

JOHN FORD

Double Column Machining Centers

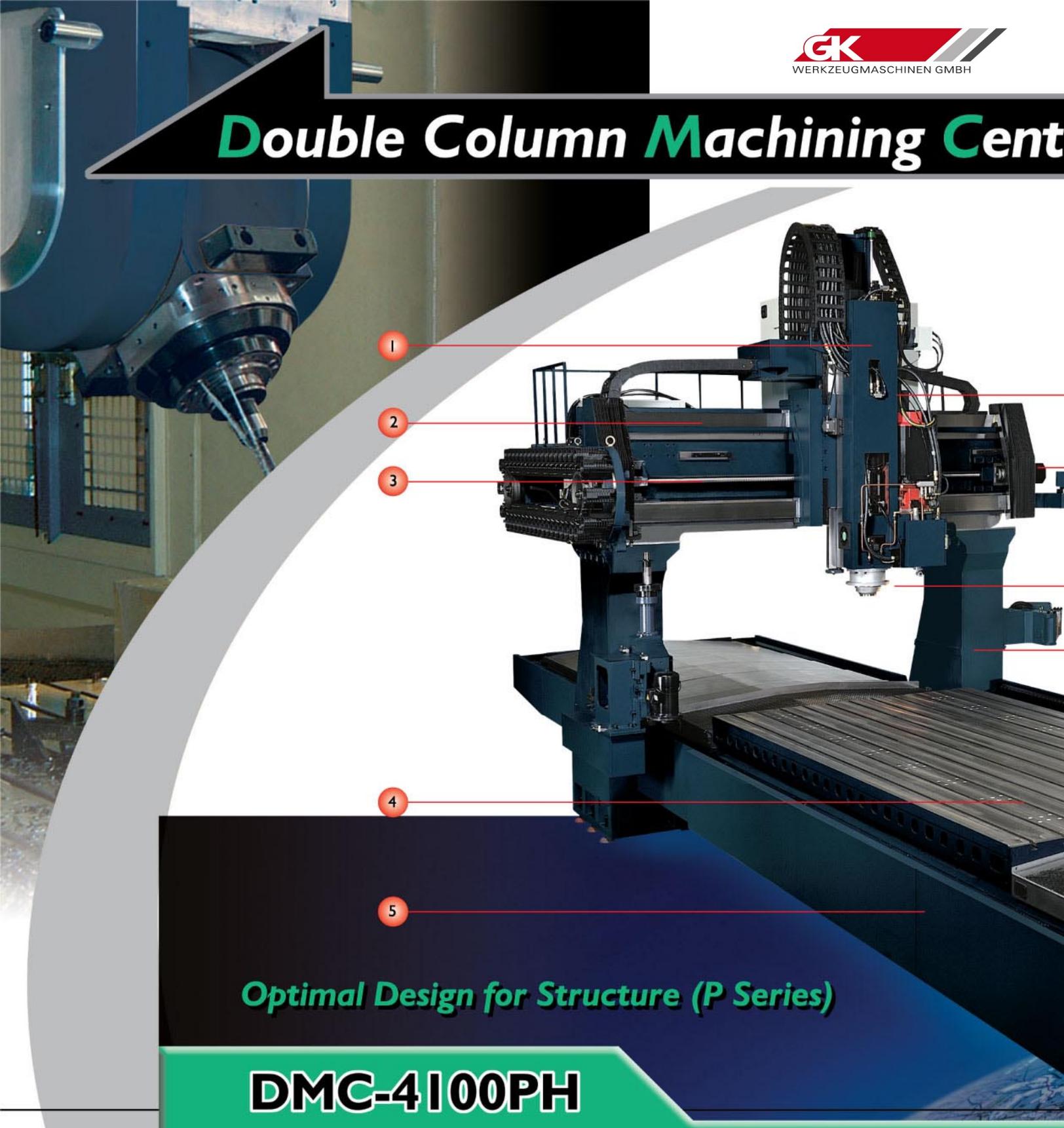


DMC-2100S/2600S/3100S/4100S/
5100S/6100S/3100P/4100P

DMC-2100SH/2600SH/3100SH/4100SH/
5100SH/6100SH/3100PH/4100PH

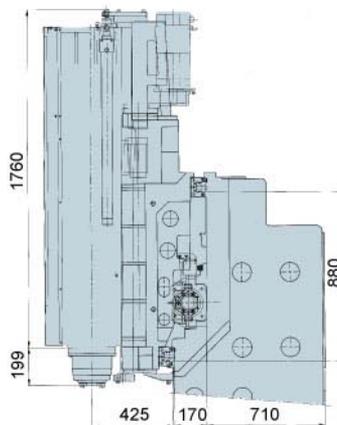
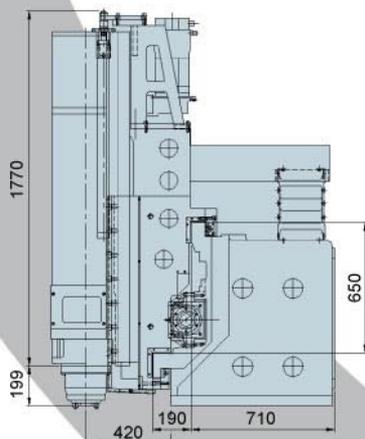
S Series / P Series: 3~Multi-Axis Machining Centers

Double Column Machining Cent



Optimal Design for Structure (P Series)

DMC-4100PH



Structure of Y Axis

- The standard box ways with Turcite-B are used on the Y-axis. But there is an optional great roller-type linear way used on the Y-axis for your choice. The optional linear way with the features of high rigidity, great dynamic and static load carrying capacity, outstanding running smoothness and the total enclosure of the carriage.
- The Z axis uses hardened and ground box ways with turcite-B.
- Hydraulic counter balance provides high stability and smooth operation.

ers (P Series)



- 1 Extra large milling head with rigid box ways. The head is held by 825 mm (32.5") of the saddle.
- 2 The distance between the standard box ways used on the Y-axis is 650 mm (25.6"), and the distance between the optional roller-type linear ways is 880 mm (34.6").
- 3 Large diameter ballscrews ϕ 63 mm (2.5") in the Y axis and ϕ 50 mm (2") in the Z axis. In the X axis, ϕ 63 mm (2.5") for DMC-3100P and ϕ 70 mm (2.8") for DMC-4100P.
- 4 Heavy duty rigid roller-type linear ways are used on the X axis for speed and precision.
- 5 Massive one piece base castings. All major machine components are made from high quality meehanite cast iron.
- 6 Huge saddle is 800x962 mm (31.5"x37.9")
- 7 7 kW servo motor is used on Y axis and 6 kW servo motor is used on X axis with 2:1 gear reduction drives for the most axis thrust available.
- 8 26 kW spindle motor with 2 speed ZF gearbox and 6000 rpm standard on the No.50 machines. It comes with a spindle oil cooler too!
- 9 High rigidity columns casting for maximum reliability.

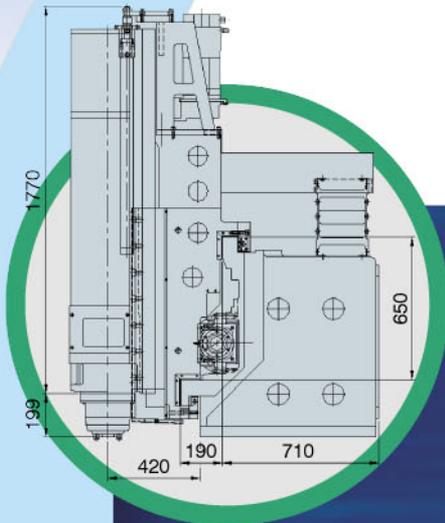


↑ There are two types of operation box for your choice.

Double Column Machining Cent

↓ Structure of Y Axis

- The Y axis and Z axis uses 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.



1

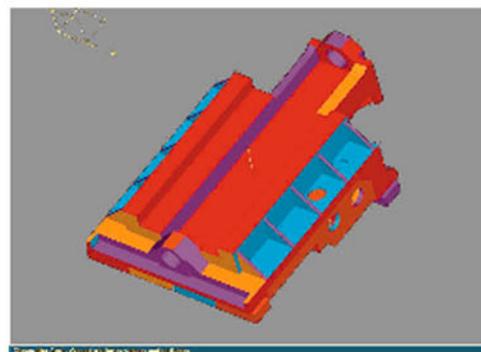
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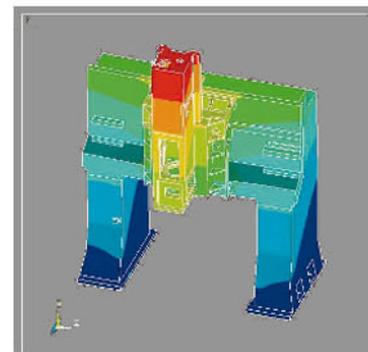
4

Built Right... Built to Last!

- ➔ 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 for beyond ordinary.

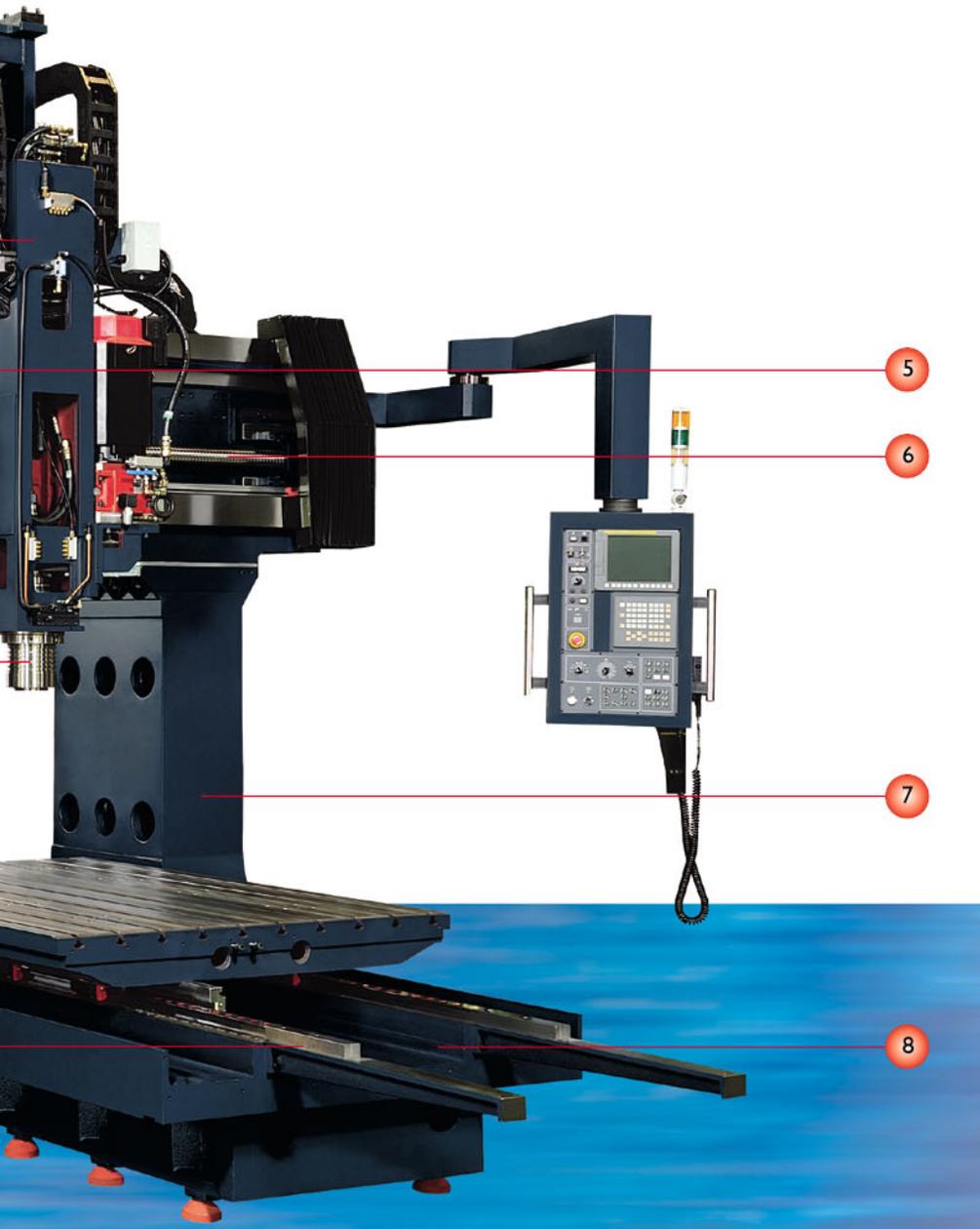


↑ 3D Optimal Design



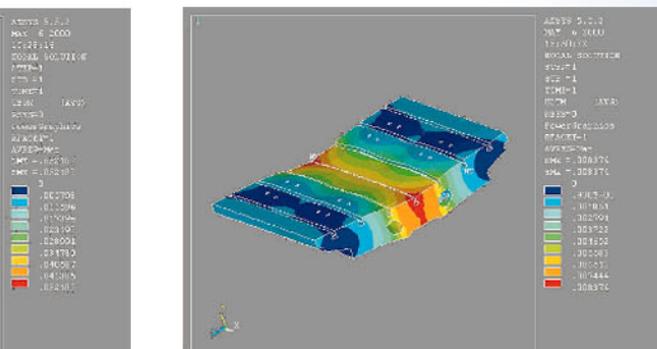
↑ Main Structure FEA

ers (S Series)



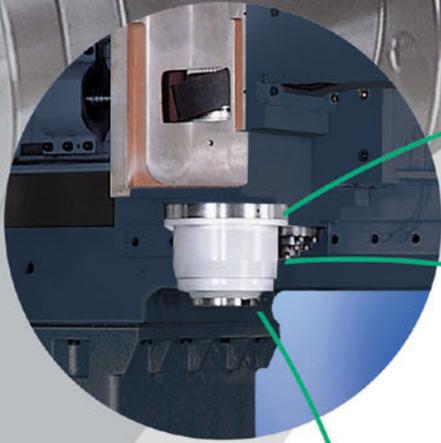
- 1 Extra large milling head with rigid box ways. The head is held by 962 mm (37.9") of the saddle.
- 2 Distance between the Y-axis rigid box way is 650 mm (25.6"). Linear ways are optional on Y-axis.
- 3 26 kW spindle motor with 2 speed ZF gearbox and 6000 rpm standard on the No.50 machines. If comes with a spindle oil cooler too! 662 N.m (488 lb. ft) of Torque at only 375 rpm!
- 4 Heavy duty rigid roller-type linear ways are used on the X axis for speed and precision.
- 5 Huge saddle that is 820x1001 mm (32.3" x 39.4")
- 6 Large diameter all ϕ 63 mm (2.5") X, Y ballscrews and ϕ 50 mm (2") Z axis ballscrew. They are pretensioned to eliminate thermal growth.
- 7 High rigidity columns and bridge casting for maximum reliability.
- 8 One piece meehanite cast iron base

Optimal Design for Structure (S Series)



Total Solution of Spindles

Multiple Configurations to Match any Need



Direct drive 2-axis NC milling head (Opt.)

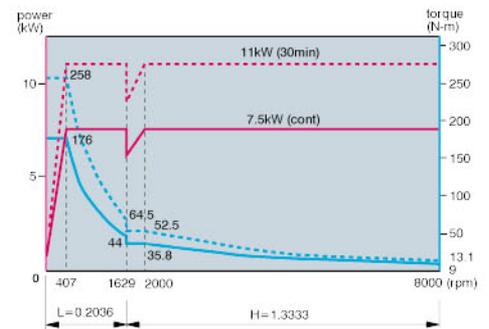
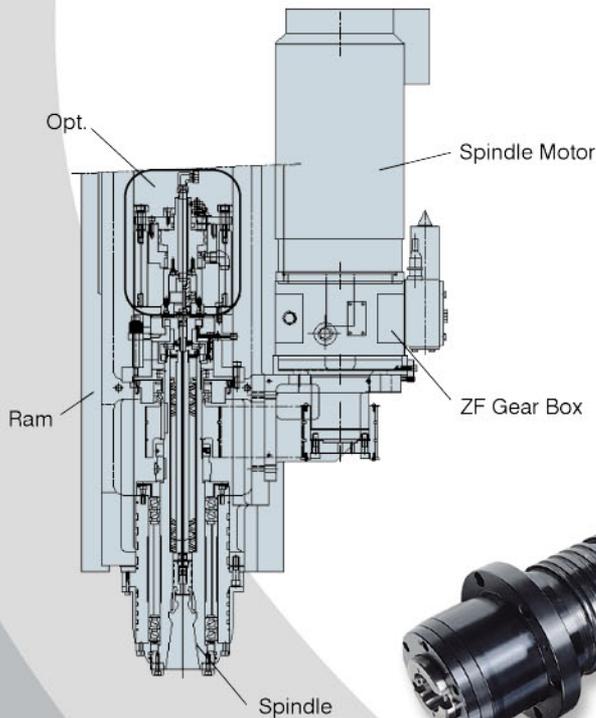


High performance cartridge spindle (Std.)

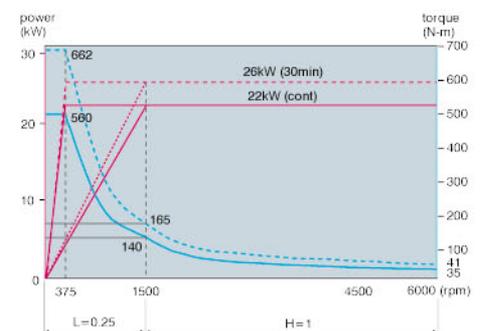


High speed spindle (Opt.)
(Built - in motor)

High Performance Cartridge Spindle (Std.)



No. 40 Spindle
(Auto Hi-Lo 2 Step ZF Gearbox)



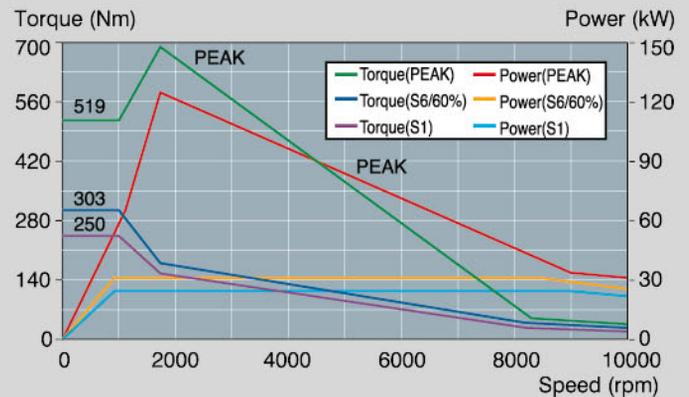
No. 50 Spindle
(Auto Hi-Lo 2 Step ZF Gearbox)

Spindle Power & Torque Chart

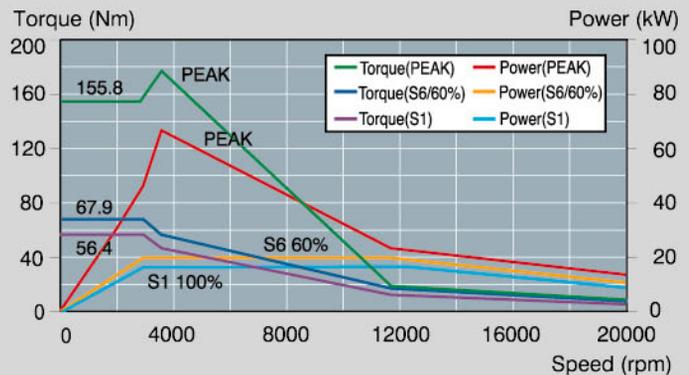
Technical Data

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/ μ m	680 N/ μ m
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



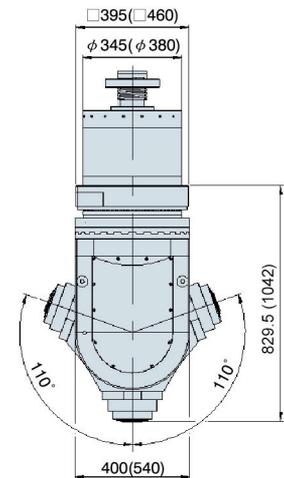
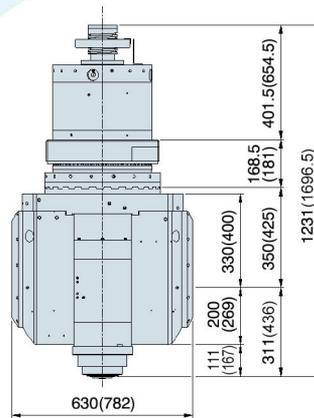
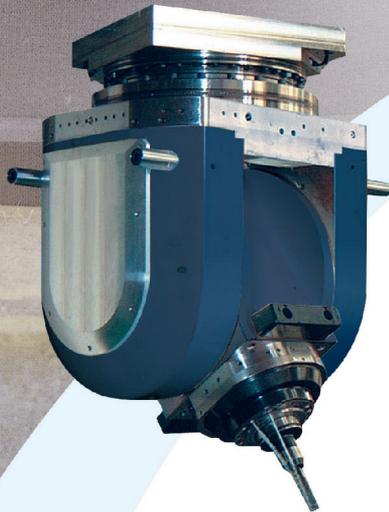
HSK A63 15,000/18,000/20,000 rpm (Oil-air)

Metal Removal Rate	Milling		Milling		Drilling		Threading	
	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	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

2-Axis NC Milling Head

NC Milling Head with Motorized Spindle

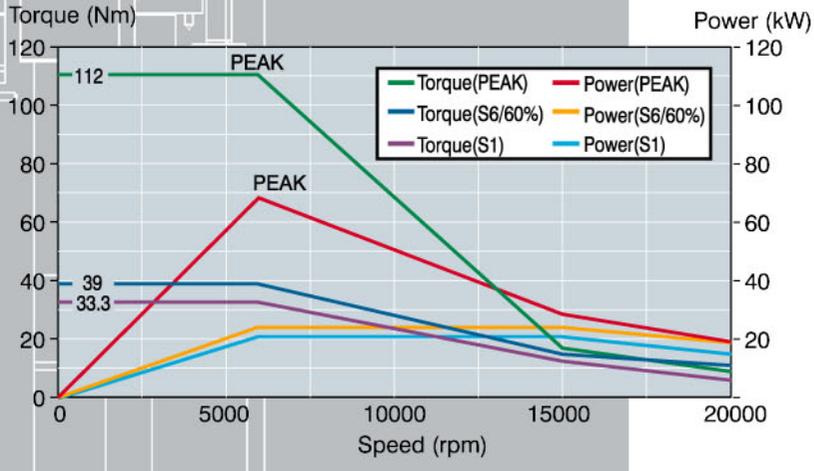
() For AC5 Tool System



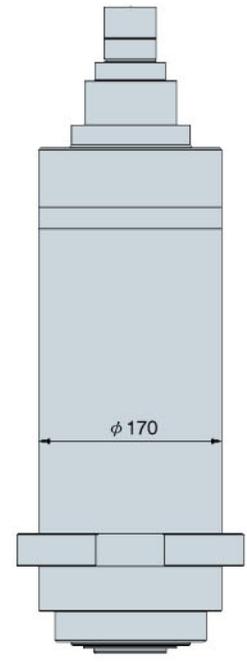
Technical Data

Main Spindle				
Item	Model	AC4		AC5
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		12l/min		14l/min
Metal removal rate		Milling 	Milling 	Milling  Drilling 
Material		Steel 600-700 N/mm ²	Aluminium AlMgSi 1	Steel 600-700 N/mm ² Steel 600-700 N/mm ²
Machining volume (cm ³ /min)		268	1,026	568 -
TTool/edges(Ømm)		32 / 3	63 / 5	63 / 5 40
Rotational speed (r.p.m.)		3,580	4,460	1820 360
Cutting speed (m/min)		360	883	360 45
Cut W x D (mm)		25 x 4	50 x 4	50 x 5 -
Feed (mm/min)		2,685	5,129	2,275 250
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		-

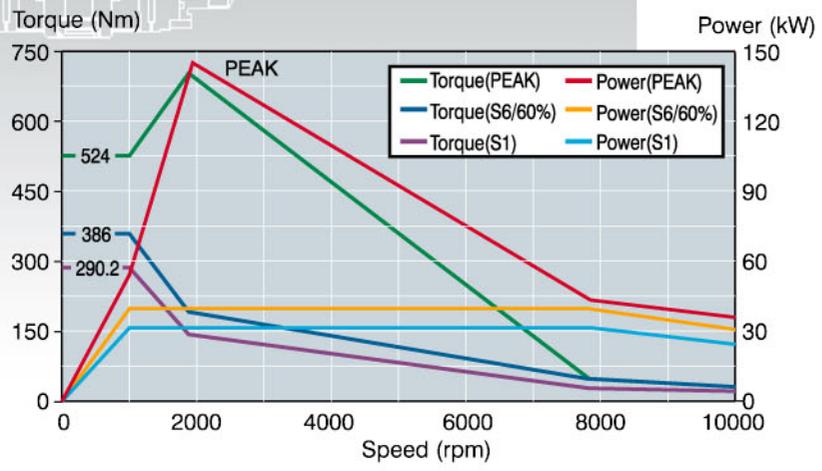
Power Chart



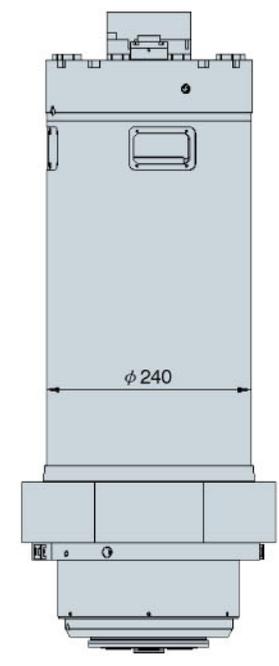
HSK A63 20,000 rpm



HSK A63
(for AC42)



HSK A100 10,000 rpm

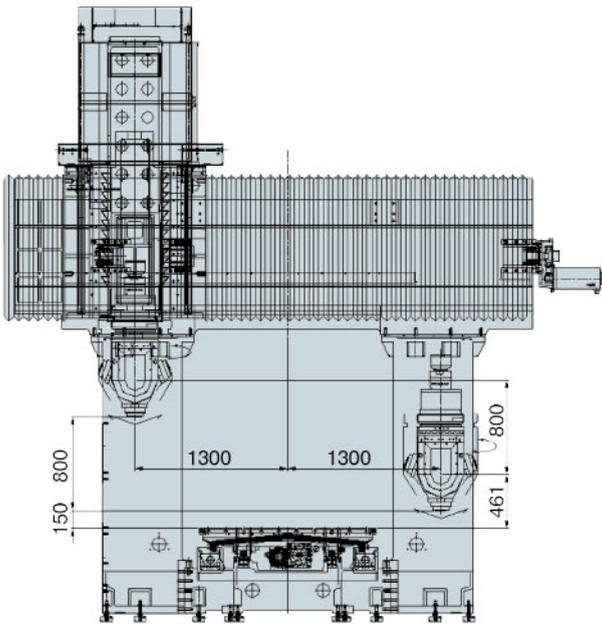


HSK A100
(for AC52)

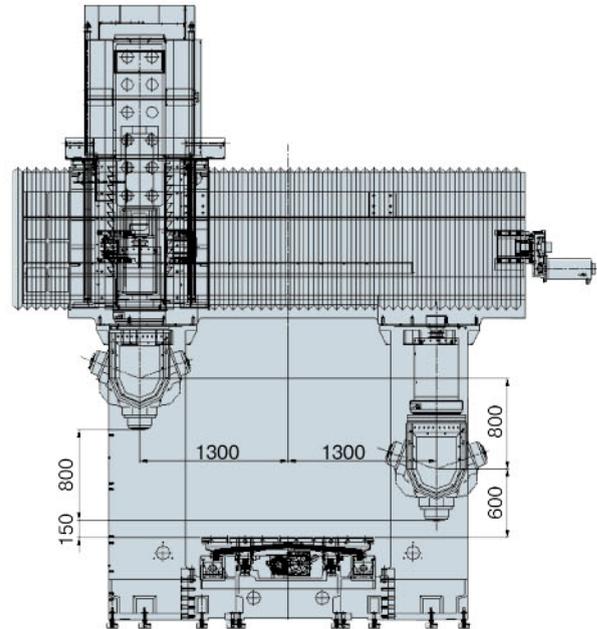
Working Range for 2-Axis NC Milling Head

DMC-2100SH / 2600SH / 3100SH / 4100SH / 5100SH / 6100SH-R2

Y travels: 2600 mm, Z travels: 800 mm



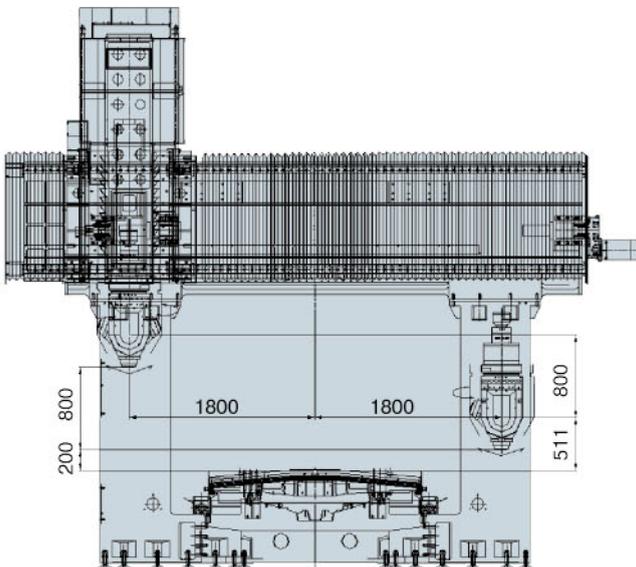
Head AC4



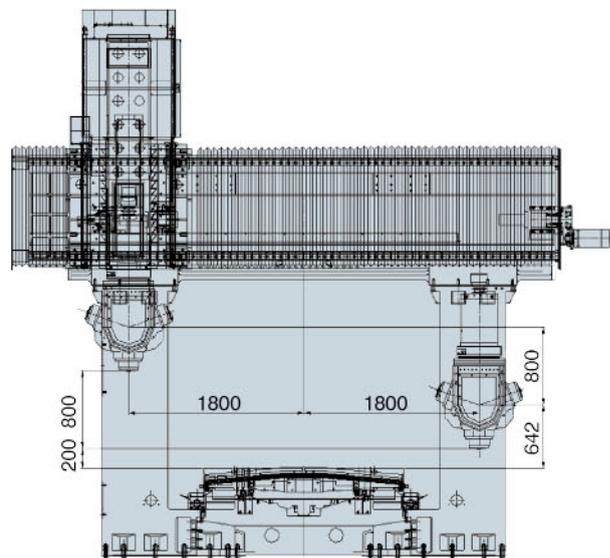
Head AC5

DMC-3100PH / 4100PH-R2

Y travels: 3600 mm, Z travels: 800 mm

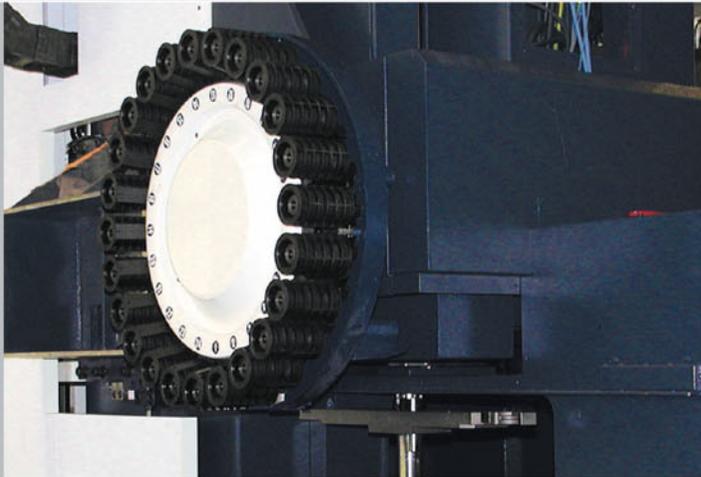


Head AC4



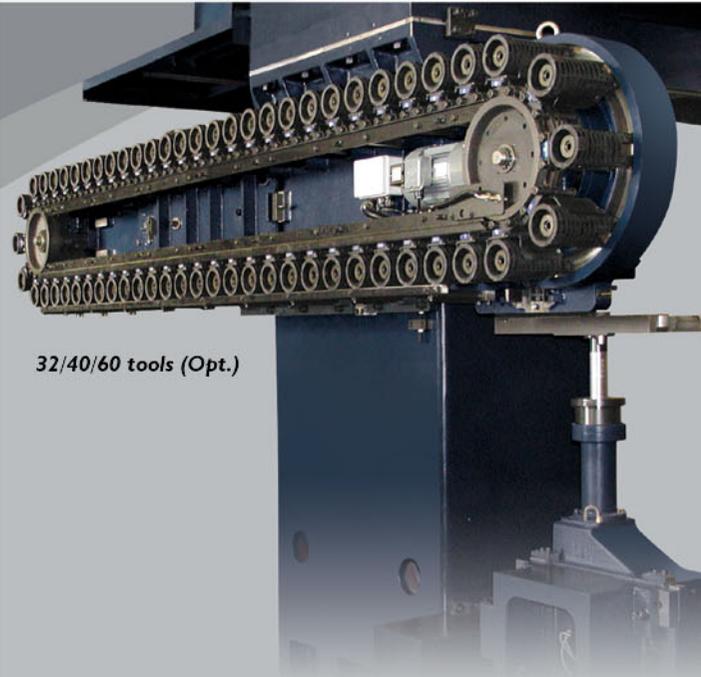
Head AC5

Automatic Tool Changer



No. 40 24 tools (Std.)
No. 50 24 tools (Std.)

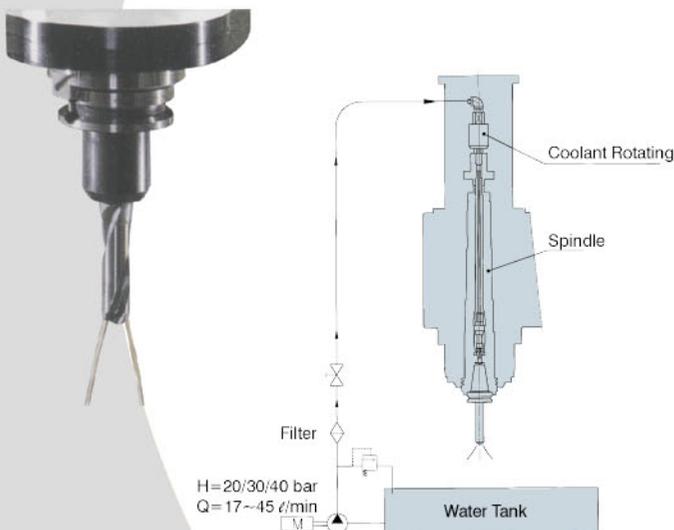
Tool change time: (Std.)
No. 40: 2.5 sec
No. 50: 4 sec



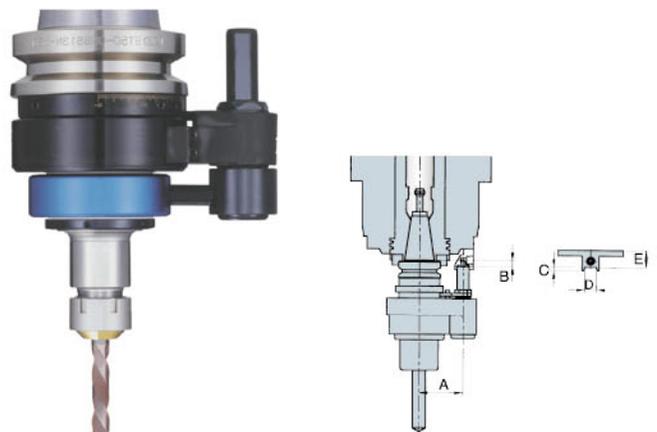
32/40/60 tools (Opt.)

Accessories

Coolant Thru Spindle



Coolant Thru Tool Tip



Model	Item	Taper No.	A	B	C	D	E
DMC-2100S / 2600S	3100S / 4100S	No.40	65	9	5	18	25.5
	5100S / 6100S						
	3100P / 4100P						
DMC-2100SH/2600SH	3100SH/4100SH	No.50	80	23.5	5	18	36.5
	5100SH/6100SH						
	3100PH/4100PH						



Automatic Chip Removal
(Screw Type Chip Conveyor)

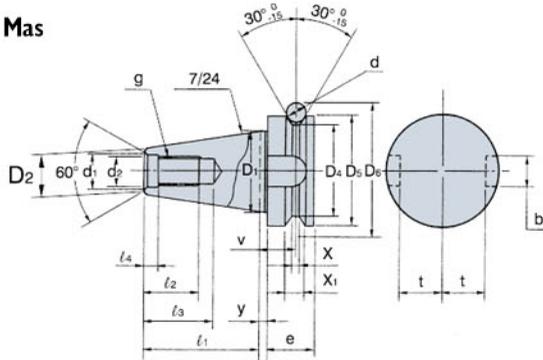


Remote Handwheel

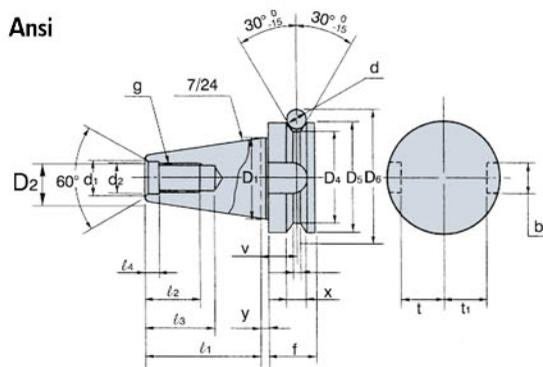
Tool System

BT/CAT Tool Dimension

Mas



Ansi



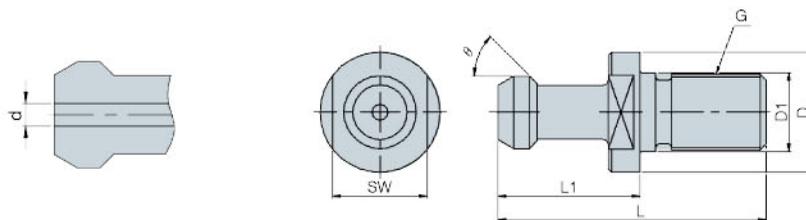
Unit: mm

Shank size	Item	D1	l1	d1	d2	g	l2	l3	l4	b	t	t1
No.40	MAS(BT)	44.45	65.4 _{-0.2}	19	17 ^{H8}	M16	30min	43min	9 ^{+0.5/0}	16.1 ^{H12}	22.6 _{-0.2}	-
	ANSI(CAT)	44.45	68.4 _{-0.3}	18.5	16.4 ^{+0.4/0}	M16x2	30min	42.5min	4.75 ^{+0.5/0}	16.1 ^{H12}	22.8 _{-0.4}	26 _{-0.4}
No.50	MAS(BT)	69.85	101.8 _{-0.2}	27	25 ^{H8}	M24	45min	62min	13.0 ^{+0.5/0}	25.7 ^{H12}	35.4 _{-0.2}	-
	ANSI(CAT)	69.85	101.75 _{-0.3}	26.5	24.8 ^{+0.4/0}	M24x3	45min	-	5.75 ^{+0.5/0}	25.7 ^{+0.2/0}	35.5 _{-0.4}	40.4 _{-0.4}

Unit: mm

Shank size	Item	D4	D5	e	f	v	x	x1	y	D2	d	D6
No.40	MAS(BT)	53	63 ^{H8}	25	-	16.6 _{-0.1}	5	10 ^{+0.1/0}	2 _{-0.4}	25.375	10	75.679
	ANSI(CAT)	56.25 _{-0.5}	63.55 _{-0.1}	-	15.82 ^{+0.1/0}	11.1	3.75 ^{+0.15/0}	-	3.18	24.5	7	72.3 _{-0.05}
No.50	MAS(BT)	85	100 ^{H8}	35	-	23.2 _{-0.1}	7-	15 ^{+0.1/0}	3 _{-0.4}	40.158	15	119.020
	ANSI(CAT)	91.25 _{-0.5}	98.45 _{-0.1}	-	15.82 ^{+0.1/0}	11.1	3.75 ^{+0.15/0}	-	3.18	40.173	7	107.25 _{-0.05}

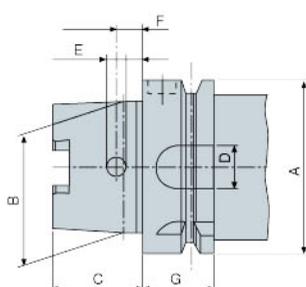
Pull Stud



Unit: mm

Shank size	Pull stud type	L	L1	D	D1	θ	G	SW	d
BT-40	P40T-1	60	35	23	17	45°	M16	19	3
CAT-40	ANSI B5.50 CAT	53.8	32	23	17	45°	M16	19	3
BT / CAT-50	P50T-1	85	45	38	25	45°	M24	30	5

HSK Tool Dimension



Unit: mm

Shank size	Item	A	B	C	D	E	F	G
HSK A63		63	48	32	16.12	7.5	9	26
HSK A100		100	75	50	20.02	12	15	29

CNC System-Fanuc 31i-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.



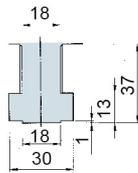
Dimensions

S Series Dimensions

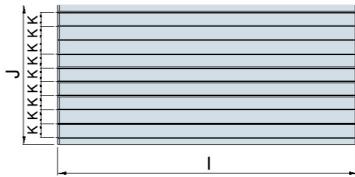
Unit: mm

Model	Size	A	B	C	D	E	F
DMC-2100S/2100SH	950 (37.4")	725 (28.5")	890 (35")	2030 (79.9")	3883 (152.9")	6633 (261.1")	
DMC-2600S/2600SH	950 (37.4")	725 (28.5")	890 (35")	2030 (79.9")	3883 (152.9")	7633 (300.5")	
DMC-3100S/3100SH	950 (37.4")	725 (28.5")	890 (35")	2030 (79.9")	3883 (152.9")	8633 (340")	
DMC-4100S/4100SH	950 (37.4")	855 (33.7")	890 (35")	2165 (85.2")	4013 (158")	11153 (439.1")	
DMC-5100S/5100SH	950 (37.4")	855 (33.7")	890 (35")	2240 (88.2")	4013 (158")	13666 (538")	
DMC-6100S/6100SH	950 (37.4")	855 (33.7")	890 (35")	2031 (80")	4013 (158")	15590 (613.8")	

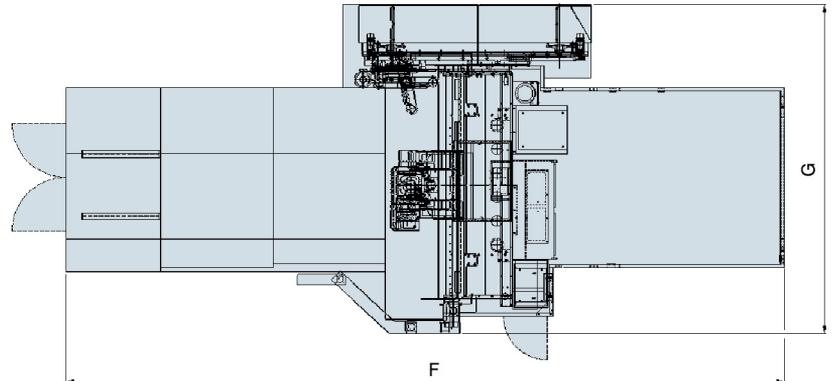
Model	Size	G	H	I	J	K
DMC-2100S/2100SH	4065 (160")	1796 (70.7")	2200 (86.6")	1500 (59.1")	150 (5.9")	
DMC-2600S/2600SH	4065 (160")	1796 (70.7")	2700 (106.3")	1500 (59.1")	150 (5.9")	
DMC-3100S/3100SH	4065 (160")	1796 (70.7")	3200 (126")	1500 (59.1")	150 (5.9")	
DMC-4100S/4100SH	4070 (160.2")	1796 (70.7")	4200 (165.4")	1500 (59.1")	150 (5.9")	
DMC-5100S/5100SH	4070 (160.2")	1796 (70.7")	5200 (204.7")	1500 (59.1")	150 (5.9")	
DMC-6100S/6100SH	4070 (160.2")	1796 (70.7")	6200 (244.1")	1500 (59.1")	150 (5.9")	



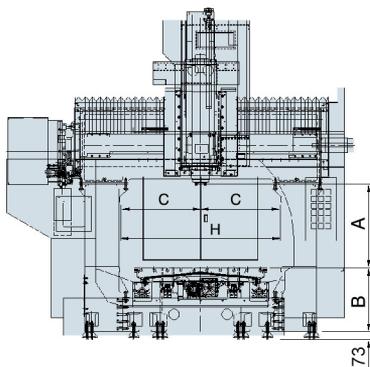
T-Slot



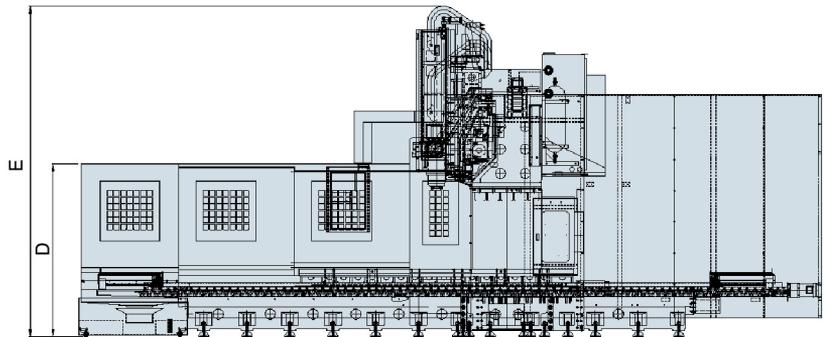
Table



Top View (floor space required)



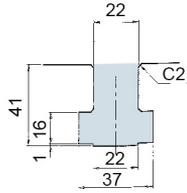
Front View



Side View

P Series Dimensions

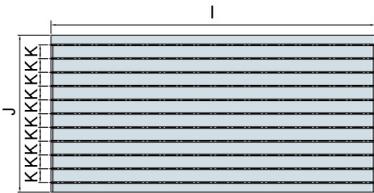
Unit: mm



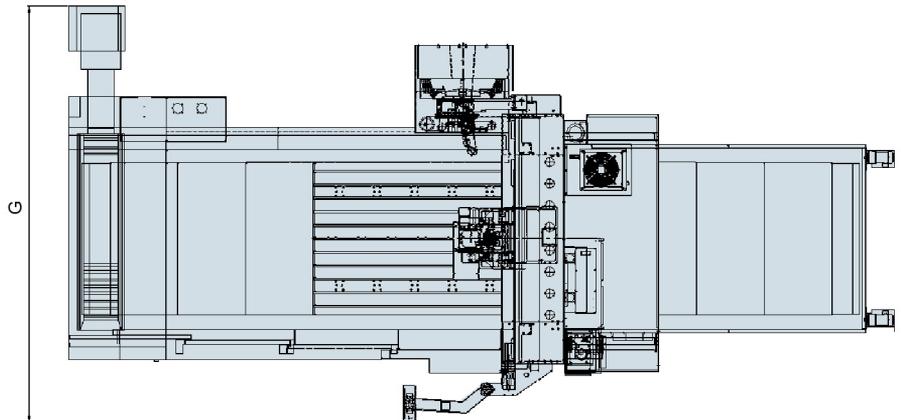
T-Slot

Model	Size	A	B	C	D	E	F
DMC-3100P/3100PH	950 (37.4")	900 (35.4")	1150 (45.3")	1800 (70.8")	3960 (156")	8482 (334")	
DMC-4100P/4100PH	950 (37.4")	900 (35.4")	1150 (45.3")	1800 (70.8")	3960 (156")	10980 (432.3")	

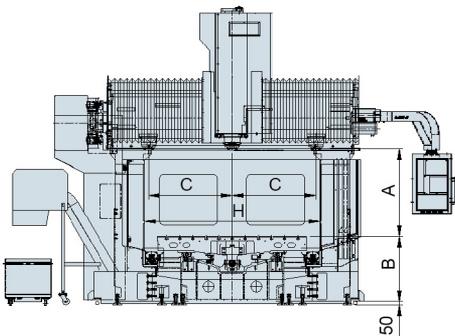
Model	Size	G	H	I	J	K
DMC-3100P/3100PH	5580 (220")	2420 (95.3")	3200 (126")	2050 (81")	180 (7.1")	
DMC-4100P/4100PH	5580 (220")	2420 (95.3")	4200 (165.4")	2050 (81")	180 (7.1")	



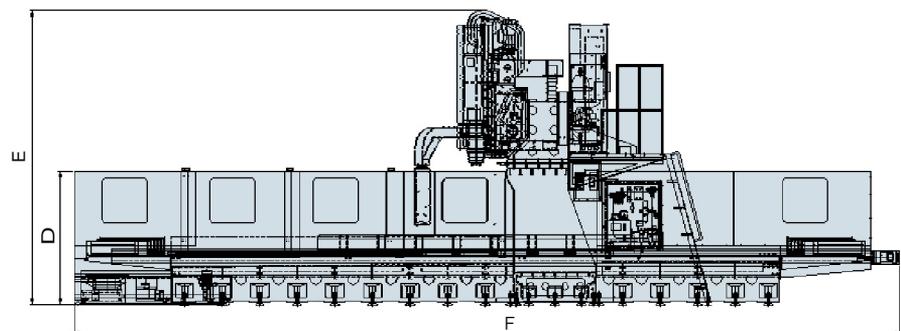
Table



Top View (floor space required)



Front View



Side View

Specifications

Item	Model	DMC-2100S	DMC-2600S	DMC-3100S	DMC-4100S	DMC-5100S	DMC-6100S	DMC-3100P	DMC-4100P
		DMC-2100SH	DMC-2600SH	DMC-3100SH	DMC-4100SH	DMC-5100SH	DMC-6100SH	DMC-3100PH	DMC-4100PH
Distance between columns (mm)	1796 (70.7")						2400 (94.4")		
Table size (mm)	2200 x 1500 (86.6" x 59")	2700 x 1500 (106.2" x 59")	3200 x 1500 (126" x 59")	4200 x 1500 (165.4" x 59")	5200 x 1500 (204.7" x 59")	6200 x 1500 (244.1" x 59")	3200 x 2050 (126" x 80.7")	4200 x 2050 (165.3" x 80.7")	
X axis travel (mm)	2100 (82.7")	2600 (102.4")	3100 (122")	4100 (161.4")	5100 (200.7")	6100 (240.2")	3100 (122")	4100 (161.4")	
Y axis travel (mm)	1778 (70")						2300 (90.5")		
Z axis travel (mm)	800 (31.5")								
Spindle nose to table (mm)	150~950 (5.9"~37.4")								
Spindle taper	BT-40 / CAT-40	HSK A63 (Opt.)	For DMC-2100S DMC-2600S DMC-3100S DMC-4100S DMC-5100S		BT-50 / CAT-50	HSK-A100 (Opt.)	For DMC-2100SH DMC-2600SH DMC-3100SH DMC-4100SH DMC-5100SH		
Spindle diameter (Bearing) (mm)	φ 70 (φ 2.8")	-			φ 90	-			
Spindle speed (rpm)	8000, 10000,12000 (Opt.)	15000, 18000, 20000			6000	10000			
Spindle motor (kW)	7.5 / 11 Hi Lo Gear	17 / 20 built-in			22 / 26 Hi Lo Gear	26 / 31 or 31 / 40 built-in			
X-Y-Z rapid traverse (m/min)	12 / 12 / 12 , 472" / 472" / 472"								
X-Y-Z cutting feed (mm/min)	1-10000								
ATC	Adjacent pockets max. tool dia. (mm)	φ 75 (φ 3")		For DMC-2100S DMC-2600S DMC-3100S DMC-4100S DMC-5100S		φ 125 (φ 5")		For DMC-2100SH DMC-2600SH DMC-3100SH DMC-4100SH DMC-5100SH	
	No. of tools	Arm type 24 Arm type 32 / 40 (Opt.)				Arm type 24 Arm type 32 / 40 (Opt.)			
	Max. tool diameter (mm)	φ 100 (φ 4")				φ 200 (φ 7.8")			
	Max. tool length (mm)	320 (12.6")				400 (15.7")			
	Max. tool weight (kg)	10 (22 lb)				15 (33 lb)			
	Tool selection	Bi-direction random type, Shortest path							
Table load capacity (kg)	10000 (22000 lb)				12000 (26400 lb)		10000 (22000 lb)	13000(28600 lb)	
Dimensions	Length (mm)	6633 (261.1")	7633 (300.5")	8633 (340")	11153 (439.1")	13666 (538")	15590 (613.8")	8482 (334")	10980(432.3")
	Width (mm)	4065 (160")			4070 (160.2")			5580 (220")	
	Height (mm)	3883 (152.9")			4013 (158")			3960 (156")	
Machine weight (kg)	22800 (50220 lb)	24400 (53745 lb)	26000 (57270 lb)	37500 (82500 lb)	42100 (92620 lb)	47000 (103525 lb)	35000 (77000 lb)	41000 (90200 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 (S series)
5. Two 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. LED working lamp
12. FANUC 0i-MF controller

Optional Accessories:

1. Contact tool setting system (Renishaw TS-27R)
2. High pressure coolant thru tool tip
3. High pressure coolant thru spindle
4. Full enclosure (P series)
5. Workpiece measuring system
6. Linear scale
7. 32/40 tools (for BT / CAT spindle)
8. 15000, 18000, 20000 rpm for HSK A63 built-in spindle
9. 10000 rpm for HSK A100 built-in spindle
10. 2-axis NC milling head
11. External coolant flow of spindle (tool edge)
12. Manual guide i (0i-MF)

CNC Control Specs

■ CNC system type

O: Std. △: Opt. -: Nil

Type	Model	DMC Series / DMC Series-R2 / DMC Series-5F
FANUC 0i/MF		○
FANUC 31/MB		△
Heidenhain iTNC530 HSCI		△
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		△	△	
	Data Server with 2GB CF card		△	△	
Function	AICC II		△	○	
	High speed processing		-	△	
	Conversational programming with graphic function	Manual guide 0i	0iMF	○	-
		Manual guide i	31iMB / 0iMF (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		○	○
	15.1" 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	iTNC530 HSCI
Display unit	Visual display unit 15" TFT display		○
Function	Main computer	0.5 ms block processing time	○
	NC programming memory	21GB on SSDR	○
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 		△
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) 		△



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