

KF5600II

High Precision Vertical Machining Center

High Column & 40 ATC Upgrade!



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The KF5600II is designed by HYUNDAI WIA with years of experience and the latest technology, maximizes productivity and provides stiffness and rigidity. KF5600II offers Hyundai value at an economical and affordable price, and provides high productivity and profitability and matches typical of complex, contoured geometry associated with die/mold and medical production

■ FEATURES

- Hyundai Wia Fanuc - Smart Plus Control
- Powerful 24.8 HP (18.5 kW) spindle motor (S3 15%)
- Max. 12,000 RPM Direct Driven Spindle
- 49.2" x 22" (1,250 x 560mm) Table Size
- 2,205 lbs (1,000 kg) Load Capacity
- Spindle Oil chiller system [8K _ Opt.]
- BCV # 40 taper [HSK tool holder _ Opt.]
- Fast 1,417 IPM (36m/min) X, Y and 1,181 IPM (30m/min) Z axis rapid traverse [1,654 IPM (42m/min) X, Y and 1,417 IPM (36m/min) Z axis _ Opt.]
- Large Linear Roller guide with roller bearings
- ATC 40 Tools Upgrade option
- "Y" shape ribbed column structure
- Metal plate coupling on all axes
- Embed operating panel
- 290 PSI through the spindle coolant
- Remote Manual Pulse Generator
- Spindle override 0% to 200% (10% Unit)
- Massive Meehanite cast iron bed
- Double Pre-Tensioned Ball screws
- Rigid tapping
- Program and data protection key switch
- Slanted telescopic way covers
- Chip Conveyor (38" discharge height)
- Flood coolant with large separate coolant tank
- 3 color tower signal light
- Full enclosure splash guard
- 15" Touch-type monitor

■ SPECIFICATIONS

TRAVEL:

X / Y axis travel	43.3" / 22.0" (1,100 / 560mm)
Z axis travel	[25.0" (635mm)]
Table top to spindle nose	[5.9" ~ 30.9" (150 ~ 785mm)]
Column to spindle center	25" (635mm)

TABLE:

Table size	49.2" x 22.0" (1,250 x 560mm)
Allowable load	2,205 lbs (1,000 kg)
Table T slot spacing x width	(5) x 3.93" x 0.71" (100 x 18mm)

SPINDLE:

Spindle Speed	12,000 rpm
Spindle Taper	BCV # 40
Pull Stud (Retention Knob)	45°
A.C. spindle motor (30min)	24.8 HP (18.5 kW)
Spindle torque (30 min)	87 lbf.ft (118 N.m)

AUTOMATIC TOOL CHANGER:

Number of Tools	40 ATC UPGRADE
Tool Shank	BCV # 40
Max. Tool Dia.	Ø3.1" (Ø80mm)
<i>with empty adjacent pockets</i>	Ø4.9" (Ø125mm)
Max. Tool Length	11.8" (300mm)
Max. Tool Weight	17.6 lbs (8 kg)
Tool change time (tool to tool)	1.3 sec
Tool change time (chip to chip)	3.2 sec [3.5 sec]

MOTION:

X / Y / Z axis rapid traverse rate	[1,645 / 1,654 / 1,654 IPM (42/42/36m/min)_Opt.]
Max. Cutting Feed	374 IPM (10,000 mm/min)
Least command increment	.0001" (.001mm)

COOLANT and HYDRAULIC SYSTEM:

Coolant tank capacity	96.4 gal (365 liter)
Hydraulic tank capacity and required oil	(Booster Cylinder)
Lubrication tank capacity and required oil	1.1 gal (4 liter) / G68

GENERAL:

Machine Height	[135.6" (3,443 mm)]
Floor Space (L) with side chip conveyor & tank	153.7" (3,905 mm)
Floor Space (W) with control panel	92.2" (2,341 mm)
Machine weight	[16,645 lbs (7,550 kg)]
Power required	20.3 kVA / 54 amp @ 220V
Voltage required	205 - 235 Volts / 3 Phase

Specifications are subject to change for improvement without notice.

■ CONSTRUCTIONS

Column

“Y” shape ribbed column structure gives superior vibration absorption which happens during cutting process and during cutting process and also provide improved rigidity. To adopt three rows of column bearings provide excellent position accuracy, and it's lubricated by oil supplying system.

Table

49.2” x 22” table size can handle most demanding cutting conditions, and it is fully supported by heavily ribbed saddle structure.

Spindle

The directly coupled spindle at a maximum revolution of 12,000 rpm, allows high –speed processing. It is driven by **24.8 HP (18.5 kW)** A.C. motor and comes with BCV # 40 taper. It is supported by precision class bearings that are lubricated by oil-air supply system. A refrigerated spindle cooling system maintains a constant temperature for high accuracy, regardless of the ambient temperature or cutting conditions. Cooling oil is circulated through jackets in the spindle head.

Spindle Cooling System

The spindle cooling system minimizes thermal displacement which can happen during lengthy machining operations, and offers continued accuracy based on the thermal stability. This is an option on the 8,000 rpm spindle.

Fanuc 0i-F Plus

Fanuc's latest controller (0i Plus) is applied to provide more convenient processing conditions. In addition, functions such as **AICC 200 Block**, **Smart Guide-i**, **Machining Condition Selection**, and **15" touch screen** are standard.

40 Tool Magazine

Servo driven twin arm ATC provides excellent positioning accuracy, and the tool change speed has been improved. Using random access this tool changer delivers instant waiting tool availability even during short cutting cycle times. The cam actuated exchange arm provides a fast, reliable **1.4 second** tool-to-tool and **3.2 second** chip to chip cycle time.

Guideways

Linear roller guideways are applied to reduce non-cutting time and bring high rigidity. Each axis is directly connected to a highly reliable digital servo motor to provide high rigidity and minimal thermal displacement.

Double Anchored Ball Screw

The double anchored ball screw minimizes the expansion and contraction. And this provides outstanding positioning repeatability with minimized thermal growth. To adopt metal plate coupling between ball screw and servo motor reduces coupling breakage and back lash as well.

290 PSI Thru-Spindle Coolant System

High pressure coolant system (**290 PSI**) aggressively brings new technology to the metal cutting industry, and increases production by a proven 30%. It provides longer tool life, longer coolant life and superior chip control. A cyclone filtering system with 50-micron element protects the spindle and the vital rotary union from contamination. The large **365 liters (96.4 gallon)** tank stores an ample supply of coolant and is isolated from the machine bed to prevent heat transfer.

1,000 PSI High Pressure Coolant (option)

CONTROLLER

HYUNDAI WIA FANUC – SMART PLUS

[] : Option ☆ Needed technical consultation

Controlled axis / Display / Accuracy Compensation	
Control axes	3 axes (X, Y, Z) 4 axes (X, Y, Z, B)
Simultaneously controlled axes	3 axes [Max. 4 axes]
Least setting Unit	X, Y, Z axes : 0.001 mm (0.0001 inch) B axes : 1 deg [0.001] deg
Least input increment	X, Y, Z axes : 0.001 mm (0.0001 inch) B axes : 1 deg [0.001] deg
Inch / Metric conversion	
High response vector control	
Interlock	All axes / Each axis
Machine lock	All axes
Backlash compensation	± 0 ~ 9999 pulses (Rapid traverse / Cutting feed)
Position switch	
LCD / MDI	15 inch LCD unit (with Touch Panel)
Feedback	Absolute motor feedback
Stored stroke check 1	Over travel
Stored stroke check 2, 3	
Stored pitch error compensation	
Operation	
Automatic operation (Memory)	
MDI operation	
DNC operation	Needed DNC software / CF card
Program restart	
Wrong operation prevention	
Program check function	Dry run, Program check, Z axis Machine lock Stored limit check before move
Single block	
Search function	Program Number / Sequence Number
Handle interruption	
Interpolation functions	
Nano interpolation	
Positioning	G00
Linear interpolation	G01
Circular interpolation	G02, G03
Exact stop mode	Single : G09, Continuous : G61
Dwell	G04, 0 ~ 9999.9999 sec
Skip	G31
Reference position return	1st reference, G28 / 2nd reference, G30 Ref. position check, G27
Single direction positioning	G60
Thread synchronous cutting	G33
Helical interpolation	Circular + Linear 2 axes (Max.)
Feed function / Acc. & Dec. control	
Manual feed	Rapid traverse Jog : 0~2,000mm/min (79 ipm) Manual handle : x1, x10, x100 pulses Reference position return
Cutting Feed command	Direct input F code
Feedrate override	0 ~ 200% (10% Unit)
Rapid traverse override	1%, 25%, 50%, 100%
Override cancel	
Feed per minute	G94
Feed per revolution	G95
Cylindrical interpolation	G07.1
Inverse time feed	G93
Look-ahead block	200 blocks (AI APC)
Program input	
Tape Code	EIA / ISO
Optional block skip	1 ea
Absolute / Incremental program	G90 / G91
Program stop / end	M00, M01 / M02, M30
Maximum command unit	± 999,999,999 mm (± 99,999,999 inch)
Plane selection	X-Y, G17 / Z-X, G18 / Y-Z, G19
Workpiece coordinate system	G52, G53, 48 pairs (G54.1 P1 ~ 48)
Manual absolute	Fixed ON
Programmable data input	G10
Sub program call	10 folds nested
Custom macro	#100 ~ #199, #500 ~ #999
Programmable mirror image	G51.1, G50.1
G code preventing buffering	G4.1
Optional chamfering corner R	

Program input	
Polar coordinate command	G15, G16
Canned cycle	G73, G74, G76, G80 ~ G89
Scaling	G50, G51
Coordinate system rotation	G68, G69
Conversational Program	SmartGuide-i
Auxiliary function / Spindle speed function	
Level-up M Code	Multi / Bypass M code
Spindle speed function	S & 5 digit , Binary output
Spindle override	0% ~ 150% (10% Unit)
Spindle orientation	M19
Retraction for rigid tapping	
FSSB high speed rigid tapping	
Tool function / Tool compensation	
Tool function	Max. T8 digit
Tool life management	
Tool offset pairs	400 pairs
Tool nose / radius compensation	G40, G41, G42
Tool length offset	G43, G44, G49
Tool offset memory C	Tool geometry and wear (Cutter and tool length)
Tool length measurement	Z axis Input C
Editing function	
Part program storage size	5,120m (2MB)
No. of registerable programs	1,000 ea
Program protect	
Background editing	
Extended part program editing	Copy, move and change of NC program
Memory card program edit	
Data input / output & Interface	
I/O interface	CF card, USB memory Embedded Ethernet interface
Screen hard copy	
External message	
External key input	
External workpiece number search	
Automatic data backup	
Setting, display and diagnosis	
Self-diagnosis function	
History display & Operation	Alarm & Operator message & Operation
Run hour / Parts count display	
Maintenance information	
Actual cutting feedrate display	
Display of spindle speed / T code	
Graphic display	
Operating monitor screen	Spindle / Servo load etc.
Power consumption monitoring	Spindle & Servo
Spindle / Servo setting screen	
Multi language display	Support 24 languages
Display language switching	Selection of 5 optional Languages
LCD Screen Saver	Screen saver
Option	
Additional optional block skip	9 ea ☆
Fast ethernet	Needed option board
Data server	Needed option board
Protection of data at 8 levels	
Additional Axis	
Manual handle feed	2/3 units
Addition of custom macro	#100 ~ #199, #500 ~ #999, #98000 ~ #98499
Add. Workpiece	Max. 300 pairs (G54.1 P1 ~ P300)
AICC II	400 blocks ☆

■ STANDARD FEATURES

- Hyundai Wia Fanuc – Smart Plus Control
- Max. 12,000 rpm direct driven spindle
- Powerful **24.8 HP (18.5 kW)** spindle motor
- High precision spindle with double-row angular contact ball bearings
- BCV # 40 Spindle Taper
- Spindle orientation
- Spindle override
- Oil jacket spindle cooler
- 290 PSI through the spindle coolant.
- Massive Meehanite cast iron bed
- Large Linear Roller Guide Ways
- Double Pre-Tensioned Ball screws
- Fast 1,417 IPM (36m/min) X, Y and 1,181 IPM (30m/min) Z axis rapid traverse
- Rigid tapping
- Custom Macro (User Definable)
- Cam Type Double Arm ATC 30 Tools
- Portable Manual Pulse Generator
- Program and data protection key switch
- Telescopic way covers
- Internal spiral chip conveyor
- Left Side Chip Conveyor (38" discharge height)
- Flood coolant with large separate coolant tank
- Work light
- 3 color tower signal light
- 15" Touch-type monitor
- Instruction manual, parts list, and electrical drawings
- Fanuc operator and maintenance manuals
- One-year machine warranty: Parts and Labor
- Two-year control and motor warranty: Parts and Labor

■ OPTIONS

● : Standard, ○ : Option, ☆ : Prior Consultation - Non Application, ★ : Offer Required

		KF5600II	
12,000 RPM	DIRECT DRIVEN SPINDLE	●	
AIR BLOW	CUTTING AIR BLOW		
AIR GUN			
AIR CONDITIONER			
APC(SHUTTLE OR DUAL)	T-SLOT	●	
ATC	30EA	●	
	40EA	SELECTED	
AUTO DOOR			
AUTO POWER CUT OFF DEVICE	NFB (SHUNT TYPE)		
	ELB TYPE		
AIR BLOW FOR TLM & TBD			
AUTO TOOL MEASURING DEVICE	LASER	RENISHAW(NC4)	
		RENISHAW(TRS-2)	
		MARPOSS(ML75)	
	TOUCH	RENISHAW(TS27R)	
MARPOSS(T18-E32)			
AUTO WORK MEASURING DEVICE(OPTICAL)	RENISHAW	OMP60	
		RMP60	★
		RMP600	★
	MARPOSS	E83C-TXL110	
		T25-E86N	
CHIP CONVEYOR (EXCLUDING SHIPPING COST)	SIDE	HINGED (LEFT)	●
		SCRAPER	
	REAR	HINGED	
		SCRAPER	
CHIP BOX	FIXED TYPE		
	SWING TYPE		
	FIXED LARGE TYPE		
COOLANT	GUN		
	JET/NIAGARA		
	OIL SKIMMER		
STROKE EXPANTION	Z axis_635MM		
HIGH COLUMN OPTION	300MM (ONE PIECE COLUMN)		
Controller	NC Hyundai Wia Fanuc - Smart Plus	●	
	NC F-32i		
	NC F-31i		
PATROL LAMP (LED TYPE)	R. G, Y (3 COLORS)	●	
	R. G, Y (3 COLORS) + BUZZER		
SPINDLE THRU COOLANT	20kgf	W/O COOL JET	

	30kgf(20L)		
	70kgf(22.8L)	CYCLONE	
SCALE, LENEAR	HEIDENHAIN	X-AXIS	
		Y-AXIS	
		Z-AXIS	
SPINDLE MOTOR POWER UP (MAIN)	11/15KW		○
	11/18.5KW		●
SPINDLE TAPER	STANDARD		BCV # 40
	HSK-A63		
SPINDLE SPEED	8,000RPM		○
	12,000RPM		●
	15,000RPM		
	20,000RPM		
SPINDLE OIL COOLING DEVICE	OIL CON.	STD RPM	●
		OPT RPM	●
TOP COVER	FOR SP. THRU COOLANT		●
TOOL MONITORING SYSTEM	1 Channel, Marposs		
	2 Channel, Marposs		
	3 Channel, Marposs		★
	4 Channel, Marposs		★
	BUILT-IN FANUC CRT (HWTM)		
TRANSFORMER	30 KVA		
	CABLE		
SPECIAL COLOR	Old Hyundai-WIA or Customer Special Color		



HYUNDAI WIA Machine Tool America Co. Limited Warranty

Hyundai Wia Machine Tool America (“HWMA”) warrants to the original purchaser, other than a purchaser for resale, (the “Purchaser”) that HWMA’s machine tools shall be free of defects in materials and workmanship. For a period of one (1) year from completion of installation, or for a period of fifteen (15) months from date of shipment, whichever is earlier, HWMA will, at its sole and exclusive discretion, either replace or repair any machine or part thereof defective in workmanship or material, at no charge to the Purchaser.

All warranty repairs must either be performed by or authorized by a HWMA’s Authorized Service Organization. To obtain warranty service, Purchaser must contact their local HWMA Authorized Service Organization. Purchaser must provide verification of the date of delivery/installation when requesting warranty service (dated installation report). Ground freight charges (UPS regular or common carrier truck) for all warranty replacement parts are paid by HWMA. If machine is not operational, the HWMA will pay next-day air shipment charges for necessary parts weighing 100 lbs. or less. Materials or parts alleged to be defective shall be returned to HWMA, at HWMA’s request, transportation charges prepaid. After the warranty repair or replacement of a defective part, HWMA’s warranty for such part shall continue for ninety (90) days or for the remainder of the original Limited Warranty, whichever is longer.

WARRANTY LIMITATIONS

This warranty shall remain in effect only if the machine is used and maintained in accordance with all operating and maintenance instructions set forth in the manuals and instruction sheets furnished by HWMA. HWMA shall have no liability to repair or replace defective parts until the Purchaser has fulfilled its payment obligations. No allowance will be made for repairs or alterations made without HWMA’s prior written consent or approval. The limited warranty provided by HWMA excludes the following:

1. Damage, malfunction, or failure caused by or resulting from improper maintenance, misuse, neglect, accident or any other cause beyond the control of the HWMA.
2. Damage, malfunction, or failure caused by modification of the machine (mechanical or electrical) without written authorization by HWMA.
3. Damage, malfunction or failure caused by installation or use of accessories or peripherals not purchased through or authorized in writing by HWMA.
4. Paint, batteries, filters, fluids, fuses, light bulbs, or any commonly expendable item.
5. Damage to machines and/or components while being transported from HWMA’s warehouse or facility to destination.
6. Accessories or peripherals not manufactured by HWMA, which shall be subject only to whatever warranty that is supplied by the manufacturer of such product.
7. Fanuc CNC control, Fanuc spindle motors and Fanuc servo motors, spindle and servo drives, which are covered by a two (2) year manufacturer warranty.

No person, agent, distributor, dealer or company is authorized to change, modify or amend the terms of this Limited Warranty in any manner. HWMA makes no warranties, guarantees or representations, express or implied with respect to the machine tool, or parts thereof, except to the extent such warranty is set forth herein. The equipment covered does not necessarily comply with any codes or standards unless specifically quoted, ordered, and so accepted.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY USE OR PURPOSE. HWMA’s LIABILITY UNDER THIS WARRANTY IS EXPRESSLY LIMITED TO ITS PROMISE TO REPAIR OR REPLACE THE DEFECTIVE GOODS. HWMA SHALL HAVE NO FURTHER LIABILITY IN CONTRACT OR NEGLIGENCE OR UNDER ANY OTHER THEORY OF LAW OR EQUITY FOR ANY DAMAGES, DIRECT OR INDIRECT, INCIDENTAL, SPECIAL OR CONSEQUENTIAL, OR ANY DELAY RESULTING FROM THE DEFECT.



Machine Investment Information

- Terms:** 00% down upon order placement, 00% due upon shipment of the machine tool, final 00% due 00 days after receipt of the machine tool.
- Delivery:**
- Freight:** The customer is responsible for all freight charges incurred with the delivery of the machine tool, options, and accessories.
- Rigging:** The customer is responsible for all rigging charges incurred.
- F.O.B.:** Port of entry.
- Voltage/Air:** The customer is responsible to provide electrical power and air supply to the machine. Please check with Hyundai-Wia or distributor for the voltage/air requirement of each machine.
- Electrical:** If approval of electrical equipment is requested pursuant to a State or County statute, any costs associated with changes due to an inspection or the cost of a certification will be the customer's responsibility.
- Training:** Distributor will provide basic Operator and Program training at your facility. There is no charge for this training on new installations.
- Warranty:** Full 00 year warranty on machine tool and controller. Full 00 year service warranty provided by Distributor.
- Validity:** Price is valid for 15 days.

Cancellation: Canceled orders after the date of order placement shall be subject to a cancellation charge of equal to thirty percent (00%) of the purchase price