德上精机
DESUN SEIKI

中国宝安集团旗下企业

江苏德上精密机床有限公司

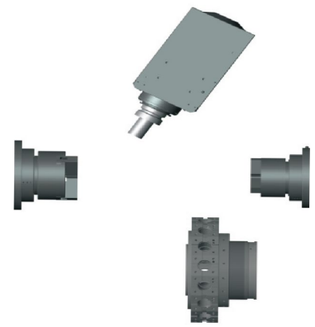
江苏省苏州市常熟经济开发区东周路6号

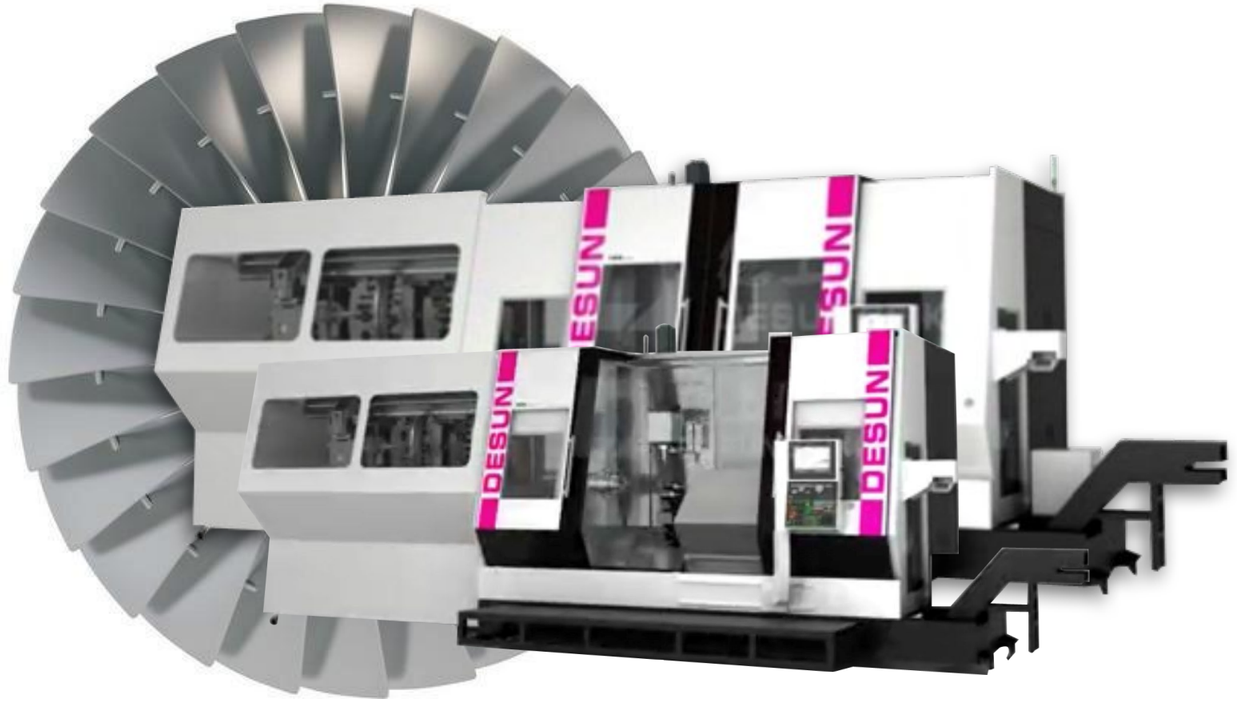
电话:0086 512 5290929　　传真：0086 512 52298929

www.desun-precision.com

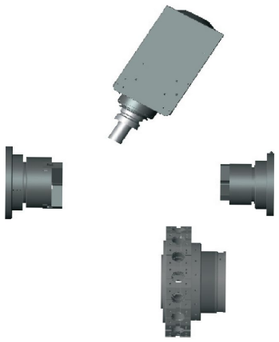
THX Series

Super 5-axis LinkageTurn-milling Composite Blade Machining Center





*better.parts.**faster.***



Super Turning and Milling Center - High Efficiency Machining Production Unit

This Mass-Production Machine was produced by DESUN SEIKI,which provides a new processing method for high-speed turning and milling complex parts by utilizing bar machining

THX series, as a mature super turning and milling center product developed by DESUN SEIKI in the early stage, has an unparalleled high efficiency production capacity with dual spindle+tool spindle+B-axis swing+lower cutter tower+dual Y-axis turning and milling composite center.In terms of processing efficiency, precision, stability, etc., it can compete with any brand in the world! DF series machine tools are on a par with foreign brands!

DESUN SEIKI has always adhered to the innovative concept of developing high efficiency and high-precision machine tools from the perspective of users, and completing all clamping at once.

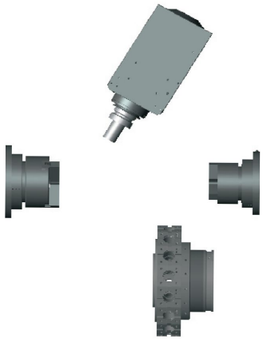
THX Series Model represents the most advanced and high-precision milling compound center in China, with a spacious processing area inside and unparalleled turn-milling compound processing performance. This model is one of the outstanding representative works of Deshang Company!

On the day of its establishment,DESUN SEIKI aspired to become the world's top machine tool provider! The quality of machine tools produced is aimed at replacing all the machine tools produced by abroad high-end Companies.The production process, quality, and accessory brands are all managed in accordance with the world's highest precision, most rigorous production and management methods. Achieving and surpassing the quality of imported brand machine tools has always been our pursuit and goal!

Not every machine tool factory can produce such a powerful, ultra precise, and highly reliable five-axis combined milling and turning machining center!

Turning and Milling-Customer Turnkey Solution

* As a leading brand in the field of turn-milling composite machining, Desun Seiki is committed to developing and providing turnkey solutions, bth for production lines and stand-alone machines. These lathes can be customized according to the specific needs of each customer, no matter what industry or field, we meet all possible technical requirements.
* Bar diameter, standard configuration between 42mm and 52mm, 65mm, 105mm, 155mm large through-hole diameter spindles are also available.
* A high-speed tool spindle, model HSK-T63, with a maximum rotational speed of 12000 rpm and a maximum torque of 110 N/m.
* One BMT-45 turret, with a maximum installation of 16 turrets, ensures the number of cutters required for complex workpiece processing.
* Standard configuration ATC tool magazine, standard 30T and selection 40T/60T/90T
* An extended boring cutter with a 600mm long boring bar is available for selection, and a maximum of 3 cutters can be installed for processing deep and long inner holes.
* High quality and efficient back processing reduces the loss of workpiece accuracy caused by multiple clamping operations.
* High speed movement, (45m) motorized spindle high speed response, C-axis indexing 0.001 mm.
* Two servo powered turrets rotate quickly for high rigidity milling.
* The two turrets are simultaneously processed with high efficiency, and the upper and lower turrets help each other to achieve high efficiency processing, balancing the cutting workload of the two turrets.
* The upper and lower rotary tools can be turned on the main shaft and sub main shaft respectively, and both can become auxiliary turning members to improve processing efficiency.

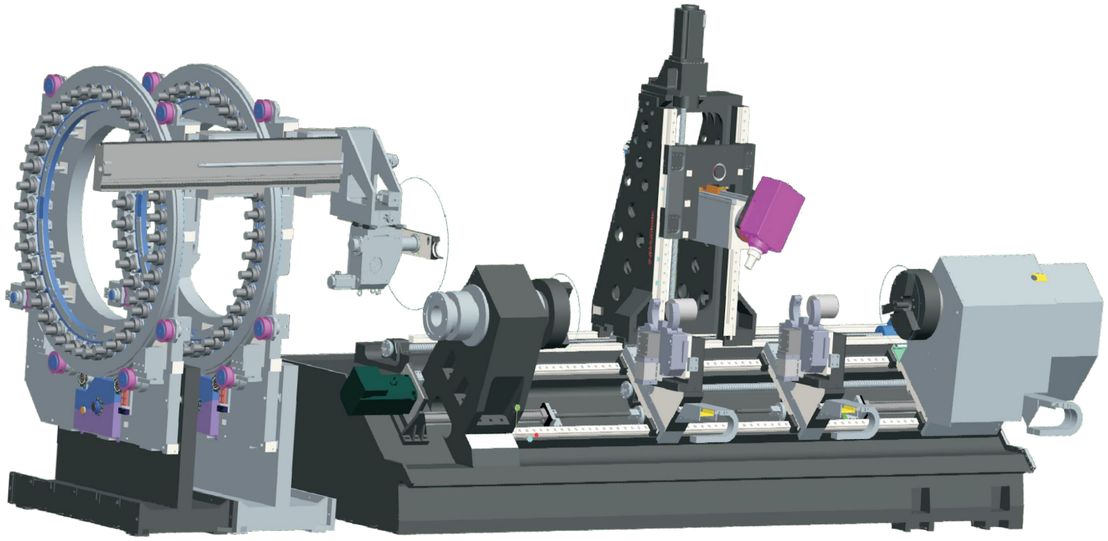


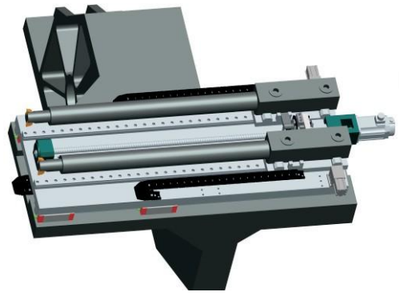
Designing Machine Tools from the Angle of Overall Stiffness

THX Series utilizes advanced finite element analysis and repeated validation to achieve high rigidity while achieving lightweight fuselage.

This model adopts roller guide rails. Compared with traditional ball guides, RollerGuides have the excellent characteristic of having a smaller amount of elasticity relative to the load. By assembling a large number of roller bodies in the sliding unit, it can achieve several times the rigidity of the ball guide. Orthogonal Y-axis, with its straight forward characteristic and high speed feed, can achieve efficient machining. In addition, using a structure with excellent rigidity, it can achieve the same or even higher machining accuracy as the machining center.

As a new type of super machining center beyond the tranditional scope of turning and milling complex centers, it has excellent turning and milling processing capabilities, creating more value for customers!





Long Shockproof Blade (1000mm)

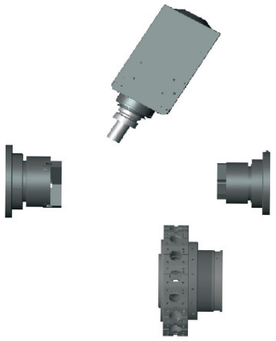
High Precision Bed Structure Design

Manufacturing a truly precise machine tool that maintains stability and high precision for a long time requires many factors. Some additional components can improve the precision of the machine tool, but none of the components can compensate for the initial structure. Due to insufficient experience and lack of design, long-term stable accuracy of the machine tool in the later stage is affected.

All accuracy assurance cannot be achieved without a robust bed structure design. The bed structure is an important component that determines the high reliability, stability, and ultra precision of a machine tool. The high-performance bed is stable, sturdy, and highly shock absorbing. The use of material failure treatment, machine tool design, and so on are important, precision machine tools are always made of cast iron materials! And the heavier the machine tool cast iron, the better.

The structural components of the machine tool must ensure long-term stability of geometric accuracy in the design, long-term rigidity of the mechanical device, and overall systematic seismic resistance of the machine tool.This allows the machine tool to maintain high accuracy under various processing conditions, with minimal vibration at the workpiece and tool contact points.Low vibration can ensure stronger machining processes, better surface roughness, and longer tool life, and the machine can maintain long-term stability.

When it comes to accuracy, the best accuracy of the machine tool is on the day of the first batch production. Adjust the straightness and perpendicularity of each axis of the machine tool appropriately, and calibrate the machine tool to the most accurate accuracy possible. However, over time, this accuracy will inevitably decrease due to various reasons. One reason is the internal stress of casting or polymer decomposition and failure, leading to the deformation of the bed over time.

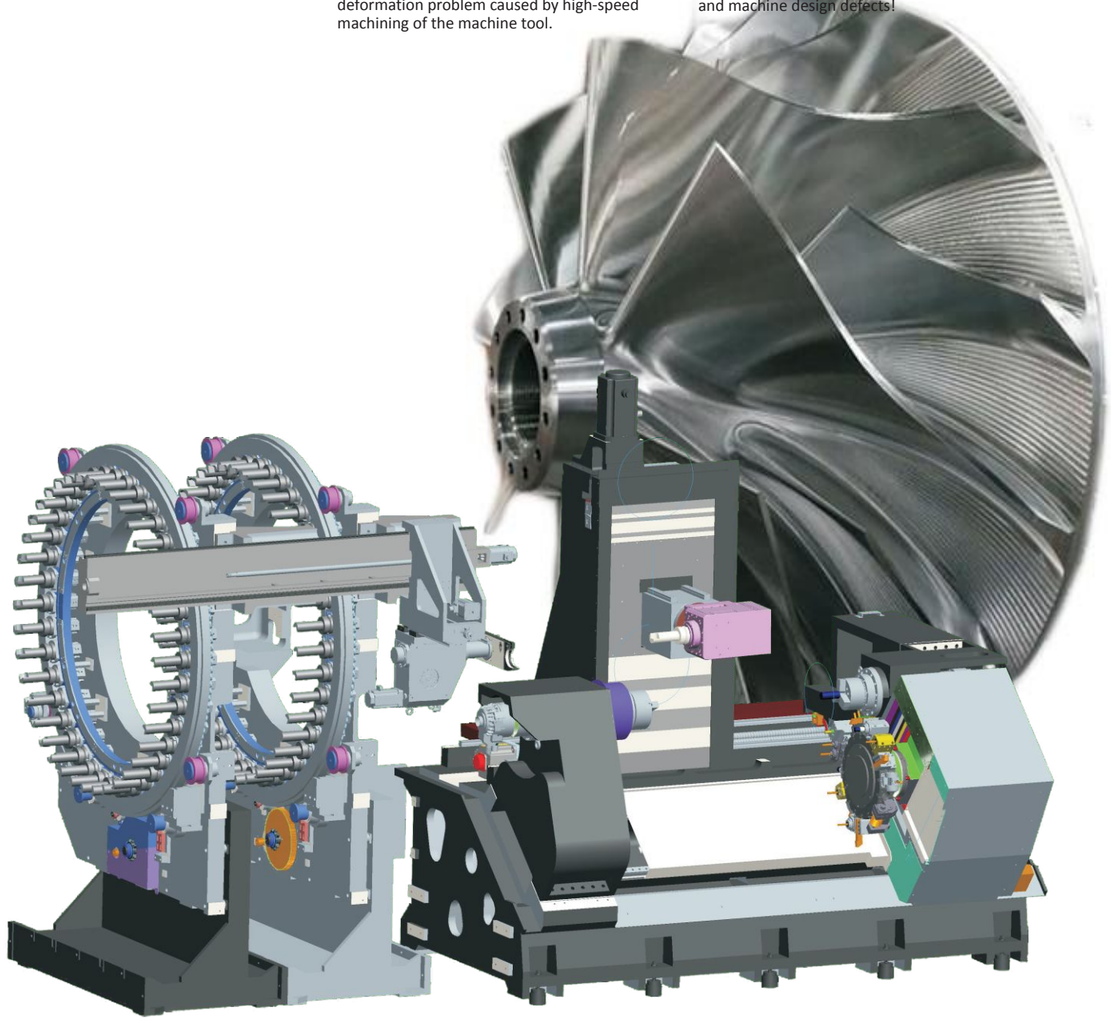


Dual rotary tools (upper tool spindle+lower tool turret+ATC tool magazine) have excellent production efficiency!

Amazing turn-milling composite processing capability

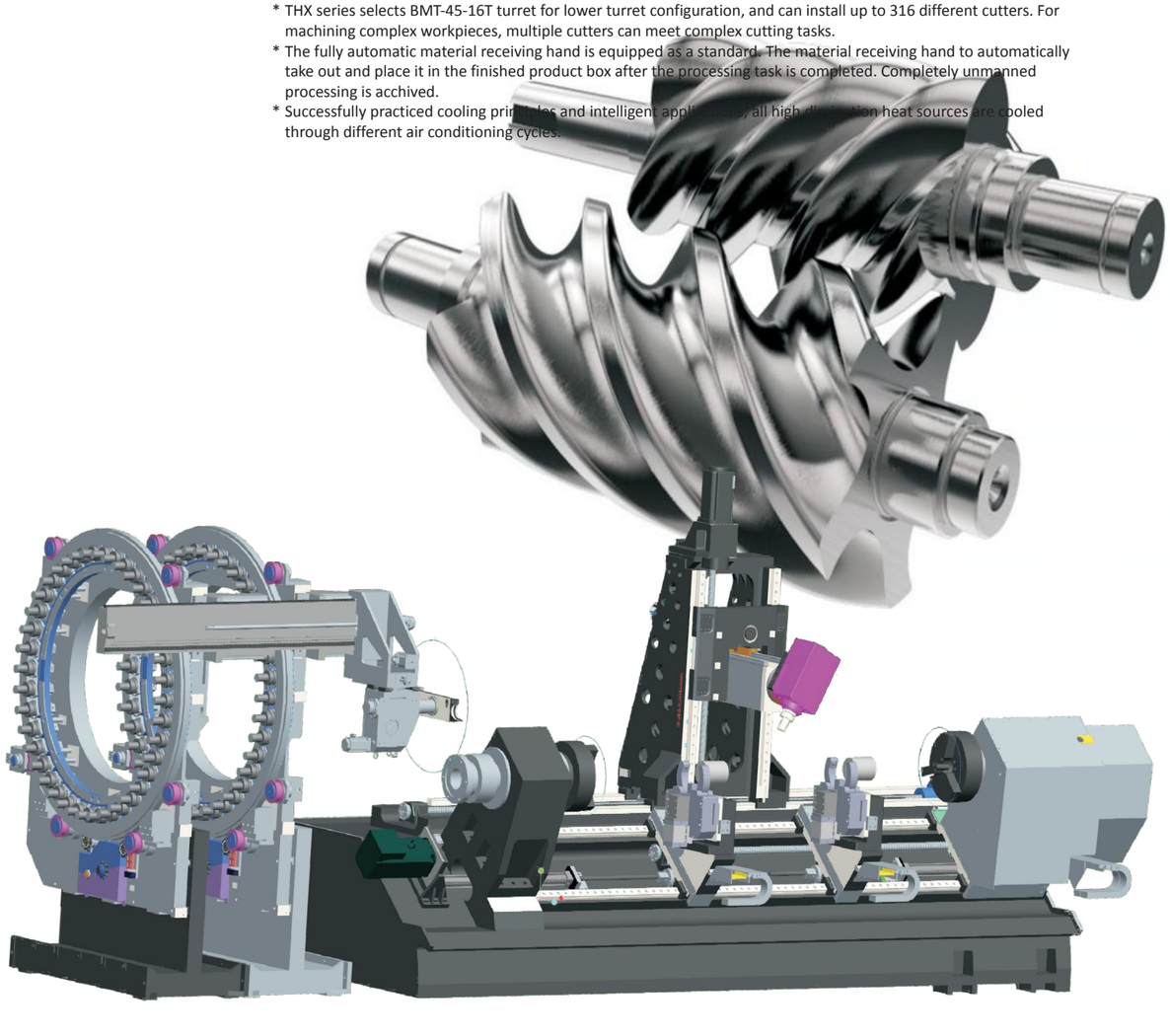
The design of THX series machine tools is all analyzed using finite element software. For the stressed parts in the cast iron structure, reinforcement shall be adopted. The internal structure of cast iron adopts a triangular reinforcing rib design to ensure the stability of the machine tool during high-speed movement. The machine tool adopts a movable column type flat bed structure design and is one-time cast. The reinforcing rib on the mounting surface of the guide rail is directly inserted into the ground. Comparing with the traditional design, this innovative design method increases the strength of the cast iron base by two times, and effectively improving the thermal deformation problem caused by high-speed machining of the machine tool.

THX series adopts two high-speed tool spindles with rotary tool holders (12000 rpm) and is equipped with servo powered tool holders. The processing area is open, which can improve the work efficiency.
The adjustment time of the machine tool has become shorter, Double tool holder processing and production make the efficiency doubled. The double-layer protective plate makes it easier to remove debris and maintain.The base of the machine tool is designed with an inclined bed of 40 degrees and the double-layer protective plate makes it easier to remove debris and maintain.
In response to the early water leakage problem of machine tools, DF series machine tools have been continuously improved through the sales performance of hundreds of units, and have been completely improved and resolved unreasonable functions and machine design defects!



THX series - Intelligent Cooling Concept, Effective Energy Saving Solution

* Electrical Cabinet Air Conditioning: THX series is equipped with electrical cabinet air conditioning as a standard, ensuring that electrical appliances and drivers work stably for a long time in a constant temperature environment
* Cutting Fluid Air Conditioner: THX full series is equipped with cutting fluid air conditioners as a standard. Aiming at the constant temperature of the cutting fluid, the workpiece processing will not change due to the temperature change of the cutting fluid.
* Main Shaft Oil Cooling Air Conditioners: THX series is equipped with spindle oil cooling air conditioners as a standard. Ensuring that the spindle temperature is maintained at a reasonable state during long-term operation, and improving the spindle precision.
*The hydraulic station is equipped with oil suction (outlet) filter and oil return filter as standard. Due to the long running time of the machine tool and normal wear and tear of the machine, hydraulic oil is mixed with scrap iron during circulation. Then the oil suction (outlet) filter and oil return filter can well protect the pump at the hydraulic station.
* The hydraulic oil pipe has been upgraded from the original rubber pipe to galvanized steel pipe, ensuring that the machine maintains the oil pipe without aging after many years.
*A 40Bar high pressure system is configured to ensure that the machine tool can easily handle deep hole machining.
* THX series selects BMT-45-16T turret for lower turret configuration, and can install up to 316 different cutters. For machining complex workpieces, multiple cutters can meet complex cutting tasks.
* The fully automatic material receiving hand is equipped as a standard. The material receiving hand to automatically take out and place it in the finished product box after the processing task is completed. Completely unmanned processing is acchived.
* Successfully practiced cooling principles and intelligent applications, all high distribution heat sources are cooled through different air conditioning cycles.



From a highly integrated operating system for customer use
The whole series adopts Japanese Mitsubishi high-end series - M800
Focus on production and control - including Future Industry 4.0

*High speed, high-precision contour control function;

*Thread turning, rigid tapping, thread milling, hexagonal turning functions;

*Virtual and development functions, collision prevention, real-time mode;

*Tool R angle compensation function, tool wear compensation function;

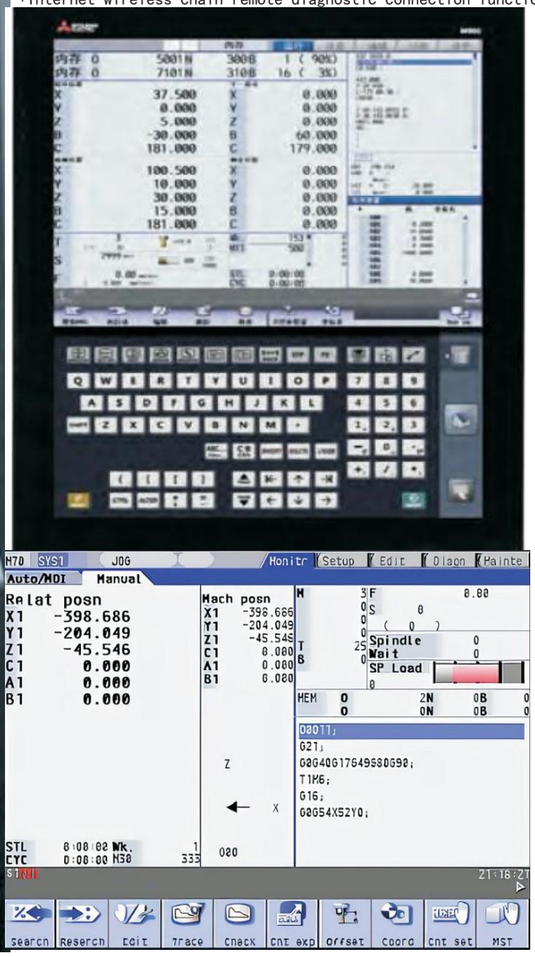
*Main shaft and auxiliary main shaft C-axis synchronization detection, rotation synchronization detection, and docking synchronization detection;

*Multi channel (III) independent processing function;

*Taper circle machining, non circular machining function;

*Chamfer and R corner turning functions;

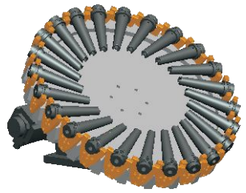
*Internet wireless chain remote diagnostic connection function.



Ultra-precision Blade Turbine/Engine Blade Series Parts

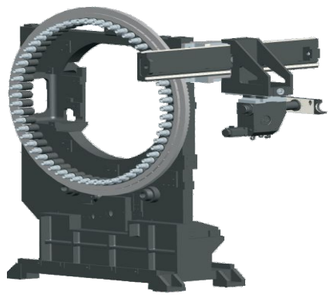
Aircraft Landing Gear/Air Compressor Rotor Series and Other Parts

Steam Turbine Shaft Center/Aviation Engine Shaft Center/Automobile Crankshaft Series and Other Parts

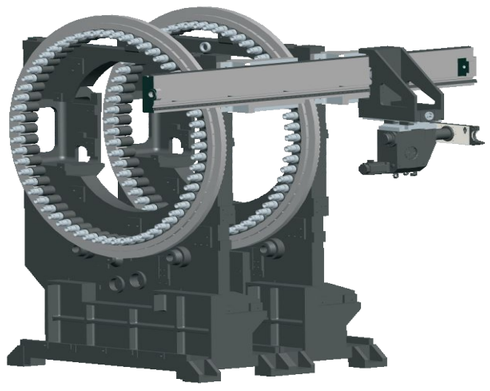


Select Configuration - High Speed Servo Large Hollow Tool Magazine (Option)

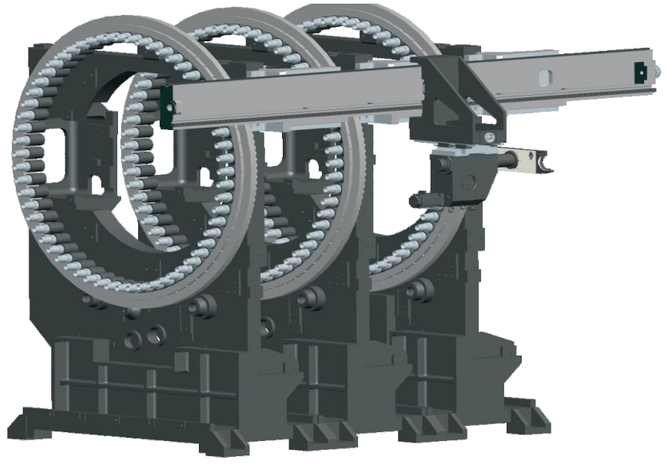
Standard Configuration
Servo drive disc tool magazine
HSK-T63/24pcs
HSK-T100/16pcs



Selected Configuration I
Servo drive disc tool magazine
HSK-T63/60pcs
HSK-T100/40pcs



Selected Configuration II
Servo drive disc tool magazine
HSK-T63/120pcs
HSK-T100/80pcs



Selected Configuration III
Servo drive disc tool magazine
HSK-T63/180pcs
HSK-T100/120pcs

Tool spindle parameters and specifications

Maximum speed of low speed coil: 6000rpm

Maximum power of low speed coil: 18.5kw/22kw

Rated power of low speed coil: 45.7

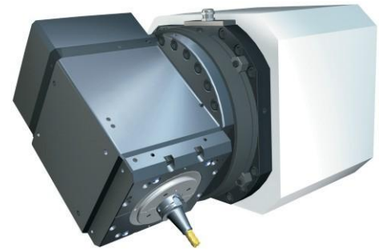
Maximum torque of low speed coil: 131N

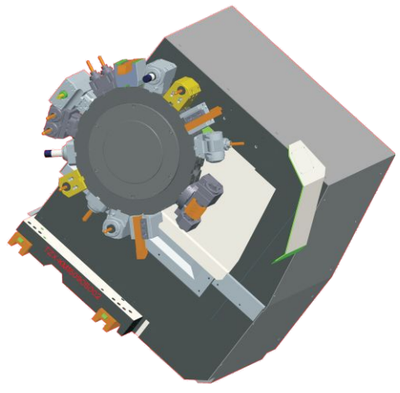
Maximum speed of high speed coil: 15000rpm

Maximum power of high speed coil: 30kw/36kw

Rated power of high speed coil: 29.4

Maximum torque of high speed coil: 47.7





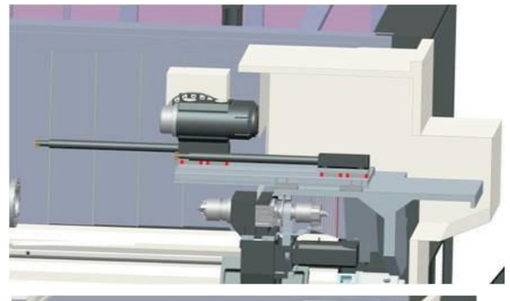
Select configuration the lower turret (Option)

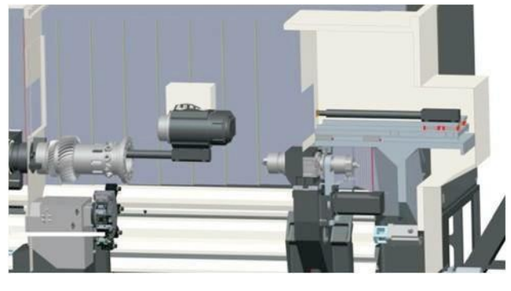
Selection I、BMT-45-16T

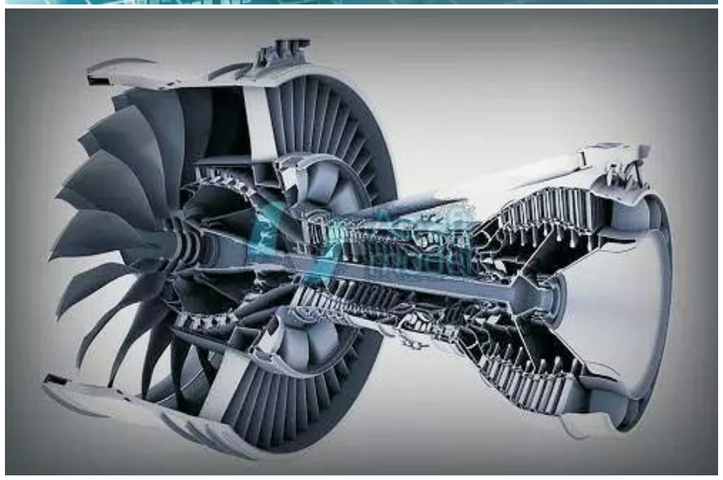
Selection II、MT-55-16T

Selected ConfigurationHydraulic servo tail center (Option)
Option One MT5
Option Two、MT6

Extended boring bar Φ Specifications
HSK-T63 Main Spindle Φ80x600mm
HSK-T100 Main Spindle Φ100x1000







Five-axis Linkage Machine Parts Processing Solution.

High performance/modern machine tools not only depend on the excellent design of the machine itself, but also It relies heavily on high-performance CNC systems. We're on the fifth axis

On the five-axis linkage system, DESUN SEIKI adopts the German Siemens 840Dsl as the optional configuration for the five-axis linkage machine tool.

With the aid of simple programming and a simulated German machine tool, the goal of rapid workpiece processing is achieved.

Optimize the processing beat

Shorten debugging time by easily finding errors on your computer. Collision pre inspection, complex parts require the use of ESPRIT programming software to check programming details. The simulation machine tool can truly simulate the processing state of the machine tool

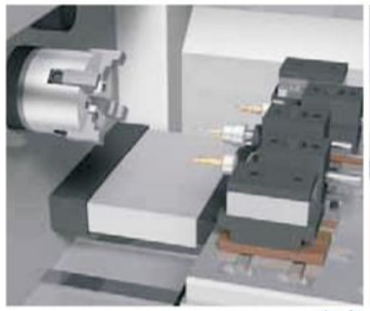
In addition to powerful programming, optimization, and simulation functions, ESPRIT software also provides collision prevention checks in 3D models, tool wear alarms, and interference between rotating tools, spindles, and workpieces. It is easy to achieve the true processing state of the machine tool on a computer.

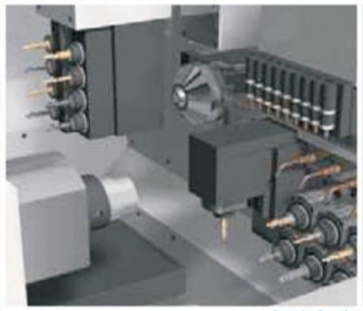
Strengthening the functions of the lathe system

Strengthening the functions of the lathe system

Significantly enhanced the functions of milling processing and multi axis and multi system control.

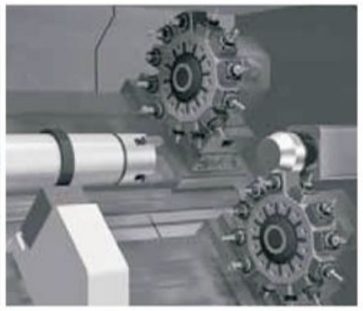
In addition, it also improves on-site handling, allowing for more complex processing to be carried out easily and efficiently.


车床


自动车床


立式车床

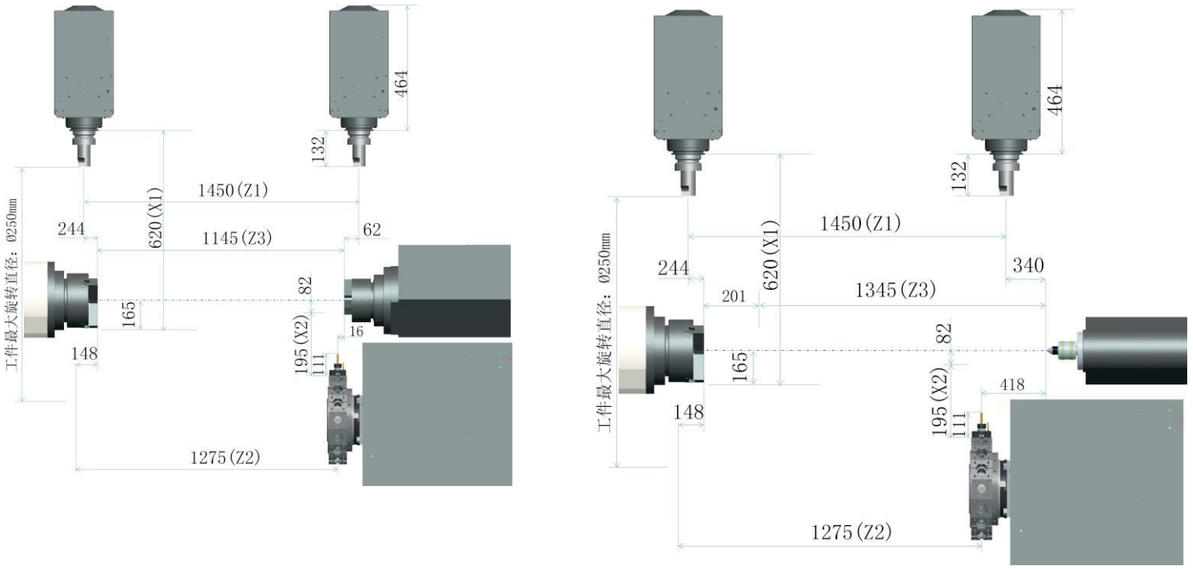

倒立车床

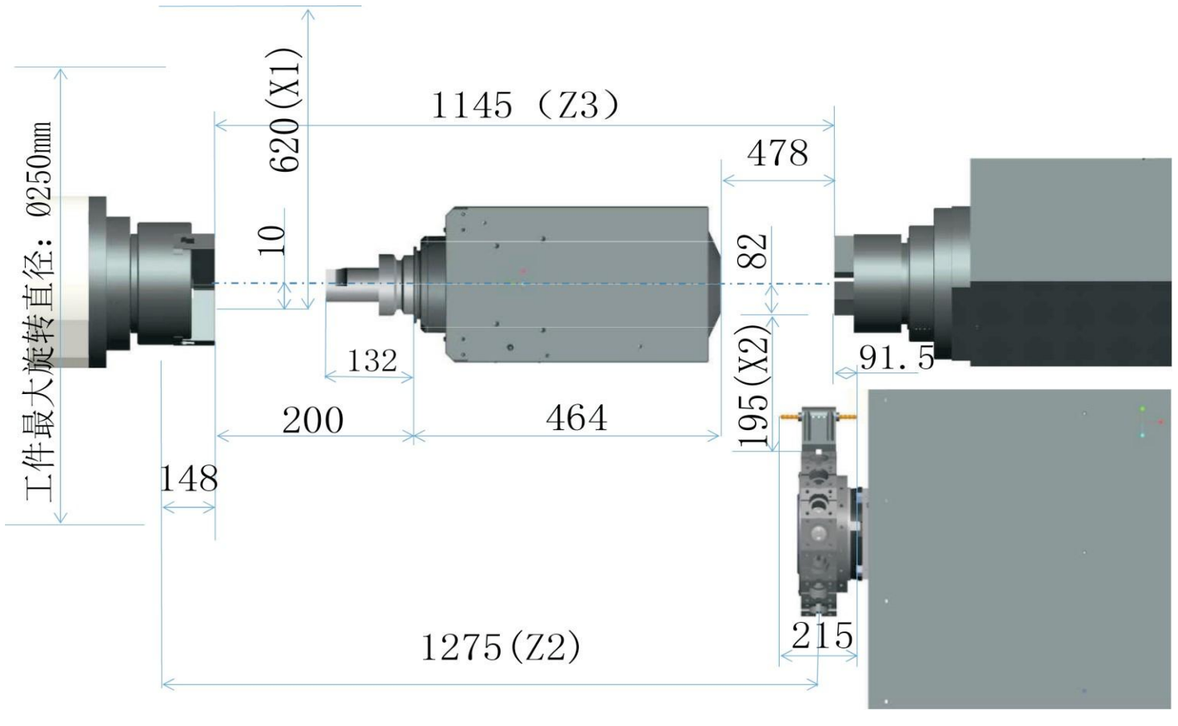

复合加工机

Can easily and efficiently perform more complex processing

Equipped with rich functions that support high productivity, it enhances the multi axis and multi system control function of milling processing by supporting high-speed and high-precision control and SSS control.

In addition, it greatly improves the functions commonly used by on-site personnel such as tool calibration and workpiece coordinate system compensation, greatly improving the ease of programming and making it easy to perform various more complex machining tasks.





Series / Specification		THX-800BSMCYY	THX-1250BSMCYY	THX-2000BTMCY	THX-2500BTMCY	THX-3000BTMCY
System		MITSUBISHI M80(Four axis linkage) Select configuration five axis linkage SIEMENS 840Ds1				
Maximum Rotation Diametermm		Ø650			Ø850	Ø1050
Maximum Processing Lengthmm		800	1250	2000	2500	3000
X1 Axis Trace mm		700				
X1 Axis Trace mm		600			750	950
Z1 Axis Trace mm		800	1250	2000	2500	3000
Y1 Axis Trace mm		±140	±140	±140	±200	
C1 Axis		360° /0.005mm				
xis Rotation Angle mm (Grating Ru		±125°				
X2 Axis Trace mm		250				
X2 Axis Trace mm		250				
Z2 Axis Trace mm		800	1250			
Y2 Axis Trace mm		±140	±140			
C2 Axis		360° /0.005mm				
Z3 Axis Trace mm		800	1250	2000	2500	3000
Tool Milling Spindle	Spindle Form/Tool Interface	HSK-T63				
	Spindle Rotation Speed rpm	50-12000				
	Spindle Power	7.5/15kw				
	Spindle Output Torque	62.3N/m/S1-1200 30/S6-3000				
Turrent Forms	Lower Turret Form (Optional)	Standard Configuration BMT-55-16T		Optional Configuration Hydraulic Center Frame		
	Tool Sizes	25x25				
	Power Motor	3.7kw				
	Maximum Speed	6000rpm				
	Inner Hole Tool Size	Ø32/Ø55				
Spindle	Spindle Form (Through Hole Diameter)	A2-5(Ø42)/ A2-6(Ø52)		A2-8 (Ø65)/A2-10(Ø105)/A2-11 (Ø165))		
	Spindle Motor Power	7.5kw/ 11kw/15kw/22kw/26kw/35kw				
	Spindle Chuck	5in/6im/8in/10in/15in/22in				
Auxiliary Spindle	Auxiliary Spindle Form	A2-4(Ø30)/A2-5(Ø42)				
	Auxiliary Spindle Chuck	5in/6in/8in/10in				
	Auxiliary Spindle Motor Power	7.5kw / 11kw/ 15kw/22kw				
Water Pump	External Cutting Pump	900w			900Wx2	
	Internal High-pressure Pump	40Bar			40Bar	
Hydraulic Tail Center	Types	MT4	MT5	MT6	MT8	Mr8
	Maximum Tool Capacity	Standard Configuration 24T(Optional Configuration 40T/60T/80T)				
	ATC Tool Grabbing Method	Rotary				
	ATC Drive Mode	Servo Stiffness				

Note: A represents A-axis swing, S represents secondary spindle, MC represents Y-axis kinetic energy, YY represents dual Y-axis, and T represents tail center