



Manufacturer



Litz Hitech Corp. No. 18 Yu 9 Road, Tachia District, Taichung City, Taiwan. Tel: +886-4-2681-5711 Fax: +886-4-2681-5108 sales@litzhitech.com www.litzhitech.com

Please visit the website for additional information.





Litz Hitech Corp.

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LU Series

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Description























Control System







LITZ 3

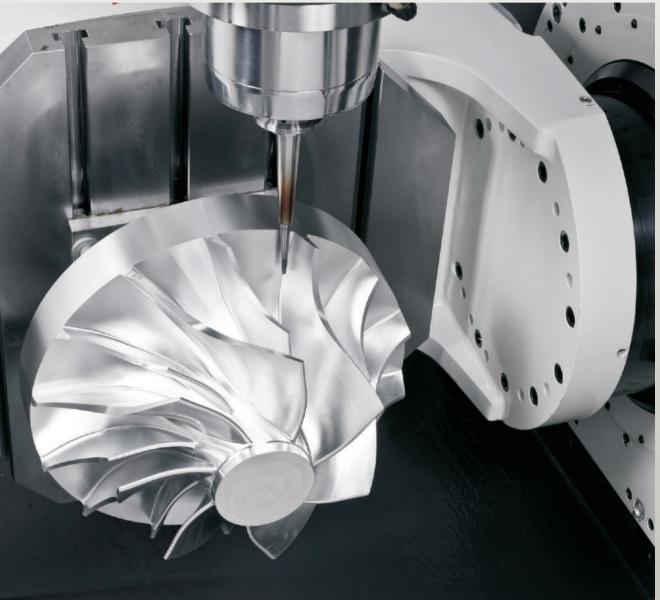
LU Series -Vertical Machining Center (5 Axes)

U-720

Powerful 5-Axes Machining / Superior Machining Performance



The design concept for the LU series is to build a simple and standardized reliablestructure, to achieve high quality/powerful 5 axes machining. The high performancecutting capability of the LU series provides a economical 5 axes solution forusers in the highly competitive market.



LITZ HITECH CORP. (5) VERTICAL MACHINING CENTER(5AXES

LU series is designed for highly efficient production mindset. It is equipped with high performance control system, along with high speed contour control capabilities. Best surface precision can be achieved in the shortest machining time. Highly dynamic performance for 5 axes machining, can provide solution for complex workpiece, and fulfill demands for 5 axes requirement.



LU-620

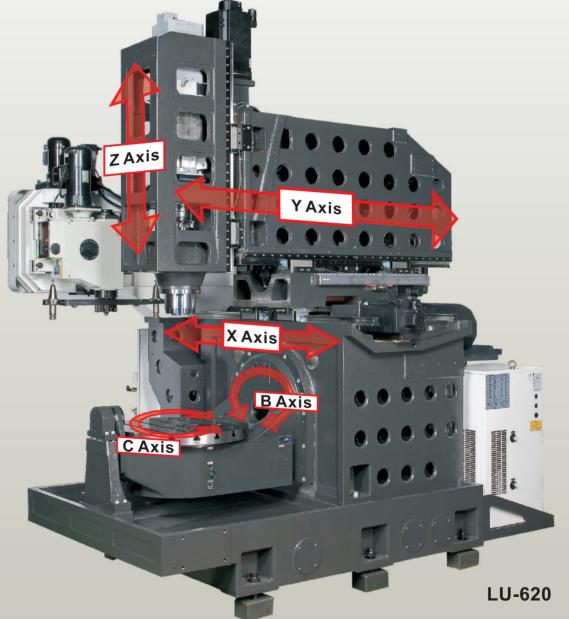
Innovative Performance

- * Easy entrance into working area.
- * Great chip removal mechanism.
- * Ergonomically design.

Servo transmission, linear scales compensation for all axes, and measurement system are either standard or optional equipment.

High-Rigidity Structural Design

LU series 5 axes machining center employs high rigidity casting base to support the swiveling B/C axes. X/Y axes are with cross slider design. The design ensures high machining precision, best quality stability and the highest production efficiencies.



Technical Highlights:

- 1. High efficiency: simple to complex 5 axes machining.

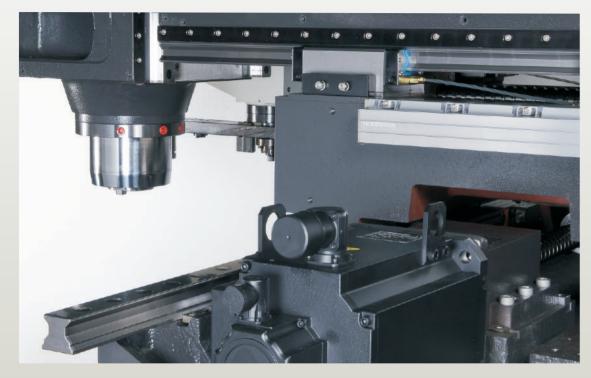


4. Magazine: **30**tools(LU400/620/720)

2. High precision: X/Y/Z axes + B/C axes with high precision linear scales. 3. Powerful cutting spindle: direct drive transmission with torque up to

High Precision Transmission System

At the highest level of machining production, linear technology can enhance machining efficiency and precision. The machine sets a new standard by compact structure. Using high technology components enables the high cutting speed, and processes the best repeatability and dynamic performance.



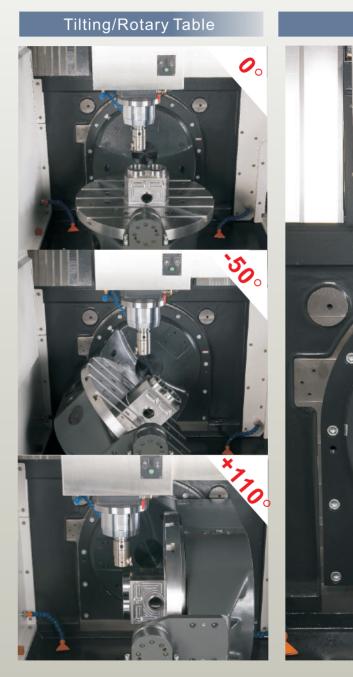
Optional 3 Axes Linear Scales **OP**



- X/Y/Z axes can be equipped with linear scales, and detects the thermal displacement caused by rapid machine movements. The value of the thermal displacement is being feedbacked to controller for accuracy compensation. The option is best for high precision parts production.
- Linear scales system is equipped with air protection device, to avoid dust and oil-mist pollution, and ensure linear scales accuracy. The device can prolong the lifespan of the linear scales.

B/C Axes Rotary Table

The 5 axes technology is equipped with linear scales and rotary tables. The dynamic swiveling rotary table can move with high rapid. B axes is **25** RPM, and C axes is **25** RPM, when the table is in worm gear mechanism.



- B axes tilting angle: -50~+110 degrees
- C axes rotating angle: 360 degrees
- B axes and C axes are with each own
- designated servo motor B / C axes worktable max. loading: 200KG (LU400), 300KG (LU620), 500KG (LU720)



LU series use high rigid swiveling B / C mechanism to ensure best positioning precision at any angle with 5 axes simultaneous operation. The expanded application range can fulfill the high demand for complex machining. B / C axes are with full circle hydraulic brake system, and ensures best reliability.

Worktable & Supporting Tailstock

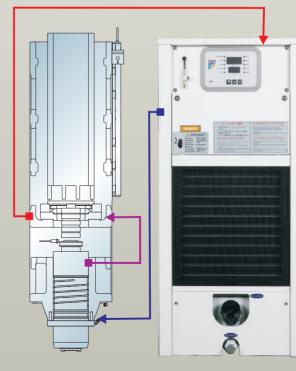
Spindle Unit

Advanced spindle design can highly enhance the cutting efficiencies and surface quality. Especially suitable for mass production and high precision demands

High Speed Spindle



Spindle Oil Cooling System



Spindle and spindle motor adjusting plate are equipped with oil-cooling system, which can efficiently control thermal changes.





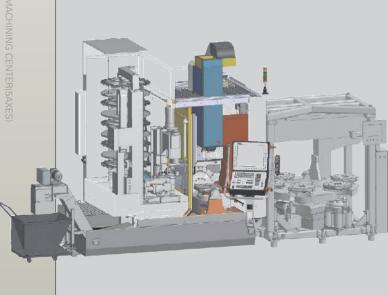
LU620 Rotary Table



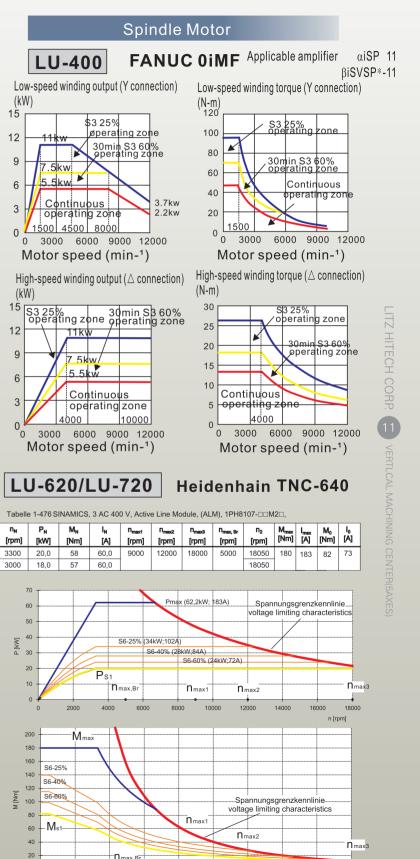
Large diameter table expands space for fixture/jig installation, and expands machining range.

Six Auto Pallet Change

Worktable Hydraulic Brake Unit



- A supporting tailstock setup to ensurebest precision and rigidity when table is loaded.
- High performance hydraulic module providesbraking system for the worktable, this ensures the worktable's high clamping force at high loading.

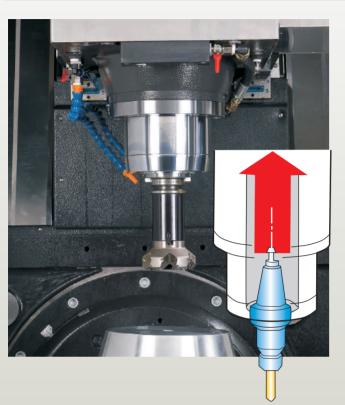


n [rpm]

Machine Oil-Coolant Separation Design

ATC and Magazine Unit

Spindle Pull Force



Spindle Tool Pulling Force

1100kgf (LU-720) 1100kgf (LU-620) 750kgf (LU-400)

- High pull force spindle provides high tool clamping force to enhance tool cutting rigidity.
- Two-sided-constraint-taper-tool is used to enhance the cutting rigidity.

Magazine Unit

Magazine capacity is 30T(LU-400/620/720) 48T(LU-400/620/720) OP 60T(LU-620/720) OP

Tools can be loaded or unloaded during cutting.

ATC Control

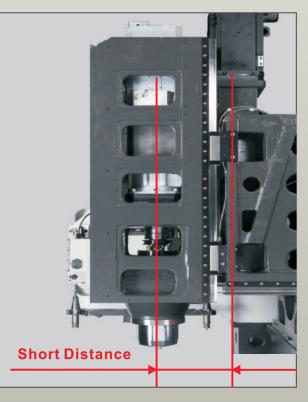








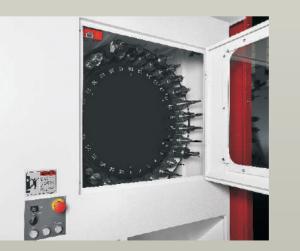
Spindle Direct Drive Transmission



IDD is the best anti-heat separation design IDD (Isolated Direct Drive System)

- Direct drive spindle design can separate heat source, and minimize heat displacement to increase precision and tool lifespan.
- Heat separation coupling design in between spindle and motor. The spindle oil cooling control is optional for high precision cutting.
- No belt nor gear transmission, thus backlashes, noises, or vibration can be limited.
- Direct drive spindle can enhance motor efficiency, high quality rigid tapping can be performed.

30T(LU-400/620/720)



Arm-type tool changing mechanism and magazine on the left side of the machine. This can reduce the time for preparing the tools. Auto door for the ATC can also prevents the chips from getting into the ATC unit.



Arm-type Tool Changing System

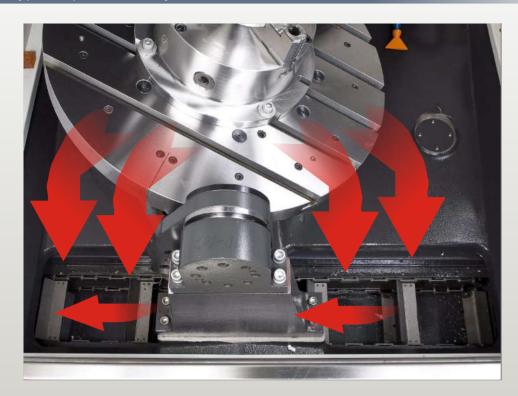


Rapid tool changing arm, T to T: 5 sec CAM type indexing mechanism, for high precision and low maintenance.

Light ATC arm, for low inertia and low loading.

Highly Efficient Chip Removal Mechanism

Chain-type Chip Removal System



In the chip removal function, the highly efficient and simple designed mechanism can handle large amount of coolant to the chip conveyor. And from the chip conveyor, the chips are transported to the chip cart on the left side of the machine. This mechanism makes it easy and convenient to handle the chips.

Chip Cart



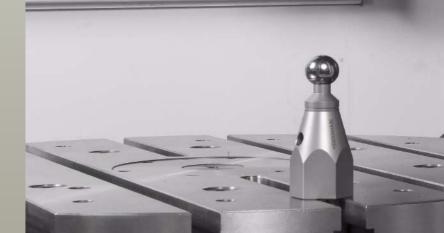
Laser Tool Measurement System 💿

The continuous monitoring of the tool data can detect the breakage/damage/wear of the tool. This can ensure the consistent production quality, and avoid damages.

Laser measurement system can ensure high quality precision.

Advantages:

- * Reduce non-production time.
- * Fully automation.
- * Low defective rate.
- * High production efficiency.
- * High production quality.



LU-400

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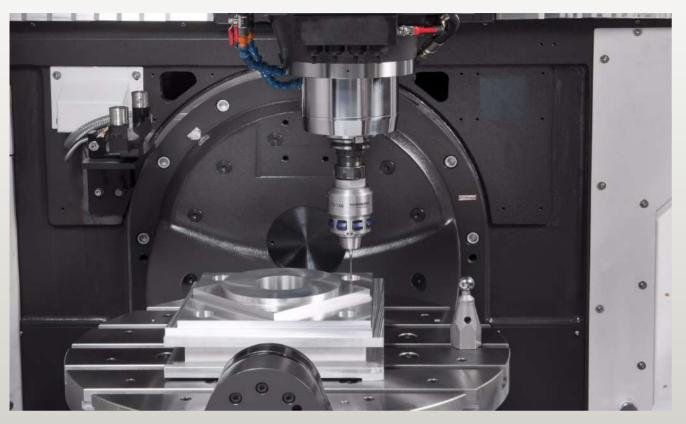
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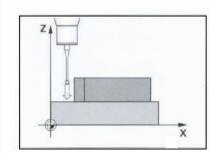
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Infrared Workpiece Measurement 😳

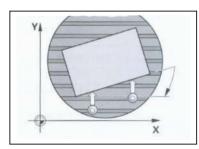


Highlights:

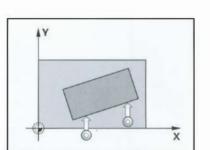
- Workpiece can be clamped at any position.
- Probe can detect uneven / unparallel surface for holes or surfaces.
- CNC coordinate compensation.



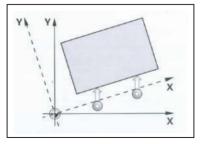
Measure any points on any axes



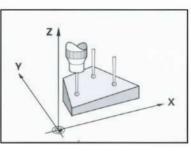
Compensate uneven value through rotating table



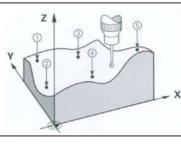
Linear tilting angle



Compensate uneven value through coordinate's basic rotation



Surface tilting angle

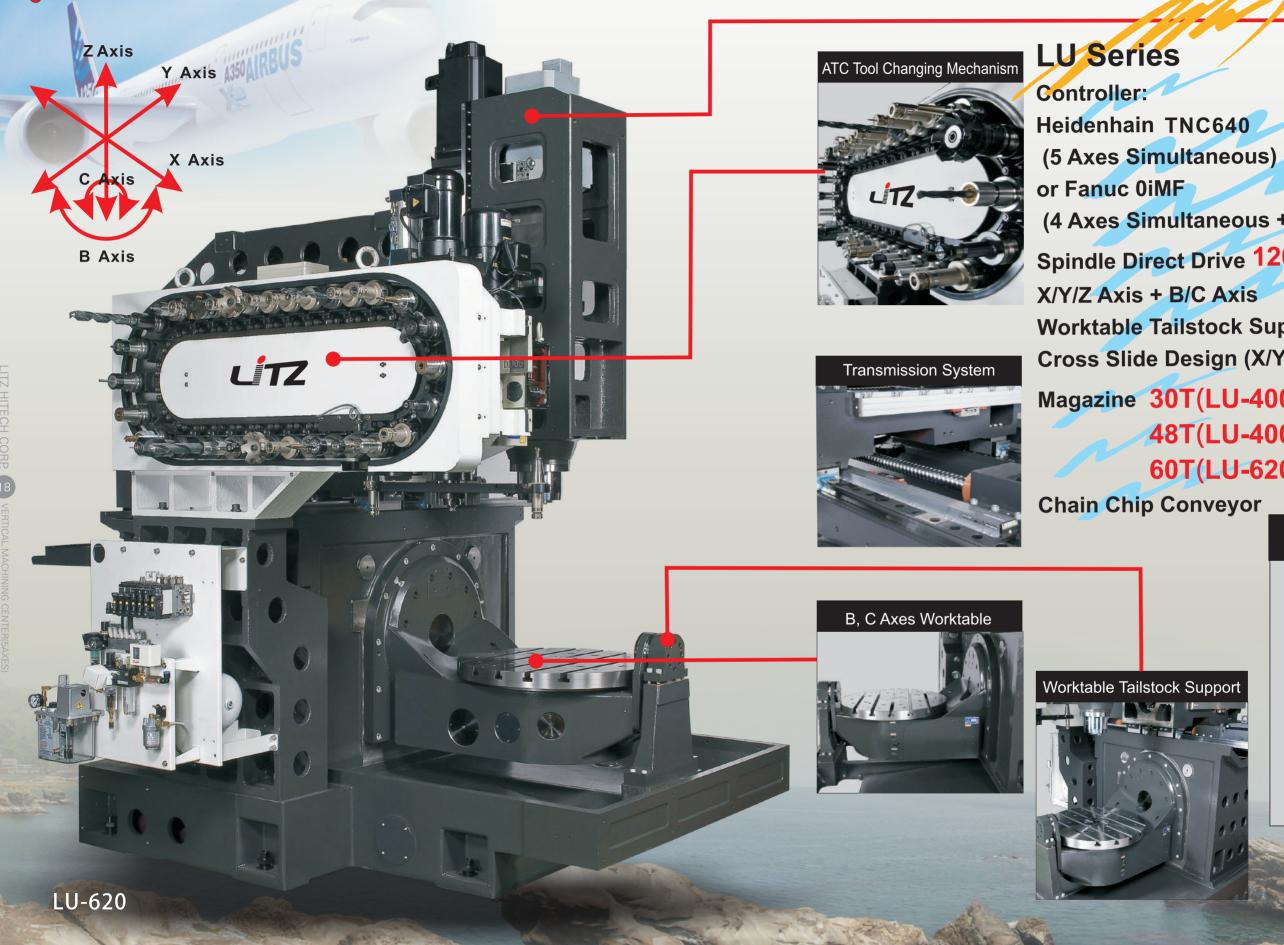


Measure curves





5 Axes Simultaneous Movement Structure



(4 Axes Simultaneous + 1)

Spindle Direct Drive 12000RPM

Worktable Tailstock Support Cross Slide Design (X/Y Axes)

Magazine 30T(LU-400/620/720) 48T(LU-400/620/720) OP 60T(LU-620/720) ①

Spindle Direct Drive Transmission

High Precision Measurement System

Easy and Simple Maintenance Design

Tilting Axis Linear Scales



BAxis Tilting Axis with Rotating Linear Scale.

C Axis Encoder



CAxis with Heidenhain High Precision Rotating Encoder.

Center Calibration Function **OP**

Rotary Axis Laser Measurement





Worktable Center Calibration w/ Heidenhain TS740. High Precision Touch Probe & Standard Calibration Ball with Heidenhain Measurement Software can detect error value of the worktable and compensate to ensure Worktable Precision.

Tool Unloading & Loading & Maintenance Door



Magazine with maintenance door, easy for loading and unloading tools, for easy maintenance.

Convenient Access for Maintenance



Hydraulic tubes are centralized at the rear of the machine for easy maintenance.

Electric System For Easy Maintenance



- Electrical cabinet are in compliance with CE regulation, to ensure control system can be free of interference.
- High performance controller, with systemized development and internet connection to fulfill demand for high speed high precision.
- Electrical cabinet is equipped with heat exchanger unit FANUC for stable control operation, air cooler can be an option

High Performance Design Setup

Extra Large Operating Room & Oil Mist Collecting

Safety Door System



When safety door is not closed, program cannot start to ensure operator's safety.
 When door is opened during machining, program will stop for safety pre-caution.

Disc Type Oil Coolant Separator **OP**



- Disc type oil-coolant separator for easy installation and low space occupation.
- Disc type oil-coolant separator can separate the floating oil in the tank to ensure coolant quality and lifespan, andfurther ensure the machining quality.

Lighting System



 High brightness work light is standard for easy loading and unloading work from the table.
 Worklight is anti-explosion, waterproof, anti-dust.
 Parts are easily accessible for the work light.

Hydraulic & Lubrication System(LU-620)

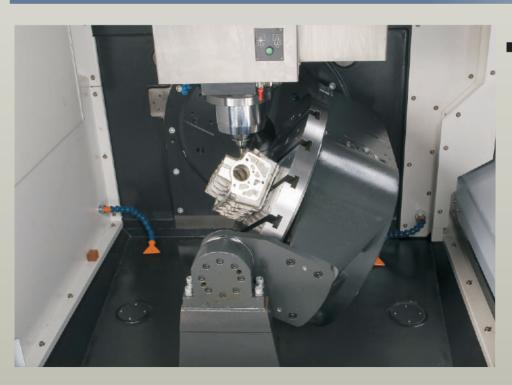


High quality components are used for hydraulic & lubrication system is used to ensure reliability of the machine.

Shaft-type Chip Guard



Ultra Large Machining Space



Oil Mist Collector Unit OP



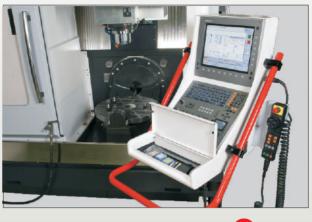
- Fully enclosed enclosure and oil mist collector can efficiently collect the dustand oil-mist during machining to avoidhazardous particles are inhaled.
 High precision parts can be producedin a clean environment to comply withdemands for green technology.
 - Large machining room with small interference area.

Operating Convenience & Accessibility

Approachable Distance

Item	unit	Section	LU-400	LU-620	LU-720
Distance Between Operator & Spindle	mm	А	315-665	305-825	400-1100
Distance Between Operator & Worktable Center	mm	В	490	565	700
Door Opening Size	mm	С	900	1000	1050
Controller from the Floor	mm	D	870	900	870
Controller from the Floor (Highest)	mm	Е	970	1000	970

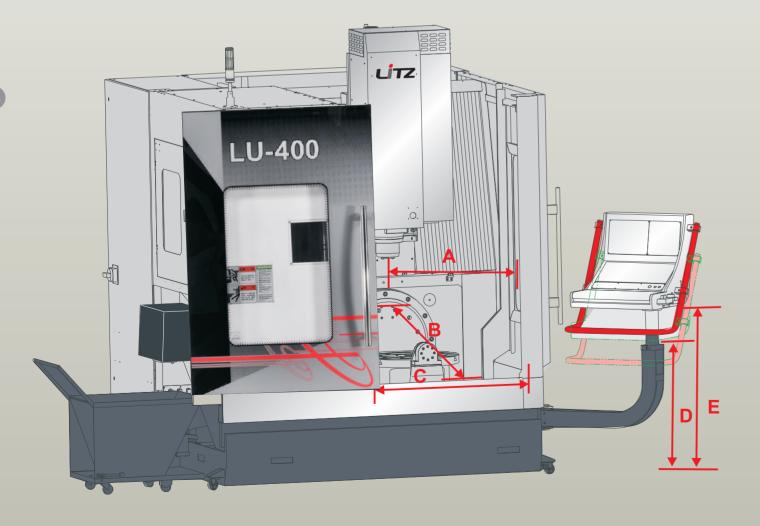
Operating Convenience (LU620)



• Document and compartment OP



• Adjustable opertation panel: it can be operated in front of the machine or at the right-side of the machine. The height of the operation panel can also be adjusted to best-suited the hight of human body.





• Movable control cabinet

Control System Unit

Equipped with Fanuc / Heidenhain for the most modern 5Axes control system. The innovative software function improves the precision and production efficiencies. The equipped Ethernet port can also provide quick external connect.



Anti Collision Software System (TNC640 ONLY)

DCM(Software Function)

Monitoring for TNC 640

Dynamic Collision



User Friendly HMI

Ergonomically Design Control Panel Providing best operating comfort for the operator. Height is 0.90m to 1.10m.



High Performance Software System

Heidenhain TNC640 (5Axes Simultaneous) Heidenhain TNC620 (4+1Axes) 3D Software 15" TFT Technology User Self-Definition Software (SOFTKEY) **SMARTNC** FANUC 0iMF (4+1 Axes)

Highlights

High performance control system is the best for high demand machining requirement. LU Series' superior advantage and high performance can fulfill the user requirement from mass production to high speed machining, and to mold making.

Safety Control

Safety technology is in compliance with CE regulation and ECN electrical safety regulation.

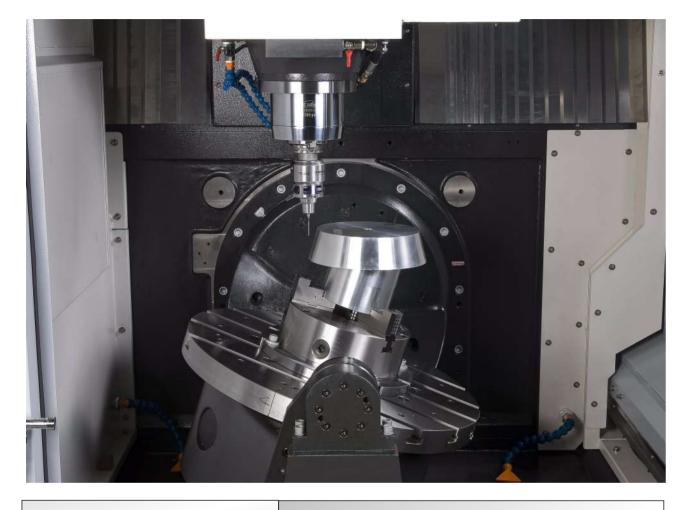
Alarm Message Software

Improved operability to reduce error. Remote capability ensures faster technical support in programming and operability.

Anti Collision (TNC640 ONLY)



ITZ HITECH CORP. 27 The Dynamic Cutting Test should be executed for the LU-Series 5-Axis Machining Center according to NAS979 standard in order to inspect the high-accuracy performance of the machine.

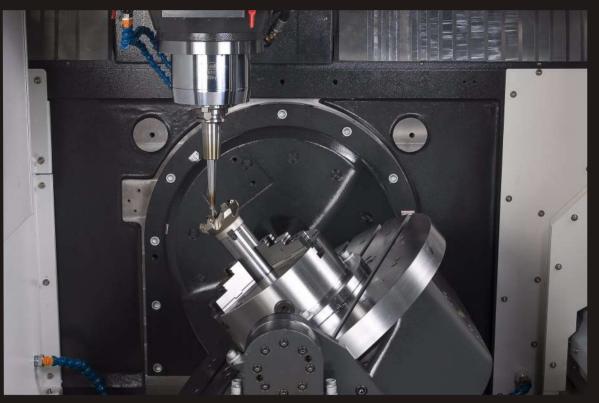


Roundness (when inhibiting 5 axes at the same time) (NAS 979 standard)	Cutting conditions:		
90°	Cutting Object (JIS)	A7075 (alu. Alloy)	
i Ai	Tool	Ultra-hard End-mill Tool - \varnothing 40mm (double- edge Tool)	
180°	Spindle Speed	2000 rpm	
	Milling Speed	2000 mm/min	
270° 5 µm	Workpiece Dimensions	Ø216mm xØ250mm x 63.5mm (H)	



One Clamping for Complex Parts

Heidenhain and Fanuc controller can be equipped for LU Series. Both are most advanced and precise 5 Axes controller in the market. The most optimized machining solution can fulfill demand for all complex parts.



Highly efficient 5 axes machining application.



CAM Solution to High Efficient Manufacturing

STRATEGIC ALLIANCE BETWEEN LITZ HITECH AND OPEN MIND. THE CAM FORCE





Being a leader in 2~5 axis high-speed machining CAM System, the PowerMILL is affirmed by the market in its operability, efficiency and functionality.





A leading brand in 2-5 axis high-speed machining CAM System

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Ultrasonic Integration For Machining Of Advanced Materials

Applications and parts

Highlight

Control technology

Summary

Technical parameters

Complex processing technolog



Tungsten steel



1. Flexibly integrated laser beams through the main axis of HSK-A63 connector

Sapphire

- 2. The beehive texture of injection mold for steering cover with laser processing
- 3. The injection mold for dashboard storage box cover with leather surface texture





HSK-A63/HSK-A100 connector

Integrated ultrasound technology The integrate ultrasonic and milling process technology for machine tool is able to provide a wider range of processing materials to users

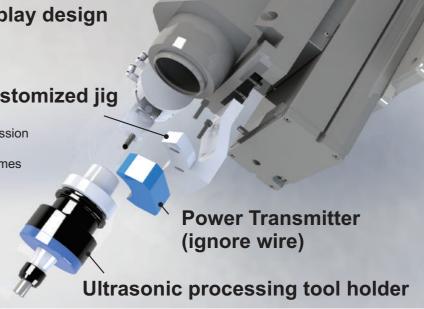
Ultrasonic processing is an innovative technology for manufacturing complex geometries of high-tech materials that brings incredible rotation speed and can be applied to almost all various fields. The difficult-to-process and highperformance materials can be economically processed and high quality can be achieved, with the kinematics superposition of cutlery rotation and additional axial vibration. The processing of thin buttress in lower processing cutlery significantly reduces minor-cracking of the materials and extending the lifespan of the cutlery. Depending on the materials characteristics, an excellent surface glossiness of Ra < 0.1µm can be achieved.

Plug and play design



Customized jig

- Ultrasonic technology
- utilizes the optimized inductive transmission
- More powerful ultrasonic
- amplifier amplitude is increased by 3 times
- Shorter ultrasonic generator to achieve a higher stiffness Cutlery
- non-integral and forming cutlery



The principle of work

The cutlery rotates through the connector of HSK-E32/HSK-E40/HSK-E50/HSK-A63/HAS-A10, and rotates reciprocally in superposition with the ultrasonic additional vibration along axial direction (piezoelectric effect).

Highlight

- +Economical grinding, milling and drilling for advanced materials which are hard, fragile and difficult-to-process
- +The whole new and more robust ULTRASONIC HSK, with a higher amplitude power for high productivity, high surface quality and precision, and longer lifespan of the cutlery +Automatic detection and track the ultrasonic frequency and amplitude

Ultrasonic processing technology

Significantly increase the productivity

LITZ HITECH CORP. 32 CENT

With the ultrasonic processing technology of Litz, special materials in the industry can be economically processed regardless of their special shapes, such as precision ceramics, glass quartz, aluminum oxide, tungsten steel, super-alloy or complex materials. The high-frequency microamplitude at the front end of cutlery is caused by the ultrasonic resonance effect and rotation super-position of the cutlery. On the basis of workpiece requirements, the ultrasonic processing technology will be able to achieve a higher feed rate, a l onger cutlery lifespan and significantly improve the workpiece surface roughness (Ra < 0.1 µm).



Litz's ultrasonic processing technology has been continuously improving based on the demands of the market. The applied processing fields in Litz's ultrasonic processing modules cover the most advanced difficult-to-process materials and reinforced-fiber complex materials.

The advanced and difficultto-process materials

Precision ceramic Light weight Excellent corrosion resistance and heat resistance Excellent wear resistance

Quartz glass Transparent color Heat and shock resistant

Good chemical stability and electrical insulation Nickel based alloy

Excellent corrosion resistance Excellent compressive intensity and antioxidant

Glass fiber High intensity High elasticity and light weight









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CEN

- Flexibly integrated ultrasonic processing technology through the
- 5. The thin and lightweight structural optics parts, such as glass ceramic parts 6.Silicon nitride camera case with sky detection
- 7.Deep hole drilling for the drive shaft in MnCr

Automatic Pallet Changer System LU400



Magazine Capacity:120T Max.Tool Length1~24T: 250mm 25~120T: 160mm Max.Tool Weight:7Kg

X/Y/Z Axes Travel:400/350/350mm	Numbe
Worktable Size: Ø450mm	APC W
Max. Worktable Loading: 150kg	APC W



ITZ HITECH



er of Pallets:6 Worktable Size:350 x350mm Worktable Loading:100kg

Automatic Pallet Changer System LU620



Max.Tool Weight:7Kg

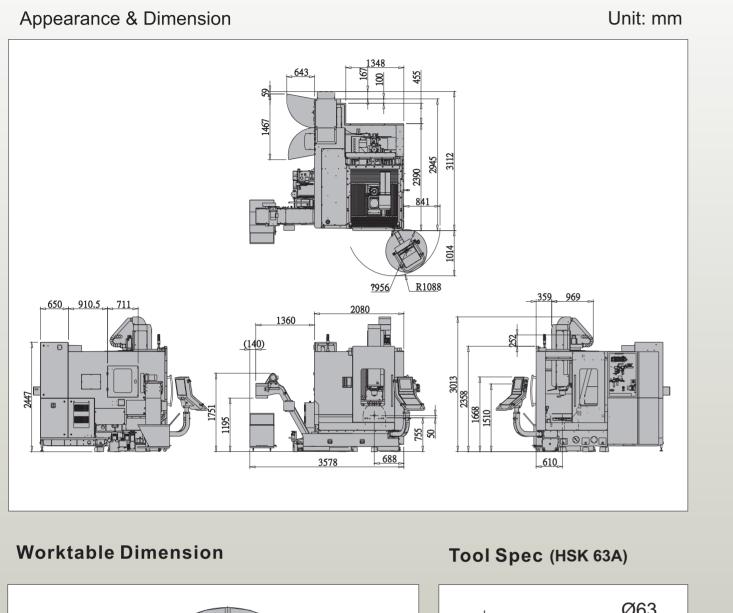
Max. Worktable Loading: 300kg

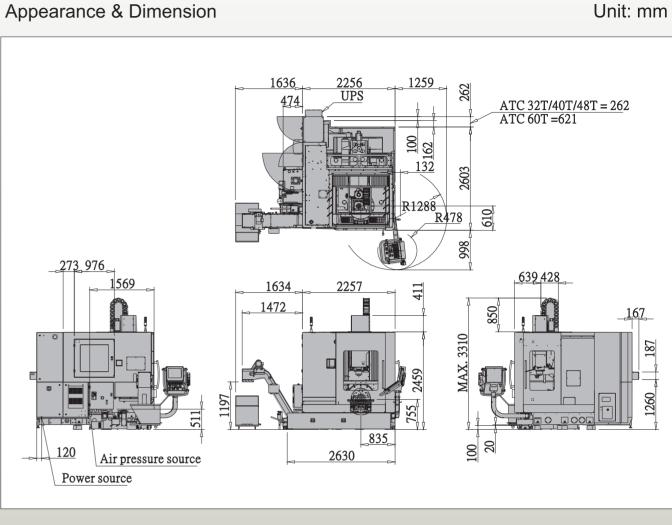


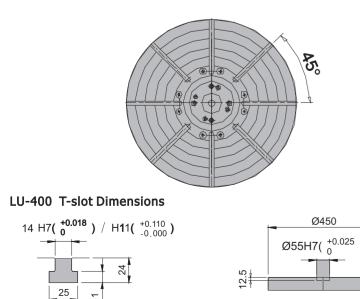
APC Worktable Loading: 100kg

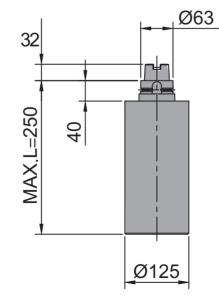
Dimension & Cutting Range LU400

Dimension & Cutting Range LU620

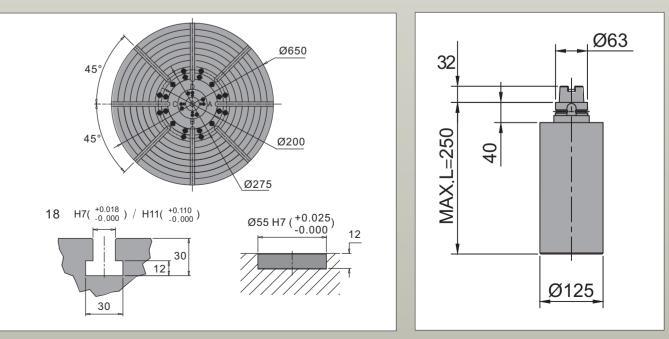








Worktable Dimension



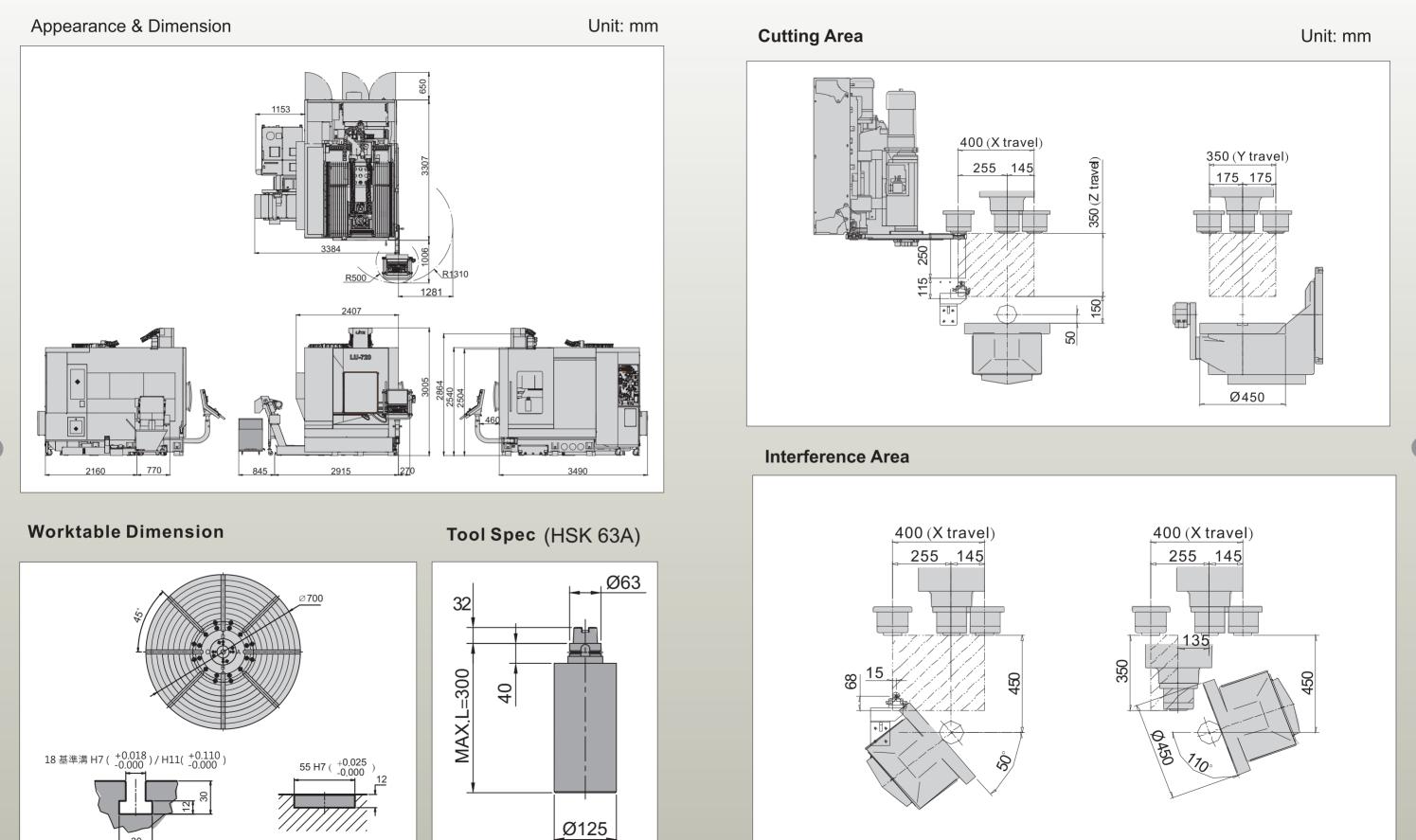
Unit: mm

39

Tool Spec (HSK 63A)

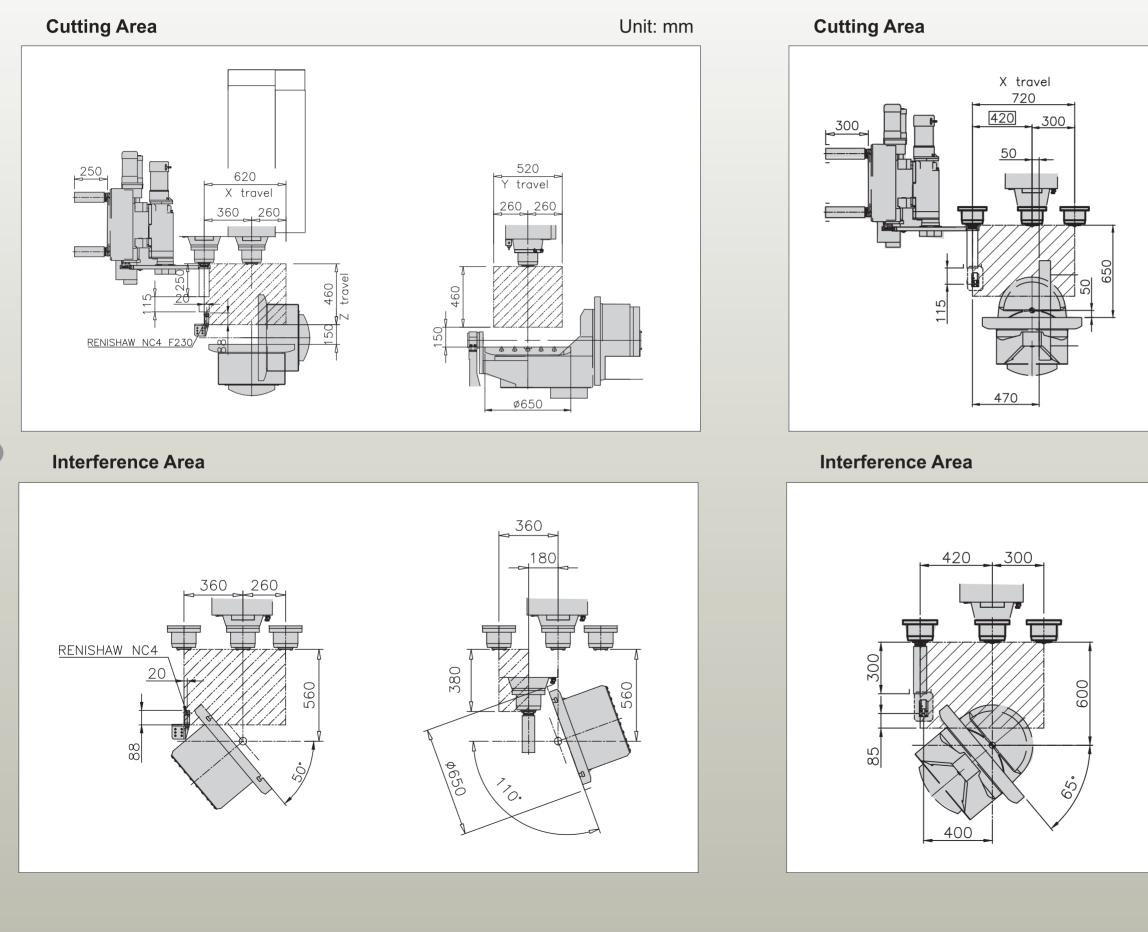
Dimension & Cutting Range LU720

Cutting Area & Interference Area (LU400)

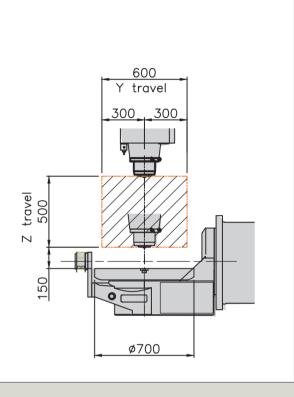


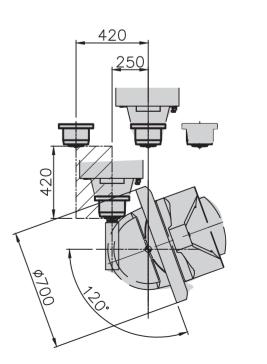
Cutting Area & Interference Area (LU620)

Cutting Area & Interference Area (LU720)



Unit: mm





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		LU-400	LU-620	LU-720
Travel		I		
X/Y/Z Axes Travel	mm	400/350/350	620/520/460	720/600/500
B Axis Tilting Range		-50° ~ +110°	-50° ~ +110°	-65°~+120°
C Axis Rotating Range		360°	360°	360°
Spindle Nose to Table Surface	mm	150~500	150~610	150~650
Spindle				
Spindle Transmission Type		Direct Drive	Direct Drive	Direct Drive
Tool Shank		ISO 40	ISO 40	ISO 40
Spindle Speed	rpm	12000	12000	12000
ATC				
Magazine Capacity	Т	30	30	30
Taper		HSK 63A	HSK 63A	HSK 63A
Max. Tool Length	mm	250	250	300
Max. Tool Diameter (No Adjacent Tool)	mm	Φ75(Φ127)	Φ75(Φ127)	Φ75(Φ127)
Motor				
Spindle Motor (Cont./30mins)	Kw	5.5/7.5(FANUC)	18/21(Siemens)	18/21(Siemens)
X/Y/Z Axes Motor Power	Kw	4.5/2.7/4.5(FANUC)	6.5 / 4.5 / 6.5 (Heidenhain)	6.5/4.5/6.5(Heidenhain
B/C Axes Motor	Kw	7 / 2.7 (FANUC)	8.6/4.5(Heidenhain)	8.6/4.5(Heidenhain)
B/C Axes				
Worktable Size	mm	Φ450	Φ 650	Φ700
Center Hole Size	mm	Φ 55H7X12 in depth	Φ 55H7X12 in depth	Φ 55H7X12 in depth
T slot type	mm	T14Radial Type 8 Slots	T18 Radial Type 8 Slots	T18 Radial Type 8 Slots
Max. Workpiece Size	mm	Φ430x(50+R389)	Φ 580x(50+R438)	Φ700x(50+R438)
Max. Worktable Loading	kg	200	300	500
Rapid Travel				
X/Y/Z M/min	I	48/48/48	36/36/36	30/30/30
B/C rpm	l	25	25	25
Cutting Feedrate mm/min	I	1-20000	1-20000	1-20000
Control				
Туре		FANUC OiMF	HEIDENHAIN	I TNC 640
Miscellaneous				
Machine Weight	kg	6000	8800	9500
Coolant Tank	L	220	240	300
Dimension (L*W*H)	mm	4126x2723x3013	3863x2730x3310	4963x2915x3005
Power Requirement	KVA	20	25	25
Air Source kg/cm² (ℓ/min)		6(1600)	6(1600)	6(1600)

Optional List

•			
۷,	. 4		
Spindle	·400	1.620	U.,720
Direct Drive Spindle 12000RPM	Ŏ		
Direct Drive Spindle 15000RPM	0		0
Spindle Oil Cooler			
Spindle Motor Plate Cooling System		•	
Coolant Through Spindle (CTS)	\bigcirc	$\overline{\bigcirc}$	\bigcirc
Spindle Air Seal System			
	•		
Cooling System			
Spindle Programmable Air Blow		•	
Spindle Splash Ring			
Coolant Cooling System	\bigcirc	\bigcirc	0
Chip Removal			
Chip Auger			
Chain Type Chip Conveyor	\bigcirc		
Chip Cart			
Water Gun			
Air Gun			
Flush Device	\bigcirc	\bigcirc	\bigcirc
Top Enclosure	\bigcirc	\bigcirc	\bigcirc
Full Enclosure			
Measurement System			
Laser Tool Length Measurement	0	\$ <u>0</u>	*0
Touch Type Tool Length Measurement TT140	0	0	0
Wireless Workpiece Measurement TS640	\bigcirc	0	0
Worktable Unit			
Worktable Tailstock Support			
Air Outlet for Fixture	\$O	\$0	\$O
Large Table 700mm			
Large Table 650mm			
Large Table 450mm			
Safety System			
Front Door/Side Door Safety Switch			
CE			
	0	0	0
Lubrication System			
Automatic Grease Lubrication (X/Y/Z)			

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ndard ⊜Optional ☆Inquir رر			Not Availab '
Coolant Oil Separator	⁴ 00	⁶ 20	·->20
Disc Type Coolant Oil Separator	\bigcirc		0
ATC Unit			
ATC			
Taper BBT40			
Tool Capacity 30T			
Tool Capacity 48T	\bigcirc	\bigcirc	\bigcirc
Tool Capacity 60T		\bigcirc	\bigcirc
3Axes Transmission			
3Axes Roller Type Linear Guideways			
3Axes Linear Scales	\bigcirc	\bigcirc	\bigcirc
B Axis Linear Scale			
C Axis Linear Scale			
Z Axis Motor System w/ Brake			
Electrical			
Worklight			
Alarm Light			
M30 Auto Shut Off			•
Heat Exchanger			
Air Conditioner	0	0	<u> </u>
Control			
Fanuc 0iMF (4+1)		\bigcirc	\bigcirc
HEIDENHAIN TNC-620 (4+1)	\bigcirc	\bigcirc	\bigcirc
HEIDENHAIN TNC-640 (5 axes simutaneous)	\bigcirc		
SIEMENS 840Dsl (5 axes simutaneous)	\bigcirc	\bigcirc	\bigcirc
	\$C	\$C	\$C
Anti Collision Software	*	\$C	\$C
Center Calibration Function	☆○	☆○	☆○
Miscellaneous			
Oil Mist Collector	\bigcirc	\bigcirc	\bigcirc
	\bigcirc	\bigcirc	\bigcirc
Rotary Window	\bigcirc	\bigcirc	\bigcirc

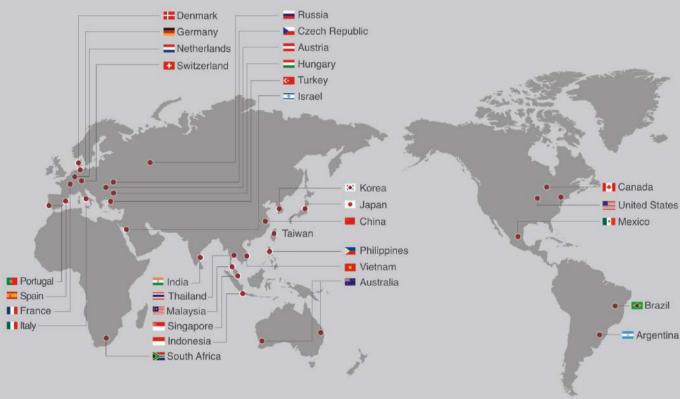
Total Production Solution

Highly efficient manufacturing fashion, equipped with high performance control system. The high speed contouring capability can achieve best possible surface quality under most demanding machining cycle time. Highly dynamic five axes machining provides solution for complex tasks.



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