STARTRAC

STARTRAC

10 - 30 HP Small Tractors Series

8G EIGHTH GENERATION

OPERATOR'S MANUAL

273 – 4WD – 8G – STAGE - V

EDITION - 200907

OPERATION MANUAL – 273 - 4WD – 8G – STAGE – V

www.captaintractors.com

† INDEX †

CHAPTER -1
TRACTOR IDENTIFICATION

1.1 ENGINE SERIAL NUMBER ON ENGINE TOP SIDE

Your tractor is identified by a serial number, whose engine No. is pasting on engine top (fig. 1. 1). Data plate is fixed on the right side of fender & which chassis number mentioned right on main chassis of front. (Fig.1.2)

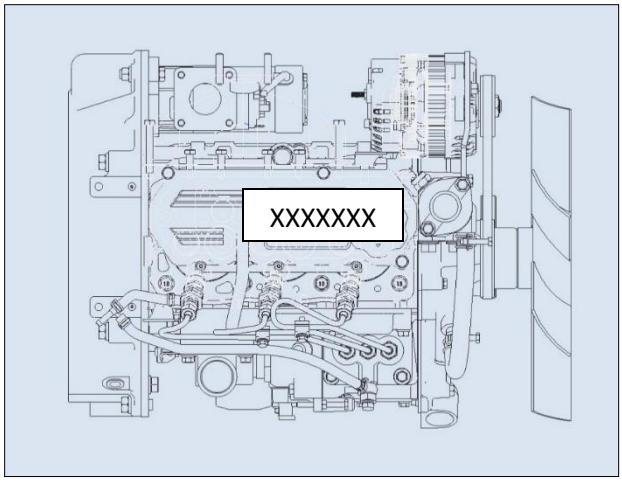


Fig 1.1

Always state the chassis and engine serial number to ensure prompt and efficient service when ordering spare parts or when asking for technical explanations or other information.

Tractor Model/Engine No. /Chassis No. (Fig.1-2)

Owner .....

Address of dealer .....

Delivery date .....

Warranty expiry date .....

NOTE: Look after this Operation and maintenance Manual carefully and consult it whenever in doubt. This publication has been written in compliance with International Standard ISO 3600 'Guide for information, contents and presentation of operation and maintenance manuals supplied with tractors and machinery for agricultural and forestry use.

1.2 CHASSIS NUMBER & WHOLE VEHICLE TYPE APPROVAL NUMBER

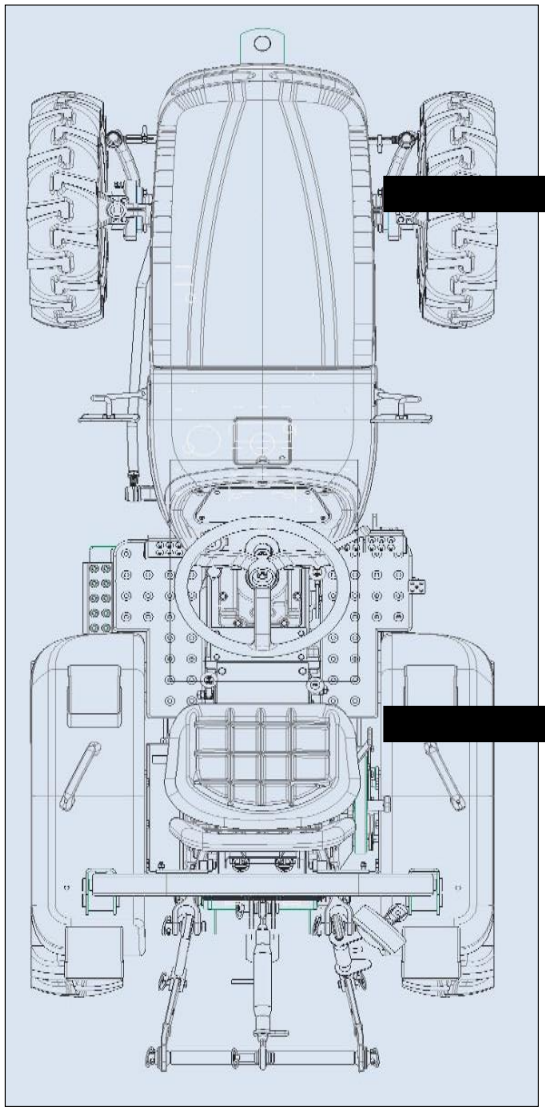
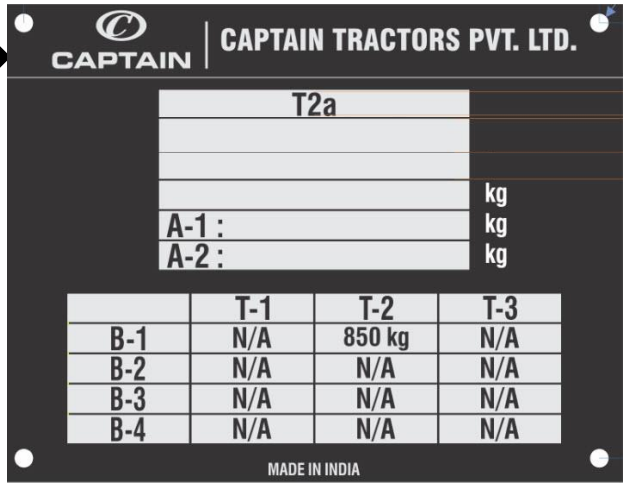


Fig.1-2

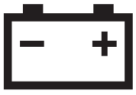
Chassis Number Location



Chassis Number Plate Location

1.3 UNIVERSAL SYMBOLS

As a guide to the operation of your, various universal symbols have been utilized on the instruments and controls. The symbols are shown below with an indication of their Meaning.

	**Hazard Warning Lights**		**Four Wheel Drive – On**
	**Read operator Manual**		**Four Wheel Drive**
	**Position Lamps**		**Fast**
	**Headlight Beam**		**Slow**
	**Parking Brake**		**Pre – Heat**
	**Engine Coolant Temperature**		**Engine On**
	**Battery Charging Condition**		**Engine Start**
	**Engine Oil – Pressure**		**Engine Shut off**
	**Turn Signal**		**Power Take-off clutch control – Off Position**
	**Engine Speed Control**		**Power Take-off clutch control – On Position**
	**Position Control – Lowered Position**		**Position Control – Raised Position**

CHAPTER -2
INTRODUCTION, WARRANTY & SAFETY NOTES

2.1 INTRODUCTION

NOTE: This book is published for worldwide distribution, and availability of equipment shown either as basic or accessory may vary according to the territory in which the tractor is to be operated. Full details of equipment available in your area can be obtained from your Dealer.

The purpose of this book is to enable the owner and driver to operate the tractor in a safe manner. Providing that the instructions are followed carefully, the tractor will give years of service in our tradition.

The installation of the product by the Dealer gives the opportunity to ensure that the operating and maintenance instructions are understood. Always consult your Dealer if do not understand any part of this book. It is important that these instructions are understood and observed. Daily maintenance should become a routine, and a record of hours in service should be kept.

When new parts are required it is important that only genuine service parts are used. Our Authorized Dealers supply genuine parts and can give advice regarding their fitment and use. Extensive damage may occur as a result of the fitment of parts of inferior quality, Customers are advised to buy their service parts only from an authorized Dealer.

Owing to wide variations in operating conditions, it is impossible for the Company to make comprehensive or definitive statements in its publications regarding performance or methods of use of its machines, or to accept liability for any loss or damage which may result from these statements, or from any errors or omissions. If the tractor is to be used for abnormal conditions which may be detrimental (e.g. deep water / paddy fields) consult your Dealer for special instructions, or the warranty may be invalidated.

These tractors are designed solely for use in customary agricultural operations (intended use).
Use in any other way is considered as contrary to the intended use. The tractor manufacturer accepts no liability for any damage or injury resulting from misuse and these risks must be borne solely by the user Compliance with, and strict adherence to, the conditions of operation, service and repair as specified by the manufacturer also constitute essential elements for the intended use. These tractors should be operated, serviced and repaired only by persons familiar with all their characteristics and who are acquainted with the relevant safety rules (accident prevention). Customers are strongly advised to use an official authorized Dealer in connection with any service problems and adjustment that may occur.

2.2 WARRANTY PROCEDURE

Correct installation, coupled with regular maintenance, will do much to prevent breakdowns. If, however, operating trouble is experienced during the warranty period, the following procedure must be adopted: -

Immediately notify the Dealer from whom you purchased the tractor, quoting the Model and Serial Number. It is most important that there should be no delay, and you should realize that, even where the original failure is covered by warranty .if the failure is not repaired immediately, warranty cover may not apply Provide your Dealer with as much background information as you can. It will help him to know how many hours service has been achieved, the type of work on which you are engaged and the symptoms of the trouble.

It should be noted that normal maintenance services such as tuning, brake/clutch adjustments, and the supply of materials used to service the tractor (oil, filters, fuel and antifreeze) are not covered by terms of the warranty.

2.3 PARTS WARNING

The fitment of non-genuine parts may result in a part of substandard quality being used. The tractor manufacturer will not take the responsibility for any loss, damage or liability resulting from the fitment of such parts, and, if fitted during the normal warranty period the manufacturer's guarantee may be invalidated.

2.4 IF YOU MOVE

Only the official dealer from whom you purchase the tractor is responsible for the protection afforded by your warranty and, where possible, you should always take the tractor to him for repair. If, however. you move to another area or if your tractor should be working temporarily at some distance from the Dealer from whom it was purchased, you are recommended to obtain from the original Dealer the name and address of the Dealer nearest to your new location and to ask for arrangements to be made for outstanding service warranty commitments to be transferred to the latter. If you have left the area in which the original Dealer operates and have not made arrangements with your new Dealer, the latter will readily provide assistance in emergency, but you will be charged at normal rates for any work undertaken unless:

You make it clear that the warranty has not expired, and You give the repairing Dealer the opportunity to make suitable arrangements with the retailing Dealer. However, you moved outside of the operation area of retail dealer and if there is no dealer in that particular region, then the warranty cannot be availed.

2.5 SERVICE AFTER WARRANTY

During the warranty period, you should have all your repairs and maintenance performed by your dealer. This ensures that a detailed check is kept on the progress and performance of your new tractor.

In order to obtain the best results from your tractor it is important that regular maintenance and service checks continue after the warranty period has expired. Make use of your local Dealer for all major tractor services; a trained engineer will spot any problems between the service and the next.

The mechanics are regularly trained and updated on the product, servicing techniques and the use of modern service tools and diagnostic equipment. They receive regular Service Bulletins; have all Workshop Manuals and other such technical information to ensure that the repair or service is to the standard required.

2.6 SAFETY

The safety of operator is one of the main concerns in designing and developing a new tractor. Designers build in as many safety features as possible. However, every year many accidents occur which could have been avoided by a few seconds thought and a more careful approach to handling farm machinery and implements.

2.7 INTERNATIONAL WARRANTY POLICY FOR EU TRACTORS

Under the policy, tractors manufactured by company and delivered to end customers through company's authorized dealers are warranted for free replacement of parts with MANUFACTURING defect within a period of 730 days from date of installation (sale/delivery) OR 1000 Hours from date of installation (sale/delivery) OR 900 Days from the Date of B/L, whichever occurs earlier, provided all the below mentioned mandatory services have been availed by the customer in the specified time period.

Defective parts are identified as original parts fitted on tractor as per approval but are not as per company's drawings and there is a manufacturing defect observed in it.

Defective parts are to be replaced free of cost by area dealer who further gets free replacement or equivalent credit amount from company under specified procedure of warranty, provided the cost of an individual item or part is above USD 10.
Labor charges will be borne by the dealer.

FOLLOWING PARTS ARE NOT COVERED UNDER WARRANTY ----

(A)--- Rubber parts inclusive of oil seals, O' rings, joints & gaskets.
(B)--- Electricals such as bulbs, fuses, wiring harness & switches.
(C)--- Items subject to wear & tear such as Brake linings, clutch linings, etc.
(D)--- Consumable items such as Lubricants, Filter elements, etc.

- Parts damaged due to misuse, accident, use of non–recommended implements will not be considered under warranty.
- All warranty claims are subject to mandatory services taken from authorized dealers & coupons submitted to dealer for onward submission to company.
- Sole authority to accept/ reject warranty claim lies with company's management.

WARRANTY OF SPECIFIC ITEMS SUCH AS:

- **TIRES/TUBES:** Wear and Tear is not covered under warranty
- **BATTERY:** Warranty is limited to 12 months from the date of B/L provided correct installation and regular maintenance has been carried out.

MANDATORY SERVICES TO BE AVAILED BY CUSTOMERS TO BE ELIGIBLE FOR WARRANTY:

1st Service within 01 month from the date of delivery or 50 hours, whichever occurs earlier.

2nd Service within 03 months from the date of delivery or 250 hours, whichever occurs earlier.

3rd Service within 06 months from the date of delivery or 500 hours, whichever occurs earlier.

4th Service within 12 months from the date of delivery or 750 hours, whichever occurs earlier.

5th Service within 18 months from the date of delivery or 1000 hours, whichever occurs earlier.

Date:

For the Company
Captain Tractors Pvt. Ltd.

For Distributor / Dealer: _____

Country: _____

2.8 SAFETY ALERT SYMBOLS AND TERMS

This safety alert symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

The safety alert symbol identifies important safety messages on machines, safety signs, in manuals or elsewhere. When you see this symbol, be alert to the possibility of personal injury or death.

Why is SAFETY important to you?

***ACCIDENT DISABLE and KILL* * ACCIDENTS are COSTLY * ***

ACCIDENTS can be AVOIDED

SAFETY: TRACTOR and IMPLEMENT

- The tractor is a source of power: Both mechanical and hydraulic.
- On its own, the tractor is of little practical value. Only when used in conjunction with an implement or other attachment does it become a working unit.
- This instruction book is compiled to cover those safe working practices that are associated with the base tractor operation.
- It does not cover all operation and safety instructions relevant to all known implements and attachments that may be fitted at the time of tractor delivery or at some future date.
- It is essential that operators use and understand the relevant instruction manual of such implements and attachments.

2.9 SAFETY: INTRODUCTION

This safety section of your Operator Instruction book is intended to point out some of the basic safety situations which may be encountered during the normal operation and maintenance of your PLATFORM, and to suggest possible ways of dealing with these situations. This section is NOT a replacement for other safety practices featured in other sections of this book Additional precautions may be necessary depending on attachments used and conditions at the work site or in the service area. The tractor manufacturer has no direct control over tractor application, operation, inspection, lubrication or maintenance. Therefore, it is YOUR responsibility to use good safety practices in these areas.

2.10 SAFETY: A WORD TO THE OPERATOR

It is YOUR responsibility to read and understand the safety section in this manual before operating your tractor. You must follow these safety instructions that take you step by step through your working day

In reading this section, you will note that illustrations have been used to highlight certain situations. Each illustration is numbered, and the same number appears in the text in parenthesis. This number is placed at the end of the written text that refers to the illustration and is made up of two digits, separated by a hyphen: the first digit designates the chapter, the second one of the figure number in that chapter (e.g.Fig.2-30 of chapter 2). Remember that YOU are the key to safety. Good safety practices not only protect you, but also the people around you. Study the features in this manual and make them a working part of your safety program. Keep in mind that this safety section is written only for this type of machine. Practice all other usual and customary safe working precautions, and above all remember are the key to SAFETY IS YOUR RESPONSIBILITY. YOU CAN PREVENT SERIOUS INJURY.

2.11 SAFETY: DANGER, WARNING and CAUTION

Whenever you see the words and symbols shown below, used in this book and on decals, you must take note of their instructions as they relate to personal safety.

DANGER: The symbol and the word DANGER indicates an imminently hazardous situation, which, if not avoided, will result in DEATH OR VERY SERIOUS INJURY.

WARNING: The symbol and the word WARNING indicate a potentially hazardous situation. If the instructions or "procedures are not correctly followed it could result in DEATH OR SERIOUS INJURY.

CAUTION: The symbol and the word CAUTION indicate a "potentially hazardous situation, which, if not avoided, may result in MINOR INJURY.

IMPORTANT:

The word IMPORTANT is used to identify special instructions or procedures which, if not strictly observed, could result in damage to, or destruction of the machine, process or its surroundings.

NOTE:

The word NOTE is used to indicate point of interest for more efficient and convenient repair or operation.

2.12 SAFETY: DECALS

Replace any DANGER, WARNING, CAUTION or Instruction Decals that are not readable or are missing. Replacement decals are available from your Dealer in the event of loss or damage. The actual location of these safety Decals is illustration at the end of this section.
If a used tractor has been purchased, refer to the illustration at the end of this section to ensure that all the safety WARNING decals are in the correct position and are readable.

WARNING: DO NOT remove or obscure DANGER, WARNING, CAUTION or Instruction decals.

2.13 SAFETY: FOR SAFE OPERATION:

For safe operation of an agricultural tractor, you must be a qualified and authorized operator. To be qualified you must understand the written instructions supplied in this Operator Instruction Book, have training, and know the safety rules and regulations for the job.

Some regulations specify, for example, that no one under the age of 18 years (according to European Rules) may operate power machinery. This includes tractor, it is your responsibility to know what these regulations are, and obey them, in the operating area of situation.

These will include, but are not limited to, the following instructions for safe tractor operations:

WARNING: An operator should not use alcohol or drugs which can change his/her alertness or co-ordination. An operator on prescription or 'over the counter' drugs needs medical advice on whether or not he or she can properly operate machines.

OBSERVE THE FOLLOWING PRECAUTIONS:

- NEVER allow children or unqualified persons to operate your tractor. Keep others away from your area of work.
- Securely fasten your seat belt when the tractor has a safety frame in the upright position.
- Where possible, avoid operating the tractor near ditches, embankments and holes. Reduce speed when turning, crossing slopes, and on rough, slippery, or muddy surfaces.
- Stay off slopes too steep for safe operation.
- Watch where you are going, especially at row ends, on roads, and around trees.
- DO NOT permit others to ride on the tractor or the implement unless an approved passenger seat is fitted.
- Hitch only to the drawbar and recommended hitch points, and never above the center line of the rear axle.
- Operate the tractor smoothly - no jerky turns, starts or stops, when the tractor is stopped, apply the parking brakes securely.
- Never modify or remove any part of the equipment and never use attachments unless they are properly matched to your tractor.

2.14 SAFETY FRAME

A Safety Structure (ROPS – Roll Over Protection Structure) and seat with belt are fitted as standard equipment to the platform tractor at the time of factory assembly. If the safety frame was deleted by the original purchaser or has been removed, it is recommended that you equip your tractor with a Safety Structure and a seat belt. Safety frames are effective in reducing injuries during overturn accidents. A tractor overturning without safety frame can result in serious injury or death (fig.2-1) Depending on laws in force in the various markets, a seat with belt may be installed. Always raise the safety frame before installation or use. Always raise the safety frame before fastening the seat belt.

Fig.2-1 (ROPS)

If a fold-down safety frame is installed. DO NOT wear a seat belt when the safety frame is in folded down position. NEVER keep the safety frame in the folded down position when working with the tractor.

OPERATION:

Before using the tractor ensure that the safety frame is not damaged, that it is securely fastened to the tractor, and, if a hinged section is fitted, that it is in the raised position and secured.

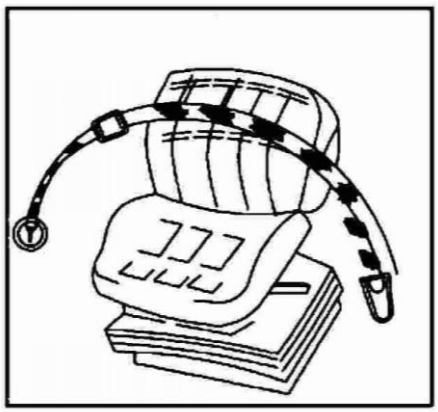


Fig.2-2

If the safety frame has been removed from the tractor, or folded down for a specific operation, it must be refitted or erected immediately using the proper hardware and applying the recommended torque value.

DO NOT ATTACH chains, ropes or cables to the safety frame for pulling purposes; this will cause the tractor to tip backwards. Always pull from the tractor drawbar.

If a seat belt is installed, always wear your seat belt-adjusted snugly except when operating with a folded down safety frame or if the safety frame has been removed (Fig. 2-2)
Check the seat belt for damage. A damaged seat belt must be replaced (Fig. 2-2).

DAMAGE TO THE SAFETY FRAME:

If the tractor has rolled over or the safety frame has been damaged (such as striking an overhead object during transport), the safety frame must be replaced to provide the original degree of protection.

After an accident, check for damage to the safety frame operator's seat, seat belt and seat mountings. Before you operate the tractor, replace all damaged parts.

DO NOT WELD, DRILL, BEND OR STRAIGHTEN THE SAFETY FRAME. IF DONE, IT WILL REDUCE THE PROTECTION IT OFFERS.

IT WILL REDUCE THE PROTECTION IF ANY OF THE ABOVE POINT IS NOT TAKEN IN CONSIDERATION.

THE COMPANY ASSUMES NO LIABILITY TOWARDS DISREGARDS OF THE ABOVE SAFETY POINT.

2.15 SAFETY: PREPARE FOR SAFE OPERATION

PROTECT YOURSELF:

Wear all the protective clothing and personal safety devices issued to you or called for by job conditions. Don't take risk hence you may carry/wear the following (fig. 2-3)

A. A hard hat.
B. Safety glasses, goggles or face shield.
C. Hearing protection.
D. Respirator or filter mask.
E. Inclement weather clothing.
F. Reflective clothing.
G. Heavy gloves (neoprene for chemical, leather for rough work).
H. Safety shoes.

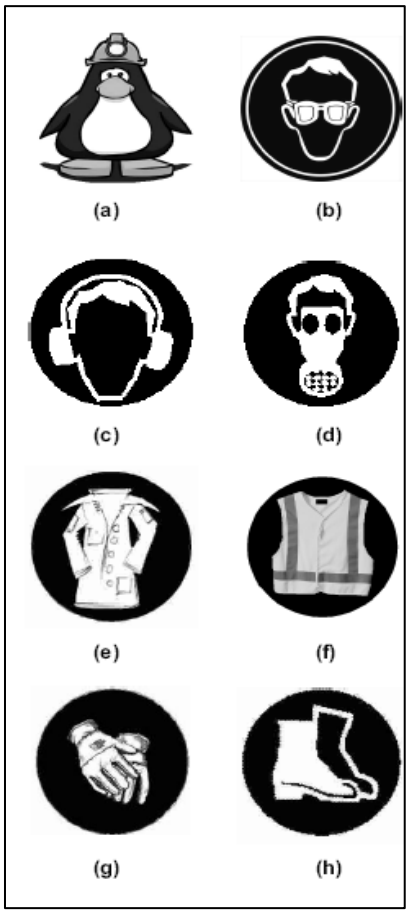


Fig.2-3

NOTE:

1. DO NOT wear loose clothing, jewelry or other items and tie up long hair which could catch on controls or other parts of the tractor.
2. Learn where fire extinguishers and first aid or emergency equipment is kept and where to get help in a hurry. Make sure you know how to use this equipment.

2.16 KNOW YOUR EQUIPMENT:

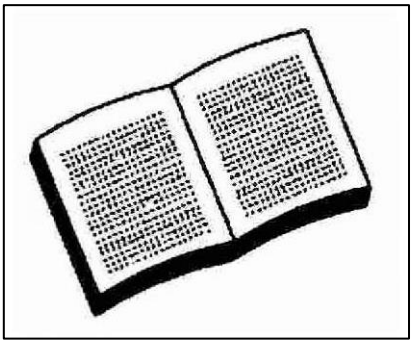


Fig.2-4

Know your tractor. Know how to operate all equipment on your machine and the implements and attachments used with it. Know the purpose of all the controls, gauges and dials. Know the rated load capacity, speed range, braking and steering characteristics turning radius and operating clearances Keep in mind that rain, snow, ie, loose gravel, soft ground, etc. can change the way your tractor operates. ***Under poor conditions, slow down and be extra careful, engage four-wheel drive, if fitted.***

Study the DANGER, WARNING or CAUTION safety signs on your tractor and the information signs also. Read this operator instruction book before starting the engine. Study it before you start the work (fig 2-4).
If there is something in the manual you don't understand, ask someone (such as your equipment dealer) to explain it to you.

IMPORTANT: This manual covers general safe practices for agricultural tractor it must always be kept with the tractor. For further copies contact you're Dealer.

2.17 USE ALL AVAILABLE PROTECTIVE DEVICES

DO NOT smoke while refueling the tractor. Keep any type of open flame away (Fig.2-6) Check for loose, broken, missing, or damaged parts. Have everything put into good repair. Make certain all safety devices are in place.
Check safety frame and seat belt for damage. A damage safety frame or seat belt MUST be replaced. Ensure that implements and attachments are properly installed and that the tractor and implement P.T.O. RPM ratings match.
Check the tires for cuts, bulges and correct pressure. Replace worn or damaged tires. Check foot and parking brakes for proper operation. Adjust if necessary.

- Stop the engine and wait for it to cool before refueling. Check the engine oil level and add oil if required.
- Perform all maintenance procedures outlined in the maintenance and adjustment section of this manual.
- Check that the PTO drive locking devices are latched.
- Check that the tractor PTO shield and driveline guards are in place and operating properly.
- Check the tractor and implement hydraulic system. Have any leaks or damaged parts repaired or renewed.

WARNING: Diesel fuel or hydraulic fluid under pressure can penetrate the skin or eyes and cause serious personal injury, blindness or death. Fluid leaks, under pressure, may not be visible. Use a piece of cardboard or wood to find leaks. Never use your bare hand. Wear safety goggles for eye protection. If any fluid is injected into the skin, it MUST be surgically removed within a few hours by a doctor familiar with this type of injury (fig. 2-6)

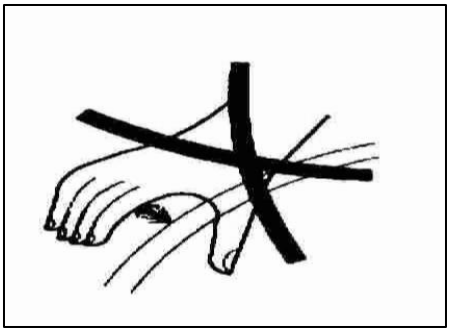


Fig.2-6

Before applying pressure to the fuel or hydraulic system, be sure all connections are tight and that lines, pipes, and hoses are not damaged. Before disconnecting fuel or hydraulic lines, be sure to relieve all pressure. Make sure that all hydraulic lines are correctly installed and not tangled.

WARNING: Liquid cooling systems build up ' pressure as the engine gets hot. Before removing the radiator cap, stop the engine and let the system cool.
Check the engine cooling system and add coolant as required.

2.18 CLEAN THE TRACTOR:

- Keep work surfaces and engine compartments clean.
- Before cleaning the machine, always lower implements to the ground, place transmission in neutral, engage the parking brake, shut off the engine and remove the key.
- Clean steps, pedals and floor. Remove grease or oil, Brush away dust or mud. In winter, scrape away snow and ice. Remember-slippery surfaces are dangerous.
- When plastic parts need to be cleaned (such as console, instrument panel, indicators etc.), do not use petrol, paraffin, diluents etc.
- They could cause discoloration, cracking or warping of the cleaned parts.
- These parts should ONLY be cleaned with water, neutral soap and a soft cloth.
- Remove and store implements, keys, hitches etc. in their proper places.

2.19 PROTECT THE ENVIRONMENT:

It is illegal to pollute drains, water courses or soil. Use authorized waste disposal facilities, including civic amenity sites and garages providing facilities for disposal of used oil. If in doubt, contact your local authority for advice. To get to know the correct methods to dispose of oils, filters, tires etc. contact your Dealer or the local agency for waste recycling.

2.20 ONLY FOR NORTH AMERICA:

The safety sheets of each material give information on chemicals contained in a product, procedures to use it safely, first-aid and procedure to be followed in case of leakage or spills. In all North America such safety sheets are available at the Dealer's.
Before any maintenance on the machine refer to the above-mentioned safety sheets for fluids, oils etc. used in this machine. The sheets inform about risks and safe maintenance procedures. We strongly recommended following these indications during any maintenance operations.
Disposal of the tractor: The tractor is made up of parts subjected to rules and laws for their disposal. When the tractor is not used any more, it must be disposed of through proper agencies according to such rules. Do not pollute the environment with the tractor or its parts

2.21 SAFETY: SERVICING THE TRACTOR

DO NOT service the tractor while the engine is running or hot, or if the tractor is in motion (fig. 2-7)
Before adjusting, or servicing the electrical system, disconnect the battery cables, negative (-) cable first.
To prevent fires or explosions keep open flames away from the battery to cold weather starting aids. To prevent sparks which could cause explosion use jumper cables according to instructions.
When making repairs or adjustments it is recommended that you consult your Dealer, and have the work carried out by trained personnel.

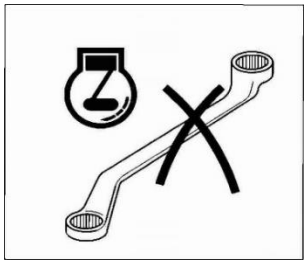


Fig.2-7

- The implement and/or tractor must be supported on suitable wooden blocks or stands, NOT a hydraulic jack.
- Check all nuts and bolts periodically for tightness especially wheel hub and rim nuts. Tighten to the prescribed torque values
- Check the power steering reservoir regularly and top up as necessary with approved oil.
- Check the brakes regularly, top up the reservoir and/or adjust where necessary. Make sure that the brakes are evenly adjusted.

2.22 SAFETY: STARTING

WARN BYSTANDERS BEFORE STARTING:
Before starting, Walk all around the tractor and any attached equipment. Make sure that no one is under it, on it, or close to it. Let other workers and bystanders know you are starting up and don't start until everyone is clear of the tractor, implements and towed equipment.

Ensure that all bystanders, particularly children are in a safe position before starting the engine. Mount and dismount properly:

Always use 'three-point contact' with the machine and face the machine when you mount it. Three-point contact means both hands and one foot or one hand and both feet are always in contact with the machine during mounting and dismounting.
Clean the soles of your shoes and wipe your hands before climbing on. Use handrails, grip handrails, ladders or steps (as provided) when mounting or dismounting.
NEVER use control levers as a hand hold and NEVER step on foot controls when mounting or dismounting.
NEVER attempt to mount or dismount from a moving tractor. NEVER jump off a tractor in any circumstances.

START SAFELY

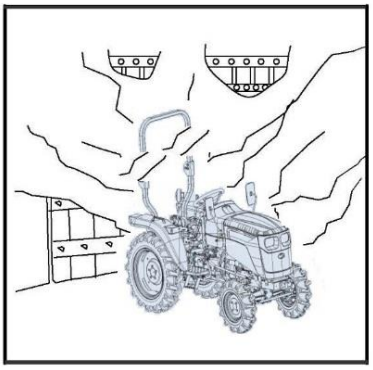


Fig.2-8

WARNING: Before starting the engine, make sure there is plenty of ventilation. Never operate the engine in a closed building. The exhaust fumes may cause asphyxiation (fig.2-8).

Always start the engine from the operator's seat with all the transmission levers and PTO lever in neutral.
Make sure that the tractor dual brake pedals are always locked together unless you are making turns in the field which require independent use of the brakes. Make sure the brakes are properly adjusted so that both brakes engage at the same time.
Adjust the seat, fasten the seat belt (where applicable as outlined in this manual), apply the parking brake and put all controls in neutral before starting up.

Fig.2-9

DANGER: Start the engine, with the starter key, from the operator's seat only. Never attempt to start the engine by shorting across the starter terminals. The machine will start in gear if the neutral start circuit bypassed. This could cause serious injury or death to anyone near the tractor (fig.2.9)

2.23 FOLLOW SAFE OPERATING PRACTICES

- Operating the controls smoothly: don't jerk the steering wheel or other controls.
- DO NOT get on or off a moving tractor, always keep a firm grip on the steering wheel, with the thumbs clear the spokes when driving the tractor.
- Make sure you have adequate clearance in all directions for tractor, safety frame and implement.
- NEVER play games with a tractor or equipment.
- NEVER attempt to work the controls expect from the operator's seat.
- Before getting off the tractor, always disengage the PTO, lower all attachments and implements to the ground, place the tractor in neutral, engage parking brake, shut off the engine and remove the key.

DO NOT touch, lean on, or reach through any implement mechanism or permit others to do so. Stay alert. Should something break, come loose, or fail to operate in your equipment, stop work, shut off the engine, inspect the machine and have repairs or adjustments made before resuming operation.

2.24 WATCH OUT FOR OTHERS

Be aware of what is going on. Never allow an untrained or unqualified person to operate your tractor. They could injure themselves or someone else.

WARNING: Your tractor is a one-person machine. DO NOT permit others to ride on the tractor or the implement (Fig. 2-10). In some countries a passenger seat must be fitted to carry passengers. Never allow anyone to ride on the implements or other equipment including trailers, except on certain harvesting equipment, specially designed for riders during the actual harvest operation only (not during transport). Such equipment must have provision for a safe riding area. NEVER allow children on a tractor.

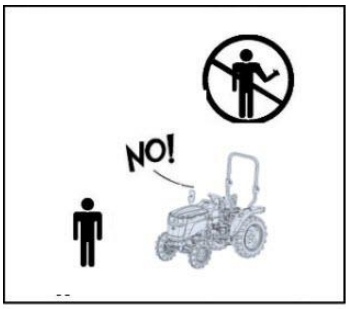


Fig.2-10

WARNING: Accidental contact with high- voltage, lines cause death. In case of contact with high -voltage conductors DO NOT leave the tractor; bid move the tractor and/or the loader in such a way as to eliminate the contact and reach a safe distance (Fig. 2-11)

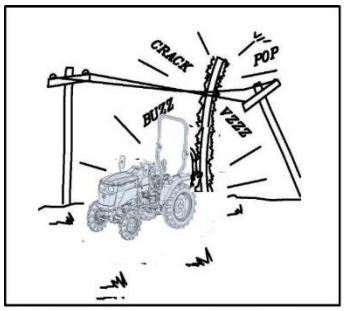
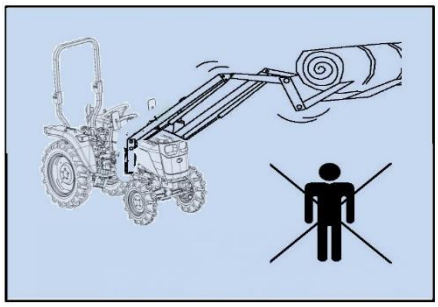


Fig.2-11

WARNING: NEVER LIFT A LOAD OVER ANYONE



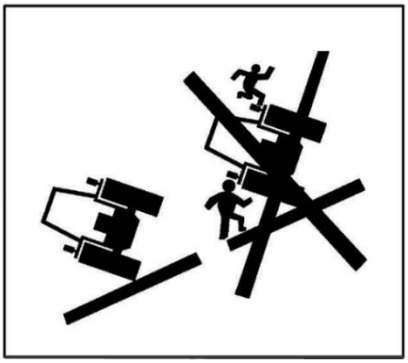
(Fig.2-12)

- Keep others away from your operation. Never allow anyone to stand or pass under a raised implement (Fig. 2-12).
- DO NOT lift object that cannot be contained safely in the bucket gets the appropriate attachment. Never allow anyone to stand on the safety frame or fenders.
- When using a loader, avoid sudden stops, starts, turns, or change of direction. Keep loads as near to the ground as possible.
- Never stand (or allow anyone else to stand) in front of, under, or behind loaded or loading equipment. Never drive a tractor up to someone standing in front of a fixed object.
- Keep others away from articulation joints, itches, drawbar, lift arm, PTO drive, cylinders, belts, pulleys, and other moving parts. Keep all shields and guards in place.

2.25 RISK OF OVERTURN

For your safety, it is recommended that all platform tractors are fitted with safety frame and seat belts (Fig.2-13)

In the event of overturning with a tractor fitted with a safety frame, hold the steering wheel firmly and DO NOT attempt to leave the seat until the tractor has come to rest. (Fig. 2-13)



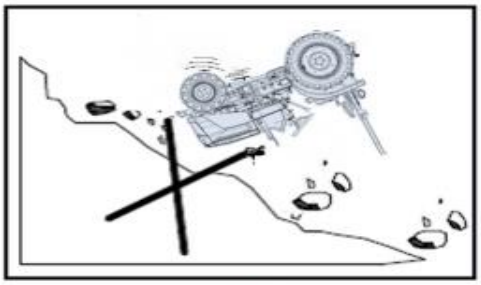
(Fig.2-13)

2.26 TO AVOID SIDE OVERTURNS:

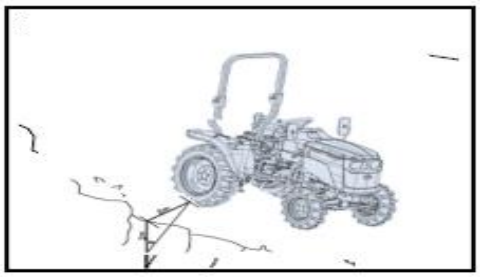
- Set the wheel track at the widest setting suitable for the job being done.
- Lock the brake pedals together before driving at transport speeds.
- Reduce speed to match operating conditions. If the tractor is equipped with a front-end loader carry the bucket and load as low as possible.
- Make wide slow turns at reduced speed. DON'T let your tractor bounce. You may lose steering control.
- DON'T pull a load too heavy for your tractor. It could run away on the down slope or the tractor could jack knife around a towed load.
- DON'T brake suddenly. Apply brakes smoothly and gradually.
- When going down a slope use the throttle to slow the tractor engine and use the same gear you would use to up the slope. Shift into gear before you start downhill.

WARNING: NEVER stand or allow anyone else stand between the tractor and implement unless the engine is turned off parking brakes is engaged, the transmission is in neutral, and all attachments or implements are lowered to the ground.
WARNING: NEVER disengage the clutch or attempt to shift gear after you have started downhill.

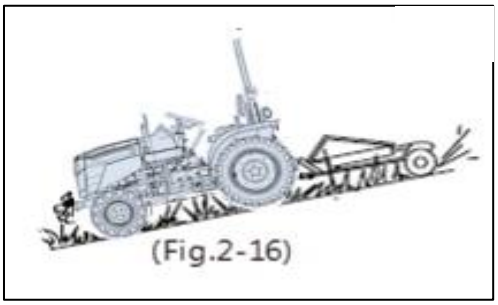
- It is always preferable to straight up or down a steep slope rather than across it.
- Avoid crossing steep slopes if possible. If you must do so, avoid any holes or depressions on the downhill side. Avoid any stumps rocks, bumps or downhill side. Avoid any stumps rocks, bumps or raised areas on the uphill side. When operating near ditches or banks always keep your tractor behind the shear line (Fig.2-14).
- If it is necessary to cross a steep slope, avoid turning uphill, slope down and make a wide turn. Travel directly up or down the slope, never across it. When traveling up or down a slope, keep the heavy end of the tractor pointed uphill. (Fig.2-15).
- When traveling across a slope with side mounted implements, keep the implement on the uphill side. Don't raise the implements, keep them as low to the ground as possible when crossing a slope (Fig. 2-16)
- void crossing steep slopes if possible. If you must do so, avoid any holes or depressions on the downhill side. Avoid any stumps, rocks, bumps or raised areas on the uphill side(fig.2-17).



(Fig.2-14)

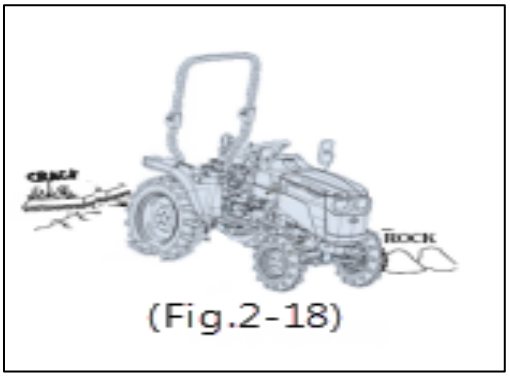


(Fig.2-15)



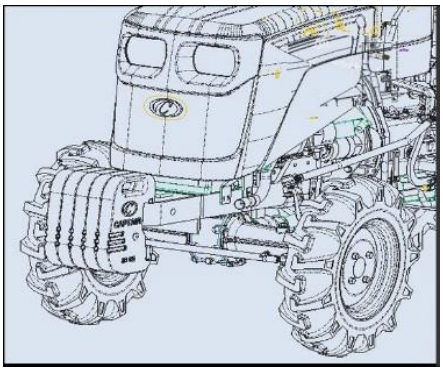
(Fig.2-16)

Fig.2-17)



(Fig.2-18)

2.27 TO AVOID REAR OVERTURNS

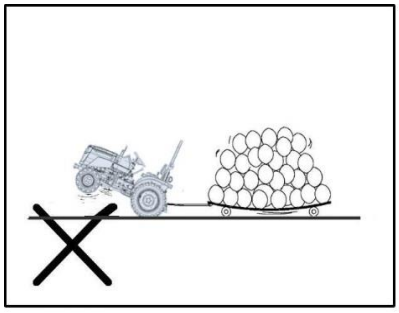


(Fig.2-20)

WARNING: **Hitching to the rear axle, or any other point above the swinging drawbar, can cause a rear overturn.**
DO NOT pull anything using the top link connection, or from any point above the center line of the rear axle. Always use an approved drawbar, and only use a drawbar pin that locks into place.

High hitching can cause rear overturn, which may cause serious injury or death. Hitch loads to the drawbar only.
When using a three-point linkage drawbar, the stays must be fitted and kept in the down position.

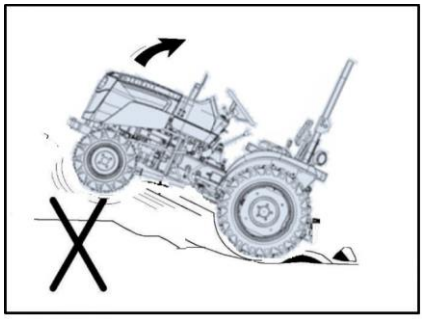
Use front counterweights to increase tractor stability when towing a heavy load or to counterbalance a heavy rear mounted implement (fig.20)



(Fig.2-21)

DO NOT overload your tractor and DO NOT ballast it beyond it's carrying capacity. Never add ballast weight to counterbalance an overload. Reduce the load instead (Fig.2-21).

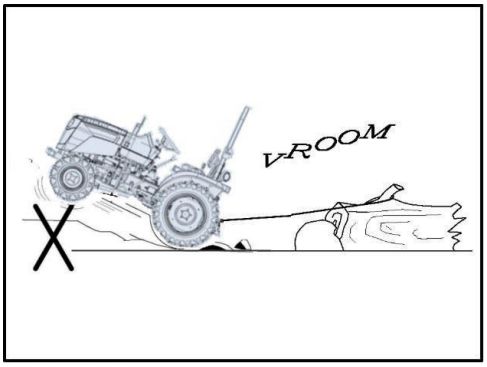
WARNING: An overload is always dangerous. Check the loading capacity of your tractor and NEVER overload (Fig.2-21



(Fig.2-22)

If the front end of the tractor starts to lift, reduce your speed and, if necessary, disengage the clutch (Fig.2 22). If your tractor is bogged down in the mud or frozen to the ground, DO NOT attempt to drive forwards.

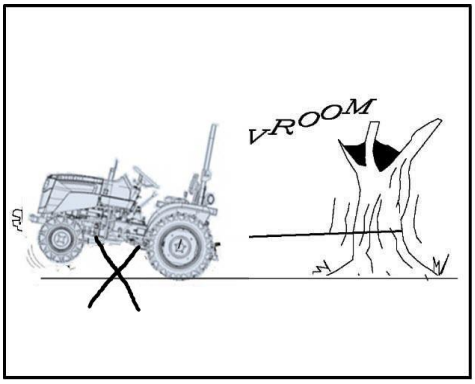
The tractor can rotate around its rear wheels and overturn (Fig. 2 22). Lift any attached implement and attempt to BACK OUT. If this is not possible, tow it out with another vehicle. (Fig.2.22)



(Fig.2-23)

Start forward slowly and gradually increase your speed. DO NOT rev the engine or drop the clutch. If the tractor is attached to a heavy load, or immovable object, improper clutching may cause overturn.

(Fig.2-23 and 2-24). If you get stuck in a ditch, BACK OUT, if possible. If you must go forward, do it slowly, and carefully

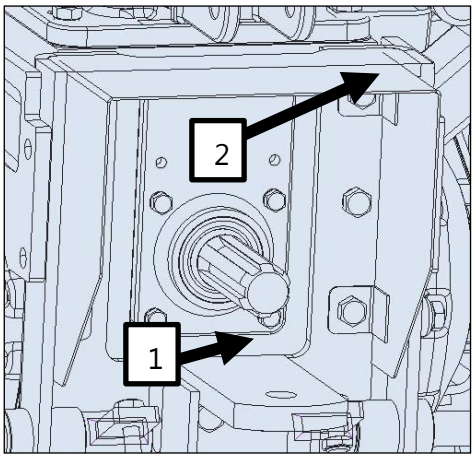


(Fig.2-24)

A bare tractor or a tractor with rear mounted attachments should be backed up the slope in reverse and travel forward downhill. A tractor with a loaded front end bucket should be backed down the slope and travel forward uphill. Keep the loader bucket as low as possible. Always keep the tractor in gear when going downhill never permit the tractor to coast with clutch disengaged or transmission in neutral.

2.28 GENERAL OPERATING HAZARDS

Ensure that the PTO shield (2) is in plane and that the cap (1) is fitted when the PTO driveline is not in use (Fig. 2-25) Before attaching, detaching, cleaning or adjusting PTO driven implements, disengage the PTO, stop the engine remove the key, and make sure that the PTO driveline has stopped.



(Fig.2-25)

Ensure that all the PTO driveline guards are in place and observe all safety signs.

Be sure everyone is clear of your machine before engaging the PTO. For stationary PTO operation, always place transmission in neutral, engage parking brake and lock both tractor and implement wheels.

When operating mobile PTO driven equipment, never leave the tractor seat until the PTO drive is disengaged, the transmission is in neutral, the parking brake is engaged, the engine shut off and the key removed.

DO NOT use PTO adaptors, reducers or extensions as they extend the PTO coupler and universal joint out beyond the protection offered by the PTO shield. The top link rods must not be extended beyond the point where threads begin to show. Fig.2-25

WARNING: NEVER attempt to unplug the hydraulic connections or adjust an implement with the engine running or the PTO drive in operation. To do so may result in serious injury or death.

When using chemicals, carefully follow the chemical manufacturer's instructions for use, storage and disposal. Also follow the chemical application equipment manufacturer's instructions.

When operating under poor visibility conditions, or in the dark, use your ground speed. (DO NOT use your field lights when traveling on a roadway because rear pointed white lights are illegal except when reversing and may confuse following drivers).

Operate your tractor with the wheels set the widest setting possible, consistent with the task you are performing. To adjust wheel settings, refer to Maintenance and Adjustment section.

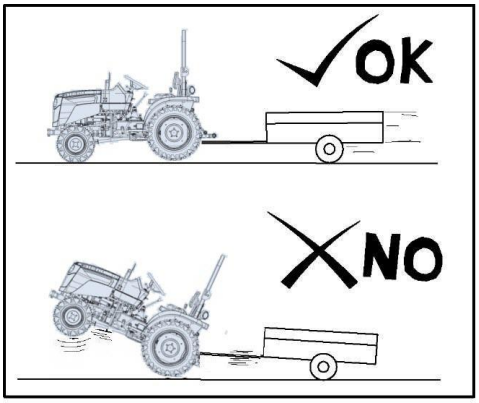
Reduce your speed when operating over rough or slippery ground when foliage restricts your view of hazards.

DO NOT MAKE SHARP TURNS AT HIGH SPEED

WARNING: A front-end loader (bucket or forks) must be equipped with a suitable restraining device to prevent the load, bales, fence posts, rolls of fence, wires etc.) From rolling down the lift arms into the operator's compartment and crushing the driver when the loader is raised. Inadequately secured objects could also fall and injure bystanders. Do not use implements for different purpose or to handle materials they are not expected to. For the operation of front loaders and relative safety rules, please refer to the Operation Manual of the loader.

Three-point hitch and side mounted implements make a much larger arc when turning that towed equipment. Make certain to maintain enough clearance for safe turning.

When using attachments or implements with the tractor, be sure to thoroughly read the Operator Instruction Book for that attachment or implement and follow its safety instructions.



(Fig.2-26)

Pull only from the approved drawbar. Towing or attaching to other locations may cause the tractor to overturn (Fig.2-26).

Improper use of the drawbar, even if correctly positioned, may cause the tractor to overturn to the back.

DO NOT overload an attachment or towed equipment Use proper counterweights to maintain tractor stability. Hitch loads to the drawbar only.

2.29 ROAD TRANSPORT

Before operating your tractor on a public road, several precautions must be taken.

- Familiarize yourself - and comply - with all local bylaws, and national laws appropriate to your tractor.
- Lock your brake pedals together.
- Raise all implements to their transport position and lock them in place.
- Place all implements into their narrowest transport configuration.
- Disengage the PTO.
- Make sure any required clearance flags or hazard lights are in place and in working order.
- Make sure you use a proper hitch pin with a clip retainer.
- Clean off all road lights, front and rear, and be certain they are in working order.
- Implements mounted on the 3-point hitch and mounted implements projecting from the side need a wider turn radius than trailed implements. Always be sure to keep.

2.30 ROAD REGULATIONS

When operating your tractor on a public road several precautions must be taken.

WARNING: DO NOT allow any passengers on the tractor or towed equipment.

- Know the route you are going to travel.
- Use flashing lights when traveling on roads, day or night, unless prohibited by law.
- Use caution when towing a load at transport speeds especially if the towed equipment is NOT equipped with brakes.
- Observe all local or national regulations regarding the road speed of your tractor.
- Use extreme caution when transporting on snow- covered or slippery roads.
- Wait for traffic to clear before entering a public road.
- Beware of blind intersections. Slow down until you have a clear view.
- DO NOT attempt to pass at any intersection. Slow down for turns and curve.
- Make wide, gentle turns.
- Signal your intent to slow, stop or turn.
- Shift to lower gear before going up or down hills.
- Keep tractor in gear. Never coast with the clutch disengaged or transmission in neutral.
- STAY OUT of the path of oncoming traffic.
- Drive in your correct lane keeping as near to the kerb as possible.
- If traffic builds up behind you, pull off the road and let the road and let it go by.
- Drive defensively. Anticipate what other drivers might do.
- When towing a load, start braking sooner than normal and slow down gradually. Watch out for overhead obstructions.
- When Stopping at any time, bring the tractor to a secure halt (DO NOT park on a slope), apply the parking brake, engage the Park lock (if installed), disengage the PTO, Place all gear shift levers in neutral ,lower the implement to the ground , stop the engine and remove the key BEFORE leaving the seat

2.31 BATTERY

CAUTION

When in Use

- Keep away from sparks, cigarettes, open flames; these can result in explosion.
- Avoid metallic contact across terminals as this can results in short circuits and sparking.

After Use

- This battery contains lead
- Lead is hazardous
- Do not dispose-off after use.
- After use, please return this battery to an authorized Dealer.

Decal on battery (Fig.2-27)

2.32 RISKS DERIVING FROM EXPOSURE TO NOISE:

Noise characteristics and measurement

- Noise is a pressure variation in an elastic medium, generally the air, produced by the variation of a material body (source) that determines an undesired and often annoying acoustic sensation. Noise is mainly characterized by:

- **Sound intensity or level** expresses the entity of the pressure variation due to the sound wave. Measured in decibels (dB), it doubles the sound intensity and, thus, the energy that reaches the ear.

- **How the risk is evaluated:** The higher the sound level and exposure time, the greater the noise risk will be:

- **LAeq:** (Equivalent continues weighted level A): this is a sound level measurement that considers noise fluctuations and the varying sensitivity of the ear to the frequencies: LAeq is measured with a sound: level meter;

NOISE PATHOLOGIES

Damage to the hearing

Noise causes hyperdulia or deafness because it destroys the acoustic receptors, nervous cells able to transform the mechanical sound vibrations into nervous impulses that, on reaching the brain, determine the aural sensation. These receptors are irreplaceable if they are destroyed and the resulting damage is irreversible: hyperdulia worsens if exposure to noise continues and does not improve even if this terminates.

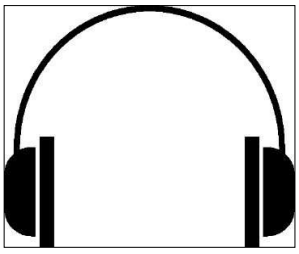
Moreover, it is also bilateral since it can be accompanied by annoying buzzing and whistling sounds, and by intolerance to loud noise. The damage is insidious since it proceeds slowly and unexpectedly: in the initial phase, when it is limited to a diminished ability to perceive acute sounds (music, bells) or the spoken voice when there is a background noise, it can only be detected by means of an audiometric test. Pulsating noises of great intensity lasting a very short time are highly damaging since the ear is unable to actuate any physiological protective measures in time. Hyperdulia from noise generally arises after several years of exposure and depends on the PEL (risk almost null below 80 dBA) and on individual characteristics. It is an incurable disease: the only efficacious means of protection against it is prevention.

Other effects

Noise does not just determine aural sensation. For levels exceeding* 70dBA, it causes stress by means of the cerebral integration centers and determines a specific neurovegetative reaction responsible for effects that lead to cardio circulatory and gastro enteric diseases. Amongst these, it is worthwhile noting: an increase in gastric acidity, a decrease in the heart rate, visual range and reflex speed; a sensation of discomfort and weariness with an increased sense of fatigue. These effects are dangerous because they also increase the risk of accidents.

Personal equipment to protect against noise

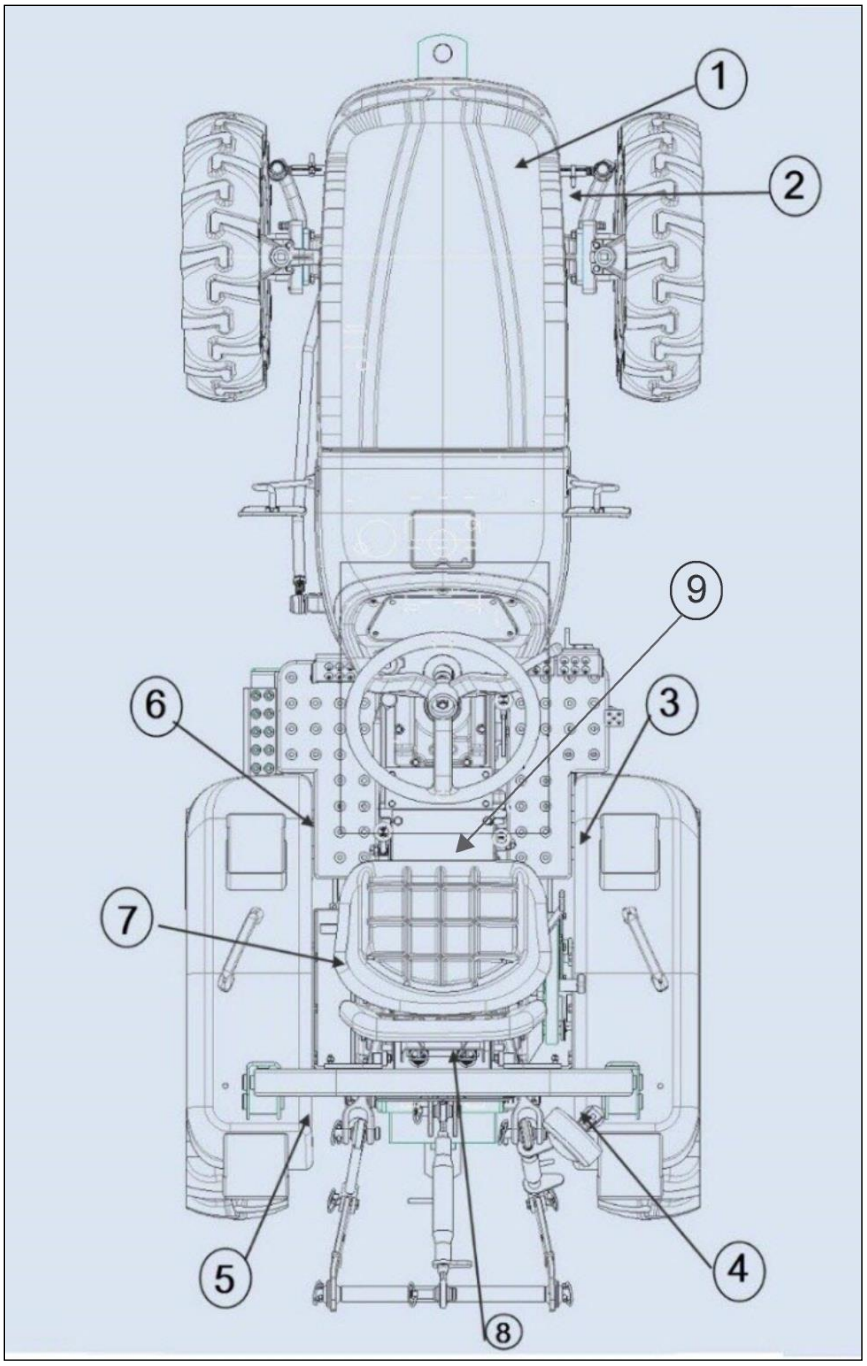
Individual protective equipment attenuates the sound energy transmitted to the ear through the air. This equipment is used when dangerous exposure cannot be avoided in any other way. There are different types of devices with different attenuating capacities: helmets, earmuffs, ear plugs (Fig.2-29). Helmets and earmuffs offer the greatest protection, but they are bulky and inconvenient to wear. They are therefore only of use for exposure to high noise levels but for short periods of time (max. 2 hours).



(Fig.2-29)

Ear plugs are generally tolerated to a greater extent and are of particular use in the case of lengthy exposure to noise of a lesser intensity. Always use adequate individual protective equipment to safeguard the hearing when the personal daily level of exposure to noise is 85 dBA or more. Consult the "specifications" chapter of this manual in relation to tractor noise measured in instantaneous conditions in compliance with the laws in force. Usage of above protection is advised in all conditions/ circumstances.

2.33 POSITION OF DECALS ON TRACTOR



(Fig.2-30)

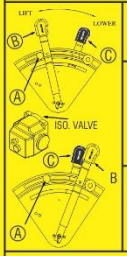
⚠ WARNING

- COOLING SYSTEM REMAINS UNDER PRESSURE.
- DO NOT REMOVE RADIATOR CAP WHEN SYSTEM IS HOT.
- ALWAYS TURN THE CAP SLOWLY AND ALLOW PRESSURE TO ESCAPE BEFORE REMOVING THE CAP COMPLETELY.
- WHEN OPERATING BELOW 0°C, USE SUITABLE ANTIFREEZE WITH WATER.

1

CAPTAIN **INSTRUCTION**

HYDRAULIC



DO NOT DISTURB HYDRAULIC LIFT SETTING MAXIMUM STOPPER. (A)

WHILE TRANSPORTING IMPLEMENTS OR USING AUTOMATIC HITCH, KEEP DRAFT LEVER IN LOWER POSITION. (C)

WHEN ISOLATING VALVE IS IN CLOSED POSITION, NORMALLY KEEPS BOTH THE LEVER IN LOWER POSITION. (B) & (C)

HYDROLIC STRAINER

REMOVE FILTER COVER BOLT, TAKE OUT FILTER, AND MAKE FIRST OIL FILTER CLEANING AFTER INITIAL 50 HOURS OF OPERATION. AFTER THAT, AT EACH 200 HOURS THOROUGHLY CLEAN FILTER BY WASHING WITH LIGHT OIL OR KEROSENE.

FAILURE TO OBSERVE THIS RULE WILL RESULT IN GREATLY SHORTENING LIFE OF HYDRAULIC SYSTEM & CAUSING TROUBLE.

3

⚠ DANGER

- KEEP FLAMES AWAY FROM BATTERY.
- DISCONNECT -ve CABLE OF BATTERY BEFORE ANY WELDING OPERATION.
- PROTECT YOURSELF FROM BATTERY, FLAME BURNS CAN RESULT FROM BATTERY ACID.
- IN CASE OF CONTACT WITH ACID, FLUSH WITH PLENTY OF WATER IMMEDIATELY.
- DO NOT JUMP START THE TRACTOR BY SHORTING ACROSS STARTER TERMINALS AS TRACTOR WILL MOVE IF IN GEAR.

2

SAFETY INSTRUCTION

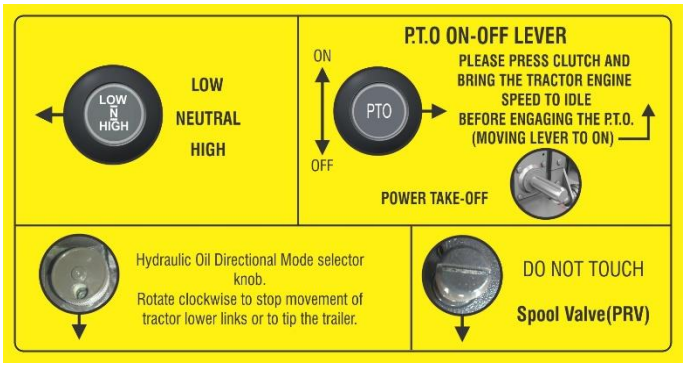
- It is essential to read The Manual carefully.
- Do not take off belt or Adjustment while Tractor is Running.
- Do not enter or exit from the Tractor while is in motion except in an emergency.
- Do not stand in-between the Tractor and Equipment when operating control.
- Keep clothing hand and feet away from moving parts.
- Do not make any adjustment when tractor is in operation.
- Wear adequate Footwear and snug-fitting clothing. Do not sit or stand on unsafe place when Tractor is moving.
- Keep Display Boards, Handles and Drivers Position Clean.
- Keep All Safety Guards in place While working.
- Make sure that no trains are coming before crossing the unguarded railway crossing

4

⚠ WARNING

- READ THE OPERATOR MANUAL CAREFULLY BEFORE STARTING THE TRACTOR. FOR QUERIES CONTACT AUTHORIZED DEALER.
- CLEAR THE AREA OF BY-STANDERS.
- UNDERSTAND OPERATION AND LOCATION OF CONTROLS.
- START ENGINE ONLY FROM DRIVER SEAT WITH GEAR LEVER IN NEUTRAL POSITION BY PRESSING CLUTCH PEDAL.
- WHILE DRIVING ON ROAD, BRAKE PEDALS SHOULD BE LOCKED TOGETHER, USE SLOW MOVING VEHICLE EMBLEM AND WARNING LIGHTS.
- DO NOT RUN FAST ON ROUGH GROUND, TURNS AND SLOPES TO AVOID JERKS.
- SITTING IS PROHIBITED ON FENDERS IF THERE IS NO SPECIFIC SEAT PROVIDED. DISENGAGE PTO AND STOP ENGINE BEFORE ATTACHING OR DETACHING IMPLEMENTS.
- BEFORE LEAVING THE TRACTOR SEAT, LOWER THE EQUIPMENT, POSITION GEAR LEVER IN NEUTRAL, STOP ENGINE AND APPLY PARKING BRAKE.

5



9

⚠ WARNING

FASTEN SEAT BELT

SEAT BELT MUST BE WORN BECAUSE THIS TRACTOR IS EQUIPPED WITH ROLL OVER PROTECTION.

FAILURE TO FASTEN SEAT BELT COULD RESULT IN SERIOUS INJURY OR DEATH

7

CAPTAIN ⚠ WARNING

ENGINE PRECAUTION

- FOR FIRST 100 HRS. OPERATE TRACTOR WITH LOAD ONLY (LIKE CULTIVATOR, LOADED TROLLEY ETC.)
- AVOID UNNECESSARY ENGINE IDLING

PTO PRECAUTION

- KEEP HANDS, FEET AND CLOTHING AWAY FROM PTO AND OTHER MOVING PARTS.
- DISENGAGE PTO AND SHUT OFF ENGINE BEFORE SERVICING TRACTOR OR IMPLEMENTS.
- KEEP PTO COVER SHIELDS IN PLACE IN CASE OF NOT USE OF PTO.

TYRE INFLATION PRESSURE

	TYRE SIZE	INFLATION PRESSURE (KG/CM²)
FRONT	180/85D12 (Agricultural)	2.53
	6.5/80-12 (Agricultural - Wide)	2.53
	23x8.5-12 (Turf)	1.54
	23x8.5-12 (Floatation)	2.46
REAR	8.3 x 20 (Agricultural)	2.46
	280/70R18 (Agricultural - Wide)	1.54
	33x15.5-16.5 (Turf)	1.54
	33x15.5-16.5 (Floatation)	1.54

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6

⚠ WARNING

- PULL ONLY FROM TOW HOOK. PULLING FROM ANY OTHER POINT CAN CAUSE REAR OVERTURN.
- DO NOT OPERATE THE PTO WITHOUT GUARD.
- USE SAFETY CHAIN WHEN TOWING EQUIPMENT

FAILURE TO FOLLOW ANY OF THE ABOVE INSTRUCTIONS, CAN RESULT IN SERIOUS INJURY TO OPERATOR OR OTHER PERSON.

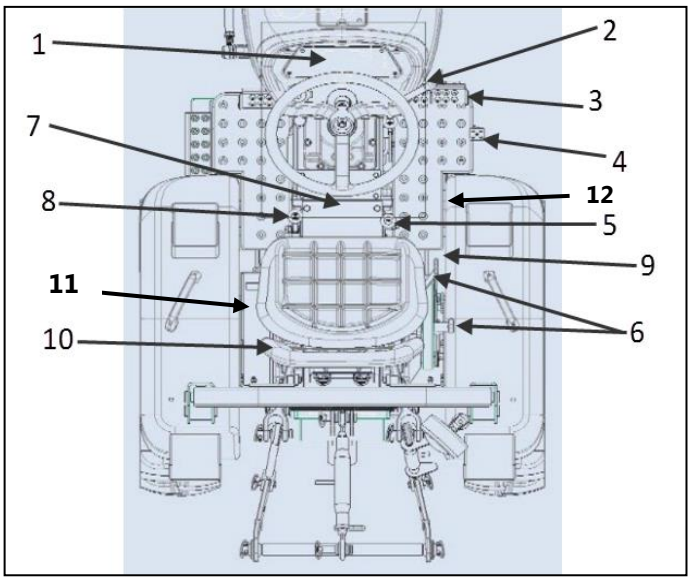
8

CHAPTER -3
INSTRUMENTS AND CONTROLS

3.1 INSTRUMENTS AND CONTROLS

NOTE: Consult the Operation chapter for instructions on how to correctly use the controls.

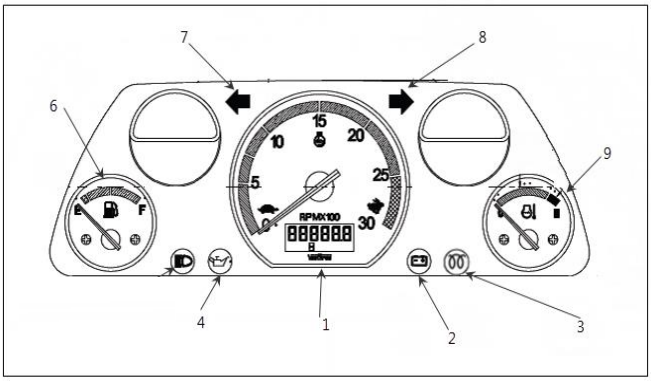
1. Control and instrument panel.
2. Accelerator hand lever
3. Brake Pedals
4. Accelerator Pedal
5. PTO Lever
6. (a) Hydraulic position control levers (Black Color Lever)
   (b) Draft Lever (Red Color Lever)
7. Gearshift control lever
8. Speed range selector lever (Hi/Low)
9. Independent parking brake lever
10. Seat belt roll over knob
11. Double Acting Aux. hyd. Lever
12. Differential Lock Lever



(Fig.3-1)

3.2 INSTRUMENT PANEL WARNING LIGHTS.

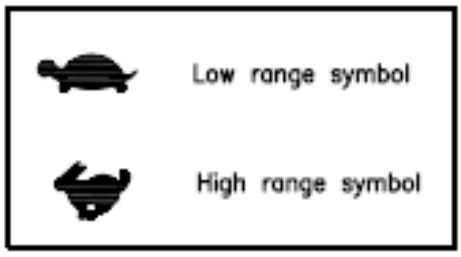
1. Hour cum RPM meter.
2. Battery charging warning light. Should go off as soon as the engine starts.
3. Pre-Heater indicator light.
4. Oil Pressure warning light. Should go off as soon as the engine starts & oil pressure is within limit.
6. Fuel Gauge.
7. Left Turn indicator light.
8. Right Turn indicator light.
9. Water Temp. Gauge.

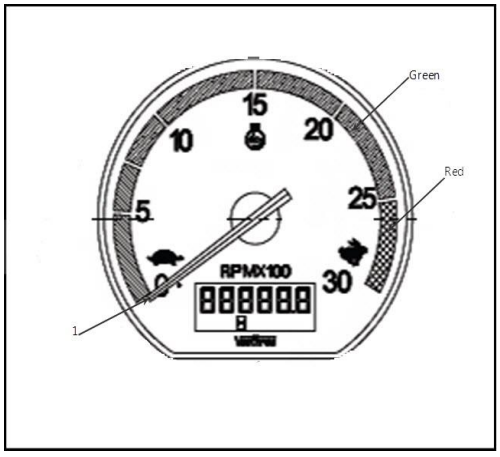


(Fig.3-2)

3.3 RPM METER

The engine rate is displayed by a pointer (1) on the graduated scale. The pointer should never reach the 2500 RPM zone which shows excessive engine speed. (Fig.3.3)



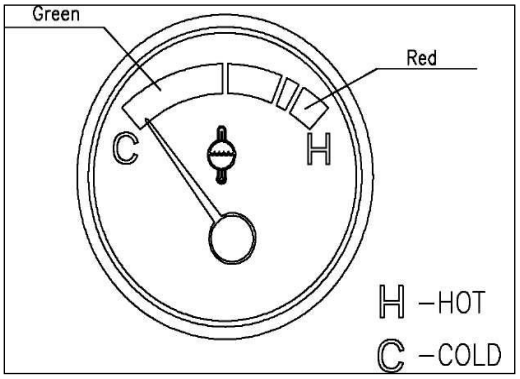


(Fig.3-3)

3.4 ENGINE COOLANT TEMPERATURE GAUGE.

- Green area = normal operating temperature. Wait for the pointer to reach the green area, indicating the normal operating temperature.
- Red area = temperature too high.

CAUTION: If the engine temperature is too high, let the engine idle immediately but do not switch it off. If the temperature gauge stays in the red, identify the cause immediately and seek expert advice if necessary.

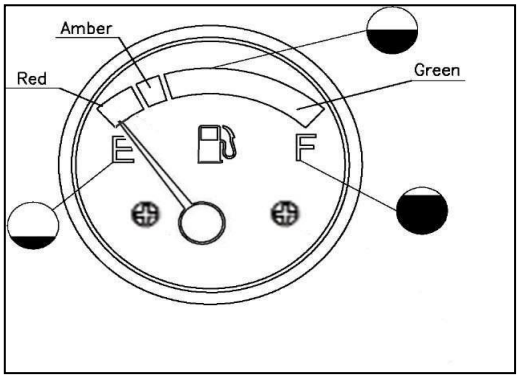


(Fig.3-4)

3.5 FUEL LEVEL GAUGE

When the pointer moves into the amber zone it shows there are still about 5 liters of fuel in the tank.

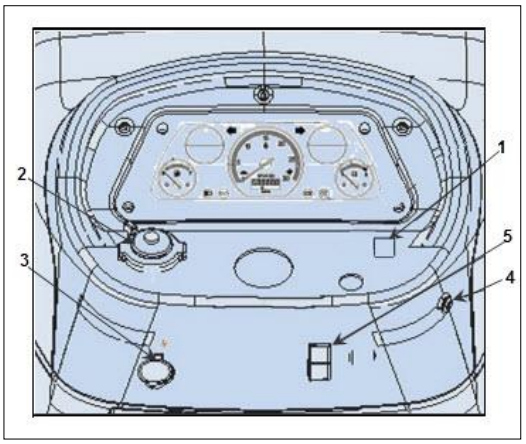
Red - **Reserve**
Amber – Reserve to 1/4
Green –1/4 to full



(Fig.3-5)

3.6 DASHBOARD

1. Led indicator
   a. Park Brake OPC indicator.
   b. Working light indicator.
   c. Parking brake indicator.
2. (Fig.3-7a) Combination Switch.
3. (Fig.3-7b) Mobile Charging Socket.
4. Ignition key.
5. Hazard Light Switch.

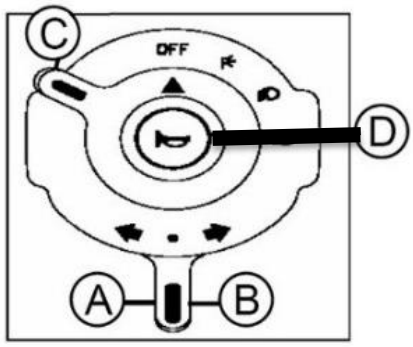


(Fig.3-6)

COMBINATION SWITCH FOR FOLLOWING OPERATIONS:

A: Left hand direction indicator.
B: Right hand direction indicator
C: Road light switch: turn the knob to operate the Head Light.
D: Push the Centre button for Horn.

SYMBOL FOR THE COMBINATION SWITCH



(Fig.3-7a) Combination Switch

Lights off.

Parking Light.

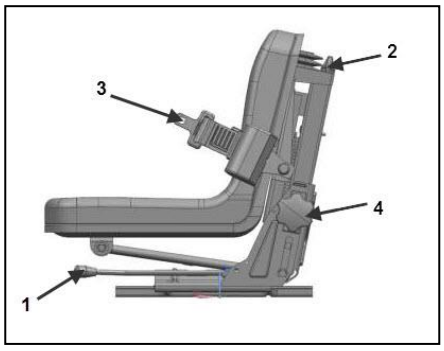
Driving beams.

Pressed Horn.

((Fig.3-7b) Mobile Charging Socket

3.7 SEAT

The driver's seat can be adjusted in horizontal and vertical control (Fig.3-8)



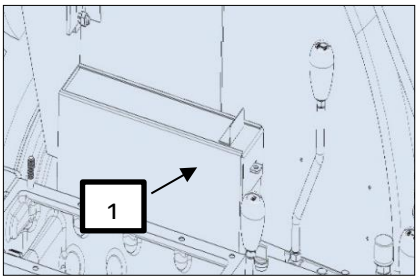
(Fig.3-8 (side view of seat)

HORIZONTAL ADJUSTMENT.

1 lift the lever to move the seat forward or backward
2 Seat height vertical adjustment Use knob to adjust the suspension
3 Seat belt (Fig.3.8)
4 use knob to adjust the height of seat vertically.

3.8 TOOLBOX

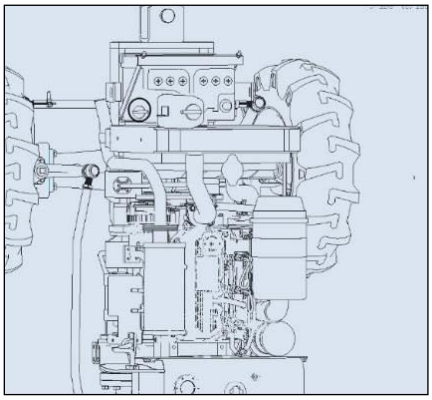
Toolbox contains a kit of tools for the daily maintenance. (Fig.3-9)



(Fig.3-9)

3.9 UNDER HOOD MUFFLER

- Under hood muffler with better aesthetics and increased field of vision with better sound muffing capabilities.
- Heat Insulation & sound muffing sheets under the bonnet hood for noise reduction



CHAPTER -4
OPERATION

4.1 OPERATION;

WARNING: Carefully read the starting instructions on the two side on fender decals.

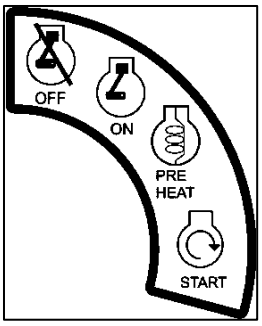
4.2 STARTING THE ENGINE (In Safety Mode – Neutral Position Only)

A - Check that, the gearshift lever and the range selector lever are in neutral.
B - Move the low/high speed selector lever to neutral position.
C - Move the hand throttle lever to about halfway position.
D - Press the clutch pedal all the way.
E – Rotate the ignition key clockwise and release it after the tractor starts.

WARNING: Make sure that the starting system allows the engine to start only when the Low/high selector lever are in the neutral position. If this fails to occur, have the tractor repaired by your dealer or authorized service center.

4.3 Cold weather starting (temperatures below 0°C) (32°F):

- Perform operations A, B, C, and D as instructed above.
- Turn the ignition key to the pre-heat position and keep it there for 20 seconds, then turn the ignition key to the "START" position.
- If the engine fails to start within 15 seconds, return the key to the preheating position.
- Wait a further 10 seconds and then turn the ignition key to the "START" position again.
- As soon as the engine starts, repeat the preheating or starting procedure as described above



NOTE:

- If the engine fails to start after two or three attempts and smoke can be seen coming out of the exhaust, repeat the starting procedure without the thermo starter preheating phase.
- Do not keep the key turned to the start position for more than 15 seconds at a time.
- Wait at least 1 minute between one attempt at starting and another.

- If the engine does not start regularly and easily, do not continue as for you may run down the battery. Bleed any air that may have accumulated in the fuel system and, if the problem persists, check that:

    - The fuel filters are not blocked.
    - The battery and thermo starter are efficient/ Working Fine.
    - The fuses of the ignition circuit are in good condition and that the fuel shut-off valve is open.
    - Before starting a cold engine in cold weather first cover the radiator with a radiator cover. Remove the cover as soon as a normal working temperature has been reached.

- If the Problem persists, contact your dealer or a specialized workshop.

CAUTION: When outdoor temperatures drop to around or below 0°C. (32°F), check the cooling system and if necessary, add the recommended antifreeze.

WARNING: Do not inject fluids (ether) to make the engine easier to start in cold weather. The tractor is equipped with a cold

WARNING: When the engine is running, keep at a safe distance from the radiator fan.

WARNING: To prevent accidents, never allow anyone to sit on the mudguards or on any other part of the tractor or implement.

4.4 RUNNING IN

It is essential to take the following precautions during the running in period:

1. Experience has shown that the first 50 hours of use are of fundamental importance for the subsequent performance and working life of the engine.
2. During this period, do not subject the tractor to loads greater than those it will have to deal with during the rest of its working life.
3. It is preferable use the tractor in agricultural operation during this time.
4. Engage low gears when towing heavy loads.
5. When running in, check regularly that all screws, nuts and bolts are tight.

4.5 STARTING THE TRACTOR

WARNING: Before moving off, make sure you are perfectly familiar with the brakes, transmission, PTO, and engine shutoff.

AFTER STARTING THE ENGINE:

1. Release the parking brake.

WARNING: Look out of bystanders, especially when backing up.

2. Select the gear required and fully release the clutch pedal, & then select the engine speed range.

WARNING: Make sure that the lever is set for the direction required.

3. Move your foot completely off the clutch pedal and slowly accelerate until you have reached the speed you need.

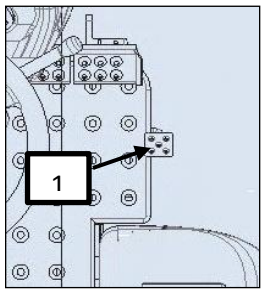
CAUTION: Do not keep your foot on the gearshift clutch pedal when driving and remember to check and adjust the clutch to prolong its life and avoid sudden damage to it.

CAUTION: If your tractor is equipped with a mechanical reverse shuttle, always bring the tractor to a complete standstill before changing direction.

4.6 ACCELERATOR PEDAL

The accelerator pedal (fig. 4-1) can over-ride the setting of the hand throttle lever to accelerate the engine.

WARNING: Make sure that the lever is set for the direction required.



(Fig.4-1)

4.7 STOPPING THE TRACTOR:

- Reduce the engine speed.
- Depress the gearshift clutch pedal to disengage drive.
- Once the tractor has come to a stop, move the gear lever and speed range lever to neutral before releasing the gearshift clutch pedal.
- Use both pedal brakes to stop the tractor and then apply the parking brakes.
- However, when you release the pedal, the engine returns to the speed set by the hand lever. When using the accelerator pedal, always set the hand throttle lever to the idling position**.**

4.8 TURNING OFF THE ENGINE

- Turn the hand throttle lever to the "idling" position.
- Stop the engine by turning the ignition key to the STOP position to disconnect all electrical circuits.

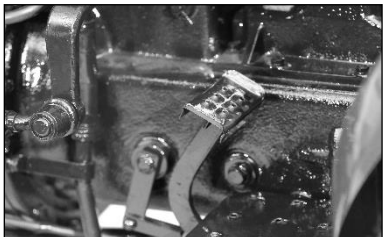
4.9 OPENING THE BONNET

- Firstly, insert the key into the keyhole provided at the front of bonnet as shown in (fig. 4-2) Rotate it clockwise direction.
- To close the bonnet gently lower the hood down then press it until lock is engaged.
- The tractor is provided with a set of two keys. If lost contact the authorized dealer to get the lock replaced

(Fig.4-2)

4.10 CLUTCH

Gearshift clutch pedal (Fig. 4-3).
Pedal released = Drive engaged.
Pedal pressed = Drive disengaged.
Select lower gear as per Load condition and don't Override the clutch for acceleration

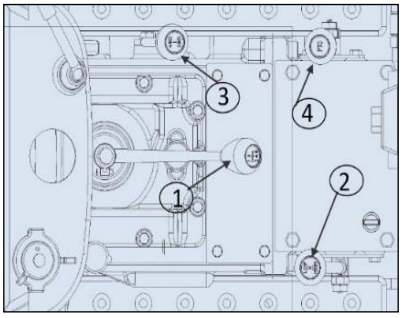


(Fig.4-3)

WARNING: Never keep your foot resting on the clutch pedal when driving
WARNING: Never coast down slopes with the gear lever in neutral/clutch Pressed when in gear.

4.11 MECHANICAL GEARBOX SPEED RANGE LEVERS

1. Gearshift lever.
2. Range Selector
2.1 High
2.2 Low
3. 2WD-4WD Levers
4. P.T.O Levers



(Fig.4-4)

4.12 SHIFTING KNOBS SPEED RANGE SELECTOR LEVER

The speed range selector lever has two possible positions corresponding to the high & low speed ranges.
See in (fig.4-5)

(Fig.4-5)

4.13 GEARSHIFT LEVER

The lever has five different positions. All five gears are fully synchronized. See in (fig.4-6)

(Fig.4-6)

4.14 2WD-4WD LEVERS

The lever has two positions viz. forward 4WD and backward 2WD on the tractor.

In (fig.4-7). The purpose of the front drive is to increase traction on broken ground, mud and slippery surfaces etc. The control lever is used to engage and disengage the front drive. Both maneuvers can be carried out whilst the tractor is driving in a straight line and never under stress.

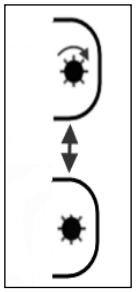
(Fig.4-7)

NOTE: Only use four-wheel drive when strictly necessary. Avoid use of 4WD when maximum traction is not required, e.g. on hard ground, roads, etc., since this would only increase tyre wear unnecessarily. Always leave the 4WD lever engaged when parking on slopes with the trailer connected.

WARNING: Never use the 4WD engaged while driving at higher speeds. Always use only when high traction is required.

4.15 PTO lever

The lever has two positions. 1.) Neutral position 2.) Live PTO position. (Fig. 4-8).



(Fig.4-8)

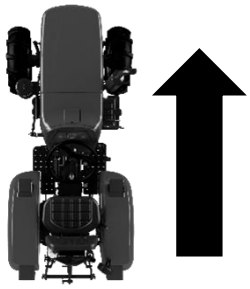
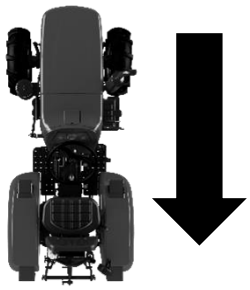
PTO lever ON – OFF position

Lever Backward: PTO in neutral position.
Lever Forward: PTO engaged.

Power take-off

- The tractor is equipped with a Direct power take off that complies with international regulations. It is installed at the rear of the transmission housing.
- Direct PTO mode. 540 PTO RPM is available in any gear selection when engine is running at 2406 RPM.

4.16 GROUND SPEED TABLES

GROUND SPEED TABLES (STARTRAC 273 4WD)				
	SHUTTLE OPTION	RANGE	GEAR	MODEL (REAR TYRE SIZE)
				STARTRAC 273 4WD (8.3 X 20)
FORWARD GEARS		LOW	1	3.0
			2	5.0
			3	8.1
			4	11.9
		HIGH	1	5.7
			2	9.6
			3	15.5
			4	22.8
REVERSE GEARS		LOW	R	2.2
		HIGH	R	4.3

*speed may vary according to tyre combination /Type /Size.

4.17 PRECAUTIONS WHEN USING THE PTO

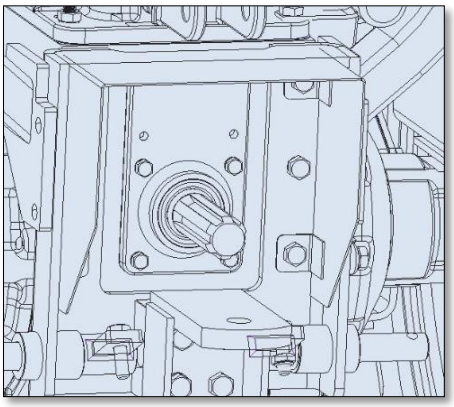


Fig.4-9

WARNING: PTO shafts and implements operated by means of the PTO can be extremely dangerous. It is therefore advisable to comply with the following important instructions:

WARNING: NEVER operate without the PTO cover (Fig.4-9). These parts protect Persons from injuries and the shaft splines from damage.

WARNING: Before connecting adjusting or working on implements operated by the PTO, disengage the PTO, stop the engine, remove the key from the dashboard and engage the parking brake. Do not work under raised implements.

WARNING: Check to make sure that all implements operated by the PTO are fitted with the correct protections, are in a good condition and comply with the provisions established by law.

WARNING: Before driving an implement through the PTO, ALWAYS make sure that all bystanders are well away from the tractor.

WARNING: Fix the drawbar in the central position when using implements that are driven by the PTO of the tractor.

WARNING: When using the PTO drive with a stationary tractor, ALWAYS make sure that the gears are in neutral and that the parking brake is applied.

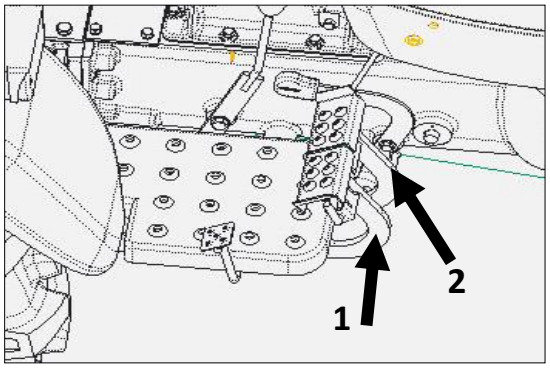
WARNING: Before starting up any PTO- driven implement hitched to the three-point linkage, lift the implement to its full height using position control and check that at least 1/4 of the total length of the telescopic section of the drive shaft is engaged.

4.18 USE IN PADDY FIELDS

When using the tractor in water-logged soil or in paddy fields where the water level could rise above the height of the PTO shaft, ask your dealer for instructions on all necessary waterproofing and sealing measures. If such measures are not taken, the guarantee could be rendered invalid.

4.19 SERVICE BRAKE

The main brakes are operated by means of two pedals (1-Fig.4-10), one for each rear wheel. Braking on one side assists steering in tight maneuvers. By locking rear wheel on the inside of curve, you can virtually turn the tractor around on its own axis. For simultaneous braking during normal use and for on road use, simply lock the two pedals together with the special brake coupling lock (2-Fig.4-10).



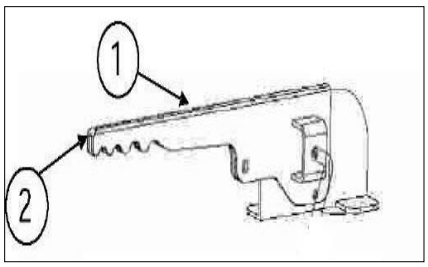
(Fig.4.10)

WARNING: Always keep the brake pedals coupled for on-road driving to ensure simultaneous braking on both rear wheels. Never use the brakes independently when driving on public roads.

WARNING: If you ever notice the brakes becoming less effective, identify the cause immediately and repair. When working on slopes avoid using the brakes as much as possible and select a lower gear in order to use engine braking.

4.20 PARKING BRAKE

Pull the lever (Fig. 4.11) completely to operate the parking Brake.
If this is not the case, pull the parking brake lever with higher force.



(Fig.4.11)

Note: The indicator light in the instalment panel lights up when the parking brake is engaged, independently of the force used for the engagement. Before starting the tractor, shift into gear and release the parking brake.

4.21 PARKING BRAKE RELEASE

Press the brake pedal slightly, push down, let the Parking brake lever down and release it. (Fig. 4.11)

WARNING: Always engage the hand brake when the tractor is used for work at a standstill, even if only for brief periods of time.

IMPORTANT: Driving the tractor with the parking brake partially engaged will cause damage to internal transmission components. Make sure the brake is fully off.

4.22 WHEELS AND TYRES

Regularly check that the front and rear wheel nuts are fully tightened.

Tyre pressure must be checked and adjusted before using the tractor. Make further checks at regular intervals.

NOTE: Tractors are supplied by the manufacturer with tires inflated at higher pressures then recommended. The pressure should be adjusted afterwards by the user according to values given in the tables of tire manufacturers and to the use anticipated for the tractor.
If these simple rules are carefully followed, they will ensure maximum working life for your tires.
If you notice any cuts in the tread or side walls, have them vulcanized immediately to avoid further damage to the tires.

Drive slowly on roads if the pressure in the tires has been reduced for use on soft earth.
To obtain maximum efficiency, do not use tires with more than 30-50% wear.

NOTE: Avoid parking the tractor on floors which are covered with oil or diesel fuel. Also avoid parking the tractor where the tires are permanently exposed to direct sunlight, especially if the tractor is not going to be used for some time.

WARNING: When jacking up the tractor, pay attention that its weight is correctly distributed and Securely wedge the wheels on the ground. Tighten all nuts and bolts to the required torque.

NOTE: Tractors are supplied by the manufacturer with tires inflated at higher pressures than recommended. The pressure should be adjusted afterwards by the user according to values given in the tables of tyre manufacturers and to the use anticipated for the tractor.

4.23 THREE-POINT LINKAGE

These tractors are equipped with a class to three point- linkage provided with fixed ball ends. To ensure correct tractor operation, check that the dimensions and weight of each implement correspond to the three-point linkage and power lift specifications.

COMPONENTS OF THREE-POINT LINKAGE

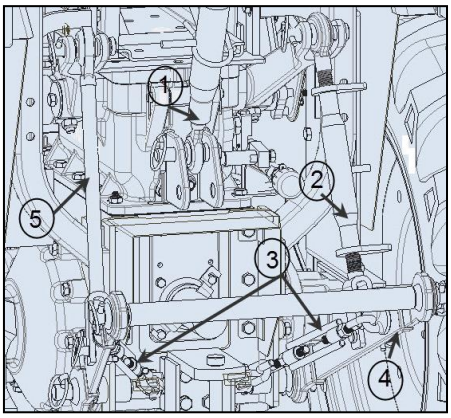


Fig.4.12

4.24 ADJUSTABLE TOP LINK (1)

1. The adjustable top link is supported by a bracket with Two fixing holes. The correct hole to use depends on the height of the implement.
2. Adjust the length of the top link to vary the attachment angle of the implement in relation to the ground.
3. Shorten the top link to increase the angle of attachment.
4. Lengthen it to reduce the angle of attachment.

4.25 ADJUSTABLE RH LIFT ROD OR LEVELING ROD (2)

The right-hand lift rod can be adjusted mechanically or hydraulically, depending on the lifting, to make the lower links level and lined up with each other. This will depend on the type of implement being used and the work to be done.

4.26 MECHANICAL ADJUSTMENT

Shorten the RH vertical lift rod by turning it clockwise. Lengthen the RH vertical lift rod by turning it anticlockwise.

4.27 LATERAL STABILIZERS (3)

The lateral stabilizers can be set to reduce lateral movement of the lower links if the three-point linkage.

- With graders, rollers, holes, weeder etc., adjust the stabilizers to restrict the side swing of the lower links.
- When transporting implements that are mounted on the three-point linkage, lateral swing must be eliminated by tightening the stabilizers.

4.28 TO ADJUST THE STABILIZERS

- Turn clockwise to increase lateral swing.
- Turn anti-clockwise to reduce swing.

NOTE: When an implement is raised to on-road transport position, lateral swing of the three-point linkage must be reduced.

4.29 LOWER LINKS (4)

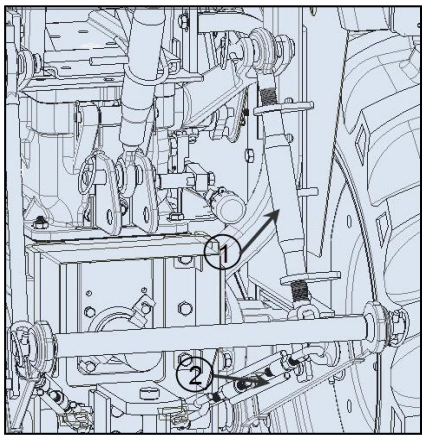


Fig.4-13

Lower links with Class 2 fixed ball ends (Fig.4-13).
Adjusting the RH and LH vertical lift rods.
The two vertical lift rods can be adjusted by means of adjuster arms in order to alter the lateral angle of the implements.
The latter position must be used for implements that require a certain freedom of movement (cultivators, spreaders, harrows, ploughs).

⚠ *WARNING: ALWAYS use great caution* when adjusting or using the three-point linkage.

4.30 HITCHING IMPLEMENTS

1. Lower the three-point linkage.
2. Adjust the lateral stabilizer to let the lower links swing freely.
3. Reverse the tractor on the implement.
4. Raise the three-point linkage until the hooks on the lower links fasten on to the ball ends on the implement crossbar and secure them with safety clips.
5. Adjust the stabilizers to give the right amount of lateral swing for the implement.
6. Hitch up and adjust the top link.

4.31 UNHITCHING IMPLEMENTS

1. Lower the implement to the ground.
2. Adjust the stabilizers to give the correct freedom of movement to the lower links.
3. Remove the safety clips and unhitch the implement's crossbar from the hooks on the lower links.

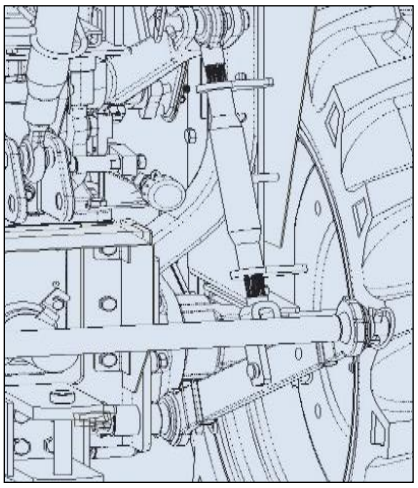


Fig. 4-14

The following are important warnings for the operation and adjustment of implements on the three-point linkage.

Use for adjusting the float position use in vertical position if certain degree of freedom is required for trail type implements. Use horizontal adjustment for locking the lower links and for adequate sensing. Also use the float mode. (Fig 4-14) while hitching the implements for ease in hitching.

WARNING: ALWAYS stop the engine before attempting to adjust the three-point linkage or any implement hitched to it.

WARNING: ALWAYS select position control mode when transporting mounted implements on the three-point linkage. Lock the implement into transport position.

WARNING: ALWAYS select position control mode when hitching or unhitching an implement to the three-point linkage.

WARNING: Before getting off the tractor, always lower to the ground any implement that is mounted on the three-point linkage.

WARNING: NEVER work underneath an implement held up only by the hydraulic power lift **and** three-point linkage. Support the **implement** for safety **and** stop the tractor engine

4.32 MECHANICALLY CONTROLLED POWER LIFT

The power-lift control levers are used to set the following modes (Fig. 4-15.)

- Position lever (Black Color)
- Draft lever (Red Color)

Each of these modes must be chosen according to the type of work in hand, the type of implement and the consistency of the soil.

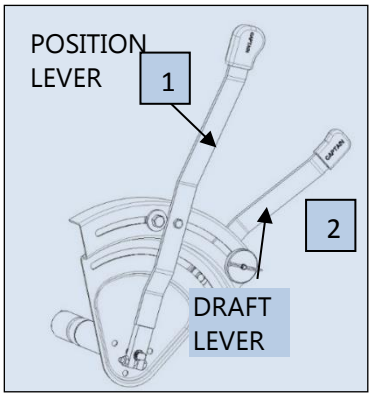


Fig. 4-15

4.33 POSITION LEVER

Move the draft lever to the lower stop. Set the position of the implement, either in or out of the soil, by moving the position lever toward the upper stop to raise it, or towards the lower stop to lower it. The degree to which implement is moved is proportional to the degree to which the position lever is shifted.

4.34 DRAFT LEVER

Move the position lever to the lower stop and set the implement to the required depth by slowly moving the draft lever towards the lower stop. The depth reached by the implement is proportional to the traction required by the consistency of soil. The tractive force required from the tractor is automatically kept constant in these conditions by the power lift. Lock the lower stop in front of draft lever to bring it to the same position each time round. Raise the implement at the end of each furrow by using the position lever only. At the end of the stroke of draft lever is engaged and power lift no longer controls the traction force.

WARNING: Never tow with the top link connected to the swinging support of the hydraulic power lift

4.35 TOP LINK OF THE MECHANICAL POWER LIFT 2 (Fig.4-16).

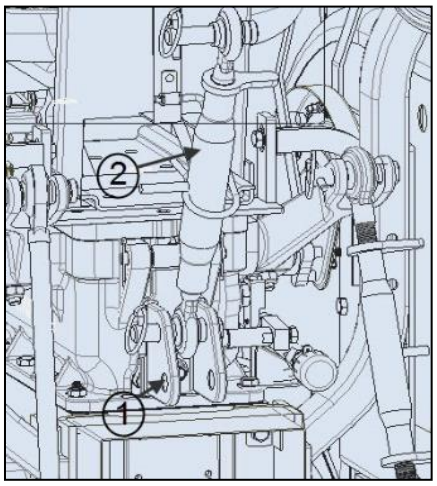


Fig. 4-16

The top link has two holes for hitching the implement and adjusting its slant. It also provides a means of adjusting draft control sensitivity, which should be chosen according to the type of implement used

- Fix top link to the lower hole for greater sensitivity (1)
- Fix the top link to the upper hole for less sensitivity or if jerking is observed.

4.36 SAFETY STRUCTURE

The tractor is equipped with a ROPS (Roll over protection safety structure) (Fig.4-38) mounted behind the driving seat and approved according to the CURRENT OECD and EEC STANDARDS. The protective structure is formed by three parts, one upper and two lowers, which are bolted together. The tractor must only be used with the protective structure in the upright position (Fig. 4-17).

Fig 4.17

WARNING: The tractor could tip up if used incorrectly. Protection is only guaranteed when the protective structure is in its original upright position with the fixing bolts tightened as described in the assembly instructions.

WARNING: To Avoid injury! Make sure that certain all parts are installed correctly.

Safety belts can be fitted, depending on the laws in force in the various countries of use. Always wear the safety belts with the protective structure in the upright position.
Never wear the safety belts when the protective structure is lowered. If the tractor must pass through low places or be parked there for maintenance purposes and the top part of the protective structure must be folded at an angle remember that there is not enough protection for the tractor driver in this position and that he could risk serious injury.
Remember that after use in low places, it is necessary to set the protective structure back in its upright position (Fig. 4-17) before continuing with any work.

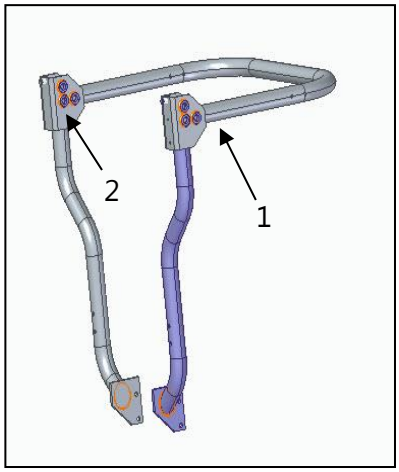


Fig 4.18

Comply with the following procedure if it is essential to fold down the protective structure for the above reasons (Fig. 4-17 and Fig. 4-18):

- Remove the fixing pins (2).
- Overturn the protective structure (1) until it rests on
- The stopper.
- Fit the fixing pins (2) and relative nuts as illustrated.
- Before you use the tractor again in any way, set the protective structure (1) back in the upright position (Fig. 4-17) by carrying out the operation described above in reverse order. Fit the fixing pins.

To avoid loosening of structure the protection offered by the safety structure will be impaired if it is subjected to structural damage, as in an overturn accident, or is in anyway altered by welding, bending, drilling or cutting. A damaged safety structure should be replaced, NOT reused. Always keep upper part of the safety structure pinned in vertical position (as in the above Fig.4-18) when operating the tractor. If the tractor is operated with the safety structure folded down (e.g. to enter a low building) drive with extreme caution and DO NOT use seat belt.
Fold the safety structure up again as soon as the tractor is operated under normal conditions.

4.37 HOW TO DRIVE THE TRACTOR

To drive the tractor, you will need to exercise greater effort if the engine is at standstill. Slow and stop the tractor with the brake pedals latched together. Tow or push the tractor at moderate speed

4.38 HOW TO SAFELY DRIVE THE TRACTOR

Affix the slow-moving vehicle card (SMV slow moving Vehicle). Use the revolving beacon and hazard lights (As per recommendation countries)
Strictly comply with the laws in force in the country where the tractor is used.

4.39 TRACTOR TRANSPORT

The tractor must be transported with a suitable vehicle. Engage the parking brake. Firmly fasten the tractor to the transport vehicle using suitable chains or straps. (Fig.4-19) Use the tow bar or its supports as rear fixing points for the tractor.

CAUTION: Never hitch or connect chains around the tractor components as these could be damaged by the chains themselves or by excessive loads.

The trailer must be provided with the warning signs and lights required by the local laws in force.

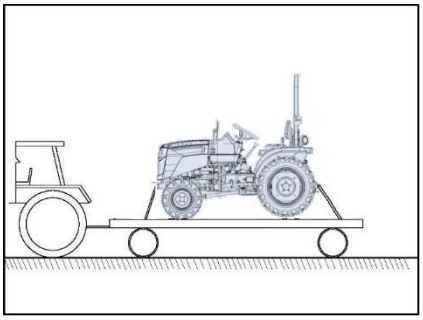


Fig 4.19

CHAPTER -5
MAINTENANCE

5.1 ROUTINE MAINTENANCE TABLE

SYMBOL/ LEGENDS: -

CHECK	*	**GREASE**	†
TIGHTEN	▲	**CLEAN**	●
REPLACE	ʘ	**WASHING**	♦

NOTES:

1. Operations that must be performed by an authorized dealer or service agent.
2. Change the gearbox oil for the first time after 500 hours, then change it after 1000 hours service (1000-2000- 3000 etc...)
3. To safeguard the hydraulic lift and power steering, replace the filter on pump intake for the first time after 250 hours. After this, repeat the same operations after every 500 hours service (i.e.500-1000 hours etc.).
4. Adjusted the brakes after the first 50 hours work.
5. Use your own discretion and experience when deciding the actual intervals for variable interval service and maintenance operations. Always remember, however, that is better to perform them too often than not often enough.
6. *Change* the engine oil and relative filter cartridge after the first 50 hours work. After this, change the engine oil and engine oil filter at the intervals given *in the* '*Routine Maintenance Table*'.
7. Replace the fuel filter at the intervals specified in the 'Routine Maintenance Table'

MAINTENANCE INTERVAL (HRS.)	10	50	250	500	750	1000
GENERAL						
COMPLETE WASHING		♦	♦	♦	♦	♦
NIPPLE GREASING	†	†	†	†	†	†
COOLANT LEVEL	*	*	*	*	*	*
AIR CLEANER						
AIR CLEANER ELEMENT		●	●	●	O	●
AIR CLEANER CLAMP	*	*	*	*	*	*
ENGINE						
ENGINE OIL		O	O	O	O	O
ENGINE OIL FILTER		O	O	O	O	O
ENGINE NUT & BOLT	*▲	*▲	*▲	*▲	*▲	*▲
BATTERY						
BATTERY ELECTROLYTE LEVEL	*	*	*	*	*	*
BATTERY TERMINAL JELLY		†	†	†	†	†
FUEL SYSTEM						
FUEL FILTER	O	O	O	O	O	O

MAINTENANCE INTERVAL (HRS.)	10	50	250	500	750	1000
COOLING SYSTEM						
FAN BELT TENSION	*	*	*	*	*	*
COOLANT SYSTEM FLUSHING						O
CLUTCH						
CLUTCH OPERATION & PEDAL FREE PLAY	*	*	*	*	*	*
TRANSMISSION/ HYDRAULIC						
OPERATION OF GEARS		*	*	*	*	*
TRANSMISSION/ HYDRAULIC OIL FILTER						O
HYDRAULIC OIL STRAINER		●	●	●	●	●
BRAKE						
BRAKE OPERATION & PADEL		*	*	*	*	*
WHEELS AND TYRE						
WHEEL BOLTS		▲	▲	▲	▲	▲
TYRE INFLATION		*	*	*	*	*
ELECTRICALS & STEERING						
FUCTIONING OF OIL GAUGE	*	*	*	*	*	*
STEERING OPERATION		*	*	*	*	*
STEERING TANK OIL LEVEL		*	*	*	*	*
STEERING OIL FILTER						O

5.2 LUBRICATION AND MAINTENANCE

Read and comply with all the safety precautions in the tractor maintenance part of the Safety Notes Section.

NOTE: Old fluid and used filters must be disposed of in the correct way.

WARNING: Do not carry out inspections, *maintenance* work or adjustments on the tractor while the engine is running.

5.3 SEALED UNITS

Do not remove the seals from the following parts: injection pump and over speed screw. If you need to repair or adjust any of these units, contact your local dealer or authorized repair shop. The warranty is automatically invalidated if these seals are tampered with.

5.4 RUNNING IN

Fade-free efficiency and a long working life largely depend on how the new tractor is treated during the running in period. It is therefore extremely important to follow these instructions:

- Your engine does not require any special running in when new. You can use it at full power from the start, but you must never overload it. Avoid using the engine at full power before it reaches an operating temperature of at least 60°C (140° F).
- Avoid idling the engine for long periods.
- Regularly check for oil leaks.

5.5 AFTER THE FIRST 50 HOURS

Change the engine oil. After this, change the engine oil and engine oil filter at the intervals given in the 'Routine Maintenance Table".

- Replace the fuel filter and engine oil filter during the first 50 hours service.
- After this, replace the filters at the intervals specified in Routine 'Maintenance Table'.
- Check clutch pedal travel in the mechanical version.
- Check the brake pedal free play.
- Check all oil levels. If necessary, top up with oil of the prescribed type.
- Check the tension of the fan belt.
- Grease to all grease nipples.
- Check to make sure that all bolts, screw and nuts are correctly torque.
- Check the tire's pressure.

5.6 HOW TO PREVENT POLLUTION

To prevent pollution when oil, filters and so forth are changed, always clean the zone around fill, level and drain plugs, dipsticks and filters. Before connecting the auxiliary cylinders, make sure that the oil they contain is clean, that it has not deteriorated owing to long storage and that it is of the prescribed type.

5.7 SERVING INTERVALS

The intervals suggested in the lubrication and maintenance table are indications to use when the tractor is used in normal conditions. These intervals should be adapted to the real environmental and operational conditions. Serving must be more frequent in adverse work conditions (in the presence of humidity, mud, sand, very dusty environments).

CAUTION: If carried out at the prescribed intervals, the operations described in this section will ensure that the tractor operates in a regular way. However, remember to carry out the inspections and adjustments (of variable frequency depending on the environmental conditions and type of work carried out) according to your discretion and experience.

5.8 MISCELLANEOUS INSPECTIONS

Periodically check the following components. If faults are discovered, contact your Dealer's specialized personnel and have the damaged parts replaced if necessary:

- Hand brake lever: make sure that the ratchet locking mechanism is secure and reliable.
- Make sure that all nuts are well tightened.
- Make sure that the safety frame bolts are well tightened.
- Make sure that all other nuts and bolts are well tightened.

5.9 FUEL INJECTION PUMP

Only OEM Authorized dealer / your Dealer's specialized personnel may be allowed to work on the injection pump during the warranty period. Removal of the seals from the pump will relieve the manufacturer from all and every liability in relation to warranty coverage.

5.10 KEEP THE ENVIRONMENT CLEAN

When you need to fill the fuel tank or charge the lubricating oil, never forget to position a vessel under the component in question in order to collect any fuel or oil that spills out. These products are polluting, so it is very important to protect the environment in this way.

5.11 ENGINE COOLING SYSTEM

It is advisable to replace the fluid in the system at least once a year even if you have not reached 1000 hours service in total.

5.12 RADIATOR

To ensure that the cooling circuit operates in a perfect way, it is important to prevent the radiator fins from becoming clogged. These fins should be cleaned often, even several times a day if the place of work is particularly dusty.

5.13 LUBRICATION

Before lubricating any parts provided with grease nipples, carefully clean the fittings surfaces and be sure that their seal ball moves freely. After the lubrication, remove any trace of grease to avoid collecting dirt or dust

5.14 INDICATOR LIGHTS

Your tractor is equipped with indicator lights that the conditions of your machine. Some of these indicate faults, so act promptly if they come on during turning or based conditions.

5.15 FUEL TANK FILLING

CAUTION: Comply with the following instructions when working with the diesel fuel:

1. Do not smoke while filling the fuel tank because diesel is explosive liquid and catch fire easily.
2. Never use such mixtures. Moreover, mixtures of diesel fuel and alcohol are not approved since the resulting lubrication of the fuel injection system is insufficient.
3. Clean around the plug where the fuel is poured and keep it clean.
4. Fill the tank at the end of the day to prevent the formation of overnight condensation.
5. Never remove the plug or fuel the tractor while the engine is running. Keep control of the pump nozzle whilst the tank is being filled.
6. The tank must not be filled. Allow space for an increase in volume. If the original tank plug is lost, it must be replaced with an original spare which must be fully tightened.
7. Dry up any fuel spill immediately.

5.16 FUEL REQUISITES

It is important to use good quality fuel if the engine is to be long-lasting and give a good performance. The fuels must be clean, well refined and non-corrosive for the fuel system components. Make sure that you use fuel of a known quality and reliable origin.

5.17 FUELING

Before you fuel the tractor, clean the zone around the fill plug to prevent foreign bodies from entering the tank. After fueling, screw on the plug and tighten it well.

5.18 FUEL STORAGE

Take all the necessary precautions to ensure that stored fuel does not become polluted with dirt, water or other substances.

- Store fuel in black iron cans. Do not store it in galvanized cans as the galvanization treatment would react with the fuel and form compounds that would spoil the injection pump and injectors.
- Store fuel cans away from direct sunlight and slightly tilted, so that any sediment inside is eliminated through the outlet tube
- To make sludge and condensation water easier to remove; there should be a discharge plug C in the lowest point, on the opposite side to the drain tube.

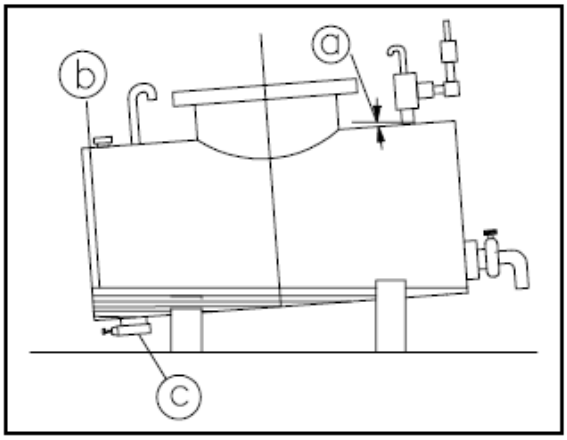


Fig.5-1 Setting up a tank for fuel storage and decanting.

a. Slope 25%.
b. Condensation water.
c. Sludge drain plug.

- If the fuel is not filtered from the storage can, use a funnel with the fine gauge mesh over the tracking fuel tank fill plug inlet when fueling.
- Plan your fuel purchases so that summer fuels are not kept for too long and used in the winter.

5.19 ACCESSING FOR INSPECTION AND MAINTENANCE

If we want to open the bonnet top to access the engine components and carry out inspections, lubrication and servicing Operations. The required procedures are illustrated below.

5.20 HOW TO OPEN THE BONNET

1. Rotate the key (2) Clockwise to unlock the bonnet lock.
2. The bonnet (1) can be easily tilted back for maintenance operations on the engine.
3. Move the Bonnet in upward direction.
4. Now we can access every external parts of engine.

Fig.5.2

5.21 VARIABLE MAINTENANCE

WARNING: Use your own discretion and experience when deciding the actual timing for variable interval service and maintenance operations. It is obviously better to carry out these operations too often than not often

5.22 OPERATION 1; ENGINE OIL LEVEL FIG.5-3

Leave the tractor parked on a flat surface for at least five minutes before checking the level, to allow the oil to settle in the sump:

- Take out the dipstick, wipe it with a rag and then dip it into sump again, then remove the dipstick again and or sure that the oil level is within the H/L mask reaches and does not exceed the level marked on it.
- If necessary, add recommenced engine oil through the filter until the required level has been reached.

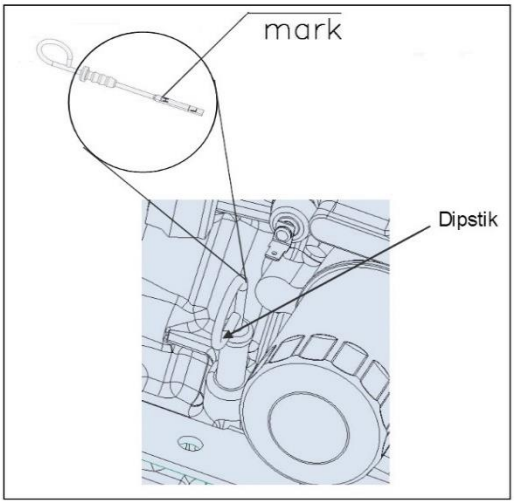


Fig.5-3 Engine oil Dipstick (LH.S OF Engine)

CAUTION: Never ever use the engine with the oil level below the "L "Mark.

5.23 OPERATION 2; OIL LEVEL: REAR TRANSMISSION, AND HYDRAULIC.

WARNING: If leak is found and any other defect that cause the oil level to drop, immediate action is required to avoid any damage to mechanical systems. *Check at regular intervals the oil level in the gearbox, the rear final drives and in the hydraulic lift and steering circuits.*
Park the tractor on the flat ground, stop the engine and lower the hydraulic lift links. Remove the dipstick (i) and check the oil level.

NOTE! Allow the oil to settle in the transmission and rear final drives before checking the level.

The oil level in the transmission must be over the midline between the minimum and maximum marks of the dipstick (Fig.5-4) with the lift link in the up position. If needed fill up through the position to the required level with oil of prescribed type. When operating extreme hydraulics, such as hydraulic front loaders, rams' motors etc. that require a certain amount of oil top up the additional oil of about 3-5 liters oil. This ensures a correct oil level in the transmission at any time.

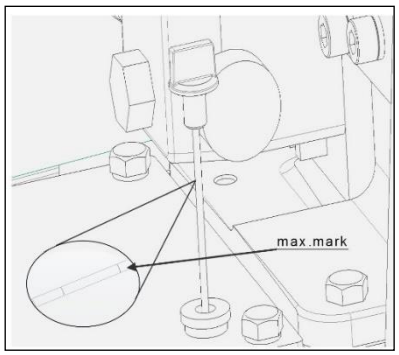


Fig.5-4

NOTE: The level must never be under the Min. mark when using external hydraulics. The level must always be between the Min and Max marks.

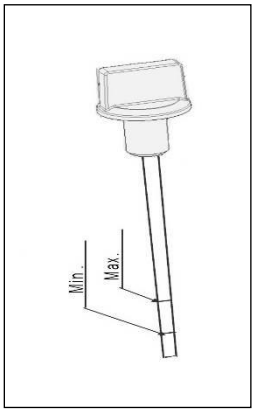


Fig.5-5

NOTE: When working with the tractor with the slopes, add extra liters of oil to guarantee a minimum oil level even in the most difficult conditions.

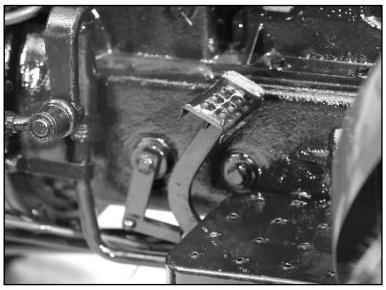
NOTE: The hydraulic ram of the implements being hitched to the tractor contains the same oil used in the transmission of the tractor. This excludes any oil contamination that could cause malfunction.

OIL IN THE GEAR BOX (FRONT TRANSMISSION)

The tractor's transmission and power lift circuits contain the same type of oil. See lubricant and Fuel chart.

TO CHECK/REFILL THE FRONT TRANSMISSION OIL

We have to unbolt the front transmission oil level bolt which is located on left side of transmission nearer to the clutch pedal. And with using funnel we can refill the oil in front transmission.



5.24 OPERATION 3; Battery

It is advisable to periodically check the level of battery acid and to add distilled water if necessary. If you need to top up more frequently, have the battery charging system checked by a qualified technician.

WARNING: Battery electrolyte contains sulphuric acid and can cause serious burns. Avoid contact with skin and eyes. Keep naked flames, sparks and lighted cigarettes away from batteries which are being charged. Keep the area in which batteries are being charged well ventilated

WARNING: When connecting the battery to a charger, make sure that positive (+) lead of the charger is connected to the positive of the battery and the negative (-) to the negative. Incorrect connection will damage the diodes and the other circuit components.

NOTE: The level of the electrolyte must be checked with the engine off, the tractor parked on the flat ground and the battery cold.

NOTE: Make sure that the battery terminal nuts are well fixed to their terminals.

WARNING: *Battery pots, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. Wash hands after handling.*

5.25 OPERATION 4;

COOLING CIRCUIT EXPANSION RESERVOIR

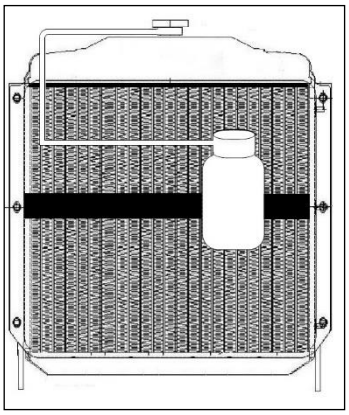


Fig.5-6

Periodically check the level in the cooling circuit expansion reservoir. Top up through the plug if necessary.

WARNING: NEVER remove the plug from the radiator while the engine is still hot. Always unscrew the plug slowly by one position and allow the pressure to drop before you loosen it completely.

PRECAUTIONS AGAINST FREEZING TEMPERATURES:

To prevent ice from forming in the radiator, add specific products according to the instructions given by the antifreeze manufacturer.
Antifreeze also possesses antioxidant and rust inhibiting properties and is suitable for all seasons. The following amount is indicatively required.

Degrees Celsius (C°)	-8°	-15°	-25°	-35°
Percentage of antifreeze per volume %	20	30	40	50

5.26 OPERATION 5;

ENGINE COOLANT RADIATOR

Periodically check to make sure that the radiator (D (Fig. 5-7) is not clogged. Clean with a jet of compressed air directed from the inside towards the outside.

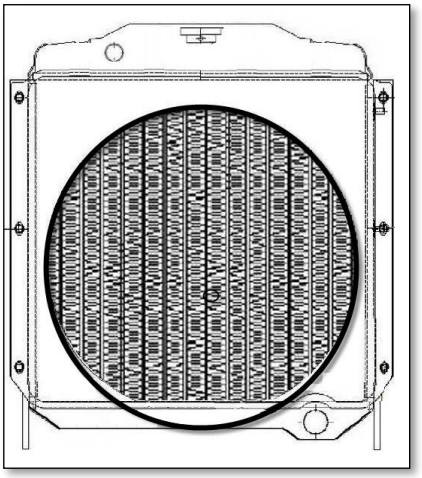


Fig.5-7

WARNING: These operations must be carried out when the engine is cold. When hot, the grilles and radiator will burn the hands and fingers.

NOTE: The best results are obtained with a steam cleaver that softens *up* the dirt. Use a lamp to check the cleaning between the radiator fins. We recommend a daily cleaning when Tractor is used int the excess dust operation and chances of radiator chocking.

5.27 OPERATION 6; AIR FILTER DISCHARGE VALVE FIG. 5-8

Discharge the dust deposits and sediments each day by pressing the rubber valve (2) on the air filter housing (1)

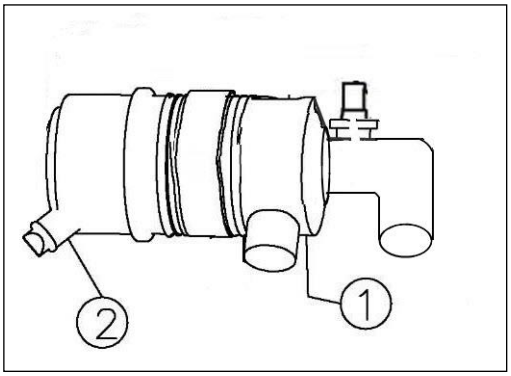


Fig.5-8

5.28 OPERATION 7;

EXTERNAL CARTRIDGE OF DRY AIR FILTER

WARNING: Always stop the engine before ' demounting the filter elements.

Periodically release the clips, remove the cover, take out the external cartridge and clean it (this operation should be carried out more frequently if you work in a very dusty environment):

- Clean the primary element after every 250 hrs. Of operation or immediately when the red band appears on the service indicator.
- Never remove the secondary element for cleaning. Only remove when replacement of it is required.
- Replace primary & secondary element upon 3rd cleaning requirement of the primary element or at 750 hrs. (whichever occurs earlier)
- Gently pull filter element backwards to remove filter out from housing.
- Use clean cloth to wipe sealing areas of filter element without removing secondary element**.**
- Ensure proper seating of filter into housing before latching the cover. Do not use latches on the cover to force the filter into air cleaner which could cause damage to housing & will void warranty.
- the vacuator valve should always be in perfectly downward direction

WARNING: Clean Primary element only by tapping vertically only on clean floor. Don't tap diagonally/ At an inclined angle.

WARNING: Secondary Element should not be cleaned or removed during cleaning of primary Element.

5.29 OPERATION 8;

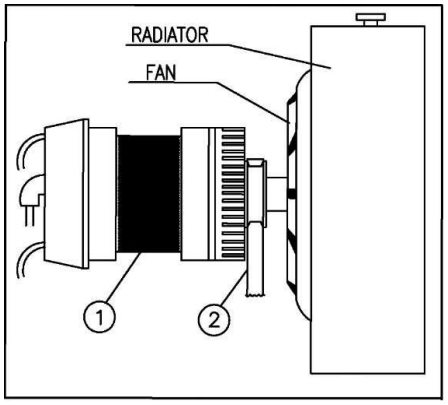


Fig.5-10

ALTERNATOR AND FAN BELT

Periodically check the tension of the alternator (1) and fan belt (2) in the middle of its long side. It should give 10 mm.
To adjust the belt tension, loosen the fixing screws and check nut on the idler and move the alternator until the correct tension has been obtained. Now tighten all the screws and check nuts.
The belt must be replaced if it is cracked or needs to be frequently adjusted. This operation must be carried out by authorized service personnel.

1 Alternator

2 Belt for alternator and fan pulley of radiator

5.30 OPERATION 9;

MECHANICAL GEARSHIFT CLUTCH PEDAL FIG. 5-11

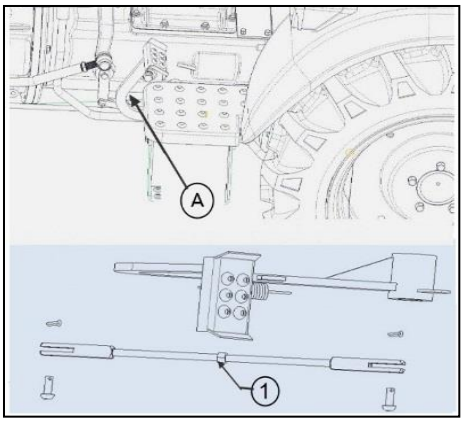


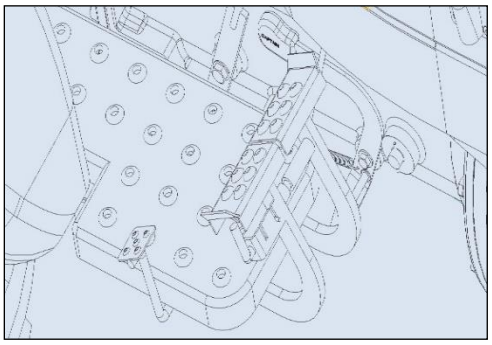
Fig.5-11

Check the free travel of the gearshift clutch pedal at suitable intervals. Excessive play reduces the disengaging travel of the clutch and could prevent the gears from being correctly meshed. On the other hand, insufficiently play could lead to abnormal wear on disengaging thrust bearing, overheating and rapid wear on the clutch itself. Free travel (Fig. 5-11) measured on the pedal should be 25 mm.

To adjust, proceed as follows:

- Loosen the Fork and check nut (1)
- To restore the pedal travel 'A"
- Then fit the Fork back again and lock the Check nut.

5.31 OPERATION 10;

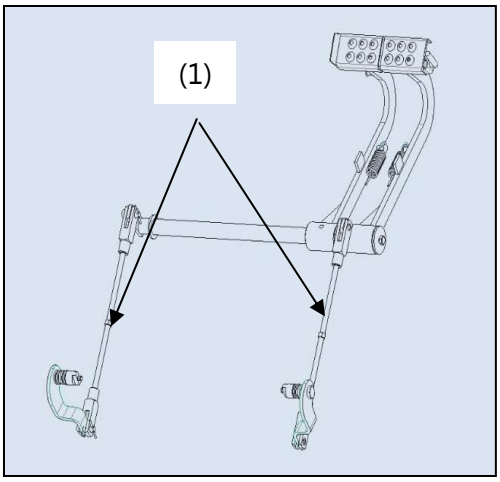


(Fig.5-12)

ADJUSTING THE BRAKES REAR BRAKES

Adjusting the brakes for the first time after the first 50 hours, then according to the work conditions.
The braking system must be adjusted when the free travel of the pedals (Fig. 5-12) becomes excessive and the pedals are near to end of travel. Proceed in the following way to restore free pedal travel to its normal value of about 15-20mm (Dimension A):

1. Jack up the rear wheels of the tractor.
2. Make sure that the parking brake is off.
3. Free the brake pedals by raising the lock.
4. Unscrew the check nut (1) (Fig.5-13). Slowly, tighten the adjuster (1) (Fig.5-13) until you can no longer turn the wheel by hand.
5. Make a reference mark on the adjuster nut (Fig.5-13) and on the support, then slacken off the adjuster nut by 1 turn, i.e. until the wheel can be freely turned. Now lock the adjuster with the relative check nut (1) (Fig. 5-13).
6. Check that the brake pedal has a free travel of 15-20mm and repeat the adjustment if necessary.
7. Repeat the same procedure for the other side (Fig. 5-13).
8. Finally, check that the free travel is the same for both pedals and that the brakes engages simultaneously on both sides.

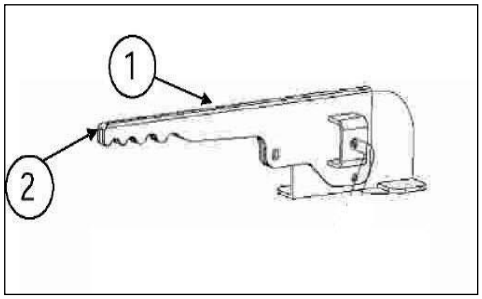


(Fig.5-13)

5.32 OPERATION 11;

PARKING BRAKE - FIG.5-14

The parking brake lever acts directly on the main brakes.
Make sure that free travel is identical for both pedals, since free travel of the pedals dictates the free travel of the parking brake and left/right distribution of the braking action when the brakes are locked. Once you have adjusted the brake pedals, adjust the free travel of the parking brake. (Fig.5-14) on the control linkage on the left side of the tractor, so that the parking brakes engage after clicks of the ratchet mechanism, sensed on the release button (2) of the lever.

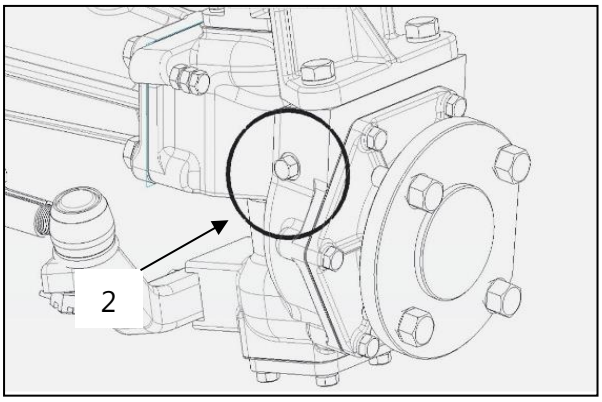


(Fig.5-14)

Parking brake adjustment

1. Parking brake lever.
2. Release button.

5.33 OPERATION 12; FRONT AXLE OIL LEVEL



(Fig.5-15)

4WD front axle
Regularly check the oil level in the differential of the front axle and in the front axle side final drives. *Park the tractor on level ground.*
Position the final drive plugs) (Fig. 5-15) on the wheel center line. Remove the plugs and check the level. Top up if necessary, with oil of the specified type through the plugs. Remove the level plug (2) (Fig. 5-15) from the central axle housing. The oil level must reach the hole. Top up if necessary, with oil of the specified type through the plug (2) (Fig. 5-15).

NOTE: See the fuel and lubricant chart for the correct type of oil.

5.34 OPERATION 13;

MISCELLANEOUS INSPECTIONS

- Hand brake lever: make sure that the ratchet mechanism locks in a secure and stable way.
- Make sure that the wheel nuts are correctly torque. Make sure that the safety frame screws are well tightened.
- Make sure that all other nuts and bolts are well tightened.
- Check the tires pressure.

SAFETY FRAME

Have your Dealer's specialized personnel check to make sure that the safety frame fixing screws are correctly tightened.

WARNING: The safety frame complies with certain safety standards. It must never be drilled or modified in order to install accessories or implements. It is FORBIDDEN to weld on accessories or repair the safety frame by welding.

DASHBOARD CONTROL COATINGS

CAUTION: Use water and a neutral detergent to clean the coating of dashboard and controls. Any commercial product to clean car interiors may be used. DO NOT use any kind of solvents or alcohols.

EVERY 100 HOURS WORK

5.35 OPERATION 14;

GENERAL LUBRICATION

Lubricate the grease inside link adj. every 100 hours or more often, depending on the working conditions.

EVERY 200 HOURS SERVICE

5.36 OPERATION 15;

ENGINE OIL SUMP

During the running in period, the engine oil must be changed after the first 50 hours. Following this, change the oil after every 250-hour service (250, 500, 750 hours, etc.)
Change the oil while the engine is hot.
Remove drain plugs after parking the tractor on flat surface.
Fit the drain plugs back on the tighten it.
Fill up through plug with oil of the recommended type until reaching the maximum level mark on the dipstick.

NOTE: Allow the oil to settle in the engine sump before checking the level. 250 hours is the maximum tolerated frequency for oil changes. The oil must be changed more frequently (e.g. every 125 hour) if the tractor is used in heavy duty conditions. If the tractor is used frequent, change the engine oil at least once a year regardless of the actual number of hours worked.

5.37 OPERATION 16;

ENGINE OIL FILTER

During the running in period the engine oil must be changed after the first 50 hours. Following this change the oil after every 250 hours service (250,500,750, etc.).

1. Unscrew the old filter from its housing.
2. Smear the housing in which the new filter is to be mounted with clean oil. Make sure that the new filter fits correctly into his housing.
3. Fully tighten the new filter into its housing.
4. Top up the level with new oil.

NOTE: Consult the lubricant and fuel chart for the type of oil required.

WARNING: Only use genuine filter cartridges. Use of non-genuine cartridges could damage the engine and shorten its working life.

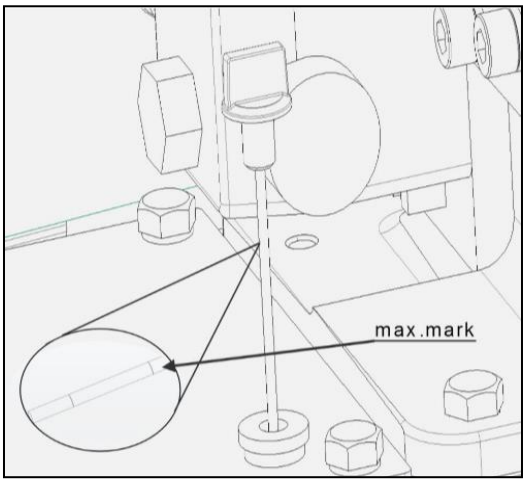
5.38 OPERATION 17;

TO CHANGE THE FUEL FILTER

When the engine is running in, during the first 250 hours service, the filter should be changed for the first two times after every 50 hours. After this, change the fuel filter cartridges after every 250 hours service (250,500, 750, 1000, etc.).

5.39 OPERATION 18;

OIL CHANGES FOR FRONT TRANSMISSION, REAR TRANSMISSION INCLUDING HYDRAULIC CIRCUITS FIG.5-16



(Fig.5-16)

NOTE: It is advisable to change the oil in the gear box for the first time after 500 hours, then after every 1000 hours service.

WARNING: When draining out and filling oil and checking oil level, take care that the transmission is in horizontal position.

OIL DRAINING

1. Lower the lift arms to the ground.
2. Remove the plug (1) (Fig. 5-25A) to make oil draining easier.
3. Place vessel under all drain plugs of transmission housing to collect the oil as it drains out.
4. ***WARNING:*** Beware of powerful oil jets. Follow all safety rules.
5. Remove the plugs and drain out the oil.
6. Clean the plugs and fit back on.

FILLING UP THE TRANSMISSION

1. Fill up the transmission to the maximum level mark on the dipstick.
2. Put the gearshift lever in neutral and start the Engine. Let it run on idle until the oil reaches a temperature over 25°c.
3. Check that the transmission oil reaches the required level mark on the dipstick.
4. If required, fill up to the correct level.

NOTE: Let the oil stabilize before checking its level.

WARNING: See the Lubricants and Fuel chart ' for the type of oil to be used according to the transmission type.

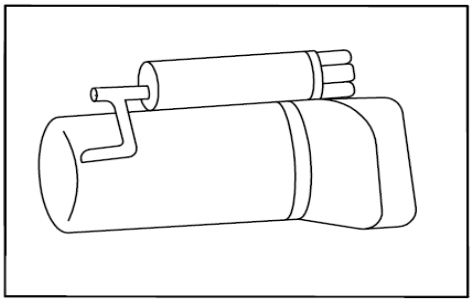
NOTE: If implements are used that require a great quantity of oil, make sure that the transmission contains enough oil for every work condition. Top up as required.

5.40 OPERATION 19;

STARTER MOTOR FIG.5-17

The starter motor should be thoroughly cleaned at least once a year. Particularly check the condition of the brushes and collector.

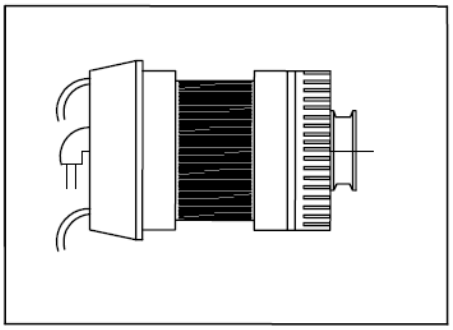
Note: Always cover the starter motor during washing of tractor.



(Fig.5-17)

ALTERNATOR - FIG.5-18

Have the condition and operation of the alternator checked by a specialized workshop.



(Fig.5-18)

5.41 OPERATION 20; DRY AIR FILTER

Release the clips, Remove the cover and Replace the internal safety cartridge.
Carefully clean the filter covers and bowl.

NOTE: The filter cartridge should be replaced at least once a year even if the tractor has not yet worked for 1000 hours.

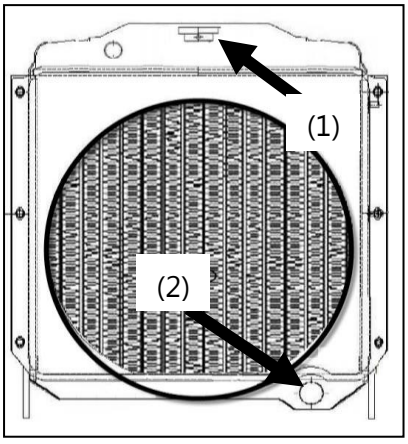
⚠ **WARNING:** The internal cartridge (5) must ' always be replaced. It must never be cleaned.
WARNING: Always stop the engine before demounting the filter *elements.*

5.42 OPERATION 21;

COOLING SYSTEM CLEANING

Remove the filler cap (1) from the expansion reservoir (2) (Fig.5-19) to make coolant draining easier.

WARNING: NEVER remove the radiator cap when the engine is hot. Unscrew the cap very slowly to release the pressure before taking it off completely. Set a suitable vessel in position and drain out the coolant through radiator plug (3) and through plug (not shown) of the engine block.



(Fig.5-19)

Shut off the drain plugs and fill up the system with coolant fluid until the level reaches 2025 mm below the edge of fill plug (1) (Fig.5-19) of radiator (2).
Remove the fill plug and allow the engine to run at 1000 RPM for a few minutes. Now check the level and top up if necessary. Shut the fill plug once the cleaning operation has terminated.

NOTE: In an emergency, to make up for sudden leaks, the system can be topped up with water by pouring this through the filler plug.

CAUTION: Have the fault repaired as soon as possible. Fill with mixture as indicated in the table below. Fig.5-19 Precaution against freezing temperatures.

The system is filled with a mixture of water and antifreeze. Add the proportion of antifreeze given in the following table

Degrees Celsius (C°)	-8°	-15°	-25°	-35°
Percentage of antifreeze per volume %	20	30	40	50

This mixture can be permanently maintained in the circuit for 1 year so long as you have not totalized 1000 hours service during this period. In this case, the mixture must be changed. Flush out the system whenever you change from using pure water to antifreeze mixture and vice versa.

5.43 OPERATION 22;

ELECTRICAL SYSTEM BATTERY

Your tractor is equipped with a "Maintenance Free battery." Keep the battery clean and dry, particularly on top. Check the electrolyte level: it should just touch the upper mark and never be under the bottom mark. If necessary, open the cover and add distilled water.

WARNING: NEVER top up with SULPHURIC ACID.
Do not use quick battery chargers to recharge the Batteries.
Check the battery charge with a digital voltmeter as Described below:
Connect to the two battery poles, matching their terminals with the same sign (negative with negative and positive with positive). Now read the measured value on the instrument;
Compare this value with the ones in the table to establish the battery charge status.

When the voltage is near 12.30V, the battery must be immediately charged with current equal to 1/10 of the capacity in Ah (a 65 Ah battery must be given a 5 Amp charge).

Voltage (V)	Charge Status
12.66	100%
12.45	75%
12.30	50%
12.00	25%

NOTE: If the battery must be topped up frequently or tends to discharge, have the electrical system of your tractor checked by your area Dealer's specialized personnel.

WARNING: Remember to disconnect the cables before you recharge the battery. It is advisable to remove the battery from its housing and to recharge it well away from the tractor.

WARNING: The place in which the battery is recharged must be well ventilated. Do not smoke or work with tools liable to produce sparks whilst the battery is being recharged.

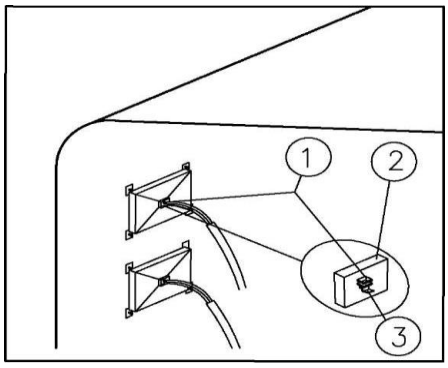
NOTE: Proceed as described below when the old Battery must be replaced with a new one:

1. First disconnect the terminal with the negative (-) sign and then the one with the positive (+) sign.
2. Fit the new battery into its housing without tightening the fixing screws too much.
3. Clean the terminals and connect them to the battery poles. Make sure you connect the negative (-) pole last. Fully tighten the terminal screws on to the poles and protect them with Vaseline.
4. Never short circuit or earth any of the alternator terminals. This could damage the electrical system
5. Never invert the alternator connections. The battery and alternator earths must be of the same sign or the alternator diodes will be damaged.
6. Always disconnect both the alternator terminals before undertaking any electrical arc welding on the tractor.

5.44 OPERATION 23;

HOW TO REPLACE THE HEADLIGHT BULBS FIG.5-19

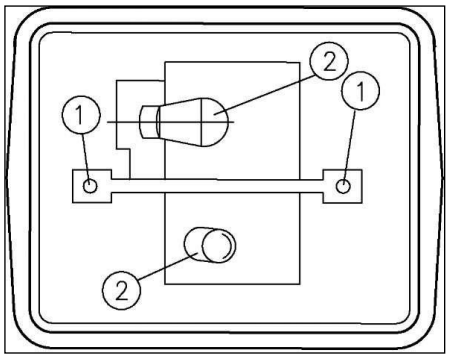
a. Remove the connector (2).
b. Remove the rubber guard (1).
c. Slacken off the retention spring (3).
d. Remove the defective bulb.
e. Fit in new bulb. Remember not to hold the bulb in your hand. Use a cloth to handle the bulb whilst it is being fitted.
f. Fit the part back in place by proceeding through the instructions in reverse order.



(Fig.5-19)

HOW TO REPLACE THE BULBS IN THE REAR SIDE & FRONT SIDE LIGHTS ON FENDER. FIG.5-20

1. Unscrew the screws (1) and remove the glass cover.
2. Press down the bulb and turn it in anticlockwise direction.
3. Replace the faulty bulb.



(Fig.5-20)

5.45 FUSES

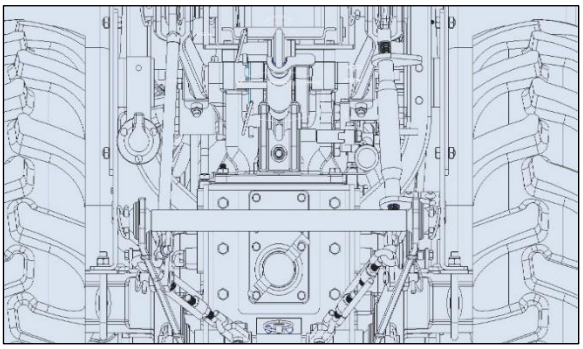
Fuses against short circuits and excessive power draw protect the tractor's electrical system. The number of the fuses in the electrical system depends on the tractor model. The fuses are contained in suitable boxes:

- Fuse box in battery compartment.
- Fuses box.

FUSES	
Ignition (Horn, brake, plough light)	Max. 15A
Turn Indicators LH SIDE	Max. 15A
Turn Indicators RH SIDE	Max. 15A
Parking Light	Max. 15A
Head Light High Beam	Max. 20A
Head Light Low Beam	Max. 20A
Fuel feed pump	Max. 15A
ECU	Max. 20A
Engine solenoid	Max. 60A

5.46 POLE POWER SOCKET FOR TRAILER

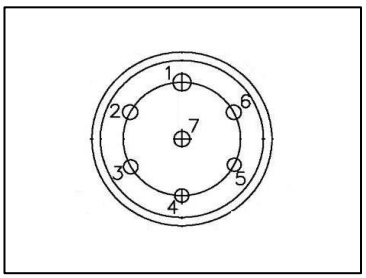
Pole power socket is installed on the rear tractor (1) (fig.5-21) this socket is used to connect the light circuit of the trailer.



(Fig.5-21)

POLE POWER SOCKET FOR TRAILER CONNECTIONS

1. LH turn indicator
2. Ignition
3. Earth
4. RH turn indicator
5. Parking
6. Brake lights
7. Parking



(Fig.5-22)

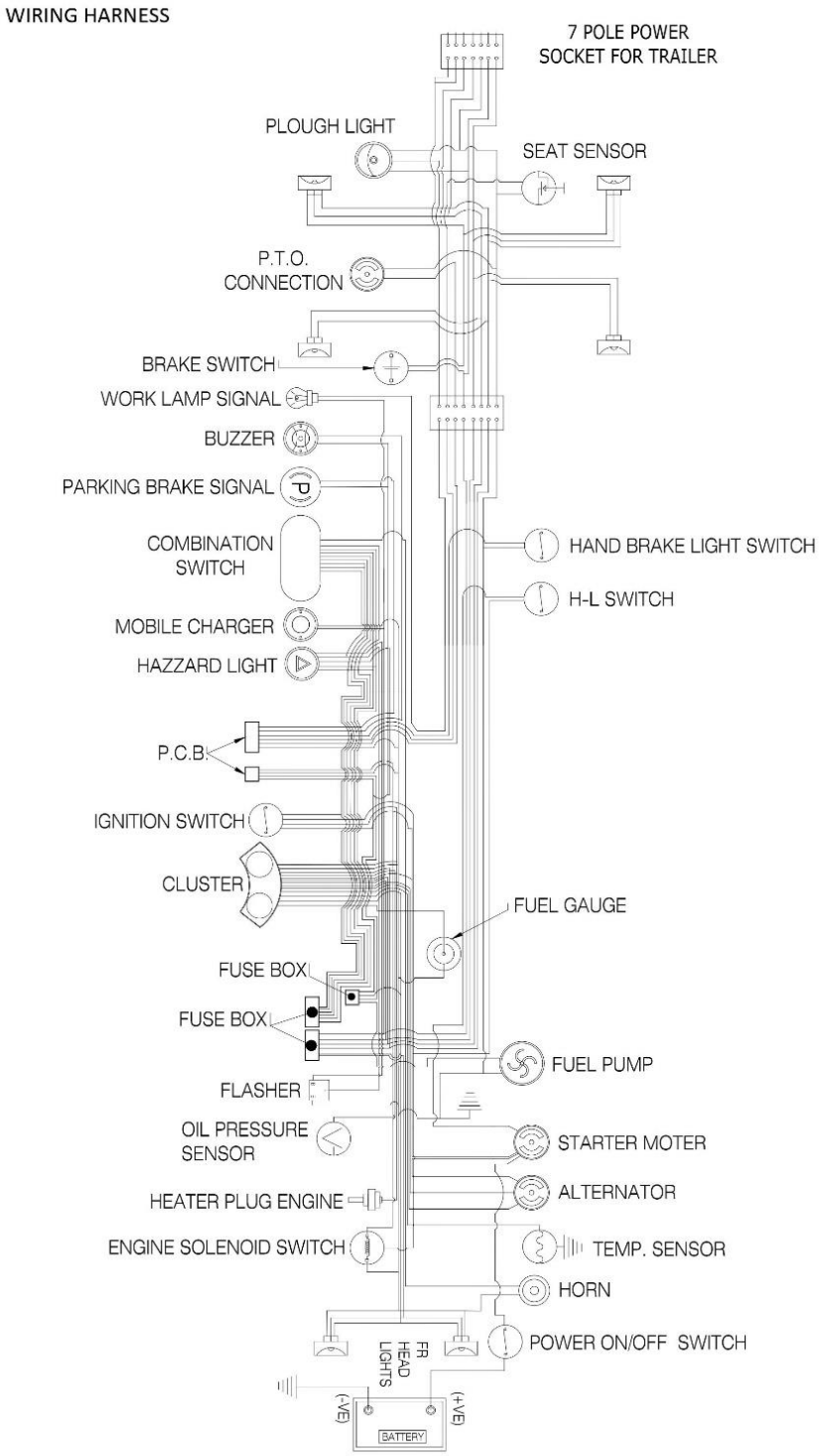
5.47 LONG IDLE PERIOD

Take the following precautionary measures when your Tractor is not going to be used for a long period of time.

- Park the tractor in dry. sheltered place.
- Drain the coolant from the radiator and engine.
- Grease all points provided with grease nipples.
- Clean the fuel filter.
- Generally, clean the tractor. particularly the bodywork components. Protect the painted parts by applying silicon wax and the unpainted metal parts by applying protective lubricant. Park the tractor in a dry, sheltered and possibly ventilated place.
- Make sure that all the controls are in neutral (including the electric switches and parking brake controls.
- Remove the ignition key from ignition switch & off battery isolator switch.
- Empty the fuel tank and fill with it with new diesel fuel until the maximum level is reached.
- Remove the battery, clean the cover and spread Vaseline on the terminal and terminal caps. Now connect the battery in the ventilated place where the temperature is not liable to drop below 10 and where it is not exposed to direct sunlight.
- Check the battery charge with a voltmeter as described in the battery part of this section Recharge if it is necessary. Place stands or other supports under the axles in order to take the weight off the wheels. When the tractor is raised in this way, it is advisable to deflate the tires. If this is not possible, the tire pressure must be periodically checked. Cover the tractor with a tarpaulin (not plastic or waterproof)

CAUTION: At the end of the idle period. When you start the engine again, pay attention to the instruction about starting engine in the operation chapter.

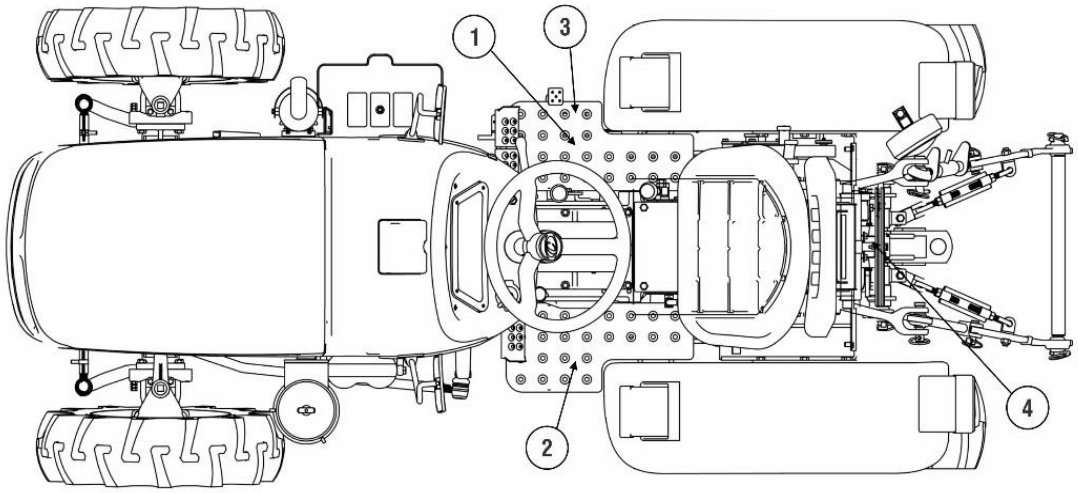
5.48 WIRING CIRCUIT DIAGRAM



5.49 GREASING POINTS AVAILABLE ON THE TRACTOR.

CAPTAIN

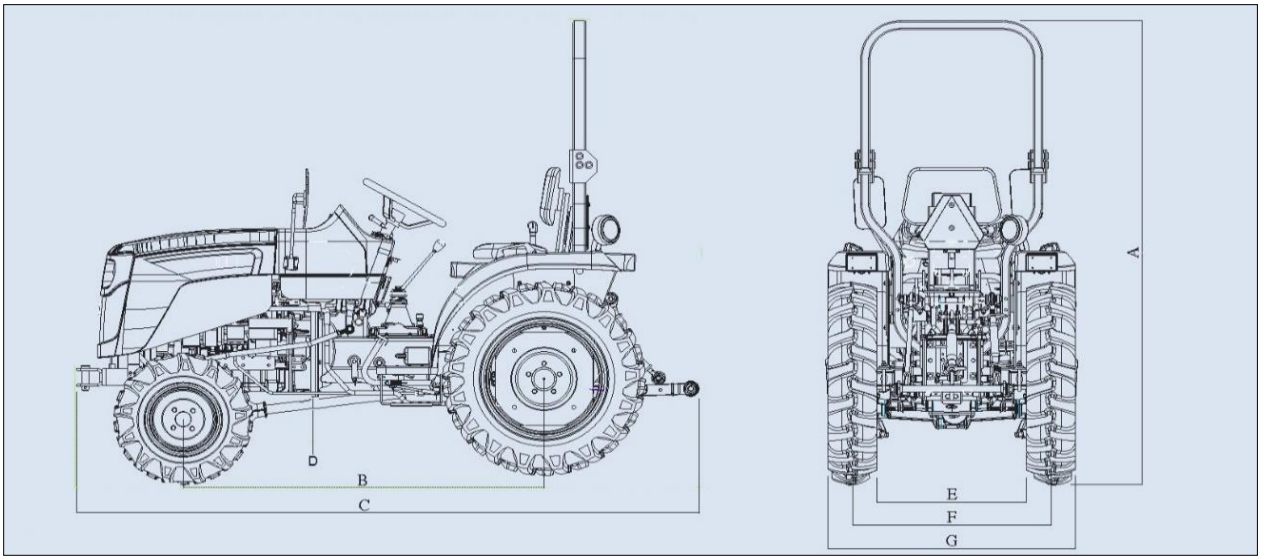
Grease Point



Sr. No.	Grease Point	No. of Point	Service Interval Hours
1	Brake Pedal	1	50
2	Clutch Pedal	1	50
3	Brake Pedal Shaft	2	50
4	Bracket Top Link	1	50

CHAPTER -6
TECHNICAL SPECIFICATION

MODEL	STARTRAC 273 4WD	STARTRAC 273 4WD	STARTRAC 273 4WD	STARTRAC 273 4WD	STARTRAC 273 4WD
GENERAL DATA	AGRICULTURAL TYRE	WIDER AGRI TYRE	TURF TYRE	FLOTATION TYRE	GALAXY GARDEN PRO TYRE
FRONT TYRE SIZE	180/85D12	6.5/80-12	23 X 8.5-12	23 X 8.5-12	220/55R12
REAR TYRE SIZE	8.3 X 20	280/70R18	33 X 15.5-16.5	33 X 15.5-16.5	280/70R16
WEIGHT(KGS.)	985	997	1025	1057	1035
A. HEIGHT AT SEAFTY FRAMEMX. (mm)	2025	2000	2005	1980	1980
B. WHEELBASE (mm)	1550	1550	1550	1550	1550
C. MAX. LENGTH WITH FRONT BALLAST & RODS (mm)	2650	2650	2650	2650	2650
D. GROUND CLEARANCE (mm)	260	240	240	220	220
E. REAR TRACK (mm)	830	920	1130	1130	970
F. FRONT TRACK (mm)	920	920	1020	1020	1020
G. MIN. WIDTH (mm)	2650	1200	1510	1510	1260



6.2 ENGINE & OTHER TECHNICAL SPECIFICATION STARTRAC 273 4WD			
Engine		**Speed (Forward)**	
Engine Type	Four Stroke Diesel Engine	Min Speed (Km/Hr.)	3.0 @2500 rpm
HP	25	Max Speed (Km/Hr.)	22.87 @2500 rpm
No. of Cylinders	3	**Hydraulics**	
Aspiration	Natural	3-point linkage	CAT 1 N
Bore/Stroke(mm)	78/92	Hydraulic lifting capacity	600Kg
Cubic Capacity (cc)	1319	**Others**	
Rated RPM	2500	Fuel Indicator gauge	Yes
Air cleaner	Dry air cleaner	Registration Plate	No
Max Torque (Nm) @ RPM	76.3 (Nm) @ 2000 rpm	Front Toe Hook	Yes
Transmission		Drawbar	Yes
Drive	4WD	ROPS	Yes
Clutch	Diaphragm, Single clutch	**Safety Switch**	
Gearbox	8F+2R	Neutral safety switch	Yes
Transmission	Mechanical, combination of constant mesh and synchromesh gears	P.T.O Safety switch	Yes
PTO		**Capacity (Ltr) (+/-5%) approx.**	
PTO	Direct PTO – 540 @2406 ERPM	Fuel tank	19
		Engine Oil	2.5
Steering		Hyd +Trans.	18
Steering	Power Steering	Front Diff.	2.5
		Main. Transmission	3.5

***Specifications are subject to change without prior notice. Consult your nearest dealer for exact model information and detailed Specifications.

6.3 ENGINE LUBRICATION

Pump driven forced lubrication.
Oil filtration by: Gauge filter at pump intake.
Replaceable cartridge filter on engine delivery line.
Oil pressure with engine at rated power speed: 3.5/5.2 bar.

6.4 ENGINE STARTING

Thermo starter device for starting at low temperatures.

6.5 COOLING

Water cooling forced circulation by centrifugal pump. Vertical tube type radiator. Thermostat control for water circulation.
Normal temperature: 74± 2°C - 90± 2°C
Specifications are subject to change without prior notice. Consult your nearest dealer for exact model information and detailed specification.

6.6 TRANSMISSION:

CLUTCH - Diaphragm.
DIAMETER - 215 mm
TRANSMISSION - Synchromesh gearbox with 8 F & 2 R speeds with Hi & Low selector lever.
REAR AXLE - With Bevel pair gear.
REDUCTION RATIO OF FINAL DRIVE - 11/55

NOTE: Specification given here is general kind of Technical specification of each market. Please refer to the information supplied by your dealer.

6.7 HYDRAULIC SYSTEM & CIRCUIT DIAGRAM

- Two stage hydraulic gear pump powered directly by the gears of the timing system with the filter on the intake.
- Mechanically controlled power lift.
-

6.8 THREE-POINT LINKAGE

- CAT – 1 NARROW linkage with fixed ball ends and mechanically adjustable top link.
- The auxiliary control valves use the hydraulic power pump.

6.9 ELECTRICAL SYSTEM

Voltage: 12 V-AH, Negative earth Maintenance Free battery.

6.10 ALTERNATOR (12V- 65 AMP)

Automatic voltage regulator incorporated in alternator.

6.11 STARTER MOTOR (12V- 1.2 kW)

Automatic pinion engagement by means of electromagnet.

6.12 LIGHTS

- Front lights including: -Two double filament headlights (12V-W)
- Two sides lights with white glass. (12W-W)
- Two direction indicators with orange glass.
- Two taillights with red glass. (12W-W)
- Two brake lights with red glass. (12V-W)
- Rear direction adjustable halogen field light or lights (optional). (12W-W)
- 7- Pin rear power socket for trailer lights.

6.13 FUSES

Consult the description in the "Electrical system" chapter for the fuses that protect the electrical system.

6.14 SEAT

Standard padded seat with adjustable suspension. The seat is also adjustable in vertical and horizontal sense for height and distance from controls.

6.15 POWER STEERING CIRCUIT DIAGRAM

Sr. No	Name of Pipe	Color
1	Pressure Pipe	
2	Suction Pipe	
3	Return Pipe	

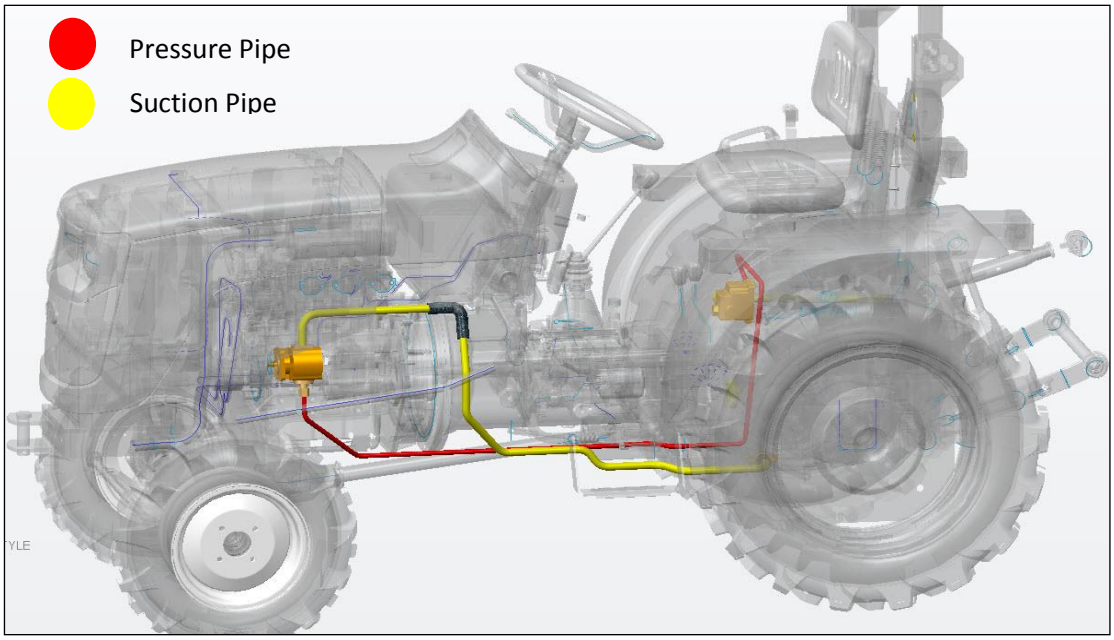


Fig.6-2

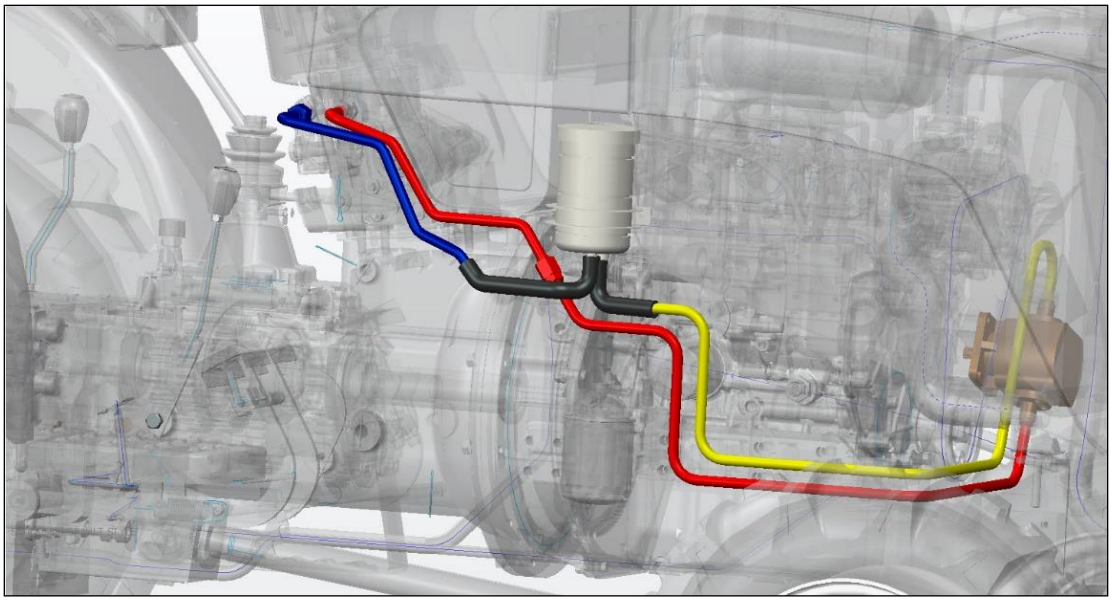


Fig.6-3

6.16 LUBRICANTS AND FUELS

FUEL: High speed Diesel Conforming to IS 1460-2000 0.840 g/cm^2

OIL & LUBRICATION: Capacity & change interval:

	Capacity	Oil Change Hours	Filter Change Hour
ENGINE OIL	2.5 LTR.	First change after 50 Hours of operation and subsequently after 250 Hours of operation.	First change after 50 Hours of operation and subsequently after 250 Hours of operation.
FRONT TRANSMISSION	3.5 LTR.	First change after 500 hours of operation and subsequent after every 1000 hours of operation.	
REAR TRANSMISSION + HYDRAULIC	18 LTR.	First change after 500 hours of operation and subsequent after every 1000 hours of operation.	First change after 50 Hours of operation and subsequently after 250 Hours of operation.
FRONT DIFFERENTIAL	2.5 LTR.	First change after 500 hours of operation and subsequent after every 1000 hours of operation.	
POWER STEERING	1 LTR.	First change after 750 hours of operation and subsequent after every 1000 hours of operation.	

SPECIFICATIONS:

OIL	GRADE	QTY.
Engine oil:	SAE 15W-40	2.5 LTR.
Transmission& Hydraulic, Steering oil and front differential oil:	5W30 UTTO	As Recommended Above
Power Steering oil:	ATF Dextron I1I	1 LTR.

- UTTO = Universal Tractor Transmission Oil

6.14 LABOUR SERVICE COUPON

1st LABOUR SERVICE COUPON

50 HRS.

DATE OF SERVICE: -

_____

TRACTOR MODEL: -

_____

TRACTOR CHASSIS NO: -

_____

JOB CARD NO: -

_____

TRACTOR HOURS:

_____

- **Valid for 1 Month or 50 Hours whichever is earlier from date of delivery.**

- **I hereby certify that service has been carried out to my entire satisfaction.**

_____ _____

Sign. Of Customer **Dealer Seal & Sign**

STARTRAC | CAPTAIN TRACTORS PVT. LTD.

1st LABOUR SERVICE COUPON **50 HRS.**

DATE OF SERVICE: - _____

DATE OF SALE: - _____

CUSTOMER NAME: - _____

TRACTOR MODEL: - _____

TRACTOR CHASSIS NO: - _____

JOB CARD NO: - _____

TRACTOR HOURS: - _____

DEALER NAME: - _____

DEALER CODE: - _____

- **Valid for 1 Month or 50 Hours whichever is earlier from date of delivery.**
- **Cost of Oil Filter & Materials to be paid by tractor owner.**
- **I hereby certify that service has been carried out to my entire satisfaction.**
- **Warranty stands Null and Void if this service is not carried out as stipulated.**

_____ _____

Sign. Of Customer **Dealer Seal & Sign**

6.15 CHECK POINTS

CHECK POINTS

WASH TRACTOR THOROUGHLY & GREASE/LUBRICATE ALL POINT AS SHOWN IN LUBRICATION CHART.

CHANGE:

- ✓ ENGINE OIL AS PER RECOMMENDED GRADE
- ✓ FUEL FILTER
- ✓ ENGINE LUB OIL
- ✓ CLEANING OF AIR CLEANER & CHANGE OIL

ADJUSTMENT:

- ✓ CYLINDER HEAD BOLT TIGHTENING
- ✓ TAPPET CLEARANCE
- ✓ V-BELT TENSION OF ALTERNATOR
- ✓ CLUTCH PEDAL FREE
- ✓ ALL NUT & BOLT TIGHTENING
- ✓ BRAKE PEDAL FREE

TOP UP (IF REQUIRED):

- ✓ OIL LEVEL IN FRONT & REAR TRANSMISSION
- ✓ BATTERY ELECTROLYTE LEVEL

CHECK:

- ✓ TYRE PRESSURE
- ✓ ANY LEAKAGES

CLEAN:

- ✓ ALL AIR BREATHERS
- ✓ BATTERY TERMINALS & SMEAR THEM WITH PETROLEUM JELLY
- ✓ COOLING RIBS ON CRANKCASE, CYLINDER & CYLINDER HEAD
- ✓ HYDRAULIC OIL SUCTION STRAINER FILTER

ROAD TEST:

- ✓ CARRY OUT ROAD TEST & CHECK PROPER WORKING OF ENGINE, CLUTCH, GEARS, BRAKES & STEERING.

STARTRAC

2nd LABOUR SERVICE COUPON

250 HRS.

DATE OF SERVICE: -

_____

TRACTOR MODEL: -

_____

TRACTOR CHASSIS NO: -

_____

JOB CARD NO: -

_____

TRACTOR HOURS:

_____

- **Valid for 3 Month or 250 Hours whichever is earlier from date of delivery.**
- **I hereby certify that service has been carried out to my entire satisfaction.**

_____ _____

Sign. Of Customer **Dealer Seal & Sign**

STARTRAC | **CAPTAIN TRACTORS PVT. LTD.**

2nd LABOUR SERVICE COUPON

250 HRS.

DATE OF SERVICE: - _____

DATE OF SALE: - _____

CUSTOMER NAME: - _____

TRACTOR MODEL: - _____

TRACTOR CHASSIS NO: - _____

JOB CARD NO: - _____

TRACTOR HOURS: - _____

DEALER NAME: - _____

DEALER CODE: - _____

- **Valid for 3 Month or 250 Hours whichever is earlier from date of delivery.**
- **Cost of Oil Filter & Materials to be paid by tractor owner.**
- **I hereby certify that service has been carried out to my entire satisfaction.**
- **Warranty stands Null and Void if this service is not carried out as stipulated.**

_____ _____

Sign. Of Customer **Dealer Seal & Sign**

CHECK POINTS

WASH TRACTOR THOROUGHLY & GREASE/LUBRICATE ALL POINT AS SHOWN IN LUBRICATION CHART.

CHANGE:

- ✓ ENGINE OIL AS PER RECOMMENDED GRADE
- ✓ FUEL FILTER
- ✓ ENGINE LUB OIL
- ✓ CLEANING OF AIR CLEANER & CHANGE OIL

ADJUSTMENT:

- ✓ CYLINDER HEAD BOLT TIGHTENING
- ✓ TAPPET CLEARANCE
- ✓ V-BELT TENSION OF ALTERNATOR
- ✓ CLUTCH PEDAL FREE
- ✓ ALL NUT & BOLT TIGHTENING
- ✓ BRAKE PEDAL FREE
- ✓ FRONT WHEEL PLAY

TOP UP (IF REQUIRED):

- ✓ OIL LEVEL IN FRONT & REAR TRANSMISSION
- ✓ BATTERY ELECTROLYTE LEVEL

CHECK:

- ✓ TYRE PRESSURE
- ✓ ANY LEAKAGES
- ✓ SPECIFIC GRAVITY OF BATTERY

CLEAN:

- ✓ ALL AIR BREATHERS
- ✓ BATTERY TERMINALS & SMEAR THEM WITH PETROLEUM JELLY
- ✓ COOLING RIBS ON CRANKCASE, CYLINDER & CYLINDER HEAD
- ✓ HYDRAULIC OIL SUCTION STRAINER FILTER
- ✓ FUEL TANK

ROAD TEST:

- ✓ CARRY OUT ROAD TEST & CHECK PROPER WORKING OF ENGINE, CLUTCH, GEARS, BRAKES & STEERING.

STARTRAC

3rd LABOUR SERVICE COUPON

500 HRS.

DATE OF SERVICE: -

_____

TRACTOR MODEL: -

_____

TRACTOR CHASSIS NO: -

_____

JOB CARD NO: -

_____

TRACTOR HOURS:

_____

- **Valid for 6 Month or 500 Hours whichever is earlier from date of delivery.**
- **I hereby certify that service has been carried out to my entire satisfaction.**

_____ _____

Sign. Of Customer **Dealer Seal & Sign**

STARTRAC | **CAPTAIN TRACTORS PVT. LTD.**

3rd LABOUR SERVICE COUPON **500 HRS.**

DATE OF SERVICE: - _____

DATE OF SALE: - _____

CUSTOMER NAME: - _____

TRACTOR MODEL: - _____

TRACTOR CHASSIS NO: - _____

JOB CARD NO: - _____

TRACTOR HOURS: - _____

DEALER NAME: - _____

DEALER CODE: - _____

- **Valid for 6 Month or 500 Hours whichever is earlier from date of delivery.**
- **Cost of Oil Filter & Materials to be paid by tractor owner.**
- **I hereby certify that service has been carried out to my entire satisfaction.**
- **Warranty stands Null and Void if this service is not carried out as stipulated.**

_____ _____

Sign. Of Customer **Dealer Seal & Sign**

CHECK POINTS

WASH TRACTOR THOROUGHLY & GREASE/LUBRICATE ALL POINT AS SHOWN IN LUBRICATION CHART.

CHANGE:

- ✓ ENGINE OIL AS PER RECOMMENDED GRADE
- ✓ FUEL FILTER
- ✓ ENGINE LUB OIL
- ✓ CLEANING OF AIR CLEANER & CHANGE OIL

ADJUSTMENT:

- ✓ CYLINDER HEAD BOLT TIGHTENING
- ✓ TAPPET CLEARANCE
- ✓ V-BELT TENSION OF ALTERNATOR
- ✓ CLUTCH PEDAL FREE
- ✓ ALL NUT & BOLT TIGHTENING
- ✓ BRAKE PEDAL FREE
- ✓ FRONT WHEEL PLAY

TOP UP (IF REQUIRED):

- ✓ OIL LEVEL IN FRONT & REAR TRANSMISSION
- ✓ BATTERY ELECTROLYTE LEVEL

CHECK:

- ✓ TYRE PRESSURE
- ✓ ANY LEAKAGES
- ✓ SPECIFIC GRAVITY OF BATTERY

CLEAN:

- ✓ ALL AIR BREATHERS
- ✓ BATTERY TERMINALS & SMEAR THEM WITH PETROLEUM JELLY
- ✓ COOLING RIBS ON CRANKCASE, CYLINDER & CYLINDER HEAD
- ✓ HYDRAULIC OIL SUCTION STRAINER FILTER
- ✓ FUEL TANK

ROAD TEST:

- ✓ CARRY OUT ROAD TEST & CHECK PROPER WORKING OF ENGINE, CLUTCH, GEARS, BRAKES & STEERING.

4th LABOUR SERVICE COUPON

750 HRS.

DATE OF SERVICE: -

TRACTOR MODEL: -

TRACTOR CHASSIS NO: -

JOB CARD NO: -

TRACTOR HOURS:

- **Valid for 12 Month or 750 Hours whichever is earlier from date of delivery.**
- **I hereby certify that service has been carried out to my entire satisfaction.**

Sign. Of Customer

Dealer Seal & Sign

STARTRAC | **CAPTAIN TRACTORS PVT. LTD.**

4th LABOUR SERVICE COUPON **750 HRS.**

DATE OF SERVICE: - _____

DATE OF SALE: - _____

CUSTOMER NAME: - _____

TRACTOR MODEL: - _____

TRACTOR CHASSIS NO: - _____

JOB CARD NO: - _____

TRACTOR HOURS: - _____

DEALER NAME: - _____

DEALER CODE: - _____

- **Valid for 12 Month or 750 Hours whichever is earlier from date of delivery.**
- **Cost of Oil Filter & Materials to be paid by tractor owner.**
- **I hereby certify that service has been carried out to my entire satisfaction.**
- **Warranty stands Null and Void if this service is not carried out as stipulated.**

Sign. Of Customer

Dealer Seal & Sign

CHECK POINTS

WASH TRACTOR THOROUGHLY & GREASE/LUBRICATE ALL POINT AS SHOWN IN LUBRICATION CHART.

CHANGE:

- ✓ ENGINE OIL AS PER RECOMMENDED GRADE
- ✓ FUEL FILTER
- ✓ ENGINE LUB OIL
- ✓ CLEANING OF AIR CLEANER & CHANGE OIL

ADJUSTMENT:

- ✓ CYLINDER HEAD BOLT TIGHTENING
- ✓ TAPPET CLEARANCE
- ✓ V-BELT TENSION OF ALTERNATOR
- ✓ CLUTCH PEDAL FREE
- ✓ ALL NUT & BOLT TIGHTENING
- ✓ BRAKE PEDAL FREE
- ✓ FRONT WHEEL PLAY

TOP UP (IF REQUIRED):

- ✓ OIL LEVEL IN FRONT & REAR TRANSMISSION
- ✓ BATTERY ELECTROLYTE LEVEL

CHECK:

- ✓ TYRE PRESSURE
- ✓ ANY LEAKAGES
- ✓ SPECIFIC GRAVITY OF BATTERY

CLEAN:

- ✓ ALL AIR BREATHERS
- ✓ BATTERY TERMINALS & SMEAR THEM WITH PETROLEUM JELLY
- ✓ COOLING RIBS ON CRANKCASE, CYLINDER & CYLINDER HEAD
- ✓ HYDRAULIC OIL SUCTION STRAINER FILTER
- ✓ FUEL TANK

ROAD TEST:

- ✓ CARRY OUT ROAD TEST & CHECK PROPER WORKING OF ENGINE, CLUTCH, GEARS, BRAKES & STEERING.

5th LABOUR SERVICE COUPON

1000 HRS.

DATE OF SERVICE: -

_____

TRACTOR MODEL: -

_____

TRACTOR CHASSIS NO: -

_____

JOB CARD NO: -

_____

TRACTOR HOURS:

_____

- **Valid for 18 Month or 1000 Hours whichever is earlier from date of delivery.**
- **I hereby certify that service has been carried out to my entire satisfaction.**

_____ _____

Sign. Of Customer **Dealer Seal & Sign**

STARTRAC | **CAPTAIN TRACTORS PVT. LTD.**

5th LABOUR SERVICE COUPON **1000 HRS.**

DATE OF SERVICE: - _____

DATE OF SALE: - _____

CUSTOMER NAME: - _____

TRACTOR MODEL: - _____

TRACTOR CHASSIS NO: - _____

JOB CARD NO: - _____

TRACTOR HOURS: - _____

DEALER NAME: - _____

DEALER CODE: - _____

- **Valid for 18 Month or 1000 Hours whichever is earlier from date of delivery.**
- **Cost of Oil Filter & Materials to be paid by tractor owner.**
- **I hereby certify that service has been carried out to my entire satisfaction.**
- **Warranty stands Null and Void if this service is not carried out as stipulated.**

_____ _____

Sign. Of Customer **Dealer Seal & Sign**

CHECK POINTS

WASH TRACTOR THOROUGHLY & GREASE/LUBRICATE ALL POINT AS SHOWN IN LUBRICATION CHART.

CHANGE:

- ✓ ENGINE OIL AS PER RECOMMENDED GRADE
- ✓ FUEL FILTER
- ✓ ENGINE LUB OIL
- ✓ CLEANING OF AIR CLEANER & & CHANGE OIL

ADJUSTMENT:

- ✓ CYLINDER HEAD BOLT TIGHTENING
- ✓ TAPPET CLEARANCE
- ✓ V-BELT TENSION OF ALTERNATOR
- ✓ CLUTCH PEDAL FREE
- ✓ ALL NUT & BOLT TIGHTENING
- ✓ BRAKE PEDAL FREE
- ✓ FRONT WHEEL PLAY

TOP UP (IF REQUIRED):

- ✓ OIL LEVEL IN FRONT & REAR TRANSMISSION
- ✓ BATTERY ELECTROLYTE LEVEL

CHECK:

- ✓ TYRE PRESSURE
- ✓ ANY LEAKAGES
- ✓ SPECIFIC GRAVITY OF BATTERY

CLEAN:

- ✓ ALL AIR BREATHERS
- ✓ BATTERY TERMINALS & SMEAR THEM WITH PETROLEUM JELLY
- ✓ COOLING RIBS ON CRANKCASE, CYLINDER & CYLINDER HEAD
- ✓ HYDRAULIC OIL SUCTION STRAINER FILTER
- ✓ FUEL TANK

ROAD TEST:

- ✓ CARRY OUT ROAD TEST & CHECK PROPER WORKING OF ENGINE, CLUTCH, GEARS, BRAKES & STEERING.

CAPTAIN TRACTORS PVT. LTD.

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