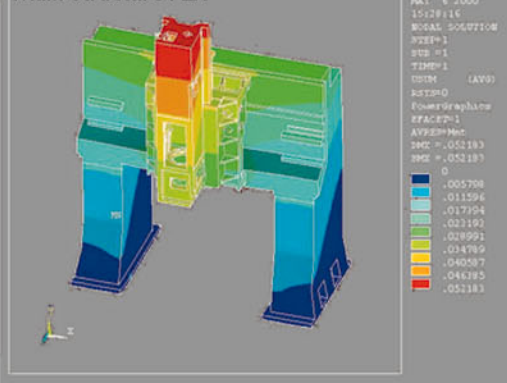
Expanding on Our P
This Series of Mid-F
C-Frame Type Mills

DMC-1500H / 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.

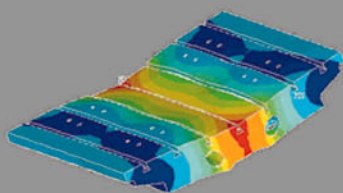
Main Structure FEA





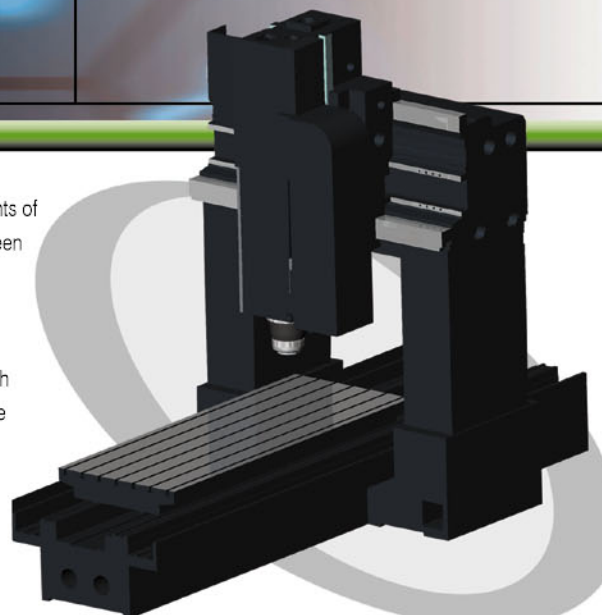
Popular DMC Series of Large Frame Bridge Mills,
Large Frame Bridge Mills Can Take The Place of Large
While Still Offering Value Pricing.

Main Structure FEA



ANYS 5.5.3
MAT 6.2000
15:50:22
MOUL SOLUTION
STEP=1
SUB #1
TIME=1
UTM (AVG)
RSTD=0
PowerGraphs
EFACET=1
AVRES=Mat
INC = .008374
INC = .008374
0
0
.910E-03
.001861
.002793
.003723
.004652
.005583
.006513
.007444
.008374

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.

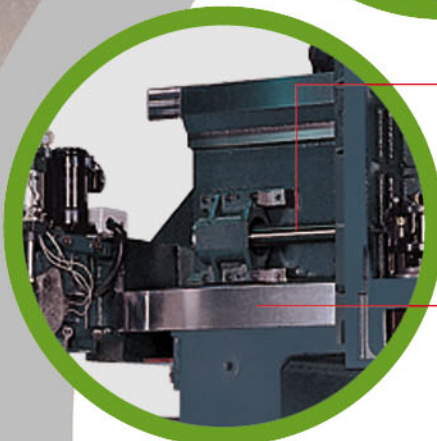


Setting the Standard....With So



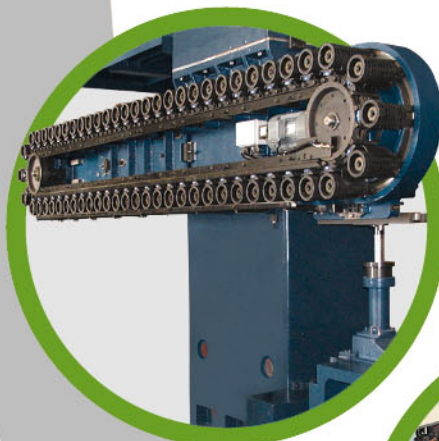
← Extra large milling head with rigid box ways. The head is held by 962 mm (37.9") of the saddle.

- 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 $\phi 50$ mm (2") ballscrew in all 3 axes for DMC-900(H) ~1500(H). $\phi 63$ mm (2.5") in the X and Y axes and $\phi 50$ mm (2") in the Z axis for DMC-1600(H) ~ 3100(H). They are pretensioned to eliminate thermal growth.

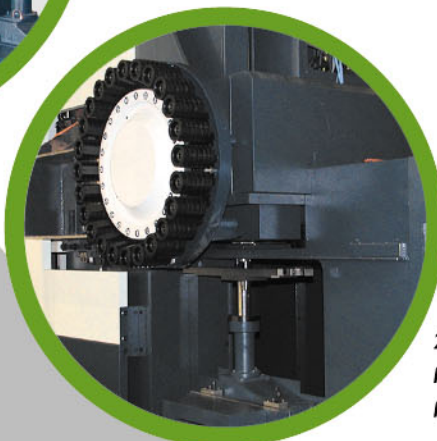
Distance between the Y-axis rigid box ways is 650 mm (25.6")



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.

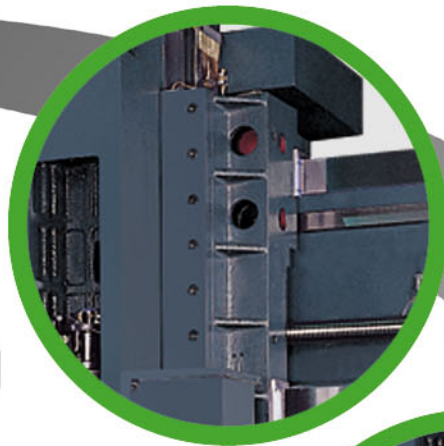
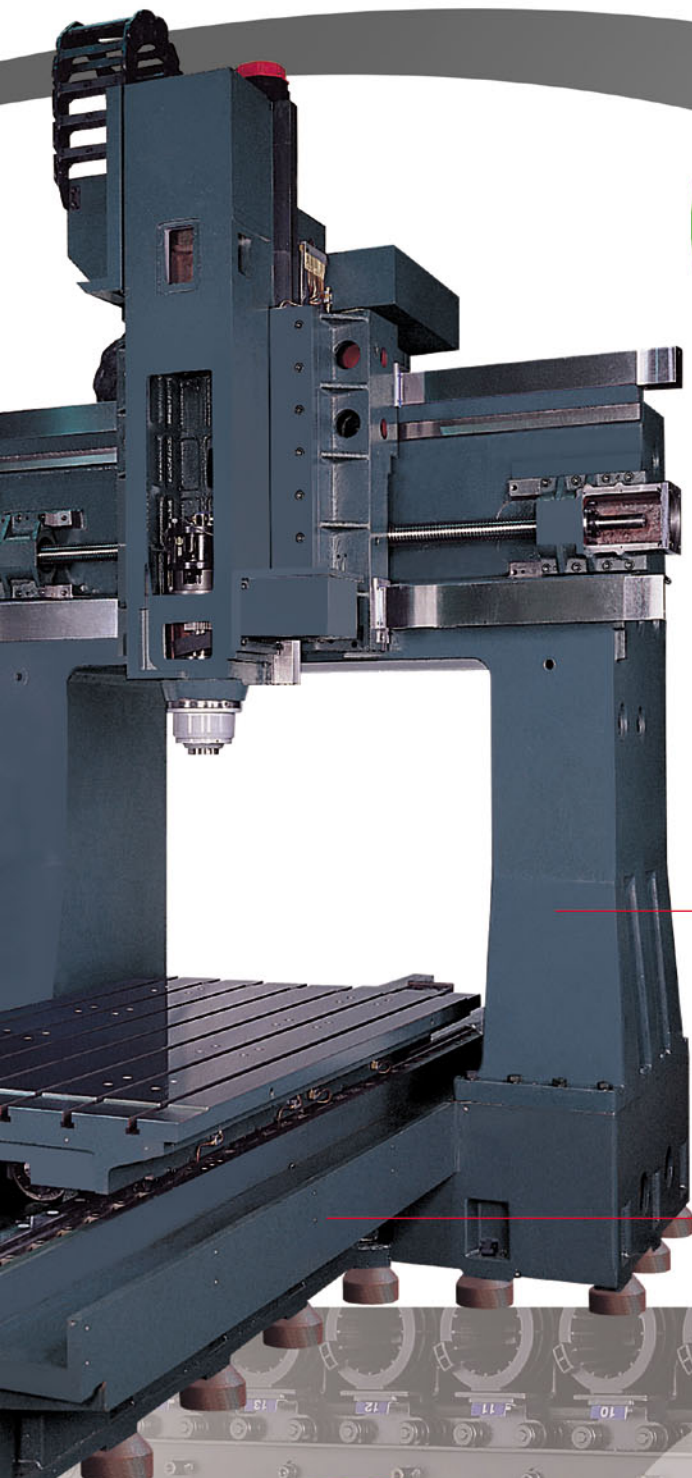


24 Tools (Std.)
No.40: 2.5 sec
No.50: 4 sec

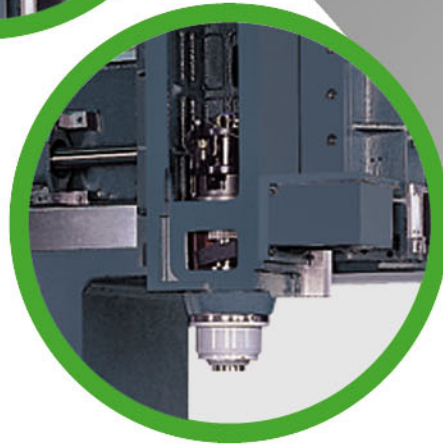


80/120 Tools (Opt.)

lid Construction



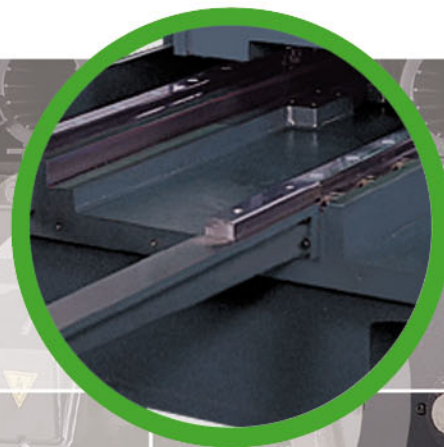
➔ Huge saddle is
800x962 mm (31.5" x 37.9")



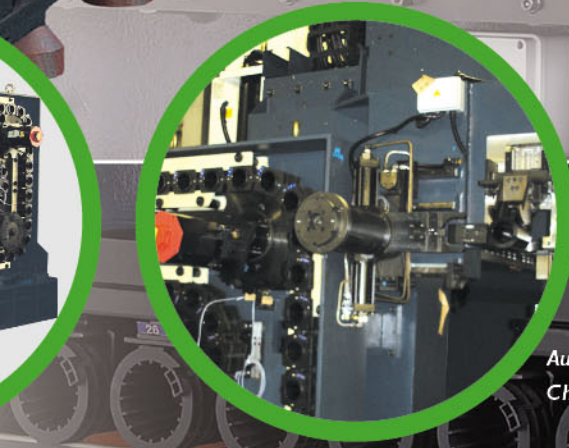
➔ 18.5 kW spindle motor with 2 speed ZF gearbox and 6000 rpm standard on the 50 Taper machines. It comes with a spindle oil cooler too! 578 N.m (426 lb. ft) of Torque at only 305 rpm!

➔ 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.

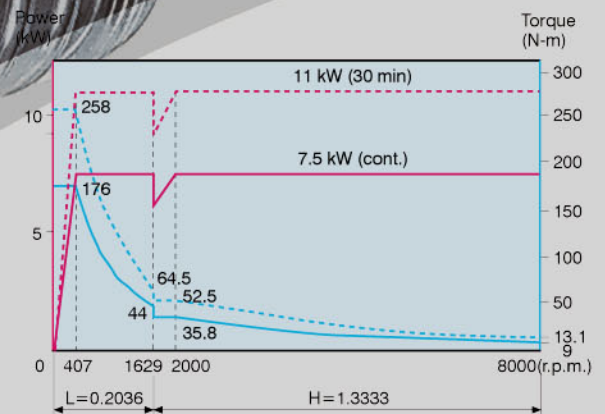
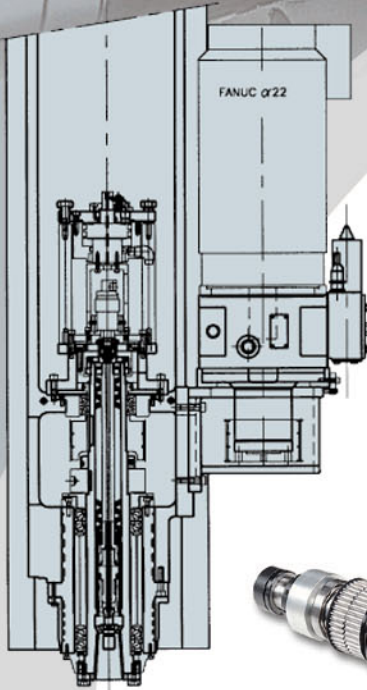


Automatic Tool
Change Arm Unit.

Spindle Power & Torque Chart

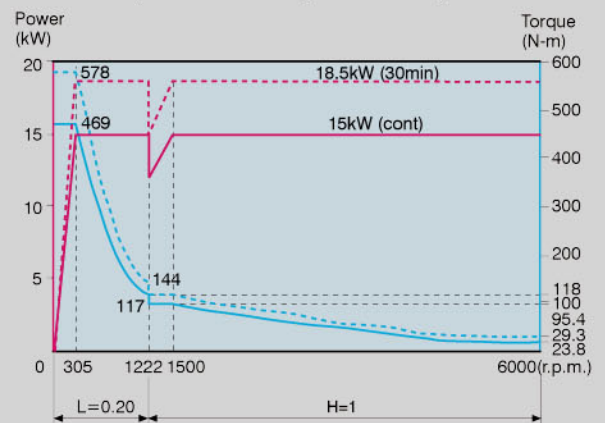
Standard Spindle

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



40 Taper Spindle

(Auto Hi-Lo 2 Step ZF Gearbox)

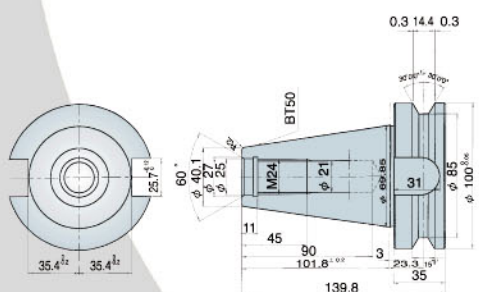


50 Taper Spindle

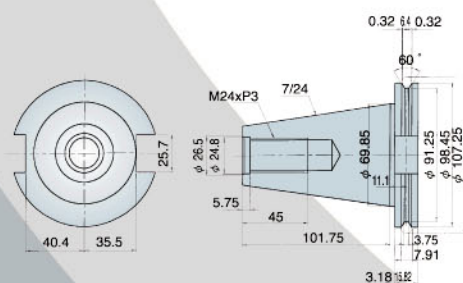
(Auto Hi-Lo 2 Step ZF Gearbox)

Tool & Pull Stud

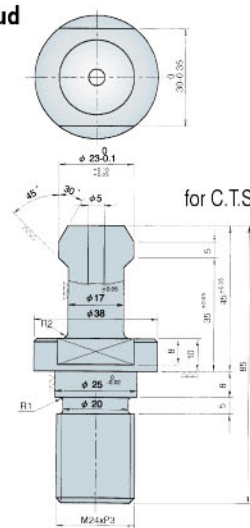
BT-50



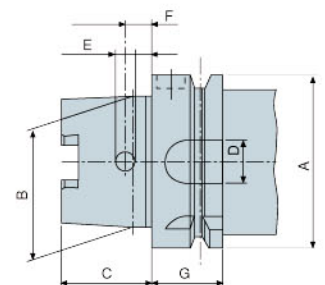
CAT-50



Pull Stud



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



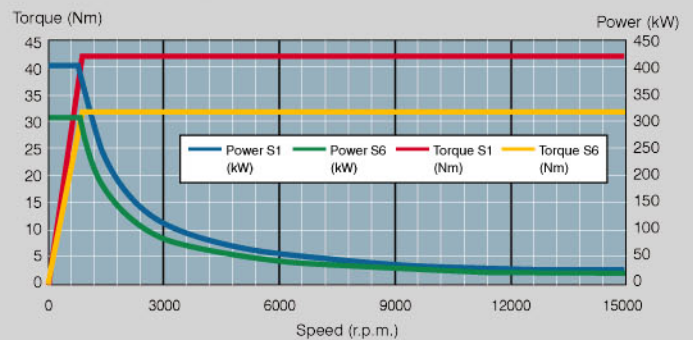
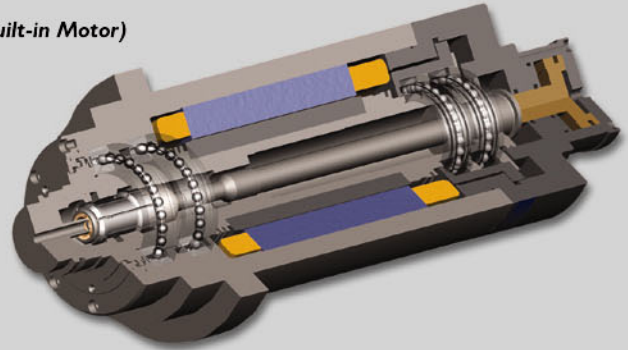
Size	Model	A63	A100
A		63 mm	100 mm
B		48 mm	75 mm
C		32 mm	50 mm
D		16.12 mm	20.02 mm
E		7.5 mm	12 mm
F		9 mm	15 mm
G		26 mm	29 mm

Technical Data

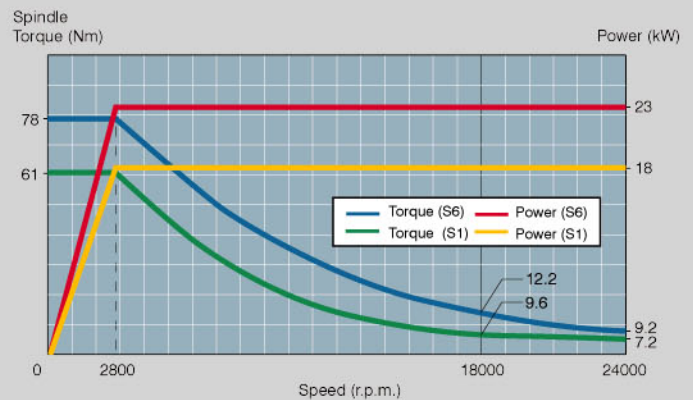
Drive Layout		
Tool system	HSK A63	HSK A100
Power	18 kW	32 kW
Nominal speed	2,800 rpm	1,000 rpm
Max. Torque	78 Nm	400 Nm
Max. Speed	24,000 rpm	15,000 rpm
Control	Fanuc / Siemens / Heidenhain	
Voltage	230V / 380V	380V
Max. Current	90 A / 54 A	125 A
Driver	-	SPM-75 HVI
Clamping system	Spring-mechanical+ Power-mechanical	Hydraulic
Clamping Force	18 kN	45 kN
Tool cleaning	Central + Surrounding	
Spindle bearings	2 x ϕ 70 Hybrid	3 x ϕ 110 Hybrid
Bearing rigidity	Sr 310.2 N/ μ m	680 N/ μ m
Bearing lubrication	Oil-air mist	
Spindle cooling	Water glycol	
Cooling performance	2.5 kW	6 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	80 bar	
Suitable for dry operation	Yes	
Air	Possible	
Min. quantities of cooling lubricant	Optional	-

High Speed Spindle (Opt.)

(Built-in Motor)



HSK A100 15,000 rpm

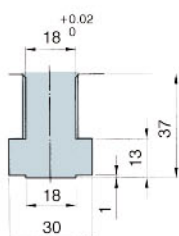


HSK A63 24,000 rpm (Oil-air)
15,000/18,000 rpm (Grease)

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	32 kW	17 kW	32 kW	17 kW	32 kW	17 kW	32 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	704	1382	2878	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	5140	2440	1435	500	330
Cutting speed (m/min)	360		1615		230		37	
Cutting B x T (mm)	40 x 4	80 x 5.5	60 x 3	80 x 5	-	-	-	-
Feed (mm/min)	1840	1600	7680	7196	366	287	500	1300

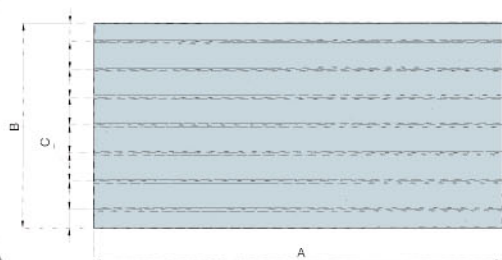
Dimensions

Unit: mm

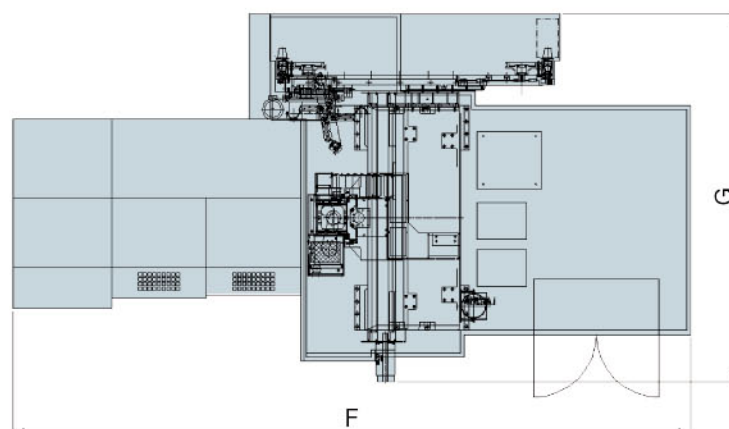


T-Slot

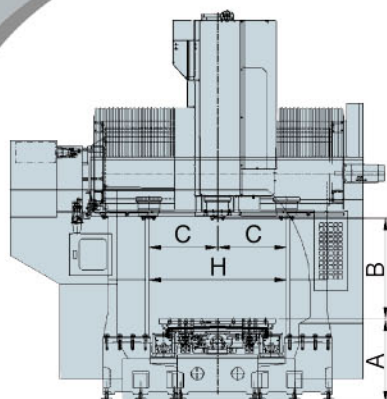
Model Size	DMC-900/900H	DMC-1200/1200H	DMC-1500/1500H	DMC-1600/1600H	DMC-2100/2100H	DMC-3100/3100H	DMC-4100/4100H
A	780	780	780	780	780	780	855
B	912	912	912	950	950	950	950
C	450	450	450	650	650	650	650
D	2000	2000	2000	2000	2000	2000	2145
E	3680	3680	3680	3730	3730	3730	3880
F	4490	4735	4980	5540	6465	8465	10800
G	3190	3190	3190	3515	3515	3515	3515
H	1060	1060	1060	1300	1300	1300	1300
Table							
A	1000	1300	1600	1700	2200	3200	4200
B	850	850	850	1100	1100	1100	1100
C	125	125	125	150	150	150	150



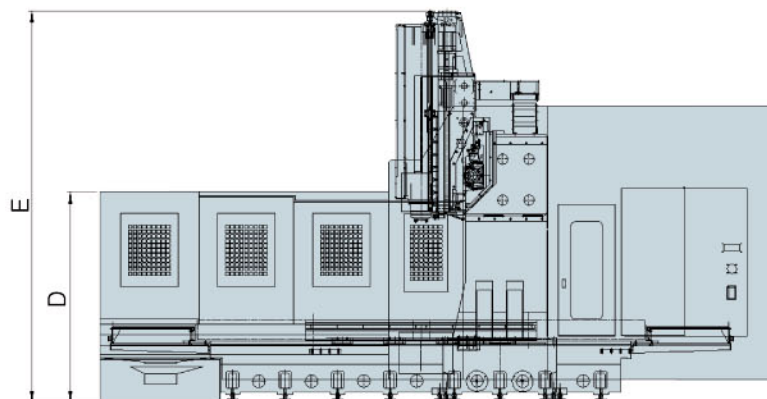
Table



Top View (floor space required)



Front View



Side View

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 mention 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

Model		No.40	DMC-900	DMC-1200	DMC-1500	DMC-1600	DMC-2100	DMC-3100	DMC-4100
Item		No.50	DMC-900H	DMC-1200H	DMC-1500H	DMC-1600H	DMC-2100H	DMC-3100H	DMC-4100H
Distance between columns		1060 mm (41.7")				1300 mm (51.2")			
Table size		1000 x 850 mm (39.4" x 33.5")	1300 x 850 mm (51.2" x 33.5")	1600 x 850 mm (63" x 33.5")	1700 x 1100 mm (66.9" x 43.3")	2200 x 1100 mm (86.6" x 43.3")	3200 x 1100 mm (130" x 43.3")	4200 x 1100 mm (165.3" x 43.3")	
X axis travel		900 mm (35.43")	1200 mm (47.2")	1500 mm (59.1")	1600 mm (63")	2050 mm (80.7")	3050 mm (120")	4100 mm (161.4")	
Y axis travel		900 mm (35.43")				1300 mm (51.2")			
Z axis travel		762 mm (30")				800 mm (31.5")			
Spindle nose to table		150~912 mm (5.9"~35.9")				150~950 mm (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)		70 mm (2.8")	-		90 mm (3.5")	-			
Spindle speed (rpm)		8000, 10000 (Opt.) 12000 (Opt.)	15000, 18000, 24000		6000 8000 (Opt.)	15000			
Spindle motor		7.5 / 11 kW Hi Lo Gear	17 / 20 kW built-in		15 / 18.5 kW Hi Lo Gear	32 / 42 kW built-in			
X-Y-Z rapid traverse		24 x 24 x 12 m/min				15 x 15 x 12 m/min			12x15x12m/min
X-Y-Z cutting feed		1~12000 mm/min				1~10000 mm/min			
ATC	Adjacent pockets max. tool dia.	φ 75 mm (φ 3")		For DMC-900, 1200, 1500, 1600, 2100, 3100, 4100	φ 125 mm (φ 5")		For DMC-900H, 1200H, 1500H, 1600H, 2100H, 3100H, 4100H		
	No.of tools	Arm type 24			Arm type 24 / 32 / 40 (Opt.)				
	Max. tool diameter	φ 100 mm (φ 4")			φ 200 mm (φ 7.8")				
	Max. tool length	320 mm (12.6")			400 mm (15.7")				
	Max. tool weight	10 kg (22 lb)			15 kg (33 lb)				
	Tool selection	Bi-directional random type, Shortest path							
Table load capacity		3000 kg (6600 lb)	3800 kg (8360 lb)	4600 kg (10120 lb)	6000 kg (13200 lb)				
Dimensions	Length	4490 mm (177")	4735 mm (186")	4980 mm (196")	5540 mm (218")	6465 mm (255")	8465 mm (333")	10800 mm (425")	
	Width	3000 mm (118")				3300 mm (130")			3515 mm (138.4")
	Height	3750 mm (148")				3800 mm (149.6")			3880 mm (152.7")
Machine weight		10000 kg (22000 lb)	12000 kg (26400 lb)	15000 kg (33000 lb)	20400 kg (45000 lb)	23600 kg (52000 lb)	26800 kg (59000 lb)	30100 kg (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 (One spotlight & two daylight lamps)
12. FANUC 0i-MC 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. Linesr scale.
6. 32 / 40 tools or more (BT-50 / CAT-50)
7. 32 tools or more (BT-40 / HSK A63)
8. 15000, 18000, 24000 rpm for HSK A63 built-in spindle
9. 15000 rpm for HSK A100 built-in spindle
10. External coolant flow of spindle
11. Manual guide *i* / *0i* (0i/MC) ; Manual guide *i* (18i/MB / 21i/MB)
12. Electronic compensation of thermal expansion.

CNC Control Specs

O: Std. △: Opt. -: Nil

Item	Function	Specifications	HEIDENHAIN		FANUC			SIEMENS	
			TNC410	iTNC530	i8iMB	21iMB	OiMC	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	0	0	0	0	0	0	0
	Absolute/incremental command	G90/G91	0	0	0	0	0	0	0
	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		0	0	0	0	0	0	0
Interpolation	RS232-C interface		0	0	0	0	0	0	0
	Positioning (interpolation)	G00	0	0	0	0	0	0	0
	Linear interpolation	G01	0	0	0	0	0	0	0
	Circular interpolation	G02/G03	0	0	0	0	0	0	0
	Helical interpolation		0	0	0	0	0	0	0
Program	Rigid Tapping		0	0	0	0	0	0	0
	Memory capacity		256 KB	6 GB	640M	640M	640M	1.5MB	2.5MB
	No. of programs stored		100	unlimited	200	200	200	unlimited	unlimited
	Background editing		0	0	0	0	0	0	0
Spindle functions	S code output 4-digit BCD-binary	S4BCD	0	0	0	0	0	0	0
	Spindle rate	%	0-150		50-150			50-200	50-200
Feed	Per-minute		0	0	0	0	0	0	0
	Rapid traverse rate	low25%,50%,100%	-	-	0	0	0	-	-
	Cutting feed rate	0%-150%	0	0	0-200			0-120	
	Handle feed rate	x1,x10,x100	-	-	0	0	0	0	0
Miscellaneous function	M-code	M2(BCD)	0	0	0	0	0	0	0
Coordinate system	Automatic coordinate system setting		-	-	0	0	0	0	0
	Machine coordinate system		0	0	0	0	0	0	0
	Work coordinate system	G54-G59	0	0	0	0	0	0	0
	Coordinate system setting	G92	0	0	0	0	0	0	0
	Manual reference point return		0	0	0	0	0	0	0
	Automatic reference point return	G28/G29	-	-	0	0	0	0	0
	2nd reference point return	G30	-	-	0	0	0	0	0
Tool function	Reference point return verify	G27	-	-	0	0	0	0	0
	Tool command	T2 BCD	0	0	0	0	0	0	0
	Tool length offset	G43/G44/G49	-	-	0	0	0	0	0
	Cutter compensation C	G40/G41/G42	0	0	0	0	0	0	0
	Number of offset sets		999	999	400	400	400	unlimited	unlimited
Operation	Single block		0	0	0	0	0	0	0
	Block skip		0	0	0	0	0	0	0
	Dry run		0	0	0	0	0	0	0
	Machine lock		△	△	0	0	0	0	0
	Option stop	M01	0	0	0	0	0	0	0
	Miscellaneous function lock	M.S.T.lock	0	0	0	0	0	0	0
	Manual/Absolute ON/OFF		0	0	0	0	0	0	0
Programming support function	PLC switch		0	0	0	0	0	0	0
	Sub-program control	M98, M99	0	0	0	0	0	0	0
	Corner chamfering/corner rounding		0	0	△	△	0	0	0
	Canned cycle for drilling	G80-G89	0	0	0	0	0	0	0
	Automatic corner override		0	0	△	△	0	0	0
	User macro		0	0	0	0	0	0	0
	No. of variable command sets		unlimited	unlimited	500	500	500	unlimited	unlimited
	Backlash compensation		0	0	0	0	0	0	0
	Memory-type pitch error compensation		0	0	0	0	0	0	0
	Coordinate system rotation	G68/G69	0	0	△	△	0	0	0
Measurement function	Scaling	G50/G51	0	0	△	△	0	0	0
	Polar coordinate command	G15/G16	0	0	△	△	0	0	0
	Skip function		0	0	0	0	0	0	0
Safe protect	Tool length automatic measurement		0	0	△	△	△	0	0
	Emergency stop		0	0	0	0	0	0	0
	Travel protected		0	0	0	0	0	0	0
Other	Program protected		0	0	0	0	0	0	0
	CRT		10.4" LCD	15" LCD	10.4"LCD	10.4"LCD	7.2"MON LCD	10.4"LCD	10.4"LCD
	MDI	Full key	0	0	0	0	small type	0	0
	Languages	English/Japaness	10	10	7	7	7	7	7
	Parts count		0	0	0	0	0	0	0
	Run hour display and parts count		0	0	0	0	0	-	-
	Graphic display		0	0	0	0	0	0	0
	4th axis interface		0	△	0	0	0	0	0
	Menu programming		0	0	0	0	0	0	0
	Conversational programming with graphic function	Manual guide	0	0	△	△	△	0	0
	Mirror function		0	0	0	0	0	0	0
	Chinese, French, German, Italian, Spanish		0	0	0	0	0	0	0
	High-precision contour control	64 bit RISC	-	△	△	-	-	△	△
	Data server (HD)		-	0	△	△	△	△	△
	ETHERNET		-	0	0	0	△	△	△

■ All data subject to change without notice.



***Whatever You Need
for Milling and Turning
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