High Performance Vertical Machining Center

Introducing AWEA with mature manufacturing abilities and advanced technology skills, the AF series. They are based on super rigidity structure and three axes high precision linear guide way design with fast arm type ATC and chip conveying system. It is to provide you with fast, strong, stable machining performance. AF series are broadly used in high precision machine parts manufacturers, which can easily meet your demands of today and tomorrow.

Based on AWEA's innovative technology, the AF series is specialized on high precision parts and mold machining industry. It can fully present high precision and high efficiency machining ability with very reasonable cost.

The modular spindle design provides cutting flexibility for various machining needs.

Solution for Precision Parts

Spindle	Taper	Speed Range
Belt-drive Spindle	BT40	8,000 ~ 10,000 rpm

Solution for Precision Mold

Spindle	Taper	Speed Range
Direct Drive Spindle	BT40 / BT50	8,000 ~ 15,000 rpm

Solution for Heavy Cutting*1

Spindle	Taper	Speed Range
Gear Spindle	BT40 / BT50	8,000 / 6,000 rpm

Specifications are subject to change without notice.
*1 Please check with your sales representative for applicable models.

Combining strong machining capability and superior quality, the AF series fulfills various machining requirements along with stable accuracy and long-lasting durability.

X-axis travel 610 mm ~ 1,800 mm, Y / Z axes travel 450 mm ~ 800 mm. The complete product series can fulfill major working needs.

High precision linear guide way design is used in 3 axes to provide the optimum control and efficient movement. Also, based on the actual machining application, customers can either select roller type or ball type linear guide way.

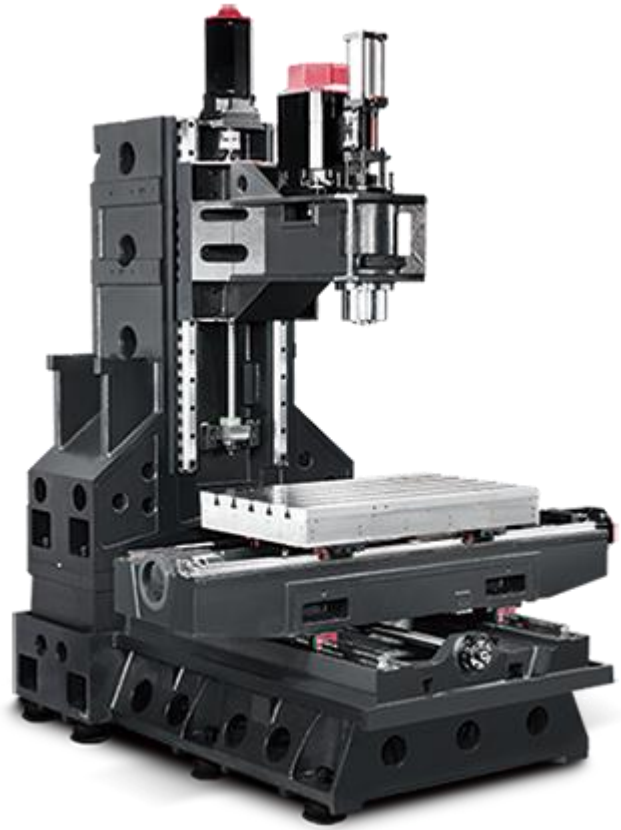
Highly efficiency 24T arm type magazine design provides fast and reliable tool change system.

Rotary operation panel and large width of protection door provide convenient operation display and spacious space for loading and unloading parts.

Independent coolant tank system provide ease of maintenance.

High pressure coolant pump efficiently increase cooling capability.

Super Rigidity Structure

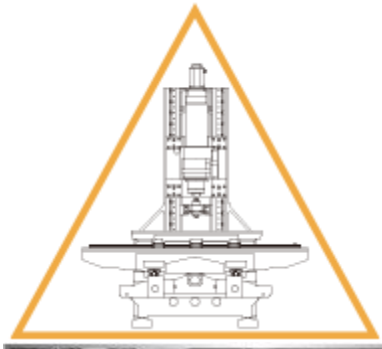


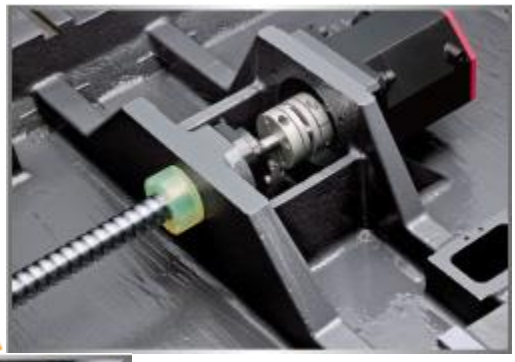
The Finite Element Analysis (FEA) provides optimal machine design and light-weight structure advantage while ensuring super rigidity of machine.

The MEEHANITE casting bed and Y-shaped column design provide solid support to ensure ultimate dynamic accuracy.

△ (Delta) Wide span column structure provides optimal machining rigidity. The headstock retains stability and accuracy even under high speed traveling.

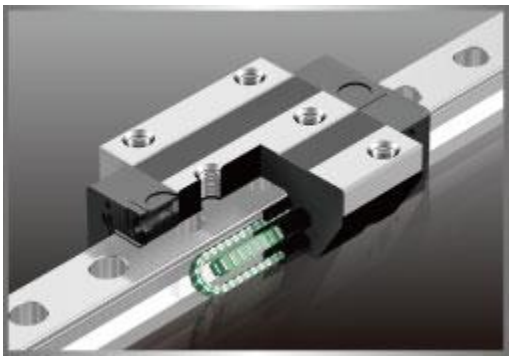
The contact surface of the column and bed are all hand scraped to ensure precision assembly, strong structure and loading balance.





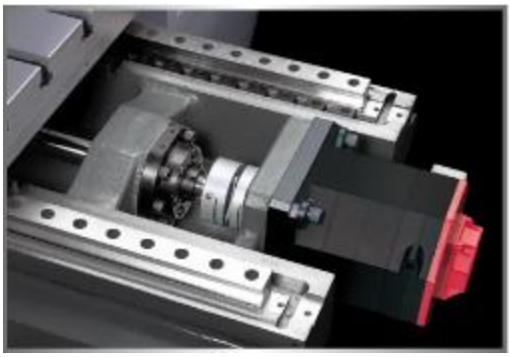
One-piece ball screw driving motor support and bearing support enable cutting force to spread evenly into casting body, so it efficiently enhances axial system of entire rigidity and prevents deformation of ball screw.

X-axis travel 1,400 mm ~ 1,800 mm model, the bed uses four linear guide ways design, and size of the bed will extend proportionally according to travel length in order to solve the overhang problem of working table and ensure the optimum support rigidity.



Super rigidity roller type linear guide way which combines heavy cutting ability from ground box way and fast movement with low abrasion ability from linear guide way completely improves rigidity and control of machine.

High precision dual-nuts ball screw provides excellent heavy cutting rigidity while ensuring machining accuracy and extend durability of ball screw.



Three axial system are adopted with FANUC αi absolute AC servo motor direct drive to provide great thrust and fast acceleration / deceleration movement. Plus, it efficiently decreases motor load and reduces generation of heat while maintaining the ultimate performance and accuracy.

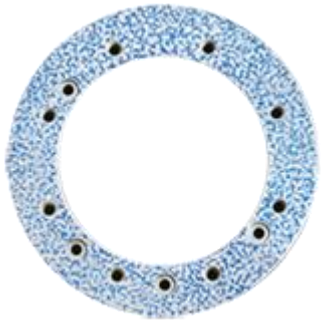
High Efficiency Belt-drive Spindle

The high efficiency belt-drive spindle provides 8,000 rpm or 10,000 rpm spindle speed which depends on machining requirements.

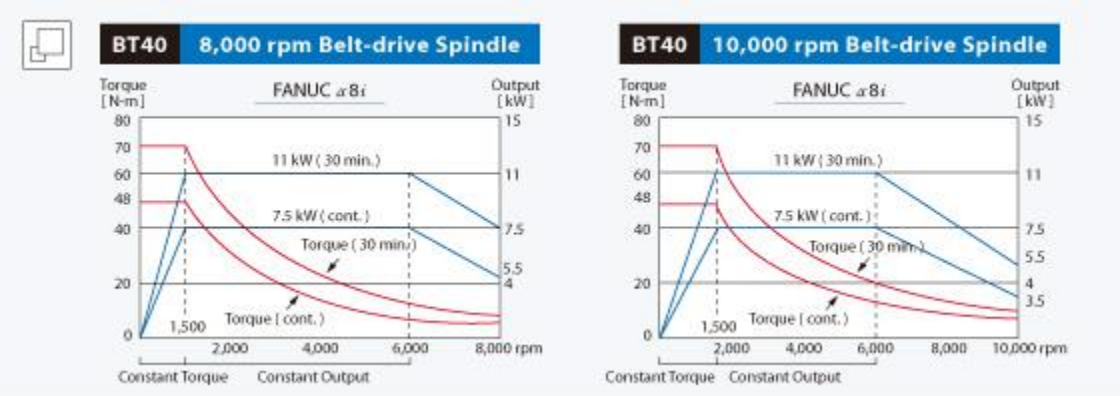
The spindle is equipped with FANUC α8i motor which provides maximum output of 11 kW.

All series are standard with spindle oil cooler system to prevent thermal expansion effects and thermal deformation.

The contact surfaces between headstock and spindle are all precisely hand scraped to ensure optimal performance and precision.



BELT-DRIVE SPINDLE OUTPUT



High Torque Gear Spindle

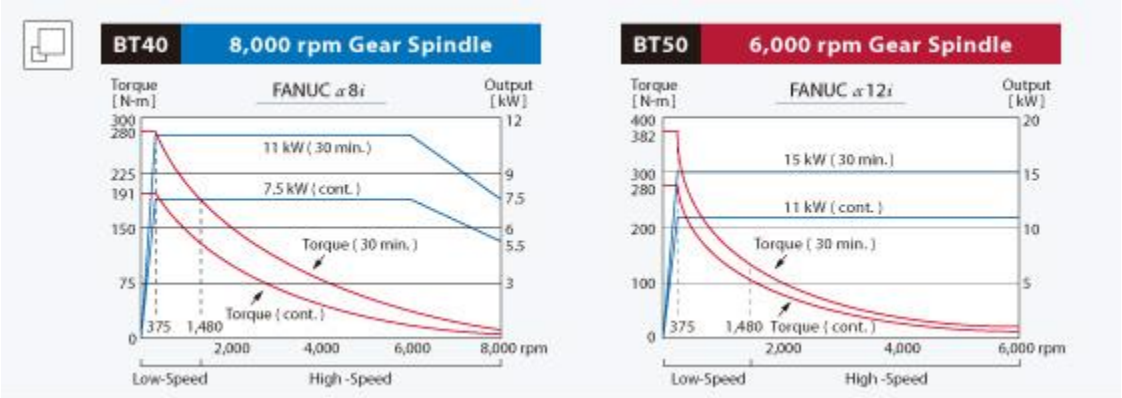
2-speed super heavy-duty gear box. (Gear spindle are all equipped with box way Z-axis.)

Floating type hydraulic tool release device eliminates pressure on the spindle bearing when releasing a tool.

8,000 rpm high torque spindle (BT40) is equipped with powerful 11 kW motor delivers maximum torque output of 280 N-m at 375 rpm to meet various working conditions.

6,000 rpm high torque spindle (BT50) is equipped with powerful 15 kW motor delivers maximum torque output of 382 N-m at 375 rpm.

GEAR SPINDLE OUTPUT



FANUC α12i / α15i motor are available.

FANUC α15i / α18i motor are available.

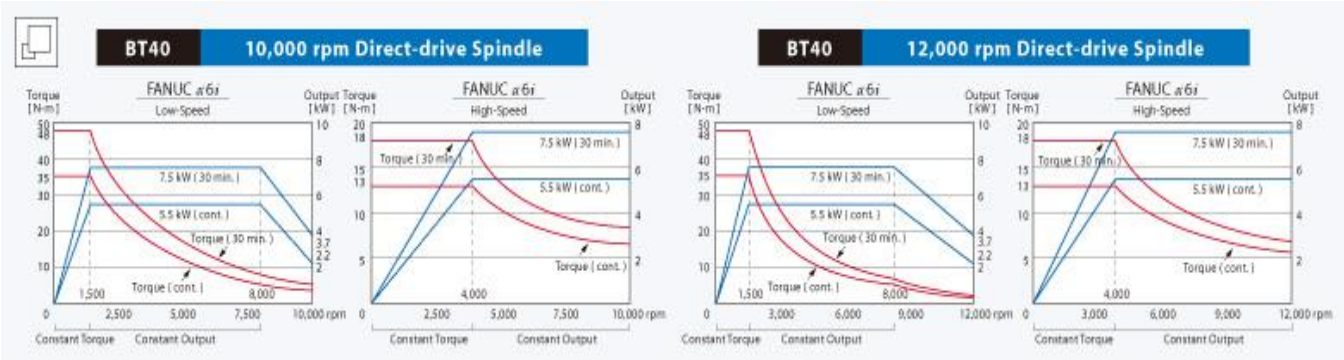
High Speed, High Power Direct Drive Spindle

Direct drive spindle efficiently separates the heat generated from the motor, which reduces deformation, therefore increasing machining accuracy.

Floating type hydraulic tool release device eliminates pressure on the spindle bearing when releasing a tool.

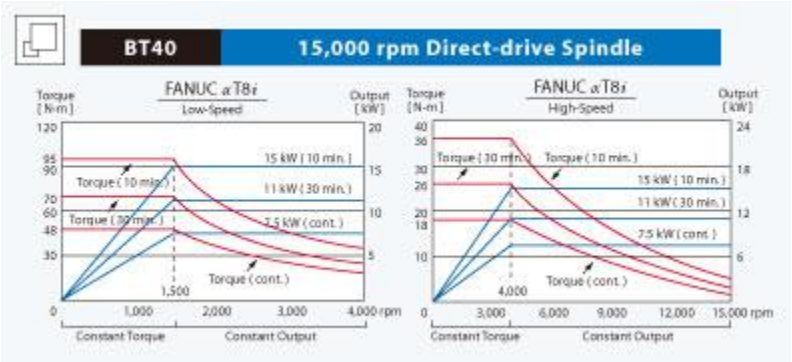
Several options of spindle heads and speed are available to fulfill various high speed machining requirements.

BT40 / DIRECT-DRIVE SPINDLE OUTPUT



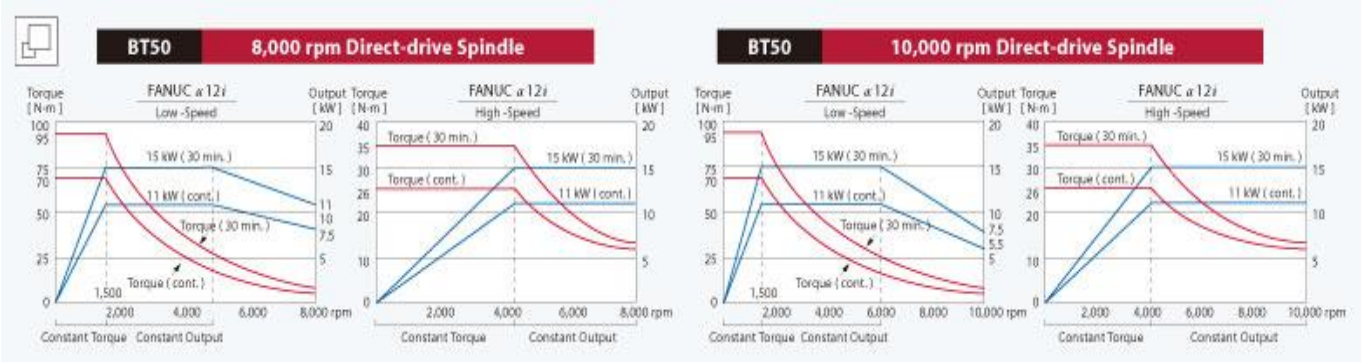
FANUC α12i motor is also available.

FANUC α12i / α15i motor are available.



FANUC α15i motor is also available.

BT50 / DIRECT-DRIVE SPINDLE OUTPUT



FANUC α15i motor is also available.

FANUC α15i motor is also available.

High Speed ATC System

All series are standard with 24T arm type ATC system which can easily fulfill various types of processing needs.

Standard shortcut tool change function can shorten tool change time and increase working efficiency.

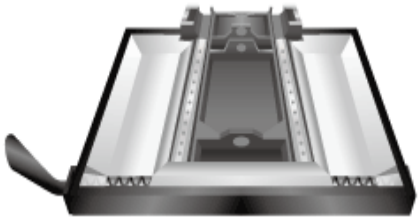
The tool magazine is supported by the column base, which increases stability and lowers the tool change vibration, while ensuring its precision (AF-1250 ~ AF-1800).

24T Disc type tool magazine

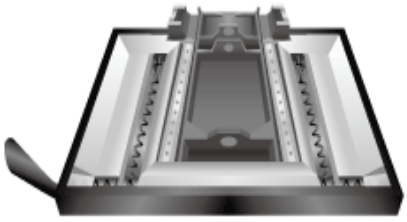
High Efficiency Chip Disposal System

All series are equipped with screw type chip conveyor. Single screw or triple screws type chip conveyors are adopted according to different models.

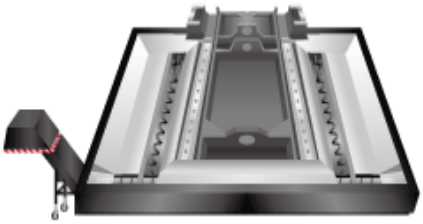
The optional high pressure chips flush coolant system is also available.



Single screw chip conveyor



Triple screws chip conveyor



Chain type chip conveyor (Opt.)

Optional Compound Guide Ways

Fulfilling Your High Speed and Heavy Cutting Needs

Z-axis could adopt with heat treated box way structure with gear box spindle. Very suitable for heavy cutting requirements.

Three axes compound structure design provide both benefits of heavy cutting capacity on Z-axis box way plus fast moving high accuracy features of linear guide ways on X and Y axes.

Optional APC System

Fulfilling Your Mass Production Needs

The high-quality, world famous Japanese auto parts machining plants, is recently installed with AWEA APC Series for processing of automotive intake manifold, gear box shell and other key components. Because of the AWEA machine high quality and high reliability performance, the installation quantity is continued to grow up.

Auto pallet changing time
7 second

Repeatability between two tables
0.02 mm

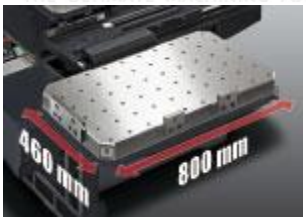


Table Size

Table rotating range

Table load capacity

Model	AF860-APC
X / Y / Z axes travel	850 / 600 / 600 mm
Table size	460 x 800 mm
Table rotating range	180˚
Repeatability for each table	0.01 mm
Repeatability between two tables	0.02 mm
Table load capacity	200 kg

Model	AF860-APC
Spindle taper	BT40 / BT50 (Opt.)
Spindle motor (cont. / 30 min.)	7.5 / 11 kW
Spindle speed	8,000 rpm

X / Y / Z axes rapid feed rate	48 / 48 / 32 m/min.
Cutting feed rate	10 m/min.
Tool magazine capacity	24 T

AF Series

Models	**AF-610**	**AF-650**	**AF-760**	**AF-860**
X-axis travel	610 mm	650 mm	762 mm	860 mm
Y-axis travel	450 mm	510 mm	510 mm	600 mm
Z-axis travel	450 mm	510 mm	510 mm	600 mm
Distance from spindle center to column	558 mm	600 mm	600 mm	800 mm
Distance from spindle nose to table top	150 ~ 600 mm	100 ~ 610 mm	100 ~ 610 mm	100 ~ 700 mm
WORKING TABLE				
Table size (X direction)	700 mm	750 mm	860 mm	1,000 mm
Table size (Y direction)	450 mm	510 mm	510 mm	600 mm
Table load capacity	450 kg	500 kg	500 kg	700 kg
SPINDLE				
Spindle taper	BT40			
Spindle motor (cont. / 30 min.)	7.5 / 11 kW			
Spindle speed	Belt-drive 8,000 / 10,000 rpm			
FEED RATE				
X / Y axes rapid feed rate	32 m/min.	48 m/min.	48 m/min.	48 m/min.
Z-axis rapid feed rate	24 m/min.	32 m/min.	32 m/min.	32 m/min.
Cutting feed rate	15 m/min.			

TOOL MAGAZINE				
Tool magazine capacity	24 T			
Max. tool diameter / adj. pocket empty	Ø 75 / Ø 150 mm			
Max. tool length	250 mm			
Max. tool weight	7 kg			
ACCURACY				
Positioning accuracy (JIS B 6338)	± 0.01 mm			
Positioning accuracy (VDI 3441)	P = 0.01 mm			
Repeatability (JIS B 6338)	± 0.003 mm			
Repeatability (VDI 3441)	Ps = 0.005 mm	Ps = 0.008 mm		
GENERAL				
Control system	FANUC Oi-MF			
Pneumatic pressure requirement	6 kg / cm²			
Power requirement	20 kVA	25 kVA	25 kVA	30 kVA
Coolant tank capacity	150 liter	320 liter	320 liter	355 liter
Machine weight	3,500 kg	4,200 kg	5,000 kg	5,800 kg

Models	AF-1000	AF-1060	AF-1250	AF-1460
X-axis travel	1,020 mm	1,060 mm	1,250 mm	1,400 mm
Y-axis travel	550 mm	600 mm	620 mm	620 mm
Z-axis travel	635 mm	600 mm	620 mm	620 mm
Distance from spindle center to column	648 mm	800 mm	790 mm	

Distance from spindle nose to table top	100 ~ 735 mm	100 ~ 700 mm	100 ~ 720 mm	
WORKING TABLE				
Table size (X direction)	1,200 mm	1,200 mm	1,350 mm	1,500 mm
Table size (Y direction)	550 mm	600 mm	620 mm	
Table load capacity	700 kg	700 kg	1,000 kg	
SPINDLE				
Spindle taper	BT40 / BT50 (Opt.)			
Spindle motor (cont. / 30 min.)	7.5 / 11 kW			
Spindle speed	Belt-drive 8,000 / 10,000 rpm			
FEED RATE				
X / Y axes rapid feed rate	36 m/min.	48 m/min.	48 m/min.	
Z-axis rapid feed rate	24 m/min.	32 m/min.	36 m/min.	
Cutting feed rate	15 m/min.			
TOOL MAGAZINE				
Tool magazine capacity	24 T			
Max. tool diameter / adj. pocket empty	Ø 75 / Ø 150 mm			
Max. tool length	250 mm			
Max. tool weight	7 kg			
ACCURACY				
Positioning accuracy (JIS B 6338)	± 0.01 mm			
Positioning accuracy (VDI 3441)	P = 0.01 mm			
Repeatability (JIS B 6338)	± 0.003 mm			
Repeatability (VDI 3441)	Ps = 0.008 mm			
GENERAL				
Control system	FANUC Oi-MF			
Pneumatic pressure requirement	6 kg / cm^2			
Power requirement	30 kVA	30 kVA	35 kVA	35 kVA

Coolant tank capacity	350 liter	400 liter	460 liter	480 liter
Machine weight	7,000 kg	7,000 kg	8,000 kg	8,200 kg

Models	**AF-1400**	**AF-1600**	**AF-1800**
X-axis travel	1,400 mm	1,600 mm	1,800 mm
Y-axis travel	800 mm		
Z-axis travel	800 mm		
Distance from spindle center to column	973 mm		
Distance from spindle nose to table top	200 ~ 1,000 mm		
WORKING TABLE			
Table size (X direction)	1,500 mm	1,700 mm	1,900 mm
Table size (Y direction)	800 mm	800 mm	800 mm
Table load capacity	1,200 kg	1,500 kg	1,800 kg
SPINDLE			
Spindle taper	BT40 / BT50 (Opt.)		
Spindle motor (cont. / 30 min.)	11 / 15 kW		
Spindle speed	Direct-drive 10,000 rpm		
FEED RATE			
X / Y axes rapid feed rate	30 m/min.		
Z-axis rapid feed rate	24 m/min.		
Cutting feed rate	12 m/min.		
TOOL MAGAZINE			
Tool magazine capacity	24 T		
Max. tool diameter / adj. pocket empty	Ø 105 / Ø 210 mm		
Max. tool length	300 mm		
Max. tool weight	15 kg		
ACCURACY			
Positioning accuracy (JIS B 6338)	± 0.01 mm		
Positioning accuracy (VDI 3441)	P = 0.012 mm		

Repeatability (JIS B 6338)	± 0.003 mm		
Repeatability (VDI 3441)	Ps = 0.008 mm		
GENERAL			
Control system	FANUC Oi-MF		
Pneumatic pressure requirement	6 kg / cm²		
Power requirement	40 kVA		
Coolant tank capacity	505 liter	518 liter	600 liter
Machine weight	14,000 kg	16,000 kg	18,000 kg