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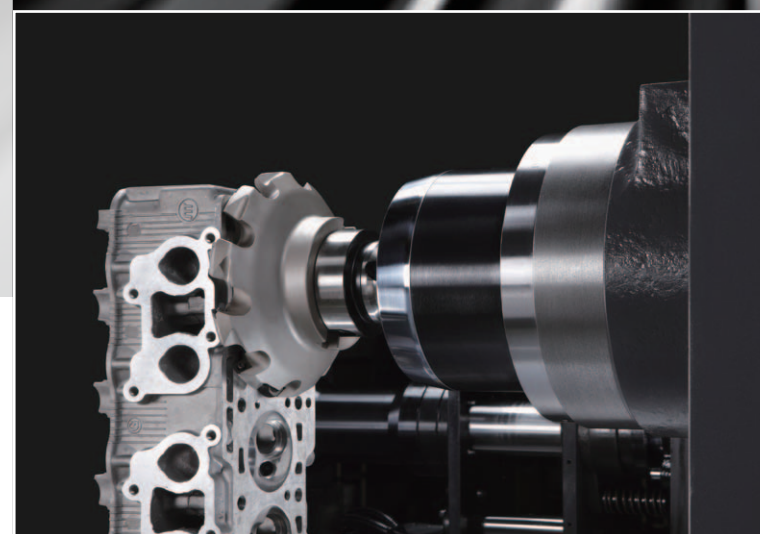
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Distributing Agent



2018 A

AC Design 04-27071159



LH300/350A

HORIZONTAL MACHINING CENTERS



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Advanced Technology & Design
High Rigidity w/ Square T Structural Design
High Performance Setup & Maintainability
Spindle & 3 Axes Heat Displacement Control
High Performance Control System & HMI
High Efficiency Chip Removal System

LH300/350A



Rigid & Compact Machine Casting

Meehanite casting is used on all major casting components, for its stable material composition & casting quality.

All casting is analyzed by Finite Element Analysis, to ensure structural rigidity.

Special Rib Construction

Wide base, and robust structure, ensure steady machining against heavy loads.

High Speed



※15inch Screen (Optional)
10.4inch Screen (Standard)



Significant Reduction of The Non-machining Time

Spindle's acceleration/deceleration time, all axes' rapid movement, and ATC changing time, are all the key elements in reducing the non-machining time and ultimately increase high production efficiency.



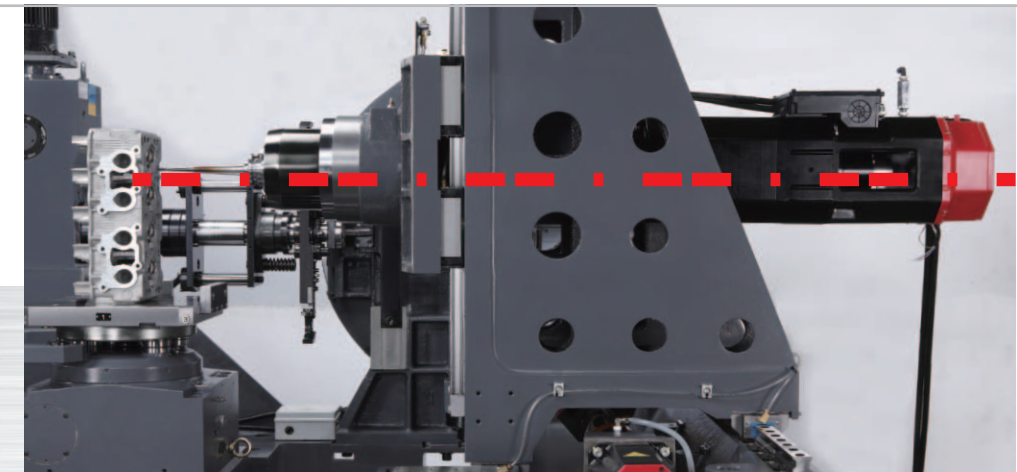
Efficiency

Increase High Yield Rate

Highly efficient chip removal system increases the production capability.

Spindle Transmission System

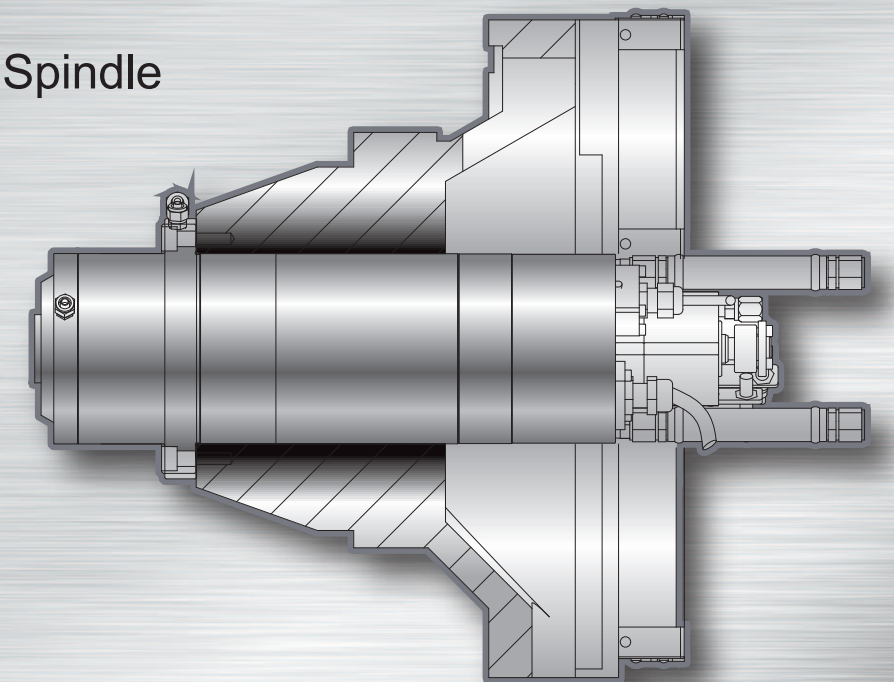
Unique Idd
Spindle
Transmission



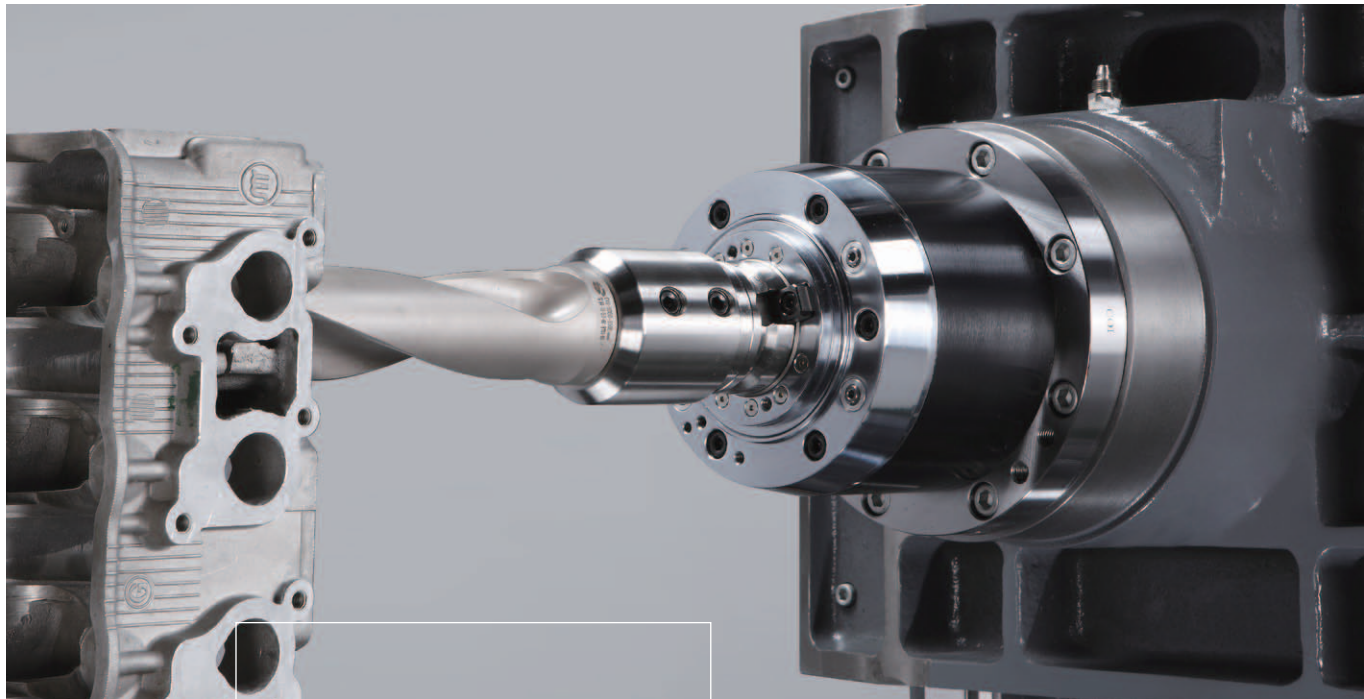
The optimal heat isolation design
IDD (Isolated Direct Drive System)

- Lower heat displacement, and higher spindle precision & lifetime.
- Low noise, backlashes, vibration.
- High machining performance.

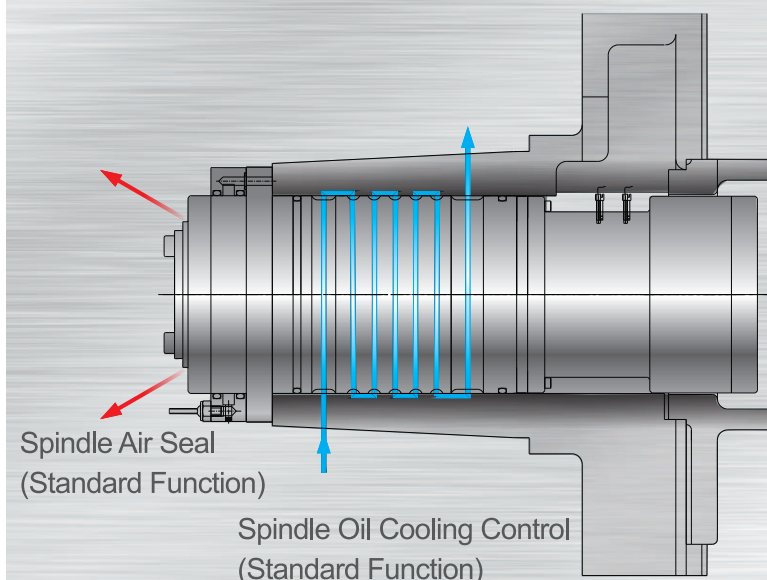
High Speed Built-in Spindle
Motor System **OP**



Spindle Motor System



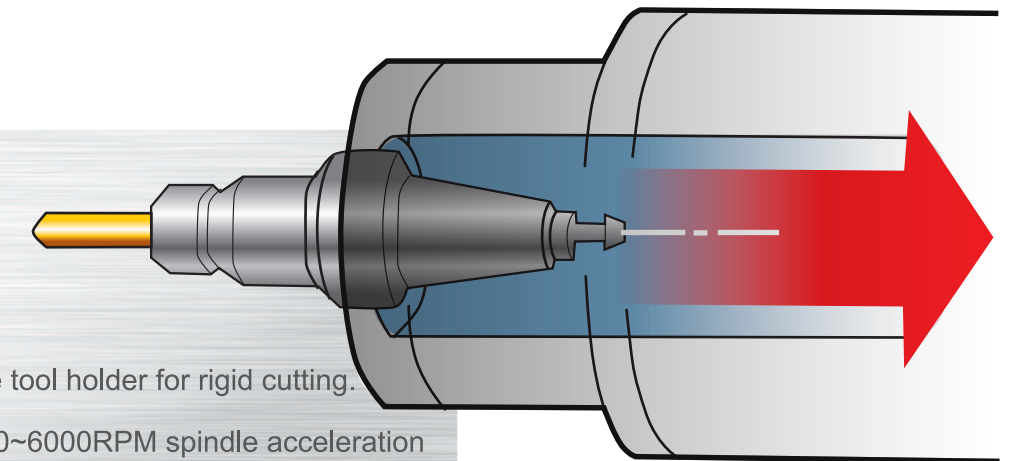
High performance spindle motor w/ high torque output during low RPM characteristics.



Spindle Air Curtain System

High speed spindle with spindle oil cooling system keeps a stable temperature range in the spindle, which ensures a high speed/precision spindle. The spindle air curtain system prevents dusts getting into the spindle.

Rapid Reaction & High Pull Force Spindle



- Spindle Tool Pull Force

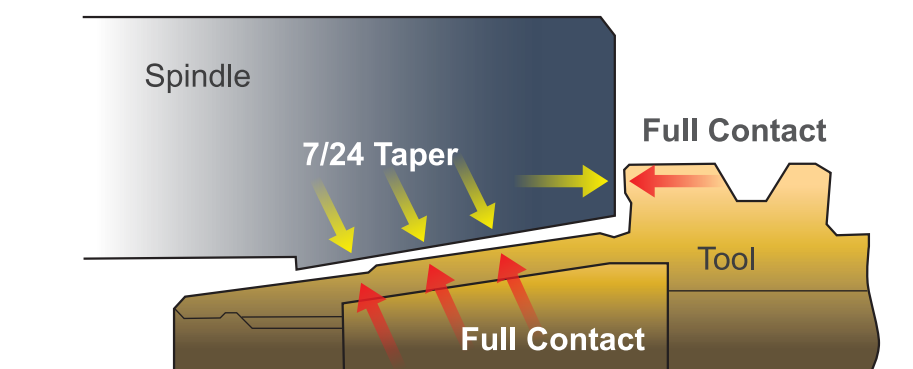
250kgf (LH-300)

1000kgf (LH-350A)

- High pull force spindle on the tool holder for rigid cutting.
- 0.6** second is needed for 0~6000RPM spindle acceleration
- 1.2** second is needed for 6000~0RPM spindle deceleration

Two-face Constraint Bbt Tool Holder

7/24 taper is used

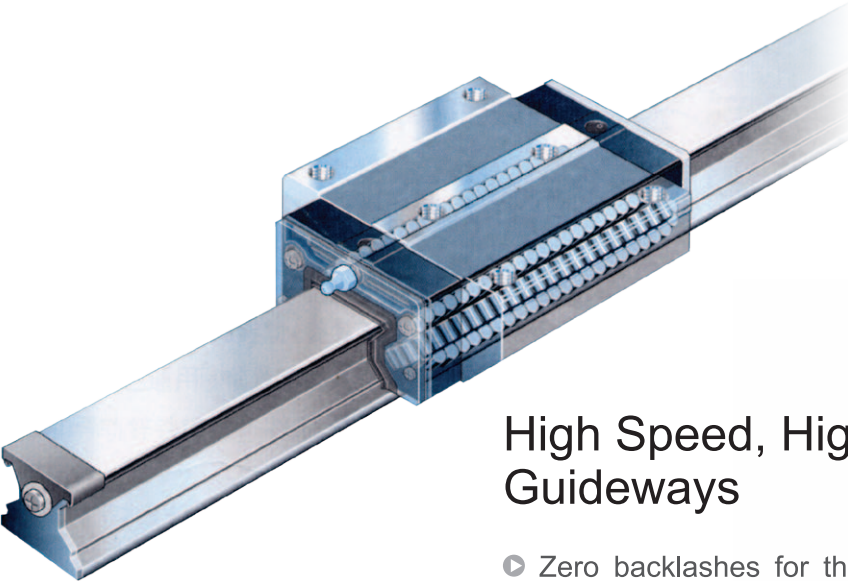
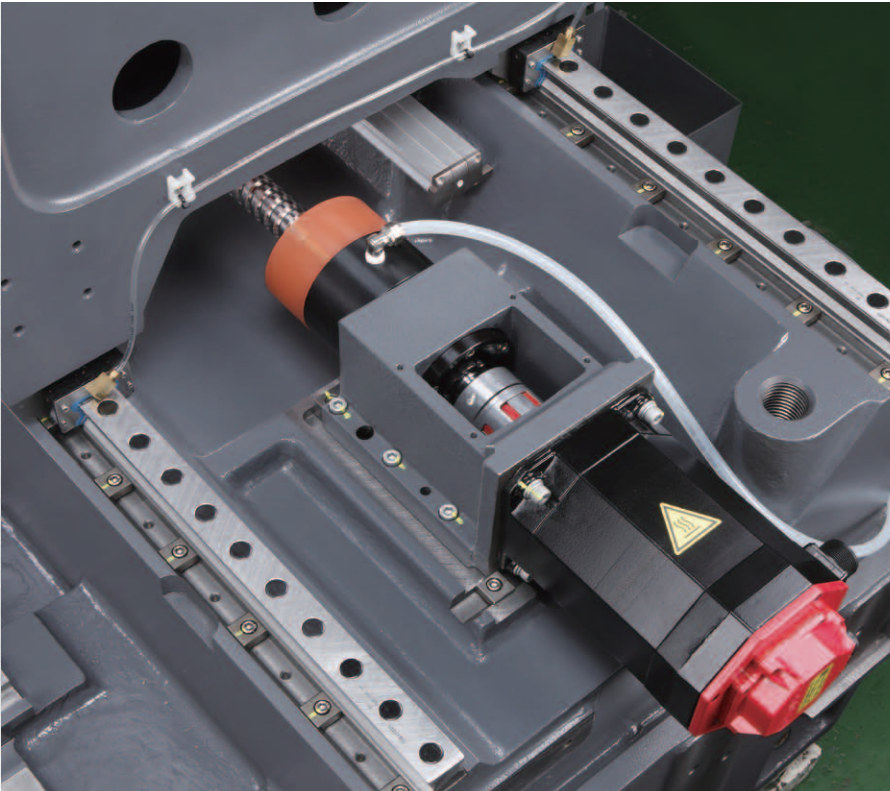


- Full contact at the taper and spindle face makes the spindle vibration-less during machining.

3 Axes Transmission System

3 Axes Ball-Type Ballscrews System

- ▶ Large diameter ball-type ballscrews are used for transmission rigidity, to ensure positioning and repeatability.
- ▶ X/Y/Z rapid speed
48m/min (LH-300/LH-350A)
- ▶ Telescopic cover: X/Y axes are fin-type, and Z axis is 2 pieces-type, for reduced vibration and noise.

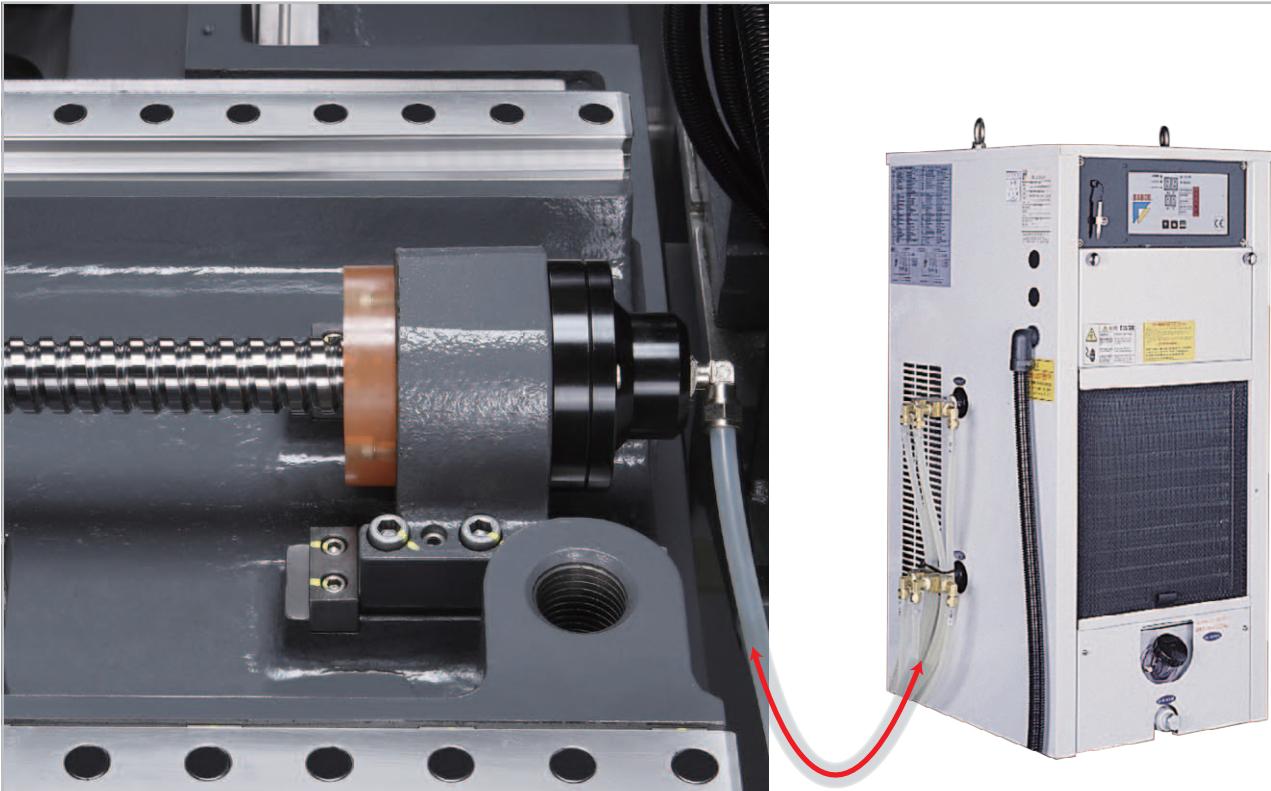


High Speed, High Precision Lnear Guideways

Cylinder Type Linear Guideway

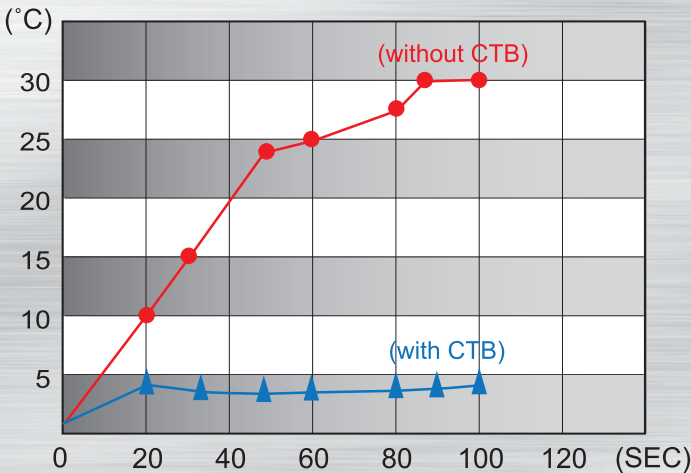
- ▶ Zero backlashes for the linear guideways. Great cutting surface for the contour cutting and etc.
- ▶ Suitable for high speed operation, to reduce the power required.
- ▶ Linear guideway has low friction during movement, which increases the lifespan of the guideway.

3 Axes Coolant Through Ballscrew (CTB)



Hollow Ballscrew Efficiency Chart

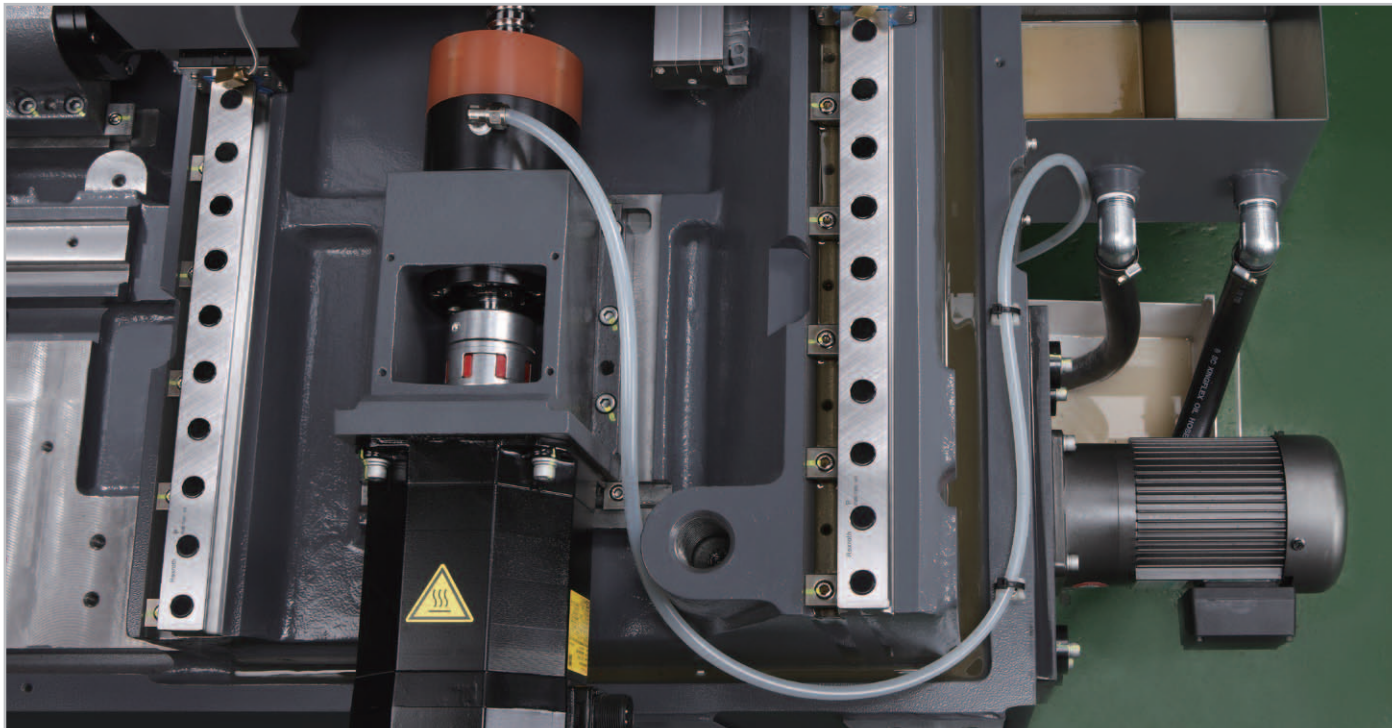
Hollow coolant design is used for the 3 axes ballscrews. Coolant oil are constantly recycling through the ballscrews to reduce the heat.



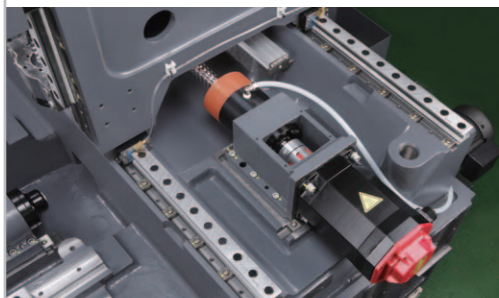
Testing Conditions

Ballscrew Diameter (mm)	Revolution (RPM)	Oil Temperature (°C)	Ball Diameter (mm)
Ø32xP12	1000	20	6.35

Disc Oil Separation Unit

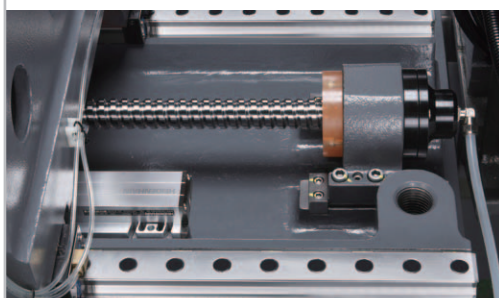


- ▶ Disc oil-coolant separator is used, to avoid deteriorating cutting coolant, which may affect the machining quality.
- ▶ After separation, the coolant is recycled to the coolant tank for re-use. Lubricant are recycled for further treatment.



3 Axes Direct Drive Transmission

- ▶ 3 Axes motor and high precision/speed ballscrew direct transmission.
- ▶ Pre-tensioned ballscrews for high ballscrew rigidity and lower heat displacement.
- ▶ Axes hollow coolant system, to significantly lower the heat displacement during machining.
- ▶ C3 grade ballscrews are used.

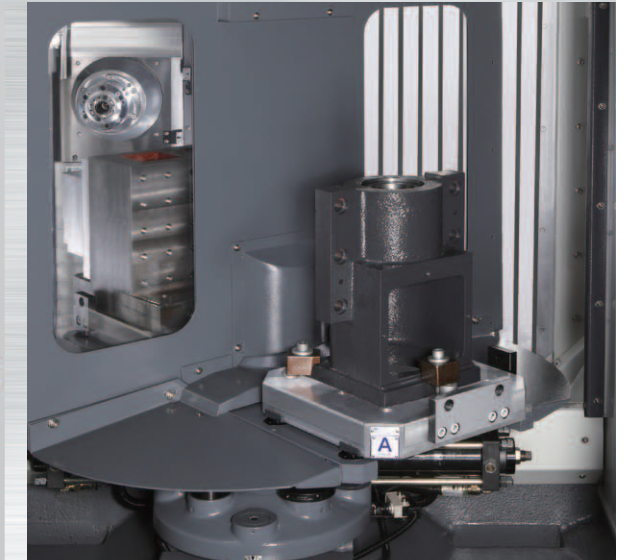


Collision proof

- ▶ Collision proof equipment are employed to reduce the impact.

APC Pallet System

Rotary 2 Sided Type APC APC is high speed, with high repeatability

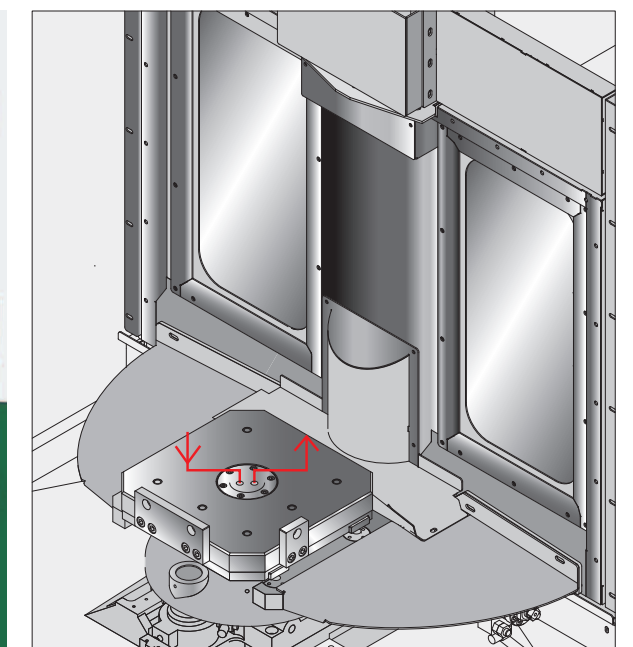


- ▶ The pre-loading pallet can be rotated randomly **0°→90°** degrees.
- ▶ Minimum pallet indexing **0.001°** degree (standard)

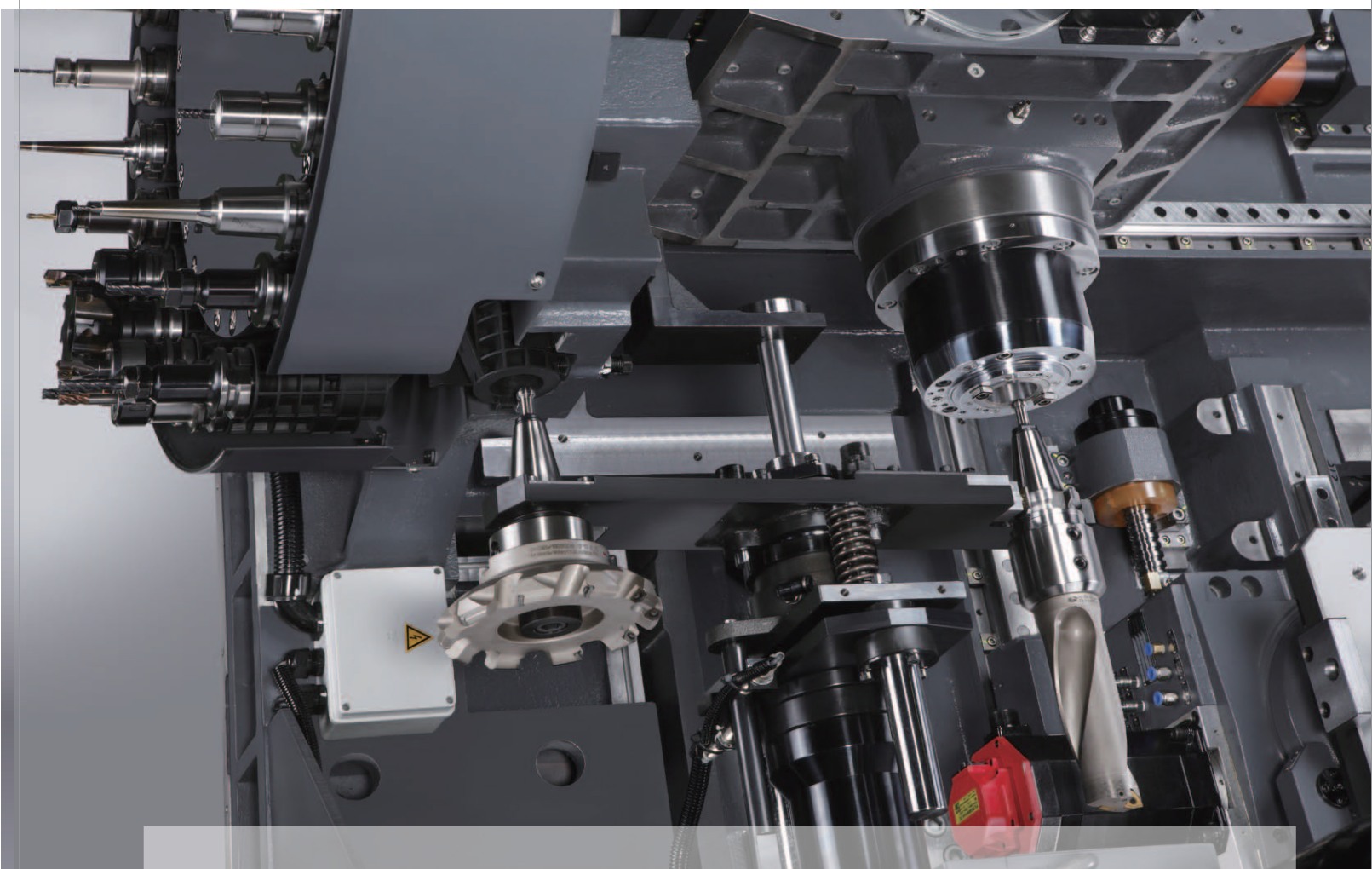
6 Pallet APC **OP**



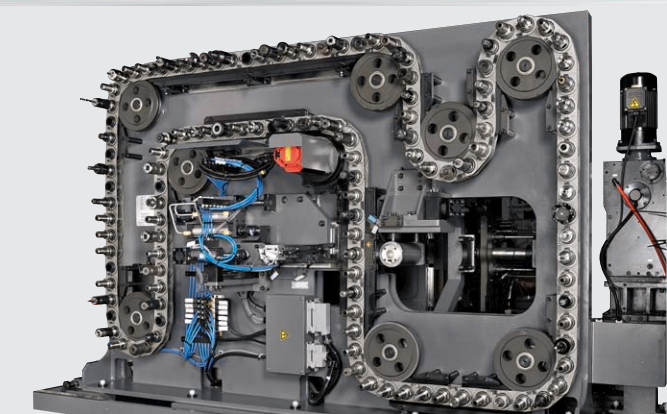
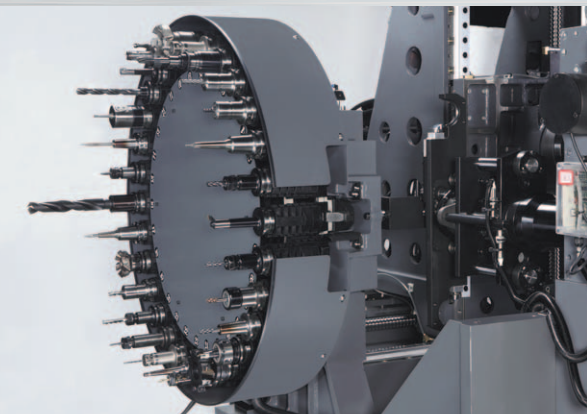
Hydraulic Source for APC **OP**



Automatic Tool Changing (ATC) & Magazine



- ▶ Rapid, simple, reliable, and long lifespan tool changing unit, for most reliable tool changing operation.
- ▶ Unique tool changing design w/ cam type transmission mechanism is used. Tools are selected by random tool selection method with PLC control software.
- ▶ ATC is tested up to million operating test.



Chip Removal System

Chain Type Chip Conveyor and Chip Cart

Chip auger is equipped on both sides of the worktable. Chip conveyor and chip cart are also equipped at the rear of the machine for chip removal solutions.



Chip Conveyor Selection

●

 : Excellent

○

 : Average

×

 : Poor

Material		Steel	Cast Iron	Alum.	Mixed Chips
Chip Shape					
Conveyor	Screw Type	○	○ (Dry Cutting)	○	○
Track Type Conveyor	Scrape Type	Cast Iron (Heavy)	×	●	×
		Alum. (Light)	×	×	●
	Chain Type	●	○	×	○

Wash Down System

Disc Type Oil-Coolant Separator & Coolant Device

- Oil-coolant separator can be easily installed with small floor occupancy.
- Higher cutting quality can be achieved from stable coolant quality provided by constant separation of oil and coolant.



Wash Down System

- Wash down system can be equipped to avoid accumulation of the chips inside the machine.



Coolant Gun

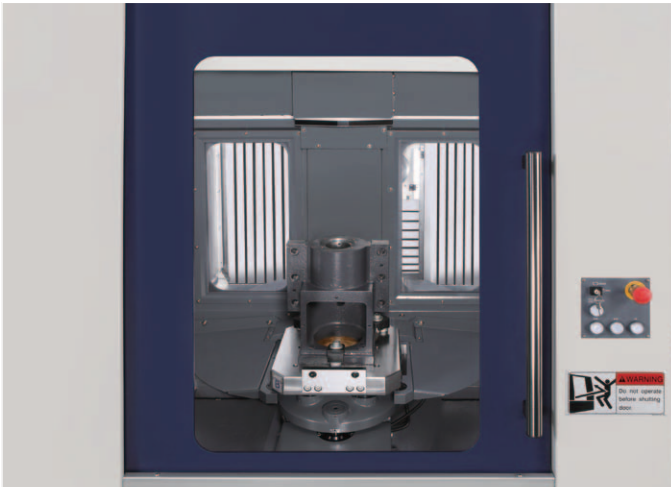
- Coolant gun is equipped for cleaning the chips in the working area.



Compact Floor Space



Front Door Visibility



Operating Door Visibility



- Large safety poly carbonate glass is used for the front door and operating door windows.

Maintainability

All important component, wires, tubes are centralized for easy daily maintenance.

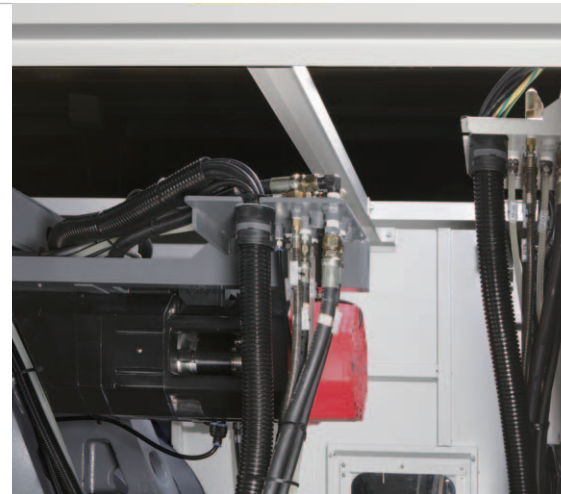
Hydraulic Tubes Centralization

- ▶ Hydraulic unit and oil-coolant unit are both installed on the machine, for easy daily check.



Centralization of the Tubes at Rear of Main Motor

- ▶ All main motor's related tubes/wires are centralized.
- ▶ Ease of maintenance after maintenance door is opened.
- ▶ All tubes are labeled.



ATC Door

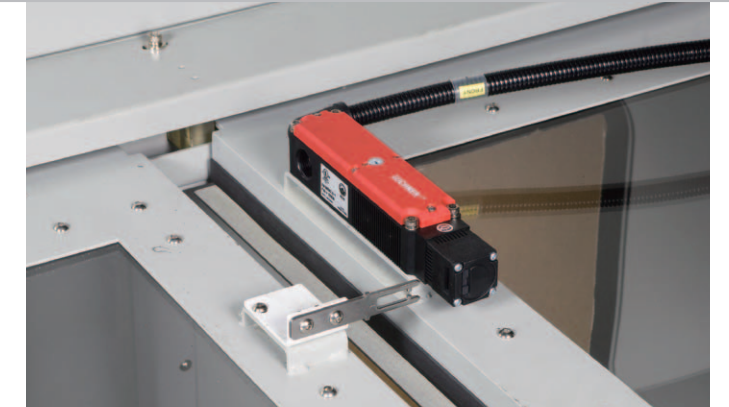
- ▶ Ease of inspection, loading/unloading through ATC door.
- ▶ Safety device is equipped for the ATC door. ATC operation is halted once door is opened.
- ▶ Wide ATC window for inspection of the ATC operation.



Safety System

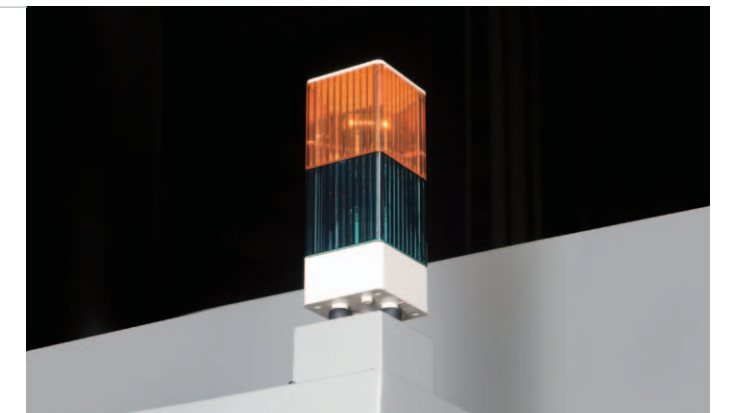
Safety Door

- ▶ When safety door is not closed, cutting program will not be allowed to initialize.
- ▶ When door is opened during operation, all movement will be stopped for safety.



Alarm Light

- ▶ Yellow flashing light signals the completion of the cutting program.
- ▶ Red flashing light signals that trouble shooting is required.



Buzzer

- ▶ When machine is abnormal, alarm message will be generated, and buzzer will beep to alert the operator for further trouble shooting.

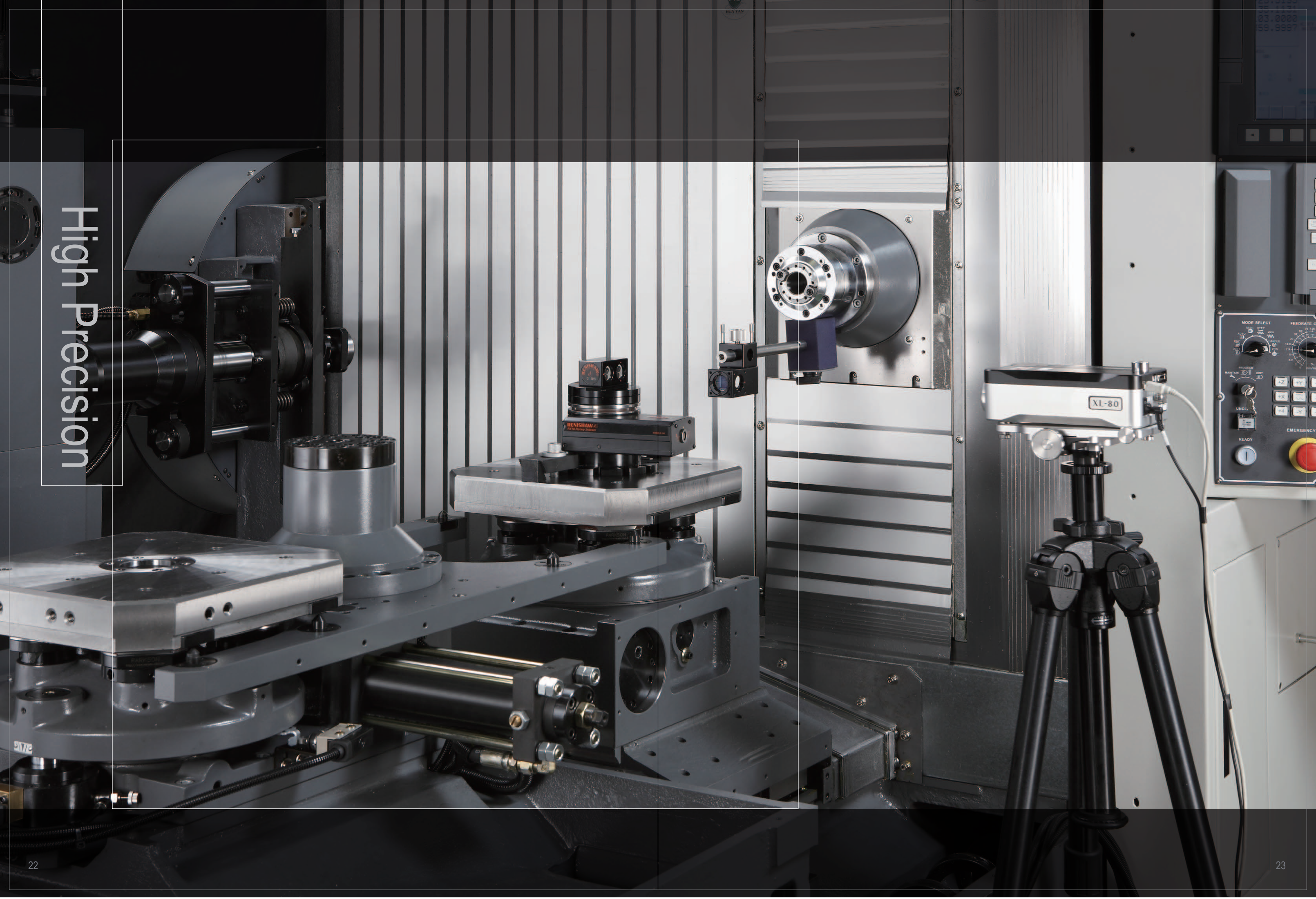


Low Pneumatic Pressure Alarm

- ▶ Pneumatic system with alarm to alert low pneumatic pressure.



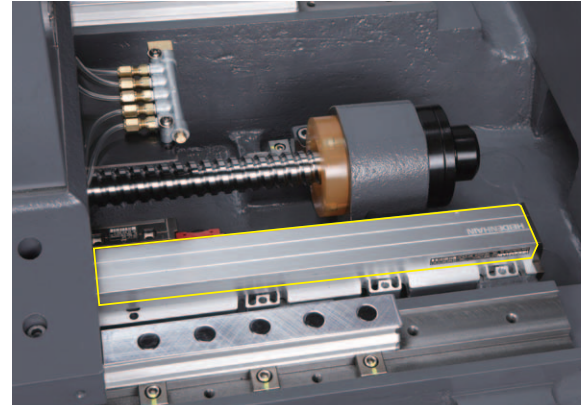
High Precision



High Performance Equipment

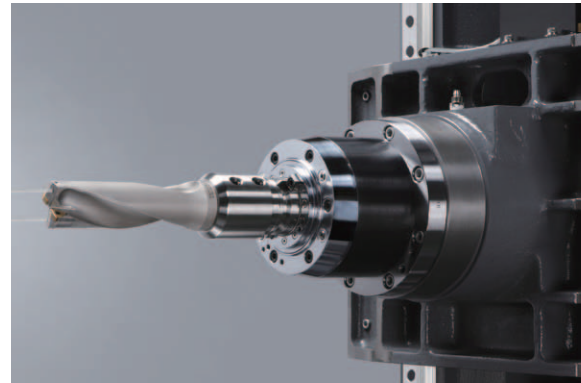
Linear Scales OP

- ▶ X/Y/Z axes can be equipped with linear scales.
- ▶ Air purge is equipped to protect the linear scale, to avoid dust or oil mist contamination. This helps the precision and lifespan of the linear scales.



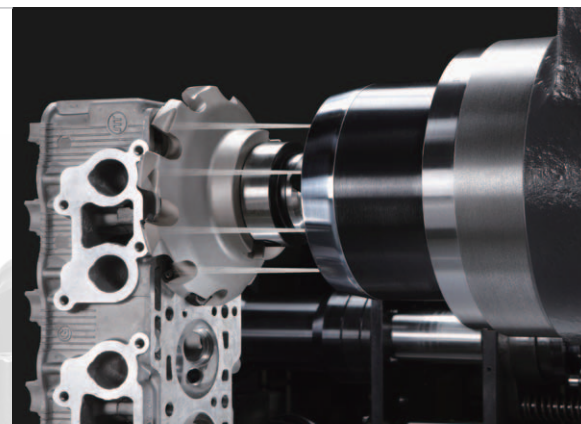
Coolant Through Spindle (CTS) Unit OP

- ▶ CTS is available for option. CTS allows high pressure coolant to travel through the spindle and tool, to imminently take away the heat.



Spindle Splash Ring

- ▶ 4 nozzles are equipped for the spindle splash ring system. The 4 nozzles are equipped around the spindle to lower the cutting temperature, and increase the machining quality.



Measurement System

Workpiece Measurement System OP

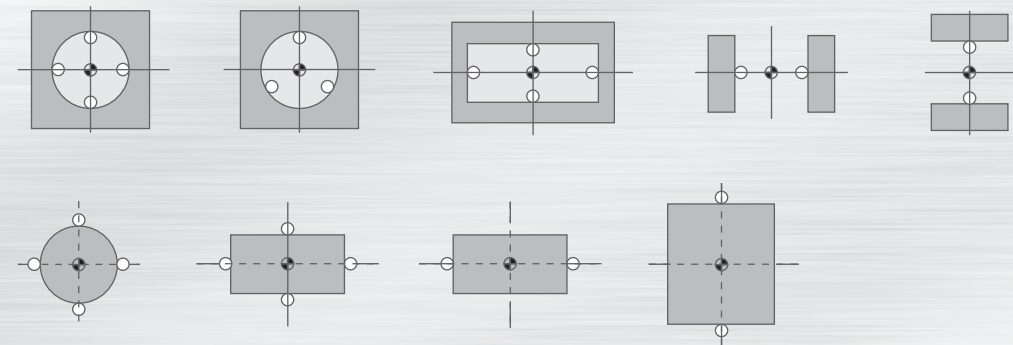
- ▶ Renishaw RMP60
- ▶ Automatic center measurement
- ▶ Automatic measurement system and its application, please see below diagrams.



Automatic Measurement Application

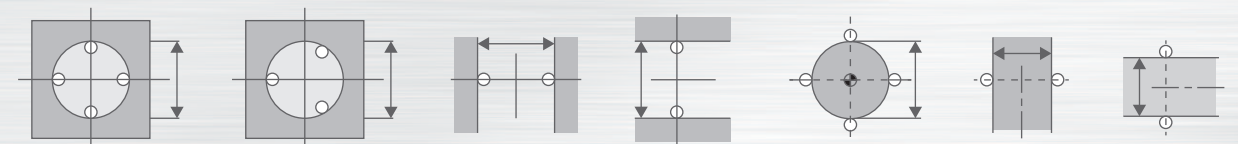
Centering Setup

Automatic setup of the workpiece 0 position.



Measurement

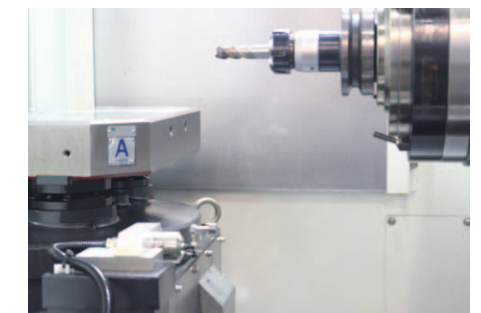
Measuring the workpiece size.



Tool Length Measurement OP

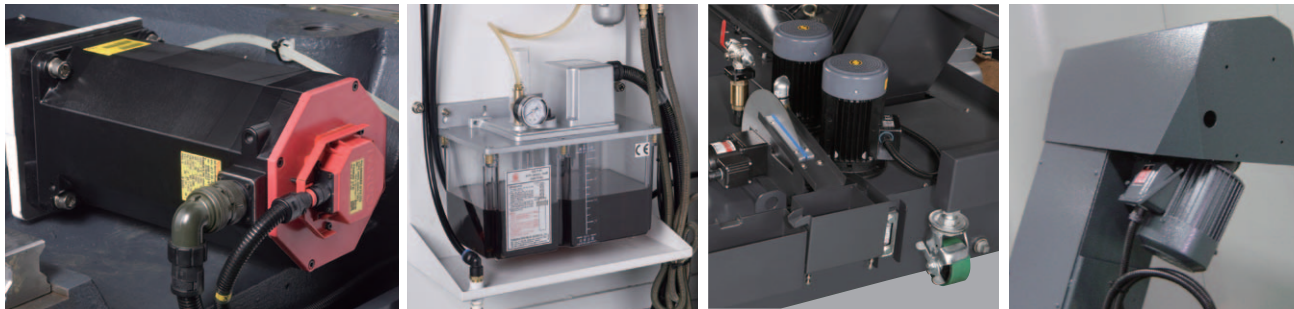
- ▶ Automatic tool measurement.
- ▶ Automatic measurement's application as shown on the right.

Automatic Measurement Application



- ▶ **Tool Measurement**
Automatic tool length measurement

Reduced Power Consumption / Oil Demister



▶ Auto Shut Off for the Machine Lamp

If controller is not operated for a certain amount of time, the lamp inside the working area will be shut off, to reduce the power consumption.

▶ Power Shut Off Function

If the machine is idled for a certain amount of time, spindle motor/servo motor/coolant pump will be shut off to reduce power consumption.

▶ Lubrication System Auto Shut Off Function

If the 3 axes is not operated in a certain amount of time, the lubrication system will be shut off to reduce the lubrication oil usage.

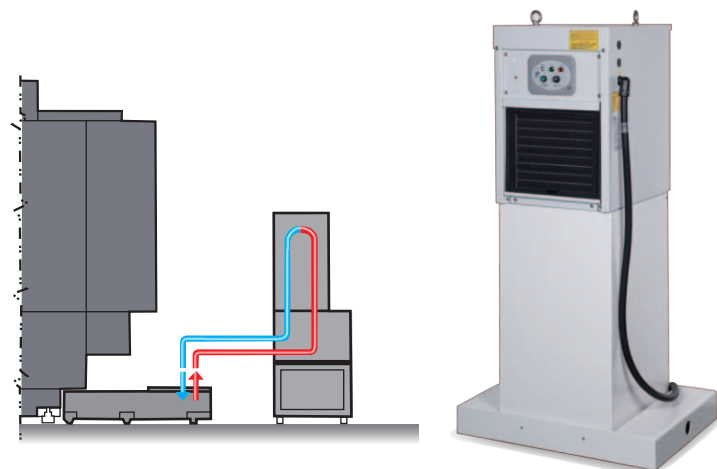
▶ Screen Auto Shut Off Function

Screen will be shut off, if controller is not used for a certain amount of time.



Cutting Coolant System **OP**

- ▶ Coolant system can limit the heat generated from machining, and further ensure the precision.



Oil Demister **OP**

- ▶ Fully sealed enclosure and oil collection to efficiently recycle the dust and oil mist. Oil demister can avoid the poisonous mist and material to be inhaled by the operator.
- ▶ Air quality can be maintained in a clean factory environment.

Human Machine Interface (HMI) / Operability



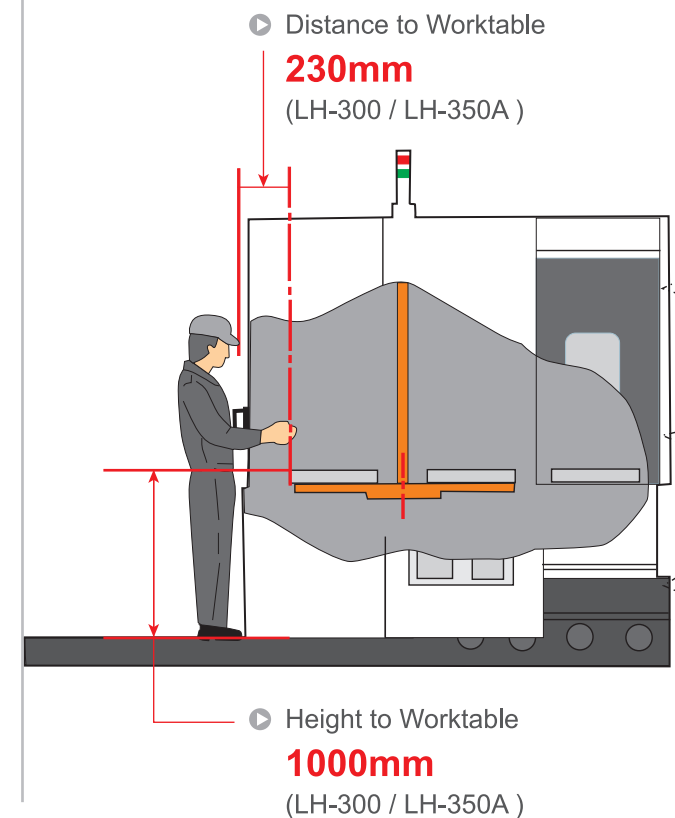
※15inch Screen (Optional)
10.4inch Screen (Standard)

※15inch Screen (Optional)
10.4inch Screen (Standard)

Next Generation Interactive Operating System

- ▶ When safety door is not closed, cutting program cannot be initialized, to ensure operator's safety.
- ▶ Cutting program will be interrupted if the door is opened during the operation.

Reachability



▶ Distance to Worktable
230mm
(LH-300 / LH-350A)

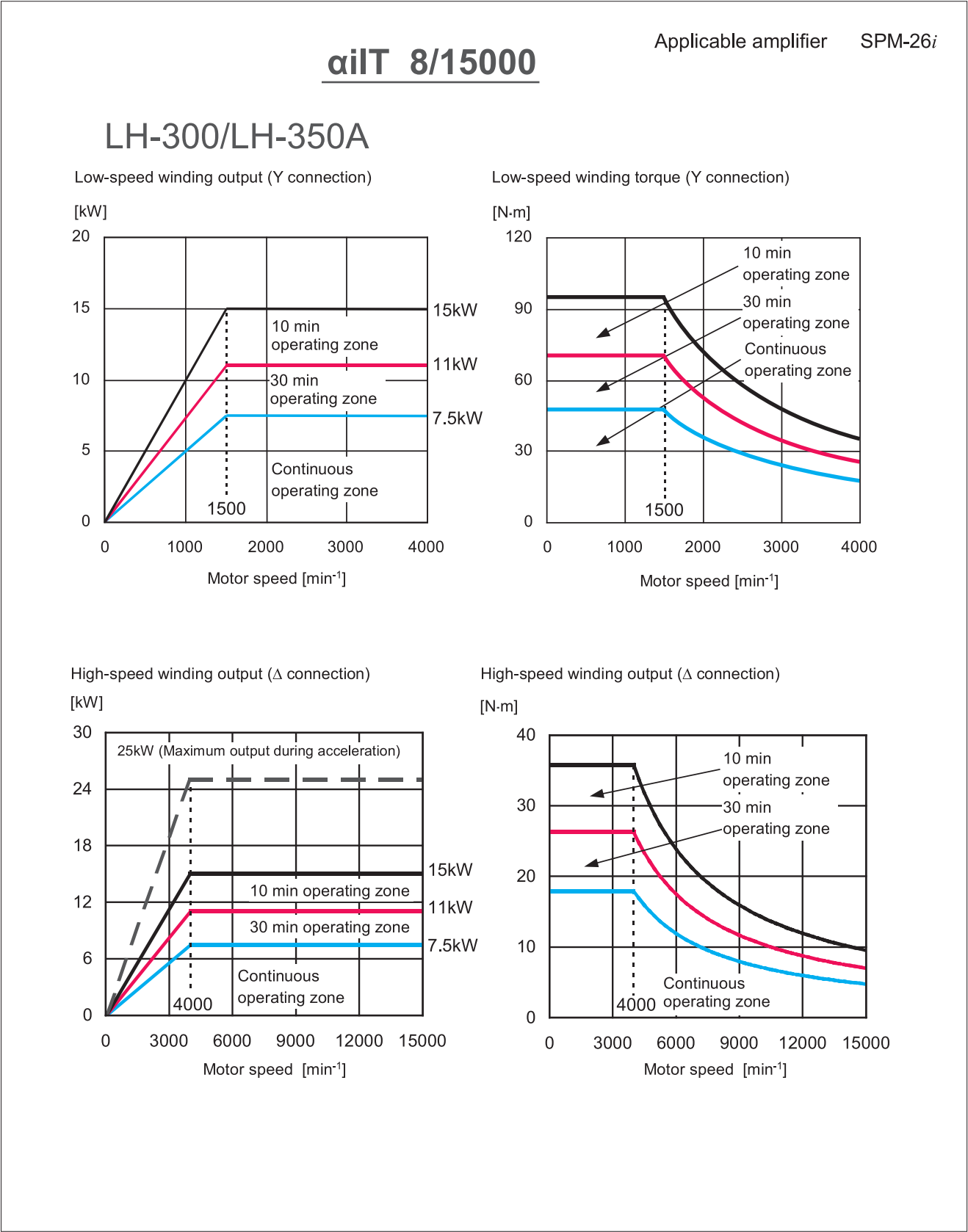
▶ Height to Worktable
1000mm
(LH-300 / LH-350A)



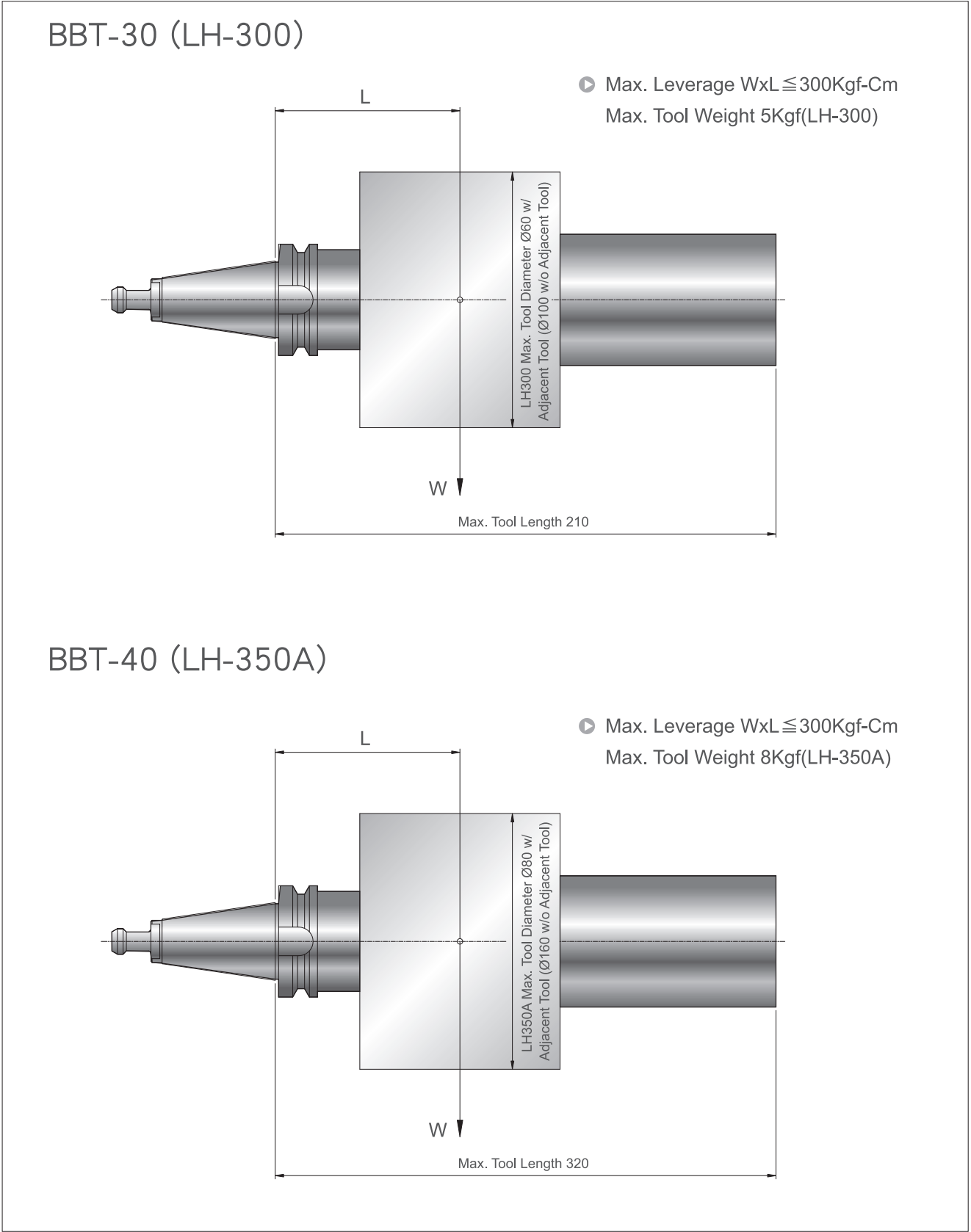
Ultra Large Door Width Design, for Ease of Loading / Unloading

- ▶ Reduced distance for operator & worktable. Door opening width **700mm** (LH-300 / LH-350A)

Spindle Motor Power and Torque Chart



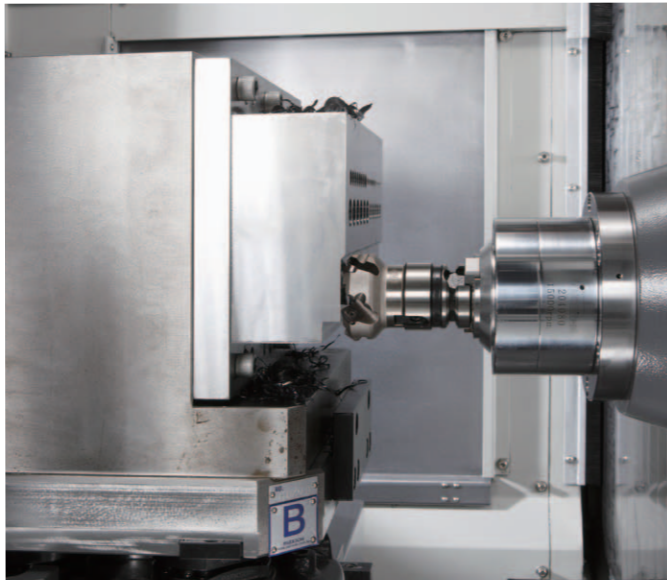
Tool Specification



Test Cut Information

800-34

Face Milling



End Milling



LH-300

Ø50mm

- ▶ Material Removal
75mL/min
- ▶ Spindle Speed
1500 rpm
- ▶ Feedrate
1000 mm/min

Ø14mm

- ▶ Material Removal
98mL/min
- ▶ Spindle Speed
1500 rpm
- ▶ Feedrate
1000 mm/min

LH-350A

Ø80mm

- ▶ Material Removal
168mL/min
- ▶ Spindle Speed
1450 rpm
- ▶ Feedrate
1200 mm/min

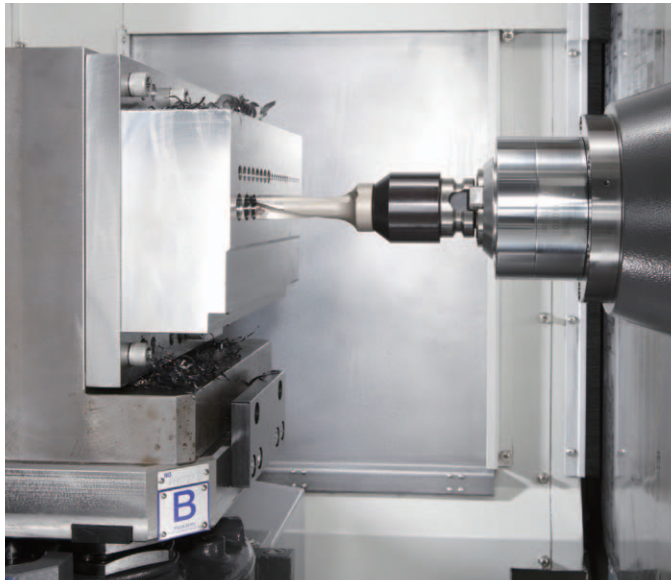
Ø16mm

- ▶ Material Removal
128mL/min
- ▶ Spindle Speed
1500 rpm
- ▶ Feedrate
1000 mm/min

Test Cut Information

800-35

Drilling



Tapping



LH-300

Ø20mm

- ▶ Spindle Speed
1200 rpm
- ▶ Feedrate
500 mm/min

- ▶ Tool Specification
M16xP2.0
- ▶ Spindle Speed
228 rpm
- ▶ Feedrate
456 mm/min

LH-350A

Ø35mm

- ▶ Spindle Speed
230 rpm
- ▶ Feedrate
35 mm/min

- ▶ Tool Specification
M24xP3.0
- ▶ Spindle Speed
100 rpm
- ▶ Feedrate
300 mm/min

High Precision

Laser Inspection

- Full travel dynamic precision through laser compensation calibration



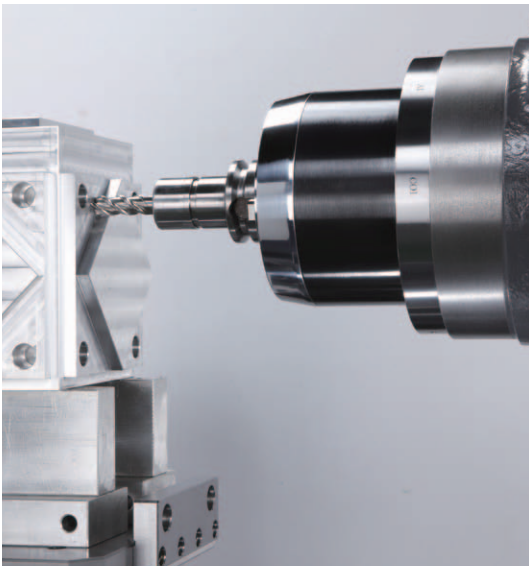
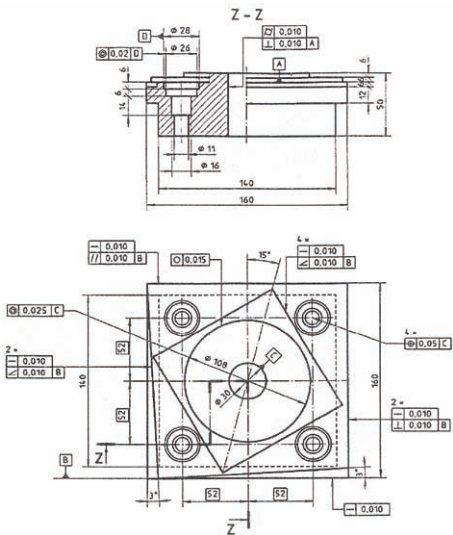
Ballbar Inspection

- Ballbar test to ensure the roundness and geometrical precision.



Standard Specimen

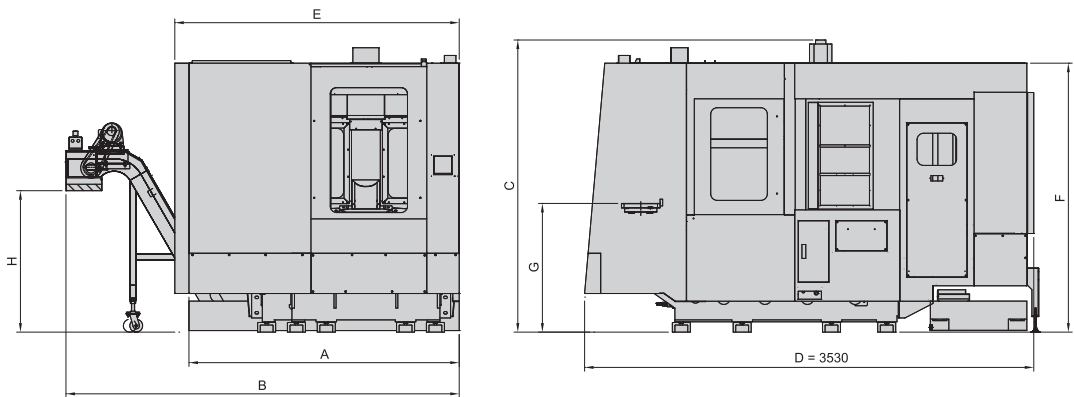
- Every machine is inspected carefully before shipment. International standard dynamic cutting specimen is also required to pass the inspection.
- The specimen is tested through CMM to ensure the result of the actual cutting standard.



Machine Exterior Dimension

Dimension

Unit : mm

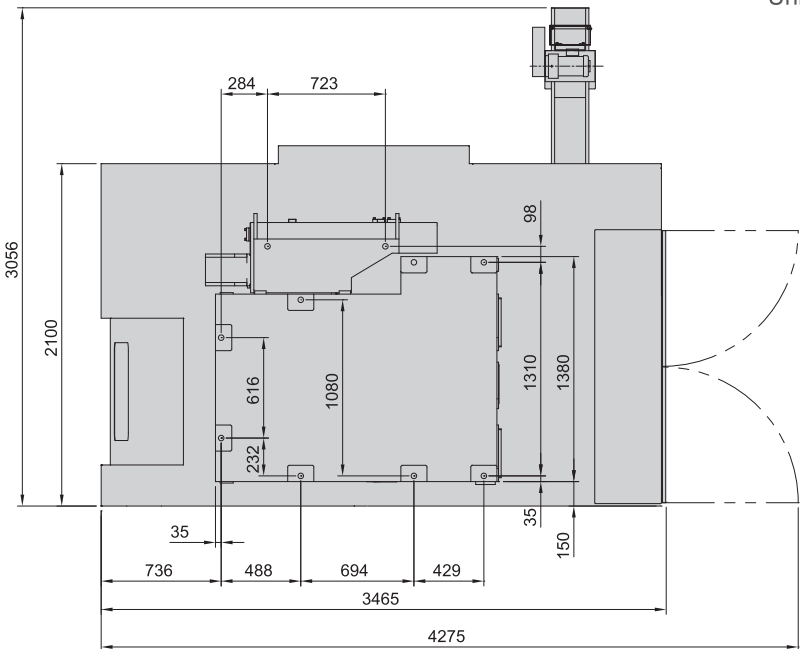


Dimension Model	A	B	C	D	E	F	G	H
LH-300	2100	3056	2282	3530	2210	2090	1000	1100
LH-350A	2100	3056	2282	3530	2235	2090	1000	1100

Floor Space & Foundation

LH-300 / LH-350A

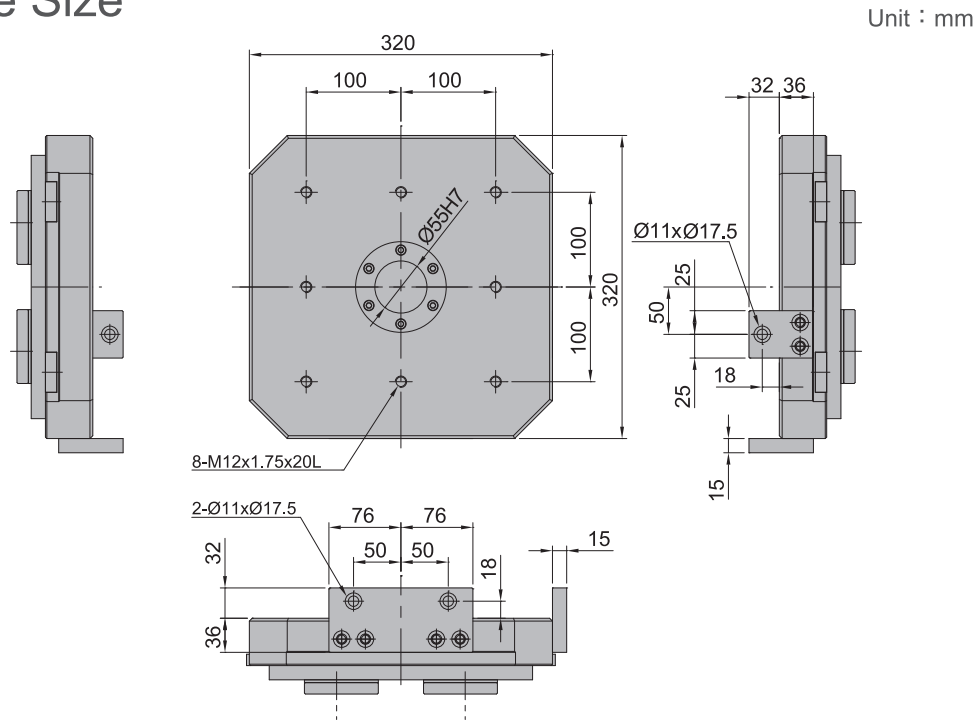
Unit : mm



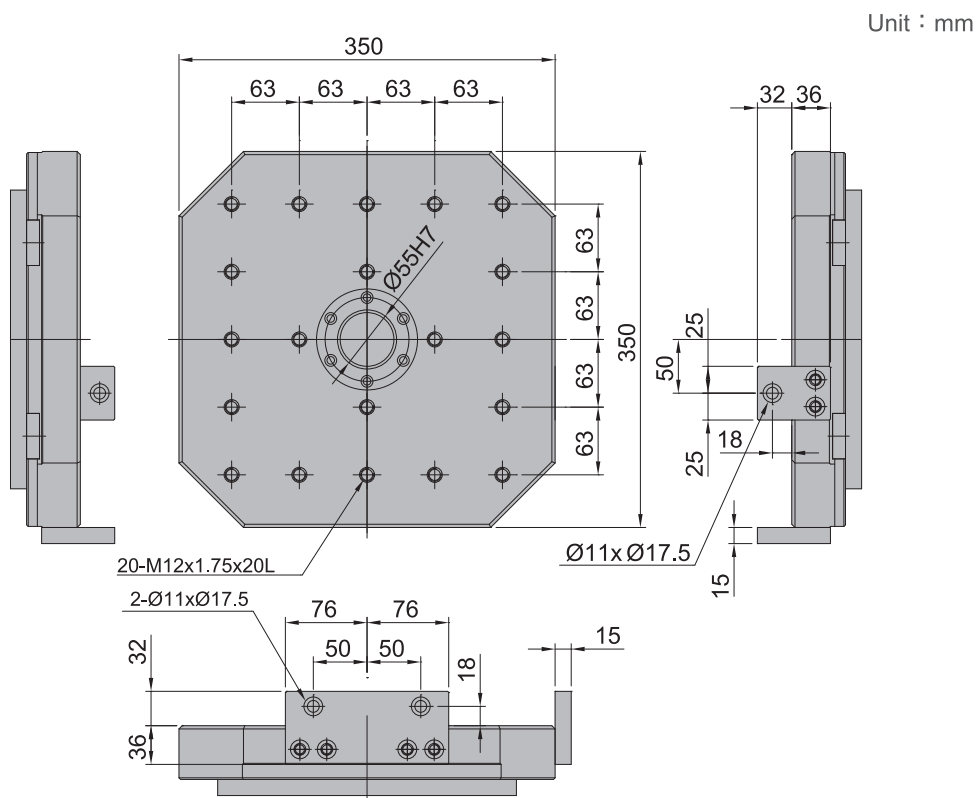
Machine Dimension

Worktable Size

LH-300

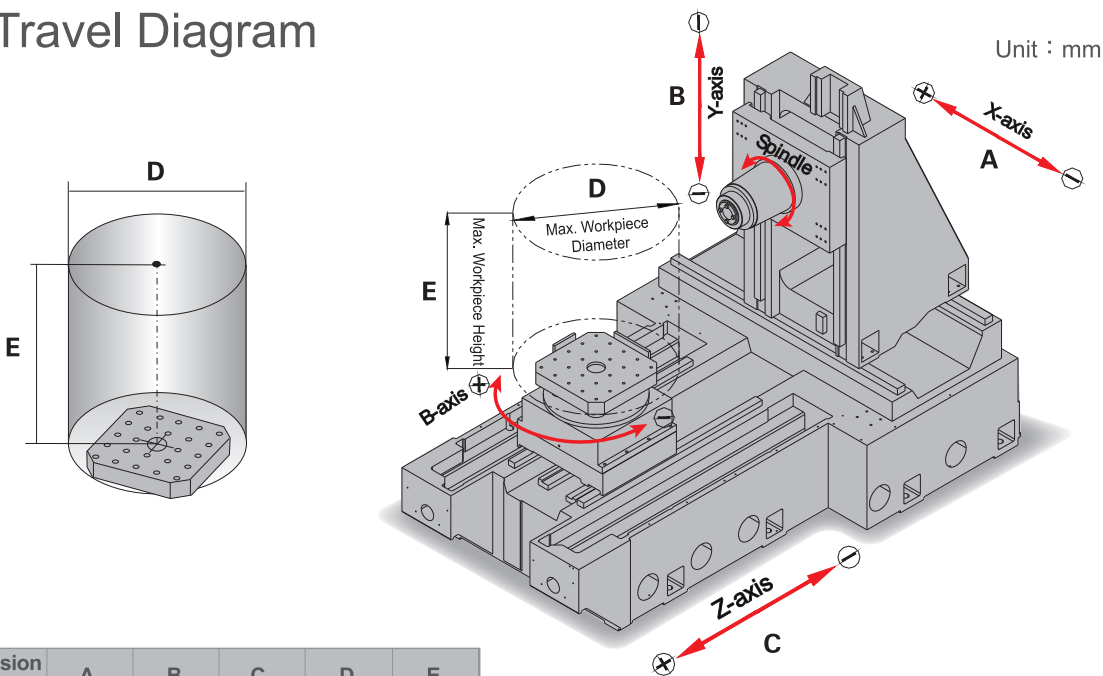


LH-350A



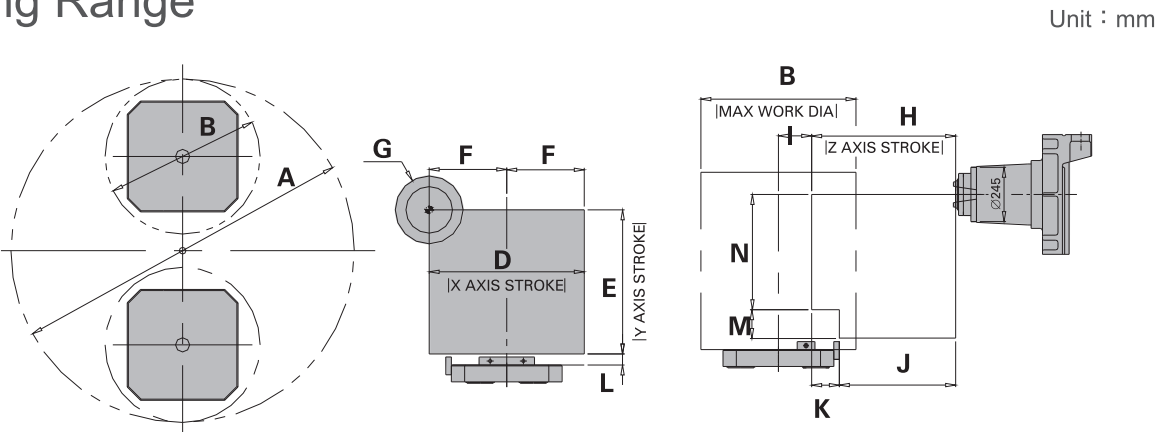
Machine Dimension

3 Axes Travel Diagram



Dimension	A	B	C	D	E
Model					
LH-300	460	460	350	430	475
LH-350A					

Cutting Range



Dimension	A	B	D	E	F	G	H	I	J	K	L	M	N
Model													
LH-300	1030	430	460	460	230	110	350	60	220	130	60	80	380
LH-350A	1030	430	460	460	230	160	350	60	220	130	60	80	380

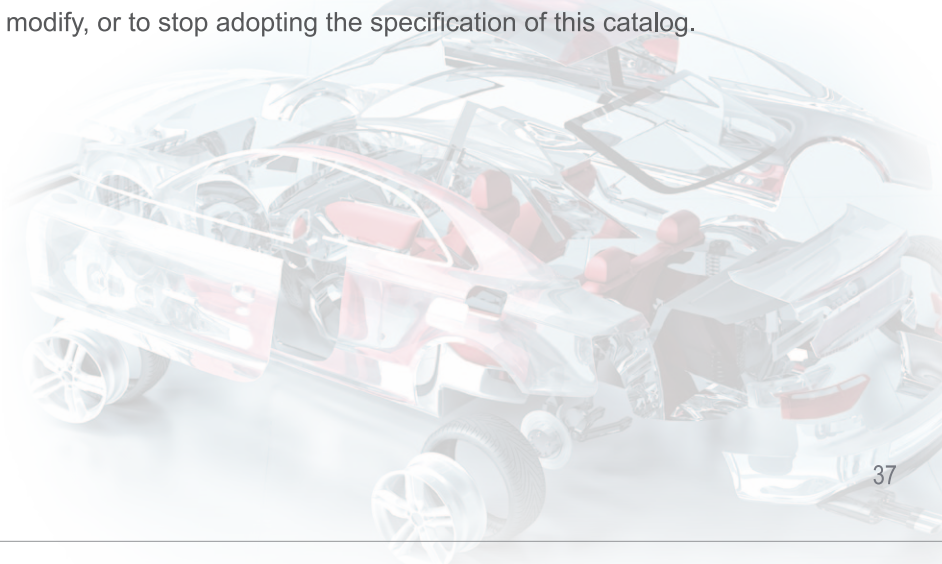
Technical Specification

Description		LH-300	LH-350A
Travel			
X/Y/Z Axis Travel	mm	460/460/350	460/460/350
Spindle Center to Worktable Surface	mm	60-520	60-520
Spindle Nose to Worktable Center	mm	60-410	60-410
Worktable			
Worktble Size	mm	320x320	350x350
Max. Workpiece Size	mm	Ø430	Ø430
Max. Table Loading	kg	250	250
Max. Workpiece Height	mm	550	550
Worktable Setup	mm	8-M12 Pitch 100	20-M12
Min. Worktable Indexing		0.001°	0.001°
Spindle			
Max. Spindle Speed	RPM	15000	12000
Max. Spindle Cutting Torque	N-m	47.7	47.7
Spindle Taper		7/24Taper,No.30	7/24Taper,No.40
Spindle Bearing Diameter	mm	45	70
Spindle Transmission		Direct Drive	Direct Drive
Feedrate			
3 Axes Rapid Speed	mm/min	48000	48000
Cutting Feedrate	mm/min	1-12000	1-12000
Manual Feedrate	mm/min	1260	1260
Auto Tool Changing Unit			
Tool Taper		BBT-30	CAT40 II
Tool Capacity	Pcs	30	30
Max. Tool Diameter (No Adjacent Tool)	mm	60(100)	80(160)
Max. Tool Length	mm	210	320
Max. Tool Weight	kg	5	8
Tool Selection		Random	Random

Technical Specification

Description		LH-300	LH-350A
Auto Pallet Changer			
Number of Pallets	Pcs	2	2
Pallet Changing Type		Swing Type	Swing Type
Tool Changing Time	Sec	10	10
Control			
Fanuc		0i-MD	0i-MD
Motor			
Spindle Motor Power	KW	7.5 / 11	7.5 / 11
Spindle Motor Torque	N.m	17.9 / 47.7	17.9 / 47.7
X/Y/Z/B Axes Motor Power	KW	2.7 / 4.5 / 2.7 / 1.6	2.7 / 4.5 / 2.7 / 1.6
Hydraulic Motor	KW	1.5	1.5
Cutting Fluid Motor	KW	1.5	1.5
Power			
Power Consumption	KVA	25	25
Oil/Coolant Tank			
Hydraulic System Capacity	L	50	50
Lubrication System Capacity	L	2	2
Cutting Fluid System Capacity	L	300	300
Machine Dimension			
Machine Height	mm	2282	2282
Floor Space (chip removal)	mm	3530x2210(3056)	3530x2235(3056)
Machine Weight	kg	7000	7000

- ▶ The catalog is only for reference purpose. Actual machine may differ to this specification.
- ▶ Litz company reserves the rights to modify, or to stop adopting the specification of this catalog.



Option List

	LH-300	LH-350A
Spindle		
Spindle Speed 12000RPM	○	●
Spindle Speed 15000RPM	●	○
Spindle Oil Cooler	●	●
Air Curtain System	●	●
Direct Drive Spindle	●	●
3Axes Transmission		
3Axes Roller Linear Guide	●	●
3Axes Hollow Cooling	●	●
3Axes Linear Scales	○	○
4th Axis Scale	○	○
Pallet		
Worktable 1Degree Indexing	△	△
Worktable 0.001 Indexing	●	●
M12 Position Holes	●	●
Worktable T Slot	○	○
Coolant System		
Splash Ring	●	●
Spindle Air Blow	○	○
Center Through Spindle	○	○
Chip Removal		
Chain Type Chip Removal System	●	●
Scrape Type Chip Removal System	○	○
Chip Cart	●	●
Chip Auger	●	●
Machine Oil-coolant Separator	●	●
Wash Down	●	●
Disc Type Oil-coolant Separator	●	●

	LH-300	LH-350A
Safety System		
Front/Side Door Safety Switch	●	●
CE Compliance	○	○
Measurement System		
Tool Length Measurement NC-4S	○	○
Workpiece Measurement RMP-60	○	○
ATC & Magazine		
Tool Capacity 30T	●	●
Tool Capacity 40T	○	○
Tool Capacity 90T	○	○
Tool Capacity 120T	○	○
Tool Holder Taper BBT	●	○
Tool Holder Taper CAT II	—	●
Spindle Taper #30	●	—
Spindle Taper #40	—	●
Electrical		
M30 Auto Power Off	●	●
Work Light	●	●
Alarm Light	●	●
Air Conditioner for Cabinet	○	○
Heat Exchanger for Cabinet	●	●
Control		
Fanuc 31i	○	○
Fanuc 0iMD	●	●
Mitsubishi M720	○	○
Miscellaneous		
Oil Demister	○	○
Rotary Window	○	○
Automation		
2 Pallet APC	●	●
6 Pallet APC	○	○

● : Standard ○ : Optional △ : Inquiry Required — : Not Available

Production Plant



SALES & DISTRIBUTION NETWORK

