## Conprofe Technology Group Co., Ltd.

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CONPROFE

# Ultrasonic Machining System

## Connotation

Converging of Global Resources

Professional as Industry Leader

“CONPROFE”

# Overview

With its roots back to 2003, Conprofe is a Provider of Efficient, Green and Intelligent Manufacturing Solutions and Key Units. It has been holding on to the idea of “Converging of Global Resources, Professional as Industry Leader” in the past two decades. Revolving around “Efficient, Green and Intelligent Manufacturing”, the company has achieved a giant leap from parts, units to machines and developed a product portfolio with three major industries - Precision Tools, Key Units and CNC Machine Tools, which covers eight categories of products, including Super-hard Tools, Tapping Tools, Precision Tool Holders, Ultrasonic Technologies, Green Technologies, Precision Units, Ultrasonic-Green CNC Machine Tools and Automation. Its customers have spread across diverse sectors, such as consumable electronics, semiconductors, automotive, aviation & aerospace, medical, education and general precision manufacturing, etc.

Conprofe perseveres in laying a solid foundation in the domestic market while keeping its eyes open to the world. Headquartered in Guangzhou Science City, the company has established sales and service centers in seven domestic regions and forged a network of R&D, sales and service based in Hong Kong, Taiwan, the United States, South Korea, India and Vietnam, etc. With its products being exported to over 70 countries and regions across six continents, Conprofe's integrated distribution of R&D, production, sales and service around the globe has gradually come into being.

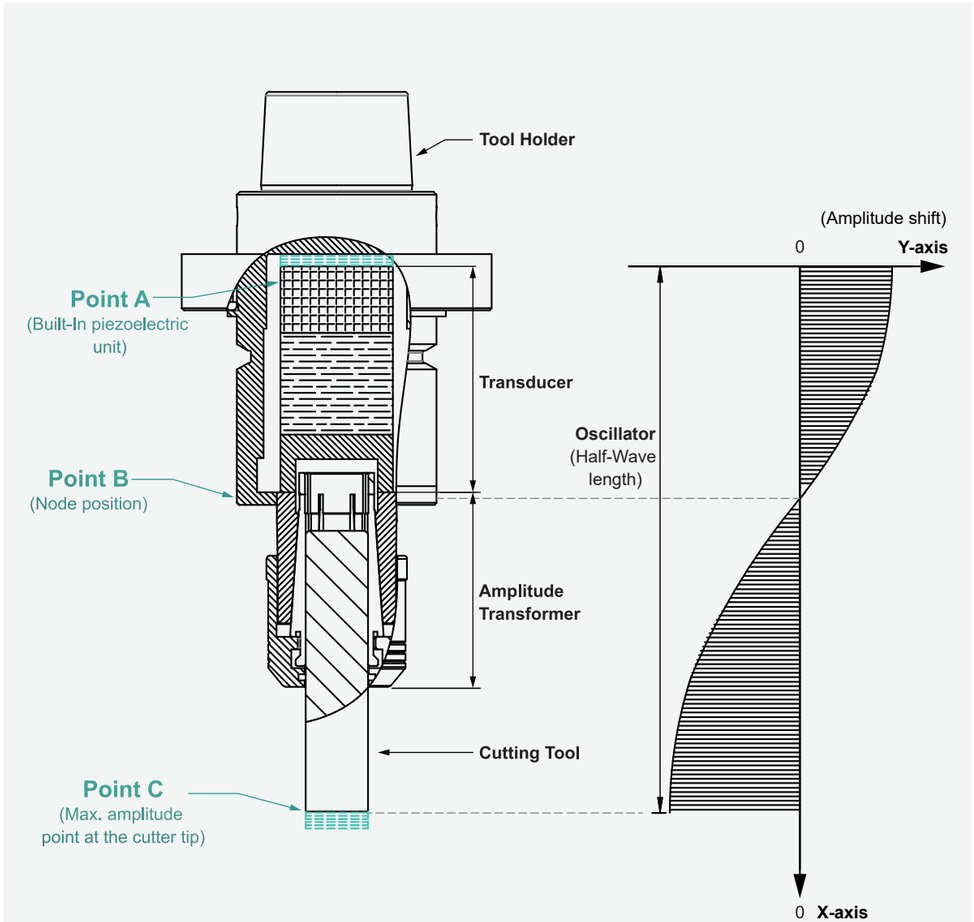
Conprofe persists in innovation-driven developing strategy and owns two National High-tech Enterprises under the Group. The company”s Frontier Technology Research Institute (FTRI) and Guangdong Province Engineering Technology Center (GPETC) has developed over 850 core technology patents. Its primary product technologies have reached an internationally advanced level, as assessed and acknowledged by experts led by members of the Chinese Academy of Engineering (CAE). Furthermore, Conprofe has successively been granted the Guangdong Scientific and Technological Progress Award (First Prize 2020, Second Prize 2021), Guangdong Patent Award (Silver), China Patent Award (Excellence) and has been honored as Enterprise with Significant Contribution to Guangdong”s Supplies for COVID-19 Prevention and Control, Guangzhou Pioneering Private Enterprise, etc.

# Ultrasonic Working Principle

The ultrasonic generator converts high-frequency electrical energy into mechanical vibration by ultrasonic vibration, which makes rotating cutter vibrate at thousands of times per second, and separates the cutter and workpiece periodically, thus effectively removing chippings, and indirectly improving cooling effect leading to better surface quality, higher efficiency and longer tool life.

1. In machining, the ultrasonic generator is activated by high-frequency alternating electrical energy, driving the transducer to resonate as a whole. Energy is generated at point A and transmitted through point B to point C in the form of longitudinal waves.

2. After activation, the transducer resonates in the form of slight expansion and contraction. Point A and point C simultaneously move away from/ close to the node (point B) of the transducer. Throughout the vibration process, point B remains stationary.




# Applicable Materials

## Hard-Brittle Materials

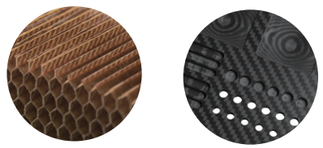
**Materials** – Single-Crystle Silicon, Aluminium Oxide, Sapphire, Glass, Sillicon Nitride, AlSiC, etc.

**Workpiece** – Semiconductor Showerhead, Speculum, Optical Fiber Stick, Mobile Phone Cover, Watch Dial Plate, Graphite Mold, Denture, etc.

## Composite Materials

**Materials** – Nomex Honeycomb, Carbon Fiber, Carbon Fiber Reinforced Metal Composites, etc.

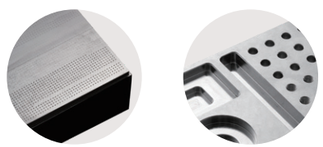
**Workpiece** – Spacecraft Component, Automobile Lightweight, Railway Transit Component, etc.



## Hard-to-Cut Metals

**Materials** – Stainless Steel, Titanium Alloy, Superally, etc.

**Workpiece** – Spacecraft Component, Wear-Resistance Component, Heat-Resistance Component, etc.





### Ultrasonic Machining Advantages

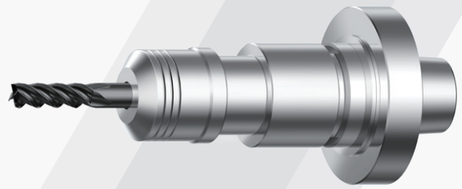
High-Frequency Vibration (18,000-70,000 times/s)

Benifits for Tools:

- Effective reduction of main cutting force and temperature
- Less subsurface damage on hard-brittle materials and less cutting force
- Reduced surface roughness
- Longer tool life
- Better workpiece surface integrity

# HSK-E25 Ultrasonic Tool Holder

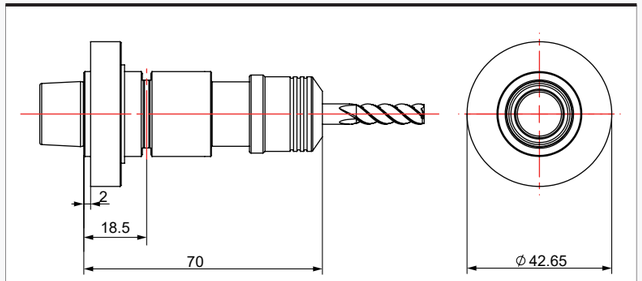
Ultrasonic Milling/ Grinding



## Specification

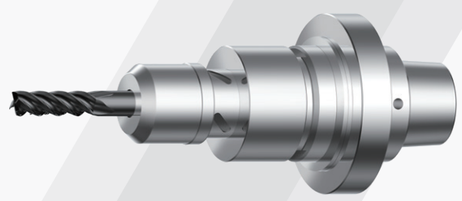
| Item | HSK-E25 |
|---|---|
| Working Frequency | 16-70kHz |
| Max. Rotating Speed | 30,000rpm |
| Collet Model | ER16 |
| Clamping Accuracy | 0.005mm |
| Spindle Taper | HSK-E25 |
| Auto Tool Change | Standard |
| Coolant-Through Spindle | N/A |

## Drawing and Dimensions (unit: mm)




# HSK-E32 Ultrasonic Tool Holder

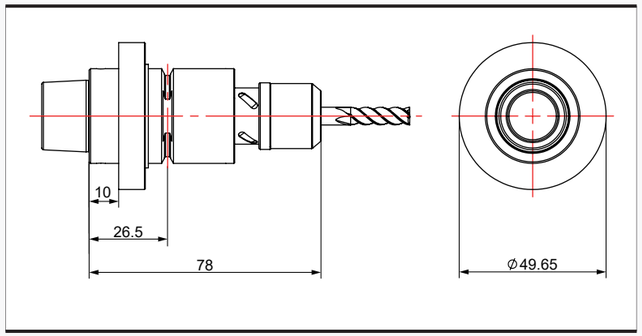
Ultrasonic Milling/ Grinding



## Specification

| Item | HSK-E32 |
|---|---|
| Working Frequency | 16-70kHz |
| Max. Rotating Speed | 30,000rpm |
| Collet Model | SK06/SK10 |
| Clamping Accuracy | 0.005mm |
| Spindle Taper | HSK-E32 |
| Auto Tool Change | Standard |
| Coolant-Through Spindle | Optional |

## Drawing and Dimensions (unit: mm)





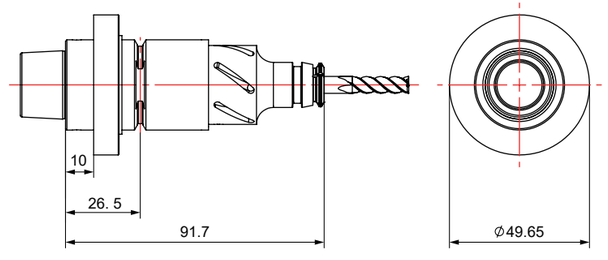

# HSK-E32

Ultrasonic Press-Fit Tool Holder

## Specification

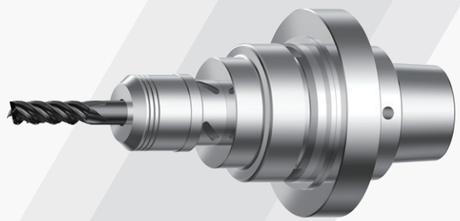
| Item | HSK-E32 |
|---|---|
| Working Frequency | 16-70kHz |
| Max. Rotating Speed | 30,000rpm |
| Collet Model | P10 |
| Clamping Accuracy | 0.003mm |
| Spindle Taper | HSK-E32 |
| Auto Tool Change | Standard |
| Coolant-Through Spindle | Optional |

## Drawing and Dimensions (unit: mm)



# HSK-E40 Ultrasonic Tool Holder

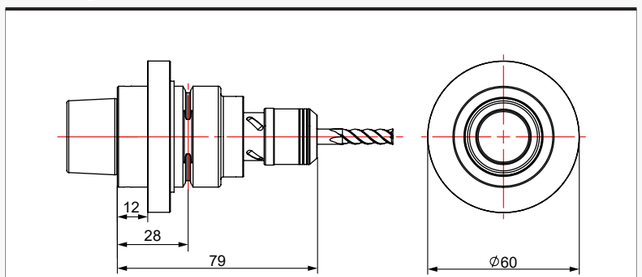
Ultrasonic Milling/ Grinding



## Specification

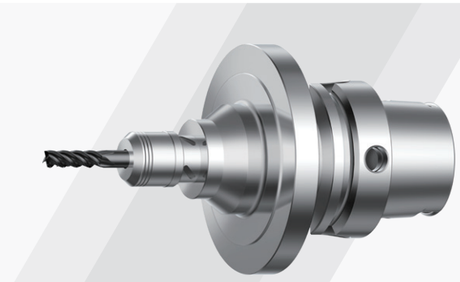
| Item | HSK-E40 |
|---|---|
| Working Frequency | 16-70kHz |
| Max. Rotating Speed | 30,000rpm |
| Collet Model | SK06/SK10/SK16 |
| Clamping Accuracy | 0.005mm |
| Spindle Taper | HSK-E40 |
| Auto Tool Change | Standard |
| Coolant-Through Spindle | Optional |

## Drawing and Dimensions (unit: mm)




# HSK-A63 Ultrasonic Tool Holder

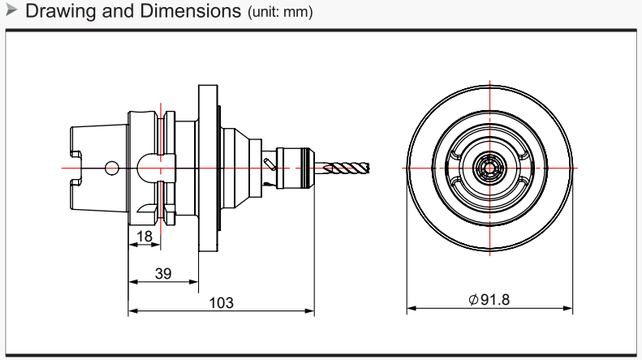
Ultrasonic Milling/ Grinding



## Specification

| Item | HSK-A63 |
|---|---|
| Working Frequency | 16-70kHz |
| Max. Rotating Speed | 24,000rpm |
| Collet Model | SK06/SK10/SK16 |
| Clamping Accuracy | 0.008mm |
| Spindle Taper | HSK-E63 |
| Auto Tool Change | Standard |
| Coolant-Through Spindle | Optional |

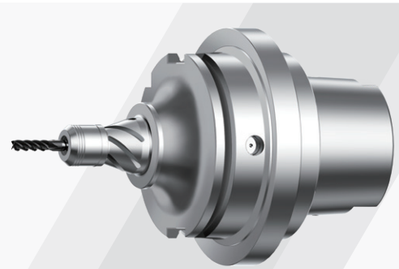
## Drawing and Dimensions (unit: mm)






# HSK-A100 Ultrasonic Tool Holder

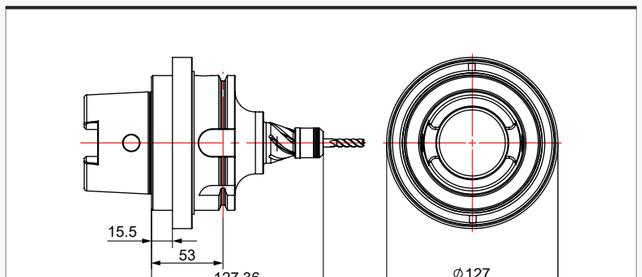
Ultrasonic Milling/ Grinding



## Specification

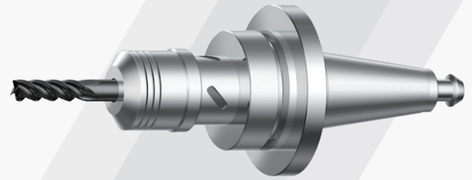
| Item | HSK-A100 |
|---|---|
| Working Frequency | 16-70kHz |
| Max. Rotating Speed | 15,000rpm |
| Collet Model | SK06/SK10/SK16 |
| Clamping Accuracy | 0.008mm |
| Spindle Taper | HSK-A100 |
| Auto Tool Change | Standard |
| Coolant-Through Spindle | Optional |

## Drawing and Dimensions (unit: mm)




# ISO20 Ultrasonic Tool Holder

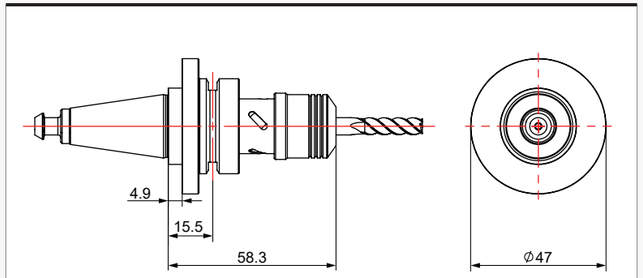
Ultrasonic Milling/ Grinding



## Specification

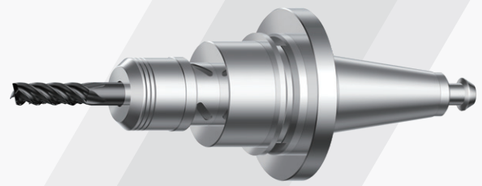
| Item | ISO20 |
|---|---|
| Working Frequency | 16-70kHz |
| Max. Rotating Speed | 30,000rpm |
| Collet Model | SK06/ER16 |
| Clamping Accuracy | 0.005mm |
| Spindle Taper | ISO20 |
| Auto Tool Change | Standard |
| Coolant-Through Spindle | N/A |

## Drawing and Dimensions (unit: mm)




# ISO25 Ultrasonic Tool Holder

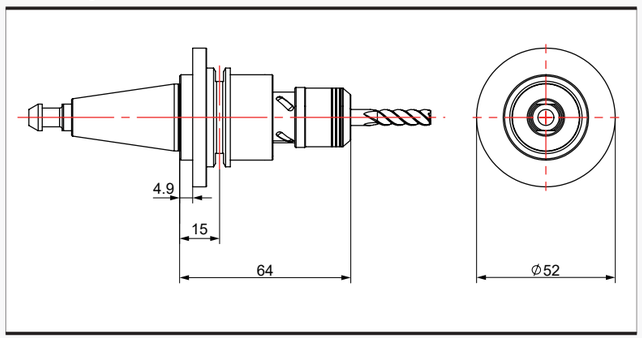
Ultrasonic Milling/ Grinding



## Specification

| Item | IOS25 |
|---|---|
| Working Frequency | 16-70kHz |
| Max. Rotating Speed | 40,000rpm |
| Collet Model | SK06/ER16 |
| Clamping Accuracy | 0.005mm |
| Spindle Taper | ISO25 |
| Auto Tool Change | Standard |
| Coolant-Through Spindle | Optional |

## Drawing and Dimensions (unit: mm)



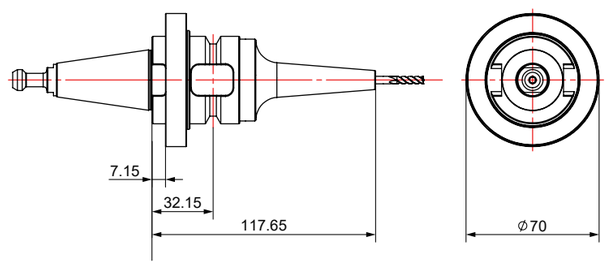
# BT30-TETH

Ultrasonic Shrink-Fit Tool Holder

## Specification

| Item | BT30-TETH |
|---|---|
| Working Frequency | 16-70kHz |
| Max. Rotating Speed | 25,000rpm |
| Collet Model | Φ4/Φ6/Φ8/Φ10 |
| Clamping Accuracy | 0.003mm |
| Spindle Taper | BT30 |
| Auto Tool Change | Standard |
| Coolant-Through Spindle | Optional |

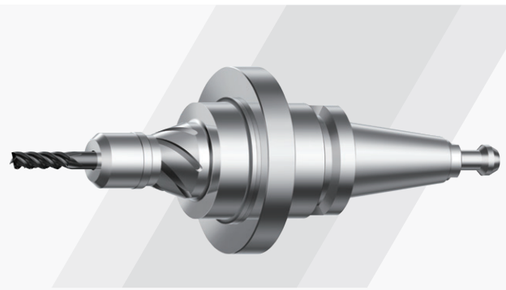
## Drawing and Dimensions (unit: mm)






# BT30 Ultrasonic Tool Holder

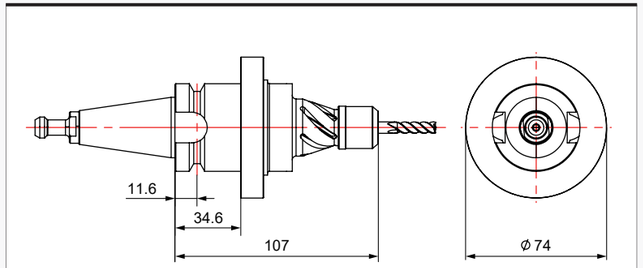
Ultrasonic Milling/ Grinding



## Specification

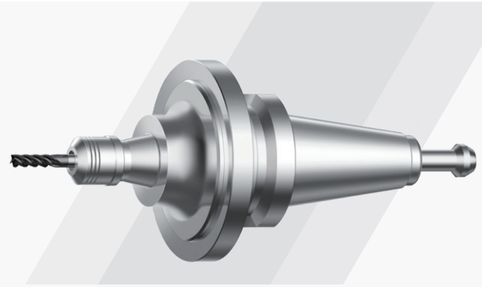
| Item | BT30 |
|---|---|
| Working Frequency | 16-70kHz |
| Max. Rotating Speed | 25,000rpm |
| Collet Model | SK06/SK10/SK16 |
| Clamping Accuracy | 0.008mm |
| Spindle Taper | BT30 |
| Auto Tool Change | Standard |
| Coolant-Through Spindle | Optional |

## Drawing and Dimensions (unit: mm)




# BT40 Ultrasonic Tool Holder

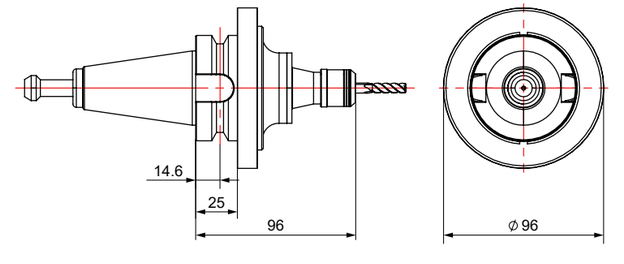
Ultrasonic Milling/ Grinding



## Specification

| Item | BT40 |
|---|---|
| Working Frequency | 16-70kHz |
| Max. Rotating Speed | 25,000rpm |
| Collet Model | SK06/SK10/SK16 |
| Clamping Accuracy | 0.008mm |
| Spindle Taper | BT40 |
| Auto Tool Change | Standard |
| Coolant-Through Spindle | Optional |

## Drawing and Dimensions (unit: mm)



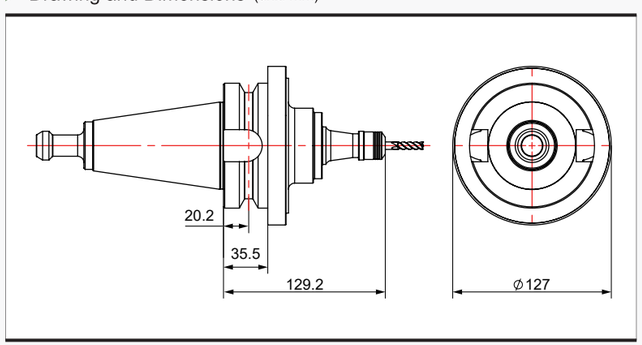
# BT50 Ultrasonic Tool Holder

Ultrasonic Milling/ Grinding

## Specification

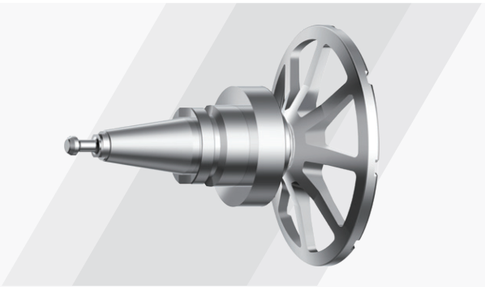
| Item | BT50 |
|---|---|
| Working Frequency | 16-70kHz |
| Max. Rotating Speed | 15,000rpm |
| Collet Model | SK06/SK10/SK16 |
| Clamping Accuracy | 0.01mm |
| Spindle Taper | BT50 |
| Auto Tool Change | Standard |
| Coolant-Through Spindle | Optional |

## Drawing and Dimensions (unit: mm)




# BT30-α Ultrasonic Tool Holder

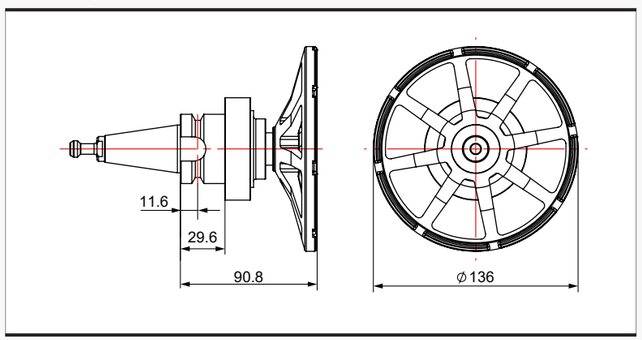
Ultrasonic Milling/ Grinding



## Specification

| Item | BT30-α |
|---|---|
| Working Frequency | 16-40kHz |
| Max. Rotating Speed | 12,000rpm |
| Collet Model | Customized |
| Clamping Accuracy | 0.01mm |
| Spindle Taper | BT30 |
| Auto Tool Change | Standard |
| Coolant-Through Spindle | N/A |

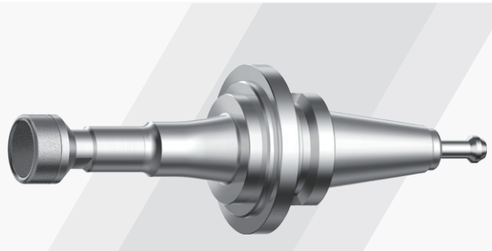
## Drawing and Dimensions (unit: mm)






# BT40-MP Ultrasonic Tool Holder

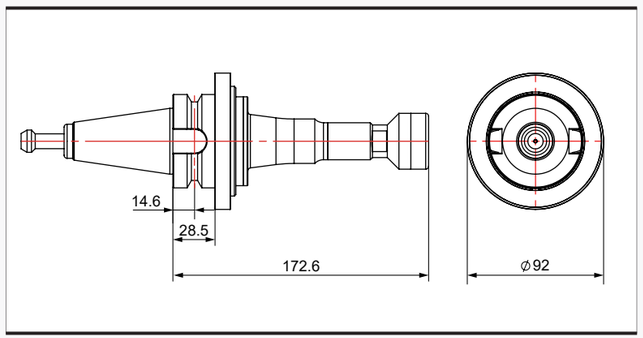
Ultrasonic Milling/ Grinding



## Specification

| Item | BT40-MP |
|---|---|
| Working Frequency | 16-40kHz |
| Max. Rotating Speed | 25,000rpm |
| Collet Model | Customized |
| Clamping Accuracy | 0.01mm |
| Spindle Taper | BT40 |
| Auto Tool Change | Standard |
| Coolant-Through Spindle | Optional |

## Drawing and Dimensions (unit: mm)

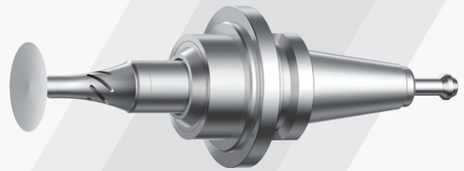


## Ultrasonic Cutting

1. Less material adhesion with ultrasonic vibration and higher cutting speed
2. Continuous cutting enabling higher machining efficiency
3. Resistance reduction between cutting tools and materials
4. Lower cutting temperature and longer tool life
5. Cutting quality improvement and no regression of composite material lamination
6. No spillout, chippings and dust
7. High-Presicion cutting, smooth cutting edge and little workpiece distortion
8. Stable machining and effecitve chatter elimination

# BT40-FY Ultrasonic Tool Holder

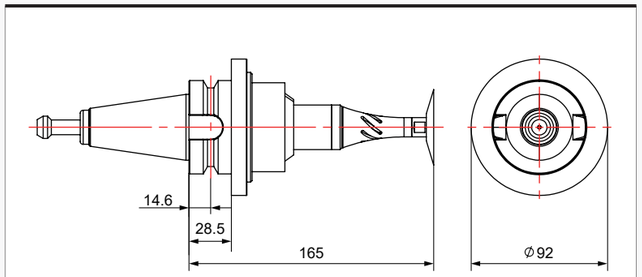
Ultrasonic Cutting



### Specification

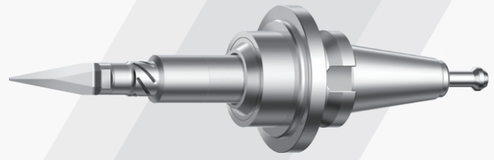
| Item | BT40-FY |
|---|---|
| Working Frequency | 20-40kHz |
| Max. Rotating Speed | 25,000rpm |
| Collet Model | Customized |
| Clamping Accuracy | 0.02mm |
| Spindle Taper | BT40 |
| Auto Tool Change | Standard |
| Coolant-Through Spindle | N/A |

### Drawing and Dimensions (unit: mm)




# BT40-FZ Ultrasonic Tool Holder

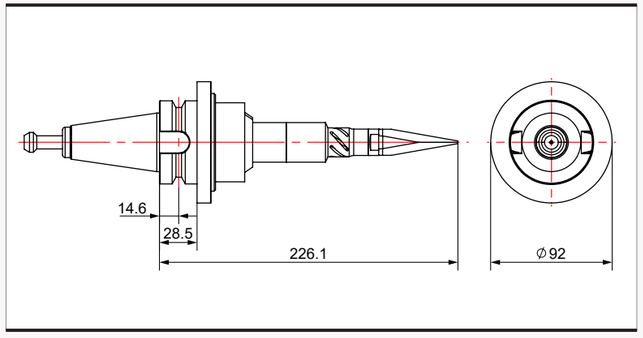
Ultrasonic Cutting



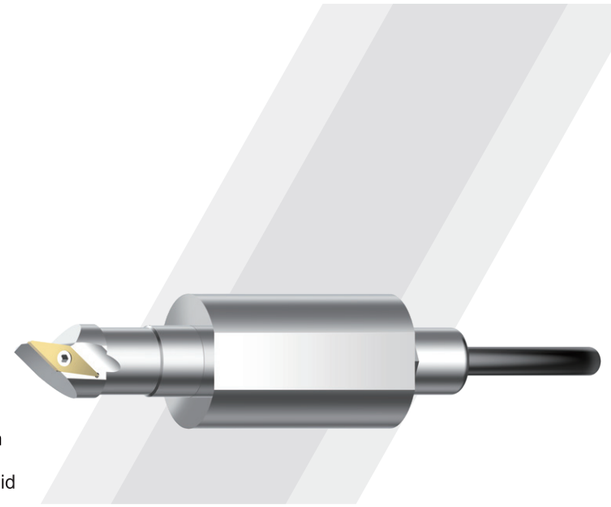
### Specification

| Item | BT40-FZ |
|---|---|
| Working Frequency | 20-40kHz |
| Max. Rotating Speed | - |
| Collet Model | Customized |
| Clamping Accuracy | 0.02mm |
| Spindle Taper | BT40 |
| Auto Tool Change | Standard |
| Coolant-Through Spindle | N/A |

### Drawing and Dimensions (unit: mm)




# Ultrasonic Turning



## Features

1. Significant cutting force reduction
2. Less chipping, burrs, build-up edges and less workpiece distortion
3. Stable machining and effective chatter elimination
4. Cooling and lubricating improvement of cutting fluid
5. Tool life improved by up to dozens of times

## Specification

| Product | Model | Cutting Tool Spec. | Screw Size | Wrench Size | Water Outlet |
|---|---|---|---|---|---|
| External Turning Insert Holder | WVJBR30-50w-ZZ | VBMT110302 | M2.5x6 | T8 | Optional |
| External Turning Insert Holder | WDJBR30-50w-ZZ | DCMT11T304 | M4x9 | T15 | Optional |
| External Turning Insert Holder | NSJBR30-50w-ZZ | SCMT09T308 | M4x9 | T15 | Optional |

## Drawing and Dimensions (unit:mm)