

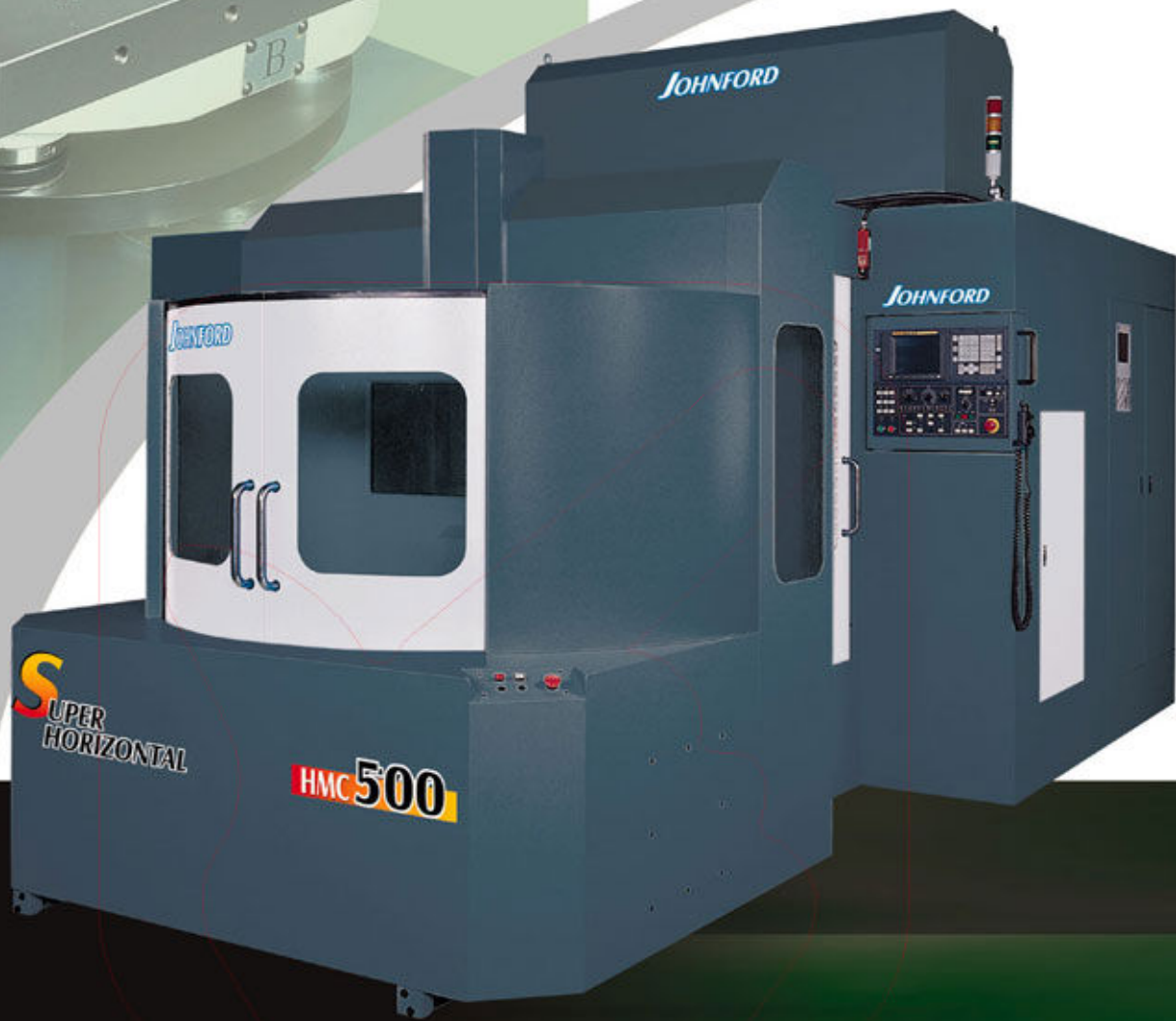


# Horizontal Machining Centers

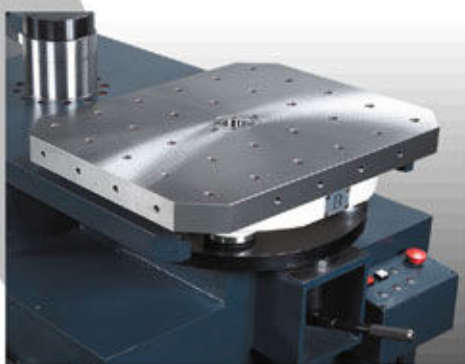


HMC-500/500H/630/630H

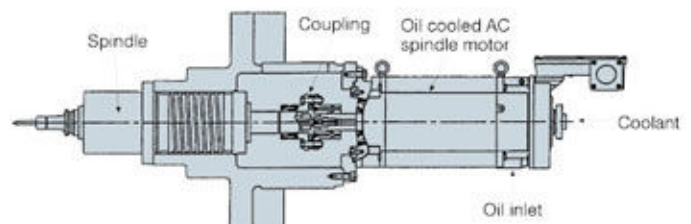
# Horizontal Machining Center



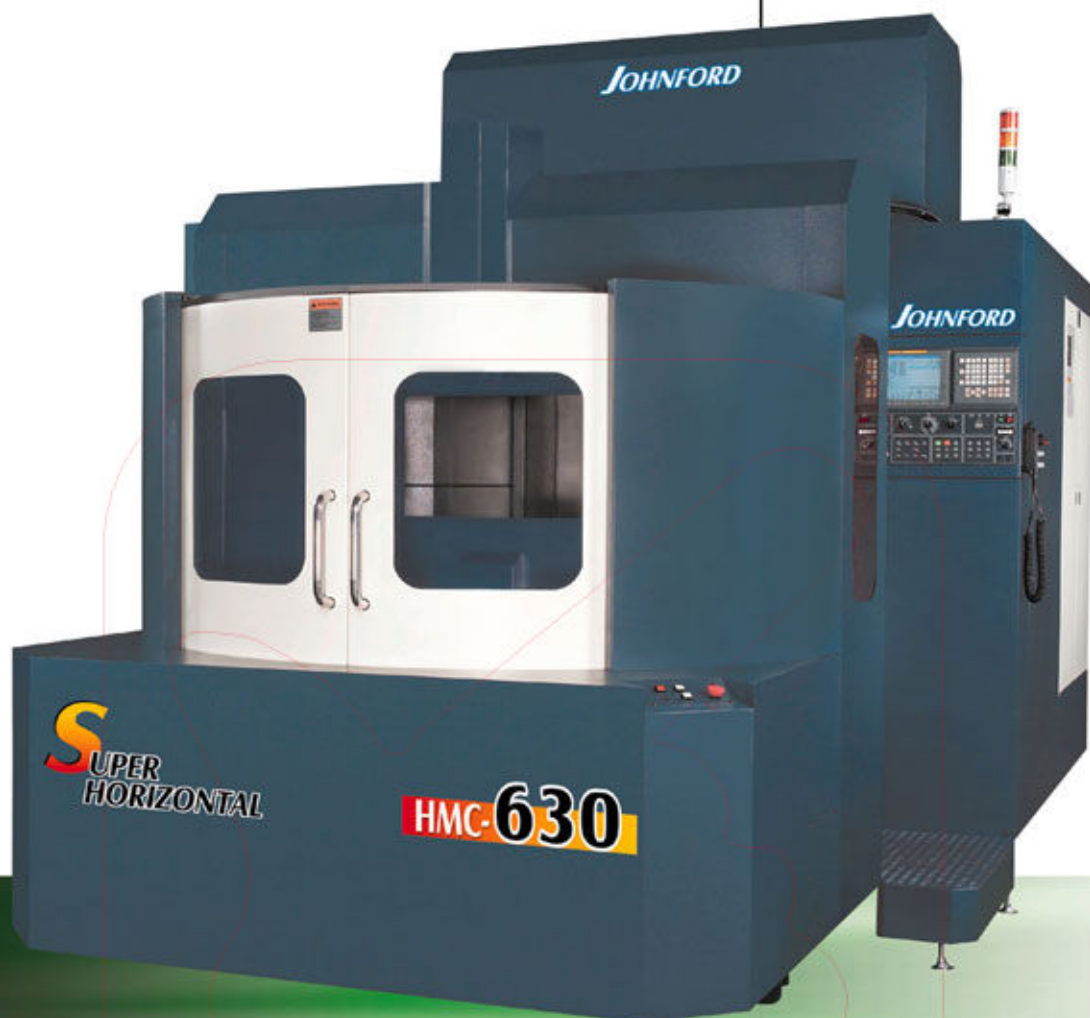
**HMC-500 / 500H / 630 / 630H**



Rotary-type automatic pallet changer



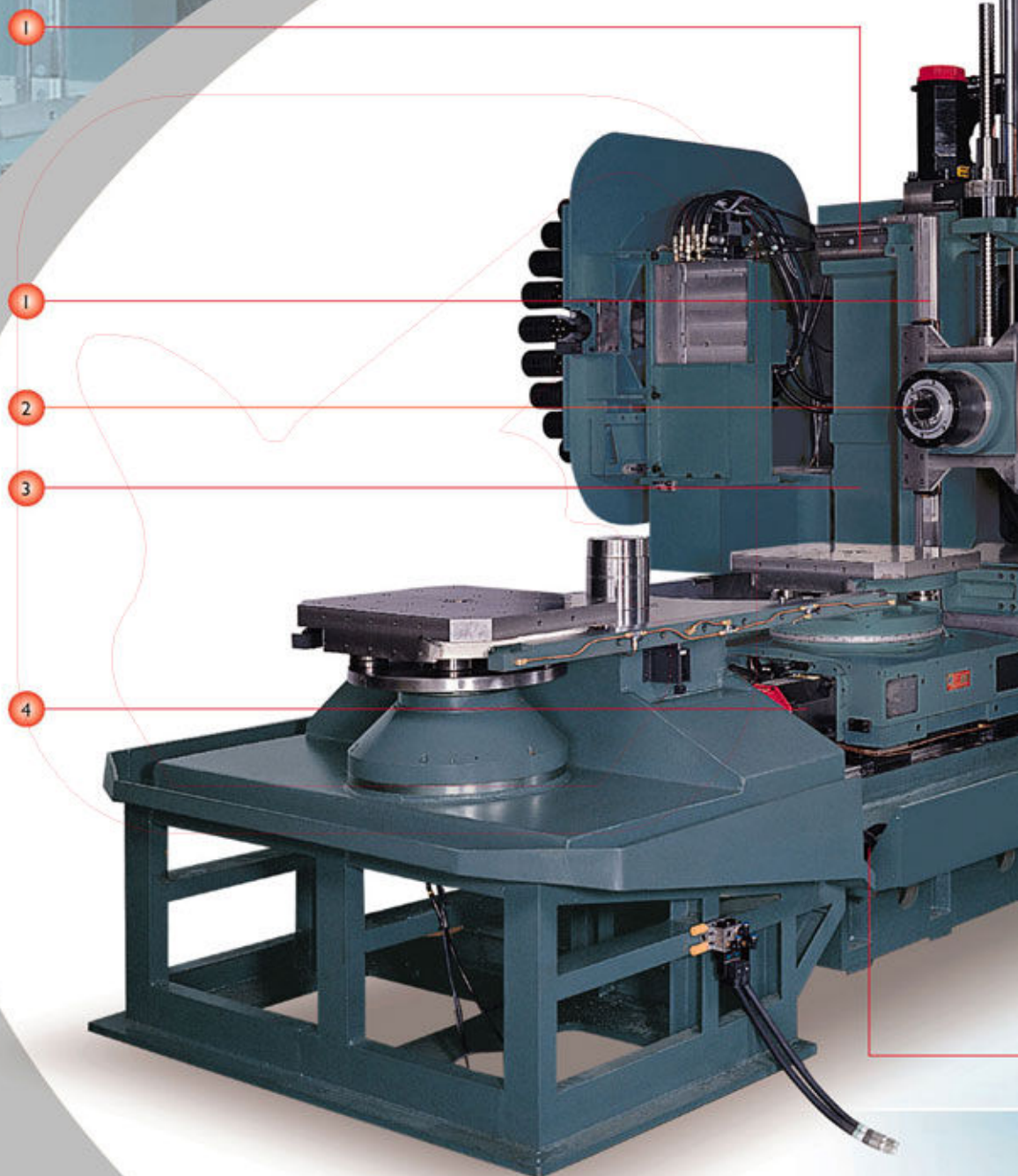
Structure of motor direct drive spindle  
(FANUC System)



- High Speed Horizontal Machining Centers with New Box in Box Design.
- Extremely Rigid and Reliable Structure.
- Direct Drive Spindle & Motorized Spindle (Built-in) for High-Capacity Cutting Performance.
- Rotary-Type Automatic Pallet Changer.

Item	Model	HMC-500	HMC-500 H	HMC-630	HMC-630 H
Table working surface		500 x 630 mm (19.7" x 24.8")		630 x 800 mm (24.8" x 31.5")	
Table load max.		550 kg (1210 lb)		1200 kg (2640 lb)	
Longitudinal travel (X)		762 mm (30")		1016 mm (40")	
Cross travel (Y)		660 mm (26")		813 mm (32")	
Vertical travel (Z)		660 mm (26")		890 mm (35")	
Spindle motor (cont. / 30min)		7.5 / 11 kW (BBT-40) ; 18 / 23 kW (HSK A63) ; 26 / 30 kW (No. 50 / HSK A100) ; 32 / 42 kW (HSK A100)			
X-Y-Z rapid traverse		40 / 40 / 40 m/min			
Tool magazing capacity		40 (60, 80, 120 Opt.)			
Machine dimensions (LxWxH)		5725 x 3615 x 3150 mm (225.4" x 142.3" x 124")		6050 x 4000 x 3340 mm (238" x 157.5" x 131.5")	
Machine weight		11000 kg (24200 lb)		18000 kg (39600 lb)	

# High Rigidity Box in Box Construction



# cted Throughout



1

Three-axes are provided with heavy, superior rigidity of linear motion guide, insuring outstanding accuracy while in heavy duty machining. Low friction and high stability performance ensures longevity with accuracy. Rapid traverse rate Max. 32M/min increases working efficiency greatly.

2

Lower mounted spindle headstock construction for lowering the vibration center, yet increasing stability greatly.

3

The super width column provides maximum support and strength to headstock.

4

1 degree index table employs high precision curve clutch for accurate positioning. 0.001' graduated index table (opt.) employs high precision worm gear mechanism for positioning.

5

Moving saddle design with thermal symmetry construction eliminates thermal strain.

6

The design of slide ways covers provides efficient chips removing, and easy to clean.

7

One piece construction of support base for ball screws insures high accuracy in axes traverse.

8

High rigidity constructed base is heavy V-ribs reinforced on slide way. Creating the excellent stability and accuracy in machining large workpieces.

5

6

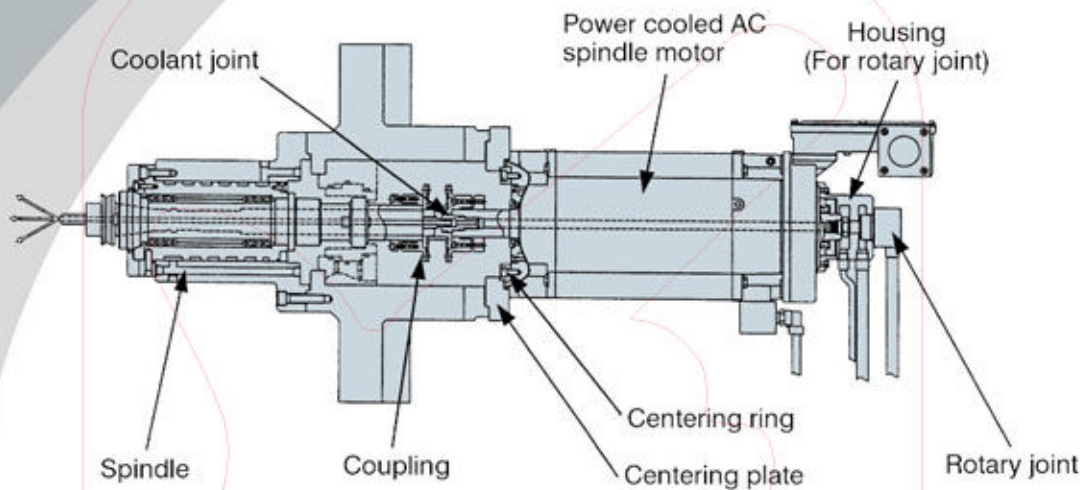
7

8

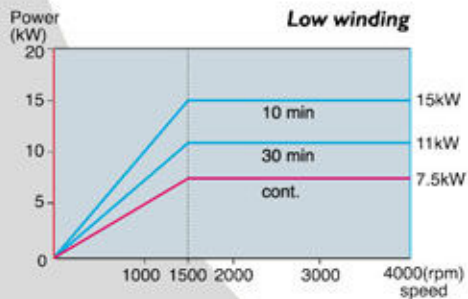
# Spindle Power & Torque Chart

## Direct Drive Spindle

Spindle through coolant function is available by directly connecting between spindle and motors, so spindle speed can be increased. And also spindle vibration and heat generation can be reduced by eliminating gear and belt in spindle head.

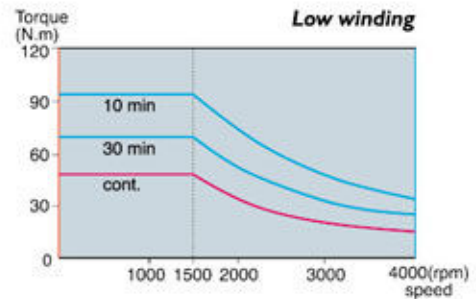


## FANUC $\alpha$ T8/20000 (Plan) Output (ACC. Power is not Guaranteed Value) (No.40)



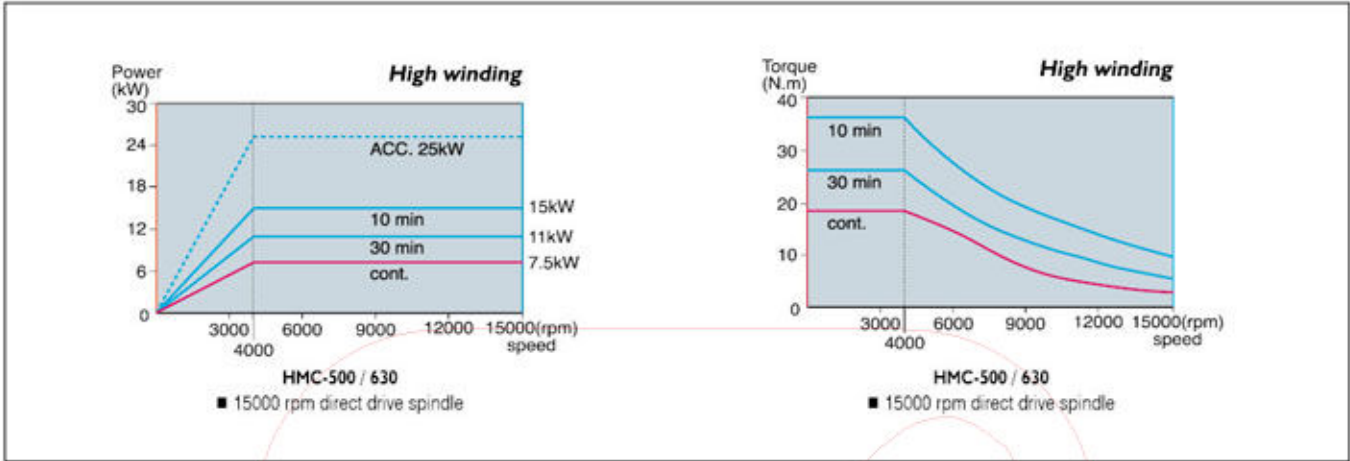
HMC-500 / 630

■ 15000 rpm direct drive spindle

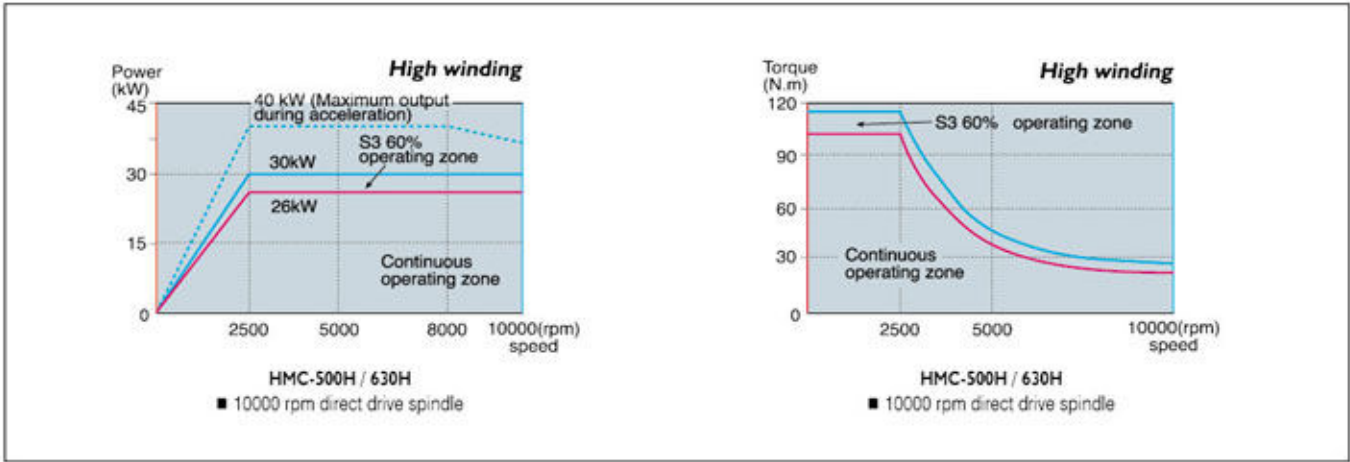
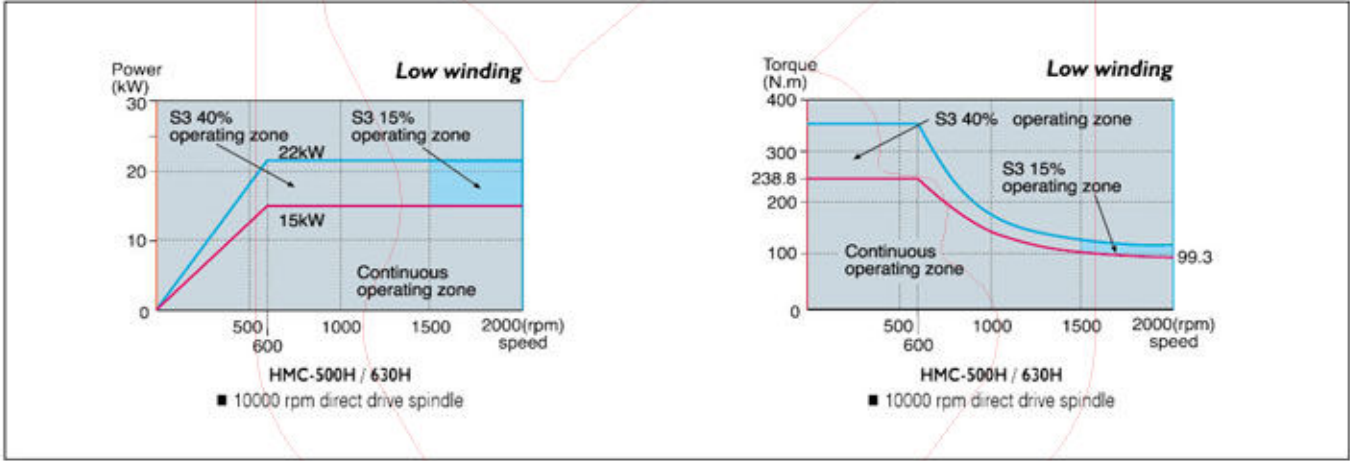


HMC-500 / 630

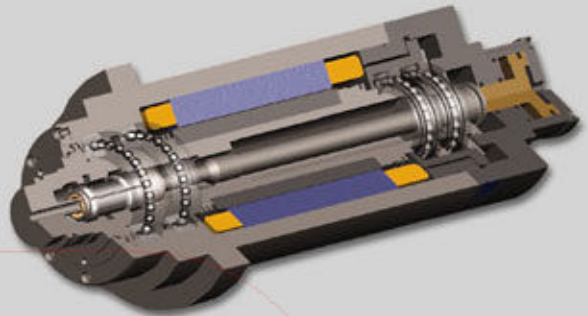
■ 15000 rpm direct drive spindle



**FANUC  $\alpha$  L26 / 10000 Output (ACC. Power is not Guaranteed Value) (No.50/HSK A100)**



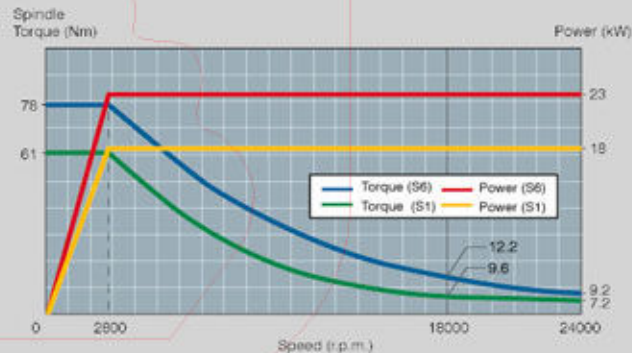
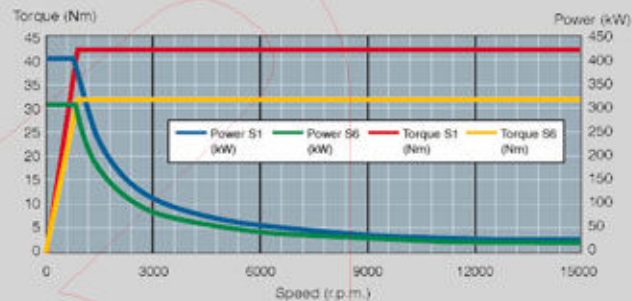
## High Speed Spindle (Built-in Motor)(Opt.)



## 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 / 54A	125 A
Driver	-	SPM-75 HVI
Clamping system	Spring-mechanical+ Power-mechanical	Hydraulic
Clamping Force	18 kN	45 kN
Tool cleaning	Central + Surrounding	Central + Surrounding
Spindle bearings	2 x $\phi$ 70 Hybrid	3 x $\phi$ 110 Hybrid
Bearing rigidity	Sr 310.2 N/ $\mu$ m	680 N/ $\mu$ m
Bearing lubrication	Oil-air mist	Oil-air mist
Spindle cooling	Water glycol	Water glycol
Cooling performance	2.5 kW	6 kW
Cooling temperature	The same as machine	The same as machine
Cooling volume approx	12 l/min	15 l/min
<b>Tool Cooling</b>		
Internal coolant flow	Optional	Standard
Max. Pressure	80 bar	80 bar
Suitable for dry operation	Yes	Yes
Air	Possible	Possible
Min. quantities of cooling lubricant	Optional	-

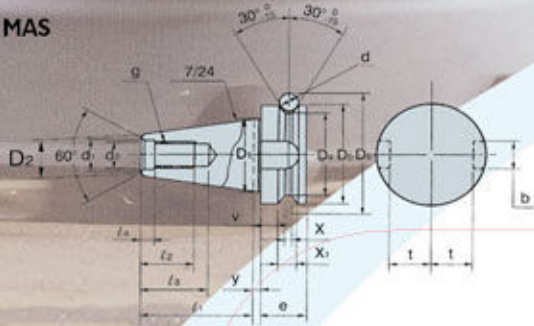


Metal Removal Rate	Milling		Milling		Drilling		Threading	
	HSK A63	HSK A100	HSK A63	HSK A100	HSK A63	HSK A100	HSK A63	HSK A100
Tool system	HSK A63	HSK A100	HSK A63	HSK A100	HSK A63	HSK A100	HSK A63	HSK A100
Power	18 kW	32 kW	18 kW	32 kW	18 kW	32 kW	18 kW	32 kW
Material	Steel 60-70 kg/mm <sup>2</sup>		Aluminum 7075		Steel 60-70 kg/mm <sup>2</sup>		Steel 60-70 kg/mm <sup>2</sup>	
Machining volume (cm <sup>3</sup> /min)	300	704	1382	2878	259	-	-	-
Tool/edges ( $\phi$ mm)	$\phi$ 50 / 4	$\phi$ 100 / 7	$\phi$ 80 / 7	$\phi$ 100 / 7	$\phi$ 30	$\phi$ 51	M24	M36
Rotational speed (min <sup>-1</sup> )	2300	1146	6400	5140	2440	1435	500	330
Cutting speed (m/min)	360	360	1615	1615	230	230	37	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

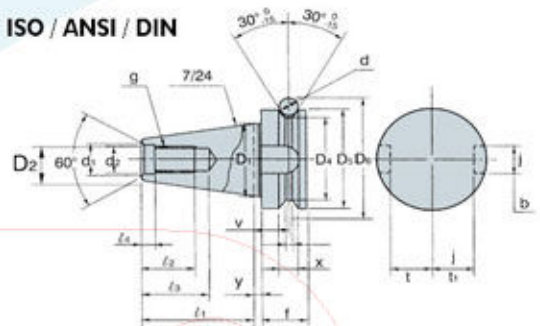
# Tool System

## No. 50 for HMC-500H / 630H

MAS



ISO / ANSI / DIN



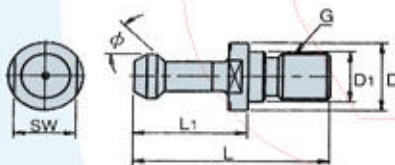
Unit: mm

Shank size	Item	D <sub>1</sub>	l <sub>1</sub>	d <sub>1</sub> (ISOd4)	d <sub>2</sub>	g	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	b	t	t <sub>1</sub>	j
No 50	MAS(BT)	69.85	101.8 <sup>+0.2</sup>	27	25 <sup>H6</sup>	M24	45 min	62 min	13.0 <sup>+0.5</sup> <sub>0</sub>	25.7 <sup>H12</sup>	35.4 <sup>0</sup> <sub>-0.2</sub>	-	-
	ISO	69.85	101.75 <sup>0</sup> <sub>-0.3</sub>	28.0 max	25 <sup>H7</sup>	M24	47 min	61.5 min	11.5 <sup>+0.5</sup> <sub>0</sub>	25.7 <sup>H12</sup>	35.5 <sup>0</sup> <sub>-0.4</sub>	37.7 <sup>0</sup> <sub>-0.4</sub>	30.00 <sup>0</sup> <sub>-0.3</sub>
	ANSI(CAT)	69.85	101.75 <sup>0</sup> <sub>-0.3</sub>	26.5	24.8 <sup>+0.1</sup> <sub>0</sub>	M24x3	45 min	-	5.75 <sup>+0.5</sup> <sub>0</sub>	25.7 <sup>+0.2</sup> <sub>0</sub>	35.5 <sup>0</sup> <sub>-0.4</sub>	40.4 <sup>0</sup> <sub>-0.4</sub>	-
	DIN	69.85	101.8 <sup>0</sup> <sub>-0.1</sub>	32 max	26.5 <sup>H7</sup>	M24	47	61.5 min	11.5 <sup>+0.5</sup> <sub>0</sub>	25.7 <sup>H12</sup>	35.3 max	-	30 <sup>0</sup> <sub>-0.3</sub>

Unit: mm

Shank size	Item	D <sub>4</sub>	D <sub>5</sub>	e	f	v	x	x <sub>1</sub>	y	D <sub>2</sub>	d	D <sub>6</sub>
No 50	MAS(BT)	85	100 <sup>H6</sup>	35	-	23.2 <sup>-0.1</sup>	7-	15 <sup>+0.1</sup> <sub>0</sub>	3 <sup>-0.4</sup>	40.158	15	119.020
	ISO	91.25 <sup>0</sup> <sub>-0.5</sub>	97.50 <sup>0</sup> <sub>-0.1</sub>	-	15.90	11.1 <sup>-0.1</sup>	3.75 <sup>-0.15</sup> <sub>0</sub>	-	3.2 <sup>-0.1</sup>	40.173	7	107.25 <sup>-0.06</sup>
	ANSI(CAT)	91.25 <sup>0</sup> <sub>-0.5</sub>	98.45 <sup>0</sup> <sub>-0.1</sub>	-	15.82 <sup>+0.1</sup> <sub>0</sub>	11.1	3.75 <sup>-0.15</sup> <sub>0</sub>	-	3.18	40.173	7	107.25 <sup>-0.06</sup>
	DIN	91 <sup>H12</sup>	97 <sup>H6</sup>	-	12 <sup>-0.15</sup>	9.2 <sup>-0.1</sup>	-	-	3.2 <sup>-0.1</sup>	40.158	6 <sup>H5</sup>	104.61 <sup>H6</sup>

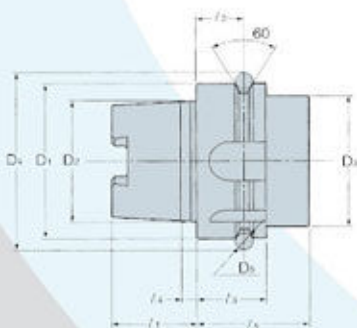
Pull Stud



Unit: mm

Shank size	Pull stud type	L	L <sub>1</sub>	D	D <sub>1</sub>	φ	G	SW
BT/ CAT/ ISO/ DIN 69871	P50T-1	85	45	38	25	45	M24	30

## HSK-A

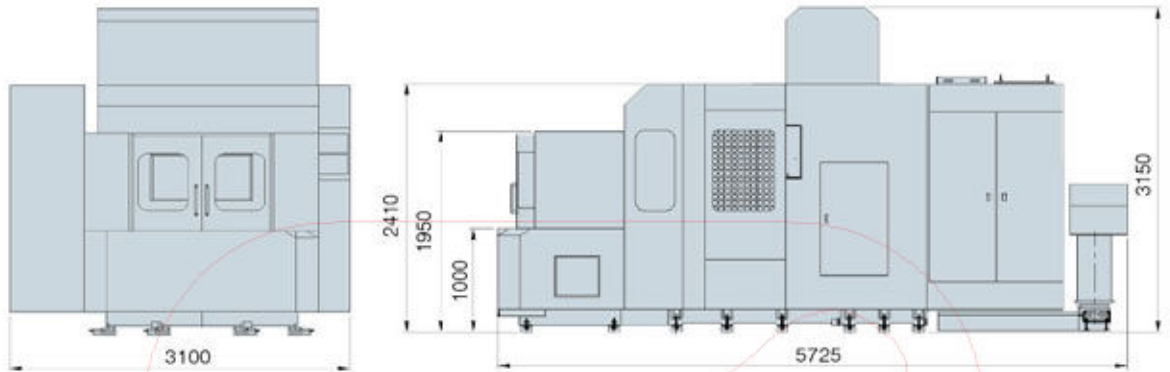


Unit: mm

Shank size	Item	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>
HSK A63		63	48	53	72.3	7	32	18	26	6.3	42
HSK A100		100	75	85	109.75	7	50	20	29	10	45

# Dimensions

HMC-500 / 500H



Front View

Side View

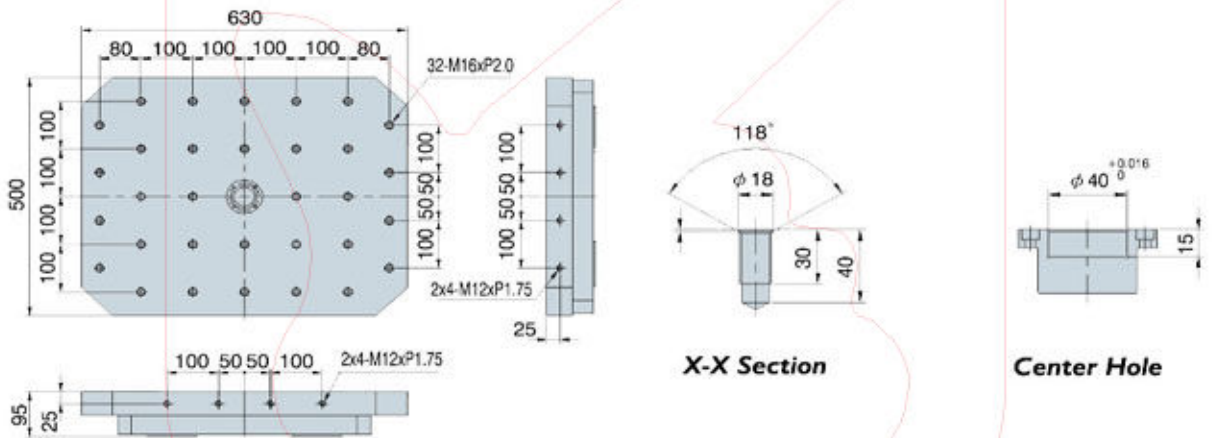
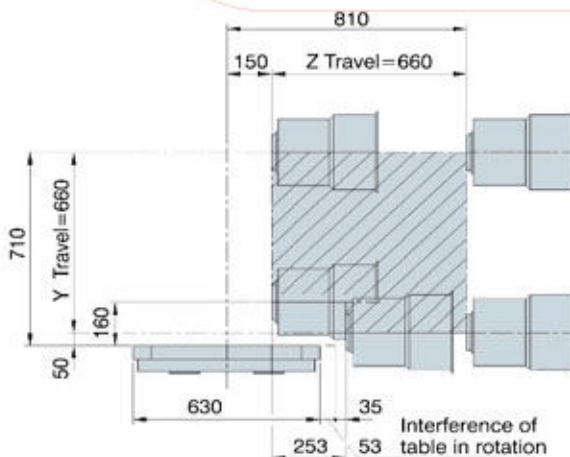


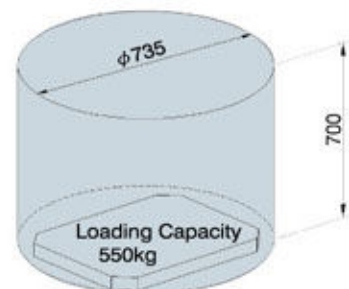
Table Dimensions

X-X Section

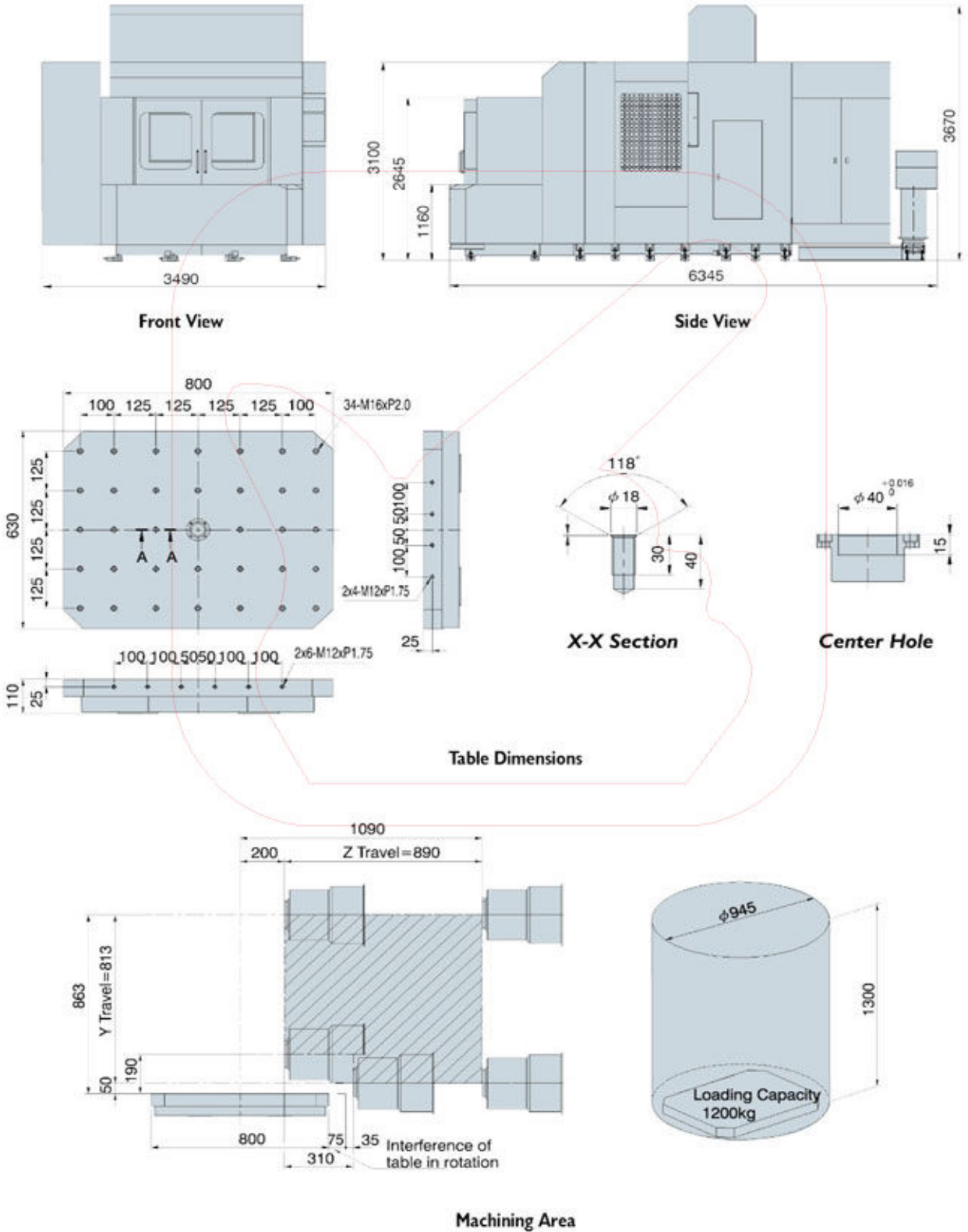
Center Hole



Machining Area



# HMC-630 / 630H



# Specifications

Item	Model	HMC-500	HMC-500H	HMC-630	HMC-630H
Table working surface		500 x 630 mm (19.7" x 24.8")		630 x 800 mm (24.8" x 31.5")	
Table load max.		550 kg (1210 lb)		1200 kg (2640 lb)	
Screw hole		M16 x P2.0		M16 x P2.0	
Longitudinal travel (X)		762 mm (30")		1016 mm (40")	
Cross travel (Y)		660 mm (26")		813 mm (32")	
Vertical travel (Z)		660 mm (26")		890 mm (35")	
Spindle nose to table		150~810 mm (5.9"~31.9")		200~1090 mm (7.8"~42.9")	
Spindle center to table top		50~710 mm (2"~28")		50~863 mm (2"~33.9")	
Spindle speed & taper	Std.	Direct drive 15000 rpm (BBT-40)	Direct drive 6000 rpm (BT / CAT / BBT-50)	Direct drive 15000 rpm (BBT-40)	Direct drive 6000 rpm (BT / CAT / BBT-50)
	Opt.	Built-in 15000 / 18000 / 24000 rpm (HSK A63)	① Direct drive 10000 rpm (BT / CAT / BBT-50 / HSK A100) ② Built-in 15000 rpm (HSK A100)	Built-in 15000 / 18000 / 24000 rpm (HSK A63)	① Direct drive 10000 rpm (BT / CAT / BBT-50 / HSK A100) ② Built-in 15000 rpm (HSK A100)
Spindle motor (cont. / 30 min)	Std.	7.5 / 11 kW	26 / 30 kW	7.5 / 11 kW	26 / 30 kW
	Opt.	18 / 23 kW	① 26 / 30 kW ② 32 / 42 kW	18 / 23 kW	① 26 / 30 kW ② 32 / 42 kW
X-Y-Z Cutting feed		1~15000 mm/min		1~12000 mm/min	
X-Y-Z Rapid traverse		40 / 40 / 40 m/min		40 / 40 / 40 m/min	
Tool magazine capacity		Arm type 40 (60, 80, 120 Opt.)			
Max. tool diameter x length		φ 75 x 320	φ 125 x 385	φ 75 x 320	φ 125 x 400
Max. tool weight		10 kg (22 lb)	15 kg (33 lb)	10 kg (22 lb)	15 kg (33 lb)
Tool selection		Bi-direction random type shortest path			
Tool to tool change time		1.98 sec	3.5 sec	1.98 sec	3.5 sec
Hydraulic pump motor		3.8 kW			
X, Y, Z, axis drive motor		3.8 kW / 3.8 kW / 3.8 kW	3.8 kW / 4.5 kW / 3.8 kW	3.8 x 2 kW / 3.8 kW / 4.5 kW	3.8 x 2 kW / 4.5 kW / 4.5 kW
Table index		1" (0.001" Opt.)			
Number of pallets		2 (6, 12 Opt.)			
Change time (APC)		8 sec		15 sec	
Machine dimension (LxWxH)		5725 x 3615 x 3150 mm (225.4" x 142.3" x 124")		6050 x 4000 x 3340 mm (238" x 157.5" x 131.5")	
Machine weight		11000 kg (24200 lb)		18000 kg (39600 lb)	

■ All data subject to change without notice.

■ All the specifications are listed with the FANUC CNC system.

## Standard Accessories:

- Cycle finish light (M30)
- Coolant unit
- Levelling bolts & pads
- Hydraulic unit
- Spindle oil cooling cooler
- Chip conveyor & chip bucket
- Tools in tool box
- Full enclosure splash guard
- 1 degree index table
- Lubrication with alarm
- Rigid tapping
- Air system with alarm
- Spindle speed/load meter
- 2 pallet APC
- FANUC Oi-MC

## Optional Accessories:

- Contact tool setting system (Renishaw TS-27R)
- High pressure coolant thru tool tip
- High pressure coolant thru spindle
- Arm type 60, 80, 120 tools ATC
- 6 or 12 pallets APC
- Linear scale
- Rotary table (0.001" )
- Built-in spindle (15000 / 18000 / 24000 rpm for HSK A63)
- Direct drive spindle (10000 rpm for BT / CAT / BBT-50 / HSK A100)
- Built-in spindle (15000 rpm for HSK A100)
- FANUC 18i-MB / 21i-MB controller
- Workpiece measuring system (OMP-60)
- Manual guide / / Oi (Oi/MC) ;  
Manual guide / (18i/MB / 21i/MB)

# CNC Control Specs

O: Std. △: Opt. -: Nil

Item	Function	Specifications	HEIDENHAIN		FANUC			SIEMENS	
			TNC410	TNC530	18iMB	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
Spindle functions	Background editing		0	0	0	0	0	0	0
	S code output 4-digit BCD-binary	S4BCD	0	0	0	0	0	0	0
Feed	Spindle rate	%	0-150		50-150			50-200	50-200
	Per-minute		0	0	0	0	0	0	0
	Rapid traverse rate	low25%, 50%, 100%	-	-	0	0	0	0	0
	Cutting feed rate	0%-150%	0	0	0	0	0-200	0	0
Miscellaneous function	Handle feed rate	x1, x10, x100	-	-	0	0	0	0	0
	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
Operation	Number of offset sets		999	999	400	400	400	unlimited	unlimited
	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	△	△
	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
Measurement function	Memory-type pitch error compensation		0	0	0	0	0	0	0
	Coordinate system rotation	G68/G69	0	0	△	△	0	0	0
	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/Japanese	10	10	7	7	7	7	7
	Parts count		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	△	△	△	△	△
	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	0	△	△	

■ All data subject to change without notice.



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