



# *GRA 150*

5-Axis High-Speed Machining Center  
Designed for Precision and Batch  
Parts Machining.



# GRA150



With fully closed-loop control technology, the GRA150 is suitable for 5-axis machining of 3C products, small precision mold and small complex hardware parts.

## Highlights

- 01 JINGDIAO 5-axis high-speed machining centers are designed for the stable precision machining, "0.1 μm feeding, 1 μm cutting, nano surface finish".
- 02 The fully closed loop axis drives are equipped with linear glass scales which ensure machining and positioning accuracy.
- 03 Cooling technology of the rotary table, bearings and screw nut are chilled them thermally stable. The fully enclosed structure further enhances thermal stability of the work environment.
- 04 The angular work area design and spray device is combined with a spiral chip conveyor which makes it easy to remove chips from the machining area.
- 05 The machine weighs 4.4 tons (9722.39 lb) and has a compact footprint of 6.82' × 9.74' (2080mm × 2970mm).

Learn More About GRA150



## Machining Samples



### Medical Bone Rasp

- Size (mm/in):** 99×29×17/3.90×1.17×0.67
- Material:** 17-4 Stainless Steel
- Highlights:**
  - + Cycle time including roughing and finishing is only 4h 15min;
  - + Witness mark on each surface is less than 0.01 mm;
  - + Since there are no burrs, secondary processes are eliminated.



### Fresnel Lenses Mold Test Piece

- Size (mm/in):** φ30×60/φ1.18×2.36
- Material:** S136(HRC50)
- Highlights:**
  - + Stable 2 μm cutting for 99h with R0.1 PCD cutting tool and the tool wear is less than 1 μm;
  - + Surface roughness Sa < 0.05 μm;
  - + Dimensional accuracy is ±5 μm.



### Capacitor Separator Screen Part

- Size (mm/in):** 162×96×10/6.38×3.78×0.39
- Material:** 316L Stainless Steel
- Highlights:**
  - + Tolerance of all positions of groove inner wall is ±0.01mm(0.00039 in);
  - + The inclined surface of the inner wall is 5-axis simultaneous machining.

### Automotive Transmission Part Stamping Die

- Size (mm/in):** φ60×60/φ2.36×2.36
- Material:** SKD11(HRC62)
- Highlights:**
  - + Length to diameter ratio of R0.5 cutting tool can be reduced to 2:1 by using JINGDIAO 5-axis machine tool;
  - + Continues finishing for 13 h with R0.5 CBN cutting tool and the tool wear is less than 3 μm;
  - + Surface roughness Ra < 0.15 μm.



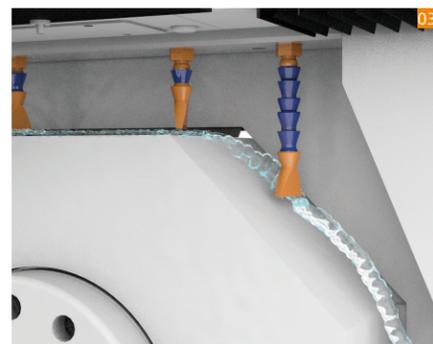
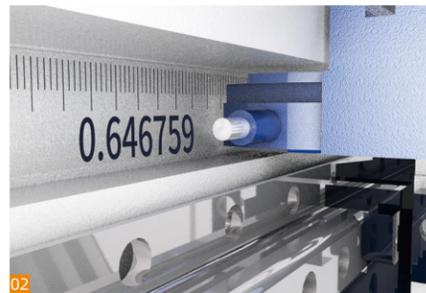
### Glass-Ceramic Aspheric Lens

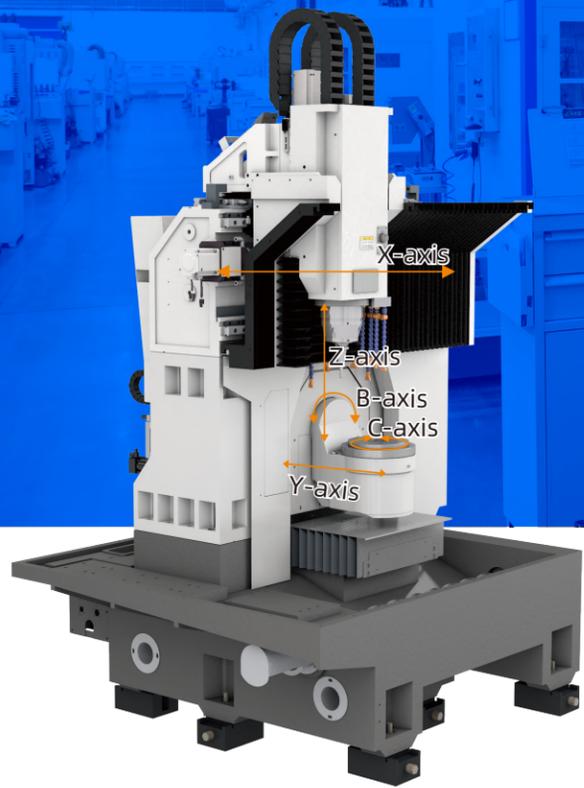
- Size (mm/in):** φ190×31/φ7.48×1.22
- Material:** Glass-Ceramic
- Highlights:**
  - + Surface roughness Sa < 0.05 μm;
  - + Profile tolerance is less than 5 μm.



### Small Precision Plastic Mold Insert

- Size (mm/in):** 30.00×51.87×47.02/1.18×2.04×1.85
- Material:** S136(HRC52)
- Highlights:**
  - + The smallest fillet at vertical side wall is R0.3 mm;
  - + Small tool milling instead of EDM.





## Machine Structure

### Max. Workpiece Dimension

Unit: mm (in)

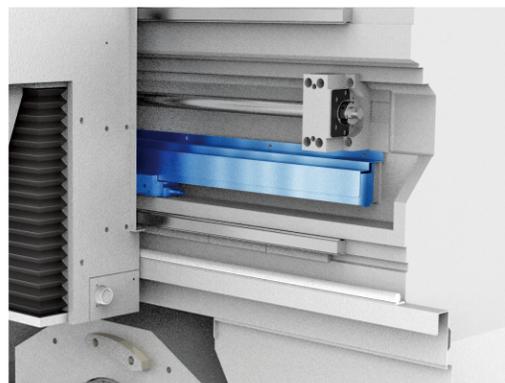


Max. load (kg/lb): 20/44.1

Travel (X/Y/Z) mm/ (in)	500/200/260(19.69/7.87/10.24)
B/C Rotation Angle (deg)	-120°~95°/360°

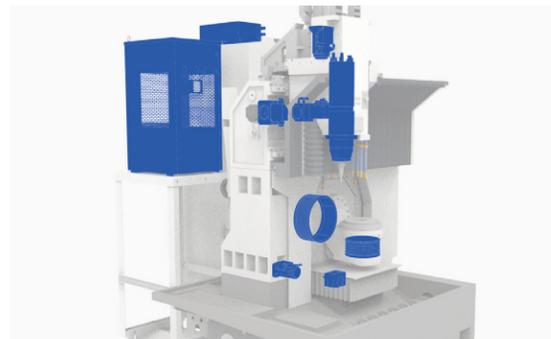
### Higher Motion Accuracy

- + Full closed loop control, motion axes equipped with linear glass scales.



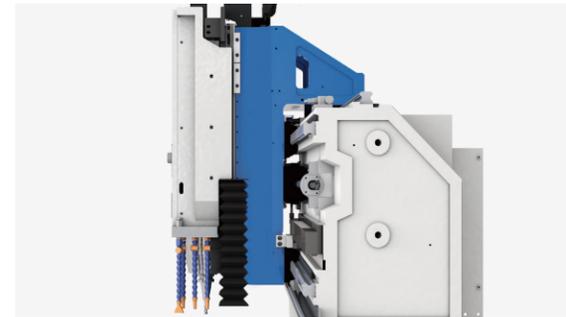
### Good Thermal Stability

- + All round cooling design, using rotary table cooling, bearing cooling, screw cooling technology, and equipped with fully enclosed machine covers.



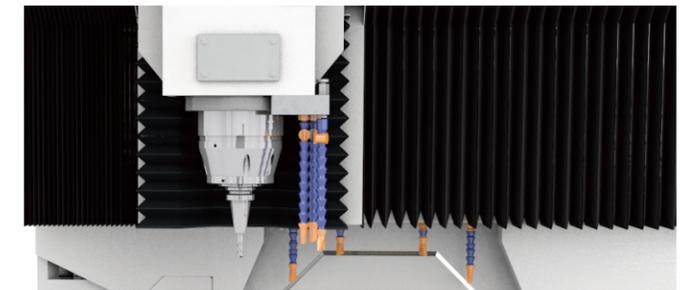
### Better Machine Rigidity

- + Inverted "L" structure.



### Less Interference in 5-Axis Machining

- + The sharp structure of the machine head bottom lengthens the nose head of the spindle.



### Compact Structure Design

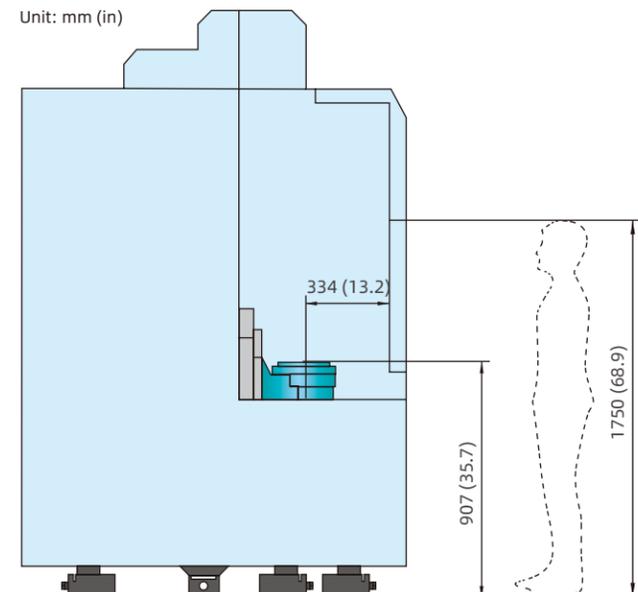
- + The electric cabinet is moved backwards and placed on the side of the chip conveyor, the footprint is 6.82' × 9.74'(2079mm × 2968mm). Optimized mainframe structure, the mainframe weighs only 3.2 tons.

### Ergonomics

The structural designed of each operation part conforms to ergonomics.

- + The worktable is close to the operator ,which makes it easy to load and unload the workpiece.
- + The display height of the console is suitable for a operator of average height.
- + Pneumatic components and lubricating components are all installed on the left side of the machine,which is convenient for inspection and maintenance.

Unit: mm (in)



# Key Components

## JD50 CNC System

The JD50 CNC system developed by JINGDIAO is the brains of the machine. It has the basic functions seen other control systems, but also includes several complete 5-axis modules developed by JINGDIAO's R&D department. This is how JINGDIAO 5-axis machine tools achieve high machining accuracy, and mirror finishes. Our machining modules are flexible and can be customized based on a customer's machining application.

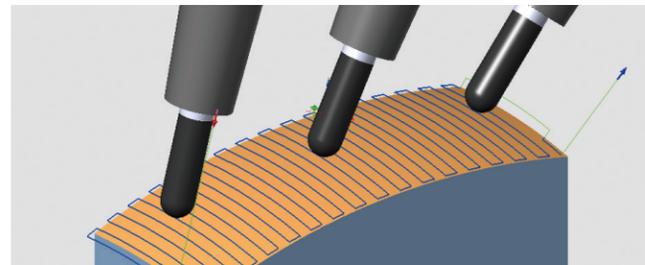


### Basic Characteristics

- + The programming resolution and control resolution are 0.1  $\mu\text{m}$  ( $3.9 \times 10^{-6}$  in).
- + Supports linear, plane arc, space arc, spiral line, spline and involute interpolation methods.
- + Support pitch compensation and reverse clearance compensation.
- + Support RTCP multi-axis motion control.



0.1 $\mu\text{m}$  Feed, 1 $\mu\text{m}$  Cutting



Fixed Point Cutting

Not RTCP Program	RTCP Program
G91G28Z0 G90 G0X0.7883Y2.4874A-90.C-771431 M590 L1 G43H1 Z35.0874 Z30.6074 N102G1Z30.1074F189.	G91G28Z0 G90 G68.2X29.3331Y6.6949Z-6.1-77.143J-90.K0. G53.1 G0X0.7883Y-3.5126 M590 L1 G43H1 Z5. Z0.52 N102G1Z0.02F189.
Not intuitive	Intuitive

### RTCP

### Five-Axis Programming Features

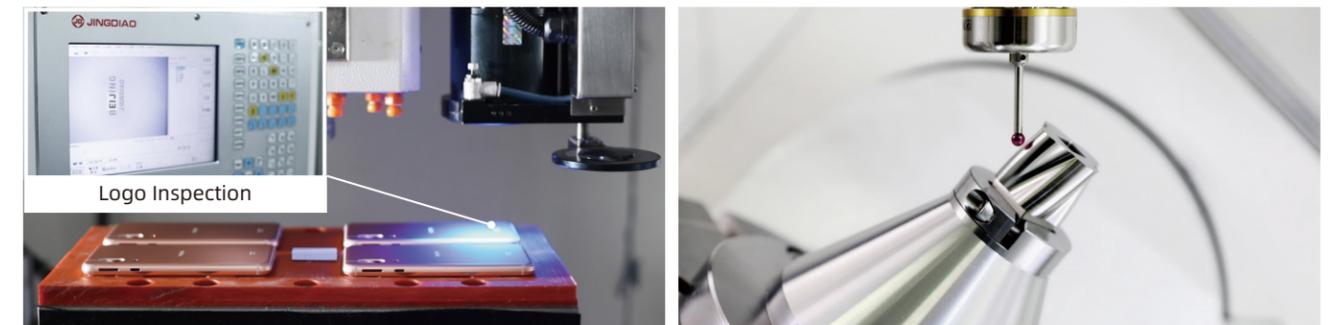
- + Tool center point control function.
- + Inclined plane machining function.
- + Cylinder interpolation function.
- + Polar coordinate interpolation function.

### System Advantages

- + Various programming methods and flexible technical process design.
- + Abundant types of interfaces and buses, with strong peripheral expansion capabilities.
- + Unique external extended function instructions (G100), which can realize instruction-level peripheral control, human-computer interaction, and complex data operations.

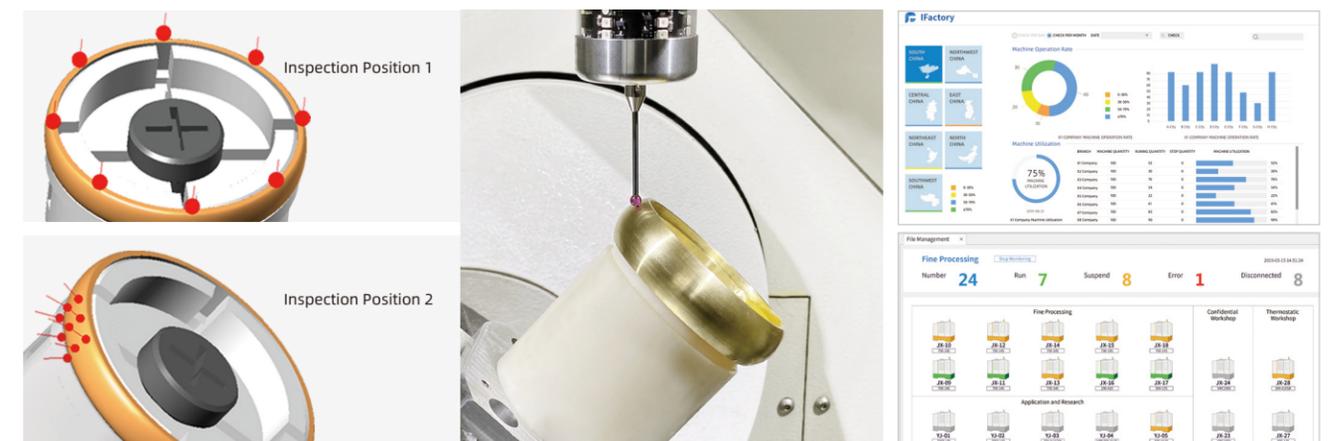
### Advanced Features

- + Includes on-machine contact and non-contact measurement functions, which results in high-precision 2D and 3D measurements.
- + Built-In CAM technology and intelligent modification technology supports the on-machine tool-path deformation compensation machining.
- + Incorporates multiple communication protocols and remote monitoring.



Non-Contact Measurement

Contact Measurement



Surface Deformation Compensation

Remote Monitoring of Machines

# JINGDIAO High-Speed Precision Spindle

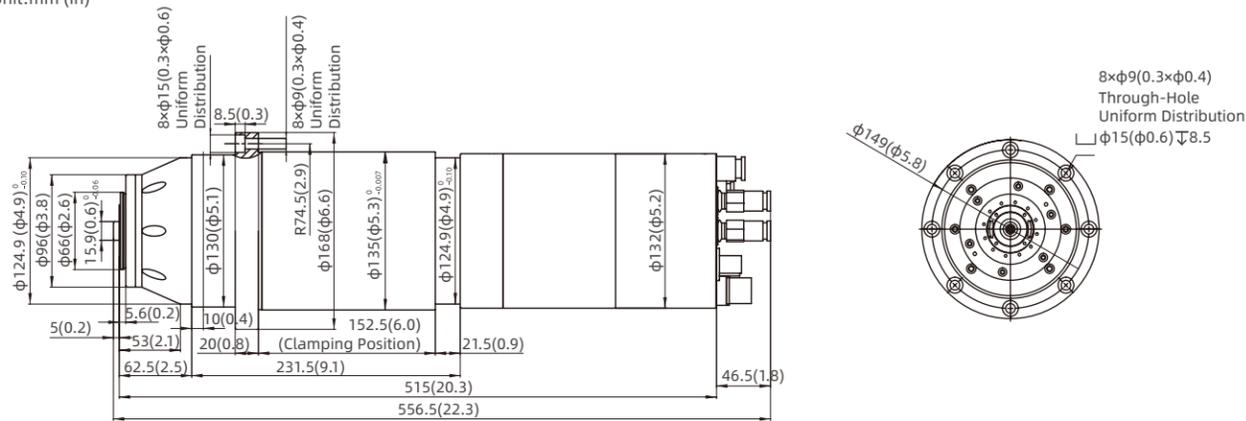
JINGDIAO's high speed spindles are the machine's main power source which produce precision machining results. Our in-house built spindles have low vibration, and high thermal stability resulting in a small coefficient of thermal expansion and stable cutting in conditions.



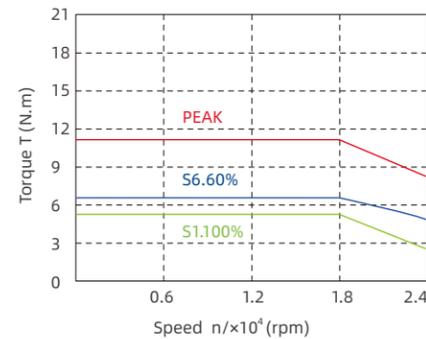
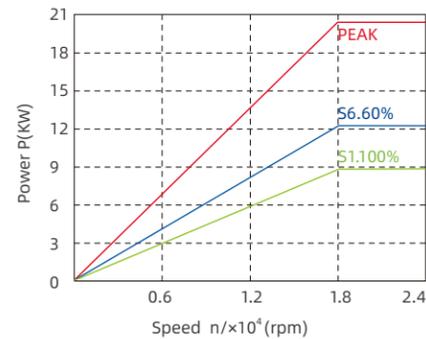
JD135S-24-BT30/F

## Dimension

Unit:mm (in)



## Output Performance



## Performance

- + Taper bore radial runout  $\leq 1.5 \mu\text{m}$  ( $5.9 \times 10^{-5}$  in)
- + Vibration at maximum speed  $\leq 0.6 \text{ mm/s}$  (1.44 ipm)

## Basic Specification

Clamping Diameter (mm/in):  $\phi 135(0 - 0.007)$  mm  
 Output Power(S6-60%): 12.2 KW  
 Output Torque(S6-60%): 6.5 N·m  
 Speed: 24,000 rpm  
 Tool Holder: BT30  
 Weight (kg/lb): 34.2/75.40

## Cutting Test Results (High-speed Precision Spindle JD135S-24-BT30/F 24,000 rpm)

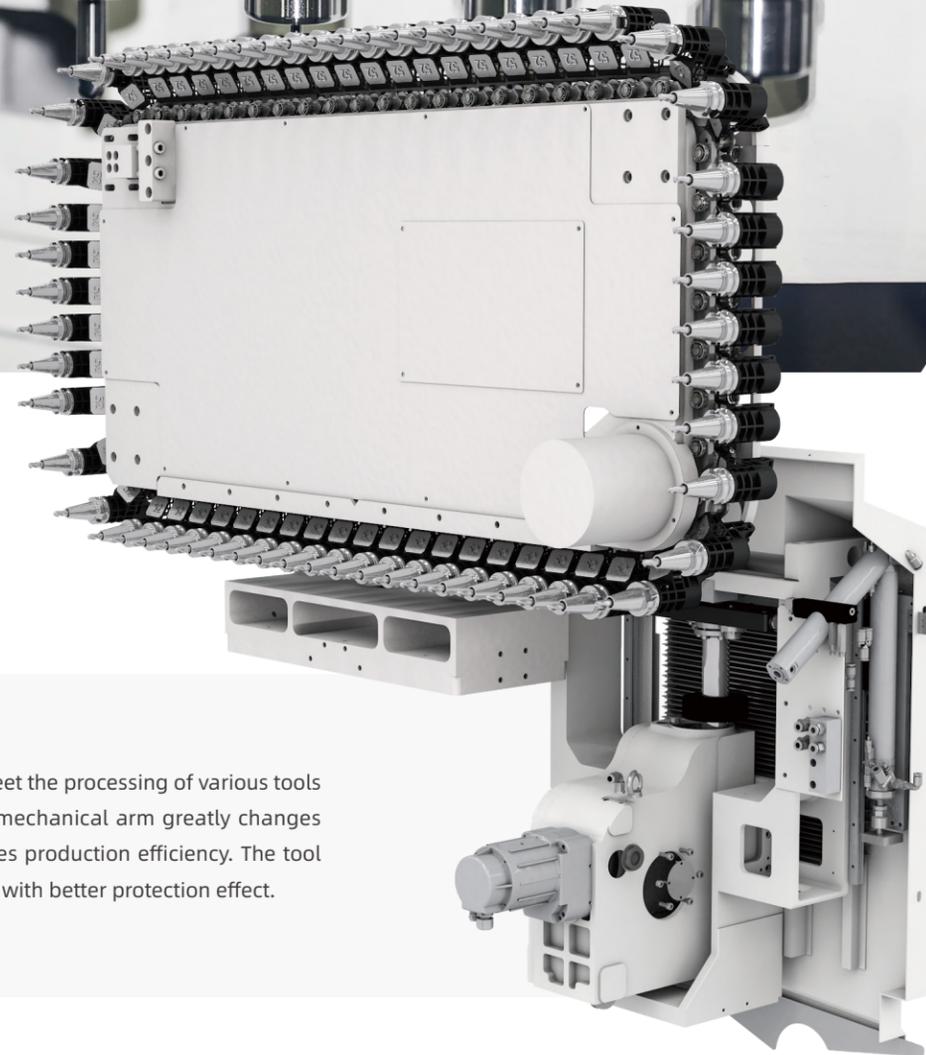
Item	Material	Teeth Number	Tool Size mm/in	Cutting Width (mm/in)		Spindle Speed rpm	Cutting Feed Rate mm/min (in/min)	Cutting Capacity cm <sup>3</sup> /mm
				Cutting Depth (mm/in)				
Face Mill	Aluminum	7	$\phi 80(\phi 3.15)$	70/2.8		6,000	2,400(94.5)	168
	Steel	4	$\phi 50(\phi 1.97)$	1/0.04				
End Mill	Aluminum	4	$\phi 10(\phi 0.39)$	45/1.8		10,000	3,200(126.0)	128
				0.4/0.02				
	Steel	4	$\phi 10(\phi 0.39)$	1/0.04		4,200	2,400(94.5)	38.4
				32/1.3				
Drill	Aluminum	2	$\phi 16(\phi 0.6)$	/		1,000	120(4.7)	/
	Steel	2	$\phi 12(\phi 0.5)$	/		1,000	100(3.9)	/
Tap	Aluminum	2	M16×2	/		900	1,800(70.9)	/
	Steel	2	M10×1.5	/		500	750(29.5)	/

※Different machining conditions have different machining data, which is only for reference.



## Tool Magazine

60 Chain-type tool magazine can meet the processing of various tools of the product. The tool-changing mechanical arm greatly changes the tool-changing time and improves production efficiency. The tool magazine door adopts armor shield with better protection effect.



## Specification

Tool Magazine	Chain Type Tool Magazine with Manipulator
Tool Holder	BT30
Capacity	60
Allowable Maximum Tool Length (mm/in) (From End of Spindle)	160/6.3
Maximum Diameter of Contiguous Tools (Full) (mm/in)	60/2.4
Maximum Diameter of Contiguous Tools (Vacant) (mm/in)	80/3.2
Max. Load of Each Position (kg/lb)	3/0.1
Max. Load of Tool Magazine (kg/lb)	60/2.4

## Single Arm Double Direct Drive Rotary Table

Assures high-precision multi-axis machining.

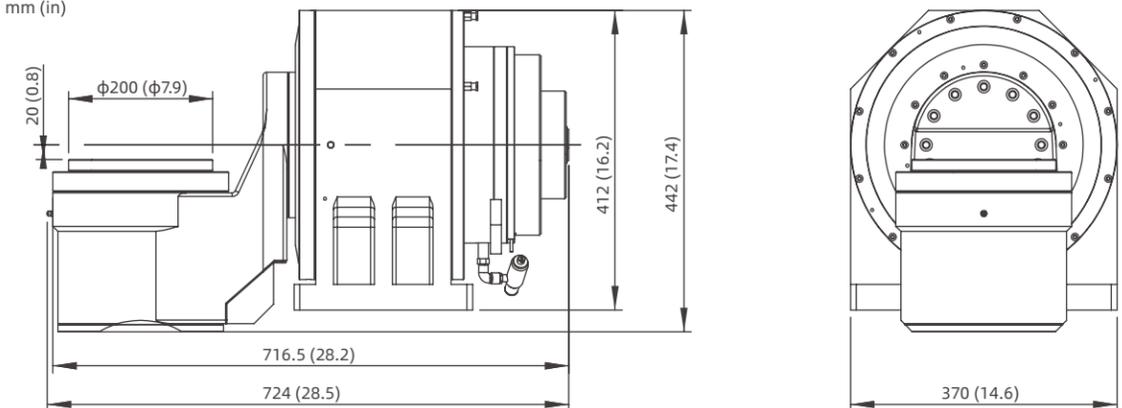
### Features

- + The whole rotary table is cantilever structure.
- + Five axis simultaneous processing, multi surface positioning processing.
- + Both the B and C axis are cooled by circulating chilled water.
- + The direct drive motor results in a very response rate.
- + B-axis adopts pneumatic locking method, and contains internal safety brake structure.
- + The safety brake structure is adopted to avoid the collision caused by sudden power failure.



### Dimension

Unit: mm (in)



## Specification

Item	Tilt Axis (B)	Rotation Axis (C)
Position Accuracy (")	8	8
Repeatability (")	5	5
G00(rpm)	60	240
G01(rpm)	30	120
Cooling Mode	Circulating Water Cooling	Circulating Water Cooling
Positioning Locking Mode	Pneumatic Locking	Pneumatic Locking
Positioning Locking Air Pressure (MPa/PSI)	0.6±0.02/8.8±2.9	0.6±0.02/8.8±2.9
Safety Brake	√	--

# Accessories

## Material Handling System

JINGDIAO material handling system can increase your production capacity. The automatic workpiece loading and unloading reduces set up time. JINGDIAO technologies like OMIM, easy start, and DT further improves safe and continuous machining. JINGDIAO's own MHS25 and MHS30 material handling systems are available to increase your working capacity.

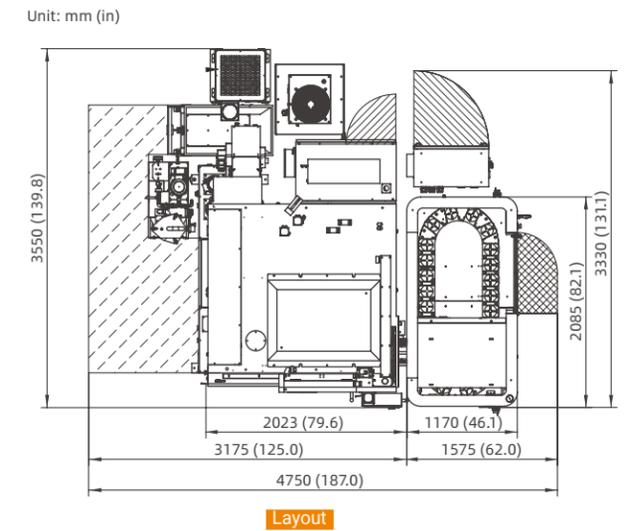
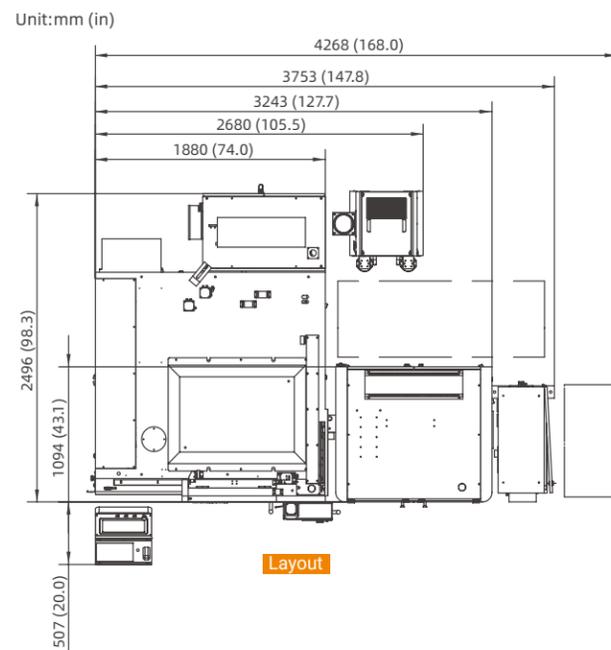


## MHS30 Specification

MHS30 Specifications				
Feeding System	MHS30-SR18A	MHS30-SR24A1	MHS30-SR32A	MHS30-SR18B
Load (kg/lb)	30 (66.1)			
Storage Capacity	18	24	32	18
Workpiece Dimension (mm/in)	170×170×200 (6.7×6.7×7.9)	120×120×200 (4.7×4.7×7.9)	120×120×200 (4.7×4.7×7.9)	φ100×230 (jack-up structure) (φ3.9×9.1)
Machine Dimension (mm/in)	1100×2600×2000 (43.3×102.4×78.7)			
Weight (kg/lb)	1500 (3306.9)			



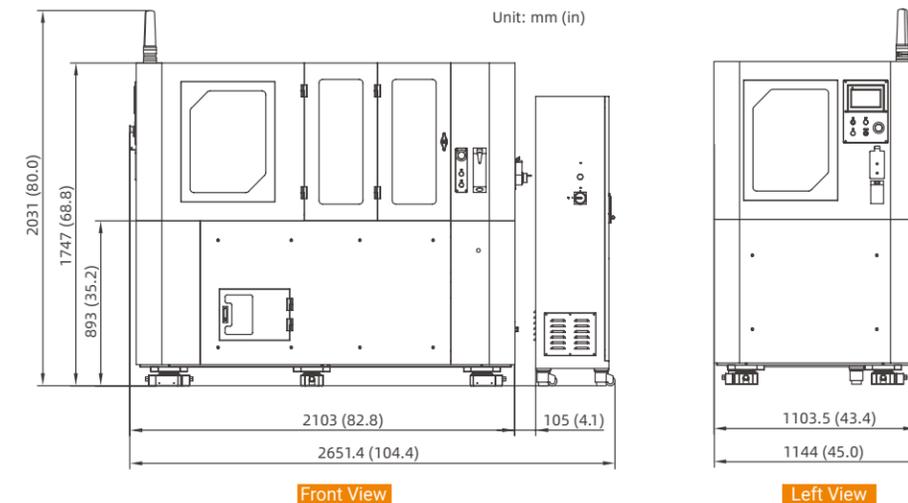
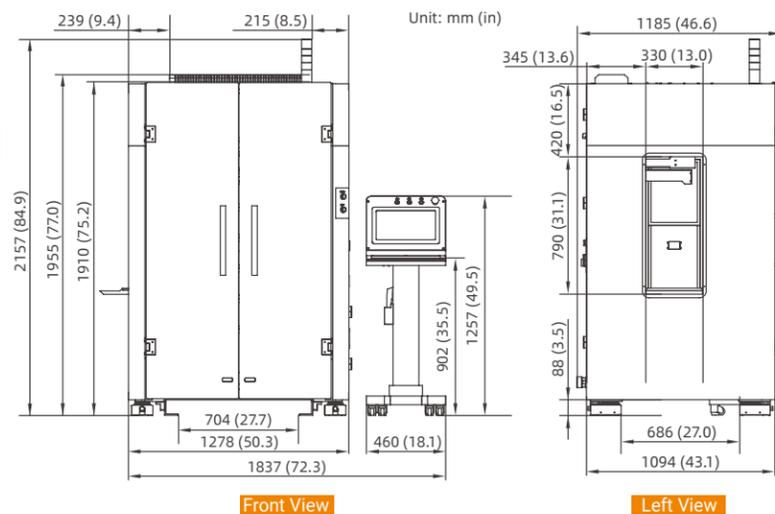
※ Machine dimension and weight are only parameters of the Material Handling System.



## MHS25 Specification

MHS25 Specifications			
Feeding System	MHS25-SF42A	MHS25-SF96B	MHS25-SF63A
Load (kg/lb)	25 (55.1)		
Storage Capacity	42	96	63
Workpiece Dimension (mm/in)	120×120×120 (4.7×4.7×4.7)	φ60×100 (φ2.4×3.9)	120×100×100 (4.7×3.9×3.9)
Machine Dimension (mm/in)	1280×1000×1900 (50.39×39.37×74.80)		
Weight (kg/lb)	900 (1984.2)		

※ Machine dimension and weight are only parameters of the Material Handling System



# Chip Disposal System

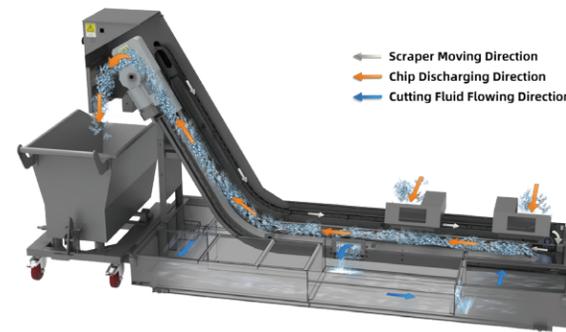
The JINGDIAO chip disposal system integrates the discharge and collection of chips, cooling and filtering of cutting fluid into one unit.

## Features

- + Improves maintenance by moving the chips into disposal container.
- + Cutting fluid service life is extended by using a multistage filtration unit.
- + Equipped with a cleaning mechanism and drop recovery mechanism which is self cleaning resulting cutting fluid recovery.



Chip Collector      Scraper Type Chip Conveyor      Filtering Tank

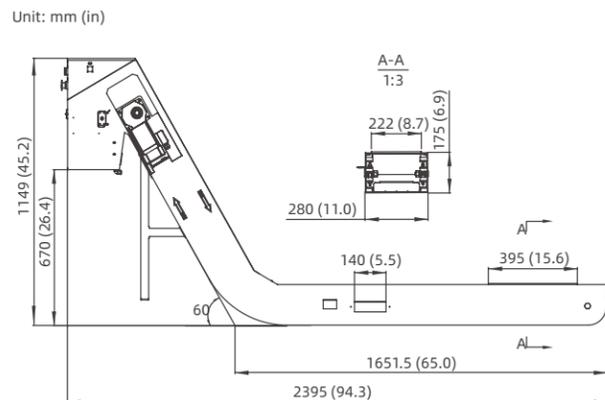


Chip Conveyor Principle ▶

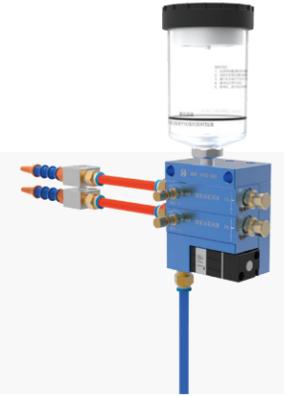
## Appropriate Chip Types

Material	Chip Form	Chip Size	Applicability
Steel		Long	●
		Short	●
		Powder	●
Cast Iron		Short	●
		Powder	●
Aluminum/ Non-ferrous Metal		Long	●
		Cumulus	●
		Short	●

● :Ideal   ● :Suitable   ● :Not Suitable



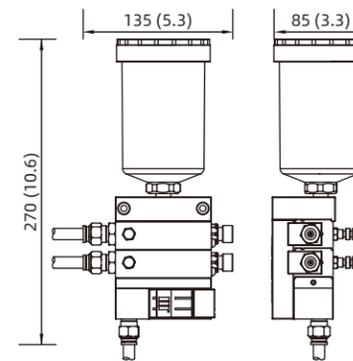
# Minimal Quantity Lubrication (MQL)



MQL cooling technology is used in precision grinding and micro milling. Equipped with MQL, the temperature fluctuation in the machine can be controlled within 0.5 °C (32.9 °F).

## Dimension

Unit:mm (in)



## Specification

Item	Spec
Pressure (MPa/PSI)	0.5~0.8/73.5~117.6
Rated Pressure (MPa/PSI)	0.55/80.8
Air Volume (L/min)	0~220
Air Consumption per Nozzle (L/min)	100
Oil Consumption per Nozzle (ml/h)	0~30
Nozzle Quantity	2
Weight (kg/lb)	1.5/3.3
Mounting Pitch (mm/in)	70/2.8

# Oil Mist Collector

The oil mist collector reduces the rise of internal temperature caused by the oil mist accumulation. It eliminates the diffusion of oil mist, reduces the internal electrical fault of the machine tool, improves the stability of equipment operation, reduces air pollution, and protects the workshop environment.

## Specification

Item	Spec
Voltage (V)	AC380±10%
Power (W)	370
Current (A)	0.95
Frequency (Hz)	50±2%
Ambient Temperature (°C / °F)	5~40/41~104
Environmental Pressure	Atmos
Weight (kg/lb)	80/176.4
Max. Air Volume (m <sup>3</sup> /in <sup>3</sup> )	450/2.7×10 <sup>7</sup>
Filtration Efficiency	> 99%



GL370 Oil Mist Collector ▶

## Tool Holders

Tool holders require good clamping performance such as high clamping accuracy, low vibration and the ability minimize oil mist during high-speed machining. JINGDIAO tool holders have anti-corrosive properties, minimize air resistance, and are designed good dynamic balance. Equipped with different spindles, GRA100 can use BT30 type tool holders.

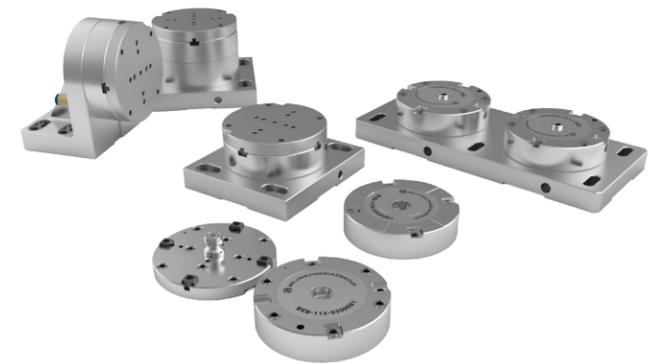


## JINGDIAO Quick-Change Clamping Systems

Fast, accurate and efficient clamping systems.

### Features

- + The loading and unloading work inside the machine can be transferred outside the machine.
- + Multi-process processing or inspection can achieve accurate positioning.
- + To achieve rapid conversion between tooling and shorten the manufacturing cycle.



## Technical Parameter

### ER Series Handle

Type	Name	Size (mm /in)					Thread
		A	B	C	L		
BT30	BT30-ER11-85S	7.5 (0.30)	19 (0.75)	35 (1.38)	82 (3.23)		M14×0.75
	BT30-ER16-60S	10.5 (0.41)	30 (1.18)	50 (1.97)	67 (2.64)		M22×1.5
	BT30-ER16-100S	10.5 (0.41)	30 (1.18)	50 (1.97)	107 (4.21)		M22×1.5
	BT30-ER25-060S	18 (0.71)	41.8 (1.65)	54 (2.13)	62 (2.44)		M32×1.5

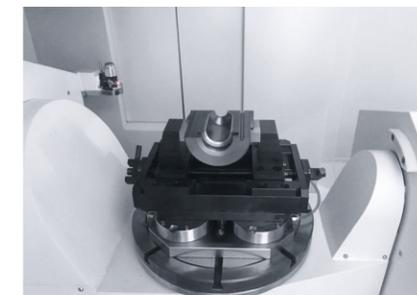
### Blade Handle without Wind Resistance

Type	Name	Size (mm /in)					Thread
		A	B	C	D	L	
BT30	BT30-ER11-085S	7.5 (0.30)	17.99 (0.71)	53 (2.09)	19 (0.75)	85 (3.35)	M14×0.75
	BT30-ER16-060S	10.5 (0.41)	26.99 (1.06)	50 (1.97)	30 (1.18)	60 (2.36)	M22×1.5
	BT30-ER20M-060S	13.5 (0.53)	30 (1.18)	28.5 (1.12)	32 (1.26)	60 (2.36)	M24×1

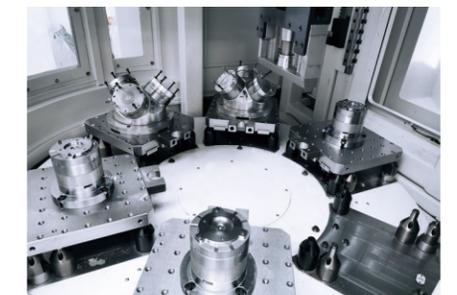
## Application Scenario



Multi-Axis Machining



Multi-Process Machining



Automation Manufacturing



Measuring



Use in Combination

# Distinctive Technologies

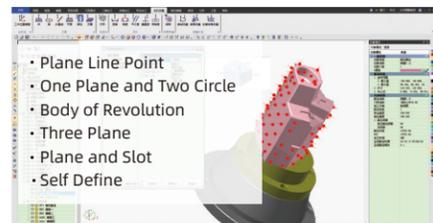
## On-Machine Measurement and Intelligent Modification Technology

JINGDIAO's innovative on-machine measurement and intelligent modification technology (OMIM) is an ideal solution that integrates CAD/CAM programming technology, numerical control processing and precision inspection technology. Its intelligent application can effectively shorten the production cycle of the workpiece, streamline the processing flow, and improve quality and efficiency for production and machining.

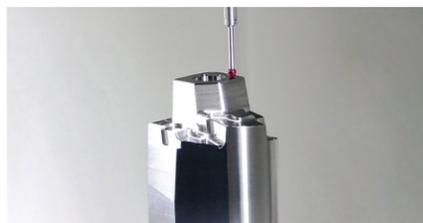
### The Function of JINGDIAO OMIM is Mainly Reflected in Three Aspects

#### + Intelligent Workpiece Alignment

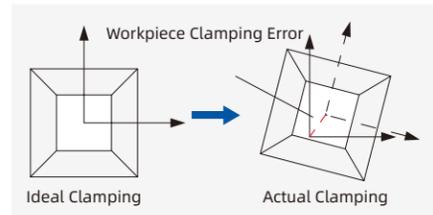
This feature automatically corrects the workpiece alignment by probing workpiece position which automatically adjusts the program accordingly.



01-Support Multiple Workpiece Position Compensation Methods



02-Obtain Actual Position on the Machine



03-Workpiece Position Compensation



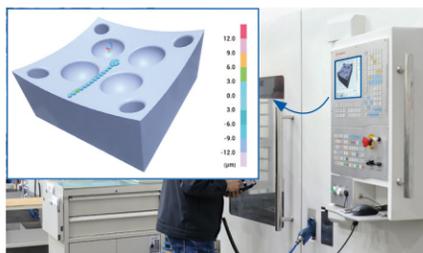
04-Verification of Position Compensation Accuracy

#### + Machining Step Remaining Stock Inspection

With this feature, the remaining stock at each machining step can be measured in real time, and the inspection results will be displayed on the machine's control. The operator can analyze the results in order to ensure that an even amount of material is removed at every machining step. This results in reduced tool wear, constant chip load, improved machining accuracy and improved surface finishes.



Inspect the Remaining Stock on the Machine



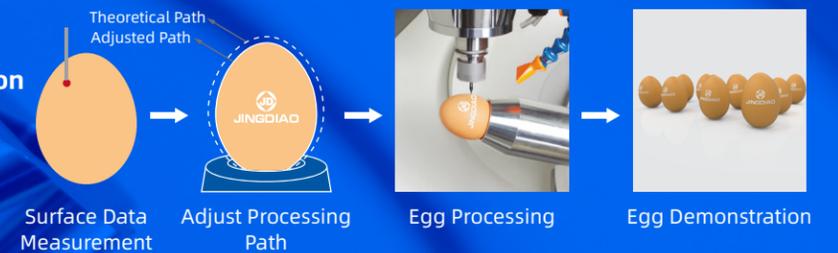
Real Time Display of CNC System



Achieve Stable Precision Machining

#### + 5-Axis Path On-Machine Compensation

The CAM function embedded in the CNC system can compensate for the inaccurate machining path, which is created by a non-conforming geometric shapes, clamping deformation and clamping deviation.



#### A New Model of Numerical Control Processing

- + Machining and inspection are achieved on one machine, forming a new model of "integration of machining and inspection".
- + The digitalization of CNC machining experience enables a entry-level operator to complete precision machining.
- + The actual processing time proportion of CNC machines has increased from 25% -45% to 45% -70%.



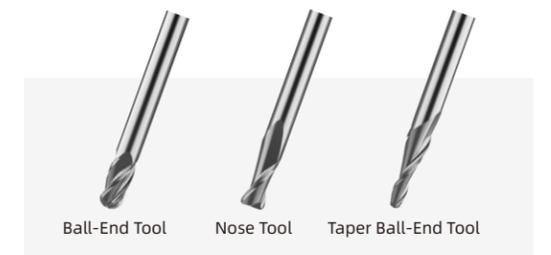
Before Using Integration of Machining and Inspection



After Using Integration of Machining and Inspection

## Tool Inspection System

During the 5-axis machining process, JINGDIAO tool inspection system can inspect the errors of different positions of the tool contour of the bull nose tool, ball-end tool and other tools for precision machining and compensate intelligently. This can effectively reduce the unqualified workpiece accuracy caused by the tool inaccuracy.



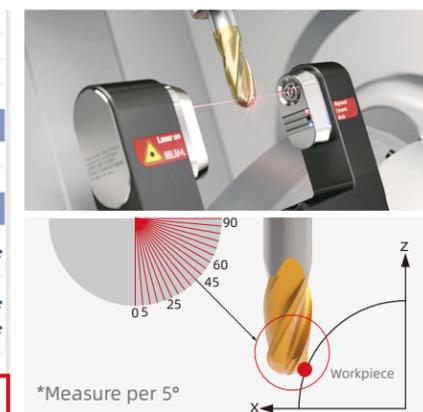
\* Tool Type

### Realization

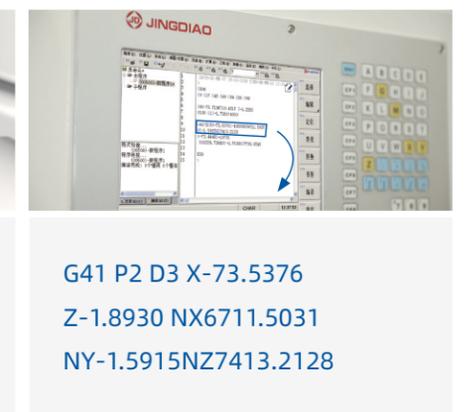


Path Verify	All
Shank Collis...	0.2
Holder Colli...	0.5
Path Edit	No Edit
<b>Avoid Settings</b>	
Set start point	<input type="checkbox"/>
Set end point	<input type="checkbox"/>
<b>Motion Settings</b>	
Safe area	Auto.
Clearance plane	5
Retract mode	Optimized mode
Relative retract	2
Plunge distance	0.5
Coolant	Air
Wear comp. mode	Tool Contour Compensation

3D Tool Contour Compensation Function



Inspect Tool Contour on the Machine

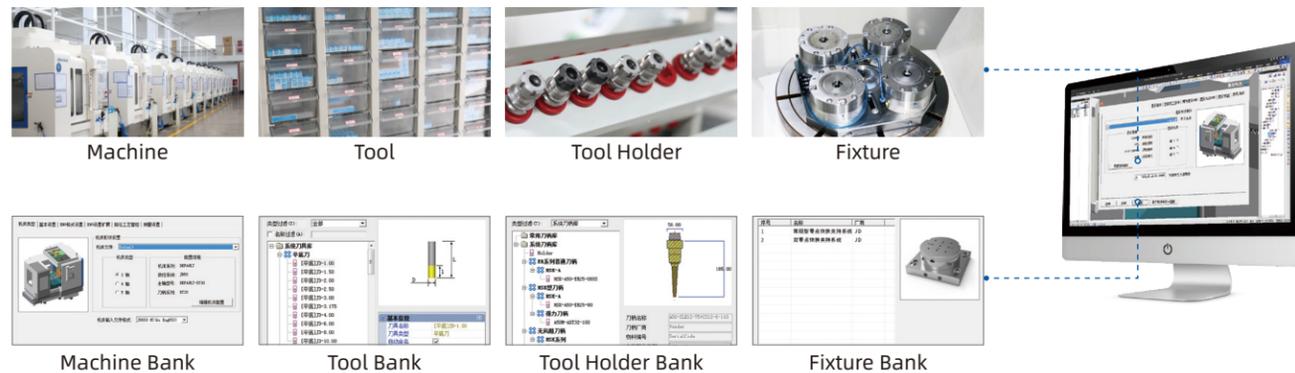


G41 P2 D3 X-73.5376  
Z-1.8930 NX6711.5031  
NY-1.5915NZ7413.2128

Compensate Tool Contour Deviation

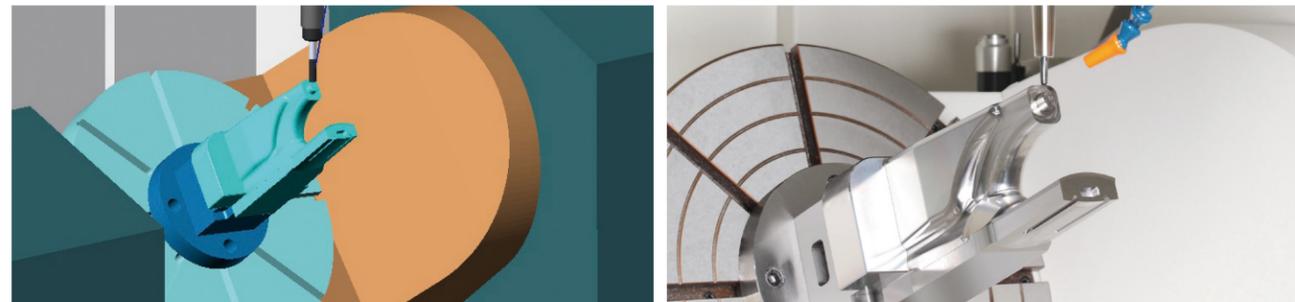
# JINGDIAO Digital Twin (DT) Technology

With JINGDIAO's software, the actual production materials and process parameters are digitized to ensure the correct information is selected by the process personnel, material preparation personnel and the operator. This creates a seamless integration process development, material preparation and machine operation, and improves the accuracy and fluency of the machining Process.



## Ensuring the Safety of 5-Axis Machining

Five-axis milling is a complex machining process. During the machining there is the risk of collisions between tools, tool holders and the workpiece. JINGDIAO uses its SurfMill software to establish the connection between production materials, CAM programming and actual processing in a virtual environment. The user can build the same digital scene in the software, simulate the machining process, analyze and adjust the process, and eliminate the machining risk in the software programming stage.

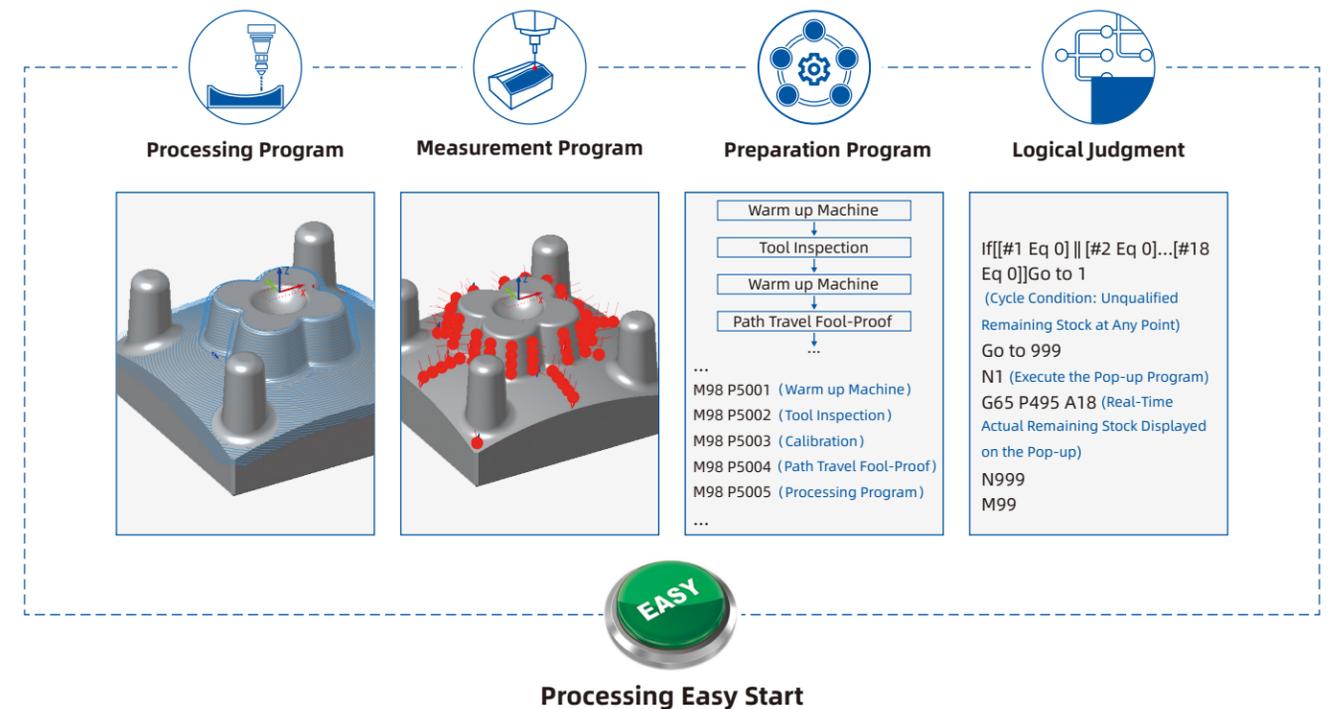


## Application Scenarios of DT Programming Technology

Technical Points	Mirror the Actual Machining Environment to Ensure the Accuracy of Interference Risk Inspection	Informatization of Production Materials to Avoid Risks Caused by Wrong Selection of Materials	The Macro Program Fool-Proof to Avoid Risk Caused by Mis-Operation by Personnel
Risk Type	Z-Axis and Workpiece	Tool Holder and Workpiece	Spindle and Workpiece
Cause Of Risk	Ignore Z-Axis	No Informatization of Production Material	Tool Clamping Length Error
Solutions	Complete Machine Model	Informatization of Production Materials	Tool Setup Foolproof

## Easy Start

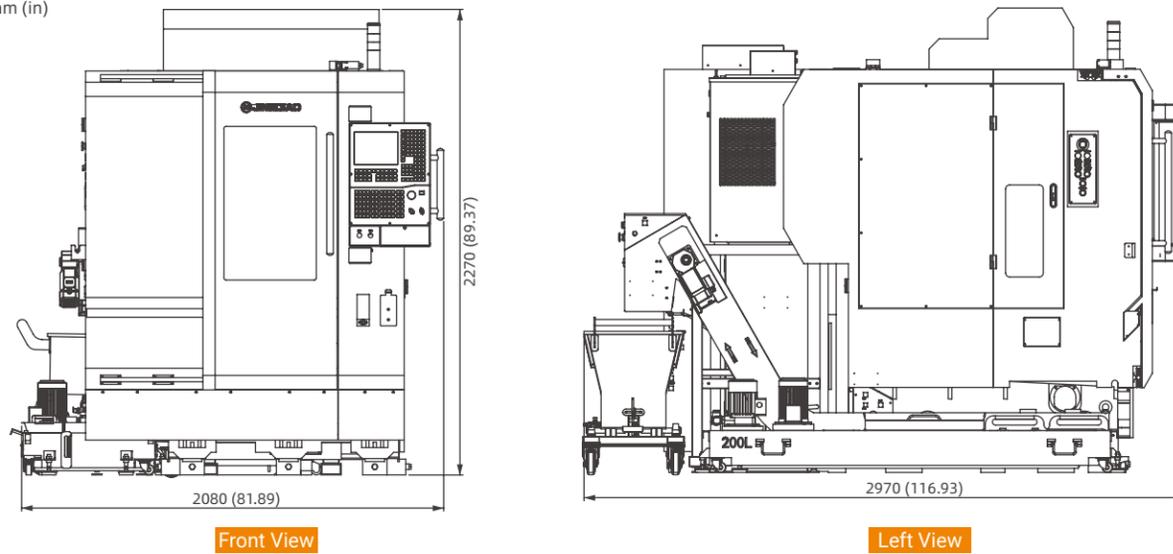
With this software, the program processing, measurement, preparation and logical judgment are combined into one program. The operator only needs to press the start button to begin the processing of the part which reduces machine setup time.



# Technical Specification

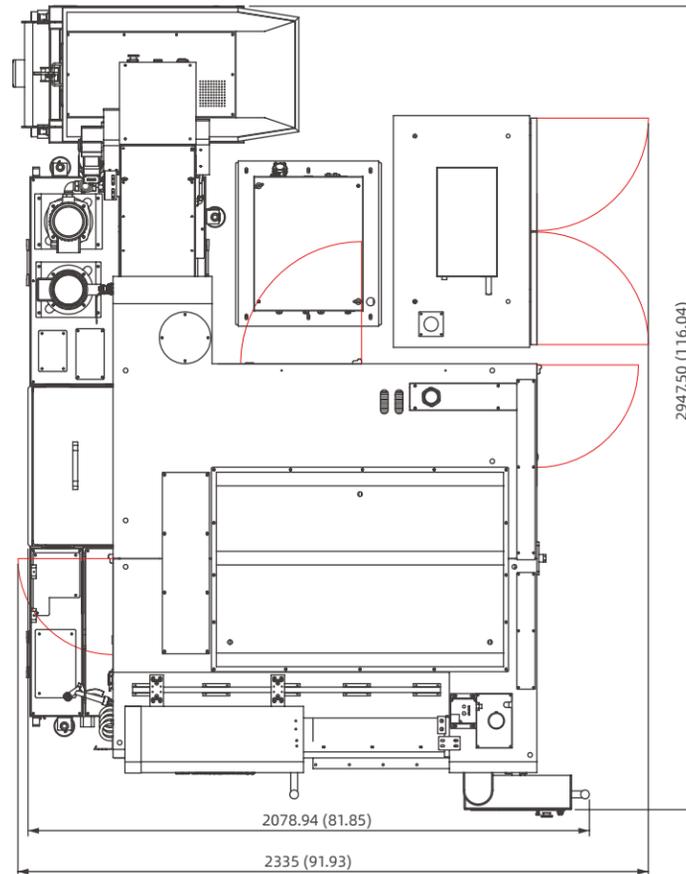
## Dimension

Unit: mm (in)



## Layout

Unit: mm (in)



## Technical Specification

Items	Standard Value
Position Accuracy (X/Y/Z) mm/ (in)	0.002/0.002/0.002 (0.00008/0.00008/0.00008)
Position Accuracy (B/C) sec	8/8
Repeatability (X/Y/Z) mm/ (in)	0.0018/ 0.0018/ 0.0018 (0.00007/0.00007/0.00007)
Repeatability (B/C) sec	5/5
Travel (X/Y/Z) (mm/in)	500/200/260 (19.69/7.87/10.24)
B/C Rotation Angle deg	-120° ~ 95°/360°
Table Diameter (mm/in)	φ200/φ7.87
Max. Load (kg/lb)	20/44.1
Spindle Type	JD1355-24-BT30/F
Max. Spindle Speed (rpm)	24,000
Tool Holder Type	BT30
Tool Magazine/Capacity	Chain Type Tool Magazine with Manipulator/60
Max. Rapid Rate (X/Y/Z) m/min (ipm)	15 (590.6)
Max. Swivel Rate (B/C)rpm	60/240
Max. Feed Rate (X/Y/Z)m/min (ipm)	10 (393.7)
Max. Feed Rate (B/C)rpm	30/120
Drive System	AC Servo
Voltage	3-Phase, 380V/50Hz
Air Pressure (MPa/PSI)	≥0.52/75.4
Machine Weight (kg/lb)	4410/9722.39

※ Above parameters have been calibrated With reference to International standard ISO230-2.

## Standard Features and Options

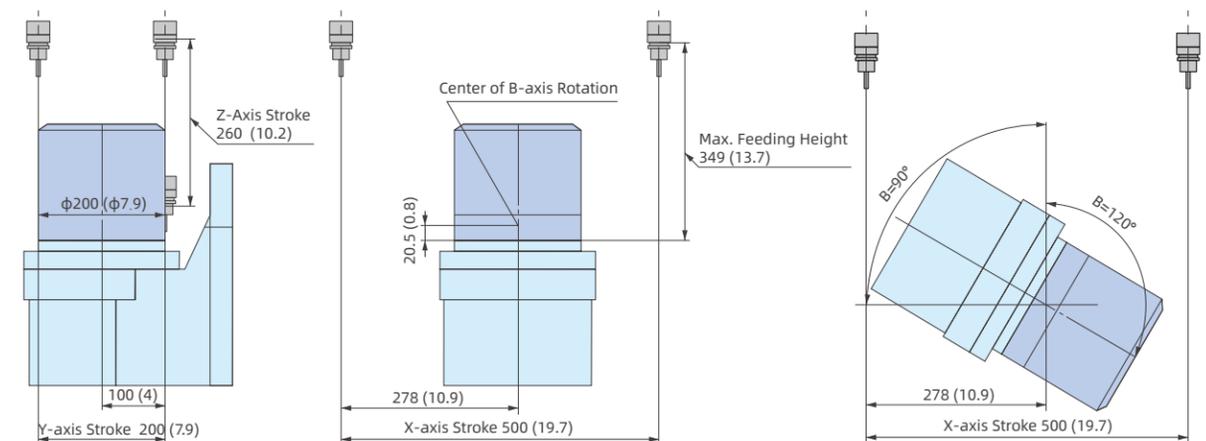
Items	Configuration
<b>Control System</b>	
JD50 NC System	●
<b>CAM Soft</b>	
JDSoft SurfMill 9.0	●
<b>Spindle</b>	
JD1355-24-BT30/F	●

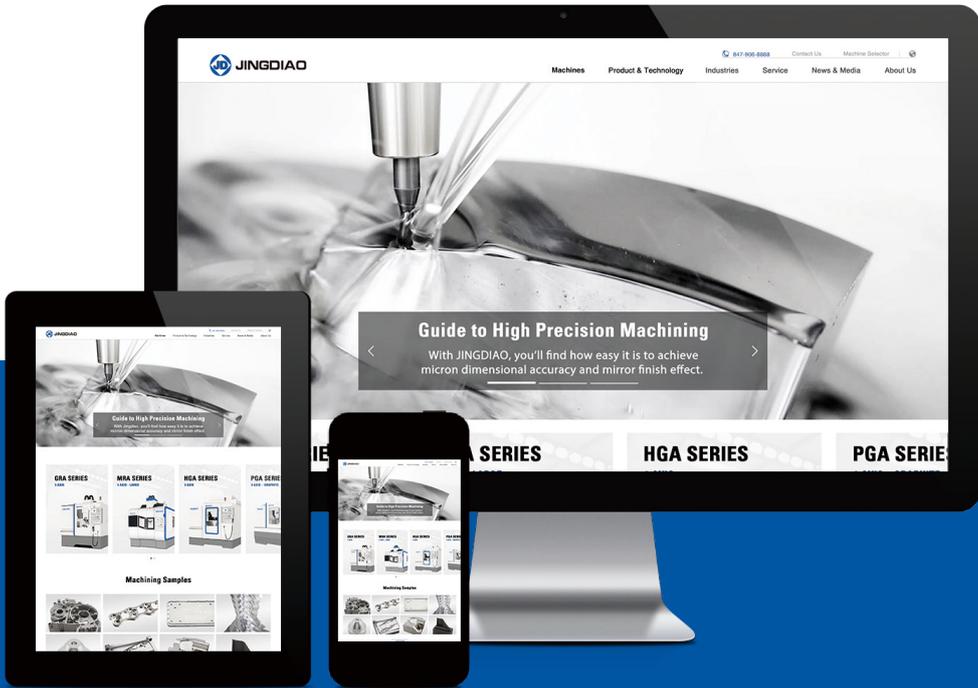
<b>Tool Magazine</b>	
Chain Type Tool Magazine with Manipulator (60 Tools)	●
<b>Cooling System</b>	
Coolant Device (Half Ring Nozzle, 2 Nozzles)	●
Coolant Tank	●
Cutting Air Cooling System	●
Spindle Cooling	●
Rotary Table Cooling	●
Screw Cooling	●
Control Cabinet Cooling	●
Oil-Water Separating System	○
Oil-Mist Separation System	○
Micro Mist Lubrication	○
<b>Chip Conveyor</b>	
Scraper Type Chip Conveyor	●
Internal Spiral Chip Conveyor	●
Chip Conveyor Interface	○
Chip Collection	○
<b>Measurement System</b>	
Contact-Type Tool Set	●
Laser Tool Set	●
JINGDIAO On-Machine Measurement System	●
Standard Calibrating Ball	○
<b>Others</b>	
MPG (Manual Pulse Generator)	●
Bag Type Filtration System	○
Hollow Filtration System	○
Front Door Safety Lock	●
Low Oil Pressure Inspection Device	○
Low Air Pressure Inspection Device	●
Ground Protector of Power Leakage	●
Machine Foot	●
Alarm	●
Lubricating Oil Inspection	●
Auto Power off Function	○
Internal Lighting Switch	●
Dynamic Balance Holder	○

●: Standard ○: Optional

## Stroke Diagram

Unit: mm (in)





You can find more information at  
[us.jingdiao.com](http://us.jingdiao.com)



Add: 1400 E. Business Center Drive, Ste. 103, Mount Prospect, IL 60056  
Phone: (847) 906-8888  
Fax: (847) 906-8800  
Email: [usa@jingdiao.com](mailto:usa@jingdiao.com)  
Website: [us.jingdiao.com](http://us.jingdiao.com)

The pictures of the equipment are for your reference only. The configurations and parameters are subject to change without notice. The final interpretation of this brochure is owned by Beijing JINGDIAO Group Co., Ltd.  
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