



**The Ultimate in Performance**

## **MU Series**

**MU-450/650  
5 Axes Machining Center**

**LEADWELL**  
LEADWELL CNC MACHINES MFG., CORP.

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\* All performance are based on 220V/3PH/60HZ. Specifications are subject to change without notice.

2016.03

# 5 AXES MACHINING CENTERS

MU Series machining centers offers 5 axis simultaneous machining capability. The design with 2-axis rotary table to fit your machining condition and application to give you the best product result.

### Target Industries:

Aerospace, Medical engineering

### Applications:

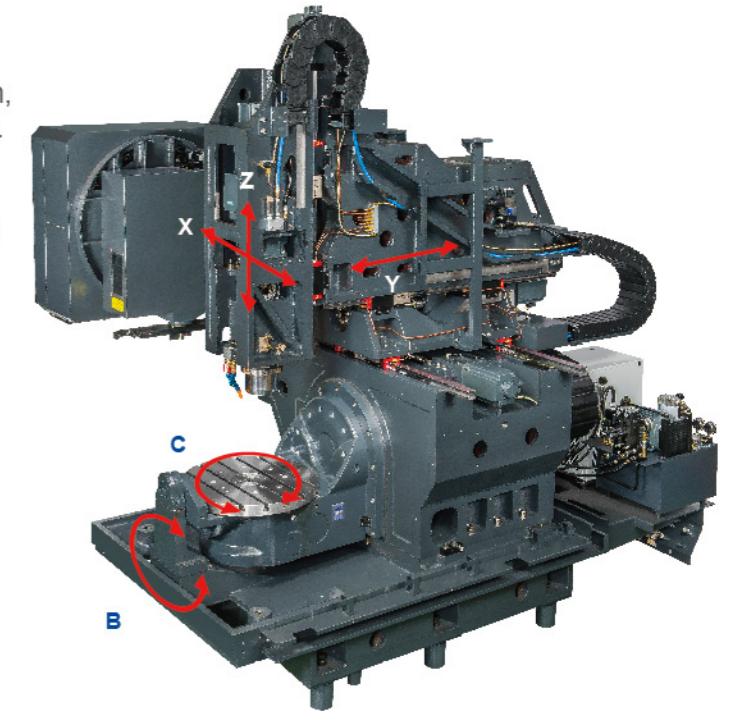
Simultaneous 5-axis machining or 3+2 axis processing method



# STRUCTURE

### Optimum Structural Design

- X、Y、Z moving column design, with B, C axis rotary table. Creates optimum floor space.
- Direct drive spindle design reduce the spindle running noise and vibration. Also increases the motor transmission efficiency.
- The rotary uses one side driving two side handling design, provides higher table load capacity and rotation accuracy.
- To ensure the machine rigidity and accuracy during long term heavy cutting, the spindle headstock is made of one piece "FCD600" castings.



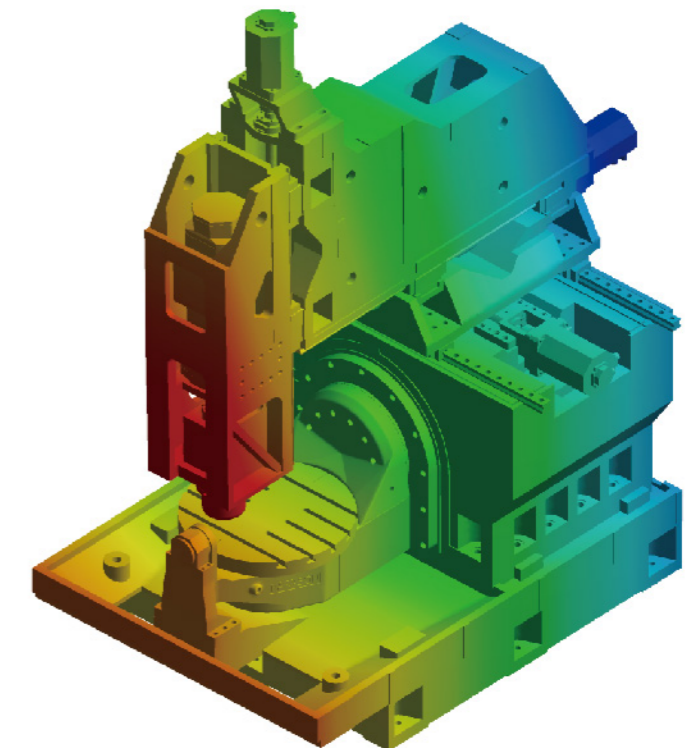
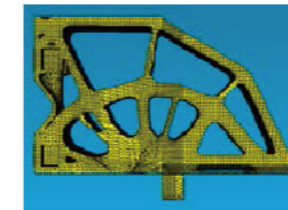
## FEA REPORT(Finite Element Analysis)

### With FEA you can:

1. Predict and improve product performance and reliability.
2. Reduce physical prototyping and testing.
3. Evaluate different designs and materials.
4. Optimize designs.

### Optimum

- Section areas
- Moments of inertia
- Torsional constant
- Plate thickness
- Bending stiffness
- Transverse shear
- Vibration reduce



## MAIN FEATURES

### 1. High Rigidity

- FEA Analysis.
- Optimized structure for stable moving.
- Dual nuts ball screw design in X and Yaxis.
- Three axis roller type high rigidity guide way.
- 4 sets of bearings transmission system design.
- B axis motor driving by gear design.

### 2. High Reliability

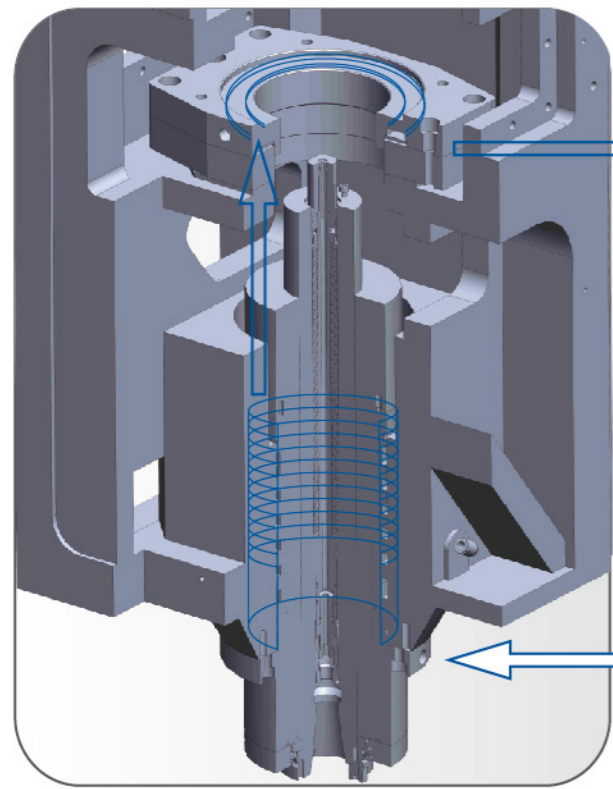
- Ball screw nuts cooling system available.
- Ball screw bearing lubrication system design.
- Linear scale (X/Y/Z) & rotary encoder (B/C) available.
- Magnetic scale available.
- Surrounding coolant system.

### 3. High Efficiency

- Rapid feed rate 36mm.
- Spindle speed 12,000 RPM.
- 5 axis machining simultaneously.



## DIRECT DRIVE SPINDLE COOLANT SYSTEM



- For the machining accuracy, the direct drive spindle system with special coolant system design, connects with spindle and motor adaptor cooling function, suppressed the heat source generated from the motor side.
- Spindle oil chiller (STD.)

Coolant out

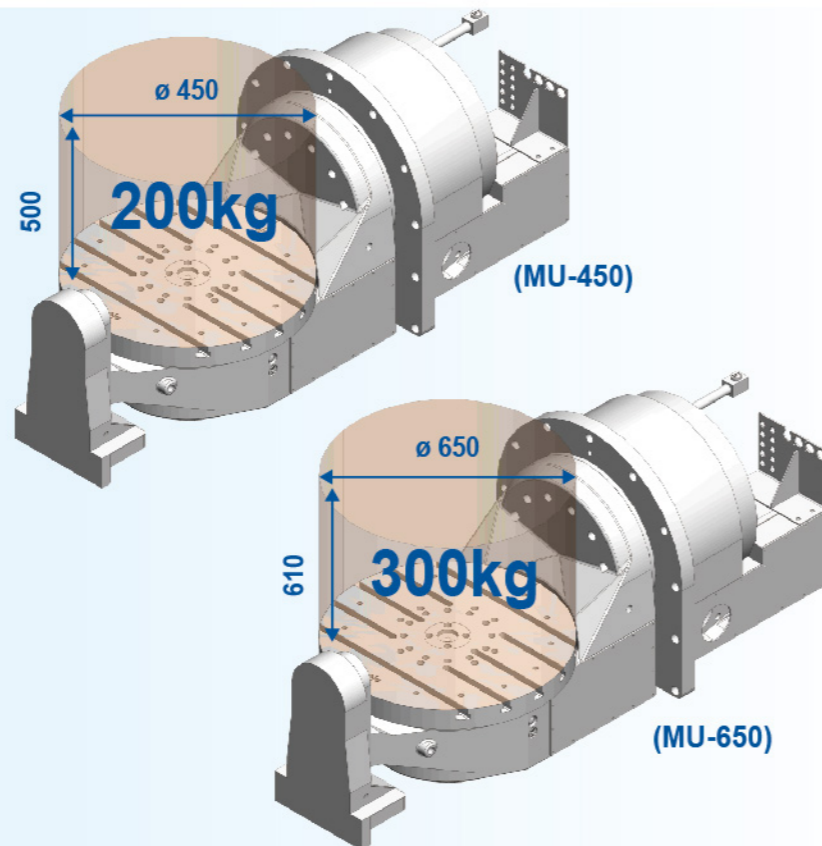
Coolant in

Max. spindle speed  
**12000 rpm**  
 15000 rpm (optional)

## ROTARY TABLE

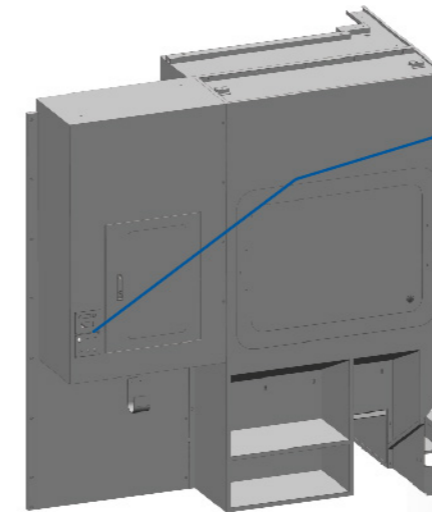
Max. table size  
 φ450x500mm(MU-450)  
 φ650x610mm(MU-650)

Max. Loading capacity  
 200kg(MU-450)  
 300kg(MU-650)



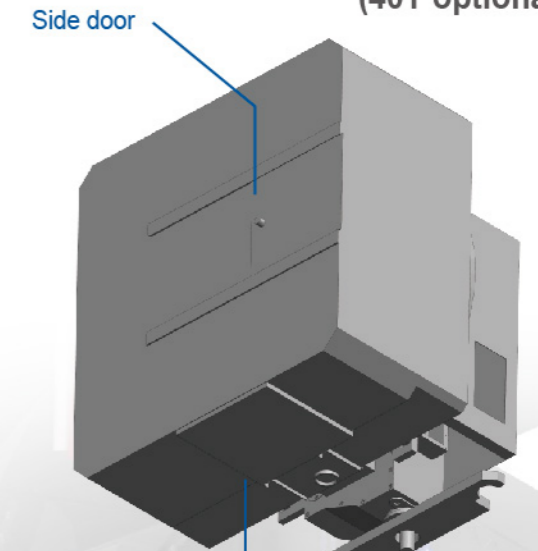
## TOOL MAGAZINE

- Spindle side and tool magazine side tool change are both available.
- 40T tool magazine has tool number and tool selection display panel.
- Faster tool changer.



Tool number &  
 Tool selection  
 display panel

Side door  
**30 T**  
 (40T optional)

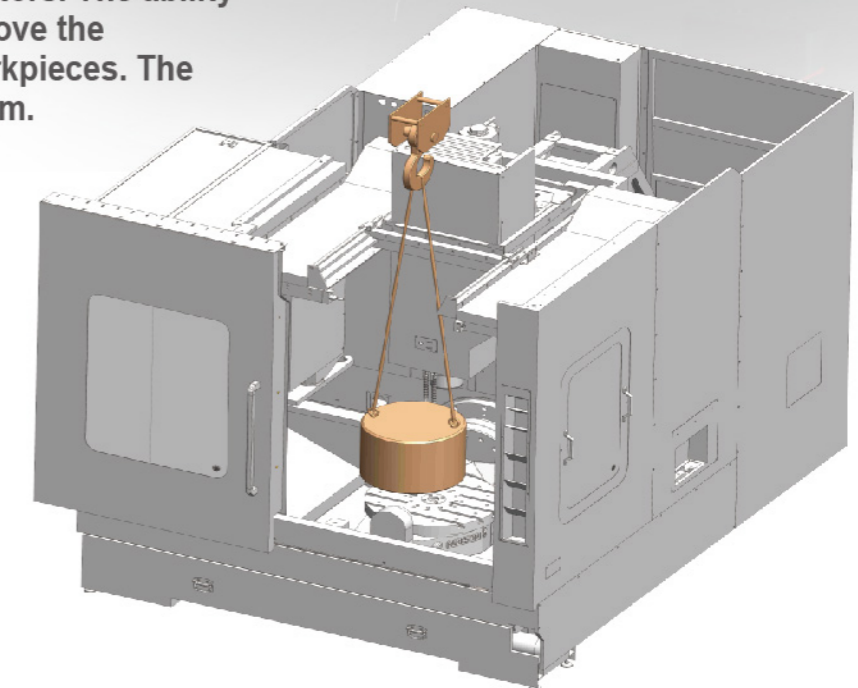


Auto-Door of Tool  
 Magazine

## LARGE WORKPIECE FRIENDLY

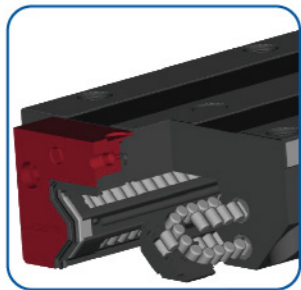
- \* The top front cover can be opened to ensure the efficiency and the safety of operators. The ability to open up the top cover will remove the limitation on machining large workpieces. The opening width can go up to 530mm.

The sliding door has no door trace, the opening width can go up to 1180mm. The large opening space ensure the easiness when loading/uploading the workpiece.

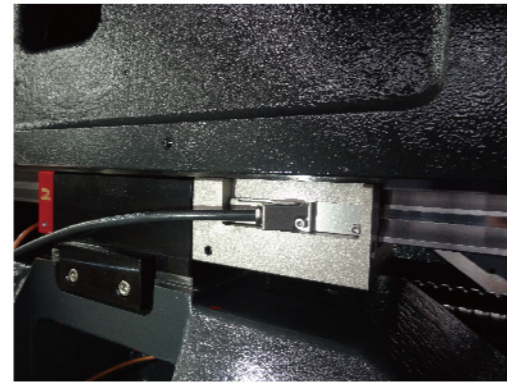




## HIGH RIGIDITY TRANSMISSION



Schneberger

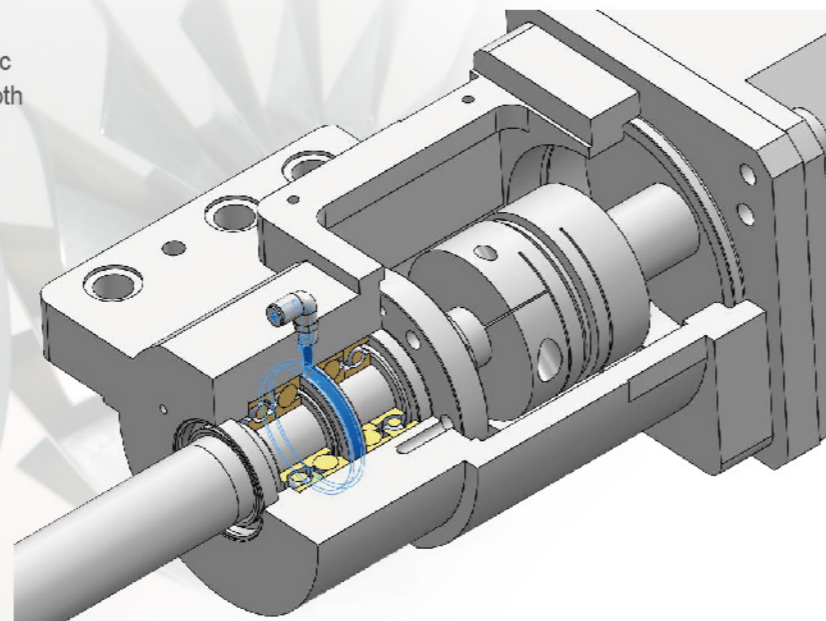


### Magnetic scale system

Magnetic scale do not have to consider the use of harsh environments, cutting oil, coolant and other environments can be determined.

### Roller type linear guideway

Exceptional rigidity, high dynamic and static load-carrying capacities, outstanding smooth running and a fully sealed carriage are the main features of the Roller Guideway.



### 4 sets of bearings transmission system design

For long machining work hours, use 4 sets of bearings design, offered high rigidity and ensure the transmission system's reliability.

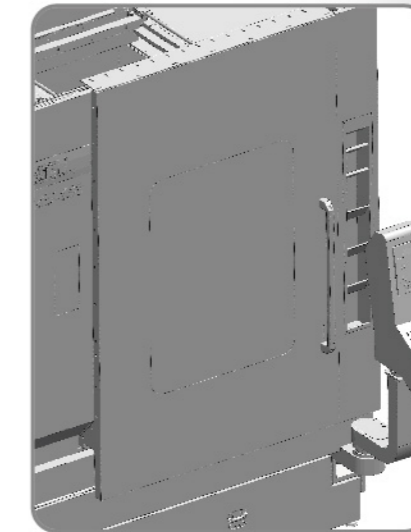
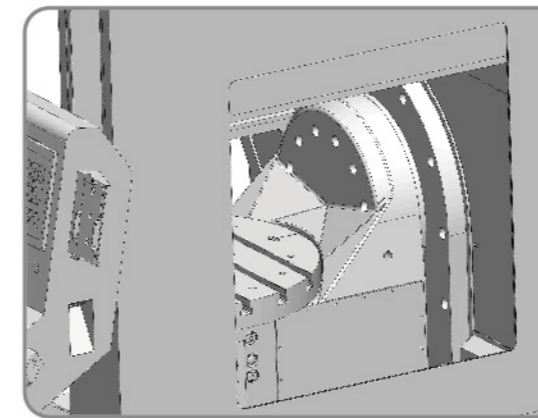
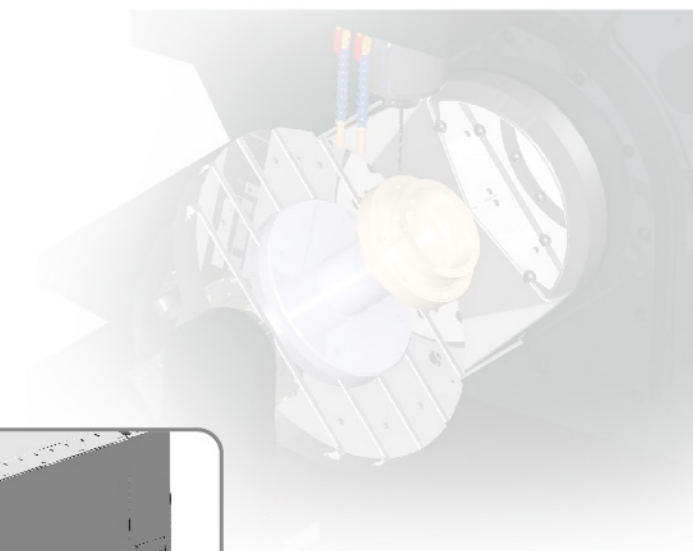
### Three Axis Bearing Oil Lubrication System

All three axis, and the bearing all have the automatic lubrication system installed. The life of the parts will be prolonged with this system. Not only get better rigidity, also reduce the thermal elongation.

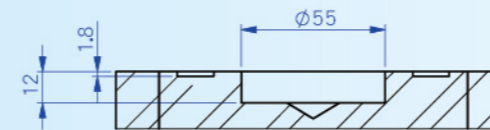
## AUTO DOOR (OPTIONAL)

### Automation Preparation

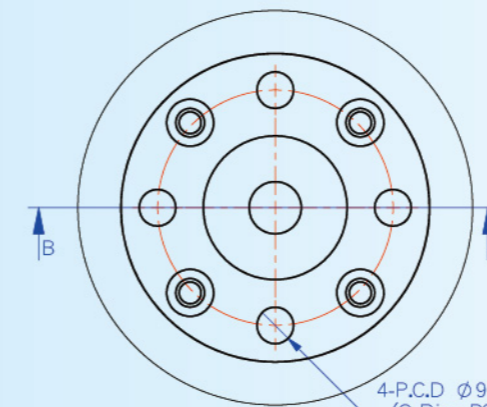
- The front side auto-door with the robot can reach loading/unloading automatically function.
- Side auto-door arranged for customer's pallet automation requests.



## FIXTURE PREPARATION (OPTIONAL)

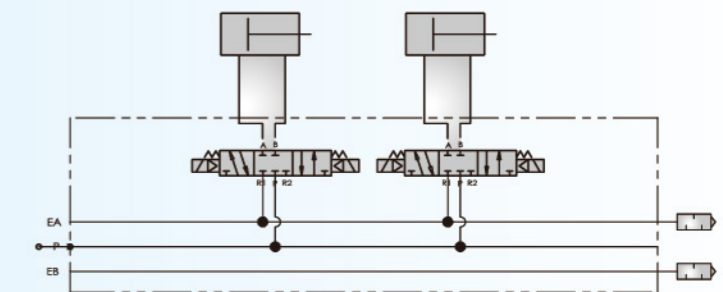


SECTION: B-B  
PROPORTION:(1:2)



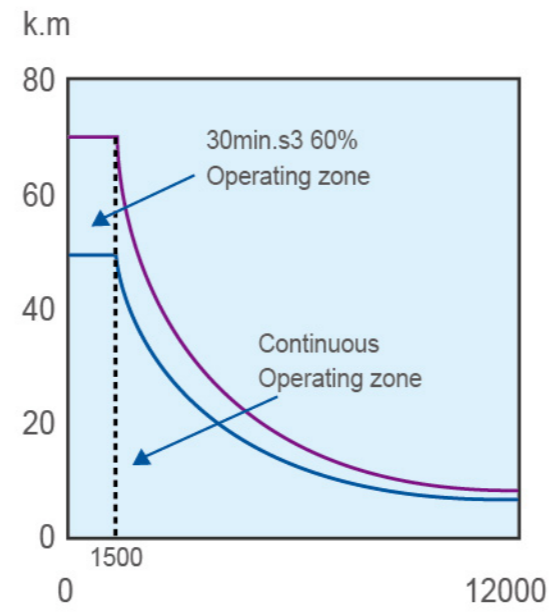
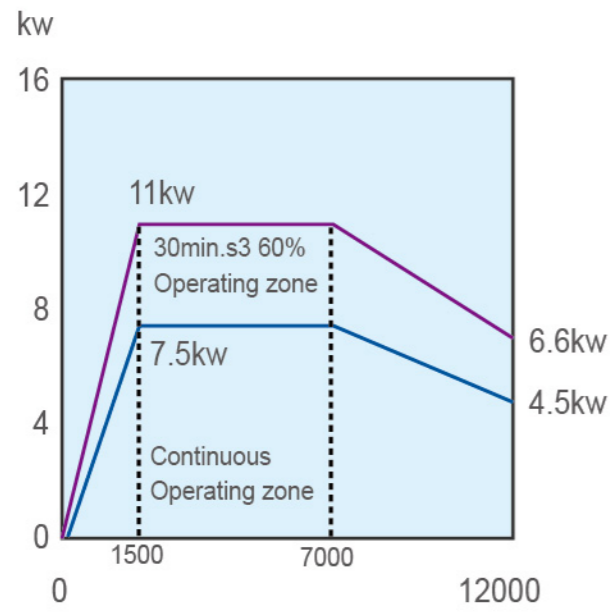
### Fixture Preparation

- Pneumatic or Hydraulic available.
- Two in and two out capacity.



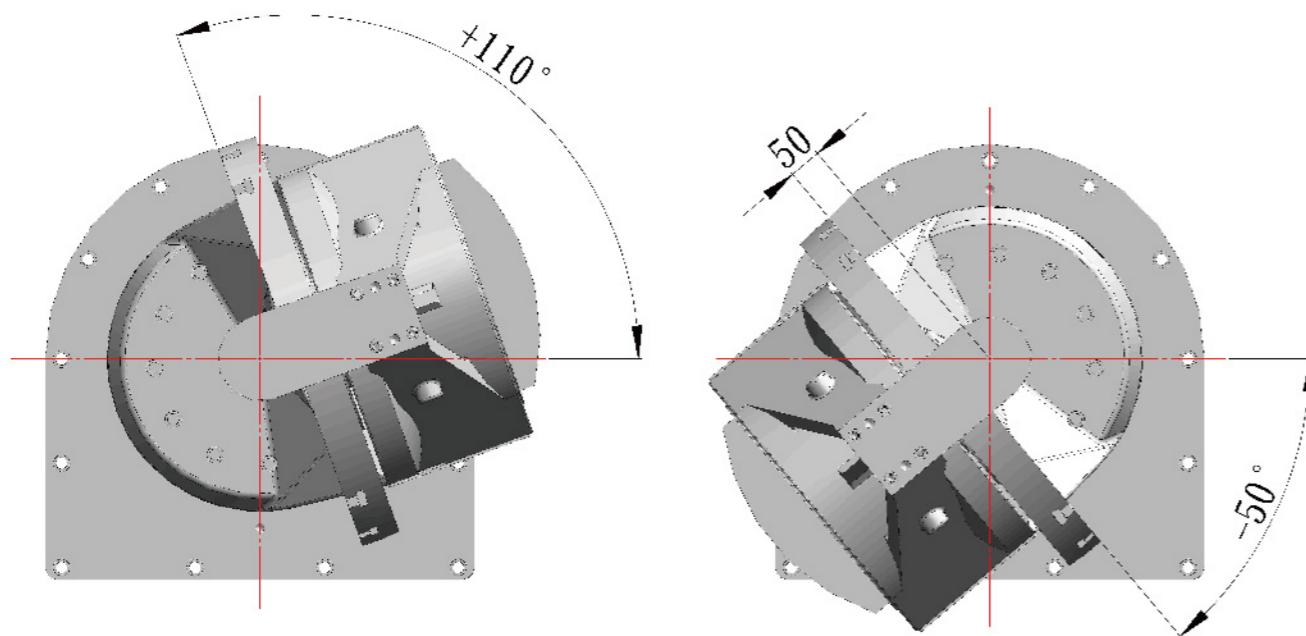
## SPINDLE MOTOR POWER CURVE

30min/cont.: 12000 rpm



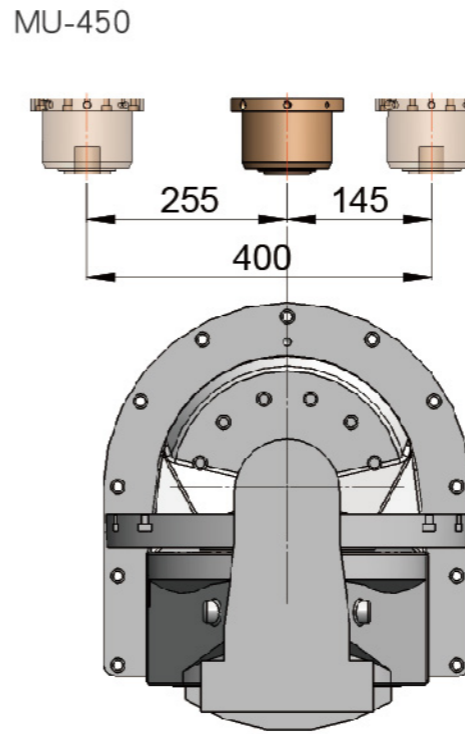
## TILTING ANGEL RANGE

B AXIS

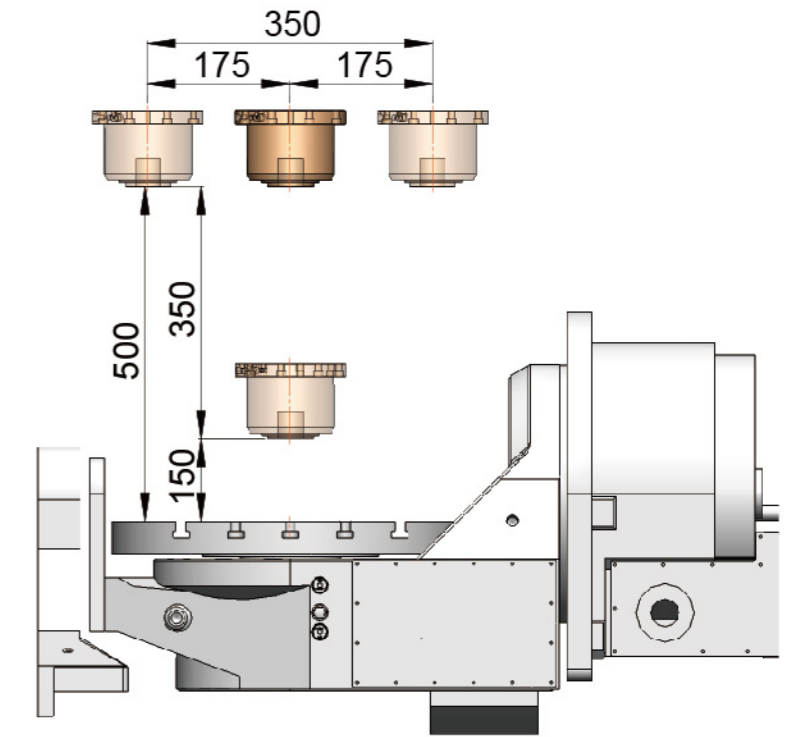


## MACHINING AREA

MU-450

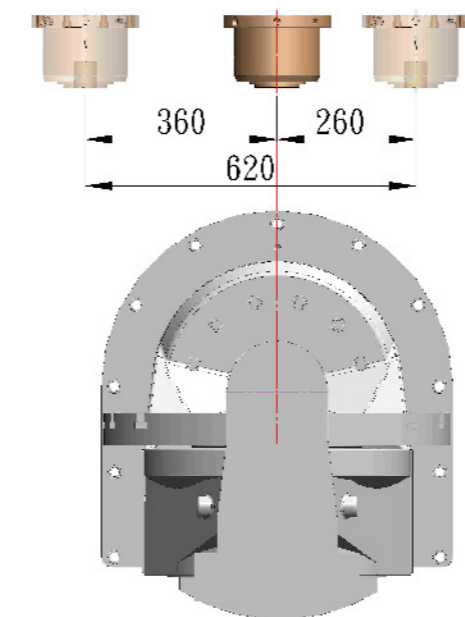


X axis travel

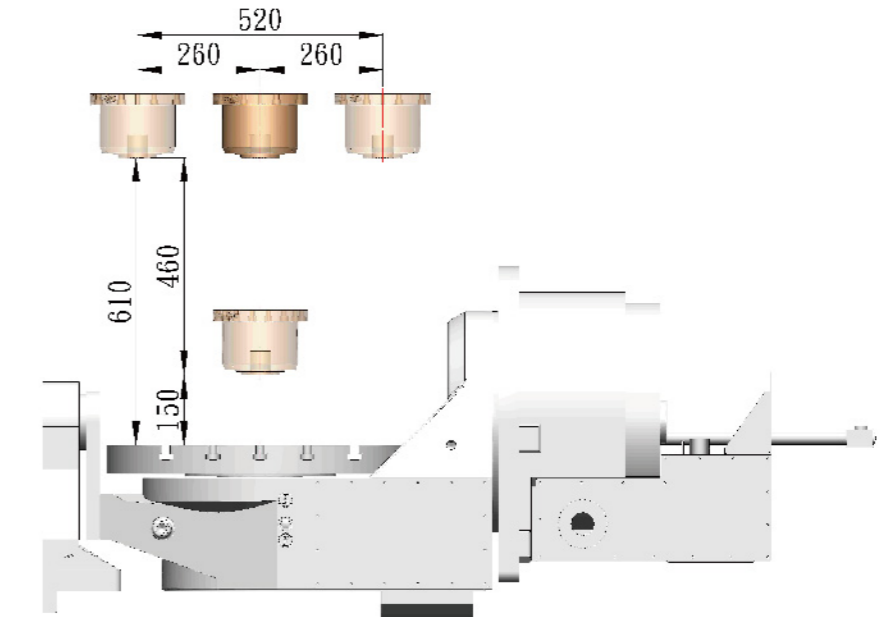


Y/Z axis travel

MU-650



X axis travel

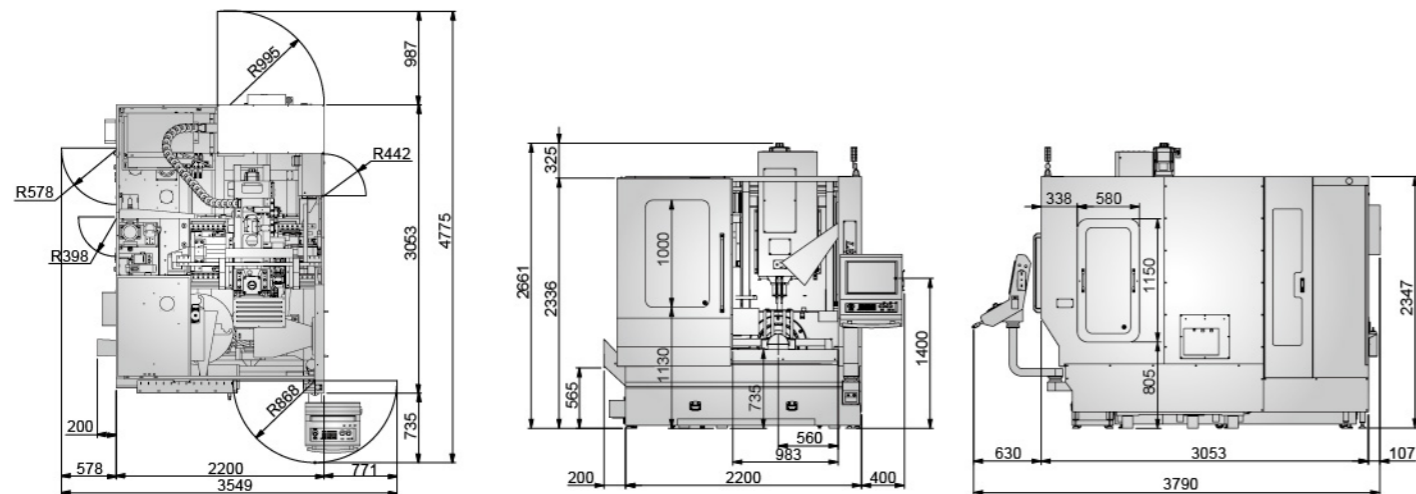


Y/Z axis travel

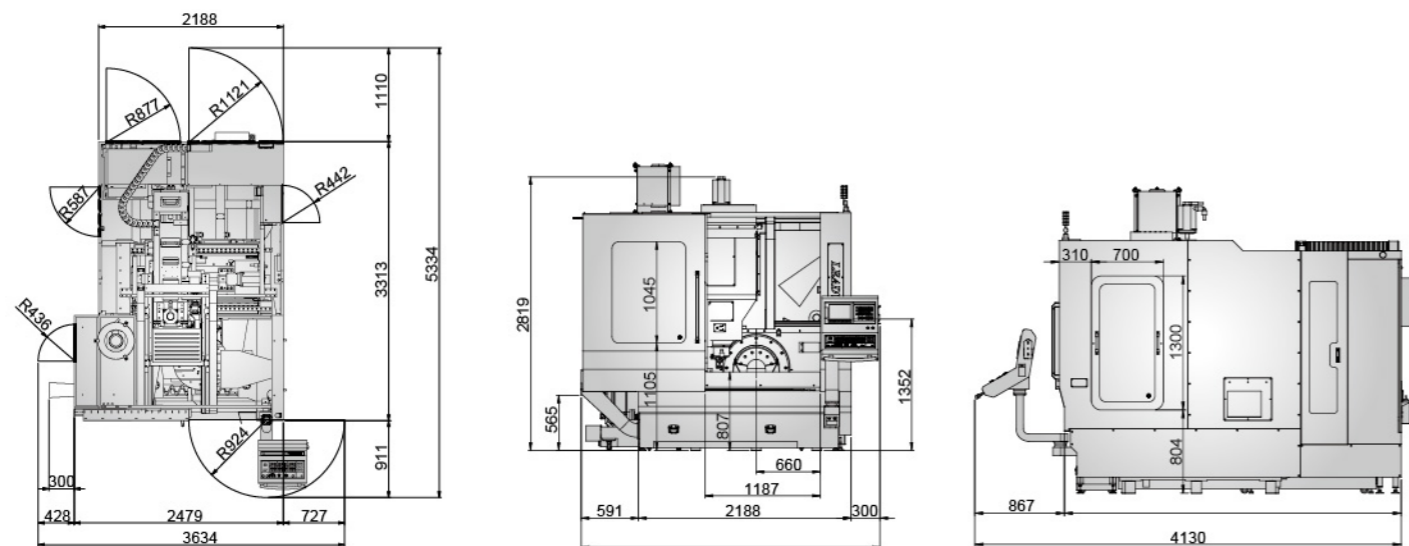


# OUTLINE DIMENSIONS

MU-450

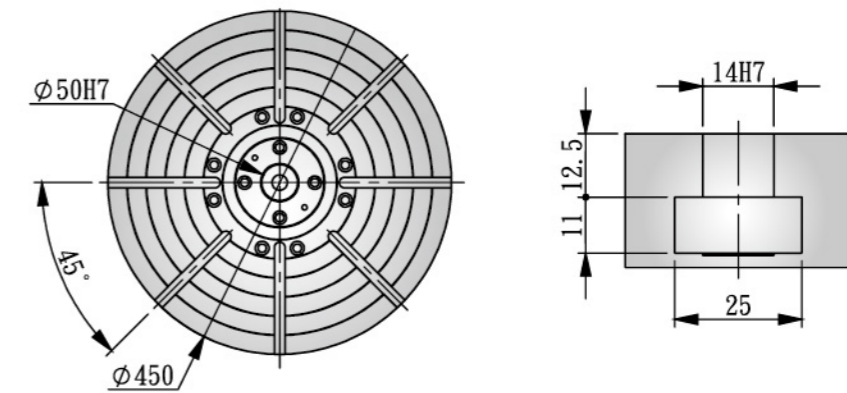


MU-650

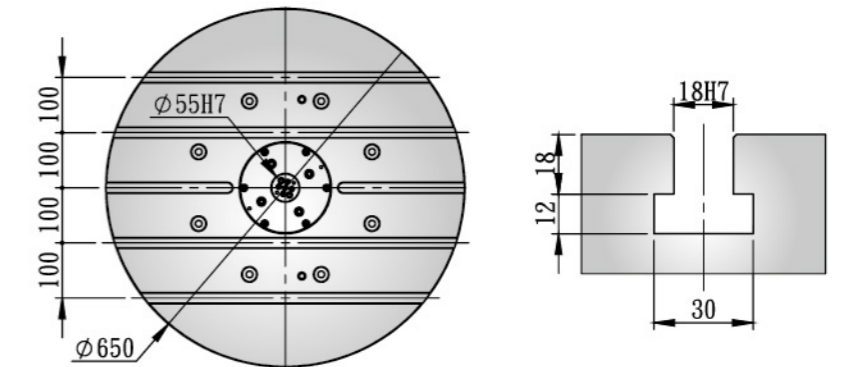


# TABLE DIMENSIONS

MU-450



MU-650



# LEADWELL SMART PROCESSOR

## More than a machine

Leadwell is never simply about building a machine and to launch onto the market. Our years of experience, we learn that the right programs must be developed to ensure the competitiveness of the users.



## Pre-machining setting

It contains the function that the operator will frequent use before the operations. This including the coordinates setting, tool measurement, tool magazine measurement, and the calculator function.



## Machining setting

It includes the parameter data setting, and all the other statistics of the machines; such as the accumulated machining time, and the tool management.



## Leadwell Assistor

The assistor contains the functions to help the user to optimize the machine setting.



## Maintenance

Operators would be able to gain the current status of the machine, and to access the internet to obtain more useful information.

14 difference useful functions





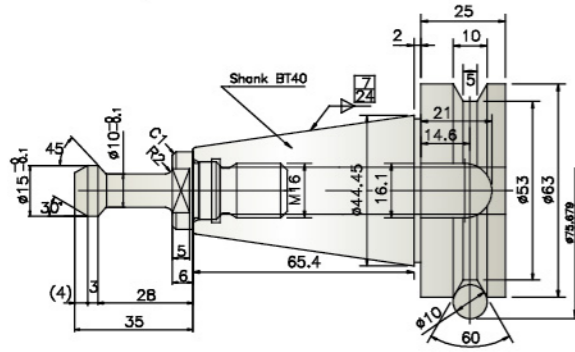
# TABLE DIMENSIONS/TOOL SHANK

# MACHINE SPECIFICATIONS

## Pull Stud

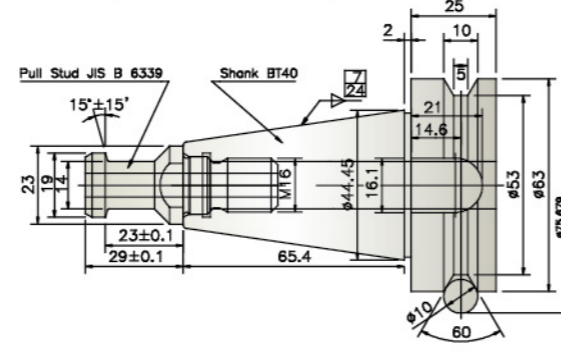
### Standard

BT 40 FOR STANDARD



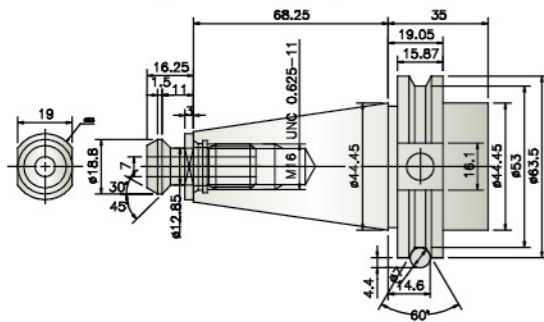
### Optional

BT 40 FOR CTS

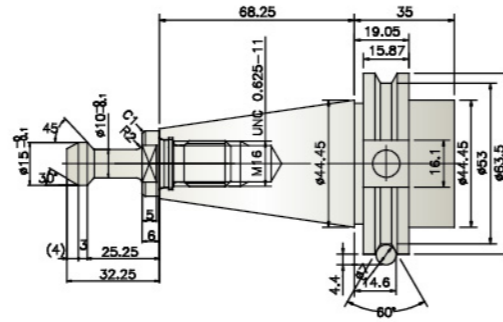


### Optional

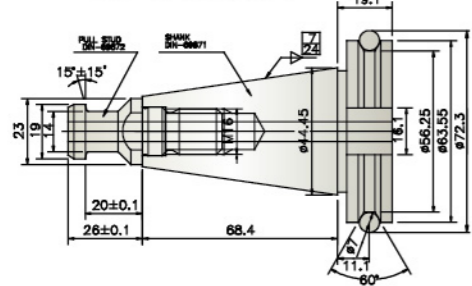
CAT 40 FOR CTS



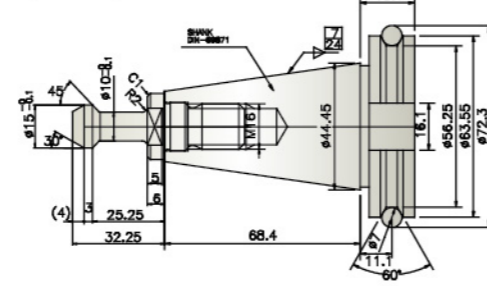
CAT 40



DIN 40 FOR CTS



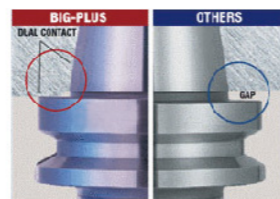
DIN 40



## Cartridge Type Spindle



## BBT Two face contact



ITEM	MODEL	Unit	MU-450	MU-650
<b>TRAVEL</b>				
X axis		mm(in)	400(15.7)	620(24.4)
Y axis		mm(in)	350(13.8)	520(20.5)
Z axis		mm(in)	350(13.8)	460(18.1)
Distance from table top to spindle end		mm(in)	150-500(6-19.7)	150-610(6-24)
<b>TABLE</b>				
Table size		mm(in)	φ450(φ17.7)	φ650(φ25.6)
Max. table load weight		Kg	200(0°)/150(90°)	300(0°)/200(90°)
Table working surface configuration		mm(in)	14T×45×8	18T×100×5
Tilting angel range		Degree	+110°~-50°	+110°~-50°
<b>SPINDLE</b>				
Spindle speed		rpm	12000	12000
Spindle nose (Normal size, no.)			7/24 Taper, NO.40	7/24 Taper, NO.40
Max. spindle torque		N.M(ft.lbf)	70(714)	70(714)
<b>FEED RATE</b>				
Rapid traverse X/Y/Z		m/min(IPM)	48(1890)	36(1417)
Cutting feed rate X/Y/Z		m/min(IPM)	10(394)	10(394)
<b>ATC</b>				
Tool storage capacity		pcs	30	30
Max. tool diameter(with adjacent tools)		mm(in)	80(3.15)	80(3.15)
Max. tool diameter(without adjacent tools)		mm(in)	150(4.3)	150(4.3)
<b>MOTORS</b>				
Spindle motor (30min)		kw(hp)	11(14.7)	11(14.7)
X/Y/Z axis feed motor		kw(hp)	4(5.4)	4(5.4)
B axis feed motor		kw(hp)	7(9.3)	6(8)
C axis feed motor		kw(hp)	2.7(3.6)	3(4)
<b>MACHINE SIZE</b>				
Height of machine (H)		mm(in)	2661(104.7)	2820(111)
Floor space (LXW)		mm(in)	2800X3790(110.2X149.2)	3080X4130(121.3X162.6)
Total machine weight		Kg	8000(17600)	10000(22000)
Power requirement		KVA	35	35
Controller		FANUC		0I-M

\*AVAILABLE CONTROLLER:SIEMENS/MITSUBISHI/HEIDENHAIN

## Control Panel OPTION



FANUC



SIEMENS



MITSUBISHI

