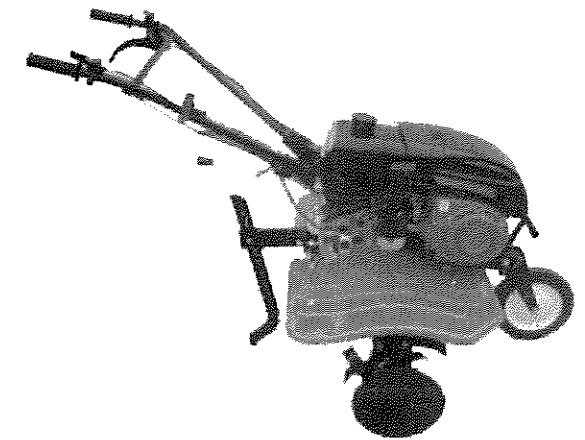


1WG3.8-95FQ-D

Mini-tiller Operation and Maintenance Manual



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IMPORTANT


Please read this manual thoroughly before operating this micro power tillers (hereinafter referred to as "power tiller").


The manufacturer reserves the right to modify this manual without notice. The manufacturer shall assume no liability for incorrect information contained in this manual.


Copying of any contents of this manual are forbidden without written approval.

Some important information in this manual will be indicated in the following way. The users should pay special attention to these instructions.

 **Danger** This indicates a hazardous situation, which, if not avoided, will result in death or serious injury

 **Warning** This indicates a hazardous situation, which, if not avoided, could result in death or serious injury

 **Caution** This indicates a hazardous situation, which, if not avoided, could result in death or serious injury

 **Warning**

- This manual is an integral part of the power tiller. When the power tiller is transferred to others, this manual should be handed over to the new owner. The illustrations contained in the manual are only valid for one model and may be for reference for other models.

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Name and Specification of Engine Parts		Name and Specification of Machine Parts	
Valve washer	Throttle control cable	Various bearings	
Oil tank strainer	Clutch cable	Rubber handle	
Valve guide seal		Various clutch shift forks	

Chapter XIV List of Common Wearing Parts

Table 11

Name and Specification of Engine Parts		Name and Specification of Machine Parts	
Engine oil filter	Inlet valve and exhaust valve	Oil seal, 12X22X6	Clutch handle
Gasoline filter	Cylinder head assembly	Oil seal, 15X35X7	
Air filter assembly	Piston ring	LH & RH rotating tine for dry land	
Spark plug	Piston	Resistance rod for dry land	
Start plate	Connecting rod bushing	Resistance rod connecting base	
Disc spring	Connecting rod bolts (including nuts and washers)	Resistance rod for paddy fields	
Torsional spring		LH&RH bent blade for wet land	
Cylinder head gasket	Radiation shield casing	Throttle switch assembly	
Crankcase head gasket	Valve spring	Oil seal for various end covers	
Plain bearing	Carburetor	Various steel-paper gasket	

Chapter I General Description

Dear users, thanks for your selection of our company's product, which brings a close relationship between us from now on! Before using this product, please read and understand every section of this manual carefully to ensure that your agricultural production can proceed as usual and that our product can operate properly and to ensure the safety of the nearby people's life and properties and yours! In case of any question, please contact the after-sales service department of your local distributor. We will serve you with all our heart.

1WG3.8-95FQ-D series power tillers are in possession of following features:

- ★ Able to achieve rotary tillage for paddy field, unland field, vegetable land and greenhouse;
- ★ This type of power tiller is compact and flexible and easy and labor-saving in operation;

Dear users, this Manual may have some differences from the actual conditions with the continuous improvement and upgrading of this product and we are hoping for your understanding!

This product has been designed and manufactured in accordance with the following standards:

- GB 10395. 1-2001 Tractors and Machinery for Agriculture and Forestry--Technical Means for Ensuring Safety-Part 1: General
- GB 10395. 10-2006 Tractors and Machinery for Agriculture and Forestry--Technical Means for Ensuring Safety-Part 10: Walk-behind Powered Rotary Tillers
- GB 10396-2006 Tractors, Machinery for Agriculture and Forestry, Powered Lawn and Garden Equipment - Safety Signs and Hazard Pictorials - General Principles
- JB/T 10266. 1-2001 Specification of Power tillers
- JB/T 10266. 2-2001 Testing Method for Power tillers

The Manual is applicable to the model: 1WG3.8-95FQ-D.

Chapter II Safety Rules

1. Safety rules

- 1.1 Before using this machine, the operator shall carefully read this Manual and provide running-in, adjustment and maintenance according to the requirements described in this Manual.
- 1.2 Before using this machine, following items shall be considered:
- 1.2.1 Check the engine crankcase and the transmission case for oil leakage; check the engine crankcase and the transmission case for oil quantity and quality, timely supplement or replace it with new clean oil; check each lubricated part for proper lubrication.
- 1.2.2 During adding the fuel, it shall be noted that clean fuel shall be added into the fuel tank in the event that the combustion engine is stopped and that there is good ventilation in such a manner that the fuel isn't in contact with the hot surfaces, electrical elements or rotating parts. For the purpose of avoidance of overflow, don't add too much fuel; check the fuel for overflow or leakage. Before starting the machine, always remove fuel spillage (if any) and remount the oil tank cover and tighten it after the fuel is satisfactorily added. No smoke or fire is allowed at the fuel addition site, fuel storage site and working places to prevent fire hazard.
- 1.2.3 Check each fastening of the machine for proper tightening, each rotating part for looseness, collision or friction and jamming, and each rotating direction for consistence with the marked direction.
- 1.2.4 Check exposed rotating parts and moving parts for provision of reliable safety devices, safety marks and complete identifications.

Chapter XIII Warranty Period

Table 10

Description	Faults
Machine body, cylinder head, flywheel and cylinder sleeve	Crack, sand hole
Crankshaft, connecting rod, connecting rod bolts, piston pin, inlet valve, exhaust valve and valve stem	Breakage, resulting in engine damage
Engine mount, transmission case, and vertical arm base	Crack, breakage
Drive shafts in all stages and output shaft	Crack, breakage
Description	Warranty period
Power tiller (wear parts excluded)	1 year
Engine body, cylinder head, flywheel, transmission case and vertical arm base	1 year

II. Bearing Used

Table 9

Standard Number	Description	Size	Q'ty	Remarks
GB276-1994	Deep groove ball bearing	6002	2	Main shaft
GB276-1994	Deep groove ball bearing	6202	3	Left end of auxiliary shaft, right end of drive sprocket shaft, left end of main shaft
GB276-1994	Deep groove ball bearing	6203	1	Left end of drive sprocket shaft
GB276-1994	Deep groove ball bearing	6005	1	Right end of output shaft
GB276-1994	Deep groove ball bearing	6205	1	Left end of output shaft

- 1.2.5 Check the clutch for proper operation, and operating parts like the rotating tine and clutch for any cracks, deformation and excessive abrasion.
- 1.2.6 The trial run shall be carried out after all abnormalities (if any) are removed at the given speed without collision or friction, abnormal noise and obvious vibration and without over-speed operation. The safety-involved components shall be replaced according to the requirements in this manual or the instructions from a professional maintainer.
- 1.3 Never allow children, pregnant women and any person not trained for proper operation of the machine to operate the power tiller.
- 1.4 It is impermissible for the person who is drunk, ill or too tired to operate this machine.
- 1.5 The operator shall work with his/her clothes and cuffs tightened properly and the one with a long hair shall wear a protective hat.
- 1.6 While the machine is in operation, the parts affecting the safety and operation of the power tiller shall not be changed at discretion. It is not allowable to remove or shorten the protective cover at each part at discretion. The operator shall be concentrated on operation.
- 1.7 The power tiller can be started in the event that the safety is confirmed. After cold start, it is impermissible to carry out operation at large-load immediately, especially for the new machine or overhauled machine.
- 1.8 For the purpose of avoiding damages to the tine, the power tiller mounted with a tine shall not move on the cement or stone floor or gravel pile and the machine shall not collide with the hard objects like stone blocks during rotary tillage.
- 1.9 During operation, check each part for proper operation and noise and check these parts for proper connection without looseness. Once any abnormal noise is heard, power off the machine immediately and don't remove the fault while the machine is operating.

- 1.10 Tillage shall be carried out in such a manner as to prevent the power tiller from overturning.
- 1.11 When the distance between the operator's back and the boundary of field is not more than 2m, it is forbidden to use the reverse gear.
- 1.12 During application of reverse gear, firstly remove the damping bar and put into reverse.
- 1.13 Observe each part like the transmission case and combustion engine for any oil leakage during tillage. If any, power off the machine for inspection without open fire which may cause fire hazard for the purpose of removing faults timely so as to prevent environmental contamination which may affect the safety of foods.
- 1.14 Remove the unwanted grass and mud after the power is off and the machine is completely stopped. DO NOT remove the obstructions from the tine while the machine is operating or remove them with an iron rod.
- 1.15 After completing tillage, remove the attachments like mud, grass and oil stains from the power tiller.
- 1.16 To withdraw from the field, remove the tine and mount the Traveling wheel.
- 1.17 Check the bolts on the tine, bearing housing and other moving components for any looseness or damages at regular intervals.

Chapter XII Tools List

I. List of Machine Tools

Table 8

S/N	Description	Unit	Function
1	Rotary tilling wheel for cultivating paddy field	set	For paddy farming (optional)
2	Two-piece combined tines	set	For clayey wetland with much wed (optional)
3	Three-piece cultivating rotor	set	For well drained paddy fields (optional)
4	Four-piece tine for dry land	set	Wild land (optional)
5	Disc blade	set	For use with other tools (optional)
6	Tines for tibba	set	For tibba (optional)
7	Traveling wheel	set	For traveling (optional)

Phenomena	Cause	Troubleshooting Method
	※ Failure of lip oil seal on the main shaft	Reinforced seal A, B
Oil leakage from gear shifting shaft	Excessive abrasion of gear shifting shaft	Replace gear shifting shaft
	Lip oil seal of gear shifting shaft	Replace the lip oil seal 12×22×6
Oil leakage from input shaft	Failure of lip oil seal on the input shaft	Replace the lip oil seal 15×35×7
Case body leakage	Invisible loosening hole on the case body	Repair welding or apply primer to stop leakage
Oil leakage from bleed hole	Damage of aluminum washer at the bleed hole	Replace aluminum washer φ8×φ15×2
	Loosening of bolt	Tighten as per the requirement

IV. Other Failures and Troubleshooting

Table 7

Phenomena	Cause	Troubleshooting Method
Broken of rotary tine	Knocked into hard objects such as stone and brick during the operation	Replace, and avoid knocking into hard objects such as stone in the soil during the operation.
Broken of operation cable	Abrasion due to long-time operation	Replace

Chapter III Safety Warning

2.1 Training

- a) Read this operating and maintenance manual thoroughly. Become familiar with all operating mechanisms and correct methods of using the machine. Be aware of the method used to rapidly stop the machine and rapidly disengage the operating mechanisms.
- b) Never allow children to use the machine. Never allow adults who have not read the manual to use the machine.
- c) Keep persons out of your work area, especially children and pets.

2.2 Preparation

- a) Thoroughly check the area where you will use the machine, and clear the work area of any foreign object.
- b) Disengage all clutches and shift the tow vehicle into neutral before starting the engine.
- c) Do not operate the machine when not wearing suitable clothing. Wear shoes with non-slip treads to improve footings on slippery surfaces.
- d) Take care to handle fuel oil as it is flammable.
 - 1) Store fuel oil in suitable containers.
 - 2) Do not fill the gasoline tank with the engine running or at hot state.
 - 3) Fill the gasoline tank outdoors with extreme care. Do not fill the gasoline tank indoors.

- 4) Before starting the engine, secure the fuel tank caps and wipe up any spilled fuel.
- e) Never make any adjustment with the engine running (except for special adjustment recommended by the manufacturer).
- f) Always wear protective goggles or safety glasses when making any operation, such as preparation, operation and repair.

2.3 Operation

- a) Never place your hands or feet near and below the rotating parts.
- b) Exercise extreme caution when on or crossing stone pavement, walks or roads. Stay alert for hidden hazards or traffic and never carry people.
- c) Stop the engine and check the power tiller thoroughly for any damage when the power tiller strikes foreign objects. Repair the damaged parts before re-starting and manipulating the power tiller.
- d) Always observe ground conditions to avoid slipping or falling.
- e) If the machine should make an unusual vibration, shut off the engine immediately and investigate the causes. Vibration is generally a warning of trouble.
- f) Shut off the engine and then leave the operating positions, remove clogging from the tines and make a repair, adjustment or inspection.
- g) Never leave power tiller unattended with the engine running. If leaving the machine, take any possible safety precautions, such as disengaging the power output shaft, lower the additional devices, shifting the tow vehicle into neutral, shutting off the engine and withdrawing the key switch.

III. Faults and Troubleshooting of the Transmission Case

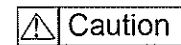
Table 6

Phenomena	Cause	Troubleshooting Method
Can't be properly shifted to low gear, high gear and neutral gear	※ The bolt of shift fork shaft is loosing, or the locking ball is seriously worn out;	Screw off the bolt of shift fork shaft and replace; replace the locking ball;
Can't be shifted to correct gear	The shift fork shaft is seriously worn out	Replace the shift fork shaft;
	※ Loosing or axial runout of input shaft	Replace the input shaft and bearing
	※ Failure of locating spring of the shift fork shaft	Replace
	Jamming during shifting due to the deformation of shift lever	Correct the shift lever or replace it
Gear noise too large	※ Deformation or bending of the shaft	Replace
	※ The side play of the gear exceeds the allowance due to excessive abrasion of the gear	Replace the gear
	※ Chain elongated	Replace
Oil leakage from output shaft	※ The fitting between the shaft and the case body is not tight	Replace
	※ Excessive abrasion of main shaft bearing	Main shaft and bearing

Chapter XI Troubleshooting

I. For engine faults and troubleshooting, refer to the specific engine manual.

II. Tensioner Clutch Faults and Troubleshooting



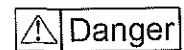
- The users should not disassemble the transmission case. Contact the manufacturer or distributor for the faults marked with ✖.

Table 5

Symptom	Possible Cause	Remedial Action
The tensioner can not be engaged or disengaged	The clutch lever malfunctions	Repair or replace
	The clutch cable is damaged	Replace
	The belt is improperly adjusted	Re-adjust or replace the belt
	The weld seam at tensioner support is defective	Repair or replace
	The tensioner support bolts are deformed or broken	Replace the tensioner support
Slippery (after pressing the clutch lever, the engine is running properly and the transmission case output shaft slowly rotates or does not rotate)	The return spring is defective	Replace
	Belt fatigue failure	Replace
	✖The chains are broken or come off	Replace the chain
	The clutch cable is improperly adjusted	Re-adjust the clutch cable

- h) Before making adjustment, repair or cleaning, shut off the engine and ensure that all moving parts are at standstill.
- i) Don not run the engine indoors as the exhaust from the engine is harmful.
- j) Never operate the power tiller without the guard, shields and other protective devices in place.
- k) Don not operate the power tiller near children or pets.
- l) Don not overload the engine due to a excessive tilling depth and high speed.
- m) Don not run the machine at high speed on slippery road. Observe the situation behind you and exercise caution when moving backward.
- n) Never allow other persons to approach the running machine.
- o) Only use the additional devices and equipments approved by the power tiller manufacturer.
- p) The tiller has no lighting system. Do not operate the power tiller where the objects obscure your vision or the light is poor.
- q) Use care to cultivate on hard soil as the tines may be hooked by soil and therefore push the power tiller forward. In case this situation occurs, release the handle and don not attempt to control the machine.

2.4 Slope operation



- a) It is necessary to run the tow vehicle on slopes, uneven or curved roads at low speed as it can tip over.
- b) Exercise extreme caution and prevent the power tiller from tipping-over when changing direction on slopes.
- c) Shifting of the tow vehicle on slopes is strictly forbidden, otherwise, it may tip over.
- d) Never operate on slopes greater than 10 degrees. The maximum safety angle is only for reference. Determine the maximum slope angle depending on the actual situation of your machines during use. In order to ensure the safety of you and others, operate the power tiller on slopes with extreme care.

2.5 Repair and storage

- a) Keep the machine, additional devices and equipments (including the battery) in safe operating state. Before storage, remove the battery to prevent icing if possible. Charge the battery properly when necessary.
- b) Check the shear bolts, engine mounting bolts and other bolts for secure tightness at an interval to ensure that the machine is in safe and good conditions.
- c) Store the machine indoors and away from fire sources. Allow the engine to cool completely before storing it indoors.
- d) If it is expected to store the power tiller for a long time, always keep the operating manual in safe position as an important document.

IV. Long-term Storage of Power Tiller

If it is expected to store the power tiller for a long time, take the following precautions to preserve the machine:

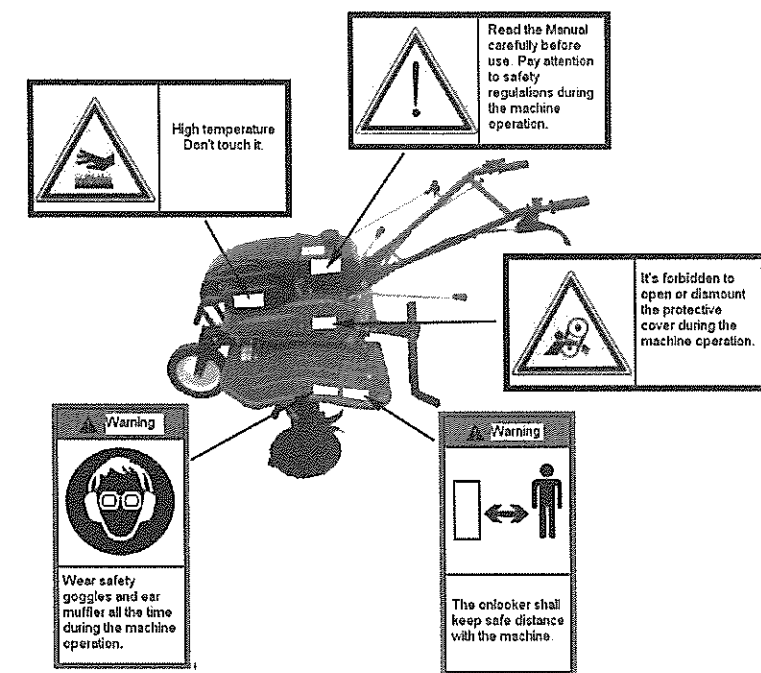
1. Store the gasoline engine according to the gasoline engine manual.
2. Clean dirt and debris from the machine.
3. Drain the lubricating oil from the transmission case and fill new oil.
4. Apply rust preventative oil on all surfaces which are not painted.
5. Store the machine in a well-ventilated and dry indoor area
6. Keep the tools, product certificate and operating manual supplied with the machine in a safe place.

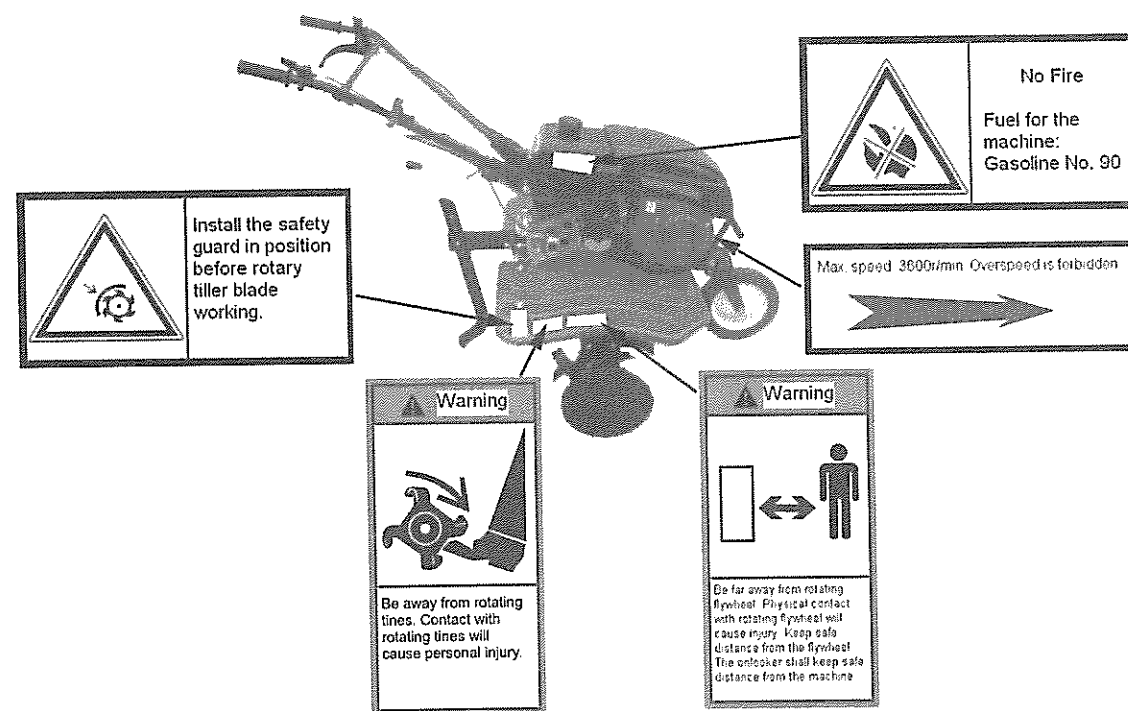
III. Maintenance Checklist for Power Tiller (the items marked with O are maintenance activities that should be performed)

Table 4

Maintenance activity	Service interval					
	Everyday	Every 8 operating hours (with half load)	After the 1st month or 20 hrs	After the 3rd month or 150 hrs	Every year or 1,000 hrs	Every 2 years or 2,000 hrs
Check and tighten nuts and bolts	O					
Check and fill engine oil	O					
Check the air filter	O		O			
Clean and replace engine oil		O (the 1st time)	O (the 2nd time)	O (the 3rd time and subsequently)		
Check for oil leak	O					
Remove dirt, wed, oil stain and clean parts	O					
Troubleshooting	O					
Adjust controls	O					
Gears and bearings					O	

Chapter IV Safety Signs and Positions





- 1.3 Check that the oil level in the engine and transmission case is between the upper and lower limit of the dipstick;
- 1.4 Clear the machine and parts of dirt, soil, weeds and oil stain in a timely manner;
- 1.5 Fill in the cultivation log.
2. **First Class Maintenance (every 150 operating hours)**
 - 2.1 Complete all maintenance items described in "Maintenance Per Shift";
 - 2.2 Clean the transmission case and replace engine oil;
 - 2.3 Check and commission the clutch and gear shifting system;
 - 2.4 Check for belt wear, and replace it when necessary
3. **Second Class Maintenance (every 800 operating hours)**
 - 3.1 Complete all maintenance items described in "First Class Maintenance";
 - 3.2 Check all gears and bearings, replace them with new ones if seriously worn.
 - 3.3 Check other machine parts, such as rotating tines or mounting bolts, etc, and replace them with new ones if damaged.
4. **Technical Maintenance (every 1,500 to 2,000 operating hours)**
 - 4.1 The local authorized service station disassembles the machine and cleans and inspects parts. Seriously-worn parts must be replaced or repaired on a case by case basis.
 - 4.2 Contact professional maintenance personnel so that they check the gears and various parts inside the transmission case;
5. For engine maintenance, please refer to the specific engine manual.

Chapter X Maintenance Procedures

During operation, the machine will inevitably experience bolt looseness and part wear due to running and friction loss and load variation. These will impair normal system state and result in improper fit between parts, engine power decrease, more fuel consumption, part malfunction, more power tiller faults and even seriously influence normal use of the power tiller. In order to minimize the above problems, the users must perform maintenance periodically to ensure the best performance and long life of your power tiller.

I. Running-in

1. For engine running-in, please refer to the engine manual;
2. For new or overhauled power tiller, run the machine for one hour under no load conditions and for five hours under light load condition. Immediately and completely drain lubricating oil from the transmission case and engine crankcase while the engine is still hot, fill with appropriate amount of clean diesel oil, run the machine for 3 to 5 minutes at idle speed, under no load condition and with the gear in 2 positions, and then drain diesel oil completely. Finally fill engine oil and perform running-in for 4 hours. After the running-in is complete, your power tiller is ready for normal cultivation.

II. Regular Maintenance of Power Tiller

1. **Maintenance per shift (before and after each shift)**
 - 1.1 Listen to and observe various machine parts for any abnormal condition (such as abnormal sound, overheating and loose screws, etc);
 - 1.2 Check the engine and transmission case for oil leak;

Chapter V Main Specification and Requirement for Accessory Equipments

I. Main Specification

Table 1

Item		Rig Model	1WG3.8-95FQ-D	
Corresponding power	Engine Model		168FB gasoline engine	
	Nominal power, kW		3.8	
	Rated speed, r/min		3600	
Corresponding parameters of the tiller	External dimension (L x W x H) mm		1380×950×970	
	Structural mass, kg		63	
	Driving type (in the transmission case)		Chain drive	
	Connection mode (from output shaft to tine)		Directly connected	
	Tine roll	Designed speed, r/min		90
		Max. radius of gyration, mm		170
		Total tines installed, pieces		24
	Model of rotating tine		Tine of type II	
	Tiling depth, cm		≥10	
	Width, cm		95	
	Operating speed, m/s		0.1~0.3	
Productivity per pure hour, hm ² /(h·m)		≥0.04		
Main fuel consumption, kg/hm ²		≤30		

II. Specification of auxiliary equipments

- 1 Engine: 168F/P-B gasoline engine;
- 2 Engine power: 3.8kW;
- 3 Drive type: Gear +chain;
- 4 Traveling mode: Shaft-driven ϕ 250 herringbone tyre
- 5 Operating mode: tine driving;
- 6 Starting mode: starting by pulling cable
- 7 Control mode: manual adjustment
- 8 Guard: protective board (fender) and belt guard.

depth in paddy fields is 25 to 45 cm, use the tines intended for rotary tilling paddy fields.

3. Choose the types of tilling tines according to local terrain and soil conditions because the terrain and soil differ greatly in various areas. If you have any doubt, consult the local distributors

II. Precaution for Use of the Power Tiller

1. During use, observe the operating conditions and noise of various parts and check for proper connection at various parts. Loose connection is not allowed. Stop the machine and eliminate the troubles if any abnormal condition is found;
2. It is not allowed that the machine is heavily loaded immediately after starting a cold engine, especially new machines or overhauled machines;
3. Check the oil level in the engine and transmission case from time to time. Replenish engine oil if necessary;
4. The cooling of engine by spraying water is strictly forbidden;
5. During cultivation, prevent the power tiller from tipping-over;
6. It is strictly forbidden to run the power tiller with rotating tines on sand beach or stones as this will result in damage to tines;
7. After the use, remove soil, weed and oil stains from the power tiller and keep the entire machine clean.
8. Clean the cavernous body or wire screen inside the filter from time to time, and replace engine oil.
9. Don not approach the rotating parts when the machine is running.

Chapter IX Scope of Application

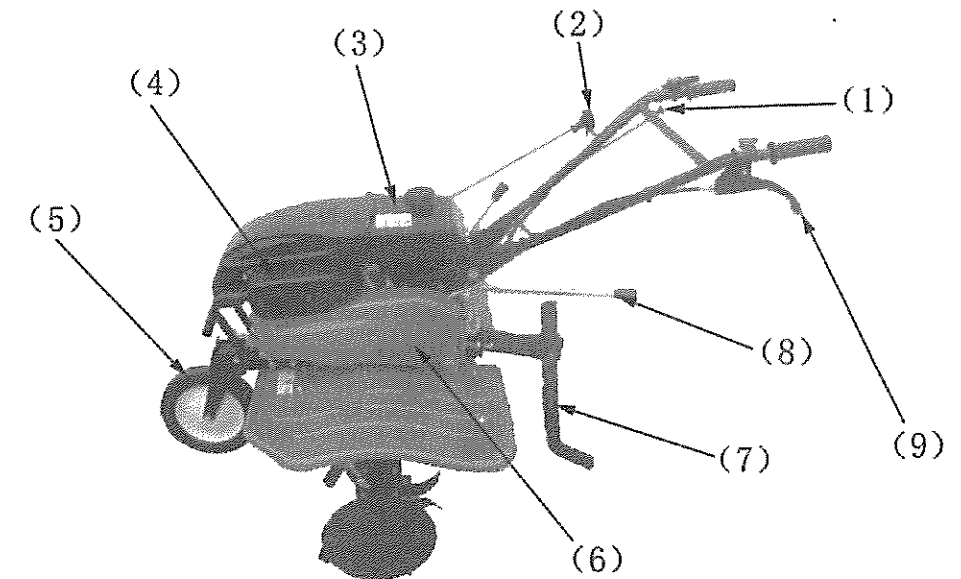
I. Rotary Tillage

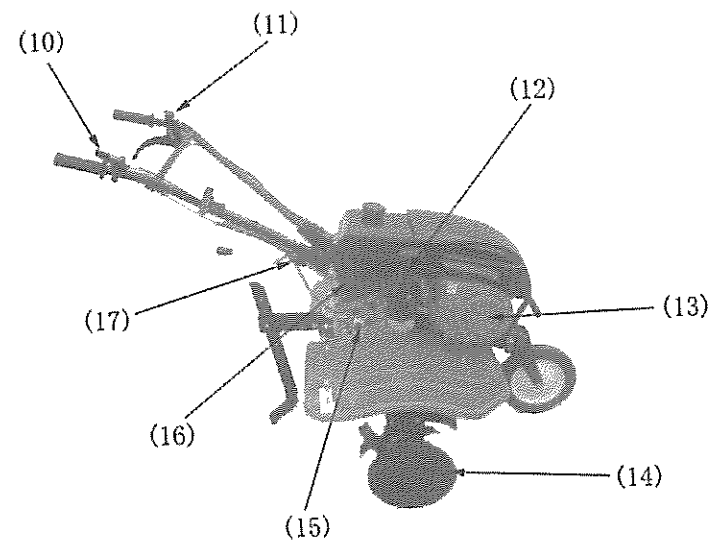
Table 3

Type of Rotating Tine Assembly	4 sets			Combined Tines	
	2 tines	3 tines	4 tines	7 tines	8 tines
Number of Rotating Tines	2X8	3X8	4X8	7X2	8X2
Width of Rotary Tillage (cm)	95			95	
Field conditions and quality of soil	Paddy fields, deficient in water, clayey soil	Hard soil	Dry soil, unland field, sandy soil, wild land	Wet fallow land and waterlogged paddy field	Dry pot gardens

1. If rotary tillage is required, remove the wheel, slide both ends of the hexagonal output shafts of the tow vehicle through the hexagonal pipe of rotating tilling devices, and axially secure them with 8X43 clevis pins. Notes: the rotating tines consist of left and right tine assemblies. The rotating tines should be mounted in such way that the tine edge face forward when the power tiller moves forward. If the rotating tines are used, it is necessary to mount left and right guards (fenders) to prevent rotating tines from causing personal injury. The depth of rotary tillage may be adjusted by changing the height and angle of the resistance rods.
2. Rotary tillage in paddy fields: When the mud depth in paddy fields is less than 25cm, cultivate paddy fields directly using the rotating tine assembly for wet land. When the mud

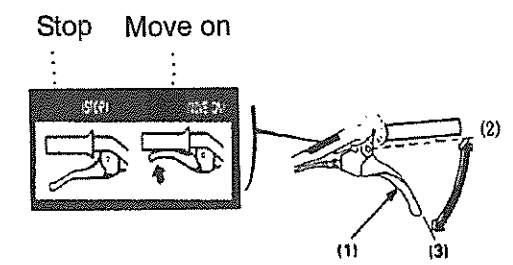
Chapter VI Machine Structure Schematics





- | | | | |
|--------------------------|------------------------------------|----------------------------------------|--------------------------|
| (1) Choke valve switch; | (2) Handlebar of manual starter; | (3) Fuel tank; | (4) Muffler; |
| (5) Front wheel; | (6) Belt guard; | (7) Resistance tines for deep plowing; | |
| (8) Gear shifting lever; | (9) Clutch lever; | (10) Throttle switch; | (11) Engine Stop switch; |
| (12) Air filter; | (13) Manual starter; | (14) Tine (tyre); | (15) Oil fill plug; |
| (16) Nameplate; | (17) Handlebar adjustment assembly | | |

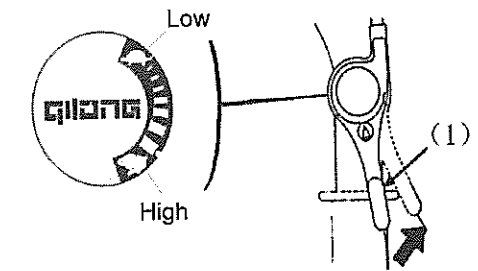
Fig. 1



(1) Clutch lever; (2) Engaged; (3) Disengaged

Figure 23

- b. Push the throttle control lever to the TURTLE position. (see Figure 24)

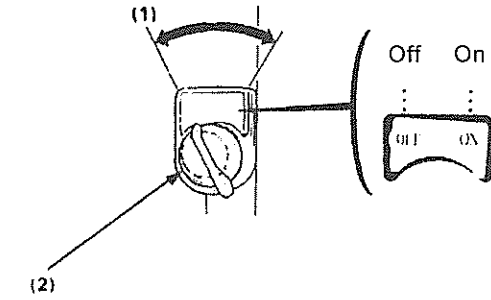


(1) Throttle control lever

Figure 24

IV. Shutdown

1. Emergency stop: turn the engine STOP switch to the OFF position. (see Figure 22).



(1) Off position of stop switch; (2) Engine STOP switch

Figure 22

2. Normal stop
 - a. Release the clutch lever and push the gear shifting lever to the neutral position as shown in Fig. 23.

Chapter VII Installation and Adjustment

I. Unpacking and Assembling the Machine

1. Remove the machine body from the packing and take care to ensure safety.

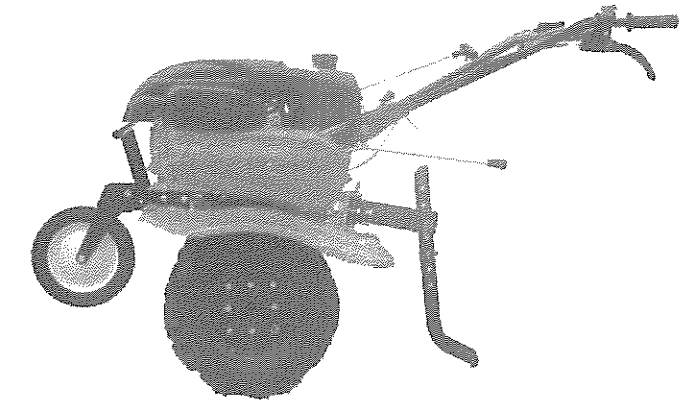


Fig. 2

2. Place the machine on even ground and keep it upright.
3. Tyre mounting: Mount the two tyres at both ends of the hexagonal output shaft respectively and have one 8×43 sized pin pass through the $\phi 9.5$ connecting holes on the left and right shafts respectively and insert Clamp spring B on the pin against return;

4. Mounting of the trailer: Mount the trailer on the hing mount and connect it using the lifting eye pin, insert Clamp spring C and penetrate the resistance rod into the square groove of connecting seat, and then place the 8×40 pin with Clamp spring B being inserted on it against return.
5. Mounting of the handlebar assembly: Have the two fluted discs at the forkhead of the front end of the handlebar assembly aligned with the fluted discs on the vertical arm and adjust the upper and lower positions of the direction handlebar; connect and tighten the handlebar assembly using the self-contained M16×140 bolts and 16 sized flat gasket.
6. Assembly of splash guard (fender): Install the fender's front support on the engine support, and lock it with M10×60 and M10 nuts. Install the fender's rear support into the mounting holes at the bottom of hinge rack with two M8×15 nuts and two M8 nuts.

II. Adjusting the Clutch Cable

Test the cable tension as shown in the figure. Free movement range: 3 to 8mm (0.1 to 0.3in). If the free movement range is incorrect, loosen the locknuts and adjust the adjusting screws if necessary. See Fig. 3.

Slightly press the handlebar downward so that the front end of the machine is raised by 6 to 8 degrees. In order to obtain the most efficient tillage, operate the machine at the angle shown in Figure 21.

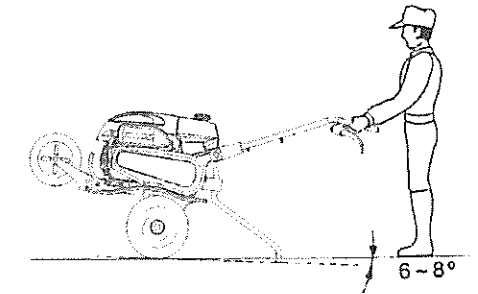



Figure 21

Caution


- Don not use the tines with a radius of gyration greater than 150mm.
- Anyone may be injured if operating the machine incorrectly.
- Stop the engine immediately when the rotating tines are clogged by sediment or other foreign objects. Wear protective gloves and clear any obstruction in safe areas.
- In order to prevent damage to the power tiller, check the machine for any damage or other problems after each use.

7.3 Shift to reverse gear

- 1) Release the clutch handle of the tensioner from your left hand so that the tensioner clutch can be disengaged.
- 2) Shift the shift lever to reverse gear, feel whether it has been shifted to correct position, and then hold the right handle with your right hand.
- 3) Slowly engage the clutch handle of the tensioner with your left hand, so as to engage the tensioner clutch. In this way the power tiller will be running backwards in low speed.

 **Warning**

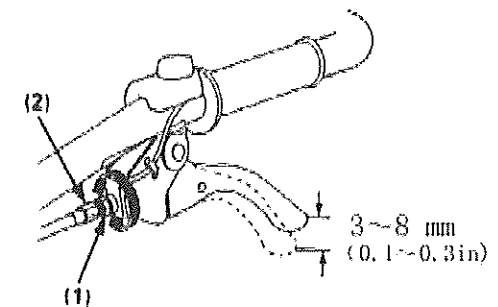
- It is necessary to operate the power tiller slowly by moving the throttle to the SLOW position while using reverse gears. Observe whether it is flat or wide behind you, otherwise, personal injury could occur.

 **Caution**

- Prior to any gear shifting during the moving on of the power tiller, stop it through decelerating and disengaging the tensioner clutch.

8. When operating the machine, adjust the handlebar to such height to operate the machine easily. (It is recommended that the handlebar height be equal to the one of your waist during tilling). Press the handlebar downward if the power tiller moves rapidly forward during tilling. Move the handlebar leftward and rightward if the machine does not move forward.

Normal Operating Angle



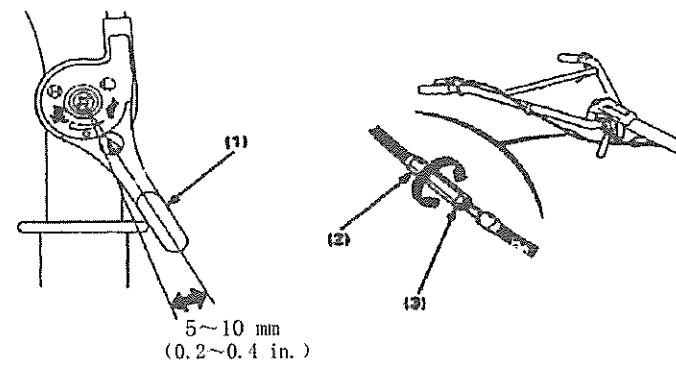
(1) Locknut; (2) Adjusting screw

Fig. 3

After adjustment, screw the locknut down. Then start up the engine to check the clutch handle for appropriate operation.

III. Adjusting the Throttle Cable

Test the tension of the throttle cable by using the same method as the one for the clutch cable. Free movement range: 5 to 10mm (0.2 to 0.4 in). Loosen the lock nuts and adjust the adjusting screws if necessary. See Fig. 4.



(1) Throttle control lever; (2) Adjusting screws; (3) Lock nuts

Fig. 4

IV. Adjusting the Belt Tension

- 1) The standard belt tension should be 60 to 65 mm (2.4 to 2.5 in) while you grasp the clutch lever and the tensioner tensions the belt. See Fig. 5.
- 2) If necessary to adjust the belt tension, loosen four screws mounting the engine and screws mounting the connecting plate. Move them forward or backward so that the belt is suitably tensioned. See Fig. 6.

Caution

- Please tightly hold the clutch handle and move the power tiller slightly to readjust the gear position in case the shift lever hasn't been shifted to the position you want.

7.1

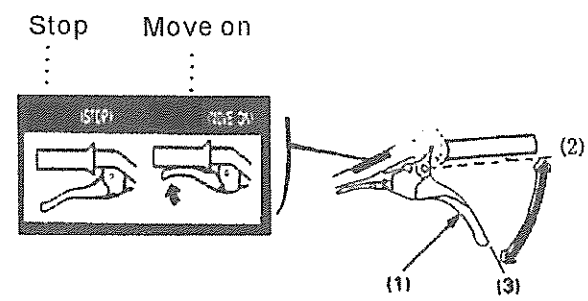
Shift to low gear

- 1) Release the clutch handle of the tensioner from your left hand to disengage the tensioner clutch.
- 2) Shift the shift lever to low gear with your right hand, feel whether it has been switched to correct position, and then hold the right handle with your right hand.
- 3) Slowly engage the clutch handle of the tensioner with your left hand, so as to engage the tensioner clutch. In this way the power tiller can be running in low speed.
- 4) Properly accelerate with your right hand, and then the power tiller will be running in low speed.

7.2

Shift to high gear

- 1) Release the clutch handle of the tensioner from your left hand so that the tensioner clutch can be disengaged.
- 2) Shift the shift lever to high gear, feel whether it has been shifted to correct position, and then hold the right handle with your right hand.
- 3) Slowly engage the clutch handle of the tensioner with your left hand, so as to engage the tensioner clutch. In this way the power tiller can be running in high speed.
- 4) Properly accelerate with your right hand, and the power tiller will be running in high gear speed.



(1) Clutch lever; (2) Engaged; (3) Disengaged

Figure 19

7. Gear selection

Please operate the shift lever as per the indication shown on the gear indication stand (see Figure 20).

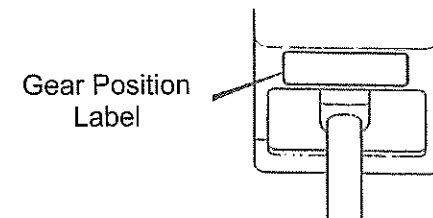
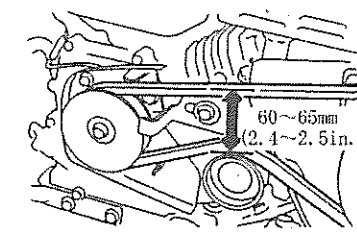


Figure 20



(1) Mounting screws; (2) Screws securing the connecting plate

Fig. 5

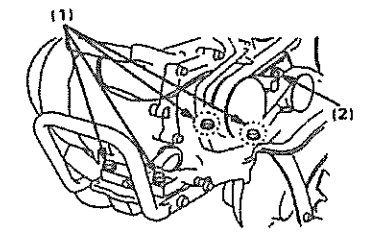
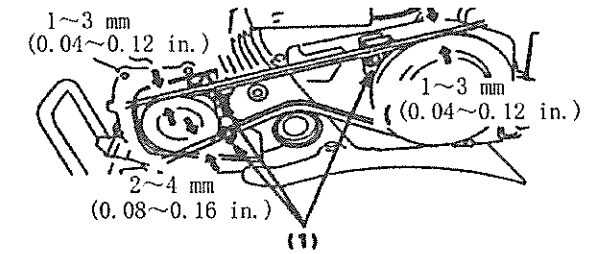


Fig. 6

- 3) Loosen the belt hanger screws. Firmly grasp the clutch lever and adjust the distance between the belt hanger and belt as shown in the figure. See Fig. 7.



(1) Belt hanger

Fig. 7

Chapter VIII Method of Operation

I. Inspection Prior to Operation

The preparatory works is important and will directly concern:

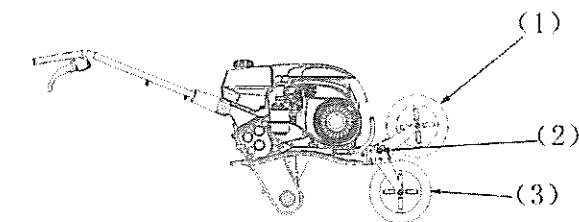
- Whether the power tiller can efficiently operate or not;
- Whether you can operate the power tiller conveniently and safely or not;
- Whether the power tiller can keep a good operating conditions;

In order to ensure satisfactory operation of the power tiller, make preparation as required every time you use the power tiller.

1. Check each connecting bolt for looseness and tighten them with their specified torque listed in Table 3. (Tightening torque of bolts and nuts for the engine are detailed in the engine manual.)

Table 2

Name	Torque (N.M)
Fixing bolt between engine support and engine	35~40
Engine support and transmission case	35~40
Fixing bolt of transmission case body	10~12
Fixing bolt between transmission case and vertical arm seat	35~40
Fixing bolt between belt pulley and shaft	10.6~15
Fixing bolt between transmission case and towing body	50~60
Front handrail and engine support	10~12



(1) Position of the front wheel when using the machine in fields; (2) Pins; (3) Position of the front wheel when moving the machine on roads

Figure 18

6. Operating the Clutch

The engagement and disengagement of the clutch can control engine power output.

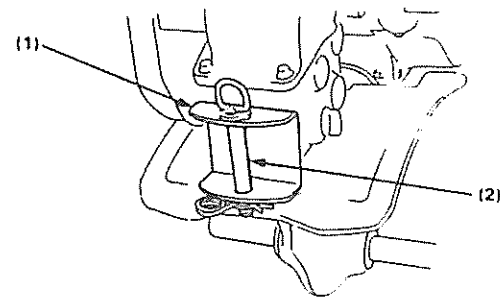
When you grasp the clutch lever, the clutch will be engaged, the power will be output and the tines will begin rotating.

When you release the clutch lever, the clutch will be disengaged, the power will not be output and the tines will stop rotating. (see Figure 19).

Caution

- Reduce engine speed before operating the clutch.

attach the tilling parts (resistance tines for deep plowing, rakes and colter boots) chosen using tine connecting bases, adjust their height and then insert the shaft pins. (see Figure 17).



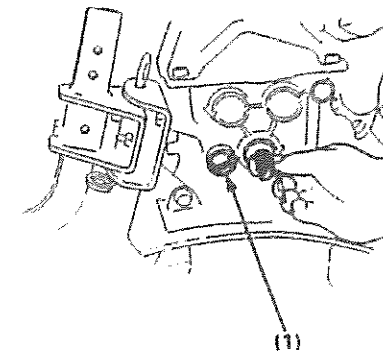
(1) Hinge mount; (2) Shaft pin with ring

Figure 17

5. Adjusting the Front Wheel

- 1). When moving the power tiller on roads
Remove the pins, lower the front wheel and then secure the front wheel to the rear holes in the connecting rods using the pins. When you move the power tiller, raise the handlebar to set down the front wheel.
- 2). When using the power tiller in fields
Remove the pins, raise the wheel and then insert the pins. (see Figure 18).

2. Check each handlebar (throttle, clutch, shift lever) of the control system for flexible and proper action. If not, remove the fault.
3. Put the transmission case' shift lever at the neutral position.
4. Oiling
 - 4.1 Inject SEA10-40 4-stroke gasoline engine lubricating oil into the crankcase of gasoline engine.
 - 4.2 The lubricating oil No. 20 shall be added into the transmission case. Place the entire machine vertically and then inject the oil through the oil hole at the rear of the transmission case. Place the machine horizontally and then check the oil level which shall be flush with the center position of the second hole under the oil hole.



(1) Oil fill hole

Fig. 8

5. Inspection of air filter

Remove dirt and foreign substances from the air filter. See Fig. 9.

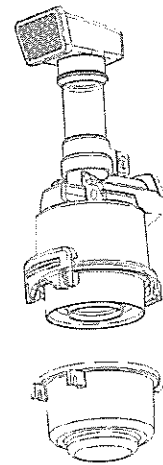



Fig. 9

 Caution

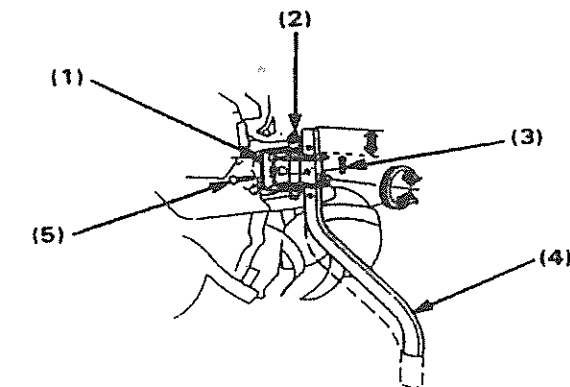
- The machine is shipped without engine oil in the air filter. Before initially starting the machine, you must fill the air filter with engine oil until the oil reaches the scale line, soak the foam filter element in clean engine oil, then squeeze excessive oil from the

3. Adjusting the Tilling Depth

Install the tilling parts in hinge mount using the hinge mount pins.

Adjust the tilling depth using the following methods:

Remove the pins (3) and (5). Loosen the bolts securing the connecting rod and move the tines upward and downward to the desired position. (see Figure 16).



(1) Hinge mount; (2) Shaft pin with ring; (3) Cotter pin; (4) Tines; (5) Shaft pin

Figure 16

4. Using the Hinge Mount

Install the tilling parts in hinge mount using the shaft pins with ring. Remove the shaft pin,

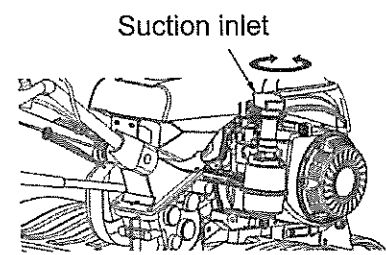


Figure 14

2. Adjusting the Handle Height

Caution

• Before adjusting the handle, place the machine on firm and even ground in order to prevent accidental tipping-over. Release the adjusting handle, adjust the height of the handle up and down to a proper position, and then tighten the adjuster (see Figure 15).

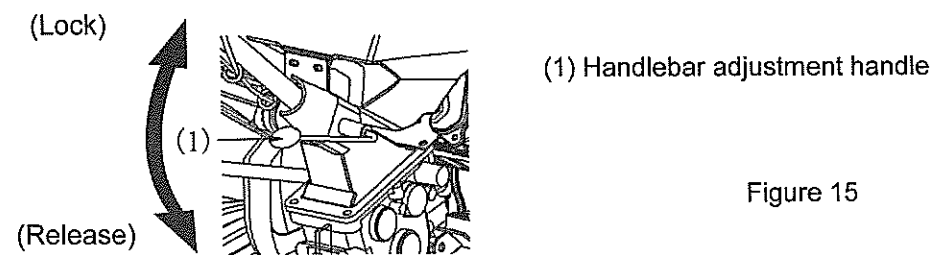


Figure 15

element, and re-install the filter element. Now, you may start up the machine.

- Clean the foam element of air filter in warm water with soap, and then dry it by airing. Or clean it with the solvent of high ignition point and dry it by airing. Soak the element in clean oil, and squeeze excessive oil. Excessive oil in foam element will cause black smoke during initial startup of engine.

6. Gasoline No. 90 is applicable to 168FB gasoline engine of model 1WG3.8-95FQ-D.

Other specific requirements and technical parameters are detailed in the corresponding engine manual.

Notes: Open the oil tank cover to check the fuel level. If insufficient, inject clean fuel through the filling opening until the level reaches the red baffle in the filter screen instead of exceeding the mark.

7. Carry out preparations for starting according to the engine manual.

II. Startup

Caution

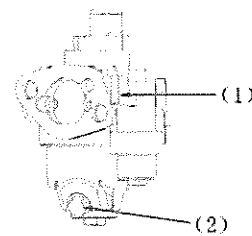
- When starting the engine, release the clutch and shift the gear shifting lever to the neutral position in order to prevent power tiller movement from out-of-control.

1. Turn the fuel shut-off valve to the ON position and check that the fuel drain knob is tightened or not. See Fig. 10.

2. Close the choke valve (see Figure 11).

Caution

- Please open the choke valve if the engine is excessively hot or the ambient temperature is high.



(1) Fuel shut-off valve; (2) Fuel drain knob

Figure 10

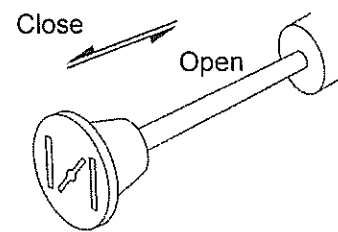
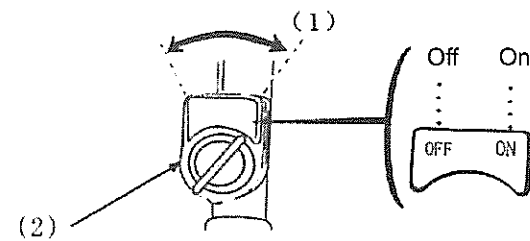


Figure 11

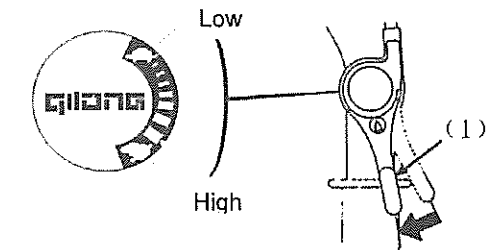
3. Turn the Engine OFF Switch to the ON position, see Fig. 14



(1) OPEN position;
(2) Engine OFF Switch

Figure 12

4. Push the throttle control lever to the "Rabbit (high speed)" position (see Figure 13).



(1) Throttle control lever

Figure 13

5. Grasp the starter handle and slowly pull until you feel resistance, then firmly pull it outwards.
6. Open the choke valve through slowly pushing it in when the engine becomes hot (see Figure 11).
7. The engine shall be run in idle speed (1500~2000 rpm) with no load for 2~3 minutes. Inspect whether the engine is running normally. Stop it to repair if any abnormal condition is found. The engine can be operated with load if it is running normally with no load.

III. Adjustment during the Operation

1. Adjusting the air filter

Turn the suction inlet of air filter to the side with less rubbish and dust according to the operation condition (see Figure 14).