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HIGH PRECISION
INTELLIGENT CONTROL
HIGH SPEED CAPABILITY
PLUG & PLAY DESIGN

ULTRASONIC
MACHINING
MODULE



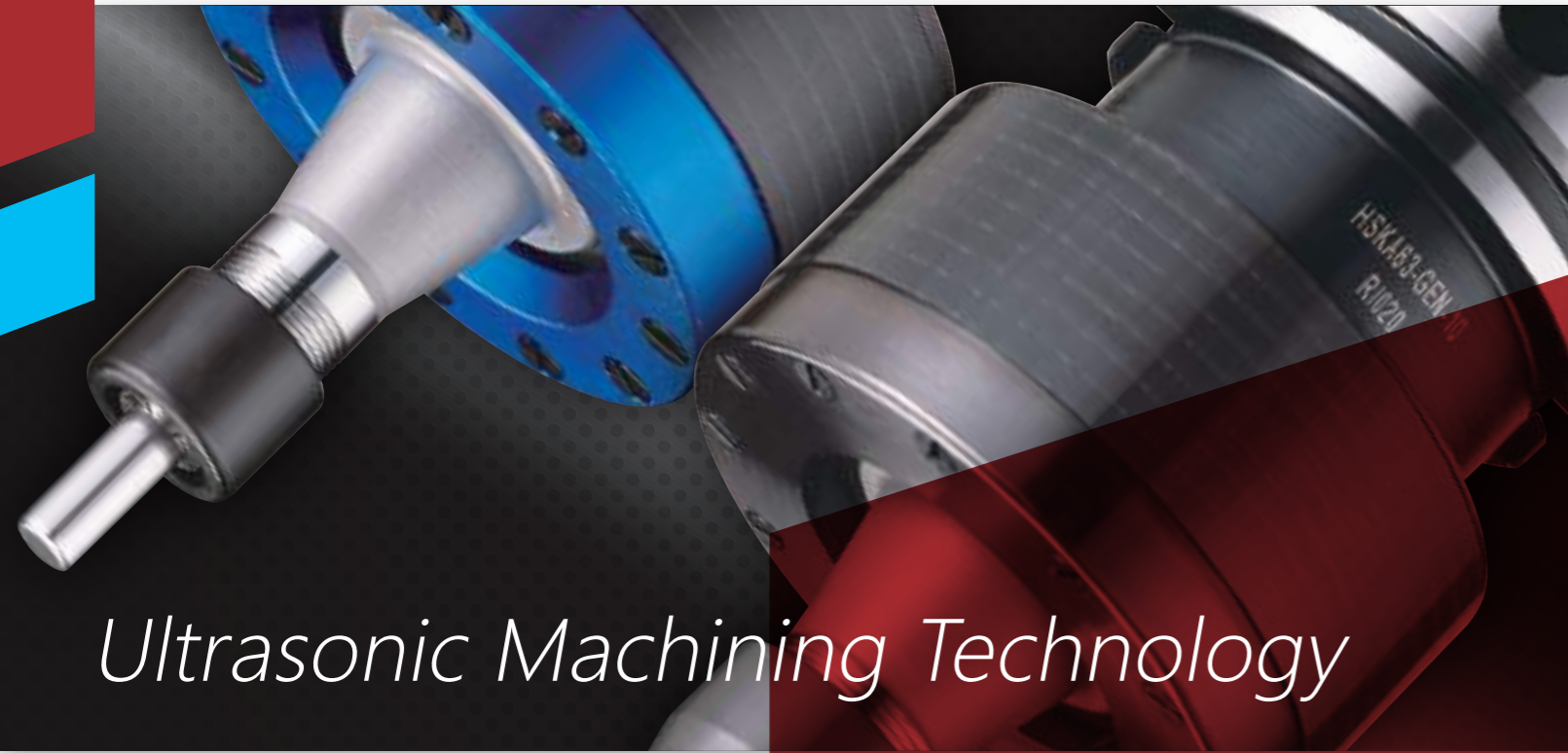
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ULTRASONIC MACHINING MODULE

COMPANY PROFILE

Advanced materials machining and smart manufacturing are foreseen by many major industries as the trends of CNC machining technology. Advanced materials are lightweight, hard/tough and capable of operate at higher temperature. Precision tooling is being used by the industries involved in advanced materials, including semiconductor, optoelectronics, aerospace, medical device, energy equipment, smart electric vehicle, electronic mobile and precision machinery. Nowadays, CNC machining is shifting from traditional metal machining to new smart hybrid CNC machining combining ultrasonic vibration-assisted machining and other new type of machining method.

Hantop Intelligence Technology, an innovative, young and visionary team, includes more than 60% of the members having master degree and PhD in engineering, focusing on reliability engineering, advanced material machining technology and system solutions. Our mission is to provide best economical products and the best customer experience. Join us to build strong business partnership.



Ultrasonic Machining Technology

Increased Productivity

The **ULTRASONIC technology from HIT** enables the economical machining of complex work-piece geometries in demanding Advanced Materials like e.g. ceramics, glass, corundum, tungsten carbide or even composites.

The kinematic overlapping of the tool rotation with an additional oscillation effects a reduction of the process forces by up to 40% in comparison to conventional machining. Depending on the work-piece requirements, this allows higher feed and infeed, longer tool life or significantly better surface finishes of up to $Ra < 0.1 \mu m$.

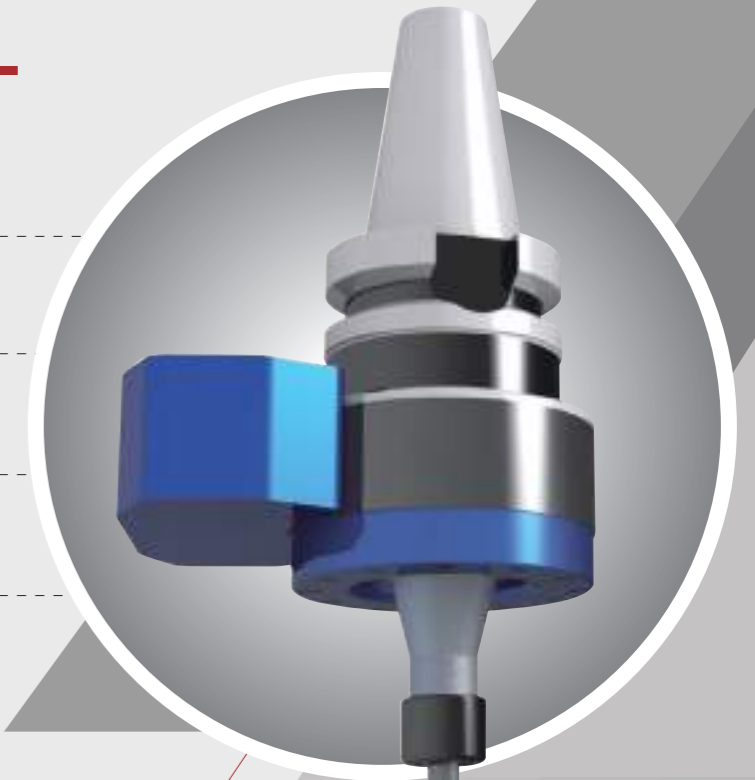
Based on a consequent development of the **HIT ULTRASONIC technology** according to the markets requirements, the **HIT ULTRASONIC MODULE** is able to cover ultrasonic-assisted milling of hard-to-machine metal/materials or fibre reinforced materials with defined cutting edge.

Advanced Materials

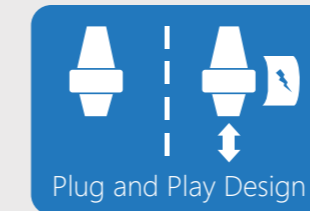
- 1 **TUNGSTEN CARBIDE**
Characterised by its high strength, toughness and hardness.
- 2 **CERAMICS**
High elastic modulus and hardness, high melting points, low thermal expansion, and good chemical resistance.
- 3 **GLASS**
Transparency, heat resistance, pressure and breakage resistance and chemical resistance.
- 4 **INCONEL**
High resistance to corrosion, pressure and oxidation.
- 5 **FIBERGLASS**
High strength, high elasticity, light weight.

Ultrasonic Toolholder

- **Plug & Play Transmitter**
Compatible for variable CNC machine tool
- **Non-contact Ultrasonic**
Optimised inductive transmission
- **Reinforced Actuator**
To achieve high stiffness
- **Oscillation-amplitude**
0 - 15 μm (depending on tool settings)
- **Tools**
(With undefined and defined cutting edge)



Plug & Play Design



Customize Fixture

Transmitter (Cable Ignored)

Ultrasonic Toolholder



Design for Advanced Materials



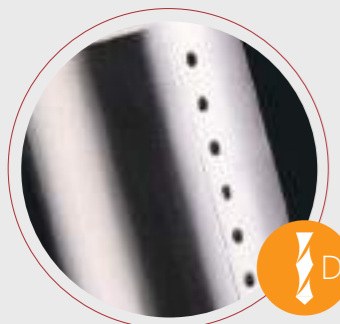
TUNGSTEN CARBIDE

1. Without polishing, near mirror finish surface ($Ra < 0.1\mu m$)
2. Processing efficiency increases 4 times, compared to EDM
3. Same processing method, efficiency increases 1.6 times
4. Reducing the processing procedures
5. Longer tool life by 4 times



SAPPHIRE

5. 1. Processing efficiency increases 4 times, compared to non-ultrasonic
2. Effectively reduce the workpiece chipping and surface micro-cracks



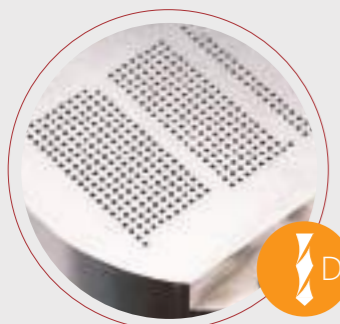
INCONEL

2. 1. Efficiency enhanced by 30% compared to non-ultrasonic
2. Prolongs tool life



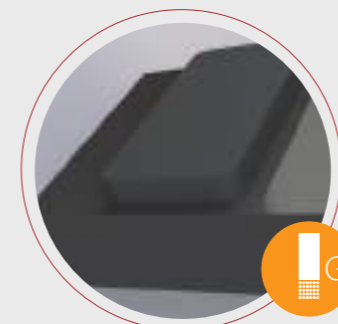
OPTICAL GLASS

6. 1. Better quality, compared to non-ultrasonic
2. Efficiency enhanced by 800% compared to non-ultrasonic



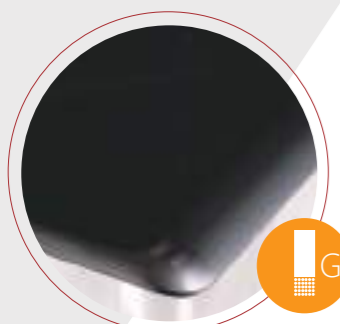
AISI 304

3. 1. Processing efficiency increases 3 times
2. Significant quality improvement: reducing entry distortions, decreasing hole roughness



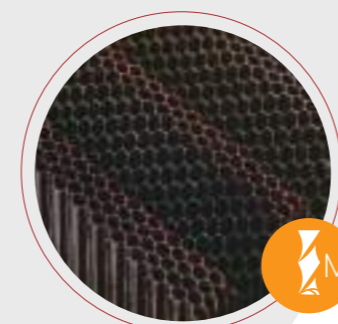
SILICON CARBIDE

7. 1. Break the limitation of non-ultrasonic machining, increased the removal rate up to 5 times
2. Better quality, reducing surface roughness by 30%



ZIRCONIUM DIOXIDE

4. 1. Better quality, compared to non-ultrasonic
2. Processing time reduced by half
3. Longer tool life by 3 times



FIBERGLASS

8. 1. Not only meeting the customer angular machining qualities, but increases the roughing efficiency by 4 times
2. At the same quality standard, the finishing efficiency can be increased by 2 times

*Actual results depending on user machining parameters.

BT-30

- Balance Quality Grade G2.5
- High Precision runout <5μm



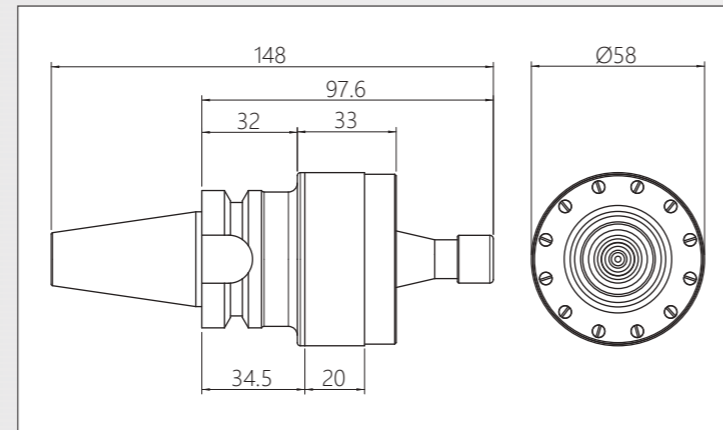
Specification

Model	BT30
Runout(4D)	<5 μm
Operating Freq.	20 kHz ~ 32 kHz(*52kHz)
Max. Spindle Speed	30,000rpm
Collet Types	SK 6/10 H6
Weight	0.9 kg
Taper	BT30/ BBT30
ATC	Yes
CTS※	Optional(≤70 bar)

※: Optional

External Dimensions

Unit : mm



HSK-E40

- Balance Quality Grade G2.5
- High Precision runout <5μm



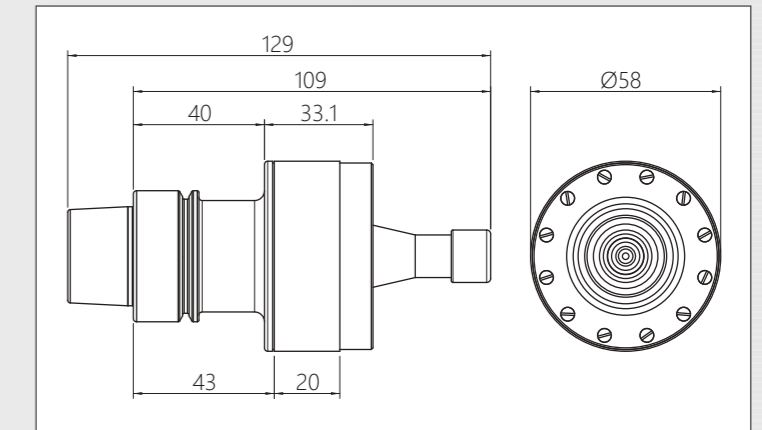
Specification

Model	HSK-E40
Runout(4D)	<5 μm
Operating Freq.	20 kHz ~ 32 kHz(*52kHz)
Max. Spindle Speed	30,000rpm
Collet Types	SK 6/10 H6
Weight	0.8 kg
Taper	HSK E40
ATC	Yes
CTS※	Optional(≤70 bar)

※: Optional

External Dimensions

Unit : mm



BT-40

- Balance Quality Grade G2.5
- High Precision runout <5μm



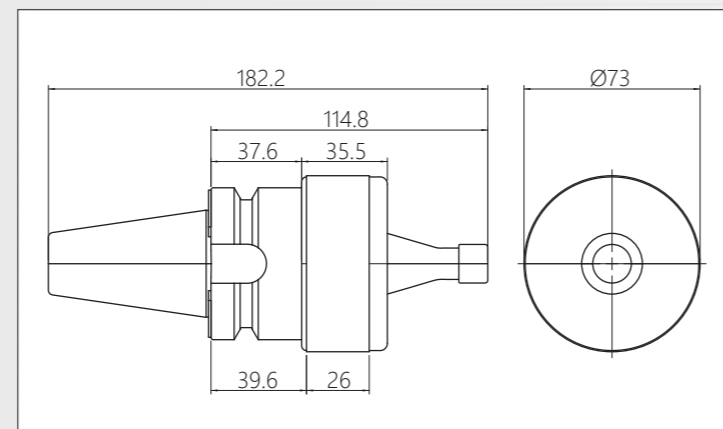
Specification

Model	BT40
Runout(4D)	<5 μm
Operating Freq.	20 kHz ~ 32 kHz(*52kHz)
Max. Spindle Speed	24,000rpm
Collet Types	SK 6/10 H6
Weight	2.0 kg
Taper	BT40/ BBT40
ATC	Yes
CTS※	Optional(≤70 bar)

※: Optional

External Dimensions

Unit : mm



HSK-A63

- Balance Quality Grade G2.5
- High Precision runout <5μm



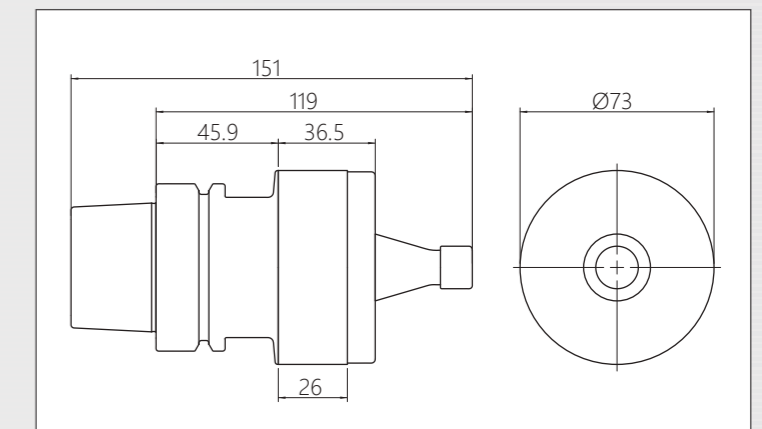
Specification

Model	HSK-A63
Runout(4D)	<5 μm
Operating Freq.	20 kHz ~ 32 kHz(*52kHz)
Max. Spindle Speed	24,000rpm
Collet Types	SK 6/10 H6
Weight	2.0 kg
Taper	HSK A63
ATC	Yes
CTS※	Optional(≤70 bar)

※: Optional

External Dimensions

Unit : mm



HSK-E32



- Balance Quality Grade G2.5
- High Precision runout <math>< 5\mu\text{m}</math>

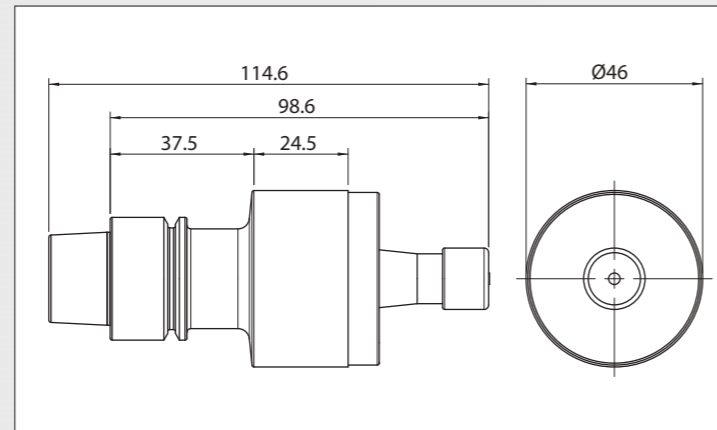
Specification

Model	HSK-E32
Runout(4D)	<math>< 5\ \mu\text{m}</math>
Operating Freq.	20 kHz ~ 32 kHz(*52kHz)
Max. Spindle Speed	38,000rpm
Collet Types	SK 6/10 H6
Weight	0.5 kg
Taper	HSK E32
ATC	Yes
CTS*	Optional(≤70 bar)

*: Optional

External Dimensions

Unit : mm



Specification

Model	BT30	BT40	HSK-E40	HSK-A63	HSK-E32
Runout(4D)	<math>< 5\ \mu\text{m}</math>	<math>< 5\ \mu\text{m}</math>	<math>< 5\ \mu\text{m}</math>	<math>< 5\ \mu\text{m}</math>	<math>< 5\ \mu\text{m}</math>
Operating Freq.	20 kHz~32 kHz (*52kHz)	20 kHz~32 kHz (*52kHz)	20 kHz~32 kHz (*52kHz)	20 kHz~32 kHz (*52kHz)	20 kHz~32 kHz (*52kHz)
Max. Spindle Speed	30,000rpm	24,000rpm	30,000rpm	24,000rpm	38,000rpm
Collet Types	SK 6/10 H6	SK 6/10 H6	SK 6/10 H6	SK 6/10 H6	SK 6/10 H6
Weight	0.9 kg	2.0 kg	0.8 kg	2.0 kg	0.5 kg
Taper	BT30 / BBT30	BT40 / BBT40	HSK E40	HSK A63	HSK E32
ATC	Yes	Yes	Yes	Yes	Yes
CTS*	Optional (≤70 bar)	Optional (≤70 bar)	Optional (≤70 bar)	Optional (≤70 bar)	Optional (≤70 bar)

*: Optional

UD-2

Ultrasonic Driver
Enables Inductive Transmission



Transmitter

Size Depends on Toolholder Spec.



Control Panel

Allows Remote Control of the Driver



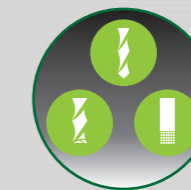
Transparent
Parameter
Information



Adjustable
Power Level



Automatic
Freq-Lock



Tool-Adaptive
Scanning



Multiple
Control Mode



One Driver for
all Toolholders

Maximum Power	60 W	Driver UD2 Size & Weight	Size(mm) - H162 x W215 x D370 *1 Weight(kg) -4.2
Frequency Range	14 kHz ~ 52 kHz		
Operating Temperature	-20°C to 50°C		
Operating Humidity	5 % RH -95 % RH (No coden.)	Control Panel Size & Weight	Size(mm) - H90 x W151 x D51 *2 Weight(g) -261
Transportation/Storage Temp.	-25°C to 60°C		
Transportation/Storage Humi.	5 % RH -95 % RH (No coden.)		
Power Supply	AC 110-220 Vrms±10 % 50/60 Hz, 1φ		

*1.Without mounting plates(mm) : H162 x W215 x D280

*2.With signal cable & connector(mm) : H90 x W251 x D51