

hit 漢鼎智慧科技
Hantop Intelligence Tech.

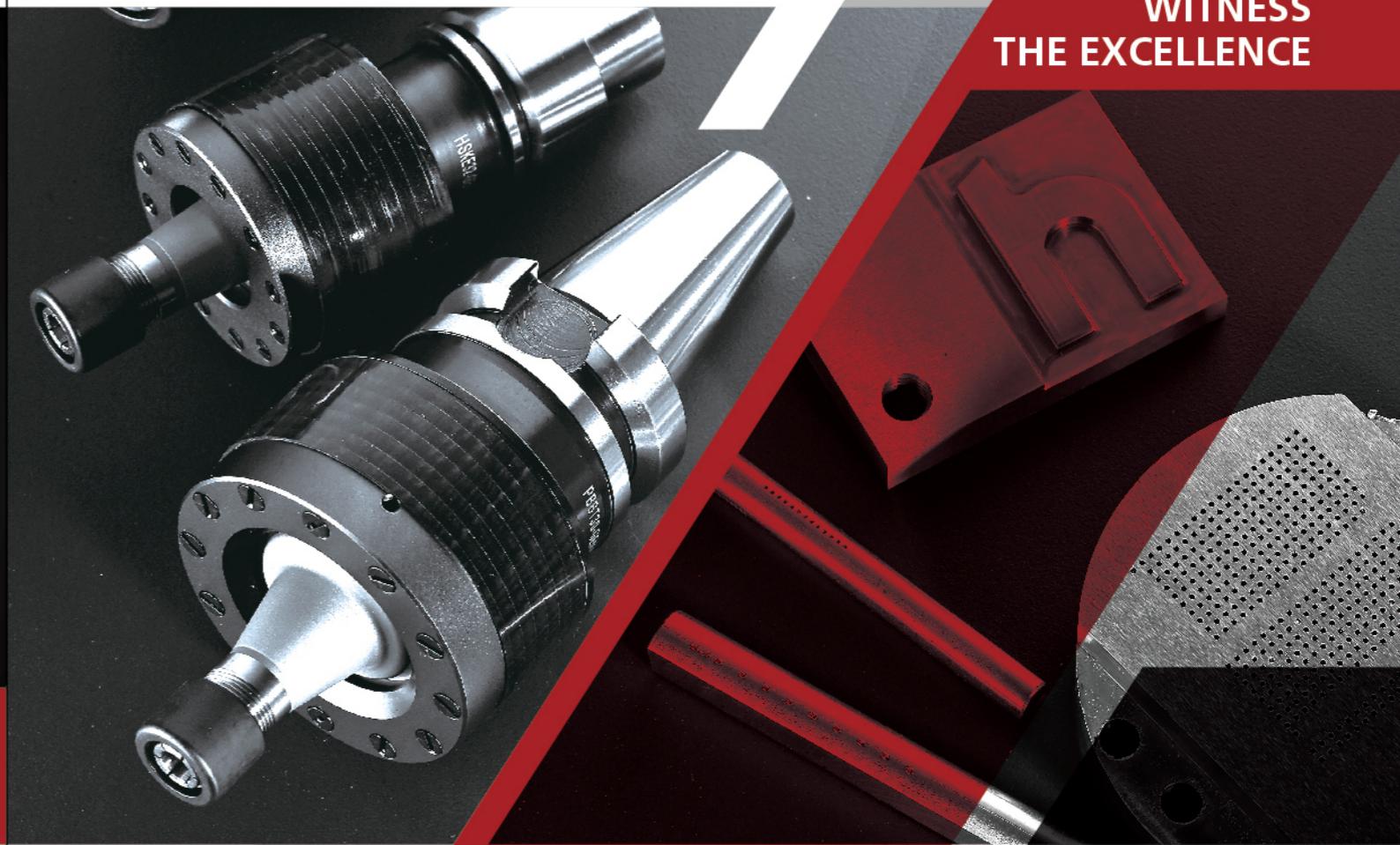
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Hantop Intelligence Tech.

WITNESS
THE EXCELLENCE



HIGH PRECISION
INTELLIGENT CONTROL
HIGH SPEED CAPABILITY
PLUG & PLAY DESIGN

**ULTRASONIC
MACHINING
MODULE**

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ULTRASONIC MACHINING MODULE



COMPANY PROFILE

Advanced materials machining and smart manufacturing are being widely adopted across major industries, driven by advances in CNC machining technology. Advanced materials are lightweight, hard, tough, and capable of operating at higher temperatures. Precision tooling is extensively used in industries involving advanced materials, including semiconductor, optoelectronics, aerospace, medical devices, electric vehicles, electronic devices, and precision machinery.

Today, CNC machining is evolving from traditional metal machining to new smart hybrid CNC machining technologies that combine ultrasonic vibration-assisted machining with other advanced machining methods.

Hantop Intelligence Technology (HIT) is an innovative and visionary team, with more than 60% of its members holding master's or PhD degrees in engineering. We focus on reliability engineering, advanced materials machining technology, and system solutions. Our mission is to deliver the best economical products and provide an excellent customer experience. We invite you to join us in building strong and long-term business partnerships.



■ Optimization of the Machining Process for Advanced Materials

HIT's **ULTRASONIC** technology enables cost-effective machining of complex workpieces made from advanced materials, such as technical ceramics (aluminum oxide, zirconium dioxide, silicon carbide), quartz glass, optical glass, tungsten carbide, heat-resistant alloys (titanium alloys, nickel alloys), hardened steel, mold steel, and composite materials.

The superposition of tool rotation with high-frequency ultrasonic oscillation significantly reduces friction between the tool and the workpiece. This effect facilitates chip removal, lowers cutting forces and cutting heat, and results in higher machining efficiency, improved workpiece quality, and extended tool life.

Based on extensive customer feedback, HIT's **ULTRASONIC** technology has demonstrated performance that exceeds comparable products available on the market in terms of functionality, quality, and reliability. HIT remains committed to continuously improving and refining its technology, providing advanced solutions that integrate intelligent technologies with high-quality customer service.

■ Ultrasonic Toolholder

● Plug & Play Transmitter

Compatible for variable CNC machine tools

● Non-contact Ultrasonic

Optimized inductive transmission

● Reinforced Structure

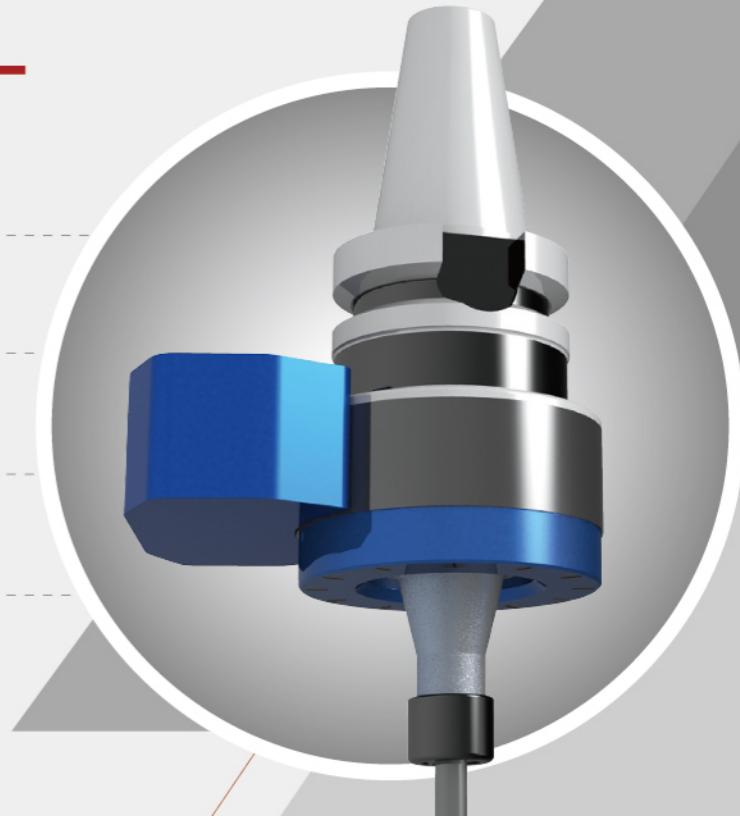
To achieve high rigidity

● Oscillation-amplitude

0 - 15 μm (depending on tool settings)

● Tools

With defined and undefined cutting edge



■ Plug & Play Design



■ Customized jig

■ Transmitter (Cable Ignored)

■ Ultrasonic toolholder



Ultrasonic Toolholder/

Semiconductor, Optoelectronics, Precision Mould, Medical, Aerospace/ Automotive Industry Application



SILICON CARBIDE

1. MICRO-DRILLING Ø0.4x4mm

- Efficiency +2.5X
- Hole Quality +1.8X
(Crack Size < 4µm)
- Tool Wear-3.2X

2. CIRCULAR RAMPING Ø27x1mm

- Surface Quality +3.5X (Sa < 0.2µm)
- Improved Ceramic Particle Flushing

ALUMINUM OXIDE

1. MICRO-DRILLING Ø0.5x3mm

- Efficiency +10X
- Tool Life +5X

2. PROFILE GRINDING

- Efficiency +2X
- Workpiece Quality + nearly 3X
- Improved Ceramic Particle Flushing

QUARTZ GLASS

1. MICRO-DRILLING Ø0.3x5.4mm

- Efficiency +1.9X

2. TROCHOIDAL GRINDING (Microfluidic Device)

- Fewer Manufacturing Steps
- Workpiece Quality +2X
- Improved Ceramic Particle Flushing

GLASS PANEL

1. MICRO-DRILLING Ø0.3x1mm

- Efficiency +9X
- Exit Hole Quality +10X
(Crack Size < 22µm)

2. EDGE GRINDING

- Efficiency +1.5X
- Crack Size < 50µm
- Tool Life +1.6X



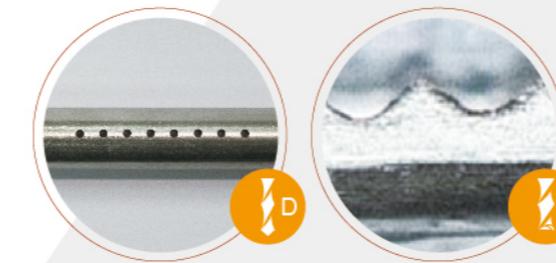
COMPOSITES MATERIAL

1. ROUGH GRINDING (AlSiC Heat Dissipating Plate)

- Efficiency +1.5X
- Surface Quality +1.6X
- Tool Life +2X

2. DRILLING Ø5x5mm (Carbon-Ceramic Brake Disc)

- Efficiency +5X
- Hole Quality +5X
- Tool Life +4X



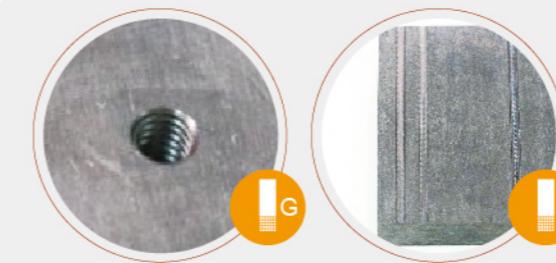
STAINLESS STEEL

1. MICRO-DRILLING Ø1x8mm

- Exit Hole Quality + nearly 4X
(Burr Height < 100µm)
- Tool Life + over 2X

2. MICRO-MILLING (Surgical Device)

- Product Yield Rate – From 10% to 100%
- Reduced Surface Roughness and Elimination of Tool Marks



TUNGSTEN CARBIDE

1. M2 INTERNAL THREADING

- Efficiency +3X
- Reduced Tool Wear

2. SLOT GRINDING

- Workpiece Quality +2X (Ra < 0.6µm)
- Tool Life + over 2X



HARDENED STEELS

1. hit PROFILE MILLING

- Efficiency +5.5X
- Tool Life +5X

2. FULL SLOTTING (HIGH ASPECT RATIO)

- Workpiece Quality +2.5X
- Tool Life +3X



HEAT-RESISTANT ALLOYS

1. SIDE MILLING

- Efficiency +3X
- Sa < 0.3µm
- Reduced Cutting Force and Heat

2. POCKET MILLING Ø7.6x3mm

- Efficiency +4X
- Workpiece Quality +1.5X
- Tool Life +1.7X

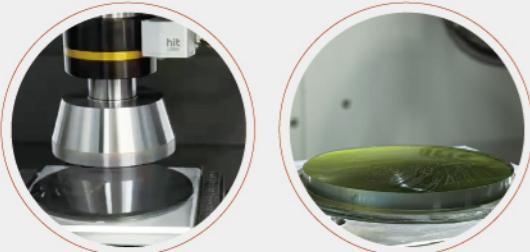
3. MICRO-DRILLING Ø0.6x6mm

- Efficiency +2X
- Tool Life +5X

*Actual results may vary depending on machining processes, parameters, and machine rigidity.

Ultrasonic Grinding Wheel Toolholder/

Semiconductor, Aerospace/Automotive Industry Application



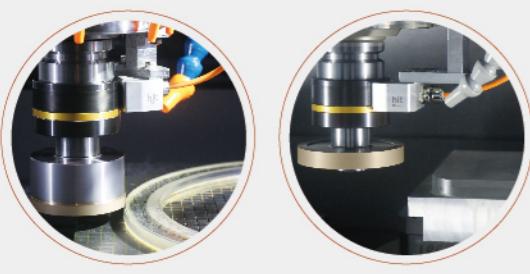
SILICON CARBIDE

1. SURFACE GRINDING

- Spindle Load -2.3X
- Surface Quality +1.6X
- Reduced Wheel Wear

2.. (CVD-SIC) SURFACE GRINDING

- Efficiency +5X
- Tool Life +4X



QUARTZ GLASS

1.(ROUGH) SIDE GRINDING

- Efficiency +2X
- Material Removal Rate +2X
- Workpiece Quality +1.6X

2.(ROUGH) SIDE GRINDING

- Efficiency +2X
- Material Removal Rate + nearly 3X
- Workpiece Quality +1.5X



COMPOSITES MATERIAL

1. SURFACE GRINDING

(Carbon-Ceramic Brake Disc)

- Material Removal Rate +3.3X
- Tool Life +3X

(Source: Thorney Ltd.)

*Actual results may vary depending on machining processes, parameters, and machine rigidity.

Ultrasonic Toolholder – Product Specification Sheet

*Measured with high-precision collet

Description Model	Run-out (4D)	Operating Freq.	Max. Spindle Speed	Collet Types	Weight	ATC	CTS
HSK-E25	≤5μm	35~47 kHz	48,000 rpm	ER08	0.2kg	YES	NO
HSK-E32	≤5μm	20~32 kHz	38,000 rpm	SK06	0.5kg	YES	≤70bar
HSK-E40	≤5μm	20~32 kHz	30,000 rpm	SK06 SK10	0.8kg	YES	≤70bar
HSK-E50	≤5μm	20~32 kHz	30,000 rpm	SK06 SK10	1.1kg	YES	≤70bar
HSK-A63	≤5μm	20~34 kHz	24,000 rpm	SK06 SK10 ER20	2.0kg	YES	≤70bar
HSK-A63-R30	≤5μm	20~34 kHz	24,000 rpm	SK06	2.2kg	YES	≤70bar
HBT-30	≤5μm	20~32 kHz	30,000 rpm	SK06 SK10	0.9kg	YES	≤70bar
HBT-40	≤5μm	20~34 kHz	24,000 rpm	SK06 SK10 ER20	2.0kg	YES	≤70bar
HBT-40-R30	≤5μm	20~34 kHz	24,000 rpm	SK06	2.0kg	YES	≤70bar
CAT-40	≤5μm	20~34 kHz	24,000 rpm	SK06 SK10	2.0kg	YES	≤70bar

HSK-E25

- Balance Quality Grade G2.5
- High Precision Run-out $\leq 5\mu\text{m}$

Specification

Model	HSK-E25
Run-out (4D)	$\leq 5\mu\text{m}$
Operating Freq.	35 kHz ~ 47 kHz
Max. Spindle Speed	48,000rpm
Collet Types	ER08
Weight	0.2 kg
ATC	YES
CTS	NO

*Measured with high-precision collet



HSK-E32

- Balance Quality Grade G2.5
- High Precision Run-out $\leq 5\mu\text{m}$

Specification

Model	HSK-E32
Run-out (4D)	$\leq 5\mu\text{m}$
Operating Freq.	20 kHz ~ 32 kHz
Max. Spindle Speed	38,000rpm
Collet Types	SK06
Weight	0.5 kg
ATC	YES
CTS	70 bar

*Measured with high-precision collet



HSK-E40

- Balance Quality Grade G2.5
- High Precision Run-out $\leq 5\mu\text{m}$

Specification

Model	HSK-E40
Run-out (4D)	$\leq 5\mu\text{m}$
Operating Freq.	20 kHz ~ 32 kHz
Max. Spindle Speed	30,000rpm
Collet Types	SK06 / SK10
Weight	0.8 kg
ATC	YES
CTS	70 bar

*Measured with high-precision collet



HSK-E50

- Balance Quality Grade G2.5
- High Precision Run-out $\leq 5\mu\text{m}$

Specification

Model	HSK-E50
Run-out (4D)	$\leq 5\mu\text{m}$
Operating Freq.	20 kHz ~ 32 kHz
Max. Spindle Speed	30,000rpm
Collet Types	SK06 / SK10
Weight	1.1 kg
ATC	YES
CTS	70 bar

*Measured with high-precision collet



HSK-A63

- Balance Quality Grade G2.5
- High Precision Run-out $\leq 5\mu\text{m}$

Specification

Model	HSK-A63	R30 SERIES
Run-out (4D)	$\leq 5\mu\text{m}$	$\leq 5\mu\text{m}$
Operating Freq.	20 kHz~34 kHz	20 kHz~34 kHz
Max. Spindle Speed	24,000rpm	24,000rpm
Collet Types	SK06/SK10/ER20	SK06
Weight	2 kg	2.2 kg
ATC	YES	YES
CTS	70 bar	70 bar



*Measured with high-precision collet

HBT-30

- Balance Quality Grade G2.5
- High Precision Run-out $\leq 5\mu\text{m}$

Specification

Model	HBT-30
Run-out (4D)	$\leq 5\mu\text{m}$
Operating Freq.	20 kHz ~ 32 kHz
Max. Spindle Speed	30,000rpm
Collet Types	SK06 / SK10
Weight	0.9 kg
ATC	YES
CTS	70 bar



*Measured with high-precision collet

HBT-40/CAT-40

- Balance Quality Grade G2.5
- High Precision Run-out $\leq 5\mu\text{m}$

Specification

Model	HBT-40 / CAT-40	R30 SERIES
Run-out (4D)	$\leq 5\mu\text{m}$	$\leq 5\mu\text{m}$
Operating Freq.	20 kHz~34 kHz	20 kHz~34 kHz
Max. Spindle Speed	24,000rpm	24,000rpm
Collet Types	SK06/SK10/ER20	SK06
Weight	2 kg	2.2 kg
ATC	YES	YES
CTS	70 bar	70 bar



*Measured with high-precision collet

Ultrasonic Grinding Wheel Toolholder - Product Specification Sheet

Model	Description	Operating Freq.	Max. Spindle Speed	Locking Mechanism	Weight	ATC	CTS
HBT-30-W02		20~32 kHz	12,000 rpm	Thread-locking	<1kg	YES	≤70bar
HBT-40-W01		20~34 kHz	10,000 rpm	Thread-locking	2.2kg	YES	≤70bar
HSK-E40-W02		20~32 kHz	12,000 rpm	Thread-locking	<1kg	YES	≤70bar
HSK-A63-W01		20~34 kHz	10,000 rpm	Thread-locking	2.2kg	YES	≤70bar

HBT-30 / HSK-E40

■ Balance Quality Grade G2.5

Specification

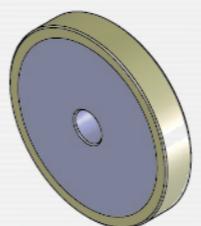
Model	HBT-30-W02 / HSK-E40-W02
Operating Freq.	20 kHz ~ 32 kHz
Max. Spindle Speed	12,000 rpm
Locking Mechanism	Thread-locking
Weight	< 1kg
ATC	YES
CTS	70 bar



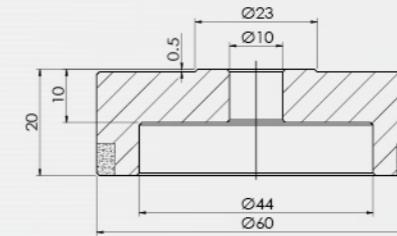
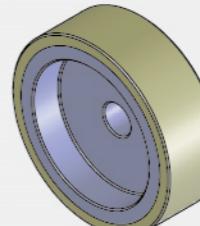
Grinding Wheel Selection

★ It is recommended to purchase grinding wheels from HIT to ensure optimal ultrasonic performance and vibration mode consistency.

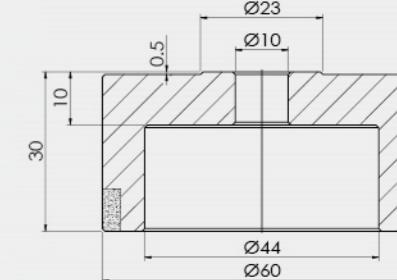
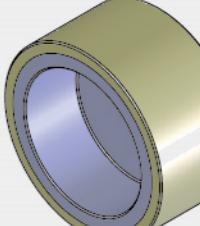
▪ A TYPE



▪ B TYPE



▪ C TYPE



HBT-40 / HSK-A63

- Balance Quality Grade G2.5

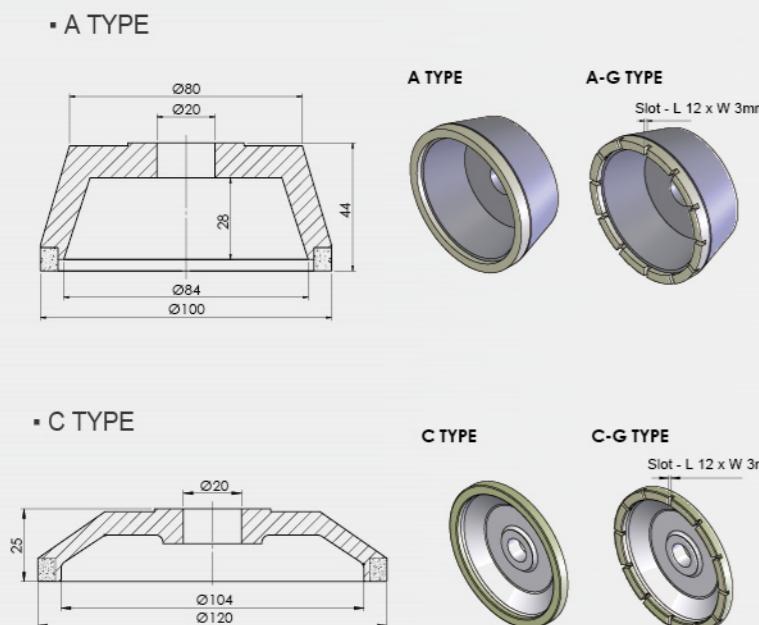
Specification

Model	HBT-40-W01 / HSK-A63-W01
Operating Freq.	20 kHz ~ 34 kHz
Max. Spindle Speed	10,000rpm
Locking Mechanism	Thread-locking
Weight	2.2kg
ATC	YES
CTS	70 bar



Grinding Wheel Selection

★ It is recommended to purchase grinding wheels from HIT to ensure optimal ultrasonic performance and vibration mode consistency.



Ultrasonic Driver Module

UD7

UD7 Ultrasonic Driver



External Control Box

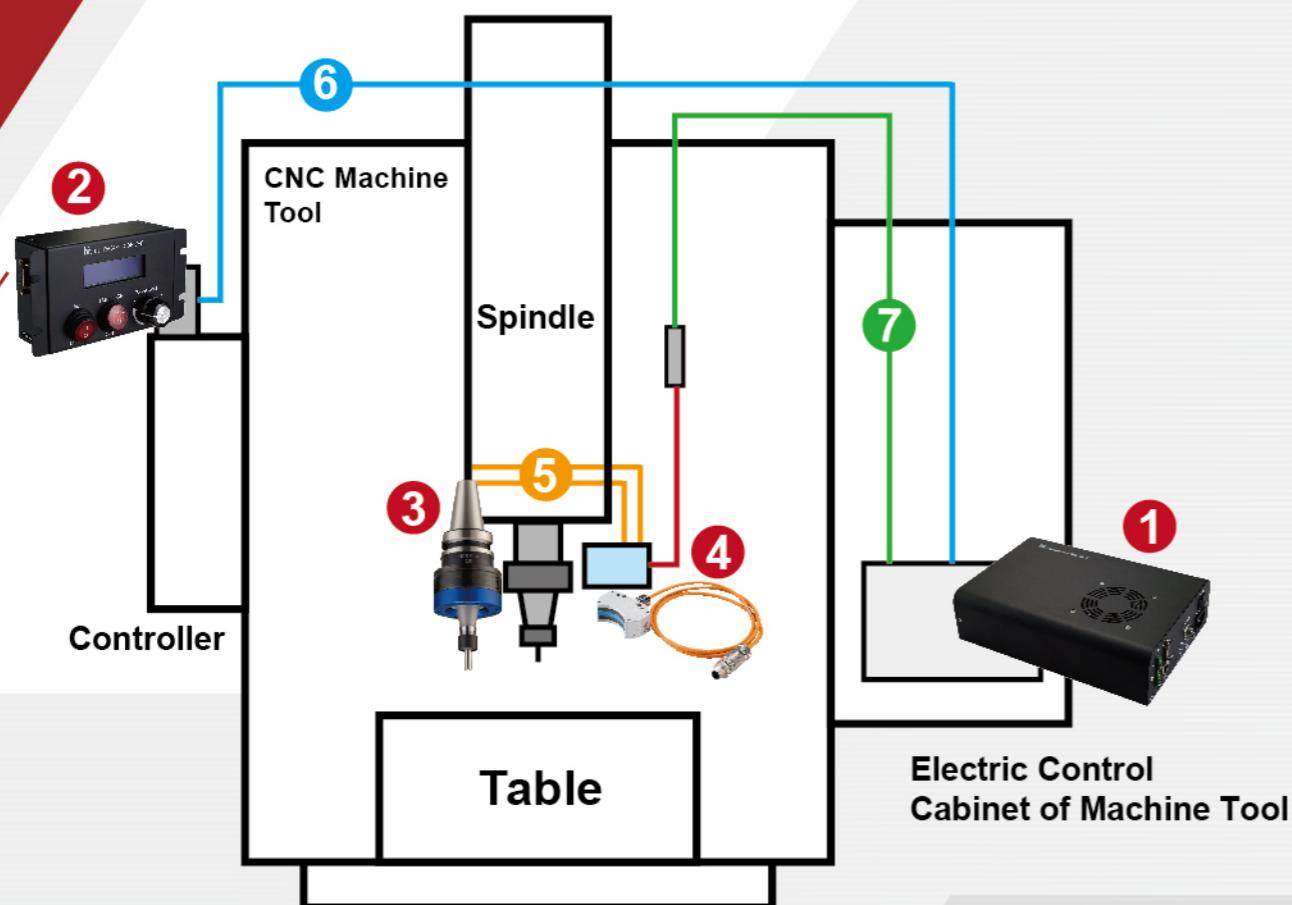
Supports external control and monitoring of ultrasonic driver.

UD7 Driver Specification

Max. Power	400 W
Frequency Range	10 kHz ~ 60 kHz
Operating Temperature	-20°C to 50°C
Operating Humidity	5 % RH ~ 95 % RH (non-condensing)
Power Supply	AC 100~240 V, 50/60 Hz, single-phase
Dimensions & Weight	[Dimensions] L 310 x W 200 x H 90 mm [Weight] 2.6 kg
Features	<ul style="list-style-type: none"> *Intelligent frequency scanning compatible with various machining tools. *Automatic frequency locking and tracking. *Adjustable output power. *Multiple control modes: manual and PLC. *Ultrasonic status display and output monitoring. *Multiple alarm notifications.

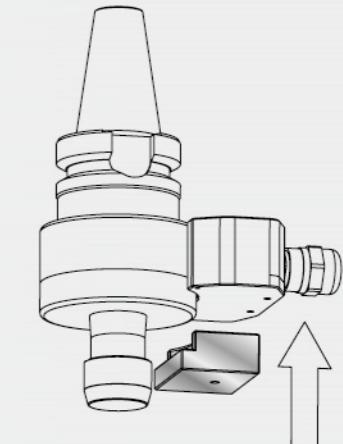
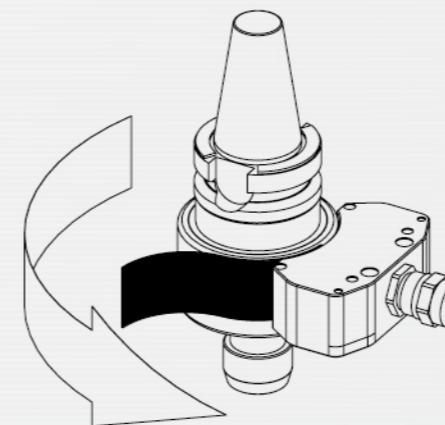
■ Product Installation Example

- ① UD7 Ultrasonic Driver (AC 110/220)
- ② External Control Box
- ③ Ultrasonic Toolholder
- ④ Power Transmitter (Cable: Standard 1M)
- ⑤ Power Transmitter Jig (Customizable)
- ⑥ External Control Box Signal Cable (Standard 8M)
- ⑦ Ultrasonic Signal Cable (Standard 5M)



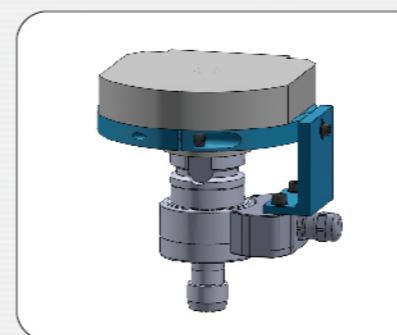
■ Power Transmitter Installation Auxiliaries

- 0.5mm Air Gap Sheet
- Height Adjustment Block

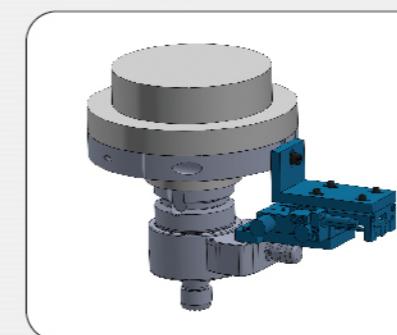


■ Power Transmitter Jig Design

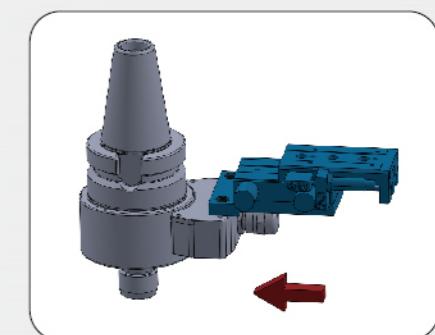
- Fixed Type



- Dodging Type

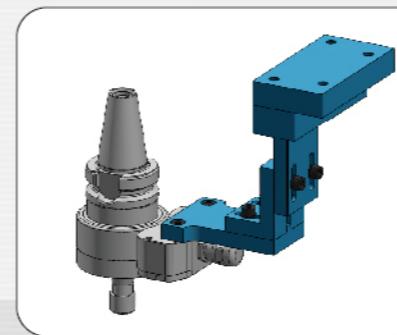


[Dodging Type Operation]

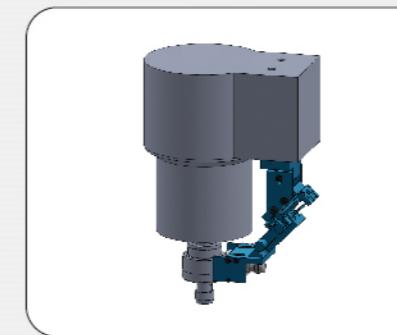


In Operation

- Fixed Type



- Dodging Type



Tool Changing