



We lead the way by a new business model



WELE MECHATRONIC CO., LTD
(<http://www.welegroup.com>)

HEADQUARTERS:
No.458, Shinsing Rd., Hukou Town, Hsin-Chu County 303
TEL : +886-3-696-0360 (rep.) FAX : +886-3-696-0370

TAICHUNG BRANCH:
No.356, Sanfeng Rd., Houli Dist., Taichung City 421
TEL : +886-4-2558-0762 FAX : +886-4-2558-2334

WELE MECHATRONIC (SU-ZHOU) CO., LTD.

No. 16, Fuhua Rd., Changshu Economic Development Zone,
Changshu City, Jiangsu Province
TEL : +86-512-5229-7868 FAX : +86-512-5229-7866
SALES: 150-5141-3969,150-5141-3981



16052402 MacdS TEL:04-2753326

RB SERIES

Double Column
Machining Center ▶▶▶▶▶



WELE MECHATRONIC CO., LTD

Compact Fixed Column Machining Center Rigidity Bridge series



The shown figures RB-212 include optional roof enclosure splash guard and direct driven spindle as accessories.

The basic configuration

Including every vital component for demanding machining.

- Electrical handwheel with axis selector.
- Integrated spindle oil cooler; temperature controlled via sensors.
- 32 tool magazine with automatic tool change system.
- Convenient foot switch for manual tool setup.
- Digital controller AC servo motors with encoder in the X & Z axes.
- Central lubrication system for all guideways and ball screws.
- Twin augers for full travel in X axis & Caterpillar type conveyor for chip remove efficiency.
- Machine status signal lamp.

High Speed, High Performance, and High Rigidity bridge machining center developed by advanced technical team

- Developed for high precision, heavy duty, and high performance on the smallest bridge range.
- One piece bridge and bed casting provides excellent performance machining.
- All-axes using ultra-heavy loading, high accuracy, low friction coefficient, and 0.003~0.005 roller guide ways saves at least 40% energy consumption.

Innovative & Sturdy structure design

As thermal displacement symmetrical, uniform box type main body structure with user friendly operational design, provides the foundation of machine accuracy.

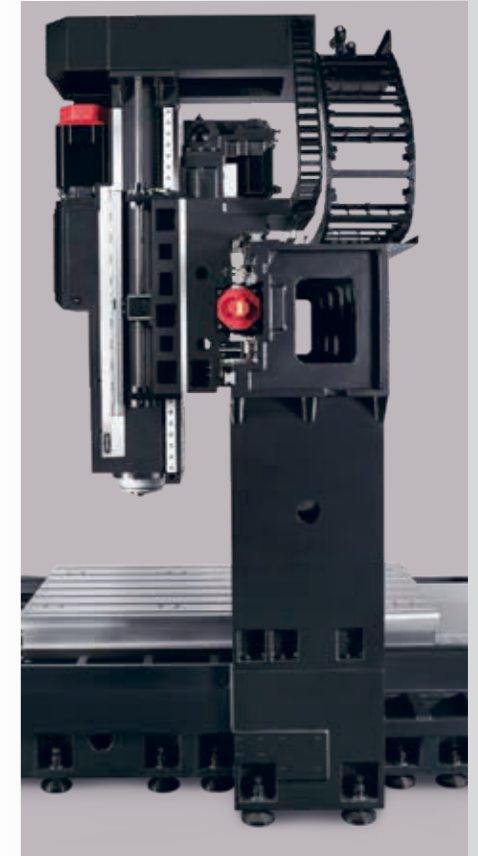
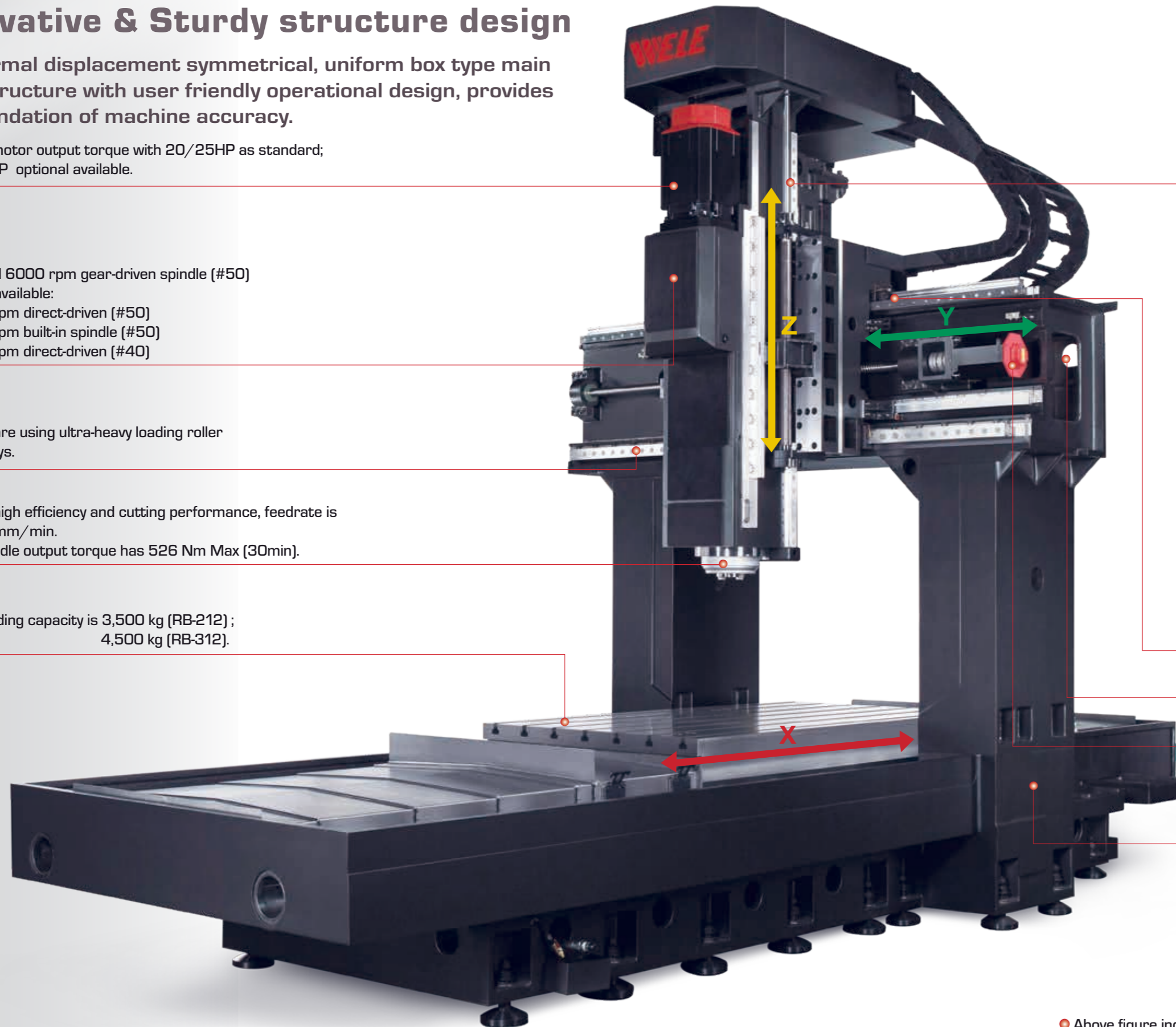
- Spindle motor output torque with 20/25HP as standard; 25/30HP optional available.

- Standard 6000 rpm gear-driven spindle (#50)
- Options available:
 - 10000 rpm direct-driven (#50)
 - 12000 rpm built-in spindle (#50)
 - 15000 rpm direct-driven (#40)

- All axes are using ultra-heavy loading roller guide ways.

- Provide high efficiency and cutting performance, feedrate is 10,000 mm/min.
- High spindle output torque has 526 Nm Max (30min).

- Table loading capacity is 3,500 kg (RB-212); 4,500 kg (RB-312).



- RB series includes twin hydraulic counter balancer in Z axis.

- Y axial roller guide way on up and bottom. Furthermore increasing the span of saddle seat's guide way; Providing more stronger structure and machining ability.

- Designed for super wide section beam.

- Max. rapid feed up to 24m/min (X,Y axes).

- Bridge casting made in one piece; Providing high rigidity and machining performance.

Unit: mm (inch)

	RB212	RB312
X travel	2120 (83.5)	3060 (120.5)
Y travel	1200 (47.2)	
Z travel	800 (31.2)	

- Above figure indicates the RB-212 standard machine without sheet metal, but within optional Y, Z axes linear scales feedback system.

Genius Design and Experienced Technology



- Machine accuracy is based on flatness less than $3\ \mu\text{m}$ in 1.2m by 1.2m. (JIS 0 grade standard: flatness less than $7\ \mu\text{m}$ in 1m by 1m).



- Keep improving MC quality by the strict accuracy control and machining test data through high precision 3D CMM measuring equipment WENZEL (Germany).



- Own developed key component capable to keep high performance and geometric accuracy quality.

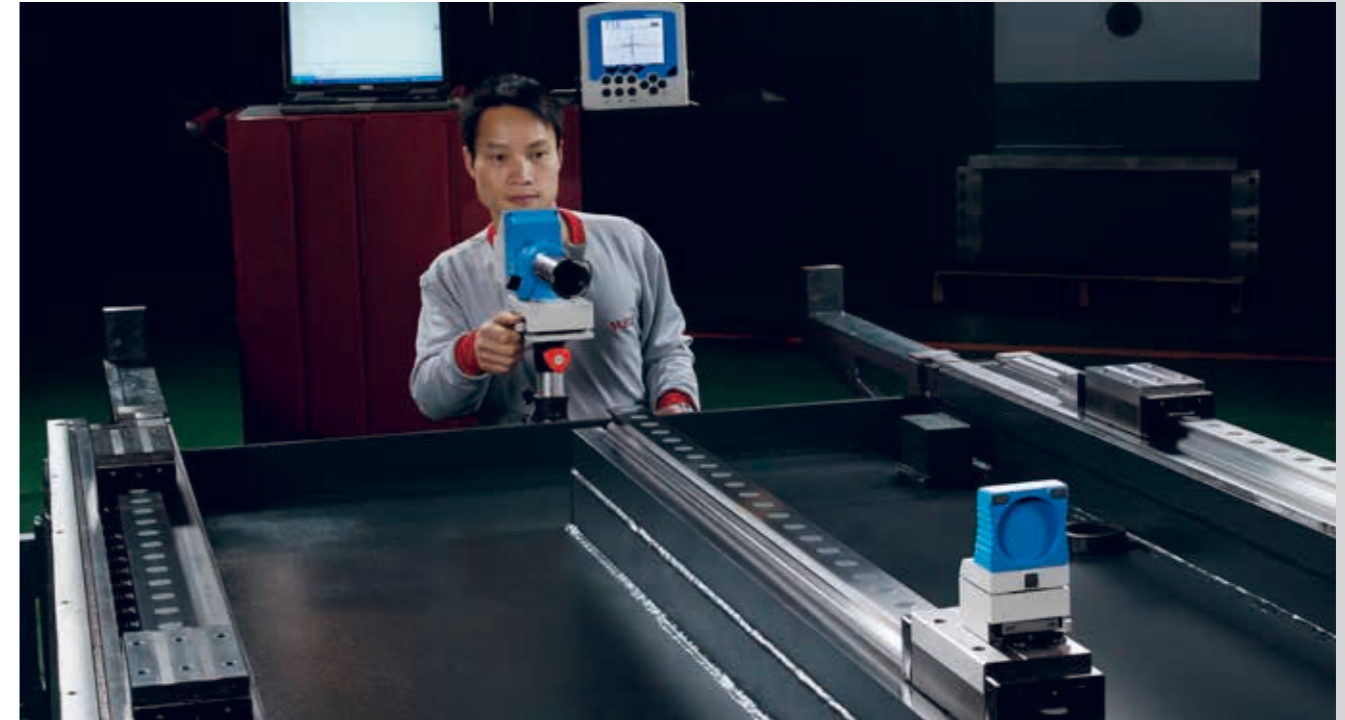


- Gear transmission trial run to conform spindle noise and temperature variation to stable condition.



- More than 20 years design and manufacture experiences to build every spindle through dynamic balance check with constant temperature control.

Strictly Quality Assurance



- 50% higher than JIS standard make excellent quality and geometric accuracy by German standard VDI 3441.



- Positioning and repeatability accuracy measurement.



- Circular interpolation test



- NASA standard test process guarantees machine performance with geometric and dimension accuracy.



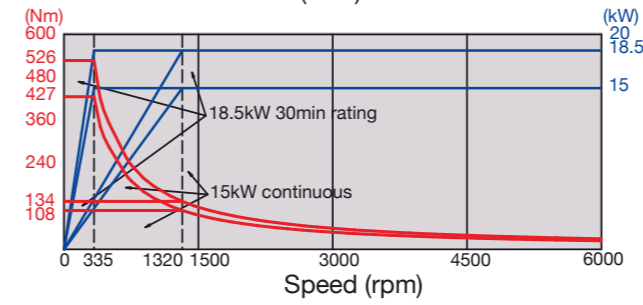
- Noise and vibration measurement.

Powerful spindle

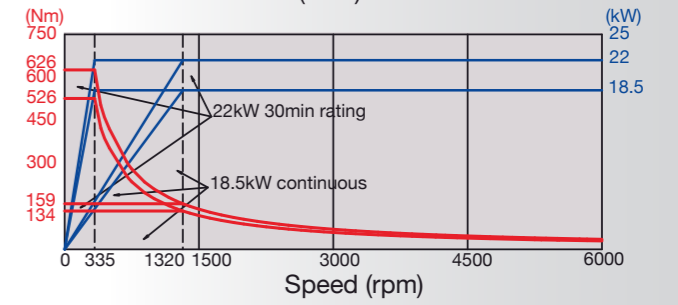
Two speed geared transmission box adoption can successfully ensure ultra heavy-duty and combined rough machining jobs. Several optional direct-driven spindles are also available for light alloy material or high speed machining requirements.

Spindle Torque chart

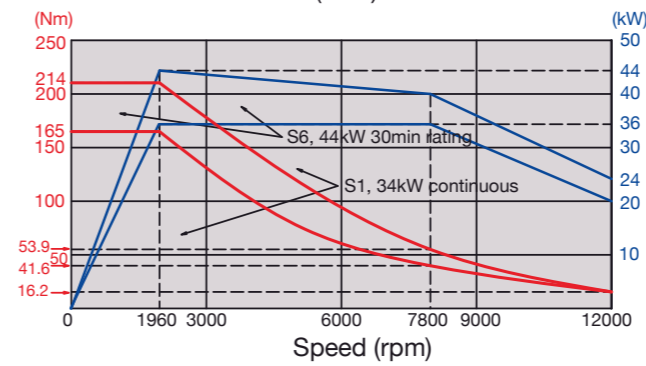
Speed up to 6000 rpm with gear-driven of Faunc α 15/7000i Spindle Motor (20 / 25 HP) (STD)



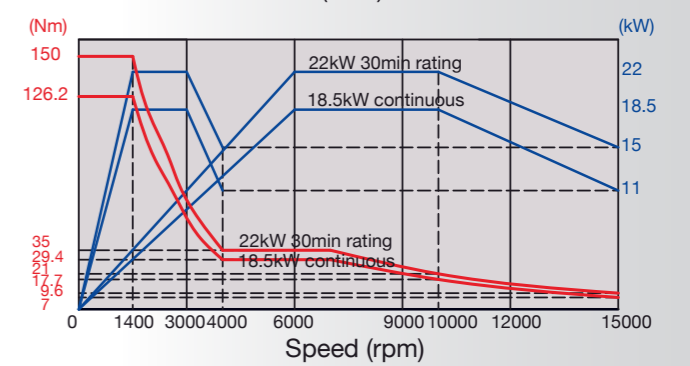
Speed up to 6000 rpm with gear-driven of Faunc α 18/7000i Spindle Motor (25 / 30 HP) (OPT)



Speed up to 12000 rpm with built-in driven of Spindle Motor (45 / 59 HP) (OPT)



Speed up to 15000 rpm with direct-driven of Faunc α 15/15000iL Spindle Motor (25 / 30 HP) (OPT)



Outstanding Machining Performance



Face milling with 6000 rpm geared spindle	
Material	S45C
Tool diameter	ϕ 125mm
Speed	477 rpm
Cutting width	80 mm
Cutting depth	6 mm
Feedrate	900 mm/min
Spindle motor power	15 kW
Removal rate	28.8 cc/min-kW
Cutting capacity	432 cc/min

Leading and Reliable Electrical Technology

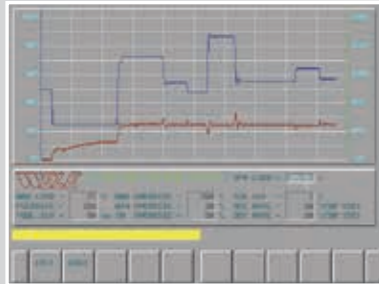
- Friendly operator control panel.
- On AUTO mode, execute tool exchange at magazine side.
- Prevent over travel (OT) error in operation
- High efficiency heat exchanger to cooling the electrical cabinet
- UL wiring and CE certification are optional available.
- Centralize automatic lubricating system on all axial guideway and feed system.
- Design for monitor of spindle overloading and protection.
- Auto-backup function for machine parameters.
- USB interface for data transfer.
- Mix type tool number management including random and fix Tool#.
- Trouble shooting screen in NC memory.
- Standard is AICC look ahead in 200 blocks/sec. ; 600, 1000 blocks/sec. are optional available.



Advance Technology and Convenient Functions

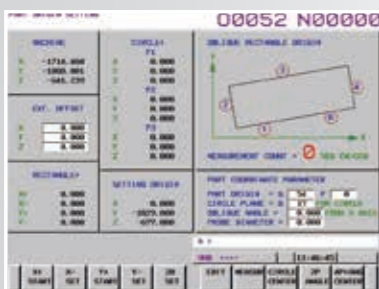
Thermal Compensation Mode (TCM-Option)

Environmental and machining temperature can bring the caused the machine deformation. An unique technology of thermal compensation function can be reduced the machine error correctly.



Feed Adaptive Control (FAC)

To provide the customer increase their working efficiency. We called it FAC (Feed Adaptive Control). It does not need any adjustment the machine can reach a perfect cutting condition while the machine in operation.



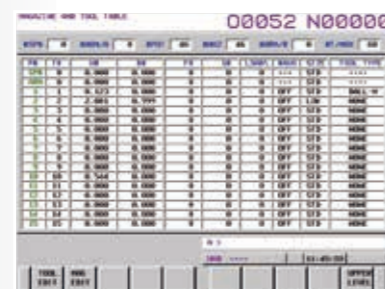
Oblique Part Origin (OPO)

The function is not only create the reference points in one workpiece but also calculates the length, width, and diameter of workpiece. and it will be defined the workpiece dimension rapidly.



Tool Magazine Panel and I/O diagnose

To provide the customers diagnose the tool magazine's I/O status be conveniently and do the trouble shooting.



Tool Table Management (TTM)

The WELE Tool Table has its advantage as below:

- Tool number management
- Geometric compensation
- Cutting condition setting
- Random tool management.

Mentioned above function can be provided to meet the requirement of the customer.



Optimum Contour Cutting Parameter (OCCP)

WELE own developed the unique optimized cutting condition software which can be adjusting the cutting condition automatically according to the machine response presently. When the machine is using for a while, the optimized cutting condition software can be detected the variation of the machine performance and verify the parameter in accordingly.

User Friendly and Ideal Design



- Super wide operator door (full open). Easy to load and unload the workpiece.



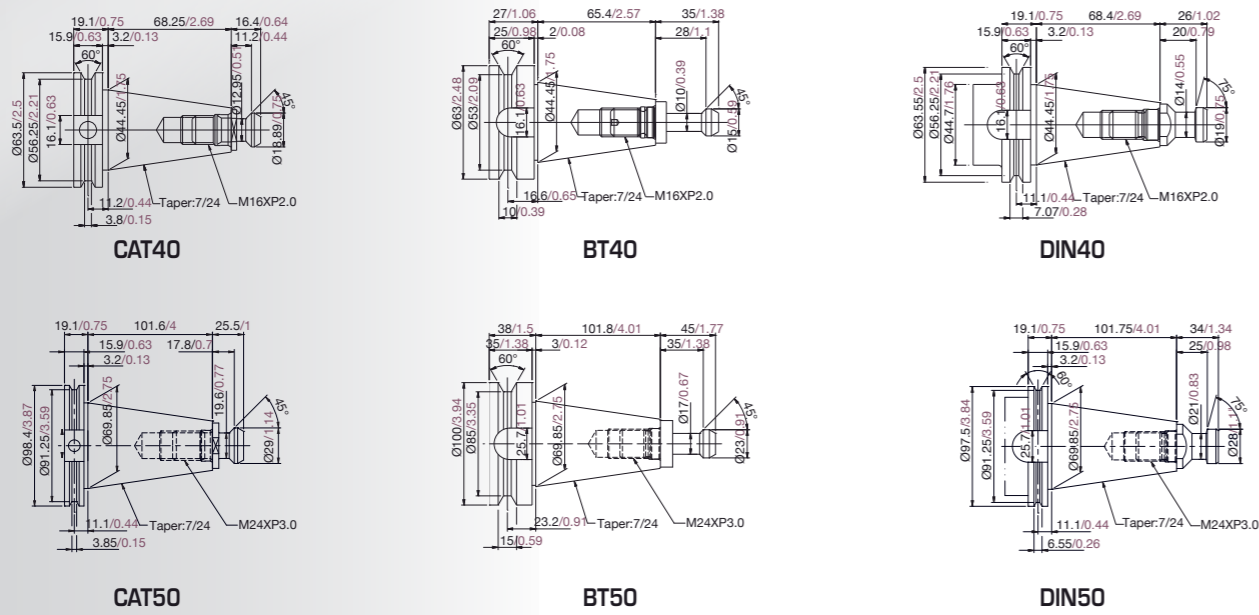
- Provide within operator panel for trouble shooting step by step. And the footswitch for tool exchange by manually.



- Compact design for easy maintain and checking.

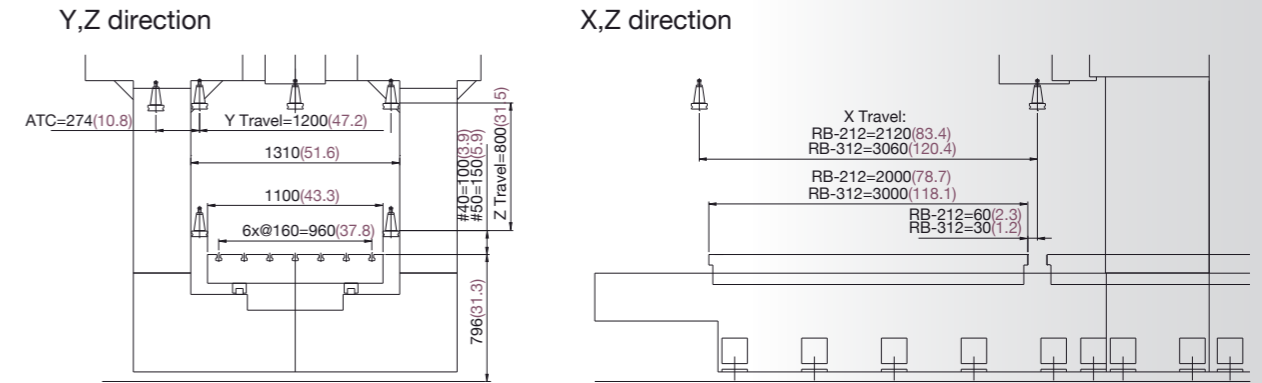
Tool Shank and Pull Stud Dimensions

Unit: mm (inch)



Inside of Working Area Dimensions

Unit: mm (inch)



Machine Dimension and Space Requirement

Unit: mm (inch)

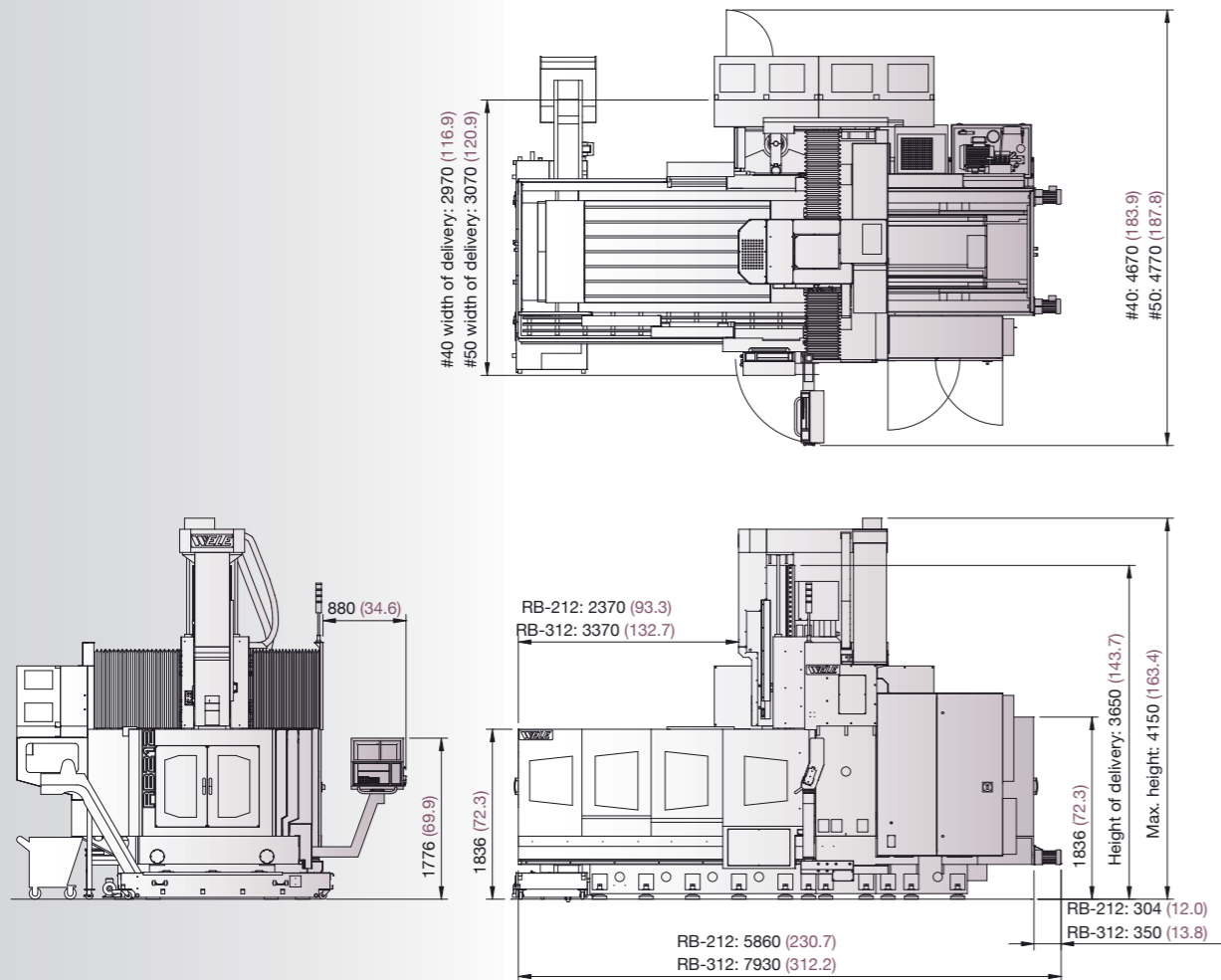
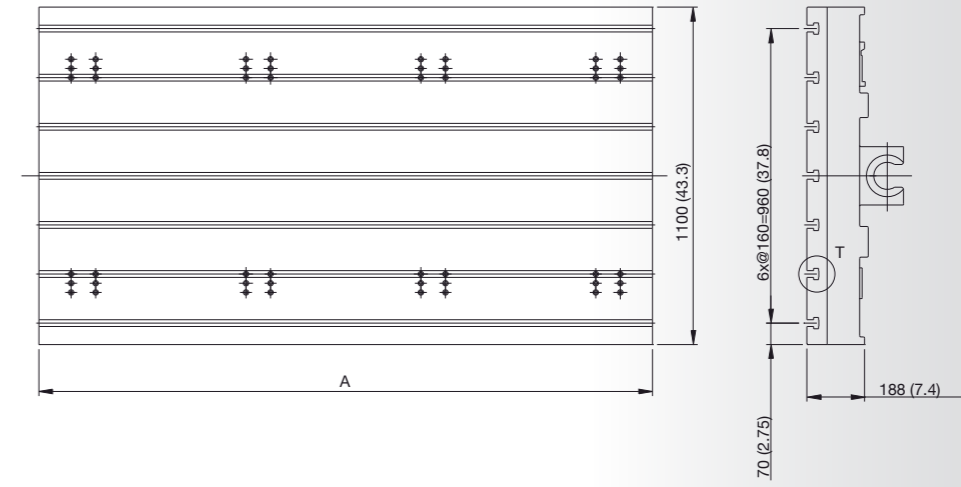
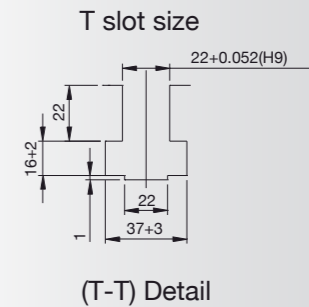


Table Dimensions



Unit : mm (inch)		
	RB212	RB312
A	2000 (78.7)	3000 (118.1)



(T-T) Detail

Specification

Specification \ Model	UNIT	RB-212	RB-312
Travel			
X travel (Left & right)	mm (in)	2120 (83.5)	3060 (120.5)
Y travel (in & out)	mm (in)	1200 (47.2)	
Z travel (up & down)	mm (in)	800 (31.5)	
Distance from spindle nose to table top	mm (in)	150-950 (5.9-37.4)	
Distance between columns	mm (in)	1300 (51.2)	
Table			
Table size (X direction)	mm (in)	2000 (78.7)	3000 (118.1)
Table size (Y direction)	mm (in)	1100 (43.3)	
Table load capacity	kg (lb)	3500 (7716)	4500 (9921)
Table T slot size (W x distance x number)	mm (in)	22x160x7 (0.866x6.3x7)	
Spindle			
Spindle motor (cont./30 min. rating)	kW (HP)	15/18.5 (20/25)	
Spindle driven type		Gear Driven	
Spindle speed	rpm	10-6000	
Spindle output torques (cont./ 30 min. rating)	Nm	426.7/526.3	
Spindle taper		BT#50 (ISO 50)	
Spindle clamping force	kg (lb)	1800 (3968)	
Feedrate			
Rapid traverse rate (X axis)	mm (in)/min	24000 (944.9)	
Rapid traverse rate (Y axis)	mm (in)/min	24000 (944.9)	
Rapid traverse rate (Z axis)	mm (in)/min	15000 (590.6)	
Cutting feedrate (max)	mm (in)/min	1-10000 (0.04-393.7)	
Tool magazine			
Tool magazine capacity	pockets	32	
Max. tool diameter / adjacent pocket empty	mm (in)	127/215 (4.9/8.5)	
Max. tool length (from gauge line)	mm (in)	400 (15.7)	
Max. tool weight	kg (lb)	15 (33)	
Accuracy			
Positioning accuracy (JIS 6338)	mm (in)	±0.005/full travel (±0.0002)	
Positioning accuracy (VDI 3441)	mm (in)	P ≤ 0.020 (P ≤ 0.0008)	P ≤ 0.025 (P ≤ 0.001)
Repeatability (JIS 6338)	mm (in)	±0.003 (±0.00012)	
Repeatability (VDI 3441)	mm (in)	Ps ≤ 0.015 (Ps ≤ 0.0006)	Ps ≤ 0.020 (Ps ≤ 0.0008)
Other			
Total required power (AC220V ± 10%, 3 Phase, 60/50 Hz)	kVA	40	
Pneumatic pressure requirement	kg/cm ²	5	
Lubrication oil tank capacity	liter (gallon)	4.6 (1.21)	
Axis guide-ways		Linear ROLLER WAY	
Space requirement			
Machine length (area required)	mm (in)	5900 (232.3)	7930 (312.2)
Machine width (area required)	mm (in)	3550 (139.8)	
Machine height	mm (in)	4150 (163.4)	
Machine weight	kg (lb)	18000 (39683)	23000 (50706)

**Product specifications and accessories are subject to change without notice.

Standard & Optional accessories

● : Standard ○ : Option

Specification \ Model	RB-212	RB-312
*BT50 spindle taper+MAS pull stud	●	●
*DIN50 spindle taper	○	○
*CAT50 spindle taper+ANSI pull stud	○	○
*6000 rpm geared spindle (20/25HP)	●	●
*6000 rpm geared spindle (25/30HP)	○	○
*10000 rpm direct driven spindle (35/40HP) BBT50	○	○
*12000 rpm built-in driven spindle (45/59HP)	○	○
*15000 rpm direct driven spindle (25/30HP) BBT40	○	○
*Column raise up for 200mm	○	○
*Spindle & gearbox temperature control system	●	●
*Torque monitoring function	●	●
*External pulse coder	●: X, Z	●: X, Z
*Centralized automatic lubricating system	●	●
*Sliding operator's door	●	●
*Flood Coolant system (Pump & tank)	●	●
*Roof enclosure guarding system	○	○
*Recycling lubricating oil collector for 3 axes	●	●
*Twin screw & caterpillar types conveyor and bucket	●	●
*Rigid tapping	●	●
*Footswitch for tool clamping	●	●
*Remote handwheel control	●	●
*Work light	●	●
*Operation cycle finish and alarm lights	●	●
*Spray hose for chip wash down	●	●
*Heat exchanger to refit air-conditioning for electric cabinet	○	○
*Oil Skimmer	○	○
*Foundation bolt kit	●	●
*Machine manuals	●	●
*Linear scale feedback system for 3 axes	○	○
*Coolant through the tool adapter	○	○
*Coolant through the spindle (Form A) w/1000 liter tank	○	○
*Automatic tool length measurement (Renishaw or Blum)	○	○
*Automatic workpiece measuring system (Renishaw or Blum)	○	○
*FANUC 31iMB controller	●	●
*Heidenhain TNC 640 controller	○	○
Mitsubishi M830 controller	○	○
*4th axis interface prepared	○	○
*CNC rotary table	○	○

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