

X650

OWNER'S MANUAL

Forward

Thanks for purchasing our rotary tiller!

- ◇ This manual contains the operation and maintenance of X650 Rotary tillers.
- ◇ All contents in this manual are based on the latest information when the manual is printed.
- ◇ Our company has the right to revise the manual without any prior notice and will not bear any legal responsibility.
- ◇ Without our authorization, any parts of the manual can't be copied.
- ◇ This manual should be kept as a part of the rotary tiller, and should be transferred when resold.
- ◇ According to different specifications, products may be different from the drawings in the picture.

Safety information

Safety is very important for you and others. We have written down important safety information in both manual and machine. Please read it carefully.

Safety information gives you warning that you may bring potential danger to yourself and others. The key words with “!” are put before every piece of information. These words are “danger, warning, attention”.

◇ Please pay attention to the meanings of the above-mentioned identifiers.

! Danger: if you don't operate follow those indicated in the manual, serious injures, even death will be caused.

! Warning: if you don't operate follow those indicated in the manual, device damage and injures will be caused.

! Attention: if you don't operate follow those indicated in the manual, device damage and injures may be caused.

Damage prevention

You can see other important information marked with “ATTENTION”.

ATTENTION: If you don't operate as those indicated in the manual, device damage will be caused.

Safety prevention



◆ If mini tiller is operated follow those indicated in the manual, it will work safely and reliably. Before operating the mini tiller, please read this manual carefully. Otherwise, injures and device damage will be caused.

Attention

- When starting engine, please turn gear lever to neutral position.
- When the machine is working, please pay attention to safety!
- Be careful about the rotary blades, because they may hurt you!
- Fuel and lube oil must be clear.
- Before shifting the gear , you must disconnect the clutch. When holding the backshift bar, the gear lever must be put in the neutral position.
- Gasoline is flammable, you must pay attention to fire and exploding.

As model is always improved, photos or illustrations may have difference comparing the actual machine.

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1. Safety information and warning

◇1. Training

a). Carefully read this manual, fully know all the controlling functions and the proper operation, learn how to quickly stop and dispart the tiller.

b). Children are not allowed to use tiller. And adults who don't learn this manual are also not allowed to use this tiller.

c). Keep working area without other people, especially children and pets.

◇2. Preparation

a). Check working area, and move away all the sundries.

b). Disengage all the clutches and place gear to neutral position before starting engine.

c). Do not use tiller without suitable clothes and skid-proof shoes.

d). Carefully deal with fuel which is tinder.

1). Use suitable container to store fuel.

2). Do not add fuel when engine is working or hot.

3). Carefully add oil outdoor. Don't allow to add oil indoor.

4). Wrest on fuel tank cap, and clean out spilling fuel.

e). When engine is working, do not do any adjustment which are not allowed.

f). Wearing eye protect glasses when preparation, working and servicing.

◇3. Operate

a). Never use hand or foot to touch rotary blades when it is working

b). When go across cobbled road, crosswalk, and road, pay more attention to the latent danger. Do not let people ride on the tiller.

c). If tiller bumps something, stop to check. If it is broken, repair it and then start it.

d). Be careful when working, do not fall or slip.

e). If tiller has abnormal noise, it means that it may have problems. Stop the tiller to check reason.

f). Stop engine before leaving, cleaning blades, servicing, adjusting and checking.

g). When no people working on the tiller, shift gear to the neutral gear and stop the engine.

h). Before check, clean and repair the tiller, stop engine and confirm if every part is in stop state.

i). Do not work tiller indoor, because exhaust is poisonous.

j). Do not work when there isn't proper equipment.

k). Keep away from children and pets.

l). Do not let tiller over load because of deep tilling depth and fast speed.

m). Do not let tiller run on the slip road. Be careful when reverse.

n). Do not let looker-on come near the tiller.

o). Only these additional equipment allowed by manufacture can be used.

p). Do not use tiller when it is dark.

q). When work on the hard land, blades may hitch the land and push tiller forward. In this condition, release the tiller and let it go itself, do not try to control it. Or else, there will be danger.

r). Do not work on the sharp slop.

s). When tiller go across slope, be careful and do not let tiller fall.

◇4. Service and store

a). Keep tiller and its additional equipment in well working condition.

b). Periodically check engine bolts and other bolts, make sure they are fixed well, to ensure tiller in good working condition.

c). Tiller should be kept indoor and away from fire. Stop and cool the engine before storage.

d). If tiller needs to be stored for a long time, this manual should be also kept as an important part.

e). Do not try to repair the tiller unless you know the knowledge, and have proper tools.

2. Profile of rotary tiller

◆ 1. Specification

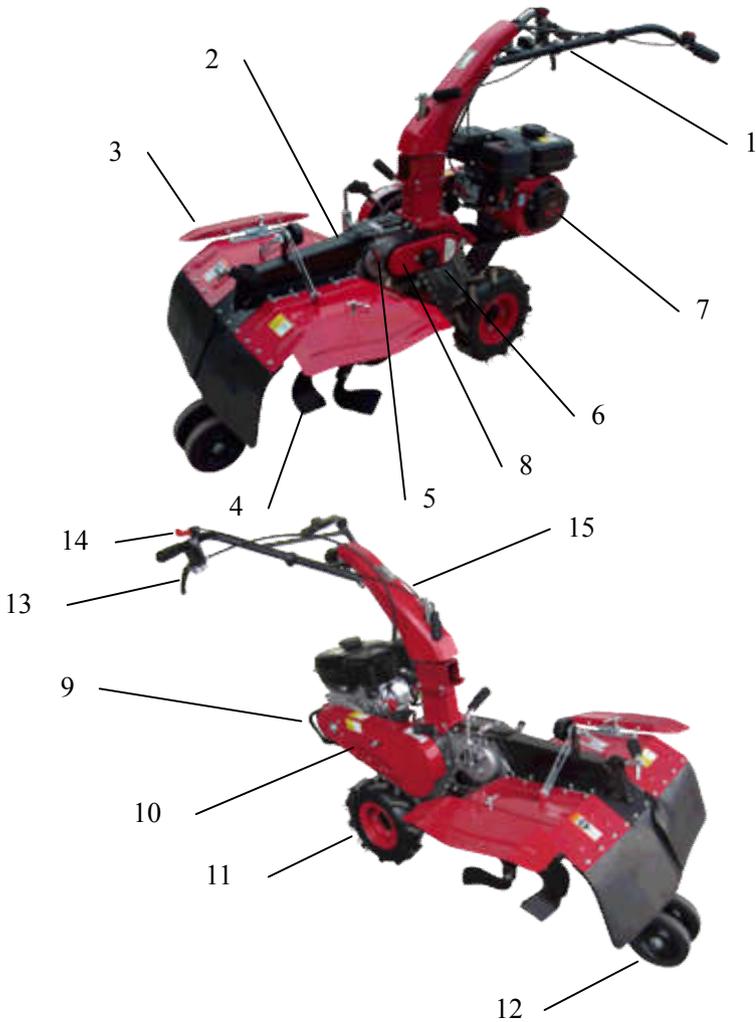
ITEM		DESCRIPTION		
ENGINE	Engine model	170F-L		
	Max. Power(kw)	4.8		
	Rated Power(kw)	4.2		
	Rated Speed(r/min)	1800		
TILLER	Dimension (L×W×H)mm		1600×750×800	
	Net Weight(kg)		85	
	Transmission System		Synchronous belt, tension pulley transmission	
	Connecting System		Pin, bolt	
	Clutch system			Belt tension
	Walking speed (r/m)	Front gear	Fast	73
			Slow	38
		Reverse gear	Fast	52
			Slow	27
	Tilling speed (r/m)	Chain box on fast	Fast	553
			Slow	299
		Chain box on slow	Fast	311
			Slow	168
	Blades			Three pieces, three group(2+1)
	Total blades			18 pcs
	Tilling depth (cm)			≥10
Tilling width (cm)			42 - 65	
Working productivity(hm ² /h)			≥0.055	
Fuel consumption(kg/hm ²)			≤30	

DITCHING	Ditching blades	5 pieces 1 group
	Total blades	10
	Ditching width (mm)	29 - 32
	Earthing up higher	15 - 25

Table 1

Specifications will change according to improvement of tiller. So this tablet is only for reference.

◆2. General chart



1. Hand control assy 2. Trailer 3. Mud fender 4. Rotary tilling equipment
5. Tilling box assy 6. Gear box assy 7. Gasoline engine
8.Chain transmission assy 9. Bumper 10. Belt cover 11. Front tire
12. Rear wheel 13. Clutch handle 14. Throttle handlebar
15. Steering column

3. Applicable scope

◆1. Rotary tilling

Applicable to garden, tea plantation, orchard, sugarcane, corn land, vegetables land, greenhouse etc., for rotary assignments.

Assemble tilling blades on output shaft of tilling gear box gear, and fix it with pin and clip. Finally we change rear wheel to resistance rod to do tilling work. (Look at table 2)

Rotary tilling device mode	(Two+One) group
	3 pcs
Rotary blades	3×6
Rotary tilling scope	420-650mm

Table 2

◆2. Ditching

Take away resistance rod, install rear wheels, change tilling blades into ditching blades (look at table 3), and adjust the height of rear wheel. Finally we can do ditching work.

Ditching device	Standard accessories	Optional accessories	
	One group	One group	One group
	5 pcs	4 pcs	6 pcs
Rotary blades	5×2	4×2	4×2
Rotary tilling scope	290-320mm	210-240mm	440-470mm

Table 3

◆3. Multifunctional work

Take away rear wheels or resistance rod, match the relative tools and accessories and carry out multifunctional work, such as covering mulch, reaping, chemical spraying.

4. Operation and use of rotary tiller

◆1. Assembly

1. Unpacking assembly

◇1.1 Take out rotary tiller and accessories.

◇1.2 Fix the body of rotary tiller, install walking wheels, then use pin 8×40 and clip to fix them. Install rear wheels in the appropriate height, then use lock bolt to fix it.

◇1.3 Tilling/ditching blades installation: install tilling blades or ditching blades on both sides of output shaft, edge towards forward, and then use pin M8×40 and clip to fix it.

◇1.4 Mud fender (or narrow mud fender) and side mud fender installation: Install left and right mud fenders on the tiller, fixing with bolt M6×12 (8 pcs) and locknut M6 (8 pcs), and screw up by spanner. The adjustable part of mud fender place is as the picture. Then install side mud fender on both sides and screw up small handles.

◇1.5 Handle bar installation: assemble handle bar components on tiller. The handle bar frame position is symmetrical accordingly for the tiller, then use the locked pin to fix the frame.

2. Installation and adjustment of cables

◇2.1 Adjustment of clutch cable(Look at picture 1)

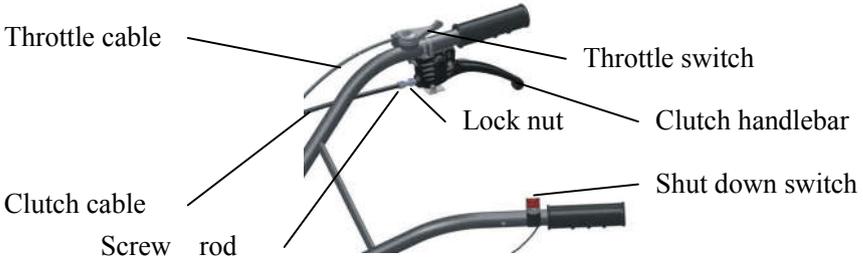
①Unlock nuts on the screw rod.

②Instantaneously rotate the screw rod to show the shortest part of the handle bar.

③Connect the clutch cable head into clutch plug behind the gear box assy, thread the cable into axis pin M6×20, and fix with jump ring.

④Properly pull down the clutch cable and fix the clutch cable head to handle bar bottom.

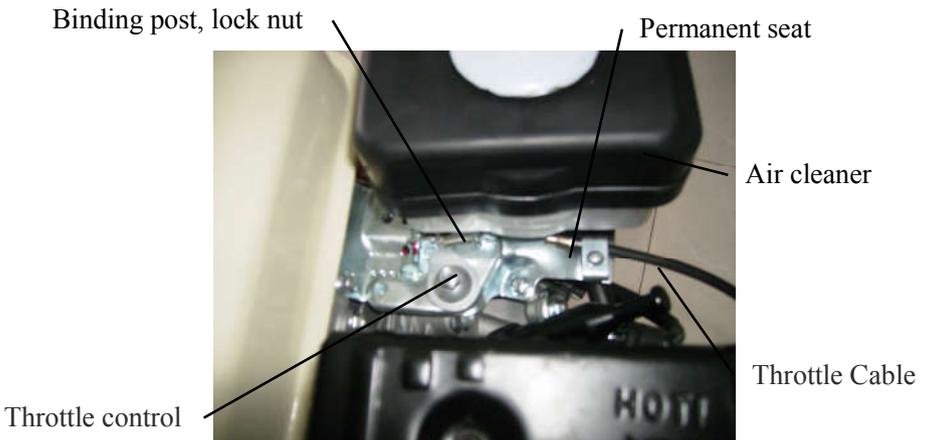
⑤Rotate out the screw rod and clip it repeatedly, unlock the clutch handlebar until spring force of clutch can reset the bar, finally fasten the nuts.



Picture 1

◇2.2 Adjustment of oil throttle cable.(Look at picture 2)

- ① Screw oil throttle switch to the minimum scale.
- ② Thread the steel wire-rope into the oil throttle, the pole and plug of regulation panel of gasoline engine.
- ③ Fasten the steel wire-rope and fix the screw.
- ④ Adjust the oil throttle switch repeatedly until the throttle bar of the regulation panel can be in the fastest or slowest position.



Picture 2

◎Add oil into air cleaner: disassemble the cover, then add about 0.1L oil number 20.

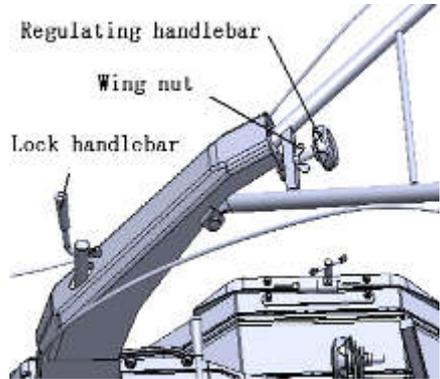
! WARNING: Oil level can't over the mark.

2. Rotary tiller state adjustment

◇2.1 Adjustment of handle bar height(Look at picture 4).

◎Loosen the regulating handle, adjust the handle frame to suitable position, screw into the regulating handle, tighten the wing nut.

◎Loosen the locked handlebar and standpipe, standpipe and handle frame can be rotated in 330 °, which has 18 positions. Then tighten the locked handle, operate the rotary tiller through adapting to different position.



Picture4

◇2.2 Adjustment of tilling depth

◎Adjust resistance rod downwards, tilling depth will increase. Adjust resistance rod upwards, tilling depth will decrease.

◇2.3 Usage and adjustment of clutch.

◎Control power output of engine by clutch.

◎When clutch handle is loosen, clutch is opened, the engine stops inputting power to tiller, tiller blades stop rotating (Look at picture 5)

◎When we clench the handle lock, clutch is connected. In this condition, power is transmitted to tiller, blades begin to work. (Look at picture 6)



Picture 5



Picture 6

◇2.4 Gear Choice

◎Gear box has 5 shifts, including neutral position. The gears are optional (Look at Table 5)

Gear box					Tilling box(Using with chain box together)				
Transmission speed(km/h)					Blades rotary speed (rpm)				
Forward		Stop	Back		Fast		Stop	Slow	
Slow	Fast	Neutral	Slow	Fast	High	Low	Neutral	High	Low
2.55	4.83	/	1.82	3.45	553	299	/	311	168

Table 5

◎Change gear

- ①Counterclockwise turn the throttle switch to the right position (mini).
- ②Clench clutch handlebar, and make clutch open.
- ③Change shift lever to the gear you need.
- ④Loosen clutch handlebar, make machine into the changed gear, then open the throttle to increase the speed into the work.
- ⑤If necessary, we may start engine to check if clutch can work.

3. Attention items of using rotary tiller

◇3.1 When using tiller, you should pay attention to the working situation and the sound, check the connection. If there is abnormal situation, you should stop the rotary tiller and check.

◇3.2 Never carry out work in heavy load condition if tiller has not been used for some time, especially for the new ones or the repaired ones.

◇3.3 Pay attention to the oil level of diesel engine and gear box. Please refuel oil in insufficient condition.

◇3.4 Never cool the diesel engine in the way of water-pouring.

◇3.5 Prevent rotary tiller from falling down when tilling.

◇3.6 Never install mini tiller with rotary blades work on sand or stone to avoid damaging blades.

◇3.7 After tilling, pay attention to clear away dirtiness in the rotary tiller, such as mud, grass and oil stain.

◇3.8 Frequently wash the sponge in the air filter and change oil more often.

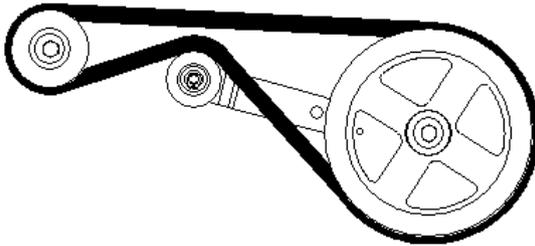
◇3.9 Ridging or weeding: Assemble ridging or weeding blades to the tilling box, turn handlebar to the direct of engine. When tilling, tilling box is front and

gear box is rear. According to the falling soil position, we adjust mud fender or side mud fender.

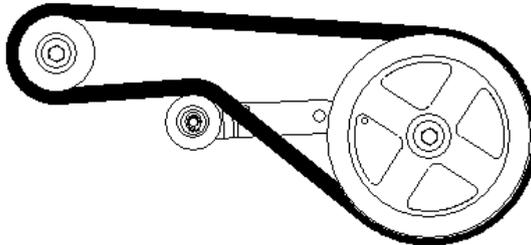
◆3. The way and data of adjusting

1. Adjustment of belt tensiony

◇1.1 Normal range of belt tension degree is 25mm or so, when we loosen brake handle, tension pulley moves upward to press tightly belt and transmission begins to work, when we clench clutch handle, tension pulley moves down to make belt loosen, engine stops to input transmission to gear box.



Loosing condition of clutch handlebar



Clenching condition of clutch handlebar

◇1.2 If belt tension degree is not in the normal range, it's necessary to adjust. To loosen the four fixed bolts of the engine, if the belt is too loose, we make the engine move forward, if the belt is too tight, we make the engine move backward, until tension level is in the normal range. Tighten the four fixed bolts of the engine.

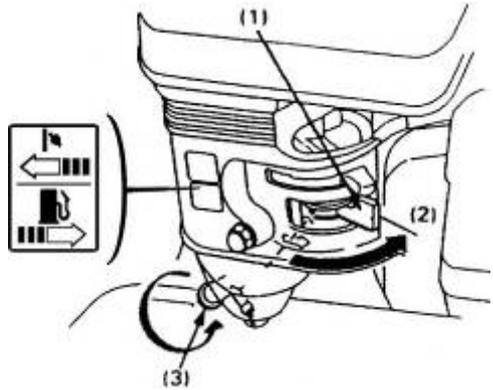
◆4. Engine operation

1. Start procedure

! WARNING: Before starting engine, shift lever of gear box and tiller box must be placed on neutral position, clutch handle is clenched (i.e. loosen tension pulley)

◇1.1 Turn the fuel valve to ON position.

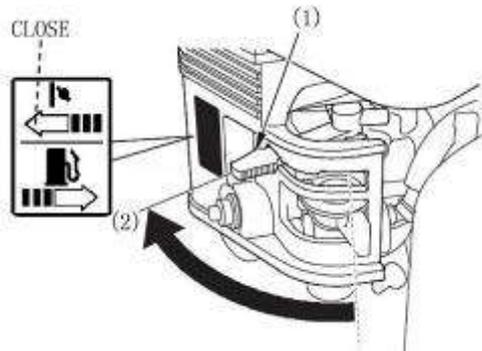
- (1) FUEL VALVE
- (2) ON
- (3) DRAIN BOLT



◇1.2 Close the choke lever.

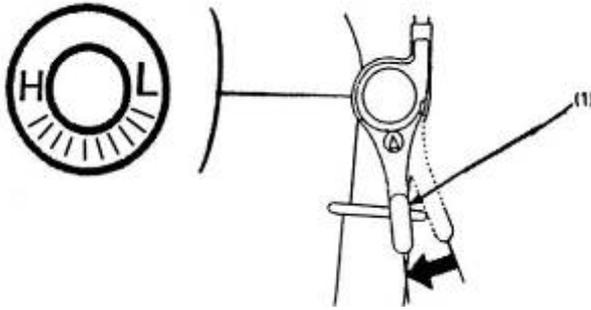
! NOTE: Do not use the choke when the engine is warm or the air temperature is high.

- (1) CHOKE LEVER
- (2) CLOSE



◇ 1.3 Move the throttle handle slightly to the left.

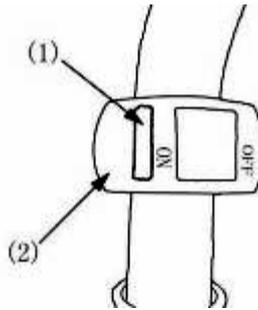
(1) THROTTLE HANDLE



◇ 1.4 Turn engine switch to ON position.

(1) ON

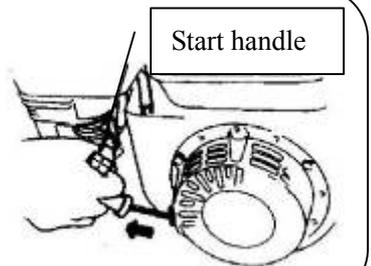
(2) ENGINE SWITCH



※Repeatedly pull the rope of starter until you feel the resistance, and then quickly pull out the rope.

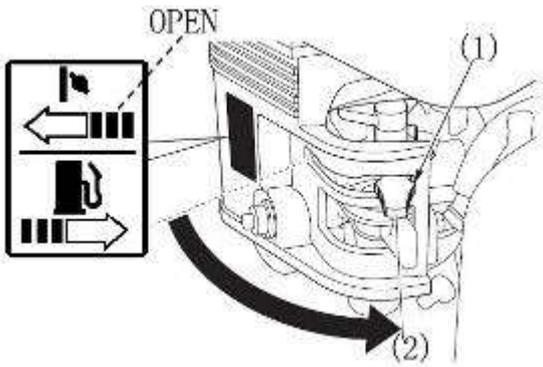
! ATTENTION:

Don't suddenly loosen the recoil starter handle, or it may be sprang back to strike the engine. You should release it slowly.



◇1.5 After preheating the engine, gradually move choke to OPEN position.

- (1) CHOKE LEVER
- (2) OPEN



◇1.6 Adjust rotary speed of engine through the throttle switch (or throttle handle)

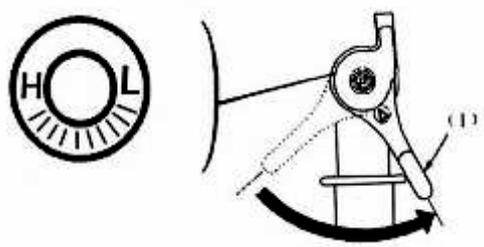
2. Turn off or stop engine

◇2.1 In an emergency, you may directly turn switch to OFF position.

◇2.2 Generally, adopt the following steps to turn off engine.

① Counterclockwise turn throttle switch to minimum scale or turn throttle handle to the right.

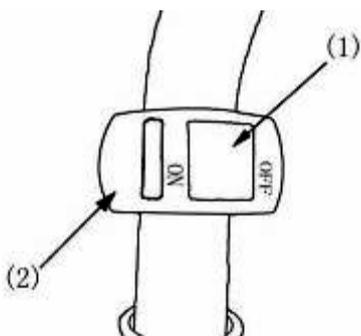
- (1) THROTTLE LEVER



② Turn engine switch to OFF position.

(1) OFF

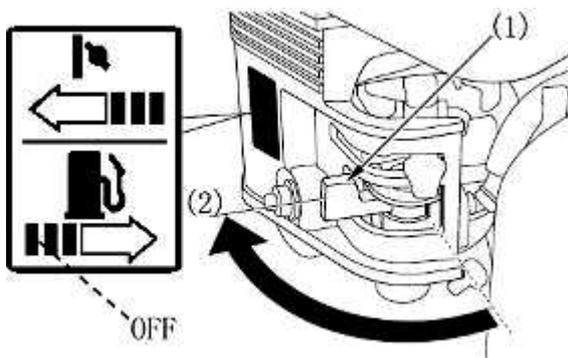
(2) ENGINE SWITCH



③ Put fuel valve to OFF position

(1) FUEL VALVE

(2) OFF



5. Maintenance

◆1. Maintenance of gasoline engine

! WARNING:

- ◆ Turn off engine before maintaining
- ◆ In order to prevent accidentally starting the engine, turn engine switch to OFF position and disconnect the spark plug.
- ◆ The engine should be repaired by the authorized dealer, unless user has appropriate tools, repair materials and professional capability.

! ATTENTION: Use our company series of engine parts and their replacement. Engine may be damaged in using bad replacement.

If we want to maintain engine good performance, we must regularly inspect and adjust the engine. Routine maintenance also keeps engine a long life. Required maintenance interval and maintenance projects are illustrated as the following table.

Maintenance period Item		Ever y day	The first month or 20 hours	Third months or 50hours	Every half year or 100 hours	Every year or 300 hours
Engine lubricant	Check amount	0				
	Replace		0		0	
Reduction gear lubricant(applic able to some type)	Check amount	0				
	Replace		0			0
Air cleaner	Check	0				
	Clean	0(1)				
Dust cover	Clean				0	
Spark plug	Check and clean				0	
Spark eliminator (optional)	Clean				0	
Tank and filter	Clean			0(2)		0(2)
Valve	Check and readjust					
Fuel circuit	Check	Every two years (2) (Change it if possible)				

Remark: “0” shows maintenance content.

(1) Please maintain more in dust environment.

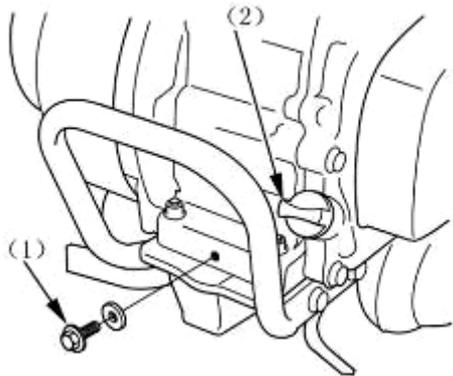
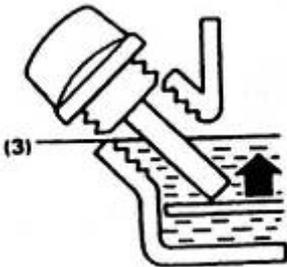
(2) Some of the projects may be maintained by authorized dealers, unless the user has the appropriate tools and repair capacity.

1. Change lubricant oil

When the engine is still hot, let the oil out, so to ensure their rapid and thorough emissions.

- ◇ 1.1 Screw out the oil filler cap and bolts, let the lubricant out.
- ◇ 1.2 Screw down the bolt.
- ◇ 1.3 Put in the recommended lubricant again and check the oil level.
- ◇ 1.4 Put on fuel filler cap, engine lubricant capability should be 0.6L.

- (1) DRAIN BOLT
- (2) OIL FILLER CAP
- (3) UPPER LEVER



2. Maintenance of air cleaner

A dirty air cleaner may prevent air into carburetor. To avoid carburetor problems, regularly clean air cleaner. Clean air cleaner more in heavy dust working area.

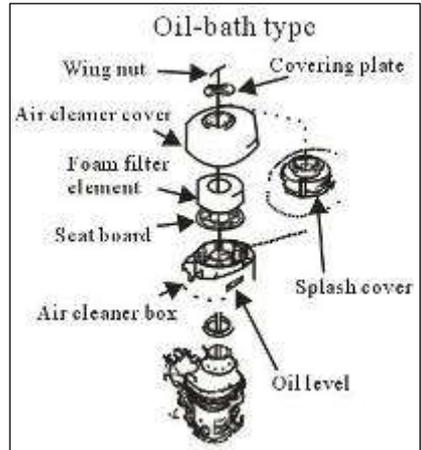
! WARNING: Neither use gasoline or low burning point solvent to wash air cleaner element, or this will cause exploding.

! ATTENTION: Never run engine without air cleaner, or engine will be worn out fast.

◇2.1 Open air cleaner cap, take out foam and filter element.

◇2.2 Use household detergent and warm water to wash filter element, thoroughly rinse. Also may use high-lighted solvent to clean, then dry filter element.

◇2.3 Put filter element into clean engine oil, then squeeze out the surplus oil, otherwise the engine will smoke thickly at the first start.



◇2.4 Empty the oil in air leaner, use nonflammable or high-lighted solvent to clean the dust, then dry air cleaner.

◇2.5 Put the same oil as the engine oil in air cleaner, to the standard height.

◇2.6 Assemble the filter element and air cleaner cover.

3. Maintenance of spark plug

! ATTENTION: Don't use the spark plug without correct caloricity scale. The machine version is F7TC. To keep engine in good working condition, spark plug must be clean and without carbon deposit.

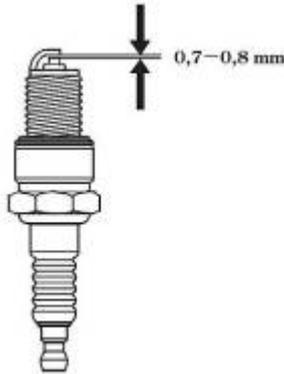
◇3.1 Use the specific sleeve spanner to assemble and disassemble spark plug.

! WARNING: If engine is just stop, the muffler will be very hot. Please avoid touching the muffler.

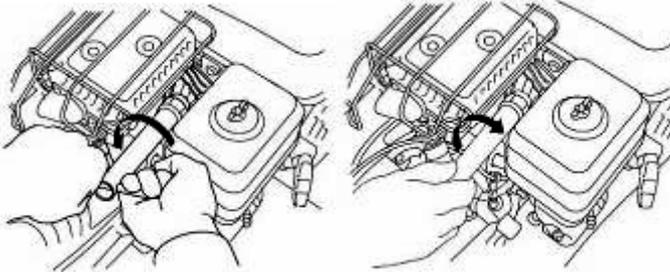
◇3.2 Check spark plug, if it is distinctly worn out or dehisced, please change a new one. If it is still well, clean it.

◇3.3 Check spark plug clearance, the right clearance should be 0.7-0.8mm. If it is necessary, please turn the electrode to adjust it.

◇3.4 In order to avoid the wrong touch of whorls, check spark plug gasket.



◇3.5 Put on spark plug gasket, use the sleeve spanner to screw on it.



! ATTENTION: When the gasket is just pressed. If it is new spark plug, turn $1/2$ circle more to press the gasket .If it is old spark plug, turn $1/8$ — $1/4$ circle more.

! ATTENTION: Spark plug should be rightly assembled. If not, it will become hot and damage the engine.

4. Spark eliminator maintenance (Choose accessories)

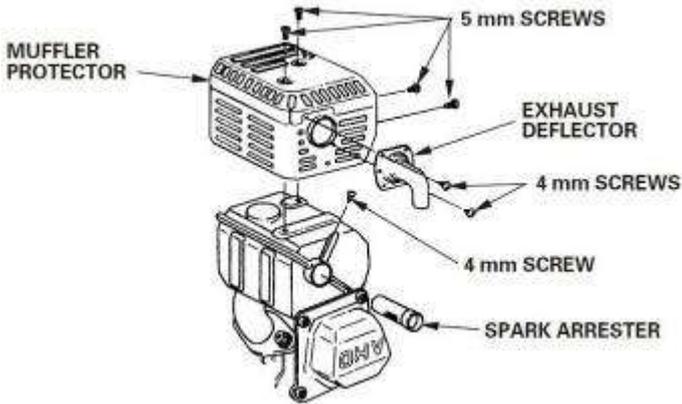
! WARNING: If the engine has just worked, muffler will be hot, operate it after cooling.

! ATTENTION: Spark eliminator must be maintained once per 100 hours to keep it good performance.

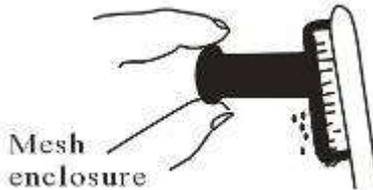
◇4.1 Unscrew two 4 mm screws from exhaust guide pipe and remove exhaust guide tube.

◇4.2 Unscrew four 5 mm screws from muffler cover and remove the cover.

◇4.3 Unscrew 4 mm screws from spark eliminator and remove it from muffler.



◇4.4 Use brush to clean the carbon on spark eliminator mesh enclosure.



! WARNING: Be careful not to damage mesh enclosure.

! ATTENTION: Spark eliminator must not have holes or be broken, if so, please change.

◇4.5 Assemble spark eliminator according to the contrary process of disassembly.

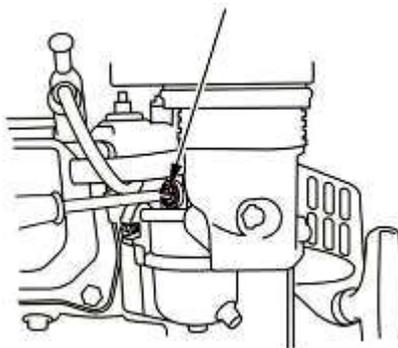
5. Adjustment of carburetor idling speed

◇5.1 Start the engine, and wait until it arrive right temperature.

◇5.2 When engine is working in idling speed, adjust valve bolt to get the standard idling speed.

Standard idling speed: 1500 ± 150 r/m

Restrictor screw



6. Oil level (accessories are optional)

The oil level system is used to avoid to damage engine caused by oil shortage in the crankcase. When oil is below the safe line, The oil level system will automatically stop the engine (even if the switch is still on ON position).

◆2. Maintenance method of rotary tiller

During working, due to rotating, abrading and load changing, bolts will become loose and parts will be worn. These changes will destroy the proper working condition, create abnormal fitting clearance, degrade output power of diesel engine, increase oil consumption, lead to the maladjustment of spare parts and increase malfunctions of mini tiller. These all will seriously affect the working efficiency. To decrease the frequency of the above-mentioned accidents, maintenance must be done strictly and regularly to keep the tiller in a good working state and prolong its life.

1. Running-in of rotary tiller

If tiller is new or just heavy repaired, it should work without load for one hour. After the mini tiller works in light load for five hours, all oil in gear box and crankcase should be drained immediately. Afterwards, you should refuel clean oil adequately, run the mini tiller at idle speed for 3 to 5 minutes to wash it , then drain oil completely. Please refuel oil and carry out running-in for 4 hours according to the procedure of chapter 4/ ◆2/1/◇1.1. By doing so, the tiller can begin to work in normal condition.

2. Technical maintenance of rotary tiller

◇2.1 Per shift maintenance (before and after work):

①Hear and check if there is malfunction for every part (such as abnormal noise, overheat, loose screw).

②Check if there is oil leakage from diesel engine, gear box and running gear.

③Check if the oil level is in dipstick scale.

④Clean mud, grass and oil stain regularly.

⑤Daily record.

◇2.2 Primary maintenance (per 150 hours)

①Carry out all maintenance works of per shift.

②Wash gearbox and change lube oil.

③Check and adjust clutch unit, shift unit and reverse gear unit.

◇2.3 Secondary maintenance (per 800 hours)

①Carry out all maintenance works per 150 working hours.

② Check all gears and bearings. If they are fretted severely, please replace them.

③ Check other parts, such as rotary blades or bolts. If there is damage, please replace them.

◇ 2.4 Technical inspection (per 1500-2000 hours)

① Disassemble, clear or check the whole machine in the specific maintenance station. If the accessories are severely fretted, they must be changed or repaired.

② Ask experts to check the clutch.

3. Technical maintenance table of mini tiller (mark "√" indicates the maintenance contents)

Working Intervals maintenance contents	Every day	Work with half load for 8 hours	Work for one month or 20 hours	Work for 3 months or 150 hours	Every year or 1000 hours	Per 2 years or 2000 hours
Check and tighten nuts, bolts	√					
Check and refuel lube	√					
Check and change lube		√(first time)	√(second time)	√(third time or more)		
Check if there is oil leakage	√					
Clean mud, grass and oil stain	√					
Debug malfunction	√					
Adjust operation parts	√					
Gears and bearings					√	

4. Long-period storage of engine

! WARNING: To prevent to be burned or fire hazard, let the engine cool before we put engine indoor.

◇4.1 Storage preparation

The correct storage preparation is the key of reducing the failures and maintaining a good appearance. In order to start better in next time, please avoid corrosion to impact engine.

◇4.2 Clean

If engine just stops working, you must cool it for at least half an hour before cleaning. Clean all external surfaces, the metal surfaces easily rusted are coated with lubricant.

! ATTENTION: The engine can not be washed with water to prevent water through the air filter and muffler into the cylinder to cause damage to the engine.

◇4.3 Fuel

During storing, fuel is easily oxidated and deteriorated. Gum deposit in the oil circuit blocks oil pipe, this will cause difficult start. During storing, if the fuel is deteriorated, you must maintain or change carburetor and other circuit components. Therefore, if storage is longer than 30 days, in last work, please let out fuel in carburetor and tank or operate the engine till fuel uses up.

! DANGER: Gasoline is flammable, even easily exploded in certain conditions. Smoking, firing or sparking is prohibited in working site.

5. Long-period storage of rotary tiller

When rotary tiller needs be stored for a long period, the following measures should be adopted to prevent tarnishing.

◇5.1 Wash oil stain and clean dust.

◇5.2 Drain lube oil in the gear box and refuel new oil.

◇5.3 Paint pickling oil on non-aluminum parts where there is no paint.

◇5.4 Store tiller in the dry, safe place where there is enough aeration.

◇5.5 Properly keep the attaching tools, certificates of conformity and instruction.

6. Common faults and removing ways

◆1.Common faults and removing ways of engine

◇1.1 Is the switch of engine in ON(open) position or not?

◇1.2 Is there enough lube oil or not?

◇1.3 Is the fuel valve placed in ON (open) position or not?

◇1.4 Is there fuel in tank or not?

◇1.5 Does the fuel level reach the carburetor or not? Check it through loosening the oil drain bolt of carburetor and placing the fuel valve in ON (open) position.

! WARNING: If fuel spills, the spilled fuel must be drastically cleaned and completely volatilized before we check the spark plug or start the engine. Spilled fuel or volatile gases can cause a fire.

◇1.6 Dose the spark plug spark or not?

①Disconnect the spark plug cap, clean the dust inside, and then remove the spark plug.

②Cover the spark plug cap on the spark plug.

③Make the edge of the spark plug contact any connected ground point of the engine. Pull the recoil starter, observe if sparks appear.

④If there isn't any spark, change the spark plug. If there are sparks, re-install spark plug, then start the engine again according to the manual.

⑤If the engine still can't be started, contact the authorized distributors for repair.

◆2.Common faults and removing ways table of tiller

Phenomenon	Reason	Solution
The clutch can not be opened or closed.	Belt is too tight	Adjust the engine to make belt's loose situation meet the manual instruction
	Control wheel presses tightly belt in loose situation	Adjust clutch cable to make control wheel down and touch belt
Belt becomes tight, and tills powerlessly	Belt is too loose	Adjust the engine to make belt's loose situation meet the manual instruction
	Control wheel don't touch belt in tight situation	Adjust clutch cable to make control wheel up and touch belt
Gear isn't in the correct position	Don't fill steel ball, spring or steel ball appears not enough	Change
	Shift axis exists problems	Change
Gear leaves the correct position	Steel balls appear not enough, spring is powerless	Change spring
There is oil leakage of gear box or tilling box	Oil leaks from seal	Change
	Near bolts or nuts loosen	Screw tightly or change
	The combined facet of the aluminum gasket and box isn't flat	Burnish flatly, or use sealant
	Don't add paper gasket	Add paper gasket
	Added oil over the level	Release oil to the level
Incorrect sound of gear box or tilling box	Changed gear is not in the correct position	Make changed gear is in the correct position
	Chain broke	Change
	Gear interferes gear box each other	Change gear box, tilling box or gear
	Don't add oil	Add oil
Engine support broke	Welding problem	Weld again or change
Rotary blades(Ditching blades) rub tilling box Rotary blades are broken	Don't put pin and clip	Add pin and clip
	Rotary blades problem	Change
Rotary blades(Ditching blades) Don't work	Assembling direction of rotary blades is wrong	All blades face to the forward direction of the machine
	Assembling of left or right rotary blades is same	Change one of the both
There is dark smoke from engine	Engine head is covered by oil.	Work longer, the combined oil is burned. Decrease tilling angle of inclination of the tiller.

7. Easily-damaged parts of rotary tiller

Number	Name	Assy.
1	Clutch cable	Handle frame assy.
2	Throttle cable	Handle frame assy.
3	Throttle switch	Handle frame assy.
4	Rubber handlebar	Handle frame assy.
5	Rubber sleeve	Changing gear handlebar, locking handlebar
6	Fork shaft seal	Changing gear handlebar, locking handlebar
7	Oil plug	Gear box and tilling box components
8	Rubber plate	Gear box and tilling box components
9	Engine vulnerable parts	Refer to engine manual and catalogue

8. Accessories list

Number	Name	Quantity	Unit	Usage	Remark
1	3 pieces,2+1 groups, rotary tilling blades	1	Set	Rotary tilling in dry land	Standard accessories
2	5 pieces, one group, ditching blades	1	Set	Ditching	
3	Rear wheel	1	Set	Support to walk and for working	
4	Drag bar	1	Piece	Use in hard soil and gravel stone land	
5	Front wheel	1	Set	For walking or working	
6	4 pieces, one group, ditching blade	1	Set	Ditching	Optional accessories
7	6 pieces, one group, ditching blade	1	Set	Ditching	
8	Iron wheel	1	Set	Use in soft land when dragging power is increased	
9	Weeding wheel	1	Set	Weed, superficially till	
10	Two facial plough	1	Piece	Ditch or hill up	

