

F

660M

High Speed, Wide Range Vertical Machining Center for High Quality Mold Machining

HYUNDAI WIA High-Speed Vertical Machining Center

Technical Leader

The Vertical Machining Center F660M, designed by Hyundai WIA with years of expertise and the latest technology, provides the high performance necessary for machining high quality molds.

Table Size (L×W)	mm(in)	1,600×650 (63"×25.6")
Max. Load Capacity	kg(lb)	1,300 (2,866)
Spindle Taper	-	BBT40 [HSK-A63]
Spindle Speed	r/min	15,000 [20,000] [15,000]
Sp. Power (Max./Cont.)	kW(HP)	25/22 (33.5/30) [22/18.5 (30/25)] [26/26 (35/35)]
No. of Tools	EA	24 [30]
Travel (X/Y/Z)	mm(in)	1,400/660/635 (55.1"/26"/25")
Rapid Traverse Rate	m/min	36/36/30

[] : Option • HYUNDAI-ITROL

F

660M

Vertical Machining Center for Mold Machining

- Main spindle with high precision angular contact bearing
- Built-in main spindle for processing high quality mold products
- Semi servo ATC for the quickest tool change time
- An enhanced 4 guideway Y-axis system
- Roller guideway on all axes for maximum feed power
- Hyundai WIA mold package for optimal mold product machining
- HYUNDAI-iTROL controller with wide range of supporting software



01 BASIC STRUCTURE

High Speed & Productivity Vertical Machining Center

Magazine

- No. of Tools : 24 [30] EA
- Tool Change Time (C-C) : 3.9 sec
- Max. Tool Leng^t : 300 mm (11.8")
- Max. Tool Dia. (W.T/W.O)
Ø90/Ø150 (Ø3.5"/Ø5.9")
- Tool Selection Method : Random

High Precision Spindle

- Belt Driven Spindle
- 15,000 [20,000] rpm
- Spindle Cooling : Std.

Table

- Tabel Size (X/Y) : 1,600×650 mm (63"×25.6")
- Max. Load Capa. : 1,300kg (2,866 lb)



HIGH-PRECISION, SPEED & LARGE WORKING AREA

HIGH-PRECISION STRUCTURE

4 Slideways Y-axis

4 Slideways on the Y-axis to minimize sagging of X-axis, enabling manufacture of high precision products.



High Column **OPTION** - High column of 300mm(11.8") is provided.

Optimal Structural Analysis

F660M is designed to have optimal structure through Hyundai WIA's unique structural analysis. In particular, enhancement of bed and column's rigidity makes excellent performance even in heavy duty cutting.

GUIDE WAY



High-Speed Roller LM Guideway **OPTION**

For processing the highest quality mold products, the F660M is designed with roller LM guideways for high rigidity and enhanced acc/deceleration.

(Mold Package : Standard)



Ball Screw

In order to eliminate thermal growth and increase accuracy, all axis are driven by high precision double anchored ballscrews. The pretensioned and double anchored design provides outstanding positioning and repeatability with virtually no thermal growth.

Travel (X/Y/Z)

1,400/660/635 mm

(55.1"/26"/25")

Rapid Traverse Rate (X/Y/Z)

36/36/30 m/min

(1,417/1,417/1,181 ipm)

02 SPINDLE & ATC

Excellent Machining Performance with High-precision Spindle & ATC

SPINDLE



Built-in Spindle

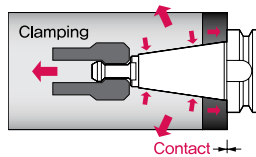
Maximum spindle speed up to 20,000rpm(opt.) is possible due to the installation of ultra precision Angular Ball Bearings. The spindle head is designed to minimize the heat displacement of main spindle, and with the use of a hydraulic tool lock system the machining stability is increased.

Spindle Cooling

The spindle cooling system minimizes thermal displacement which can happen during lengthy machining operations, and offers reliable machining based on the thermal stability.

Dual Contact Spindle **OPTION**

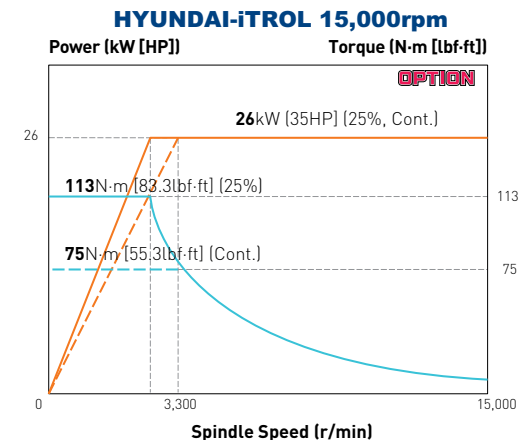
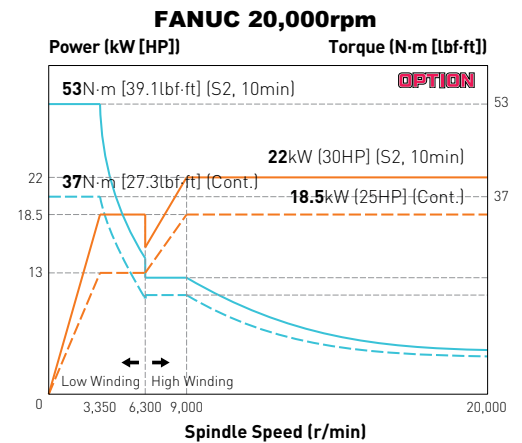
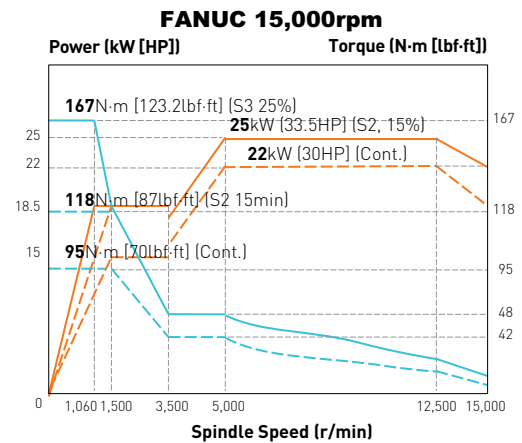
The Big Plus spindle system (BBT40) provides dual contact between the spindle face and the flange face of the tool holder.



Through Spindle Coolant **OPTION**

Through Spindle Coolant is exceedingly useful when drilling deep holes. It helps increase the lifetime of the tool, while decreasing cycle time.

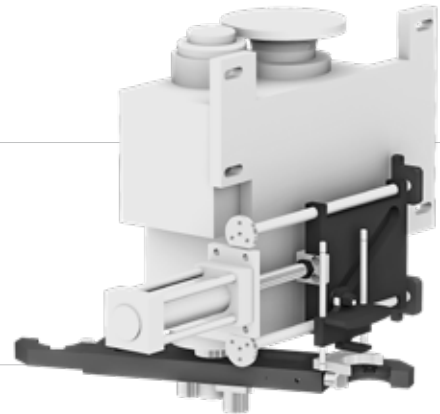
20 bar / 30 bar / 70 bar



ATC

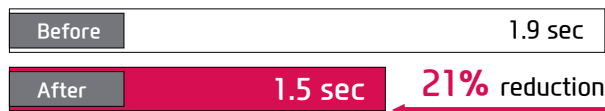
High Speed ATC

Position control through twin arm ATC on servo motors has been improved drastically. In addition, tool exchanging has become easier, reducing specific cutting time tremendously. Position control on the Twin Arm ATC has improved drastically. The twin arm ATC enables faster tool change and increased productivity.

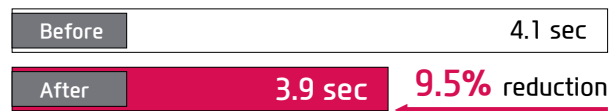


⦿ ATC Speed Improvement

Tool to Tool Time



Chip to Chip Time



No. of Tools	Tool Shank	Max. Tool Length	Max. Tool Weight	Max. Tool Dia. (W.T/W.O)
24 [30] EA	BBT40 [HSK-A63]	300 mm (11.8")	8 kg (17.6 lb)	Ø90/Ø150 mm (Ø3.5"/Ø5.9")

[] : Option

MAGAZINE

The tool magazine holds 24 tools as standard and 30 tools as an option. Random access allows faster tool change and increase in productivity.

24 Tool Magazine



30 Tool Magazine



03 MOLD PACKAGE

Powerful Mold Package, HYUNDAI-WIA Mold All in One

Mold Package Option

1 Package / i Package : Standard 2, 3, 4 Package : Option

HWM ALL IN ONE		1 Package	2 Package	3 Package	4 Package	i Package
AICC II Package	200 block	•	•			
	600 block			•		
	1,000 block				•	
Advanced surface						•
S/W : HW-MCS, HW-AFC		•	•	•	•	
Auto Power Off		•	•	•	•	•
Sp. Heat Distortion Compensation Device		•	•	•	•	•
Cutting Air Blow		•	•	•	•	•
Auto Tool Measuring Device		•	•	•	•	•
Data Server 1GB			•	•	•	

HWM ALL-IN-ONE

To enhance mold machining, the "HWM ALL-IN-ONE" is provided as a standard feature for F660M machines. This ensures accurate and high quality surface finishing and contouring.



- ❶ High Speed Contouring Control (AICC II)
- ❷ Optimal S/W (FANUC 31i Series Models)
HW-MCS (Selectable Process Conditions), HW-AFC (Adaptive Feed Control)
- ❸ Main Spindle Cooling Device (8-channel) – Maintain spindle temperature (heat sensor)
- ❹ Cutting Air Blow – Cutting air blow is provided for mold machining.
- ❺ Auto Tool Measuring Device – Detects and sets tool length, and attrition (Graphic User Interface included)

Thermal Displacement Compensation Device

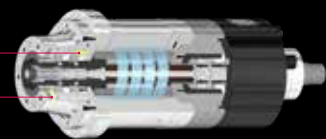
Cooling system & Lubrication system

Thermal displacement of the spindle is minimized by the use of cooling techniques. This provides high accuracy when machining at high speed.

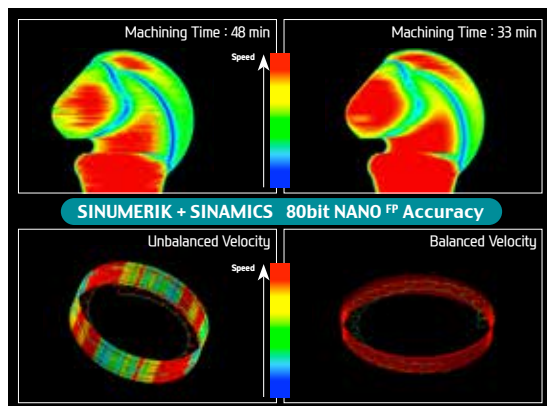
T.D.C With PT100 Sensor

Interface

T.D.C With Disp. Sensor



ADVANCED SURFACE



- Advanced Surface software for high speed, high accuracy mold processing
- 80-bit floating point calculation enables calculation of numbers less than a nanometer
- A brand new filter for speed and acceleration control - Improvements upon the problems of intensity of illumination due to irregular CAM data
- Standard jerk restriction function to ease deceleration impact - Minimized vibration and high speed deceleration
- Standard feed forward function for speed control - Improves contouring accuracy by correcting the following error before setting point output

04 HYUNDAI WIA FANUC – SMART PLUS

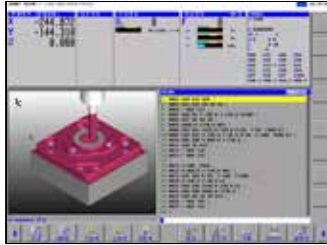
The Compatible All-round Control



15" Touch-type Monitor as a standard

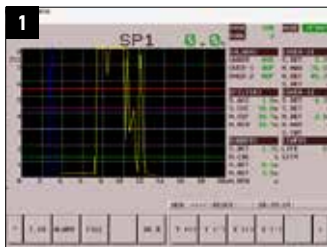
Smart Machine Control	Fast Cycle Time Technology
	Fine Surface Technology
Conversational Program	SmartGuide-i
i-HMI	Machining-aid Function
AI Contour Control	AICC-2 (200 blocks)
Smooth Tolerance Control	0.1 μ m command and specify tolerance
JERK Control	Diminished vibration by controlling acceleration speed
Machining Condition Selection	Designated machining level based on speed & quality
Machining Quality Control Function	Smooth Tolerance+ integrated support
Part Program Storage	5120M (2MB)
No. of Registerable Programs	1000 EA

SMART SOFTWARE



DIALOGUE PROGRAM (Smart Guide-i)

This software offers maximum user convenience through a dialogue program from setup to machining. This includes writing machining programs and simulation checks.



High-quality Machining S/W

1. Tool Monitoring (HW-TM) **OPTION**

This tool status monitoring software monitors and protects workpiece, tools, and equipment through real-time monitoring of the motor load from machining.

2. Adaptive Feed Control (HW-AFC)

This software improves the lifetime and productivity of tools by automatically controlling the feed to maintain an even machining load.



3. Thermal Displacement Compensation (HW-TDC) **OPTION**

This software improves machining precision by minimizing thermal deformation from changes in external environments and machining.

4. Machining Condition Selection (HW-MCS)

This software automatically optimizes rapid transfer parameters for cutting transfers and workpiece weights depending on the machining type (based on rate/precision /quality)



Machining Support S/W

1. Machine Guidance (HW-MCG)

This software offers various user convenience functions such as tool manipulation, maintenance, tool monitoring, and a pop-up/status window

2. Tool/Workpiece Measurement (Renishaw GUI) **OPTION**

This user convenience GUI software measures material coordinate systems, tool lengths/diameters/damage to tools (included in Renishaw H/W set)



3. LAUNCHER

This software offers shortcuts for quick access to specialized features and frequently used features.

4. Premium Tool Operation

This software offers premium graphic functions for more intuitive tool operation.



5. Manual Viewer

This software enables users to view electronic manuals right from the tool.

6. Scheduling

This software enables viewing/setting up directly from the tool. This allows such actions as managing customer's tool schedules and schedule notification.

❖ KF5600M, KF6700M : HYUNDAI WIA FANUC - SMART PLUS Non Applicable

SPECIFICATIONS

Standard & Optional

Spindle		F660M
15,000rpm (25kW [33.5HP])	FANUC	●
20,000rpm (22kW [30HP])	FANUC	○
15,000rpm (26kW [35HP])	HYUNDAI-ITROL	○
Spindle Cooling System		●
ATC		
ATC Extension	24	●
	30	○
Tool Shank Type	BT40	○
	BBT40	●
	CAT40	○
	HSK-A63	○
U-Center	D'andrea	○
Pull Stud	45°	●
	60°	○
	90°	○
Table & Column		
APC		-
Tap Type Table		-
T-Slot Table		●
NC Rotary Table		☆
High Column	300mm (11.8")	○
Coolant System		
Std. Coolant (Nozzle)		●
Bed Flushing Coolant		●
Through Spindle Coolant*	20bar	○
	30bar, 20 ℓ (5.3 gal)	○
	70bar, 15 ℓ (4 gal)	○
	70bar, 30 ℓ (7.9 gal)	○
Top Cover		●
Shower Coolant		○
Gun Coolant		○
Side Oil Hole Coolant		○
Air Gun		○
Cutting Air Blow		○
Tool Measuring Air Blow (Only for TLM)		○
Air Blow for Automation		☆
Thru MQL Device (Without MQL)		☆
Coolant Chiller		☆
Power Coolant System (For Automation)		☆
Chip Disposal		
Coolant Tank	600 ℓ (158.5 gal)	●
Chip Conveyor (Hinge/Scraper)	Left(Left)	○
	Left(Rear)	○
Special Chip Conveyor (Drum Filter)		☆
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	☆
ETC		
Tool Box		●
Customized Color	Need for Munsel No.	☆
CAD&CAM Software		☆
Electric Device		
Call Light	1 Color : ●	●
Call Light & Buzzer	3 Color : ●●●B	○
Work Light		●
Electric Cabinet Light		○
Remote MPG		●
3 Axis MPG	FANUC	○
	HYUNDAI-ITROL	-
Work Counter		○
Total Counter		○
Tool Counter		○

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

Electric Device		F660M
Multi Tool Counter	6 EA	○
	9 EA	○
Electric Circuit Breaker		○
AVR (Auto Voltage Regulator)		☆
Transformer	25kVA	○
Auto Power Off		●
Back up Module for Black out		○
Measuring Device		
Air Zero	TACO	○
	SMC	○
Work Measuring Device		○
TLM (Marposh/Renishaw/Blum)	Touch(Mold Package)	●
Tool Broken Detective Device		○
Tool Broken Detective Device		☆
Linear Scale	X/Y/Z Axis	○
Coolant Level Sensor (Only for Chip Conveyor, Bladder Type)		☆
Enviornment		
Air Conditioner		○
Dehumidifier		○
Oil Mist Collector		☆
Oil Skimmer (Only for Chip Conveyor)		○
MQL (Minimal Quantity Lubrication)		☆
Fixture & Automation		
Auto Door	Std.	○
	High Speed	☆
Auto Shutter (Only for Automatic System)		☆
Sub O/P		☆
NC Rotary Table/F	Single	○
	Channel	☆
Control of Additional Axis	1Axis	○
	2Axis	☆
External M Code 4ea		○
Automation Interface		☆
I/O Extension (In & Out)	16 Contact	○
	32 Contact	○
Hyd. Device		
Std. Hyd. Unit	70bar/14 ℓ (3.7 gal)	●
	2x3(6 port)	☆
Center Hyd. Supply Device	2x5(10 port)	☆
	70bar	○
Fixture Hyd. Unit	100bar	○
	Customized	☆
S/W		
DNC software (HW-eDNC)		○
Machine Monitoring System (HW-MMS Cloud/Edge/Remote)		○
Machine Monitoring System & Analysis (HW-MMS Edge Plus)		☆
Automation CAM program (HW-ACAM)		○
Conversational program (HW-DPRO)		○
SmartGuide-i : FANUC		● (F31i : ○)
Tool Monitoring (HW-TM) : FANUC		○
Adaptive Feed Control (HW-AFC)		●
Thermal Displacement Compensation (HW-TDC)		○
Machining Condition Selection (HW-MCS) : FANUC		●
Machine Guidance (HW-MCG) : FANUC		●
RENISHAW GUI : FANUC		○
Spindle Warm up Function (HW-WARMUP) : FANUC		●
Energy Saving System (HW-ESS) : FANUC		●
Premium Tool Operation : FANUC		● (F31i : -)
Manual Viewer : FANUC		● (F31i : -)
Scheduling : FANUC		● (F31i : -)
Operation Memo : FANUC		● (F31i : -)

Through Spindle Coolant* : Please check the filter types with sales representative.
Specifications are subject to change without notice for improvement.

External Dimensions

unit : mm(in)

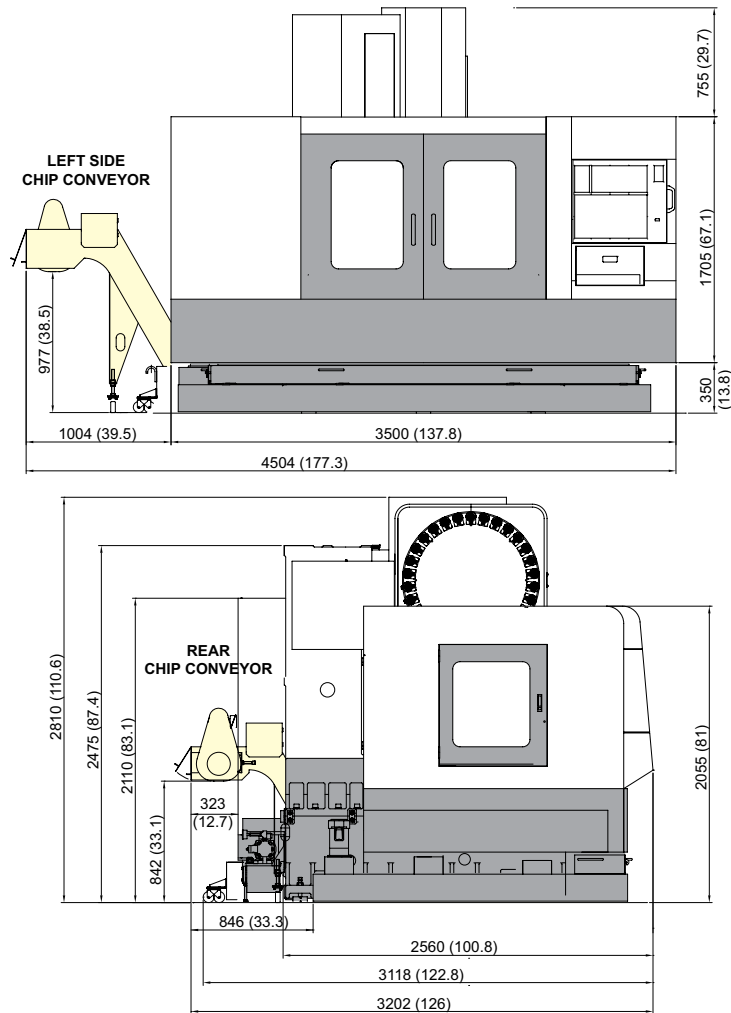
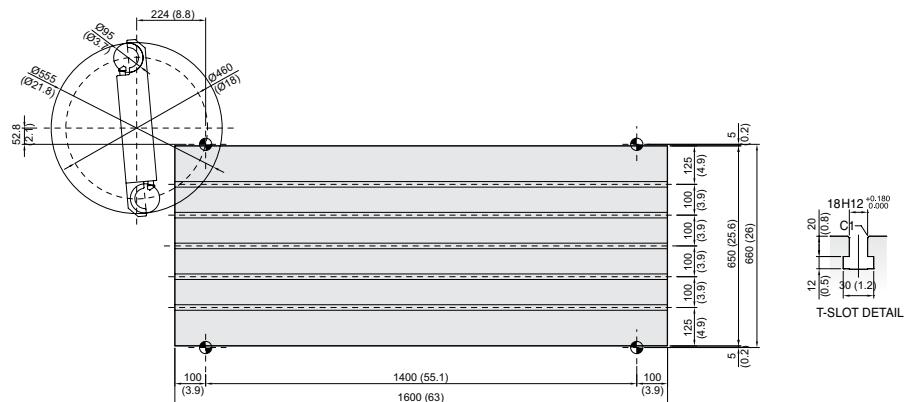


Table Dimensions

unit : mm(in)

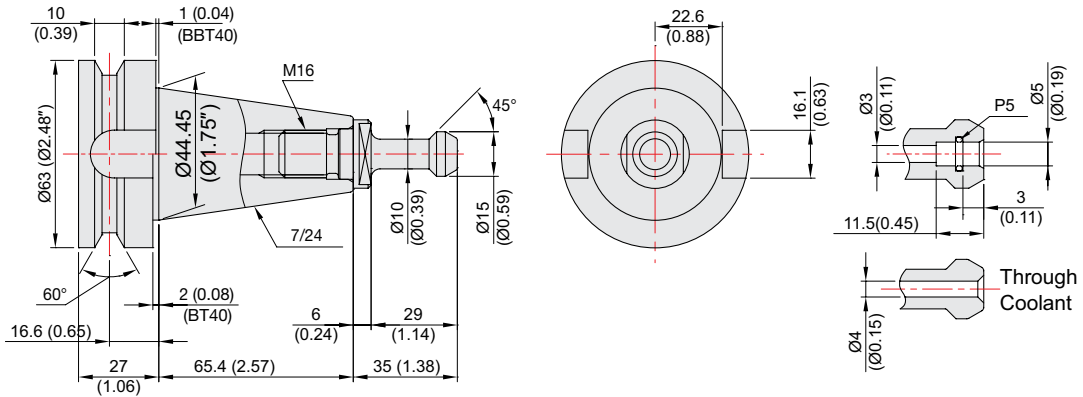


SPECIFICATIONS

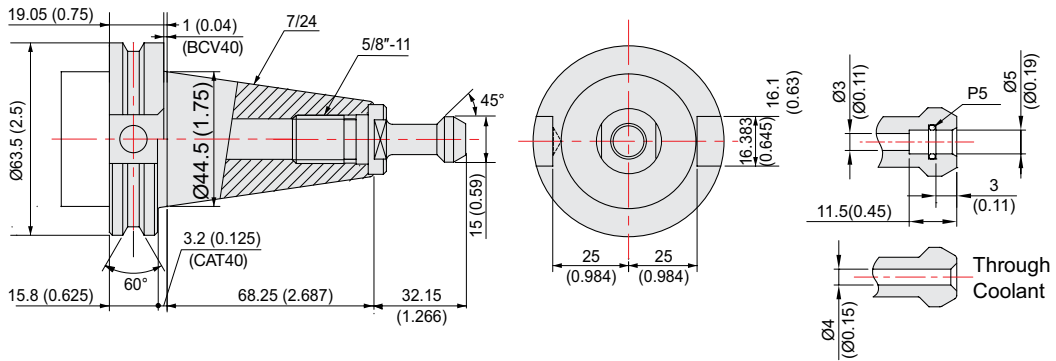
Table Dimensions

unit : mm(in)

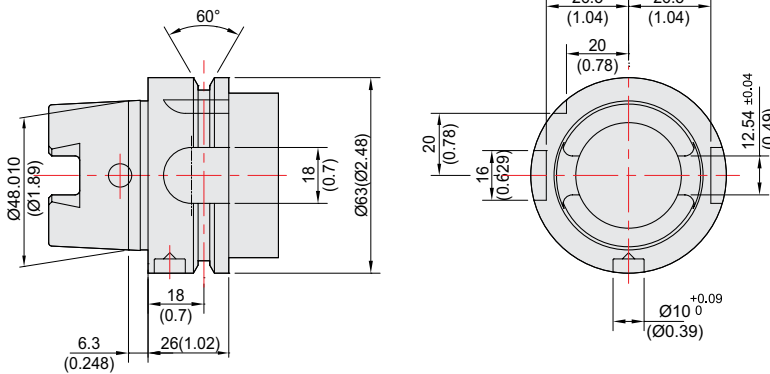
BT40/BBT40, BIG PLUS



CAT40/BCV40



HSK A-63



SPECIFICATIONS

Specifications

[] : Option

ITEM		F660M	
TABLE	Table Size	mm(in)	1,600×650 (63"×25.6")
	Maximum Load Capacity	kg(lb)	1,300 (2,866)
	Table Change Time	sec	-
	Change Method	-	-
	Table Driving Method	-	-
SPINDLE	Spindle Taper	-	BIG PLUS #40 [HSK-A63]
	Spindle RPM	r/min	15,000 [20,000] [15,000]
	Spindle Power (Max./Cont.)	kW(HP)	25/22 (33.5/30) [22/18.5 (30/25)] [26/26 (35/35)]
	Spindle Torque (Max./Cont.)	N·m(lbf·ft)	167/95 (123.2/70) [53/37 (39.1/27.3)] [113/75 (83.3/55.3)]
	Spindle Driving Method	-	BUILT-IN [BUILT-IN]
FEED	Travel (X/Y/Z)	mm(in)	1,400/660/635 (55.1"/26"/25")
	Distance from Table Top to SP. Nose	mm(in)	150~785 (5.9"~30.9")
	Distance from Column to SP. Center	mm(in)	766 (30.2")
	Rapid Traverse Rate (X/Y/Z)	m/min	36/36/30
	Slide Type	-	LM GUIDE [ROLLER GUIDE]
ATC	Number of Tools	EA	24 [30]
	Tool Shank	-	BBT40 [CAT40] [HSK-A63]
	Max. Tool Dia. (W.T / W.O)	mm(in)	Ø90/Ø150 (3.5"/5.9")
	Max. Tool Length	mm(in)	300 (11.8")
	Max. Tool Weight	kg(lb)	8 (17.6)
	Tool Selection Method	-	RANDOM
	Tool Change Time	T-T	sec
C-C		sec	3.9
TANK CAPACITY	Coolant Tank	ℓ (gal)	600 (158.5)
	Lubricating Tank	ℓ (gal)	2 (0.5)
	Hydraulic Tank	ℓ (gal)	11 (2.9)
POWER SUPPLY	Air Consumption (0.5MPa)	ℓ /min(gal)	110 (29.1)
	Electric Power Supply	KVA	28
	Thickness of Power Cable	Sq	OVER 50
	Voltage	V/Hz	220/60 (200/50*)
MACHINE	Floor Space (L×W)	mm(in)	3,500×2,560 (137.8"×100.8")
	Height	mm(in)	2,810 (110.6")
	Weight	kg(lb)	9,500 (20,944)
NC	Controller	-	HYUNDAI WIA FANUC i Series - Smart Plus [FANUC 31i-B] [HYUNDAI-iTROL]

❖ Roller guideway is included as standard when the Mold Package is selected.

*) Using 50Hz voltage instead of 60Hz may lower the output of motors. (excluding servo motors and inverter motors)
Specifications are subject to change without notice for improvement.

CONTROLLER

HYUNDAI WIA FANUC i Series – 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	9 ea
Absolute / Incremental program	G90 / G91
Program stop / end	M00, M01 / M02, M30
Maximum command unit	± 999,999,999 mm (± 99,999,9999 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	
Fast ethernet	Needed option board
Data server	Needed option board
Protection of data at 8 levels	
Additional Axis	
Manual handle feed	2/3 units #100 ~ #199, #500 ~ #999, #98000 ~ #98499
Add. Workpiece	Max. 300 pairs (G54.1 P1 ~ P300)
AICC II	400 blocks ☆

Figures in inch are converted from metric values.

The FANUC controller specifications are subject to change based on the policy of company CNC supplying.

CONTROLLER

FANUC 31i-B

[] : 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	G20 / G21
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	10.4 inch color LCD
Feedback	Absolute motor feedback
Stored stroke check 1	Over travel
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 axes Machine lock, Stroke check before move
Single block	
Search function	Program Number / Sequence Number
Interpolation functions	
Pano interpolation	
Positioning	G00
Linear interpolation	G01
Cylindrical 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 : G27 Ref. position check : G30
Thread synchronous cutting	G33
Helical interpolation	Circular + Linear interpolation 2 axes(max.)
Feed function / Acc. & Dec. control	
Manual feed	Rapid traverse Jog : 0~5,000mm/min (197 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	F0% (F1%), F25%, F50%, F100%
Override cancel	
Feed per minute	G94
Feed per revolution	G95
Look-ahead block	40 Block 200 Block (Mold)
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 (± 99,999.9999 inch)
Plane selection	X-Y : G17 / Z-X : G18 / Y-Z : G19
Workpiece coordinate system	G52, G53, 6 pairs (G54 ~ G59)
Manual absolute	Fixed ON
Programmable data input	G10
Sub program call	10 folds nested
Custom macro	#100 ~ #149, #500 ~ #549
G code system	A
Programmable mirror image	G51.1, G50.1
G code preventing buffering	G4.1
Including Chamfering / Corner R	
Canned cycle	G73, G74, G76, G80 ~ G89
Coordinate rotation	G68, G69

Auxiliary function / Spindle speed function	
Auxiliary function	M 4 digit
Level-up M Code	Multi / Bypass M code
Spindle speed command	S 5 digit , Binary output
Spindle override	0% ~ 150% (10% Unit)
Spindle orientation	M19
FSSB high speed rigid tapping	
Tool function / Tool compensation	
Tool function	Max. T 8 digit
Tool life management	256 pairs ☆
Tool offset pairs	64 pairs
Tool nose radius compensation	G40, G41, G42
Tool nose length compensation	G43, G44, G49
Tool offset memory C	Tool length, diameter, abrasion(length, diameter)
Tool length measurement	Z axes Input C
Editing function	
Part program storage size	640m (256KB)
No. of registerable programs	500 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	RS 232C serial port, 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	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 20 languages
Display language switching	Selection of 5 optional Languages
LCD Screen Saver	Screen saver
Processing select	Speed/ridigity setting
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	
Polar coordinate command	G15, G16
Polar coordinate interpolation	G12.1, G13.1
Cylindrical interpolation	G07.1
One-way positioning	G60
Stored stroke check 2, 3	
Inverse-time feed	G93
Scaling	G50, G51
Manual guide i	Conversational auto program
Handle interrupt	
Manual handle feed	2/3 units #100~#199, #500~#999 #100~#199, #500~#999, #98000~#98499
Additional custom macro variables	
Retraction for rigid tapping	
Tool management function	
Tool offset number	Max. 2000 pair ☆
Program storage capacity	512KB ~ 8MB ☆
Program registration number	Max. 4000 ea ☆
Additional work coordinate	48 pair (G54.1 P1 ~ P48)
AICC II	200 block 400 / 600 / 1000 block ☆

Figures in inch are converted from metric values.

The FANUC controller specifications are subject to change based on the policy of company CNC supplying.

CONTROLLER

HYUNDAI-iTROL (SIEMENS 828D)

[] : Option ☆ Needed technical consultation

Controlled axis / Display / Accuracy Compensation	
Control axes	3 axes (X, Y, Z) [4 axes (X, Y, Z, A)] [5 axes (X, Y, Z, A, C)]
Simultaneously controlled axes	Max. 4 axes
Least setting Unit	X, Y, Z axes : 0.001 mm (0.0001 inch) [A, C (B) axes : 1 deg [0.001] deg]
Least input increment	X, Y, Z축 : 0.001 mm (0.0001 inch) [A, C (B) axes : 1 deg [0.001] deg]
Inch / Metric changeover	G70 (inch) / G71 (metric)
Interlock	All axes / Each axis
Pitch error compensation	
Feedforward control	
LCD / MDI	10.4 inch color LCD [15 inch color LCD (With Touch panel)]
Keyboard	QWERTY full keyboard
Stored stroke check	Over travel
Operation	
Automatic operation	
MDI operation	
Program restart	
Program check function	Dry run / Program check / Machine lock
Single block	
Block search	Block search
Reposition	
Working area limit	Working area limitations
Interpolation functions	
Positioning	G00
Linear interpolation	G01
Circular interpolation	Circular Interpolation CW (G02) Circular Interpolation CCW (G03)
Exact position stop	Single block exact stop (G09) Exact stop G60 (G601, G602, G603)
Dwell	Dwell (G04)
Reference position return	Return to reference point Return to 2nd reference point
Helical interpolation	
Spline interpolation	Non-uniform rational B splines
Compressor for 3-axis machining (Improving machining quality)	CompCAD / CompCURV (Cycle 832)
Feed function / Acc. & Dec. control	
Manual feed	Rapid traverse Jog Manual handle Reference position return
Cutting Feed command	Direct input F code
Feedrate override	0 ~ 200% (10% Unit)
Rapid traverse override	1%, 25%, 50%, 100%
Feed per minute	G94
Feed per revolution	G95
Look-ahead block	300 block 450 block : (SW28X Mold) [600 block]
Program input	
ISO correspondence	G291(ISO)/G290 (SIEMENS) (ISO G Code system-A)
Optional block skip	2
Program stop / end	M00, M01 / M02, M30
Maximum command unit	± 999,999.999 mm, ± 99,999.9999 inch
Plane selection	X-Y : G17, X-Z : G18, Y-Z : G19 G54 ~ G57, G505~G549
Workpiece coordinate system	G500 (Basic frame - settable zero offset) G53 (Work offset non modal) G153 (basic frame non modal)
Sub program call	11 folds nested
G code preventing buffering	STOPRE
Drilling/Milling cycle	Programing (Cycle 82, 83, 84, 840)
User cycle	

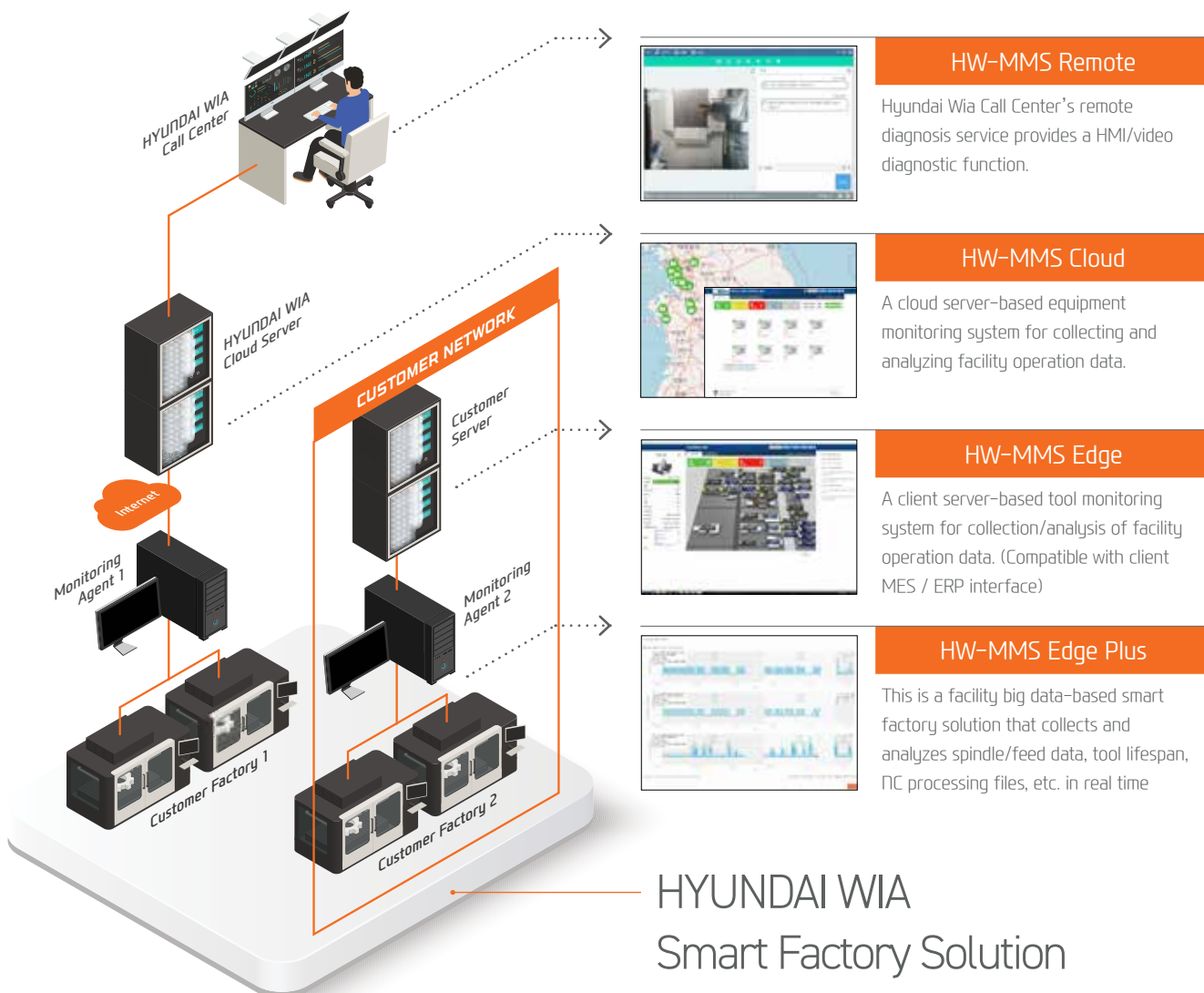
Auxiliary function / Spindle speed function	
Auxiliary function	M Code 4 digit
Spindle speed function	S Code 5 digit
Spindle override	0% ~ 150% (10% Unit)
Spindle orientation	SPOS
Rigid tapping	
Automatic mode Interchange	Spindle / Axis mode
Constant surface speed control	G96, G97
Spindle speed limitation	LIMS
Tool function / Tool compensation	
Tool function	Tool number & Tool name Tool : T + Offset : D
Tool life management	
Tools in tool list	256 ea 768 ea : (SW28X Mold)
Cutting Edges in tool list	512 ea 1,536 ea : (SW28X Mold)
Tool radius compensation	ISO (G40, G41, G42)
Tool length offset	
Geometry / Wear compensation	
Measurement of tool length	
Tool management function	
Editing function	
Part program storage size	5MB 10MB : (SW28X Mold)
No. of registerable programs	750 ea
External Storage devices	Local network, Server, USB, Flash drive
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 interface (ONLY 10.4") USB memory interface Embedded Ethernet memory interface
Screenshot	
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. Support 9 languages Chinese (Simplified/Traditional), English, French, German, Italian, Korean, Portuguese, Spanish [☆ 22 Support languages : Inquiry need]
Multi language display	
LCD Screen Saver	Screen saver & Motion sensing
Option	
Additional optional block skip	10 ea
Additional axis control	
Contour handwheel	
3D simulation	
Real time simulation	
ShopMill	Machining step programming for milling

HW-MMS

HYUNDAI WIA Machine Monitoring System



A manufacturing machine self-developed by Hyundai Wia, HW-MMS is a unique software capable of monitoring the operation status of manufacturing machines in factories, a smart solution to improve manufacturing conditions of customers





F660M
Movie



YouTube HYUNDAI WIA MT

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2021-06 001.003 ENG