

NOTE TO THE OWNER

Thank you for purchasing your new Farmtrac tractor. :

This Manual has been prepared to assist you in the correct procedure for running-in, driving and operating your new tractor and to assist you in the correct method of maintenance to keep it in peak condition.

Your tractor has been designed and built to give maximum performance, economy and ease of operation under a wide variety of operating conditions. Prior to delivery, the tractor was carefully inspected, both at the factory and by your Authorized Dealer to ensure that it reaches you in optimum condition. To maintain this condition and ensure trouble-free operation, it is important that the routine services, as specified in this manual, are carried out at the recommended intervals.

The precautions to be observed to ensure your safety and the safety of others. Read the safety precautions and follow the advice offered before operating the tractor.

The vehicle reference serial number are also recorded on the pre-delivery inspection sheet that was provided to you by your Authorized Dealer and should be quoted to the Dealer should the tractor require service.

Read this Manual carefully and keep it at a convenient place for future reference. This manual must be considered as an integral part of your tractor. If at any time you require service or advice concerning your tractor, do not hesitate to contact your Authorized Dealer. He has trained personnel, genuine parts and the necessary equipment to carry out all your service requirements.

Following these introductory pages, this manual is split into four sections. Section A describes the controls and instruments and advises the correct method of operating your new tractor. Section B details lubrication and maintenance procedures and includes a comprehensive service chart. Section C outlines the specifications of your tractor.

Escorts Limited has a Company policy of continuous improvement and development. Designs, materials and specifications are subject to change without notice and without any liability whatsoever.

All data given in this book is subject to production variations. Dimensions and weights are approximate only and the illustrations do not necessarily show tractor in standard condition. Some of the equipment/accessories described in the text may also not be fitted on your tractor. For exact information about any particular tractor, please consult your Authorized Dealer.

ESCORTS LIMITED

ESCORTS AGRI MACHINERY

International Business Department

Plot No. 2 Sector-13, Faridabad - 121007, India

Phone : +91-0129-2575292/5507

E-mail - international@escorts.co.in

NOTE : The Operator Manual is in accordance with standard ISO 3600 : 1996.

----- To Users -----

Escorts appreciates your selection of FT 6050 CROSS tractor for your application.

No one should operate the tractor unless they read and understand the information in this manual.

This manual contains the instructions and data on the safety and operation of the tractor. Follow the operation procedures to make sure that your tractor operates at MAXIMUM EFFICIENCY. The operator must keep this manual in the cab of the tractor.

If there is anything in the manual that is not clear or you do not understand, please contact our service technician. We (Escorts) are NOT responsible for damages from / to any operator's actions who operates the tractor.

The OPERATOR'S MANUAL is an important part of the tractor and shall be read and followed by every person operating the tractor.

The data (data, specifications, illustrations) in this manual is for tractor in production at the time of this manual's publication. We reserve the right to make changes to this manual at any time, without obligation.

Thank you!

Escorts Limited

CONTENTS

	Page
Owner's Address and Tractor Identification	1
Warranty & Maintenance Service Record	8
Universal Symbols	11
Safety Instructions	
Safety Precautions	12
Safety SYMBOLS	16-17
Safety Decals	18
How to get top performance from tractor	22

SECTION A

CONTROLS, INSTRUMENTS AND OPERATION

Operator's Seat	2
Seat Belt, Safety Frame Or Roll Bar	2
Control Levers	3
Instruments and Controls	4
Starting the Engine	6
Stopping the Engine	7
Tractor Parking	8
Foot Controls	8
Battery Isolator	9
Clutch Safety Switch	9
Transmission	10
Running in Procedure	10
Power Take Off (PTO)	11
Hearing Protection	12
Hydraulic System	14
Auxiliary Spool Valve	16
Three Point Linkage	17
Front Wheel Track Adjustment	20
Toe In Measurement	20
Rear Wheel Track Adjustment	21
Tractor Weighting	22
Liquid Ballasting	23
Tire Inflation	24
Hydraulic Trailer Brake	25

SECTION B

LUBRICATION AND MAINTENANCE

Lubricant and Maintenance Chart	2
Routine Servicing	5
General Maintenance	19
Trouble Shooting	24
Tips on fuel Saving	27

SECTION C

SPECIFICATIONS

OWNER'S ADDRESS AND TRACTOR IDENTIFICATION

OWNER'S NAME &

.....

ADDRESS

.....

Ph.....Mobile.....

ENGINE NO.

.....

TRACTOR SERIAL NO.

.....

DATE OF INSTALLATION

.....

PURCHASED FROM
(DEALERS'S STAMP)



DELIVERY CERTIFICATE

Tear off

Customer Name	:	.....	Model	:	.....	
	:	.....	Tractor Sr. No.	:	.....	
Address	:	.....	Engine No.	:	.....	
	:	.....	Chassis No.	:	.....	
Zip Code	:	.....	Battery Sr. No.	:	.....	
Phone No.	:	.....	Date of Delivery	:	.....	
Mobile No.	:	.....	Dealer Code	:	.....	
Date of Birth	:	.....	Dealer Name	:	.....	
	:	.....	Dealer Address	:	.....	
Tractor purchase decision based on			Any other person interested to buy tractor			
1) Friends	☐	2) Relatives	☐	Name	:	
3) Newspaper	☐	4) T.V.	☐	Address	:	
5) Wall Painting	☐	6) Previous Tr. experience	☐	Phone No.	:	

* Escorts Copy

Tear off

INSTALLATION CERTIFICATE

Customer Name	:	.....	Model	:	.....
	:	.....	Tractor Sr. No.	:	.....
Address	:	.....	Engine No.	:	.....
	:	.....	Chassis No.	:	.....
Zip Code	:	.....	Battery Sr. No.	:	.....
Phone No.	:	.....	Battery Make	:	.....
Mobile No.	:	.....	FIP Sr. No.	:	.....
Date of Birth	:	.....	FIP Make	:	.....
	:	.....	Alternator No.	:	.....
	:	.....	Alternator Make	:	.....
	:	.....	Front Tyre No. LH	:	.....
	:	.....	/ Make RH	:	.....
	:	.....	Rear Tyre No. LH	:	.....
	:	.....	/ Make RH	:	.....
Tractor Application :			Dealer Code ☐☐☐☐☐☐ Dealer Stamp & Signature		
Date of Installation :					
Delivery Invoice No. :					
Date of Delivery :					
Customer's Signature					

* Escorts Copy

DELIVERY CERTIFICATE

Tear off

Customer Name	:	.....	Model	:	.....	
	:	.....	Tractor Sr. No.	:	.....	
Address	:	.....	Engine No.	:	.....	
	:	.....	Chassis No.	:	.....	
Zip Code	:	.....	Battery Sr. No.	:	.....	
Phone No.	:	.....	Date of Delivery	:	.....	
Mobile No.	:	.....	Dealer Code	:	.....	
Date of Birth	:	.....	Dealer Name	:	.....	
	:	.....	Dealer Address	:	.....	
Tractor purchase decision based on			Any other person interested to buy tractor			
1) Friends	☐	2) Relatives	☐	Name	:	
3) Newspaper	☐	4) T.V.	☐	Address	:	
5) Wall Painting	☐	6) Previous Tr. experience	☐	Phone No.	:	

* Dealer Copy

Tear off

INSTALLATION CERTIFICATE

Customer Name	:	.....	Model	:	.....
	:	.....	Tractor Sr. No.	:	.....
Address	:	.....	Engine No.	:	.....
	:	.....	Chassis No.	:	.....
Zip Code	:	.....	Battery Sr. No.	:	.....
Phone No.	:	.....	Battery Make	:	.....
Mobile No.	:	.....	FIP Sr. No.	:	.....
Date of Birth	:	.....	FIP Make	:	.....
	:	.....	Alternator No.	:	.....
	:	.....	Alternator Make	:	.....
	:	.....	Front Tyre No. LH	:	.....
	:	.....	/Make	:	RH :
	:	.....	Rear Tyre No. LH	:	.....
	:	.....	/ Make	:	RH :
Tractor Application :			Dealer Code ☐☐☐☐☐☐☐ Dealer Stamp & Signature		
Date of Installation :					
Delivery Invoice No. :					
Date of Delivery :					
Customer's Signature					

* Dealer Copy

Farmtrac Disc Mowers Parts Manual
DELIVERY CERTIFICATE

Customer Name : Model :
 : Tractor Sr. No. :
 Address : Engine No. :
 : Chassis No. :
 Zip Code : Battery Sr. No. :
 Phone No. : Date of Delivery :
 Mobile No. : Dealer Code :
 Date of Birth : Dealer Name :
 Dealer Address :
 Tractor purchase decision based on Any other person interested to buy tractor
 1) Friends ☐ 2) Relatives ☐ Name :
 3) Newspaper ☐ 4) T.V. ☐ Address :
 5) Wall Painting ☐ 6) Previous Tr. experience ☐ Phone No. :

* Customer Copy

INSTALLATION CERTIFICATE

Customer Name : Model :
 : Tractor Sr. No. :
 Address : Engine No. :
 : Chassis No. :
 Zip Code : Battery Sr. No. :
 Phone No. : Battery Make :
 Mobile No. : FIP Sr. No. :
 Date of Birth : FIP Make :
 Alternator No. :
 Alternator Make :
 Front Tyre No. LH :
 /Make RH :
 Rear Tyre No. LH :
 / Make RH :
 Tractor Application :
 Date of Installation :
 Delivery Invoice No. :
 Date of Delivery :
 Customer's Signature
 Dealer Code ☐☐☐☐☐☐
 Dealer Stamp & Signature

* Customer Copy

NOTE : TO BE FILLED IN BY DEALER

Farmtrac Disc Mowers Parts Manual

WARRANTY & MAINTENANCE SERVICE RECORD

[illegible]

NOTE : TO BE FILLED IN BY DEALER

Tool Kit applicable in Farmtrac Model

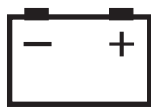
Tool Kit (2WD) D10370900



Sr. No.	Description	Rang of Spanner
1	D-Ended Spanner	3/8 - 5/16
2	D-Ended Spanner	1/2 - 7/16
3	D-Ended Spanner	5/8 - 9/16
4	D-Ended Spanner	3/4 - 11/16
5	Ring Spanner	19 - 21
6	Wheel Spanner	21 - 30
7	Wheel spanner rod	1
8	Screw driver	1
9	Linch Pin	4
10	Top Link pin	1

UNIVERSAL SYMBOLS

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



Alternator Charge



Fuel level



Fuel-shut-off



Engine speed



Hours recorded



Engine oil

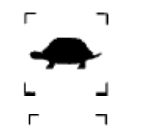
pressure



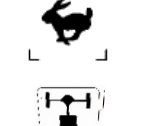
Engine coolant
temperature



Headlight main
beam



Slow or low setting



Fast or high setting



4 Wheel Drive



Head light
dipped beam



Horn



Turn Signals



Warning!



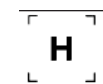
P.T.O.



Transmission in
Neutral



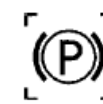
Low transmission
range



High transmission
range



Hazard Warning



Parking Brake

SAFETY INSTRUCTIONS



SAFETY PRECAUTIONS



A careful operator is the best operator. Most accidents can be avoided by observing certain precautions to prevent the possibility of injury or damage. The following precautions should be taken to help prevent accidents. Read them carefully before operating your new Farmtrac tractor.

THE TRACTOR

1. Read this Manual carefully and familiarize yourself with all the controls before attempting to operate the tractor. Working with unfamiliar equipment or lack of operating knowledge may lead to accident.
2. Do not permit anyone to ride on the tractor with the operator.
3. Use the foot steps and assist handles when getting on or off the tractor. It is recommended that you face the tractor when mounting or dismounting. Keep steps and platform clear of mud and debris.
4. Replace any warning sign on the tractor that becomes damaged or is painted over. Replace all missing, illegible or damaged safety decals.

OPERATING THE TRACTOR

1. Never start the engine while standing beside the tractor. Always sit in the tractor seat, fasten seat belt and ensure that the Roll Over Protective Structure (ROPS) is in place before starting the engine.
2. Apply the parking brake, place the P.T.O. lever in the "OFF" position, set the control levers in the down position, the remote control valve levers in the neutral position and the transmission in neutral before starting the tractor.
3. Do not bypass the safety starter switch. Consult your Authorized Dealer if your safety starter controls are not operating correctly.
4. Stop the engine, disconnect P.T.O. and apply the parking brake before dismounting.
5. Do not engage the parking brake while the tractor is in motion.
6. Never get off the tractor while it is in motion.
7. Never park the tractor on a steep incline.
8. To provide maximum lateral stability, add liquid ballast to tires, use cast iron wheel weights and set front and rear wheels to maximum tread width commensurate with the operation being performed.
9. Do not tie ropes, chains, or cables to the axle or other parts of the chassis. Always hitch the load to the tractor's drawbar in the lowest possible position, except when pulling implements specifically designed for and properly attached to the three point hitch.
10. Do not operate the tractor with a light front end. If the front tends to rise with heavy implements at the rear, install front end or front wheel weights.

11. Ensure that an implement coupled to the three-point linkage does not contact any part of the cab, if cab is provided.
12. Never leave equipment in the raised position.
13. If the engine or power steering ceases operating, stop the tractor immediately.
14. Always engage 'Position Control' when attaching equipment, transporting equipment and when no equipment is attached. Be sure hydraulic couplers are properly mounted and will disconnect safely in case of accidental detachment of the implement.
15. Ensure any attached equipment or accessories are correctly installed, are approved for use with the tractor, do not overload the tractor and are operated and maintained in accordance with the instructions issued by the equipment or accessory manufacturer.
16. Remember that your tractor, if abused or incorrectly used, can be dangerous and become a hazard both to the operator and to bystanders. Do not overload or operate with attached equipment which is unsafe, not designed for a particular task or is poorly maintained.

⚠ WARNING: *Hearing protection must be worn when operating this tractor if a safety cab is not fitted.*

⚠ CAUTION : *Your Farmtrac tractor is not equipped with a Spark Arrestor. Where there is a risk of fire to the crop or environs or local legislation so requires, a suitable Spark Arrestor must be installed.*

DRIVING THE TRACTOR

1. Always drive the tractor with care and at speeds compatible with safety, especially when operating over rough ground, crossing ditches or slopes or turning to avoid overturning the tractor.
2. Never allow the tractor to over-run when going downhill, particularly with trailed equipment attached. Keep the tractor in One same gear when going downhill as used when going uphill. Do not coast or free-wheel down hills. Use extreme caution while operating on steep slopes and use a low gear to maintain control with minimum braking.
3. Lock the foot brakes pedals together when travelling on the highway.
4. When operating in the field unlock the brake pedals.

5. Reduce speed before turning or applying the brakes. Brake both the wheels simultaneously when making an emergency stop.
6. Do not engage the differential lock when turning the tractor. When engaged, the lock will prevent the tractor taking the turn and may result in overturning of the tractor.
7. If the tractor drive wheels are stuck, shift to reverse gear and back out, to prevent from lifting the front wheels off the ground and possibly rolling the tractor over backwards.
8. Slow moving vehicles on highways are dangerous. Use a slow moving (SMV) sign in conjunction with red lights, tail lights, and flashing warning lights.
9. Use extreme caution and avoid hard application of the tractor brakes when towing heavy loads. Any towed vehicle whose total weight exceeds that of the tractor must be equipped with brakes for safe operation.
10. Watch where you are going especially at row ends, on roads, around trees and any low hanging obstacle.
11. Dip the tractor lights when meeting a vehicle at night. Ensure the lights are adjusted to avoid blinding the driver of an on coming vehicle (applicable only twin beam Head lamps are fitted).
12. Always check overhead clearance, especially when working in confined spaces.
13. Engage the clutch slowly when driving out of a ditch, gully or up a steep hillside. Disengage the clutch promptly if the front wheels rise off the ground.
6. Before operating implements, study the implement manufacturer's handbook. Certain implements require special operating techniques

SERVICING THE TRACTOR

1. Keep the tractor and equipment, particularly brakes and steering, maintained in a reliable and satisfactory condition to ensure your safety and comply with legal requirements.
2. Stop the engine and disconnect battery terminals before performing any service on the tractor.
3. To prevent fire or explosion, keep open flames away from the battery. To prevent sparks which could cause explosion, use jumper cables according to instructions.
4. The fuel oil in the injection system and fluid in the hydraulic system are under high pressure and can penetrate the skin. Unqualified and unauthorized persons should not remove or attempt to adjust a pump, injector, nozzle or any other part of the fuel injection system. This also may be unlawful under certain circumstances. Failure to follow these instructions can result in serious injury.

5 DO NOT

- Use your hand to check for leaks. Use a piece of cardboard or paper to search for leaks.

DO'S

- Stop the engine and relieve pressure before connecting or disconnecting hydraulic or fuel lines.
- Tighten all connections before starting the engine or pressurising lines.
- If fluid is injected into the skin obtain medical attention immediately or gangrene may result.

BOARDING AND LEAVING THE TRACTOR

1. Never try to get on or off a moving tractor or jump off the tractor to exit.
2. Face the tractor when getting into or out the tractor. Do not use the controls as hand holds to prevent inadvertent machine movements.
3. Always keep steps and floor clean to avoid slippery conditions.

OPERATING THE P.T.O.

1. Ensure the P.T.O. guard is always installed and put the P.T.O. shaft cap when the P.T.O. is not being used,
2. Shut off the engine and wait for the P.T.O. shaft to stop turning before getting off the tractor to connect or disconnect P.T.O. driven equipment.
3. Apply the parking brake and block the rear wheels, front and rear, when operating stationary P.T.O. driven equipment.
4. To avoid injury never clean, unclog, adjust or service P.T.O. driven equipment while the tractor engine is running.
5. Never wear loose clothing when operating the P.T.O. or when near equipment that is rotating.
6. The cooling system operates under pressure which is controlled by the radiator cap. It is dangerous to remove the cap while the system is hot. Allow the engine to cool, then turn the cap slowly to the first stop and allow the pressure to escape before removing the cap entirely.
7. Continuous long term contact with used engine oil may cause damage to skin. Avoid prolonged contact with used engine oil. Wash skin promptly with soap and water
8. Some components on your tractor, such as gaskets and friction surfaces (brake linings, clutch linings, etc.), may contain asbestos. Breathing asbestos dust is dangerous to your health. You are, therefore, advised to have any

SAFETY INSTRUCTIONS

maintenance or repair operations on such components carried out by an Authorised Dealer. If, however, service operations are to be undertaken on parts that contain asbestos, the following essential precautions must be observed

- Work out of doors or in a well ventilated area
 - Dust found on the tractor or produced during work on the tractor should be removed by extraction and not by blowing.
 - Dust waste should be dampened, placed in a sealed container and marked to ensure safe disposal.
 - If any cutting, drilling etc., is attempted on materials containing asbestos, the item should be dampened and only hand tools or low speed power tools used.
9. Do not run the tractor engine in a closed building without adequate ventilation as exhaust fumes may suffocate you.
 10. Do not modify or alter or permit anyone else to modify or alter the tractor or any of its components or any tractor function without first consulting your Authorised Dealer.
 11. Tractor wheels are heavy. Handle them with care and ensure that, when stored, they cannot topple and cause injury.

DIESEL FUEL

1. Under no circumstances should gasoline, alcohol or blended fuels be added to diesel fuel. These combinations can create an increased fire or explosive hazard. In a closed container, such as a fuel tank, these blends are more explosive than pure gasoline. Do not use blended mixture.
2. Never remove the fuel cap or refuel with the engine running or hot.
3. Do not smoke or allow an open flame near the fuel tank or while refueling the tractor. Wait for the engine to cool before refueling.
4. Maintain control on the fuel filler pipe nozzle when filling the tank.
5. Do not fill the fuel tank to capacity. Allow room for expansion.
6. Wipe up spilled fuel immediately.
7. Always tighten the fuel tank cap securely.
8. If the original fuel tank cap is lost, replace it with an approved cap. A non-approved cap may not be safe.
9. Keep equipment clean and properly maintained.
10. Do not drive equipment near open fire.
11. Never use fuel for cleaning purpose.
12. Use diesel fuel with a minimum cetane rating of 40 (Diesel fuel no. 2) at ambient temperatures above -70°C (20°F) or Diesel fuel no. 1 below this temperature. At very low ambient temperatures and/or at high altitude, a fuel with a higher cetane rating is required.
13. Diesel fuel with a sulphur content above 1.3% is not recommended.

14. Precaution should be taken to ensure that stored fuel is kept free of dirt, water, etc.
15. Fuel should be stored in black iron tanks, not galvanised tanks, as the galvanised coating will react with the fuel and form compounds that will contaminate the injection pump and injectors.
16. Bulk storage tanks should be installed away from direct sunlight and angled slightly so that the outlet pipe is at the higher end. In this way sediment in the tank will settle away from the outlet pipe.
17. To facilitate moisture and sediment removal a drain plug should be provided at the lowest point (at the opposite end to the outlet pipe). If there is no filter on the outlet pipe, then a funnel with a fine mesh screen should be used when filling the tractor fuel tank.
18. Fuel purchases should be arranged so that summer grade fuels are not held over and used in winter and vice-versa.
19. Refill the fuel tank via filler tube which is on the rear left-hand side of the hood.

⚠ CAUTION : *The fuel oil in the injection system is pressurized and can penetrate human skin with fatal results. Adjustment of fuel injection equipment should not be carried out by unqualified person.*

SAFETY FRAME OR ROLL BAR

Your tractor may be equipped with a safety frame or roll bar which must be maintained in a serviceable condition. Be careful when driving through doorways or working in confined spaces with low headroom.

Under no circumstances :

- i) Modify, drill, weld or alter the safety frame or roll bar in any way. Doing so could render you liable to legal prosecution in some countries.
- ii) Attempt to straighten or weld any part of the safety frame, roll bar or retaining brackets which have suffered damage. By doing so you may weaken the structure and endanger your safety.
- iii) Secure any parts on the safety frame or roll bar or attach if with other than the special high tensile bolts and nuts specified.
- iv) Attach chains or ropes to the safety frame or roll bar for pulling purpose.
- v) Take unnecessary risks even though your safety frame or roll bar affords protection possible.

SAFETY INSTRUCTIONS

Safety rules - Explosions and fires

⚠ Fire and explosion prevention ⚠

Fuel or oil leaks, or spills on hot surfaces or electrical components can cause a fire.

Crop material, dead branches, debris, bird nests or flammable material can ignite on hot surfaces.

Remove dead branches and debris from the machine at least once a day and in any case at the end of the working day, especially in the areas surrounding the hot components such as the engine, transmission, exhaust, battery, etc. Depending on the working conditions and environment, more frequent cleaning may be needed.

- Flush with water for 15 minutes.

- Consult a doctor promptly.

Antidote (if swallowed)

- Drink large quantities of water or milk.

- Do not induce vomiting.

- Seek medical attention immediately.

Safety rules - Battery

⚠ General safety rules for the battery ⚠

Always wear eye protection when working on the batteries.

Do not create sparks or have open flame near the battery.

Ventilate when charging or using in enclosed area.

The negative terminal (-) must be disconnected first and reconnected last.

When welding on the machine, disconnect both battery terminals.

Do not weld, grind or smoke near a battery.

To start the engine with auxiliary batteries or jumper wires, follow the steps outlined in the instruction manual. Do not short across terminals.

When storing and handling the batteries, keep to the manufacturer's instructions.

Battery posts, terminals and related accessories contain lead or lead compounds. Wash your hands after maintenance. Keep out of reach of children and other unauthorized persons.

Battery acid causes burns. Batteries contain sulfuric acid.

Avoid contact with skin, eyes, or clothing.

Antidote (in case of external contact):

- rinse with water.

Antidotes (eyes):

SAFETY SYMBOLS



SAFETY FIRST

This symbol, the industry' s "Safety Alert Symbol" is used throughout this manual and on labels on the machine itself to warn of the possibility of personal injury of personal injury. Read these instructions carefully.

It is essential that you read instructions and safety regulations before you attempt to repair or use this unit.

**DANGER**

: Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

**WARNING**

: Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

**CAUTION**

: Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

IMPORTANT

: Indicates that equipment or property damage could result if instruction are not followed.

NOTE

: Gives helpful information.

SAFETY INSTRUCTIONS

CARE OF DANGER, WARNING AND CAUTION LABELS

1. Keep Danger, Warning and caution labels clean and free from obstructing material.
2. Clean danger, warning and caution labels with soap and water, dry with a soft cloth.
3. Replace damaged or missing danger, warning and caution labels with new labels from your local FARMTRAC Dealer.
4. If a component fixed with danger, warning and caution labels is replaced with new part, make sure new labels are attached in the same location as the replaced component.
5. Mount new danger, warning and caution label by applying on a clean dry surface and pressing any bubbles to outside edge.

SAFETY INSTRUCTIONS

CARE OF DANGER, WARNING AND CAUTION LABELS

(1) Part No.: D10510110

CAUTION

CAUTION

Engine oil

1. Before operating tractor, check the flow meter, if the amount of oil is insufficient, please refill the oil.
2. Do not mix a different kind of oil.
check a classification and manufacture.

Coolant

1. Check the amount of coolant in the supplement tank. if the coolant is insufficient. refill the coolant as followed.

Refill the coolant through the inlet of the supplement tank only.
Open the cap of the supplement tank and refill the water below the full line.

2. In winter, please use antifreezing solution.

3. If not using an anti freezing solution, please drain the water after finishing the work.

Fuel Filter

1. Remove Water in the transparent bowl cup promptly.
2. Please wash element every 100 hours with diesel.
3. Please change the bowl cup in case that the bowl cup has holes or transformed.

Air Cleaner

1. Clean the air cleaner before operating.
2. Clean or change every 100-200 hrs.

Pull out the Air from fuel

1. Please refer to the operators manual.

(2) Part No.: D10510140

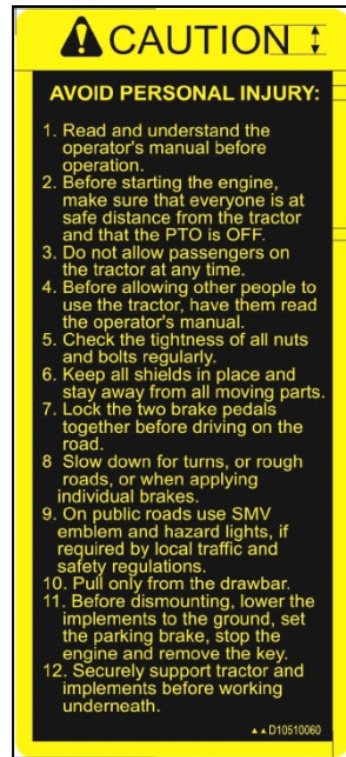
 WARNING	
To prevent serious injury or death 1. After first hour of operation and daily thereafter, check front and rear wheel lug nuts and bolts for proper torque. 2. PTO: keep hands, feet and clothing away from PTO & other moving parts. 3. Disengage PTO and shut off engine before servicing tractor or implements or attaching or detaching implements. 4. Keep all safety shields in place for your protection. 5. Pull only from approved drawbar or lower links of 3-point hitch at horizontal position or below. 6. Lock tractor brake pedals together for travel on roads or highways. 7. Always apply parking brake and shift transmission to neutral before dismounting. 8. Allow no riders on tractor or implements.	
	To prevent serious injury or death 1. Always use a seat belt when you operate the tractor 2. Do not use a seat belt when operating with folding ROPS in lowered position.
	1. Engine exhaust fumes can cause death or sickness. 2. Always try to work in a well ventilated area.
	1. Disengage the differential lock when turning the tractor. 2. Always disengage the differential lock when driving on roads. 3. Depress one or both brake pedals to disengage the differential lock.

(3) Part No.: D10510160

 WARNING	
	TO AVOID PERSONAL INJURY: 1) Keep PTO shield in place at all times 2) Do not operate the PTO at speeds faster than the speed recommended by the implement manufacturer 3) For towing PTO driven implements set drawbar at towing position (see operator's manual) 4) Keep hands, feet and clothing away.
	D 10510160

SAFETY INSTRUCTIONS**CARE OF DANGER, WARNING AND CAUTION LABELS**

(4) Part No.: D10510110



(5) Part No.: D10511760



(6) Part No.: D10510030



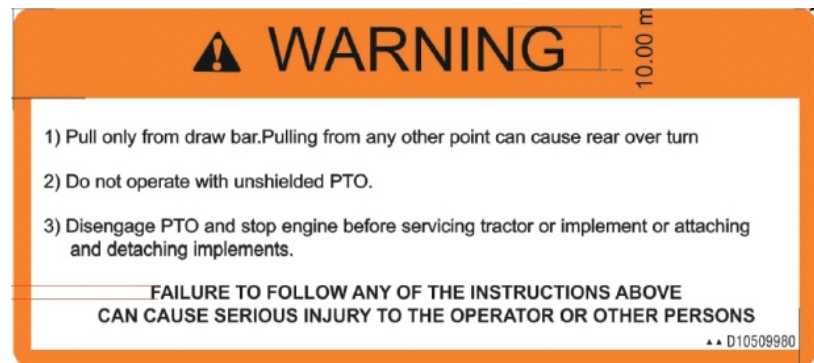
SAFETY INSTRUCTIONS

CARE OF DANGER, WARNING AND CAUTION LABELS

(7) Part No.: D10510000



(8) Part No.: D10509980



(9) Part No.: D10511810



(10) Part No.: D10510180



SAFETY INSTRUCTIONS

CARE OF DANGER, WARNING AND CAUTION LABELS

(11) Part No.: D10511790



(12) Part No.: D10570890



(12) Part No.: D10510150



(14) Part No.: 10510160



HOW TO GET TOP PERFORMANCE FROM YOUR TRACTOR

Tractor Maintenance

Ensure daily and periodic maintenance as per given schedule in this manual.

Do's

- Before starting and stopping the tractor, run engine at idle RPM for approx 1 min.
- While using the tractor after a long time: Insert the key, turn it on, crank the engine 3-4 times and start the engine normally.
- Ensure leak proof joints clamps are properly tightened .
- Ensure specified grade of lubricating oil.
- Check air & oil filter regularly. Incase clogging sensor giving indication it means air cleaner need cleaning or replacement.
- Ensure that engine maintenance intervals are adhered as per recommended chart.

Don'ts

- Do not add any additives in lubricating oil.
- Do not run the vehicle / engine at idle for long periods (more than 20 – 30mins).

Dry Air Cleaner

- Check Clogging sensor, clean filter element and when the indicator glows red on instrument panel.

Engine Oil

- Check engine oil level daily. Oil level between “Add” & “Max” is safe . Top up oil level if oil level is close to “Add” mark.

Clutch and Brake Pedal Free Play

- Maintain 22-25 mm clutch pedal free play for suspended type clutch. .
- Maintain 22-25 mm brake pedal free play for suspended type brake pedals.

Greasing and Lubrication

- Grease all greasing points every 50 hrs. or weekly. For puddling operation grease daily.

DIESEL FUEL

Before handling fuel, filling tanks, etc., observe the following:

- Do not use adulterated diesel in your tractor.
- Fill the fuel tank at the end of each day to reduce overnight condensation.
- The fuel cap and neck area should always clean.
- If the original fuel tank cap is lost or damaged, replace it with a genuine part.
- Precautions should be taken to ensure that stored fuel is kept free of dirt, water, etc.
- To facilitate moisture and sediment removal, a drain plug should be provided at the lowest point (at the opposite end to the outlet pipe). If there is no filter on the outlet pipe, then a funnel with a fine mesh.

SECTION A

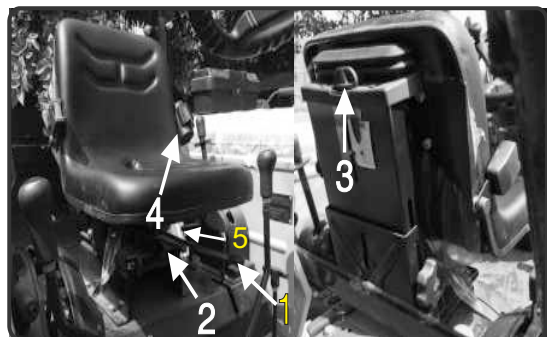
CONTROLS, INSTRUMENTS AND OPERATION

The following pages in this section detail the location and function of the various instruments, switches and controls on your tractor. Even if you operate other tractors, you should read through this section of the Manual and ensure that you are thoroughly familiar with the location and function of all the features of your new tractor. Do not start the engine or attempt to drive or operate the tractor until you are fully accustomed to all the controls. It is too late to learn once the tractor is moving. If in doubt about any aspect of operation of the tractor, consult your Authorized Dealer. Reference to tractor models or equipment not available in your territory or to options or accessories not fitted on your tractor should be ignored.

Particular attention should be paid to the recommendations for running-in to ensure that your tractor will give the long and dependable service for which it was designed.

See Section B for the routine lubrication and maintenance requirements. The specification of your tractor will be found in Section C.

CONTROL INSTRUMENTS AND OPERATION



1. Seat Adjustment

1. Weight adjuster Knob.
2. Horizontal travel adjustment lever.
3. Seat Mounting plate.
4. Seat belt.
5. Operator presence switch (OPS).

OPERATOR'S SEAT

The tractor seat has a device that allows it to be regulated as to control height and suspension, and horizontal travel of the seat depending on the operator's requirement. Before operating the tractor, it is important to adjust the seat to the most comfortable position. See Figure 1 for details.

To achieve the optimum suspension setting, sit on the seat and turn the suspension adjuster knob until the weight indicators on the seat frame align.

Press down the horizontal travel adjustment lever and move the seat forward or backward, as required. Further seat travel is possible after loosening the two seat mounting bolts that secure the seat base to the tractor.

Seat height is adjusted after loosening the two knobs on both sides of the seat frame.

Operator presence switch : When the operator leaves the tractor seat, the vehicle will shut off automatically within 7-10 sec.

Park Operator presence switch : The audible alarm will be activated after the operator has been detected out the driving position and parking brake is not applied. The time out of alarm is less than 10 sec.

NOTE : Operator presence switch is available.

SEAT BELT, SAFETY FRAME OR ROLL BAR/ (where fitted)

⚠ WARNING : Tractors equipped with a safety or roll bar also have a seat belt fitted. Always use the seat belt with a safety frame or roll-bar installed. Do not use a seat belt if the tractor is not equipped with a safety frame or roll bar.

To lengthen the belt, tip the buckle away from the belt and pull on the buckle. With the belt fastened around you, pull the free end of the belt until it is a snug fit.

The belt may be sponged with clean, soapy water. Do not use solvents, bleach or dye on the belt as these chemicals will weaken the webbing. Replace the belt when it shows signs of fraying, damage or general wear.

If your tractor is fitted with a safety frame or roll bar, it must be maintained in a serviceable condition.

⚠ WARNING: Do not attach chains or ropes to it safety frame or roll bar for pulling purpose since the tractor may tip back-wards. Always pull from the tractor drawbar. Be careful when driving through door openings or under low overhead objects. Make sure that there is sufficient overhead clearance for the roll bar.



1.A Safety Frame Or Rollbar 1. ROPS

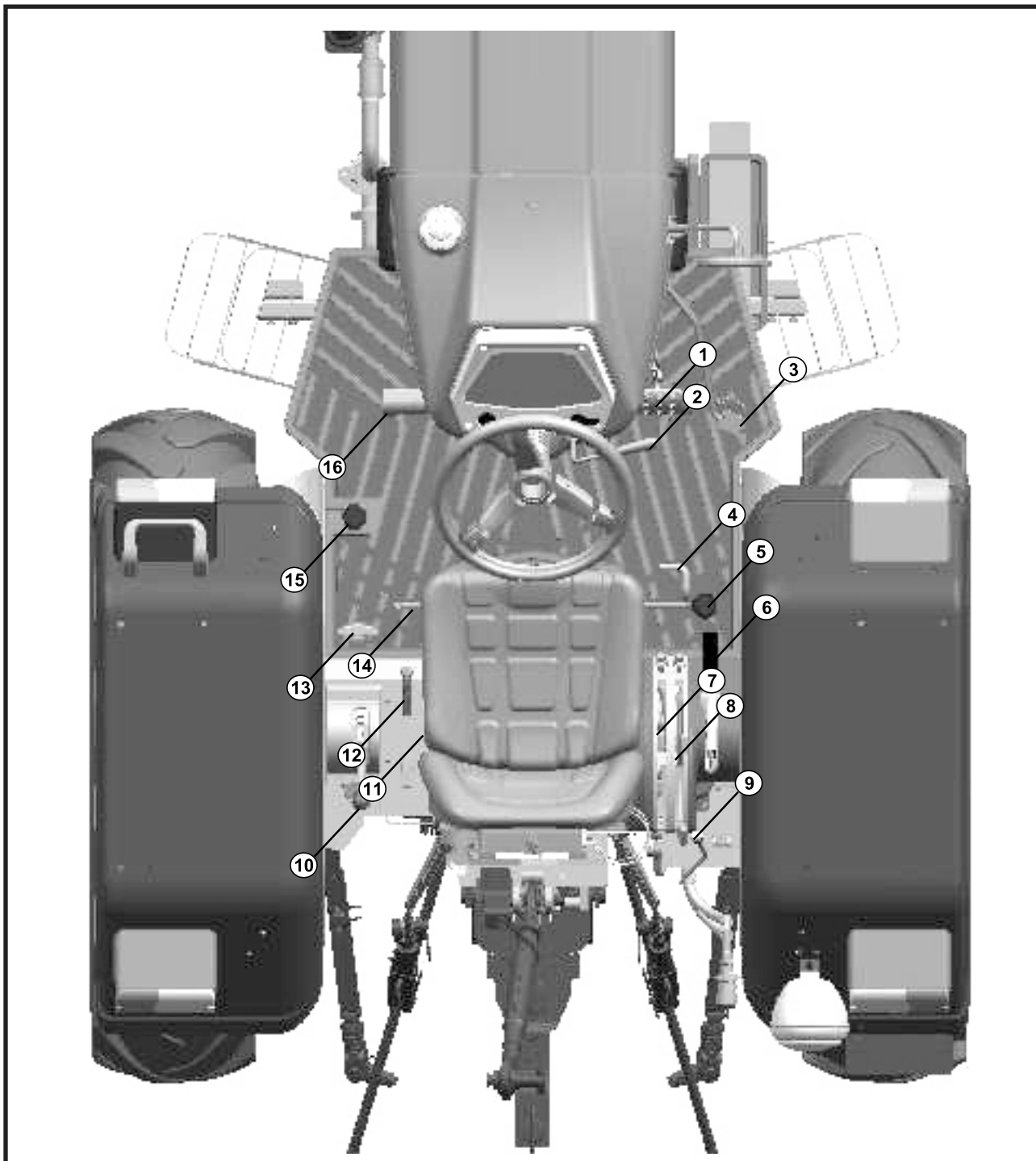
SAFETY FRAME

A Safety Structure and seat belt is fitted as a 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. 1-A)

Depending on laws in force in the various markets, a seat may be installed. Always raise the safety frame before fastening the seat belt.

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.

NOTE: RMS value of weight vibration acceleration 2.05 m/s².



2. Control Levers

- | | | |
|----------------------|----------------------------|-----------------------------------|
| 1. Brake | 2. Hand throttle control | 3. Foot throttle accelerator |
| 4. Differential lock | 5. Main shift lever | 6. Parking brake |
| 7. DC levers | 8. PC lever | 9. DCV lever |
| 10. IPTO lever | 11. Dual speed PTO control | 12. PTO control Assembly |
| 13. 4WD-2WD lever | 14. High Low Range lever | 15. Forward-Reverse Shuttle lever |
| 16. Clutch Pedal | | |

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, reduce the protection it offers.

INSTRUMENTS AND CONTROLS

The following text describes the various gauges, switches and warning lights installed on your tractor, See Figure 2A and 2B.

Engine RPM Meter

The Engine RPM Meter indicates engine revolutions per minute. Each division on the scale represents 50 rev/min.-eg. with the needle indicating '20' the engine is running at 1000 rev/min.

The yellow mark on the tachometer scale indicates the engine speed at which the standard P.T.O. speed of 540 rev/min is obtained.

The Engine RPM Meter also records the total number of hours that the tractor has operated, based on an average engine speed of 1600 rev/min. If the engine is run at a speed lower than 1600 rev/min then the tachometer will accumulate hours at a rate slower than real time. Higher engine speeds will cause the tachometer to accumulate hours at a rate faster than real time.

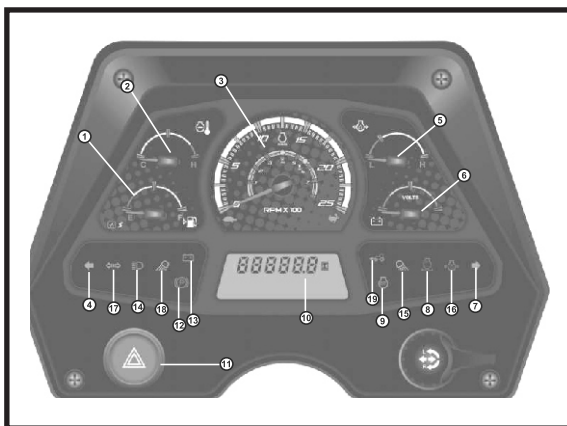
The hours recorded should be used as a guide to determine hours servicing intervals, (see Section B of this Manual).

Engine Coolant Temperature Gauge

The gauge indicates the temperature of the engine coolant. If the needle enters the red area of the gauge while the engine is running, stop the engine and investigate the cause.

NOTE : *When the key-start switch is turned off, the gauge needle will assume a random position.*

CONTROL, INSTRUMENTS AND OPERATION



2A. Cluster Panel (Where applicable)

- | | |
|---|--|
| 1. Fuel Gauge | 10. Digital Hour Meter |
| 2. Engine Coolant/Water temperature Gauge | 11. Warning Signal Indicator |
| 3. RPM Meter | 12. Parking light indicator (Where applicable) |
| 4. Turn light Indicator LH | 13. Battery |
| 5. Engine Oil Pressure] Warning Gauge | 14. High beam light indicator |
| 6. Voltmeter | 15. Rear work light Indicator |
| 7. Turn light Indicator RH | 16. Engine oil |
| 8. Air restriction light | 17. Trailer 1 |
| 9. Glow plug Indicator | 18. Front work light |
| | 19. 4 Wheel drive |

Engine Oil Pressure Warning Light

The red warning light on the instrument panel indicates low engine oil pressure and should extinguish immediately after the engine is started, and is only operative with the key start switch in the 'ON' position.

NOTE : If the light comes on while engine is running, stop the engine immediately and investigate the cause. The light indicates low oil pressure and is not an indication of oil level. The engine oil level must still be checked daily by means of the dipstick.

Hand Throttle

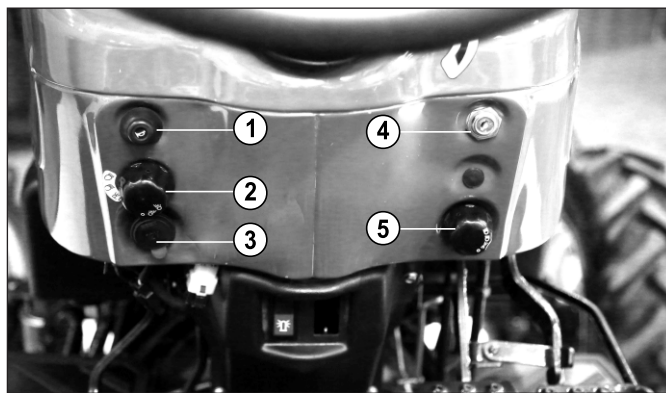
With the engine running, pull the throttle lever rearwards to progressively increase engine speed. Push the throttle lever forward to decrease the engine speed.

Hazard Warning Light Switch

Press the switch to operate both turn signals simultaneously. The switch, which is internally illuminated, will flash in unison with the turn signals and the turn signal indicator lights on the instrument panel.

Indicator Lights

The upper indicator light of the pair will illuminate when headlamp main beam is selected. When either of the turn signal is operated, the lower indicator light will flash in unison with the turn signals.



2B. Controls

1. Horn Switch
2. Tractor Light Switch
3. Mobile charger
4. Ignition Switch
5. Head Light Switch

However, the tractor is also equipped with a 7 pin rear trailer socket, the lower indicator light will flash in unison with the turn signals of the trailer when either of the turn signal is operated.

The turn signal indicator lights will also flash in unison with the turn signals whenever the hazard switch is operated.

NOTE : Please check with your Authorized Dealer on which system is fitted on your Tractor.

Tractor Lights Switch

The light switch is of rotary type and has four positions. By turning clockwise,

- | | |
|-----|--|
| 1st | Stage All lights 'OFF' |
| 2nd | Stage Instruments, side and rear lights 'ON' |
| 3rd | Stage Instruments, side rear and head lights (dipped beam) 'ON'. |
| 4th | Stage Instruments, side, rear and head light (main beam) 'ON'. |

Stopping the engine

Turn the key to OFF position, take it out to cut off the fuel supply to the injectors and stop the engine.

Key-Start Switch

The key operated switch actuates the starting motor. See 'Starting The Engine' for the correct operating procedure.

Charging Indicator

The red warning light on the instrument cluster indicates that the alternator is not charging the battery and should extinguish when the engine speed is increased above idle.

Fuel Gauge

The gauge indicates the level of fuel in the tank and is only operative with the key-start switch in the 'ON' position.

NOTE : When the key-start switch is turned off the gauge needle may assume a random position and may indicate a fuel level greater than the true level. Always check the fuel level with the key-start switch on.

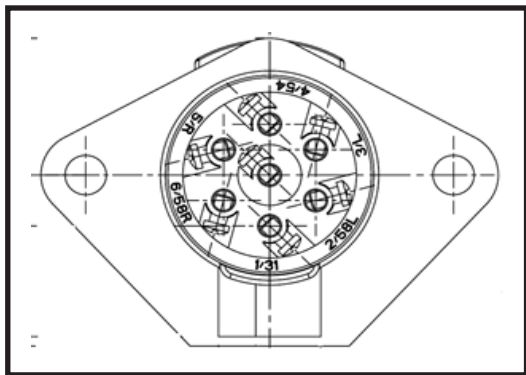
Air Restriction Warning Light

When this lamp lights up, clean or replace the outer element of dry air cleaner. If light comes on during tractor operation when replacement of element is not immediately possible, just clean the element and reduce the engine speed so on to prevent the lamp from lighting.

Seven-Terminal Trailer Socket

This socket allows lights, turn signals and other electrical equipment on a trailer or implement to be connected. This is fitted at the rear of driver's seat.

Always use additional lighting on the mounted implement if this conceals the turn signals and other lights at the rear of the tractor. (Refer Figure 2C)



2C Seven-Terminal Trailer Socket

1.	Ground	Brown
2.	Parking RH	Grey-Red
3.	Turn signal LH	Black-White
4.	Brake light	Red-White
5.	Turn signal RH	Black-Green
6.	Parking LH	Grey-Red

STARTING THE ENGINE

A four-position key-start switch is installed on all the tractors. For starting in temperatures down to -15°C (0°F) the thermostat option may also be installed. Basically the thermostat consists of an electrically heated element in the air in taken manifold which, when operated, ignites a measure of diesel fuel and introduces it into the combustion chamber. With the thermostat installed, all the four positions of the key-start switch are connected as shown in Figure 3. However, if the automatic thermostat is not installed, the starting motor operates at position (3) while as position (4) is left unconnected (see Figure 3).

IMPORTANT : Never push or tow the tractor to start the engine. Doing so may overstress the drive train.

NOTE: A safety start switch prevents operation of the starting motor unless the transmission range lever is in the neutral (N) position.

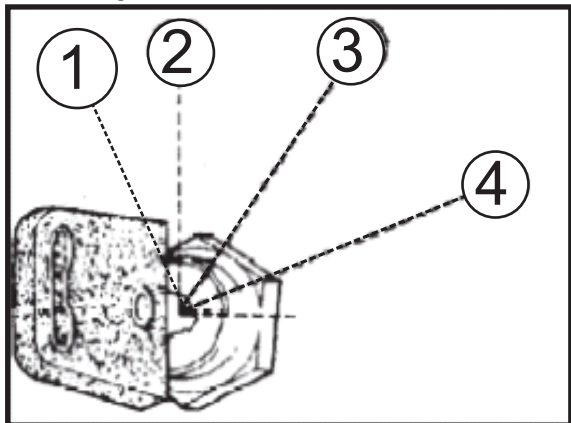
Glow plug : In cold weather to start the engine, glow plug is used. Depress the clutch and turn the key-start switch to position (3) hold for 30 second and then turn fully clockwise to position (4).

- Before starting the engine, always carry out the following procedure
- Sit on the driver's seat and ensure that the parking brake is firmly applied.
- Ensure that both gearshift levers are in neutral and that the P.T.O. lever is in the disengaged position.
- Move both hydraulic lift control levers fully forward.
- Place the remote control valve levers in neutral.

⚠ WARNING : Start the tractor only from the driver's seat. If the key-start switch is bypassed, the engine may start inadvertently with a gear selected and cause sudden and unexpected movement of the tractor or a tractor runaway. Wear eye protection when starting the tractor with jump leads or when charging the battery. Tractor will not start until PTO lever, Hi-low lever are in neutral condition and clutch pedal need to be press with your foot.

CONTROL, INSTRUMENTS AND OPERATION

- Return the throttle to the idle position and check that all warning lights extinguish and gauge readings are normal.



3. Key-start Switch

1. Electrical equipment 'OFF'
2. Warning lights and instruments 'ON'
3. Starting motor operates
4. Engine shut off through key. Bring the key on 1st position to shut off the engine.

For tractors fitted with automatic thermostat:

- In warm weather, or when the engine is hot, depress the clutch and turn the key start switch fully clockwise to position (4). Operate the starting motor until the engine starts or for a maximum of 40 seconds and then allow the key to return to position (3).
- In cold weather with the engine cold, depress the clutch and turn the key-start switch to position (3), hold for 20-30 seconds and then turn fully clockwise to position (4). Operate the starter until the engine starts or for a maximum of 30 seconds.
- Return the throttle to the idle position and check that all warning lights extinguish and gauge readings are normal.

NOTE : If the engine fails to start, repeat the procedure, after waiting for 1-2 minutes. If the thermostat is fitted, the key should be held at position (4) only for 7-10 seconds when attempting to restart the tractor.

STARTING THE TRACTOR WITH JUMP LEADS

If it is necessary to use jump leads (booster cables) to start the tractor, proceed as follows:

Connect one end of the red jump lead to the tractor battery positive (+) terminal and the other end to the auxiliary battery positive (+) terminal. Connect one end of the black jump lead to the auxiliary battery negative (-) terminal and the other end to a suitable projection on the

tractor engine block. Follow the starting procedure previously described.

When the engine starts allow it to run at idle speed, turn on all electrical equipment (Lights etc.) then, disconnect the jump leads in the reverse order to the connecting procedure. This will help protect the alternator from possible damage due to extreme load changes.

NOTE : When using an auxiliary battery to start the engine, ensure that the polarity of the jump leads is correct

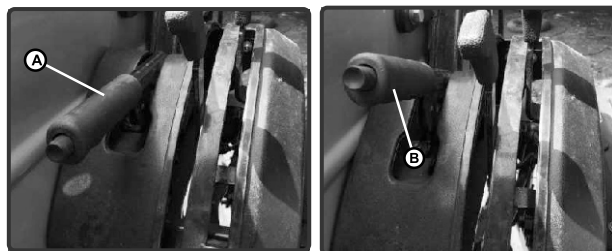
- Positive to positive, negative to negative otherwise the alternator may be damaged

STOPPING THE ENGINE

To stop the engine, carry out the following procedure:

- Sit on the driver's seat and close the throttle.
- Ensure that the parking brake lever is firmly applied.
- Ensure that both gearshift levers are in neutral and that the P.T.O. lever is in the disengaged position.
- Turn the key-start switch off.
- Move the hydraulic lift control levers fully forward to lower all hydraulic equipment to the ground.
- Move the remote control valve levers fully forward and then fully rearward before placing them in neutral position.

⚠ WARNING: Check the area beneath the equipment to ensure that no injury or damage will be caused when equipment is lowered.



3.1

- A. Hand Brake (In Disengaged Position)
B. Hand Brake (In Engaged Position)

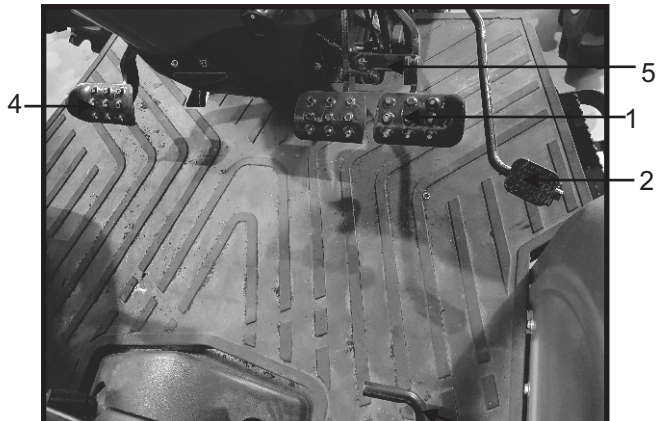
TRACTOR PARKING

To operate the parking brake, lock the brakes together (see the following text titled 'Foot-brakes'). Apply the foot brakes, press the button and pull up the handle and release the button. To free the parking brake, Press the button and bring it down. In Figure 3.1, the parking brake is shown in the applied position.

⚠ WARNING: Ensure that the parking brake is fully disengage before driving the tractor.

FOOT CONTROLS

For details of foot operated controls, refer to Figure 3.2 and the following text.



3.2 Foot Controls

1. Brake pedals
2. Foot accelerator
3. Differential lock pedal
4. Clutch pedal
5. Locking latch

Foot Brakes

The foot brake pedals, Figure 3.2, activate the rear wheel brakes and may be operated independently, to aid turning in confined spaces or together for normal stopping. When operating in the field, the brake pedals may be unlocked. However, due to the close proximity of the pedals to one another, it is still possible to apply both brakes together, when required.

⚠ WARNING : For your safety, always lock the brake pedals together when travelling at transport speeds, or on a highway or if a trailer is attached. To lock the pedals together, slide the latch (5) across to engage in the hole in the underside of the right-hand pedal, as shown.

Foot Accelerator

The foot accelerator, Figure 3.2, may be used independently of the hand throttle to control the speed of the tractor. It is recommended that you use the foot accelerator when driving on the highway.

NOTE : When it is required to use the foot accelerator, set the hand throttle to the idle position (fully forward).

Clutch

When the clutch pedal, Figure 3.2, is depressed the drive between the engine and transmission will be disengaged. Use the clutch pedal to transfer engine power smoothly to the driving wheels when moving off from a standstill.

Always depress the clutch pedal to engage or disengage a gear or when operating transmission P.T.O.

NOTE : Avoid resting your foot on the clutch pedal when operating the tractor. Such action will lead to early clutch failure.

Differential Lock

In field conditions including wheel slip, hold down the differential lock pedal, Figure 3.2, until the lock is felt to engage.

If conditions cause a rear wheel to spin at speed, reduce the engine speed to idle before engaging the differential lock.

⚠ WARNING : Never engage the differential lock at speeds above 5 mph (8 kmph) or when turning the tractor. When engaged, the lock will prevent the tractor from turning.

Transport Lock



3.3 Transport Lock

1. Pre selector knob
2. Transport Lock

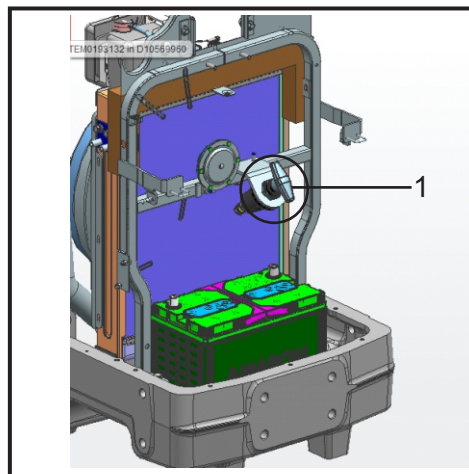
The transport lock is provided to lock the hydraulic system so that it will hold the implement to its desired height and is mainly used during transportation. Rotate the knob clockwise for locking and anti-clockwise for unlocking.

Do not use or adjust pre selector knob. The tractor is fitted with one single acting or one double acting convertible direct control valve (DCV), so there is no requirement of pre selector knob to operate trailer.

BATTERY ISOLATOR

Battery Isolator has been used to achieve control of DC.

NOTE : It is recommended to cut the battery connection from other electrical equipment while leaving the tractor. This will enhance battery life.



1. ISOLATOR SWITCH

ROTATE CLOCKWISE
TO TURN OFF



ON POSITION

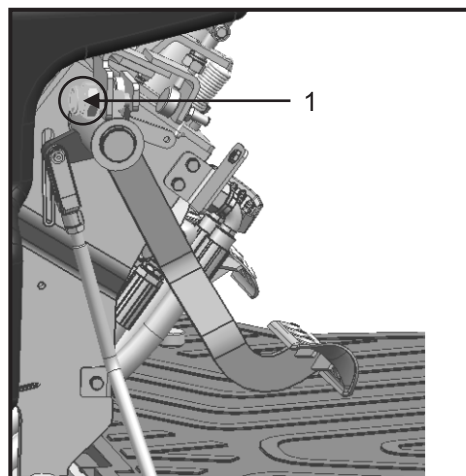


OFF POSITION

ROTATE COUNTER
CLOCKWISE TO TURN ON

Clutch Safety Switch

It is a safety feature which ensures that the tractor will not start until the clutch pedal is pressed fully.



1. Clutch Safety Switch

Neutral Safety Switch

It is safety feature which ensures that the tractor will not start until all the gear levers are at neutral position.

Also ensure that all the gear levers should be in neutral position before starting the tractor.

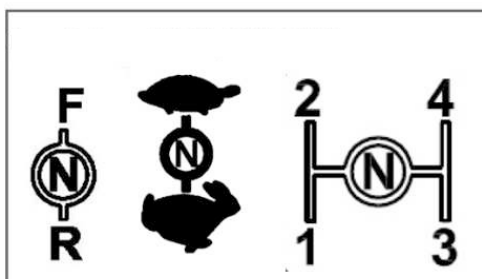
1. Side Shift Transmission

The transmission levers are at the side of the gear box. High & Low range can be selected by shifting the lever (B) in backward & forward direction respectively. The both transmission gear levers (A)&(B) operates in the pattern as shown in figure. Shuttle lever(C) is used to reverse the current speed.

⚠ WARNING : *To prevent inadvertent tractor movement, avoid accidental contact with the gearshift levers. Always stop the engine, firmly apply the parking brake and place all gearshift levers in neutral before dismounting from the tractor.*

TRANSMISSION

The transmission is of the constant mesh type and has eight forward and eight reverse speed ratios.

**4. Gear Shift Lever Positions**

H = High Range ()
 L = Low Range ()
 N = Neutral
 R = Reverse
 F = Forward

**4. TRANSMISSION LEVERS**

A. Main Shift Lever
 B. Range Lever
 C. Shutter Lever

⚠ WARNING : *A safety switch prevent operation of the starting motor unless the right-hand lever is in the neutral (N) position.*

NOTE : Always press the clutch pedal fully before changing main, shuttle (F-R), range (H-L) gear levers and release after the gear has been selected.

The gearshift levers protrude from the center of the transmission, Adjacent to Driver Seat. Refer figure 4.

The left-hand shuttle lever (C) is used to select forward or reverse gear ratio. The right -hand main gearshift lever (A) is used to select any one of four gear ratio. The left-hand range lever (B) is used to select the high (H) or low (L) range which has the effect of doubling the number of available gear ratios. Stop the tractor and fully depress the clutch before moving either of the gear levers. See Figure 4 for the gear shift positions.

IMPORTANT : *When towing the tractor, it is essential that the transmission main (right-hand) lever is kept in the neutral (N) position. Noncompliance may result in damage to transmission components.*

RUNNING IN-PROCEDURE

Your new tractor will provide long and dependable service if given proper care during the first 50 hours running-in- period and if serviced at the recommended intervals.

Avoid prolonged operation at either high or low engine speeds without a load on the engine.

Avoid overloading the engine. Operating in too high a gear under heavy load may cause excessive engine overloading. Overloading occurs when the engine will not respond to a throttle increase.

CONTROL, INSTRUMENTS AND OPERATION,

Use the lower gear ratios when pulling heavy loads and avoid continuous operation at constant engine speeds. Operating the tractor in too low a gear with a light load and high engine speed will waste fuel. You will save fuel and minimize engine wear by selecting the correct gear ratio for each particular operation.

Check the instruments frequently and keep the radiator and various oil reservoirs filled to the recommended levels.

POWER TAKE-OFF (P.T.O.)

The power take-off (P.T.O.) on your tractor transfers engine power directly to mounted or trailed equipment via a splined shaft at the rear of the tractor.

The P.T.O. shaft is a 6-spline, shaft designed for 540 operation, the speed at which most P.T.O. actuated equipment are designed to run.

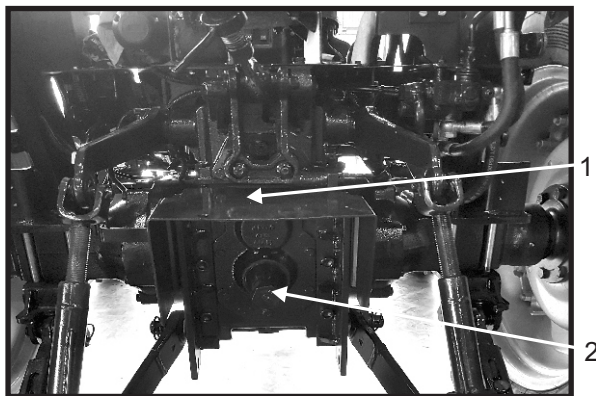
To obtain 540 / min & 540 E / min at the P.T.O., set the tractor engine speed to 1728 / min & 1251 / min.

For most P.T.O. operations the ground speed of the tractor is controlled by selection of the appropriate gear ratio while maintaining the correct P.T.O. speed by using the throttle.

NOTE : Select the 540 & 540E before starting any application based upon the requirement & use the recommended engine speed.

⚠ WARNING : Before attaching, detaching or working on P.T.O. driven equipment, the following precautions must be taken :-

- Firmly apply the parking brake.
- Ensure that both gearshift levers are in neutral and that the P.T.O. lever is in the disengaged position to stop the engine.
- Ensure that the P.T.O. shaft has stopped turning.



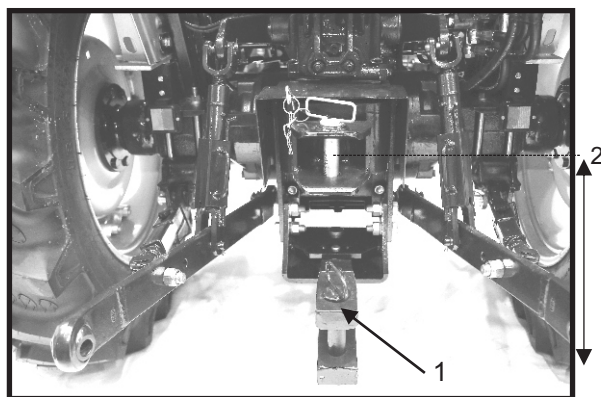
5 POWER TAKE - OFF

1. Guard 2. P.T.O. cap

To connect P.T.O. driven equipment to the P.T.O. shaft, remove the guard (where fitted) which is secured to the rear axle center housing by a linch pin, as shown in Figure 5. Unscrew and remove the P.T.O. cap and store in the toolbox. Attach the implement to the P.T.O. shaft and reinstall the guard.

⚠ WARNING : Do not approach or work on the P.T.O. shaft or equipment with the P.T.O. in motion. Block all four wheels when carrying out stationary P.T.O. work.

If P.T.O. driven equipment is attached to the drawbar then the drawbar should be set to the extended position so that the horizontal distance between the end of the P.T.O. shaft and the pin hole in the end of the drawbar is at least 14.9 in (387 mm.) See figure 5.1.



5.1. Drawbar setting

1. Swinging Drawbar
2. Horizontal distance - shaft to hitch pin

IMPORTANT : After attaching mounted equipment carefully raise and lower them using Position Control Lever and check clearances and P.T.O. shaft slide range



Figure 5.2

1. P.T.O. On / Off Lever

CONTROL, INSTRUMENTS AND OPERATION,

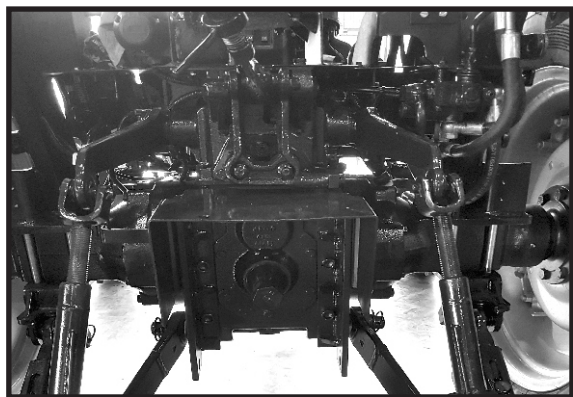
ON/OFF PTO

Transmission P.T.O. may be engaged or disengaged whether the tractor is moving or stationary. When stopping the tractor, the action of depressing the clutch pedal will not stop rotation of the P.T.O. output shaft since it is fitted with Independent PTO clutch.

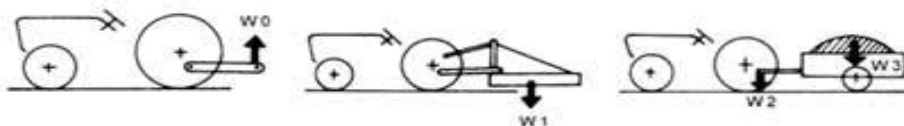
IMPORTANT : Always disengage the independent PTO clutch lever before engaging or dis-engaging the P.T.O. to prevent damage to P.T.O. components.

◆ **Working**

1. Pull only from the drawbar. Never hitch to axle housing or any other point except drawbar :such arrangements will increase the risk of serious personal injury or death due to a tractor upset.

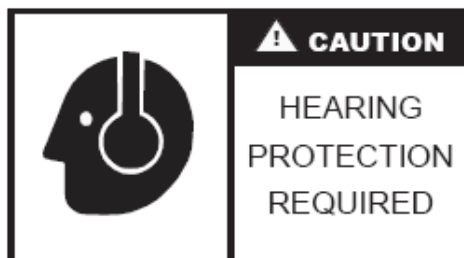


- (1) Drawbar
2. For trailing PTO-driven implements, set the drawbar to the towing position.
3. Attach pulled or towed loads to the drawbar only.
4. Keep all shields and guards in place. Replace any that are missing or damaged.



1. W_0 (Max allowable weight can be put on the lower link end) = 1500kg.
2. W_1 (Max drawbar load) = 1500kg
3. W_2 (trailer loading weight) = 5000Kg.

5. Avoid sudden starts. To avoid upsets, slow down when turning, on uneven ground, and before stopping.
6. The tractor cannot turn with the differential locked and attempting to do so could be dangerous.
7. Do not operate near ditches, holes, embankments, or other ground surface features which may collapse under the tractor's weight. The risk of tractor instability is even higher when the ground is loose or wet. Tall grass can hide obstacles, walk the area first to be sure.
8. Watch where you are going at all times, Watch for and avoid obstacles, Be alert at row ends, near trees, and other obstructions.
9. Never try to get on or off a moving tractor.
10. Always sit on the operator's seat when operating levers or controls.
11. Do not stand between tractor and implement or trailed vehicle unless parking brake is applied.



Hearing Protection

A hearing protection to be worn when sound levels exceed certain limits.

Hearing Protection Rules of Thumb

NOTE : Noise at operator's ear level is below 86 dB(A)



CONTROL, INSTRUMENTS AND OPERATION,

13. Keep the ROPS in the "UP" position and wear the seat belt when driving the tractor on the road. Otherwise, you will not be protected in the event of a tractor roll-over.
14. Do not operate an implement while the tractor is on the road. Lock the 3-point hitch in the raised position with the help of transport lock.
15. When towing other equipment, use a safety chain and place an SMV emblem on it as well Figure 5.3

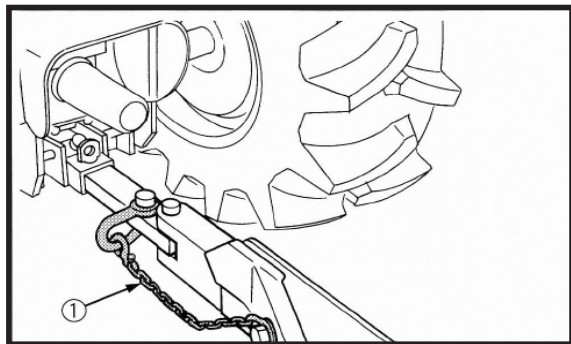


Figure 5.3
1. SAFETY CHAIN

3. PARKING THE TRACTOR

1. Disengage the PTO, lower all implements to the ground, place all control levers in their neutral positions, set the parking brake, stop the engine, remove the key from the ignition.
2. Make sure that the tractor has come to a complete stop before dismounting.

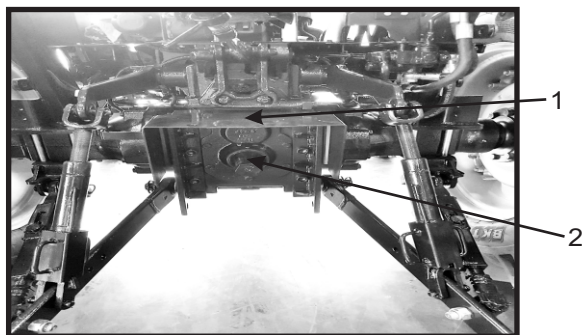


Figure 5.4
1. PTO Guard 2. PTO Cap

3. Before installing or using PTO driven equipment, read the manufacturer's manual and review the safety labels attached to the equipment.
4. When operating stationary PTO driven equipment, always apply the tractor parking brake and place chocks behind and in front of the rear wheels. Stay clear of all rotating parts. Never step over rotating parts.

USING 3-POINT HITCH

1. Use the 3-point hitch only with equipment designed for 3-point hitch usage.

2. When using a 3-point hitch mounted implement, be sure to install the proper counterbalance weight on the front of the tractor.
3. When transporting on the road, set the implement lowering speed knob in the "LOCK" position to hold the implement in the raised position.

To connect P.T.O. driven equipment to the P.T.O. shaft, remove the guard (where fitted). Unscrew and remove the P.T.O. cap and store in the toolbox. Attach the implement to the P.T.O. shaft and reinstall the guard.

⚠ WARNING : *The guard serves as a support for drive line shields used with Pull-type P.T.O driven equipment and also provides you safety*

NOTE : Avoid resting your foot on the clutch pedal while operating the tractor. Such action will lead to early clutch failure.

Always move the power take off to neutral before getting off the tractor.

Always keep the power take off at neutral before carrying out any adjustment or jobs on the implement connected.

OPERATING THE P.T.O.**Transmission P.T.O.**

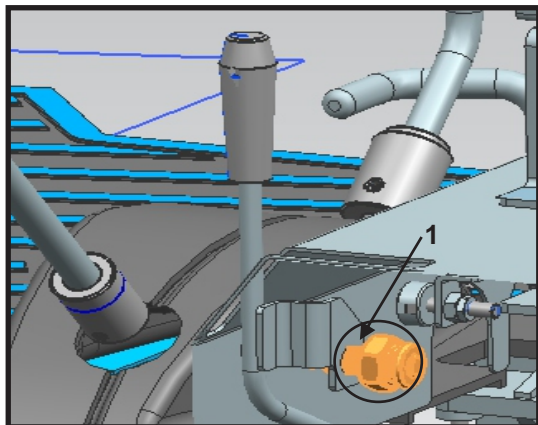
To operate transmission P.T.O., start the engine, fully disengage the independent PTO clutch Lever and pull the P.T.O. selector lever Figure 5.5 rearwards.

Please select 540 rev/min or 540E rev/min mode by using dual PTO lever. Set the engine rpm to 1728 rev/min for 540 rev./min and engine rpm to 1251 rev/min for 540E rev/min. Pull PTO clutch lever (1) upward and bring PTO selection lever (2) to engaged position by pulling it up. Release the PTO clutch lever by pressing the knob at the top of the lever and then release it. There are three positions of PTO selection lever, Position (1) is for normal operation of 540 rpm, position (2) is neutral and position (3) will select 540E RPM.

IMPORTANT : *Always disengage the independent PTO clutch lever before engaging or dis-engaging the P.T.O. to prevent damage to P.T.O. components.*

⚠ WARNING : *To avoid inadvertent movement of the implement, disengage the P.T.O. after each use.*

PTO SAFETY START SWITCH



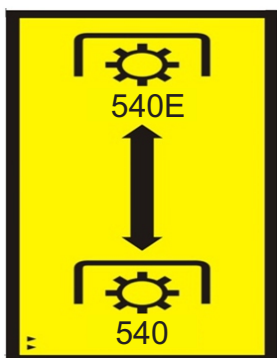
1. PTO Safety Start Switch

It is a safety feature which ensures that the tractor will not start until the PTO select lever is at neutral position. Before starting the tractor, keep the PTO select lever at the neutral position.



5.5 P.T.O. Shifter Lever

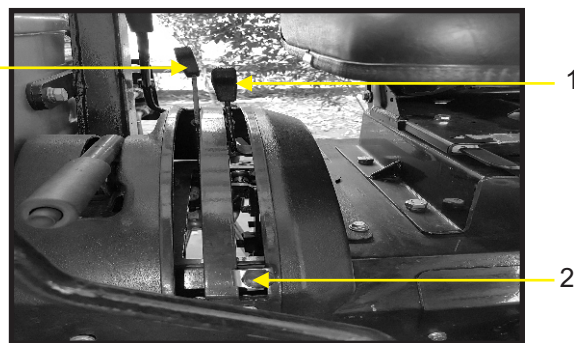
1. Independent P.T.O. Clutch Lever
2. P.T.O. Selection Lever
3. PTO ON / OFF lever



540E / 540 Lever

HYDRAULIC SYSTEM

Your tractor is equipped with a hydraulic system providing accurate and sensitive control over a wide range of operating conditions.



6. Hydraulic Levers

1. Draft Control lever
2. Adjustable stop
3. Position Control lever

Two distinct systems are incorporated

1. Draft Control lever
2. Position Control lever

The type of control selected will depend on the type of implement in use and the operating conditions.

1. Draft Control is most suitable for soil engaging implements operating in the ground. Changes in the working depth or soil resistance cause the draft loading on the implement to increase or decrease. This change in draft loading is sensed through the top link of the three-point linkage and the hydraulic system responds by raising or lowering the implement to restore the draft loading.

In this way a uniform draft load is maintained on the implement. The system responds to both upper link compression and tension loads and is, thus, described as a double-acting system.

2. Position Control provides accurate and sensitive control of implements such as sprayers, rakes, mowers, etc., that operate above the ground. Position Control would not normally be used with ground engaging equipment unless it is essential to maintain a constant depth regardless of the draft load.

The tractor has a dual lever system, i.e., separate levers for Draft and Position Control functions. See Figure 6.

The Draft and Position Control levers are used to raise or lower the three-point linkage (and implement) to the required height or working depth.

⚠ WARNING: Do not transport or attach equipment when the hydraulic system is in Draft Control Use position Control for these operations Always lower hydraulic equipment to the ground before stopping the tractor.

Draft Control Operation

Move the Draft Control Lever in the quadrant to find the point near the center where the lift links neither raise nor lower. This is the neutral point.

Lower the implement into work using the Draft control Lever. Push the Lever forward to increase the draft loading. Pull rearwards to reduce the draft loading. In most circumstances, forward movement of the Draft Control Lever will increase implement depth and rearward movement will reduce the depth.

Once set, tractor hydraulic system will automatically adjust the implement depth to maintain an even pull on the tractor and so reduce wheel slip to a minimum.

When lowering the implement into work push the Draft Control Lever down to the bottom of the quadrant to ensure positive engagement of the implement in the ground then immediately raise the Draft Control Lever until the required implement depth is achieved.

When the required implement working depth has been established, set the adjustable stop adjacent to the Draft Control Lever to locate the position for repeated use. The Draft Control Lever may be eased sideways to bypass the adjustable stop, if required.

Position Control Operation

Set the required implement height/depth using the Position Control Lever, Figure 6.

Pull the Lever Back to raise the implement height/depth using the Position Control Lever. Pull the lever back to raise the implement, push forward to lower. Implement height/depth is relative to the position of the Lever in the quadrant.

When the required implement working height/depth has been established, set the adjustable stop adjacent to the Position Control Lever to locate the position for repeated use. The Lever may be eased sideways when it is required to by pass the adjustable stop.

The adjustable stop is reversible after loosening the central clamp screw so that it may also be used when operating in Draft Control.

IMPORTANT : *When transporting equipment on the three-point linkage set the adjustable stop to maintain the Position Control Lever in the raised position. This will prevent accidental movement of the lever which could result in attached equipment lowering and becoming damaged or damaging the road surface.*

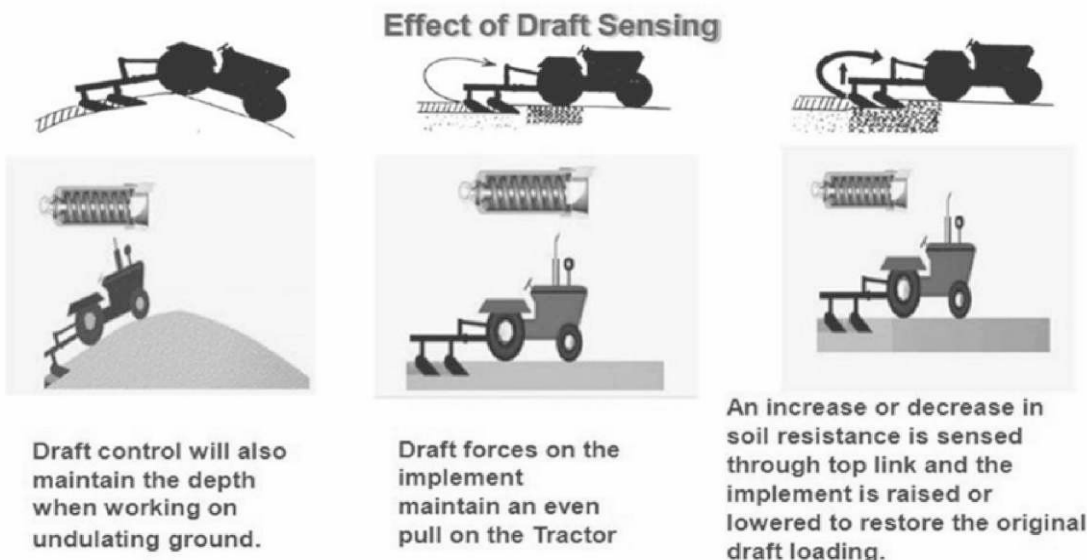
Automatic Draft and Depth System (Blending)

Position Control may be used together with the Draft Control as follows:

HYDRAULICS

Automatic Depth And Draft Control (ADDC)

ADDC is used mostly while operating soil engaging Implements like ploughs and tillers.



CONTROL, INSTRUMENTS AND OPERATION

Set the Position Control Lever at the maximum desired implement depth. The hydraulic system will not lower the implement below this depth. This will also prevent "diving" which may be encountered with light equipment, such as a rear blade, when grading or backfilling.

Adjust the Draft Control Lever for the maximum required draft load (pull).

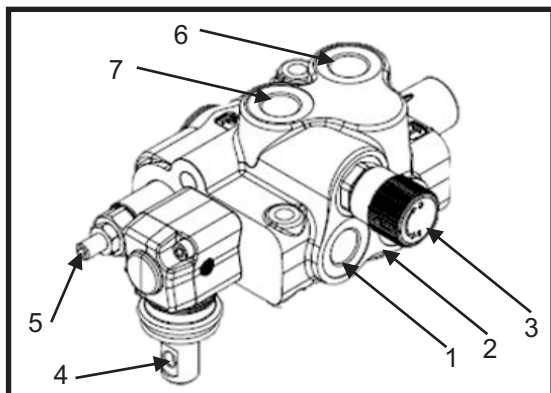
The hydraulic lift system will now provide normal draft response within the range set by the Position Control. This adjustment provides a more uniform depth while maintaining an even pull in widely varying soil conditions.

Auxiliary Spool Valve

To facilitate the operation of remote Cylinders, Single Spool, Double acting valve with Selector knob is Provided on the Tractor. Refer figure 7.

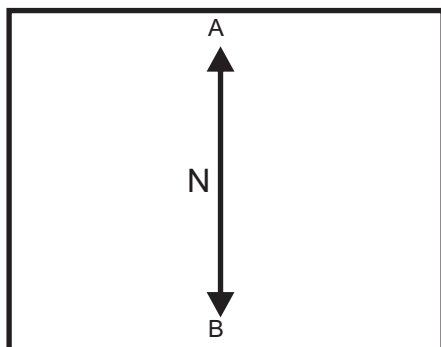
It can be used with both single acting as well as double acting cylinders with the help of a Selector knob.

It is operated by joystick provided on the Auxiliary valve. The pattern of operation is shown below :



7. Double Spool Remote Control Valve

- | | |
|----------------------------|--------------------|
| 1. Pressure Carryover Port | 2. Tank Port |
| 3. SA/DA Selection Knob | 4. Operating Lever |
| 5. Relief Valve | 6. Work Port |
| 7. Work Port | |



Pattern of Operation Figure 7.1

It works in both Forward and Backward positions and connects oil supply to remote couplers. Attach Blue colour port in case of single acting cylinder and both for a double acting cylinder attachment. Refer Figure 7.1

NOTE: To connect the male quick coupler to female quick coupler, open the flap, pull the knurled ring behind, insert the male inside & release the ring. To disconnect, pull the knurled ring behind & the male will automatically come out by spring action.

NOTE: Always fix the attachment oil connections in the same ports (Red or Blue) so that cylinder opening & closing directions do not change with respect to operating Knob.

⚠ CAUTION : Once the trailer ram is at full lift, bring back the operation lever, immediately to neutral position. Keeping the lever in raised position, will cause Hydraulic pump to unnecessarily run at full pressure and cause continuous blowing off system pressure and rise in temperature.

⚠ CAUTION : Before connecting or disconnecting hydraulic hoses at the remote couplers, stop the engine and relieve the pressure in the circuit by moving the remote control valve lever(s) fully forward, fully rearward and then to the neutral position. Ensure no one will be injured by moving equipment when relieving pressure in the system. Before disconnecting cylinders or equipment ensure the equipment or implement is supported securely. Never work under equipment supported by a hydraulic device because it may drop if the control is actuated (even with the engine stopped) or in the event of failure, etc. Always use a secure support for equipment which must be serviced while in the raised position.

NOTE : Before connecting remote cylinder hoses, thoroughly clean the connections to prevent oil contamination. Remote cylinders are operated by oil drawn from the tractor hydraulic system. Therefore, always check and replenish the hydraulic system oil after remote cylinder equipment has been connected and cycled a few times.

- Operate Single Acting Cylinder in 'S' position of knob.
- Operate Double Acting Cylinder in 'D' position of knob.

⚠ CAUTION : Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic lines. Tighten all connections before applying pressure.

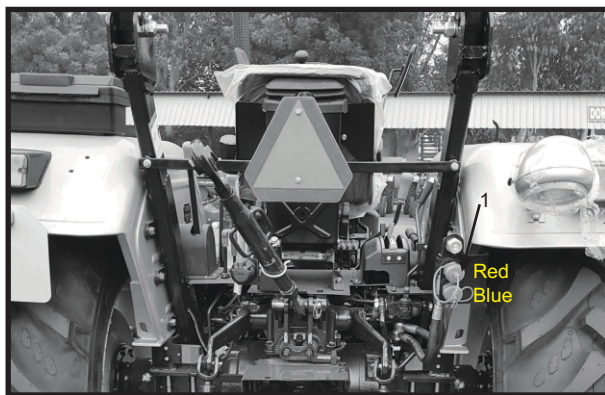
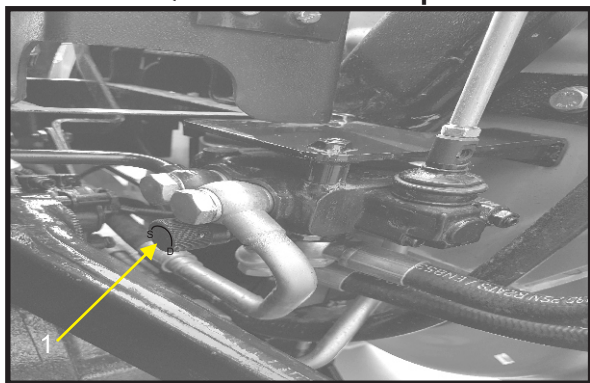


Figure 7.2.
1. Quick Release Coupler



1. Single / Double Acting Selection Knob

THREE-POINT LINKAGE AND TRAILED EQUIPMENT

Before attaching equipment study the following text:

- Remove the drawbar if mounted or semi-mounted equipment is attached.

CAUTION : For attaching and detaching the implement, use position control

Equipments can be attached to your tractor as follows :

- Position the lower link hitch point in alignment with the implements hitch points. Insert the hitch pins and secure with linch pins. Always hitch left link first then right link and then top link, at last.
- Lengthen or shorten the top link until the implement mast pin can be inserted through the mast and top link. Adjust the top link to an initial 27 in. (685 mm) setting.
- For detaching the equipment, reverse the attaching procedure .

The following tips will make hitching easier and safer.

- Always park the equipment on a firm, level surface.
- Support equipment so that it will not tip or fall when detached from the tractor.
- Always relieve all hydraulic pressure before unhitching.

NOTE : Top link should be parallel to the ground in operating condition.

Top Link



8 1- TOP LINK

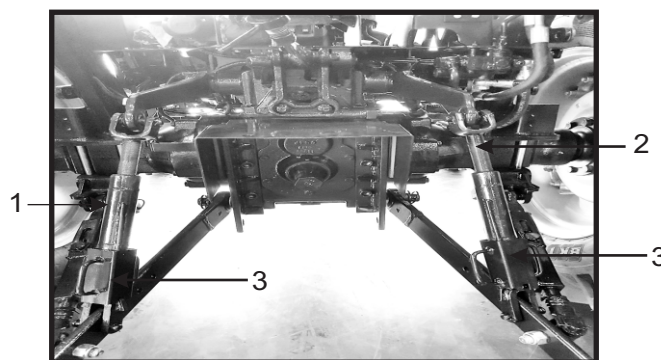
The top link length is adjusted by turning the sleeve. The locknut must be loosened before the sleeve can be turned. Most equipment will operate at the correct depth/height if the top link is set to a nominal 27 in. (685 mm) measured between the centres of the attaching pins. When transporting the tractor, hook the link plate over the lug, on the hydraulic lift rocker. refer figure 8.

IMPORTANT : While attaching mounted or semi-mounted equipment to the three-point linkage or coupling trailed equipment to the drawbar, ensure that there is adequate clearance between the implement and the tractor. The clearances in the raised position should be checked by raising the implement carefully in Position Control. Check the swing clearance by performing a series of left and right-hand turns with the tractor and implement combination.

NOTE: The top link length can be obtained from 590-840 mm. Length of pin at tractor end is 110 mm.

NOTE : Top link should be parallel to the ground in operating condition.

Lift Rod



8.1 Lift Rod Adjustment

1. Left Hand Lift Rod
2. Right Hand Leveling Rod
3. Crank Handle for Adjustment

CONTROL, INSTRUMENTS AND OPERATION

The right-hand lift rod is adjusted by means of a crank handle on the leveling box. See Figures 8.1

The leveling box as shown in Figure 8.1 is fitted on tractors in territories where ROPS is also installed.

Turn the crank handle clockwise to shorten the lift rod or turn anti-clockwise to lengthen the lift rod.

8.2 Hydraulic Lift Rocker

The locking handle should be turned away from the top link to unlock the top link before adjusting it. The sleeve can be adjusted by rotating it in clockwise or anticlockwise direction with the help of the locking handle itself. Always ensure that the top link is locked after the adjustments are carried out.

When operating in Draft Control, draft signals are transmitted via the top link and hydraulic lift rocker to the control valve within the hydraulic system. The draft signal transmitted may be varied by adjustment of the lift rocker connections.

The lift rocker has three holes for attachment of the top link as shown in figure 8.2



Figure 8.2
Rocker Hole Selection

- A for Hard Top soil or Low moisture soil
 - B for Medium moisture soil or for Secondary tillage
 - C for Soft Moisture soil or during secondary tillage.
- Attach Cultivator with 3-point linkage
 - Selection of Draft Sensing Hole



Figure 8.2A
1. Locking Handle

The top link length is adjusted by turning the sleeve by means of a locking handle. See Figure 8.2. Most equipment will operate at the correct depth/height if the top link is set to a nominal 27 in. (685 mm) measured between the centers of the attaching pins.

IMPORTANT : *When attaching mounted or semi-mounted equipment to the three-point linkage or when coupling trailed equipment to the drawbar, ensure that there is adequate clearance between the implement and the tractor. The clearance in the raised position should be checked by raising the implement carefully in Position Control. Check the swing clearance by performing a series of left and right-hand turns with the tractor and implement combination. Ensure that the stay bar are adjusted to prevent damage to the tractor.* In some territories, top link with lockable handle is also provided. See figure 8.2.

Stay bar



8.3 Staybar

1. Left Hand Stay bar
2. Right Hand Stay bar

Stay Bars are provided to resist the excessive lateral movement of equipment and so as to avoid the fouling of rear tyres.

The lower link is provided with Square channel Pin type staybar. The Pin type stay bar gives you the option of changing the stay bar length as per the requirement.

It's length can be controlled by shifting the position of pins along it's length. Refer Figure 8.3

SWINGING DRAWBAR

The E-marked Swinging Drawbar which is retained by a single pivot pin at the front, may be allowed to swing the full width of the hanger or be retained in a fixed position by the insertion of pins through holes in the hanger.

The Swinging Drawbar is fully adjustable for projection relative to the P.T.O. output shaft.

To vary the height of the drawbar / implement hitch point, invert the drawbar and/or reposition the clevis straps shown in Figure 8.4.

CONTROL, INSTRUMENTS AND OPERATION

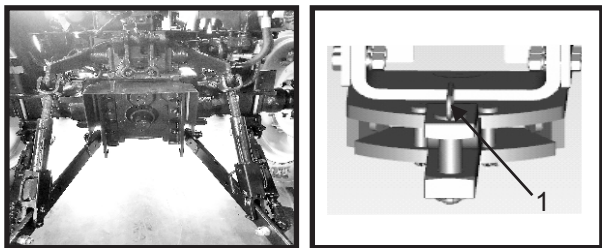


Figure 8.4 Swinging drawbar locating points
1. Pin

The drawbar retaining pin may be inserted in either of the holes (1) or (2), Figure 8.4, to vary the drawbar/ implement hitch point relative to the P.T.O. shaft. Always use the close-coupled position (hole 2) when towing equipment exerting high static downward forces, such as two wheeled trailers etc.

See the following table for hitch point position.

Hole	P.T.O. Shaft to Lower Hitch Point Distance	P.T.O. Shaft to Horizontal Hitch Point Distance
1	20.59 Inch / (52.3 cm.)	21.22 Inch / (53.9cm.)

⚠ WARNING : *When supporting equipment on either the fixed or the swinging drawbar, ensure that the total weight on the rear axle does not exceed the maximum rear axle loading or the rear tire load capacity, whichever is lower.*

Operating on Slopes or Rough Terrain

⚠ WARNING

To avoid personal Injury or death:

- Always back up when going up a steep slope. Driving forward could cause the tractor to tip over backward. Stay off hills and slopes too steep for safe operation.
 - Avoid changing gears when climbing or descending a slope.
 - If operating on a slope, never disengage shift levers to neutral. Doing so could cause loss of control.
 - Do not drive the tractor close to the edges of ditches or banks which may collapse under the weight of the tractor. Especially when the ground is loose or wet.
1. Slow down for slopes, rough ground, and sharp turns, especially when transporting heavy, rear mounted equipment.
 2. Before descending a slope, be sure that the range lever is in the low so that speed can be controlled without using brakes.

Transport the Tractor Safely

1. The tractor, if damaged, must be carried on a truck. Secure the tractor tightly with ropes.

2. Follow the instruction below when towing the tractor: Otherwise, the tractor's powertrain may get damaged.
 - Set the all shift levers to "NEUTRAL" position.
 - If possible, start engine and select 2WD, if creep speed is fitted ensure that it is disengaged.
 - Tow the tractor using its front hitch or drawbar.
 - Never tow faster than "10 km/h (6.2 mph)".

TOE IN CHECKING AND MEASUREMENT

If the Toe-in alignment marks on the spindle arms and axle sections are not visible or replacement parts have been installed, use the following procedure to determine the Toe-in setting :

On flat level ground slowly drive the tractor in a straight line for at least 10 feet (3 meters). Stop the tractor and ensure the front wheels remain in the straight ahead position.

Mark the inboard rim of each front wheel towards the front at wheel center height. Measure and note the distance between the two marks, call this dimension A.

Maintain the straight ahead position and move the tractor forward so the wheels rotate through 180° and the marks on the wheels face the Rear at wheel center height.

Again measure and note the distance between the two marks, call this dimension B.

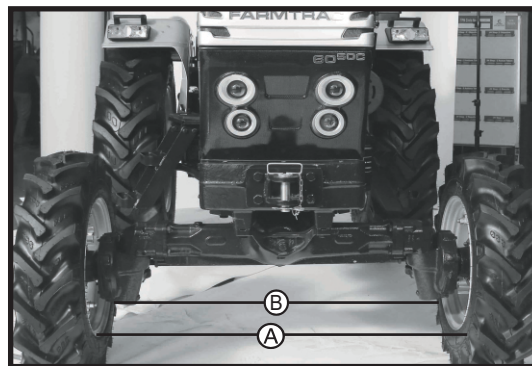


Figure 9. Toe in Checking

- A. Dimension between front ends of front tyre.
B. Dimension between rear ends of front tyre.

NOTE : If dimension A is larger, then A-B gives the Toe-out. If dimension B is larger, then B-A gives the Toe-in.

To ensure accurate results it is recommended that the above procedure is completed three times with three different marks equally spaced around each wheel rim and the average dimension for Toe-in taken. This method minimizes any inaccuracy due to wheel rim run-out.

9. Tie Rod Assy. (Right Hand Side)

- Half turn of thread on each side will change toe-in by 6mm.
- If found, tyre is Toe-out then, Loose the link ball joint.
- If found, tyre is Toe-in then, Tight the link ball joint.
- Refer Figure 9.1

**9.1 Tie Rod Assy. (Right Hand Side)**

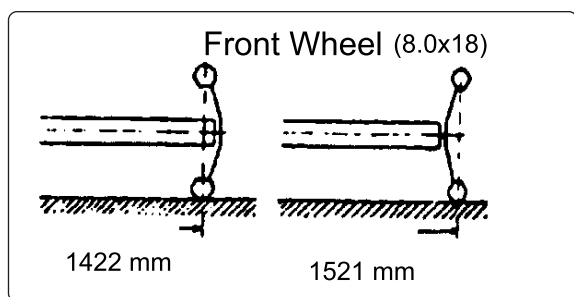
1. Link Check nut

⚠ WARNING : Owners should ensure that all steering components are maintained in a reliable and satisfactory condition to ensure safe operation and comply with legal requirements.

FRONTWHEEL (Where applicable):

Front wheel track adjustment can be done by reversing both wheels. Remove securing nuts of left and right hand wheel. Reverse the wheels and tighten the nuts to specified torque.

Front Wheel Tyre Size : 8.0x18



**FRONT WHEEL TRACK ADJUSTMENT
FOR FOUR WHEEL DRIVE TRACTORS (where Ever
Applicable)**

⚠ WARNING : A tractor with narrow wheel settings may not be as stable under the same conditions as a tractor with wide wheel settings. Use the maximum track width possible, compatible with your operation, especially on rough ground, slopes or across ditches.

Adjustment of the front wheel track width is effected by changing the wheel rim relative to the centre disc, the rim and /or the disc relative to the axle hub or by interchanging the front wheel. The sectional drawings shown in figure 29, illustrate the wheel rim and disc positions relative to the hub at various track settings. Each drawing represents either a left hand wheel viewed from the rear or a right hand wheel viewed from the front.

When refitting or adjusting a wheel, tighten the bolts to the recommended fracas, then recheck after driving the tractor for 220 yards (200 meters) and after 1 hour and 8 hours operation and thereafter at 50 hour intervals. Front disc to hub nuts 73.74-103.24 lbf. ft. (100-140 Nm). Front disc to rim nuts 166 lbf.ft. (225 Nm).

⚠ WARNING: Owner should ensure that all steering components are maintained in a reliable and satisfactory condition to ensure safe operation and compliance with legal requirements.

TOE-IN ADJUSTMENT

To obtain optimum life of front tires Toe in must be checked at every 50 hours or after every change in the track setting. In case it is not properly adjusted proceed as below.

If Toe in is incorreced operate with two wrenches on the guide rods screwing in and out joint tie rods, equally till the toe in is with in the specified tolerance.

After adjusting, screw in the lock nuts of the guide rod, to the tightening torque of 173.3-191.74 lbf.ft (235-260 Nm)

REAR WHEEL TRACK ADJUSTMENT

Rear wheel track adjustment is effected by changing the wheel rim relative to the center disc, the rim and/or the disc relative to the axle hub or by interchanging the rear wheels.

⚠ WARNING : A tractor with narrow wheel settings may not be as stable under the same conditions as a tractor with wide wheel settings. Use the maximum width possible which is compatible with your operation, especially on rough ground, slopes or across ditches.

The sectional drawings shown in Figure 11 illustrate the wheel rim and disc positions relative to the hub at various track settings.

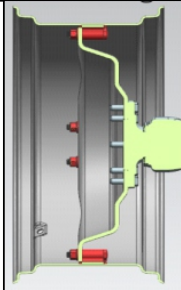
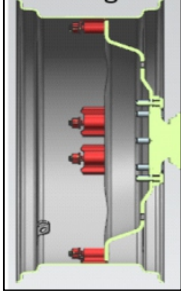
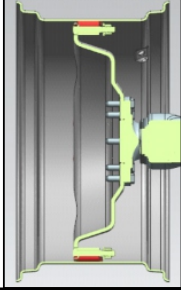
NOTE : When interchanging left and right-hand wheel assemblies, ensure the "V" of the tire tread remains pointing in the direction of forward travel.

With certain options and/or tire sizes, the smaller track settings may not be attainable due to minimal clearance between tires and fenders or equipment.

When refitting or adjusting a wheel, tighten the bolts to the following torques then recheck after driving the tractor for 200 yards (182 m.) after 1 hour and 8 hours operation and thereafter at 50 hour intervals.

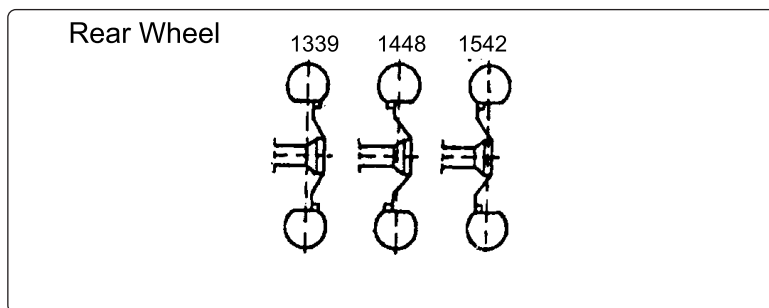
⚠ WARNING: Never operate the tractor with a loose wheel rim or disc. Always tighten nuts to the specified torque and at the recommended intervals.

⚠ WARNING : Your tractor is equipped with lights which meet lighting regulations when operating or travelling on the public highway. If the wheel track setting is adjusted beyond the initial factory position then you may be required to reposition the lights or fix auxiliary lighting to comply with legal requirements. Additionally, before travelling on the highway, ensure that the overall tractor width does not exceed the maximum permitted in your country.

Disc/Rim Position	Track Width
	57"
	HOW
	Standard Setting
	60.7"
	HOW
	Disc change to ward in side
	52.75"
	HOW
	Disc change to ward outside side replace with RH

Tyre Size : 13.6x28

REAR TYRE RIM SETTING



Rear Track Setting 13.6X28

CONTROL, INSTRUMENTS AND OPERATION

TRACTOR WEIGHING

For maximum performance in heavy draft conditions weight should be added to the tractor in the form of liquid ballast, cast iron weights or a combination of both. Front end ballast may be required for stability and steering control when weight is transferred from the front to the rear wheels as the implement is raised by the tractor three-point linkage.

As a general guide, tractors should be ballasted so that approximately one third of the total tractor weight (less implement) is on the front wheels.

When a rear mounted implement is raised to the transport position, the weight on the front wheels should be at least 20% of total tractor weight.

Add additional front end ballast, as required, for stability during operation and transport. Ballasting of the front end may not always provide adequate stability if the tractor is operated at high speed on rough terrain. Reduce tractor speed and exercise caution under these conditions.

When using front mounted implements, add weight to the rear wheels to maintain traction and stability.

IMPORTANT : *Only sufficient weight should be added as is necessary to provide traction and stability. Adding more weight than necessary results in unnecessary loads being imposed on the tractors and a higher fuel consumption. When adding weight, adhere to the maximum tire capacity loading stated in the tables towards the end of Section C of this manual. If further information or assistance is required on tractor weighing consult your Dealer.*

When adding ballast, the total weight of the tractor including liquid, cast iron weights and mounted equipment (where specified) should not exceed the maximum shown in the following text entitled 'Weighing Limitations'.

⚠ WARNING : *If proper stability cannot be achieved within the following weighing limitations, reduce the load on the tractor until stability is restored*

Weighing Limitations (Where ever applicable)

For optimum driveline reliability and tractive efficiency, maximum ballasted tractor weight (base tractor plus ballast and any mounted equipment such as sprayers, etc., including the load carried there on) must not exceed 6900 lb. (3130 kg.)

Maximum permissible rear axle loading with ballast and mounted equipment is 6000 lb. (2700 kg.)

NOTE : *Total rear axle weight is measured with only the rear wheels on the scales inclusive liquid and cast iron ballast and with mounted equipment in the raised position.*

The total front axle load must not exceed 3000 lb. (1360 kg.) or the load capacity of the tires. See tire pressure and Load Tables in Section C of this Manual.

For speeds above 10 mph (16 kmph), the permissible loading should be reduced by 20% from the limits specified above.

Liquid Ballast

Filling the front and rear tires with liquid ballast is a convenient method of adding weight. A solution of water is recommended. This gives a low freezing point and provides a higher density than plain water.

NOTE : When filling tires with water solution the valve should be at the highest point on the wheel. If the tire contains liquid ballast, the valve should be at the lowest point when checking or adjusting air pressure. Special equipment is required to water ballast tires. See your Tractor Dealer or Tire Supplier for details.

TYRE SIZE	BALLASTED WEIGHT (Kgs / Tyre)
FRONT TYRE	
8.00-18	Nil
REAR TYRES	
13.6-28	165

Removal Procedure:

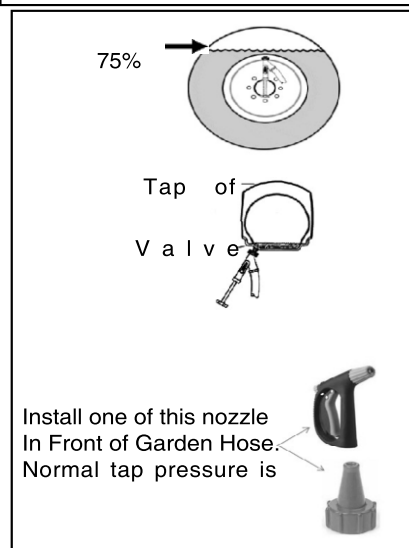
- Jack up the tractor & turn wheel to bring the valve at bottom position.
- Remove the valve core housing and make connections with pump.
- Completely evacuate the tire.
- Re-inflate the tire with recommended air pressure.

How to do Wheel Ballasting

- Jack-up both rear wheels, remove Valve Body & allow air to flow out completely
- Position wheel nozzle @ 12'o clock location.
- Direct water jet into the tube & intermittently allow internal air to flow out
- Allow excess water to drain-out, that is above 11'o clock location
- Now rotate wheel & position nozzle at 12'o clock location. Replace Valve body.
- Fill balance air pocket with 7-8 psi air pressure. DO NOT fill higher pressure.
- Always position valve at 12'o clock to re- check air pressure.

Do not fill 100% or over fill water, this will result in SOLID wheel & will lead to rough ride & extra slippage. Half filled wheel will not brake easily.

- For freezing cold regions add salt solution with water to avoid freezing.

**LIQUID BALLASTING
IS FREE**


Do Not Fill more than 75% volume of tyre air space (upto Valve level)
Recommended AIR Pressure not to exceed 8 psi on rear wheel

CONTROL, INSTRUMENTS AND OPERATION

TIRE INFLATION

Upon receiving your tractor, check the air pressure in the tires and recheck every 50 hours or weekly.

When checking tire pressure, inspect the tires for damaged tread and side walls. Neglected damage will lead to early tire failure.

Inflation pressure affects the amount of weight that a tire may carry. Locate the tire size for your tractor in the Tire Pressure and Load Tables in Section C of this Manual. Do not exceed the load for the pressure listed. Do not over or under inflate the tires.

⚠ WARNING : *Installing or servicing tires can be dangerous. Whenever possible, trained personnel should be called in to service or install tires. In any event, to avoid the possibility of serious or fatal injury take the following precautions*

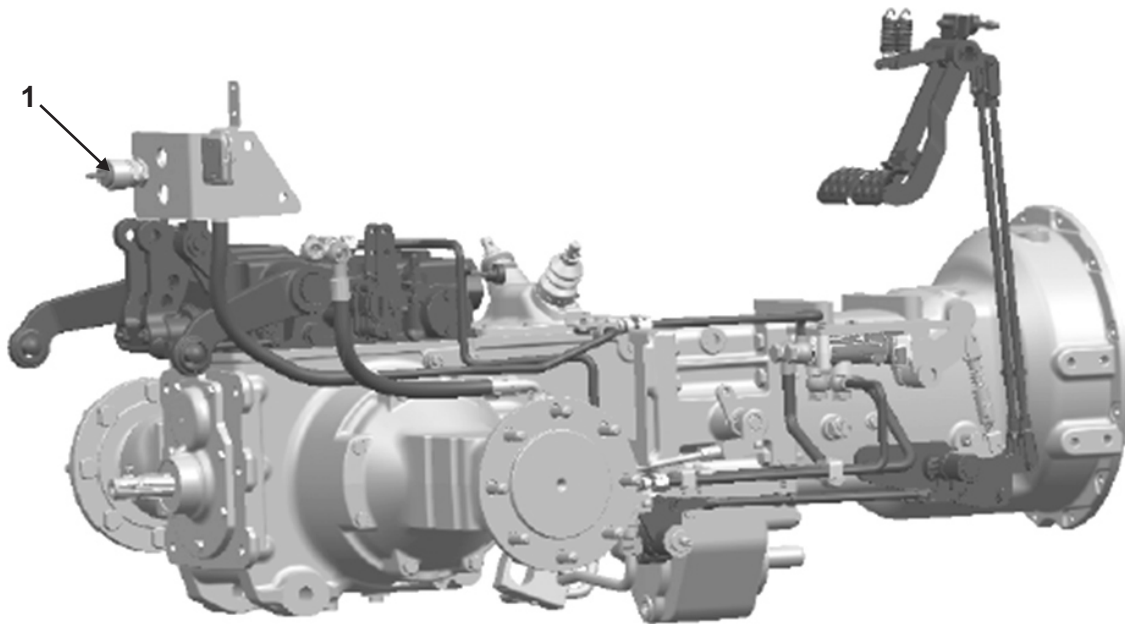
- *Never attempt tire repairs on a public road or highway.*
- *Do not inflate a steering tire (front tire) above the manufacturer's maximum pressure shown on the tire or beyond the maximum pressure shown in Section-C if the tire is not marked with the maximum pressure rating.*
- *Never inflate any traction tire (rear tire) over 35 lbf/in² (2.4 bar). If the bead does not seat on the rim by the time this pressure is reached, deflate the tire, relubricate the bead with a soap/water solution and reinflate. Do not use oil or grease. Inflate beyond 35 lbf/in² with unseated beads may break the bead or rim with explosive force sufficient to cause a serious injury.*
- *After seating the beads, adjust inflation pressure to the recommended operating pressure.*
- *Do not re-inflate a tire that has been run flat or seriously under-inflated until it has been inspected for damage by a qualified person.*
- *Torque wheel to axle nuts to specification after reinstalling the wheel. Check nut tightness daily until torque stabilizes.*
- *Use jack stands or other suitable blocking to support the tractor while repairing tires. Ensure the jack is placed on a firm, level surface.*
- *Do not put any part of your body under the tractor or start the engine while the tractor is on the jack.*
- *Never hit a tire or rim with a hammer.*
- *Ensure the rim is clean and free of rust or damage. Do not weld, braze, otherwise repair or use a damaged rim.*
- *Do not inflate a tire unless the rim is mounted on the tractor or is secured so that it will not move if the tire or rim should suddenly fail.*
- *When fitting a new or repaired tire, use a clip-on valve adaptor with a remote gauge that allows the operator to stand clear of the tire while inflating it. Use a safety cage*

CONTROL, INSTRUMENTS AND OPERATION

Hydraulic Trailer Brake

Hydraulic Trailer Brake Valve function :

Trailer braking system is independent of the tractor service brake system. Trailer brake valve is mounted on clutch housing and it is actuated by the linkage which is connected with tractor's service brake pedal. During braking, operator presses the brake pedals and actuator assy moves downward, resulting in the rotation of pushing pin mounting bracket. Therefore sphere pushing pin moves forward and it presses the brake valve spool resulting in operation of the trailer brake valve.



1. Hydraulic Brake (Quick Release Coupler)

CAUTION : Once the trailer ram is at full lift, bring back the operation lever, immediately to neutral position. will cause hydraulic pump to unnecessarily run at full pressure and cause continuous blowing of system pressure and rise in temperature.

CONTROL, INSTRUMENTS AND OPERATION**A-Recommendation for Safe Haulage Operation with Un-braked or hydraulic assisted brake**

- Always use approved trailers as per applicable country rules for road safety.
- Never overloaded the trailer beyond its recommended tonnage capacity mentioned on trailer identification plate or registration document.
- Load on trailer to be distributed evenly & should not exceed 5 Ton / Axle on trailers with hydraulic assisted brake
- Under any condition, tractor towing capacity should not exceed 3.5 T for un-braked trailer.

▲ CAUTION: For trailers fitted with Inertia brakes always ensure that inertia couplings are in OK condition & all clearances are as per manufacturer's specifications. While moving downslope / reversing the tractor or uneven / Off roads always ply on safe speed or lock the inertia coupling to avoid rapid wearing of brakes & accidental locking of inertia brakes.

B-Recommendation for hydraulic Trailer Brake Valve selection by trailer manufacturer :-

Following technical specifications has to be taken care while selection of trailer brake valve.

Hydraulic trailer brake is operated by brake pedal.

Item	Description	Specification
1	Flow Capacity (LPM)	40-50 LPM
2	Maximum Operating Pressure (Bar)	200 bar
3	Cleanliness	Oil contamination class 10 acc. to NAS 1638 obtained with filter 25=75
4	Operating Temperature Range (°C)	-25 °C to 120 °C
5	Spool Type (For Braking)	Push
6	Spool Push Force (kg.	40 Kg (Max)
7	Tank Pressure (bar) if provided	0.5 bar (Max)

If push type valves are used, then suitable changes in cable arrangements have to be made by Trailer Manufacturer.

IMPORTANT: The trailer brake valve's relief pressure shall not exceed 200 ± 5 bar and shall not impact the tractor's hydraulic system specification when trailer brakes are not actuated. If pressure exceeds the recommended level it will result in damage to Tractor system.

▲ CAUTION: Never exceed a speed of 25 km/h (15 mph) when travelling with hydraulically braked trailers.

IMPORTANT: To prevent undue wear on the brakes, observe the following points:

Make sure that the pressure hose is connected properly.

When driving downhill, select the same gear you would do for driving uphill.

Check the hydraulic trailer brake regularly to make sure that it is functioning correctly.

It is recommended to use proportionate valve in trailer brake application.

NOTE

SECTION B

LUBRICATION and MAINTENANCE

This section gives full details of the service procedures necessary to maintain your tractor at peak efficiency while the lubrication and maintenance chart on page 2 provides a ready reference to these requirements.

In addition to the regular service operations listed, the following items should be checked every 10 hours or daily during the first 50 hours of operation:

- Radiator water level
- Fuel in fuel tank
- Engine & Transmission oil level
- Air cleaner
- Tyre pressure
- Rear wheel nuts for tightness

At the first 50 hours service, ensure that the following additional service operations are carried out:

- Change engine oil & filter.
- Change hydraulic oil filter.
- Check and adjust fan belt tension.
- Check and adjust brakes.
- Clean, inspect and grease front wheel bearings
- Check torque of front end weight clamp bolts (where applicable).

NOTE: *Ensure that the tractor is on level ground and that all rams are extended, where applicable, before checking oil levels. See Section C - Specifications for additional amount that may be added to the rear axle and for recommended oil capacities and grades.*

To prevent contamination when changing oils, filters etc., always clean the area around the filter, level plugs, drain plugs, dipsticks and filters. Before connecting remote cylinders, ensure that oil contained within them is clean, has not degenerated due to long storage and is of the correct grade.

- Work outdoor or in a well ventilated area.
- Dust found on the tractor or produced during work on the tractor should be removed by extraction and not by blowing. Dust waste should be dampened, placed in a sealed container and marked to ensure safe disposal.
- If any cutting, drilling, etc., is attempted on materials containing asbestos, the item should be dampened and only hand tools or low speed power tools should be used.

LUBRICATION AND MAINTENANCE CHART

LUBRICATION AND MAINTENANCE CHART

The numbers in these column refer to the Operation Numbers contained in the following pages of this section. In some instances, illustrations are not considered necessary in order to carry out the service operation and are therefore omitted.

Hours Operated	Service Requirements	Check	Clean	Lubricate	Change	Adjust	Drain
Every 10 hours or Daily	Engine Oil Level Radiator Coolant Level Radiator Matrix Water Separator Dry Air Cleaner Dust Collector Dry Air Cleaner Outer Element Oil Breather on Front Axle	X X	 X X X		 X	X X	 X
Every 50 hours	Tires Front and rear wheel nuts Clutch pedal free play Brake Pedal Free Play Adjustment Transmission & rear Axle oil Level Fuel Filter Hydraulic Oil Filter Battery electrolyte level Grease fittings Pivots Engine oil and filter	X X X X X X		 X	 X X X	X X X X X X	
Every 300 hours	Engine oil and filter Transmission oil level / Rear Axle Oil Hydraulic Oil Filter Fuel Filter Front Axle Oil (Differential Housing) Fan/Alternator belt tension ROPS/Safety frame bolts Dry Air Cleaner Outer Element Hydraulic Strainer Filter Power Steering Oil & Filter	 X X	 X		X X X X X X X X	 X X	
Every 600 hours	Dry Air Cleaner Outer Element Starter motor pinion Fuel Tap Strainer Front wheel Toe-in Fuel filter Hydraulic Oil Filter Engine Oil & Oil Filter Valve Tappet Clearance Setting Front Wheel Bearing	 X X X X X	 X		X X X X	 X X X	

LUBRICATION AND MAINTENANCE CHART

Hours Operated	Service Requirements	Check	Clean	Lubricate	Change	Adjust	Drain
Every 900hours	Fuel Filter Engine oil and filter Hydraulic Oil Filter Fan/Alternator belt tension Coolant Dry Air Filter (Primary)	X			X X X X X	X	
Every 1200hours	Bleeding the fuel system Hydraulic Strainers Filter Alternator brushes Engine oil and filter Hydraulic Oil Filter Front Axle Oil (Differential Housing) Fan/Alternator belt tension Fuel Filter	X			X X X X X X	X	
Apart from the service follow the instruction as given.							
Every 1500hours	Front Axle Oil (Differential & Planetary) Epicyclic Reduction Gear Oil (Front Axle) Fuel Injector Tips Fuel Filter Hydraulic Oil Filter Rear Axle Oil / Transmission oil level Power Steering Oil & Filter			X	X X X X X X		
Every 1800hours	Carry out the preceding checks.				X		
Every 2700hours	Power Steering Oil & Filter Rear Axle Oil / Transmission oil level				X X		
Every 3000hours	Fuel Injectors	X	X		X	X	
See Notes	Engine Cooling Systems (1500 Hrs.)				X		X
As Required	General Maintenance						

NOTE : Secondary Air Filter to be replaced on 3rd replacement of primary air filter.

Transmission oil & power steering oil & filter to be replaced at every 1200 hours after being replaced at 300 hours.

LUBRICATION AND MAINTENANCE CHART

NOTES:

1. Grease daily when operating in wet land conditions.
2. The first change of the filter should be done at 50 hours of usage and all subsequent changes after every 300 hours. Oil change interval will be reduced if the diesel fuel has high sulphur content or if the tractor is operated in extremely cold temperatures.
3. Frequency depends on clutch usage.
4. Frequency depends on coolant in use.

FARMTRAC TRACTORS - RECOMMENDED LUBRICANTS

USAGE LOCATION CLASSIFICATION	OIL AND GREASE CLASSIFICATION	OIL GRADES	QTY. (Ltr.)
ENGINE, AIR CLEANER FUEL INJECTION PUMP	MEETING OR EXCEEDING API CF-4 IS 13656 E-DL5	API CF-4 15W/40	6.5
TRANSMISSION OIL (Oil Immersed Brake)	API GL-4/MIL-L-2105	Oil Transmission Universal Tractor DS4018	30
FOR POWER STEERING		Transfluid III H	3
Front Axle Oil		ENI MULTITECH THT	5.9

IMPORTANT : For optimum performance of the engine, use 15W-40 multigrade conforming to API/CF4 specifications. First oil change at 50 hours, 2nd at 300 hours and subsequent oil change period is also 300 hours.

SPECIAL OILS :

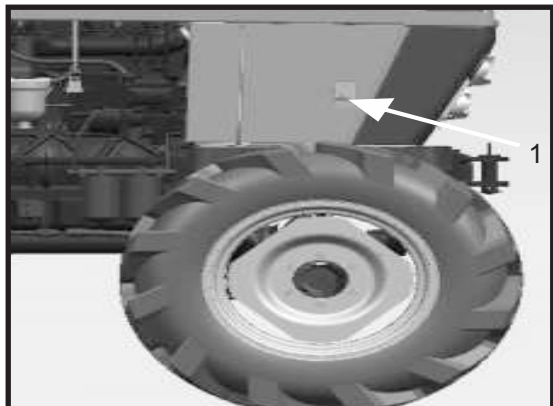
Belt Pulley :- API - GLA IS : 1118 EP TYPE GL- 4 OR DIPOY - 90

Greasing Points :- NL GI - 2 OR BALL BEARING AP3 Grease

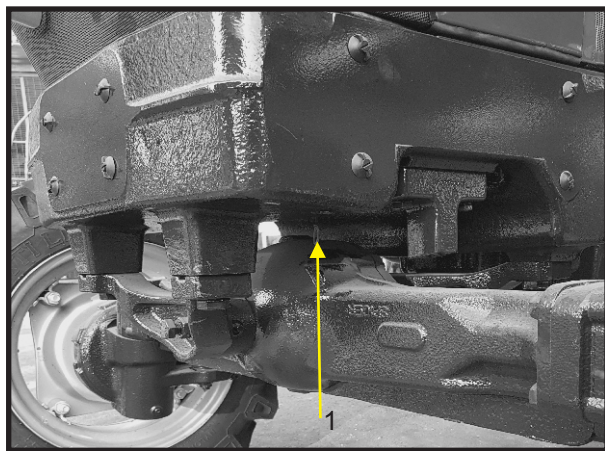
LUBRICATION AND MAINTENANCE CHART

Access Panels

It is necessary to remove various panels to gain access to certain service items.



1.Hood Side Panel
1.Hood Latch



1A. Emergency Cable

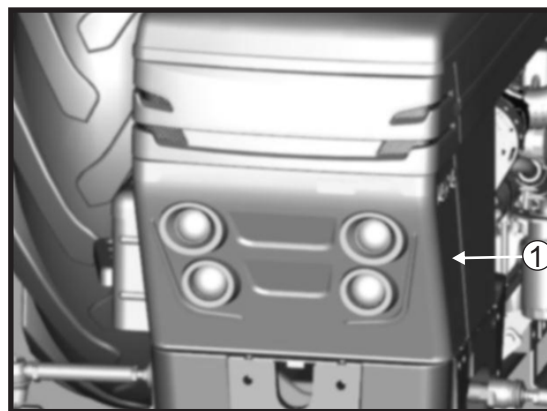
Figure '1' - Hood Side Panel

To gain access to the radiator cap, air cleaner, horn etc.

- Pull the knob provided at the side of panel support and raise.
- In case of emergency, pull the cable shown in figure 1A to open the front bonnet.

Figure '2' - Front Grille

For additional access to the horn (where fitted), air cleaner, radiator matrix and grille mounted headlamps (where fitted), remove the front grille. The grille hooks into slots in the side panels. To remove, lift the grille up and forward, as shown. If grille- mounted head lamps are installed, disconnected the cables from the rear of the lights or from the harness connector, as necessary. Refer Figure 2.



2. Front Grille
1. Front Grille

EVERY 10 HOURS or DAILY (whichever occurs first) carry out the following checks:

Operation 1 - Engine Oil Level

Before checking the oil level, stop the engine and wait for a short period to allow the oil to drain back into the sump. Check the oil level by means of the dipstick. (Refer Figure 3) If necessary, remove the filler plug and top up with fresh oil to the upper mark on the dipstick. Do not overfill, if oil level on dipstick is between "Add" and "Max" marks, there is no need to top up. Add oil when level comes to near "Add" mark.

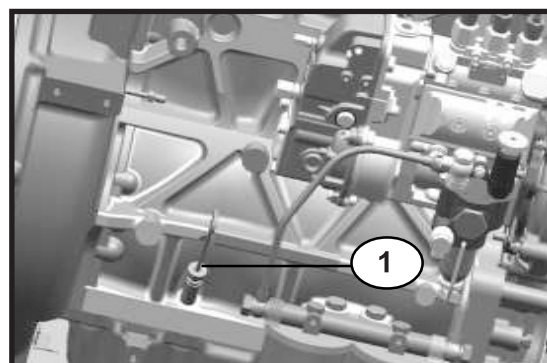
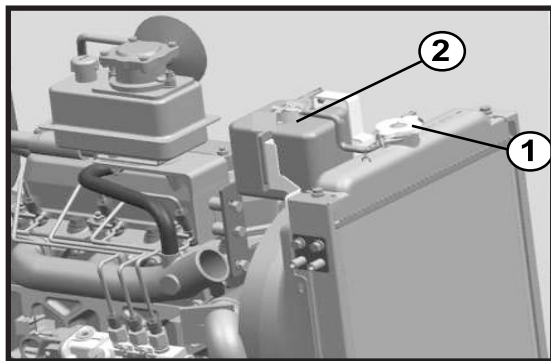


Figure 3
1. Engine Oil Dipstick



Figure 3.1
1 Engine Oil Filling Plug



4 Radiator Coolant Level

1 Radiator Cap 2. Recovery Bottle

Operation 2 - Radiator Coolant Level

The Radiator is now provided with Radiator Recovery bottle so no need to open the radiator cap for checking the level of coolant. It is a transparent bottle with "max" and "min" marks on it. The coolant Level should be maintained in between "max and "min" marks. Refer Figure 4.

⚠ WARNING : The cooling system operates under pressure which is controlled by the radiator cap. It is dangerous to remove the cap while the system is hot. Allow the engine to cool then, using a thick cloth, turn the cap slowly to the first stop and allow the pressure to escape before fully removing the cap.

IMPORTANT : It is essential that an approved cap is used. If the original cap is misplaced or damaged, obtain a replacement from your Authorized Dealer.

Operation 3 - Radiator Matrix

Clean the radiator matrix with compressed air not exceeding 100 psi. (7 bar).

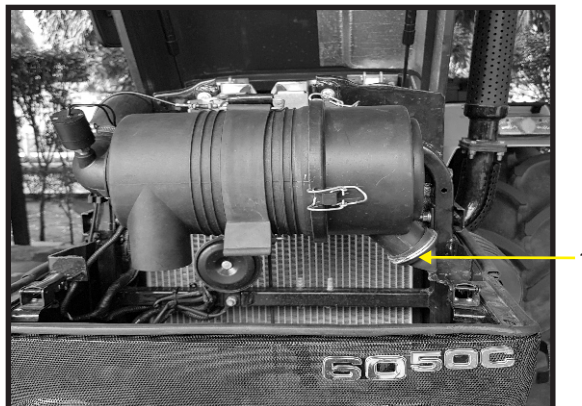
Any matrix blocked with oily substances may be cleaned with a detergent solution, preferably applied with a high pressure washer.

Dry Air Cleaner Dust Collector (where applicable)

A rubber dust collector protrudes beneath the dry air cleaner body periodically pinch the dust collector which will open and discharge any accumulated dust.

IMPORTANT : The air cleaner should be checked daily or more often when operating in dusty conditions. In extreme conditions, it may be necessary to service the air cleaner two or three

times each day.



5. Dry Air Cleaner

1. Dust Collector

NOTE-

- Replacement period for Outer element is the service indication or after 1 year which ever is earlier.
- Inner element should be replaced only after replacing the Outer element 3 times.

Operation 4. Air Cleaner

The function of the air cleaner is to remove impurities from the air while allowing sufficient volume of air to enter the engine and ensure complete combustion of the fuel.

The air cleaner will only fulfill this function if it is correctly and regularly maintained. A poorly maintained air cleaner will result in loss of power, excessive fuel consumption and a reduction in engine life.

Operation 5. Dry Air Cleaner Dust Collector (where fitted)

NOTE : Do not remove or disturb the inner element. The inner element should be serviced only by an Authorized Dealer.

⚠ WARNING : If air cleaner restriction warning light comes on during tractor operation, stop the engine and replace the outer element of air cleaner

LUBRICATION AND MAINTENANCE CHART



Figure 5.1

1. Air Cleaner Outer Element

EVERY 50 HOURS Carry out the preceding checks plus the following :

Operation 6 - Front and Rear Wheel Nuts (Where Ever Applicable)

Check the front and rear wheel nuts for tightness using a torque wrench and torque multiplier, where necessary. The specified torque figures are as follows:

Front disc to hub nuts	73.74-103.24 lbf. ft (100-140 Nm)
Rear disc to hub nuts	124.1-138.7 lbf. ft (170-190 Nm)
Rear disc to rim nuts	164.25 lbf. ft. (225 Nm)

Operation 7 - Clutch Pedal Free Play

Check clutch free play. It should be (22 - 25 mm) at the clutch pedal. If adjustment is required, loosen the locknut and remove the split pin and clevis pin. Turn the clevis to lengthen or shorten the operating rod, as required. Secure the clevis pin with a new split pin and tighten the locknut.

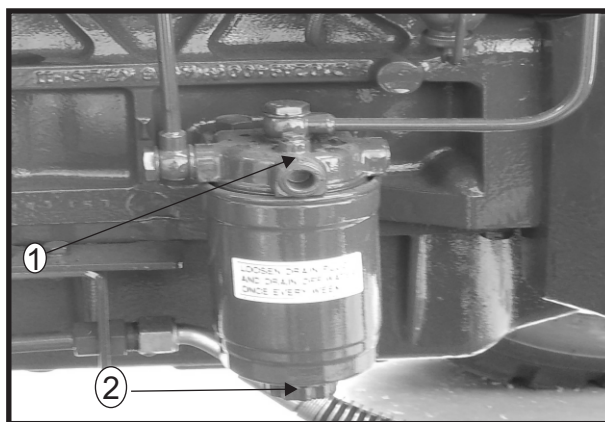


6.Clutch Pedal Free Play

1. Locknut 2. Adjustment Rod

Operation 8 - Fuel Filters

Loosen the bleed screw on filter in turn and loosen the drain plug to allow contaminated fuel to drain.



7. Fuel Filters

1. Bleed screws 2. Drain Plugs

After draining the fuel filters, tighten the drain plugs and bleed the injection system as outlined in page no.56

Operation 9 - Rear Axle / Transmission Oil Level

With all rams extended, unscrew the level plug from the right-hand side of the rear axle center housing and check that the oil is up to the bottom of the level plug hole.



8.Rear Axle / Transmission Oil Level

1. Filler plug

If necessary, unscrew and remove the filler plug and top up the system with clean oil.

Operation -10 Battery Electrolyte Level

The battery is mounted on a hinged tray which may be swung outward, to improve accessibility, after loosening the wing nut clamp.

Ensure that the battery terminals are clean and tight. To prevent the formation of verdigris (corrosion) the terminals should be greased with petroleum jelly (Vaseline or similar).

⚠ WARNING : Do not use a open flame to check the electrolyte level. Wear eye protection when charging the battery or starting the engine with a slave battery.

**9. Battery Electrolyte Level****1. Wing Nut Clamp**

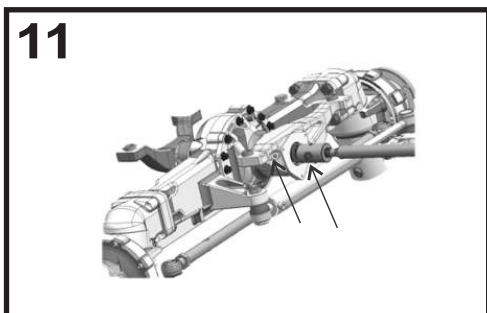
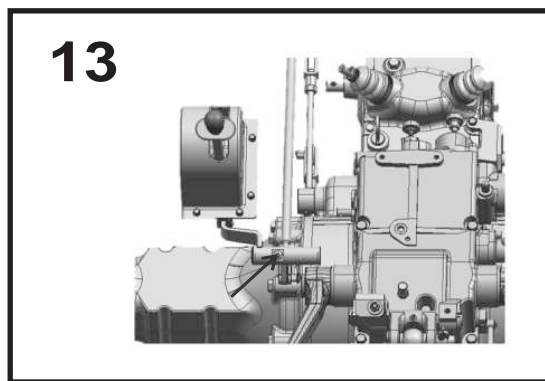
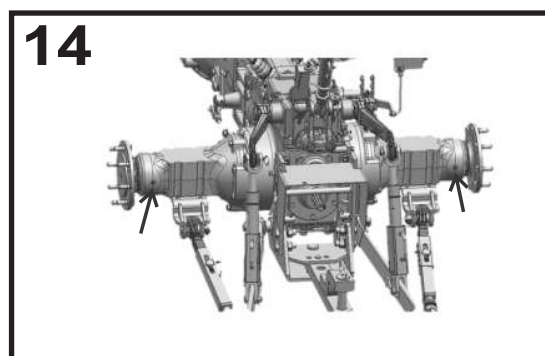
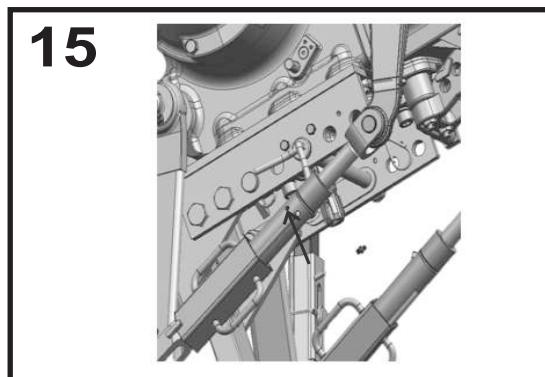
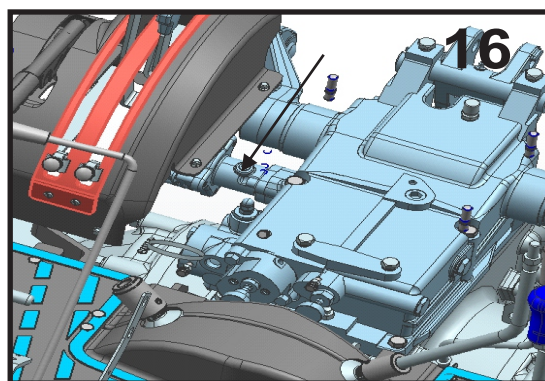
⚠ CAUTION: Do not use a open flame to check the electrolyte level. Wear eye protection when charging the battery or starting the engine with a slave battery.

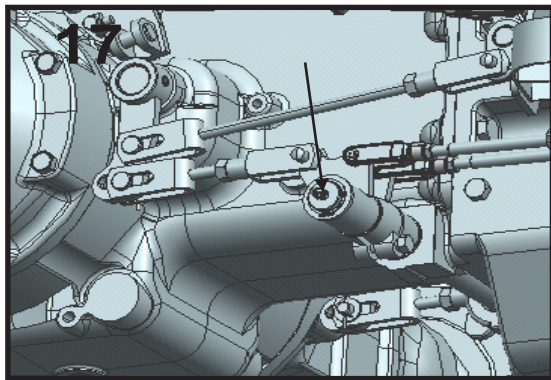
NOTE: In some territories, maintenance free batteries are fitted on the Farmtrac tractors. Please follow the manufacturer maintenance instructions.

Operations - 11-18 Grease Fittings and Pivots

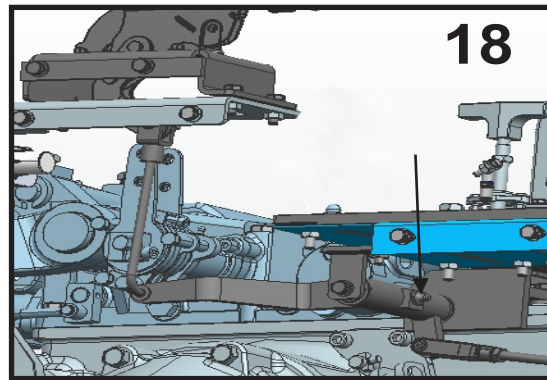
Oil all pivots and apply grease to the lubrication fittings, as shown in Figures 12 to 19 inclusive (The operation sequence No. is shown in the top left hand corner of each figure)

NOTE: All grease fittings and pivots should be lubricated daily when operating in wet land conditions.

**10. Propeller Shaft****11. Top Link****12. IPTO HUB****13. Rear Axle Near Flange****14. Lift Rod****15. PC & DC Hub**

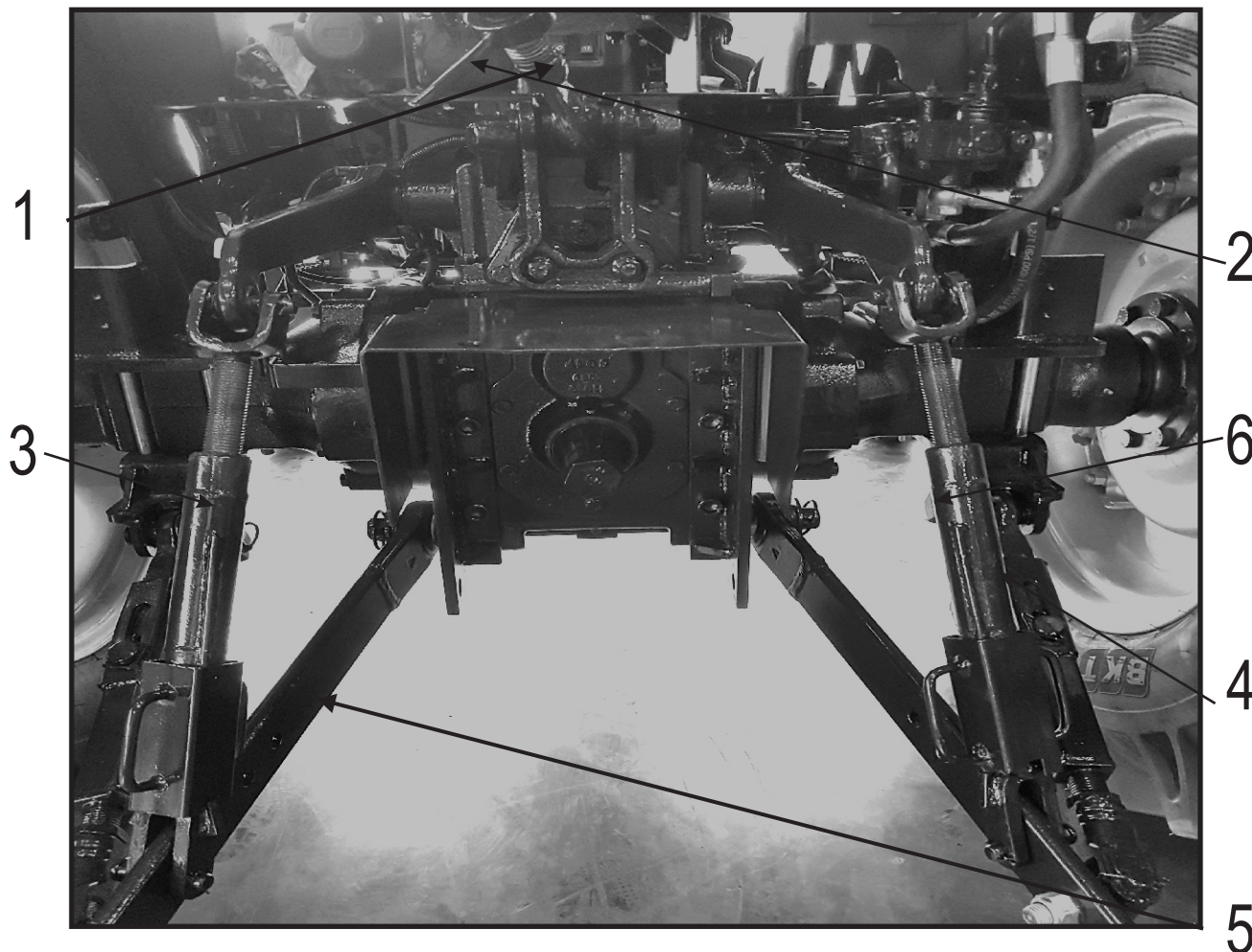


16. Parking brake Hub



17. Parking brake Hub

3-POINT HITCH & DRAWBAR



(1) Top link

(3) Lifting rod (Left)

(5) Lower link

(2) Top link holder

(4) Stay Bar

(6) Leveling Rod (Right)

LUBRICATION AND MAINTENANCE CHART

Operation 19- Engine Oil and Filter (Only after first 50 hrs)

Change Engine oil & oil filter after first 50 hrs of run of the engine.

EVERY 300 HOURS carry out the preceding checks plus the following:

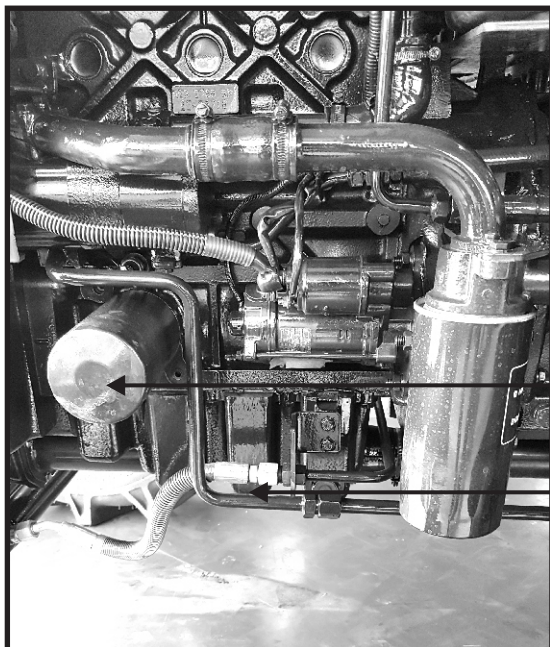
The following text depicts the normal 300 hours engine oil and filter change period. However, engines operating in temperatures below – 12°C (10°F) or in arduous conditions should have the oil changed every 150 hours of operation. (the oil filter need only be changed at the normal 300 hours service interval).

In some territories, locally available diesel may have a high sulphur content, in which case the oil change period should be adjusted, as follows:

- * Diesel fuel sulphur content below 0.5% - normal oil change period applies.
- * Diesel fuel sulphur content between 0.5 and 1.0%
 - Reduce oil change period to half of the normal.
- * Diesel fuel sulphur content between 1.0 and 1.3%
 - Reduce oil change period to one quarter of the normal.

The use of diesel fuel with sulphur content above 1.3% is not recommended.

Operation 20 and 21 - Engine Oil and Filter



18. Engine (Left Hand Side)

1. Oil Filter 2. Drain Plug



19. Engine (Top Side)

1. Filler Plug

Clean the area around the filter. Smear clean engine oil around the rubber seal of a new filter and install on the tractor. Screw up until the faces just meet, then tighten a further ¾ of a turn. Do not over tighten.

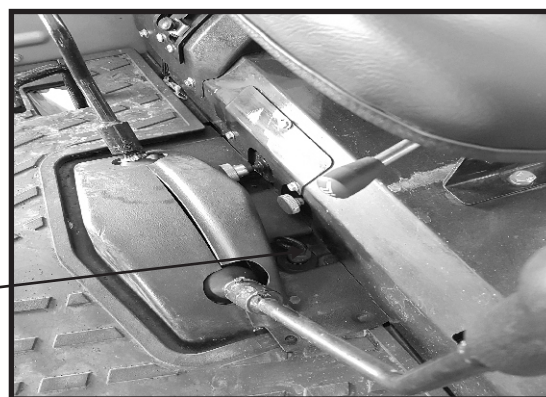
Replace the drain plug, remove the filler plug, Figure 18 & 19, and refill the engine with clean oil. Replace the filler plug.

Run the engine for a minute or so, to circulate the oil and then stop the engine. Wait for a short period to allow the oil to drain back to sump then check the oil level by means of the dipstick.

Add clean oil, as necessary, until the oil reaches the upper mark on the dipstick.

See Section C for correct oil grade.

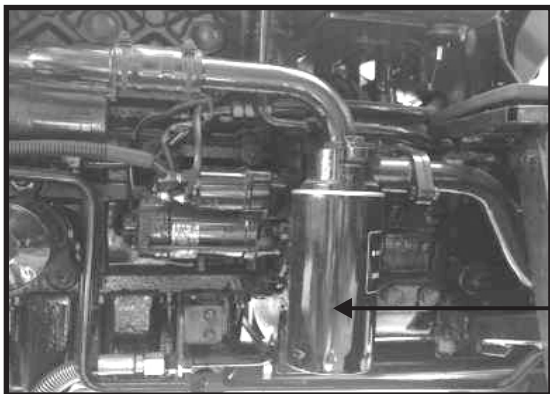
Operation 22-Transmission/Rear Axle Oil Level



22. Transmission / Rear Axle oil level

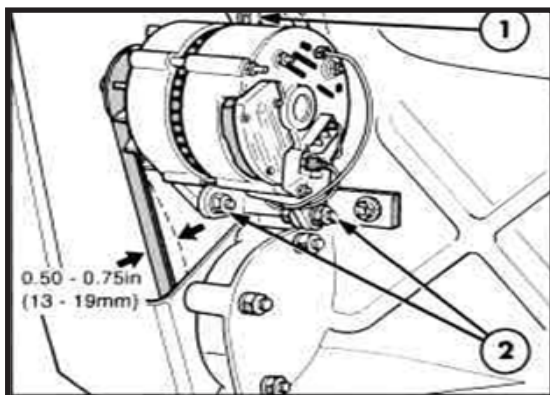
1. Dipstick

Pullout the dipstick (as shown figure 20) and wipe it with a clean cloth. Replace the dipstick, pushing it fully home and check that the oil reaches the upper mark on the dipstick when it is removed again from the transmission aperture.

Operation 23—Hydraulic Oil Filter**21. Hydraulic Oil Filter**

Unscrew and discard the hydraulic oil filter. Install a new filter as follows:

Clean the inlet channel and the face of the manifold. Smear clean oil around the rubber seal of a new filter and install on the tractor. Screw up until the faces just meet, then tighten a further $\frac{3}{4}$ of a turn. Do not over tighten.

Operation 24—Fan/Alternator Belt Tension**22. Fan Belt Tension**

1,2 Alternator mounting bolts

Belt tension is correct when the belt can be deflected 0.50-0.75 in. (13-19 mm).

To adjust, remove the guard, slacken the mounting bolts and move the alternator to retention the belt. Do not over tension the belt.

Tighten the mounting bolts.

Operation 25— ROPS / Safety Frame (Where fitted)

Check that all safety frame/roll bar bolts and nuts and seat belt mountings are securely tightened.

To Fold the ROPS

1. Remove both set bolts, maintain a hold on the ROPS (Figure 1).

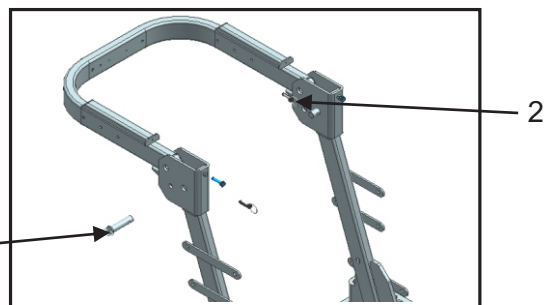


Figure 23 (A) (1) Set bolt (2) Lynch Pin

⚠ CAUTION

To avoid personal injury:

- Make sure that both set bolts are properly installed and secured with the Lynch Pins Figure 23 (A)

To Raise the ROPS to Upright Position

1. Remove both Lynch Pins and set bolts Figure 23 (B)

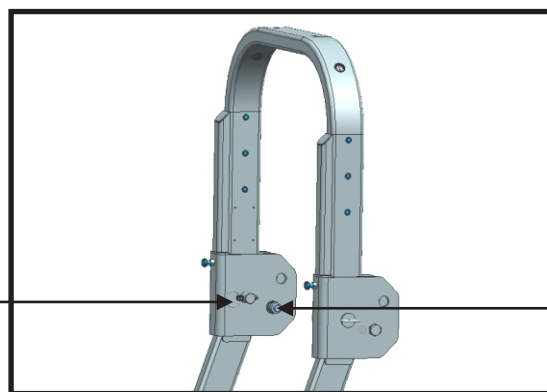


Figure 23 (B) (1) Set bolt (2) Lynch Pin

2. Raise ROPS to the upright position, maintain a hold on the ROPS.

⚠ CAUTION

To avoid personal injury:

- Raise the ROPS slowly and carefully.
- Insert both set bolts and secure them with the lynch pins.

⚠ CAUTION

To avoid personal injury:

- Make sure that both set bolts are properly installed as soon as the ROPS is in the upright position and secured with the Lynch Pins Figure 23 (B)

LUBRICATION AND MAINTENANCE CHART

ROPS

1. FARMTRAC recommend the use of a Roll Over Protective Structures (ROPS) and seat belt in almost all applications. This combination will reduce the risk of serious injury or death, should the tractor be upset. Check for overhead clearance which may interfere with a ROPS.
2. Set parking brake and stop engine. Remove any obstruction that may prevent raising or folding of the ROPS. Do not allow any bystanders. Always perform function from a stable position at the rear of the tractor. Hold the top of the ROPS securely when raising or folding. Make sure all pins are installed and locked.
3. If the ROPS is loosened or removed for any reason, make sure that all parts are reinstalled correctly before operating the tractor.
4. Never modify or repair any structural member of a ROPS because welding, bending, drilling, grinding, or cutting may weaken the structure.
5. If any structural member of the ROPS is damaged, replace the entire structure at your local FARMTRAC Dealer.
6. If the tractor is equipped with a foldable ROPS it may be temporarily folded down only when absolutely necessary for areas with height constraints. (There is no operator protection provided by the ROPS in the folded position. For operator safety the ROPS should be placed in the upright and locked position.



27. Safety Frame (ROPS)
1. ROPS

EVERY 600 HOURS carry out the preceding checks plus the following:

Operation 26. Dry air cleaner outer element (where fitted)

Extract and discard the outer element after removing the retaining wing nut. Clean the inside of the air cleaner casing using a damp, lint-free cloth and install a new outer element.

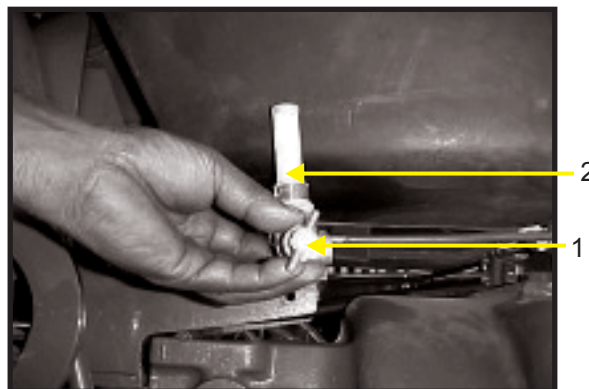
Operation 27. Starter Motor Pinon

Disconnect the cable from the battery earth terminal and the battery cables from the starter motor and solenoid. Extract the three securing bolts and remove the starter motor. Examine the starter pinion for clutch dust

contamination and, if necessary, brush clean with a solution of 75% paraffin (kerosene) and 25% lubricating oil. This mixture will provide sufficient lubrication for the pinion until the next 600 hours service.

NOTE: This operation should be carried out more frequently if the clutch is subject to heavy usage.

Operation 28 - Fuel Tap Strainer

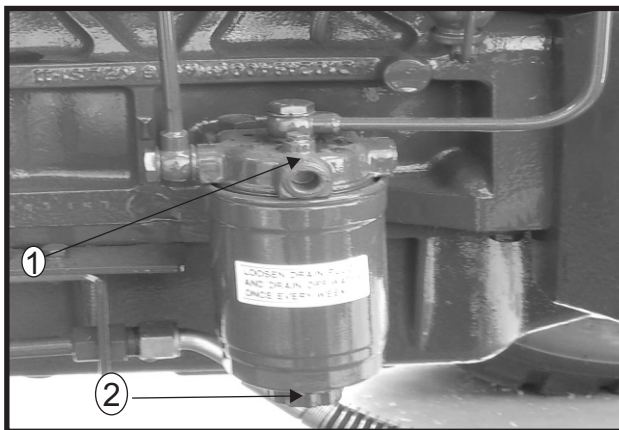


24. Fuel Tap Strainer
1. Shut Off Valve 2. Strainer

Close the fuel tank shut-off valve, Figure 24, by turning in a clockwise direction. Remove the banjo bolt from the fuel injection pump and drain the fuel tank completely. Remove the tube assembly by unscrewing the nut and ferrule from the fuel tank tap. Unscrew the fuel tap and remove the strainer. Wash the strainer and dry it. Refit the strainer and tap assembly to the fuel tank and connect the tube assembly to the fuel tap ensuring that the ferrule is correctly seated. Re-connect the tube assembly to the fuel injection pump using the banjo bolt after replacing both the sealing washers.

Re-fit the fuel tank and bleed the fuel system.

Operation 29. Fuel Filter



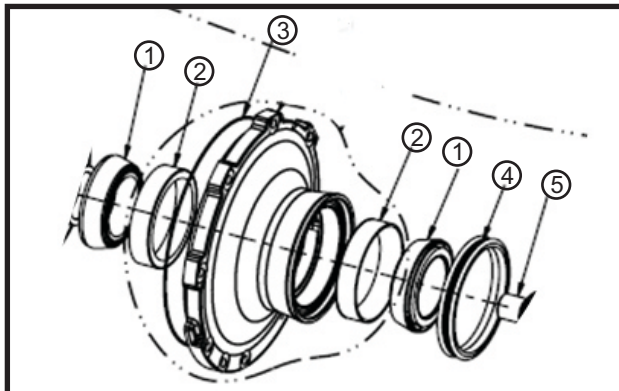
25. Fuel Filters
1. Bleed screws 2. Drain Plugs

Operation 30 – Front Wheel Toe-in

Check the front wheel Toe-in as described on Page-19 of Section A and adjust if required.

Operation 31– Front Wheel Bearings

With the parking brake applied, jack up and support one front wheel and block the other three wheels. Remove the cap, split pin, nut, thrust washer and the outer bearing.

**26. Front Wheel Bearings**

- | | | | |
|----|--------------------|----|-------------|
| 1. | Cup Inner & Outer | 2. | Seal O Ring |
| 3. | Cone Inner & Outer | 4. | Seal Face |
| 5. | Shaft Output | | |

Remove the complete wheel and hub assembly and extract the seal and inner bearing. Thoroughly clean all parts in a suitable solvent and allow to dry.

⚠ WARNING : Do not use solvents in a confined space. Work in a well ventilated area and avoid skin contact with the solvent.

Inspect the bearings and both bearing cups in the wheel hub for discoloration or wear. Repack the bearings and the space between the two bearing cups with grease. Grease the axle shaft.

Re-assemble and tighten the castellated nut to 25 lbf. ft. (34 Nm). Rotate the wheel hub three to six revolutions in a clockwise direction. Further tighten the castellated nut to 50 lbf. ft. (68 Nm).

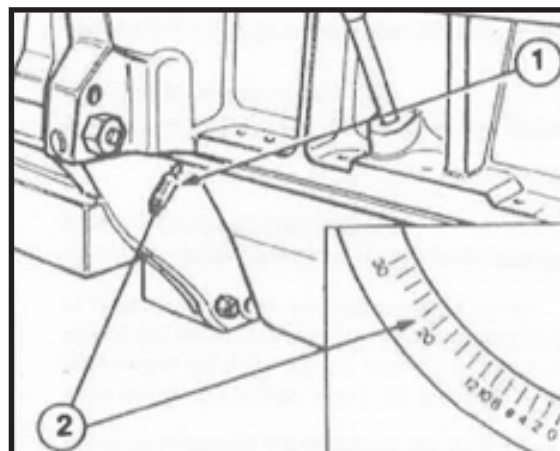
Now slacken the nut two slots. If the hole in the axle shaft does not align with a slot in the nut, turn the nut in a clockwise direction just sufficient to align the hole with the nearest slot.

Install a new split pin and replace the hub cap.

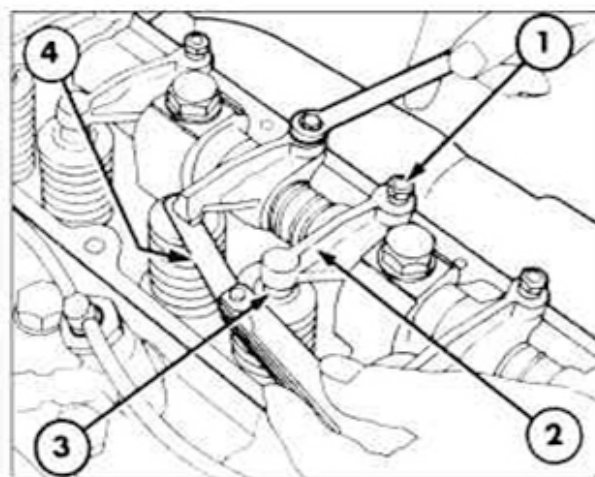
Repeat the procedure on the other front wheel.

Operation 32. Valve Tappet Clearance Setting

Remove the valve rocker cover, taking care not to damage the gasket.

**27. Flywheel Timing Marks**

Remove the plug from the flywheel access hole, Figure 28 and with the engine cold, place No. 1 (front) cylinder on top dead center (TDC) of the firing stroke. (The arrow on the casing will be aligned with the '0' timing mark on the flywheel).

**1. Flywheel access hole 2. Timing marks****28. Valve Tappet Clearance**

- | | | | |
|----|------------------|----|--------------|
| 1. | Rocker arm screw | 3. | Valve stem |
| 2. | Rocker arm | 4. | Feeler gauge |

In the firing stroke, both valves of No. 1 Cylinder will be closed. In this condition, check and adjust the following valves:

- | | |
|---------------|---------------|
| NO. 1 Inlet | No. 3 Inlet |
| NO. 1 Exhaust | No. 2 Exhaust |

Use a feeler gauge, to check the clearance between the valve stem and the rocker arm. Turn the rocker arm screw to adjust the clearance.

LUBRICATION AND MAINTENANCE CHART

Rotate the engine one complete revolution until No. 1 cylinder is on TDC of the exhaust stroke. (The valves of No. 1 cylinder will both be open with the inlet opening and the exhaust closing).

Check and adjust the remaining valves, as follows
NO.2 Inlet NO.3 Exhaust

The correct valve clearance is :

Inlet 0.0118 in (0.3 mm)

Exhaust 0.0157 in. (0.4 mm)

Replace the rocker cover, using a new gasket.

Replace the plug in the flywheel access hole

Operation 33. Starter Motor Pinion

Disconnect the cable from the battery earth terminal and the battery cables from the starter motor and solenoid. Extract the three securing bolts and remove the starter motor.

Examine the starter pinion for clutch dust contamination and, if necessary clean with a solution of 75% paraffin (kerosene), and 25% lubricating oil. This mixture will provide sufficient lubricating for the pinion until next 600 hours service.

NOTE : This operation should be carried out more frequently if the clutch is subject to heavy usage.

Close the fuel tank shut-off valve, by turning in a clockwise direction.

Clean the filter assembly with a clean, lint-free cloth.

Unscrew the central retaining bolt and remove the primary filter element and bowl. Discard the filter element.

NOTE : Only the primary element (front of engine) should be changed at this service. It may be desirable, in some locations, to replace the filters more frequently if fuel contamination is a problem.

EVERY 900 HOURS carry out the preceding checks plus the following check:

EVERY 1200 HOURS or 12 MONTHS
(Whichever occurs first) carry out the preceding checks plus the following:

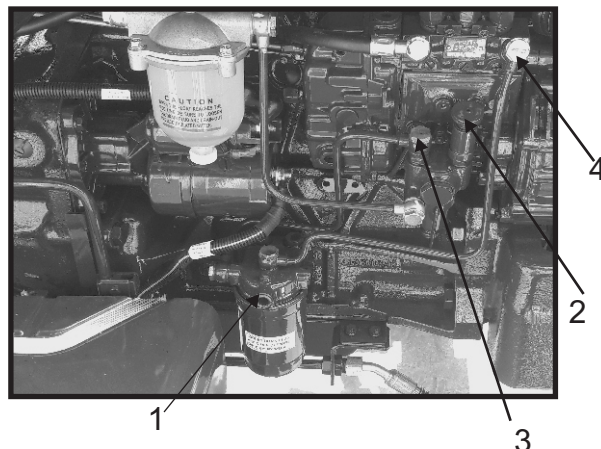
Operation 34 – Bleeding the Fuel System

Loosen the banjo fitting on the fuel inlet pipe to the injection pump and allow fuel to escape. When fuel free of air bubbles flows out, tighten the banjo fitting.

The injection pump has a built-in hand primer in the form of a plunger. The plunger is normally screwed down. To operate the primer, unscrew the primer cap.

Loosen the bleed screw on the primary filter and move the plunger up and down until fuel free of air bubbles is discharged from the bleed screw hole. Tighten the bleed screw.

Repeat the procedure on the secondary filter, then tighten the bleed screw.



29. Bleeding the Fuel System

1. Filter bleed screw (primary)

2. Primary plunger

3. Fuel inlet (to feed pump)

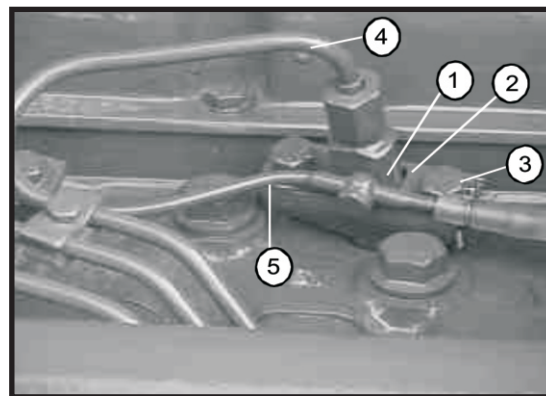
4. Fuel inlet (to pump)

Loosen the fuel inlet to the pump and repeat the procedure until fuel free of air bubbles is discharged. Tighten the fuel inlet.

Push the primer plunger down and turn the cap clockwise to secure it in the normal operating position.

Loosen the injector pipe connections, see Figure 29, and crank the engine with the stop control in and the throttle wide open until air-free fuel is discharged from the connections. Tighten each connection in turn while the engine is still turning.

Wipe the fuel bowls and other areas dry. Start the engine and check to ensure that there are no fuel leaks.



30. Injectors & Pipe Connections

1. Injector

2. Mounting Flange

3. Retaining Bolts

4. Injector Tube

5. Injector Return Pipe

Operation 35 - Hydraulic Strainers

The inlet and outlet strainers, which are located in the rear axle center housing, should be inspected and cleaned or replaced, as necessary.

This service should be carried out by your Authorized Dealer.

Operation 36 - Alternator brushes

Change the alternator brushes and clean the brush box. It is recommended that this service be carried out by authorised dealer only.

EVERY 1500 HOURS carry out the preceding checks plus the following :

Operation 37 - Rear Axle Oil / Transmission Oil.

With the oil hot, remove the drain plug, Figure 31, and allow the oil to drain into a suitable container. Replace the plug after the oil has completely drained.

Unscrew and remove the filler and dipstick, Figure 32, and refill the rear axle until the oil reaches up to upper mark on dipstick, RHS of tractor (Rear Side) After refilling the rear axle, start the engine to allow the oil to circulate through out the vehicle. After a minute stop the engine and recheck the oil level by dipstick. If requires top up to the upper mark of the dipstick. See Section C for oil capacity and grade.

**31 - Rear Axle Oil**

1. Drain plug

**32. Rear Axle**

1. Filler plug

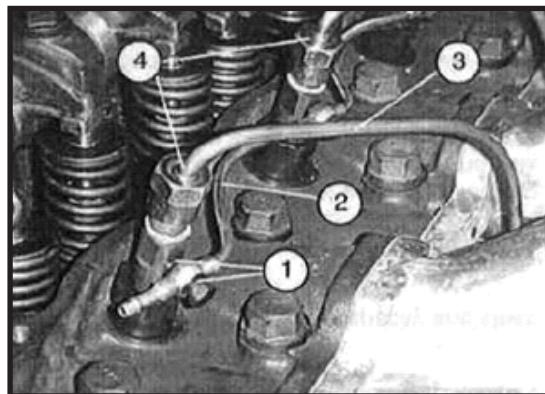
Operation 38- Fuel Injector Tips

⚠ CAUTION : The fuel oil in the injection system is pressurised and can penetrate human skin with fatal results. Adjustments of fuel injection equipment should not be carried out by unqualified persons.

- Do not use your hand to check for leaks. Use a piece of cardboard or paper to search for leaks. Wear eye protection.
- Stop the engine and relieve pressure before connecting or disconnecting lines. Tighten all connections before starting the engine or pressurizing lines.

If any fluid is injected into the skin, obtain medical attention immediately or gangrene may result.

IMPORTANT: Before loosening or disconnecting any part of the fuel injection system, thoroughly clean the area to be worked on. Loosen the injector pipe connections at the injection pump end. Disconnect the injector pipes, Figures 33, and the leak-off line at the injectors, discarding the copper washers on either side of the leak-off port banjo fittings.

**33. Injection pipe connection**

- | | |
|-------------------|------------------------------|
| 1. Copper washers | 2. Leak-off line |
| 3. Injector pipes | 4. Injector pipe connections |

Withdraw the injectors, and also the injector mounting flange (wherever fitted) Figure 33, after removing the retaining bolts. Extract the copper sealing washer from each injector bore in the cylinder head together with the cork dust washer on each injector. Discard the copper and cork washers.

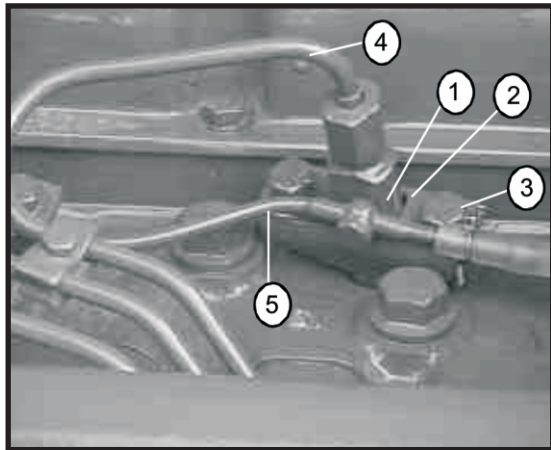
If a space set of freshly calibrated injectors is not immediately available, cover the ends of the pipes and injector inlet ports and leak-off ports to prevent the entry of dirt. Get your injectors serviced by an Authorized Dealer or injector specialist.

Using new sealing and dust washers, (if installed originally) install the freshly calibrated injectors and tighten the retaining bolts evenly to 17 lbf. ft. (22 Nm).

LUBRICATION AND MAINTENANCE CHART

Reconnect the leak-off line using new washers on either side of the banjo fittings and tighten the retaining bolts to 6 lbf. ft. (8Nm). Reconnect the pump to injector pipes and tighten the connections to 18 lbf. ft. (24 Nm).

After replying the injectors and pipes, bleed the system



1. Injector pipe
5. Overflow Tube

NOTE: Modification or adjustment of fuel injection equipment outside specification may invalidate the warranty.

EVERY 2500 HOURS carry out the preceding checks.

EVERY 3000 HOURS carry out the preceding checks plus the following:

Operation 39 - Fuel Injectors

Repeat the service as described in Operation 38. If required, replace the Injectors. Regular maintenance of the Injectors is not necessary. The Injector Nozzles should be renewed only if it is found faulty. Some of the problems that may indicate that new Nozzles are needed are:

- Engine difficult to start or will not start.
- Engine will not develop enough power.
- Engine misfires or runs erratically.
- High fuel consumption.
- Visible black exhaust smoke.
- Engine knocks or vibrates excessively
- Excessive engine temperature.

It is recommended that this service be carried out by an Authorized Dealer or injector specialist only.

COOLING SYSTEM MAINTENANCE

Operation 40 – Engine Cooling System

The service interval for the cooling system is dependent upon the source of coolant in use which, in turn, is dependent upon availability.

Using antifreeze to specification WSN - M97B18 - D:

A solution of 50% clean water and 50% antifreeze WSN- M97B18-D is recommended. This antifreeze contains a chemical inhibitor which will protect your engine for **1200 hours or two years**, whichever occurs first.

The inhibitor will:

- Increase rust prevention.
- Reduce scale formation.
- Minimize cylinder wall erosion (pitting).
- Reduce foaming of the coolant.

As the chemical inhibitor in the antifreeze works and protects the system, it gradually loses its strength and must, therefore, be replenished at intervals to maintain the optimum protection level. This protection is provided by draining and flushing the system and refilling with a 50% solution of antifreeze meeting the specification shown above.

Using proprietary antifreeze:

Where antifreeze meeting the previously mentioned specification is not available, use proprietary, heavy duty antifreeze mixed with an equal amount of clean water and changes the coolant every **900 hours or 12 months**, whichever occurs first.

When antifreeze is not available:

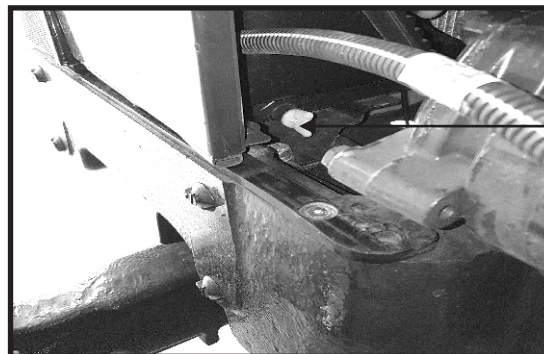
In countries where antifreeze is not available, use clean water and changes it every **600 hours or 6 months**, whichever occurs first?

Draining and refilling the cooling system

With the engine cool, drain and refill the cooling system, as follows:

⚠ WARNING: Antifreeze solution is irritating to eyes and skin. Adhere to the precautions outlined on the antifreeze container.

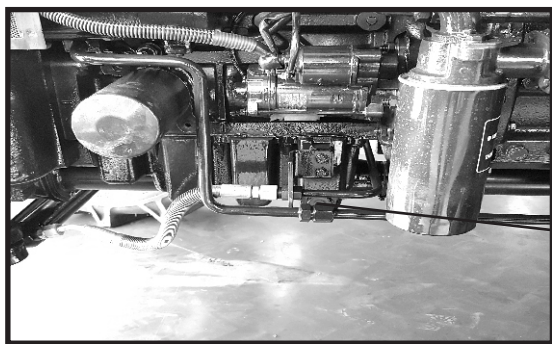
- Avoid contact with eyes or prolonged and repeated skin contact.
- Wear protective eye wear when using antifreeze.
- In case of contact with eyes, flush with water for 15 minutes and obtain prompt medical attention.
- Wash skin with soap and water after use.
- Keep out of reach of children.
- Open the radiator drain cock, Figure 35 and allow the coolant to drain.



35 Draining The cooling system
1. Radiator drain cock

LUBRICATION AND MAINTENANCE CHART

NOTE: In case a drain cock is not fitted on the radiator, open the hose connection on the radiator base tank



36. Draining the cooling system

1. Engine block drain plug

Open the threaded plug, Figure 36, and drain the coolant from the engine block. Remove the radiator cap at this stage to increase the drainage rate.

After draining, flush the cooling system with clean water via the radiator filler. After flushing, close the engine block drain plug and the radiator drain cock (if radiator drain cock is not fitted, reconnect the hose and clip firmly). Refill the cooling system via the radiator filler tube.

NOTE: To avoid trapping air in the system, fill the radiator as slowly as practicable thereby allowing any air pockets to disperse.

Check that the coolant level is flush with the bottom of the filler tube (see Operation 2). Start and run the engine to circulate the coolant.

NOTE: The coolant level may drop as it is pumped around the cooling system.

Stop the engine and top up the radiator with 50% solution of clean water and antifreeze (or clean water only if antifreeze is not available).

⚠ WARNING : The cooling system operates under pressure which is controlled by the radiator cap.

It is dangerous to remove the cap while the system is hot. Allow the engine to cool and using a thick cloth, turn the cap slowly to the first stop. Allow the pressure to escape before fully removing the cap.

IMPORTANT: It is essential that an approved cap is used. If the cap is mislaid or damaged, obtain a replacement from your Authorized Dealer.

Allow the engine to cool and make a final check to ensure that the coolant level is satisfactory.

See Section C for cooling system capacity and clean water properties.

Cooling System Leaks

In the event of a loss of coolant, for example a leaking hose or gasket, it is important to firstly correct the leak and secondly top up with a pre-mixed solution of water and antifreeze of the correct proportions.

It is recommended that a solution of 50% clean water and 50% antifreeze, no matter what degree of freeze protection is required, be pre-mixed and used as a top up solution.

1 Always keep this pre-mixed solution in a specially marked container for top-up purpose and always investigate the cause of leakage and repair properly or replace the defective part. Do not use anti-leak additives.

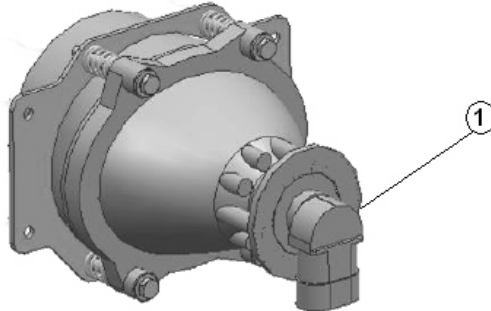
LUBRICATION AND MAINTENANCE CHART

GENERAL MAINTENANCE

The following pictures and text detail the service or adjustment procedure that are not required to be carried out on a routine basis.

Remove the radiator grille, detach the connection socket and remove the three nuts and washers securing the headlamp frame to the grille. Remove the three screws securing the lamp unit to the frame. Ease the sealed beam unit from the frame.

Operation 41- Headlight Bulb Replacement

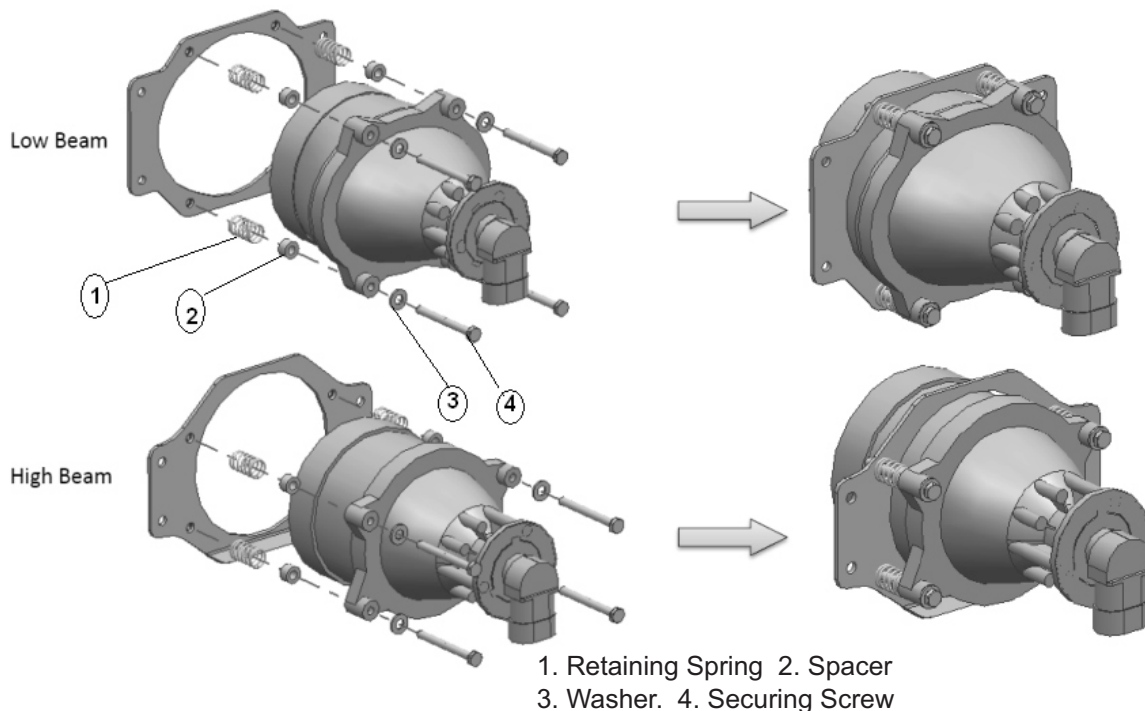
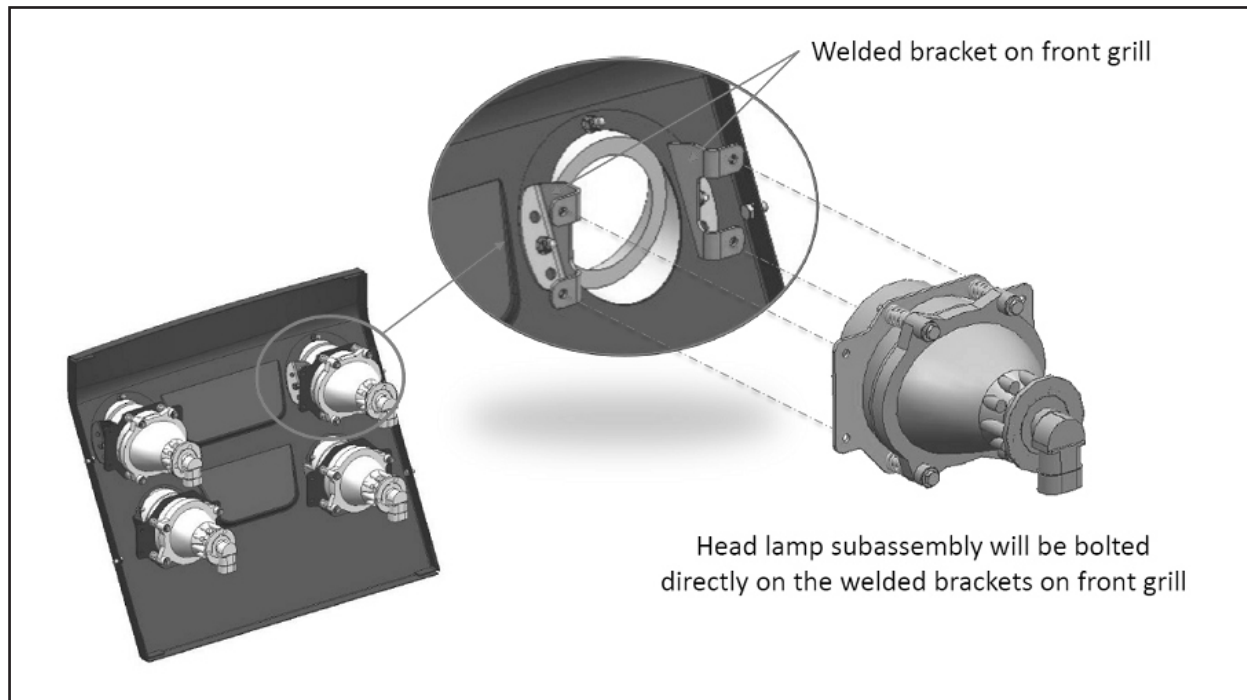


Connector & Bulb assembly

Rotate the connection socket, Pull the connector & bulb assembly out, Replace the connector & bulb assembly. Re-assemble in reverse order.

LUBRICATION AND MAINTENANCE CHART

Operation 43- Sealed Beam Headlamp Replacement



In some territories single beam sealed head lamps are installed in the radiator grille. To replace, follow the procedure as described below.

Remove the radiator grille, detach the connection socket and remove the four screws and washers securing the headlamp frame to the grille. Remove the four screws securing the lamp unit to the frame. Ease the sealed beam unit from the frame. Install a new unit by reversing the removal procedure.

To avoid blinding oncoming drivers, adjust the angle of the headlight beam after slackening the headlight to mounting bracket. The lamp beam may be adjusted vertically or laterally by turning one or more of the screws, in or out, as required.

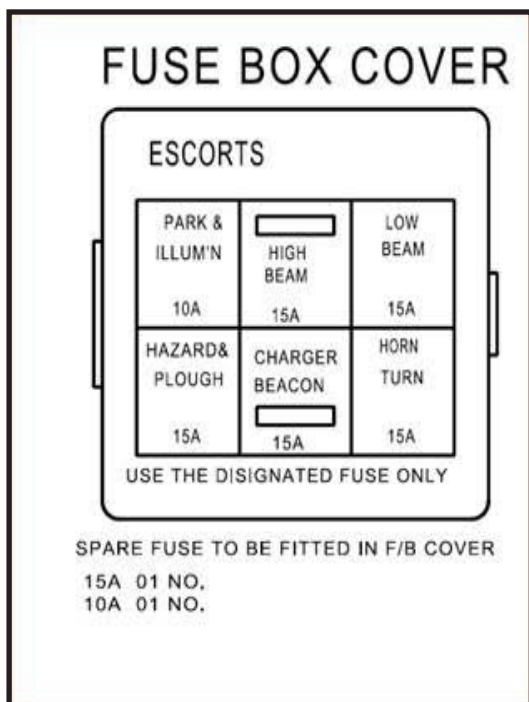
Operation 43 – Instrument Cluster

The warning and cluster light are not replaceable separately, replace the electronic instrument cluster following the procedure as described below.

To gain access, remove the four securing screws from the instrument cluster surround and withdraw the instrument cluster assembly. Disconnect the connection cable, install a new unit by reversing the removal procedure.

Operation 44 - Fuses

The fuses are housed in a box located on the right-hand side above engine, beneath the bonnet. Remove the plastic lid to gain access to the fuses



1. Location of Fuse Box

SPARE FUSE TO BE FITTED IN F/B COVER

15A01 NO.

15A01 NO.

5A01 NO. .

Operation 45. Fuse box (with cover removed)

There are 10 blade type fuses, as detailed above. The fuses are numbered and protect the circuits as shown in figure.

IMPORTANT : Do not replace a blown fuse with another of a different rating.

Operation 46 – Alternator Service Precautions

- To avoid damage to the alternator charging system, service precautions should be observed, as follow:
- NEVER make a break any of the charging circuit connections, including the battery, when the engine is running.
- NEVER short any of the charging components to earth.
- ALWAYS disconnect the battery earth cable when installing or removing the alternator.
- DO NOT use a slave battery of higher than 12 volts nominal voltage.
- ALWAYS disconnect the battery earth cable when charging the battery in the tractor using a battery charger.
- ALWAYS observe correct polarity when installing a battery or using a slave battery to jump start the engine. Follow the instructions on Page 5 of Section A when jump starting the tractor.
- ALWAYS disconnect the battery earth cable before carrying out arc welding on the tractor or on any implement attachment to the tractor.

⚠ WARNING : Wear eye protection when charging the battery or starting the tractor with a slave battery.

Connect positive to positive and negative to negative.

ELECTRICAL EQUIPMENT

Alternator	12V, 55Amp
Battery*	12V, 85Ah
Starter Motor	12V, 2KW Positive engagement, solenoid operated

LUBRICATION AND MAINTENANCE CHART

***NOTE :** In cold climate countries, maintenance free batteries with at-least 700 cold cranking Amps. are recommended.

Operation 47 - Tractor Storage

Before storing the tractor for an extended period, the following precautions should be taken.

Clean the tractor.

- Drain the engine, transmission and rear axle and refill with fresh oil.
- Drain the fuel tank and pour approximately 6 Liters of special calibrating fuel into the tank. Run the engine for at least 10 minutes to ensure complete distribution of the calibrating fuel throughout injection system. See the next item before running the engine. Check the radiator coolant level. If the coolant is within 200 hours of the next change, renew the coolant. See Operation 48, as appropriate. Run the engine for one hour to disperse the inhibitor throughout the cooling system.
- Lubricate all grease fittings
- Raise the lift linkage hydraulically and support the lift arms in the fully raised position.
- Lightly coat all exposed hydraulic piston rods with petroleum jelly, e.g., power steering cylinder rams, spool valves, etc.
- Remove the battery and store in a warm, dry atmosphere. Recharge periodically.
- Raise the tractor and place supports under the axles to take the weight off the tires.
- Block the clutch pedal in the fully depressed position.
- Cover the exhaust pipe opening.

Operation 48 - Preparing the Tractor for Use after Storage

- Inflate the tires to the correct pressure.
- Refill the fuel tank.
- Check the radiator coolant level.
- Check all oil levels.
- Install a fully charged battery.
- Remove the exhaust pipe covering.
- Start the engine and check that all instruments and controls are functioning correctly.
- Drive the tractor without a load to ensure that it is operating satisfactorily.

NOTES

Farmtrac Disc Mowers Parts Manual
TROUBLESHOOTING

The following are suggestions listed for your convenience. You can make simple adjustments on your tractor that will improve its operation and save your time.

If any trouble is experienced, make sure of the cause before attempting to make any adjustments. Always make one adjustment at a time, and if the adjustment made does not improve the problem, return to the original setting before proceeding to the next adjustment.

ENGINE

PROBLEM	CAUSE	REMEDY
Hard to start	No Fuel	Refill the tank and be sure to bleed the fuel system
	Air trapped in Fuel Line	Bleed the fuel system
	Incorrect Timing	Have your dealer reset the timing
	Weak Battery	Check the electrolyte level
Engine Over Heating	Low Coolant Level in cooling System	Fill the Radiator to its proper level
	Radiator Clogged	Clean the cooling system
	Fan Belt Slipping	Tighten the fan belt alternator bracket
	Collapsed Radiator Hose	Replace the defective hose
	Radiator Cores Clogged	Remove all dirt and trash from the radiator's grille, clean with compressed air or water
	Engine over load	Reduce engine load or change to lower gear
	Diluted Lubricating Oil	See your Dealer
	Water pump impeller vanes broken	Replace the water pump
Loss of Power	Insufficient Fuel	Refill the tank and be sure to bleed the fuel system
	Air in fuel system	Bleed the fuel system
	Restriction in Fuel Line	Clean the fuel system
	Clogged air cleaner	Clean the air cleaner and it's element
	High / Too slow Idle RPM	See your Dealer
	Low Operating Temperature	Run Engine before putting it under full load.
	FIP Problem	See your Dealer
Excessive Exhaust Smoke		
Black Smoke	Excessive Fuel Rate	See your Dealer
	Overloading Engine	Reduce Engine Load or change to lower gear
	Restriction in air supply	Clean the air cleaner and it's element
	Low coolant temperature	Check the thermostat

White Smoke (Indicates Misfiring)	Low Engine operating temperature	Check the thermostat
	Faulty Injector	See your Dealer
	Poor Compression	See your Dealer
Blue Smoke (Indicates High Oil Consumption)	Worn or Stuck Rings	See your Dealer
	Low coolant Temperature	Check the thermostat
Engine Knocking	Engine over loading	Reduce Engine Load or change to lower gear
	Incorrect Timing	See your Dealer
	Engine RPM too slow	Adjust the engine RPM

TRANSMISSION

Hard shifting	Improper clutch finger height.	Check & adjust.
	Clutch linkage binding.	Check & adjust clutch
	Contaminated oil	Replace oil.
Noise in neutral	Oil level low	Top up oil
	Missing cir-clips on drive gear	See your authorized Dealer
	Gears badly worn out or broken.	See your authorized Dealer

HYDRAULICS

Hydraulic system fails to function	Low oil level	Fill system with correct grade and quantity of oil.
	Clogged transmission-hydraulic filter.	Replace filter.
	Transport lock closed	Open the transport lock
	Hydraulic pump pressure low	See your authorized Dealer
Hydraulic oil overheats	Lift cylinder, lift cover castings cracked or porous	See your authorized Dealer
	Low oil supply.	Fill system with correct grade and quantity of oil
	Clogged transmission-hydraulic oil filter.	Replace filter.
	Oil passage to cylinder closed	Open transport lock
	System overloaded	Reduce load on system.

TROUBLESHOOTING

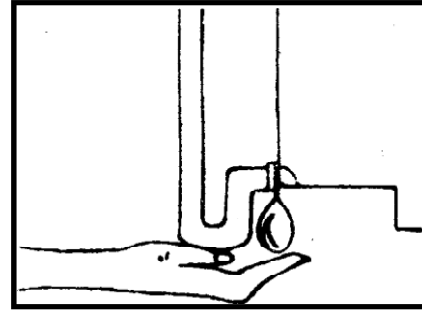
ELECTRICAL SYSTEM		
Battery will not charge	Loose or corroded connections.	Clean and tighten connections.
	Sulfated or worn-out battery.	Check electrolyte level and specific gravity.
Charging system indicator glows with engine running	Low engine speed.	Increase speed.
	Defective battery.	Check electrolyte level and specific gravity.
Starter in operative	Defective alternator.	See your authorized Dealer
	Range shift lever in gear.	Move lever to neutral.
	PTO lever in engaged position.	Move PTO lever to disengaged position.
	Low battery output.	See your authorized Dealer
	Blown fuse.	Replace fuse.
Starter cranks slowly	Low battery output.	Check electrolyte level and specific gravity.
	Crankcase oil too heavy.	Use proper viscosity oil.
	Loose or corroded connections.	Clean and tighten loose connections.
Light system does not function , rest of electrical system functions	Blown fuse.	Replace fuse.
Entire electrical system does not function	Faulty battery connections.	Clean and tighten connections.
	Sulfated or worn-out battery.	Check electrolyte level and specific gravity.
	Blown fuse.	Replace fuse.
Relay(s) sticking or nonfunctional , repeated failures	Diode to protect circuit from	See your authorized Dealer

Farmtrac Disc Mowers Parts Manual
TIPS ON FUEL SAVING

1. Know your Tractor

Your manual will tell you everything you need to know about the maintenance and operation of your tractor.

Research shows that a badly maintained tractor wastes upto 25% of precious diesel.



2. Stop diesel leaks

Check your tractor daily. A leak of one drop per second can cost you 600 litres per year.

3. Turn your engine off, when you stop

An idling tractor wastes more than 1 litre of diesel every hour.

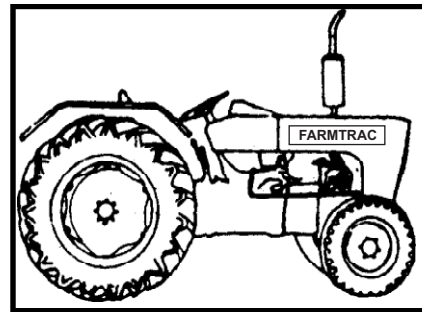
Remember :

- When in doubt, check with your dealer.

Remember :

Inspect joints in

- Fuel tank,
- Fuel injectors,
- Fuel pump,
- Fuel lines.



Remember :

- Keep your battery, dynamo and self-starter in top running condition. If they are faulty they can force you to idle.

4. Drive in the correct gear always

If your tractor struggles to pull a load with the throttle at maximum. You should go into lower gear. If it accelerates, slip into a higher gear.

Wrong gear selection can increase fuel consumption by 30% and reduce field output by 50%.

5. Does your tractor smoke, too

A tractor that smokes excessively wastes precious diesel. Oversize implements or using the wrong gear, cause tractor smoke. If your tractor continues to smoke, have it attended from your dealer. Test nozzles and if required recalibrate the fuel injection pump.

Faulty fuel injection can increase fuel consumption by 25%.

Remember :

- Smokes from a tractor indicates overloading, gear down.

Remember :

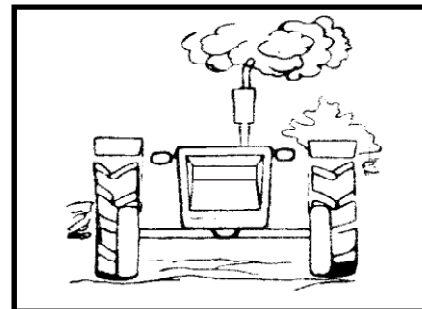
- Don't use oversize implements.
- Service the engine regularly.

6. Dirt—your engine's worst enemy

Good air filtration is important since tractors often operate in dusty conditions. Research proves that unfiltered air wears out cylinder bores 45 time faster and piston rings 115 times faster than normal.

Good fuel filtration is important, too. Dirty fuel endanger the engine too. Use quality fuel filters and replace them as recommended.

7. Wheels that slip waste diesel



TIPS ON FUEL SAVING

Keep tractor wheels from slipping by adding water ballasts and/or cast iron weights. Add just the right amount of weight to keep wheel slippage to minimum.

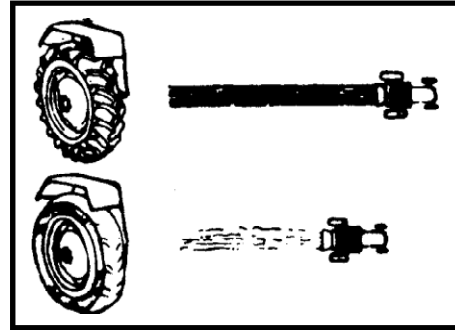
Note : Information about water ballasting & weights is given in latter pages.

Remember :

- Do not replace both fuel filters simultaneously.
- Clean air cleaner regularly.

Remember :

- Remove ballasts after field operations are over.



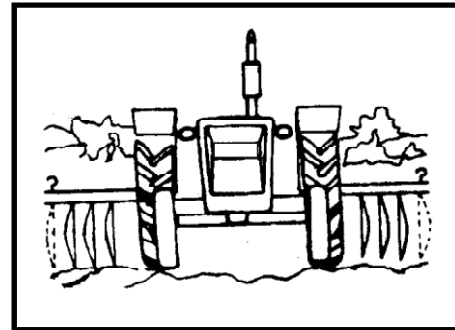
8. Worn out tyres reduce pulling power

Relug your tyres on time. While refitting tyres, make sure the 'V' treads point downwards when viewed from the front.

Remember :

- Different tyre pressure are recommended for road and field work. Check your manual or ask your dealer.

You may consume upto 30% more fuel if you use undersized implements or operate at low speeds.



9. Match hauling capacity with load

Choose implement size and tractor operating speed to match your engine's full horsepower. Run in the highest gear possible at which your tractor doesn't smoke. If your tractor on full throttle accelerates even in the top gear. Your implement is too small. A bigger implement or a multiple arrangement of implements may help you get the maximum benefit of tractors, power and cut diesel waste.

Remember :

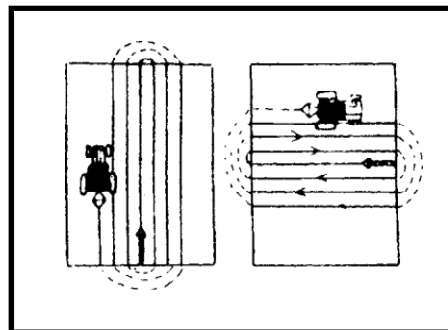
Consult an expert when selecting implements.

10. Plan your field run

Plough according to a planned layout that reduces idle running, backtracking and awkward turns. You will save diesel if you plough long furrows instead of short ones.

Remember :

- Your first openings must be straight and parallel.
- Side lands and headlands should be ploughed around the field continuously without reploughing the field.

**Using a pump-set or thresher**

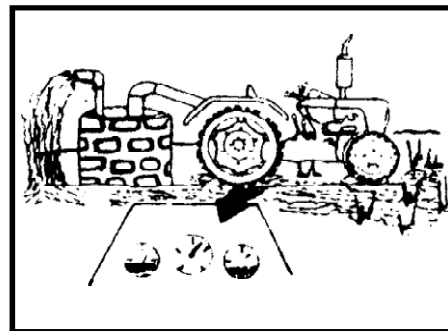
Operate your tractor at the throttle setting which gives you the recommended speed for either a PTO or a belt drive.

Your tractor has a built-in tachometer, the correct engine speed will be marked on the dial.

Ask your dealer or an expert to make the throttle setting according to the size of your pump, thresher etc.

Remember :

- You will save money if you operate the engine at its best speed for the pump or thresher.

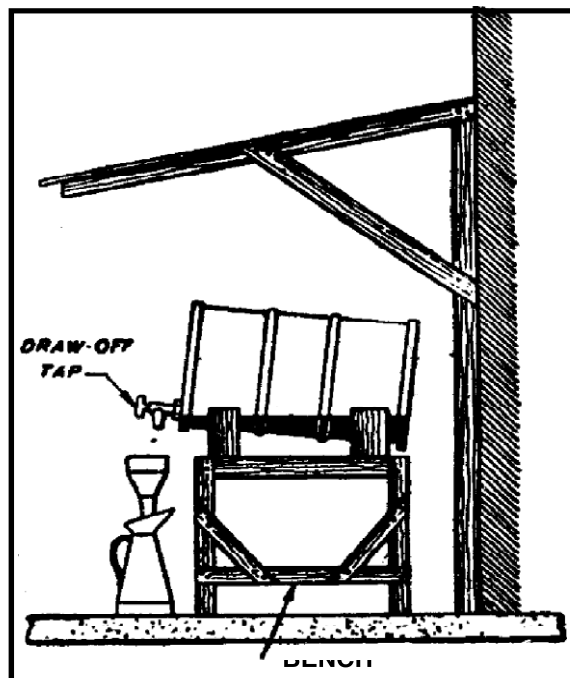
**DIESEL STORAGE AND HANDLING**

The Funnel for pouring the diesel should have a close mesh gauze. Cans and funnel should be kept clean and dry and covered up when not in use.

The barrels should be kept well sheltered and the contents given ample time to settle before any diesel is withdrawn.

A tap should be screwed into the hole on one end of the barrel, which should be placed tilted away from the tap. It will be necessary to loosen the second plug for drawing the diesel and to tighten it afterwards.

The barrel should not completely drained, but refilled while there is still 5-10 litres diesel in it.



SECTION C

SPECIFICATIONS

The specification on the following pages are given for you information and guidance. For further information concerning your tractor and equipment, consult your Authorized Dealer.

Where ever a specific model in not mentioned, the data applies on all models.

Company policy is one of continuous improvement and the right to change prices, specification or equipment at any time without notice is received.

All data given in this book subject to production variations. Dimensions and weights are approximate only and the illustrations do not necessarily show tractor in standard condition. For exact information about any particular tractor please consult your Authorized Dealer.

SPECIFICATIONS

GENERAL DIMENSIONS	FARMTRAC
Height to top of exhaust	2250 mm
Minimum ground clearance (swinging drawbar)	375mm
Width at minimum track rear	1422 mm
Overall length	3737 mm
Wheelbase	1885 mm
TIRES SIZE	
Standard	8.0x18 (R1/R2)
	13.6x28 (R1/R2)
Other tires option may be available in different market, check with your Authorized dealer.	
WEIGHT	
Total with fuel, oil and water	2000+/- 25 kg.
FRONT AXLE	
Differential Type	4 Wheel Drive
Front /Drop Box/Rear Wheel Gearing Ratio	NA
Wheel Reduction type	Epicycle reduction
Drive Shaft Location	NA
ENGINE	
Number of Cylinder	3
Bore	98 mm
Stroke	122 mm
Engine CC	2760 cc
Compression Ratio	17.5±5% : 1
Firing order	1/2/3
Idle Speed	700-800 rpm
Rated speed	2000 rpm
Valve clearance (cold)	
Intake	0.0118 in. (0.30 mm)
Exhaust	0.0157 in. (0.40 mm)
COOLING SYSTEM	
Type	
Fan - Number of blades	6
Fan/alternator belt deflection	0.5 - 0.75 in. (13 -19 mm.)
Thermostat	
Start to open at	80±2°C
Fully open at	90 ± 3°C
Pressure Cap	0.5 kgf /cm ²
CLUTCH	
Type	Double Clutch
Transmission plate dia	280mm
P.T .O. Plate dia	280mm
Engine speed for 540 & 540E rpm PTO speed	
Single speed PTO	540@1728 & 540E @1251
Reverse PTO	NA

GENERAL DIMENSIONS	FARMTRAC
FUEL SYSTEM	
Injection pump type	In - line (Flange-mounted)
Injector type	Multi hole nozzle
Nozzle opening pressure	250-258 bar
HYDRAULIC SYSTEM	
Type	Position and Draft Control with double acting top link
Nominal pressure	220 ± 5 bar for dcv 185 ± 5 bar for lift 93-98 for power steering
Lift capacity (at linkage ball ends) with lower links in across range	1030 Kg. (1st Hole) 1170 kg. (2nd Hole) 1530 kg. (3rd Hole)
Hydraulic pump	18cc/11cc
Hydraulic pump discharge - Standard	Lift - 32.4 lpm Power Steering - 19.8 lpm
STEERING	
Type	Power steering
Steering wheel turns (lock to back)	99° with 3.1 (Right Turn), 99° with 4.1 (Left Turn)
Front wheel toe - in	3-10 mm
BRAKES	
Types	Oil Immersed Brakes
Disc Diameter	6.5"
No. of Disc	Two on each wheel side
Effective Area of lining on each wheel side (cm ²)	457.69 cm ²
Total friction area	1664
Pedal free travel	24-25 mm
ELECTRICAL EQUIPMENT	
Alternator With integral regulator	12V, 55 Amp
Battery*	12V, 88 Ah (880 CCA)
Starter Motor	12V, 2 KW, Positive engagement, solenoid operated
*NOTE : In Cold climate countries , maintenance free batteries with at least 750 cold cranking Amps are provided.	
CAPACITIES	
FUEL Tank	60 Liters.
Engine (including filter)	6.5 Liters
Transmission / Rear Axle	30 Liters.
Steering system Hydrostatic Steering	3 Liters.
Front Axle	5.9 Liters.
LUBRICANTS	
Component	
Steering Box	Transfluid III H
Transmission / Rear Axle	OIL Transmission Universal Tractor DS4018
Front Axle	ENI MULTITECH THT, SAE 10W30

FRONT TIRE PRESSURE AND PERMISSIBLE LOADS

The following charts give the carrying capacity of the axle at the tire pressures indicated:

TYRE SIZE	FIELD (kPa)	ROAD (kPa)
8.0x18	179 - 193	193 - 207
13.6x28	110-124	193 - 207

When front mounted implements are fitted, front tire loads may be increased by up to 35% with no increase in inflation pressure when operating at speeds not exceeding 12 mph (20 kmph). At speeds not exceeding 5 mph (8 kmph) the load on 6, 8 and 10-ply front tires may be increased by 50% with no increase in inflation pressure.

Front tyres pressure and permissible loads : per tyre 525 kg.

rear tyres pressure and permission loads : per tyre 1650 Kg.

REAR TIRE PRESSURE AND PERMISSIBLE LOADS

The following charts give the carrying capacity of the axle at the tire pressure indicated :

SPECIFICATIONS**NOTES**