



A JTEKT Strategic Alliance Partner

Double Column and Gantry Type Vertical Machining Centers

UB Series – Universal Bridge



WELE Mechatronic New Facility – Hsinchu Factory

WELE Mechatronic Facility – Taichung Factory





A JTEKT Strategic Alliance Partner

WELE VALUE PROPOSITION

**Best-In-Class Manufacturing Practices Leads to
Best-In-Class Machine Performance**

Superior Cutting Capability - - - HOW?

Superior Machine Longevity - - - HOW?

Superior Tool Life - - - HOW?

**A Higher Grade of Machine Assembly – TRUE
GEOMETRIC ACCURACY**



WELE Manufacturing Philosophy

Precision Hand Scraping and Alignment:

- Dedicated team of skilled craftsmen employing meticulous hand scraping techniques for precision alignment.
- Ensures unparalleled accuracy and longevity of machine components.

Vertical Integration of Quality Stream:

- In-house control at every stage of production for seamless quality assurance.
- Integration of quality checkpoints across the complete manufacturing processes.

Quality Control Measures:

- Stringent quality checks enforced at each stage, maintaining consistency and superior standards.
- Continuous improvement strategies embedded within the production cycle for ongoing enhancement.

Customization and Tailored Solutions:

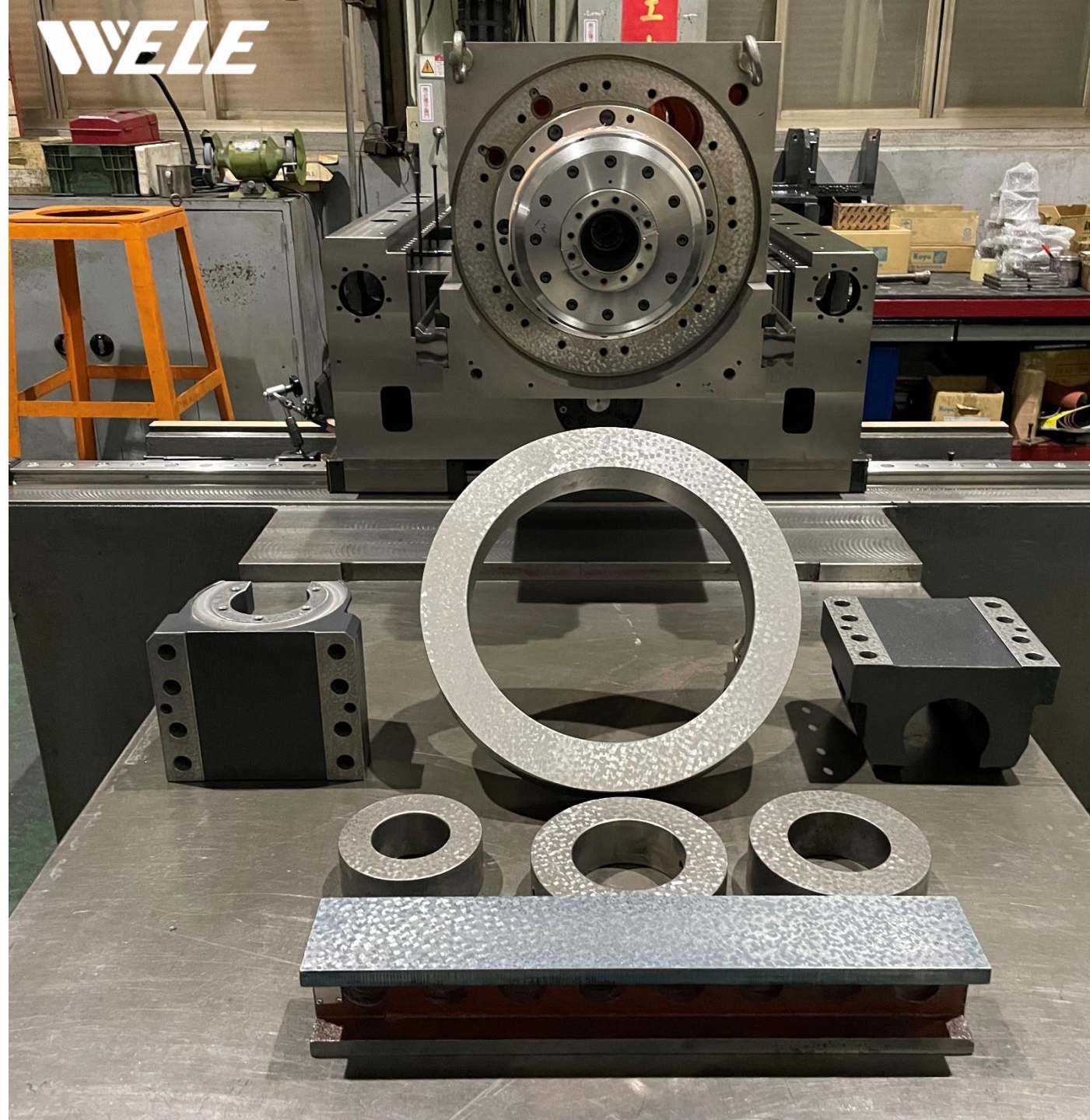
- Flexibility in manufacturing to cater to client needs.
- Ability to adapt and customize machines to meet specific industry requirements.

Commitment to Durability and Reliability:

- Emphasis on building machines that stand the test of time.
- Focus on reliability and reducing downtime occurrence.

Skilled Workforce and Training Programs:

- Investment in continuous training and development for employees.
- Continuous development of skilled workforce dedicated to maintaining exceptional quality standards.



The Foundation of Accuracy

JIS 0 grade standard: 7 μ m in 1.0m by 1.0m

WELE standard: 3 μ m in 1.2m by 1.2m



Precision Fit Serialized Components

Traceability and Quality Control:

Serialization allows for precise tracking of each component's manufacturing history, enabling better quality control. It ensures that matched components are specifically designed and manufactured to fit together perfectly, reducing the chances of defects or discrepancies in the assembly process.

Improved Reliability and Longevity:

Matched components that are serialized and manufactured to work together exhibit superior reliability and durability. The precision fit reduces wear and tear, enhancing the overall lifespan of the machine.

Efficiency in Assembly and Maintenance:

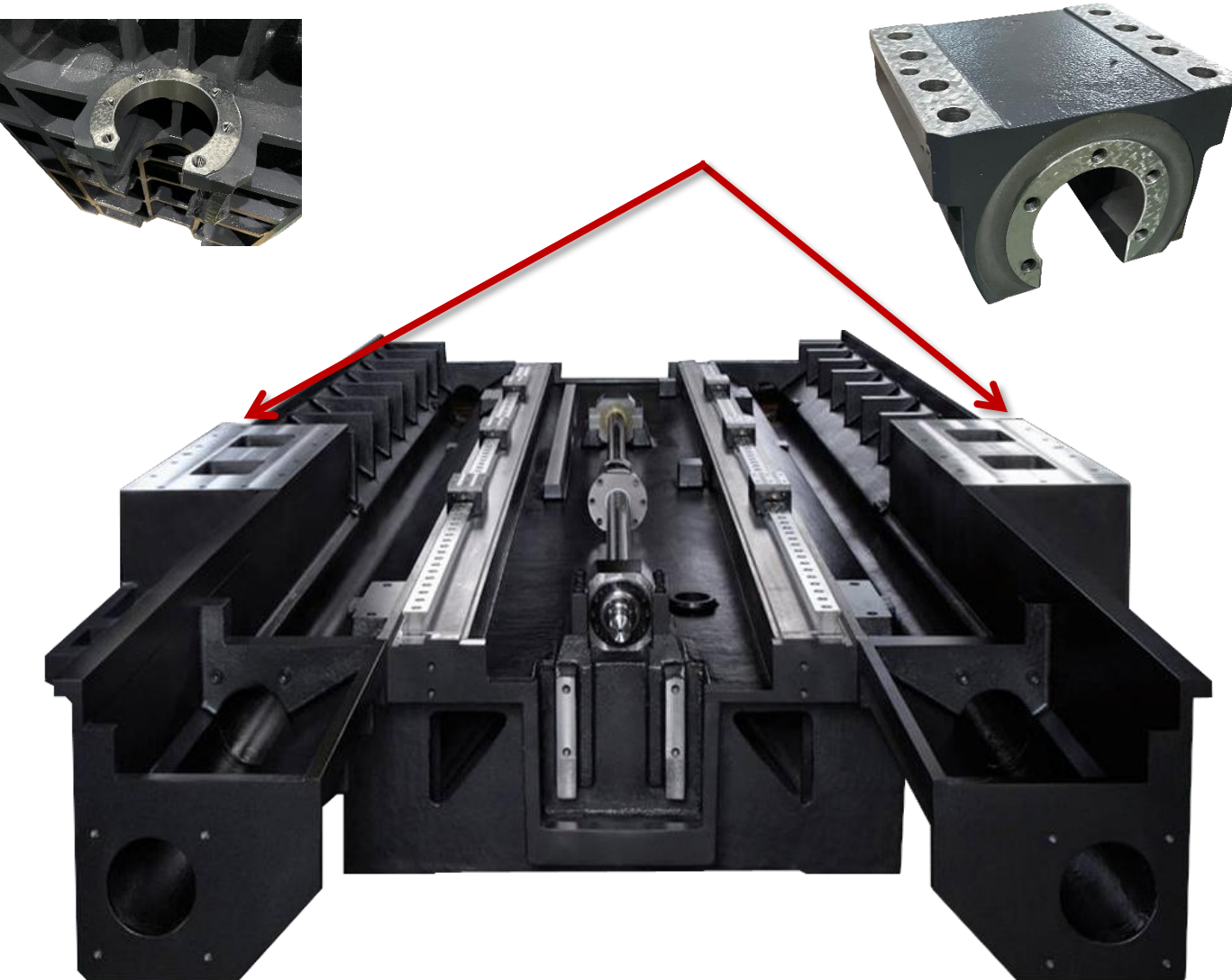
Serialized matched components streamline the assembly process. Workers can easily identify and pair components without the need for excessive adjustments or modifications.

Enhanced Customer Satisfaction:

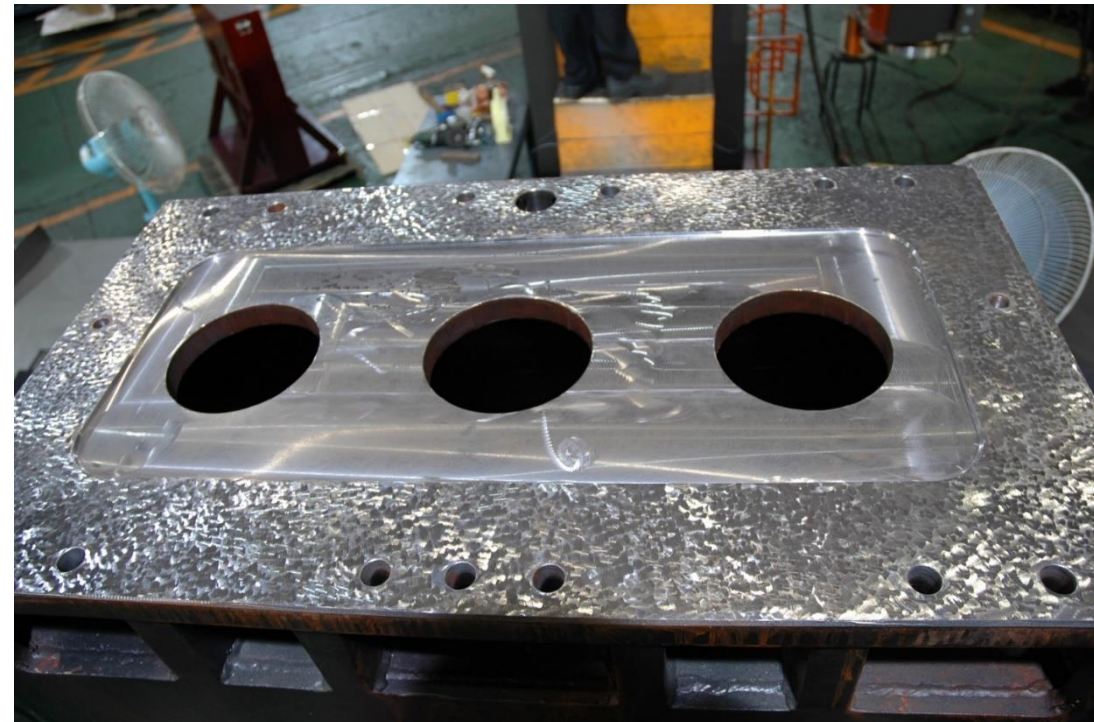
CNC Machines assembled from precisely matched parts perform better, have fewer issues, and offer a more consistent user experience, ultimately satisfying customer needs and expectations.



Primary Machine Mating Surfaces



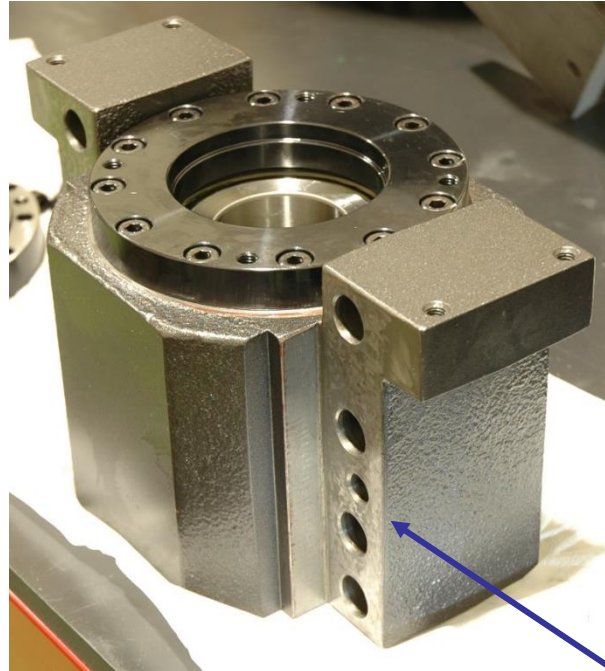
Bridge Machine Column Mounting Surface



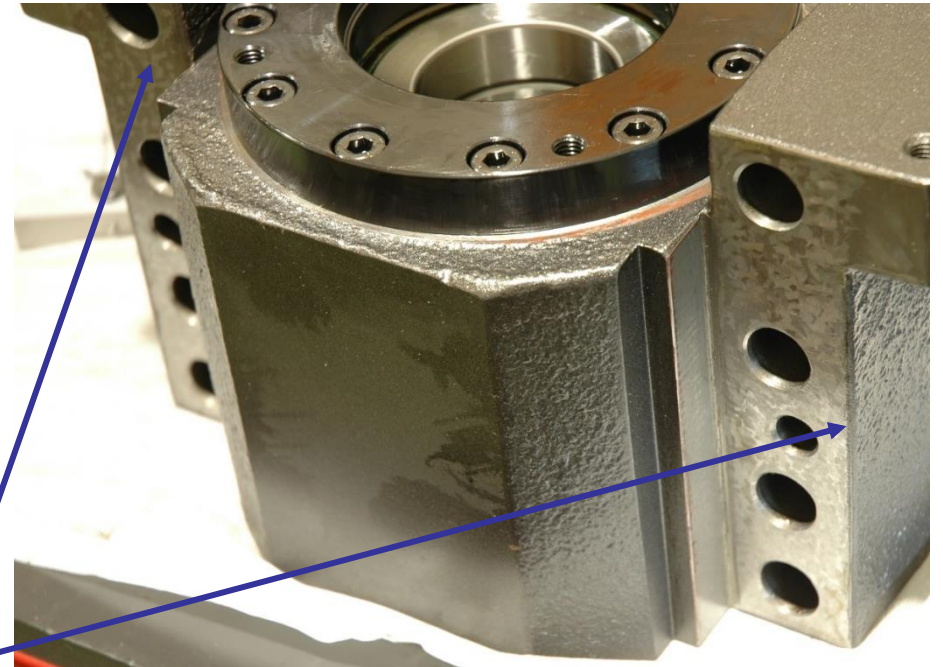
True Geometric Alignment - Ball Screw



Why do my ball screws need replacement every 3-4 years?



X & Y Axis



Scraping Surfaces

True Geometric Alignment – Motor Mount

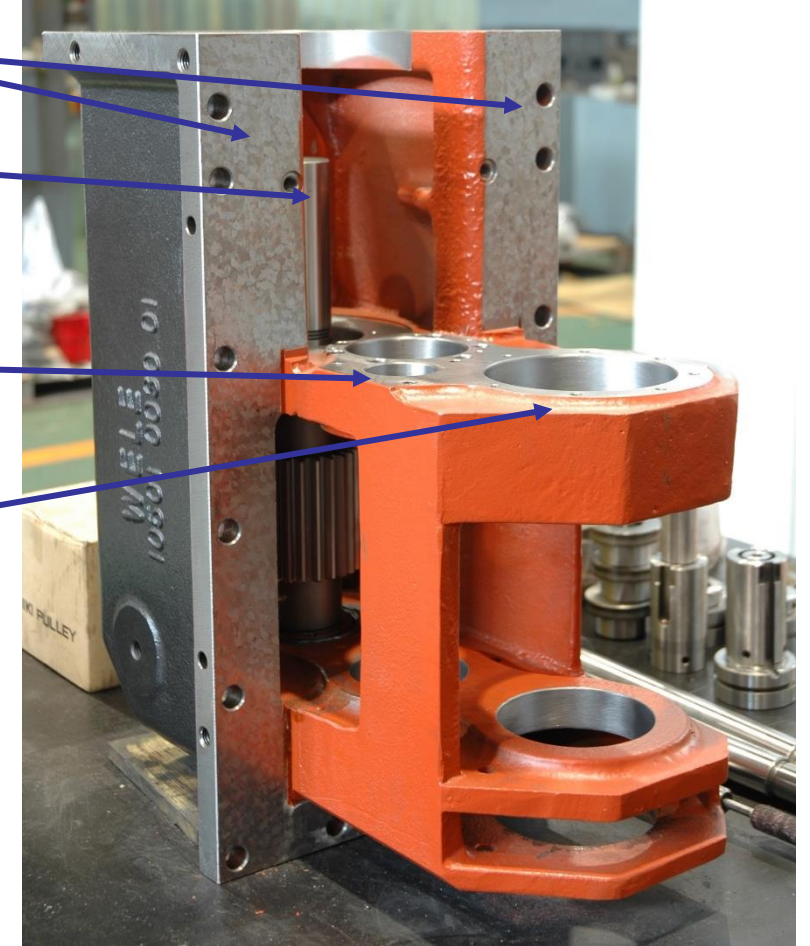


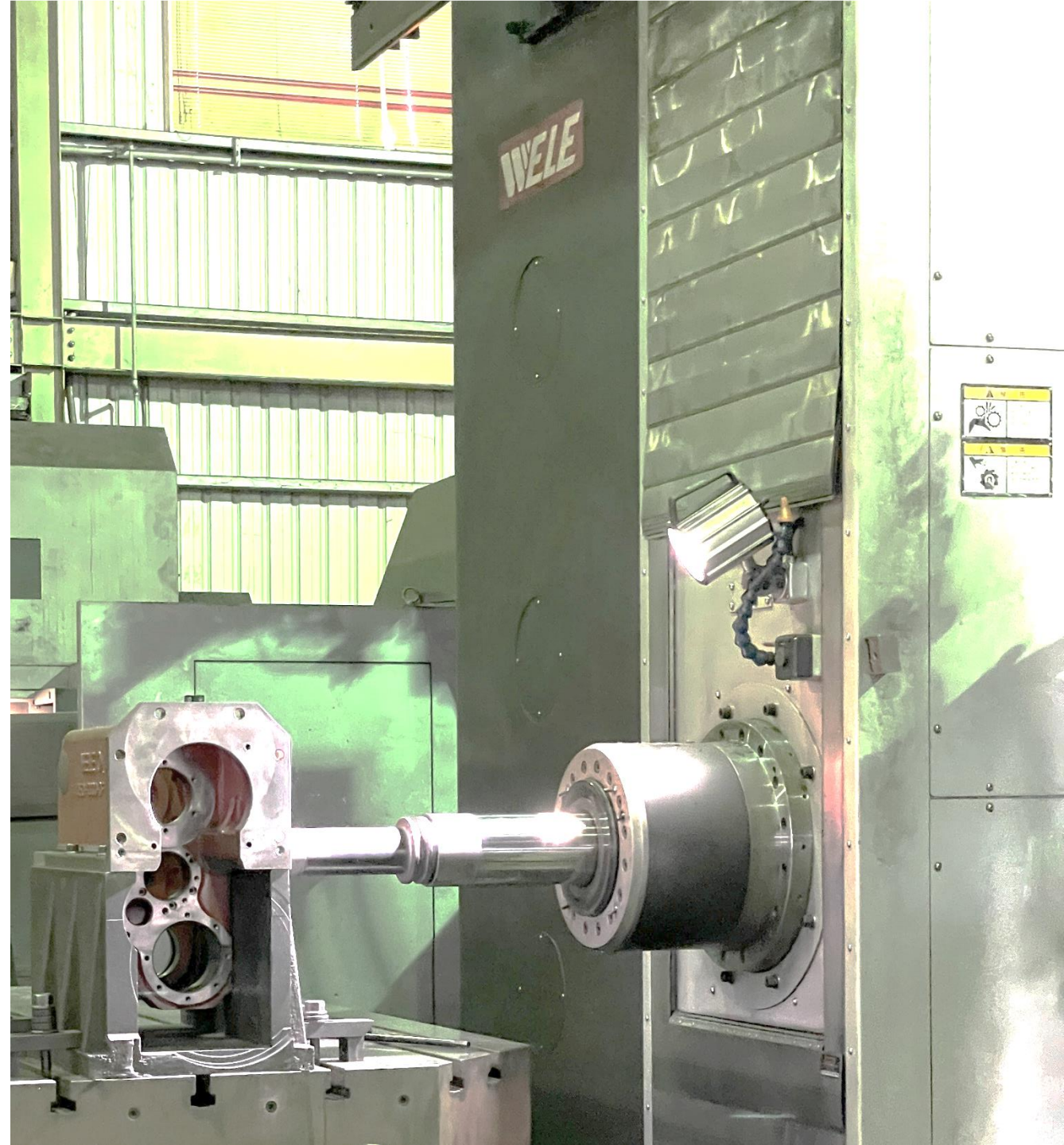
Scrapping Surface

Spindle Motor Shaft

Step Shift Shaft

Transmission Shaft



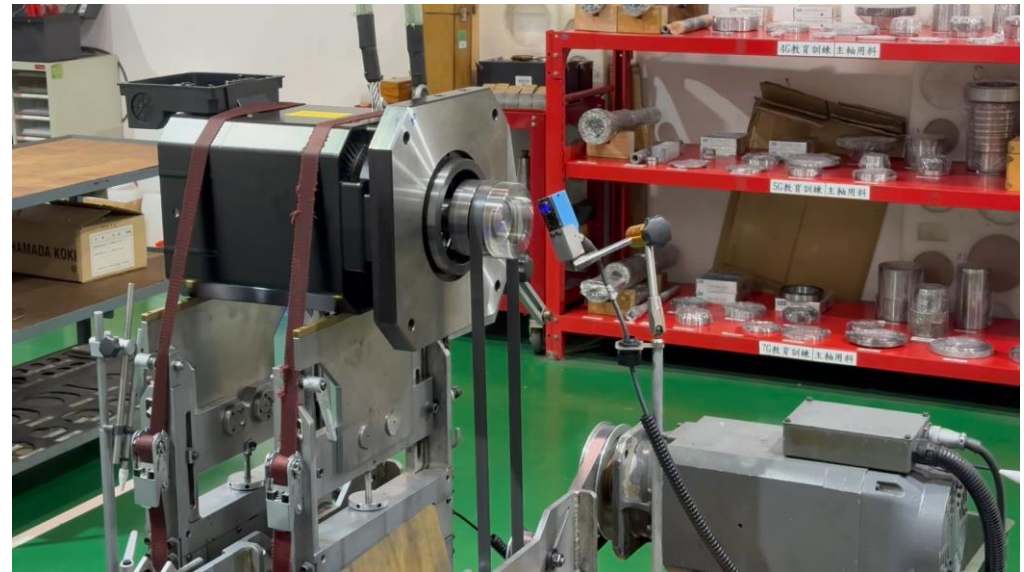
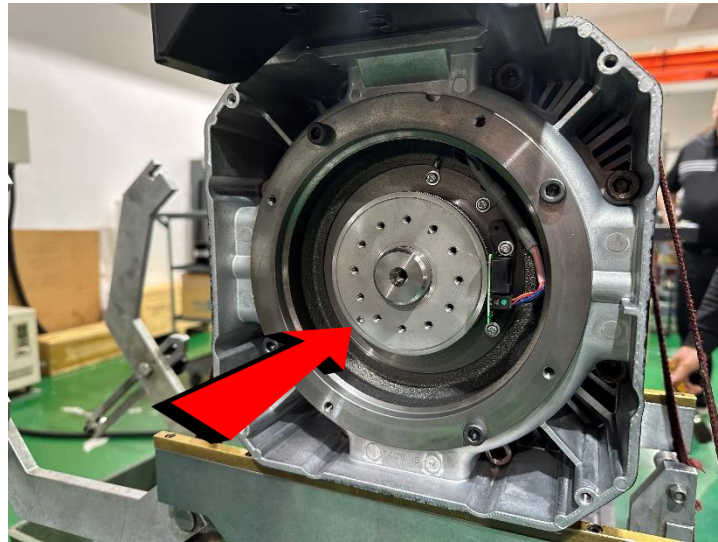
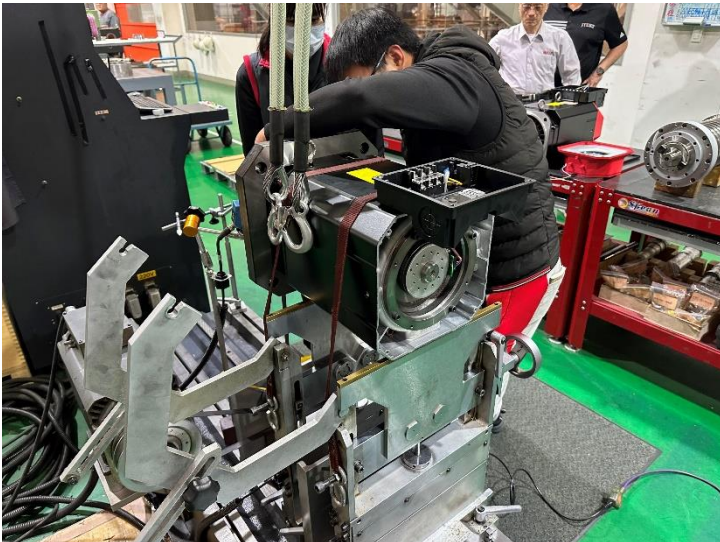




True Geometric Alignment – Ram Assembly



Better Balance – Improved Cutting Condition



Better Balance – Improved Cutting Condition



WELE Double Column Line Up

UB Series – Large Bridge “21”

- Machine Sizes

UB321 - 120.5” X 84.6” X 31.5”

UB421 - 159.8” X 84.6” X 31.5”

UB521 - 199.2” X 84.6” X 31.5”

UB621 - 238.6” X 84.6” X 31.5”

UB321Y - 120.5” X 110.2” X 31.5”

UB421Y - 159.8” X 110.2” X 31.5”

UB521Y - 199.2” X 110.2” X 31.5”

UB621Y - 238.6” X 110.2” X 31.5”

90.5” Distance Between Columns

39.4” Z Axis Optional

47.2” Z Axis Optional

55.1” Z-Axis Optional

Machine Riser Also Available



WELE Double Column Line Up

UB Series – Large Bridge “25”

- Machine Sizes

UB325 - 120.5” X 100.3” X 31.5”

UB425 - 159.8” X 100.3” X 31.5”

UB525 - 199.2” X 100.3” X 31.5”

UB625 - 238.6” X 100.3” X 31.5”

UB325Y - 120.5” X 125.9” X 31.5”

UB425Y - 159.8” X 125.9” X 31.5”

UB525Y - 199.2” X 125.9” X 31.5”

UB625Y - 238.6” X 125.9” X 31.5”

106.3” Distance Between Columns

39.4” Z Axis Optional

47.2” Z Axis Optional

55.1” Z-Axis Optional

Machine Riser Also Available



WELE Double Column Line Up

UB Series – Large Bridge “33”

- Machine Sizes

UB433 - 159.8” X 131.8” X 31.5”

UB533 - 199.2” X 131.8” X 31.5”

UB633 - 238.6” X 131.8” X 31.5”

UB433Y - 159.8” X 161.4” X 31.5”

UB533Y - 199.2” X 161.4” X 31.5”

UB633Y - 238.6” X 161.4” X 31.5”

137.8” Distance Between Columns

39.4” Z Axis Optional

47.2” Z Axis Optional

55.1” Z-Axis Optional

Machine Riser Also Available



Operator Ergonomics

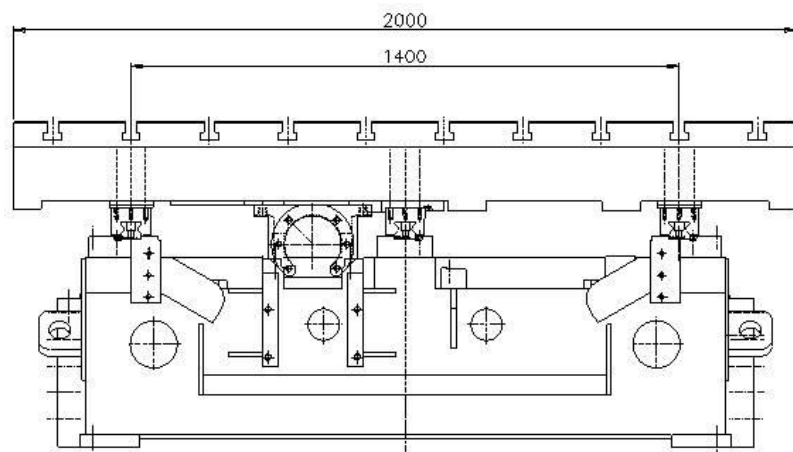
- Low floor to table height ideal for loading efficiency
- Full access to table with doors in open position allows for loading via overhead crane
- Easy tool load procedure with foot pedal and ability to bring spindle ram to operator
- Large side door openings provide ease of maintenance and cleaning
- Smooth door open and close action through dual support guide rollers (fully enclosed machine pictured)
- Fully Enclosed Roof for Operator Area Cleanliness
- Improved Chip Evacuation through the Machine Envelope Design



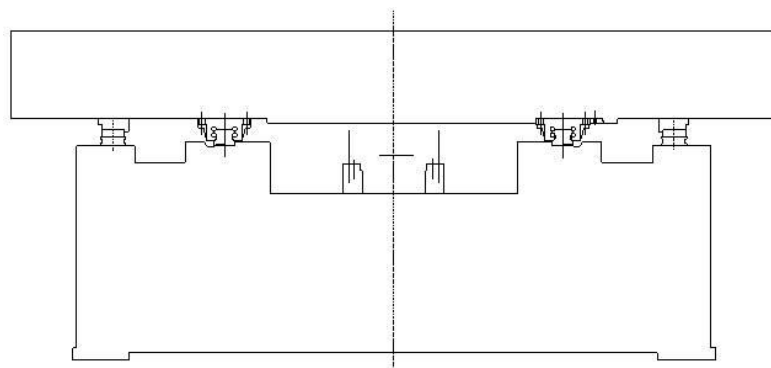
Cylindrical Roller Linear Contact Bearings

Linear Contact Roller Bearings Provide Improved Rigidity over Ball Bearing Packs

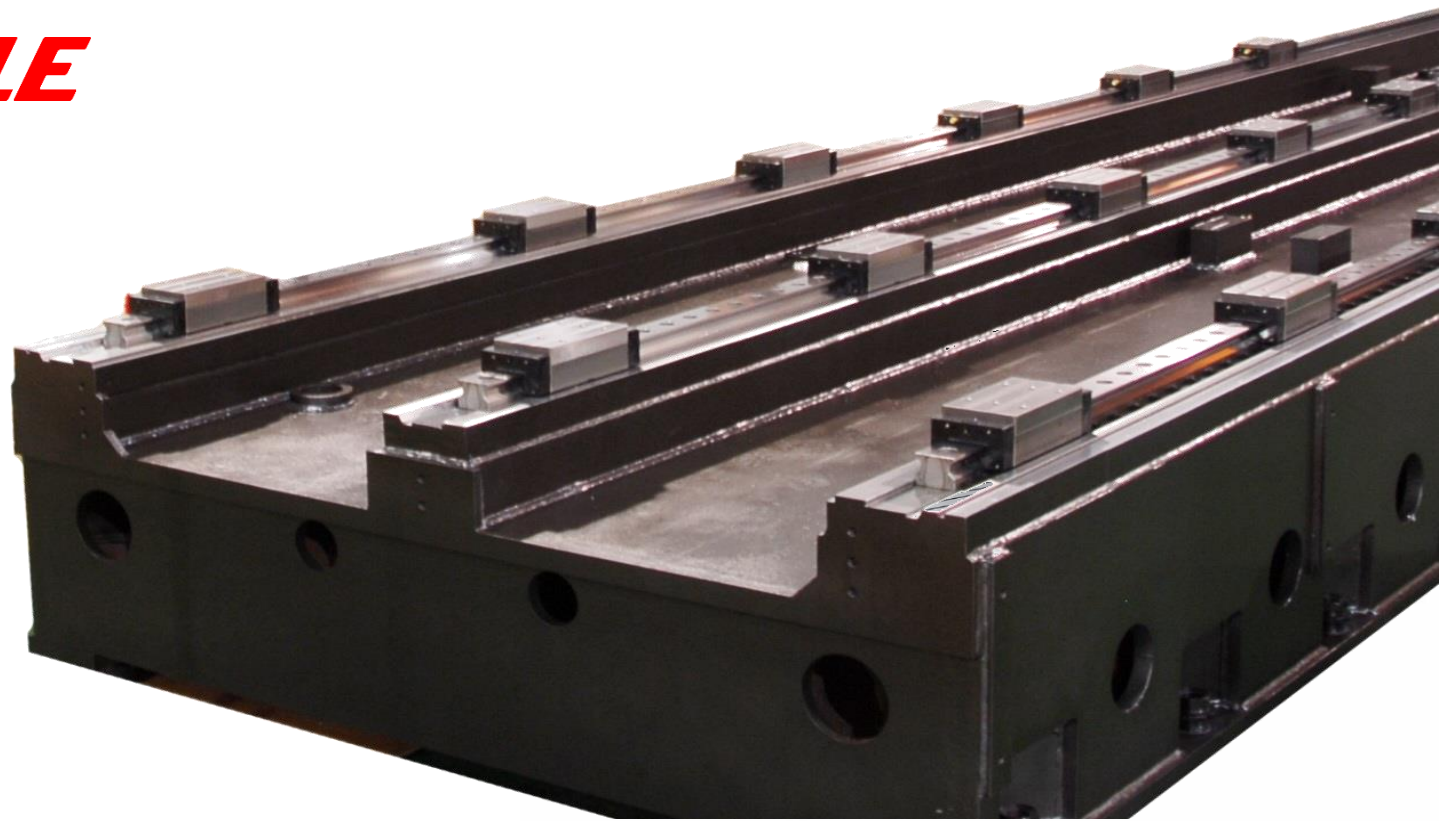
Heavy Duty Linear Guides Provide for Maximum Workpiece Weight and Traverse Speed



WELE

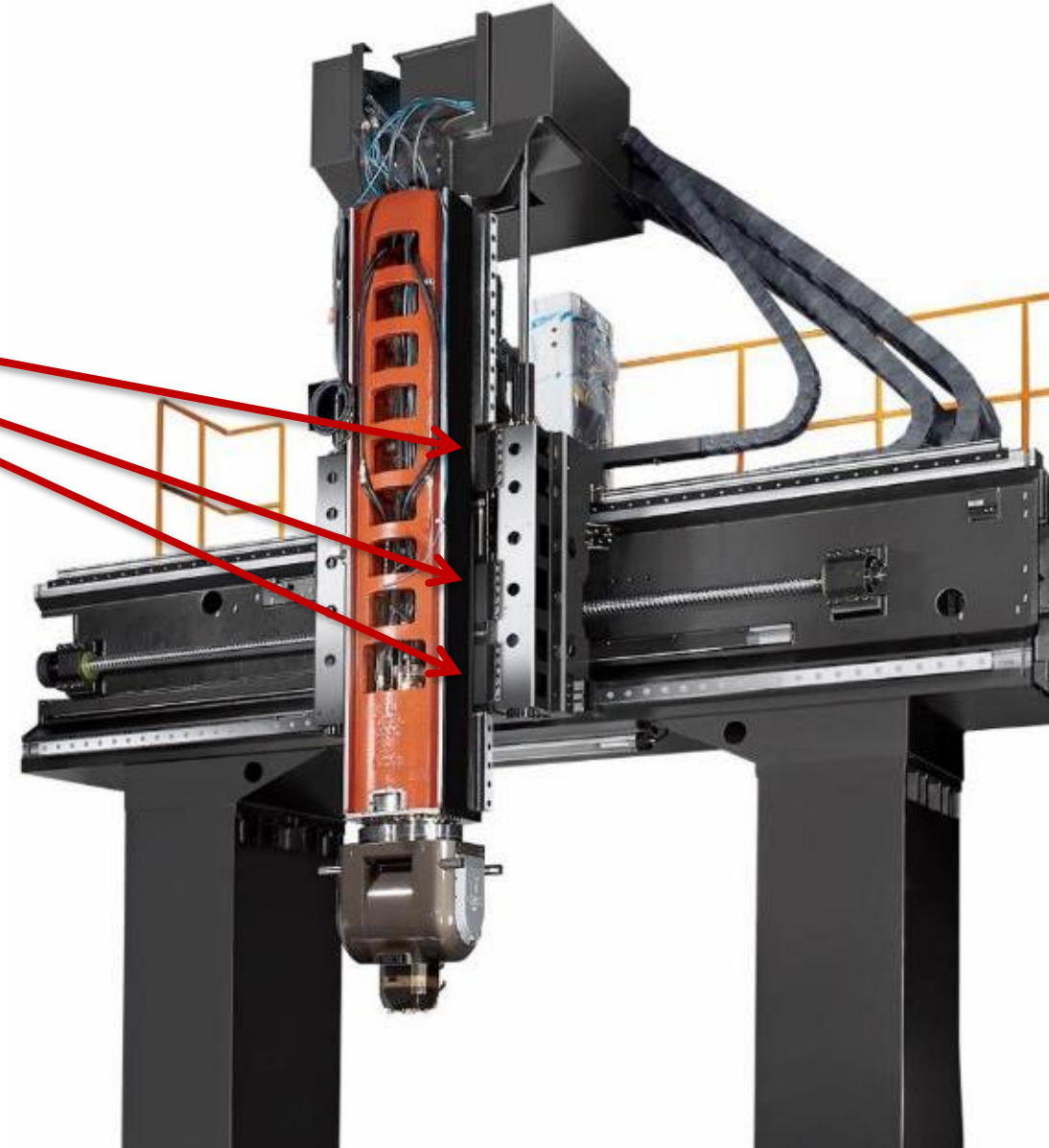
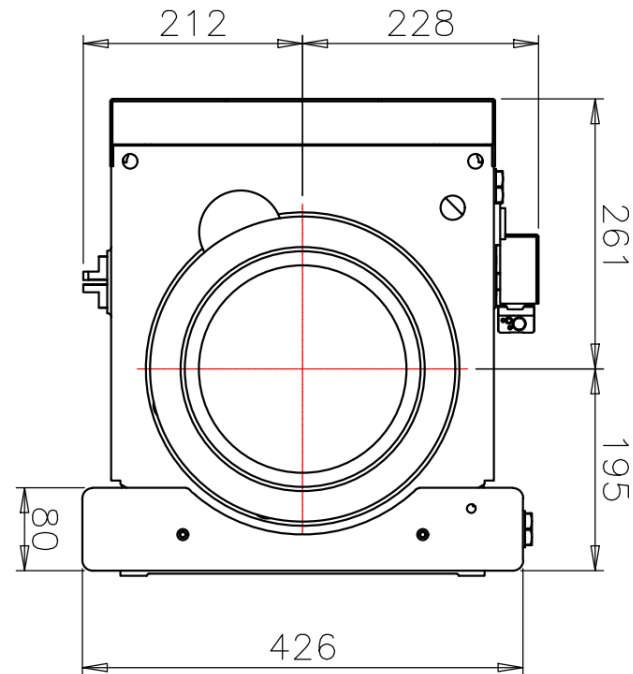
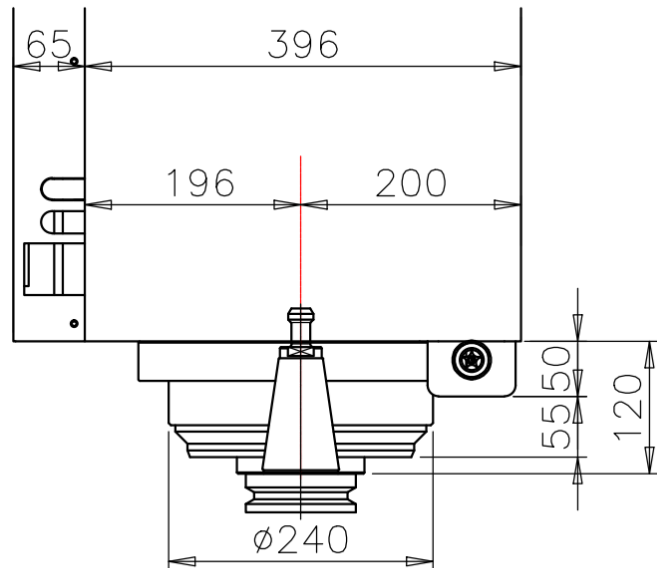


Competitors



Over Sized Ram for Cutting Rigidity

Six Carriage Guide Trucks – Extra Stability

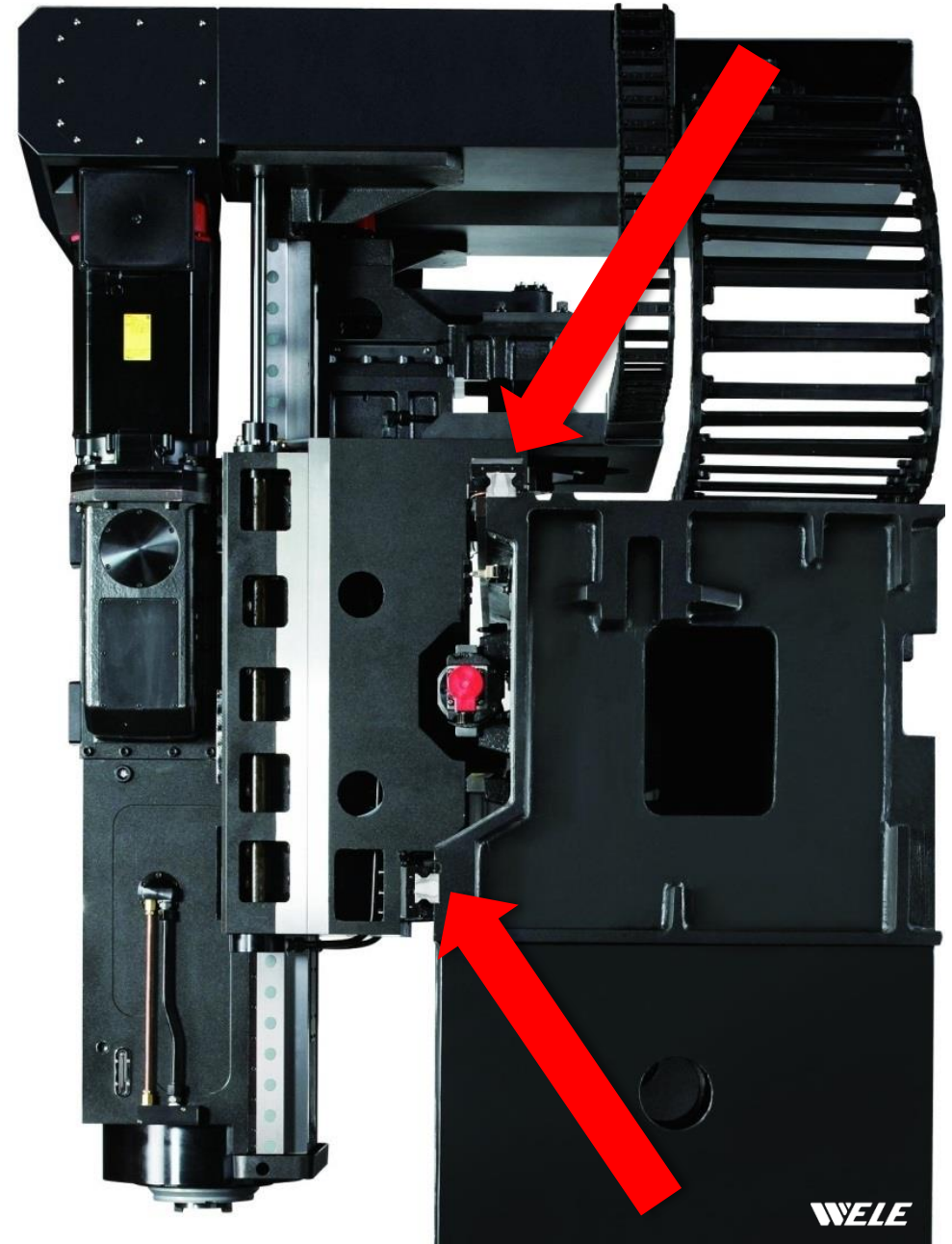


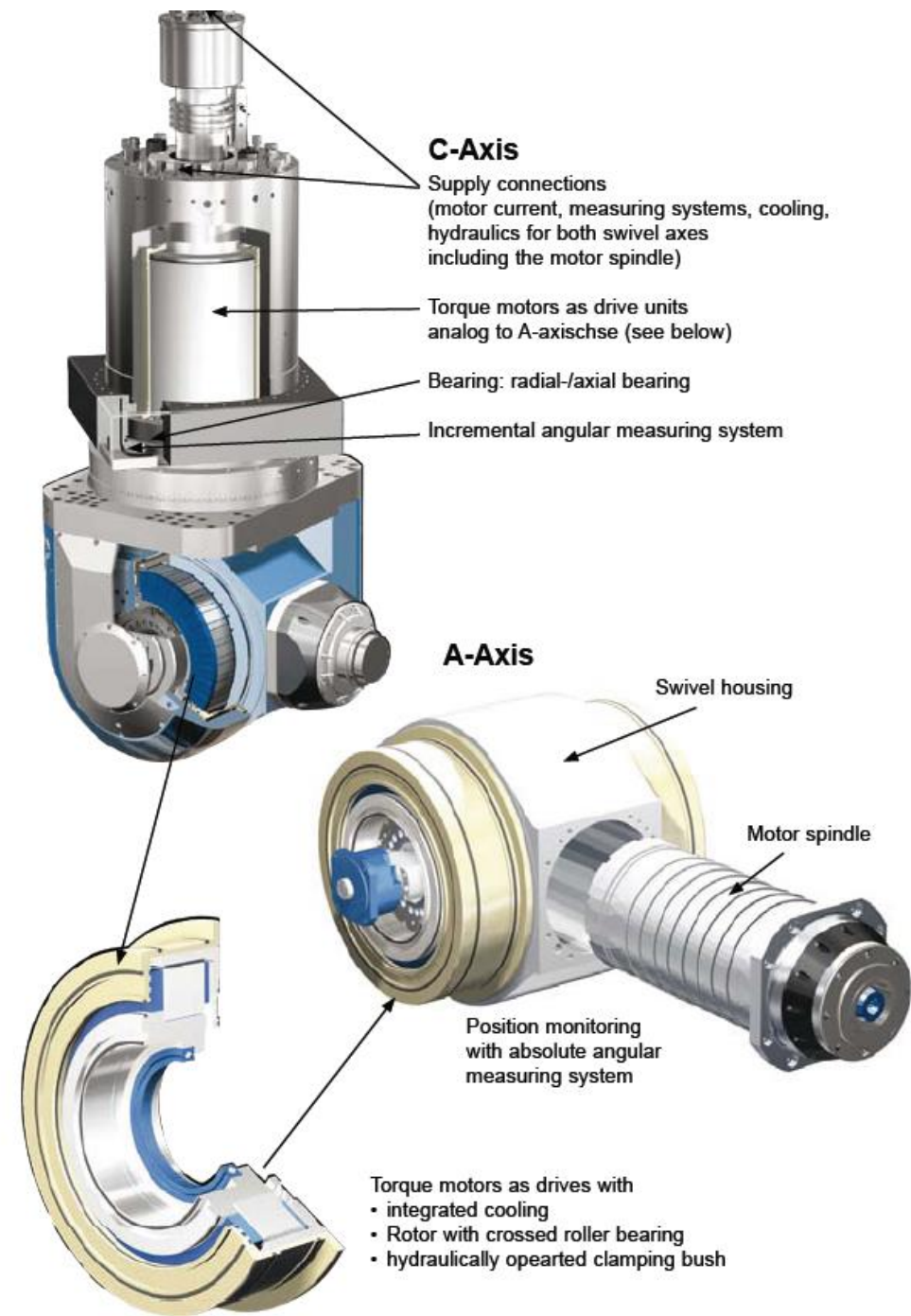
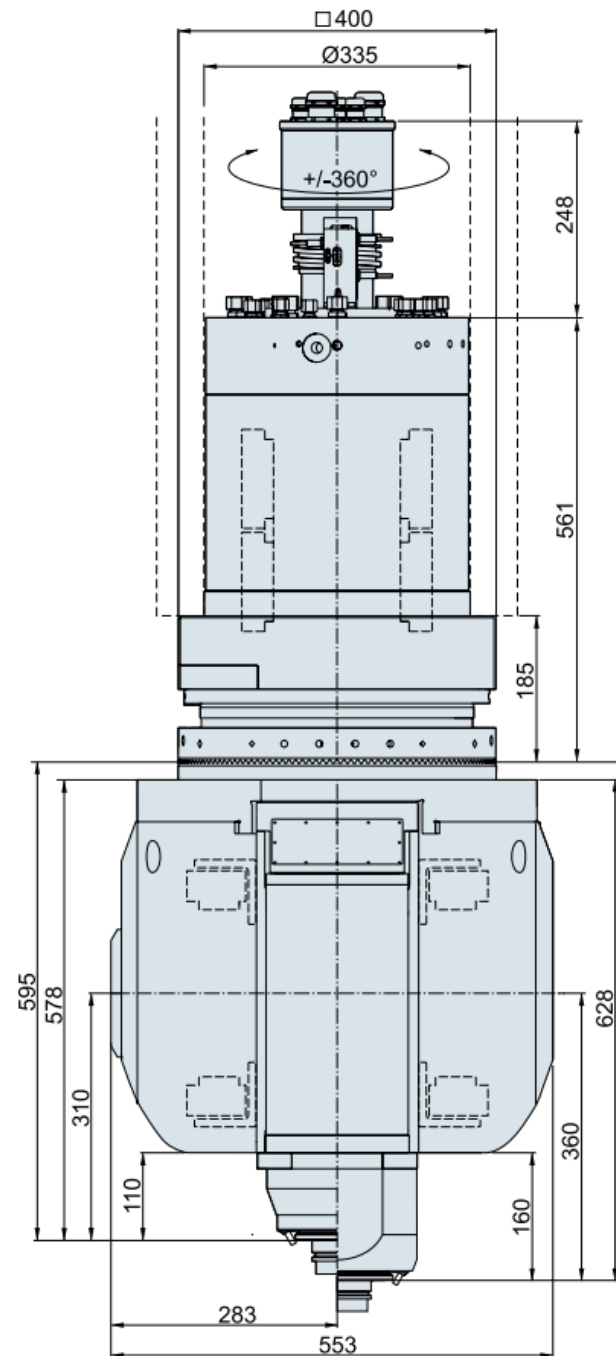
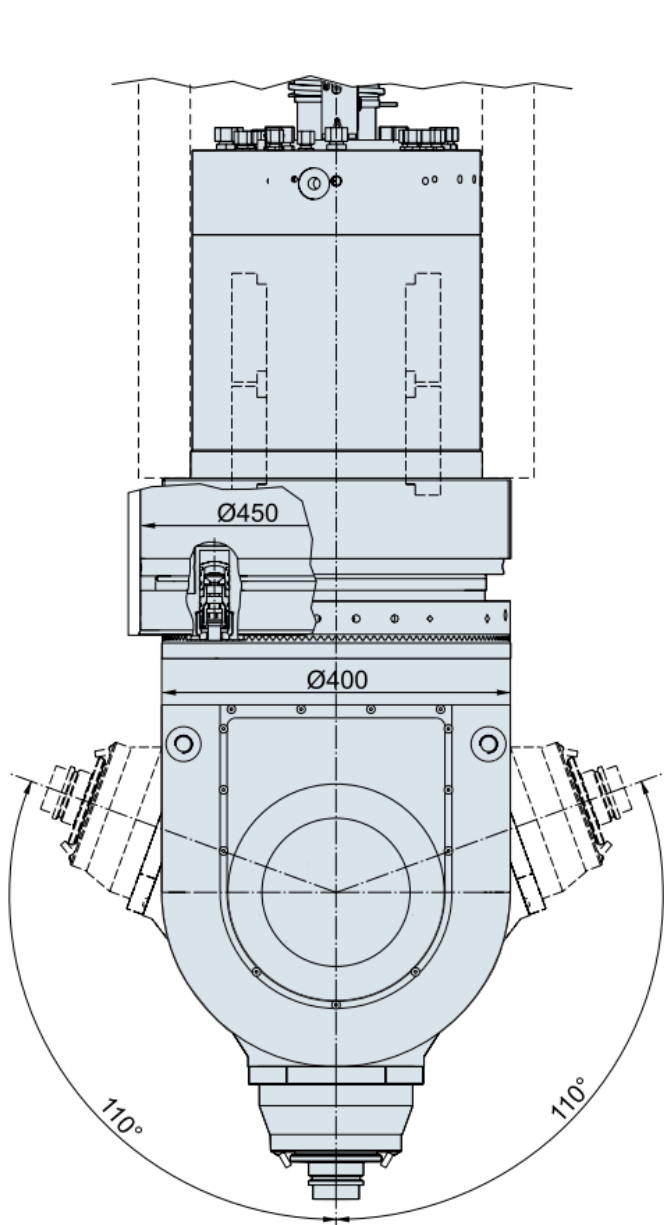
Y Axis Guide Way Dual Plane Support Design

Decreases Over-hang of Spindle Centerline

Increased Rigidity for Machining Under Heavy Spindle Load

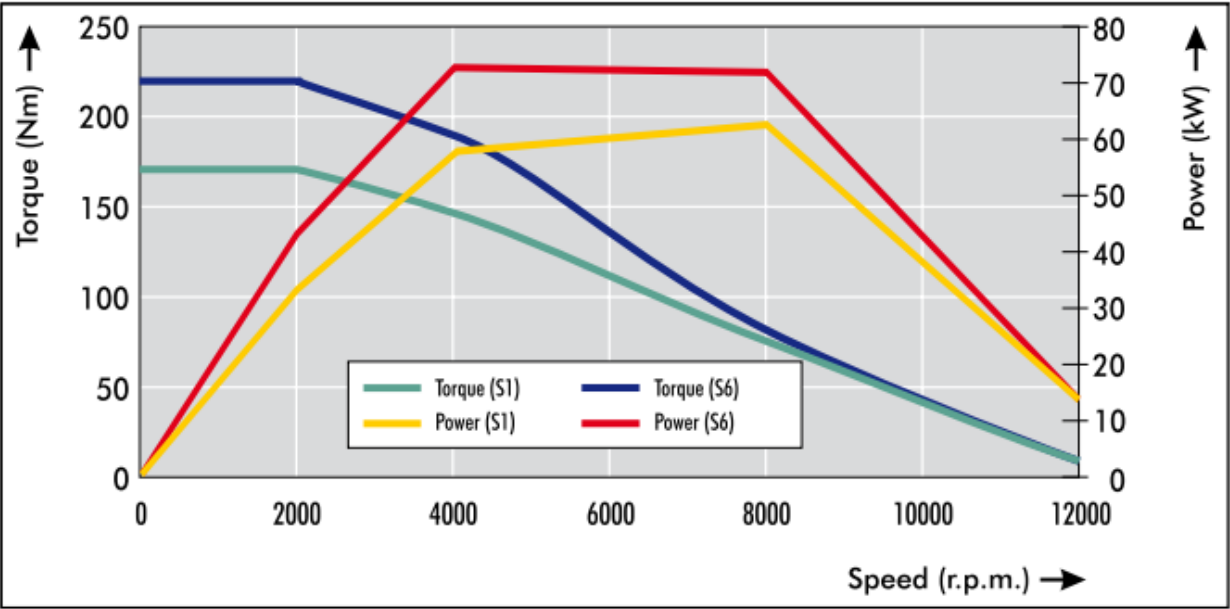
Spindle drive shaft is 800mm shorter than competitor's design.





CYTEC BC HEAD

The Cytec 34 kw continuous rating is calculated from max. torque x rpm as S1 (170 x 2000, the green and yellow lines in the chart), but when rpm increases and even the torque had dropped it still delivers 145 Nm on 4000 rpm so 145 x 4000 the kw is 58 and so forth until the peak kw of 60 at 8000 rpm while the torque is 75 Nm.

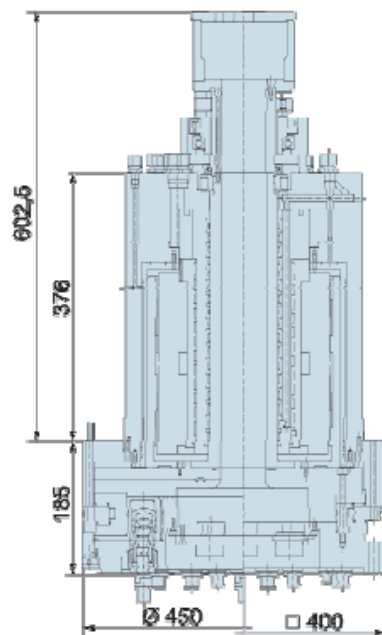


Technical data Fork head M21

Milling unit	C-Axis	A-Axis Fork
Max. torque:	1.200 Nm	1.000 Nm
Clamping torque:	4.000 Nm (50 bar)	
Swivel speed:	360°/s	360°/s
Swivel angle:	+/-360°	+/-110°
Nom. voltage/current:	400 V/28 A	400 V/28 A
Power dissipation:	2 kW (10 l/min)	2 kW (10 l/min)
Measuring system:	incremental	absolute
Positioning accuracy:	0,0015°	0,0015°
Total weight (Steel/Alu) approx.:	850 / 670 kg	



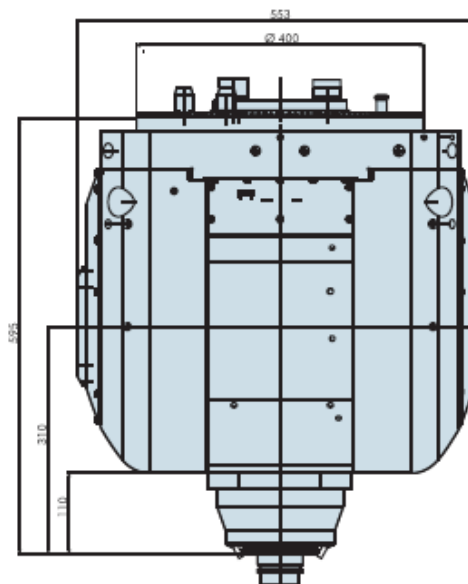
C-Axis Technical Data:



Max. swivel speed:	up to +/- 360°/s
Max. acceleration:	up to 7U/sec ²
Max. Swivel torque of motor:	1.000Nm
Braking torque:	4.000Nm(50bar)
Max. Cooling power/liquid:	2kW/4-5bar/10l/min (Tyfocor/Antifrogen N
Bearing system:	Axial-Radial roller bearing Ø 260 with integrated scale for angle measuring system and Sensor on the bearing.
Measuring system:	AMO, Incrementally. One Reference mark.
Signal:	sin/cos, 1Vss
Positional accuracy (head):	+/-5"
Cartridge centering- ø:	335
Screw ø:	365 (reference circle diameter)
Fixing screw:	36x M8
Flange dimensions:	400x400
Complete height:	ca. 830mm(without cable)
Weight:	ca. 380kg
Power supply:	400V/ 28A
Recommended driver:	Heidenhain See further data sheet (not into delivery)



A-Axis Technical Data:



Max. swivel speed:	up to 360°s
Max. acceleration:	up to 7U/sec ²
Max. Swivel torque of motor:	1.000Nm
Braking torque (hydraulic):	4000Nm(50bar)
Max. Cooling power/liquid:	2kW/4-5bar/10l/min Tycofor/Antifrogen N
Swing angle :	+115°/-115°
Swing arm of spindle :	310mm
Angle measuring system :	Heidenhain RCN226 absolut
Positional accuracy (head) :	+/-5"
Weight :	Ca.500kg
Power supply :	400V/ 30/40A
Recommended driver :	Heidenhain
Geometric accuracy :	
Max. Angle error:	+/-10 µm 90° to the swivel direction
Skewness of A-Axis All CNC compensating errors:	+/-20µm (regarding protocol)

Five Axis - Heidenhain TNC640



Factory Testing and Runoff

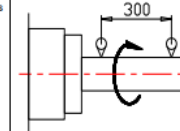
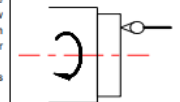
A. Static Accuracy Test :

1. Table (X axis travel) :			unit : mm	
Item / Inspection	Illustration	Tolerance	Result	
1-1. Straightness in the vertical plane 『X-Z plane』		0.040 / m	0.030 / m	
1-2. Straightness in the vertical plane 『Y-Z』 plane		0.040 / m	0.028 / m	
Place the precision level in the center of the table surface, move the table, read the level at least 3 points i.e. at the center and at both ends of the table movement and take the max difference between the readings.				
1-3. Straightness in the horizontal plane. 『X-Y』 Plane		0.006 / 500	0.003 / 500	
1-4. Straightness in the horizontal plane. 『X-Z』 Plane		0.006 / 500	0.003 / 500	
Set up the straight gauge in the center of the table surface and measure the Straightness between the gauge and table movement by use of the Dial gauge fixed on the spindle face. offset to zero at both ends and take the max differences between the readings.				

90° HEAD Accuracy Test Report

Unit No :	1.Type : Auto exchange 90-Head	2.speed : 3000 rpm
ZN-23096	3.Index: 1 degree index	5. Tool clamp type: Hydraulic
Quality :	4. Clamp: Hydraulic	6.other :
OK	CHECKED BY	INSPECTED BY
	DATE	2023.12.01

Attached Head : Static geometric accuracy :

1. Horizontal spindle accuracy:		unit : mm		
TEST	MEASURING METHOD	ILLUSTRATION	TOLERANCE	MEASURED
1-1. In case of 90 deg. attachment head, Run-out of the spindle hole interior a : at root b : at 300mm away from root	In case of 90 deg. attachment head, Mount the test bar in the spindle. Measure run-out at root and free end of the test bar with the test indicator mounted on the table while the spindle is rotating at low speed. Take the maximum difference of the test indicator readings as the measured value. *To be applied at 0 deg. in C-axis only.		A 0.010	0.004
1-2. In case of 90 deg. attachment head, Run-out of the spindle nose	In case of 90 deg. attachment head, Measure run-out of the surface of the spindle nose with a test indicator mounted on the table while the spindle is rotating at low speed. Take the maximum difference of the test indicator readings as the measured value. *To be applied at 0 deg. in C-axis only		B 0.025	0.012
			0.010	0.004

Circularity measured Record. (DBB) (XY plane) : ↓

ISO 230-4:2005(E)

RENISHAW

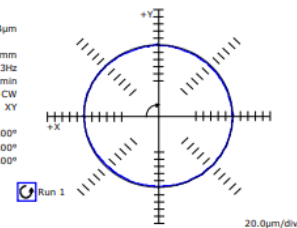
Circular deviation
XY 360度 150mm 20231204-182157 AICC

Operator: 11119
Date: 2023-Dec-04 18:21:57

Machine: LB-421Y2M(23694)
QC20-W: 60M378, Last calibrated: 2012-01-31

Circular deviation (CW)

Value 7.4μm
Test parameters
Radius 150.0000mm
Sample rate 76.923Hz
Feedrate 3000.0mm/min
Run direction CW
Plane under test XY
Test position
Start angle 180.00°
End angle 180.00°
Overshoot angle 180.00°



ISO 230-4:2005(E)

RENISHAW

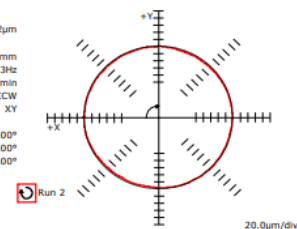
Circular deviation
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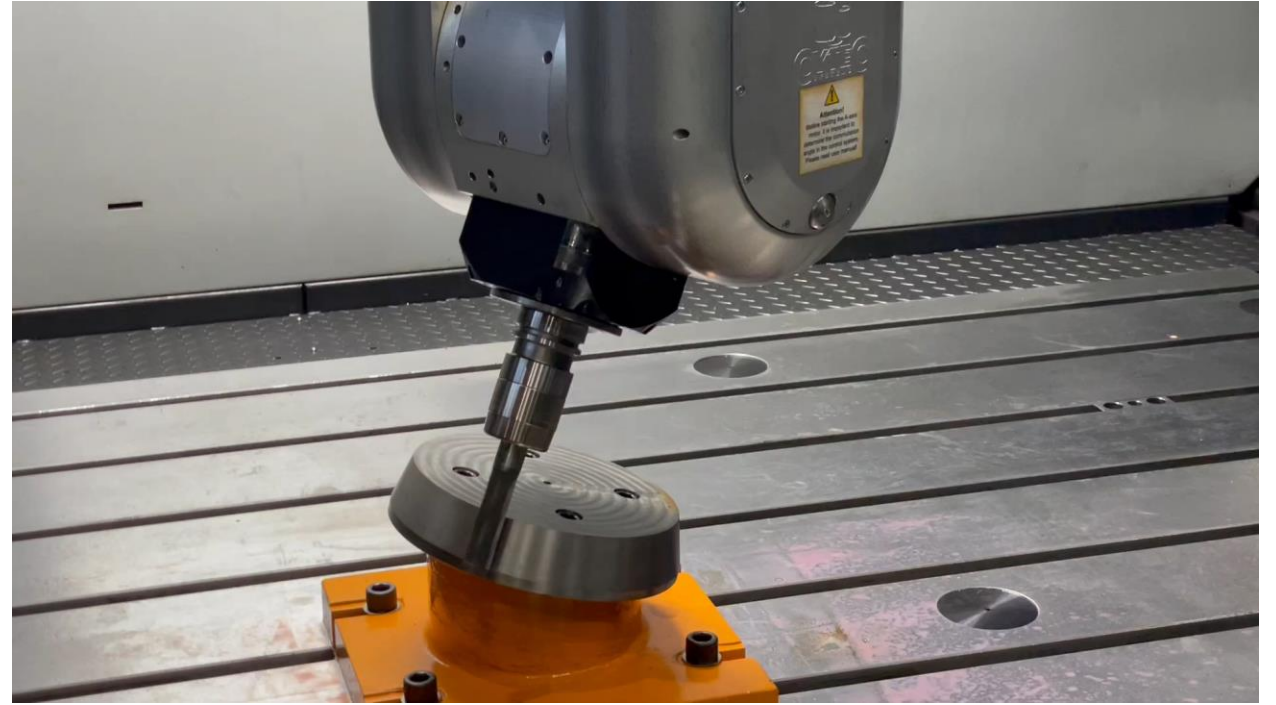
Circular deviation (CCW)

Value 8.2μm
Test parameters
Radius 150.0000mm
Sample rate 76.923Hz
Feedrate 3000.0mm/min
Run direction CCW
Plane under test XY
Test position
Start angle 180.00°
End angle 180.00°
Overshoot angle 180.00°



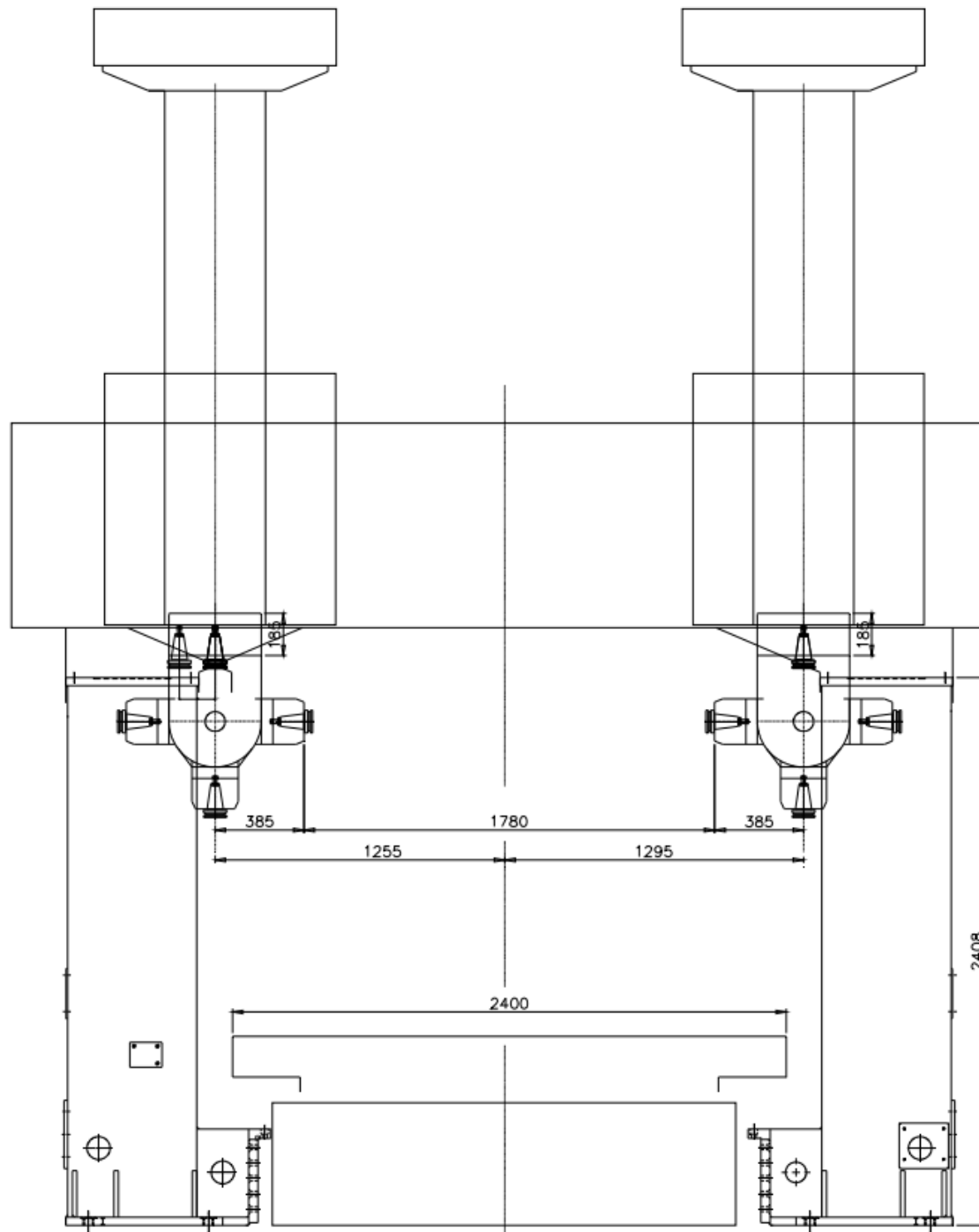
Circularity measured Record. (DBB) (XY plane) : ↑











UB425Z2 Working Area

High Rail Gantry up to 20 Meters

