



JINGDIAO 5-AXIS HIGH-SPEED MACHINING CENTER



INTRODUCTION

Jingdiao 5-axis High-speed Machining Center is the flagship product of Beijing Jingdiao Group - A sub-series of Jingdiao High-speed Machining Center, and developed for 5-axis precision machining.

Jingdiao 5-axis High-speed Machining Centers featured the ability of "0.1 micron feed, 1 micron cutting, nano-level surface roughness", can "accurately and efficiently" realize "micron-level precision processing, and be widely used in mold manufacturing, medical equipment, precision electronics, automotive parts, tool equipment, optical instruments and automation machinery and other industries.

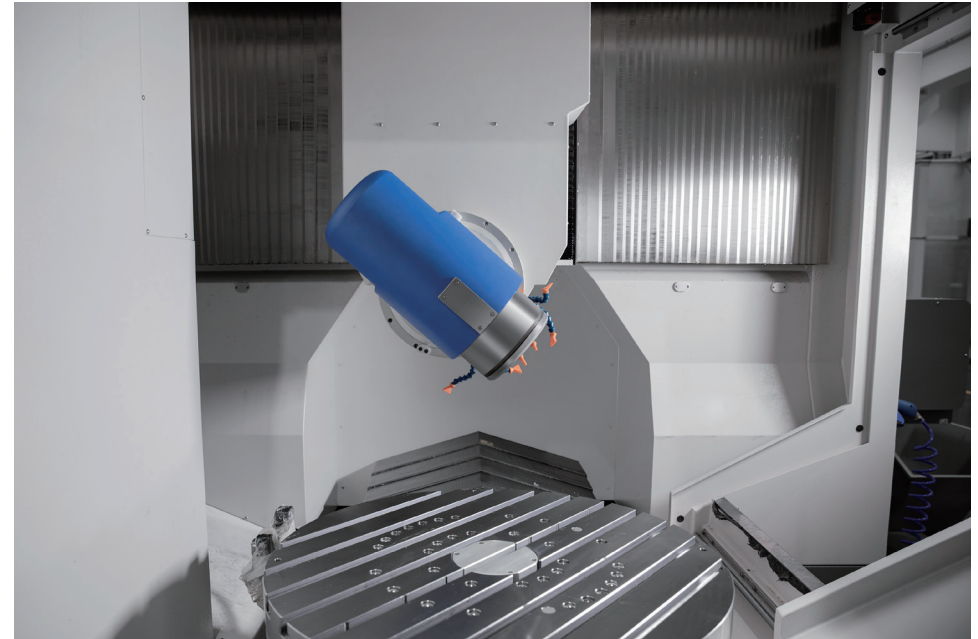
GRU400T, is the first 5-axis High-speed Machining Center which passed through the maturity evaluation of CMES (Chinese Mechanical Engineering Society) and obtained the level 8 certification, which indicated that Beijing Jingdiao has characterized the mature scale manufacturing capacity of 5-axis high-speed machine tools.



SRU800

Precision Type

SRU800, one of the precision type Jingdiao 5-axis High-speed Machining Center with orthogonal swing head design, which is suitable for the processing of all kinds of medium-sized complex parts, and is good at the processing of all kinds of parts with large negative angle characteristics. The application fields are concentrated in the mold, automobile, aviation, aerospace, energy and other industries.



Technical Parameters

Machine Model	SRU800
Working Travel (X/Y/Z)	900×1300×750 mm
Rotation Angle (A/C)	-110°~ 90° /360°
Angle Between Spindle Swing Axis (A Axis) And Spindle Axis	90°
Spindle	JD200SC-15-HT63
Tool Holder	HSK-A63
Tool Magazine	Chain Type
Tool Magazine Capacity	43
Machine Tool Weight	15000 kg
Application Fields	Concentrated in mold, automotive, aviation, aerospace, energy and other industries

MRU600 Precision Type

MRU600 Jingdiao 5-axis High-speed Machining Center won the award of 2021-2022 "Good Design" annual Gold Medal. It adopted the kinematic structure of the movable beam gantry, so it's trunnion type double-axis rotary table can carry out up to 400 kg load's index and 5-axis simultaneous machining.

MRU600 is especially good at processing heavy precision parts with complex structural features on hard-to-cut materials (hardened steel, stainless steel, titanium alloy, etc.), its excellent composite processing ability can also be competent for drilling, milling, boring composite processing.



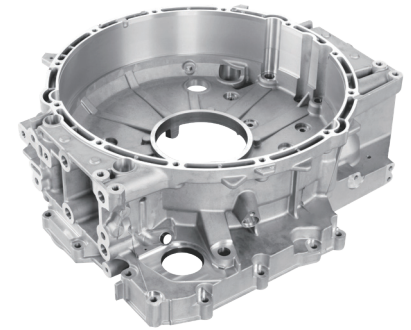
Flywheel Shell Die-cast Part

Help customers save 20-40 days of precision fixture customization time and hundreds of thousands of costs.

Size: 578×560×178 mm

Material: Cast aluminum (ADC12), silicon content 12%, hardness HB90

Processing characteristics: Holes, planes and other assembly positions processing distributed in multi-angle.



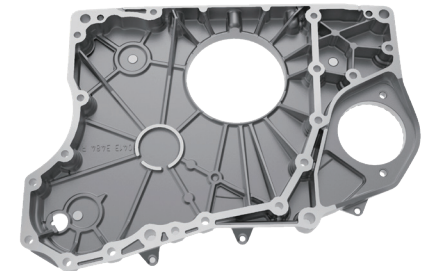
Engine Gear Housing

Product yield increased from the original 20% to 100%.

Size: 470×335×40 mm

Material: Cast aluminum (ADC12), silicon content 12%, hardness HB90

Processing characteristics: Mainly for end-face and hole processing.



Technical Parameters

Machine Model	MRU600	MRU600	MRU600
Working Travel (X/Y/Z)	650×660×500 mm	650×660×500 mm	650×660×500 mm
Rotation Angle (A/C)	-120°~ 90° /360°	-120°~ 90° /360°	-120°~ 90° /360°
Spindle	JD150S-20-HA50/C	JD180S-15-HA63/B	JD180SC-15-HA63/B
Tool Holder	HSK-A50	HSK-A63	HSK-A63
Tool Magazine	Chain Type	Chain Type	Chain Type
Tool Magazine Capacity	63	51	51
Machine Tool Weight	12000 kg	12000 kg	12000 kg
Application Fields	Molds, precision parts, complex industry parts	Molds, precision parts, complex industry parts	Molds, precision parts, complex industry parts

GRU500

Precision Type

GRU500, one of Jingdiao 5-axis High-speed Machining Center with micron-level accuracy processing capability.

It is suitable for complex hard-to-cut (HRC > 50) metal material's precision machining, such as drilling, milling and grinding.

It can stably achieve 5-15μm processing accuracy and carry out micro-milling processing with fine features, and can meet the processing requirements of large cutting volumes.



Compressor Impeller

The unbalance of the impeller was reduced from 38 gmm to 5 gmm, and met the machining requirement of 7 gmm.

Size : Φ408×160 mm **Material:** 2Cr13

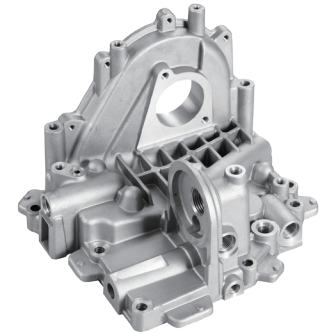


Engine Cooling Module Die Casting

One Jingdiao 5-axis high-speed machine replaces one 3-axis, one 4-axis and one lathe machine's multi-process flow processing, and the operator is reduced from 3 to 1.

Size: 257×223×173 mm **Material:** ADC12 cast aluminum

Machining characteristics: More than 30 holes of different specifications distributed at 6 angles.



Technical Parameters

Machine Model	GRU500	GRU500	GRU500	GRU500
Working Travel (X/Y/Z)	550×770×450 mm	550×770×450 mm	550×770×450 mm	550×770×450 mm
Rotation Angle (A/C)	-115°~ 90° /360°	-115°~ 90° /360°	-115°~ 90° /360°	-115°~ 90° /360°
Spindle	JD150S-20-HA50/C	JD150SC-20-HA50/A	JD180S-15-HA63/B	JD180SC-15-HA63/B
Tool Holder	HSK-A50	HSK-A50	HSK-A63	HSK-A63
Tool Magazine	Chain Type	Chain Type	Chain Type	Chain Type
Tool Magazine Capacity	37/63	37/63	37/51	37/51
Machine Tool Weight	13000 kg	13000 kg	13000 kg	13000 kg
Application Fields	Precision mold parts' finishing and complex shape parts' composite processing	Precision mold parts' finishing and complex shape parts' composite processing	Complex shape parts of the composite processing	Complex shape parts of the composite processing

GRU400T Precision Type

GRU400T, one of Jingdiao 5-axis High-speed Machining Center with micron-level accuracy processing capability.

GRU400T is the first 5-axis High-speed Machining Center which passed through the maturity evaluation of CMES (Chinese Mechanical Engineering Society) and obtained the level 8 certification, which indicated that Beijing Jingdiao has characterized the mature scale manufacturing capacity of 5-axis high-speed machine tools.



Turbo Molecular Pump Impeller

Help customers to shorten the process trial production cycle from 6 months to 20 days, the first piece of processing successfully at once, creating a new model of complex parts process trial production.

Size: $\Phi 350 \times 286$ mm

Material: 7075 Aluminum alloy

Processing features: Total 249 thin-walled blades in 7 layers, the maximum blade height 98 mm and thickness 2 mm.



Compressor Impeller

The processing time is shortened from 11h to 6h, and the profile tolerance < 0.05mm, which broke through the limit value 0.08mm of the customer's existing ability.

Size: $\Phi 100 \times 56.8$ mm

Material: TC4 Titanium alloy



Technical Parameters

Machine Model	GRU400T	GRU400T
Working Travel (X/Y/Z)	450×680×400 mm	450×680×400 mm
Rotation Angle (A/C)	-120°~90°/360°	-120°~90°/360°
Spindle	JD150S-20-HA50/C	JD150SC-20-HA50/A
Tool Holder	HSK-A50	HSK-A50
Tool Magazine	Chain Type	Chain Type
Tool Magazine Capacity	37/63	37/63
Machine Tool Weight	11000 kg	11000 kg
Application Fields	Precision mold, precision parts, complex shape parts' composite processing	Precision mold, precision parts, complex shape parts' composite processing

GRU300

Precision Type

GRU300, Jingdiao precision type 5-axis High-speed Machining Center with micron-level accuracy machining capability.

It configured Jingdiao high-speed precision motorized spindle, so it can meet the wide scope requirements of applicable cutting tools.

It is capable of milling, drilling, boring, tapping and other composite processing, is widely used in medical equipment, precision mold and other industries. It can realize precision machining of complex metal hard materials (HRC > 50) and precision mold parts with high surface quality requirements.



HUD Mirror Mold

After milling by PCD cutter, the surface roughness reaches up to Sa 10 nm.

Size: 300×200×50 mm **Material:** M333(HRC50)

Processing features: Mirror surface



Tibial Proximal End Lateral Plate

Processing 20000 pieces of fully milled bone plates, the production efficiency increased by 30% on average, and the yield exceeded 98%.

Size: 242×20×44 mm **Material:** TC4 Titanium alloy

Processing features: Twisted thin-wall surface features, multi-angle threaded holes.



Tungsten Steel Mold for 3D Glass Hot Bending

Tungsten steel mirror surface processing, no EDM and manual polishing, the process trial production cycle from uncontrollable to 15 days.

Size: 170×115×10 mm **Material:** MD10(HRC78)

Processing features: Mirror surface



Technical Parameters

Machine Model	GRU300	GRU300	GRU300
Working Travel (X/Y/Z)	390×510×300 mm	390×510×300 mm	390×510×300 mm
Rotation Angle (A/C)	-110°~ 90° /360°	-110°~ 90° /360°	-110°~ 90° /360°
Spindle	JD135E-32-HE32/F	JD150S-20-HA50/C	JD150SC-20-HA50/A
Tool Holder	HSK-E32	HSK-A50	HSK-A50
Tool Magazine	Umbrella Type	Chain Type	Chain Type
Tool Magazine Capacity	24	37/63	37/63
Machine Tool Weight	7200 kg	7400 kg	7400 kg
Application Fields	Precision mold for microelectronics industry	Precision mold, precision parts and complex hardware	Precision mold, precision parts and complex hardware

GRU200T Precision Type

GRU200T, one of Jingdiao 5-axis High-speed Machining Center with very high market recognition. It has the processing capabilities of "0.1μm feed, 1μm cutting, nanometer-level surface roughness", and fits for the processing of precision mold, precision parts, medical parts, and optical parts.

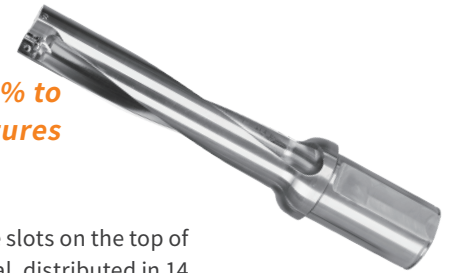


U Drill Body

The processing yield increased from 90-95% to 98%, and the cost of equipment and fixtures reduced by 50%.

Size: $\Phi 40 \times 278$ mm **Material:** SKD61 (HRC30)

Machining characteristics: There are two 20 mm blade slots on the top of the cutter body, and 28 machining characteristics in total, distributed in 14 different angles.



Gear Parts

The development cycle of gears has been reduced from 30~90 days to 7 days.

Size: $\Phi 39.8 \times 58.2 / \Phi 123.8 \times 13.7$ mm

Material: 38CrMoAl **Processing characteristics:** Gear surface



Radius and Ulna Plate

After milling by GRU200T, the subsequent polishing time has been greatly reduced from 30 mins to 5 mins.

Size: 56×25×8 mm **Material:** TA3G1

Processing features: Twisted thin-wall surface features, multi-angle threaded holes.



Technical Parameters

Machine Model	GRU200T	GRU200T	GRU200T	GRU200T
Working Travel (X/Y/Z)	500×280×300 mm	500×280×300 mm	500×280×300 mm	500×280×300 mm
Rotation Angle (B/C)	-120°~90°/360°	-120°~90°/360°	-120°~90°/360°	-120°~90°/360°
Spindle	JD135E-32-HE32/F	JD135S-24-BT30/FA	JD150S-20-HA50/C	JD150SC-20-HA50/A
Tool Holder	HSK-E32	BT30	HSK-A50	HSK-A50
Tool Magazine	Chain Type	Chain Type	Chain Type	Chain Type
Tool Magazine Capacity	37/63	37/63	37/63	37/63
Machine Tool Weight	5900 kg	5900 kg	5900 kg	5900 kg
Application Fields	Precision mold for microelectronics industry	For small product parts processing	Plastic mold finishing	Plastic mold finishing

GRU100

Precision Type

GRU100, Jingdiao 5-axis High-speed Machining Center with micron-level accuracy machining capability, and suitable for small-sized precision molds, precision parts and precious metal jewelry. Just 2.7 tons weight and can be placed on upstairs floor, compact 3.7 m² footprint.



Fresnel Lens

Stable processing by R0.1mm PCD tool for 99h, and the surface roughness Ra < 30 nm, without manual polishing.

Size: 42×42×89 mm **Material:** S136(HRC50)

Processing characteristics: Multi-circle of tiny grooves.



Small Nucleus Pulposus Surgical Forceps

Small batch trial production of 24 pieces, product yield of 100%.

Size: Upper jaw Φ2.4×6 mm, lower jaw Φ2.4×12 mm

Material: 17-4PH stainless steel (HRC42)

Processing characteristics: Distributed in 5 different angles of cutting edge, assembly groove, pin hole, etc.



Double-fish Ring

Achieve the "precise" processing of 400 stripes and engrave patterns in a single work set up.

Size: Φ23×4.6 mm **Material:** Brass

Processing features: 400 stripes and fish scale surface on the ring.



Technical Parameters

Machine Model	GRU100	GRU100	GRU100
Working Travel (X/Y/Z)	400×200×200 mm	400×200×200 mm	400×200×200 mm
Rotation Angle (B/C)	±120° /360°	±120° /360°	±120° /360°
Spindle	JD105E-32-HE32/F	JD135E-32-HE32/F	JD135S-24-BT30/FA
Tool Holder	HSK-E32	HSK-E32	BT30
Tool Magazine	Umbrella Type	Umbrella Type	Umbrella Type
Tool Magazine Capacity	16	16	14
Machine Tool Weight	2800 kg	2800 kg	2800 kg
Application Fields	Precious jewelry processing industry	Precision mold for microelectronics industry	For small product parts processing

GRU50

Precision Type

GRU50, precision type small-sized 5-axis High-speed Machining Center with micron-level accuracy machining capability, is suitable for precision machining and micro-hole drilling in medical, watch, jewelry and other industries. It weighs 1.65 tons, covers an area of 2.25 m², and can realize upstairs processing with high space utilization rate.



Dental Implant Bridge

The processing time of a single piece is reduced from 4h to 3h10min.

Size: 56 mm×42 mm×14 mm **Material:** TC4 titanium alloy

Processing characteristics: Multi-angle taper interface, gingival surface, occlusal surface.



Heart Pump Impeller

The surface roughness is optimized from 0.4 μm to less than 0.2 μm.

Size: φ5.5 mm×8.5 mm **Material:** PEEK

Processing features: Small rounded thin wall surface.



Shiny Fish Scale Ring

The surface of the fish scale is consistent, no vibration, a mirror effect, and the roughness Ra 20 nanometers.

Size: φ24.0 mm×4.8 mm **Material:** 6061 aluminum alloy

Processing features: Jewelry surface shiny fish scale surface.



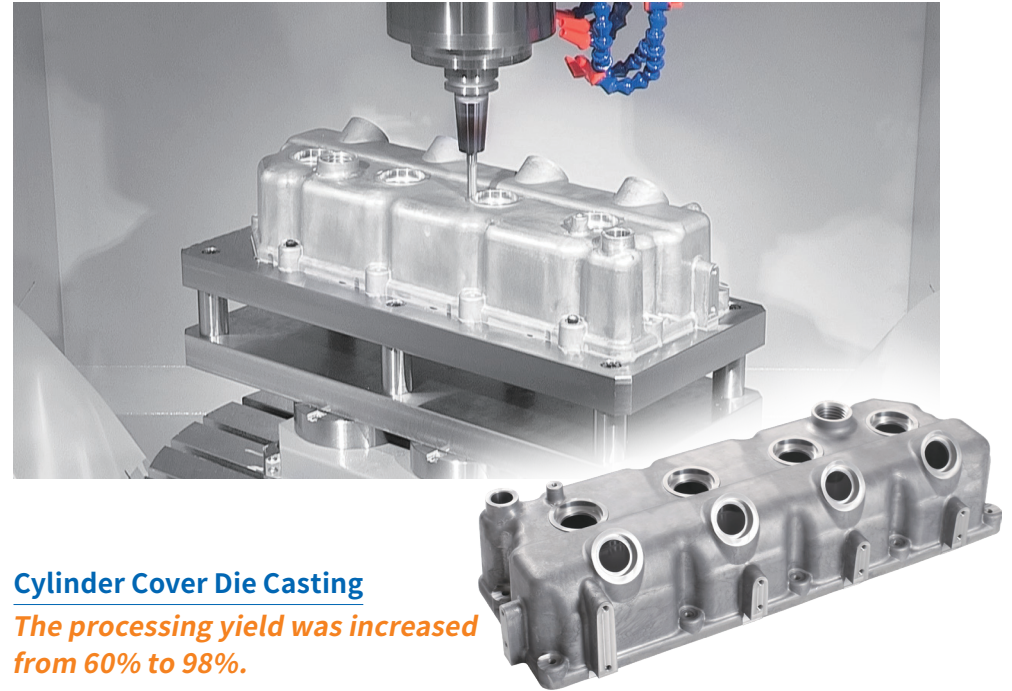
Technical Parameters

Machine Model	GRU50	GRU50
Working Travel (X/Y/Z)	235×210×175 mm	235×210×175 mm
Rotation Angle (A/C)	-15°~ 125° /360°	-15°~ 125° /360°
Spindle	JD105E-36-IS020/F	JD105E-32-HE32/F
Tool Holder	ISO20	HSK-E32
Tool Magazine	Chain Type	Chain Type
Tool Magazine Capacity	21	21
Machine Tool Weight	2000 kg	2000 kg
Application Fields	For micro-hole processing, small precision mold, etc.	For precision small mold, precision hardware, precious metal jewelry, etc.

MRET600

High Efficient Type

MRET600, high efficient type 5-axis High-speed Machining Center, has the composite processing abilities of milling, boring, drilling, tapping, reaming and etc. It is suitable for the 5-axis efficient composite processing of auto parts and complex industry parts.



Cylinder Cover Die Casting

The processing yield was increased from 60% to 98%.

Size: 527×194×119 mm

Material: Cast aluminum (ADC12) silicon content 12% hardness HB90

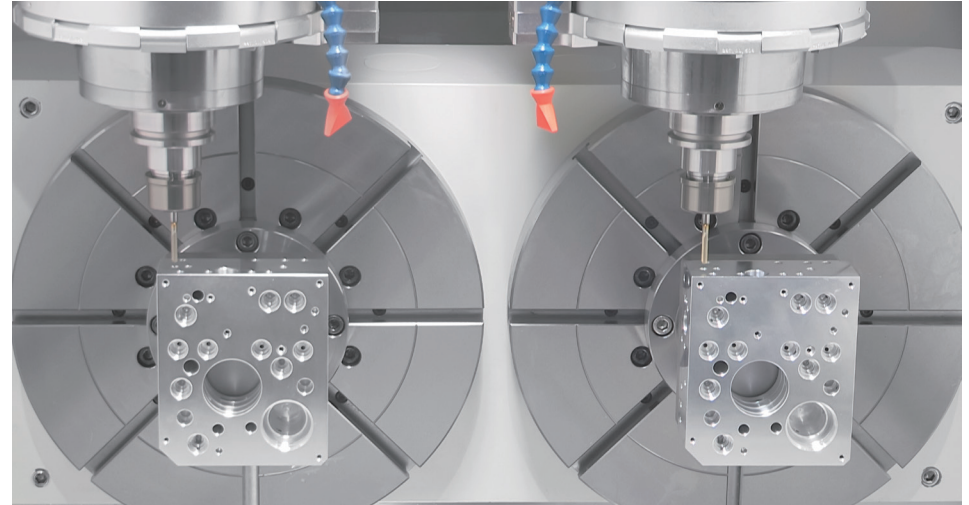
Processing features: Assembly holes and sealing holes distributed at 7 angles.

Technical Parameters

Machine Model	MRET600	MRET600
Working Travel (X/Y/Z)	670×840×500 mm	670×840×500 mm
Rotation Angle (A/C)	-120°~ 90° /360°	-120°~ 90° /360°
Spindle	JD180S-15-HA63/B	JD180SC-15-HA63/B
Tool Holder	HSK-A63	HSK-A 63
Tool Magazine	Chain Type	Chain Type
Tool Magazine Capacity	64	64
Machine Tool Weight	15000 kg	15000 kg
Application Fields	5-Axis composite processing of die-casting parts and complex industry parts	5-Axis composite processing of die-casting parts and complex industry parts

MRET400DZ **High Efficient Type**

MRET400DZ, high efficient type 5-axis High-speed Machining Center, which has double Z-axis and double C-axis, is suitable for 5-axis efficient composite machining of auto parts and complex product parts.



Hydraulic Valve Body

The material removal amount of parts is more than 40%;

Hole Cylindricity < 5 μm;

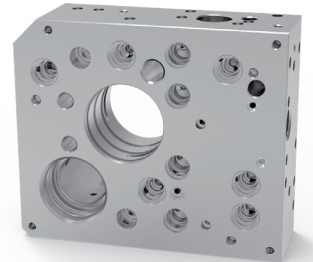
Step Hole Concentricity < 10 μm;

The verticality between the hole and the surface < 10 μm;

The machining size deviation of the two parts < 10 μm.

Size: 150×127×50 mm

Material: 6061-T6



Technical Parameters

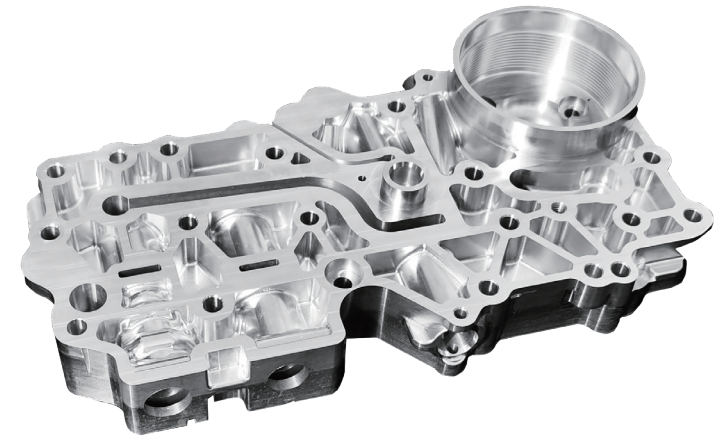
Machine Model	MRET400DZ
Working Travel (X/Y/Z)	400×700×485 mm
Rotation Angle (A/C)	-120°~ 90° /360°
Spindle	180SC-15-HA63/B
Tool Holder	HSK-A 63
Tool magazine	Chain Type
Tool Magazine Capacity	37/51/73
Machine Tool Weight	11000 kg



GRET400

High Efficient Type

GRET400, high efficient type 5-axis High-speed Machining Center, fits for multiple tools complex and efficient 5-axis simultaneous machining, such as drilling, milling, boring, reaming, tapping, etc. It is mainly used in the processing of general mechanical parts.



Automobile Valve Body

The machining of multiple surfaces in different angles is completed in one single work set up.

The perpendicularity of hole and surface is 0.01mm.

Parallelism of both sides 0.02mm.

Size: 246×140×44.5 mm **Material:** Cast aluminum (ADC12)



Technical Parameters

Machine Model	GRET400	GRET400
Working Travel (X/Y/Z)	450×700×485 mm	450×700×485 mm
Rotation Angle (A/C)	-120°~ 90° /360°	-120°~ 90° /360°
Spindle	JD180S-15-HA63/B	JD180SC-15-HA63/B
Tool Holder	HSK-A63	HSK-A63
Tool Magazine	Chain Type	Chain Type
Tool Magazine Capacity	37/51/73	37/51/73
Machine Tool Weight	11000 kg	11000 kg
Application Fields	Composite processing of complex 5-axis structural parts	Composite processing of complex 5-axis structural parts

GRET150

High Efficient Type

The GRET150, high efficient type small-sized 5-axis High-speed Machining Center, is a "composite" 5-axis high-speed machine, widely used in medical, new energy, 3C electronics and other industries.

The GRET150 can perform milling, drilling, tapping, boring, etc., and the tool wear is stable and controllable during the machining process, so it can accurately and efficiently complete the composite machining of micron-level accuracy parts.



Composite Machining Test Pieces

The total processing time is 47min27s, and the multi-feature milling, drilling, tapping, reaming, boring and other composite processing can be realized in a single work set up.

Size: 100×100×110 mm **Material:** 4Cr13

Highlight: Surface inner hole and outer cone surface Ra 0.3 μm;
The verticality of the hole < 0.01 mm.



Automotive Turbocharger Impeller

The processing time is 3min15s/ piece, and 28s each piece shorter than previous processing time of the customer, so produce about 51 pieces more per day.

Size: Φ53.5×25.1 mm **Material:** 7075 Aluminum alloy



Medical Bone File

5-axis combined process, the processing time is reduced from 6h to 4h15min.

Size: 99×29×17 mm **Material:** 17-4 Stainless steel

Processing characteristics: All slots on the surface of the parts.



Technical Parameters

Machine Model	GRET150
Working Travel (X/Y/Z)	500×200×260 mm
Rotation Angle (B/C)	-120°~ 90° /360°
Spindle	JD135S-24-BT30/FA
Tool Holder	BT30
Tool magazine	Chain Type
Tool Magazine Capacity	60
Machine Tool Weight	4400 kg
Application Fields	For small product parts processing



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About Jingdiao

