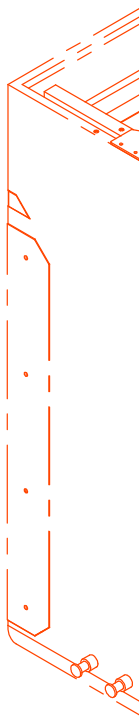
TAKUMI
When Precision Matters

The Art of Precision
Machines for your success

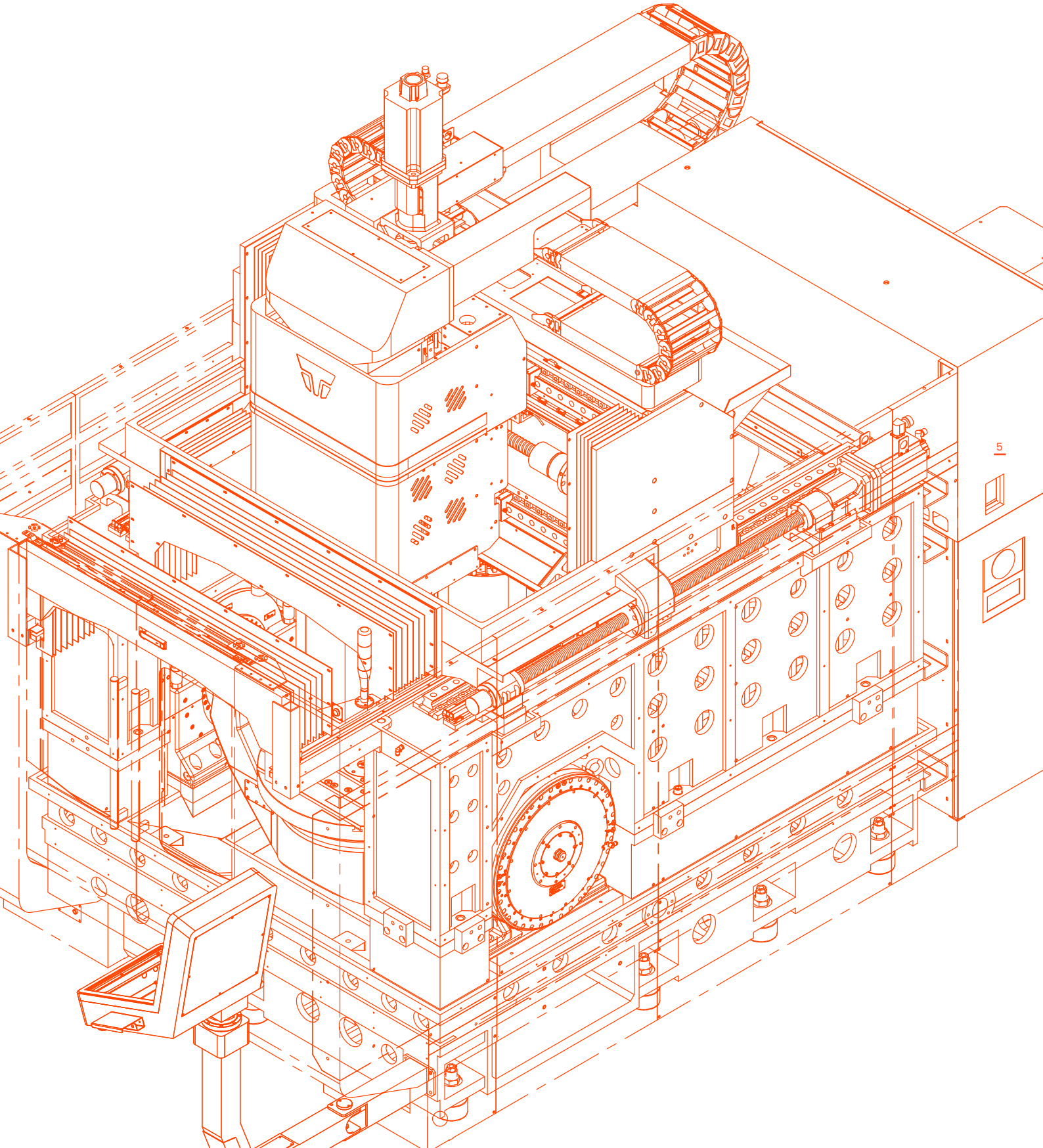
5-axis CNC Machining Centers

Takumi.
The industry standard.

Closer to our customers, dependable in our performance: As Takumi stands for mechanical engineering in highest level 4 its products are always a secure investment in the future.

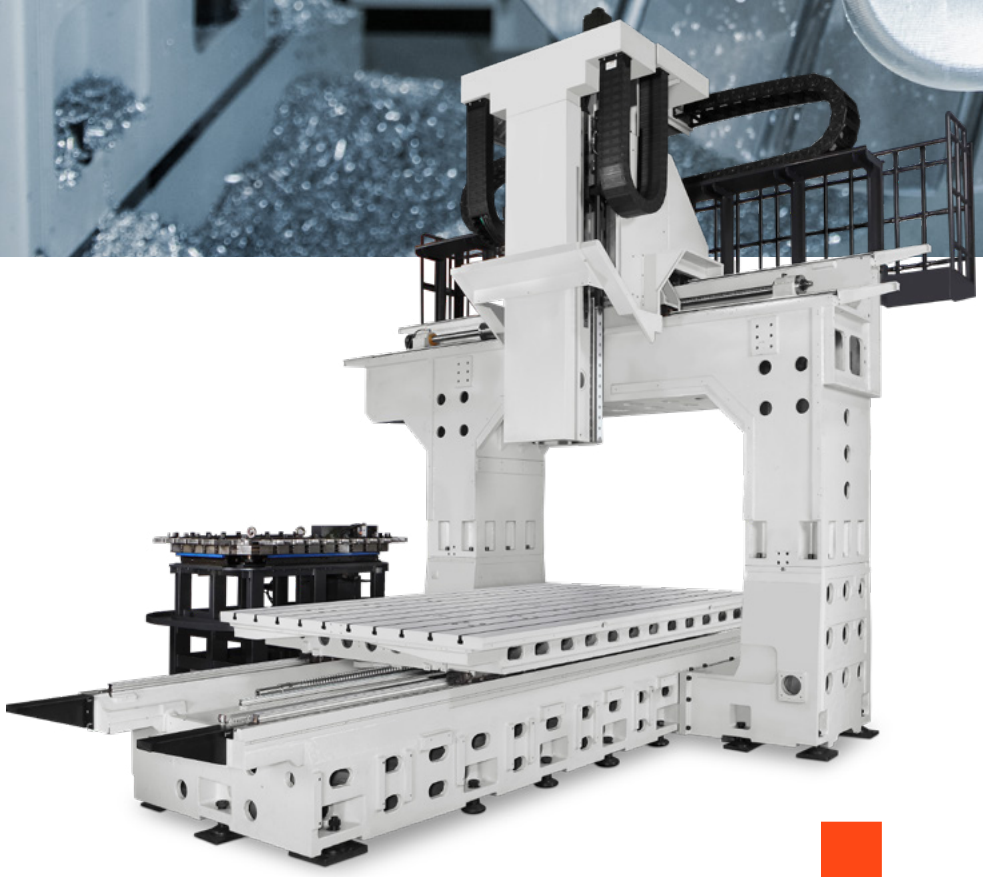


Takumi stands out thanks to our pursuit of perfection combined with our minimal waste philosophy - and has for over 30 years.



Takumi stands for unrivaled quality consciousness and strives for the highest level of precision.

The Takumi name originates from the Japanese, in which it equates with craftsmanship and a tradition of quality. It is precisely these values that have always defined how Takumi manufactures its CNC machining centers. It is in our DNA to demand that our customers consistently receive machines embodying first-class quality, manufactured exclusively using components from the premiere producers and technical specialists with whom we maintain long-term partnerships. All Takumi products are crafted in conformity with the ISO 9001:2008 quality management standard.



U-

Unshakable and ultra-precise:

The U-Series five-axis machining centers

The five-axis machining centers from our U-Series have been specially designed for simultaneous machining of five-sided and five-axis surfaces. Every high-performance machine in this series is purpose-built to offer optimal operation with particular part sizes and table-load specifications. Regardless of the individual requirements, all of our machines boast maximum precision and immense thermal stability accompanied by extreme rigidity to ensure the ultimate in precise results.

The U-Series Assets:

» Extremely rigid, high-precision machine structure
» Extended processing periods and running times thanks to thermal stability
» Spindle cooling for additional machining power
» User-friendly Heidenhain TNC 640 control system
» Integrated Heidenhain DCM contributes dynamic collision monitoring
» Optional extras available (such as touch probe system for measuring tools/workpieces, automatic machining center-line compensation allowing users to perform quick and uncomplicated precision adjustments)
» Supports individual configuration to perfectly reflect your application profile
» Backed up with fast service and in-depth availability of spare parts

SERIES

Thanks to an optimal design embodied in a superbly efficient structure, acting in tandem with a high-precision control system, Takumi machining centers provide perfection in every operating environment.

U-

Versatility to furnish perfectly formed results

The five-axis machining centers from the U-Series

Five-axis machining centers with precision as standard equipment
The five-axis milling machines with synchronous axis drive systems have been engineered to produce ultra-precise workpieces featuring maximum fitting accuracy accompanied by excellent surface quality. These machining centers are assembled to satisfy the most exacting demands in precision and stability, and represent the culmination of a production process including selection of superior materials, ultra-precise alignment and hand-finished componentry.

Multifaceted and adaptable
Each model within the U-Series has been optimized to reflect specific workpiece dimensions and individual production requirements. Thanks to compact design configurations conceived as ideal solutions for their specific application environments, these machining centers offer maximum efficiency and rigidity in a package demanding only minimal installation floorspace.

Top models to meet every operational demand
- UC 250x / UC 320x for small components in a cost-saving entry-level unit
- U 400 / U 600 for small and medium-sized components
- U 800 for large workpieces exerting a maximum table load of up to 1,000 kg
- UB 3222 / UR 1000 for extremely large and heavy workpieces with maximum table loads extending up to 8,500 kg

A range of available options combines with latitude for individual configuration to let you tailor each model to create the ideal reflection of your own demands and your individual manufacturing environment. The user-friendly Heidenhain TNC 640 control system offers additional user convenience.

SERIES

At home in demanding manufacturing sectors

Aeronautics

There is hardly any other industry that makes such uncompromising demands for extended service life along with quality and perfection embracing the most minute details. It is these challenges that make aerospace firms the ideal customers for Takumi. After all, we are also uncompromising when it comes to the quality of our products.

In our drive to deliver perfect machine tools to the aircraft industry, we focus on the following assets:

» Torsionally rigid machine structure featuring high-density Meehanite casting
» Massively solid supporting elements designed to absorb process oscillations and vibrations
» Hand scraped support surfaces for machine components and guides

First-class performance for dynamic applications machines from Takumi provide reliable precision with no need for time consuming finishing processes.

Automotive

Assured calculation security assumes prime priority among our customers in the automotive sector. Takumi supplies this security with machines bearing a name synonymous with reliability and long life. Our depot in Pliening near Munich operates in tandem with our proven logistics partners to ensure rapid response to requests for replacement components and wear parts.

This is why the automotive industry can place 100 % confidence in machines from Takumi:

» Exclusive reliance on premium components
» Process reliability through carefully conceived discharge of chips and shavings along with wear-resistant materials
» Rapid delivery of replacement and wear parts
» Extended service network, local technicians

Aerospace

This is a market in which high production numbers are irrelevant as the focus remains firmly fixed on uncompromising quality, sometimes in production batches consisting of a single part. To achieve this level of perfection in every part and component, our clients need machines with quick, streamlined set-up procedures.

Our machines place priority on these assets:

» User convenience
» Excellent machine access
» Ergonomically ideal control environment
» Production of highly complex precision components

Energy sector

Regardless of whether the task entails machining nonferrous metals in semiconductor and PCB production or milling tough high-alloy materials for application in such sectors as weather-resistant gear-unit components and housings in wind turbine generators: The Takumi U-Series shines with the machine bed's oscillation-damping properties and the extreme precision provided with all table sizes from Ø 248-1000, 3,320 x 2,100.

We generate this precision on the mechanical side to hold the effort invested in subsequent compensation to the lowest possible level.

Technology and machining center systems

Is every machining center unique? Is each component's design a special solution to meet individual customer requirements? When the object is to evolve individual solutions to meet ultimate demands for flexibility and agility, Takumi is right in its element. With our support, you can be sure that no position will be missed and no angle will be beyond reach. We help you set new records in reducing the time between set-up and the first shaving while also diminishing downtime to an absolute minimum.

Precision is our trademark

Typically Takumi: Robust and rigid engineering join sturdy and stable design along with high levels of thermal stability to guarantee maximum
precision, even when the going gets tough.

These are the assets that Takumi applies for maximum accuracy:

- Torsionally rigid structure in massive Meehanite cast iron
- Solid and sturdy support elements to absorb process oscillations and vibrations
- Engineered with integral reinforcement for moving elements to reduce weight while maintaining optimal intrinsic rigidity
- Stepped design configuration to reduce mass and spindle overhang for increased dynamic response and rigidity*
- Pretensioned ball screw spindles equipped with cooled cores and spindle stocks with cooled jackets supply thermal stability*
- Sensor systems for thermal compensation of spindle expansion
- Linear scales to ensure precise positioning with reliable reproducibility
- Reliable oil separators to prevent the emulsion from breaking down

At Takumi, precision is the result of designs featuring extreme torsion resistance and thermal stability.

*Depending on model

The ultra-precise space savers

UC 250x / UC 320x

These compact bridge-type machining centers represent the perfect modestly priced entry into the world of high-precision processing with CNC milling machines. They offer optimal performance in machining and shaping compactly dimensioned components. Even with their diminutive floorspace requirements, once in the shop they offer an extensive working area embracing variegated possibilities.

- In-line spindle operating at up to 15,000 rpm
- Pretensioned ball screws for all axes to prevent thermal deformation
- Spindle cooler
- Machine doors feature wide opening angles for ergonomic, user-friendly loading and unloading
- Linear scales on all axes
- Capable of simultaneous five-axis operation
- Optional: ICF up to 70 bar (standard: 30 bar)
- Modest floorspace, massive working area

Designation	UC 250x	UC 320x
Travel		
X axis (mm)	360	440
Y axis (mm)	520	610
Z axis (mm)	610	520
A axis (°)	+30 / -120	+30 / -120
B axis (°)	-	-
C axis (°)	360	360
Machine capacity		
Machine table L x W (mm)	Ø 250	Ø 320
Table load (symmetrical distribution) (kg)	100	200

Products may vary from catalog illustrations


TAKUMI
UC320
UC Series
TAKUMI

The steadfast multitalents

U 400 / U 600

The U-Series machining centers represent a cost-optimized investment for producing small and medium-sized parts in mold and die manufacture. The concept behind these machines incorporates gantry drive, rendering them suitable for meeting a variegated range of demands as they combine precision with efficiency. Extreme rigidity and stability are provided by a commitment to precision that is evident early in the assembly process.

- Motor spindle operating at up to 24,000 rpm
- Ideal for crane loading
- Pretensioned ball screws for all axes to prevent thermal distortion
- Spindle cooler
- Stable and rigid portal design featuring reliable resistance to high temperatures
- Machine doors feature wide opening angles for ergonomic, user-friendly loading and unloading
- Linear scales on all axes
- High levels of rigidity and dynamic response ensure exact milling

Designation	U 400	U 600
Travel		
X axis (mm)	580	660
Y axis (mm)	950	1,020
Z axis (mm)	500	500
A axis (°)	+30 / -110	+30 / -110
B axis (°)	-	-
C axis (°)	360	360
Machine capacity		
Machine table L x W (mm)	Ø 398	Ø 600
Table load (symmetrical distribution) (kg)	250	500

Products may vary from catalog illustrations


U400
U Series
TAKUMI

The power-fully practical performer

U800

The U800 bridge-type machining center saves cost, time and space while serving as the universally efficient solution for manufacturing medium-sized and large parts. The gantry drive combines with table loads extending up to 1,200 kg and a pivot bridge for maximum accuracy and stability. The U800's intrinsic rigidity ensures high levels of surface quality, even with large components.

- In-line or motor spindles operate at up to 15,000 rpm or 20,000 rpm
- Ideal for crane loading
- Pretensioned ball screws for all axes to prevent thermal deformation
- Spindle cooler
- Machine doors feature wide opening angles for ergonomic, user-friendly loading and unloading
- Linear scales on all axes
- High levels of rigidity and dynamic response ensure exact milling
- Stable gantry design for high thermal stability and rigidity

Designation	U800
Travel	
X axis (mm)	800
Y axis (mm)	950
Z axis (mm)	750
A axis (°)	+/-120
B axis (°)	-
C axis (°)	360
Machine capacity	
Machine table L x W (mm)	Ø 800
Table load (symmetrical distribution) (kg)	1,200

Products may vary from catalog illustrations


TAKUMI
U800
U Series
TAKUMI

The consistent high flyer

UB 3222

This bridge-type machining center for extremely large and heavy parts satisfies the most stringent demands for precision and stability. Even when confronted by table loads as high as 8,500 kg, the extremely stiff construction ensures optimal machining. Simultaneous machining on five axes reduces process times while also increasing resistance to wear for extended tool service lives.

- Motor spindle operating at up to 18,000 rpm
- Ideal for crane loading
- Pretensioned ball screws for all axes to prevent thermal deformation
- Spindle cooler
- Machine doors feature wide opening angles for ergonomic, user-friendly loading and unloading
- Linear scales on all axes
- High levels of rigidity and dynamic response ensure exact milling
- Stable and rigid portal design featuring reliable resistance to high temperatures

Designation	UB 3222
Travel	
X axis (mm)	3,200
Y axis (mm)	2,250
Z axis (mm)	1,200
A axis (°)	-
B axis (°)	+/-105
C axis (°)	+/-220
Machine capacity	
Machine table L x W (mm)	3,320 x 2,100
Table load (symmetrical distribution) (kg)	8,500

Products may vary from catalog illustrations


TAKUMI
UB3222

The formidably dynamic front-runner

UR 1000

The UR1000 bridge-type machining center for extremely large and heavy parts unites stability with perfection. Support structures in Meehanite cast iron facilitate precise production of bespoke parts thanks to maximum levels of rigidity and dynamic response. Simultaneous five-axis machining reduces process times and enhances resistance to wear.

- Motor spindle operating at up to 24,000 rpm
- Table loads of up to 2,500 kg
- Ideal for crane loading
- Pretensioned ball screws for all axes to prevent thermal deformation
- Spindle cooler
- Machine doors feature wide opening angles for ergonomic, user-friendly loading and unloading
- Linear scales on all axes
- High levels of rigidity and dynamic response ensure exact milling
- Stable and rigid portal design featuring reliable resistance to high temperatures

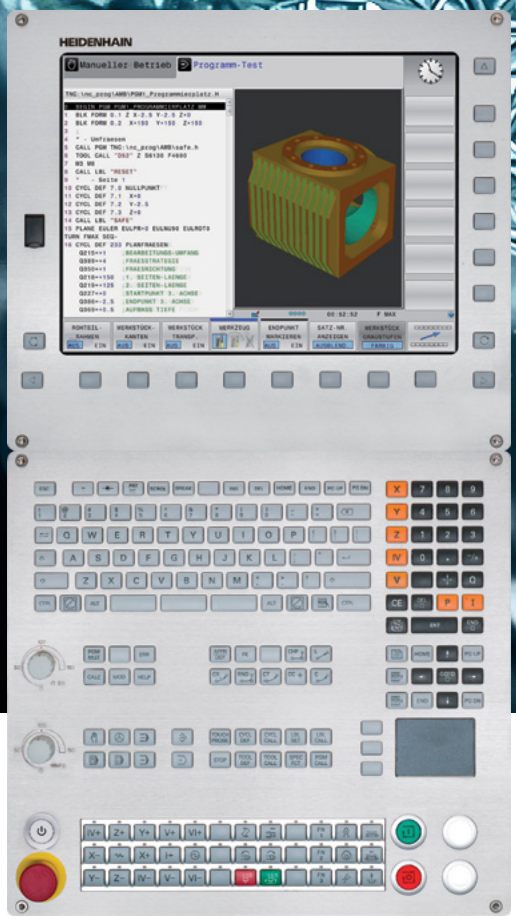
Designation	UR1000
Travel	
X axis (mm)	1,500
Y axis (mm)	2,040
Z axis (mm)	1,000
A axis (°)	+/-110
B axis (°)	-
C axis (°)	360
Machine capacity	
Machine table L x W (mm)	1,000x1,000
Table load (symmetrical distribution) (kg)	2,500

Products may vary from catalog illustrations


TAKUMI
UR1000
UR Series

Heidenhain TNC 640

State-of-the-art control system for modern manufacturing jobs



The latest CNC control system for machining centers is superbly suited for dynamic machining of complex free-form surfaces using extensive data sets on five-axis machining centers featuring a swivel bridge as well as large machines with a fork-swivel head. It is not for nothing that the control system's convenient layout and user-friendly design featuring intuitive cycle programming have become the industry standard. A modern and robust design complemented by ease of operation ensures optimal processing speeds along with maximum precision.

Discover the advantages offered by Heidenhain control systems in Takumi machining centers

Success lies in the details

The Heidenhain TNC 640 control system convinces with extensive assets and numerous equipment options:

Standard:
- Dialog programming
- ISO NC programming
- Free contour programming
- Extended milling and drilling cycles
- Touch probe cycles
- Heidenhain DNC parallel programming
- Integrated "Help" system
- Simulation graphics
- 1024 block look-ahead
- 0.5 ms block processing time
- ≥21 Gigabyte data storage
- ≥2 Gigabyte RAM
- 15.1 inch LCD display
- Minimum input increment of 0.01 µm or 0.0001°
- 2x Gigabit Ethernet adapter
- 4x USB ports
- RS-232-C and RS-422 interfaces
- Extended data interface for remote control

Optional:
- DXF converter
- CAD import
- Adaptive Feed Control (AFC)
- Dynamic Collision Monitoring (DCM)
- 4th and 5th axis
- Heidenhain DNC
- Remote Desktop Manager
- Extended tool management
- Dynamic precision
- Dynamic efficiency

The Takumi machining centers are equipped with the latest version of the Heidenhain **TNC 640** control system.

This provides distinctive assets for the operator:
- Multifaceted path control with up to five controlled axes and regulated spindle
- Shop-oriented programming with graphic support
- Multiple practically oriented cycle selections
- User-friendly control concept

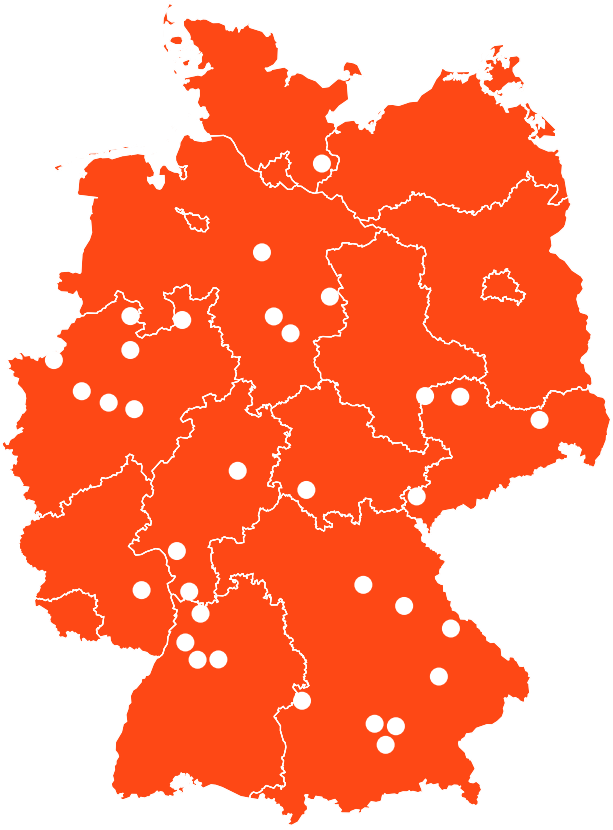
Optimal coordination of Takumi CNC machining centers and Heidenhain control systems ensures perfectly harmonized synergy at the human-machine interface. Takumi CNC supports our customers with specially trained technicians who keep abreast of the latest developments and are always standing by to offer competent, result-oriented assistance with your questions. Our immense performance potential and firm focus on result-oriented solutions form the foundation for the trust that our customers have in our technology, as demonstrated by longstanding partnerships and relationships with our customers.

Your demands, our solutions: The Takumi service pledge

At Takumi, a customer-support team numbering almost 100 staff members is standing by to provide you with effective assistance whenever you need it.

We remain close to our customers at every level – personal, technical and geographical – and we are unequivocally committed to joining you in extracting maximum quality and productivity from your Takumi. Our CNC technical specialists receive ongoing instruction including regular basic and advanced training courses at Heidenhain. To us, service means consistently focusing on our customers' requirements by finding fast and flexible solutions for their individual needs. As consistent reliability and unexcelled quality form the foundation of our firm's philosophy.

You order, and we deliver: Our Next-Day-Delivery Guarantee. In order to support our customers as they respond to the daily demands and challenges encountered as part of maintaining production, we guarantee complete availability of roughly 40,000 ready-for-delivery spare parts for Takumi machining centers. At our disposal is a super-modern and highly efficient spare parts depot housing an extensive product range embracing everything from high-performance spindles to tool changers You order it, we deliver it: Fast and uncomplicated.



Product overview and specifications

Designation	UC 250x	UC 320x	U 400
Travel			
X axis (mm)	360	440	580
Y axis (mm)	520	610	950
Z axis (mm)	610	520	500
A axis (°)	+30/-120	+30/-120	+30/-110
B axis (°)	-	-	-
C axis (°)	360	360	360
Machine capacity			
Spindle nose - table (mm)	65 - 675	90 - 610	90 - 590
T-slots (number x width x distance) (mm)	6 x 12mm - 60°	4 x 12mm - 90°	6 x 14mm - 60°
Machine table L x W (mm)	Ø 250	Ø 320	Ø 398
Table load (symmetrical distribution) (kg)	100	200	250
Main spindle			
Spindle taper	SK40 BigPlus	SK40 BigPlus	HSK63-A/SK40 BigPlus
Max. spindle speed (rpm)	15,000	15,000	15,000
Spindle power S1/S6 (kW)	10/14	10/14	10/14
Spindle torque S1/S6 (Nm)	63.7/89.4	63.7/89.4	63.7/89.4
Feed			
X/Y/Z axis rapid traverse speed (m/min.)	36/36/24	36/36/24	36/36/36
X/Y/Z axis cutting feed (m/min.)	12	12	20
A/B/C axis rapid traverse speed (rpm)	22.2/-/33.3	16.7/-/22.2	25/-/25
A/B/C axis cutting feed (rpm)	22.2/-/33.3	16.7/-/22.2	25/-/25
Tool changer			
Tool changer design	Arm	Arm	Arm
Magazine capacity	24	24	30
Max. tool diameter (mm)	75	75	75
Diameter with empty pockets(mm)	120	150	150
Max. tool length (mm)	250	280	300
Max. tool weight (kg)	7	7	7
Other data			
Air supply (bar)	6	6	6
Electric power connection (kVA)	50	75	60
Machine weight (kg)	6,700	5,720	9,500
Required floor space (mm)*	2,660 x 2,160 x 3,300	4,343 x 3,035 x 3,225	3,000 x 2,560 x 3,170

*Notice: The specifications refer to the floor space with unrestricted access from all sides with the doors completely open. Floor space requirements can be lower subject to consultation.

You can find information on standard and optional equipment on pp. 34-35.

	U 600	U 800	UB 3222	UR 1000
	660	800	3,200	1,500
	1,020	950	2,250	2,040
	500	750	1,200	1,000
	+30 / -110	+/-120	-	+/-110
	-	-	+/-105	-
	360	360	+/-220	360
	160 - 660	150 - 900	100 - 1,300	0 - 810
	5 x 14 mm x 100 mm	7 x 14 mm x 100 mm	10 x 22 mm x 200 mm	9 x 18 mm x 100 mm
	Ø 600	Ø 800	3,320 x 2,100	1,000 x 1,000
	500	1,200	8,500	2,500
	HSK63-A / SK40 BigPlus	HSK63-A / SK40 BigPlus	HSK100-A	HSK63-A
	15,000	15,000	12,000	24,000
	10 / 14	10 / 14	25 / 30	42 / 55
	63.7 / 89.4	63.7 / 89.4	120 / 144	66.8 / 87.5
	36 / 36 / 36	48 / 48 / 48	16 / 16 / 16	20 / 16 / 16
	20	24	12	12
	25 / - / 33	50 / - / 100	- / 100 / 100	180 / - / 50
	25 / - / 33	50 / - / 100	- / 100 / 100	180 / - / 50
	Arm	Pick-up	Pick-up	Arm
	30	32	32	40
	75	90	125	75
	150	125	180	100
	300	300	300	400
	7	7	15	7
	6	6	6	10
	60	80	80	80
	14,000	18,000	44,000	28,000
	3,255 x 3,855 x 3,520	4,120 x 5,620 x 4,000	8,700 x 5,800 x 6,000	4,590 x 4,625 x 4,865

Product survey and specifications

Designation	UC 250x	UC 320x	U 400
Standard			
	» Heidenhain TNC 640 control system » HSK A63 / SK40 direct-drive spindle, 15,000 rpm » Drum magazine for 30 tools » Central lubrication system » Cooling system with cooling ring » Linear scale measurement systems on all axes » Thermal-expansion compensation system for spindle » Heidenhain DCM Dynamic Collision Monitoring » Internal coolant feed through the spindle (ICF 30 bar) » Chip flushing » Spindle cooler » Completely encapsulated working area » Oil skimmer » Climate-controlled control cabinet » Working area illumination » Signal lamp (three-color) » Rinsing and compressed air gun » Scraper-type chip conveyor and chip trolley » Ethernet interface	» Heidenhain TNC 640 control system » HSK A63 / SK40 direct-drive spindle, 15,000 rpm » Drum magazine for 30 tools » Central lubrication system » Cooling system with cooling ring » Linear scale measurement systems on all axes » Thermal-expansion compensation system for spindle » Heidenhain DCM Dynamic Collision Monitoring system » Internal coolant feed through the spindle (ICF 30 bar) » Chip flushing » Spindle cooler » Completely encapsulated working area » Oil skimmer » Climate-controlled control cabinet » Working area illumination » Signal lamp (three-color) » Rinsing and compressed air gun » Scraper-type chip conveyor and chip trolley » Ethernet interface	» Heidenhain TNC 640 control system » SK40^{BigPlus} direct-drive 15,000 rpm spindle » Drum magazine for 30 tools » Central lubrication system » Cooling system with cooling ring » Linear scale measurement systems on all axes » Thermal-expansion compensation system for spindle » Heidenhain DCM Dynamic Collision Monitoring system » Internal coolant feed through the spindle (ICF 30 bar) » Chip flushing » Spindle cooler » Completely encapsulated working area » Oil skimmer » Climate-controlled control cabinet » Working area illumination » Signal lamp (three-color) » Rinsing and compressed air gun » Scraper-type chip conveyor and chip trolley » Ethernet interface

[1] According to equipment level

Optional			
	» Touch probe system for workpiece measurement » Touch probe system for tool measurement » Programmable external cooling air » Programmable cooling air through the spindle » Internal coolant feed through the spindle (ICF 70 bar) » Rotary union coupling on C axis » Oil mist separator » Knoll production package » Bypass filtration system » Rotoclear	» Touch probe system for workpiece measurement » Touch probe system for tool measurement » Programmable external cooling air » Programmable cooling air through the spindle » Internal coolant feed through the spindle (ICF 70 bar) » Rotary union coupling on C axis » Oil mist separator » Knoll production package » Bypass filtration system » Rotoclear	» HSK-A63 20,000 rpm motor spindle » HSK-A63 24,000 rpm motor spindle » Touch probe system for workpiece measurement » Touch probe system for tool measurement » Programmable external cooling air » Programmable cooling air through the spindle » Internal coolant feed through the spindle (ICF 70 bar) » Rotary union coupling on C axis » Oil mist separator » Knoll production package » Bypass filtration system » Rotoclear » Magazine capacity of 50 or 90 tools

U 600	U 800	UB 3222	UR 1000
» Heidenhain TNC 640 control system » SK40^{BigPlus} direct-drive 15,000 rpm spindle » Chain-type magazine for 40 tools » Central lubrication system » Cooling system with cooling ring » Linear scale measurement systems on all axes » Thermal-expansion compensation system for spindle » Heidenhain DCM Dynamic Collision Monitoring system » Internal coolant feed through the spindle (ICF 30 bar) » Chip flushing » Spindle cooler » Completely encapsulated working area » Oil skimmer » Climate-controlled control cabinet » Working area illumination » Signal lamp (three-color) » Rinsing and compressed air gun » Scraper-type chip conveyor and chip trolley » Ethernet interface	» Heidenhain TNC 640 control system » HSK A63 direct-drive 15,000 rpm spindle » Chain-type magazine for 32 tools » Central lubrication system » Cooling system with cooling ring » Linear scale measurement systems on all axes » Thermal-expansion compensation system for spindle » Heidenhain DCM Dynamic Collision Monitoring system » Internal coolant feed through the spindle (ICF 30 bar) » Chip flushing system » Spindle cooler » Completely encapsulated working area » Oil skimmer » Climate-controlled control cabinet » Working area illumination » Signal lamp (three-color) » Rinsing and compressed air gun » Scraper-type chip conveyor and chip trolley » Ethernet interface	» Heidenhain TNC 640 control system » HSK-A100 12,000 rpm motor spindle (Kessler) » HSK-A63 18,000 rpm motor spindle (Kessler)* » Chain magazine for 32 (HSK100) or 40 (HSK63) tools » Central lubrication system » Cooling system with cooling ring » Linear scale measurement systems on all axes » Cooling system for the ball screws on X, Y and Z axes » Thermal-expansion compensation system for spindle » Heidenhain DCM Dynamic Collision Monitoring system » Internal coolant feed through the spindle (ICF 30 bar) » Chip flushing » Spindle cooler » Completely encapsulated working area » Oil skimmer » Climate-controlled control cabinet » Working area illumination » Signal lamp (three-color) » Rinsing and compressed air gun » Steel hinged-plate chip conveyor and chip trolley » Ethernet interface	» Heidenhain TNC 640 control system » HSK-A63 24,000 rpm motor spindle » Chain-type magazine for 40 tools » Central lubrication system » Cooling system with cooling ring » Linear scale measurement systems on all axes » Thermal-expansion compensation system for spindle » Heidenhain DCM Dynamic Collision Monitoring system » Internal coolant feed through the spindle (ICF 30 bar) » Chip flushing » Spindle cooler » Completely encapsulated working area » Oil skimmer » Climate-controlled control cabinet » Working area illumination » Signal lamp (three-color) » Rinsing and compressed air gun » Steel hinged-plate chip conveyor and chip trolley » Ethernet interface
» HSK-A63 20,000 rpm motor spindle » HSK-A63 24,000 rpm motor spindle » Touch probe system for workpiece measurement » Touch probe system for tool measurement » Programmable external cooling air » Programmable cooling air through the spindle » Internal coolant feed through the spindle (ICF 70 bar) » Rotary union coupling on C axis » Oil mist separator » Knoll production package » Bypass filtration system » Rotoclear » Magazine capacity of 50 or 90 tools	» HSK-A63 20,000 rpm motor spindle » HSK-A63 24,000 rpm motor spindle » Touch probe system for workpiece measurement » Touch probe system for tool measurement » Programmable external cooling air » Programmable cooling air through the spindle » Programmable oil mist lubrication » Oil mist separator » Knoll production package » Bypass filtration system » Rotoclear » Magazine capacity of 64 tools	» Chain magazine for 48 (HSK100 only) or 60 tools » Touch probe system for workpiece measurement » Touch probe system for tool measurement » Programmable external cooling air » Programmable cooling air through the spindle » Programmable oil mist lubrication » Oil mist separator » Knoll production package » Bypass filtration system » Rotoclear	» Chain-type magazine for 50 tools » Touch probe system for workpiece measurement » Touch probe system for tool measurement » Programmable external cooling air » Programmable cooling air through the spindle » Programmable oil mist lubrication » Oil mist separator » Knoll production package » Bypass filtration system » Rotoclear » Internal coolant feed through the spindle (ICF 70 bar)

Notes and remarks

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Commitment to quality and
precision in the Japanese mold.

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