PCD LASER

5-axis Laser Precision Machines

Up to 5× the efficiency of conventional processes

www.pcdlaser.com

Power Creative Development Tools Co., Ltd.

Modern Manufacturing Facility

Power Creative Development Tools Co., Ltd.

2017 The company was established in September 2017 with an initial investment of RMB 50 million.

13,500 The company is located in the Lingang Electronic Information Industrial Park, Nankang District, Ganzhou, Jiangxi Province, covering an area of approximately 13,500 m^2.

PCD We specialize in the design, development, and production of 5-axis laser machines for manufacturing PCD, CBN, and other ultra-hard material cutting tools, as well as high-precision micro-tools.

Application Fields

- Aerospace industry
- Electric vehicles and new energy automotive industry
- “Belt and Road” international capacity cooperation markets
- Leveraging the strategic advantages of Ganzhou International Port, we support global customers along major industrial routes and contribute to advanced intelligent manufacturing in leading industrial countries.

Technology & Innovation under one roof

Everything under one roof: from laser source development and software engineering to machine design and production, all activities are performed in-house and supported by close cooperation with leading universities, research institutes, and research centers.

- University of Electronic Science and Technology of China
- Harbin Institute of Technology
- Lithuania Laser Technology R&D Center
- PCD East China Training Institute & Kunshan Prototyping Center

We have developed advanced five-axis laser machining solutions for diamond and superhard tools. Our technologies integrate:

- New processing methods
- Advanced equipment design
- Continuous innovation over 13+ years of industrial validation

High-precision 5-axis laser machining centers

Our Advantages

1.Advanced laser processing concept

No consumables, no pollution, quiet and clean production environment.

2.Natural granite machine base

Ensures long-term stability and high machining accuracy, benchmarked against precision measuring instruments.

3.Vertical machining structure

Eliminates accuracy deviations caused by workpiece weight during processing.

4.Linear motors with closed-loop encoder control

High-speed, high-precision 5-axis machining performance.

5.Strong R&D and IP foundation

Since 2013: workshop experience with continuous improvement; simple and intelligent operation.

6.Smart programming workflow

DXF import, simple parameter setup, automatic machining after probe measurement.

7.Easy operation & maintenance

Low skill requirement for operators, fast training and quick start-up.

Wide machine portfolio

- **FUTURE LINEAR III:** Vertical Nanosecond
- **FUTURE UNIVERSAL II:** Horizontal Nanosecond
- **FUTURE MICRO II:** Horizontal Femtosecond

- **WOOD SERIES**

FUTURE SERIES

Accuracy

Linear axes repeatability: 0.003 mm	Rotary axes repeatability: ±1.5 arc sec
Linear axes positioning accuracy: ±0.003 mm	Rotary positioning accuracy: ±3 arc sec

Key Functions

- 5-axis machines for manufacturing PCD, CBN, and other ultra-hard cutting tools and high-precision micro-tools Chip breaker slot machining for advanced tool geometries
- Chip breaker, machineing for complex insert geometries

Key Features

Precision and Durability: The 5 Axis Laser machine series is built on a natural granite base and equipped with linear motor drives and optical-linear scale closed-loop control; ensuring high precision even at high operating speeds and long-term durability.

User-Friendly Design: Easy to learn and operate, it delivers high efficiency while remaining simple and cost-effective to manage.

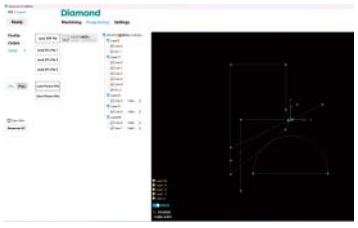
Intelligent Operation: The intuitive system interface and smart functions allow complex machining tasks to be executed with ease.

Software & Vision System

Software: Diamond 13

CCD camera: high-precision visual/optical inspection system

DXF import, automatic NC code generation, real-time, monitoring, multilingual support



FUTURE SERIES: 5-Axis Laser Machine

FUTURE SERIES is the Nanosecond flagship laser machine in the superhard tool manufacturing industry.

VN: Vertical Configuration, HN: Horizontal Configuration.

Since 2013, we have been developing advanced laser machines featuring proprietary software innovations, delivering an intuitive human-machine interface that simplifies operation and enhances efficiency.

Superior Efficiency

FUTURE SERIES deliver significantly higher performance compared to traditional machining methods:

- Up to 5 × the efficiency of conventional processes.
- Rough machining speed is significantly higher than traditional wire-cutting methods.
- Edge finish quality is far superior to conventional techniques

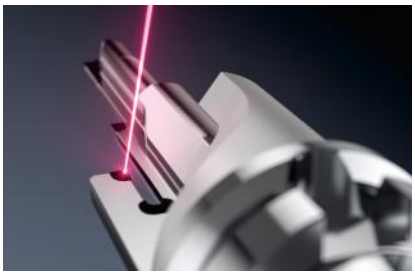
FUTURE SERIES is widely adopted in superhard tool manufacturing, balancing efficient rough machining with high-quality edge finishing performance:

- They enable single-clamping roughing and finishing for a fully integrated process.
- They feature an integrated camera-based system for precise in-process dimensional verification.
- They process superhard materials such as PCD, CBN, and single-crystal diamond,ensuring high-quality edge finishing and cutting performance.

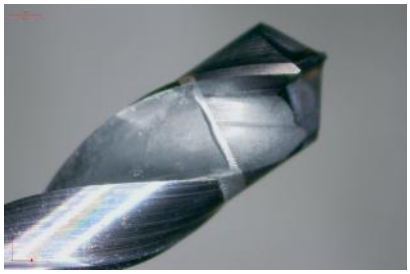
Laser System (FUTURE SERIES)

- Type: pulsed nanosecond fiber laser
- Power: 120 W
- Wavelength: 1064 nm
- Water cooled electronics and galvanometer scanners

FUTURE LINEAR III



FUTURE UNIVERSAL II



Versatile Applications

The FUTURE SERIES meets the machining requirements of most round tools and cutting tools in superhard materials, representing the state of the art in PCD laser machining technology.

FUTURE LINEAR III

Additional Specifications

Closed-loop water cooling system

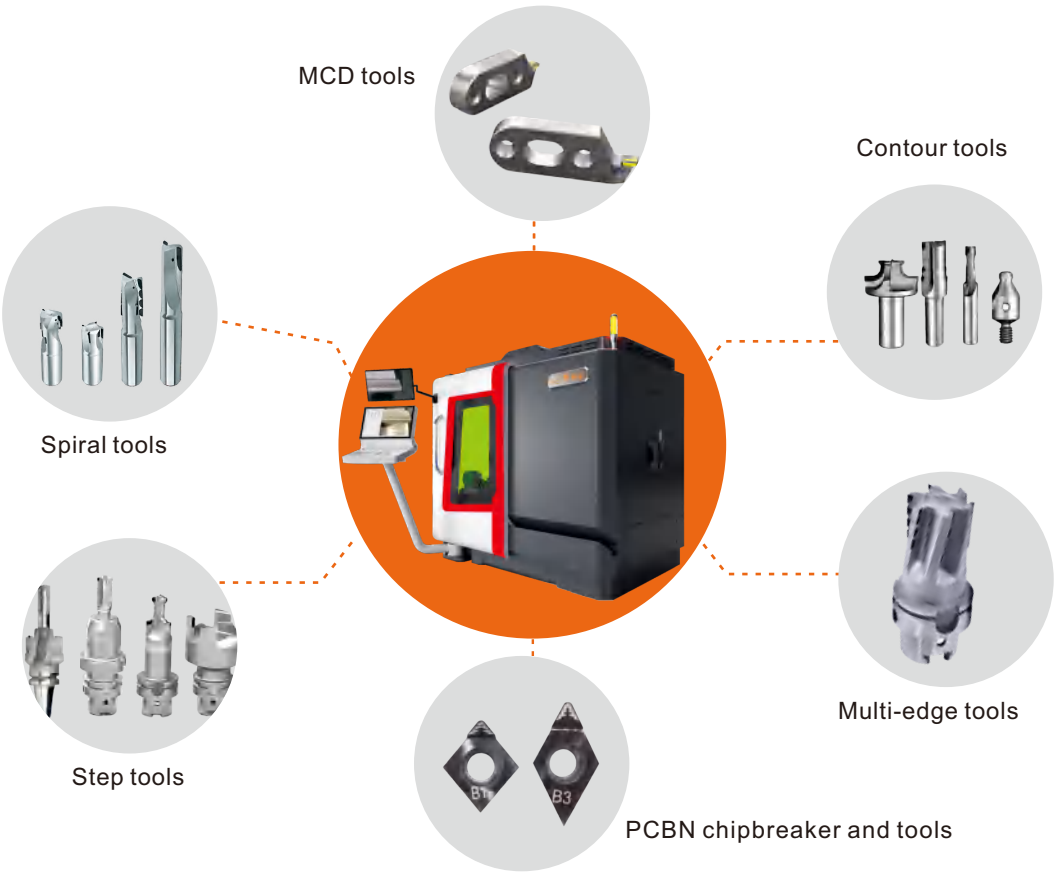
Surface roughness: Finishing Ra ≤ 0.2 µm	Weight: approx. 5,000 kg
Dimensions (L × W × H): 2280 × 2950 × 2235 mm	Power supply: 3 × 380 V
Power consumption: max. 5 kW	
X/Y/Z-axis: linear motor, water-cooled, 380/380/380 mm travel, 15 m/min rapid speed	
A-axis: high-precision torque motor, water-cooled, 0–360°	
B-axis: high-precision torque motor, water-cooled, -45° to +45°	

Machining Range

Diameter:	D 1- 300 mm
Length:	Up to 380 mm (with fixture)
Tool weight:	Up to 30 kg
Tool interface:	HSK-A63/BT50
Base:	Granite bed
Spindle:	Vertical

Main Applications

The Future Linear III excels in the machining of a wide range of tool geometries, including:



FUTURE UNIVERSAL II

Additional Specifications

Closed-loop water cooling system

Surface roughness: Finishing Ra ≤ 0.2 µm	Weight: approx. 5,000 kg
Dimensions (L × W × H): 2280 × 2950 × 2235 mm	Power supply: 3 × 380 V
Power consumption: max. 5 kW	
X/Y/Z-axis: linear motor, water-cooled, 360/320/350 mm travel, 15 m/min rapid speed	
A-axis: high-precision torque motor, water-cooled, 0–360°	
B-axis: high-precision torque motor, water-cooled, -35° to +92°	

Machining Range

Diameter:	D 1 - 180 mm
Length:	Up to 260 mm (with fixture)
Tool weight:	Up to 10 kg
Tool interface:	HSK-A63
Base:	Granite bed
Spindle:	Horizontal

Main Applications

FUTURE UNIVERSAL II excels in the machining of a wide range of tool geometries, including:

FUTURE MICRO II

Additional Specifications

Closed-loop water cooling system

Surface roughness: Finishing Ra ≤ 0.2 µm	Weight: approx. 5,000 kg
Dimensions (L × W × H): 2280 × 2950 × 2235 mm	Power supply: 3 × 380 V
Power consumption: max . 5 kW	
X/Y/Z-axis: linear motor, water-cooled, 380/380/380 mm travel, 15 m/min rapid speed	
A-axis: high-precision torque motor, water-cooled, 0–360°	
B-axis: high-precision torque motor, water-cooled, -35° to +92°	

Laser System

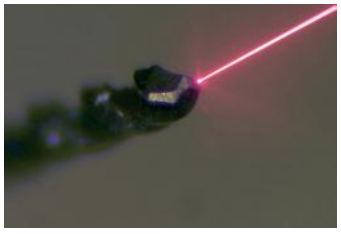
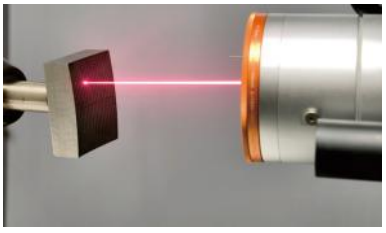
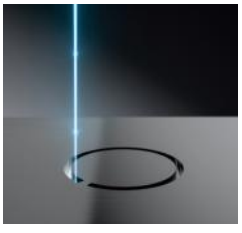
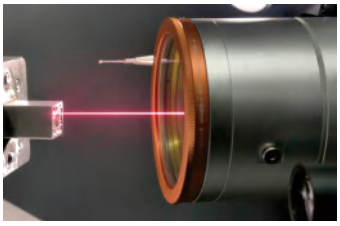
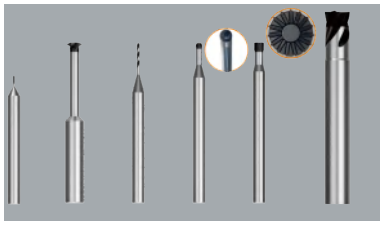
- Type: pulsed femtosecond fiber laser
- Power: 20 W
- Wavelength: 1064 nm

Machining Range

Diameter:	D 0.1- 150 mm
Length:	Up to 240 mm (with fixture)
Tool weight:	Up to 10 kg
Tool interface:	HSK-A63
Base:	Granite bed
Spindle:	Horizontal

Main Applications

The **FUTURE MICRO II** excels in the machining of a wide range of tool geometries, specialized in form mold, micro-diameter tools, and medical device manufacturing; PCD chip breaker grooving, cutting edge micro-finishing & tool surface polishing.
Wide machining range: cemented carbide, PCD, PCBN, steel and other materials with no material limitations.


FUTURE CUTTING II

Additional Specifications

Closed-loop water cooling system

Surface roughness: Finishing Ra ≤ 0.3 μm	Weight: approx. 4,000 kg
Dimensions (L × W × H): 2150 × 2670 × 2080 mm	Power supply: 3 × 380 V
Power consumption: max. 5 kW	
X/Y/Z-axis: linear motor, water-cooled, 300/270/300 mm travel, 15 m/min rapid speed	
A-axis: high-precision torque motor, water-cooled, 0–360°	
B-axis: high-precision torque motor, water-cooled, -40° to +40°	

Machining Range

Diameter:	D 1 - 120 mm
Length:	Up to 180 mm (with fixture)
Tool weight:	Up to 5 kg
Tool interface:	D20 flange clamp interface
Base:	Granite bed
Spindle:	Vertical

Main Applications

FUTURE CUTTING II—Vertical structure | rod type tool specialist

1.Unique Vertical Design: Specially engineered for rod type straight shank tools. It perfectly fits over 80% of common tool blanks, making it the ideal solution for high-volume production.

2.Delivers excellent material removal efficiency in premachining; significantly boosts overall productivity when integrated with other processing equipment.

3.Key advantages: high efficiency and easy operation.

FUTURE COMFORT II

Additional Specifications

Closed-loop water cooling system

Surface roughness: Finishing Ra ≤ 0.2 μm	Weight: approx. 5,000 kg
Dimensions (L × W × H): 2280 × 2950 × 2235 mm	Power supply: 3 × 380 V
Power consumption: max. 5 kW	
X/Y/Z-axis: linear motor, water-cooled, 380/380/380 mm travel, 15 m/min rapid speed	
A-axis: high-precision torque motor, water-cooled, 0–360°	
B-axis: high-precision torque motor, water-cooled, -35° to +92°	

Laser System

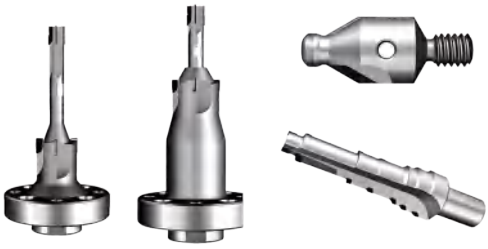
- Type: pulsed picosecond fiber laser
- Power: 20/30/60 W
- Wavelength: 355/532/1064 nm

Machining Range

Diameter:	D 0.1- 150 mm
Length:	Up to 240 mm (with fixture)
Tool weight:	Up to 10 kg
Tool interface:	HSK-A63
Base:	Granite bed
Spindle:	Horizontal

Main Applications

1.Equipped with a picosecond laser, used together with CUTTING II as a cost-effective alternative to femtosecond laser systems.
2.Supports stable cold ablation for diverse materials and high-precision finishing of PCD profile tools.
3.CUTTINGII for roughing + COMFORT II for finishing delivers performance comparable to femtosecond laser systems, with no product processing limitations.
4.Specially developed for 3C decorative profile tools, delivering precise and efficient processing solutions.



WEALTHY WOOD II

Additional Specifications

Closed-loop water cooling system

Surface roughness: Finishing Ra ≤ 0.5 µm	Weight: approx. 4,000 kg
Dimensions (L × W × H): 2150 × 2670 × 2080 mm	Power supply: 3 × 380 V
Power consumption: max. 5 kW	
X/Y/Z-axis: linear motor, water-cooled, 300/270/300 mm travel, 15 m/min rapid speed	
A-axis: high-precision torque motor, water-cooled, 0–360°	
B-axis: high-precision torque motor, water-cooled, -45° to +45°	

Laser System

- Type: pulsed nanosecond fiber laser
- Power: 200 W
- Wavelength: 1064 nm
- Water-cooled electronics and galvanometer scanners

Machining Range

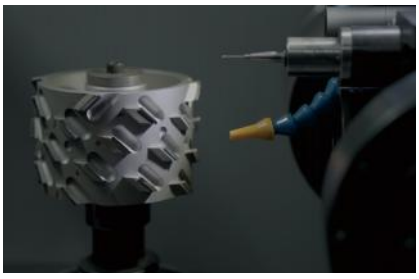
Diameter:	D 1 - 300 mm
Length:	Up to 180 mm (with fixture)
Tool weight:	Up to 30 kg
Tool interface:	HSK-A63
Base:	Granite bed
Spindle:	Vertical

Accuracy

Linear axes repeatability: 0.004 mm	Rotary axes repeatability: 5 arc sec
Linear axes positioning accuracy: ±0.004 mm	Rotary positioning accuracy: ±5 arc sec

Main Applications

The WEALTHY WOOD II excels in the machining of a wide range of tool geometries.



WEALTHY SAW II

Specifically designed for the production of PCD-tipped saw blades

Dimensions (L × W × H): 2650 × 2300 × 2290 mm	Weight: approx. 4,000 kg
Power consumption: max. 5 kW	Power supply: 3 × 380 V
X/Y/Z axes: Linear motors; travel: 160/160/110 mm	
B-axis: High-precision torque motor, −15° to +15°	
Specifically designed for manufacturing PCD-tipped saw blades	

Laser System

- Type: pulsed nanosecond fiber laser
- Power: 200 W
- Wavelength: 1064 nm

Machining Range

Diameter:	≤ 600 mm
Base:	Granite bed
Tool weight:	Up to 30 kg
Tool interface:	Interchangeable mandrel sleeves for different saw blade bores

Accuracy

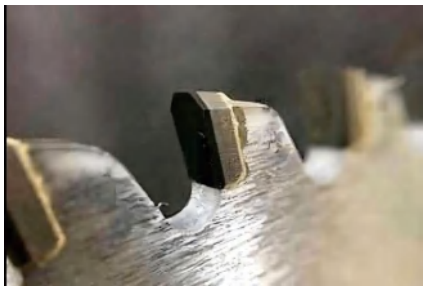
Linear axes repeatability: 0.004 mm	Rotary axes repeatability: 5 arc sec
Linear axes positioning accuracy: ±0.004 mm	Rotary positioning accuracy: ±5 arc sec

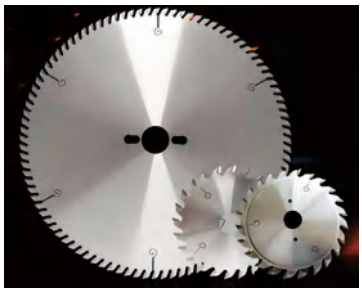
Main Applications

1.This saw blade machine is equipped with an integrated gantry automatic loading & unloading system. It can process up to 12 saw blades in one batch.

>Maximum machinable saw blade diameter: 600 mm

>Minimum machinable saw blade diameter: 80 mm





2. Capable of machining all common tooth profiles, and customized copmlex tooth profiles

Machining Information - Configuration Parameters

Item	Parameters				
Model	FUTURE LINEAR III	FUTURE UNIVERSAL II	FUTURE COMFORT II	FUTURE MICROII	FUTURE CUTTING II
X / Y / Z	380-380-380 mm	360-320- 350 mm	380-380- 380 mm	380-380- 380 mm	300-270- 300 mm
rotating table	A-axis : 0-360 ° B-axis : ±45 °	A-axis : 0-360° B-axis : 92° , -35°	A-axis : 0-360° B-axis : 92° , -35°	A-axis : 0-360° B-axis : 92° , -35°	A-axis : 0-360 ° B-axis : ±40 °
Laser Type	1064 Nanosecond Laser		355/532/1064 picosecond laser	1064 femtosecond laser	1064 Nanosecond Laser
Main Functions	ultra-hard tools cutting edge process; tool flute making	ultra-hard tools cutting edge process; tool flute making; Integral Ultra-hard tools	ultra-hard tools cutting edge process; tool flute making; Integral Ultra-hard tools	micro ultra-hard cutting tools edge process; tool flute making; engraving on any kind of material	Rod-shaped Ultra-hard Tool
linear axis positioning accuracy	positioning accuracy : ±0. 003 mm, repeated positioning accuracy : 0. 003 mm				positioning accuracy : ±0. 004 mm, repeated positioning accuracy : 0. 004 mm
A/B axis swivel table positioning accuracy	positioning accuracy : ± 3 arc-second, repeated positioning accuracy : 3 arc-second				positioning accuracy : ± 5 arc-second, repeated positioning accuracy : 5 arc-second
Max. Tool Dimen.	30 KG	10 KG			5 KG
workpiece mounting interface	HSK-A63 or BT 50	HSK-A63			D20 flange clamp interface
Maximum tool size	Dia : D300 mm Length : L430 mm	Dia : D180 mm Length : L260 mm	Dia : D 150 mm Length : L 240 mm		Dia : D120 mm Length : L180 mm
Machine dimensions	(L*W*H) : 2280 × 2950× 2235 mm				(L*W*H) : 2150 × 2670× 2080 mm
Total weight	5 tons				4 tons

Power Creative Development

- 5-axis laser machining centers for superhard tools
- Various optional functions for automated operations

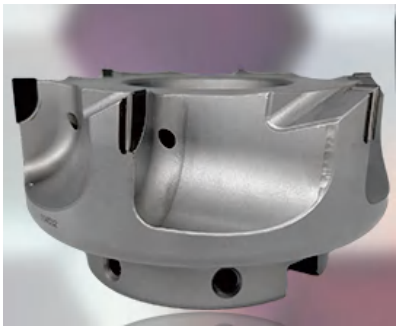
Robotic automatic loading and unloading (optional)

HSK63 (optional BT50)

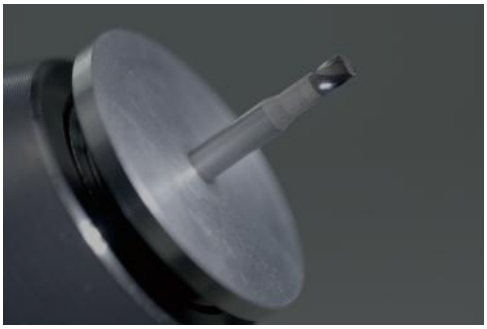
PCD tools

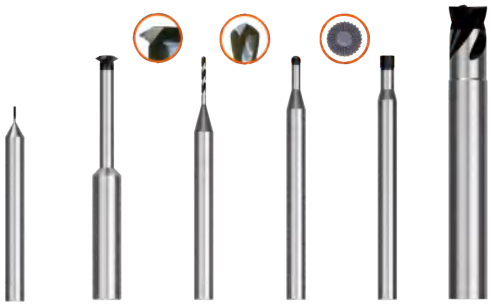
MCD tools

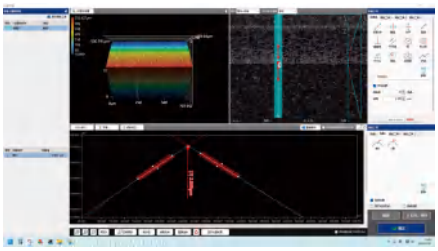
PCBN chipbreaker and tools



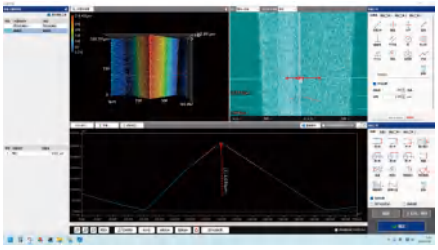
Solid PCD tool



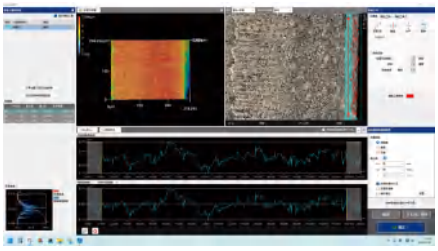




Edge radius machining
(back to front)



Edge radius machining
(front to back)



Flank surface roughness

CE Certification:

ISO 230.2 • EN ISO 12100 · EN 60204-1

Corporate Philosophy
Integrity · Sharing · Cooperation · Win-Win

Management philosophy
Service · Credibility · Forward-thinking

We are committed to delivering high-quality machines and services, contributing to shared industrial progress and sustainable development.

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