

Kubota

Kubota Diesel Engine **ZT PLUS**

Incredibly Tough and Powerful

10 - 15.5 HP



Incredibly Tough and Powerful



High quality steel fuel tank

- The fuel tank is made of strong and durable SPCE steel
- Incredibly tough with high quality 10.5-liter steel fuel tank
- Fuel tank cap is made from stainless steel with wider tank cap for easily refuel.



Thick steel mesh reinforcement to prevent damage to the radiator and the fan.

Reinforce high quality steel grates for radiator and fan cover protection.

- Better steel grate filter inside of radiator screens out impurity and prevents the radiator system from clogging as well as reduces the risk of cooling failure.
- SPCD steel grilles on the radiator side and the fan side prevent damage to parts of the engine from crashes or accidents.



Strengthened throttle control house

- Reinforced by three anchor points to reduce vibration during operation



Strong engine cover Slick and catch all eyes

- Engine cover with modern design and aluminum structure to protect the radiator and other parts while operating.
- The rubber size under the upper cover is increased to lessen vibration while working.



Full power

Maximum power

- Kubota diesel engine comes with a wide range of horsepower from 10, 11, 12, 12.5, 14 and 15.5.
- Two types of combustion systems are offered to suit the required operation.
 - 1) With direct injection combustion systems, fuel can be saved during heavy use or accelerating at over 1,200 rpm., suitable for soil preparation tasks, transport, etc.
 - 2) TVCS with large-hole nozzle can reduce clogged soot while running at rpm. below 1,200, suitable for water pumping, running shrimp farm wind turbines, etc.



Fuel level gauge with transparent PVC tube

- Fuel levels are visible during operation



Lighting and safety when travelling



LED headlight for security and safety while travelling

- Adjustable beam distance, during night trip and transport
- LED light density is increased by 10% for brighter and safer.



Safe with turn indicators and convenient with USB charging ports

- Special functions of Left-Right turn signal light and USB charging port for electronic devices (for Pro model only)

Tough, durable and ready for all kinds of operations

**Superior performance with *K-TECH*
Kubota's diesel engine technology**

A comprehensive engine for all agricultural needs



**Strong and durable
for cost-effective transport**

**Fulfil construction needs
and multi-purpose operations***



Note: * There are 3 aspects in the universal use limitation as follows: Suitable engine installation: (1) Engine must be installed and used with the engine tilted from a horizontal level not in excess of 30 degrees in all directions. (2) The engine must be mounted firmly to the device base or the machine that is driven by the engine and the mounting base must be sufficiently strong. While the engine is running, the average vibration acceleration at the cylinder block mounting base must not exceed 15 m/s². The vibration acceleration must be measured in the same direction as the piston movement. Suitable environment: (3) The temperature of the air sucked into the engine's radiator grille must not exceed 42°C for more than 2 hours of continuous operation and 45°C for continuous use up to 2 hours. (4) If the engine is installed inside a room, there must be a vent to let the exhaust fume from the engine out of the room to prevent fume building up in the room as well as to prevent heat building up to the temperature limits mentioned in item (3). (5) If the engine is used outdoors in the open, the fuel tank must be covered and a tailpipe must be installed to prevent rainwater entering the fuel tank and the exhaust pipe which can cause the internal parts of the engine to rust. Load and optimum engine revs: (6) Do not operate the engine with a continuous overload for more than 30 minutes (overload means when accelerating the engine, the engine rpm does not increase and there is a continuous black smoke coming out of the exhaust pipe). When the engine is found operating in such condition, let off the throttle position until the engine rev begins to decrease slightly and the black smoke is reduced to only faint smoke. Or if the throttle has to be let off so low that the engine rpm is insufficient for the use of the connected device, this shows that the speed ratio between the engine and the equipment is not suitable and something needs to be changed such as pulley or gear. (7) The DI engine engine should not be regularly operated at an engine rev less than 1,000 rpm for more than 5 hours. Without accelerating the engine to more than 1,000 rpm, soot will accumulate and can easily clog the nozzle resulting in engine power drop and increase fuel consumption.

Powerful

1. Saturn Shape Groove

Helps mixing circulating air to improve combustion Low-speed torque is increased by 1-3%¹ exclusively for Kubota diesel engine ZT, Three Vortex Combustion System (TVCS)

Durable

2. Crank Shaft

With a special hardening technique at stepped crank shaft chamfer, it is stronger, more durable to piston combustion and more compatible with the engine operation²

3. Super Valve

Sintered powder alloy valve seat is wear-resistant, heat-resistant and replaceable with a detachable inserted in cylinder head design.³

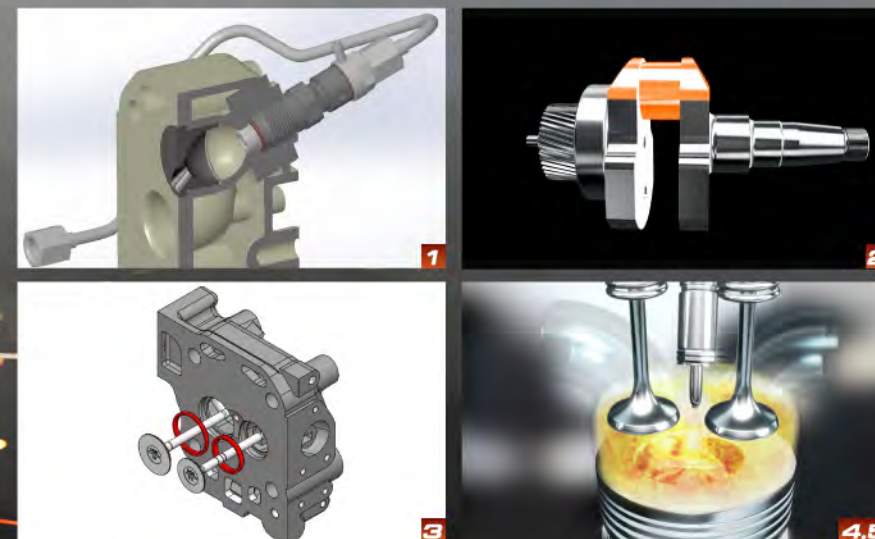
Fuel-saving⁴

4. Direct Injection Combustion System

Combustion at the piston increases horsepower, saves fuel and reduces heat loss to the engine cooling system, enabling it to work continuously of with less problem of radiator overheating.

5. Multi-Hole Injection Nozzle

Multi-Hole Injection Nozzle enables the fuel spray to be injected into the combustion chamber thoroughly and quickly with precision regarding the shape of the combustion chamber. The overall effects include better combustion efficiency, less fuel loss and lower fuel\ consumption rate.⁵



¹ Measure the maximum engine torque at crankshaft speed range of 1000-1800 rpm with full throttle position using an electrically controlled dynamometer. ² Following the comparison at the test stand with ZT155DI model, using four-belt tension at the engine pulley and maximum torque. The result showed that hardened crank shaft added chamfering. The test result also showed that the hardened crank shaft can withstand the testing twice as long as that without hardening during the comparison testing using RT140DI model with the non-separated valve seat cylinder head. ³ Comparative tests were performed using the RT140DI model with non-separated valve seat cylinder heads (cast iron cylinder heads with integral valve seats) and the RT140DI model with sintered powder alloy valve seats cylinder heads (super valves), the results showed that valve seats made of sintered powder alloy are three times less worn. The tests were done on a test bench that exerted load at maximum power (14 PS) at a given crankshaft rev (2,400 rpm) for 3 minutes and alternated with low load at 1,000 rpm. for 1 minute for 1,000 hours. ⁴ Based on the engine comparison test between ZT120 model (Three Vortex Combustion System-TVCS) and ZT140DI model on the dynamometer test stand using continuous load at 7.72 kW for ZT120 and 9.19 kW for ZT140DI, respectively, the specific fuel combustion of ZT140DI is 10% lower than that of ZT120 model. ⁵ Based on the engine comparison between ZT120 model (Three Vortex Combustion System-TVCS) and ZT140DI model on the dynamometer test stand using continuous load at 7.72 kW for ZT120 and 9.19 kW for ZT140DI, respectively, the specific fuel combustion of ZT140DI model is 10% lower than that of ZT120 model.

TRA CHANG Power Tiller NC PLUS X and NC PLUS X SPECIAL

Strong, durable and flexible and suitable for all agricultural needs



Strong, durable and flexible and suitable for all agricultural needs

Special Cast Iron (SCI)

- The uniqueness of Tra Chang Power Tiller is it is made of special ductile cast iron that makes gear housing strong and durable.

Four-gear system

- Quick operation with three forward gears and one reverse gear.
- An additional sleeve between gear shift compartment and the gear lever reduces the risk of damage to the gear lever.

Various options to suit the required operation.

Three sizes of wheels offered



NC Plus X Wheels (800 mm)

Multipurpose model, 16 three-inch forward lugs, reduce impact, suitable for general soil preparation



NC Plus X Special Wheels (850 mm)

Extra-large wheels, 16 four-inch forward lugs

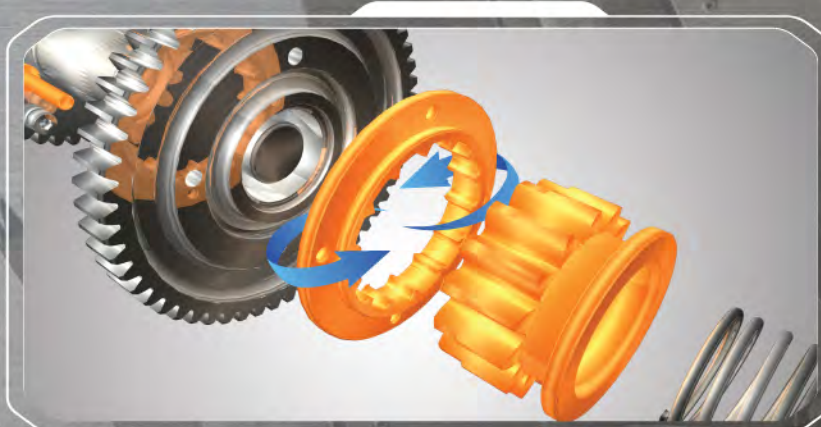


NC Plus X Special Wheels (950 mm)

Extra-large wheels, 16 five-inch forward lugs

Both extra-large wheel sizes enhance ground pecking, reduce slipping, suitable for soil preparation in swampy and highly swampy soil conditions.

Strong and durable Gear Insert System with a lifetime warranty***



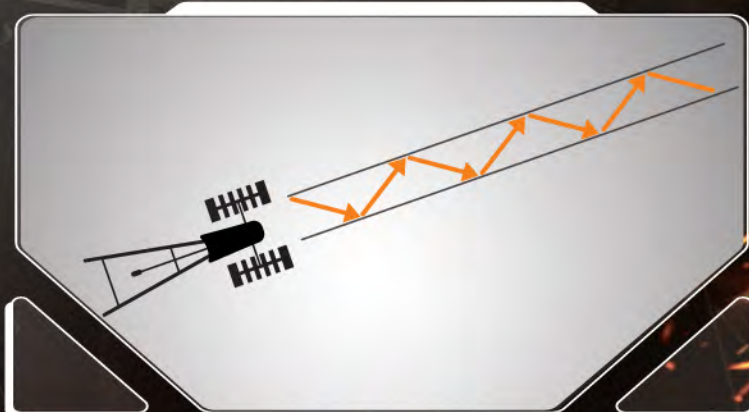
Gear system for durability

Gear systems are designed to distribute gear tooth load during operation to enhance strength and durability of the gearbox. The gears can be reversed to extend the use when those on the other side have worn down.



Safety Bolt extends the service life

Gear insert system, designed to reduce the risk of damage to the gear system, thus extends the service life of TRA CHANG Power Tillers.



Agile and flexible for a speedy work

The steering gear is designed to have more grooves for easy maneuvering in a straight line and less effort required.

Tough and Powerful ready to use multi-purpose



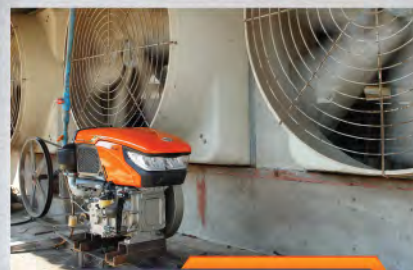
Farmer truck
Suitability of horsepower 14-15.5 HP



Fertilizer sprayer
Suitability of horsepower 12.5-15.5 HP



Utility Vehicles
Suitability of horsepower 14-15.5 HP



EVAP Fan
Suitability of horsepower 12.5-15.5 HP



Micropile installation
Suitability of horsepower 12.5 - 15.5 HP



water pump, Shrimp farm turbine
Suitability of horsepower 10-12 HP (TVCS)

Note: * Lifetime warranty for SCI special ductile cast iron gear housing parts only. **Note: There are 3 aspects in the universal use limitation as follows: Suitable engine installation: (1) Engine must be installed and used with the engine tilted from a horizontal level not in excess of 30 degrees in all directions. (2) The engine must be mounted firmly to the device base or the machine that is driven by the engine and the mounting base must be sufficiently strong. While the engine is running, the average vibration acceleration at the cylinder block mounting base must not exceed 15 m/s². The vibration acceleration must be measured in the same direction as the piston movement. Suitable environment: (3) the temperature of the air sucked into the engine's radiator grille must not exceed 42°C for more than 2 hours of continuous operation and 45°C for continuous use up to 2 hours. (4) If the engine is installed inside a room, there must be a vent to let the exhaust fume from the engine out of the room to prevent fume building up in the room as well as to prevent heat building up to the temperature limits mentioned in item (3). (5) If the engine is used outdoors in the open, the fuel tank must be covered and a tailpipe must be installed to prevent rainwater entering the fuel tank and the exhaust pipe which can cause the internal parts of the engine to rust. Load and optimum engine revs: (6) Do not operate the engine with a continuous overload for more than 30 minutes (overload means when accelerating the engine, the engine rpm does not increase and there is a continuous black smoke coming out of the exhaust pipe). When the engine is found operating in such condition, let off the throttle position until the engine rev begins to decrease slightly and the black smoke is reduced to only faint smoke. Or if the throttle has to be let off so low that the engine rpm is insufficient for the use of the connected device, this shows that the speed ratio between the engine and the equipment is not suitable and something needs to be changed such as pulley or gear. (7) The DI engine engine should not be regularly operated at an engine rev less than 1,000 rpm for more than 5 hours. Without accelerating the engine to more than 1,000 rpm, soot will accumulate and can easily clog the nozzle resulting in engine power drop and increase fuel consumption. *** Only when the operator changes gear from a lower gear to a higher gear position such as from 1st gear to 2nd gear or 2nd gear to 3rd gear, etc. ****Gear insert systems are available only on TRA CHANG Power Tillers; NC-Plus X Special, single clutch and NC-Plus X Special, dual clutch.

For more information, please scan QR Code to access siamkubota.co.th



Specifications

TRA CHANG Power Tiller

Power Tiller		NC-Plus X Single clutch	NC-Plus X Special Single clutch
Dimension	Width (minimum/maximum)	1,050 / 1,200 mm	1,270 / 1,370 mm
	Length	2,960 mm	
	Height	1,220 mm	1,349 mm
Diameter of cage wheels		800 mm.	880 / 980 mm
Power Tiller belt		1,981 mm (78 inches)	1,854 mm (73 inches)
Engine pulley		140 mm (5.5 inches)	89 mm (4 inches)
Clutch pulley		180 mm (7 inches)	
Diameter of Implement hitching pin		26 mm	
Brake systems		Drum brake	
Clutch systems		Dry multi-plates clutch	
Gear oil		SAE, No. 90	
Gear oil capacity		5.5 - 6 liters	
Gear ratio (between Power Tiller clutch pulley and wheels)	1st speed	44 : 1	
	2nd speed	23 : 1	
	3rd speed	8 : 1	
	Reverse speed	56 : 1	
Maximum speed		23.5 km/h	15 km/h
Net weight of Power Tiller (excluding engine)		215 kg	254 kg
Size of powered eninge (horsepower)		8 - 14 horsepower	8 - 15.5 horsepower

Specifications

Kubota Diesel Engine ZT PLUS

Model		Direct Injection System						Three Vortex Combustion System (TVCS)									
		ZT125 Plus	ZT125 Plus-ES	ZT140 Plus	ZT140 Plus-ES	ZT155 Plus	ZT155 Plus-ES	RT80-M	RT90-M	ZT100 Plus	ZT100 Plus-ES	ZT110 Plus	ZT110 Plus-ES	ZT120 Plus	ZT120 Plus-ES		
Type		Four-stroke water cooled horizontal diesel engine															
Number of pistons		1															
Bore x stroke	mm x mm	94 x 96		97 x 96		100 x 98		84 x 84		86 x 84		88 x 90		92 x 90		94 x 90	
Displacement Volume	cc.	666		709		770		465		487		547		598		624	
Maximum Power (kW/rpm)	HP/rpm	12.5/2,400		14/2,400		15.5/2,400		8/2,400		9/2,400		10/2400		11/2,400		12/2,400	
		(9.19kW/2,400)		(10.3kW/2,400)		(11.4kW/2,400)		(5.88 kW/2,400)		(6.62 kW/2,400)		(7.35 kW/2,400)		(8.09 kW/2,400)		(8.83 kW/2,400)	
Continuous Rated Power (kW/rpm)	HP/rpm	11/2,400		12.5/2,400		13.5/2,400		7/2,400		8/2,400		9/2400		9.5/2,400		10.5/2,400	
		(8.09kW/2,400)		(9.19kW/2,400)		(9.93kW/2,400)		(5.15 kW/2,400)		(5.88 kW/2,400)		(6.62 kW/2,400)		(6.99 kW/2,400)		(7.72 kW/2,400)	
Rated Rotational Speed	rpm	2,400															
Specific Fuel Consumption at Continuous Rated Power	(g/PS-h), g/kW-h	240						270				269					
Compression ratio		18 : 1				17.5 : 1		23 : 1				22 : 1		20.5 : 1		21 : 1	
Maximum torque	kg-m/rpm	4.7 / 1600		5.1 / 1600		5.5 / 1600		2.8 / 1600		3.0 / 1600		3.5 / 1600		3.9 / 1600		4.1 / 1600	
Coolant capacity	cm3 (liter)	2.1						1.6				2.1					
Fuel capacity	cm3 (liter)	10.5						10				10.5					
Oil capacity	cm3 (liter)	2.8						2.4				2.8					
Fuel type		Automotive used diesel fuel (SAE No. 2-D)															
Lubricating oil grade		SAE 40 API CF															
Combustion system		Direct Injection System						Swirl Pre-Combustion Chamber									
Cooling system		Radiator															
Lubrication system		Trohoid Pump															
Air cleaner type		Oil bath type															
Engine starting system		Hand cranking (double speed), an electric motor is provided for ES Model.															
Battery capacity (ES model only)		12 Volt 30 A-h battery															
Rotation direction of flywheel		Turn counterclockwise when facing the flywheel															
Net Weight	kg.	111	113	112	114	112	114	88	88	105	112	110	112	111	113		
Gross Weight	kg.	126	128	127	129	127	129	103	103	120	127	125	127	126	128		

Note: 1. Values shown in Kubota diesel engine and TRA CHANG Power Tillers product specification tables are calculated from the mean values of product testing under standard of Siam Kubota Corporation Co., Ltd. However, in the production there will be discrepancy in these values.
2. The figures of horsepower, torque and specific fuel consumption rate are obtained from engines that must be operated at the rated rotational speed of at least 50 hours and tested in accordance with the JIS B 8018 standard (atmospheric pressure, 750 mm.Hg, 25 Celsius temperature and 30% relative humidity).

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Produced in March 2022

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