

# **AL. WHEEL**

## CUTTING SOLUTION





## **Promise for** Safe & Comfortable Driving

WIA machine tools has grown into a core affiliate of the Hyundai Motor Group and has the world-class level of aluminum wheel machining lineup for comfortable and safe driving of customers. Also we have made a great contribution to improving the performance of finished vehicle with excellent efficiency and quality.

Choosing an aluminum wheel processing machine of WIA Machine tools ...

It is a promise of WIA machine tool to guarantee the customer's safe and comfortable driving.





# AL. WHEEL

## CUTTING SOLUTION



## AL. Wheel Cutting Solution Line-up

### KL6500AW



**19 inch**  
Recommend Wheel



Max. Turning Dia :  $\varnothing 660$  mm (26")



### LV800AW-TT



**19 inch**  
Recommend Wheel



Max. Turning Dia :  $\varnothing 650$  mm (25.6")



### LV8500R



**22.5 inch**  
Recommend Wheel



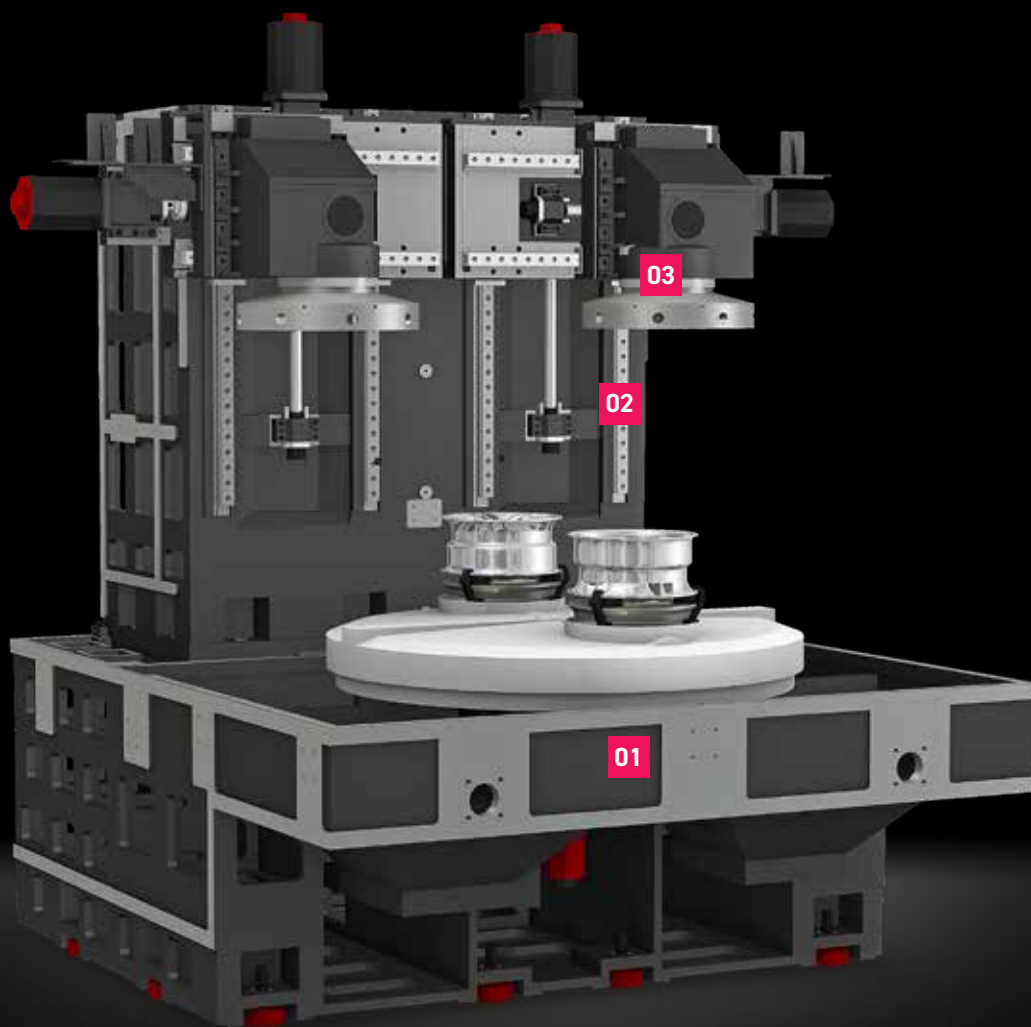
Max. Turning Dia :  $\varnothing 800$  mm (31.5")



01  
L-AW Series

## LV800AW-TT

Powerful Cutting Capability, AL Wheel Cutting  
2 Turret CNC Vertical Turning Center



Reduction of Non-cutting Time by Fast Rapid Speed

19 inch  
Recommend Wheel

420/650 (16.5/25.6) mm (inch)  
Travel (X/Z)

30/30 (1,181/1,181) m/min (ipm)  
Rapid Traverse Rate (X/Z axis)

# Basic Features

01

## Chip Disposal

For smooth chip disposal, the size of chip outlet on the bed is enlarged to 350mm(13.8") by 856mm(33.7") and installed with the steep angle of 45 degrees so that it can easily handle a large amount of chips.

02

## Roller Type LM Guideway

The LV800AW-TT is equipped with Roller Type LM Guide to satisfy both rigidity and fast feed speed.

In particular, we will increase productivity by achieving the best rapid traverse speed of 30m/min (1,181 ipm) for each axis.

## 03 VDI 2 Turret

It is designed with 2 turret structure, it is possible to process the inner and outer diameters of the wheel at the same time. Furthermore, It is possible to exchange the tool easily by applying VDI Turret.

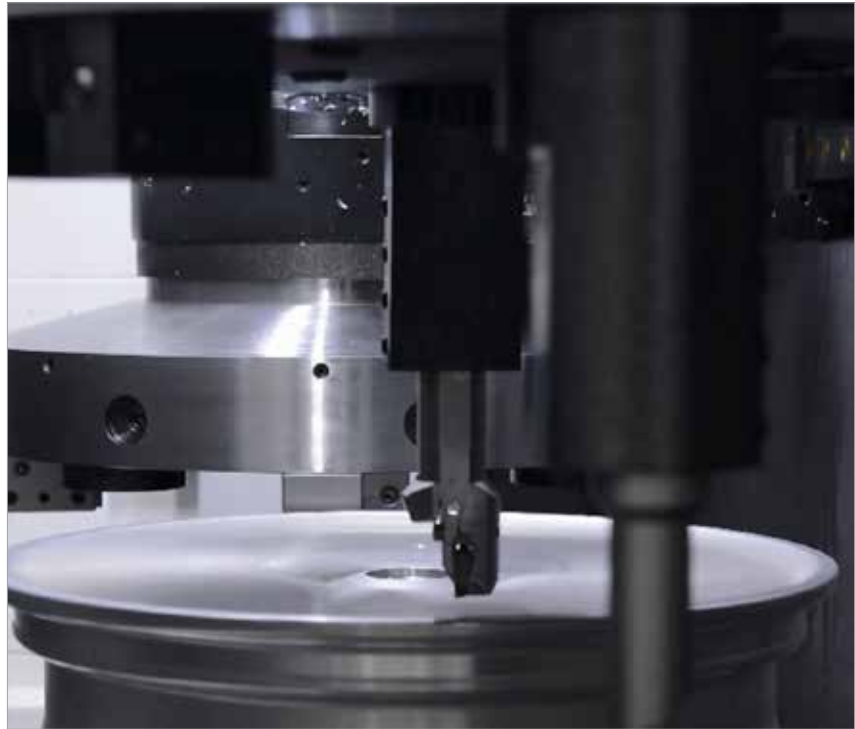
◎ **Tool Size** (OD/ID) : □25/Ø40 mm

◎ **Turret Type** : **VDI50** (8 station 2 Turret)



# High-Precision Spindle

Long Lasting High Accuracy & Excellent Performance  
Vertical Turning Center





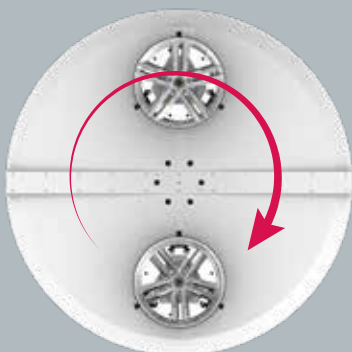
## Exceptional performance for high precision machining Built-in Spindle

The built-in spindle of the LV800AW-TT minimizes vibration and heat generation during machining and provides fast acceleration and deceleration to produce the best products.

### ACC (Automatic Chuck Changer)

It is possible to process the front and back of the wheel in one machine by applying the automatic chuck exchange device which can rotate the 180 degree index at high speed.

In particular, the alarm factor of the electric device (sensor) is minimized by the ACC design of the servo motor driving method.

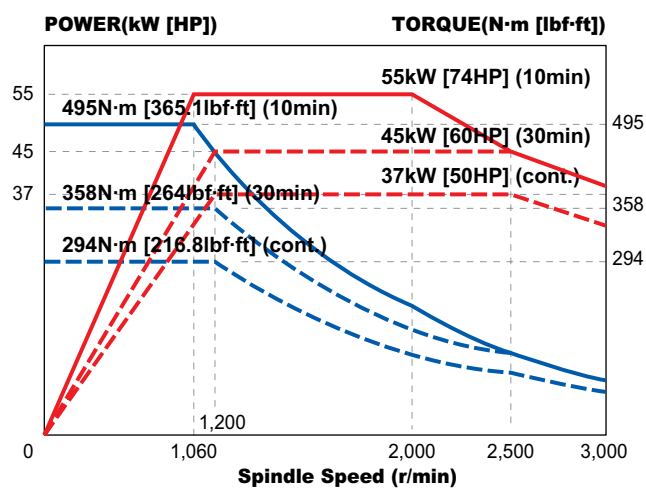


### Special Chuck **OPTION**

Finger chuck dedicated to aluminum wheel processing offers stable machining even at fast binding and high-speed rotation. This special chuck is designed to be processed quickly and accurately.



### 3,000rpm Built-in



3,000 rpm

**55 kW**  
Max. Output

(74 HP)

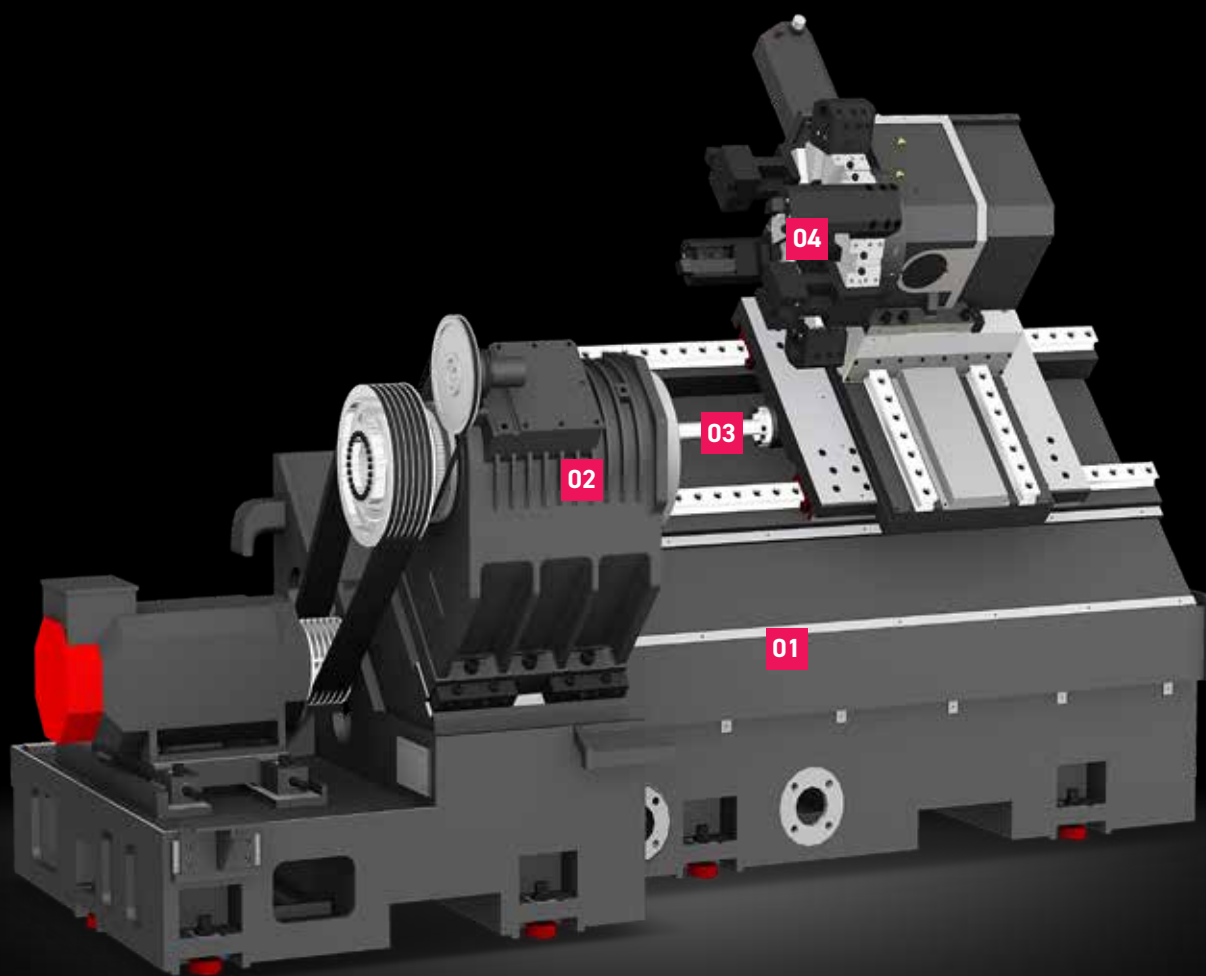
**495 N·m**  
Max. Torque

(365.1 lbf·ft)

02  
L-AW Series

## KL6500AW

The Best Productivity Popular  
Wheel CNC Turning Center



AL. Wheel Turning Center for Heavy Duty Cutting

19 inch  
Recommend Wheel

400/720 (15.7/28.3) mm (inch)  
Travel (X/Z)

20/24 (787/945) m/min (ipm)  
Rapid Traverse Rate (X/Z axis)

# Basic Features

## 01 Stable Bed Design

The KL6500AW minimizes vibration caused by machining with the optimal weight of bed design through the FEM.(Finite Element Method)

⊙ **3.5 ton weight bed for vibration control**

⊙ **Machine Weight : 7.8 ton (17,196 lb)**

### Main Spindle

The main spindle has become sturdier by enlarging the diameter and thickness. Rigidity and accuracy are maintained by adoption of high precision angular ball bearing.



02

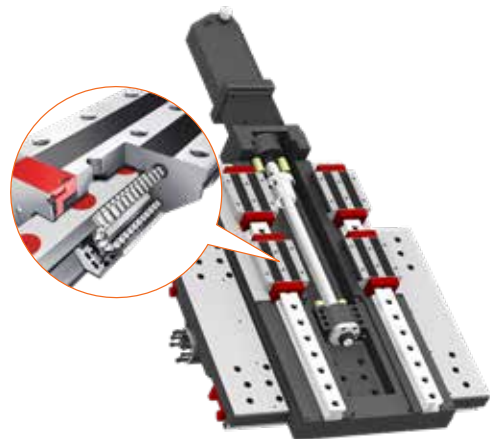
### Wide Width Roller Type LM Guideway

All axis of the KL6500AW adopted Roller type LM Guide with excellent feed rate to improve productivity.

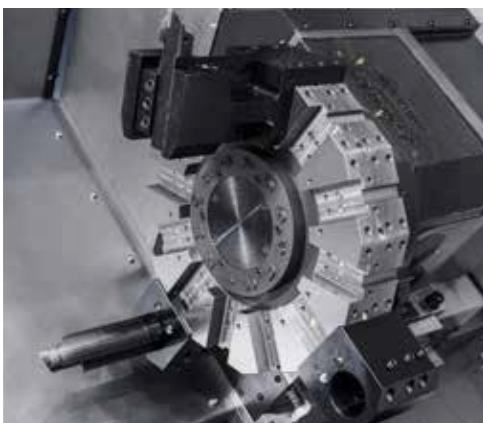
In order to increase the rigidity, wide width of Roller type LM Guide is applied to show sufficient rigidity even for heavy-duty cutting.

### Ball Screw

Travel is stabilized by fastening both ends of the ball screw, the double anchored method. In particular, a large diameter ball screw with proper preload reinforces rigidity and resistance to thermal displacement.



03



### Turret

The turret (BMT65 class) optimized for medium and large aluminum wheel machining is adopted and the stability of machining is improved by increasing the holder clamping force with 6 holder bolts.

⊙ **Tool Size (OD/ID) : □32/Ø63 mm (□1.3"/Ø2.5")**

⊙ **No. of Tools : 12 EA**

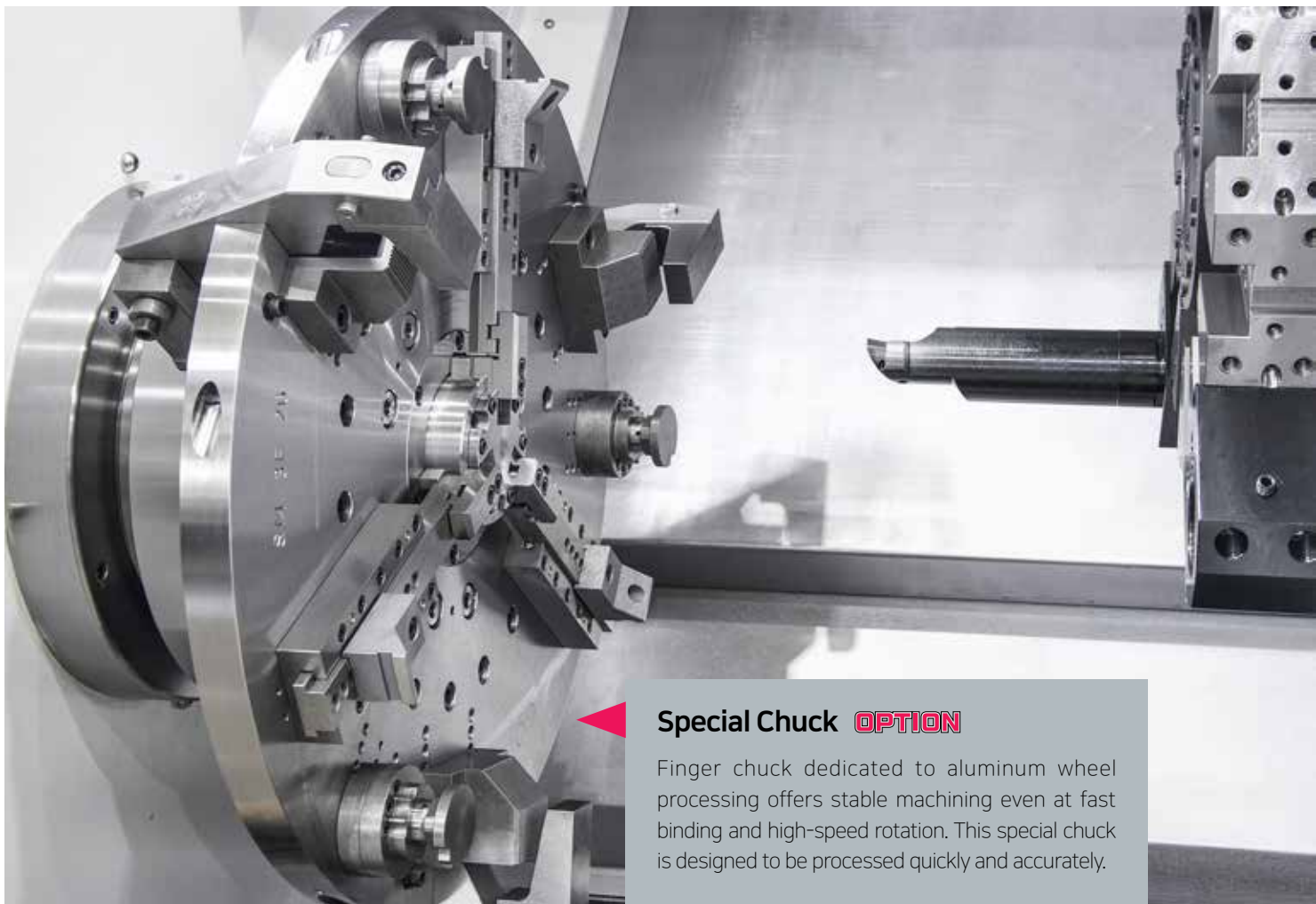
⊙ **Indexing Time : 0.25 sec/step**

⊙ **No. of Holder Bolts : 6 EA**

04

# High-Precision Spindle

Long Lasting High Accuracy & Excellent Performance  
CNC Turning Center



## Special Chuck **OPTION**

Finger chuck dedicated to aluminum wheel processing offers stable machining even at fast binding and high-speed rotation. This special chuck is designed to be processed quickly and accurately.

## High-power Spindle

KL6500AW main spindle is combined with high rigidity large bearings to maintain rigidity and high accuracy in order to achieve optimal performance when machining aluminum wheels. With a high-power spindle motor of up to 37kW (49.6 HP), it is able to demonstrate powerful torque of 553N·m (407.9lbf·ft), thus showing optimal performance for medium and large sized aluminum wheels.

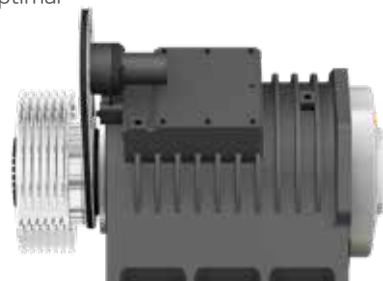
2,000 rpm (Belt)

**37** kW  
Max. Output

(50 HP)

**553** N·m  
Max. Torque

(407.9 lbf·ft)

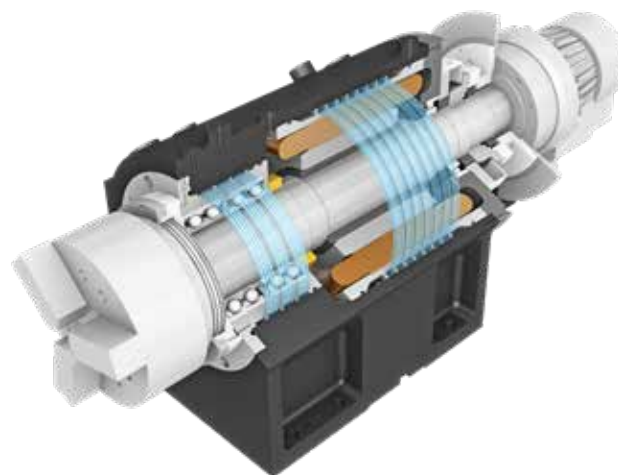




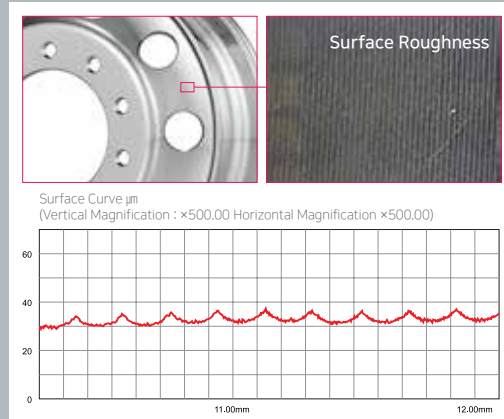


## For Mirror Finishing Machining High-precision Built-in Spindle

With the optional built-in spindle L600AW, you can minimize the vibration and heat generation during machining and produce the best products with fast acc./deceleration.



### Machining Ability



## Utmost Quality of Wheel-machining Capability by Adopting Mirror Finishing

- ⊙ **Roughness**: Under **1.6**  $R_a$
- ⊙ **Gloss**: Over **900**  $G_U$  (in commercial vehicle)

2,500 rpm (Built-in)

**OPTION**

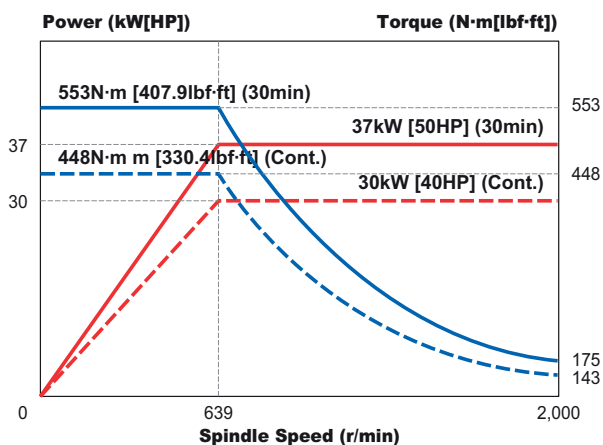
**37** kW  
Max. Output

**1,262** N·m  
Max. Torque

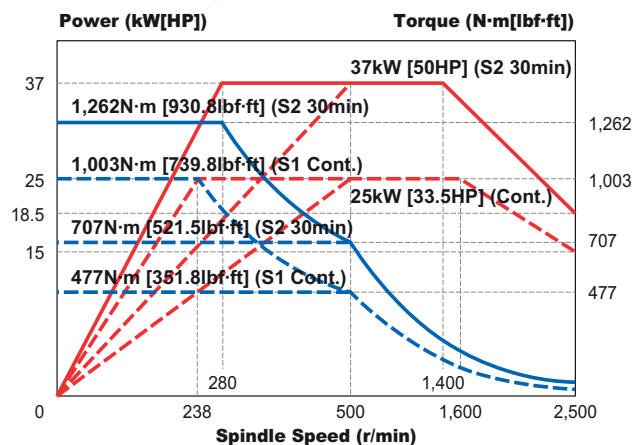
(50 HP)

(930.8 lbf.ft)

### 2,000rpm Belt



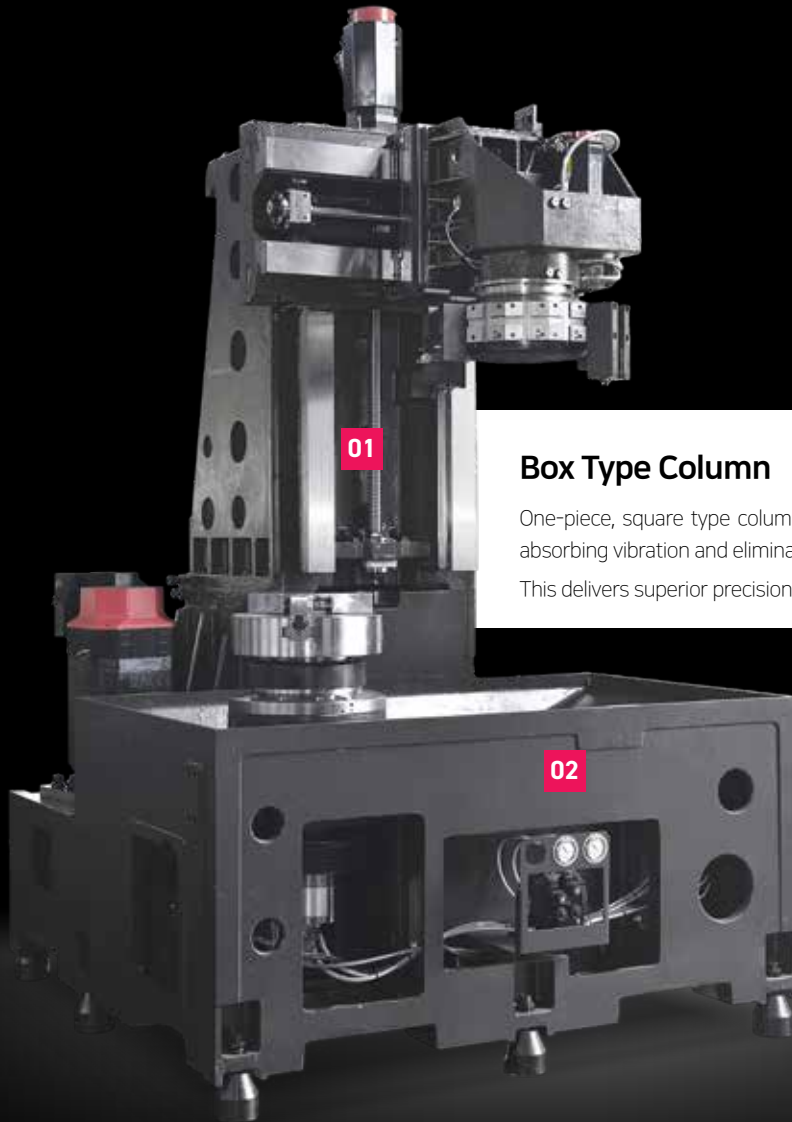
### 2,500rpm Built-in **OPTION**



**03**  
L-AW Series

## LV8500R

Powerful Cutting Capability,  
AL Wheel CNC Vertical Turning Center



### Box Type Column

One-piece, square type column offers the ultimate stability by absorbing vibration and eliminating distortion.

This delivers superior precision even during heavy duty cutting.

Vertical Turning Center for Commercial Vehicle

**22.5** inch  
Recommend Wheel

**450/800** (17.7/31.5) mm (inch)  
Travel (X/Z)

**20/20** (787/787) m/min (ipm)  
Rapid Traverse Rate (X/Z axis)

# Basic Features



## Wheel Machine for Large Commercial Vehicles

The LV8500R is designed to be able to process up to 22.5 inches of aluminum wheels in the recommended machining diameter. Especially, this vertical structure offers more stable machining due to tightened workpiece by self load.

## Right/Left Machine Structure

LV8500R provides Right/Left sided structure depending on the location of the main spindle and the tool rest, which makes it possible to facilitate optimal factory automation.

## Convenient Maintenance Structure

User convenience has significantly enhanced due to positioning utility units in front of the machine for easier application and maintenance.  
(Utility units : Hydraulic, Lubricating oil)

## Box Guideway

All axis of the LV8500R feature box guideways. Box guideway provides unsurpassed long term rigidity and accuracy, even during heavy duty cutting.



## Ball Screw

Both ends of the ball screw are fixed by double anchor method, ensuring the stability of the transfer to exact parallelism with the slide way.

## Chip Influx Protection

LV8500R has protective measures to keep chips and other debris from entering the main spindle, ensuring long term and highly precision performance.

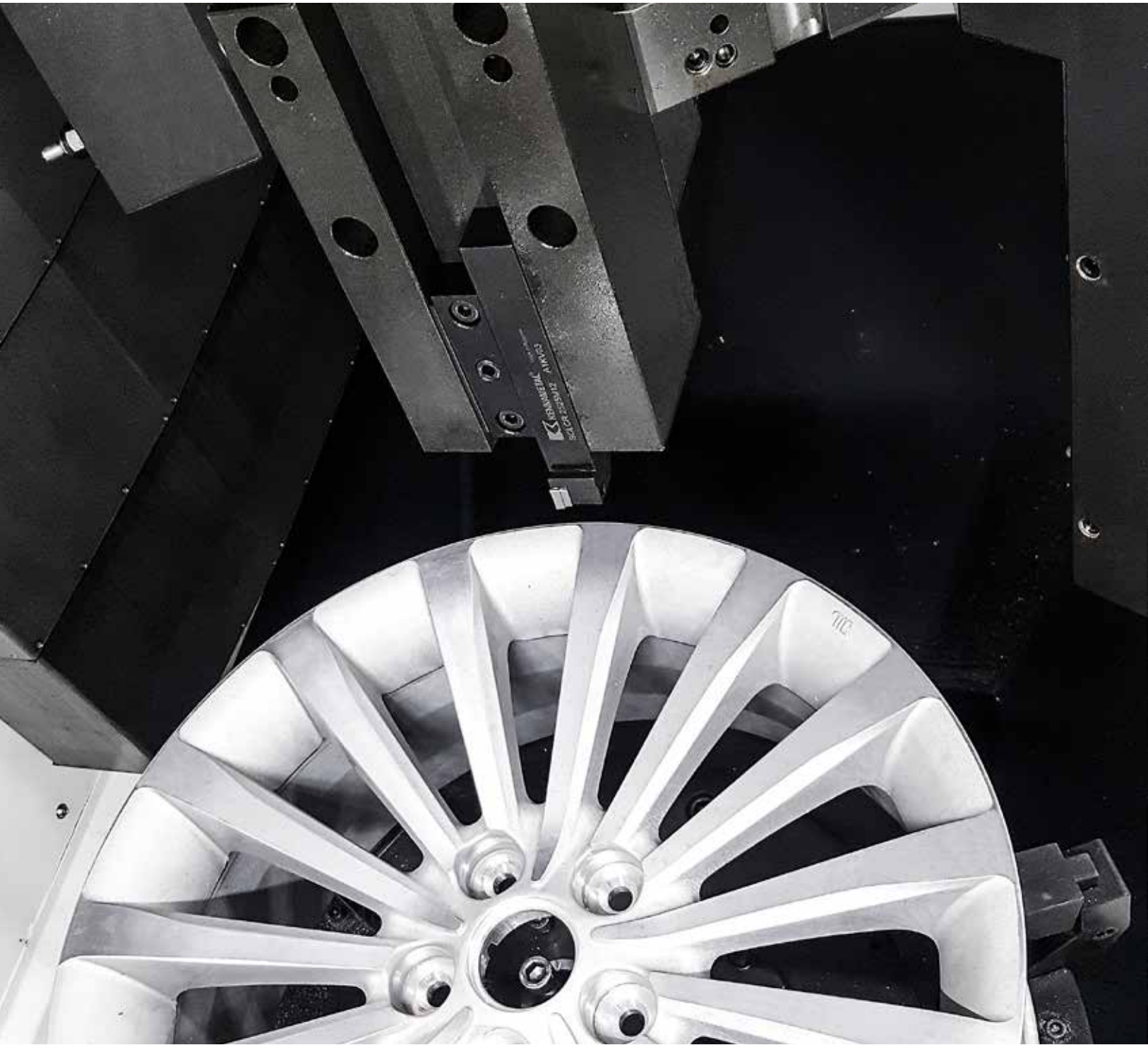


## Chute Structure

The slope type bed design improves chip and cutting oil disposal and chute structure blocks thermal distortion.

# High-Precision Spindle

Long Lasting High Accuracy & Excellent Performance  
Vertical Turning Center





## Superior performance for Aluminum Wheel Processing for commercial vehicles High-power Spindle

The spindle is specially designed for machining aluminum wheels for commercial vehicles. High torque spindle motor with 45kW (60HP) is adopted to produce 692N·m(510lbf·ft) torque in 500~1,200rpm range, which is optimal for aluminum wheel cutting.

### Heavy Duty Cutting Spindle

High rigidity bearing structure makes it possible to operate without any trouble even with heavy duty cutting. It is designed to minimize vibration and thermal displacement.

### Step Chuck Clamping System

Step chucking system offers low pressure for heavy duty cutting or high pressure for precision cutting. This is provided as standard feature to enhance machining performance with minimal material deformation.

### Decrease spindle acc./dec. time by 40%

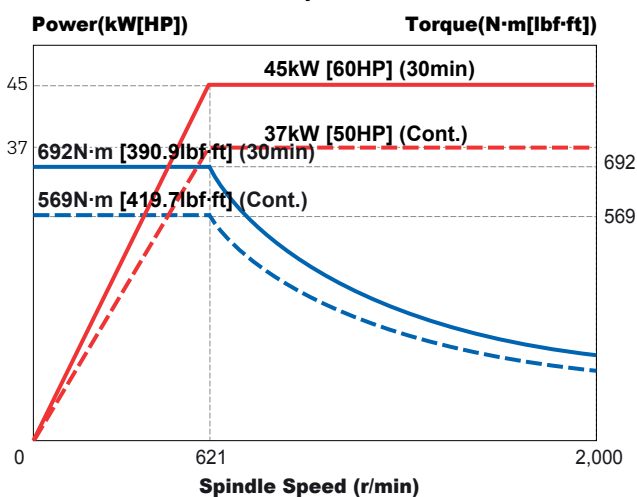
|                  |                        |
|------------------|------------------------|
| Previous Machine | 3.35 sec               |
| LV8500R          | 1.99 sec 40% reduction |

### Special Chuck **OPTION**

Finger chuck dedicated to aluminum wheel processing offers stable machining even at fast binding and high-speed rotation. This special chuck is designed to be processed quickly and accurately.



### 2,000rpm Belt



2,000 rpm

**45** kW  
Max. Output

(60 HP)

**692** N·m  
Max. Torque

(510.4 lbf.ft)

# 04

L-AW Series

## Automation System

Optimal Automation System for High Quality and Productivity



## AL. Wheel Machining Area



### I.D/O.D Machining

#### Horizontal Turning Center

KL6500AW

#### Vertical Turning Center

LV8500R

LV800AW-TT

### Lug Hole Machining

#### Vertical Machining Center

Under 18" : KF5

Over 18" : KF6

### Air Hole Machining

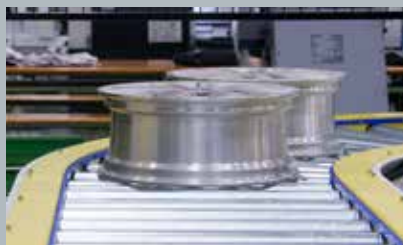
VMC + 4-axis NCRT

### Robot & Gripper



WIA machine tools's able to deliver high quality factory automation system through the precision technologies accumulated during its long history of machine tool manufacturing.

### In/Out Conveyor



For increasing the working efficiency, WIA machine tools utilizes the conveyor to deliver work in and out during machining process.

### Vision System



The vision system functions to position the processing area (lug hole, air valve hole) of the wheel to be machined in the machining center after finishing the lathe process.



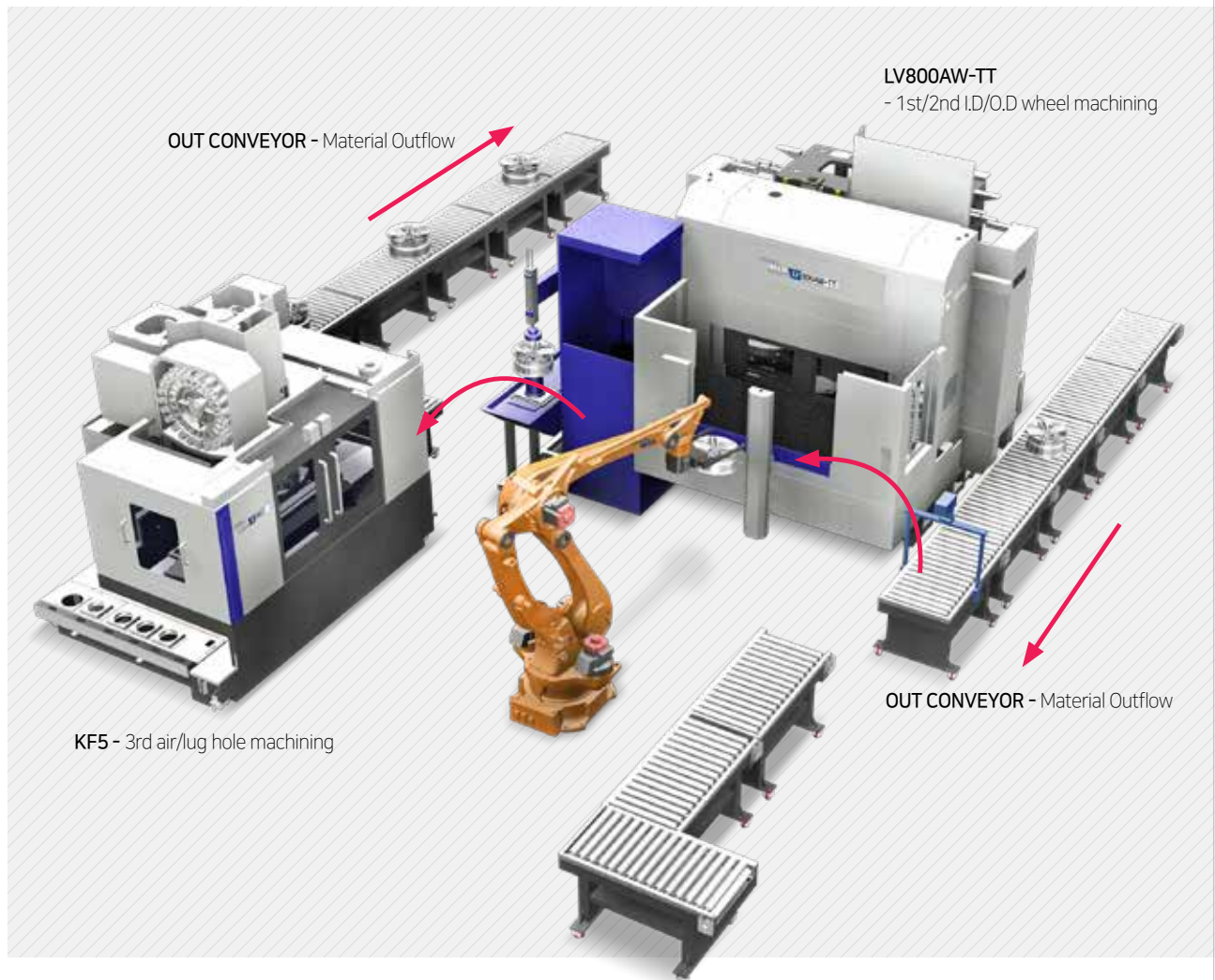
# LV800AW-TT

LV800AW-TT + KF5 + ROBOT (4-AXIS) + IN/OUT CONVEYOR + VISION SYSTEM + AIR BLOW + MEASURING DEVICE





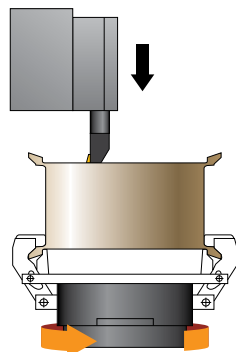
# Automation System



L-AW SERIES  
AL WHEEL TURNING CENTER

20  
+  
21

## Surface Roughness



## LV800AW-TT Cutting Test

|               |                     |
|---------------|---------------------|
| Product type  | 19×7J (Ø487.4×178)  |
| Sp. Speed     | 1,800 r/min         |
| Feed Speed    | Max. 0.7mm/rev      |
| Cutting Depth | Max. 3.0mm          |
| Coolant       | 6% water solubility |
| Cutting Time  | 119 sec             |

Outline/Gloss/I.D & O.D Matching : Fine

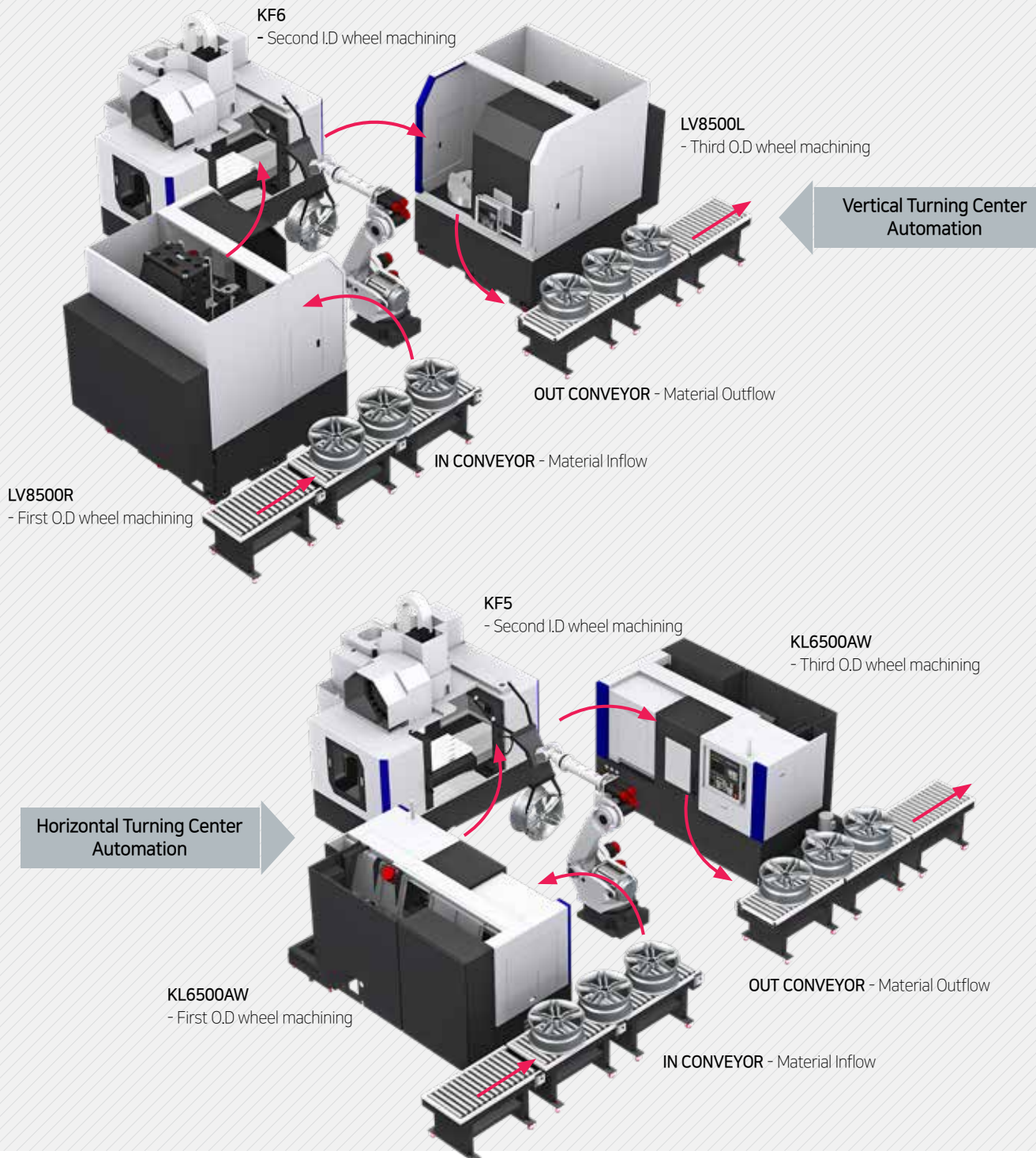
# KL6500AW / LV8500R

KL6500AW (Horizontal) + KF5 + ROBOT (6-AXIS) + IN CONVEYOR + OUT CONVEYOR

LV8500R (Vertical) + KF6 + ROBOT (4-AXIS) + IN CONVEYOR + OUT CONVEYOR



# Automation System





# Machining Center & Robot

Various Machining Center & Robot for Optimal Automation System



※ The above 4-axis NCRT image for aluminum wheel processing is an image to help understanding of A-axis driving.  
In actual machining, the rotation angle of A axis is identical to angle of air valve hole.





### Under 18" : KF5

[    ] : Option

## 1,100/560/520 mm

Travel (X/Y/Z)

|                             |                                        |
|-----------------------------|----------------------------------------|
| Table Size                  | 1,300×560 mm (51.2"×22")               |
| Max. Load Capacity          | 1,000 kg (2,205 lb)                    |
| Spindle Speed               | 8,000 r/min                            |
| Spindle Output (Max./Cont.) | 18.5/11 kW (25/15 HP)                  |
| Spindle Taper               | BT40 [HSK-A63]                         |
| Number of Tools             | 30 EA [40, 60 EA]                      |
| Rapid Traverse Rate(X/Y/Z)  | 36/36/30 m/min (1,417/1,417/1,181 ipm) |



### Over 18" : KF6

[    ] : Option

## 1,300/670/635 mm

Travel (X/Y/Z)

|                             |                                        |
|-----------------------------|----------------------------------------|
| Table Size                  | 1,500×670 mm (59"×26.4")               |
| Max. Load Capacity          | 1,300 kg (2,866 lb)                    |
| Spindle Speed               | 8,000 r/min                            |
| Spindle Output (Max./Cont.) | 18.5/15 kW (25/20 HP)                  |
| Spindle Taper               | BBT40 [HSK-A63]                        |
| Number of Tools             | 30 EA [40, 60 EA]                      |
| Rapid Traverse Rate(X/Y/Z)  | 36/36/30 m/min (1,417/1,417/1,181 ipm) |

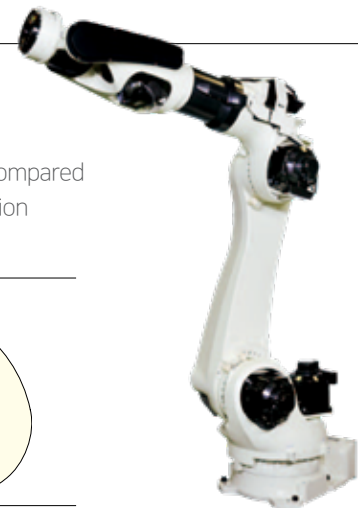
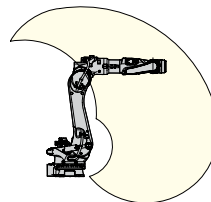
## BX200L - WIA Machine tools 6 Axis Robot

200 kg

Payload

BX series robots can minimize the installation area compared to existing robots, which is very efficient for automation configuration considering factory layout.

|              |                    |                  |
|--------------|--------------------|------------------|
| Motion Range | Arm rotation (JT1) | ±160°            |
|              | Arm in-out (JT2)   | +120° ~ -65°     |
|              | Arm up-down (JT3)  | +90° ~ -81°      |
|              | Wrist twist (JT4)  | ±210°            |
|              | Wrist bend (JT5)   | ±125°            |
|              | Wrist swivel (JT6) | ±210°            |
| Motion Range |                    | 1,634 mm (64.3") |



# SPECIFICATIONS

## Standard & Optional

● : Standard ○ : Option ☆ : Prior Consultation - : Non Applicable

| Spindle                                                       |                                   | KL6500AW |
|---------------------------------------------------------------|-----------------------------------|----------|
| Main Spindle<br>Hollow Chuck 3 Jaw                            | 18"                               | ○        |
| Main Spindle<br>Solid Chuck 3 Jaw                             | 15"                               | ○        |
| Standard Soft Jaw (1set)                                      |                                   | ○        |
| Chuck Clamp Foot Switch                                       |                                   | ●        |
| 2 Steps Hyd. Pressure Device                                  |                                   | -        |
| Spindle Inside Stopper                                        |                                   | -        |
| 5" Index                                                      |                                   | ☆        |
| Cs-Axis (0.001")                                              |                                   | ☆        |
| Chuck Open/Close Confirmation Device                          |                                   | ○        |
| 2 Steps Chuck Foot Switch                                     |                                   | ☆        |
| Special Chuck<br>For AL Wheel                                 | Max 17" Wheel                     | -        |
|                                                               | Max 20" Wheel                     | -        |
|                                                               | Max 24" Wheel                     | ☆        |
| Turret                                                        |                                   |          |
| Inner Base Holder (Wheel Turning)                             |                                   | ●        |
| Out Dia Base Holder (Wheel Turning)                           |                                   | ●        |
| Face Tool Holder (Wheel Turning)                              |                                   | ●        |
| Mill Turret                                                   |                                   | -        |
| Boring Bar Sleeve                                             |                                   | ●        |
| Drill Socket                                                  |                                   | -        |
| U-Drill Holder                                                |                                   | -        |
| U-Drill Holder Sleeve                                         |                                   | -        |
| O.D Extension Holder                                          | For Out-Dia                       | ☆        |
| Tail Stock & Steady Rest                                      |                                   |          |
| Manual Tail Stock                                             |                                   | -        |
| Programmable Tail Stock                                       |                                   | -        |
| Manual Type Hyd. Steady Rest                                  |                                   | -        |
| Standard Live Center                                          |                                   | -        |
| High Precision Live Center                                    |                                   | -        |
| 2 Steps Tail Stock Pressure System                            |                                   | -        |
| Quill Forward/Reverse Confirmation Device                     |                                   | -        |
| Tail Stock Foot Switch                                        |                                   | -        |
| Coolant & Air Blow                                            |                                   |          |
| Standard Coolant (Nozzle)                                     |                                   | ●        |
| Chuck Coolant (Upper Chuck)                                   |                                   | ○        |
| Gun Coolant                                                   |                                   | ○        |
| Through Spindle Coolant (Only for Special Chuck)              |                                   | ☆        |
| Chuck Air Blow (Upper Chuck)                                  |                                   | ○        |
| Tail Stock Air Blow (Upper Tail Stock)                        |                                   | -        |
| Turret Air Blow                                               |                                   | ☆        |
| Air Gun                                                       |                                   | ○        |
| Through Spindle Air Blow (Only for Special Chuck)             |                                   | ☆        |
| High Pressure Coolant                                         | 1.5Bar                            | ●        |
|                                                               | 6Bar                              | ○        |
|                                                               | 20Bar                             | ○        |
| Shower Type Coolant Device                                    |                                   | ●        |
| Power Coolant System (For Automation)                         |                                   | ☆        |
| Coolant Chiller (When selecting sub tank type, chip conveyor) |                                   | ☆        |
| Chip Disposal                                                 |                                   |          |
| Coolant Tank                                                  | 252 ℓ (66.6 gal)                  | -        |
|                                                               | 276 ℓ (72.9 gal)                  | ●        |
| Chip Conveyor<br>(Hinge/Scraper)                              | Front (Right)                     | ○        |
|                                                               | Front (Rear)                      | -        |
| Special Chip Conveyor (Drum Filter)                           |                                   | ☆        |
| Chip Wagon                                                    | Standard<br>(180 ℓ [47.5 gal])    | ○        |
|                                                               | Swing<br>(200 ℓ [52.8 gal])       | ○        |
|                                                               | Large Swing<br>(290 ℓ [76.6 gal]) | ○        |
|                                                               | Customized                        | ☆        |
| Safety Device                                                 |                                   |          |
| Total Splash Guard                                            |                                   | ●        |
| Chuck hydraulic pressure maintenance interlock                |                                   | ○        |

| Electric Device                                            |                  | KL6500AW |
|------------------------------------------------------------|------------------|----------|
| Call Light                                                 | 1Color : ■       | ●        |
| Call Light & Buzzer                                        | 3Color : ■ ■ ■ B | ○        |
| Electric Cabinet Light                                     |                  | ○        |
| Remote MPG                                                 |                  | -        |
| Work Counter                                               | Digital          | ○        |
| Total Counter                                              | Digital          | ○        |
| Tool Counter                                               | Digital          | ○        |
| Multi Tool Counter                                         | Digital          | ○        |
| Electric Circuit Breaker                                   |                  | ○        |
| AVR (Auto Voltage Regulator)                               |                  | ☆        |
| Transformer                                                | 36kVA            | -        |
|                                                            | 50kVA            | ○        |
| Auto Power Off                                             |                  | ○        |
| Measurement                                                |                  |          |
| Q-Setter                                                   |                  | -        |
| Automatic Q-Setter                                         |                  | -        |
| Work Close Confirmation Device<br>(Only for Special Chuck) | TACO             | ☆        |
|                                                            | SMC              | ☆        |
| Work Setter                                                |                  | ☆        |
| Linear Scale                                               | X Axis           | ☆        |
|                                                            | Z Axis           | ☆        |
| Coolant Level Sensor (Only for Chip Conveyor)              |                  | ☆        |
| Environment                                                |                  |          |
| Air Conditioner                                            |                  | ○        |
| Oil Mist Collector                                         |                  | ☆        |
| Oil Skimmer (Only for Chip Conveyor)                       |                  | ☆        |
| MQL (Minimal Quantity Lubrication)                         |                  | ☆        |
| Fixture & Automation                                       |                  |          |
| Auto Door                                                  | Standard         | ○        |
|                                                            | High Speed       | ○        |
| Auto Shutter (Only for Automatic System)                   |                  | ☆        |
| Sub Operation Pannel                                       |                  | ☆        |
| Bar Feeder Interface                                       |                  | -        |
| Bar Feeder (FEDEK)                                         |                  | -        |
| Extra M-Code 4ea                                           |                  | ○        |
| Automation Interface                                       |                  | ☆        |
| I/O Extension (IN & OUT)                                   | 16 Contact       | ○        |
|                                                            | 32 Contact       | ○        |
| Parts Catcher                                              | Main SP.         | -        |
| Turret Work Pusher (For Automation)                        |                  | ☆        |
| Parts Conveyor (Need to apply main part catcher)           |                  | -        |
| Hyd. Device                                                |                  |          |
| Standard Hyd. Cylinder                                     | Solid            | ●        |
| Standard Hyd. Unit                                         | 35bar/30 ℓ       | ●        |
| S/W                                                        |                  |          |
| Dialogue Program (W-DPRO)                                  |                  | ○        |
| DNC software (W-eDNC)                                      |                  | ○        |
| Smart Guide-i : FANUC                                      |                  | ●        |
| Smart S/W                                                  |                  | ☆        |
| ETC                                                        |                  |          |
| Tool Box                                                   |                  | ●        |
| Customized Color                                           | Need Munsel No.  | ☆        |
| CAD & CAM                                                  |                  | ☆        |
| Thermal displacement compensation                          |                  | ○        |

# SPECIFICATIONS

## Standard & Optional

● : Standard ○ : Option ☆ : Prior Consultation - : Non Applicable

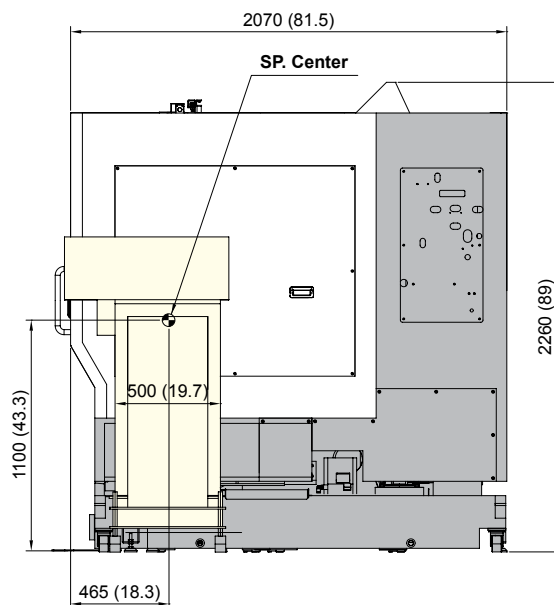
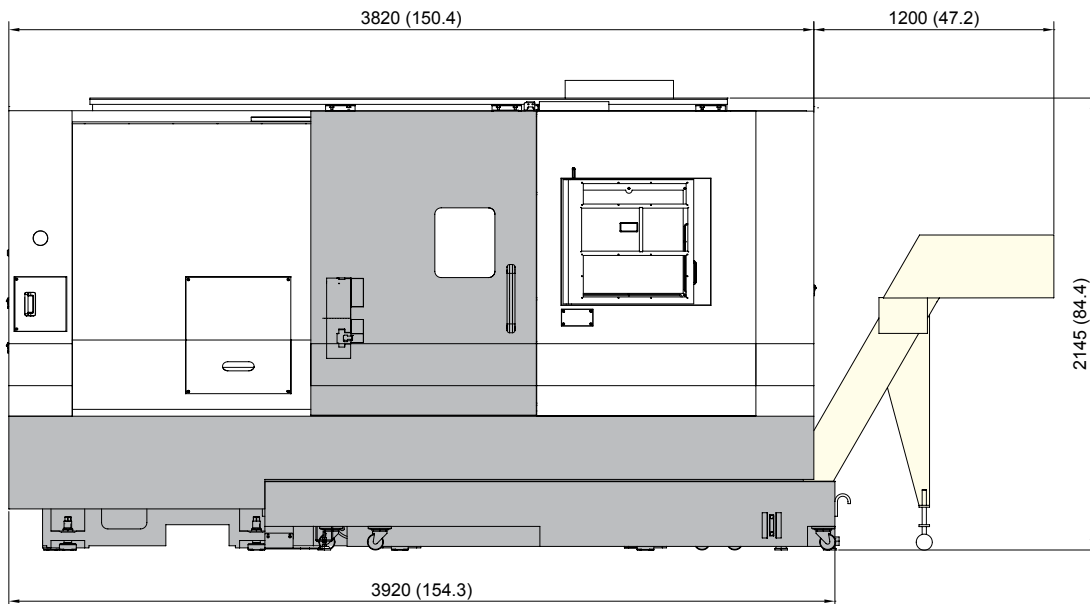
| Spindle                                           |                                | LV8500R | LV800AW-TT |
|---------------------------------------------------|--------------------------------|---------|------------|
| Main SpindleHollow Chuck 3 Jaw                    |                                | -       | -          |
| Main Spindle                                      | 18"                            | -       | -          |
| Solid Chuck 3 Jaw                                 | 21"                            | -       | -          |
|                                                   | 24"                            | -       | -          |
| Standard Soft Jaw (1set)                          |                                | ●       | -          |
| Chuck Clamp Foot Switch                           |                                | ●       | ●          |
| 2 Steps Hyd, Pressure Device                      |                                | ○       | -          |
| Spindle Inside Stopper                            |                                | -       | -          |
| 5" Index                                          |                                | -       | -          |
| Cs-Axis (0.001")                                  |                                | -       | -          |
| 2 Steps Chuck Foot Switch                         |                                | ○       | ○          |
| Chuck Open/Close Confirmation Device              |                                | ●       | ●          |
| AL Wheel 가공 특수척                                   | 22.5"                          | ☆       | ☆          |
| Turret                                            |                                |         |            |
| Tool Holder                                       |                                | ●       | ●          |
| 8 station Turret                                  |                                | -       | ●          |
| 12 station Turret                                 |                                | ●       | -          |
| Mill Turret                                       |                                | -       | -          |
| Straight Milling Head                             | Collet Type,1EA                | -       | -          |
| Angular Milling Head                              | Collet Type,1EA                | -       | -          |
| Straight Milling Head                             | Adapter Type                   | -       | -          |
| Angular Milling Head                              | Adapter Type                   | -       | -          |
| Boring Sleeve                                     |                                | -       | ☆          |
| Drill Socket                                      |                                | ○       | -          |
| U-Drill Holder                                    |                                | -       | -          |
| U-Drill Holder Sleeve                             |                                | ○       | -          |
| Angle Head                                        |                                | -       | -          |
| Tail Stock & Steady Rest                          |                                |         |            |
| Manual Tail Stock                                 |                                | -       | -          |
| Coolant & Air Blow                                |                                |         |            |
| Standard Coolant (Nozzle)                         |                                | ●       | ●          |
| Bed Flusing Coolant                               |                                | ●       | ●          |
| Jet Coolant                                       |                                | ●       | ●          |
| Chuck Coolant (Upper Chuck)                       |                                | -       | ●          |
| Gun Coolant                                       |                                | ○       | ☆          |
| Through Spindle Coolant (Only for Special Chuck)  |                                | -       | -          |
| Thru Coolant for Live Tool                        |                                | -       | -          |
| Chuck Air Blow (Upper Chuck)                      |                                | ○       | -          |
| Turret Air Blow                                   |                                | ☆       | -          |
| Air Gun                                           |                                | ○       | ○          |
| Through Spindle Air Blow (Only for Special Chuck) |                                | ☆       | -          |
| High Pressure Coolant                             | 1.5Bar                         | ●       | -          |
|                                                   | 6Bar                           | ○       | ●          |
|                                                   | 20Bar                          | ○       | ☆          |
|                                                   | 70Bar                          | ○       | -          |
| Power Coolant System (For Automation)             |                                | ☆       | ☆          |
| Coolant Chiller                                   |                                | ☆       | ☆          |
| Chip Disposal                                     |                                |         |            |
| Coolant Tank                                      | 500 ℓ (132.1 gal)              | ●       | -          |
|                                                   | 950 ℓ (251 gal)                | -       | ○          |
| Chip Conveyor (Hinge/Scraper)                     | Front (Side)                   | ○       | -          |
|                                                   | Rear (Rear)                    | ○       | -          |
| Special Chip Conveyor (Drum Filter)               |                                | ☆       | ○          |
| Chip Wagon                                        | Standard (180 ℓ [47.5 gal])    | ○       | -          |
|                                                   | Swing (200 ℓ [52.8 gal])       | ○       | -          |
|                                                   | Large Swing (290 ℓ [76.6 gal]) | ○       | -          |
|                                                   | Large Size (330 ℓ [87.2 gal])  | ○       | ○          |
|                                                   | Customized                     | ☆       | ☆          |
| Safety Device                                     |                                |         |            |
| Total Splash Guard                                |                                | ●       | ●          |
| Chuck hydraulic pressure maintenance interlock    |                                | ☆       | ●          |

| Electric Device                                         |                  | LV8500R | LV800AW-TT |
|---------------------------------------------------------|------------------|---------|------------|
| Call Light                                              | 1Color : ■       | ●       | ○          |
| Call Light & Buzzer                                     | 3Color : ■ ■ ■ B | ○       | ●          |
| Electric Cabinet Light                                  |                  | ○       | ○          |
| Remote MPG                                              |                  | ○       | ●          |
| Work Counter                                            | Digital          | ○       | ○          |
| Total Counter                                           | Digital          | ○       | ○          |
| Tool Counter                                            | Digital          | ○       | ○          |
| Multi Tool Counter                                      | Digital          | ○       | ○          |
| Electric Circuit Breaker                                |                  | ○       | ○          |
| AVR (Auto Voltage Regulator)                            |                  | ☆       | ☆          |
| Transformer                                             | 45kVA            | ○       | -          |
|                                                         | 100kVA           | -       | ○          |
| Auto Power Off                                          |                  | ○       | ○          |
| Measurement                                             |                  |         |            |
| Q-Setter (Removable)                                    |                  | ○       | -          |
| Automatic Q-Setter                                      |                  | -       | -          |
| Work Close Confirmation Device (Only for Special Chuck) | FESTO            | ☆       | ●          |
|                                                         | Etc.             | ☆       | ☆          |
| Work Setter                                             |                  | ☆       | ☆          |
| Linear Scale                                            | X Axis           | ○       | ☆          |
|                                                         | Z Axis           | ○       | ☆          |
| Coolant Level Sensor (Only for Chip Conveyor)           |                  | ☆       | ○          |
| Environment                                             |                  |         |            |
| Air Conditioner                                         |                  | ○       | ○          |
| Oil Mist Collector                                      |                  | ☆       | ☆          |
| Oil Skimmer (Only for Chip Conveyor)                    |                  | ○       | ○          |
| MQL (Minimal Quantity Lubrication)                      |                  | ☆       | ☆          |
| Fixture & Automation                                    |                  |         |            |
| Auto Door                                               | Standard         | ○       | ○          |
|                                                         | High Speed       | -       | ☆          |
| Auto Shutter (Only for Automatic System)                |                  | -       | -          |
| Sub Operation Pannel                                    |                  | ☆       | ●          |
| Extra M-Code 4ea                                        |                  | ○       | ○          |
| Automation Interface                                    |                  | ☆       | ☆          |
| I/O Extension (IN & OUT)                                | 16 Contact       | ○       | ○          |
|                                                         | 32 Contact       | ○       | ○          |
| Turret Work Pusher (For Automation)                     |                  | ☆       | -          |
| Hyd. Device                                             |                  |         |            |
| Standard Hyd. Cylinder                                  | Solid            | ●       | ●          |
|                                                         | 35bar/42 ℓ       | -       | -          |
|                                                         | 60bar/20 ℓ       | ●       | -          |
| Standard Hyd. Unit                                      | 70bar/24 ℓ       | -       | -          |
|                                                         | 50bar/63 ℓ       | -       | ●          |
| S/W                                                     |                  |         |            |
| Dialogue Program (W-DPRO)                               |                  | ○       | ○          |
| DNC software (W-eDNC)                                   |                  | ○       | ○          |
| Smart Guide-i : FANUC                                   |                  | ●       | ☆          |
| Smart S/W                                               |                  | ☆       | ☆          |
| ETC                                                     |                  |         |            |
| Tool Box                                                |                  | ●       | ●          |
| Customized Color                                        | Need Munsel No.  | ☆       | ☆          |
| CAD & CAM                                               |                  | ☆       | ☆          |
| Special Level Sheet                                     | For Air Chuck    | ☆       | ☆          |
| Thermal displacement compensation                       |                  | ○       | ○          |

# SPECIFICATIONS

## External Dimensions (KL6500AW)

unit : mm(in)

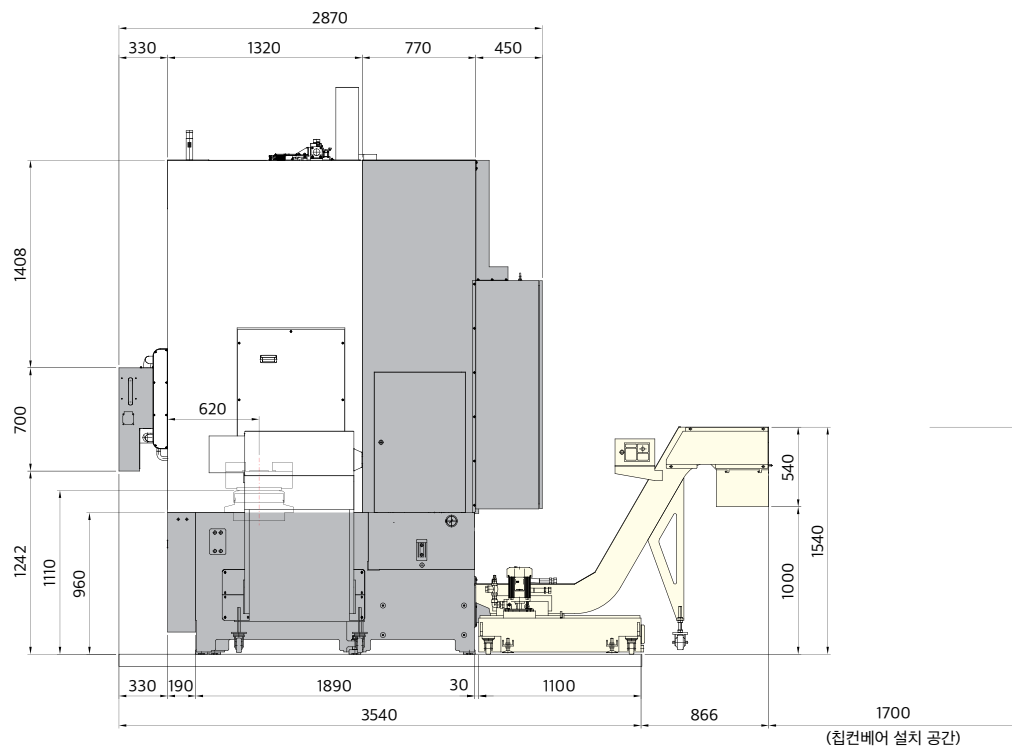
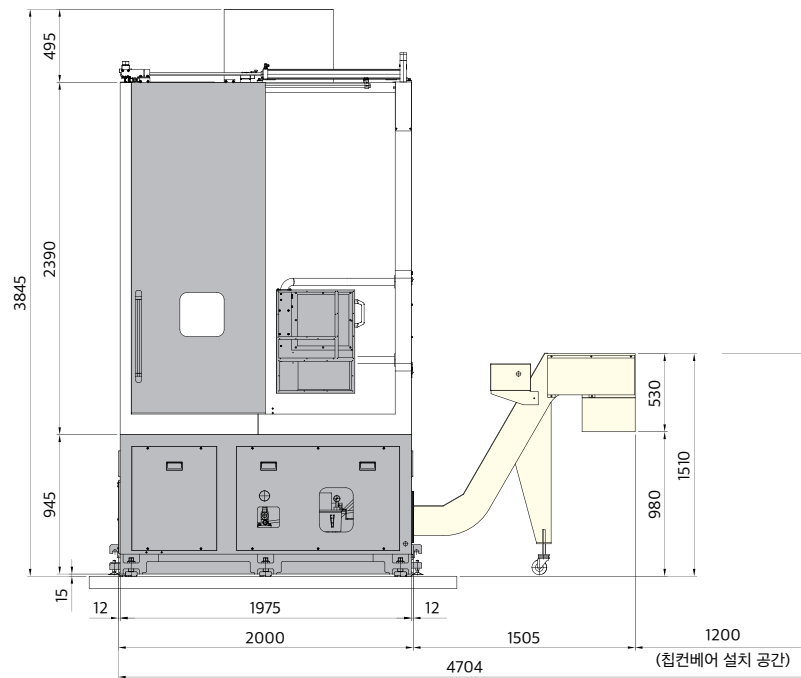




## SPECIFICATIONS

### External Dimensions (LV850R)

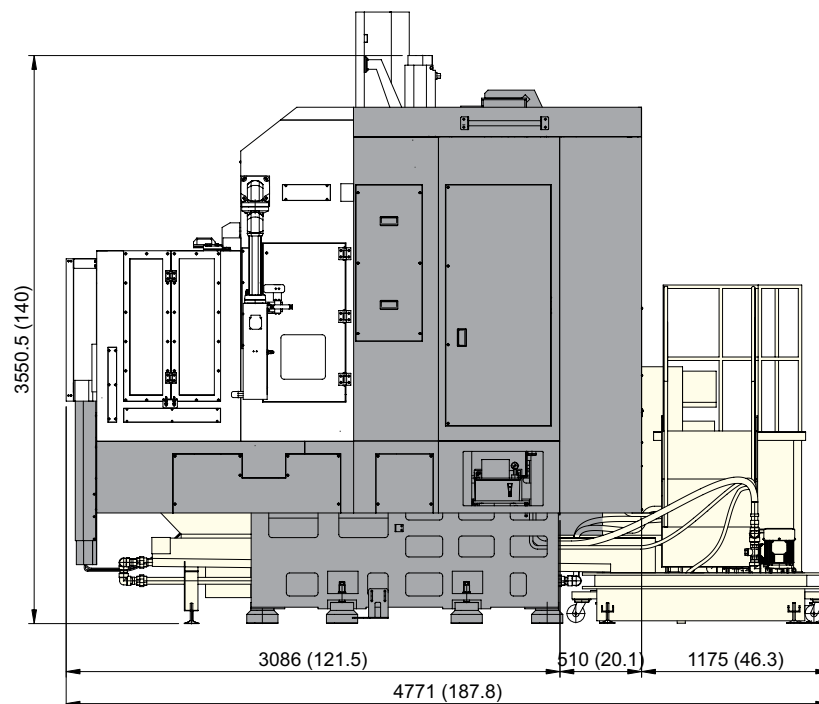
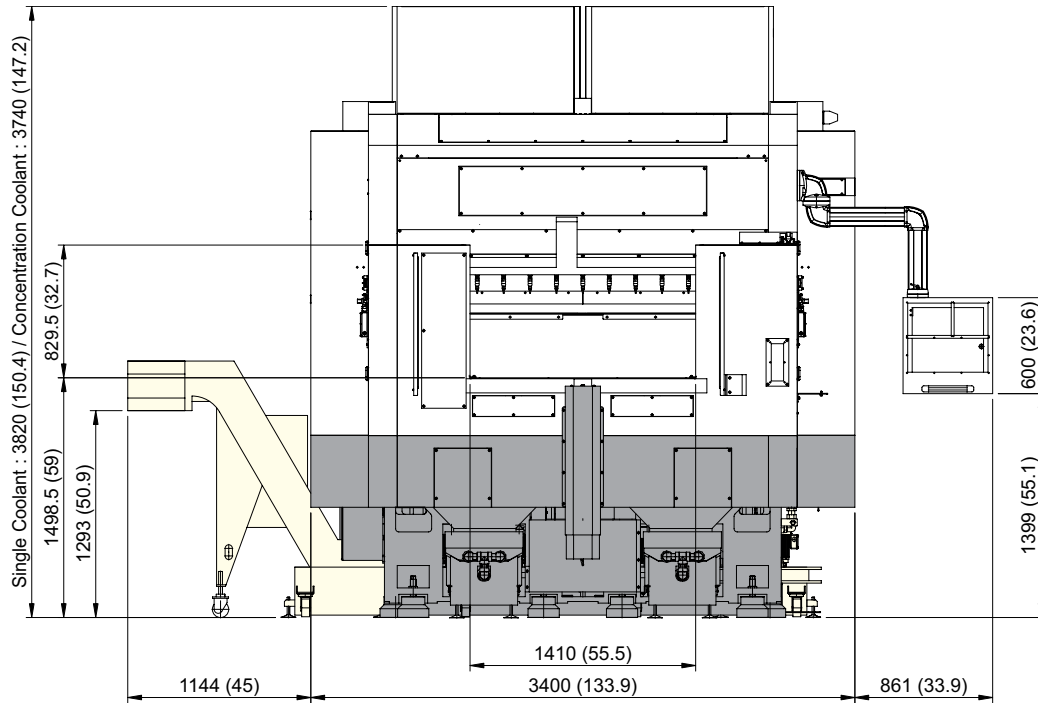
unit : mm(in)



# SPECIFICATIONS

## External Dimensions (LV800AW-TT)

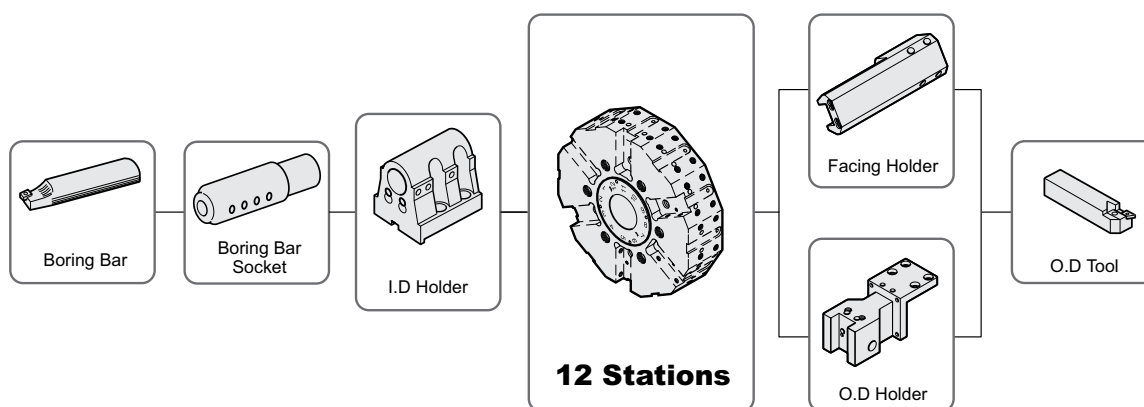
unit : mm(in)



# SPECIFICATIONS

## Tooling System (KL6500AW)

unit : mm(in)

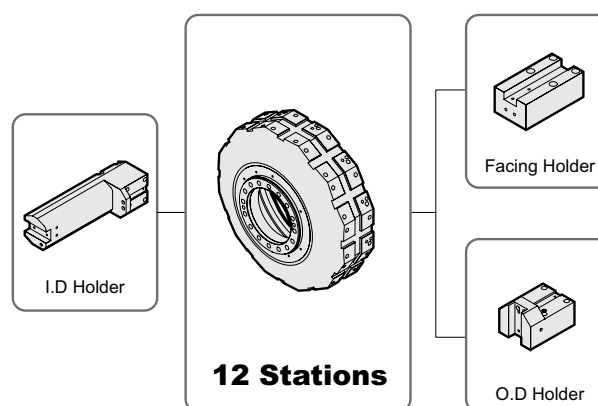


### Tooling Parts Detail

| ITEM           |               |               | KL6500AW |           |
|----------------|---------------|---------------|----------|-----------|
|                |               |               | mm Unit  | inch Unit |
| Turning Holder | O.D Holder    | Right/Left    | 2        | -         |
|                | Facing Holder |               | 2        | -         |
| Boring Holder  | I.D Holder    | Single        | 2        | -         |
| Socket         | Boring        | Ø32 (Ø1 1/4") | 1        | -         |

## Tooling System (LV8500R)

unit : mm(in)



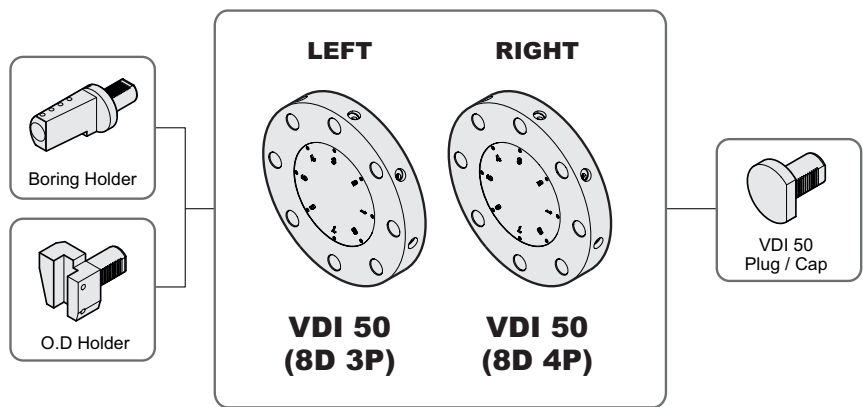
### Tooling Parts Detail

| ITEM           |               |            | LV8500R |           |
|----------------|---------------|------------|---------|-----------|
|                |               |            | mm Unit | inch Unit |
| Turning Holder | O.D Holder    | Right/Left | 2       | 2         |
|                | Facing Holder |            | 2       | 2         |
|                | I.D Holder    | Long       | 2       | 2         |

# SPECIFICATIONS

## Tooling System (LV800AW-TT)

unit : mm(in)



### Tooling Parts Detail

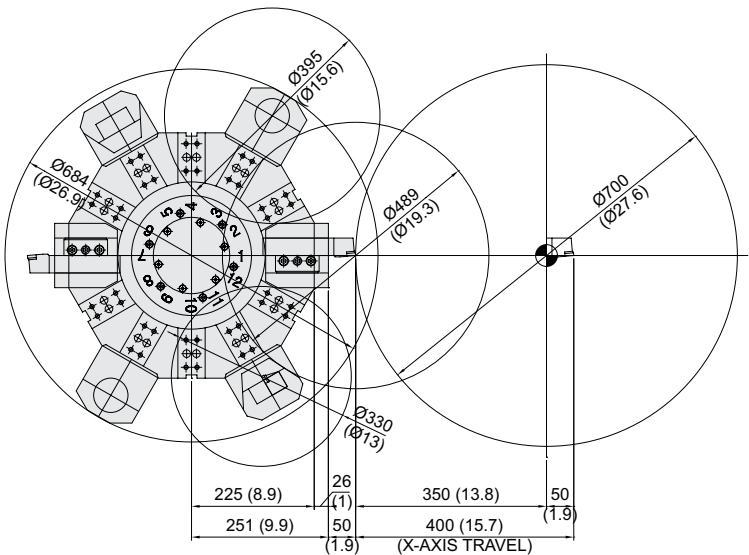
| ITEM           |            |            | LV800AW-TT (Right) |           | LV800AW-TT (Left) |           |
|----------------|------------|------------|--------------------|-----------|-------------------|-----------|
|                |            |            | mm Unit            | inch Unit | mm Unit           | inch Unit |
| Turning Holder | O.D Holder | Right/Left | -                  | -         | 2                 | 2         |
| Boring Holder  | I.D Holder | Single     | 4                  | 4         | 1                 | 1         |
| Socket         | Plug       |            | 4                  | 4         | 5                 | 5         |

Specifications are subject to change without notice for improvement.

## Interference

unit : mm(in)

KL6500AW





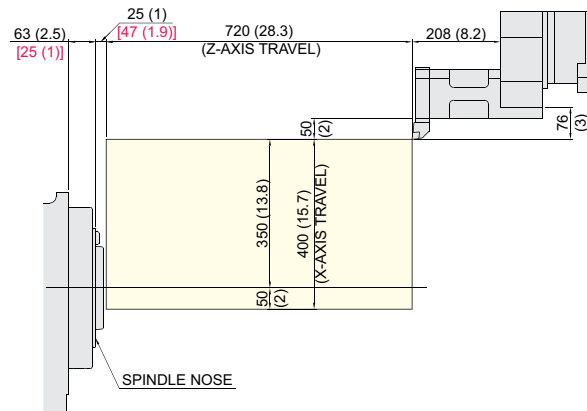


# SPECIFICATIONS

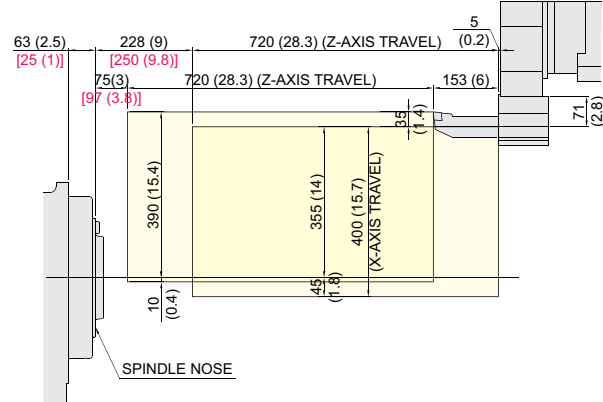
Tooling Travel Range (KL6500RAW [Mirror Finishing])

unit : mm(in)

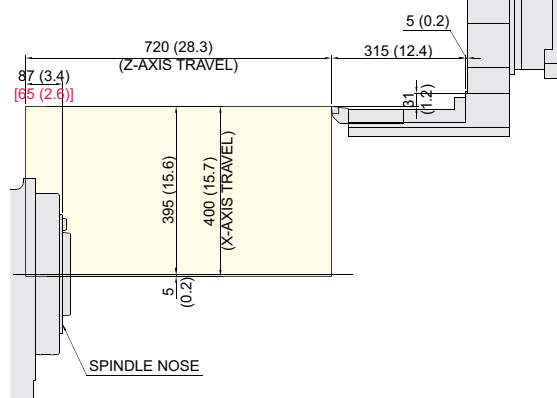
## OD Tool Holder



## ID Tool Holder



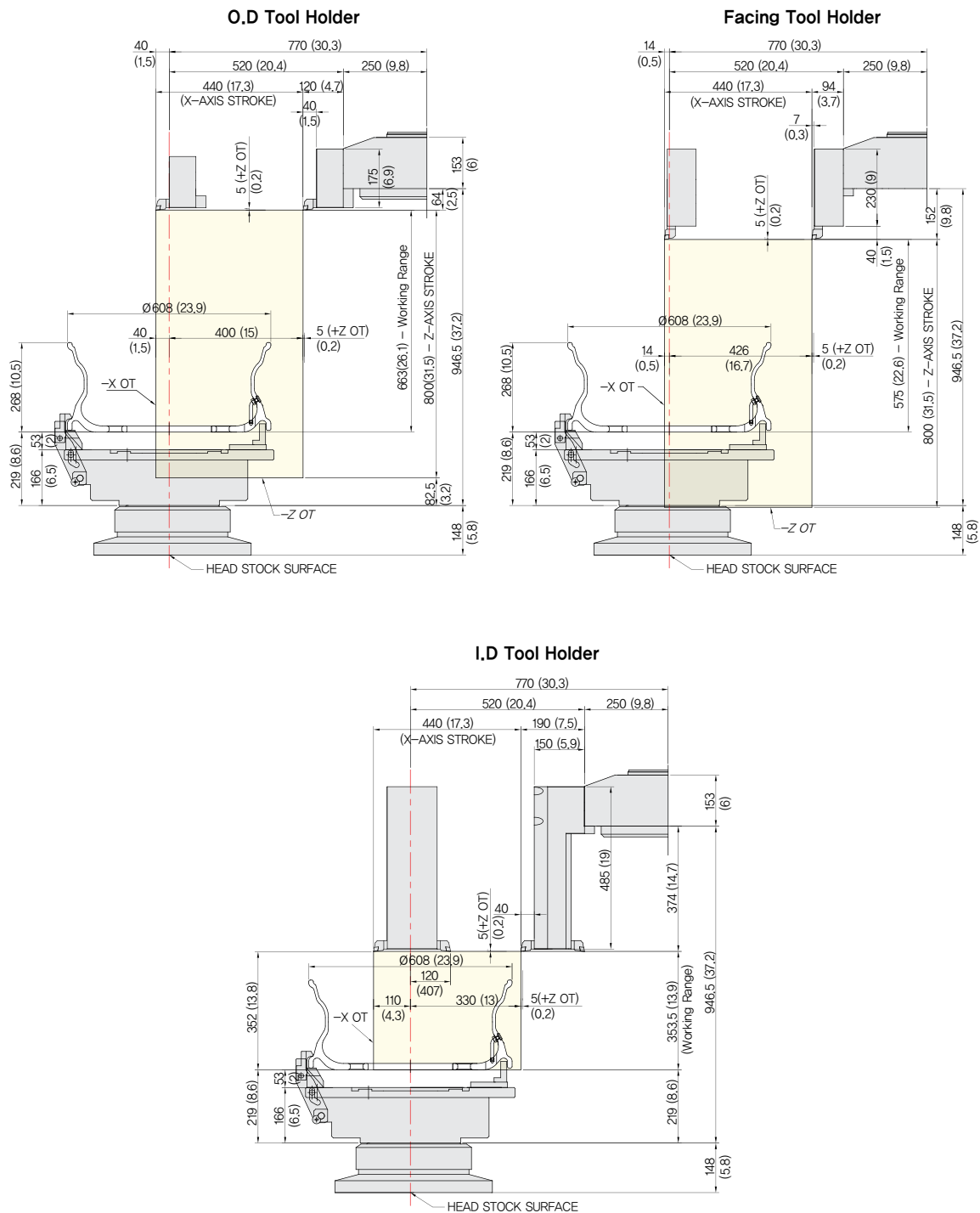
## Face Tool Holder



# SPECIFICATIONS

## Tooling Travel Range (LV8500R)

unit : mm(in)

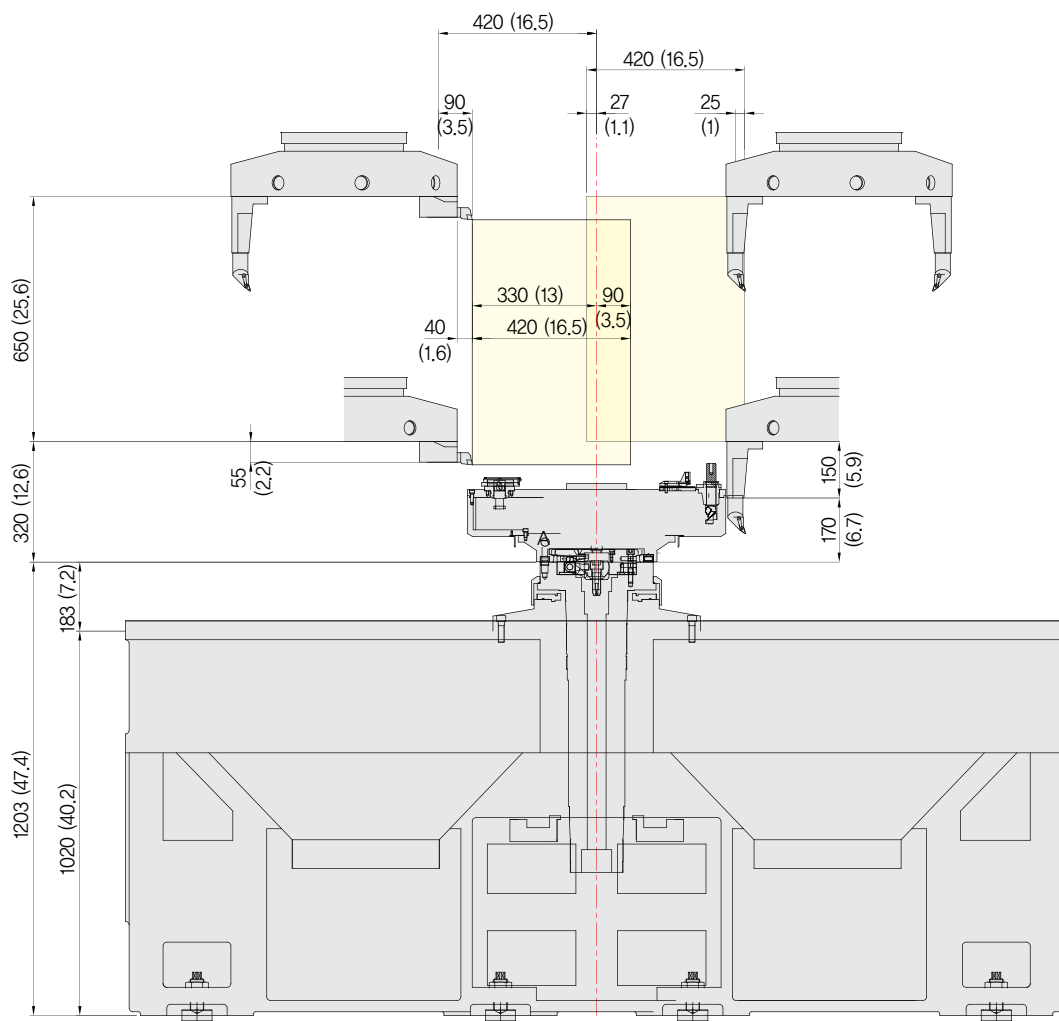


# SPECIFICATIONS

## Tooling Travel Range

unit : mm(in)

### LV800AW-TT





# SPECIFICATIONS

## Specifications

[ ]: 선택사양

| ITEM          |                           |        | KL6500AW [Mirror Finishing] |                                                   |
|---------------|---------------------------|--------|-----------------------------|---------------------------------------------------|
| CAPACITY      | Swing Over the Bed        |        | mm(in)                      | Ø850 (33.5")                                      |
|               | Max. Turning Dia.         |        | mm(in)                      | Ø660 (26")                                        |
|               | Max. Turning Length       |        | mm(in)                      | 710 (28")                                         |
| SPINDLE       | Recommended Wheel Size    |        | inch                        | 19"                                               |
|               | Spindle Bore              |        | mm(in)                      | Ø130 (Ø5.7")                                      |
|               | Spindl Speed (rpm)        |        | r/min                       | 2,000 [2,500]                                     |
|               | Motor (Max/Cont.)         |        | kW(HP)                      | 37/30 (50/40) [37/25 (50/33.5)]                   |
|               | Torque (Max/Cont.)        |        | N·m(lbf·ft)                 | 553/448 (407.9/330.4) [1,262/1,003 (930.8/739.8)] |
|               | Spindle Type              |        | -                           | BELT [BUILT-IN]                                   |
|               | Spindle Nose              |        | -                           | A2-11                                             |
| FEED          | Travel                    | X-Axis | mm(in)                      | 400 (15.7")                                       |
|               |                           | Z-Axis | mm(in)                      | 720 (28.3")                                       |
|               | Rapid Traverse Rate (X/Z) |        | m/min(ipm)                  | 20/24 (787/945)                                   |
|               | Slide Type                |        | -                           | ROLLER LM GUIDE                                   |
| TURRET        | No. of Tools              |        | -                           | 12                                                |
|               | Tool Size                 | O.D    | mm(in)                      | □32 (□1.3")                                       |
|               |                           | I.D    | mm(in)                      | Ø63 (2.5")                                        |
|               | Indexing Time             |        | sec/step                    | 0.25                                              |
| LIVE TOOL     | Motor Output (Max/Cont.)  |        | kW(HP)                      | -                                                 |
|               | Max. Speed (rpm)          |        | r/min                       | -                                                 |
|               | Torque (Max./Cont.)       |        | N·m(lbf·ft)                 | -                                                 |
|               | Collet Size               |        | mm(in)                      | -                                                 |
|               | Live Tool Type            |        | -                           | -                                                 |
| TANK CAPACITY | Coolant Tank              |        | ℓ (Gal)                     | 276 (72.9)                                        |
|               | Lubricating Tank          |        | ℓ (Gal)                     | 1.8 (0.5)                                         |
| POWER SUPPLY  | Electric Power Supply     |        | KVA                         | 50                                                |
|               | Thickness of Power Cable  |        | mm²                         | Over 35                                           |
|               | Voltage                   |        | V/Hz                        | 220/60 (200/50*)                                  |
| MACHINE       | Floor Space (L×W)         |        | mm(in)                      | 3,920×2,070 (154.3"×81.5")                        |
|               | Height                    |        | mm(in)                      | 2,260 (89")                                       |
|               | Weight                    |        | kg(lb)                      | 7,800 (17,196)                                    |
| NC            | Controller                |        | -                           | FANUC i Series - Smart Plus                       |

\*) Using 50Hz voltage instead of 60Hz may lower the output of motors. (excluding servo motors and inverter motors)  
Specifications are subject to change without notice for improvement.

# SPECIFICATIONS

## Specifications

[    ] : 선택사양

| ITEM          |                           |                 | LV8500R/L                   | LV800AW-TT                                                                 |
|---------------|---------------------------|-----------------|-----------------------------|----------------------------------------------------------------------------|
| CAPACITY      | Swing Over the Bed        | mm(in)          | Ø890 (35")                  | Ø760 (29.9")                                                               |
|               | Max. Turning Dia.         | mm(in)          | Ø850 (33.5")                | Ø650                                                                       |
|               | Max. Turning Length       | mm(in)          | 800 (31.5")                 | 650                                                                        |
| SPINDLE       | Recommended Wheel Size    | inch            | 22.5"                       | 19"                                                                        |
|               | Spindle Bore              | mm(in)          | Ø100 (3.9")                 | Ø50                                                                        |
|               | Spindle Speed (rpm)       | r/min           | 2,000                       | 3,000                                                                      |
|               | Motor Output (Max/Cont.)  | kW(HP)          | 45/37 (60/50)               | 55/37                                                                      |
|               | Torque (Max/Cont.)        | N·m(lbf·ft)     | 692/436 (510.4/321.6)       | 495/294                                                                    |
|               | Spindle Type              | -               | BELT                        | BUILT-IN                                                                   |
|               | Spindle Nose              | -               | A2-11                       | A2-11                                                                      |
|               | C Axis Indexing Time      | deg             | -                           | -                                                                          |
| FEED          | Travel (X/Z)              | mm(in)          | 465/800 (18.3"/31.5")       | 420/650                                                                    |
|               | Rapid Traverse Rate (X/Z) | m/min           | 20/20 (787/787)             | 30/30                                                                      |
|               | Slide Type                | -               | BOX GUIDE                   | ROLLER LM GUIDE                                                            |
| TURRET        | No. of Tools              | EA              | 12                          | 8+8                                                                        |
|               | Tool Size                 | O.D             | □32 (1.26")                 | □25 (1")                                                                   |
|               |                           | I.D             | -                           | Ø40 (1.6")                                                                 |
|               | Indexing Time             | sec/step        | 0.2                         | 0.35                                                                       |
| LIVE TOOL     | Motor Output (Max/Cont.)  | kW(HP)          | -                           | -                                                                          |
|               | Max. Speed (rpm)          | r/min           | -                           | -                                                                          |
|               | Torque (Max./Cont.)       | N·m(lbf·ft)     | -                           | -                                                                          |
|               | Collet Size               | mm(in)          | -                           | -                                                                          |
|               | Live Tool Type            | -               | -                           | -                                                                          |
| TANK CAPACITY | Coolant Tank              | ℓ (Gal)         | 300 (79.3)                  | 950 (251)                                                                  |
|               | Lubricating Tank          | ℓ (Gal)         | 3 (0.8)                     | 3 (0.8)                                                                    |
| POWER SUPPLY  | Electric Power Supply     | KVA             | 48                          | 80                                                                         |
|               | Thickness of Power Cable  | mm <sup>2</sup> | Over 35                     | Over 95                                                                    |
|               | Voltage                   | V/Hz            | 220/60 (200/50*)            | 220/60 (200/50*)                                                           |
| MACHINE       | Floor Space (L×W)         | mm(in)          | 2,000×3,540 (78.7"×139.4")  | 3,400×3,595 (133.9"×141.5")                                                |
|               | Height                    | mm(in)          | 3,845 (151.4")              | {3,740 (147.2") : Concentration Coolant / 3,820 (150.4") : Single Coolant} |
|               | Weight                    | kg(lb)          | 9,500 (20,943)              | 19,500 (42,990)                                                            |
| NC            | Controller                | -               | FANUC i Series - Smart Plus |                                                                            |

\*) Using 50Hz voltage instead of 60Hz may lower the output of motors. (excluding servo motors and inverter motors)  
Specifications are subject to change without notice for improvement.

# CONTROLLER

## FANUC i Series - Smart Plus

[ ] : Option

| Controlled axis / Display / Accuracy Compensation |                                                                                                                                                     |
|---------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Control axis                                      | 2 axis (X, Z) / 3 axis (X, Z, C) / 4 axis (X, Z, Y, C)<br>5 axis (X, Z, Y, B, C, A) / 6 axis (X, Z, Y, B, C, A)<br>7 axis (X1/Z1, X2/Z2, B2, C1/C2) |
| Simultaneously controlled axis                    | 2 axis [Max. 4 axis]                                                                                                                                |
| Designation of spindle axis                       | 3 axis [Max. 4 axis]                                                                                                                                |
| Least setting Unit                                | X, Z, Y, B axis : 0.001 mm (0.0001 inch)<br>C, A axis : 0.001 deg                                                                                   |
| Least input increment                             | X, Z, Y, B axis : 0.001 mm (0.0001 inch)<br>C, A axis : 0.001 deg                                                                                   |
| Inch / Metric conversion                          | G20 / G21                                                                                                                                           |
| High response vector control                      |                                                                                                                                                     |
| Interlock                                         | All axis / Each axis                                                                                                                                |
| Machine lock                                      | All axis                                                                                                                                            |
| Backlash compensation                             | ± 0~9999 pulses (exc.Rapid traverse / Cutting feed)                                                                                                 |
| Position switch                                   |                                                                                                                                                     |
| LCD / MDI                                         | 15 inch LCD unit (with Touch Panel)                                                                                                                 |
| Feedback                                          | Absolute motor feedback                                                                                                                             |
| Stored stroke check 1                             | Over travel                                                                                                                                         |
| Stored stroke check 2, 3                          |                                                                                                                                                     |
| PMC axis control                                  |                                                                                                                                                     |
| Operation                                         |                                                                                                                                                     |
| Automatic operation (Memory)                      |                                                                                                                                                     |
| MDI operation                                     |                                                                                                                                                     |
| DNC operation                                     | Needed DNC software / CF card                                                                                                                       |
| Program restart                                   |                                                                                                                                                     |
| Wrong operation prevention                        |                                                                                                                                                     |
| Program check function                            | Dry run                                                                                                                                             |
| Single block                                      |                                                                                                                                                     |
| Search function                                   | Program Number / Sequence Number                                                                                                                    |
| Interpolation functions                           |                                                                                                                                                     |
| Nano interpolation                                |                                                                                                                                                     |
| Positioning                                       | G00                                                                                                                                                 |
| Linear interpolation                              | G01                                                                                                                                                 |
| Circular interpolation                            | G02, G03                                                                                                                                            |
| Exact stop mode                                   | Single : G09, Continuous : G61                                                                                                                      |
| Dwell                                             | G04, 0 ~ 9999.9999 sec                                                                                                                              |
| Skip                                              | G31                                                                                                                                                 |
| Reference position return                         | 1st reference : G28, 2nd reference : G30<br>Ref. position check : G27                                                                               |
| Thread synchronous cutting                        | G33                                                                                                                                                 |
| Thread cutting retract                            |                                                                                                                                                     |
| Variable lead thread cutting                      |                                                                                                                                                     |
| Multi / Continuous threading                      |                                                                                                                                                     |
| Feed function / Acc. & Dec. control               |                                                                                                                                                     |
| Manual feed                                       | Rapid traverse<br>Jog : 0~2,000 mm/min (79 ipm)<br>Manual handle : x1, x10, x100 pulses<br>Reference position return                                |
| Cutting Feed command                              | Direct input F code                                                                                                                                 |
| Feedrate override                                 | 0 ~ 200% (10% Unit)                                                                                                                                 |
| Rapid traverse override                           | 1%, F25%, 50%, 100%                                                                                                                                 |
| Override cancel                                   |                                                                                                                                                     |
| Feed per minute                                   | G98                                                                                                                                                 |
| Feed per revolution                               | G99                                                                                                                                                 |
| Look-ahead block                                  | 1 block                                                                                                                                             |
| Program input                                     |                                                                                                                                                     |
| Tape Code                                         | EIA / ISO                                                                                                                                           |
| Optional block skip                               | 9 ea                                                                                                                                                |
| Program stop / end                                | M00, M01 / M02, M30                                                                                                                                 |
| Maximum command unit                              | ± 999,999.999 mm (± 99,999.9999 inch)                                                                                                               |
| Plane selection                                   | X-Y : G17 / Z-X : G18 / Y-Z : G19                                                                                                                   |
| Workpiece coordinate system                       | G52, G53, 6 pairs (G54 ~ G59)                                                                                                                       |
| Manual absolute                                   | Fixed ON                                                                                                                                            |
| Programmable data input                           | G10                                                                                                                                                 |
| Sub program call                                  | 10 folds nested                                                                                                                                     |
| Custom macro                                      | #100 ~ #199, #500 ~ #999                                                                                                                            |
| G code system                                     | A, B/C                                                                                                                                              |
| Programmable mirror image                         | G51.1, G50.1                                                                                                                                        |
| G code preventing buffering                       | G4.1                                                                                                                                                |
| Direct drawing dimension program                  | Including Chamfering / Corner R                                                                                                                     |
| Conversational Program                            | SmartGuide-i                                                                                                                                        |

| Program input                               |                                                    |
|---------------------------------------------|----------------------------------------------------|
| Multiple repetitive cycles I, II            |                                                    |
| Canned cycle for turning                    |                                                    |
| Auxiliary function / Spindle speed function |                                                    |
| Auxiliary function                          | M & 4 digit                                        |
| Level-up M Code                             | High speed / Multi / Bypass M code                 |
| Spindle speed function                      | S & 5 digit, Binary output                         |
| Spindle override                            | 0% ~ 150% (10% Unit)                               |
| Multi position spindle orientation          | M19 (S##)                                          |
| Rigid tapping                               |                                                    |
| Constant surface speed control              | G96, G97                                           |
| Tool function / Tool compensation           |                                                    |
| Tool function                               | T & 2 digit + Offset 2 digit                       |
| Tool life management                        |                                                    |
| Tool offset pairs                           | 128 pairs                                          |
| Tool nose radius compensation               | G40, G41, G42                                      |
| Geometry / Wear compensation                |                                                    |
| Direct input of offset measured B           |                                                    |
| Editing function                            |                                                    |
| Part program storage size                   | 5,120m (2MB)                                       |
| No. of registerable programs                | 1,000 ea                                           |
| Program protect                             |                                                    |
| Background editing                          |                                                    |
| Extended part program editing               | Copy, move and change of NC program                |
| Memory card program edit                    |                                                    |
| Data input / output & Interface             |                                                    |
| I/O interface                               | CF card, USB memory<br>Embedded Ethernet interface |
| Screen hard copy                            |                                                    |
| External message                            |                                                    |
| External key input                          |                                                    |
| External workpiece number search            |                                                    |
| Automatic data backup                       |                                                    |
| Setting, display and diagnosis              |                                                    |
| Self-diagnosis function                     |                                                    |
| History display & Operation                 | Alarm & Operator message & Operation               |
| Run hour / Parts count display              |                                                    |
| Maintenance information                     |                                                    |
| Actual cutting feedrate display             |                                                    |
| Display of spindle speed / T code           |                                                    |
| Graphic display                             |                                                    |
| Operating monitor screen                    | Spindle / Servo load etc.                          |
| Power consumption monitoring                | Spindle & Servo                                    |
| Spindle / Servo setting screen              |                                                    |
| Multi language display                      | Support 24 languages                               |
| Display language switching                  | Selection of 5 optional Languages                  |
| LCD Screen Saver                            | Screen saver                                       |
| Unexpected disturbance torque               | BST (Back spin torque limit)                       |
| Function for machine type                   |                                                    |
| Cs contour control (C & A axis)             | Mill, MS, Y, SY, LF-Mill, TTMS, TTSY               |
| Polar coordinate interpolation              | Mill, MS, Y, SY, LF-Mill, TTMS, TTSY               |
| Cylindrical interpolation                   | Mill, MS, Y, SY, LF-Mill, TTMS, TTSY               |
| Polygon turning (2 Spindles)                | Mill, MS, Y, SY, LF-Mill, TTMS, TTSY               |
| Canned cycle for drilling                   | Mill, MS, Y, SY, LF-Mill, TTMS, TTSY               |
| Spindle orientation expansion               | MS, SY TTS, TTMS, TTSY                             |
| Spindle synchronous control                 | MS, SY TTS, TTMS, TTSY                             |
| Torque control                              | MS, SY TTS, TTMS, TTSY                             |
| Y axis offset                               | Y, SY, TTSY                                        |
| Arbitrary angular control                   | Y, SY, TTSY                                        |
| Composite / Superimposed control            | MS, SY, TTS, TTMS, TTSY                            |
| Balance cutting                             | TTS, TTMS, TTSY                                    |
| Option                                      |                                                    |
| Fast ethernet                               | Needed option board                                |
| Data server                                 | Needed option board                                |
| Protection of data at 8 levels              |                                                    |
| Tool offset pairs                           | 200 pairs                                          |
| Helical interpolation                       |                                                    |
| Look-ahead Block                            | 40 ea, 200 ea (AICC II)                            |

Figures in inch are converted from metric values.  
The FANUC controller specifications are subject to change based on the policy of company CNC supplying.



LV8500R Movie



LV8500R 3D Movie

## WIN MACHINE TOOLS



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