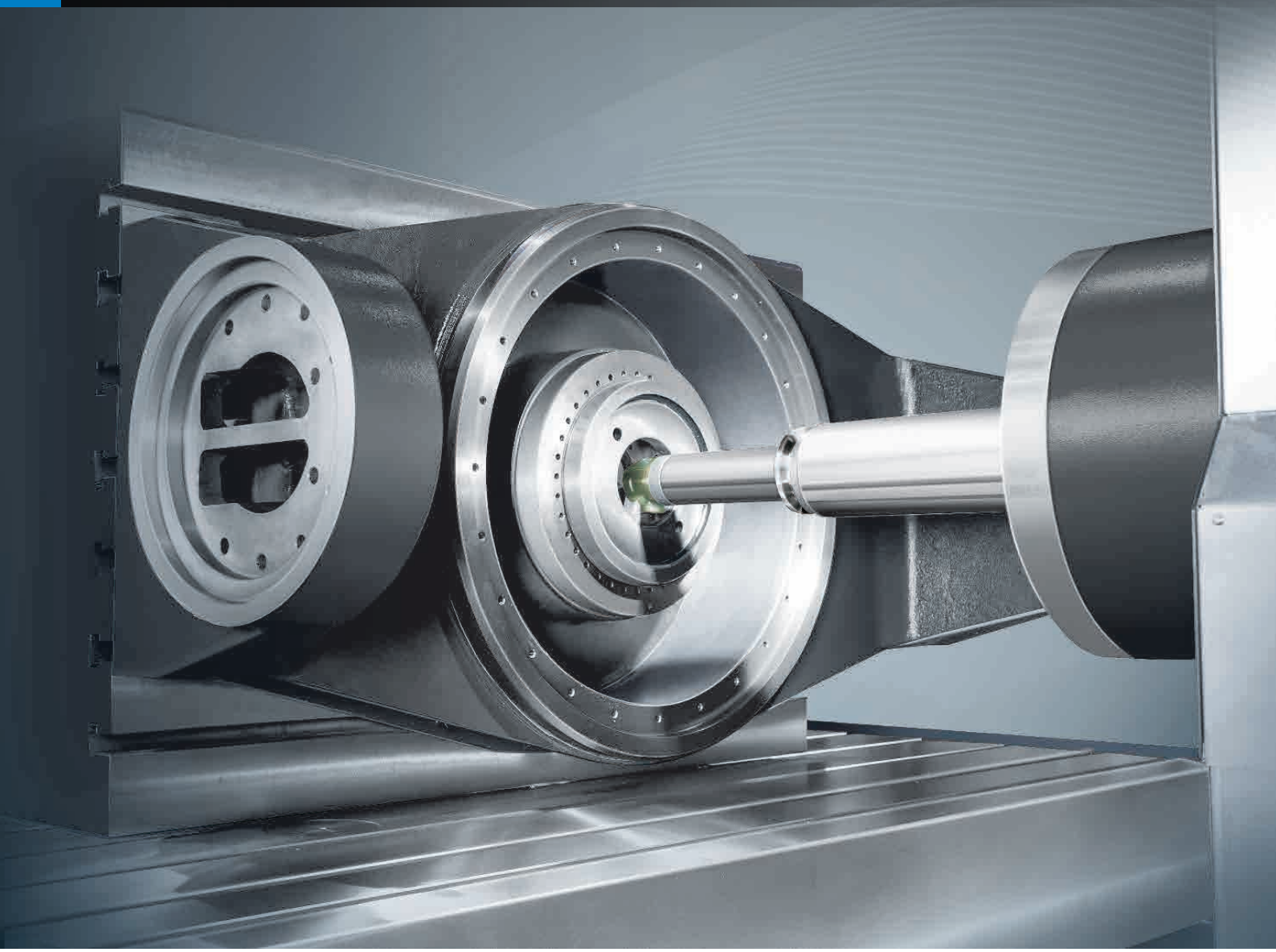
BT SERIES

Heavy-duty Horizontal Boring Mills



AWEA®
THE ULTIMATE MACHINING POWER

AWEA MECHANTRONIC CO.,LTD.

BT series | Heavy-duty Horizontal Boring Mills

Based on a solid cast iron bed, column, and a large-sized hardened box way structure, equipped with a super high-torque two-step spindle and a high-precision B-axis work table, the AWEA BT series not only possesses the high-precision horizontal boring capability of a horizontal boring mills but also offers unparalleled heavy cutting performance in the market. Whatever challenges in machining large-sized workpieces, the BT series can provide the optimal production solution.

Moving Column Structure Design

- The X & Z axes guide ways support the work table and column throughout the full travel, eliminating the issue of work table overhang typically found in fixed-column machine models, effectively ensuring cutting rigidity and machining precision.

High Torque Geared Spindle

- The two-step spindle provides an exceptionally high torque output of 3400 Nm within the low-speed range, making it particularly suitable for machining requirements involving difficult-to-cut materials and heavy cutting.

Compact Footprint

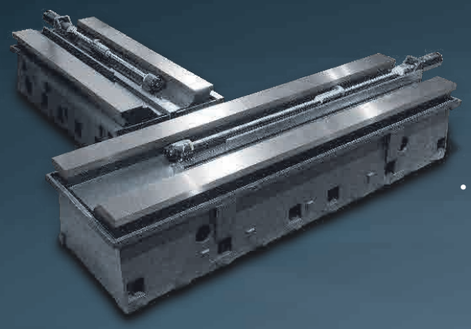
- The structure and sheet metal design are extremely compact, with the machine occupying an area of only about 36 m^2 (6 m x 6 m) . The nearly square proportion also ensures that BT series occupies minimal floor space in the factory.

Versatile Splash Guard

- Options include fully enclosed splash guard (w/roof or w/o roof) , depending on actual machining requirements. Additionally, users can opt for a dual-workstation APC system to enhance production efficiency.

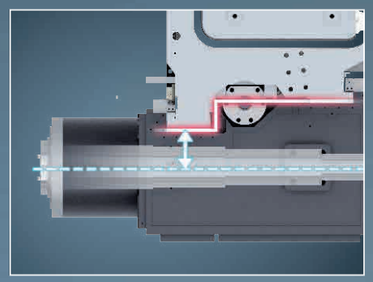
(BT-2520 with high-profile splash guard for the work table)

BT series | Heavy-duty Horizontal Boring Mills

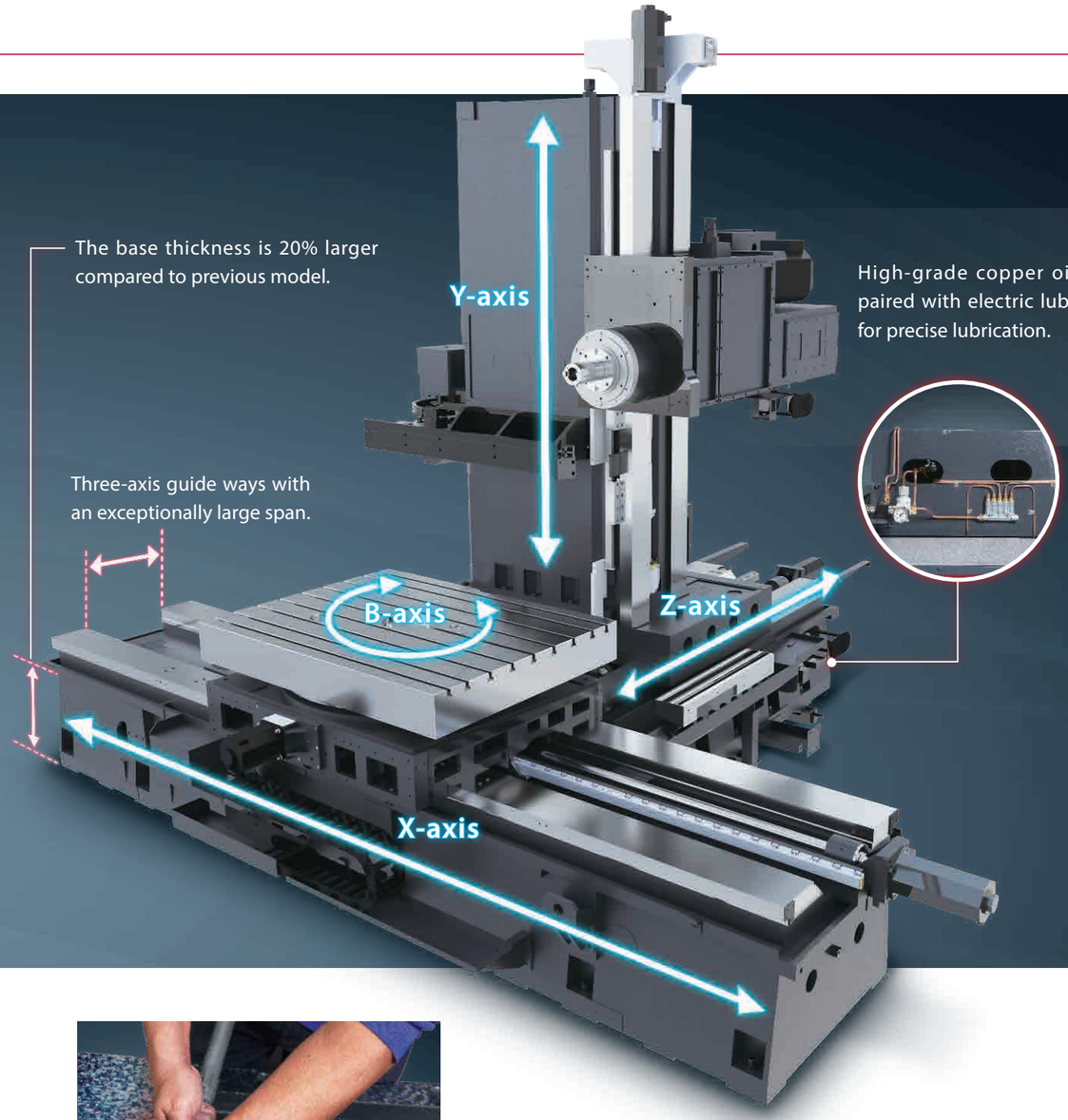


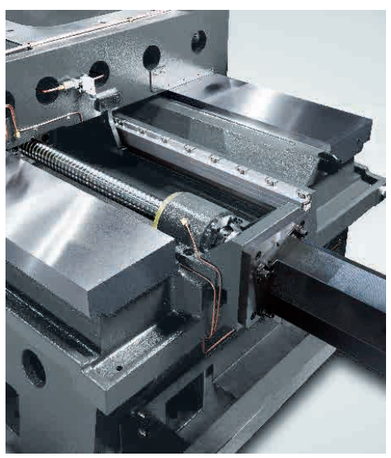
- The casting all featuring high-tensile Meehanite cast iron with high-performance reinforcing ribs, undergo strict annealing processes and aging treatments. This effectively eliminates internal stresses within the castings, meeting the long-term machining demands.
- The T-shaped machine base combines X & Z axes structure, enhancing the full travel support of work table and column to fulfill the demand of high table load at 10 tons capacity and superior accuracy.

- The Y-axis guide ways with offset design shortens the distance between guide ways and spindle center line which reduces vibration and thermal expansion of headstock while performing heavy cutting.
- The Y-axis feed system is balanced by counter balance, ensuring smooth movement without any stick slip phenomena in the Y-axis direction.



Y-axis guide ways with offset design



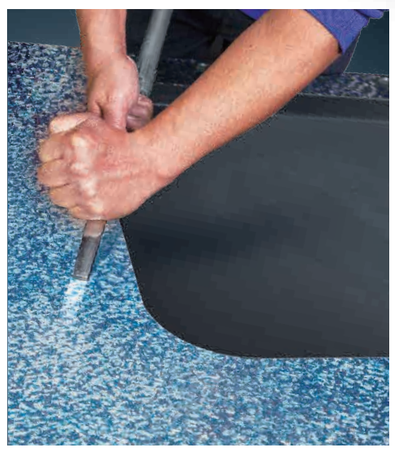


High Rigidity Box Ways

- X / Y / Z axes are equipped with super rigid box ways that have been heat-treated and precisely ground, for optimal heavy-duty cutting support.

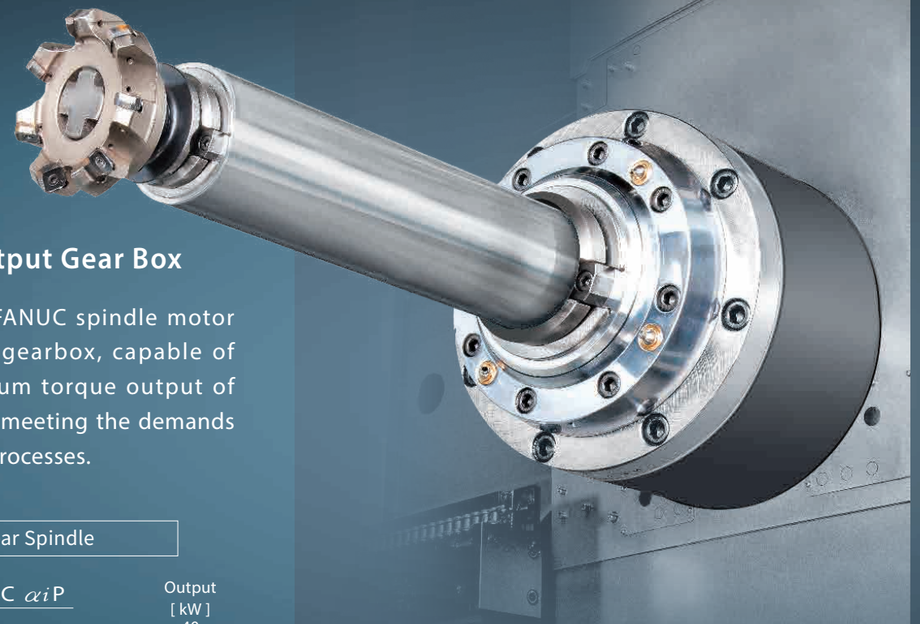
Large Diameter Ball Screws

- Ø63 mm large diameter ball screw combined with high-power FANUC servo motors, providing ample axial rigidity and thrust. The rapid feed rates on X / Y / Z axes can reach 18 m/min.



Precision Hand Scrapping

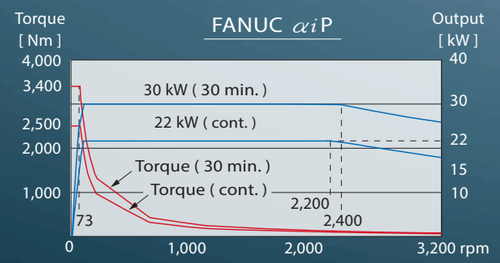
- Contact surfaces of work table, headstock, base, and column are precision hand scraped to provide maximum assembly precision, structural rigidity, and load distribution.



High Torque Output Gear Box

- 30 kW high power FANUC spindle motor driving a two-step gearbox, capable of delivering a maximum torque output of 3,400 Nm at 73 rpm, meeting the demands of heavy machining processes.

3,200 rpm Gear Spindle



- The spindle adopts a high-rigidity crossed roller bearing design, capable of withstanding extremely high axial, radial, and torque loads. Even during prolonged heavy cutting operations, the spindle can maintain ultra-high machining precision.

Long-nose spindle

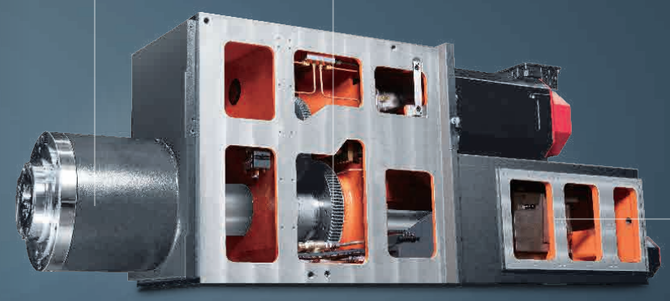
Long-nose spindle enables the use of shorter tools for machining, significantly enhancing cutting rigidity.

High-grade gears

Utilizing high-hardness nickel-molybdenum-chromium alloy steel material, providing the gearbox with an extended lifespan.

High-precision quill

The entire quill undergoes heat treatment followed by precision grinding, significantly enhancing rigidity and assembly accuracy.

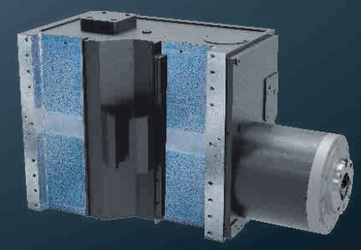


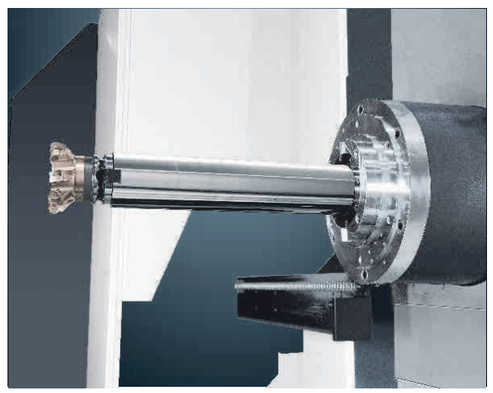
Wide-span y-axis guide ways

The large-sized, wide-span Y-axis guide ways are designed to resist cutting torque and thermal deformation to the maximum extent, ensuring cutting rigidity.

Precision hand scrapping

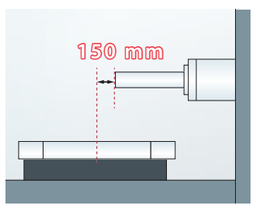
The sliding surfaces of the headstock are covered with top-grade wear-resistant Turcite B and meticulously hand-scraped for precision.





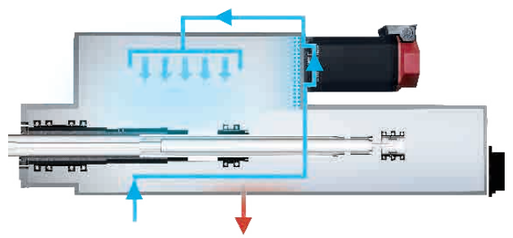
Quill Type Spindle

- Featuring a Ø110 mm spindle quill design with a maximum reach of 500 mm (W-axis), the spindle-to-table center distance is minimized to just 150 mm at the shortest, allowing for high-precision boring operations with standard-length cutting tools.



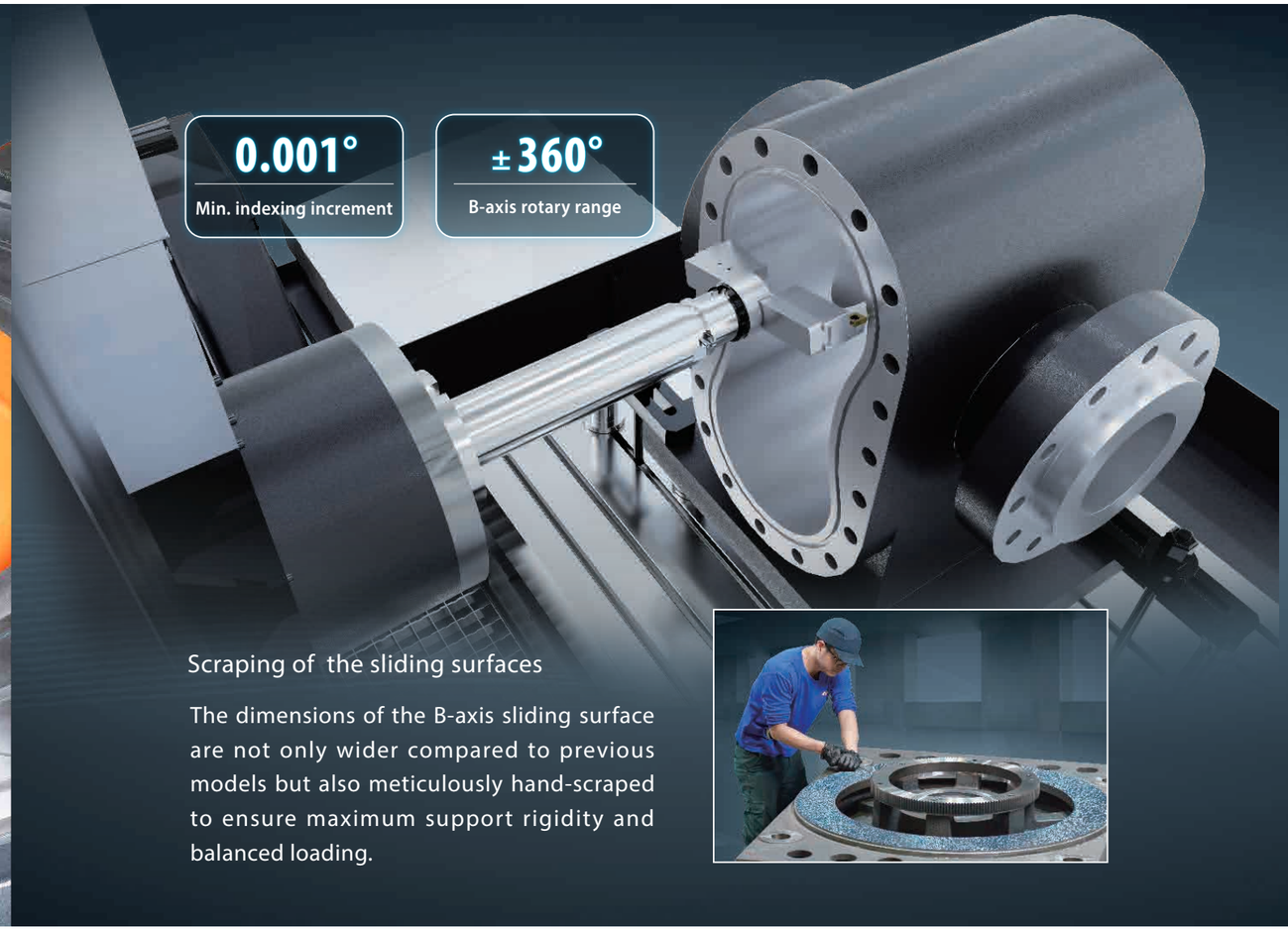
Efficient Cooling Measures

- A shower-style lubrication and cooling design, combined with an oil chiller maintaining temperature stability within ±0.1°, effectively suppresses thermal deformation that may occur during prolonged spindle operation.
- The bearings employ an automatic oil-mist lubrication design, providing optimal cooling with minimal lubricant usage.



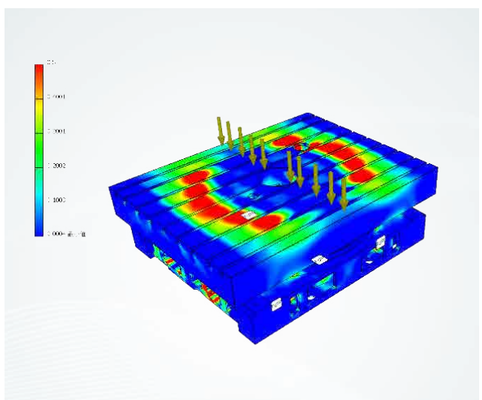
B-axis Driving Mechanism

- The B-axis driving mechanism adopts a design with two sets of high reduction ratio worm gears, providing precise transmission, extended lifespan and effective backlash elimination.
- After B-axis indexing and positioning, the work table is securely locked by multiple sets of hydraulic disc brake mechanisms, ensuring reliability of the B-axis throughout the machining process.
- The B-axis utilizes ultra-high precision tapered roller bearings paired with a high-resolution rotary optical encoder design, ensuring effective positioning accuracy for B-axis indexing.



Scraping of the sliding surfaces

The dimensions of the B-axis sliding surface are not only wider compared to previous models but also meticulously hand-scraped to ensure maximum support rigidity and balanced loading.

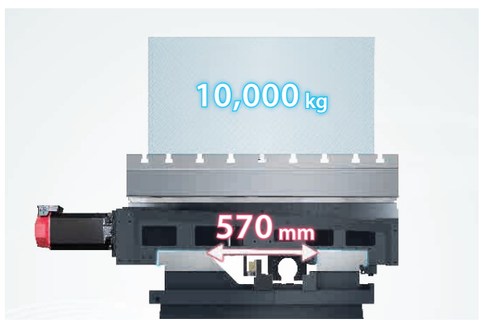


Super Rigid Work Table

- The work table boasts a thicker thickness and optimized rib design compared to similar models. Through FEM analysis, even under a maximum load of 10 tons, the work table with minimum deformation possible.

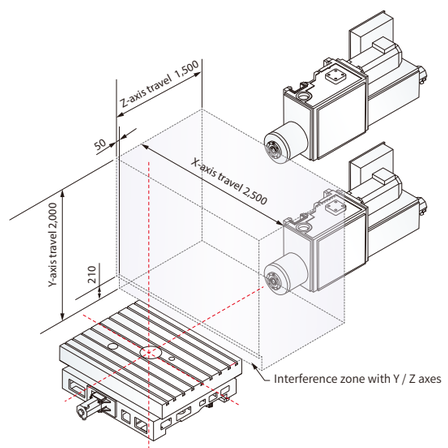
Work table	BT-2520
Table size (D x W)	1,400 x 1,800 mm
Table load capacity	10,000 kg
Max. swing diameter	Ø 2,400 mm
Max. work-piece height	2,000 mm

Wide-span Guideways Support for Work Table



Working area and max. workpiece size

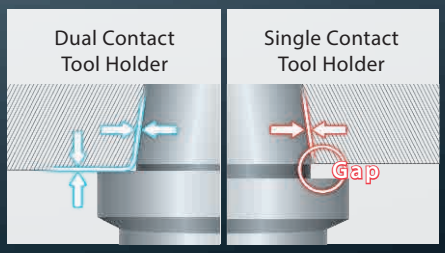
(Unit : mm)

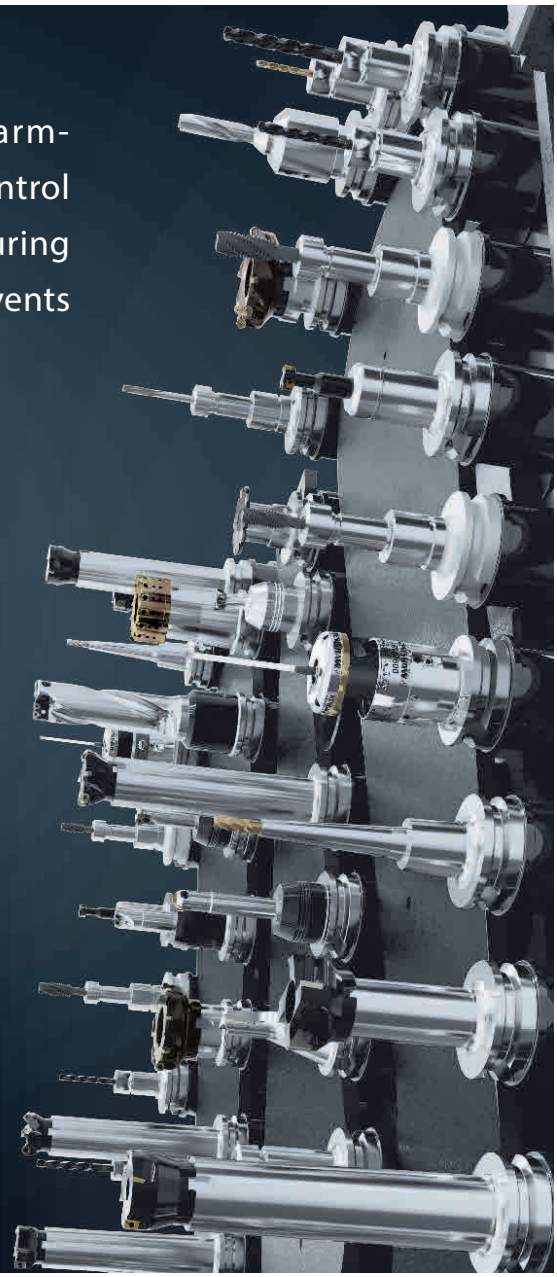


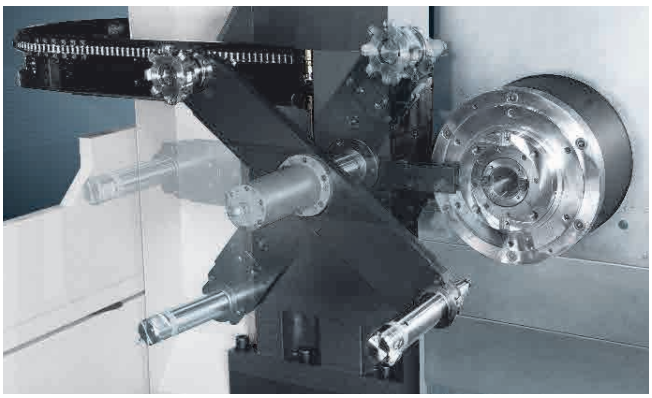
BT series | Reliable Arm Type Tool Magazine

The chain type tool magazine, paired with an arm-type ATC system, is designed for precision cam control throughout the entire tool changing process, ensuring smooth and reliable tool exchange. This design prevents accidental damage to the spindle taper hole.

- 60T chain type tool magazine as standard and optional for 90T, 120T to fulfill various machining demands.
- Sensors and sequence scanning ensure safety and reliability.
- BBT50 dual contact spindle efficiently suppresses tool vibration and therefore enhances cutting rigidity.





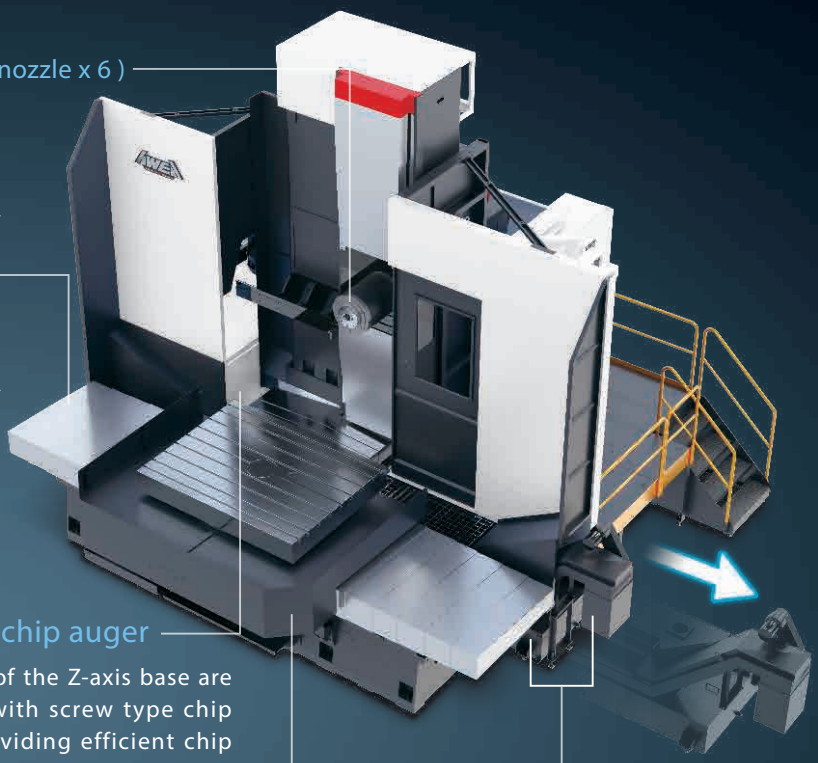


Chain type tool magazine	BT-2520
Tool magazine capacity	60T / 90T / 120T
Max. tool length	400 mm
Max. tool weight	25 kg
Max. tool diameter / adj. pocket empty	Ø125 / Ø250 mm

BT series | Chip Removal System

- Coolant nozzle around spindle (nozzle x 6)
- Spindle air curtain

- All axes are equipped with metal telescopic covers, ensuring long-term reliability with durable brush strips to maintain cover integrity.



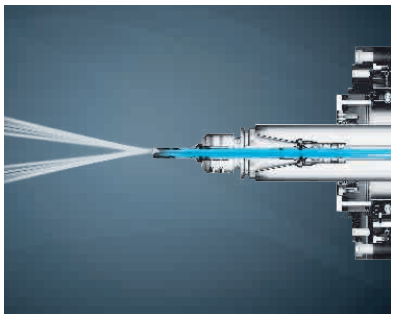
Screw type chip auger

- Both sides of the Z-axis base are equipped with screw type chip augers, providing efficient chip removal capabilities.

High-profile protective sheet metal for the work table

- Ensuring that the working environment outside the machining area is not contaminated by cutting fluid or chips.
- The troughs with a designed inclination angle facilitates the rapid removal of chips by cutting fluid from the machining area.

- 355 L large-capacity water tank ensures optimal cooling efficiency.
- The dimensions of the chip conveyor are optimized to effectively save floor space.



Coolant Through Spindle (Opt.)

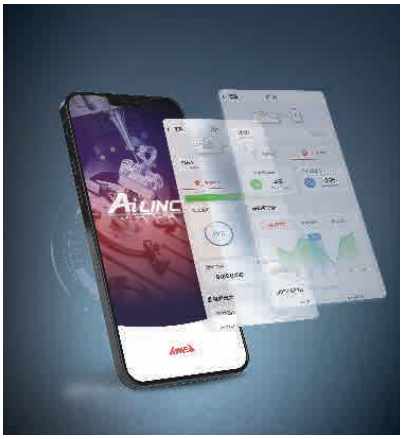
High Pressure Coolant System

- Optional high-pressure coolant system enhances machining speed and precision, improves chip evacuation capability, and prolongs tool life. Additionally, the automatic variable pressure control function enables consistent pressure for different diameter tools, simplifying manual pressure adjustments requirements.

BT series | Excellent Operability

AiLINC System

Assisting in reducing machining time, increasing machine utilization, and minimizing downtime frequency to make the machine smarter. Opt.

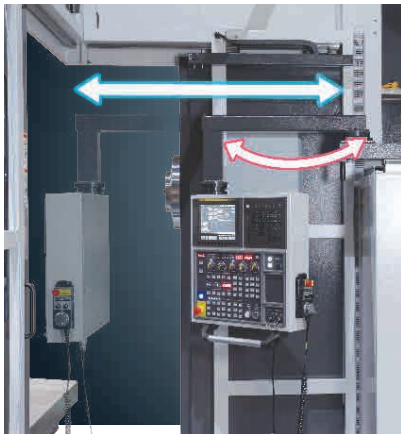


Smart Information APP

Assisting you in instantly monitoring machine status through your smartphone (requires the AWEA Smart Digital Communication Box). Opt.

Advanced Control System

Offering a variety of options including FANUC, MITSUBISHI, or SIEMENS controllers.



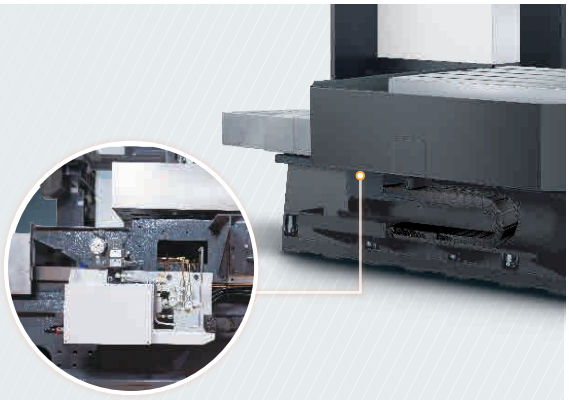
Pendant Control Unit

Double-opening Protective Door

Ample Workspace

Convenient Maintenance

- The hydraulic and pneumatic adjustment valves and pressure gauges of the work table are all located on the front side of the machine, making daily inspection and maintenance operations more convenient.

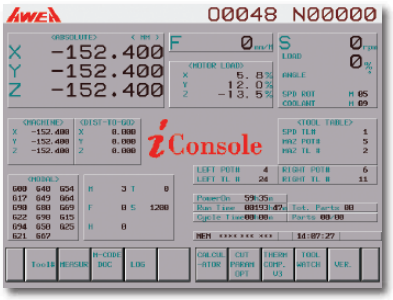


i Console

Optional

AWEA's self-developed i Console intelligent software enhancement system provides you with a user-friendly interface, real-time machine status information and diagnosis functions. It not only effectively reduces complex working processes but also enables intelligent machining abilities.

Main screen



- Instant messaging system
- Tool list
- Work-piece measurement
- M code
- Calculator

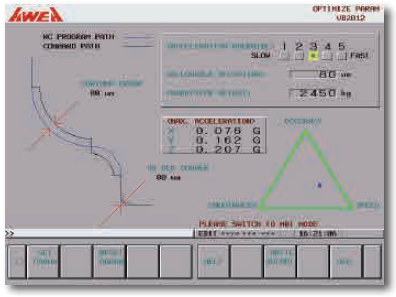
Opt.

- CNC parameter optimization
- Spindle thermal compensation
- Adoptive feed control (AFC)

Trouble shooting

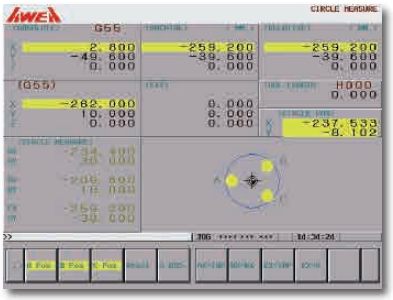
When an alarm appears, the program will display the cause for the alarm and a suitable troubleshooting procedure. Users can easily troubleshoot minor problems to avoid down time.

CNC optimized parameter



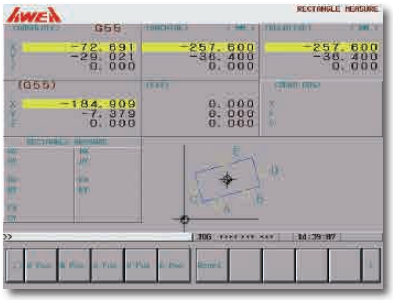
From rough cutting to fine machining, users can select different work modes, define the allowable tolerances and enter the weight of the work-piece. Based on this input the i Console program will modify machining parameters to reduce machining time.

Circular work-piece measurement



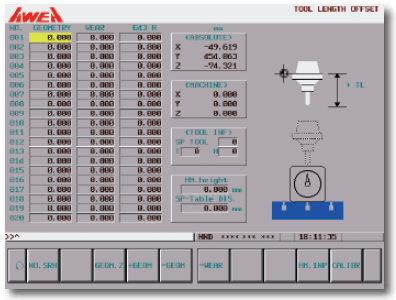
By measuring the A, B, C three points coordinates the circular work-piece's center point can be correctly calculated.

Rectangular work-piece measurement



By measuring the A, B, C, D, and E five points coordinates, the rectangular work-piece's center point and slant angle can be calculated. Then the center point coordinate can be entered in the work-piece coordinate system.(G54 – G59)

Tool length offset

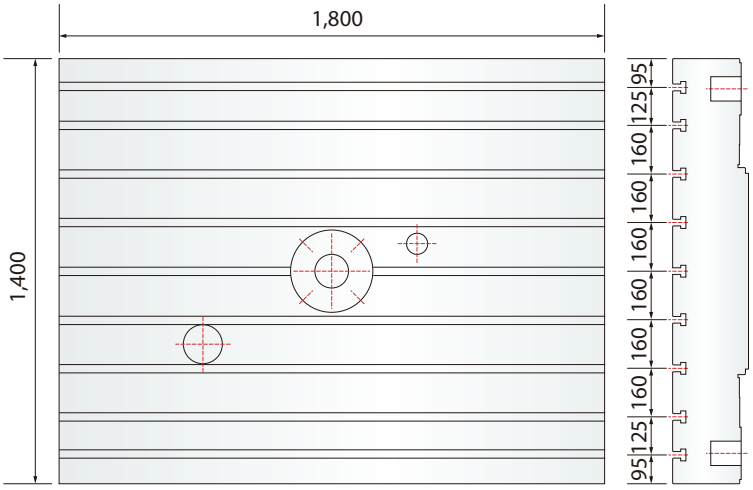


After manually measuring the tool length, the controller will automatically calculate the tool tip position and enter the data into the tool length offset table.

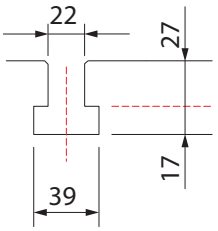
BT series | Dimensions

(Unit : mm)

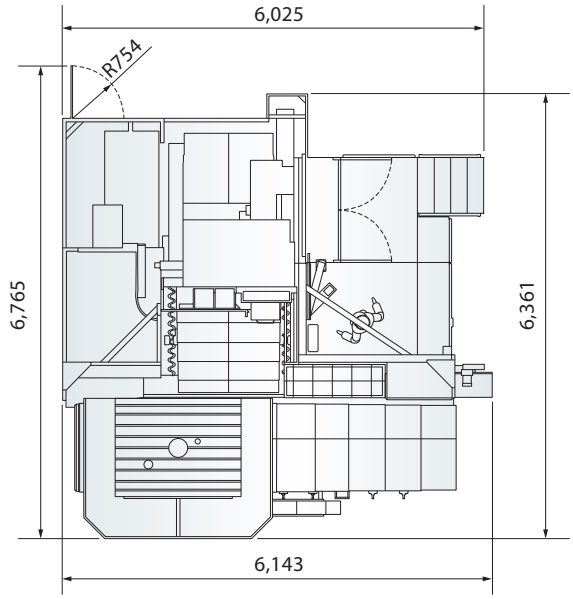
Table Dimensions

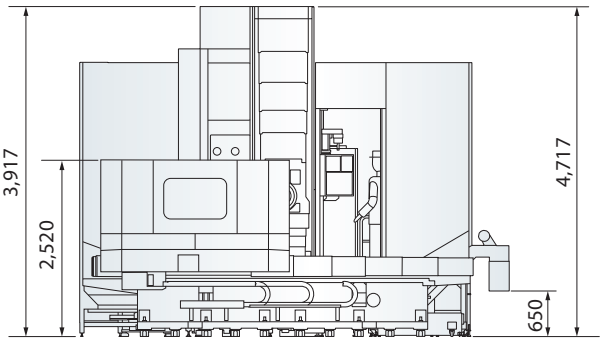


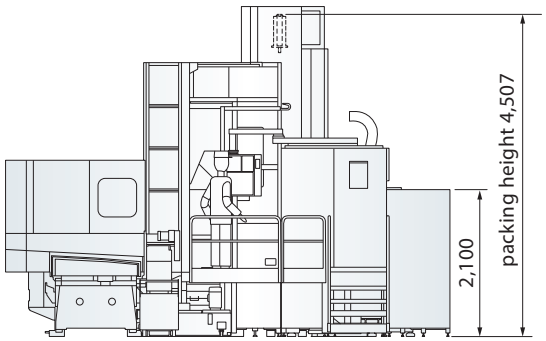
T-slot Dimensions



Machine Dimensions

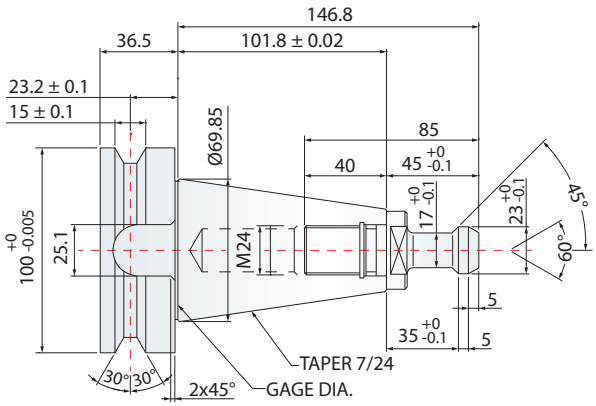






Tool Shank and Pull Stud Dimensions

BBT50



BT series | Specifications

		BT-2520
SPECIFICATIONS		
X / Y / Z axes travel	mm	2,500 / 2,000 / 1,500
W-axis travel	mm	500
Dist. from spindle center to table top	mm	0 ~ 2,000
Dist. from spindle nose to table center	mm	650 ~ 2,150
TABLE		
Table size	mm	1,400 x 1,800
Table indexing (B-axis)		0.001°
B-axis rapid feed rate	deg/min.	720
Table load capacity	kg	10,000
T-slot (width x no. x space)		22 mm x 9 x 160 mm
SPINDLE		
Spindle taper		BBT50
Boring spindle size	mm	Ø110
Spindle motor (cont. / 30 min.)	kW	22 / 30
Spindle speed	rpm	5 ~ 3,200
FEED RATE		
X / Y / Z axes rapid feed rate	m/min.	18
W-axis rapid feed rate	m/min.	6
Cutting feed rate	m/min.	10
TOOL MAGAZINE		
Tool magazine capacity	T	60
Max. tool length	mm	400
Max. tool weight	kg	25
Max. tool diameter / adj. pocket empty	mm	Ø125 / Ø250
ACCURACY		
Positioning accuracy (ISO230-2)	mm	A ≤ 0.01 / Full Travel
Repeatability (ISO230-2)	mm	R ≤ 0.008
GENERAL		
Power requirement	kVA	60
Pneumatic pressure requirement	kg/cm^2	6
Hydraulic unit tank capacity (pump)	liter (HP)	300 (3)
Lubrication oil tank capacity	liter	6
Coolant tank capacity	liter	355
Machine weight	kg	33,000

Specications are subject to change without notice.

Standard Accessories

- X / Y / Z / W / B axes optical linear scale
- 2-step gear spindle
- Standard splash guard + chip collector for table
- Spindle cooling system
- Centralized automatic lubricating system
- Automatic power-off system
- Caterpillar type chip conveyor and bucket
- Coolant equipment system (Pump & tank)
- Heat exchanger for electrical cabinet
- Air gun and alarm light
- Foundation bolt kit

Optional Accessories

- Full enclosure / Full enclosure with roof splash guard
- Air conditioner for electric cabinet
- 90T / 120T Arm type tool magazine
- Transformer

BT series

THE ULTIMATE MACHINING POWER

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ISO 9001 ISO 14001 CE

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