JOHNFORD®

Double Column Machining Centers

DMC-4000 / SDMC-6000

Fixed / Moving Column, Cross Rail (W-Axis),
Multi-Axis / 5-Face Series Order-Made

Double Column Machining Cent

DMC-4000

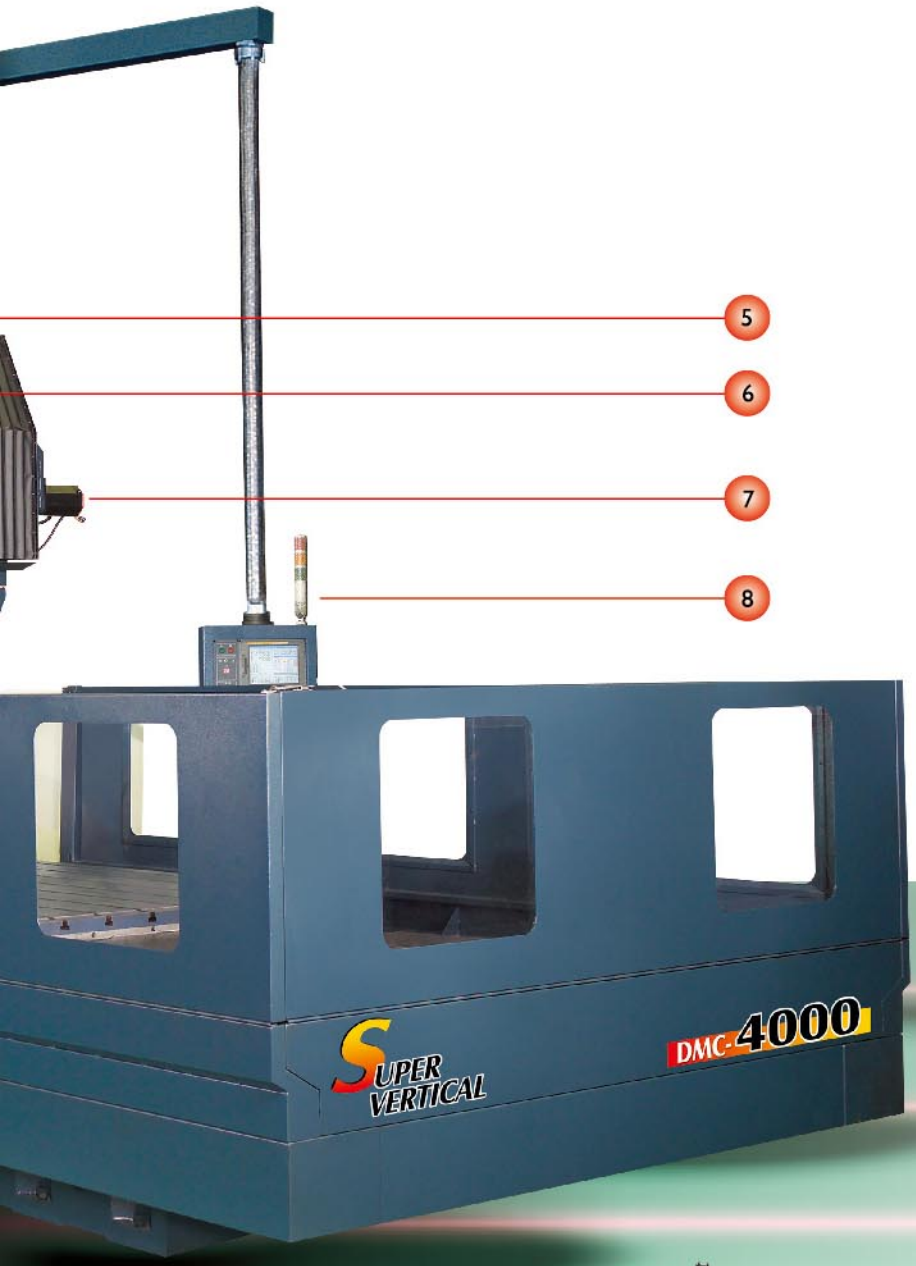
Mightiest of Them All

Johnford DMC's are the heaviest, best built bridge mills on the planet. These are heavy machines built to last while delivering heavy cutting, high accuracy, and high speed. Check out these specs:

DMC-4000: 4000 x 2800 x 800 mm, 64200 kg
(157.5" x 110.2" x 31.5", 141400 lb)
4000 x 2800 x 1066 mm, 66200 kg
(157.5" x 110.2" x 42", 145800 lb)

When the machine is equipped with the multi-axis or 5-face heads, the machine structure is changed.

ters



1
Twin hydraulic cylinders balance the massive headstock.

2
Large diameter spindle is driven by a 26 kW (37 kW Opt.) spindle motor and 2 speed helical transmission for heavy cutting. The spindle cartridge and the gearbox have their own separate oil chillers for the best thermal stability possible. Plus, it generates 662 N-m (488 lb.ft) of torgue at only 375 rpm for 26 kW and 1472 N-m(1086 lb.ft) at only 240 rpm for 37 kW. Multi-axes heads are optional.

3
Johnford's ATC system is the best available. The standard ATC is 40 tools with options of 60 tools or more. The ATC is self contained and stands alone. The fixed pot system always puts the tool back in the pocket it came from. 200 mm (8") shell mills are easily accommodated in the magazine.

4
Massive one piece base castings. All major machine components are made from high quality meehanite cast iron.

5
The largest bridge and saddle in the industry! The cross rail is 1332 mm (52.4") tall x 1213 mm (47.8") deep. The saddle is 1250 mm (49.2") tall and 1200 mm (47.2") wide and holds onto a full 1250 mm (49.2") of the Z axis head for the ultimate in stability and rigidity. The massive Y axis ways are offset 250 mm (10") for stability and accuracy.

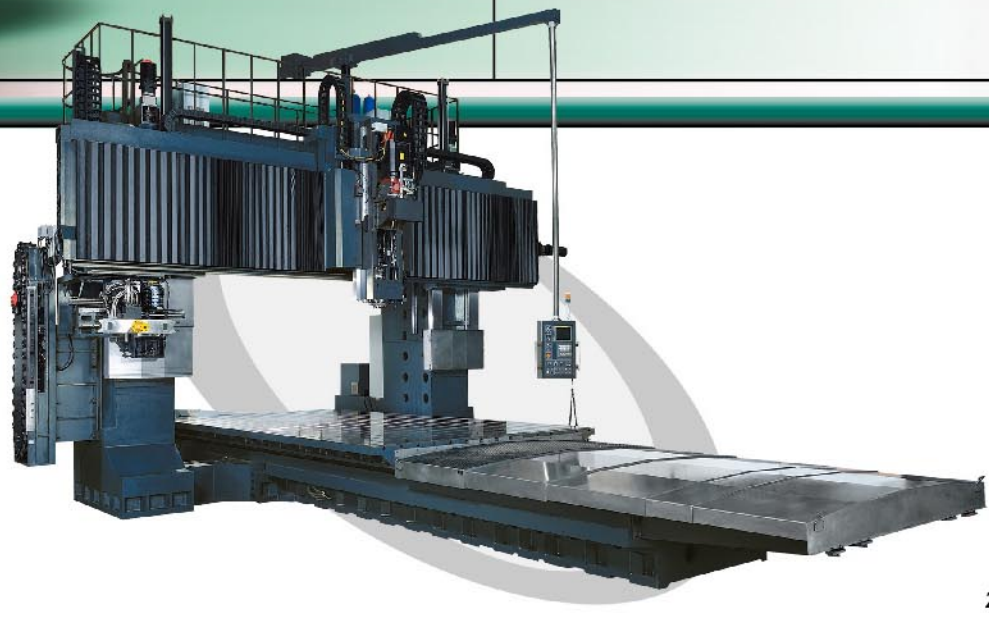
6
Ballscrews are the largest in the industry 80 mm (3.1") in the X, Y and 50 mm (2") in the Z. They are pretensioned to eliminate thermal growth.

7
Servo motors are the largest in the industry tool 6 kW on X and Y with 2:1 gear reduction drives for the most axis thrust available.

8
Fanuc 18*i* MB/0*i* MF/31*i* MB controls are used for reliable service and state-of-the-art technology.

Super Advanced Features

- Large diameter spindle with big power
- Twin hydraulic cylinders for balance
- The largest bridge and saddle in the industry
- The largest ballscrews in the industry
- The largest servo motors in the industry
- Twin chip removal systems
- Massive one piece castings
- Excellent ATC system
- The largest order-made machine available



Double Column Machining Cen

- Same massive bridge/saddle/head assembly as our DMC series.
- Same excellent ATC system used on our DMC's. We mount the ATC to the column as the standard system to save ATC time.
- Twin 80 mm (3.1") ballscrews are used on the X-axis in 11 meters. One ballscrew is under each column. The ballscrews are synchronized in a master/slave system by the Fanuc CNC control system. Due to the length of the ballscrews, the ballscrews remain stationary while the ball nuts are rotated by the powerful servo motors. When the X-axis length of machine is over 11 meters, we will use twin preloaded rack & pinion drive systems to move the X-axis of machine for standard. Because the ballscrews will have more cost made and difficulty in manufacturing.
- Efficient chip removal system consisting of 2 screw type conveyors and a caterpillar type conveyor with 1220 mm (48") discharge height is standard.

SDMC-8000 / 16000-W

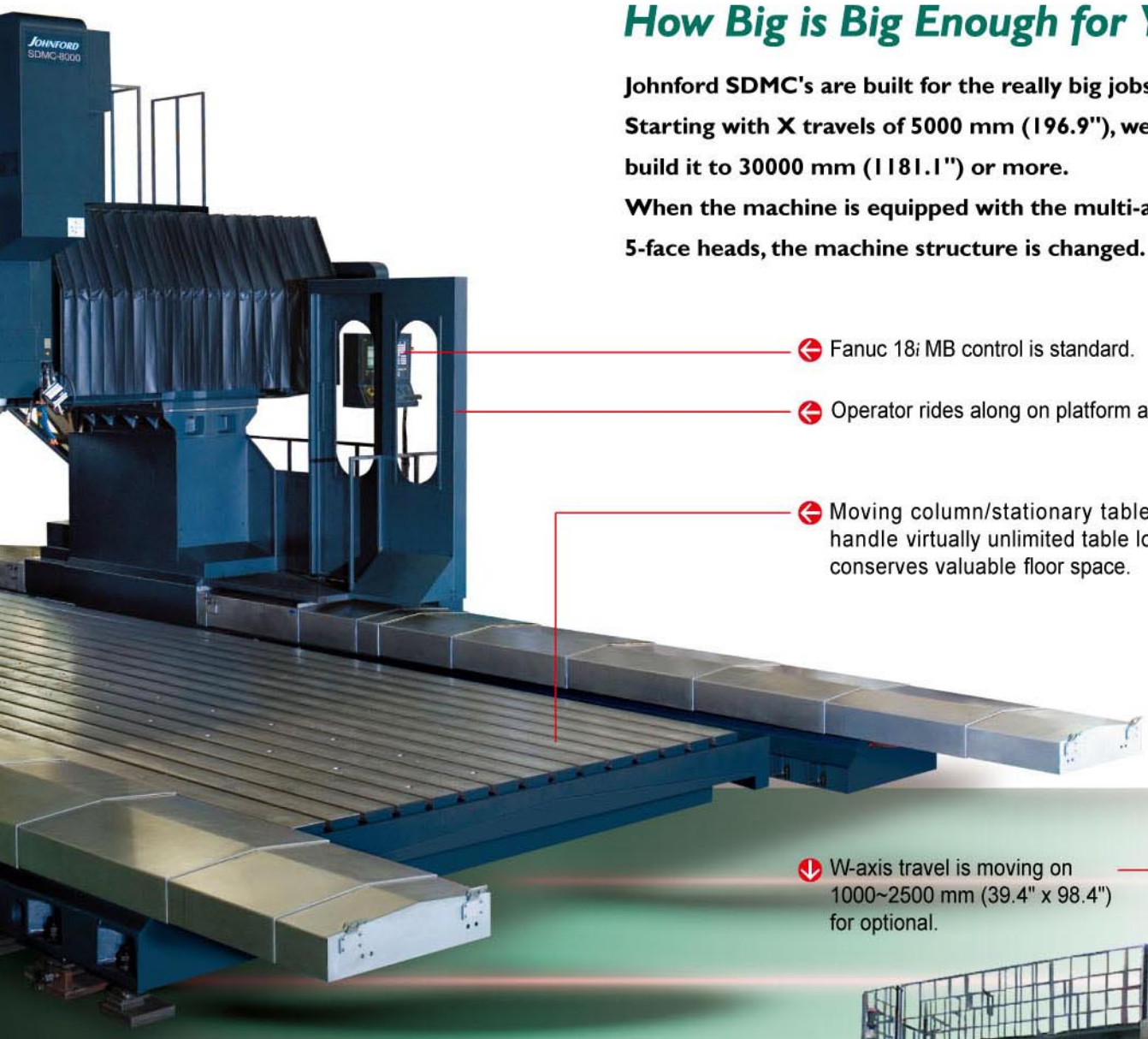
Super Advanced Features

- Large diameter spindle with big power
- Twin hydraulic cylinders for balance
- The largest bridge and saddle in the industry
- The largest ballscrews in the industry
- The largest servo motors in the industry
- Twin chip removal systems
- Massive one piece castings
- Excellent ATC system
- The largest order-made machine available

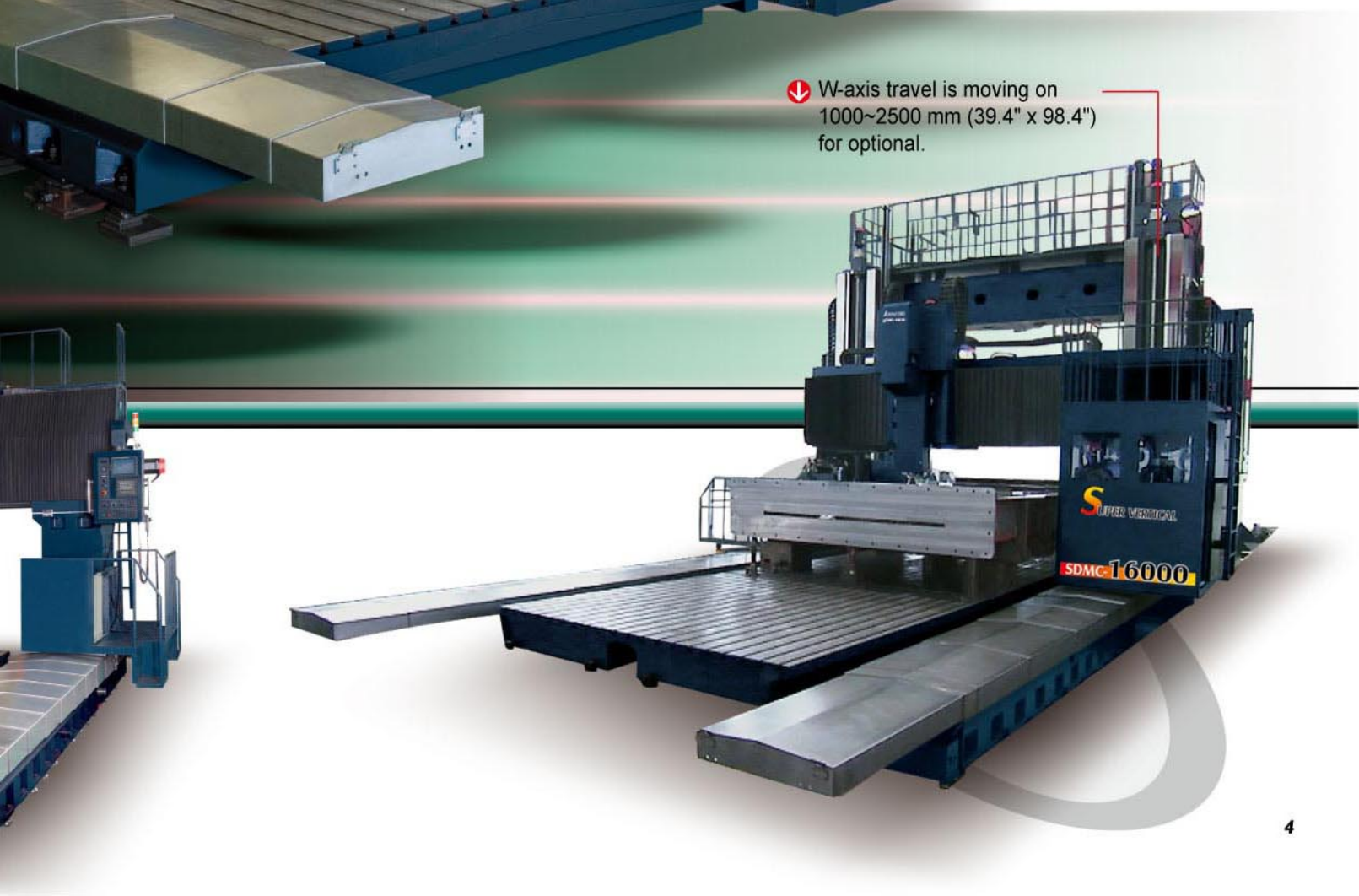
ters (Slid / Cross Rail Type)

How Big is Big Enough for You?

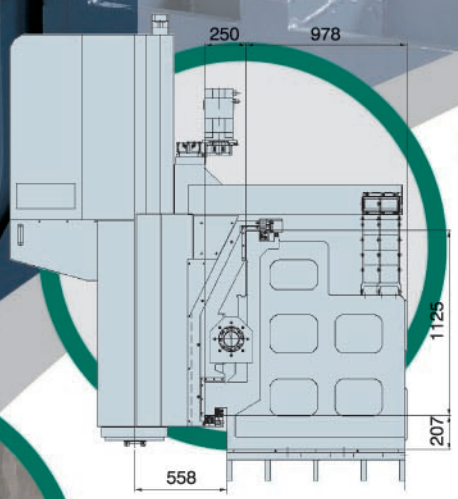
Johnford SDMC's are built for the really big jobs. Starting with X travels of 5000 mm (196.9"), we can build it to 30000 mm (1181.1") or more. When the machine is equipped with the multi-axis or 5-face heads, the machine structure is changed.



- Fanuc 18*i* MB control is standard.
- Operator rides along on platform attached to column.
- Moving column/stationary table design can handle virtually unlimited table loads and conserves valuable floor space.
- W-axis travel is moving on 1000~2500 mm (39.4" x 98.4") for optional.



Reliable Mechanical Design (Mi



- Both Y & Z use hardened & ground box ways with turcite-B.
- Box structure ram ensures working stability and accuracy.
- Zero overhang on Z travel.
- Double support hydraulic counter balances provide high stability.

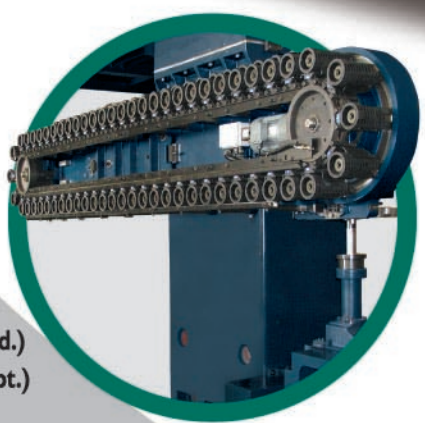
X-axis

Preloaded rack & pinion drive system (Opt.)

- The optional preloaded rack & pinion drive system is used on both X and Y-axes for large travel.
- It can prevent the machine from bad accuracy due to a long ballscrew bending and offer the SDMC machines high feeding speed.

Y-axis

60 tools or more (Opt.)



40 tools (Std.)
60 tools (Opt.)

Automatic Tool Changer

- Reliable automatic tool changer provides 7 seconds tool change time.
- Automatic tool change arm is supported by linear ways to ensure rapid & smooth traverse.
- Bi-directional tool changer without interference. 40 tools automatic tool changer is standard. 60 tools or more are optional.

lling Heads 100% Johnford-made)

2-Axis NC Milling Head (Opt.)

5-Face Head (Opt.)

TU-35+ (Opt.)

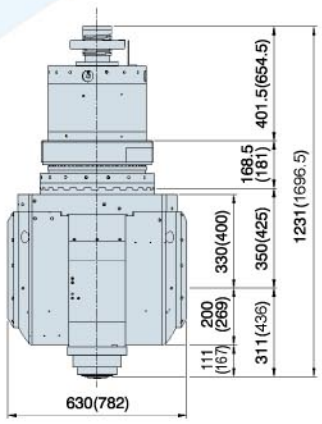
MA25 (Opt.)

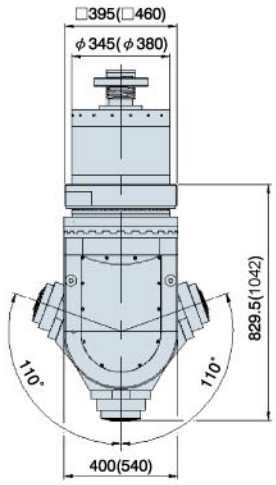
Slim Extended Head (Opt.)

2-Axis NC Milling Head

NC Milling Head with Motorized Spindle

( ) For AC5 Tool System

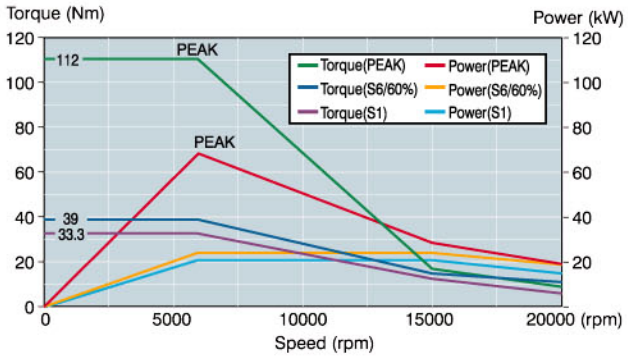




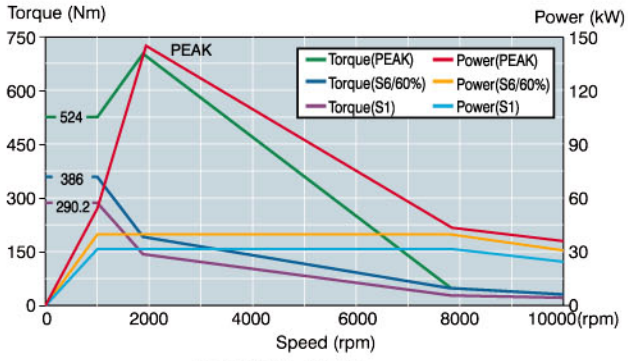
Technical Data

Item \ Model	AC4		AC5	
Main Spindle				
Power	21 kW (S1) / 24 kW (S6-60%)		31 kW (S1) / 40 kW (S6-40%)	
Nominal speed	6,000 rpm		1,000 rpm	
Max. torque	34 Nm (cont.) / 112 Nm (max.)		290 Nm (S1) / 386 Nm (S6)	
Max. speed	20,000 rpm		10,000 rpm	
A-Axis swiveling angle	±110°		±110°	
C-Axis swiveling angle	±200°		±200°	
Tool system	HSK A63		BT-50 / CAT-50 / HSK A100	
Clamping system	Hydraulic		Hydraulic	
Clamping force	18 kN		20 kN	
Tool cleaning	Automatic		Automatic	
Spindle bearings front	2 x Ø70 Hybrid		3 x Ø100 Hybrid	
Bearing rigidity	Axis / radial 512 N/µm		Axis / radial 660 N/µm	
Bearing lubrication	Grease		Grease	
Spindle cooling	Automatic		Automatic	
Cooling performance	3 kW		5 kW	
Cooling temperature	20-25°		20-25°	
Cooling volume flow approx	12 ℓ/min		14 ℓ/min	
Metal removal rate	Milling	Milling	Milling	Drilling
Material	Steel 600-700 N/mm²	Aluminium AlMgSi 1	Steel 600-700 N/mm²	Steel 600-700 N/mm²
Machining volume (cm³/min)	268	1,026	575	550
Tool/edges (Ømm)	32 / 3	63 / 5	63 / 6	50
Rotational speed (r.p.m.)	3,580	4,460	1820	1400
Cutting speed (m/min)	360	883	360	220
Cut W x D (mm)	25 x 4	50 x 4	50 x 5	–
Feed (mm/min)	2,685	5,129	2,300	280
Cooling System				
External coolant supply	6 Spray nozzles		6 Spray nozzles	
Internal coolant supply	optional		optional	
Max. pressure	70 bar		70 bar	
Air	optional		–	
Minimal cooling lubrication	optional		–	

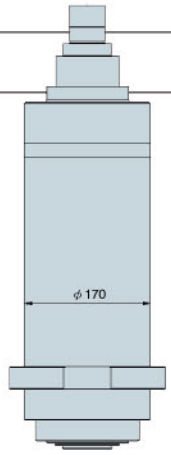
Power Chart



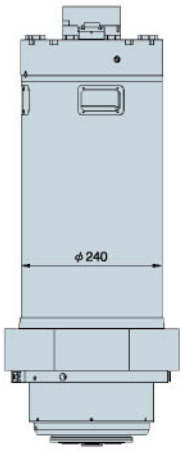
HSK A63 20,000 rpm



HSK A100 10,000 rpm

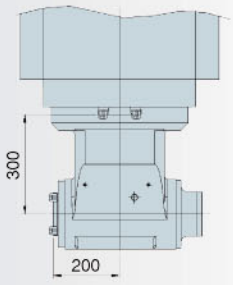


HSK A63
(for AC42)



HSK A100
(for AC52)

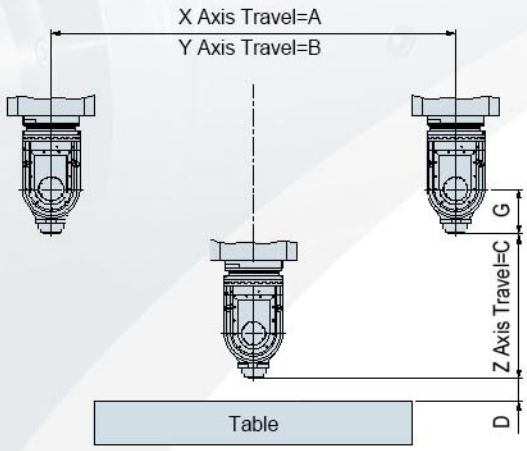
5-Face Head



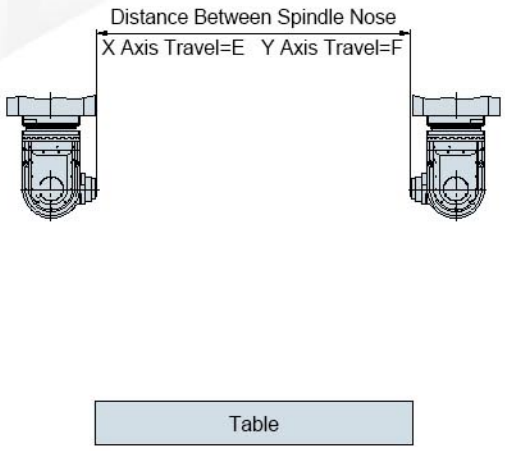
5-Face Head Specifications	
Max. Spindle Speed	Vertical Spindle 6000 rpm
	Horizontal Spindle 2000 rpm / 4000 rpm (Opt.)
Spindle Motor	22 / 26 kW
Spindle Taper	BT 50/CAT 50
Spindle Lubrication	Grease / Oil-mist (Opt.)
Coolant	Coolant thru vertical Spindle
Axis Clamping	Curvic Coupling
Min. Indexing	5 Degree / 1 Degree (Opt.)
Tool Clamping	Power Drawbar

Working Range

DMC-4000x2800 - R2



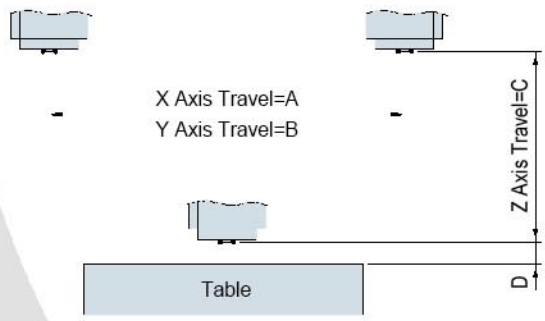
Vertical Spindle



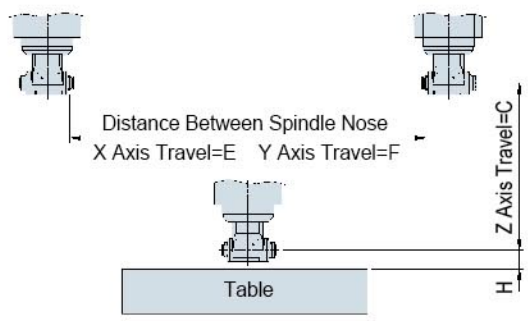
Horizontal Spindle

Size / Model	HSK A63	HSK A100
A	4000 mm (157.4")	
B	3600 mm (141.7")	
C	1066 mm (42")	
D	150 mm (5.9")	
E	3378 mm (133")	3128 mm (123")
F	2978 mm (117.2")	2728 mm (107.4")
G	311 mm (12.2")	436 mm (17.2")

DMC-4000x2800 - 5F



Vertical Spindle



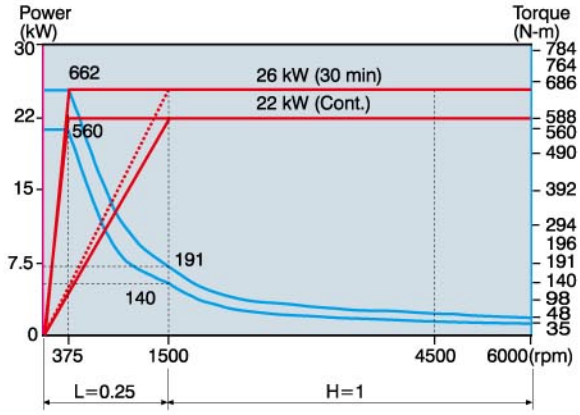
Horizontal Spindle

Size	Model	DMC -4000x2800-5F
Vertical Spindle	A	4000 mm (157.4")
	B	3600 mm (141.7")
	C	1066 mm (42")
	D	420 mm (16.5")
Horizontal Spindle	E	3600 mm (141.7")
	F	3200 mm (126")
	G	1066 mm (42")
	H	120 mm (4.7")

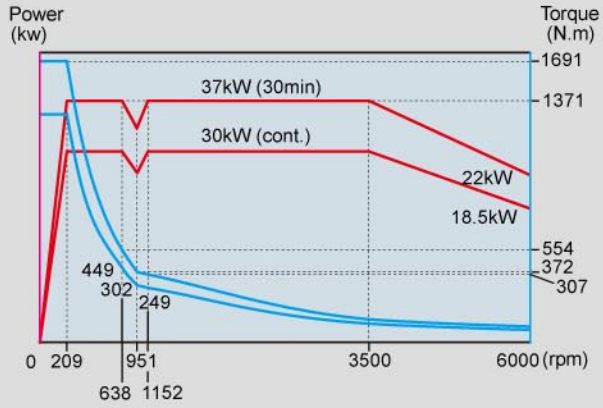
Spindle Power & Torque Chart

Belt Type Spindle

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



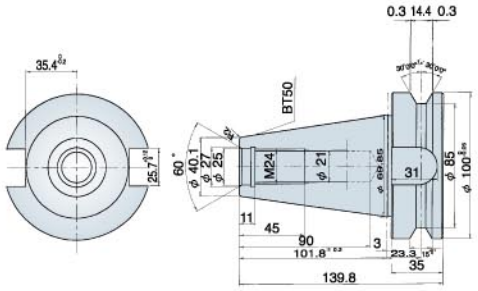
Standard Spindle
(Auto Hi-Lo 2 Step Gearbox)



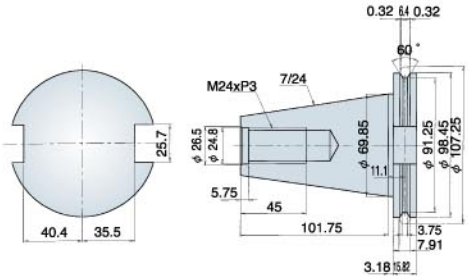
Optional Spindle
(Auto Hi-Lo 2 Step Gearbox)

Tool & Pull Stud

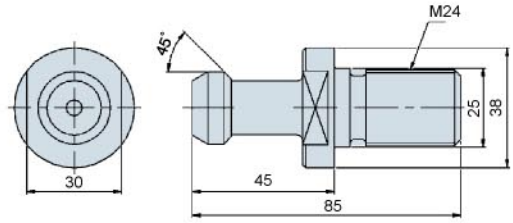
BT-50



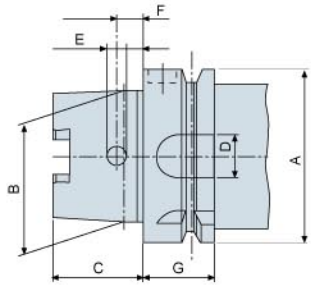
CAT-50



Pull Stud
for C.T.S.



HSK A63/A100

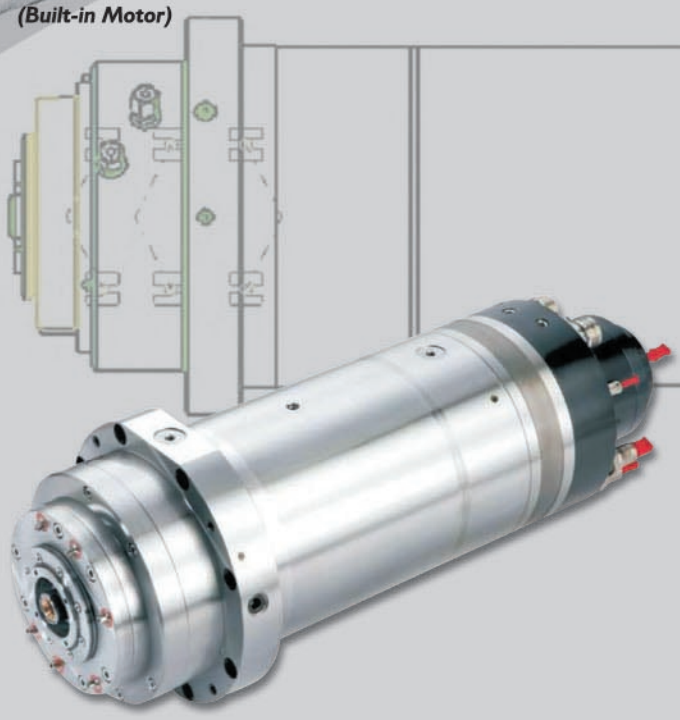


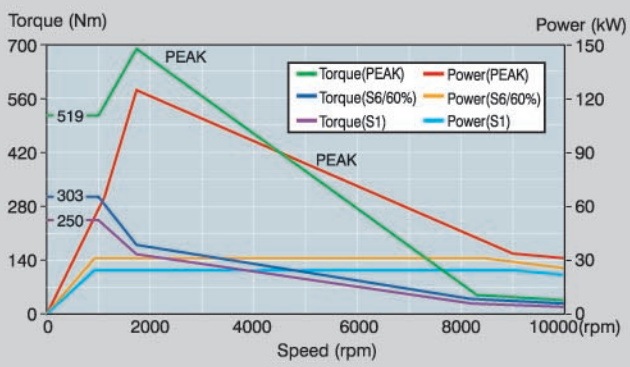
Size \ Model	A63	A100
A	63 mm	100 mm
B	48 mm	75 mm
C	32 mm	50 mm
D	16.12 mm	20.02 mm
E	7.5 mm	12 mm
F	9 mm	15 mm
G	26 mm	29 mm

Spindle Power & Torque Chart

High Speed Spindle (Opt.)

(Built-in Motor)





HSK A100 10,000 rpm

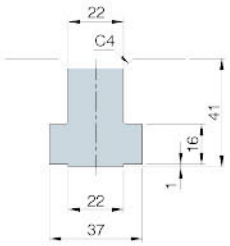
Technical Data

Drive Layout	
Tool system	HSK A100
Power	26 (S1) / 31 (S6) kW
Nominal speed	992 rpm
Max. Torque	303 Nm
Max. Speed	10000 rpm
Control	Fanuc / Siemens / Heidenhain
Voltage	400V
Clamping system	Hydraulic
Clamping Force	45 kN
Tool cleaning	Central + Surrounding
Spindle bearings	2 x Ø100 Hybrid
Bearing lubrication	Grease
Spindle cooling	Water glycol
Cooling performance	>7 kW
Cooling temperature	Temperature of machine+2°C
Cooling volume approx	15 ℓ/min
Tool Cooling	
Internal coolant flow	Standard
Max. Pressure	70 bar
Suitable for dry operation	Yes
Air	Possible
Min. quantities of cooling lubricant	–

Metal Removal Rate		Milling	Milling	Drilling	Threading
Tool system		HSK A100	HSK A100	HSK A100	HSK A100
Power		26 kW	26 kW	26 kW	26 kW
Material		Steel 60-70 kg/mm²	Aluminum 7075	Steel 60-70 kg/mm²	Steel 60-70 kg/mm²
Machining volume	(cm³/min)	577	1428	550	–
Tool/edges	(Ømm)	Ø100 / 7	Ø100 / 7	Ø50	M36
Rotational speed	(min-1)	1146	2550	1400	330
Cutting speed	(m/min)	360	800	220	37
Cutting B x T	(mm)	80 x 4.5	80 x 5	–	–
Feed	(mm/min)	1604	3575	280	1300

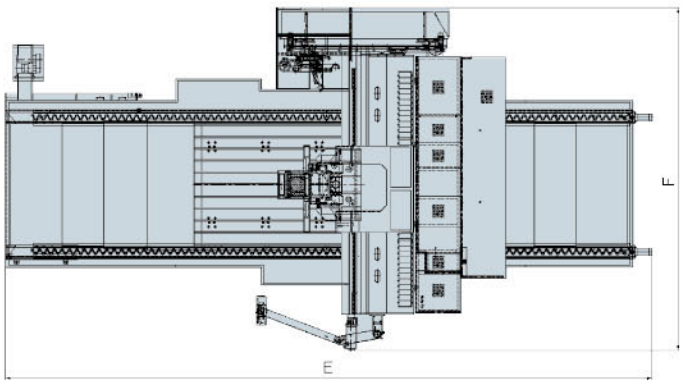
Dimensions

DMC-4000 x 2800

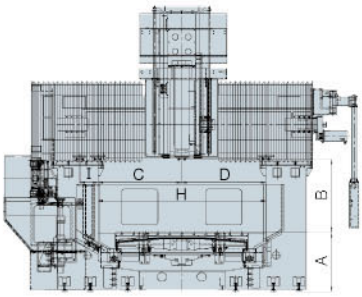


Size \ Model	DMC-4000x2800x800	DMC-4000x2800x1066
A	1000 mm (39.3")	
B	950 mm (37.4")	1216 mm (47.8")
C	1400 mm (55.1")	
D	1400 mm (55.1")	
E	10900 mm (429")	
F	5680 mm (223.6")	
G	4550 mm (180")	4850 mm (191")
H	2800 mm (110.2")	
I	300 mm (11.8")	
J	4200 mm (165.3")	
K	2200 mm (86.6")	
L	200 mm (7.8")	

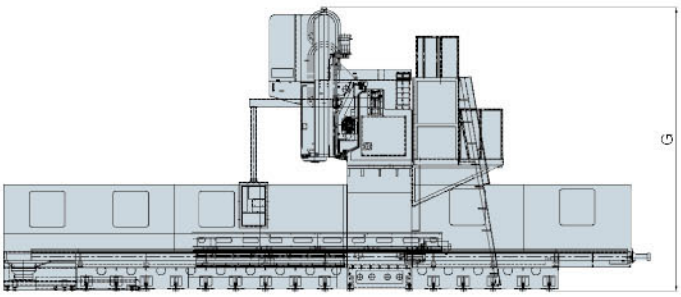
Table



Top View (floor space required)



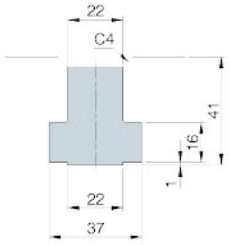
Front View



Side View

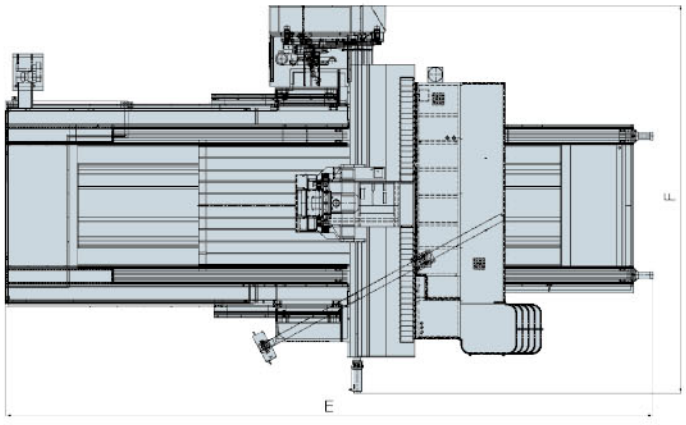
Dimensions

DMC-4000 x 2800 - R2

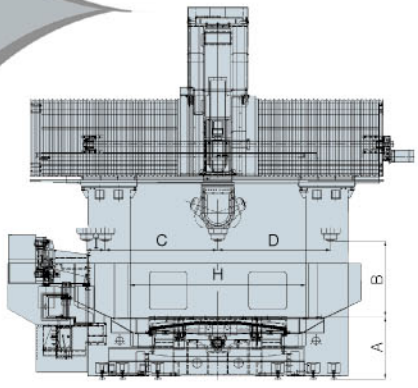


Size \ Model	DMC-4000x2800-R2 (AC4)	DMC-4000x2800-R2 (AC5)
A	1000 mm (39.3")	
B	1216 mm (47.8")	
C	1800 mm (70.8")	
D	1800 mm (70.8")	
E	10900 mm (429")	
F	6500 mm (256")	
G	6280 mm (247.2")	6500 mm (256")
H	2800 mm (110.2")	
I	300 mm (11.8")	
J	4200 mm (165.3")	
K	2200 mm (86.6")	
L	200 mm (7.8")	

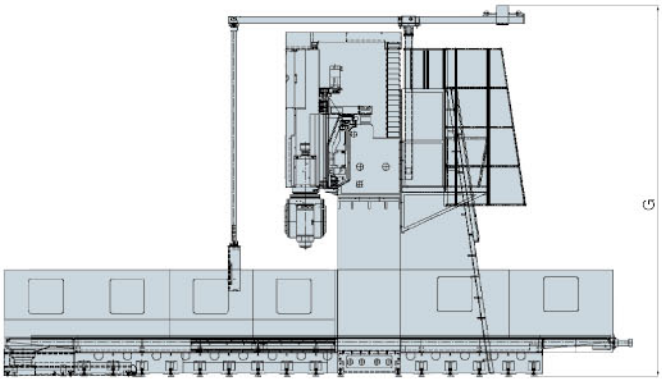
Table



Top View (floor space required)

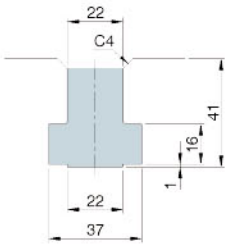


Front View

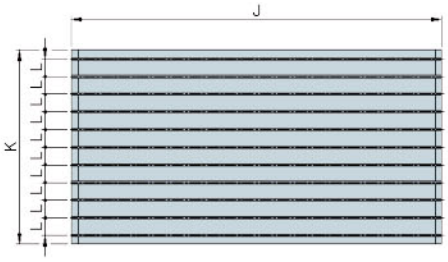


Side View

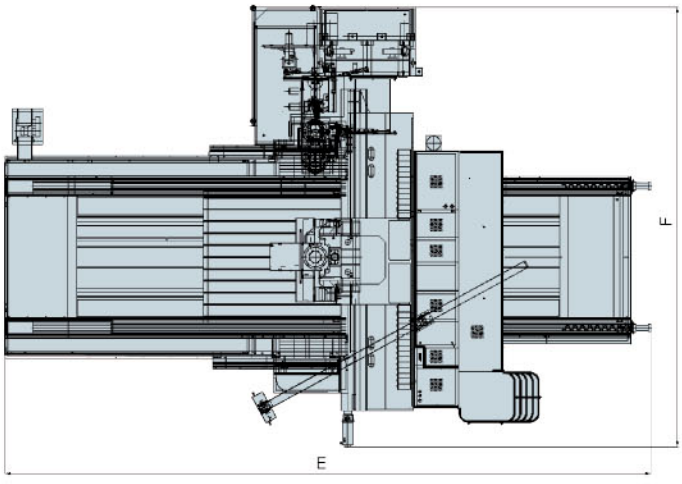
DMC-4000 x 2800 - 5F



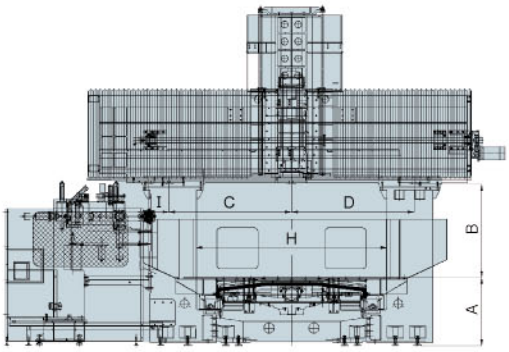
Size \ Model	DMC-4000x2800-5F
A	1000 mm (39.3")
B	1486 mm (58.5")
C	1800 mm (70.8")
D	1800 mm (70.8")
E	10900 mm (429")
F	7400 mm (291.3")
G	5920 mm (233.1")
H	2800 mm (110.2")
I	300 mm (11.8")
J	4200 mm (165.3")
K	2200 mm (86.6")
L	200 mm (7.8")



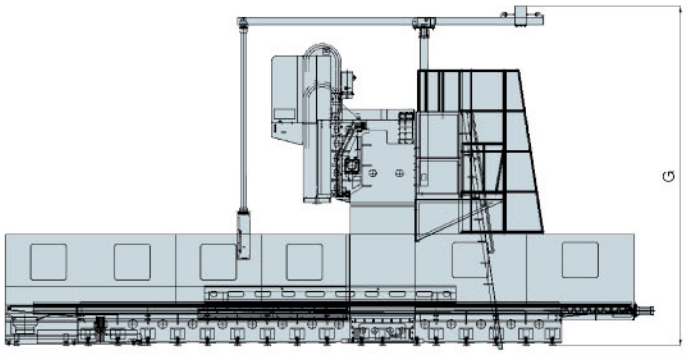
Table



Top View (floor space required)



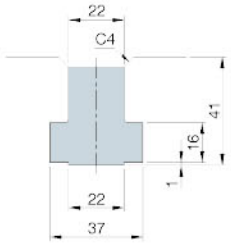
Front View



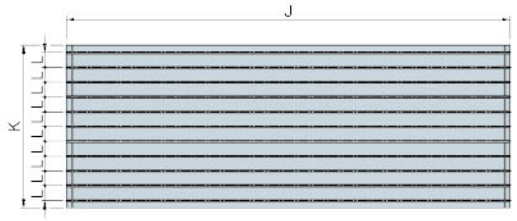
Side View

Dimensions

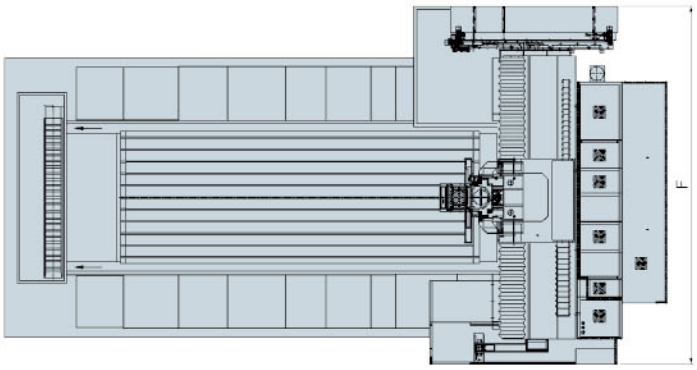
SDMC-6000 x 2800 x 800 / SDMC-6000 x 2800 x 1066



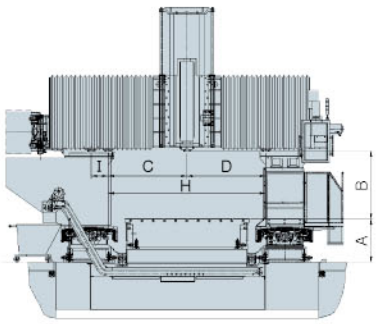
Size \ Model	SDMC-6000x2800x800	SDMC-6000x2800x1066
A	765 mm (30.1")	
B	950 mm (37.4")	1216 mm (47.8")
C	1400 mm (55.1")	
D	1400 mm (55.1")	
E	11200 mm (441")	
F	6000 mm (236.2")	
G	4265 mm (167.9")	4531 mm (178.3")
H	2800 mm (110.2")	
I	300 mm (11.8")	
J	6000 mm (236.2")	
K	2200 mm (86.6")	
L	200 mm (7.8")	



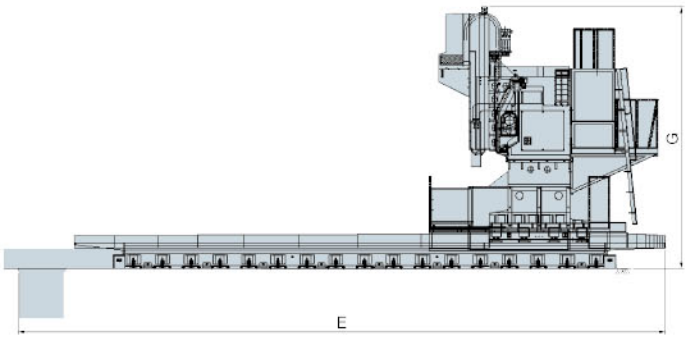
Table



Top View (floor space required)



Front View



Side View

Specifications

Item \ Model	DMC-4000x2800x800	DMC-4000x2800x1066	DMC-4000x2800-R2 AC4	DMC-4000x2800-R2 AC5	DMC-4000x2800-5F	SDMC-6000x2800x800	SDMC-6000x2800x1066
Distance between columns (mm)	2800 (110.2")					2800 (110.2")	
Table size (mm)	4200 x 2200 (165.3" x 86.6")					6000 x 2200 (236.2" x 86.6")	
X axis travel (mm)	4000 (157.4")					6000 (236.2")	
Y axis travel (mm)	2800 (110.2")		3600 (141.7")			2800 (110.2")	
Z axis travel (mm)	800 (31.5")	1066 (42")	1066 (42")		1066 (42")	800 (31.5")	1066 (42")
W axis travel (mm)	1000~2500 (39.4"~98.4")						
Spindle nose to table (mm)	150~950 (5.9"~37.4")	150~1216 (5.9"~47.9")	150~1216 (5.9"~47.9")		420~1486 (16.5"~58.5")	150~950 (5.9"~37.4")	150~1216 (5.9"~47.9")
Spindle taper	BT-50 / CAT-50		AC41: No.40 AC42: HSK A63	AC51: No.50 AC52: HSK A100	BT-50 / CAT-50	BT-50 / CAT-50	
Spindle diameter (mm)	Ø90 (Ø3.5")		—		Ø90 (Ø3.5")	Ø90 (Ø3.5")	
Spindle speed (rpm)	6000 Hi-Lo Gear		50~20000	50~10000	10~6000 (Vertical) 10~2000 (Horizontal)	6000 Hi-Lo Gear	
Spindle motor (kW)	22 / 26		21 / 24	31 / 40	22 / 26	22 / 26	
X-Y-Z rapid traverse (m/min)	12~12~10				12~12~10	10~10~10	
X-Y-Z cutting feed (mm/min)	1-10000				1-10000	1-10000	
ATC: Adjacent pockets max. tool dia. (mm)	Ø125 (Ø4.9")		Ø75 (Ø3")	Ø125 (Ø4.9")	Ø125 (Ø4.9")	Ø125 (Ø4.9")	
ATC: No.of tools	40 tools Std. (60, 80, 120 Opt.)				40 tools Std. (60, 80, 120 Opt.) Vertical & Horizontal tool change	40 tools Std. (60, 80, 120 Opt.)	
ATC: Max. tool diameter (mm)	Ø200 (Ø7.8")		Ø100 (Ø3.9")	Ø200 (Ø7.8")			
ATC: Max. tool length (mm)	400 (15.7")		320 (12.6")	400 (15.7")			
ATC: Max. tool weight (kg)	20 (44 lb)		10 (22 lb)	20 (44 lb)			
ATC: Tool selection	Bi-direction random type, Shortest path						
Table load capacity (kg)	20000 (44000 lb)		20000 (44000 lb)		20000 (44000 lb)	5000 kg/m² (1023 lb/ft²)	
Dimensions (mm): Length	10900 (429")		10900 (429")		10900 (429")	11200 (441")	
Dimensions (mm): Width	5680 (223.6")		6500 (256")		7400 (291.3")	6000 (236.2")	
Dimensions (mm): Height	4550 (180")	4850 (191")	6280 (247.2")	6500 (256")	5920 (233.1")	4265 (167.9")	4531 (178.3")
Machine weight (kg)	59200 (130240 lb)	61200 (134640 lb)	65000 (143000 lb)	68000 (149600 lb)	68000 (149600 lb)	63000 (138600 lb)	65000 (143000 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. Twin screw-type chip conveyors
5. A chain-type chip conveyor
6. Operation box
7. Tools, tool box and various manuals
8. Rigid tapping
9. Spindle oil cooler
10. FANUC 0i-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. 60, 80, 120 tools
5. Workpiece measuring system (Renishaw OMP-60 or BULM TC-50)
6. Z axis travel 1066 / 1200 / 1500 mm.
7. W axis travel 1000 ~ 2500 mm.
8. 5-Face head
9. 2-Axis NC milling head (AC4 / AC5)
10. 90° milling head
11. Multiangular milling head (TU35+ / MA25)
12. Slim extended head
13. Twin spindle-2H
14. Manual guide i (0iMF)

CNC Control Specs

Siemens Controller

Fanuc Controller

■ CNC system type

O: Std. △: Opt. –: Nil

Type / Model	DMC Series / DMC Series-R2 / DMC Series-5F / SDMC Series
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			△	○
Function	Data Server with 2GB CF card			△	△
	AICC II			△	○
	High speed processing			–	△
	Conversational programming with graphic function		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 Controller

■ 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		△

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