



**KINGFISHER**



**Accurate Precision Machining**



**RADAR **RAL** series**

**R12/16/20**

**CNC VERTICAL LATHE**

**ISO 9001** **CE**

## ABOUT RADAR

Radars Industrial Co., Ltd., established in 2007, has more than 50 years of experience in manufacturing professional machine tools and technologies. We manufacture with high accuracy, stability, and rigidity using the CNC Vertical Lathe for heavy cutting processes.

Our management team's energy and enthusiasm are strongly respected by our customers. To meet their satisfaction, we ensure precision quality at each step of our production line.

The products' ease of operation increases efficiency for our customers. The use of new and advanced design concepts has excellent precision machines tools, and can deliver a performance that is unique compared to our competitors. With a steady, practical and honest commitment to our business, we provide customers a complete "before and after" customer service. Our CNC vertical lathe gives our customers the fastest delivery at a very satisfactory price.



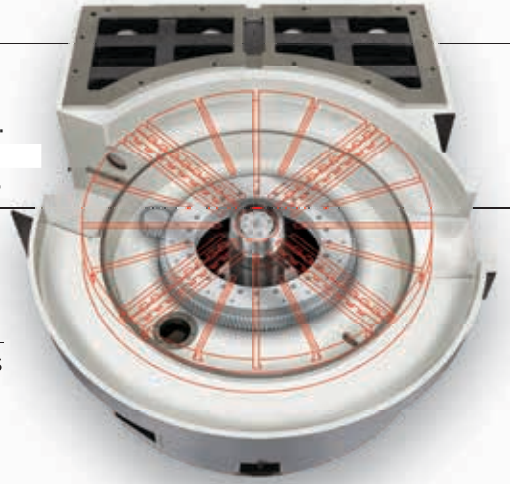


## Thrust Cylindrical Roller Bearing

Thrust cylindrical roller bearing plus Tapered roller bearing. The center is using NSK taper roller bearing to support. It is suitable for heavy cutting, heavy loading, and high capability to machining.

## Patent Octagon RAM Design

The unique structure of all Radar models provides excellent straightness with improved control of thermal expansion. This special Octagon RAM provides superior damping characteristics and improved rigidity when compared with the traditional square RAM design.



## High Precision Quality Turning Center

The range of vertical lathe offers unrivalled levels of rigidity and accuracy due to the strong foundation of both structure and design gives a high level of performance and accuracy.



**R12**  
CNC VERTICAL LATHE

# R16/20

CNC VERTICAL LATHE





## Structure of Saddle

The 15° slant bed design is used on both RAL-16 & RAL-20 models.

This reduces overhang problem and provides increased machine rigidity.



## Massive Hydraulic Clamps Lock Crossrail

Each position is locked by 4 strong independent hydraulic cylinders in conjunction with large taper lock pins.

This design provides both of flexible and rigid crossrail that provides machine's versatile capacity, superior positioning and repeatability control.



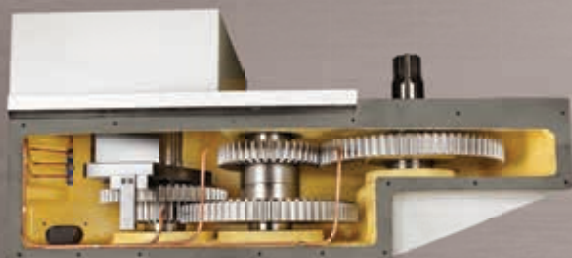
## Work Table

High rigidity of work table with 4 jaw manual chuck.



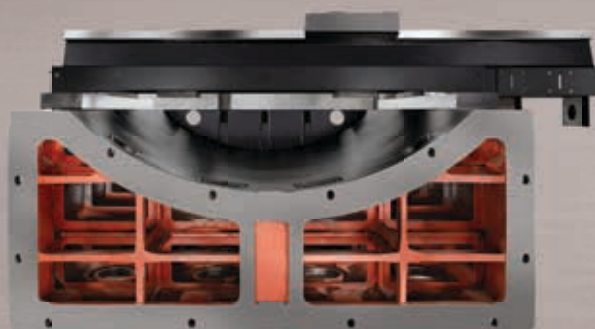
## FANUC

User friendly operation control panel.



## Gear box

The high torque, 2 speed gearbox assembled by ourselves, incorporates a Fanuc spindle motor with a maximum torque of 23,270 N.m enable a cutting power to suit all types of material.

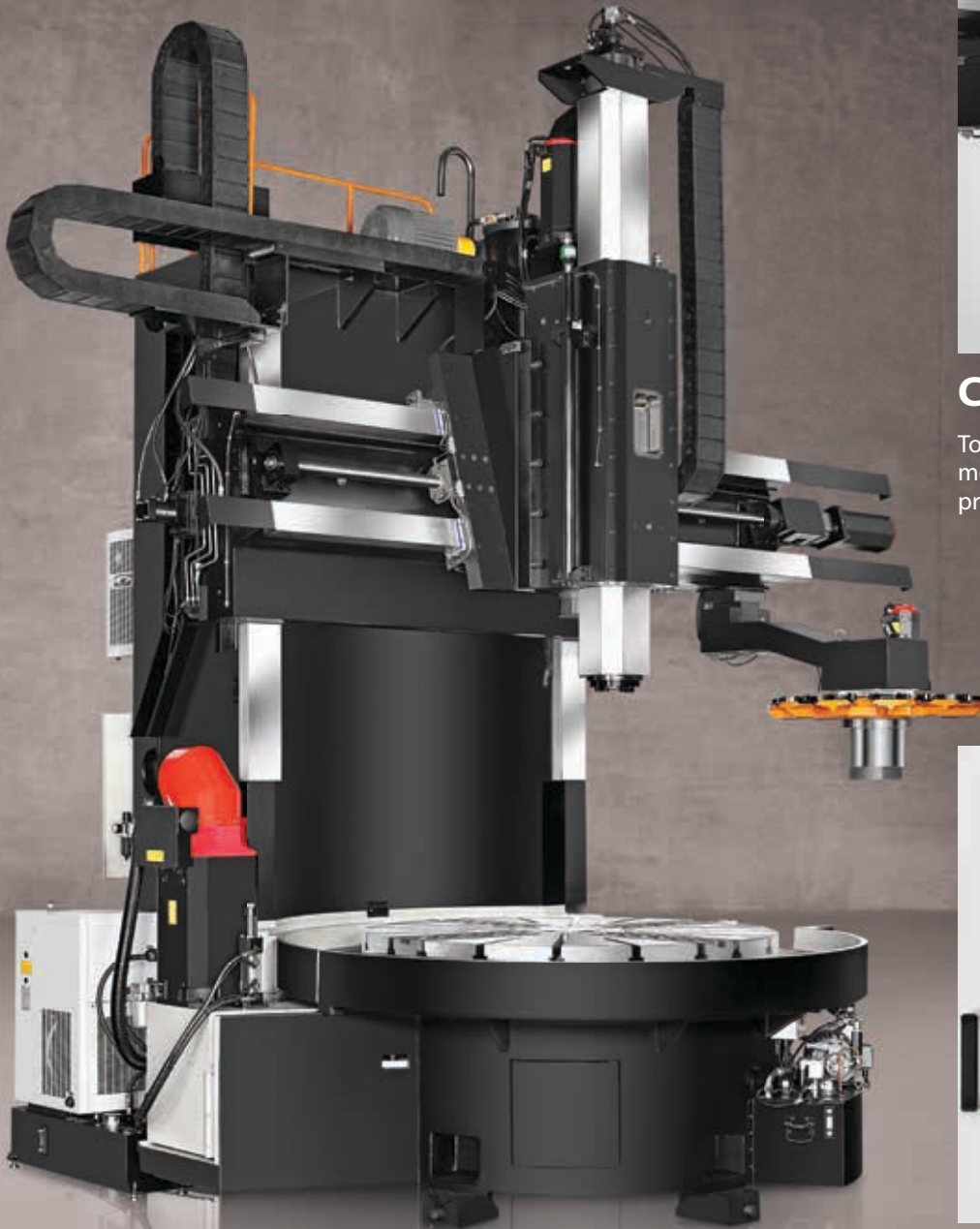


## Multi-Ribbed Column

The one piece column made by Meehanite cast iron with wide span ribbed box structure provides strong stability and rigidity. It dramatically decrease vibration, thermal expansion, and deformation caused by cutting stress. The oversize box to Rockwell 55° and stress relieved.

# RAL

## MACHINE FRAME



The whole range of RAL models offers a heavy structure and provides the ideal combination of high rigidity and machining accuracy.



### Carousel

Tool magazine is driven by servo motor to make sure the fast and precise positioning of ATC.

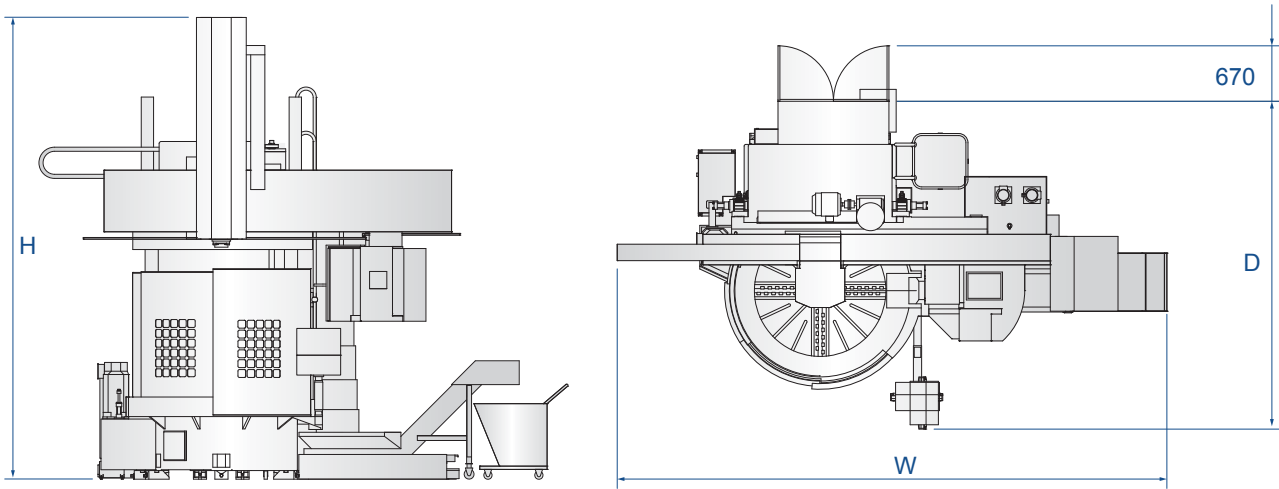


### ATC

Standard models equipped with 12 tools. M type models equipped with 18 tools, adopt compound tool magazine with 9 powered tools and 9 non-powered tools.

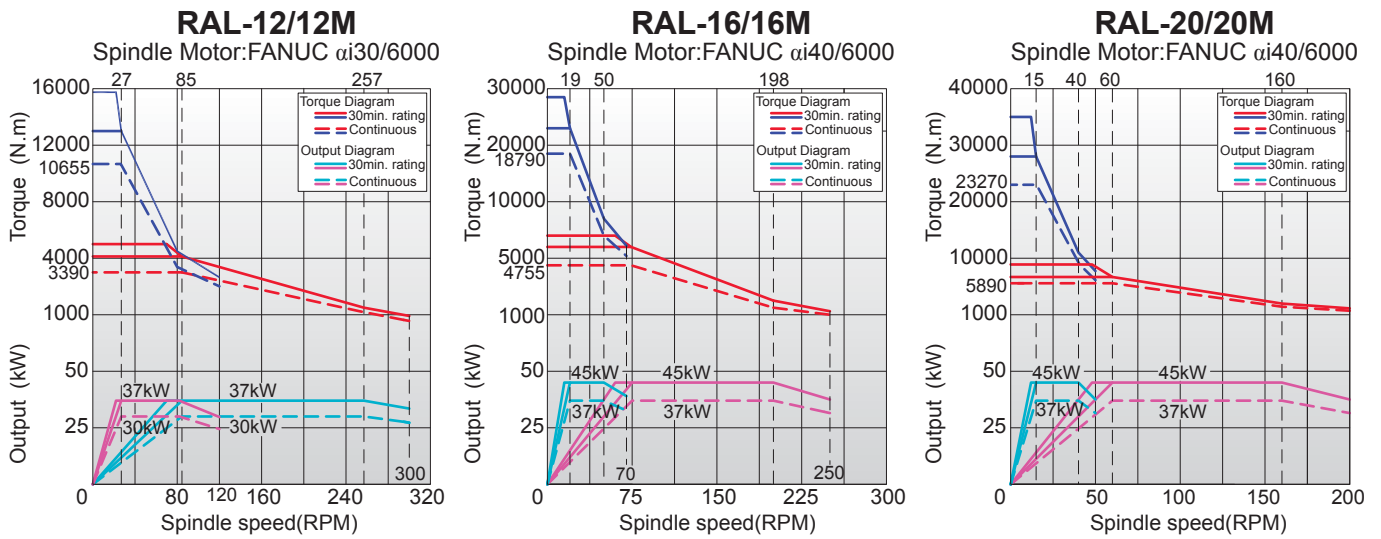
# Machinery Dimension

unit: mm

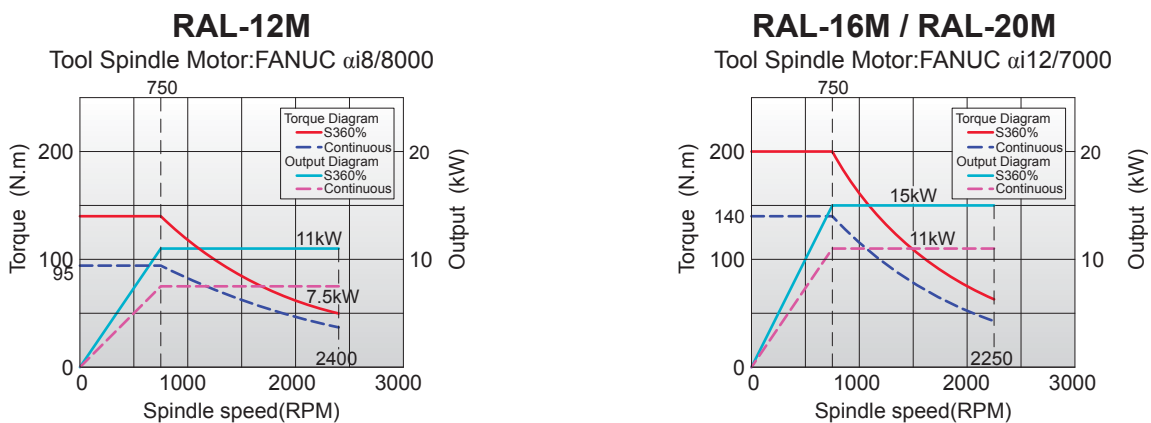


**RAL-12/12M** W 5,900 D 3,130 H 5,020/5,360 **RAL-16/16M** W 6,500 D 3,930 H 5,690/5,880 **RAL-20/20M** W 7,800 D 4,430 H 5,740/5,930

# Table Torque Diagram



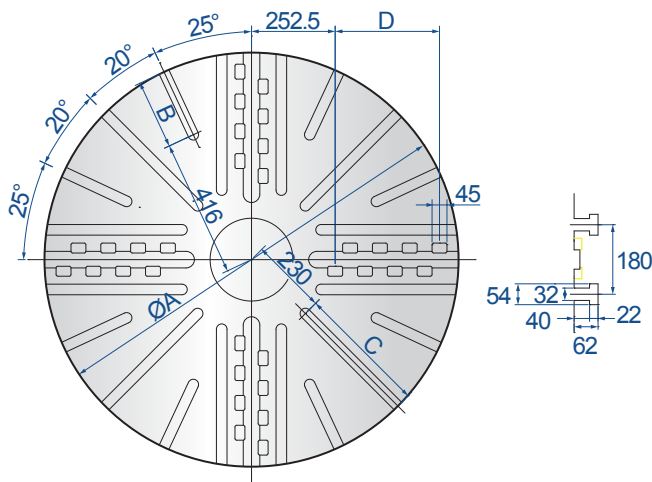
# Live Spindle Torque Diagram





## Work Table

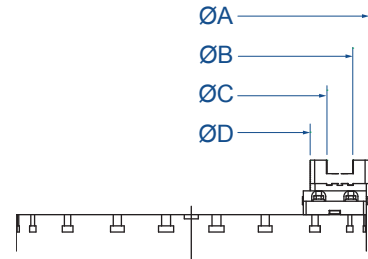
### Standard Work Table



unit: mm

	RAL-12/12M	RAL-16/16M	RAL-20/20M
<b>A</b>	1,250	1,600	2,000
<b>B</b>	209	384	584
<b>C</b>	395	570	770
<b>D</b>	7x45=315	11x45=495	15x45=675

### Inside and Outside Clamping for Chuck



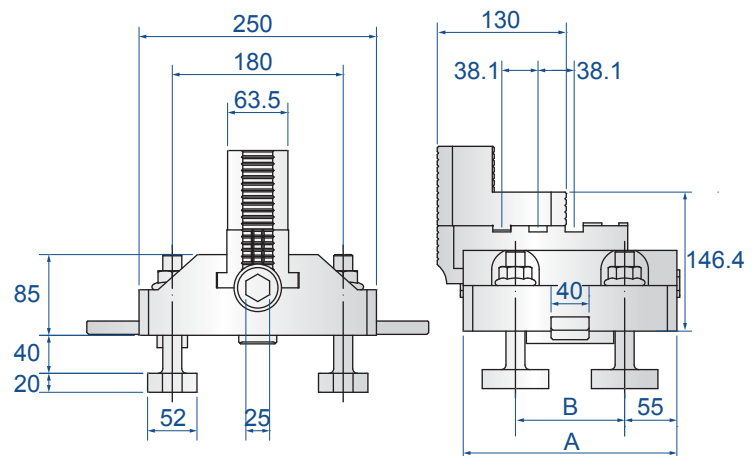
unit: mm

	RAL-12/12M	RAL-16/16M	RAL-20/20M
<b>A</b>	745~1,295	715~1,685	715~2,000
<b>B</b>	630~1,180	600~1,570	600~1,885
<b>C</b>	440~990	410~1,380	410~1,695
<b>D</b>	325~875	295~1,260	295~1,580

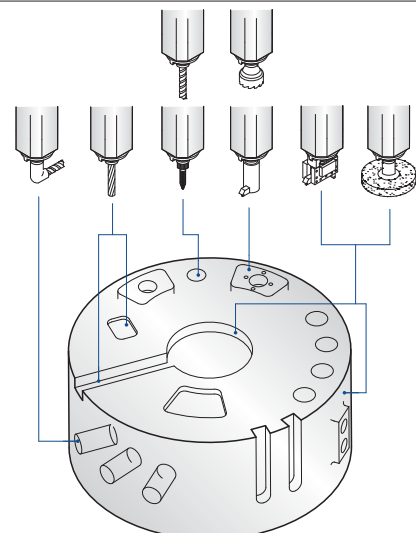
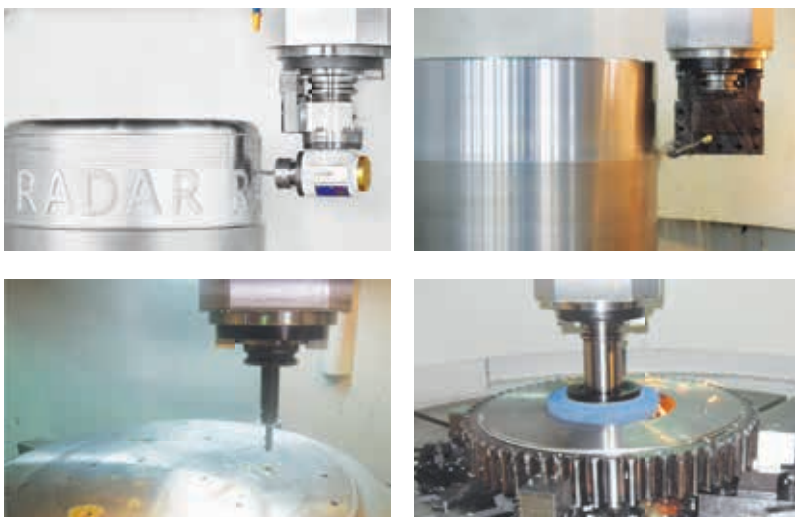
### 4 Jaw Manual Chuck

unit: mm

	RAL-12/12M	RAL-16/16M	RAL-20/20M
<b>A</b>	225	255	255
<b>B</b>	115	145	145

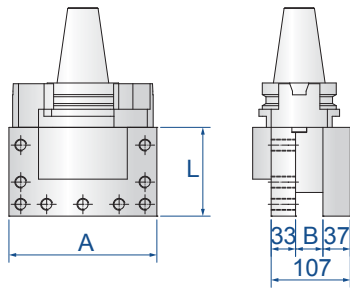


## Tooling System



# Dimension of Tool Holder

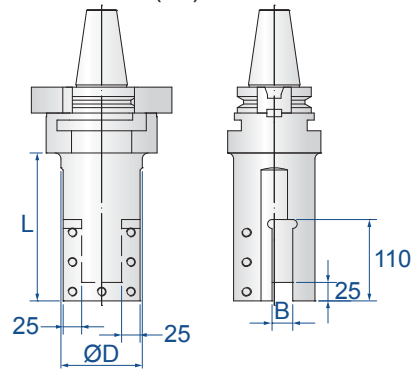
OD Tool Holder (ODF)



unit: mm

MODEL	L	A	B	Tool
<b>ODF32-200-120</b>	120	200	37	32x32
<b>ODF32-230-140</b>	140	230	37	32x32

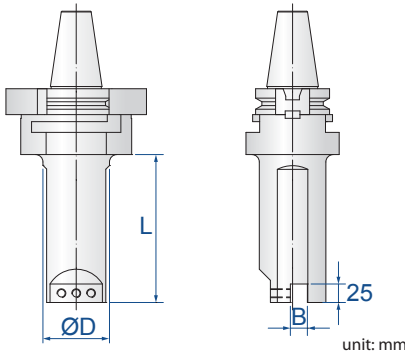
Socket Holder (ISF)



unit: mm

MODEL	L	ØD	B	Tool
<b>ISF25-110-200</b>	200	110	28	25x25
<b>ISF25-110-300</b>	300	110	28	25x25

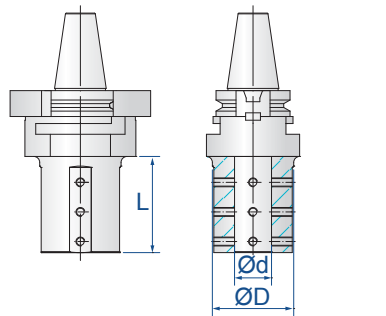
ID Tool Holder (IDF)



unit: mm

MODEL	L	ØD	B	Tool
<b>IDF20-80-200</b>	200	80	23	20x20
<b>IDF20-80-250</b>	250	80	23	20x20
<b>IDF20-90-300</b>	300	90	23	20x20
<b>IDF25-100-400</b>	400	100	28	25x25

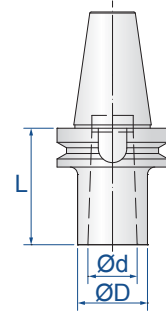
Boring Holder (BOB)



unit: mm

MODEL	L	ØD	Ød	Tool
<b>BOB50-110-130</b>	130	110	50	Ø50
<b>BOB63-110-130</b>	130	110	63	Ø63
<b>BOB50-110-230</b>	230	110	50	Ø50
<b>BOB63-110-230</b>	230	110	63	Ø63

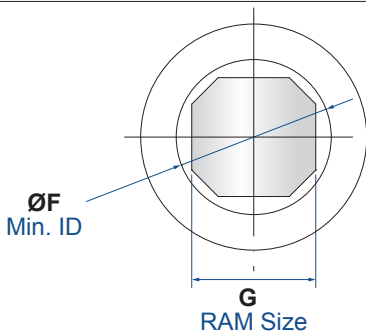
Taper Holder (DRI)



unit: mm

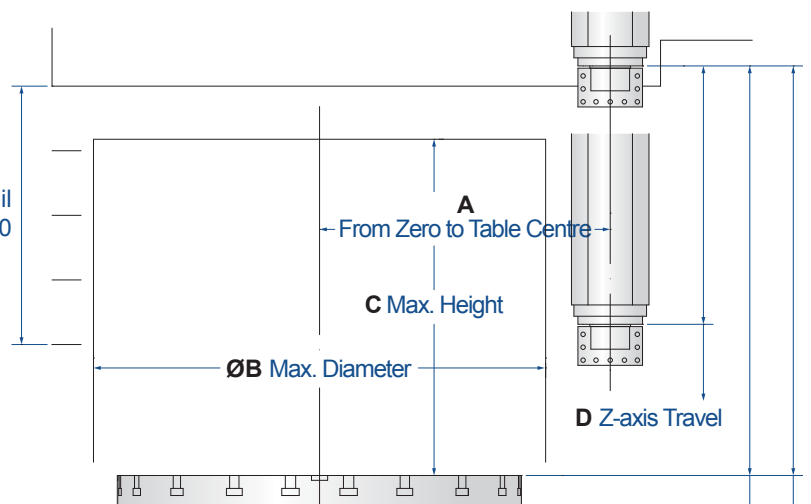
MODEL	L	ØD	Ød	Tool
<b>DRI2-32-60</b>	60	32	17.78	MT#2
<b>DRI3-40-65</b>	65	40	23.825	MT#3
<b>DRI4-48-95</b>	95	48	31.267	MT#4
<b>DRI5-63-105</b>	105	63	44.399	MT#5

# Max. Machining Range



Crossrail  
200×4=800  
unit: mm

	RAL-12/12M	RAL-16/16M	RAL-20/20M
<b>A</b>	900	1,125	1,380
<b>ØB</b>	1,500	1,900	2,400
<b>C</b>	1,250	1,600	1,600
<b>D</b>	900	1,000	1,000
<b>E1</b>	25~700	65~1,065	75~1,075
<b>E5</b>	600~1,500	865~1,865	875~1,875
<b>ØF</b>	285	310	310
<b>G</b>	230x240	240x270	240x270



**E1** Machining Range of Step 1  
**E5** Machining Range of Step 5

DISCRIPTION	UNIT	RAL-12	RAL-12M	RAL-16	RAL-16M	RAL-20	RAL-20M
<b>Capacity</b>							
Table Diameter	mm	1,250		1,600		2,000	
Max. Swing	mm	1,600		2,000		2,500	
Max. Turning Diameter	mm	1,400		1,900		2,400	
Distance from RAM to table	mm	700 ~ 1,500		1,065 ~ 1,865		1,075 ~ 1,875	
Max. Turning Height	mm	1,250		1,600			
Max. Workpiece weight	kg	6,000		10,000		13,000	
RAM Size	mm	230x240		240x270			
Min. ID for RAM Pass	mm	285		310			
<b>Spindle</b>							
Table Speed (2 steps)	rpm	1 ~ 120, 1 ~ 300		1 ~ 70, 1 ~ 250		1 ~ 50, 1 ~ 200	
Max. Torque of table	N.m	10,655		24,480		33,770	
Live Spindle Speed	rpm	-	24 ~ 2,400	-	50 ~ 2,250	-	50 ~ 2,250
<b>Travel / Rapid Traverse</b>							
X-axis Travel	mm	-200 ~ +850		-200 ~ +1,125		-250 ~ +1,380	
Z-axis Travel	mm	900		1,000			
Crossrail Travel	mm	800					
Crossrail Step	mm x step	200 x 5					
X-axis Rapid Traverse	m/min	10					
Z-axis Rapid Traverse	m/min	8					
<b>ATC</b>							
ATC Capacity	-	12	18	12	18	12	18
Max. Tool Length	mm	400					
Max. Weight of Tool Holder	kg	50					
Max. Weight of magazine	kg	450	550	450	550	450	550
Type of Tool Shank	-	BT50					
Tool shank size	mm	25 or 32					
<b>Motor</b>							
Spindle Motor	kW	AC 30/37			AC 37/45		
Total Power Capacity	kVA	50			60		
X/Z-axis Servo Motor	kW	6					
Live Spindle Motor	kW	-	AC 11 / 15	-	AC 11 / 15	-	AC 11 / 15
CF-axis Servo Motor	kW	-	6	-	6	-	6
<b>Machine Dimension</b>							
Floor Space (LxW)	mm	5,900x3,800		6,500x4,600		7,800x5,100	
Machine Height (H)	mm	5,020	5,360	5,690	5,880	5,740	5,930
Machine Weight	kg	20,000	20,500	28,000	28,500	42,000	42,500

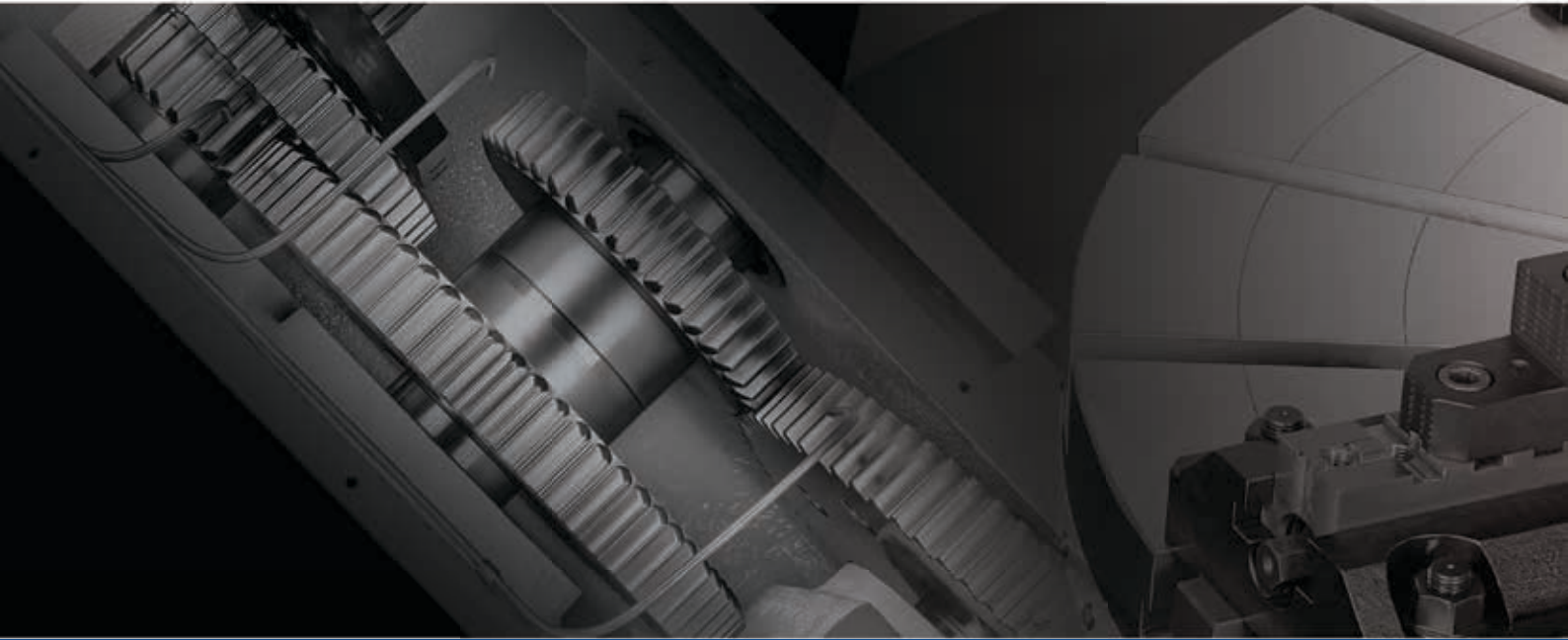
All the specifications in the catalog are subject to change without notice.

### Standard Accessories

- |                                     |   |                                    |
|-------------------------------------|---|------------------------------------|
| • FANUC Oi-TF Controller            | • Auto Lubrication System                 | • Tools and Tool Box               |
| • Independent 4 Jaw Manual Chuck    | • Tool Holder BT-50 (O.D. + I.D.) x 1 pcs | • Hydraulic Unit                   |
| • 12 Tools of ATC for RAL series    | • Chip Conveyor                           | • Table Lubricant Oil Cooling Unit |
| • 18 Tools of ATC for RAL(M) series | • Heat Exchanger For Electrical Cabinet   | • Anchor Bolt and Pad              |
| • Machine Cover (Semi-Opened)       | • Work Light and Signal Tower Light       | • Operation Manual                 |
| • Oil / Water Separator             | • High Pressure Pump (3 Bar)              |                                    |

### Optional Accessories

- |  |                           |                               |
|--|---------------------------|-------------------------------|
| • Air Conditioner For Electrical Cabinet | • X / Z-axis Linear Scale | • High Pressure Pump (6 Bar)  |
| • Transformer for Power Source           | • Tool Probe              | • High Pressure Pump (10 Bar) |
| • Additional Tool Holders                | • Parts Probe             | • CF-axis                     |
| • Coolant Through Spindle                | • 3 Jaw Power Chuck       | • CAT Tool Magazine           |



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