

XF2000

5-Axis Machining Center

THE WORLD BEST

XF2000 the World's Top-Tier Horizontal Machining Center

At Germany's most prestigious **MM Awards ceremony**,

XF2000 won best machine in the milling segment

This result says it all.



Epilogue

Staffed with the world's top caliber researchers, the Hyundai WIA Europe R&D Center developed the XF2000, a **simultaneously controlled 5-axis horizontal machining center**.

The R&D Center in Europe opened its doors in Germany in 2014, with the top priority emphasized on the execution of surprise and delight to the company's customers through the highest level of productivity and product quality.

Though the company has accomplished many great feats, its most notable achievement was receiving **the highest honor in the milling segment at the MM Awards** held in Hanover, Germany in 2017. The award symbolized the company's commitment to the global machine tool market, and in particular, the 5-axis technology.

XF 2000

XF2000, the world's top-tier 5-axis horizontal machining center, is the creation of the Hyundai WIA Europe R&D Center. With an integrated bed & column structure, it not only provides outstanding structural stability, but also delivers unrivaled productivity with the world's top-level acceleration/deceleration 2G by giving the linear feed axis extraordinarily powerful feed capabilities

- Table Size **Ø200 mm (Ø7.9")** XF2000i : **Ø260 mm (Ø10.2")**
- Max. Load Capacity **15 kg (33 lb)** XF2000i : **50 kg (110)**
- Spindle Speed **40,000 rpm** XF2000i : **24,000 rpm**
- Spindle Output (Max./Cont.) **26/18 kW (34.9/24.1 HP)** XF2000i : **10.5/8 kW (14/10.7 HP)**
- No. of Tools XF2000 : **20 EA** (Pick-UP Type) XF2000i : **40 EA** (Chain Type)
- Travel (X/Y/Z) **300/300/200 mm (11.8"/11.8"/7.9")**
- Rapid Traverse Rate (X/Y/Z) **50/50/50 m/min (1,969/1,969/1,969 ipm)**





ULTRA PRECISION

With the highest level of precision processing in its class, the XF2000 enables to produce small impellers within the shortest time possible, proving it is the best solution available on the market.

To offer the company's customers the highest level of productivity, it is equipped with an efficient structure, backed by a monoblock type bed and a cantilever type DDM table.

XF2000
5-AXIS MACHINING CENTER

04
+
05

EXPERIENCE
THE NEW TECHNOLOGY



XF2000 Applications & Parts

IMPELLER



206 sec

With the highest level of productivity in its class, the XF2000 rolls out small-sized impellers within **206 seconds**.

XF2000i Applications & Parts

WATCH
CASE

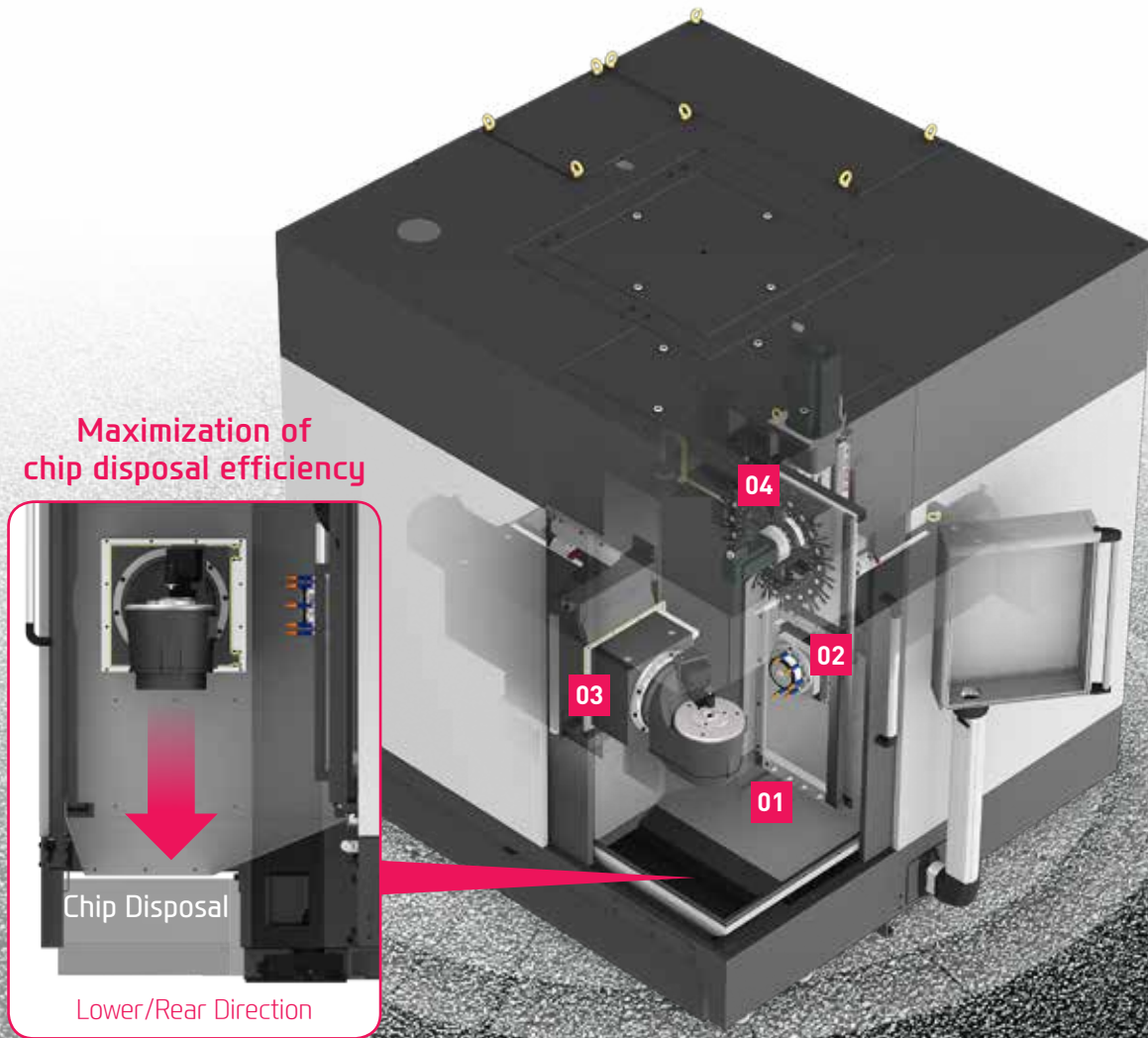


DENTAL
MOLD



XF2000

Cutting Edge Technology



High Precision & Speed 5-Axis Machining Center

50/50/50 m/min (1,969/1,969/1,969 ipm)
Rapid Traverse Rate (X/Y/Z-axis)

200/200 r/min
Rapid Traverse Rate (A/C-axis)

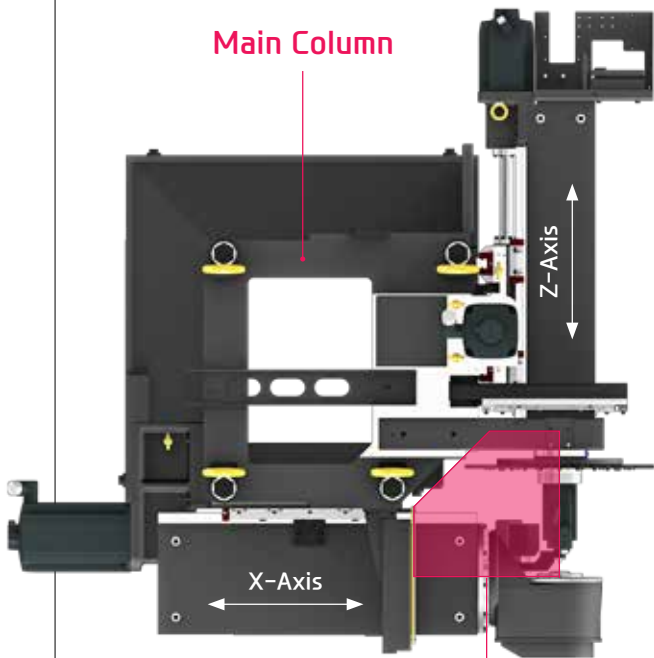
300/300/200 mm (11.8"/11.8"/7.9")
Travel (X/Y/Z-axis)

240/360 deg
Travel (A/C-axis)

❖ XF2000i Rapid Traverse Rate (A/C-axis) : 120/120 r/min

Basic Features

01



Main Column

Z-Axis

X-Axis


Force Flow

One-piece Bed & Column

The XF2000 maximizes the dynamic rigidity by designing bed and column as an integral type, and improves the structural stability by concentrating the flow force between the work space and the tool.

Linear Scale (Std.)


Applied linear scale as a standard for high-precision machining through the compensation of thermal displacement.



02

Built-In Spindle

Designed with a built-in motor structure, the spindle provides maximum acceleration and deceleration while suppressing vibration and heat that can occur during the high-speed rotation. This leads to the excellent performance for high precision machining.



03

DDM Tilting Rotary Table

Precise 5-axis control can be done simultaneously by adopting DDM table, ensuring world-class travel speed to enhance productivity.




⊙ XF2000i : T-slot Type

04

Pickup-type Magazine

Developed as a pickup-type magazine with a relatively simple structure, automatic tool loading device is unnecessary, which is excellent in maintenance.

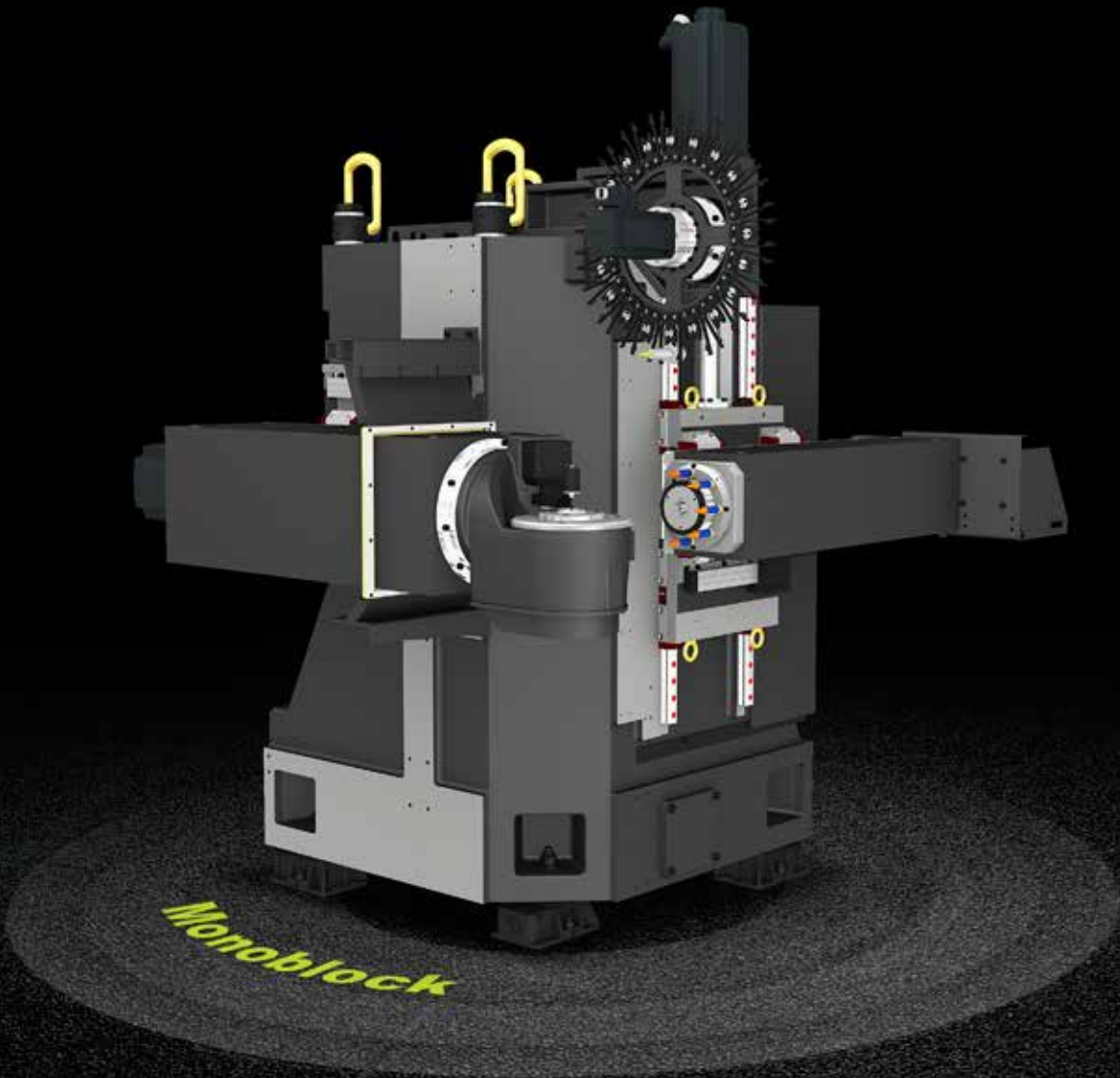


⊙ XF2000i : Chain Type

01
XF2000

Basic Structure

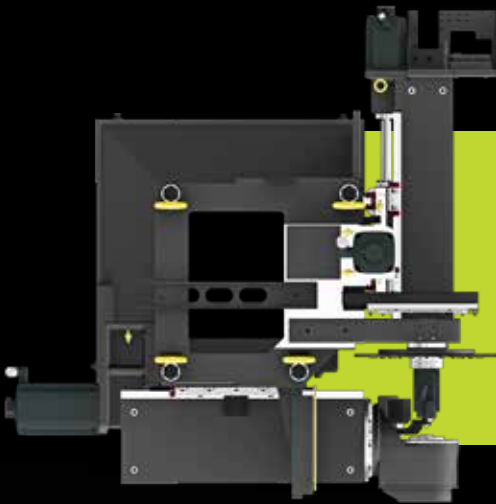
High-Precision & Speed 5-Axis Machining Center



XF2000, a compact size high-speed, high-precision 5-axis machine developed by Hyundai WIA Europe R&D Center based in Germany, has optimized its structure to maximize its productivity. To complete the company's efforts toward a robust design, it applied a mechatronic simulation technique from initial design stage to maximize the mechanical performance of the machine tool.

The strength and rigidity of the base body structure are a direct link to the precision of a machine tool.

HYUNDAI WIA's advanced body design coupled with an integrated bed/column structure is the foundation of machining perfection.



- > A monoblock type high rigidity, integrated bed & column
- > Ensuring a robust design through mechatronics simulations
- > An optimized casting rib structure for high rigidity
- > The maximization of operational efficiency by horizontally arranging the main spindle and the table
- > The bed structure designed to optimize operators' accessibility



High-Speed Roller LM Guideway

Roller LM guide with high acc./deceleration and rigidity has applied to reduce non-cutting time.

◎ Acc./Deceleration Speed : **2G** (XF2000i : 1.2G)



High-Precision Linear Scale (Standard)

The XF2000 are equipped with linear scales on all axes providing high precision positioning accuracy and compensates for ball screw thermal displacement ensuring extremely precise machining.

In addition, the absolute type linear scale is installed in close proximity to the ball screw of each axis. During operation an added benefit is not being require to home the machine.

02
XF2000

RAM Type Spindle

Long Lasting High Accuracy & Excellent Performance
5-Axis Machining Center



Spindle

High-Precision Built-in Spindle

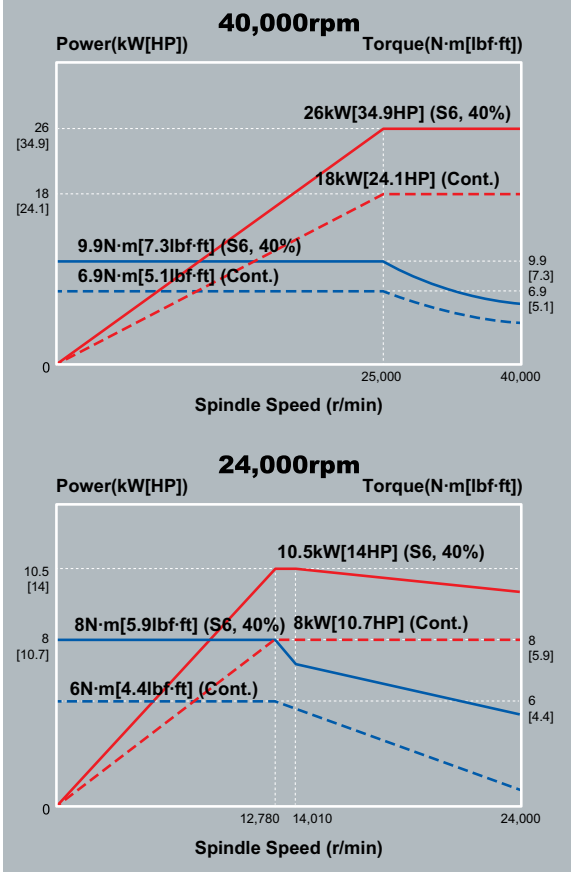
By using ultra precision angular ball bearings, fast acceleration and deceleration of the main spindle is achieved.

The spindle head is designed to minimize the heat displacement of main spindle, and with the use of hydraulic tool lock system, the machining stability has increased.



HSK Tool Holder

HSK tool holder is utilized for precise positioning with less expansion in the spindle taper during high speed rotation. This ensures an excellent level of precision for die mold machining.



Spindle Cooling

Spindle temperature is controlled by the use of a spindle oil chiller. This ensures consistent spindle temperature which minimizes thermal displacement.

XF2000 – 40,000 rpm

26/18 kW (34.9/24.1 HP)
Spindle Power (Max./Cont.)

9.9/6.9 N·m (7.1/5.1 lbf·ft)
Spindle Torque (Max./Cont.)

XF2000i – 24,000 rpm

10.5/8 kW (14/10.7 HP)
Spindle Power (Max./Cont.)

8/6 N·m (5.9/4.4 lbf·ft)
Spindle Torque (Max./Cont.)

n3
XF2000

Magazine & Table

Super Quality & Productivity
5 Axis Machining Center



ATC & Tool Magazine

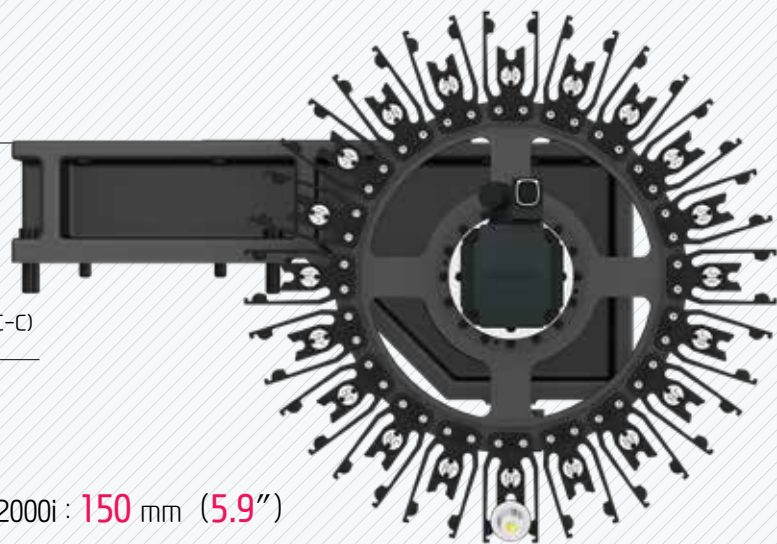
Automatic tool loading device with unnecessary pick-up type magazine achieves best-in-class tool change time (chip to chip) of 4.5 seconds and excellent maintainability.

❖ XF2000i : Chain type Magazine

XF2000/XF2000i

20/40 ea
No. of tools

4.5/5.0 sec
Tool change time (C-C)



- ⊙ **Max. Tool Dia. : $\varnothing 50$ ($\varnothing 2''$)**
- ⊙ **Max. Tool Length :**
- XF2000 : **200 mm (7.9'')** XF2000i : **150 mm (5.9'')**
- ⊙ **Max. Tool Weight : 1.5 kg (3.3 lb)**



5-axis DDM Table

Precise 5-axis control can be done simultaneously by adopting DDM table, ensuring world-class travel speed to enhance productivity.

- ⊙ **Table Size**
- XF2000 : **$\varnothing 200$ ($\varnothing 7.9''$)** XF2000i : **$\varnothing 260$ ($\varnothing 10.2''$)**
- ⊙ **Load Capacity : 15 kg (33 lb)**
- ⊙ **Tilting Angle (A axis) : $240^\circ (+120^\circ \sim -120^\circ)$**
- ⊙ **Rapid Traverse Rate (A/C axis) :**
- XF2000 : **200/200 rpm** XF2000i : **120/120 rpm**

A/B-axis Rotary Scale as Standard

High quality machining is achieved by scale built-in YRT bearing which is applied to the A/B-axis of rotary table.



ROEMHELD
1500 bar
1500 bar

WELKSTRALE 2
WELKSTRALE 3

FAST & DYNAMICS & CONVENIENCE

- Highest level of acceleration and deceleration (FAST): Acc./Dec. time-2G
- High performance built-in spindle (DYNAMIC)
- High visibility programming and accessibility through its ergonomic design (CONVENIENCE)

Those are the values that the XF2000 pursues.



04
XF2000

SIEMENS Controller

The Powerful CNC Platform for Machine Tools



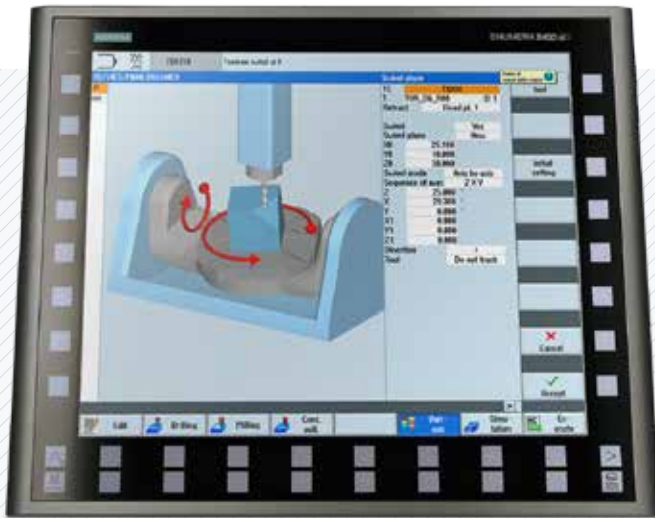
SIEMENS

**DIFFERENTIATED CAPABILITIES,
INTEGRATED ENGINEERING SEAMLESSLY INTERLINKED**

SIEMENS 840D sl is the latest generation CNC controller with the capability of running up to 20 axes on a single machine.

The powerful 80-bit controller reduces processing time and increases productivity. It supports the preparation of a variety of programs and setup functions for ease of operation.

SIEMENS Controller



SIEMENS Technology

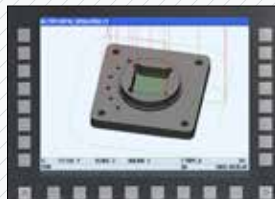
Shop Mill

- Dialogue-type programming, simple and convenient
- Effective specifications for small quantity batch production
- Step-by-step operation possible without knowledge of the DIN/ISO code



Real Time 3D Simulation

- Real time 3D simulation is possible
- 2D simulation offered standard
- Possible to confirm NC program thru simulation



Easy Screen

- Create an easy screen
- Insert text and pictures
- Max. 5-screen configuration
- PLC variables and PLC interface with read/write support



SIEMENS MDrive



SIEMENS MDrive is required for a variety of CNC mold processing software solutions which is combined into one package achieving the highest processing rates

ISO Code Programming



If the ISO Dialect (G291) is ordered, JIS-based G-code programs can be used. (Standard)





THE PRECISION

How precise should an exceptional machine tool be?

The XF2000 is the best in the world.

It's ultra-precision is also the best in the world.

What's stopping you benefitting from ultra-precision machining using the HYUN DAI WIA XF2000?

SPECIFICATIONS

Standard & Optional

● : Standard ○ : Option ☆ : Prior Consultation - : Non Applicable

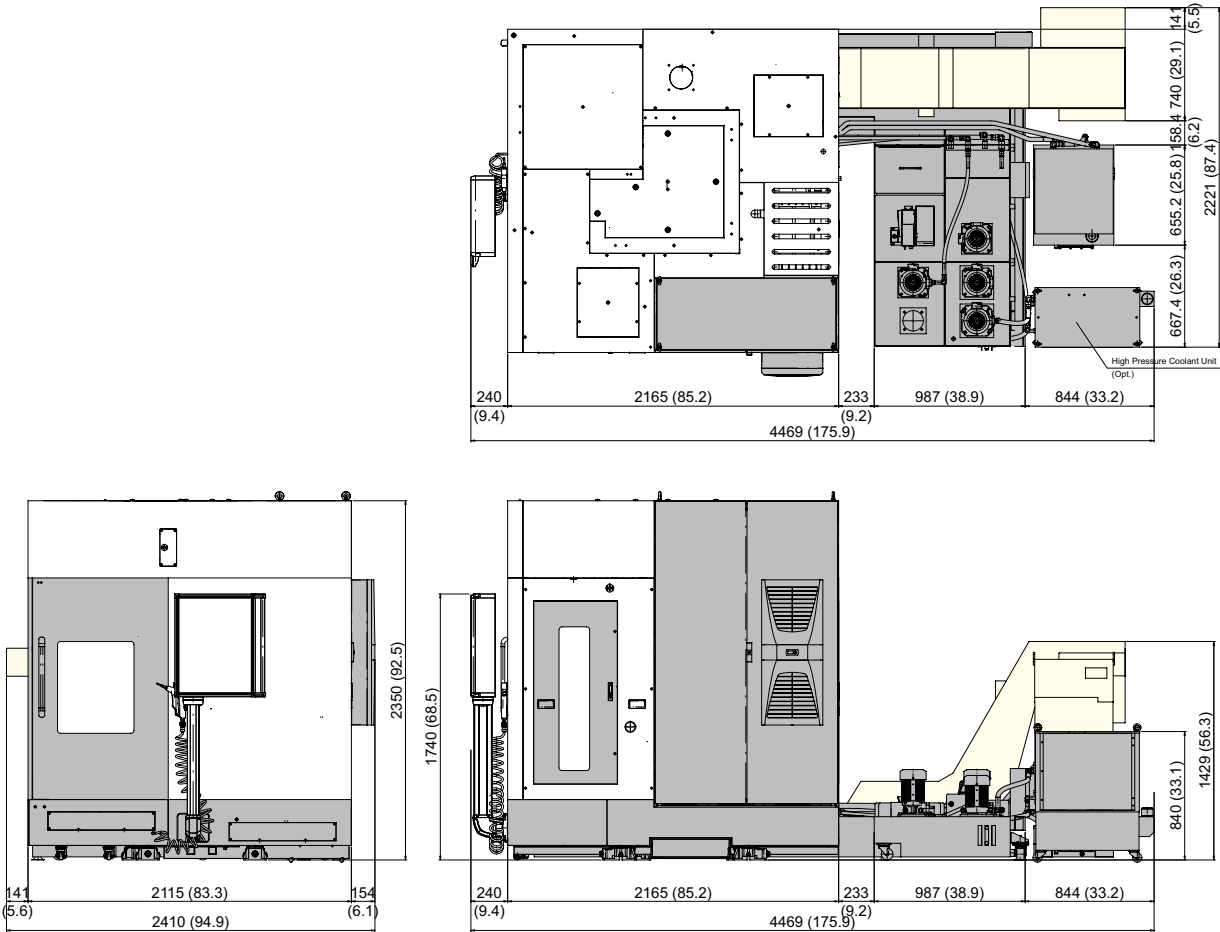
Spindle		XF2000	XF2000i
40,000rpm	Built-in (E+A)	●	-
24,000rpm	Built-in	-	●
Spindle cooling system	WATER Chiller	●	●
ATC			
ATC extension	20EA	●	☆
	40EA	-	●
Tool shank type	HSK E40	●	●
Tool weight	1.5kg (3.3 lb)	●	●
Servo motor drive magazine		●	●
Table, APC & Pallet			
T-slot type pallet		-	●
Impeller type pallet		○	-
Coolant System			
Std. coolant (Nozzle+Bed)		●	●
Shower coolant (Niagara)		○	○
Through spindle coolant (25 l (6.6 gal))	20bar (290 psi)	○	○
	30bar (435 psi)	○	○
	70bar (1,015 psi)	○	○
Gun coolant		○	○
Air gun		○	○
Spindle air blow		○	○
Tool measuring air blow (Selected Tool measuring Device)		○	○
Coolant cooling device		○	○
Thru MQL device (without MQL)		☆	☆
Air blow (for automation)		☆	☆
Power coolant system (for automation)		☆	☆
Chip Disposal			
Coolant tank	470 l (124 gal) -High Level	●	●
Chip conveyor (Hinge/Scraper)	Rear	○	○
Chip wagon	Standard (180 l [47.5 gal])	○	○
	Swing (200 l [52.8 gal])	○	○
	Large Swing (290 l [76.6 gal])	○	○
	Large Size (330 l [87.2 gal])	○	○
	Customized	☆	☆
S/W - SIEMENS			
Machine guidance (HW-MCG)		●	●
Tool Monitoring (HW-TM)		○	○
Energy Saving System (HW-ESS)		○	○
Tool Offset Measurement (HW-TOM)		☆	☆
Work Coordinate Measuring (HW-WCM)		☆	☆
Machining Condition Selection (HW-MCS)		○	○
Adaptive Feed Control (HW-AFC)		○	○
Spindle Load Monitoring (HW-SLM)		○	○
Tool ID Manager (HW-TIDM)		○	○
DNC Software (HW-eDNC)		○	○
Spindle Heat Distortion Compensation (HW-TDC)	8CH	○	○
Spindle Warm up Function (HW-WARMUP)		●	●
Machine Monitoring System (HW-MMS)		○	○
TOP Surface		●	●
Alarm Mailing Service		○	○

ETC		XF2000	XF2000i
Tool box		●	●
Customized color	Need for Munsel No.	☆	☆
CAD & CAM software		☆	☆
Total splash guard		●	●
Electric Device			
Call light	1color : ●	●	●
Call light	3color : ●●●	○	○
Call light & buzzer	3color : ●●● B	○	○
Work light		●	●
Electric cabinet light		○	○
Front door interlock		●	●
Side door interlock (Selected side auto door)		○	○
Remote MPG		●	●
3 axis MPG		○	○
Transformer (220V/380V)	40/10kVA	●	●
Spindle load meter	LED	○	○
Spindle speed meter	LED	○	○
Work counter	Digital	○	○
Total counter	Digital	○	○
Tool counter	Digital	○	○
Multi tool counter	6ea	○	○
	9ea	○	○
Electric circuit breaker		○	○
Auto power off		○	○
Splash memory card		○	○
Back up Module for Black out		○	○
AVR (Auto Voltage Regulator)		☆	☆
Measuring Device			
Air Zero (Selected impeller table)	FESTO	●	●
	SMC	○	○
Work Measuring Device		○	○
TLM (Renishaw/Blum)	Touch	☆	☆
	Laser	○	○
Tool Broken Detective Device		○	○
Linear Scale	X/Y/Z Axis	●	●
Rotary Scale	A/C Axis	●	●
Coolant Level Sensor (Only for Chip Conveyor, Bladder Type)		☆	☆
Environment			
Air Conditioner		●	●
Dehumidifier		○	○
Oil Mist Collector		○	○
Oil Skimmer (Only for Chip Conveyor)		○	○
MQL (Minimal Quantity Lubrication)		☆	☆
Fixture & Automation			
Auto door	Side	○	○
Sub operation pannel		☆	☆
Control of Additional Axis	1 Axis	○	○
	2 Axis	○	○
External M code 4ea		○	○
Automation interface		○	○
I/O extension (In & out)	4 contact	○	○
	16 contact	○	○
Hyd. Device			
Std. hyd. unit	100bar (1,450 psi) / 4 l (1 gal)	●	●
	45bar (653 psi)	☆	☆
Hyd. unit for fixture	70bar (1,015 psi)	☆	☆
	100bar (1,450 psi)	☆	☆
	Customized	☆	☆

SPECIFICATIONS

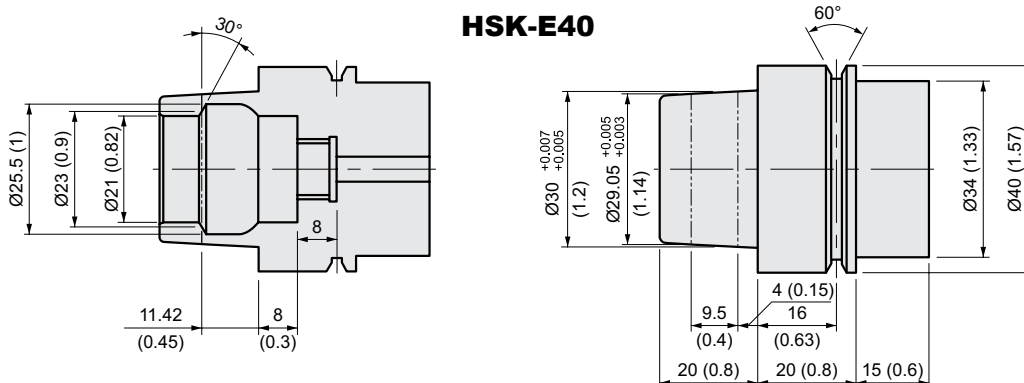
External Dimensions

unit : mm (in)



Tool Shank

unit : mm (in)



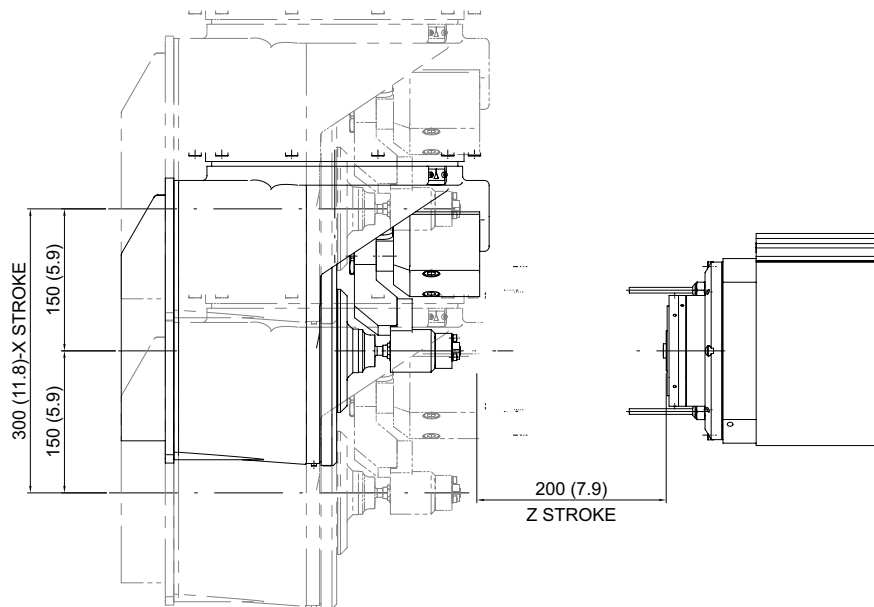
SPECIFICATIONS

Table Dimensions

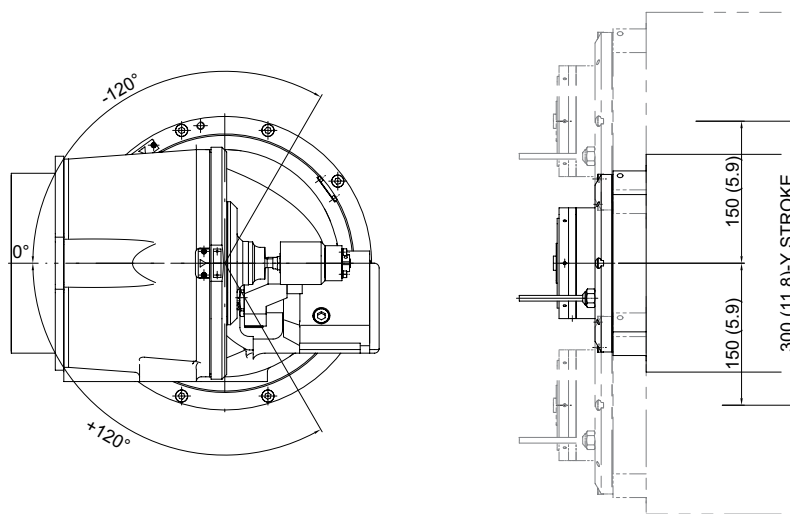
unit : mm (in)

XF2000

**Tilting A-axis : 0°
(IMPELLER TABLE)**



TOP VIEW



FRONT VIEW

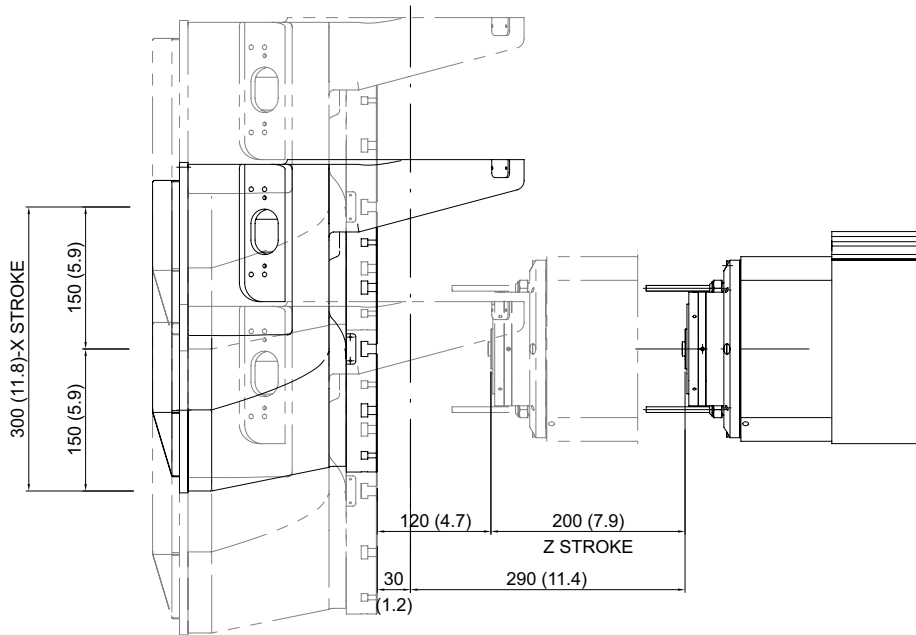
SPECIFICATIONS

Table Dimensions

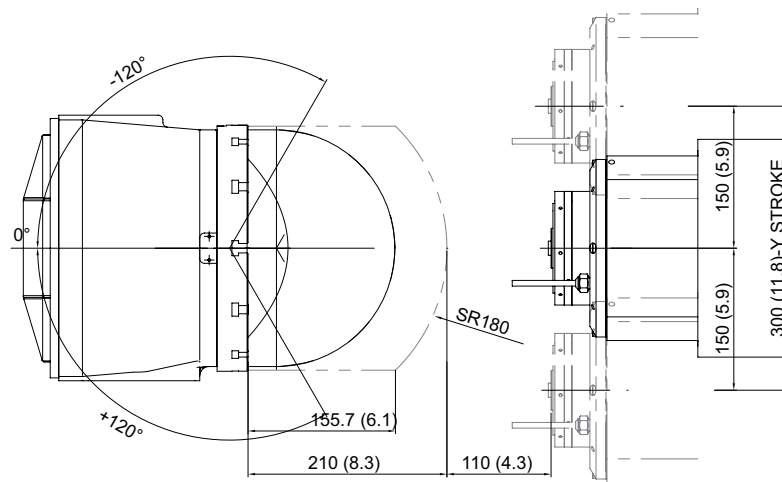
unit : mm (in)

XF2000i

**Tilting : A-axis 0°
(T-SLOT TABLE)**



TOP VIEW



FRONT VIEW

SPECIFICATIONS

Specifications

[]: Option

MODEL			XF2000	XF2000i	
TABLE	Table Size	mm(in)	Ø200 (Ø7.9")	Ø260 (Ø10.2")	
	Maximum Load Capacity	kg(lb)	15 (33)	50 (110)	
	Max. Macining Height	mm(in)	-	100 (3.9")	
	Table Driving Method	mm(in)	DIRECT DRIVE MOTOR		
SPINDLE	Spindle Taper	-	HSK-E40		
	Spindle RPM	r/min	40,000	24,000	
	Spindle Power Output (Max./Cont.)	kW(HP)	26/18 (34.9/24.1)	10.5/8 (14/10.7)	
	Spindle Torque (Max./Cont.)	N·m(lbf·ft)	9.9/6.9 (7.3/5.1)	8/6 (5.9/4.4)	
	Spindle Driving Method	-	BUILT-IN		
FEED	Travel	X/Y/Z Axis	300/300/200 (11.8"/11.8"/7.9")		
		A/C Axis	240° (-120°~+120°)/360°		
	Distance from Table Top to SP. Nose	mm(in)	-150 ~ 150 (-5.9 ~ 5.9)		
	Rapid Traverse Rate	X/Y/Z Axis	50/50/50 (1,969/1,969/1,969)		
		A/C Axis	r/min	200/200	120/120
	Feed Axis Acc./Dec. Speed	X/Y/Z Axis	G	2/2/2	1.2/1.2/1.2
	Slide Type	-	ROLLER GUIDE		
ATC	Number of Tools	ea	20 : Pick up Type	40 : Chain Type	
	Tool Shank	-	HSK-E40		
	Max. Tool Dia. (W/T Adjacent Tool)	mm(in)	Ø50 (2")		
	Max. Tool Length	mm(in)	200 (7.9")	150 (5.9")	
	Max. Tool Weight	kg(lb)	1.5 (3.3)		
	Tool Change Time	C-C	sec	4.5	5.0
	Tool Selection Method	-	FIXED		
TANK CAPACITY	Coolant Tank	ℓ (gal)	470 (124)		
	Lubricating Tank	ℓ (gal)	2 (0.5)		
	Hydraulic Tank	ℓ (gal)	3.9 (1)		
POWER SUPPLY	Electric Power Supply	KVA	50		
	Thickness of Power Cable	Sq	16		
	Voltage	V/Hz	380/60		
MACHINE	Floor Space (L×W)	mm(in)	2,410×4,469 (94.9"×175.9)		
	Height	mm(in)	2,350 (92.5)		
	Weight	kg(lb)	6,000 (13,228)		
CNC	Controller	-	SIEMENS 840D sl		

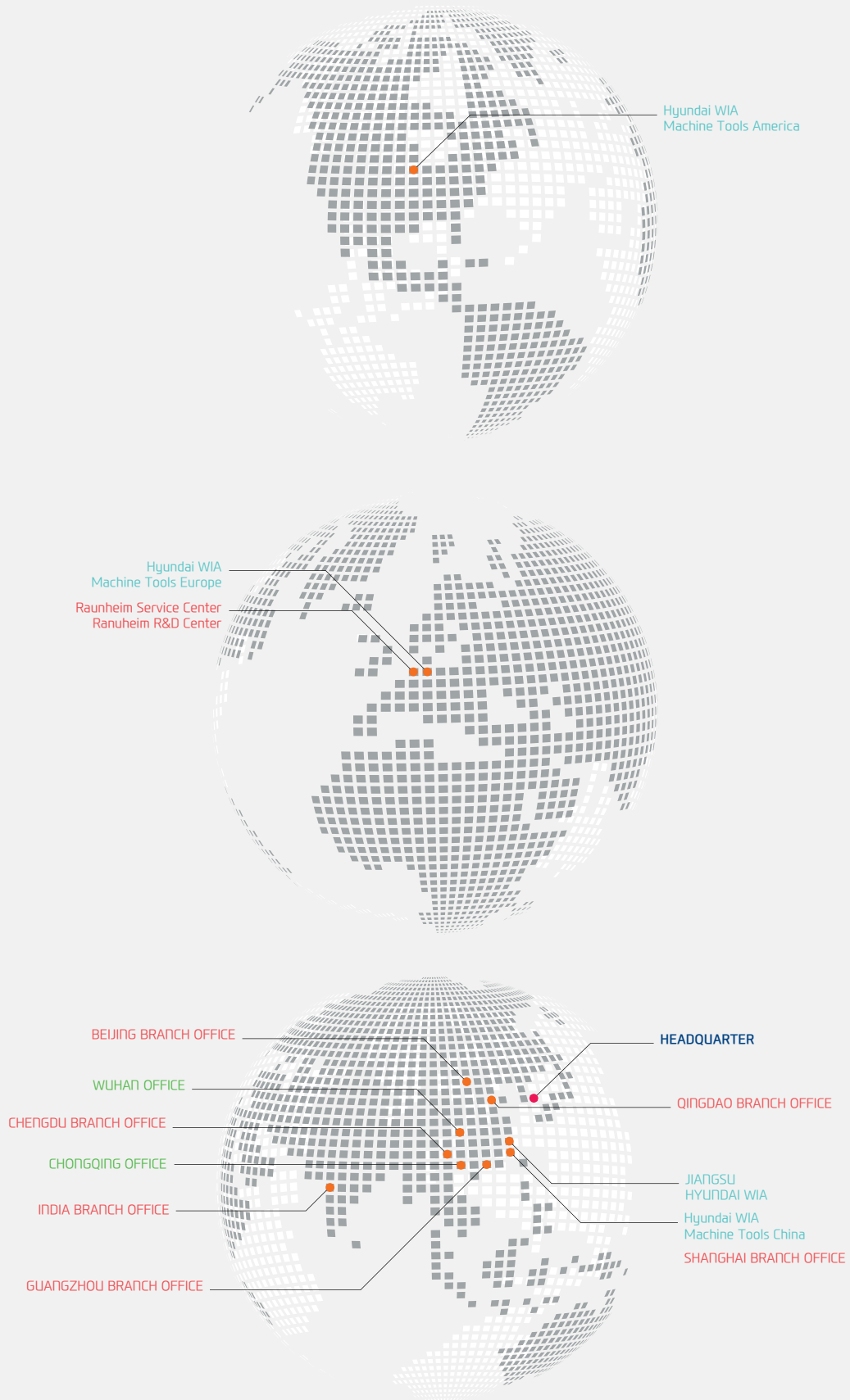
CONTROLLER

SIEMENS 840D sl Standard

Control Function	
Controlled axis	10 axis
Simultaneous controllable axis	5 axis (max 20 axis)
Least Command/input	0.0001mm / 0.0001inch
Feed Function	
Feedrate override	0 – 120%
Rapid traverse override	0 – 120%
Tool Function	
Tool radius comp.	
Zero Offset (G54, G55, G56, G57, G58, G59)	6ea (Max:100ea)
Programmable Zero Offset	
3D tool radius compensation	
Display	
Language	Chinese Simplified, English, French German, Italian, Spanish
CRT/MDI	TFT 19" Color
Screen saver	
Spindle Function	
Spindle override	50% – 120%
Spindle orientation	
Spindle speed limitation	
Rigid tapping	
Manual Operation	
Manual handle/jog feed	
Reposition	
Reference approach	Ref 1, 2 approach
Spindle control	Start, stop, rev, jog, ort.
Auto Operation	
Single block	
Feed hold	
Optional block skip	
Machine lock	
Dry run	
Simulation	
Diagnosis Function	
Alarm display	
Monitor	
Programming Function	
Part program storage length	10MB
Program name	23 digits
Subroutine call	7Level
Absolute/incremental command	G90 – G91

Programming Input & Interpolation Function	
Scaling / Rotation	
Inch / Metric conversion	
Conversational cycle program	22 ea
Block search	
Macro	
Read/Write system variable	
Background editing	
Miscellaneous functions	M – Code
Skip	
Program stop	M00, M01, M02, M30
Lookahead, Jerk Limitation Feed & Forward Control	
Helical interpolation	
COMPCAD, COMPCURB	
Cylindrical interpolation	
Work coordiante interpolation	
Interactive program	
Fanuc program exe.	
Machining Package Milling	
Protection Function	
Emergency stop	
Soft limit	
Contour monitoring	
Program protection	
Automation Support Function	
Actual speed display	
Tool life management	Time, Parts
Work count	Internal
Language	
Two Language Switchable	Chinese Traditional, Czech, Danish Dutch, Finnish, Hungarian, Japanese Korean, Polish, Russian, Swedish Portuguese, Turkish
DATA Transfer	
RS 232C I/F	
Ethernet	
Option	
Display	With Harddisk
Data transfer	Only PCU50

GLOBAL NETWORK



GLOBAL NETWORK



HEADQUARTER

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