



SHRACHI[®]

BTL EPC LTD (Agro)

CHAMPION



ALL ROUNDER



SF 15 DI



OWNERS MANUAL FOR

**SHRACHI
POWER
TILLER**



CAUTION

Before using our Power Tillers, please read this manual carefully, to understand the proper use of your unit.

Keep this manual handy.

SAFETY FIRST

The first time users shall have practical instructions in the use of the Power Tiller and the protective equipment from an experienced operator.

Instructions contained in warnings within this manual marked with a symbol, concern critical points which must be taken into consideration to prevent possible bodily injury. Hence, you are requested to read all such instructions carefully and follow them without fail.

ABOUT US

For more than two decades BTL (Agro) has been catering to the requirements of small and marginal farmers in India, thereby contributing towards increased farm productivity and rapid mechanisation in the agrarian sector of India. The company is known to be the pioneer in introducing cost-effective Power Tillers in India in the early 90s and with a constant focus on improving the quality and service. It has grown to become one of the leading farm machinery companies in its segment.

Since inception, the company had the vision to provide a total solution to its target customers and has gradually expanded its range of Power Tillers, Reapers, Garden Tools and Tractor implements. The company has also successfully diversified into manufacturing Aerobic Bio-toilets and aims to provide environmental friendly sanitation solutions in the country to contribute to the success of Swachh Bharat Mission (SBM).

INTRODUCTION

Congratulation on your selection of Shrachi Power Tiller. We believe that you will be pleased with the purchase of one of the finest Power Tillers in the market.

We want you to get the best results from your new Power Tiller by operating it safely.

This manual contains the information on how to do that; please read it carefully.

As you read this manual, you will find information that is intended to help you avoid damaging the Power Tiller, other property or the environment.

We suggest you to read the warranty policy fully to understand its coverage and your responsibilities of ownership. The warranty policy is included in this booklet.

When your Power Tiller needs scheduled maintenance, keep in mind that your Shrachi servicing dealer is specially trained in servicing Shrachi Power Tiller. Your Shrachi servicing dealer is dedicated to your satisfaction and will be pleased to answer your questions and concerns.

*Best wishes,
BTL EPC LTD (Agro)
SHRACHI Group*

TABLE OF CONTENTS

CONDITIONS OF SALES	6
SERVICE INFORMATION	7
PART IDENTIFICATION	8
TECHNICAL SPECIFICATIONS	9
ADJUSTMENT(CHAMPION & SF 15 DI)	10-11
ADJUSTMENT(ALL ROUNDER)	12-13
OPERATIONS OF POWER TILLERS	14-15
DOS & DON'TS	16
MAINTENANCE & REPAIR	17-18
CHAMPION & SF 15 DI	19-20
ALL ROUNDER	21-22
TROUBLE SHOOTING	23-28
WARRANTY POLICY	29
SERVICES	30
PDI AT DEALER POINT	31
PDI SERVICING	32-34
FIRST FREE SERVICING	35-37
SECOND FREE SERVICING	38-40
FIRST PAID SERVICING	41-43
SECOND PAID SERVICING	44-45

CONDITIONS OF SALES

1. Free service period is effective up to 140 hours or six months, whichever is earlier from the date of dispatch/delivery of the machine.
2. The purchaser/his authorized representative have been acquainted with the operation and routine service of the machine, and the conditions governing the warranty and free services of the machine.
3. The owner's manual should be handed over to the owner.
4. The signature of the purchaser/his authorized representative confirms proper delivery and acceptance of the machine, accessories and tools.

SALES INTIMATION CARD		SHRACHI POWER TILLER	
Model		INVOICE NO. & DATE	
Name		Engine No.	
Vill			
P.O.		Chassis No/Serial No	
P.S.			
DIST			
PIN		Delivery Date	
STATE			
MOBILE			
The machine with all accessories and tool kit has been handed over to the purchaser in good order and condition as per delivery instructions, training and service.			
Customer Signature		Dealer's Name & Stamp	
Scanned copy of the card has to be sent to company within 15 days from the date of the Delivery/Supply along with the Dealer Challan			

SERVICE INFORMATION

This is the owner's manual for your Shrachi Agro product. It contains operational tips, do's and don'ts, sales intimation card and service coupons.

OPERATIONS

This section includes the general operating procedure regarding the machine, how to operate and keep the machine in working condition.

DO'S AND DON'TS

Do's and don'ts are the important points to be considered while operating the machine. This will in turn be beneficial for you, and your machine will yield much more profit than imagined.

SALES INTIMATION CARD

Before taking the delivery of your product from our dealer, you will have to sign the sales intimation card. Our dealer will give free training to you or your operator for proper operation and maintenance of your product. Before signing the sales intimation card, make sure that the training is up to your satisfaction.

WARRANTY

Our warranty will be of 1 year or 280 hours, whichever is earlier. Our warranty is subject to certain conditions. For example, the warranty will not be valid if your product is misused or is not serviced properly or if you use non-genuine spare parts or accessories. Therefore, please ask our dealer to explain you the warranty conditions in detail.

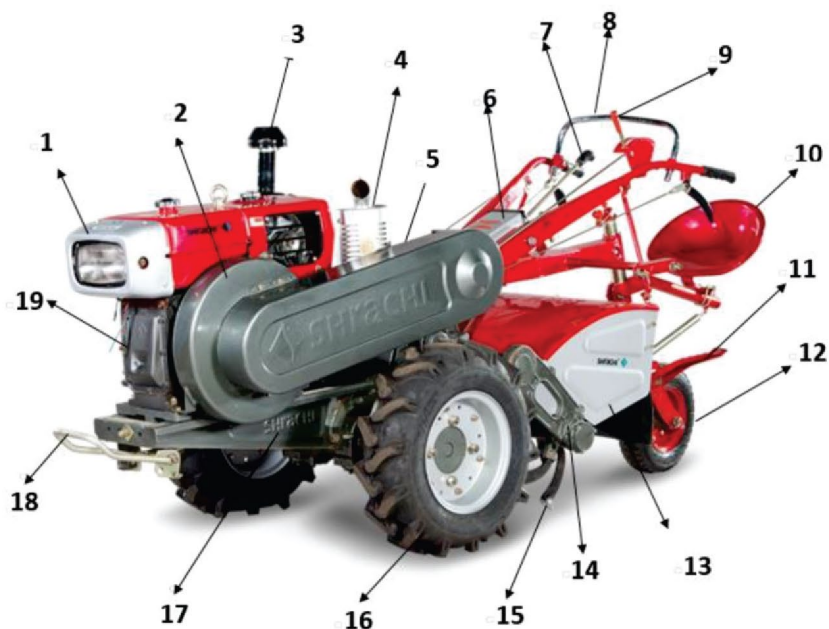
SERVICES

Your product should be serviced periodically. Our dealer will explain everything to you. There will be four services in a year and first two services will be free of labour charge.

IMPORTANT

The service book is a very important document and should be kept in safe custody. If you lose this book, you will not be entitled to get free services and the warranty will cease to be valid. Along with your Shrachi Agro product, you will also get an operator's manual. Read the manual carefully and follow the instructions strictly.

PART IDENTIFICATION



1. Illuminator
2. Flywheel
3. Air Intake Pipe
4. Exhaust Pipe
5. Transmission Belt Case
6. Gear Lever Cover
7. Gear Lever
8. Handle Bar
9. Clutch

10. Seat
11. Foot Rest
12. Tail Wheel
13. Hood
14. LH Supporting Arm
15. Rotary Tines
16. Front Tyre
17. Chassis Frame
18. Supporting Rod
19. Engine

Technical Specifications

CHAMPION

Engine	H18N Engine
Power	15HP@2000 RPM
Engine Type	Single Cylinder, Water Cooled, DI, Horizontal, Diesel Engine
Gear Box Type	GN type gear box
No. of Gears	3 forward one reverse, with high low speed
Type	With seating arrangement
Rotary	20 tynes
Fuel Consumption	1.2 1.4 litre/hr.
Acre/hr.	0.3-0.4

ALL ROUNDER

Engine Model	KUBOTA RT 120 PLUS (IDI)
Engine Type	4-Stroke, Water Cooled, Horizontal, Single Cylinder, Diesel Engine
Engine Power	12 HP @ 2400 RPM
No. of Gear Speed	6 Forward + 2 Reverse
No. of Blades	20 + 20 (Straight & Bent)
Weight	432 kg
Acre/hr.	0.4
Fuel Consumption (litre/hr.)	1.1-1.2
Avg. Depth of Cut (inch)	6-8
Avg. Width of Cut (feet)	2

SF 15 DI

Engine	ZS1100
Power	15HP@2000 RPM
Engine Type	Single Cylinder, Water Cooled, DI, Horizontal, Diesel Engine
Gear Box Type	GN type gear box
No. of Gears	3 forward one reverse, with high low speed
Type	With seating arrangement
Rotary	18 tynes
Fuel Consumption	1.2-1.5 litre/hr.
Acre/hr.	0.4-0.5

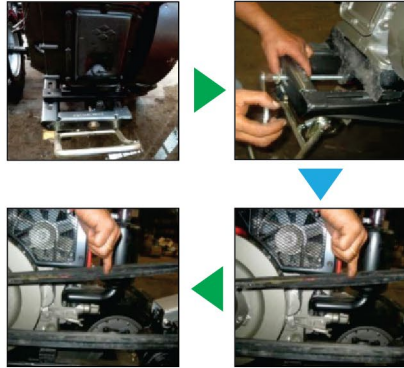
ADJUSTMENT (CHAMPION & SF 15 DI)

I. ADJUSTMENT OF V-BELT TENSION

The tension of V-belt must be properly adjusted as an excessive slackness or tightness of V-belt will shorten the life of belt itself and the machine. A severely slack V-belt will cause belt-slip, resulting in lower power output. The three V-belt selected should be equal in length. Check the tension in the V-belts by pushing down in the middle with four fingers. The drop should be in between 20-30 mm.

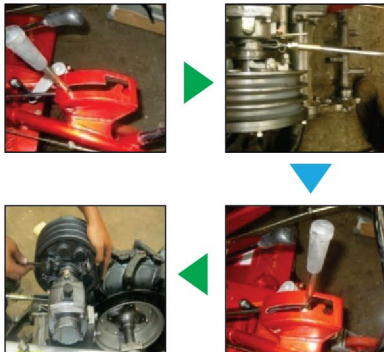
Method of adjustment: _____

1. Loosen the four securing nuts under the engine for smooth motion of engine over the chassis.
2. Loosen the locking nut.
3. Turn the adjusting nut clockwise to make the engine move forwards, until the V-belts are properly tensioned.
4. Tighten the nuts.



II. ADJUSTMENT OF CLUTCH CLEARANCE

1. Shift the clutch brake handle to "engage" position.
2. Adjust the length of the pull rod until the hole of the disengaging cam approximately aligns with that of the guide sleeve of the disengaging cam.
3. The correct length of the pull rod is obtained, tighten the nut.
4. Shift the clutch-brake handle to "disengage" position.
5. Adjust the clearance between the clutch throw-out levers and throw-out bearing in a range of 0.4-0.7 mm with the help of a filler gauge.



III. ADJUSTMENT OF BRAKE

When the clutch lever is pulled over the “disengaging” position by 25-30 mm the tiller begins to brake,

Method of adjusting:

1. Move the clutch lever to the “disengaging” position.
2. Loosen the double nuts and adjust their positions.
3. Adjust the clearance between the lug and nut to approximate 12 mm.
4. Tighten the nuts.



IV. ADJUSTMENT OF STEERING SYSTEM

1. “Disengage” the steering clutch completely.
2. Loosen the nut.
3. Adjust the length of the pull rod so that the clearance between the steering lever (4) and the handle grip ranges from 2-4 mm.
4. Tighten the nut.

V. ADJUSTMENT OF THROTTLE CONTROL SYSTEM

The throttle control system should be so adjusted that the lever can operate either to accelerate the engine to maximum speed or to stop the engine timely.

Method of adjustment:

1. Loosen the setscrew.
2. Turn the throttle lever counter-clockwise to the extreme position.
3. Turn the governor control knob to the throttled wide open position.
4. Tighten the setscrew.



VI. ADJUSTMENT OF CHAIN TENSION IN TRANSMISSION BOX

The chain in the transmission box gets worn and slack after certain time. Proper tension is necessary.

Method of adjustment:

1. Open the chain case.
2. Tighten the adjusting bolt with hand till the chain gets into proper tension.
3. Tighten the bolt.



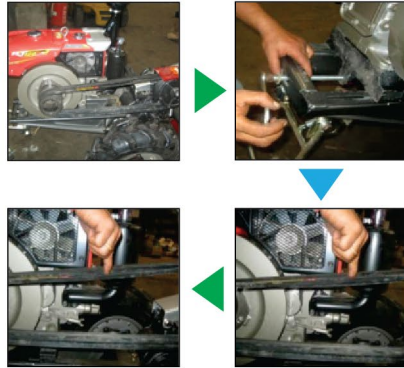
ADJUSTMENT (ALL ROUNDER)

I. ADJUSTMENT OF V-BELT TENSION

The tension of V-belt must be properly adjusted as an excessive slackness or tightness of V-belt will shorten the life of belt itself and the machine. A severely slack V-belt will cause belt-slip, resulting in lower power output. The three V-belt selected should be equal in length. Check the tension in the V-belts by pushing down in the middle with four fingers. The drop should be in between 20-30 mm.

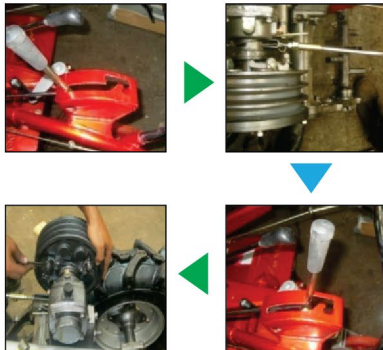
Method of adjustment: _____

1. Loosen the four securing nuts under the engine for smooth motion of engine over the chassis.
2. Loosen the locking nut.
3. Turn the adjusting nut clockwise to make the engine move forwards, until the V-belts are properly tensioned.
4. Tighten the nuts.



II. ADJUSTMENT OF CLUTCH CLEARANCE

1. Shift the clutch brake handle to "engage" position.
2. Adjust the length of the pull rod until the hole of the disengaging cam approximately aligns with that of the guide sleeve of the disengaging cam.
3. The correct length of the pull rod is obtained, tighten the nut.
4. Shift the clutch-brake handle to "disengage" position.
5. Adjust the clearance between the clutch throw-out levers and throw-out bearing in a range of 0.4-0.7 mm with the help of a filler gauge.



III. ADJUSTMENT OF BRAKE

When the clutch lever is pulled over the “disengaging” position by 25-30 mm the tiller begins to brake,

Method of adjusting:

1. Move the clutch lever to the “disengaging” position.
2. Loosen the double nuts and adjust their positions.
3. Adjust the clearance between the lug and nut to approximate 12 mm.
4. Tighten the nuts.



IV. ADJUSTMENT OF STEERING SYSTEM

1. “Disengage” the steering clutch completely.
2. Loosen the nut.
3. Adjust the length of the pull rod so that the clearance between the steering lever (4) and the handle grip ranges from 2-4 mm.
4. Tighten the nut.

V. ADJUSTMENT OF THROTTLE CONTROL SYSTEM

The throttle control system should be so adjusted that the lever can operate either to accelerate the engine to maximum speed or to stop the engine timely.

Method of adjustment:

1. Loosen the setscrew.
2. Turn the throttle lever counter-clockwise to the extreme position.
3. Turn the governor control knob to the throttled wide open position.
4. Tighten the setscrew.

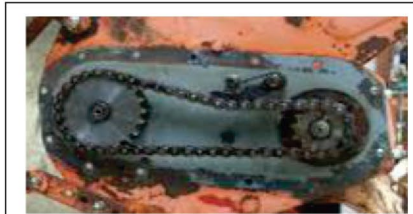


VI. ADJUSTMENT OF CHAIN TENSION IN TRANSMISSION BOX

The chain in the transmission box gets worn and slack after certain time. Proper tension is necessary.

Method of adjustment:

1. Open the chain case.
2. Tighten the adjusting bolt with hand till the chain gets into proper tension.
3. Tighten the bolt.



OPERATIONS OF POWER TILLERS

IMPORTANT ATTENTION IN TRACTOR OPERATION

1. Before starting check the fuel level, the lubrication oil level, water level and tyres inflation pressure. Check all the joints (especially the nuts on the drivewheels and the rotary).
 2. Check the oil level in main drive gearbox and rotary cultivator transmission box.
 3. Check the tightness of the bolts at all connecting parts.
 4. Shift the clutch-brake handle to disengage position the speed-changing lever to neutral lever and the throttle.
 5. Put the bumper downward for supporting tractor.
 6. Start the engine according to the operation manual for the engine.
-

STARTING OF THE TRACTOR

1. Put the bumper upward.
 2. Engage the speed-changing lever
 3. Check the engagement of the left or right steering gear to intermediate reduction gear.
 4. Shift the clutch-brake handle to engage position smoothly, then the tractor is started.
-

REVERSING OF THE TRACTOR

1. Shift the speed-changing lever to reverse 1st (or 2nd). The tractor can be reversed, if shifting the clutch-brake handle to engage position smoothly.
 2. A sudden raising of the handlebar may occur when reversing of tractor is made. Therefore, it is very important to shift the clutch-brake handle very gently and carefully. For the safety, it is advisable to operate the engine under reduced throttle setting.
-

STEERING

1. Steering on flat road is effected by operating the left or right steering hand grip under the handlebars. If the rear wheel for riding is mounted, in addition to the operation of the hand grips, the pedals of the wheel should be applied leftward or rightward whichever is required. Operate the tractor at a very low speed.
2. When operating the tractor down a steep slope, it is preferable to carry out the steering by pushing or pulling handlebars leftwards and rightwards.

BRAKING:

1. The braking can be effected by shifting the clutch-brake handle to “brake” position quickly.

STOPPING

1. Shift the clutch-brake handle to “disengage” position.
2. Shift the speed-changing lever of the tractors and the cultivator to “neutral” position.
3. Throttle down the engine gradually until the engine comes to stop.
4. Shift the clutch-brake handle back to “engage” position.

SAFETY REGULATIONS

1. Never operate the clutch-brake handle together with the steering hand grips when starting the tractor.
2. Never operate the tractor up or down a slope at high speed.
3. Never operate both left and right steering hand grips at the same time, when driving on slope.
4. Never make sudden turn at high speed.
5. Never disengage the clutch on a steep slope, or driver the tractor across a steep slope.
6. If the trailer is attached to the tractor for transportation, the operator must observe the public traffic regulation.

STAGE	LOAD	RUNNING-IN HOURS IN DIFFERENT GEARS								TOTAL HOURS
		1 ST	2 ND	3 RD	4 TH	5 TH	6 TH	1 ST reverse	2 ND reverse	
1	1/3	½	½	½	½			¼	¼	4 ½
2	1/2	1	2	2	1					6
3	2/3	2	3	3	2	1	1			12
	TOTAL HOURS	3 ½	5 ½	5 ½	3 ½	2	2	¼	¼	22 ½

NOTE:

- Run-in the tiller at 1st or 2nd gear by rotary tilling;
- Run-in the tiller at 3rd or 4th gear by ploughing;
- Run-in the tiller at 5th or 6th gear by transporting;

DOs

- ✓ Do a visual check before starting every time.
- ✓ Keep the power tiller clean.
- ✓ Do use the recommended fuel and lubricants only.
- ✓ Do check the fuel level.
- ✓ Do check the air intake filter oil level.
- ✓ Do check the engine oil and gear oil levels.
- ✓ Do check for any leakage.
- ✓ Do check the decompression knob before starting.
- ✓ Do check if the gear is in neutral position before starting.
- ✓ Do use the recommended attachments only.
- ✓ Do maintain a distance of 1ft from buildings and other equipments while operating, to avoid any accidents.
- ✓ Only operators with knowledge of machine and its operation must be permitted to operate the agriculture weeder.
- ✓ Let the power tiller cool down before parking it in indoors.

DON'Ts

- ✗ Don't overflow the fuel, or let the fuel tank run out empty.
- ✗ Don't use any adulterated fuel.
- ✗ Don't smoke or allow flame or spark where power tiller is refueled or where fuel is stored.
- ✗ Don't inhale exhaust as it contains poisonous carbon monoxide.
- ✗ Don't run the power tiller without adequate ventilation.
- ✗ Don't lean/tilt tiller more than 20°, otherwise fuel may spill.
- ✗ Don't cover the top of power tiller to avoid fire.
- ✗ Don't touch muffler/exhaust, as it gets hot during operation and stays hot for sometime even after stopping.
- ✗ Don't delay on service schedules.
- ✗ Don't operate the tiller continuously more than 2hrs. 30mins. for any given operation. Give a break of 20mins.
- ✗ Don't take any alterations in design, operations and functioning of agriculture weeder other than the company's recommendation.

MAINTENANCE & REPAIR

The life of your tiller depends largely on the maintenance. Proper maintenance can increase the life of your tiller. Some maintenance is done daily and some are done periodically.

WORKING INTERVALS AND MAINTENANCE CONTENTS	EVERY SHIFT	AFTER 100 HOURS	AFTER 500 HOURS	AFTER EVERY 1500-2000 HOURS
Check and tighten nuts and bolts.	✓			
Clear off the mud, dust and oil-smear from the tiller.	✓			
Check if there is any oil leakage	✓			
Check and adjust operation parts.	✓			
Check and adjust the tension of chain.		✓		
Check and adjust the tension of V-belt.		✓		
Check and adjust the clearance between the heads of clutch throw-out levers and throw-out bearing.		✓		
Check and adjust the performance of braking system.		✓		
Check and clean dirt in oil filling plug's breathing hole.		✓		
Check the tyre pressure.		✓		
Lubricate the machine referring to lubricating chart (refer chart).		✓		

WORKING INTERVALS AND MAINTENANCE CONTENTS	EVERY SHIFT	AFTER 100 HOURS	AFTER 500 HOURS	AFTER EVERY 1500-2000 HOURS
Wash the gear box clean and renew the lubricant.			✓	
Lubricate the machine referring to lubricating chart (refer chart).			✓	
Dismount and clean the gears, chains, bearings, oil seals of transmission box, main drive gearbox, final transmission, rotary cultivator, etc.				✓
Check the wearing condition of gears, chains, bearings and oil seals. Renew them if necessary.				✓
Check the reliability of springs of gear shifting forks and the steering system. Renew them if necessary.				✓
Check and adjust the accuracy of all control mechanisms.				✓
Check the wearing conditions of V-belts, friction disc of clutch, braking rings, shifting forks, tires and other parts. Replace them with new ones if excessive wear is found.				✓

SL. NO.	PARTS	METHOD	INTERVAL
1	Tiller wheel shaft and its bearing	Dismount the shaft and its bearing, grease them after cleaning.	Every 100 hours
2	Clutch throw out lever	Shift the clutch-brake handle and lubricate the sliding surface with the engine oil.	1-2 times per shift
3	Hinged points of all control links	Apply several drops of engine oil.	Every 2 shifts
4	Clutch disengaging cam	Add a few drops of engine oil into the hole.	Every shift
5	Clutch bearings	Grease it with the bearing cover removed.	Every 100 hours
6	Elevating screw of tail wheel	Remove, clean and grease.	Every 100 hours

CHAMPION & SF 15 DI

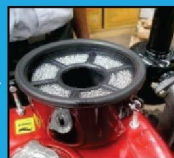
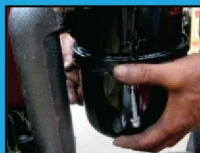
I. CLEANING THE FUEL TANK STRAINER (Before every refill)

- Open the fuel tank cap by rotating counter-clockwise.
- Take out the fuel tank strainer and rinse it. If it is too much dirty then change it with a new one.
- Close the fuel tank cap.



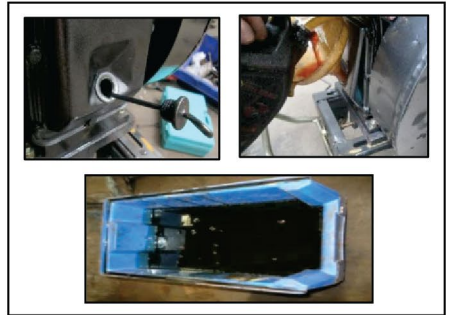
II. CLEANING THE AIR CLEANER

- Open the Hex. Bolt.
- Take out the air cleaner element and clean it with a high air pressure air pipe. Clean inside-out otherwise replace the assembly.
- Fill the engine oil in the cup shape inside the cleaner body.
- Retighten the Hex. Bolt.



III. CHANGING ENGINE OIL

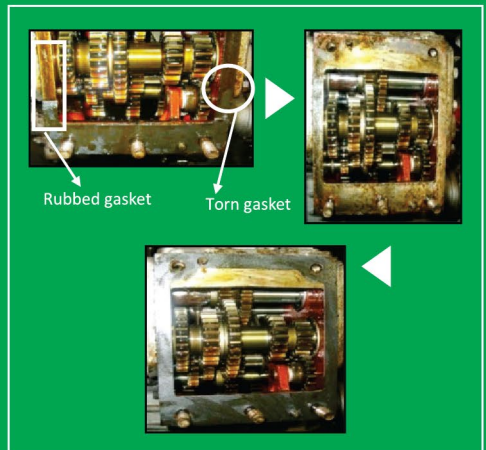
- Check oil level and quality through dipstick.
- If oil quality is too bad replace the oil.
- Open the drain plug and pour out the old oil.
- Fill with a SAE40 grade oil.
- If the oil quality is OK but level is low then refill.



IV. OIL LEAKAGE

The main reason of oil leakage is worn out gasket. Gaskets are applied wherever two metal units are joined together. With time the gasket gets old and gets rubbed off. The following method of changing gasket is a general one:

- Open the unit where there is oil leakage.
- Identify torn or rubbed gasket.
- Remove the old torn off gasket.
- Clean the surface by removing stuck gasket, but don't scratch the surface.
- Coat the surface with lubricating oil.
- Place the new gasket.
- Coat the gasket with lubricating oil.
- Reassemble the unit.



ALL ROUNDER

I. CLEANING THE FUEL TANK STRAINER (Before every refill)

- Open the fuel tank cap by rotating counter-clockwise.
- Take out the fuel tank strainer and rinse it, if it is too much dirty than change it with a new one.
- Close the fuel tank cap.



II. CLEANING/REPLACING THE FUEL OIL FILTER ELEMENT

- Close the fuel line by rotating cock lever clockwise.
- Hold the filter cup with one hand and rotate Retaining ring counter-clockwise with the other.
- Take out the filter element and clean with fuel first and then with high pressure air.
- If the element is too dirty replace it.
- Place the cup and retighten the retaining ring.



III. CLEANING THE AIR CLEANER

- Open the wing nut.
- Remove the cover along with the gasket.
- Take out the air cleaner element and clean it with a high air pressure air pipe. Clean inside-out and not otherwise.
- Replace the assembly.
- Retighten the wing nut with a washer.



IV. CLEANING THE AIR CLEANER

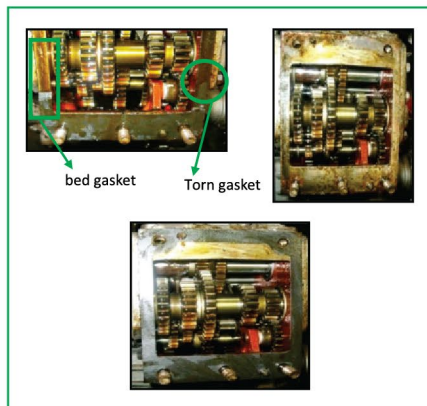
- Check oil level and quality through dipstick.
- If oil quality is too bad replace the oil.
- Open the drain plug and pour out old oil.
- Fill with a SAE40 grade oil.
- If oil quality is OK but level is low then refill.



IV.OIL LEAKAGE

The main reason of oil leakage is worn out gasket. Gaskets are applied wherever two metal units are joined together. With time the gasket gets old and gets rubbed off. The following method of changing gasket is a general one:

- Open the unit where there is oil leakage.
- Identify torn or rubbed gasket.
- Remove the old torn off gasket.
- Clean the surface by removing stuck gasket, but don't scratch the surface.
- Coat the surface with lubricating oil.
- Place the new gasket.



TROUBLE SHOOTING

CAUSES	SOLUTIONS
Low ambient temperature.	Heat the lubricating oil before use or add hot water to the hopper, preheat the intake air or take off the transmission belt connecting the engine to its coupled equipment.
Fitting clearance incorrect, bearing shells or bushings are seized.	Adjust the fitting clearance. Replace the bushing.
Decompression device failure.	Adjust the decompression stroke or repair the device.
The fuel system develops troubles. <ul style="list-style-type: none"> Air has entered the fuel line. Fuel line or fine fuel filter choked. Fuel injection pump fails to deliver fuel or injection timing is incorrect. Fuel injector fails to work properly. 	<ul style="list-style-type: none"> Release the air Check and clean them through or replace them. Check and adjust according to the recommended procedure. Check the atomization and injection pressure
Compression pressure in the cylinder is insufficient. <ul style="list-style-type: none"> Cylinder head gasket is damaged. Piston ring gaps line up or excessive wearing of cylinder and piston rings. Too much carbon deposits. Valve leakage. 	<ul style="list-style-type: none"> Replace the cylinder head gasket. Replace the Piston rings. Adjust the relative positions of rings. Remove the carbon deposits if found any. Replace the cylinder liner if necessary. Check and adjust the valve clearance. Check the adjustment of the valves with their seats. Lap or ream their contacting surfaces if necessary.
The orifice of the turbulence combustion chamber insert is blocked.	Take off fuel injector. Clean the orifice with a piece of wire.
Air filter choked up.	Clean or replace the cartridge.
Engine speed is too low.	Re-set the adjusting screw of the governor spring.
Fuel System Failure <ul style="list-style-type: none"> Air has entered the fuel pipe. Injection timing incorrect. 	<ul style="list-style-type: none"> Release the air. Adjust it.

CAUSES	SOLUTIONS
<ul style="list-style-type: none"> ▪ Insufficient injection pressure and poor atomisation. 	<ul style="list-style-type: none"> ▪ Check, adjust, clean or replace the nozzle of the fuel injector.
<p>Insufficient Compression.</p> <ul style="list-style-type: none"> ▪ Insufficient compressing pressure in the cylinder. ▪ The fuel injector's hole in the cylinder head is air leaking. ▪ Valve clearance are excessively little ▪ The piston rings are burnt, deposited with the carbon or seised. 	<ul style="list-style-type: none"> ▪ Cleanly remove the carbon deposits or replace the copper washer. ▪ Adjust the clearance according to the recommended procedure. ▪ Clean or replace them.
<p>Engine is too hot in operation.</p>	<p>Remove the scale in the hopper, cylinder block and head. Remove carbon deposits from the piston and piston rings check and adjust all the relevant fitting, clearances and the lubricating system.</p>

• ENGINE EXHAUST COLOURS

CAUSES	SOLUTIONS
<p>Engine exhaust dense black smoke</p> <ul style="list-style-type: none"> ▪ Engine is over speeding with overload. ▪ Fuel injection is delayed. ▪ Low injection pressure and poor atomization. ▪ Air filter blocked. ▪ Incorrect valve clearances and poor valve tightness. 	<ul style="list-style-type: none"> ▪ Reduce the load and speed of the engine. ▪ Adjust the fuel injection timing. ▪ Adjust the injection pressure. Lap or replace the nozzle of the fuel injector. ▪ Clean the cartridge or replace it. ▪ Adjust the clearance. Check the tightness of the seating surfaces of the valves.
<p>Engine exhaust white smoke</p> <ul style="list-style-type: none"> ▪ Low cooling water temperature ▪ Water has entered the cylinder due to blasting damaged cylinder head gasket or cracks in the mounting surfaces of the cylinder head. 	<ul style="list-style-type: none"> ▪ Extend the warming time so as to raise the cooling water temperature. ▪ Replace the Gasket with a new one. Replace the gasket with the new one. Replace the cylinder head when necessary.
<p>The Engine exhaust blue smoke</p> <ul style="list-style-type: none"> ▪ Piston rings are seized. Their gaps line up. The cylinder liner piston rings and valve guide are excessively worn. These cause the oil to enter the cylinder liner. ▪ Air filter is blocked up or has too much oil inside 	<ul style="list-style-type: none"> ▪ Check and clean the related parts. Replace them if necessary. ▪ Clean the filter element. Reduce the quantity of oil inside the filter.

- ENGINE FAILS TO RUN SMOOTHLY OR STALL SUDDENLY

CAUSES	SOLUTIONS
Faulty fuel system <ul style="list-style-type: none"> Air has entered the fuel pipe Fuel supply is interrupted 	<ul style="list-style-type: none"> Release the air. Refill the fuel tank or clean and get through the fuel line.
Piston is seized inside the inside the cylinder liner.	Repair or replace the piston and cylinder liner.
Main bearing shells, connecting rods bearing shells or bushings are burned.	Replace them and check the lubricating system.

- ENGINE DEVELOPS ABNORMAL NOISES

CAUSES	SOLUTIONS
The clearance between the piston skirt and cylinder liner is too large, causing heavy knocking noises.	Dismantle and repair them. Replace them if necessary.
Balancing shaft bearing clearance is enlarged or the holding frames broken, causing abnormal noises.	Check and replace the bearing.
Piston crown collides with the valve head.	Check and adjust the valve clearance, the thickness of the cylinder head gasket and correct the valve timing.

- LUBRICATING OIL PRESSURE IS LOW

CAUSES	SOLUTIONS
Oil level in the oil sump is too low.	Replenish oil to make the oil level up to specified height.
The grade of lubricating oil improper, with low viscosity.	Replaced by recommended grade lubricating oil.
Lubricating oil lines are choked up or leak.	Check and repair them.
Main bearing are excessively worn out or oil seal leaks extremely.	Repair or replace them.
Excessive wear of rotor and body of lubricating oil pump, or its bad assembly quality.	Check and adjust or replace them.
The piston of oil relief valve is seized below the oil return hole.	Clean or ream the oil relief valve duct.

I. CLUTCH

- CLUTCH SLIPPING

CAUSES	SOLUTIONS
Oil smear on friction disc.	Dismantle the disc, wash it with petrol and blow it dry.
Friction disc excessively worn.	Replace with new disc.
Too close contact of throw out levers and bearings.	Adjust the clearance to 0.4-0.7 mm.

- CLUTCH NOT ENGAGING COMPLETELY

CAUSES	SOLUTIONS
Too much clearance between throw out levers and bearing.	Adjust the clearance to 0.4-0.7 mm.
Too much play of clutch brake handle.	Readjust.

- CLUTCH THROW OUT BEARING GETTING HOT

CAUSES	SOLUTIONS
Poor lubrication.	Wash the bearing clean and lubricate with grease.
Constant contact of throw-out levers and bearings.	Readjust.

II. GEAR-BOX

- LOUD NOISE OR KNOCKING

CAUSES	SOLUTIONS
Gear seriously worn or gear teeth scaled.	Replace gear.
Bearing seriously worn.	Replace bearing.
Lack of gear oil or not up to requirement.	Replenish or change the oil.
Chain excessively worn.	Adjust its tension or replace with new one.

- **GEARS DIFFICULT OR UNABLE TO ENGAGE**

CAUSES	SOLUTIONS
Gear lever and its linkage not in coordination with gear shifting fork.	Readjust.
Chamfered tooth ends of gears having burrs.	Remove the burrs.

- **GEARS SLIP TO NEUTRAL AFTER ENGAGEMENT**

CAUSES	SOLUTIONS
The control lever is not in suitable position required by the transmission shifting fork.	Readjust.
Positioning notches of gear-shifting shaft seriously worn.	Turn the shifting fork by an angle.
Positioning spring slackened.	Replace with new spring.
Internal spline of gear, internal sleeve of gear or splined shaft excessively worn.	Replace the worn parts with new ones.

- **GEAR BOX GETTING HOT**

CAUSES	SOLUTIONS
Lack of gear oil or not up to mark.	Replenish or replace the oil.
Bearing seriously worn or damaged.	Replace bearing.

- **OIL-LEAKAGE OF GEAR-BOX**

CAUSES	SOLUTIONS
Oil seal incorrectly mounted or damaged.	Readjust or replace with new one.
Paper gasket damaged or bearing cover not tightened.	Replace with new paper gasket or retighten the cover.
Breathing hole on main gear lever choked.	Clean it through.

III. STEERING

- STEERING INEFFECTIVE

CAUSES	SOLUTIONS
Steering spring slackened.	Replace with new spring.
Insufficient distance between steering hand grip and handlebar.	Shorten the pull rod.
Gear oil becomes thick in winter.	Run the tractor for a time in an open court without load.
Steering fork worn out.	Replace with new one.

WARRANTY POLICY

SHRACHI POWER TILLER

NAME OF PURCHASER	Engine No.
	Chassis No. / Serial No.
	Date of Delivery

- 1) This warranty is extended only to the first purchaser of the machine for the specific period of 1 Year from the date of delivery/dispatch or 280 hrs of operation whichever is earlier provided servicing and maintenance of the machine have been strictly observed as per operator's manual and subject to condition stated below:
- 2) The warranty will be carried out only. The sales intimation card should be properly filled up by the dealer and customer, and must be submitted to the respective branches from where the machine was dispatched within 15 days from the date of sales. Unless the sales intimation has been received, no warranty claim will be entertained.
- 3) Any reconditioning/repair of the machine may be carried out by our authorised representative.
- 4) All the free & paid service should be done in the time or hour which is earlier to avail the warranty.
- 5) The warranty does not cover :
 - Natural wear and tear of the Power Tiller components.
 - Defects due to abnormal application of the power Tiller components for purposes for which it is not designed.
 - Damages due to inadequate maintenance and servicing or due to the ignorance of the operators.
 - Damages resulting from overloading of the Power Tiller, be it temporary or permanent.
 - Damages resulting from neglecting symptoms betraying defects of the Power Tiller.
- 6) The warranty ceases if spare parts, accessories or implements are not supplied by us or obtained from other sources without authorization, is used on or with the Power Tiller.
- 7) **Tyres, Tubes, Belts, Glass and Plastic Parts, Accessories Panel Instruments, Electrical Instruments, Oil Seals, Rubber Parts, Bearings etc are NOT covered by warranty.**
- 8) Dealers/customer (through dealer) should raise the warranty claim within the warranty period (six months from sales date) through proper documents with correct information to the respective factory.
- 9) The warranty ceases immediately if the Power Tiller suffers an accident.
- 10) The warranty ceases if the Power Tiller has been subjected to modification or designed and other changes without the company's approval.
- 11) The warranty expires if the Power Tiller has been reconditioned or repaired in any other shops or by persons other than those authorised by the company.
- 12) Warranty shall not apply in case of any defects in materials or parts, which cannot be discovered by ordinary factory inspection.
- 13) The warranty shall provide for either repair or replacement according to the discretion of the company.
- 14) Warranty claims to be sent to the factory within a month from the date of failure with all necessary documents & failed parts.
- 15) If the claim does not reach within a month of replacement / repair the same will be rejected.
- 16) Ignorance of Warranty Policy will not be entertained.

Customer signature

Dealer's Stamp, Sign and date

SHRACHI POWER TILLER

- 1) **Training:** Thorough training in the operation and maintenance will be given by the dealer before delivery of the Power Tiller.
- 2) **Inspection:** Prior to delivery our dealer will carry out the pre-delivery service of the machine.
- 3) **Free & Paid Services:** Our dealer will render two free services as follows:
 - i) PDI : Before delivery to the customer this checking should be done at dealer point.
 - ii) 1st free service within 70 hours of operation or 3 months from the date of delivery whichever is earlier.
 - iii) 2nd free service within the next 140 hours of operation or 6 months from the date of delivery whichever is earlier.
 - iv) 1st paid service within the next 210 Hrs of operation or 9 months from the date of delivery whichever is earlier.
 - v) 2nd paid service within the next 280 Hrs or 12 months from the date of delivery whichever is earlier.
- 4) Our authorised dealer is ready with specialist mechanics and modern facilities to give expert advice on any question regarding Shrachi power tiller at any time, even after expiry of the warranty period.

PDI AT DEALER POINT

MECHANICS REPORT

Model :	
Chassis No. :	
Engine no. :	

SHRACHI POWER TILLER

GENERAL CONDITION OF POWER TILLER

(Mark in the appropriate box)

	Clean	Dirty	Normal	Below Normal
Water in the radiator				
Water cleaner oil				
Engine oil				
Gear box oil				
Chain case oil				

<p>Indications of any defect/ mishandling/ accident noted. (describe indicating name and Dr. no. of parts, specify suspected cause and action taken, if any , to rectify</p>
<ol style="list-style-type: none"> Engine Clutch Gearbox Chaincase Body Anyother

Mechanic's Name	Signature
-----------------	-----------

PDI SERVICING

MARK AFTER EACH OPERATION IS COMPLETED

- 1) Clean the machine thoroughly.
- 2) Clean crank case after running the engine for 3 minutes and change engine oil (40 grade or 20w40 grade or 15w30 grade [in cooler places]).
- 3) Clean lubricating oil filter.
- 4) Clean air cleaner and filter, change oil in case of oil bath type air cleaner.
- 5) Change gear case oil if necessary (ep90 or ep140).
- 6) Check whether the connection bolts are loose or not and fasten the loose bolts according to their moment.
- 7) Oil main clutch thrust bearing and intermediate bearing, main clutch lever etc., if necessary.
- 8) Oil steering clutch lever joints, arm shafts and shaft from arm shaft.
- 9) Listen and check if there is malfunction of any parts (such as abnormal noise, overheat, loose screw and so on).
- 10) Adjust clutch, accelerator, brake etc, if necessary.
- 11) Lubricate all moving parts.
- 12) Check and tighten rotavator blade nuts.
- 13) Change the fuel filter, if necessary, otherwise clean and install again for the first servicing.
- 14) Adjust valve clearance when the engine is cold.
- 15) Check and adjust the level of dragbar assembly.
- 16) Check the safety pin location.
- 17) Check the rpm of engine & pto shaft.
- 18) Check all the control systems.
- 19) Check the tyre pressure properly and fill in with recommended pressure.

MECHANIC	PURCHASER
Sign	Sign
Name	Name
Date	Date

SL NO-		
SHRACHI POWER TILLER		
Model		
Chassis No.		
Engine No.		
Date of Delivery		
Hours of Operation		Due within 70 Hrs or 3 months whichever is earlier
Date of Service		
Service has been done to my Satisfaction		1 st free service
Name & Signature of owner		
Dealer's Name & Signature		
Owner's Copy		

PDI COUPON

SL NO- PDI at dealer point		
SHRACHI POWER TILLER		
Model		
Chassis No.		
Engine No.		
Date of Delivery		
Hours of Operation		Due within before delivery of machine
Date of Service		
Service has been done to my Satisfaction		PDI
Name & Signature of owner		
Dealer's Name & Signature		
Company's copy to be returned immediately after PDI		

Model :	
Chassis No. :	
Engine no. :	

MECHANICS REPORT

SHRACHI POWER TILLER

GENERAL CONDITION OF POWER TILLER

(Mark in the appropriate box)

	Clean	Dirty	Normal	Below Normal
Water in the radiator				
Water cleaner oil				
Engine oil				
Gear box oil				
Chain case oil				

Indications of any defect/ mishandling/ accident noted. (describe indicating name and Dr. no. of parts, specify suspected cause and action taken, if any , to rectify

1. Engine
2. Clutch
3. Gearbox
4. Chaincase
5. Body
6. Anyother

Mechanic's Name	Signature
------------------------	------------------

FIRST FREE SERVICING

(MARK AFTER EACH OPERATION IS COMPLETED)

1. Clean the machine thoroughly.
2. Clean crank case after running the engine for 3 minutes and change engine oil (40 grade or 20w40 grade or 15w30 grade [in cooler places]).
3. Clean lubricating oil filter.
4. Clean air cleaner and filter, change oil in case of oil bath type air cleaner.
5. Change gear case oil if necessary (ep90 or ep140).
6. Check whether the connection bolts are loose or not and fasten the loose bolts according to their moment.
7. Oil main clutch thrust bearing and intermediate bearing, main clutch lever etc., if necessary.
8. Oil steering clutch lever joints, arm shafts and shaft from arm shaft.
9. Listen and check if there is malfunction of any parts (such as abnormal noise, overheat, loose screw and so on).
10. Adjust clutch, accelerator, brake etc, if necessary.
11. Lubricate all moving parts.
12. Check and tighten rotavator blade nuts.
13. Change the fuel filter, if necessary, otherwise clean and install again for the first servicing.
14. Adjust valve clearance when the engine is cold.
15. Check and adjust the level of dragbar assembly.
16. Check the safety pin location.
17. Check the rpm of engine & pto shaft.
18. Check all the control systems.
19. Check the tyre pressure properly and fill in with recommended pressure.

MECHANIC	PURCHASER
Sign	Sign
Name	Name
Date	Date

SL NO-		
SHRACHI POWER TILLER		
Model		
Chassis No.		
Engine No.		
Date of Delivery		
Hours of Operation		Due within before delivery of machine
Date of Service		
Service has been done to my Satisfaction		
Name & Signature of owner		PDI
Dealer's Name & Signature		
Owner's Copy		

1st free service coupon (RS. 300)

SL NO- 1 st free Service		
SHRACHI POWER TILLER		
Model		
Chassis No.		
Engine No.		
Date of Delivery		
Hours of Operation		Due within 70 Hrs or 3 months whichever is earlier
Date of Service		
Service has been done to my Satisfaction		
Name & Signature of owner		1 st free service
Dealer's Name & Signature		
Company's copy to be returned immediately after 1 st free service		

Model :	
Chassis No. :	
Engine no. :	

MECHANICS REPORT

SHRACHI POWER TILLER

GENERAL CONDITION OF POWER TILLER

(Mark in the appropriate box)

	Clean	Dirty	Normal	Below Normal
Water in the radiator				
Water cleaner oil				
Engine oil				
Gear box oil				
Chain case oil				

<p>Indications of any defect/ mishandling/ accident noted. (describe indicating name and Dr. no. of parts, specify suspected cause and action taken, if any , to rectify</p>
<ol style="list-style-type: none"> 1. Engine 2. Clutch 3. Gearbox 4. Chaincase 5. Body 6. Anyother

Mechanic's Name	Signature
------------------------	------------------

SECOND FREE SERVICING

(MARK AFTER EACH OPERATION IS COMPLETED)

- 1) Clean the machine thoroughly.
- 2) Clean crank case after running the engine for 3 minutes and change engine oil (40 grade or 20w40 grade or 15w30 grade [in cooler places]).
- 3) Clean lubricating oil filter.
- 4) Clean air cleaner and filter, change oil in case of oil bath type air cleaner.
- 5) Change gear case oil if necessary (ep90 or ep140).
- 6) Check whether the connection bolts are loose or not and fasten the loose bolts according to their moment.
- 7) Oil main clutch thrust bearing and intermediate bearing, main clutch lever etc., if necessary.
- 8) Oil steering clutch lever joints, arm shafts and shaft from arm shaft.
- 9) Listen and check if there is malfunction of any parts (such as abnormal noise, overheat, loose screw and so on).
- 10) Adjust clutch, accelerator, brake etc, if necessary.
- 11) Lubricate all moving parts.
- 12) Check and tighten rotavator blade nuts.
- 13) Change the fuel filter, if necessary, otherwise clean and install again for the first servicing.
- 14) Adjust valve clearance when the engine is cold.
- 15) Check and adjust the level of dragbar assembly.
- 16) Check the safety pin location.
- 17) Check the rpm of engine & pto shaft.
- 18) Check all the control systems.
- 19) Check the tyre pressure properly and fill in with recommended pressure.

MECHANIC	PURCHASER
Sign	Sign
Name	Name
Date	Date

SL NO-		
SHRACHI POWER TILLER		
Model		
Chassis No.		
Engine No.		
Date of Delivery		
Hours of Operation		Due within 140 Hrs or 6 months whichever is earlier
Date of Service		
Service has been done to my Satisfaction		
Name & Signature of owner		2 nd free service
Dealer's Name & Signature		
Owner's Copy		

2nd free service coupon (Rs. 300)

SL NO- 2 nd free Service		
SHRACHI POWER TILLER		
Model		
Chassis No.		
Engine No.		
Date of Delivery		
Hours of Operation		Due within 140 Hrs or 6 months whichever is earlier
Date of Service		
Service has been done to my Satisfaction		
Name & Signature of owner		2 nd free service
Dealer's Name & Signature		
Company's copy to be returned immediately after 2 nd free service		

Model :	
Chassis No. :	
Engine no. :	

MECHANICS REPORT

SHRACHI POWER TILLER

GENERAL CONDITION OF POWER TILLER

(Mark in the appropriate box)

	Clean	Dirty	Normal	Below Normal
Water in the radiator				
Water cleaner oil				
Engine oil				
Gear box oil				
Chain case oil				

<p>Indications of any defect/ mishandling/ accident noted. (describe indicating name and Dr. no. of parts, specify suspected cause and action taken, if any , to rectify</p>
<ol style="list-style-type: none"> 1. Engine 2. Clutch 3. Gearbox 4. Chaincase 5. Body 6. Anyother

Mechanic's Name	Signature
------------------------	------------------

1st PAID SERVICING

(MARK AFTER EACH OPERATION IS COMPLETED)

- 1) Clean the machine thoroughly.
- 2) Clean crank case after running the engine for 3 minutes and change engine oil (40 grade or 20w40 grade or 15w30 grade [in cooler places]).
- 3) Clean lubricating oil filter.
- 4) Clean air cleaner and filter, change oil in case of oil bath type air cleaner.
- 5) Change gear case oil if necessary (ep90 or ep140).
- 6) Check whether the connection bolts are loose or not and fasten the loose bolts according to their moment.
- 7) Oil main clutch thrust bearing and intermediate bearing, main clutch lever etc., if necessary.
- 8) Oil steering clutch lever joints, arm shafts and shaft from arm shaft.
- 9) Listen and check if there is malfunction of any parts (such as abnormal noise, overheat, loose screw and so on).
- 10) Adjust clutch, accelerator, brake etc, if necessary.
- 11) Lubricate all moving parts.
- 12) Check and tighten rotavator blade nuts.
- 13) Change the fuel filter, if necessary, otherwise clean and install again for the first servicing.
- 14) Adjust valve clearance when the engine is cold.
- 15) Check and adjust the level of dragbar assembly.
- 16) Check the safety pin location.
- 17) Check the rpm of engine & pto shaft.
- 18) Check all the control systems.
- 19) Check the tyre pressure properly and fill in with recommended pressure.

MECHANIC	PURCHASER
Sign	Sign
Name	Name
Date	Date

SL NO-		
SHRACHI POWER TILLER		
Model		
Chassis No.		
Engine No.		
Date of Delivery		
Hours of Operation		Due within 210Hrs or 9 months whichever is earlier
Date of Service		
Service has been done to my Satisfaction		
Name & Signature of owner		1 st paid service
Dealer's Name & Signature		
Owner's Copy		

1st Paid service

SL NO- 1 st Paid Service		
SHRACHI POWER TILLER		
Model		
Chassis No.		
Engine No.		
Date of Delivery		
Hours of Operation		Due within 210 Hrs or 9 months whichever is earlier
Date of Service		
Service has been done to my Satisfaction		
Name & Signature of owner		1 st paid service
Dealer's Name & Signature		

Model :	
Chassis No. :	
Engine no. :	

MECHANICS REPORT

SHRACHI POWER TILLER

GENERAL CONDITION OF POWER TILLER

(Mark in the appropriate box)

	Clean	Dirty	Normal	Below Normal
Water in the radiator				
Water cleaner oil				
Engine oil				
Gear box oil				
Chain case oil				

Indications of any defect/ mishandling/ accident noted. (describe indicating name and Dr. no. of parts, specify suspected cause and action taken, if any , to rectify

6. Engine
7. Clutch
8. Gearbox
9. Chaincase
10. Anyother

Mechanic's Name	Signature
------------------------	------------------

2nd PAID SERVICING

(MARK AFTER EACH OPERATION IS COMPLETED)

- 1) Clean the machine thoroughly.
- 2) Clean crank case after running the engine for 3 minutes and change engine oil (40 grade or 20w40 grade or 15w30 grade [in cooler places]).
- 3) Clean lubricating oil filter.
- 4) Clean air cleaner and filter, change oil in case of oil bath type air cleaner.
- 5) Change gear case oil if necessary (ep90 or ep140).
- 6) Check whether the connection bolts are loose or not and fasten the loose bolts according to their moment.
- 7) Oil main clutch thrust bearing and intermediate bearing, main clutch lever etc., if necessary.
- 8) Oil steering clutch lever joints, arm shafts and shaft from arm shaft.
- 9) Listen and check if there is malfunction of any parts (such as abnormal noise, overheat, loose screw and so on).
- 10) Adjust clutch, accelerator, brake etc, if necessary.
- 11) Lubricate all moving parts.
- 12) Check and tighten rotavator blade nuts.
- 13) Change the fuel filter, if necessary, otherwise clean and install again for the first servicing.
- 14) Adjust valve clearance when the engine is cold.
- 15) Check and adjust the level of dragbar assembly.
- 16) Check the safety pin location.
- 17) Check the rpm of engine & pto shaft.
- 18) Check all the control systems.
- 19) Check the tyre pressure properly and fill in with recommended pressure.

MECHANIC	PURCHASER
Sign	Sign
Name	Name
Date	Date

SL NO-		
SHRACHI POWER TILLER		
Model		
Chassis No.		
Engine No.		
Date of Delivery		
Hours of Operation		
Date of Service		Due within 280Hrs or 12 months whichever is earlier
Service has been done to my Satisfaction		
Name & Signature of owner		2 nd Paid service
Dealer's Name & Signature		
Owner's Copy		

2nd Paid service

SL NO- 2 nd Paid Service		
SHRACHI POWER TILLER		
Model		
Chassis No.		
Engine No.		
Date of Delivery		
Hours of Operation		
Date of Service		Due within 280 Hrs or 12 months whichever is earlier
Service has been done to my Satisfaction		
Name & Signature of owner		2 nd paid service
Dealer's Name & Signature		

