



TAKUMI

U Series



5-Axis Gantry Machining Center

| U800

U Series

The Takumi U800, 5-axis machining center, is designed for high precision finishing of medium and large size parts in markets such as dynamic die and mold, aerospace and automobile applications.

The gantry structure with integral table to column design offers superior performance in both heavy cutting and high speed machining.

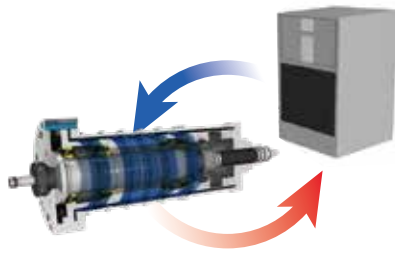
The twin synchronized Y-axis motors greatly reduce accuracy error, offering excellent acceleration, speed, and machine dynamics which leads to superior semi-finish and finish performance.





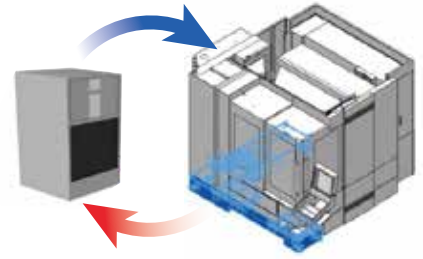
Dual surface contact design

The BIG-PLUS spindle system ensures superior finish thanks to simultaneous fit of taper and spindle flange which minimizes vibration.



Stable Spindle Cooling Circulation

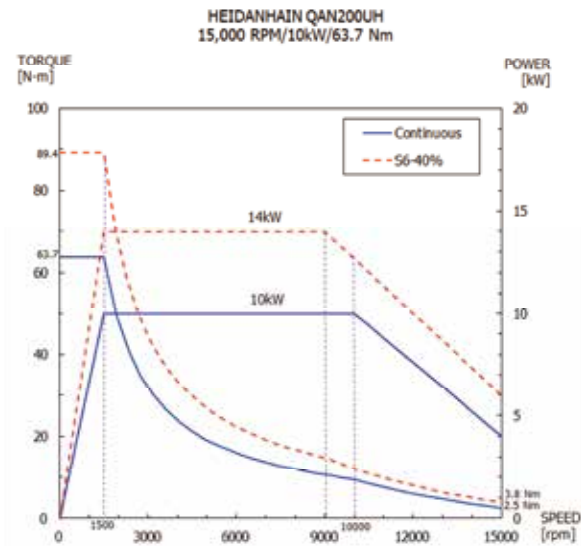
Spindle temperature is constantly controlled by an oil chiller. Our test results have proven that the temperature of the circulating oil is controlled within certain variation, which minimizes thermal displacement during continuous operation at high speed.



Cutting Coolant Chiller option

The coolant chiller reduces the temperature of the cutting fluid before it is circulated through the machine. The cooler has effectively reduced the deviation and leads to excellent accuracy of the workpiece and extends the life of cutting tools by stabilizing coolant temperature.

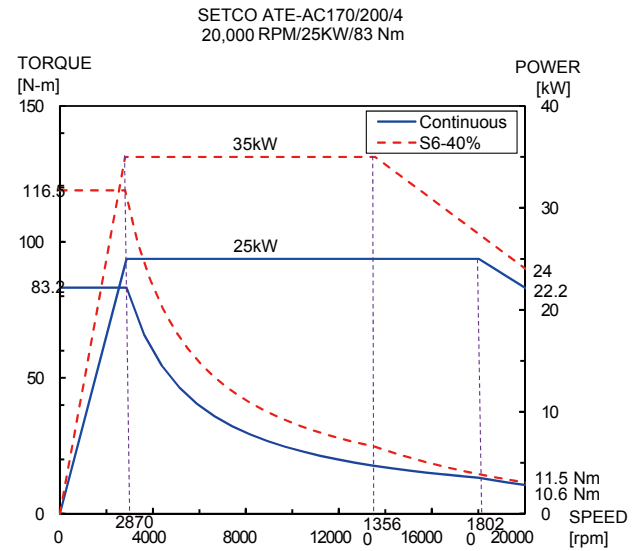
Spindle Power - Torque Curve



15,000rpm Direct drive spindle (Standard)

10/14 kW
Power (Cont./S6-40%)

63.7/89.4 N.m
Torque (Cont./S6-40%)



20,000rpm Built-in spindle (Option)

25/35 kW
Power (Cont./S6-40%)

83.2/116.5 N.m
Torque (Cont./S6-40%)

01

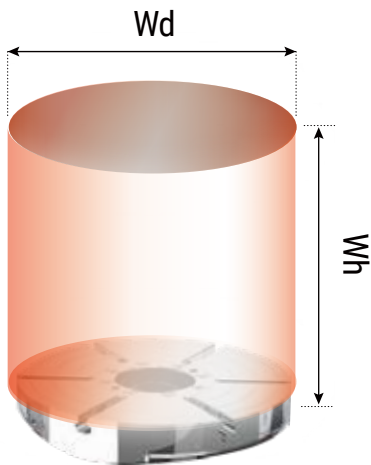
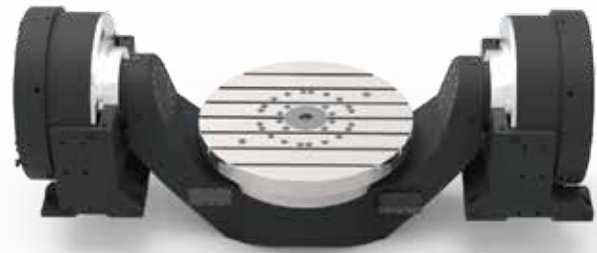
U Series Spindle

02

U Series DDM Rotary Table

High Performance DDM Rotary Table

The rotary table uses integral direct drive motors (DDM), instead of gear drives, promoting quicker response, higher torque, outstanding position accuracy and lower service maintenance. Both two A and C-axis is driven by direct drive motor (DDM), which motion can be delivered 100% from motor to provide high speed, high torque and zero backlash.



Maximum workpiece size (Wd x Wh)

U800	Φ 800 x 650mm
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Maximum workpiece weight

U800	1000kg
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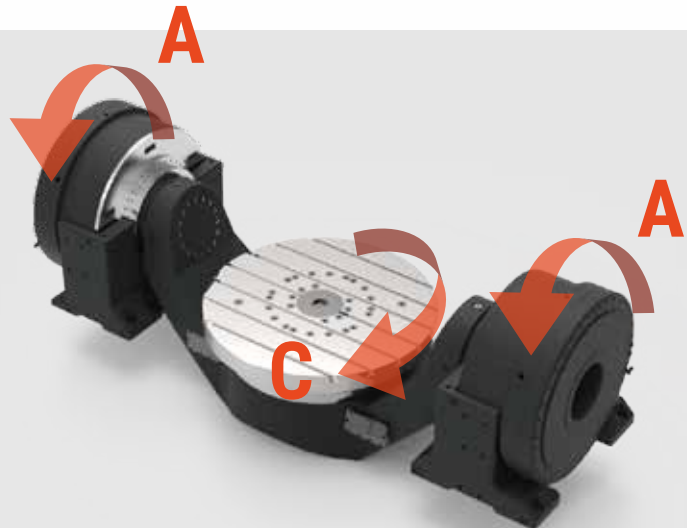
Three DDM Rotary Table

A/C rotation range

+120° ~ -120°/360°

A/C rotation speed

80/100 rpm

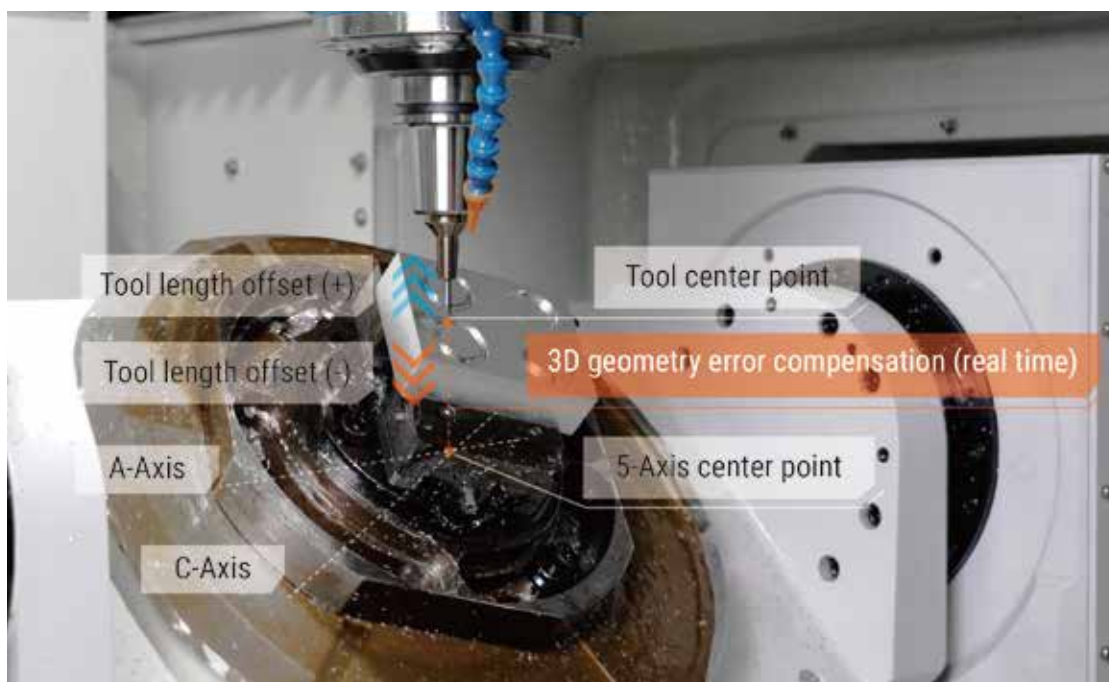


5-axis accuracy perfection by 5XCDO (5-Axis Center Dynamic Offset) option

In 5-axis machining, high accuracy of rotary axes is especially critical for it machines more complex components and parts that are for critical applications.

Thanks to Takumi's 5XCDO technology, within the X/Y/Z-axis travel and any angle range of the turntable (A/C-axis), the Z-axis tool offset (+ or -) at any position will be dynamically compensated based on the TCP (Tool Center Position) and the five-axis center point.

For high accuracy 5-axis machining, 5XCDO is recommended. It improves workpiece contour machining accuracy by reducing 3-D geometry error. With 5XCDO solution, every component produced becomes an incomparable masterpiece.



03

U Series

5XCDO

(5-Axis Center Dynamic Offset)

04 U Series

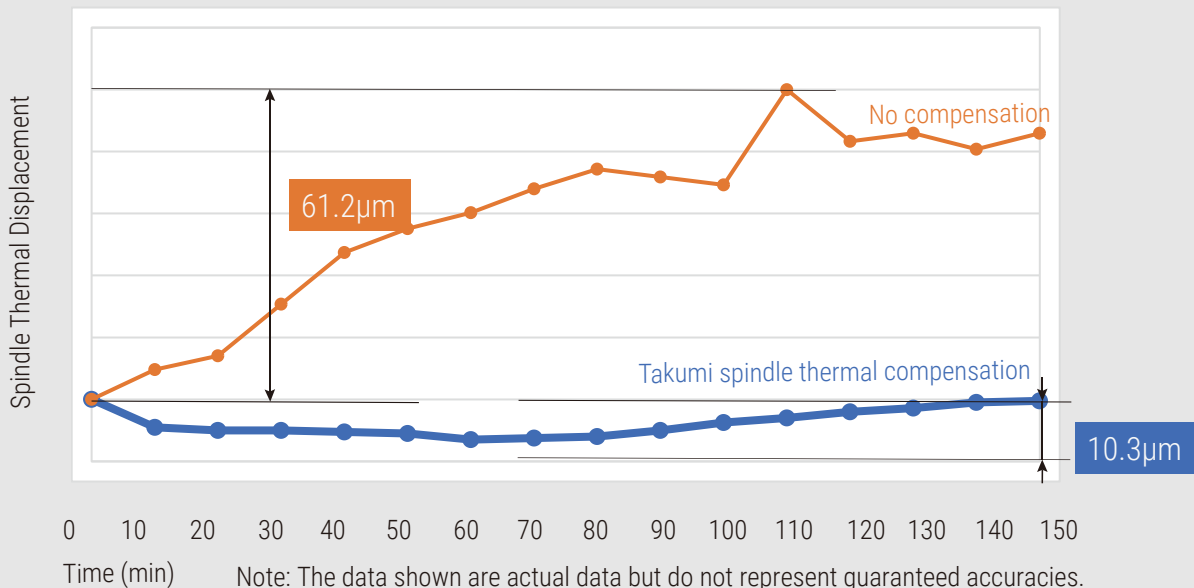
Intelligent Spindle Thermal Compensation Technology

Deformation precision control

TAKUMI's unique spindle thermal compensation technology minimizes the heat from generating and compensates thermal expansion, which ensures better surface finish over a long cycle times.

There are several heat sources that can influence the performance of the machine tool. Three main thermal sources are spindle displacement, axis drive transmissions and structure. Among these sources spindle displacement is the most critical to overcome and address.

■ H10 with HEIDENHAIN TNC640; 15,000rpm direct drive; no machine warm up.



Without Compensation

Max. 61.2µm

★ **With Compensation**

Max. 10.3µm

83% reduction

Your benefits



Machine warm-up is not needed



High precision cutting performance is guaranteed



High processing stability over continuous runs



Save money and reduce the time and cost on cutting workpieces.

External Dimension

U800

Unit : mm

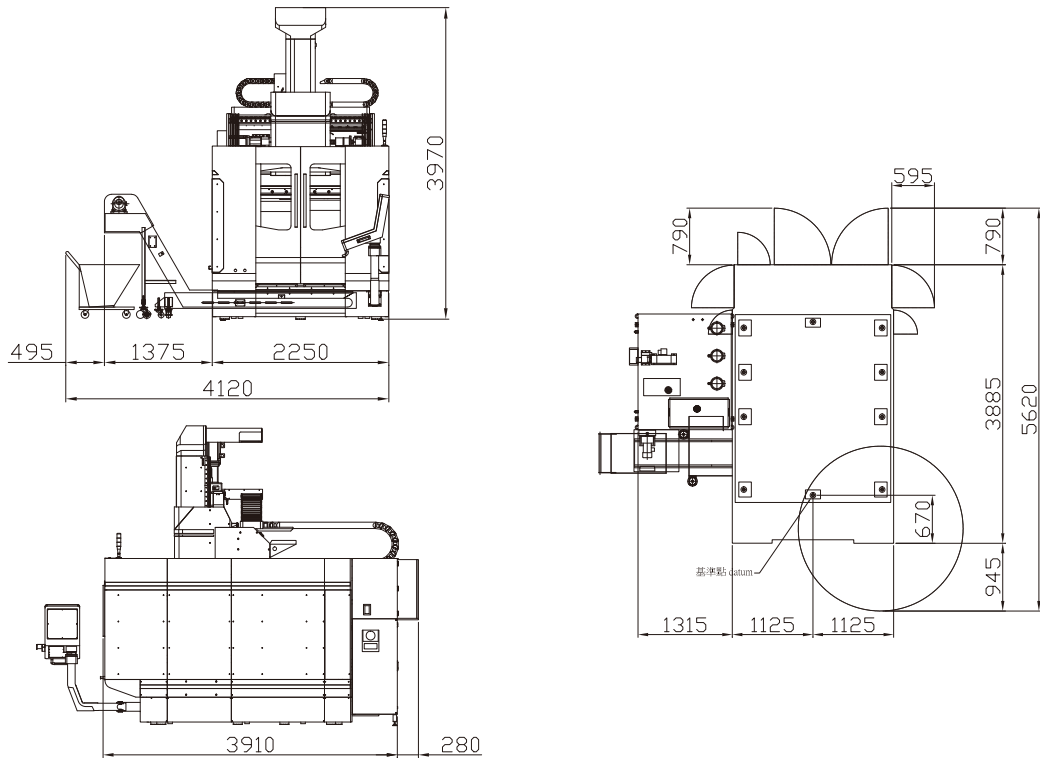
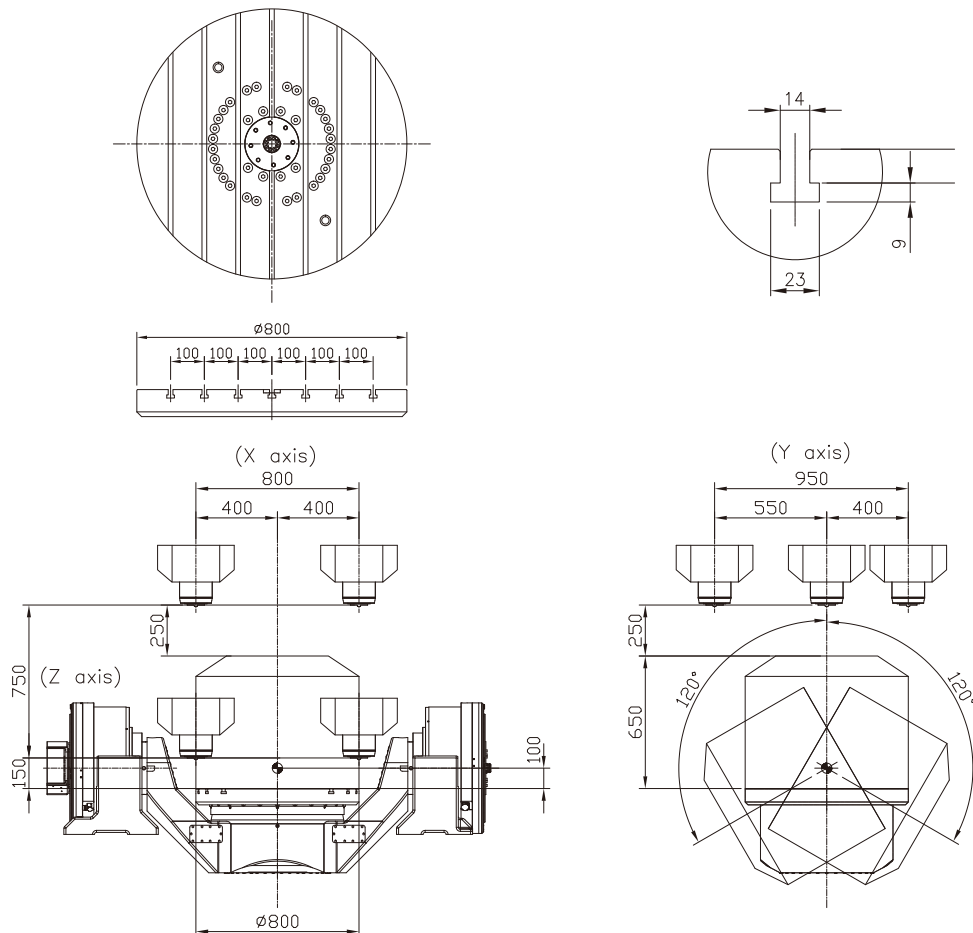


Table & T-Slot Dimension

U800

Unit : mm



Machine Specification

Travel	U800
X/Y/Z-axis	800 / 950 / 750mm
Distance from spindle nose to table	150-900mm

Table	
Dimension	Φ800mm
Max. load	1000kg
T-slot	14 x 100 x 7

Spindle	
Spindle type	Direct-drive
Spindle speed	15000rpm
Spindle motor power	10kW/14kW (Cont./S6-40%)
Spindle taper	BBT40

Feed	
Rapid feed (X/Y/Z)	48/48/48m/min
Cutting feed	24000mm/min
Motor power (X/Y/Z)	5.4/6.5/8.6 kW

C-Axis	
Rotary table diameter	Φ800mm
Rotation range	360°
Positioning accuracy	±5"
Rotation speed	100rpm
Rotation torque	1870Nm

A-Axis	
Rotation range	+120° ~ -120°
Positioning accuracy	±5"
Rotation speed	80rpm
Rotation torque	1870x2Nm

ATC & Magazine	
ATC type	Flat type
Number of tools	32pcs
Max. tool diameter (next pockets empty)	90/125mm
Max. tool length	300mm
Max. tool weight	7kg

Supply	
Air pressure	6kgf/cm ²
Electric power supply	80kVA

Net Weight	
Machine weight	18000kg

Standard & Optional

Standard:

Heidenhain TNC640
 15,000rpm, BBT40, Direct drive spindle
 32T
 Spindle cooling system
 Cutting air blast
 Coolant tank & coolant flushing system
 Full chip enclosure
 Chain type chip conveyor
 Linear scales (X/Y/Z)
 Rotary encoders for rotary axis
 3-Color signal light
 Working light
 Air conditioner for electric cabinet
 Oil skimmer
 Dynamic collision monitoring
 Leveling block and screws
 Maintenance tools
 Manuals
 Washing gun & air gun
 Manual pulse generator
 Automatic centralized lubrication system
 CE certified

Optional:

20,000rpm, HSK-A63, Built-in spindle
 Water-cooled motor
 64T
 Scraper type chip conveyor
 Coolant through spindle (30bar/ 70bar)
 Air through spindle (without CTS)
 3-Axis ballscrew cooling
 Cutting coolant chiller
 Workpiece measurement
 Tool measurement
 Oil mist collector
 Oil mist device
 Transformer
 Automatic doors
 Gear skiving
 5-axis center dynamic offset (Heidenhain only)

Spindle Thermal Compensation

i Spin-TC I™
 i Spin-TC II™
 i Spin-TC III™



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