



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



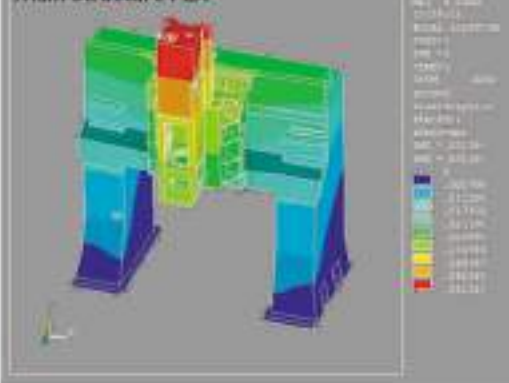
Expanding on Our P
This Series of Mid-F
C-Frame Type Mills

DMC-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 assure 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.

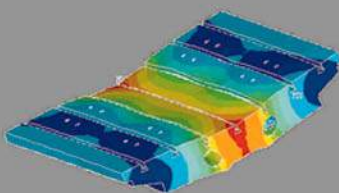
Main Structure FEA





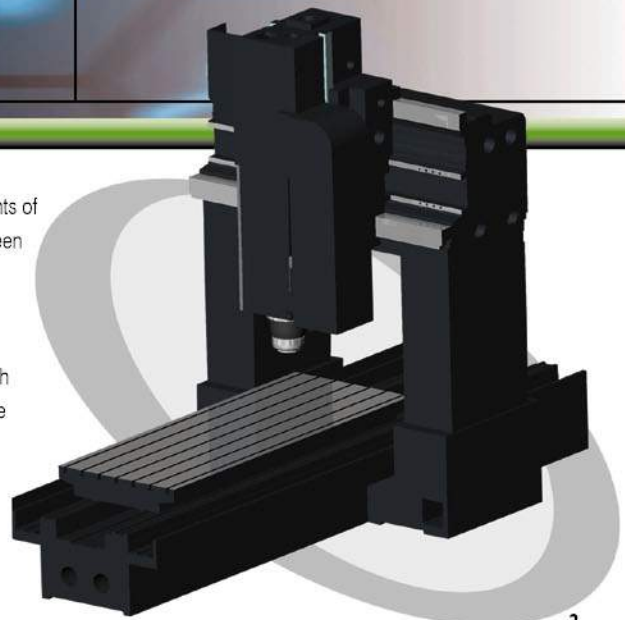
Popular DMC Series of Large Frame Bridge Mills,
Large Frame Bridge Mills Can Take The Place of Large
Mills While Still Offering Value Pricing.

Main Structure FEA



ANSYS 5.5.1
MAX = 21000
15:50:22
GLOBAL SOLUTION
STEP=1
SUB #1
TIME=1
UNIT= (IN)
ELEM=0
EQUATION=10
EFACET=1
AVRSP=Max
SBC = .000374
SBC = .000374
0
0
.910E-03
.001861
.002791
.003721
.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.

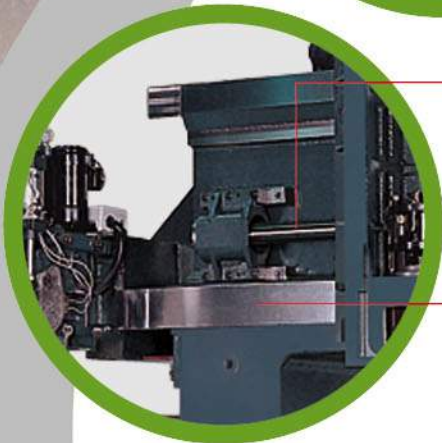


Setting the Standard....With So



← 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.

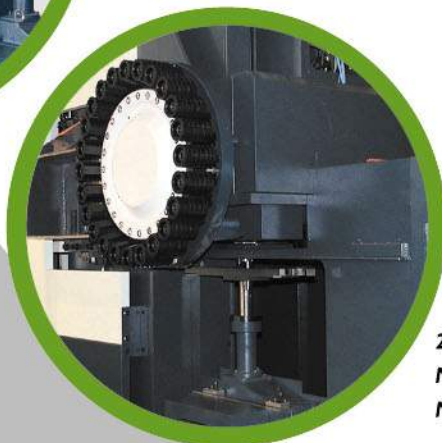
Distance between the Y-axis rigid box ways is 650 mm (25.6")



← 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.

32/40/60 Tools (Opt.)

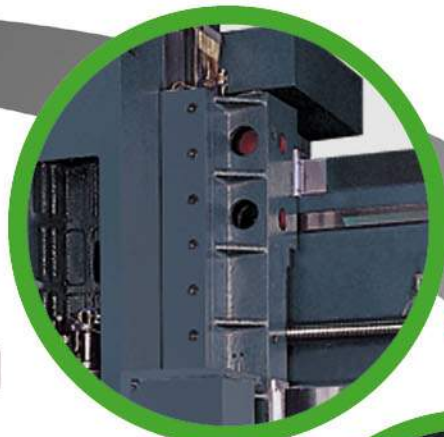
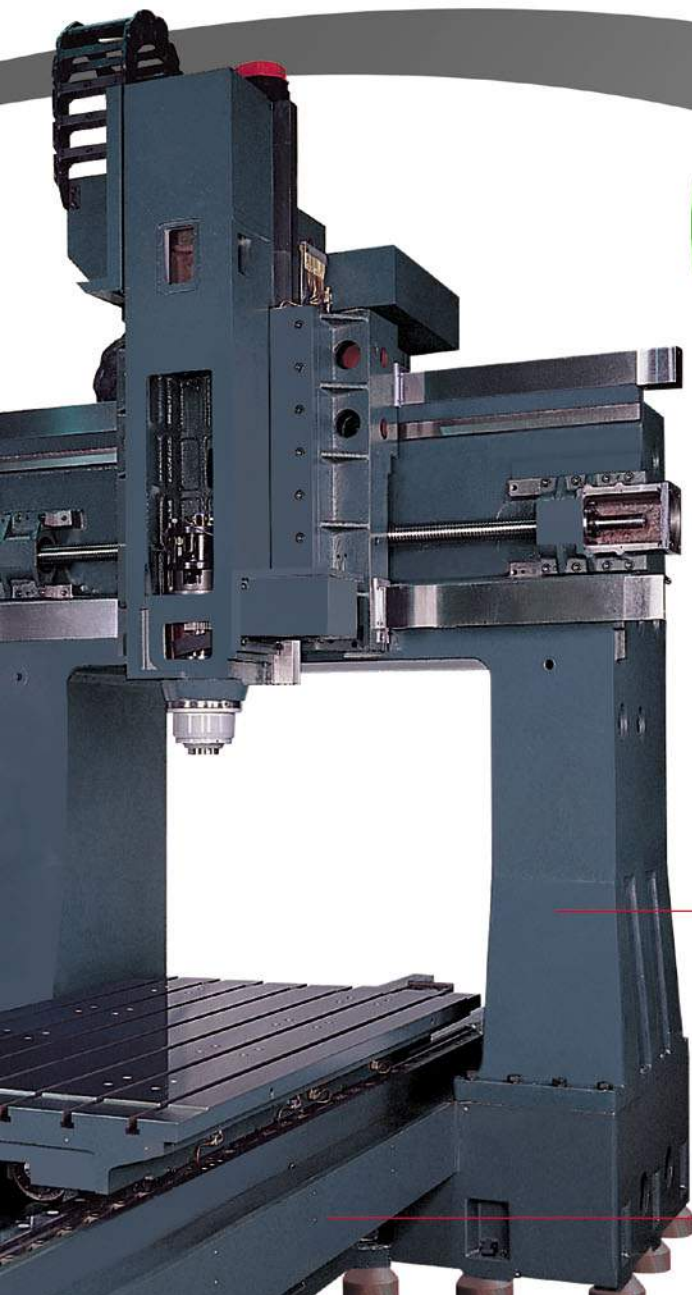


24 Tools (Std.)
No.40: 2.5 sec
No.50: 4 sec



80/120 Tools (Opt.)

lid Construction



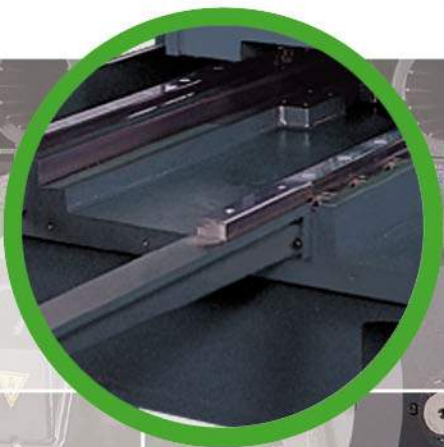
➤ Huge saddle is 800x962 mm (31.5" x 37.9")



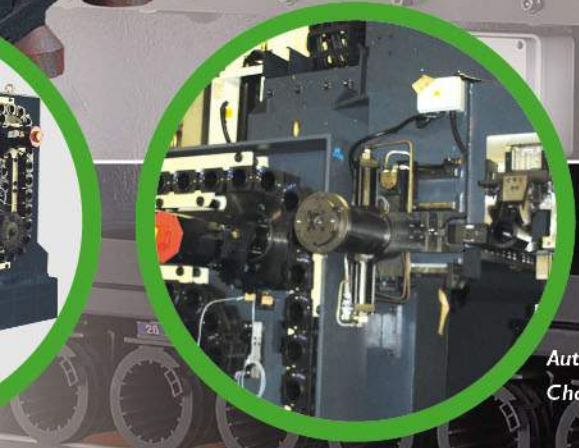
➤ 18.5 kW spindle motor with 2 speed ZF gearbox and 6000 rpm standard on the 50 Taper machines. It comes with a spindle oil cooler too! 578 N.m (426 lb. ft) of Torque at only 305 rpm!

➤ One piece columns and bridge casting for maximum rigidity.

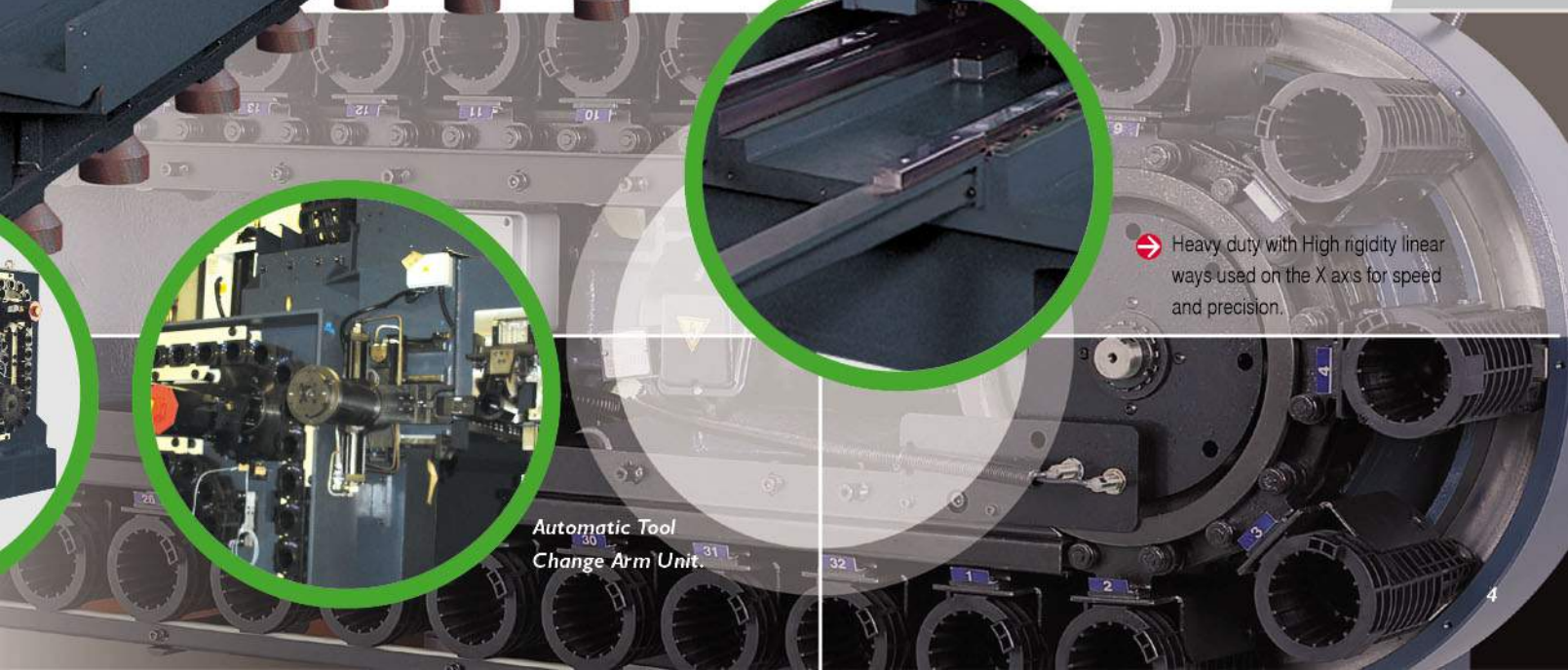
➤ One piece meehanite cast iron base.



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



Automatic Tool Change Arm Unit.

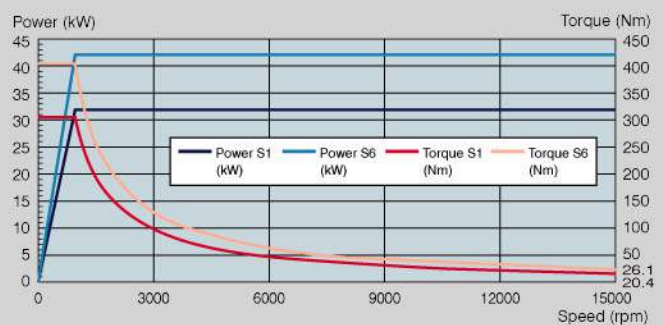
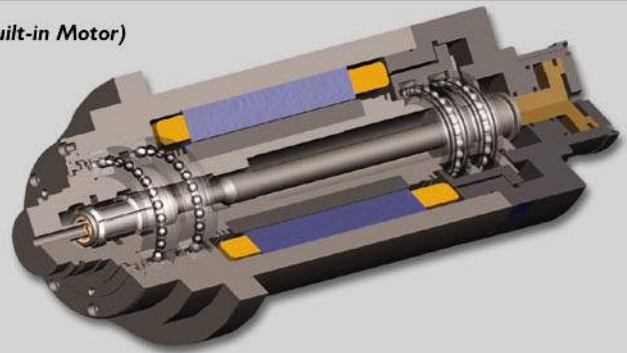


Technical Data

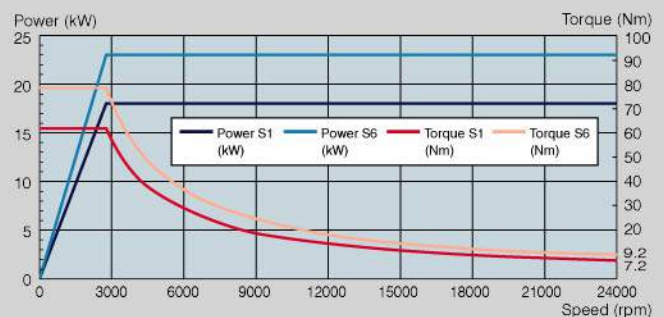
Drive Layout		
Tool system	HSK A63	HSK A100
Power	18 kW	32 kW
Nominal speed	2,800 rpm	1,000 rpm
Max. Torque	78 Nm	400 Nm
Max. Speed	24,000 rpm	15,000 rpm
Control	Fanuc / Siemens / Heidenhain	
Voltage	230V / 380V	380V
Max. Current	90 A / 54 A	125 A
Driver	-	SPM-75 HVI
Clamping system	Spring-mechanical+ 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

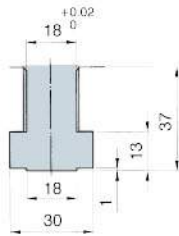


HSK A63 24,000 rpm (Oil-air)
15,000/18,000 rpm (Grease)

Metal Removal Rate	Milling 		Milling 		Drilling 		Threading 	
	HSK A63	HSK A100	HSK A63	HSK A100	HSK A63	HSK A100	HSK A63	HSK A100
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

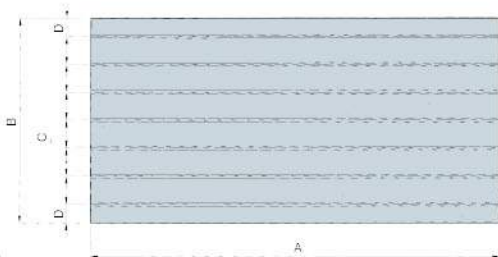
Unit: mm



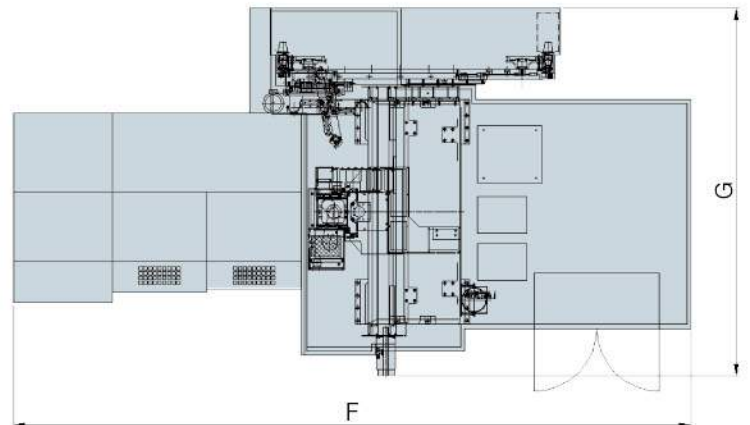
T-Slot

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

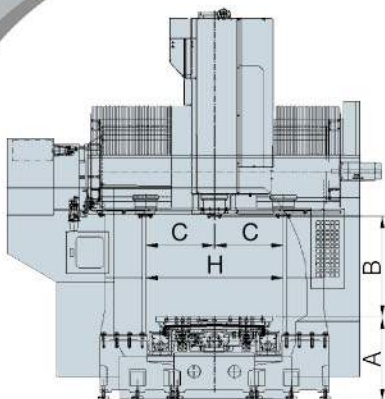
Table							
A	1000	1300	1600	1700	2200	3200	4200
B	850	850	850	1100	1100	1100	1150
C	125	125	125	150	150	150	150
D	50	50	50	100	100	100	50



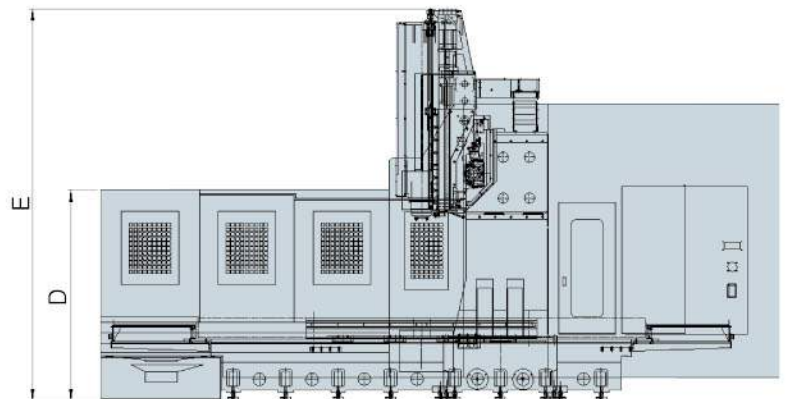
Table



Top View (floor space required)



Front View



Side View

CNC System-FANUC 3 I 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, Custom Macro B, Helical, 1280m (512KB) of memory, Canned Cycles, Full MDI keyboard, and AI Contour Control II (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.



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 with 1000 block look ahead, you can fly through 3-axis simultaneous movements at 150,000 blocks per minute (0.4 ms/block). Or take it one step further by adding the Nano Smoothing and 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	No.40	DMC-900	DMC-1200	DMC-1500	DMC-1600	DMC-2100	DMC-3100	DMC-4100
	No.50	DMC-900H	DMC-1200H	DMC-1500H	DMC-1600H	DMC-2100H	DMC-3100H	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		BT-50 / CAT-50	HSK A100 (Opt.)	For		
Spindle diameter (Bearing) (mm)	70 (2.8")	-	DMC-900,		90 (3.5")	-	DMC-900H,		
Spindle speed (rpm)	8000, 10000 (Opt.) 12000 (Opt.)	15000, 18000, 24000	1200, 1500, 1600, 2100,		6000, 8000 (Opt.)	15000	1200H, 1500H, 1600H, 2100H,		
Spindle motor (kW)	7.5 / 11 Hi Lo Gear	17 / 20 built-in	3100, 4100		15 / 18.5 Hi Lo Gear	32 / 42 kW built-in	3100H, 4100H		
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)	$\phi 75$ ($\phi 3$ ")		For		$\phi 125$ ($\phi 5$ ")		For	
	No. of tools	Arm type 24 / 32 / 40 (Opt.)		DMC-900,		Arm type 24 / 32 / 40 (Opt.)		DMC-900H,	
	Max. tool diameter (mm)	$\phi 100$ ($\phi 4$ ")		1200, 1500,		$\phi 200$ ($\phi 7.8$ ")		1200H, 1500H,	
	Max. tool length (mm)	320 (12.6")		1600, 2100,		400 (15.7")		1600H, 2100H,	
	Max. tool weight (kg)	10 kg (22 lb)		3100, 4100		15 (33 lb)		3100H, 4100H	
	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	4490 (177")	4735 (186")	4990 (196")	5540 (218")	6515 (257")	8515 (335")	10850 (427")	
	Width	3000 (118")				3300 (130")			3515 (138.4")
	Height	3750 (148")				3800 (149.6")			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 (One spotlight & two daylight lamps)
12. FANUC 0i-MD 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* (0iMD) ; Manual guide *i* (31iMB)
12. Electronic compensation of thermal expansion.

CNC Control Specs

■ CNC system type

O: Std. —: Opt. - NI

Type	Model	DMC - 900 ~ DMC - 4100H	
FANUC 0iMD		<input type="radio"/>	
FANUC 31iMB		<input type="radio"/>	
Heidenhain iTNC530 HSCI		<input type="radio"/>	
Siemens 840D (572.5)		<input type="radio"/>	
Siemens 840D (573.5)		<input type="radio"/>	
Siemens 828D (PPU 281)		<input type="radio"/>	

■ Fanuc specifications

O: Std. —: Opt. - NI

	Item	Specifications	0iMD	31iMB	
Display unit	8.4" color LCD		<input type="radio"/>	<input type="radio"/>	
	10.4" color LCD		<input type="radio"/>	<input type="radio"/>	
	Data Server with 2GB CF card		<input type="radio"/>	<input type="radio"/>	
Function	AICC II		<input type="radio"/>	<input type="radio"/>	
	High speed processing		<input type="radio"/>	<input type="radio"/>	
	Conversational programming with graphic function	Manual guide O	0iMD	<input type="radio"/>	<input type="radio"/>
		Manual guide I	31iMB / 0iMD (10.4" LCD)	<input type="radio"/>	<input type="radio"/>
NC program memory	1290 meter (about 512 KB)		<input type="radio"/>	<input type="radio"/>	

■ Siemens specifications

O: Std. —: Opt. - NI

	Item	Specifications	828D	840D
Operation Panel	10.4" color LCD		<input type="radio"/>	<input type="radio"/>
	15.1" color LCD		<input type="radio"/>	<input type="radio"/>
	Machine panel MCP483C		<input type="radio"/>	<input type="radio"/>
	PCU 20 without hard disk		<input type="radio"/>	<input type="radio"/>
	PCU 50 with hard disk	Include HD & Ethernet	<input type="radio"/>	<input type="radio"/>
Function	Network / disk drive management	CF card	<input type="radio"/>	<input type="radio"/>
	ShopMill programming		<input type="radio"/>	<input type="radio"/>
	Automatic residual material detection		<input type="radio"/>	<input type="radio"/>
	Universal interpolator NURBS		<input type="radio"/>	<input type="radio"/>
	Spline interpolation for 3 - axes		<input type="radio"/>	<input type="radio"/>

■ Heidenhain specifications

O: Std. —: Opt. - NI

	Item	Specifications	iTNC530 HSCI MC6222
Display unit	Visual display unit 15" TFT display		<input type="radio"/>
Function	Main computer (MC6222)	0.5 ms block processing time	<input type="radio"/>
	NC programming memory	21GB on SSDR	<input type="radio"/>
Software option 1	<ul style="list-style-type: none"> • Cylindrical surface interpolation • Feed rate in mm/min • Tilting the working plane • Circular interpolation in 3 axes with tilted working plane • HSC path control with special nominal-position value filters 		<input type="radio"/>
Software option 2	<p>3-D machining</p> <ul style="list-style-type: none"> • Motion control with minimum jerk • 3-D tool compensation through surface normal vectors • TCPM: Tool center point management • Keeping the tool normal to the contour • Tool radius compensation normal to the tool direction • Manual traverse in the active tool-axis system <p>Interpolation</p> <ul style="list-style-type: none"> • Linear in 5 axes (Subject to export permit) • Spline: execution of splines (3rd degree polynomial) 		<input type="radio"/>





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



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