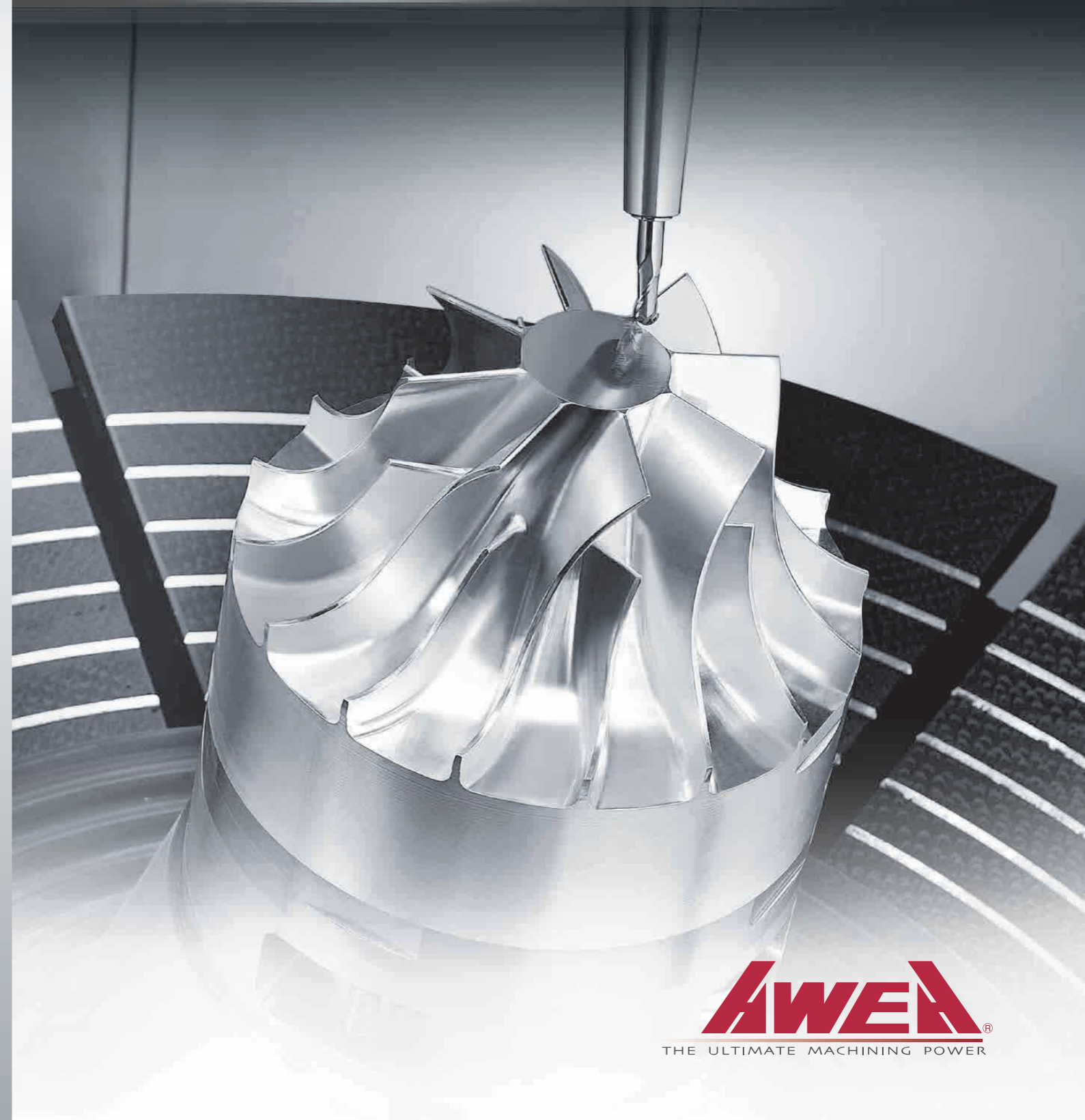


# FCV-800 Series

Gantry Type 5-Axis Machining Centers



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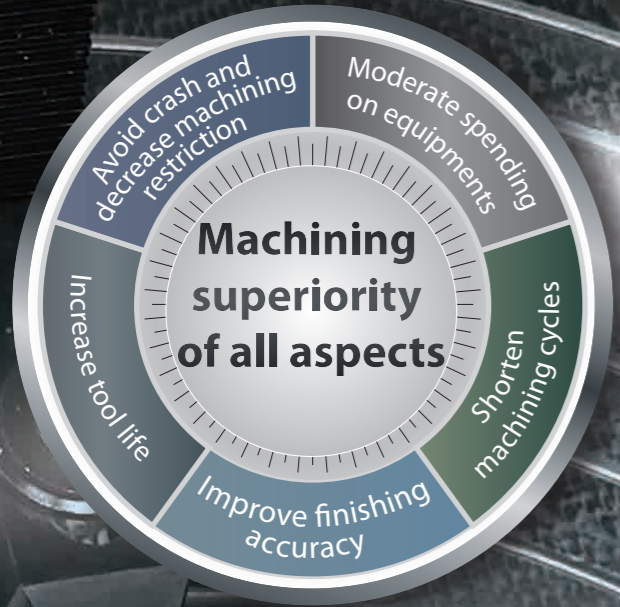
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ISO 9001



ISO 14001

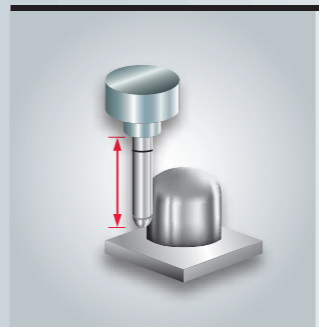




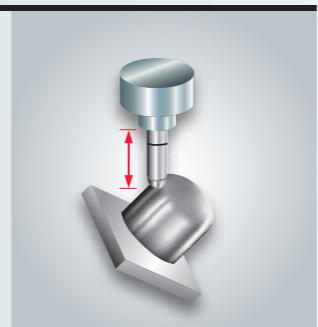
# Gantry Type 5-Axis Machining Centers

Based on customer feedback and up to date technology evolution, AWEA introduce the latest version FCV-800. Performance, reliability and ergonomic design has been completely upgraded.

**FCV-800 can work on side cutting with short tool.**



3-axis cutting



5-axis cutting

**FCV-800 can work on side-filler cutting.**



3-axis cutting



5-axis cutting



# FCV-800 Series

## Gantry type 5-axis machining center

Super rigidity gantry type structure features high performance A,C axes trunnion table, which allows FCV-800 series easily overcome integrated complex tasks with milling, drilling, tapping, fixed slanted angle machining, helical machining and intricate shape machining.

- High performance A, C axes trunnion table. A-axis swiveling range  $-120^{\circ} \sim +30^{\circ}$ , C-axis rotary range  $360^{\circ}$ , table load capacity 1,000 kg.\*<sup>1</sup>
- Built-in spindle can export 100% motor output, which provides energy saving, lower noise and higher accuracy.
- X / Y / Z axes adopt high power direct drive servo motor. Rapid feed rate is up to 48 m/min.
- 40T / 60T / 80T arm type ATC fulfills various machining needs.
- The optimal exterior design allows work-piece to be easily loaded via overhead crane, which phenomenally enhances production efficiency.

\*1 :  $0^{\circ}$  : 1,000 kg /  $90^{\circ}$  : 700 kg

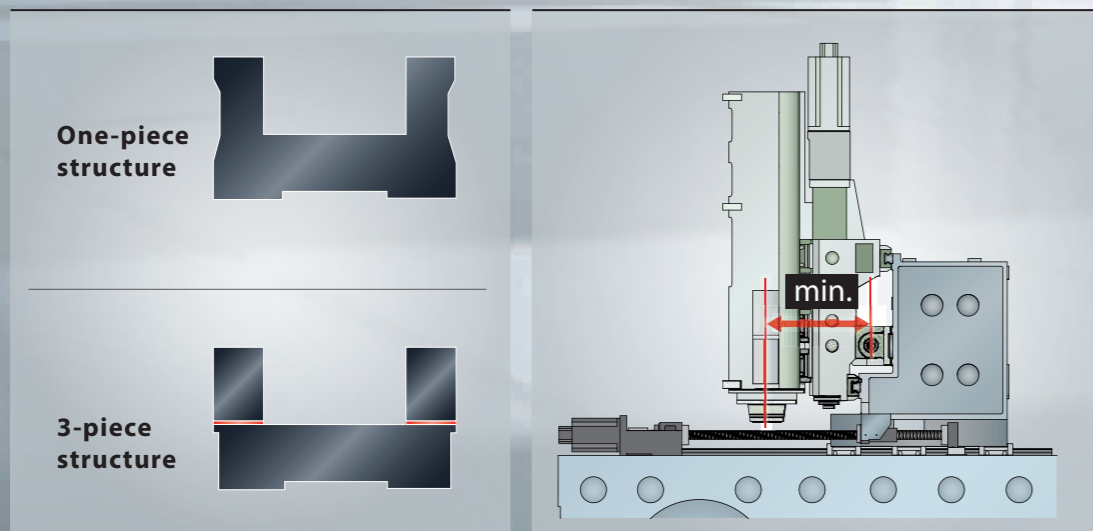
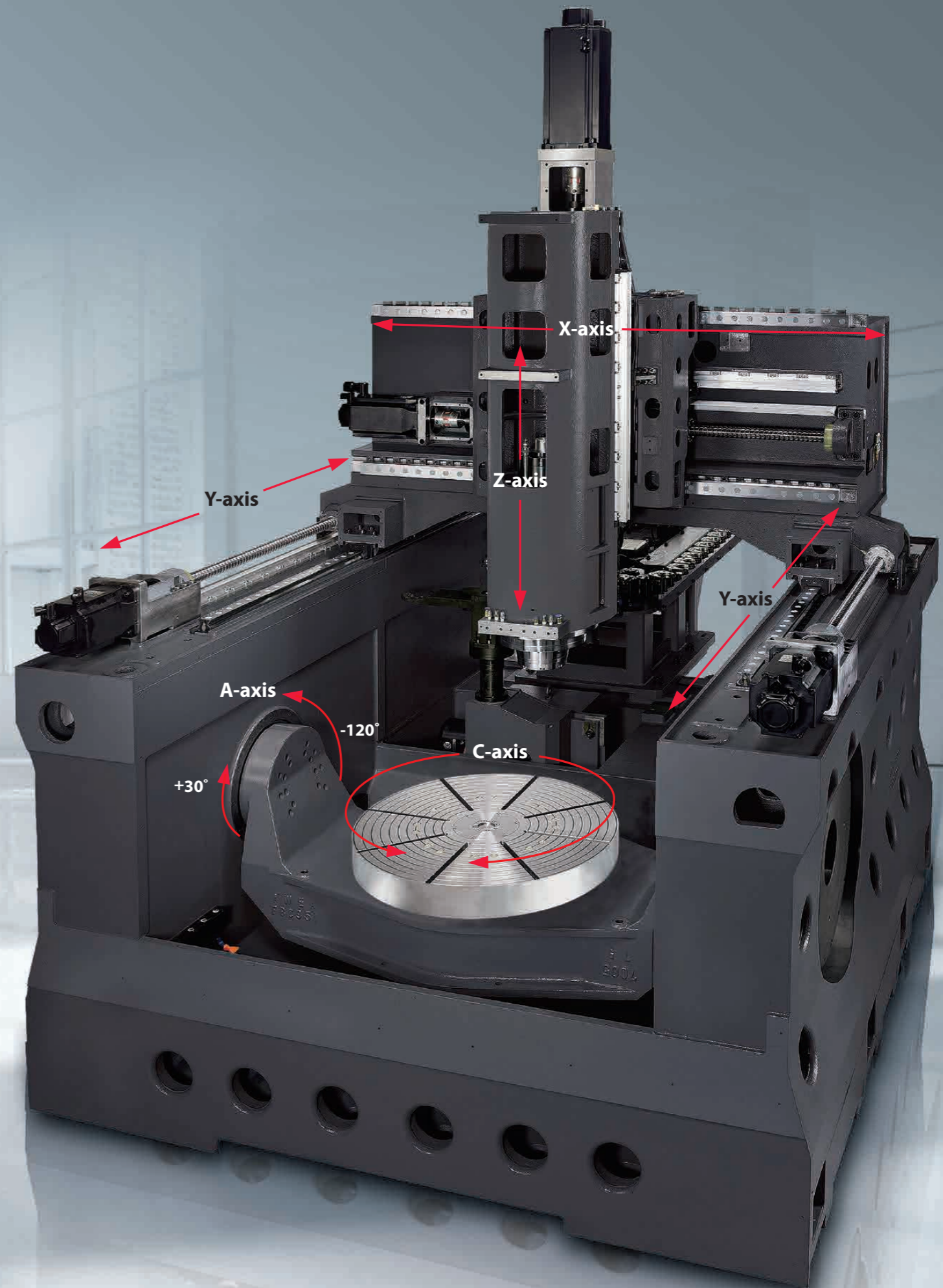


# FCV-800 Series

## Gantry type 5-axis machining center

Super rigidity gantry type structure and advanced core components achieve high efficiency and high accuracy machining capacity.

- X-axis adopts AWEA "simultaneous-controlled technology" which greatly reduces accuracy error caused by both sides of ball screws.
- One-piece U-shaped high rigidity base adopts FC300 MEEHANITE casting, which is stronger than competitor's 3-piece structure.
- Minimal spindle overhang design can prevent deformation of overhang to ensure cutting rigidity and stable accuracy.
- X / Y / Z axes adopt heavy-duty roller type linear guide ways design, which provide integration of heavy cutting ability from box way and fast movement ability from linear guide way.
- X / Y / Z axes are driven by superior HEIDENHAIN QSY absolute servo motor, provides faster acceleration / deceleration and powerful thrust.



# High Performance Trunnion Table

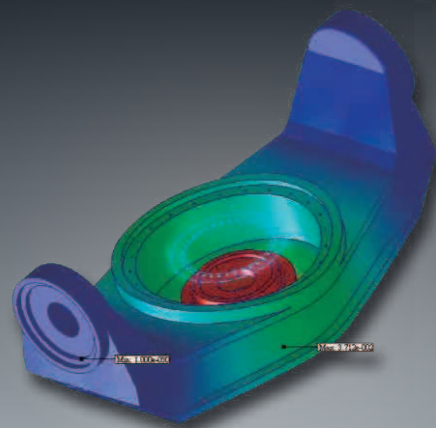
## A-axis

- A-axis is driven by high class servo motor that provides the max. torque 12,600 N-m.
- Brake system adopts servo motor with stacked disk spring design to provide stable and reliable performance. Even when the power is cut off suddenly, table can still hold at current position thus greatly improves the safety.

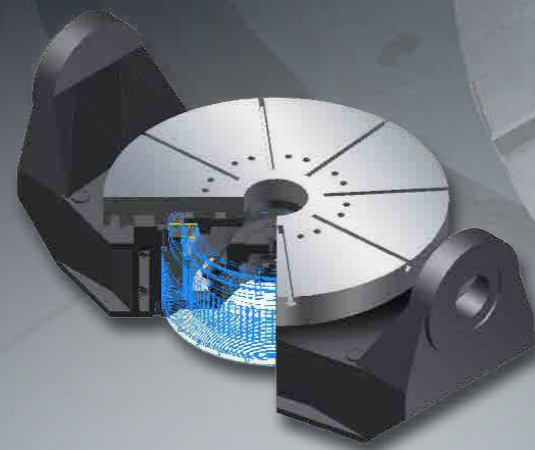
## C-axis

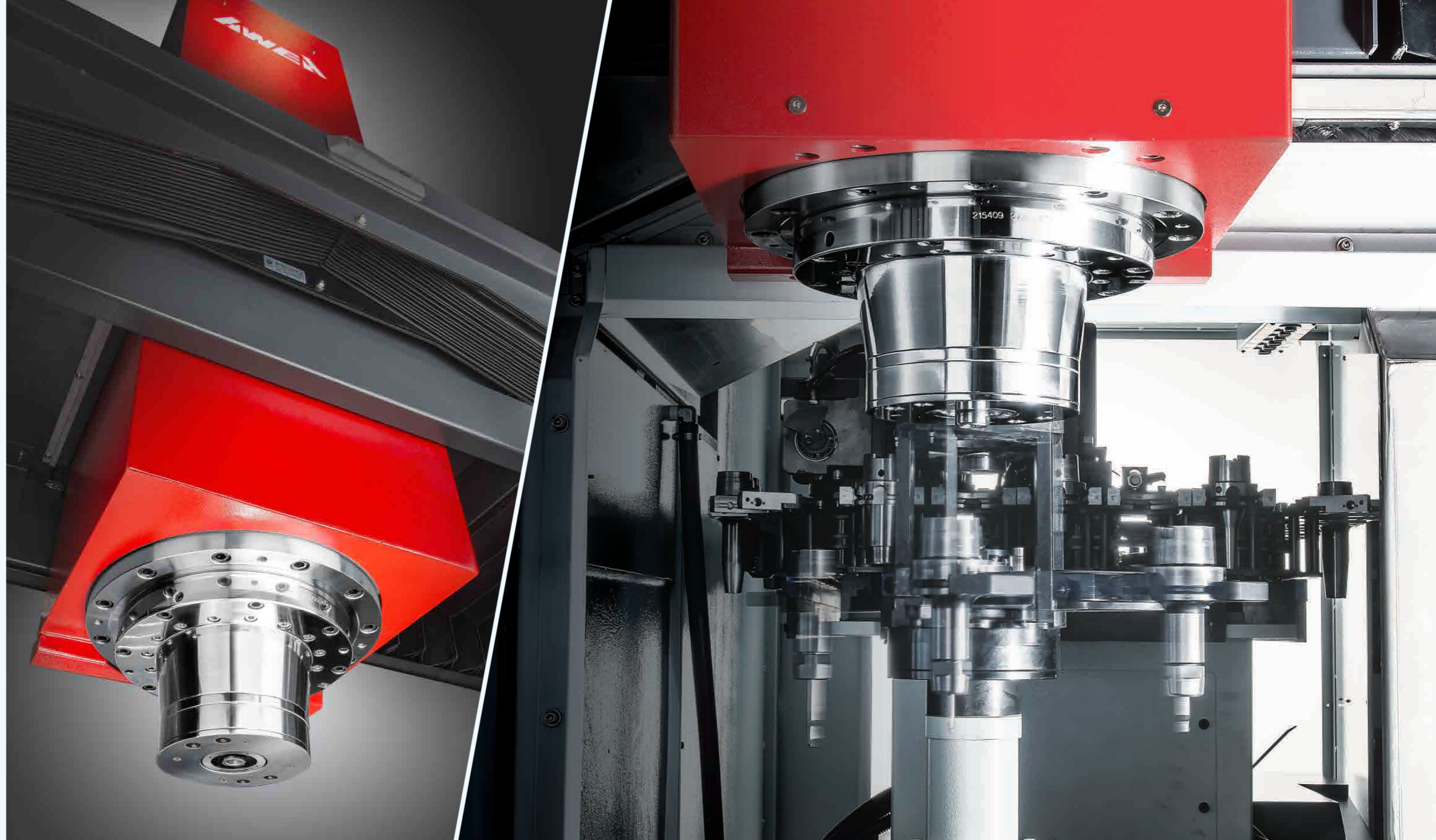
- C-axis is driven by direct drive motor ( DDM ), which motion can be delivered 100% from motor to provide high speed, high torque and zero backlash.
- Outer diameter of slew bearing is increased 35% compared to the last generation, and rigidity of C-axis is improved 70%.
- Brake system adopts specialized mechanical design with ample braking force.

The Finite Element Analysis ( FEA )

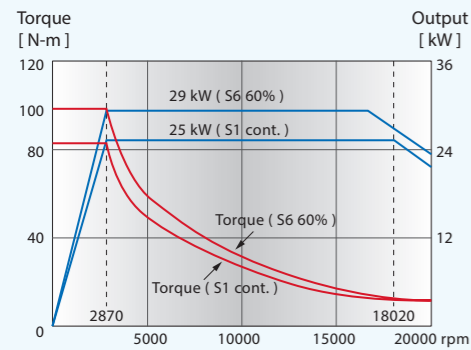


3D CAD Design

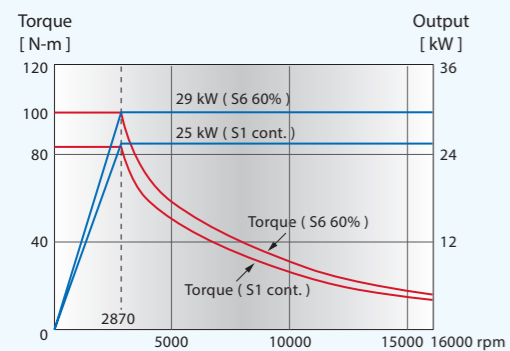




### 16,000 RPM Built-in spindle



### 20,000 RPM Built-in spindle



## Ultimate Machining Power

- 16,000 / 20,000 rpm high speed built-in spindle can export 100% motor output, which provides lower noise and higher accuracy to fulfill dies & molds machining needs.
- P4 grade high precision bearings configuration is designed for super heavy-duty cutting with ultra-smooth performance and long term durability with a higher level of accuracy.

### Machining Capacity

	Tool diameter (mm)	Spindle speed (rpm)	Feed rate (mm)	Cutting depth (mm)	Cutting width (mm)	Feed rate / Blade (mm)	Spindle load (%)
High speed drilling	Ø 40	70	90	20	-	0.13	35
Tapping	M42*4.5	50	225	20	-	-	-
Heavy cutting	Ø 50	2,000	10,000	1	32	1	82

## High Speed ATC System

- Standard equipped 40T ( 60 T / 80T opt. ) arm type ATC system. Tool change efficiently reduce tool changing time.
- Short cut tool path perform tool change swiftly and improve machining efficiency.
- Enclosed ATC guard design can avoid contamination of cutting process.

# Advance Control System

- NC control system features HEIDENHAIN iTNC 530 / TNC 640 provide excellent capacity like high speed, high precision and smooth surface.
- AWEA *i* Console function offers instant status and abundant interactive features for smart machining. (opt.)

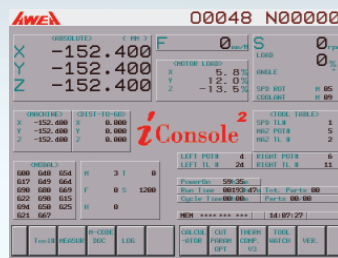


## FC-900 High Speed Machining Series

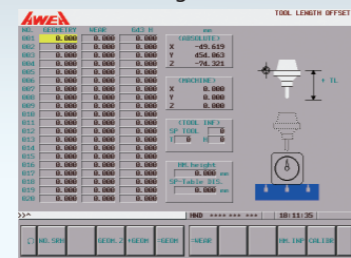
Fully enclosed splash guard with dust collector and fixed table provide most suitable combination for cutting high accuracy components based on dusty materials like graphite.

# *i* Console

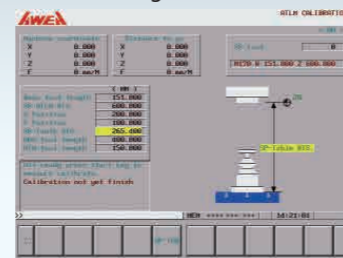
Main screen



Manual tool length measurement



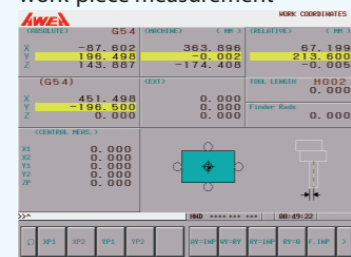
Auto. tool length measurement



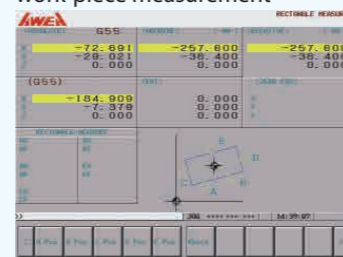
Circular work-piece measurement



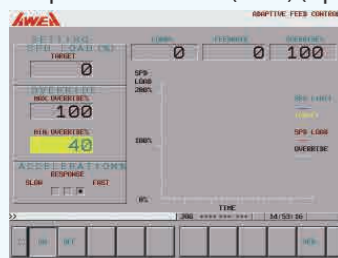
Basic rectangular work-piece measurement



Advanced rectangular work-piece measurement



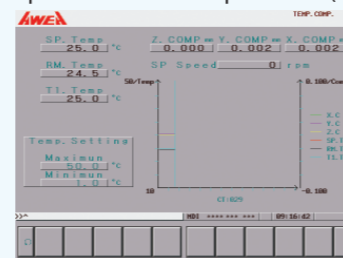
Adaptive feed control (AFC) (Opt.)



CNC parameter optimization (Opt.)



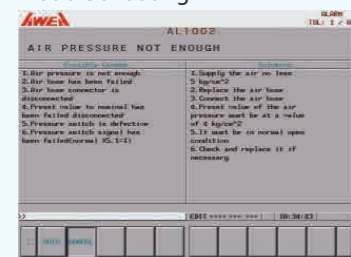
Spindle thermal compensation (Opt.)



Tools management



Trouble shooting



Counter



# Standard And Optional Accessories

Back / side-exit chips conveyors



X / Y / Z linear scale



Air conditioner for electric cabinet



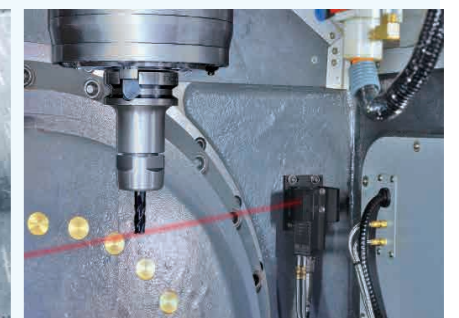
Coolant nozzles around spindle



Coolant through spindle

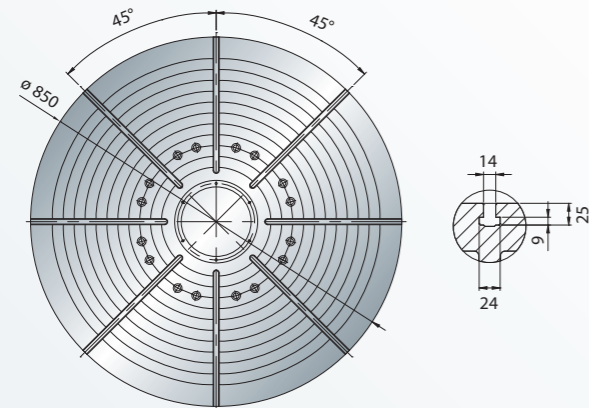


Tool length measurement

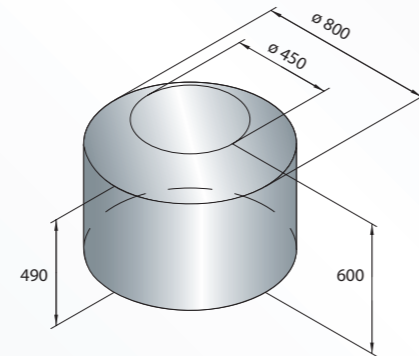


# Dimensions

Table Dimensions

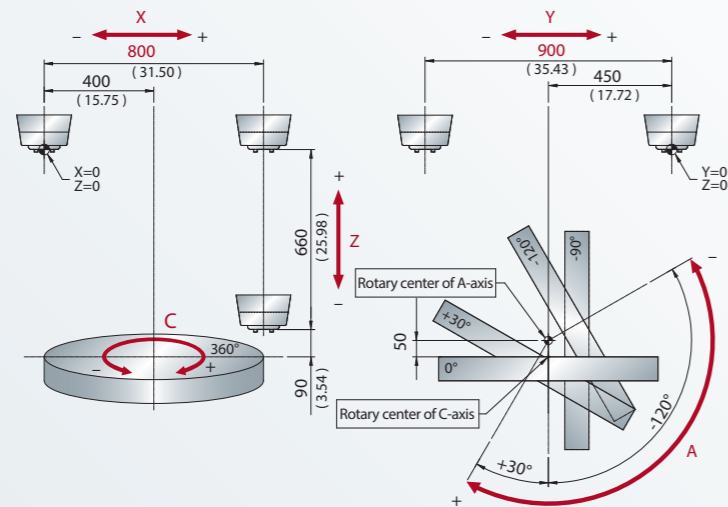


Work-piece Dimensions

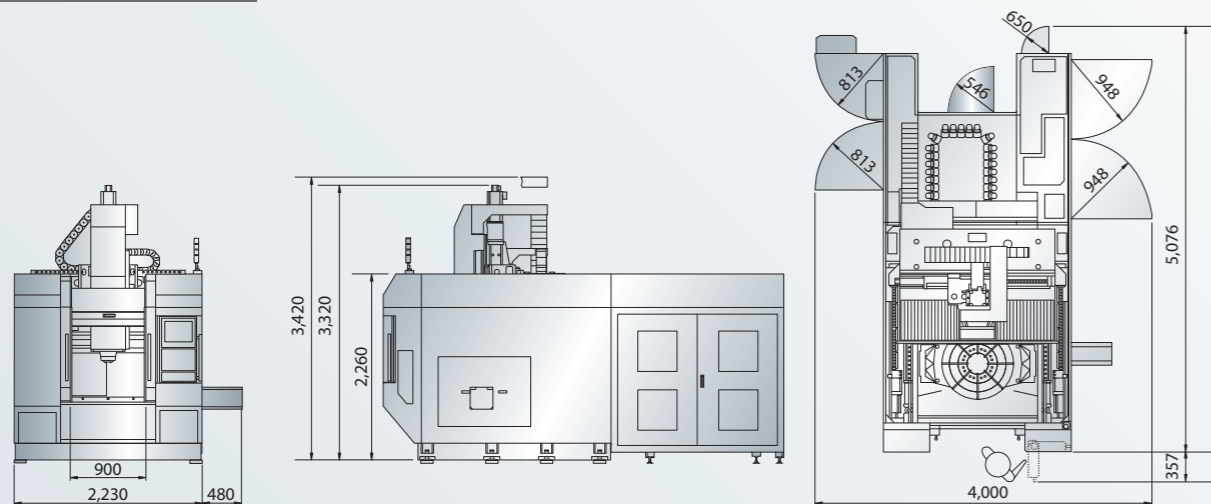


(Unit: mm)

Interference Diagram



Machine Dimensions



FC-900 High speed series

FCV-800 5-axis series

SPECIFICATION		FC-900 High speed series	FCV-800 5-axis series
X-axis travel ( right-left )	mm	900	800
Y-axis travel ( back-forth )	mm		900
Z-axis travel ( up-down )	mm		660
Distance from spindle nose to table top	mm	150 ~ 810	90 ~ 750
WORKING TABLE			
Table size	mm	1,060 x 900 ( X x Y )	Ø 850
T-slot size	mm	14 x 9 x 100	14 x 8 x 45°
Table load capacity	kg	2,500	0° : 1,000 kg / 90° : 700 kg
SPINDLE			
Spindle speed	rpm	Built-in spindle 16,000	
Spindle taper		BBT 40	
Spindle motor output ( cont. / 30 min )	kW	26	
AXES			
Swiveling range of A-axis		-	-120° ~ +30°
Rotary range of C-axis		-	360°
Swiveling speed of A-axis	rpm	-	30
Rotary speed of C-axis	rpm	-	100
Cutting feed rate	m / min.	24	
Rapid feed rate ( X / Y / Z )	m / min.	48	
TOOL MAGAZINE			
ATC type		Arm type	
Tool magazine capacity		40 T	
Max. tool diameter / adj. pocket empty	mm	Ø 90 / 125	
Max. tool length	mm	300	
Max. tool weight	kg	8	
GENERAL			
CNC control		FANUC 31 <i>i</i>	HEIDENHAIN iTNC 530 / TNC 640
Coolant tank capacity	L	500	
Air requirement	kg / cm <sup>2</sup>	6	
Power requirement	kVA	65	90
Machine weight	kg	13,000	15,000
Dimensions ( L x W x H )	mm	5,430 x 2,730 x 3,350	

Specifications are subject to change without notice.

## Standard Accessories

- Chip conveyor ( rear or side exit )
- X / Y / Z linear scale
- A / C axis encoder ( 5-axis series )
- Air conditioner for electric cabinet
- Coolant nozzles around spindle
- Spindle cooling system
- Centralized automatic lubricating system
- Fully enclosed splash guard
- Coolant system with pump and tank

- Adjusting tools & tool box
- Air gun system
- Alarm light
- Automatic power off system
- Leveling bolts & pads

## Optional Accessories

- 20,000 rpm built-in spindle
- 60 T / 80 T arm type ATC
- Automatic tool length measurement
- Dust collector
- Oil skimmer
- Oil mist collector
- Oil mist lubrication system ( 20,000 rpm spindle )
- Coolant cooling device
- Coolant through spindle ( Form A )
- Ultra fast tool exchange