

Important: (1) Normal maintenance and adjustments to the product is the responsibility customer. (2) Normal wear and tear is not covered under warranty. (3) Rubber/plastic parts and consumables such as blades, clutch and clutch-bell, spark-plugs, nylon line, air-filters, fuel-filters, oil seals etc. are not covered under the warranty.

No Warranty On Electrical Motor / Electrical Parts / Battery Etc.

Incidental / Consequential Loss: KisanKraft Limited or its manufacturers will not be liable for general damages, including bodily injuries, or for incidental or consequential damages including, but not limited to, loss of use, loss of profits, loss of production, expense of substitute equipment or other commercial loss or damage.

Limitation of Liability: This limited warranty is in lieu of all other express warranties, obligations, or liabilities. Any implied warranties, obligations or liabilities, including, but not limited to, any implied warranty of merchantability shall be limited in duration to the applicable warranty period. Any action for breach of any warranty hereunder, including, but not limited to, any implied warranty of merchantability must be brought within the applicable warranty period.

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Receipt is required for availing warranty services

Jurisdiction: All disputes are subject to Bangalore court's jurisdiction.

Our Products

- ◆Chainsaws◆Brush Cutters and Accessories◆Harvesters◆
- ◆Engines and Water Pumps◆Hand Tools◆Garden Tools ◆
- ◆Cultivators and Accessories◆Sprayers and Accessories◆
- ◆Transplanter and Post Hole Digger ◆ Milking Machines◆

This warranty is null & void, if you fail to register the warranty with KisanKraft by sending the KisanKraft Copy with dealer's stamp.

KisanKraft Limited (formerly known as KisanKraft Machine Tools P Ltd)

🌐: www.kisankraft.com

✉: info@kisankraft.com

☎: +91.80.22178200

Product	Agricultural Inter-Cultivator	KisanKraft Invoice Date	
Brand	KisanKraft	KisanKraft Invoice No.	
Model	☐ KK-IC-410P		
WARRANTY PERIOD	6 MONTHS	FOR THE SPECIFIED PERIOD FROM THE DATE OF SALE OR DELIVERY WHICHEVER IS EARLIER.	
Dealer's Invoice Date		Dealer's Invoice No.	
Buyer's Info (Name, Address, Phone, etc.):		Dealer's Stamp (Address, Phone, TIN, etc.):	
Buyer's Sign		Dealer's Sign	

What is covered: KisanKraft Limited and its manufacturers warrant this product to be free from defects in material or workmanship. All parts defective in material and workmanship are covered.

This warranty will only cover defects arising under normal usage.

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- (1) Operation of product with incorrect fuel or lubricants, (2) Incorrect usage of machine or misuse, (3) Lack of maintenance, (4) Negligence, (5) Accident or physical damage, (6) Repairs made by unauthorized parties and/or with unauthorized parts, (7) Improper set up, adjustments, tampering or altered products.

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KisanKraft Machine Tools Private Limited

Customer Care Phone: 080.2233.0318, Email: kisankraft@gmail.com

KisanKraft®

Warranty Certificate
(KISANKRAFT COPY)

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Wide Range of Products for Every Need



For more information give **MISSED CALL: 07676065555**



Many of our products have BIS: ISI certification.



User Manual



Note: Pictures shown in this manual are only for illustration purposes.

KisanKraft Limited

(Formerly known as KisanKraft Machine Tools P Ltd)

Sri Huchhanna Tower, #4, 1st Main, 7-A Cross, Maruthi Layout,
Dasarahalli, HAF Post, Hebbal, Bangalore 560024, Karnataka, INDIA

- ♦ Bangalore (HO) ♦ Ahmedabad ♦ Bhopal ♦ Bhubaneswar ♦ Coimbatore ♦
- ♦ Jammu ♦ Guwahati ♦ Shimla ♦ Hinudpur ♦ Hubli ♦ Hyderabad ♦
- ♦ Jaipur ♦ Karnal ♦ Kolkata ♦ Lucknow ♦ Patna ♦ Pune ♦ Raipur ♦

KisanKraft has a large range of products to serve the farmers. A list of our products is given below:

<p>Brush Cutters and Accessories</p> <ul style="list-style-type: none"> Brush Cutter/Power Weeder Backpack Brush Cutter Tea Pruner Pole pruner with Engine Reaper Attachment Blades-Circular Blades (2 & 3 points) Baffle Nylon Rope Tap & Go <p>Chainsaws</p> <ul style="list-style-type: none"> Petrol Chainsaw Electric Chainsaw Chain Sharpening Machine <p>Engines and Water Pumps</p> <ul style="list-style-type: none"> Engine –Diesel-(Horizontal) Engine –Diesel(Vertical) Engine-Kerosene Water Pump with Petrol Engine Water Pump with Kerosene Engine Water Pump with Diesel Engine <p>Hand Tools</p> <ul style="list-style-type: none"> Secateurs Folding Saw Garden Rake Garden Shovel Hedge Shear Lopper Telescopic Hedge Shear Telescopic Lopping Shear Tree Pruner Telescopic Steel Pipe & Fruit Picker Bag Sheep Shear <p>Garden Tools</p> <ul style="list-style-type: none"> Electric Pressure Washer Hedge Trimmer Lawn Mower (Electric, Petrol & Manual) Leaf Blower 	<p>Cultivators and Accessories</p> <ul style="list-style-type: none"> Petrol and Diesel <p>Sprayers and Accessories</p> <ul style="list-style-type: none"> Battery Sprayer Portable Power Sprayer Trolley Sprayer Manual Knapsack Sprayer Manual Pressure Sprayer Rose Cans Hose Crimping Machine HTP Sprayer HTP Delivery Hose HTP Hose Reel HTP Stand HTP Gun / Lance(Brass Rod) Knapsack Power Sprayer Mister / Duster / Granuel Spreader HTP Sprayer Set with Diesel Engine HTP Sprayer Set with Kerosene Engine Fogging Machine <p>Milking Machine</p> <ul style="list-style-type: none"> Wood Shredder Fodder Ensiling Chaff Cutter Fodder Grinder Chaff Cutter Fodder Mini Chaff Cutter <p>Harvester</p> <ul style="list-style-type: none"> Maize Sheller Maize Sheller + Dehusker Maize Combine Harvester Onion Digger Carlotti Italy Tea Leaf Harvester Sugarcane Combine Harvester Sugarcane Leaf Stripper <p>Transplanter and Post Hole Digger</p> <ul style="list-style-type: none"> Paddy Transplanter (2 & 8 Rows) Transplanter-Vegetable & Tobacco Post Hole Digger(4" to 14" Augers)
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Technical Specification

	Model		KK-IC-410P				
Inter-Cultivator	Dimension(L×W×H)mm		1800×1350×800				
	Max tilling scope(mm)		1100				
	Tilling depth		150～300				
	Main running-in method		Machine grind-in				
	Rotating speed (r/min)	High auxiliary shift (H)	-1	0	1	0	2
			83	-	83	-	145
		Low auxiliary shift(L)	-1	0	1	0	2
			24	-	24	-	42
Productivity(m^2/h)		534-1200					
Engine	Engine type		OHV, Single-cylinder, vertical, forced air-cooling, 4-stroke,				
	Bore×stroke		77×58				
	Displacement(cc)		270				
	Max power kw(hp)/rpm		6.6(9)/3600				
	Starting system		Recoil start				
	Fuel tank capacity(L)		6.0				
	Fuel number		Unleaded 90#				
	Lube capacity(L)		1.1				
	Lube mode		SAE10W-30				
	Net weight		≤27				
	Dimension(L×W×H) mm		490×430×530				

Note:

1. FREE HEADLIGHT included.
2. Specifications are subject to change without prior notice

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Problem	Probable cause	Solution
Case oil leakage	Case has some small hidden hole	Welding or paint it

5. Other problems

Problem	Probable cause	Solution
Blades broken	Hitting a stone or something hard	Change the blades
Cable broken	Worn out	Change the cable

Try to start the engine according to the instructions given above. If the engine still does not start, take the Inter-cultivator to an authorized dealer.

Problem	Probable cause	Solution
Gears make big noise	Umbrella axe, reverse axle bend	Replace
	Gears worn out seriously	Change them
	Umbrella reverse axle can't fixed well	Fix them properly
Main shaft oil leak	Oil plug on main shaft invalid	Change the oil plug
Reverse axle leak oil	O-ring invalid	Change the O-rings
Clutch fork leak oil	O-ring invalid	Change the O-rings
Gear shift axle oil leak	O-ring invalid	Change the O-rings
Flange connection leak oil	Bolt is loose	Tighten the bolt
	Steel gasket broken	Change the gasket

4. Walking case has problem

Problem	Probable cause	Solution
Gear has big noise	Gears worn out or not assemble well	Change or assemble again
Gears block	Not assemble well	Assemble again
Over heat	Oil in case is little	Add oil
	Gears clearance too narrow	Assemble again
	Axle direction clearance is too small	Adjust the clearance
Transmission box connecting place leak oil	Connection bolts are loose	Tighten the bolts
Oil leak out	Gasket broken	Change the gasket
Output shaft sleeve outside leak oil	Oil seal broken	Change the oil seal
Output shaft sleeve inner hole leak oil	Sleeve broken	Change it
Drain hole leak oil	O ring broken	Change the O- rings
	Plug loosen	Tighten the plug

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Before Getting Started

Thank you for purchasing our Inter-cultivator.

- This manual can guide you to solve the problems when you are installing, manipulating and repairing the machine. With the continuous innovation and improvement of the products, the contents in the instruction manual may differ slightly from the actual situations, your understanding and pardon is highly appreciated. If you find some problems or have some good suggestions, please do not hesitate to contact your dealer.
- No part of this publication may be reproduced without written permission.
- This manual should be considered a permanent part of the cultivator and remain with it if it is resold.

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



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

Attention

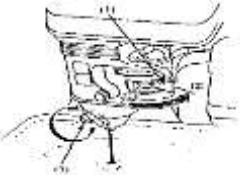
- When starting engine, please turn gear lever to neutral position.
- When the machine is working, please pay attention to safety!
- Be careful about the rotary blades, because they may hurt you!
- Fuel and lube oil must be clear.
- Before shifting the gear, you must disconnect the clutch. When holding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

Problem	Probable cause	Solution
	Spring disk can't work	Change the spring disk
	Friction disk can't contact with bearing end side	use adjusting gasket
	Clutch broken	Change the clutch
Skid	Spring worn out and can't work	Change the spring
	Fork axle can't turn well	Clean it
	Clutch cable is not fitting well	Adjust the cable properly

3. Transmission box has problem

Problem	Probable cause	Solution
Gears are not functioning properly	Screw and round but at the back of main shaft is loosen.	Assemble main shaft well, and tighten the bolt at back.
Can't turn to needed forward gear	Block worn out	Change
	Driving umbrella gear is loose	Tighten bolts and nuts
	Spring of main shaft invalid	Change
	Main shaft raid, screw of case back cover is loose	Tighten the screw
Reverse gear can't hang on	Reverse fork worn	Change
	Reverse cable can't work well	Adjust or change
	Reverse axle is loose	Tight bolt at back of reverse axle
	Reverse fork block	Clean until it turns well
Reverse gear don't return	Reverse axle is loose and is causing gear block	Tighten bolt at back of reverse axle
	Spring on reverse axle can't work	Change the spring
	Reverse axle bend	Change the reverse axle
Reverse axle is loose	Bolt at back of reverse axle loosen	Tight
	Reverse axle and gear box not fixed well	Fix them properly

Troubleshooting

Problem	Probable cause	Solution
When the engine does not start:	Insufficient fuel	Fill the fuel
	Fuel valve is not in the ON position	Bring the fuel valve to ON position
	Engine switch is not in ON position	Bring the engine switch to ON position
	Petrol is not reaching the carburetor	Loosen the drain knob with the fuel valve ON. Fuel should flow freely. Retighten drain knob
	 <p>(1) FUEL VALVE (2) ON (3) DRAIN KNOB</p>	
	There is no spark at the spark plug	<p>a. Remove the spark plug cap. Clean any dirt from around the spark plug base, and then remove the spark plug.</p> <p>b. Install the spark plug in the plug cap.</p> <p>c. Turn the engine switch on.</p> <p>d. Grounding the side electrode to any engine ground, pull the recoil starter to see if sparks jump across the gap.</p> <p>e. If there is not spark, replace the plug.</p>

2. Clutch has problem

Problem	Probable cause	Solution
Can't clutch	Clutch rod broken	Change or repair the clutch rod
	Clutch cable broken	Change the clutch cable
	Fork or gasket worn out	Change the gasket
	Fork pin bent or broken	Change
	Friction disk can't work	Change the friction disk

As the machine is always improved, photos or illustrations shown here may slightly vary with the actual machine

1. Training

- Carefully read this manual, fully know all the controlling functions and the proper operation, learn how to quickly stop and disport the cultivator.
- Children are not allowed to use cultivator. And adults who don't learn this manual are also not allowed to use this cultivator.
- Keep working area without other people, especially children and pets.

2. Preparation

- Check working area, and move away all the obstacles.
- Disengage all the clutches and place gear to neutral position before starting engine.
- Do not use cultivator without suitable clothes and skid-proof shoes.
- Carefully deal with fuel which is highly flammable.
 - Use suitable container to store fuel.
 - Do not add fuel when engine is working or hot.
 - Always add oil outdoor. Never fill oil indoors.
 - Wrest on fuel tank cap, and clean out spilling fuel.
- When engine is working, do not do any adjustment which are not allowed.
- Wearing eye protect glasses when preparation, working and servicing.

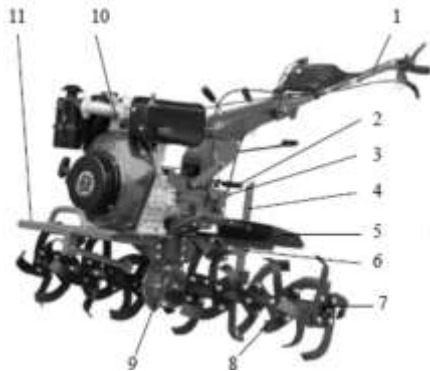
3. Operate

- Never use hand or foot to touch rotary blades when it is working
- When go across cobbled road, crosswalk, and road, pay more attention to the latent danger. Do not let people ride on the cultivator.
- If cultivator bumps something, stop to check. If it is broken, repair it and then start it.
- Be careful when working, do not fall or slip.
- If cultivator has abnormal noise, it means that it may have problems. Stop the cultivator to check reason.
- Stop engine before leaving, cleaning blades, servicing, adjusting and checking.
- When the cultivator is not in use, shift gear to the neutral gear and stop the engine.
- Before checking, cleaning and repairing the cultivator, stop engine and confirm if every part is in stop state.
- Do not use the cultivator indoors, because exhaust is poisonous.
- Do not use the cultivator when there isn't proper equipment.
- Keep away from children and pets.
- Do not let cultivator over load because of deep cultivating depth and fast speed.
- Do not let cultivator run on the slippery road. Be careful when moving in reverse direction.
- Do not let bystanders come near the cultivator.
- Additional equipment provided by manufacture only can be used.
- Do not use cultivator when it is dark.
- When work on the hard land, blades may hitch the land and push cultivator forward. In this condition, release the cultivator and let it go itself, do not try to control it. Or else, there will be danger.
- Do not work on the sharp slope.
- When using the cultivator on slope, be careful to not let cultivator fall.

4. Service and store

- Keep cultivator and its additional equipment in well working condition.
- Periodically check engine bolts and other bolts, make sure they are fixed well, to ensure cultivator in good working condition.
- Cultivator should be stored indoor and away from fire. Stop and cool the engine before storage.
- If cultivator needs to be stored for a long time, this manual should also be preserved along with.
- Do not try to repair the cultivator without proper knowledge, and proper tools.

Overview

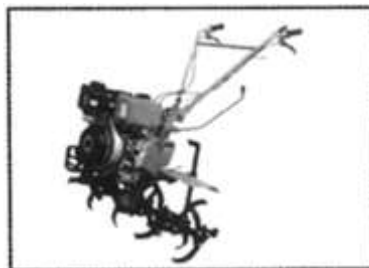


- | | |
|-----------------------|-----------------------------|
| 1. Hand bar Assy | 7. Rotary device components |
| 2. Output clutch grip | 8. Rotary blades |
| 3. Gear box Assy | 9. Running case Assy |
| 4. Resistance rod | 10. Diesel engine |
| 5. Fender | 11. Bumper |
| 6. Drag bar | |

Applicable Scope

1. Rotary Tillage:

Rotary tillage components are installed on both sides of the driving shaft of Inter-Cultivator running gear. Tighten the shaft with two bolts M8x55. Then the Inter-Cultivator can work (as shown in the pic)



Debugging method of clutch cable

Due to friction plate abrasion, clutch fork abrasion, function of the clutch become poor after a period of use. Therefore, you should debug the clutch cable. As for the debugging method, please refer to chapter3.

Attention:

- Hold, unlock the clutch handlebar for twice to three times. This is to check working condition of clutch. If it is abnormal, you should debug the clutch.
- If it is debugged for several times, and is still in bad condition, it is certain that clutch fork or friction plate is fretted severely. Therefore, you should change the friction plate or clutch fork with new parts in the special maintenance station. Never move clutch randomly in case of destroying the clutch and other parts.

Debugging method of throttle cable

When revolving the throttle switch and finding accelerating and decelerating function of the diesel engine is not good, you should debug the throttle cable. As for the method, please refer to chapter3.

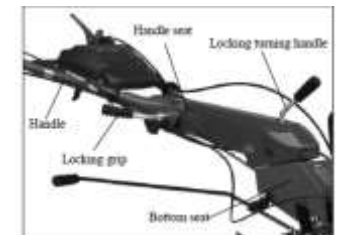
Attention:

- Revolve the throttle switches for twice or three times and check the accelerating and decelerating function of diesel engine.
- The throttle cable and connection head should be fastened with screws.

Debugging method of handle bar

Four directions of handlebar can be properly set according to one's height and tilling requirement. The method is in the following (picture)

- Up-and-down debugging of handle bar
 - Unlock the handlebar elements, disengage the terminal fangs between the handlebar and handle frame
 - Set the position of handle bar according to one's height and habits.
 - Revolve the handlebar to let terminal fangs meet between the handlebar and handle frame.
- Left-and-right debugging
 - Unlock the nut on the handle frame. This is to unlock the terminal fangs.
 - Set handlebar to the proper position on the left or right.
 - Tighten the nut to let terminal fangs meet



5. Long-period storage of rotary cultivator

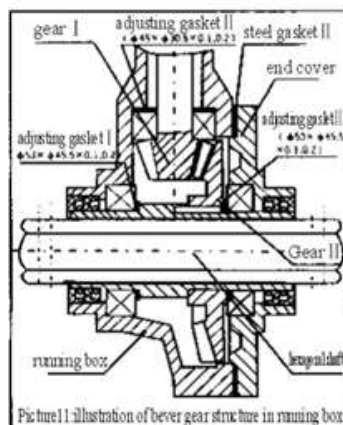
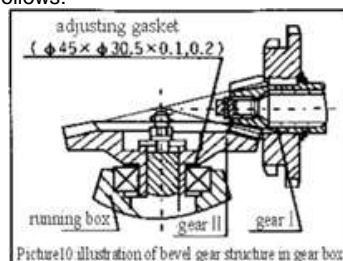
When rotary cultivator needs be stored for a long period, the following measures should be adopted to prevent tarnishing.

- 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 cultivator in the dry, safe place where there is enough aeration.
- 5.5 Properly keep the attaching tools, certificates of conformity and instruction.

Debugging method of bevel gear assy:

When bevel gear drives abnormally with loud noise, you should check and debug it immediately. The debugging methods are as follows:

1. Bevel gear clearance debugging of gear box(look at picture10)
 - i. When bevel gear assy clearance $\Delta < 0.05$, you should increase clearance between gear box and running gear box with steel gasket.
 - ii. When bevel gear assy clearance $\Delta > 0.3$, one should adjust the range 0.05~0.10 between the bearing and gear II shaft.
2. Bevel gear clearance assy debugging of running gear box(look at picture11)
 - i. When bevel gear clearance $\Delta < 0.05$, you should adjust the gasket range 0.2~0.3 to increase clearance. Meanwhile, you should change steel gasket II and adjust gasket III to ensure clearance of gear II shaft is 0.05~0.15.
 - ii. When bevel gear assy clearance $\Delta > 0.3$, you should decrease gasket I, meanwhile, ensure clearance of gear II shaft is 0.05~0.15; or increase gasket II, meanwhile, ensure clearance of gear I is 0.05~0.15.



Debugging method of backshift gear and cable

When reverse of Inter-Cultivator is abnormal, you should debug the backshift handlebar and cable. As for the method, please refer to chapter3.

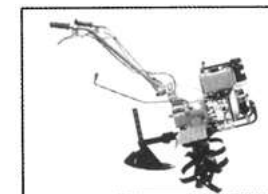
Attention:

1. Hold, unlock backshift handlebar twice to three times, which is to put into gear. If the gear is not properly adjusted, please debug it until it is well done.
2. When driving the Inter-Cultivator, please unlock backshift handlebar. After finishing this, backshift gear should return to its original position immediately, and there should not be abnormal collision noise in the gear box, otherwise, gear will be destroyed.

Tilling device mode	4groups	5groups		
	4blades	4blades		
Tilling blades	2×4×4	2×5×4		
Tilling scope(mm)	1100	1350		
Suitable soil	Paddy field with insufficient water; clayed soil	solid soil	Wet soil	Dry soil

2. Ditching and Ridge forming:

Take away resistance rod, install ditching device and adjust the width and height of ditching device (as shown in the picture)



3. Short distance transportation

Install forearm of Inter-Cultivator case on the drag body and wheels on the driving shaft. The rated load is 250kg. At the rated speed of diesel engine, fast shift speed is about 10km/h and slow shift speed is 1.8km/h.

4. Multifunctional work

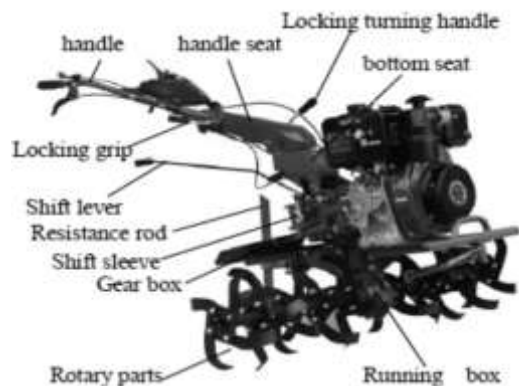
Take away the safety cover of gear box the back bolt of main shaft, the key sleeve of the shaft, then install the attaching belt pulley and coupling on the main shaft of gear box and fasten with bolts. Ordinary V-belt A-model is used for the cross section of belt pulley. The rated speed of belt pulley is 3000r/m. When it is attached with relative machine tools, auxiliary tools, you can carry out such multifunctional work: bailing, sprinkling, chemical spraying, and threshing, reaping and generating power.

5. Instruction table of attaching tools

Number	Name	Unit	Usage
1	Rotary tilling wheels of paddy field	Set	Tilling in paddy field
2	Water pumping device(self-priming water pump 3-inch)	Set	Pumping water
3	Ditcher	Set	Ditching
4	Reaper	Set	Reaping rice, wheat
5	Grass cutter	Set	Cutting weeds
6	Rotary cultivator	Set	Smashing soil block

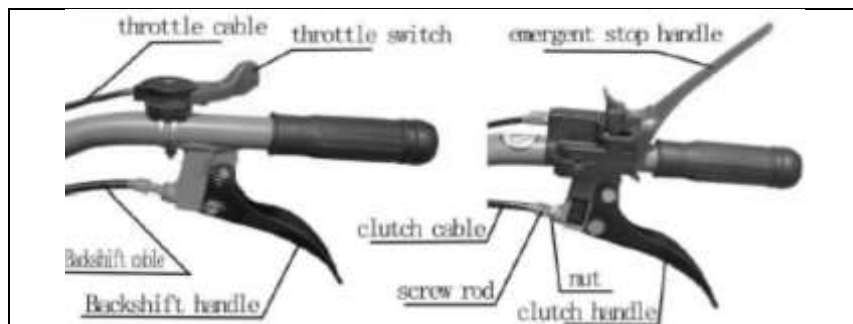
Assembly

Unpacking



- Wheels and tilling blades assembling:** Take the Inter-Cultivator chassis out of packing materials, fix the chassis, put the wheel tube or tilling blades tube on both ends of the hexagon PTO shaft, fix with pin 6*40 and pin clip in bolts box.
- Handle assembling:** take out the handle and handle seat, align the handle seat with bottom seat fluted disc, tighten with spring washer 16 and locking turning handle. Align the fluted discs of the handle with the fluted discs of the handle seat, adjust the handle height to comfortable position, use bolt M12×140, spring washer 12 and locking grip to fix them.
- Resistance rod installation:** take away the pins between the resistance rod and connecting shelf to get the resistance rod and adjust its direction by 180°.
- Mud fender installation:** Install frames of both sides and protection frame components on the Inter-Cultivator. Then install protection panel of both sides and paddy field protection panel of both sides.

Installation and adjustment of cables



3. Technical maintenance table of mini cultivator

Working interval 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					√	

Note: This mark "√" indicates the maintenance contents

4. Long-term storage of the 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 cannot 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 oxidized 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 : Petrol is flammable, even easily exploded in certain conditions. Smoking, firing or sparking is prohibited in working site.

Maintenance & Service

During the working period of the Inter-cultivator, due to the changing running speeds, abrasion and varying loads, phenomena of bolts loosening and parts wearing are inevitable which in turn may lead to the malfunction of the system, abnormalities of clearances, declination of engine power, more oil consumption, malfunction of each part, more failures of the machine, and the problems affect the normal use of the Inter-cultivator. To reduce chances of troubles, it is better to do a strict and regular maintenance job which emphasizes precautionary measures to keep a good performance and extend the machine's working life.

1. Running-in of rotary cultivator

If cultivator is new or just repaired, it should work without load for one hour. After the mini cultivator works with 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 cultivator 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 given earlier. By doing so, the cultivator will be ready to work in normal condition.

2. Technical maintenance of rotary cultivator

2.1 Per shift maintenance (before and after work):

- 1) Hear and check if there is malfunction for every part (such as abnormal noise, overheat, loose screw).
- 2) Check if there is oil leakage from the engine, gear box and running gear.
- 3) Check if the oil level is in dipstick scale.
- 4) Clean the mud, grass and oil stain regularly.
- 5) Keep daily record.

2.2 Primary maintenance (per 150 hours)

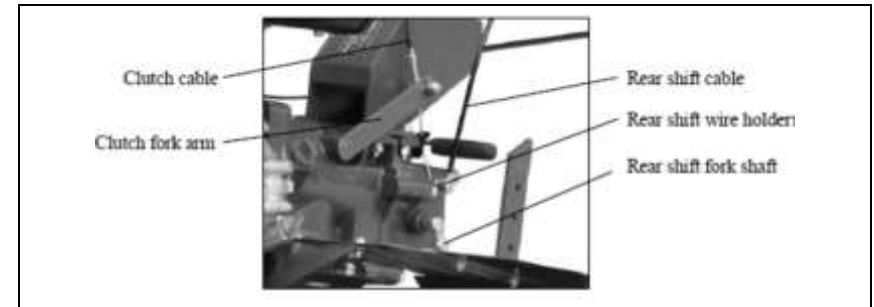
- 1) Carry out all maintenance works of per shift.
- 2) Wash gearbox and change lube oil.
- 3) Check and adjust clutch unit, shift unit and reverse gear unit.

2.3 Secondary maintenance (per 800 hours)

- 1) Carry 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 friction plate and clutch.



Adjustment of clutch cable (Refer to pictures above)

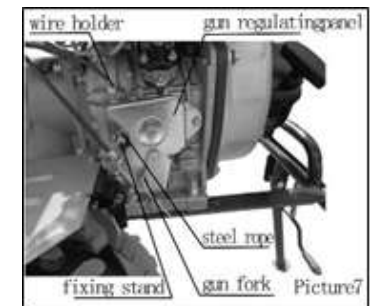
1. Unlock nuts on the screw rod.
2. Instantaneously rotate the screw rod to show the shortest part of the handle bar.
3. Thread the cable head into clutch plug behind the gear box assy and make sure the head is in the big hole of the plug.
4. Thread the steel wire-rope into the M8 hole of arm plug, and then properly press down the clutch fork arm to insert the cable head into clutch plug.
5. Rotate 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.

Backshift cable adjustment (Refer to pictures above)

1. Unlock the fasten nuts on the screw rod.
2. Instantaneously rotate the screw rod to show the shortest part of the handle bar.
3. Thread the cable into the backshift shaft at the side of gear box and make sure the cable head is in the big hole of shaft.
4. Properly counterclockwise rotate the backshift fork shaft, thread the cable into the narrow slit of backshift plug through the side of the gear box and make sure the cable head is in the big hole of the plug.
5. Rotate out the screw rod and holdfast it repeatedly, unlock the backshift bar. When spring force can reposition the bar, you should fasten the nuts.

Throttle cable adjustment (Picture given below)

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

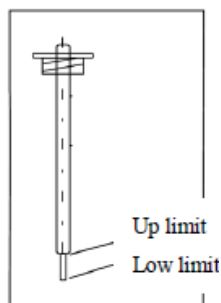


Checking and Refueling

1. Check whether the connection bolts are loose or not and fasten the loose bolts according to the bolt moment in the following table3. Table 3

Name	Moment(N.M)
Flange and petrol engine	20~25
Flange and gear box	35~40
Bolts behind the main shaft of gear box	10~12
Bolts on the backshift shaft of gear box	26~40
Bolts between the engine frame and running case	35~40
Bolts on the end cover of running gear	10.6~15
Bolts on the drag bar of running gear	50~60
Bolts between the running gear and gear box	35~40
Drag bar	45~60
Bolts on the bottom plate of petrol engine	35~40
Bolts on the handlebar frame	35~40

2. Check if the handlebars of the operation system (gun, clutch, shift lever, backshift) are flexible. If they are not in their positions, please adjust them
3. Turn lever to the neutral position
4. Refueling:
 - SAE10W-40 oil is recommended.
 - Refuel the gear box with oil num20. Lay down the machine, and refuel through the hole upper the gear box. Checking oil level by dipstick (attention: not rotate the oil ruler). The oil level should be in the range of the dipstick showed in the picture.
 - Refuel air cleaner with oil, take away the synthetic glass cover tent below the cleaner, and refuel 0.1L num.20 oil.
 - Choose engine oil according to the working environment



- Do check air intake filter oil level
- Do check engine oil and gear oil levels
- Do check for any leakage
- Do check decompress knob before starting
- Do check if the gear is in neutral position before starting
- Do use recommended attachments only
- Do maintain distance (1ft) from buildings and other equipment's when operating, to avoid any accidents
- Keep the machine away from flammable materials
- Keep the machine away from children and pets to avoid any injuries or accidents.
- Only operator with knowledge of machine and its operations must be permitted to operate Agricultural Inter-Cultivator
- Must stop the engine before refueling, and refuel in a place with good ventilation.
- Must clean and spilled or over flown fuel of the Agricultural Inter-cultivator
- Let Agricultural Inter-Cultivator cool down before storing indoors.

DON'TS...

- Don't overfill the tank with fuel, but also never let fuel tank run out empty
- Don't use adulterated fuel
- Do not work on excessively steep slopes
- Do not change the engine governor setting or over speed the engine
- Do not put hands or feet near or under rotating parts.
- Don't smoke or allow flame or spark where Agricultural Inter-cultivator is refueled or where fuel is stored
- Don't inhale exhaust for it can contain poisonous carbon monoxide
- Don't run Agricultural Inter-cultivator in a place without adequate ventilation
- Don't lean/tilt Diesel tank more than 20°, otherwise fuel may spill
- Don't cover Agricultural Inter-cultivator top so as to avoid fire
- Don't touch muffler/exhaust, as it gets hot during operating and stays hot for some time even after stopping
- Don't delay on service schedules
- Don't Operate Diesel Hal continuously more than 2hrs.30mins for any given operation (Give a break of 20mins)
- Don't make any alterations in Design, Operations and Functioning of Agricultural Inter-cultivator other than Company's recommendation
- Do not operate the engine in a confined space where dangerous carbon monoxide fumes can collect.

Run engine for 5mins to warm up

Note:

- The muffler becomes very hot during and immediately after operation. Please don't touch it.
- The air filter will inhale the air around itself when the engine works. Don't let the hands, body and clothes approach the air filter to avoid injury.

After the engine becomes warm, put the speed lever on necessary position to run the engine.

Note

- Be sure to use the speed lever to adjust the speed of engine.
- Do not loosen the speed limit screw and fuel control screw; otherwise the speed and output of the engine will be abnormal.

Running

- If the engine gives out black smoke continuously, it is because the engine is overloaded. The belt pulley of the engine or that of the powered equipment must be adjusted.
- Pay attention to the following points when the engine is running:
 - Whether there is abnormal sound and vibration?
 - Whether the exhaust is normal?
 - Whether the engine gives out white or black smoke continuously?

If any of the above phenomena is detected, stop the engine immediately and contact the nearest dealer.

Methods of Starting the Agricultural Mini-cultivator

Starting by Hand:

- Open fuel switch.
- Put engine speed lever in the start position
- Lock Auto-cut off switch.
- Hold recoil starter handle.
- Pull the starting handle slowly until you feel resistance, then release it slowly.
- Push the decompression lever down by hand to no compression position. It will get back automatically by itself after the engine gets started.
- Starting: Hold the starting handle with both the hands and pull the rope lightly until you feel the resistance, then pull the rope fast with more strength.
- If it is not easy to start the engine when the weather gets cold. You could take down the refuel screw on the cylinder cover and fill in 2ml oil before starting.

Note:

Tighten the refuel screw on the cylinder cover except filling oil in order to avoid rain and dust to get into the engine and causing damage to the engine.

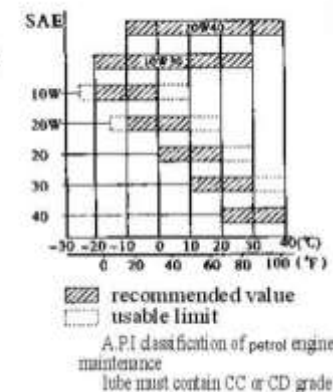
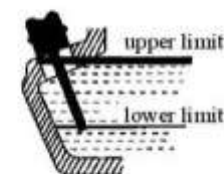
Safety Instructions:

DO'S

- Do visual check every time before starting,
- Keep Agricultural Inter-cultivator Clean
- Do use recommended Fuel and Lubricants only
- Do check the fuel level

lube entrance

put the petrol engine in the smooth place and check the oil level when filling; pay attention to insert the oil sticker lightly and not to rotate the sticker



Attention: Fuel level should not exceed above the mark.

Operation

Attention: Inter-Cultivator must go through running-in before operating.

A. Slow gear

- Hold the clutch bar with left hand to open the clutch.
- Pull back the shift lever with right hand, meanwhile, pay attention if it is in the slow position, then hold the right bar with right hand (attention: do not hold the backshift bar).
- Slowly unlock the clutch bar to close the clutch. In this situation, Inter-Cultivator can run at slow gear.
- Speed up properly with right hand, then Inter-Cultivator can run at a low speed of 5km/h

B. Fast gear

- Hold the clutch bar with left hand to open the clutch.
- Push the shift lever to the front with right hand, meanwhile, pay attention if it is in the fast position, then hold the bar with right hand (attention: do not hold the backshift bar).
- Slowly unlock the clutch bar to close the clutch. In this situation, Inter-Cultivator can run at fast gear.
- Speed up properly with right hand, then Inter-Cultivator can run at a speed of 10km/h.

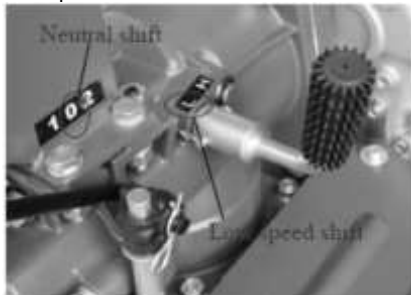
C. Back gear

- Hold the clutch bar with left hand to open the clutch.
- Adjust the shift lever to the neutral position with right hand.
- Slowly unlock the clutch bar to close the clutch, then Inter-Cultivator will step back. (**Attention:** Do not unlock the backshift bar)
- If it is unnecessary to step back, you should hold fast clutch bar slowly with left hand, then unlock the shift bar with right hand.

- D. When shifting in the process of running, you should decelerate (the standard should be the continuous work of diesel engine), then close the clutch. You should change the shift until the machine stop working
- E. When changing the direction, you should rotate the bar to left or right. (**Attention:** Do not hold the bar in wrong way, so as to avoid damaging the wheels when directing).
- F. Stop working
 - 1) Hold the clutch bar with left hand to open the clutch.
 - 2) After adjusting the shift lever to the neutral position, you should unlock the clutch bar to make the machine stop working.
 - 3) When it necessary to stop working, the procedure should be done according to the engine instruction. (**Attention:** This work is usually done on the smooth ground.)

Connecting the Attachments

- 1) When rotating, you should take away the wheels, fix hexagonal sleeve of rotary device on both sides of the hexagonal shaft with bolts M8x55. Attention: there are blade units on both sides; make sure the blade cutting edge works firstly when the Inter-Cultivator runs. After the rotary blades are installed, you must install the safety panel to prevent injuries by blades. Tilling depth can be adjusted through adjusting resistance rod.
- 2) When ditching, you should take down resistance rod, install the ditcher and adjust its depth and height. After finishing these, you can do ditching work. (look at picture 3)
Range of ditching scope: 14cm-40cm
Range of ditching depth: 11cm-25cm
- 3) Short-distance transportation
Install forearm of Inter-Cultivator case on the drag bar of running gear and install wheels on the driving shift of the running gear. After finishing these, you can transport. The rated load is 250kg. Under the rated rotary speed of diesel engine, the fast speed is around 10km/h and slow speed 1.8km/h.
- 4) Multifunctional work
- 5) Take off the resistance rod, rotate the handle for 180°, and put the auxiliary shift on "L" position. Connect the implements (reaper, rotary cultivator, mower, grass cutter, sprayer pump and etc.) to gearbox back cover, PTO side, screw nuts on the 4 bolts there. Put the shift lever on neutral position "0", put the auxiliary shift lever on low speed position "L", use the rear shift handle to start working with the multi-functional implements.



Shifting position



Connecting position

Important points in Inter-cultivator Usage

- When using cultivator, you should pay attention to the working situation and the sound, check the connection. If there is abnormal situation, you should stop the rotary cultivator and check.
- Never carry out work in heavy load condition if cultivator has not been used for some time, especially for the new ones or the repaired ones.
- Pay attention to the oil level of diesel engine and gear box. Please refuel oil in insufficient condition.
- Never cool the diesel engine in the way of water-pouring.
- Prevent rotary cultivator from falling down when cultivating.
- Never install mini cultivator with rotary blades work on sand or stone to avoid damaging blades.
- After tilling, pay attention to clear away dirt in the rotary cultivator, such as mud, grass and oil stain.
- Frequently wash the sponge in the air filter and change oil more often.

Important points in Engine Operation

1. **Break-In Of New Engine:**
If your engine has not yet break-in, improper usage will shorten the life of engine. The initial 20 hrs is the break-in-period. The operator must obey the following items
2. **Running In For 5mins After First Start:**
Run with low speed and low load before the engine gets hot. Avoid running with high speed and full load, or low speed and no load.
3. **Avoid Running With Overload:**
During break-in period, the engine can't run with full load, but can run with 3000rpm and 50% load.
4. **Change Engine Oil Regularly:**
After working for 20hrs, change the oil when engine is still warm, otherwise it will be difficult to drain the residual oil from the engine.

Oil Bath Type Air Filter:

1. Check the oil level before operating.
2. Fill oil up to upper limit. If oil is dirty, change it. Please use diesel to clean oil bath element frequently, then dip the element in the oil and squeeze out extra.

Running

WARNING

- Be sure to operate the engine in a good ventilated place in order to avoid exhaust poisoning.
- Avoid letting hands, body & clothes entangle in output shaft, belt pulley, V-type belt pulley and other moving parts, so as to prevent from getting injured.
- Stop the engine first and then maintain the movable parts and other parts around it. Make sure there are no tools and sundries in the body of the engine before operating.