FARMTRAC

6050 E

OPERATOR MANUAL

ENGLISH

INTRODUCTION

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

Escorts Kubota Limited appreciates your selection of 6050 E 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 Kubota Limited) 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 manuals publication. We reserve the right to make changes to this manual at any time, without obligation.

This operator manual is valid for Tractor Model - Farmtrac 6050 E & Serial no. DXF476980 and ahead.

Thank you!

MARCH 25th, 2023

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, better productivity 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 when 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.

Escorts Kubota Limited has a Company policy of continuous improvement and development. Designs, materials and/or 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.

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INTRODUCTION

Abbreviations used.

DTC - Diagnostic Trouble codes

ECU - Electronic Control Unit

OBD - Onboard Diagnostic

SMV - Slow Moving Vehicle

PTO - Power Take Off

ROPS - Roll Over Protective Structure

DOC - Diesel Oxidation Catalyst

RPM - Rotation Per Minute

PCV - Positive Crank Case Ventilation

SVS - Service Vehicle Soon

EGR - Exhaust Gas Recirculation

DSM - Diagnostic System Management

DPF- Diesel Particulate filter

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)

Tear off

DELIVERY CERTIFICATE

1. Customer Name	:.....	7. Mobile No.	:.....
	:.....	8. Model	:.....
2. Address	:.....	9. Tractor Sr. No.	:.....
	:.....	10. Engine No.	:.....
3. State	:.....	11. Date of Delivery	:.....
4. Country	:.....	12. Dealer Code	:.....
5. Zip Code	:.....	13. Dealer Name	:.....
6. E-mail	:.....	14. Location	:.....

*** Escorts Kubota Copy**

Tear off

INSTALLATION CERTIFICATE

1. Customer Name	:.....	8. Tractor Application	:.....
	:.....	9. Delivery Invoice No.	:.....
2. Address	:.....	10. Date of Delivery	:.....
	:.....		
3. State	:.....	11. Model	:.....
4. Country	:.....	12. Tractor Sr. No.	:.....
5. Zip Code	:.....	13. Engine No.	:.....
6. E-mail	:.....		
7. Mobile No.	:.....	14. Installation Date	:.....

Note : The Operator manual is given to me & I confirm that I will follow recommended maintenance and usage process as mentioned in the Operator manual.

Dealer Code ☐☐☐☐☐☐

Dealer Stamp & Signature

15. Customer´s Signature.....

*** Escorts Kubota Copy**

Tear off

DELIVERY CERTIFICATE

1. Customer Name :.....
:.....
2. Address :.....
:.....
3. State :.....
4. Country :.....
5. Zip Code :.....
6. E-mail :.....
7. Mobile No. :.....
8. Model :.....
9. Tractor Sr. No. :.....
10. Engine No. :.....
11. Date of Delivery :.....
12. Dealer Code :.....
13. Dealer Name :.....
14. Location :.....

* Dealer Copy

Tear off

INSTALLATION CERTIFICATE

1. Customer Name :.....
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2. Address :.....
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5. Zip Code :.....
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Note : The Operator manual is given to me & I confirm that I will follow recommended maintenance and usage process as mentioned in the Operator manual.

Dealer Code ☐☐☐☐☐☐

Dealer Stamp & Signature

15. Customer´s Signature.....

* Dealer Copy

Tear off

DELIVERY CERTIFICATE

1. Customer Name	:.....	7. Mobile No.	:.....
	:.....	8. Model	:.....
2. Address	:.....	9. Tractor Sr. No.	:.....
	:.....	10. Engine No.	:.....
3. State	:.....	11. Date of Delivery	:.....
4. Country	:.....	12. Dealer Code	:.....
5. Zip Code	:.....	13. Dealer Name	:.....
6. E-mail	:.....	14. Location	:.....

*** Customer Copy**

Tear off

INSTALLATION CERTIFICATE

1. Customer Name	:.....	8. Tractor Application	:.....
	:.....	9. Delivery Invoice No.	:.....
2. Address	:.....	10. Date of Delivery	:.....
	:.....		
3. State	:.....	11. Model	:.....
4. Country	:.....	12. Tractor Sr. No.	:.....
5. Zip Code	:.....	13. Engine No.	:.....
6. E-mail	:.....		
7. Mobile No.	:.....	14. Installation Date	:.....

Note : The Operator manual is given to me & I confirm that I will follow recommended maintenance and usage process as mentioned in the Operator manual.

Dealer Code ☐☐☐☐☐☐

Dealer Stamp & Signature

15. Customer´s Signature.....

*** Customer Copy**

WARRANTY & MAINTENANCE SERVICE RECORD

Sl. No.	Date	Hours Covered	Job Card No.	Job Description	Dealer's stamp & Signature

NOTE : TO BE FILLED IN BY DEALER

WARRANTY & MAINTENANCE SERVICE RECORD

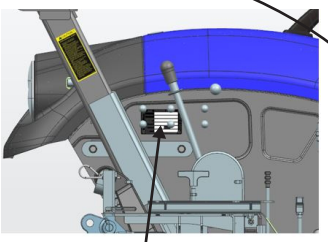
Sl. No.	Date	Hours Covered	Job Card No.	Job Description	Dealer's stamp & Signature

NOTE : TO BE FILLED IN BY DEALER

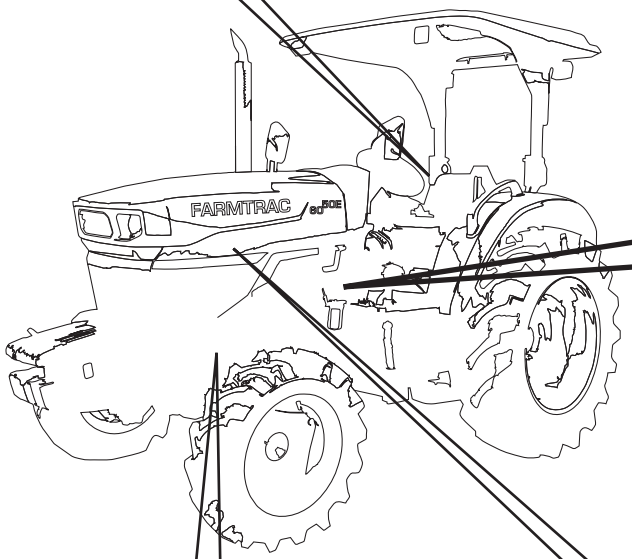
CHAPTER-1 : TRACTOR IDENTIFICATION NUMBER LOCATION

1.1. Statutory Plate

Chassis No & Tractor Serial No is also engraved on statutory plate which is riveted on left fender.

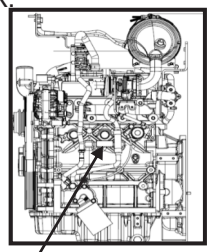


Statutory Plate
Figure-1



1.2 Engine Serial Number

The engine serial number is stamped on the right hand side of cylinder block.



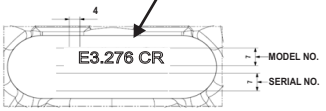


Figure-2

1.3 Chassis Serial Number

The chassis number is punched on right side of front axle support.



1. Chassis Serial Number

Figure-3

1.4 Engine Identification Plate

Engine identification plate containing details of engine serial number, production date is present on right side of engine top cover.

ESCORTS LIMITED	
ENGINE TYPE DESIGNATION:	M1ATFE
ENGINE FAMILY DESIGNATION:	T1568
ENGINE I.D./ SERIAL NO.:	#
EU TYPE APPROVAL NO./MARK:	e5 EV3/D V-0180
ENGINE PRODUCTION DATE:	MM/YYYY

Figure-4

1.5. Tool Kit



Figure-5

Sr. No.	Description	Rang of Spanner
1	D-Ended Spanner	3/8 - 5/16 inch
2	D-Ended Spanner	1/2 - 7/16 inch
3	D-Ended Spanner	5/8 - 9/16 inch
4	D-Ended Spanner	3/4 - 11/16 inch
5	Ring Spanner	19 - 24 mm
6	Wheel Spanner	7/8 x 15/16 inch
7	Wheel spanner rod	1
8	Screw driver	1
9	Linch Pin	4
10	Top Link pin	1

CHAPTER -2 SAFE OPERATION

Careful operation is your best insurance against an accident.

Read and understand this manual carefully before operating the tractor.

All operators, no matter how much experience they may have, should read this and other related manuals before operating the tractor or any implement attached to it. It is the owner's obligation to instruct all operators in safe operation.

2.1 Getting on & of 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.



Figure-6

3. Tractor is not suitable for forestry applicable in OPM.
4. Use the foot steps and assist handles when getting on or off the tractor. It is recommended that you face the tractor when getting ON or OFF the tractor.
5. Keep steps and platform clear of mud and debris. Replace any warning sign on the tractor that becomes damaged or is painted over. Replace all missing or damaged safety decals.

2.2. Safety Instructions

1. Replace damaged or torn off safety & warning symbols present on the tractor.
2. Pay special attention to the danger, warning and caution labels on the tractor.
3. 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. Read these instructions carefully. It is essential that you read the instructions and safety regulations before you attempt to assemble 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, could result in minor or moderate injury.*

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

NOTE : Gives helpful information.

4. Never wear loose, torn, or bulky clothing around tractor. It may catch on moving parts or controls, leading to the risk of an accident. Use additional safety items, e.g. hard hat, safety boots or shoes, eye and hearing protection, gloves, etc., as appropriate or required.
5. Keep your tractor clean from dirt, grease, and trash.
6. Use proper weights on the front of the tractor to reduce the risk of upsets. When using the front loader, put an implement or ballast on the 3-point hitch to improve stability. Follow the safe operating procedures specified in the implement or attachment manual.
11. Do not stand between tractor, three point linkage and implement or trailed vehicle unless parking brake is applied.

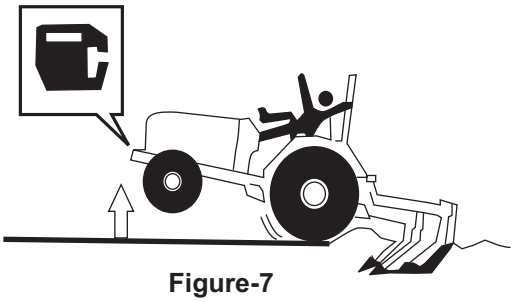


Figure-7

7. Do not modify the tractor. Unauthorized modification may affect the functioning of the tractor, which may result in personal injury.

2.3. Pre Checks Before Operating The Tractor.

Operator safety is a priority. Safe operation, specifically with respect to overturning hazards, requires understanding the equipment and environmental conditions at the time of use. Some prohibited uses which can affect overturning hazards include traveling and turning with implements and loads carried too high etc. It is the operator's responsibility to be alert for any equipment or environmental condition that could compromise safe operation.

1. Walk around the tractor & observe the following points before operating the tractor.
2. Before starting the tractor switch the key to ON position and check if any warning indication or Engine protect lamp indication is displayed on the screen. Refer page no.-29 for warnings and indications of instrument cluster.
3. Never start the engine while standing beside the tractor. Always sit on the tractor seat, fasten seat belt and ensure that the Roll Over Protective Structure (ROPS) is in place before starting the engine.
4. Apply the parking brake, place the PTO 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 position before starting the tractor.
5. Do not bypass the safety starter switch. Consult your Authorized Dealer if your safety starter controls are not operating correctly.
6. Stop the engine, disconnect PTO and apply the parking brake before dismounting implements.
7. Do not engage the parking brake while the tractor is in motion.
8. Never get off the tractor while it is in motion.
9. Never park the tractor on a steep incline.
10. To provide maximum lateral stability, add liquid ballast to tires, use cast iron wheel weights and set front and rear wheels to maximum track width.

⚠ ***CAUTION*** *To prevent premature clutch failure*

1. *Never rest foot on clutch pedal.*
2. *Never run the tractor with the clutch half engaged during the time operation.*

11. 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.
12. Never leave equipment/implement in the raised position.
13. If the operation of engine or power steering ceases, stop the tractor immediately.

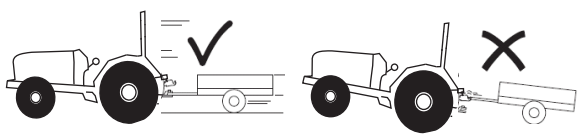
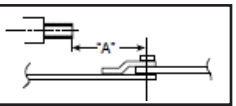


Figure-8

PTO RPM	DISTANCE “A”	
540/540E	400mm (15.85 In)	

14. Always engage 'Position Control' when attaching equipment, transporting equipment and when no equipment is attached. Be sure that hydraulic couplers are properly mounted and will disconnect safely in case of accidental detachment of the implement.
15. 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.
16. Hearing protection must be worn when operating this tractor if a safety cabin is not fitted.

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



17. Always Check the engine oil, engine coolant and other fluids for proper levels. Top up off low fluid levels if needed.
18. Make sure the air filter is clean and in good condition. Make sure all air filter ducts are properly connected. Check the air filter ducts for holes, rips or cracks.
19. Make sure all engine belts are in good condition. Check for cracked, torn, brittle, loose or missing belts.
20. Check all rubber hoses and steel hoses (vacuum/fuel) for leaks, cracks, blockage or other damage. Make sure all hoses are routed and connected properly.
21. Check all electrical wiring and harnesses for proper connection. Make sure wire insulation is in good condition, and there are no bare wires.
22. Check for the loosen or unplug sensor connecters.

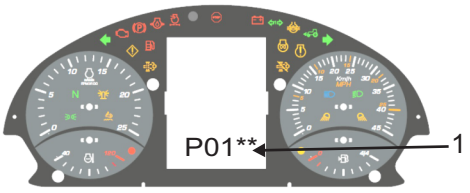
Do’s

1 Always check for the P-code on cluster.
2. Ensure battery Voltage on cluster (should be above 11.6 V)
3. Check for the loosen or unplug sensor connecters.
4. Ensure Right connections are made to Battery.

5. Check there should not be any gears engaged till tractor is not started.
6. Always cut-off the Battery power supply using kill switch when vehicle is not in Use.
7. Before starting and stopping the tractor, run engine at idle RPM for approx 1 min.
8. Engage clutch pedal lock when tractor is not in use for long period of time or during storage of tractor.
9. While using the tractor after a long time Insert the key, turn it on & crank the engine 3-4 times to start the engine normally even if it starts at the first crank. This exercise is done to fully lubricate the turbo-charger.
10. Ensure leak proof joint clamps are properly tightened.
11. Ensure that engine maintenance intervals are adhered as per lubrication & maintenance chart .Check engine oil level daily. Oil level between "Add" & "Max" is safe. Top up oil level if oil level is close to "Add" mark.
12. Grease all greasing point every 50 hrs. or daily. For puddling operation grease daily.
13. Use a piece of cardboard or paper to search for leaks.
14. Stop the engine and relieve pressure before connecting or disconnecting hydraulic or fuel lines.
15. Tighten all connections before starting the engine or pressurizing lines.
16. If fluid is injected into the skin obtain medical attention immediately or gangrene may result. 17. 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.
18. Continuous long term contact with used engine oil may cause skin cancer. Avoid prolonged contact with used engine oil. Wash skin promptly with soap and water.
19. Do not run the tractor engine in a closed building without adequate ventilation as exhaust fumes may suffocate you.
20 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.
21. Tractor wheels are heavy. Handle them with care and ensure that, when stored, they cannot topple and cause injury.

Don'ts

If any faulty system or fault in the system a **P-Code** will be displayed on the instrument cluster as shown in figure below for reference. The cause and remedies of the P-Codes is mentioned in the trouble shooting chart.



1. P-Code Displayed on instrument cluster

Figure-9

⚠ ***WARNING :*** *If any P-Code appears on the instrument cluster do not operate the tractor and contact the authorised farmtrac dealer.*

⚠ ***WARNING :*** *If Engine protect lamp , DPF inhibit switch indication blinks along with buzzer sound donot operate the tractor and consult your authorized dealer.*

1. Do not leave the engine on idle condition for longer duration of time. It may lead to soot build up in the DPF.
2. Do not start the Tractor when there is any P-Code on cluster.
3. Do not Try to jump start the vehicle.
4. Do not unplug any sensor when ECU is in ON state.
5. Do not unplug battery terminal or cut-off battery power when ECU is in ON State.
6. Don't try to crank the engine when driver is not on seat, any gear is engaged or clutch not pressed.
7. Do not operate the tractor beyond 1460 ERPM while working with 540E pto Do not operate the tractor beyond 2000 ERPM while working with 540 PTO

⚠ ***WARNING :*** *Tampering with the engine voids the EU type-approval of that particular engine.*

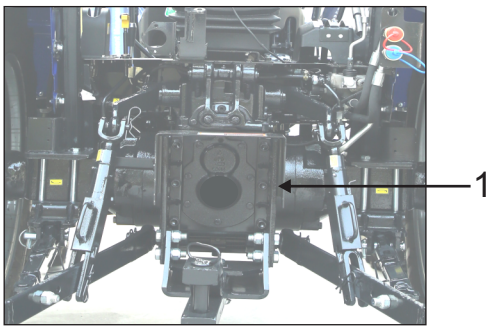
2.4. Driving The Tractor

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 of 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. 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 traveling on the highway.
4. When operating in the field, unlock the brake pedals.
5. Reduce speed before turning or applying the brakes. Apply brakes on both wheels simultaneously when making an emergency stop.
6. Do not engage the differential lock while turning.

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. Dim the tractor lights when meeting a vehicle at night. Ensure the lights are adjusted to avoid blinding the driver of an upcoming vehicle (applicable only twin beam Head lamps are fitted).
10. Always check overhead clearance, especially when working in confined spaces.
11. 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.

2.5. Operating The PTO

1. Ensure the PTO guard is always installed and place the PTO shaft cap when the PTO is not being used.



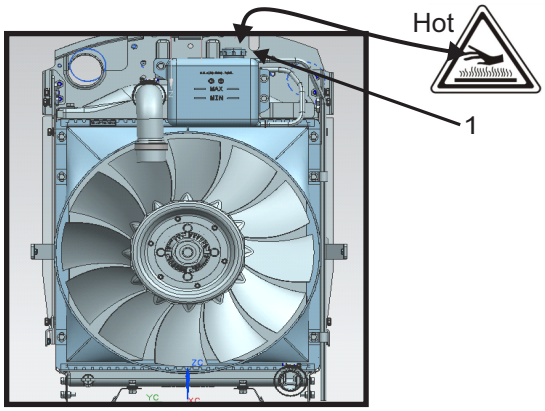
1. PTO Guard
Figure-10

2. If PTO is running, shut off the engine and wait for the PTO shaft to stop turning before getting off the tractor to connect or disconnect PTO driven equipment.
3. Apply the parking brake and block the front and rear wheels when operating stationary PTO driven equipment.
4. To avoid injury never clean, unclog, adjust or service PTO driven equipment while the tractor engine is running.
5. Never wear loose clothing when operating the PTO or near equipment that is rotating. manufacturer's handbook. Certain implements require special operating techniques.
6. During regeneration process PTO should be in OFF condition. For regeneration details refer Chapter-4, DPF Regeneration strategies and conditions.

2.6. Servicing The Tractor

Before servicing the tractor, park it on a firm, flat and level surface, set the parking brake, lower all implements to the ground, place the gear shift lever in neutral, stop the engine and remove the key.

1. Allow the tractor time to cool off before working on or near the engine, muffler, radiator, etc.



1. Radiator Cap Hot
Figure-11

2. Do not remove radiator cap while coolant is hot. When cool, slowly rotate cap to the first stop and allow sufficient time for excess pressure to escape before removing the cap completely. If the tractor has a coolant recovery tank, add coolant or water to the tank, not the radiator. (See "Checking Coolant Level" in "DAILY CHECK" in "PERIODIC SERVICE" section.)
3. Always stop the engine before refueling. Avoid spills and overfilling.
4. Do not smoke when working around battery or when refueling. Keep all sparks and flames away from battery and fuel tank. The battery presents an explosive hazard, because it gives off hydrogen and oxygen especially when recharging.
5. Keep first aid kit and fire extinguisher handy at all times.
6. Disconnect the battery's ground cable before working on or near electric components.
7. To avoid the possibility of battery explosion, do7not use or charge the refillable type battery if the fluid level is below the LOWER (lower limit level) mark. Check the fluid level regularly and add distilled water as required so that the fluid level is between the UPPER and LOWER levels.
8. Do not attempt to mount a tire on a rim. This should be done by a qualified person with the proper equipment.
9. Always maintain the correct tire pressure. Do not inflate tyres above the recommended pressure shown in the operator's manual.

10. Securely support the tractor when either changing wheels or adjusting the wheel track width.

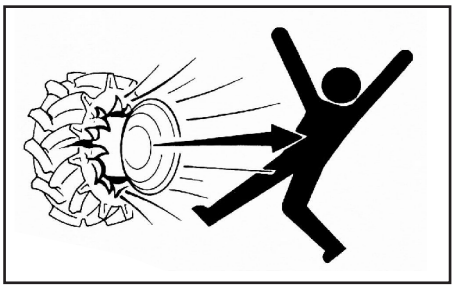


Figure-12

13. Make sure that wheel bolts have been tightened to the specified torque.
14. Do not work under any hydraulically supported devices. They can settle, suddenly leak down, or be accidentally lowered. If it is necessary to work under tractor or any machine elements for servicing or adjustment, securely support them with stands or suitable blocking beforehand.
15. Escaping hydraulic fluid under pressure has sufficient force to penetrate skin, causing serious personal injury. Before disconnecting hydraulic lines, be sure to release all residual pressure. Before applying pressure to the hydraulic system, make sure that all connections are tight and that all lines, pipes, and hoses are free of damage.

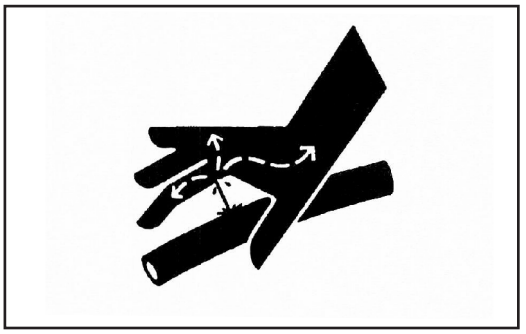


Figure-13

16. Stay away from exhaust gases during regeneration processes. Regeneration occurs inside the DPF unit which is an exhaust after treatment devices used to minimize the carbon and Nox emissions.
17. No tempering or modifications should be done on Engine specially on DPF and EGR, it can affect the emissions as well as engine performance.
18. Proper Management of DPF filter should be done as per local laws and regulations after it has reached its limit and replacement is required. DPF filter change interval is mentioned in Lubrication and Maintenance section.
19. **Do not wash DPF filter assembly when the temperature of assembly is more than 50°C(120°F)**
20. Do not wash DPF assembly using direct jet of water spray.

⚠ ***CAUTION** : Manual or assisted DPF regeneration must be done in authorised service station and under the supervision. Kindly refer Chapter-5- DPF Regeneration strategies.*

2.7. Warranty

This tractor is warranted under the E-KUBOTA. Limited Express Warranty, a copy of which may be obtained from your selling Dealer / Distributor. No warranty shall, however, apply if the tractor has not been handled according to the instruction given in the Operator's Manual even it is within the warranty period.
Correct installation, coupled with regular maintenance, will do much to prevent breakdowns. If, however, operating trouble is experienced during the warranty period, the following procedure must be adopted:- Immediately notify the Dealer from whom you purchased the tractor, quoting the Model and Serial Number. It is most important that there should be no delay, and you should realize that, even where the original failure is covered by warranty .
If the failure is not repaired immediately, warranty cover may not apply. Provide your Dealer with as much background information as you can.
It will help him to know how many hours service has been achieved, the type of work on which you are engaged and the symptoms of the trouble.
It should be noted that normal maintenance services such as tuning, brake/clutch adjustments, and the supply of materials used to service the tractor (oil, filters, fuel and antifreeze) are not covered by terms of the warranty.

2.7.1 Parts Warning

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

⚠ **CAUTION** : *Parts replacement like- ECU, DPF, injectors requires recalibration which must be done by authorized Farmtrac dealer.*

2.7.2.Service After Warranty

During the warranty period, you should have all your repairs and maintenance performed by your dealer. This ensures that a detailed check is kept on the progress and performance of your new tractor. In order to obtain the best results from your tractor it is important that regular maintenance and service checks continue after the warranty period has expired.

2.8. Diesel Fuel

1. To enhance the life of engine never use blended mixture of fuel like-gasoline, alcohol etc.
2. Never remove the fuel cap or refuel with the engine running or in hot condition.
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. Do not fill the fuel tank to capacity. Allow room for expansion.
5. Wipe up spilled fuel immediately.
6. Always tighten the fuel tank cap securely.
7. If the original fuel tank cap is lost, replace it with an approved cap. A non-approved cap may not be safe.
8. Keep equipment clean and properly maintained.
9. Do not drive equipment near open fire.
10. Never use fuel for cleaning purpose.
12. Diesel fuel EN590:2014 must be used and sulphur content above 10 PPM is not recommended.
13. Precaution should be taken to ensure that stored fuel is kept free of dirt, water, etc.

⚠ **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.*

2.9. ROPS

1. Farmtrac recommends 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 / Distributor
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 and the seat belt fastened for all other operations.)
7. Always use the seat belt if the tractor has a ROPS. Do not use the seat belt if a foldable ROPS is down or there is no ROPS. Check the seat belt regularly and replace if frayed or damaged.

2.10. Safety for children

Tragedy can occur if the operator is not alert to the presence of children. Children generally are attracted to machines and the work they do.

1. Never assume that children will remain where you last saw them.
2. Keep children out of the work area and under the watchful eye of another responsible adult.
3. Be alert and shut your machine down if children enter the work area.
4. Never carry children on your machine. There is no safe place for them to ride. They may fall off and be run over while running machine.
5. Never allow children to operate the machine even under adult supervision.
6. Never allow children to play with the machine or the implement.
7. Use extra caution while reversing the tractor. Look behind and down to make sure area is clear before moving.

2.11. Operating on slopes

Slopes are a major factor related to loss-of-control and tipover accidents, which can result in severe injury or death. All slopes require extra caution.

1. Stay off slopes which are too steep for safe operation.
2. Driving forward out of a ditch, mired condition or up a steep slope increases the risk of a tractor to be upset backward. Always back out of these situations. Extra caution is required with 4-wheel drive models because their increased traction can give the operator false confidence in the tractor's ability to climb slopes.
3. Keep all movement on slopes slow and gradual. Do not make sudden changes in speed, direction or apply brake and make sudden motions of the steering wheel.
4. Avoid disengaging the clutch or changing gears speed when climbing or going down a slope. If on a slope disengaging the clutch or changing gears to neutral could cause loss of control over the machine.

Note : *Before cranking/starting of tractor, operator to ensure cleaning of snow on front grill, side grill & air filter in winter/cold condition.*

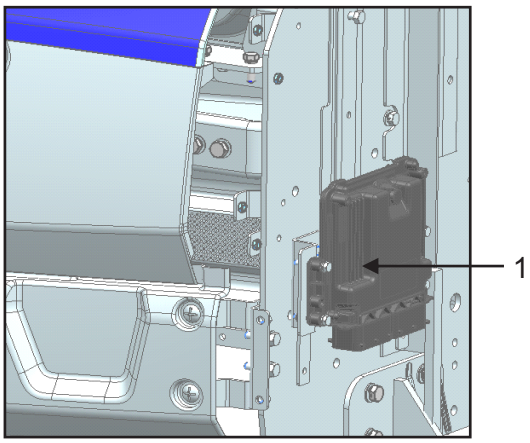
2.12 Parking The Tractor

1. Lower all implements to the ground, place all control levers in their neutral positions, set the parking brake, disengage the PTO, stop the engine, remove the key from the ignition Leaving. transmission in gear with the engine stopped will not prevent tractor from rolling.
2. Make sure that the tractor has come to a complete stop before dismounting.
3. Avoid parking on steep slopes, if at all possible park on a firm and level surface; if not, park across a slope with chock the wheels. Failure to comply with this warning may allow the tractor to move and could cause injury or death.

2.13. Handling of ECU

1. Do not unplug or plug any sensor, ECU connectors and do not cut off battery power when ECU is in ON state.
2. Do not unplug battery terminal or cut-off battery power when ECU is in ON State.
3. Do not unplug the ECU when ECU is in on state.
4. Don't try to crank the engine when driver is not on seat, any gear is engaged or clutch not pressed.

2.14. ECU ON-OFF State



1. ECU
Figure-14

For ECU On state

- Switch on the battery power Supply, then.
- Turn the Ignition ON.

For ECU Off State

- First Turn the Ignition Off, then.
- Wait for 1 minute.

Precautions Regarding the ECU

Never use ECU for the proposes that are not intended by Farmtrac; such as using unauthorised ECU, writing unauthorised data to ECU, leaving it broken, or removing sensors and actuators. Doing so could result in the violation of emission control regulation and will void the product warranty.

Improper use or misuse of the ECU may result in death or serious injury due to an abrupt and unexpected increase in engine speed.

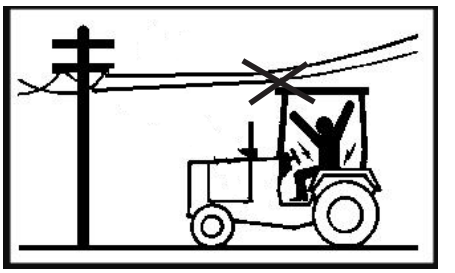
Be sure to use the ECU in conjunction with engine whose model or serial numbers are specified by Farmtrac. Other ECU/engine combination than specified will void the engine warranty.

When replacing the fuel injector, you need to rewrite the fuel injection quantity adjustment data in ECU. You will need diagnostic tool for rewriting the data. Always contact the authorised Farmtrac dealer that handles the tool.

When replacing ECU, it is necessary to transfer the data from the old ECU to the new ECU using service based diagnostic tool. Contact your authorised Farmtrac dealer who can handle the tool. If the data is not correctly transferred to the new ECU, the engine performance cannot be ensured.

Overhead Power lines :

1. Due to less gap between Earth and power line, do not cross the tractor on that place. Accident can be happened.

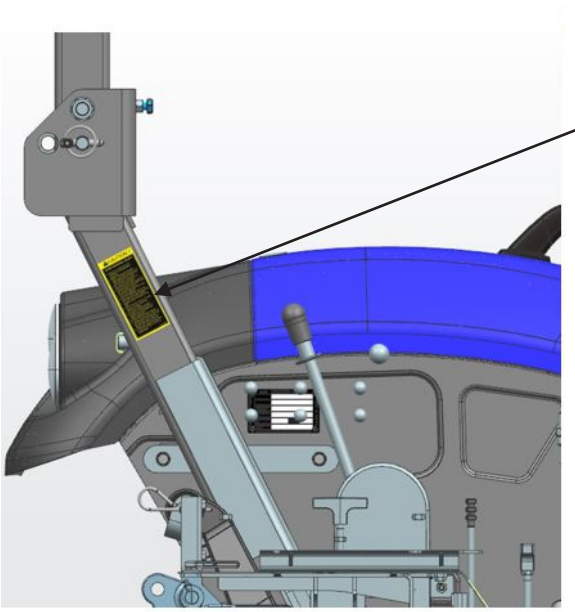


Lighting strikes can cause significant injury or death Action : Move indoors if you hear thunder.

- Severe thunderstorm Warning means Take Action
- Take shelter indoors immediately
- Use extra caution while driving
- Check forecast updates
- Stay weather ready



2.15 SAFE OPERATION



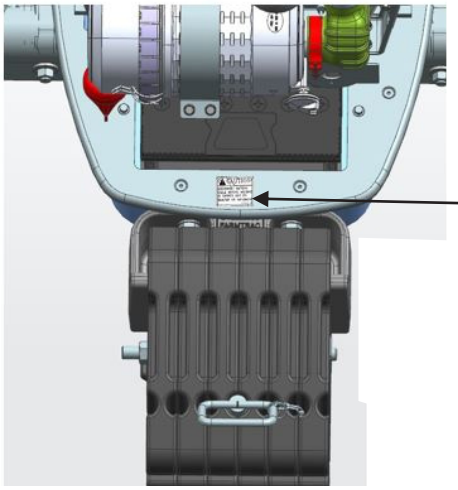
D10510060

CAUTION

AVOID PERSONAL INJURY:

1. Read and understand the operator's manual before operation.
2. Before starting the engine, make sure that everyone is at safe distance from the tractor and that the PTO is OFF.
3. Do not allow passengers on the tractor at any time.
4. Before allowing other people to use the tractor, have them read the operator's manual.
5. Check the tightness of all nuts and bolts regularly.
6. Keep all shields in place and stay away from all moving parts.
7. Lock the two brake pedals together before driving on the road.
8 Slow down for turns, or rough roads, or when applying individual brakes.
9. On public roads use SMV emblem and hazard lights, if required by local traffic and safety regulations.
10. Pull only from the drawbar.
11. Before dismounting, lower the implements to the ground, set the parking brake, stop the engine and remove the key.
12. Securely support tractor and implements before working underneath.

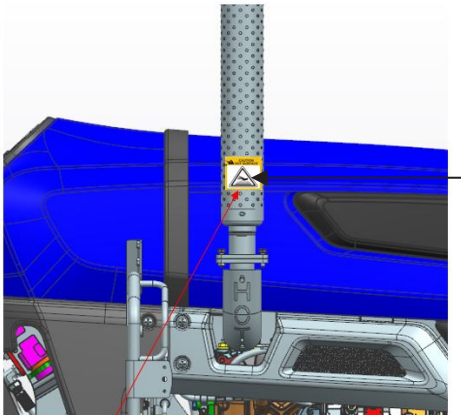
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⚠ CAUTION

DISCONNECT BATTERY CABLE BEFORE WELDING IS CARRIED OUT ON TRACTOR OR IMPLEMENT

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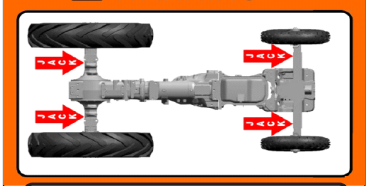
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CAUTION HOT SURFACE



D10625390

WARNING



TO AVOID PERSONAL INJURY OR DEATH.
Before jacking up the tractor, park it on firm and level ground and chock the rear wheels.

Fix the front axle to keep it from swinging.

Select jacks that can with stand the machine weight and set them up at locations shown above.

D10510010

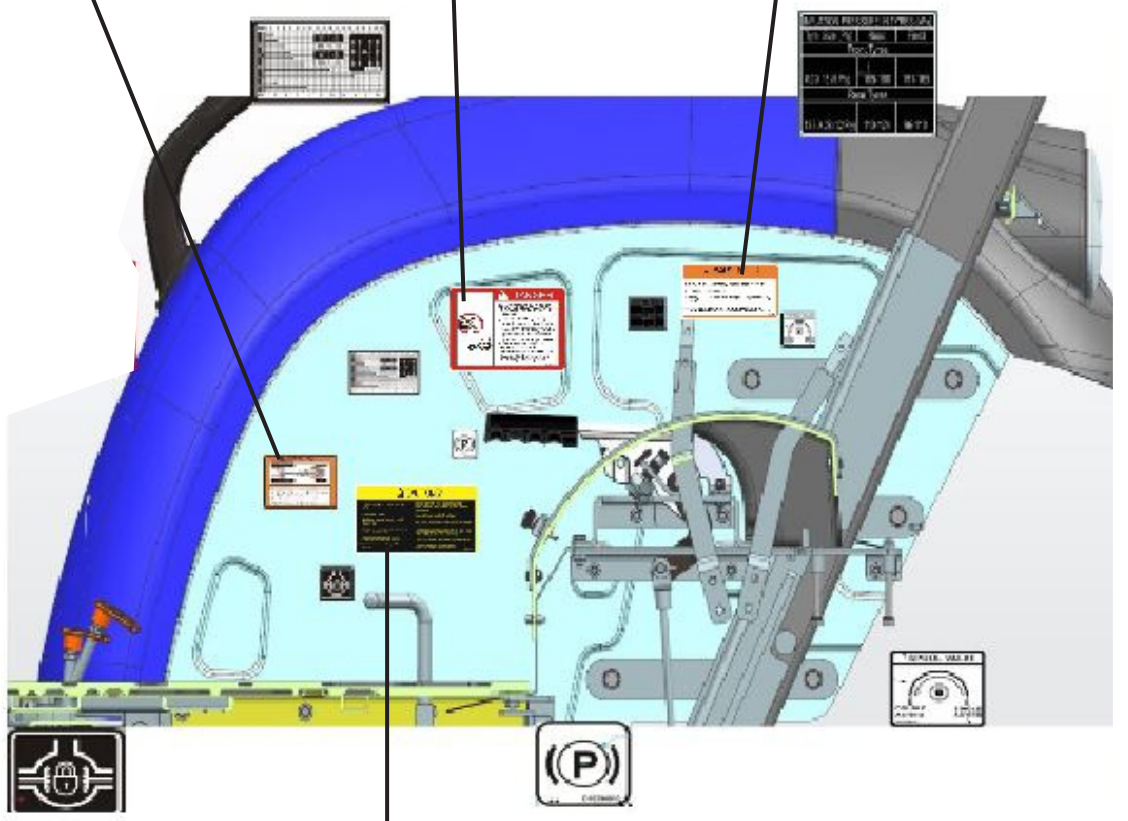
DANGER

TO AVOID POSSIBLE INJURY OR DEATH FROM A MACHINE RUNAWAY
1) Do not start engine by shoring across terminals or bypassing the safety start switch. Tractor may start in gear and move if normal starting circuit is bypassed.
2) Start engine only from operator seat with transmission and PTO OFF. Never start engine while standing on the ground.

D10509980

WARNING

1). Pull only from draw bar, Pulling from any other point can cause over turn.
2). Do not operate with unshielded PTO.
3). Disengage PTO and stop engine before servicing tractor or implement or attaching and detaching implements.
FAILURE TO FOLLOW ANY OF THE INSTRUCTIONS ABOVE CAN CAUSE SERIOUS INJURY TO THE OPERATOR OR OTHER PERSONS.



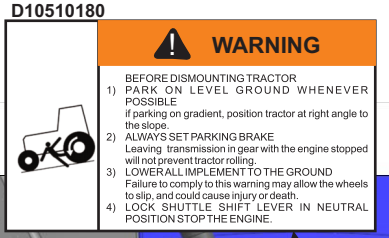
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CAUTION

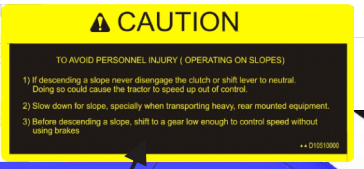
1. Read Operator's Manual before operating this tractor.
2. Keep all shields in place.
3. Hitch towed loads only drawbar to avoid rearward upset.
4. Make certain everyone is clear of machine before starting engine or operation.
5. Keep all riders off tractor and equipment.
6. Keep hands, feet and clothing away from power-driven parts.
7. Reduce speed when turning or applying Individual brakes or operation around hazards, on rough ground or steep surfaces
8. Couple brake pedal together for road travel.
9. Use flashing warning lights on highway unless prohibited by the law.
10. Stop engine, lower implement to ground and shift to "PARK" or set brake(s) securely before dismounting.
11. Wait for all movement to stop before servicing machinery.
12. Remove key if leaving tractor unattended.

▲▲D10511810

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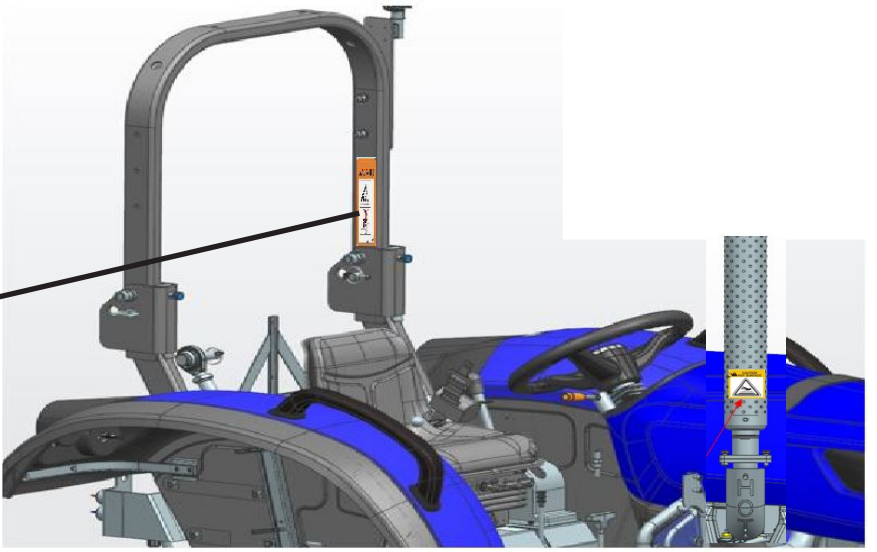
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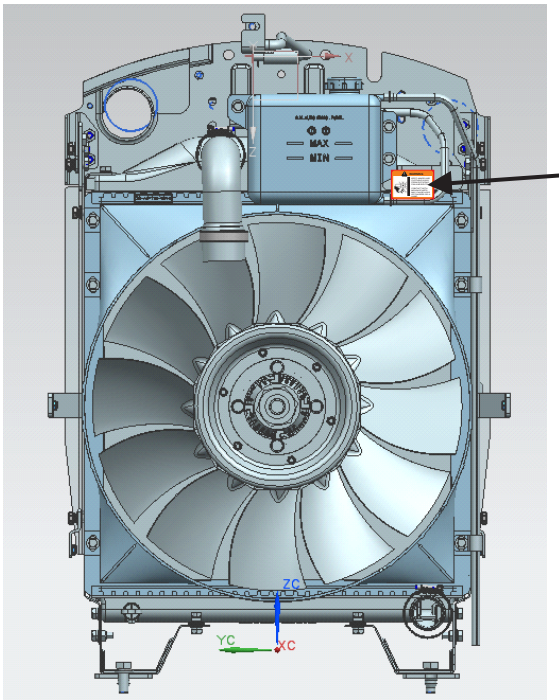


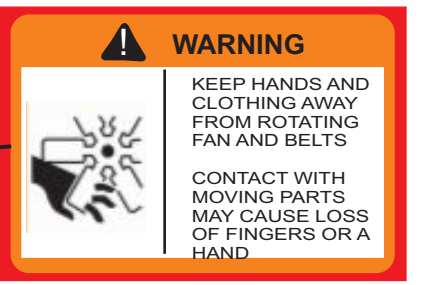
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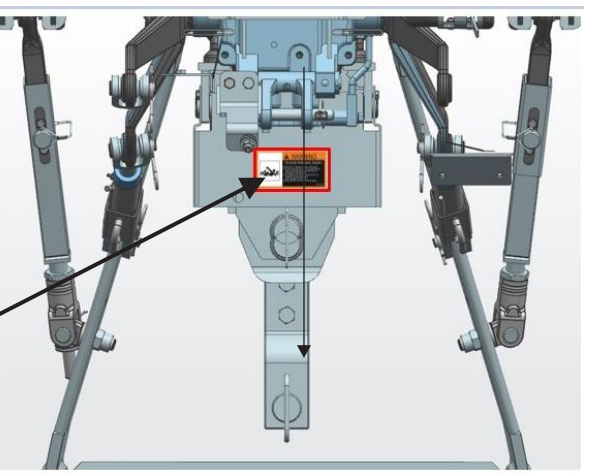








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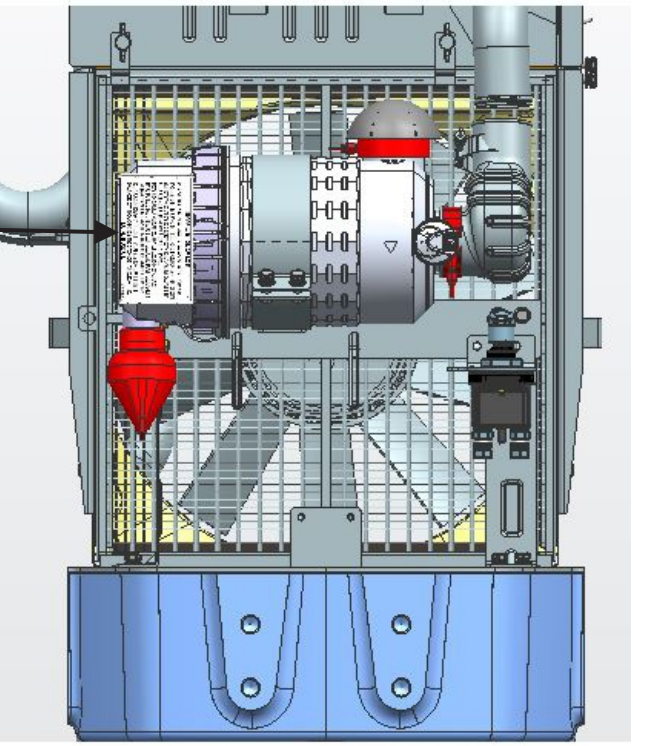


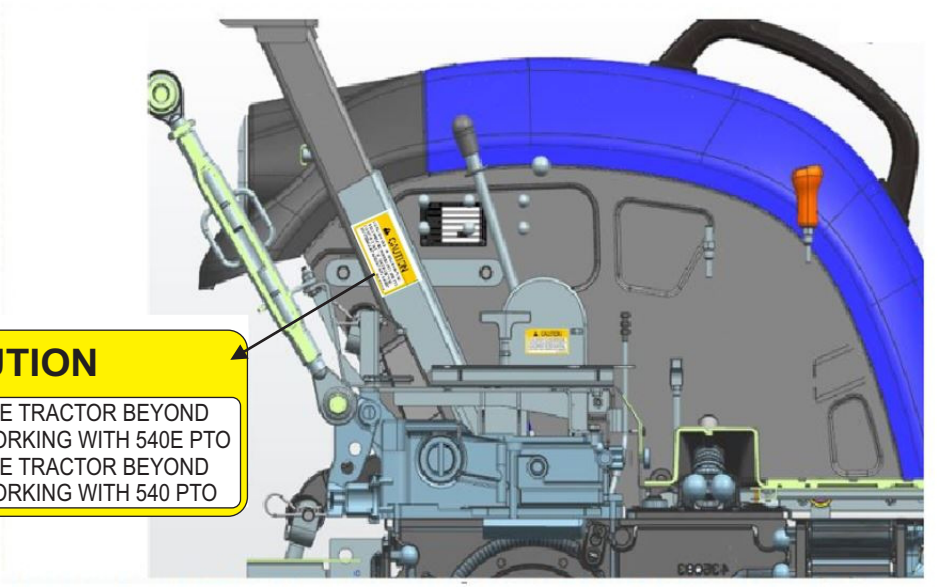


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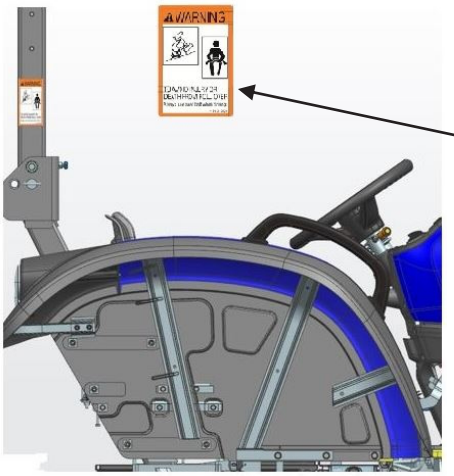




⚠ CAUTION

DO NOT OPERATE THE TRACTOR BEYOND
1460 ERPM WHILE WORKING WITH 540E PTO
DO NOT OPERATE THE TRACTOR BEYOND
2000 ERPM WHILE WORKING WITH 540 PTO

D10760870



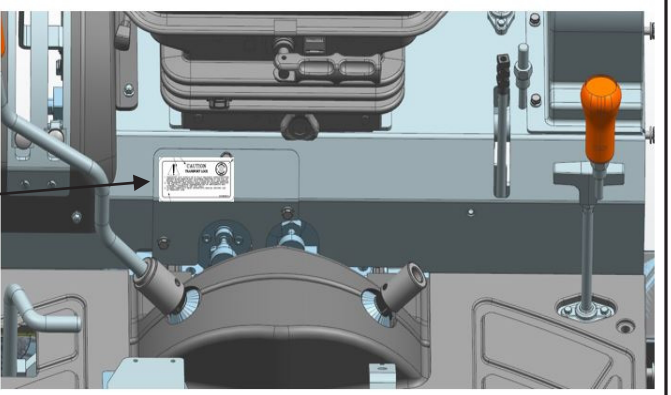
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⚠ CAUTION

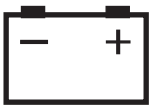
TRANSPORT LOCK

1. TRANSPORT LOCK SHOULD BE IN FULLY UNLOCKED (OPEN) CONDITION (ROTATE BLACK KNOB IN ANTI CLOCKWISE DIRECTION TO THE FULL AS SHOWN ON KNOB) DURING FIELD OPERATION WITH IMPLEMENTS,
2. USE TRANSPORT LOCK (ROTATE BLACK KNOB IN CLOCKWISE DIRECTION EXTERNAL HYDRAULIC TAP OFF ONLY
3. PLEASE CAREFULLY READ OPERATOR'S MANUAL BEFORE USE OF TRANSPORT LOCK



2.16 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

CHAPTER -3

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.

3.1. TOP VIEW OF TRACTOR

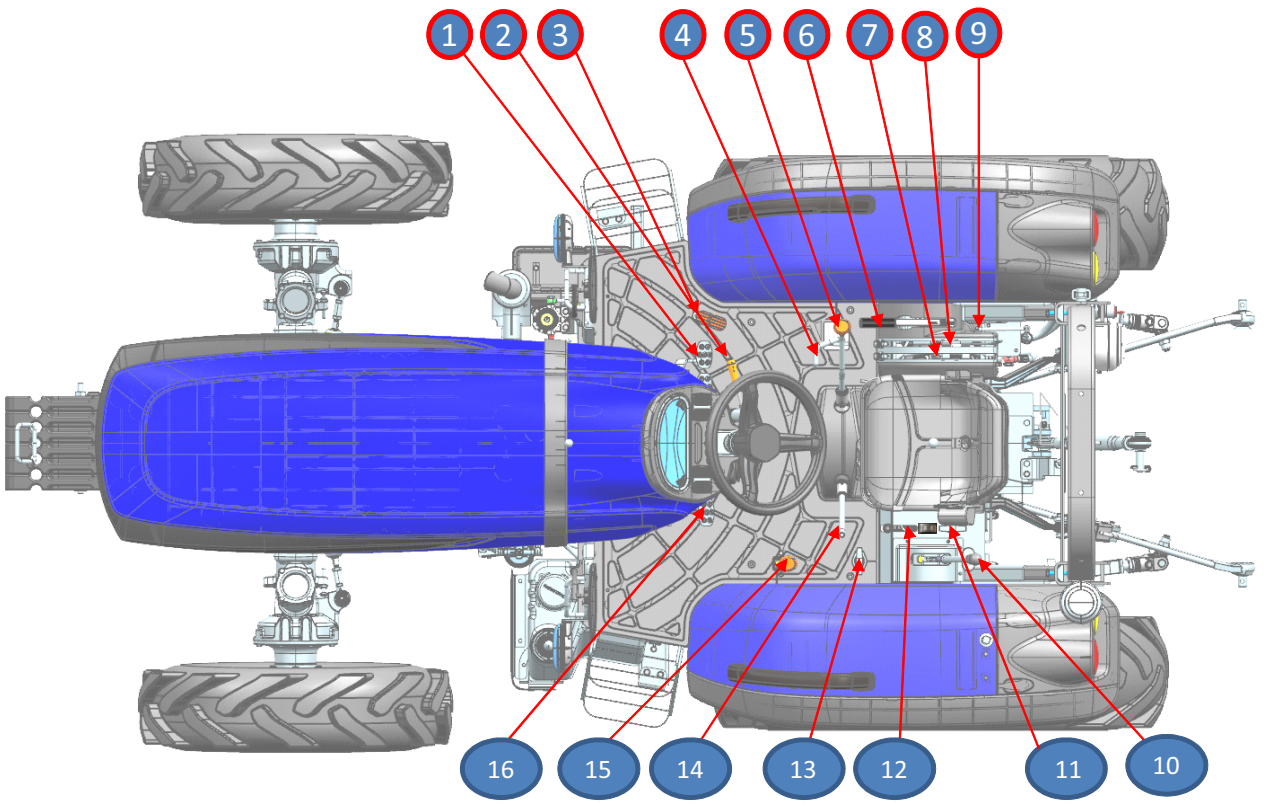


Figure 15
3. Top View Of Tractor

1. Brake
2. Hand throttle control
3. Foot throttle accelerator
4. Diff lock
5 Main Gear lever
6. Parking Brake
7. DC Lever
8. PC Lever
9. DCV Lever
10. IPTO
11. Dual Speed PTO Control
12. PTO control Assembly
13. 4WD-2WD Lever
14. High Low Shuttle lever
15. Forward -reverse Shuttle
16. Clutch pedal

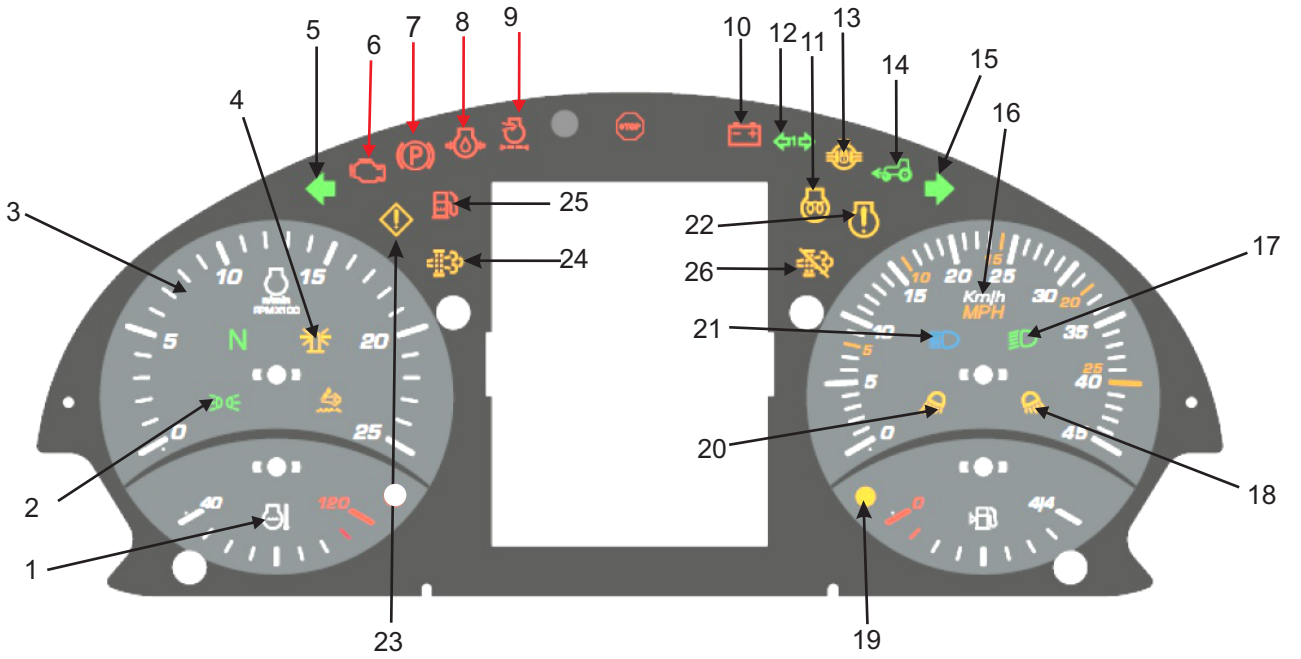
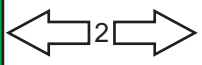
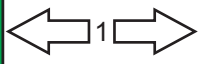
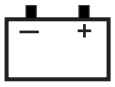


Figure 16
3.2 Single Instrument Cluster

1. Engine coolant temperature gauge
2. Position Lamp
3. RPM Meter
4. Rotary Beacon Light
5. LH Turn Signal Indicator
6. MIL Lamp
7. Parking Light Indication
8. Engine Oil Pressure Warning Light
9. Clogging Sensor Light Indication
10 . Battery Indicator
11. Glow Plug Indicator
12. Trailer Turn Indicator 1
13. Differential Lock
14. 4 Wheel Driving Engagement Light
15. RH Turn Signal Indicator
16. Speed Meter
17. Lower Beam
18. Rear Working Light
19. Low fuel indication
20. Front Working Light
21. High Beam
22. Engine warning
23. Service Lamp
24. DPF Regeneration
25. Fuel Gauge
26. DPF Regeneration Inhibit Switch

3.3 WARNING SYMBOLS & INDICATION ON INSTRUMENT CLUSTER

Function	Color	Symbol
Working Light Front	Amber	
Working Light Rear	Amber	
Sec. Trailer Turn Indication	Green	
Trailer Turn Indication	Green	
High Beam	Blue	
Lower beam	Green	
Batter Charge	Red	
Engine Oil Pressure	Red	
Left Turn Indicator	Green	
Air Intake Filter Contamination	Red	
Parking Brake	Red	
Glow Plug Indicator	Yellow	
Fuel Reserve	Amber	
Rotary Beacon	Amber	
Neutral	Green	
Engine Coolant Temperature	Red	

Function	Color	Symbol
OBD/MIL/ Diagnostic	Red	
Differential Lock	Yellow	
PTO Clutch	Amber	
Engine Protect Lamp	Amber	
Four Wheel Drive	Green	
Engine Warning	Amber	
Water in Fuel	Red	
Parking Light	Green	
Right Turn Indicator	Green	
Diesel Particulate Filter Regeneration Enabled	Amber	
Diesel particulate filter inhibit switch enabled	Amber	

3.4 RPM Meter

The RPM meter indicates engine revolutions per minute.
The yellow marks of 540 and 540E (Economy PTO) on RPM scales indicates the engine speed at which PTO RPM of 540 and 540E is obtained respectively.
The hours recorded should be used as a guide to determine hours servicing intervals.

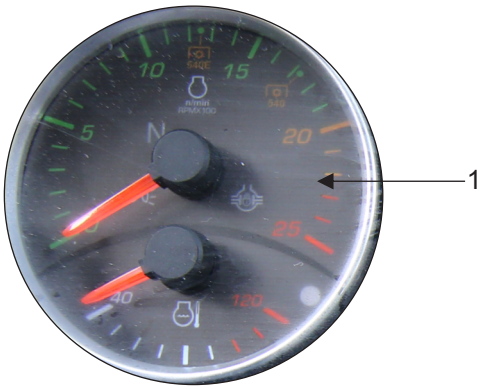


Figure-17
1. RPM Meter

3.5. Speed Meter

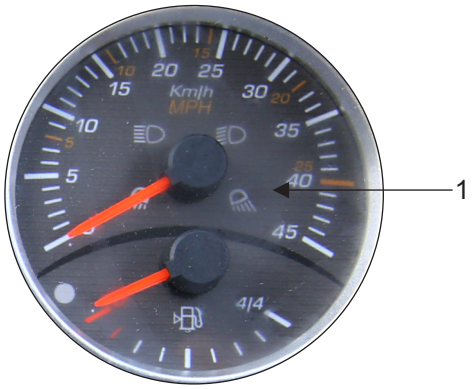


Figure-18
1. Speed Meter

It Indicates the speed of the tractor in km/h or mph.

3.6. 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, decrease the engine RPM to Idle and investigate the cause.

.



Figure-19

Engine Coolant Temperature Gauge

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

3.7 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, shift the engine RPM to idle 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.*

3.8 Battery Charging Indicator

The red warning light on the instrument cluster indicates that the alternator is not charging the battery and should extinguish when tractor is started.

3.9 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.

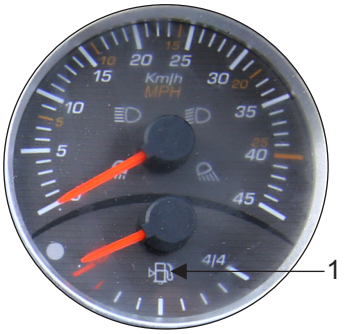


Figure-20
1. Fuel Gauge

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

3.10 Instrument Cluster Settings



Figure-21

1. Up **3. Ok**
2. Down **4. Menu**

There are 4 buttons on the instrument cluster with following functions.

1. Up 3. Ok
2. Down 4. Menu

Two Settings can be done on the instrument cluster.

1. Time 2. Tyre Option

3.9.1 Time Setting

Press main menu button, you can access the main menu in which you can setup the time. Hour field is selected automatically as shown in image blow.



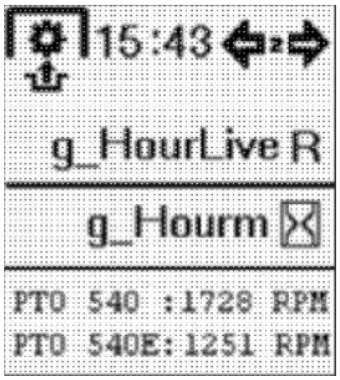
Range of time in hour meter is from 0 to 23. By pressing up button number is incremented by 1 & by pressing down button number is decremented by 1. If button is held pressed increment / decrement is fast.
Now press OK button.

By pressing the menu button, the hour value is confirmed and the selection is moved to the minute's field.



The procedure to set minutes is the same as described for the hours. Data range is 0-59.
At end press OK button, the time setting is completed & saved the instrument cluster goes back to normal operating screen.

Always press OK button at the end of the setting or the changes will not be saved.

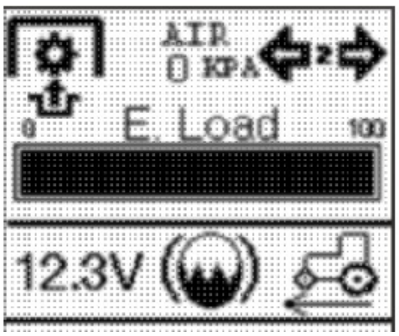


Press Up/down (1,2) button above image will appear on instrument cluster screen.

1) On top of screen time will be displayed.

2) G hour live, g hour m indicates total engine hours.

3) Below the hour indication PTO 540 and PTO 540E RPM are indicated with respect to engine rpm.



Press Up/down (1,2) button above image will appear on instrument cluster screen.

1) On top left corner the symbol be glow if PTO clutch is in ON condition.

2) indicates Air inlet pressure in engine.

3) indicates total RPM in terms of engine load. 100 means engine is running at full rpm.

4) 12.3V indicates the battery voltage.It should not be less than 9 volts.

5) Indication glows if tractor is in 4WD.

3.9.2 Tyre Selection

The instrument gives the possibility to set different tyre types. Each tyre has its own rolling circumference used to compute the vehicle speed. To access the setting screen, you have to press both buttons on the left at the same time and hold them down for 5 seconds.

The tyre type setup screen is shown, as in the image below :

Setup Tyre
13.6x28 (R1)
14.9x28

The user can scroll the list using the up and down buttons and select the desired tyre type. To confirm the selection the user has to press the OK button. After that the instrument goes to fuel tank selection screen. To abort the procedure (and keep the previous setting) the user has to press the menu button on the right. By pressing menu button, you can skip the current screen.

At first access the top line is selected. After the first time, the previously set tyre will be selected.

By default (if no tyre is selected, for example at first start up) the instrument uses the 13.6x28 tyre.

3.11. Operator's Seat

Before operating the tractor, it is important to adjust the seat to the most comfortable position such that all the controls are in proper reach and operator should have proper vision from the tractor.
Driver seat can be adjusted in 2 ways horizontally and vertically.

3.11.1 Horizontal Adjustment

Horizontal adjustment lever is present below the operator seat on left hand side. Lift the lever to move seat forward or backward.

3.11.2. Vertical Adjustment

Use knob (2) to adjust the suspension as per your weight.

NOTE:

- *Do not use solvents to clean the seat. Use warm water with a little detergent added.*
- *Rms Value of vibration Acceleration is 2.05 m/s^2 at operator's seat.*

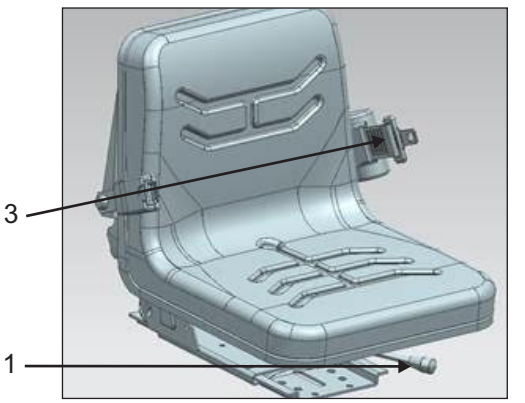


Figure-22

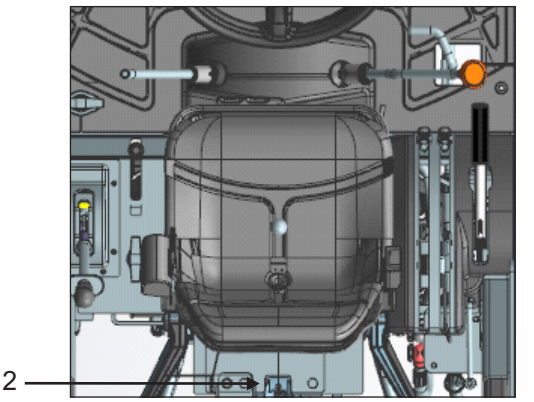


Figure-23

1. Horizontal travel adjustment lever
2. Weight adjuster Knob
3. Seat Belt

WARNING : *Tractors equipped with a ROPS also have a seat belt fitted. Always use the seat belt with a ROPS installed. Do not use a seat belt if the tractor is not equipped with a ROPS.*

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.
If your tractor is fitted with ROPS, it must be maintained in a serviceable condition.

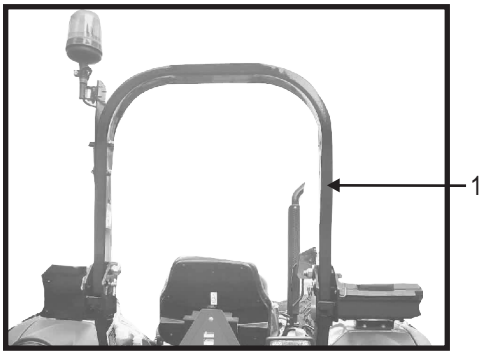


Figure-24
1. ROPS

3.12 Dash Board

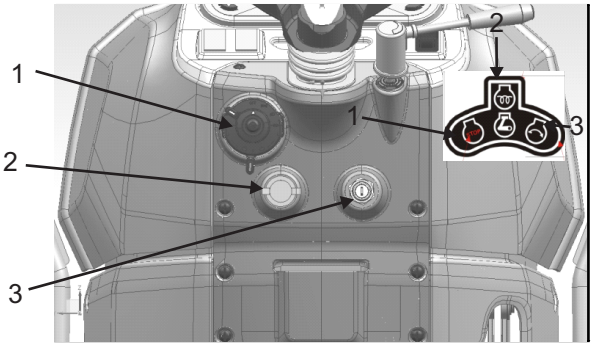


Figure -25
1. Combination switch 2. Mobile charger
3. Ignition Switch

3.12.1 Combination Switch

The combination switch is of the rotary type and has three modes when rotated in clockwise direction.

Position 1.
- Rotate combination switch clockwise.
- Night mode position lamp 'ON'.
-

Position 2.
- Rotate combination switch clockwise.
- Low beam head lamp 'ON'.
- Position lamp 'ON'.
- Registration plate lamp 'ON'.
- Farmtrac logo illuminated.

Position 3.
- Rotate combination switch clockwise.
- High beam head lamp 'ON'.
- Position lamp 'ON'.
- Registration plate lamp 'ON'.
- Farmtrac logo illuminated.

3.12.2 Turn Signal with Hazard Light Switch off.

1. Turn light indicator switch is in middle (off) position turn switch left/right to operate left/right turn light indicators.
2. When the left turn signal is activated without the hazard lights, the indicated turning light (2,3) will flash and the other (2*,3*) will stay on. Similar for the right turn signal. Refer Figure No. 28.

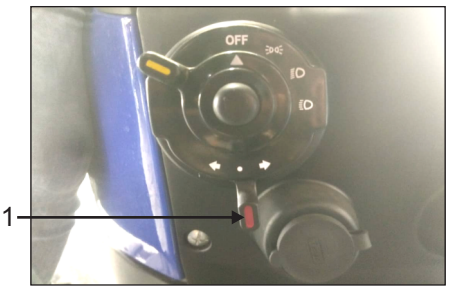


Figure-26
1. Turn Indicator Light Switch

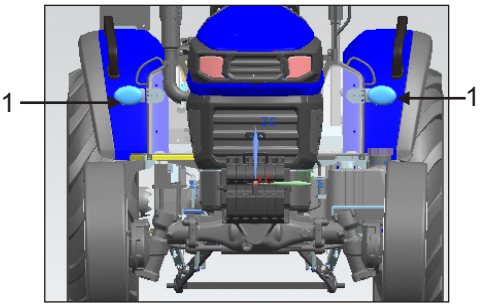


Figure -27
1. Front Turn Light Indicator

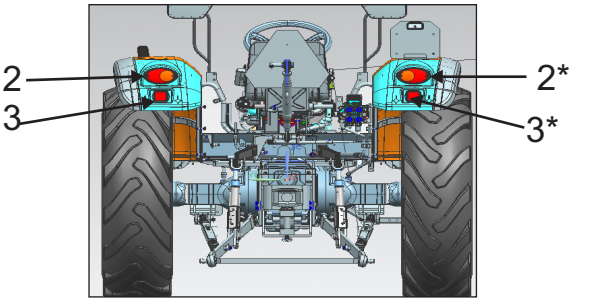


Figure -28
2, 2*. Rear Turn Light Indicator
3,3* Rear Light

3.12.3. Key-Start Switch

The key operated switch actuates the starting motor. Always use additional lighting on the mounted implement if this conceals the turn signals and other lights at the rear of the tractor.

Starting the Engine
A three-position key-start switch is installed on all the tractors.

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 high/low lever is in the neutral (N) position & clutch pedal is pressed.*

⚠ **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.*

3.13 Beacon Lamp Switch

The switch is present on the right side of the dash board. Press the switch in down position to switch 'ON' the canopy lamps & in upward position to switch 'OFF' the canopy lamps.



Figure-29
1. Beacon Lamp Switch

3.14 Hazard Lamp Switch

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



Figure -30
1. Hazard Lamp Switch

3.15 DPF Regeneration And Inhibit Switch

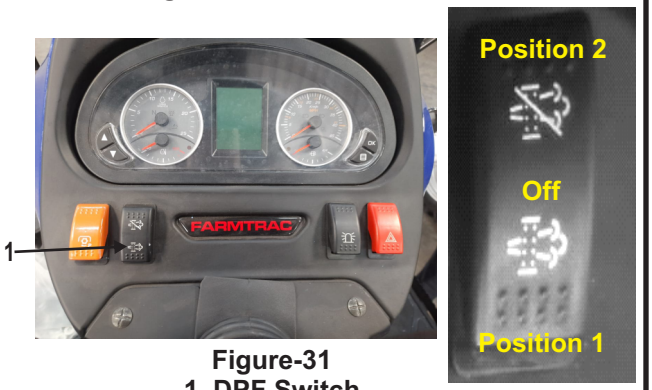


Figure-31
1. DPF Switch

DPF regeneration and inhibit switch is toggle type switch which is in OFF condition. It has 3 positions-

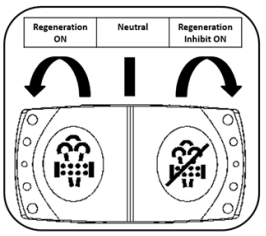
Position 1- Assisted or Manual regeneration occurs
Center - OFF
Position 2- DPF regeneration inhibits or restricted.

Following are the conditions when DPF inhibit switch should be pressed

- Customer in a Location Where in Manual/Stationary Regeneration might be dangerous. Example - In a field wherein grass growth is high, regeneration might cause burning due to high Exhaust Temperatures or Customer is at Fire Hazard Zone.
- Field Conditions or weather not favourable to continue Auto regeneration.

Action to be taken by Operator to inhibit the Regeneration

- Regeneration inhibit switch is on/off type switch.
- If operator wants to inhibit the regeneration, then inhibit switch should be pressed.
- Unless and until the switch is press in the reverse direction regeneration will be inhibited.



NOTE: *Disabling the exhaust filter cleaning request is not preferred. Disable the automatic exhaust filter cleaning only when necessary. Whenever possible, cleaning should be allowed and the diagnostic gauge should be left in the auto mode. When left in auto mode, soot build-up in the exhaust filter system will be at a minimum.*

3.16. OPS (Operator presence switch)



1. OPS bypass switch

OPS bypass switch keep the tractor running even after getting off from the seat for working on stationary PTO applications like wood chipper etc. The switch is present on dashboard.

NOTE : When the operator leaves the driving seat, the vehicle will shut off automatically within 7 sec.
Tractor is equipped with warning sound, in. Case if operator is leaving operating seat without applying parking brake

⚠ **WARNING :** It should be used only when it is necessary get off from tractor. During PTO running condition, around the implement, on one should enter. This switch is not an auto returning switch therefore after completion of activity, by -pass switch to be placed in its of mode.

3.17 Plough Lamp

It is present on rear end of tractor. It is provided with a push button. Plough lamp glows irrespective of key start switch is in 'ON' or 'OFF' position.

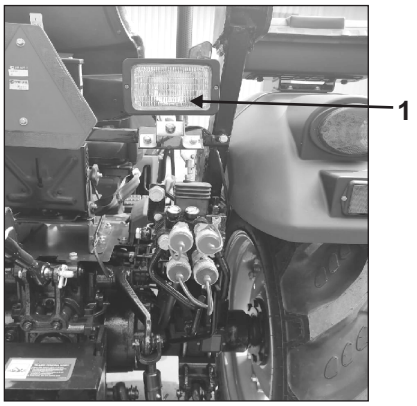


Figure-32 1. Plough Lamp

3.18 Hand Throttle

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

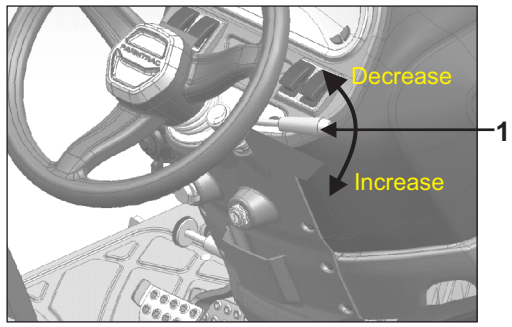


Figure -33 1. Hand Throttle

- Always cut-off battery power be when the tractor is not operated for long duration.
- Do not cut off battery power while flashing the ECU.

3.19 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 rom lighting.

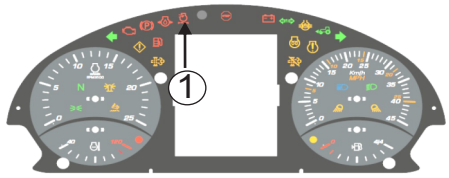


Figure-34
1. Clogging Sensor Light Indication

3.20 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.

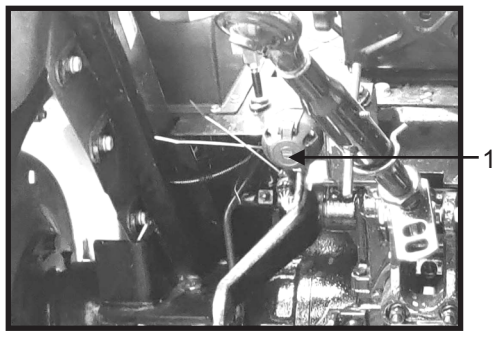


Figure -35
2C Seven-Terminal Trailer Socket

TABLE -1 CONTACT ALLOCATION

Contact No.	Function	Core insulation colour (for information)
1	Left-hand direction indicator light	Yellow
2	Rear fog light	Blue
3	Common return	White
4	Right-hand direction indicator light	Green
5	Right-hand rear position and maker lights, and rear registration plate illumination device"	Brown
6	Stop lights	Red
7	Left-hand rear position and marker lights, and rear-registration plate illumination device"	Black
a The rear registration plate illumination device shall be connected such that no lamp of the device has a common connection with both contacts 5 and 7.		

3.21 Battery Isolator

Battery isolator is located under the hood in front of the radiator, open the hood to access the battery isolator. It is recommended to use the battery cut off lever to cut the battery connection from other electrical equipment during storage period of the tractor. This will enhance the battery life.

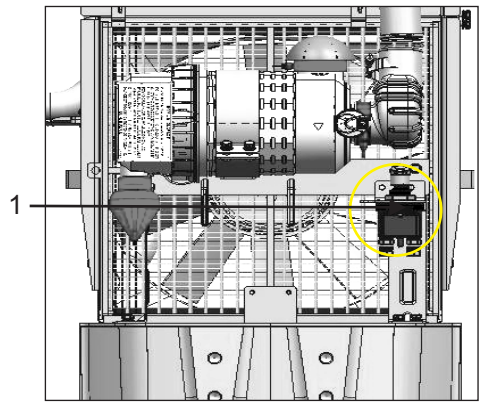
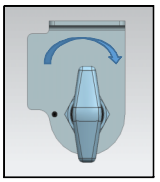


Figure-36
1. Battery Isolator in on Position

OFF POSITION
ROTATE CLOCKWISE
TO TURN OFF



ON POSITION
ROTATE COUNTER
CLOCKWISE TO TURN ON

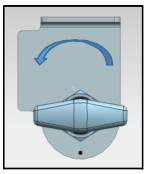


Figure -37

CHAPTER - 4 DPF REGENERATION

4.1. DPF Regeneration strategies

The engine, including the emission control system, shall be operated, used and maintained in accordance with instructions provided in manual to maintain the emissions performance of the engine within the requirements applicable to engine's category.

Tampering

No deliberate tampering with or misuse of the engine emissions control system shall take place; in particular, with regard to deactivating exhaust gas recirculation (EGR) or exhaust after treatment system.

4.2 Avoid Hot Exhaust

Servicing machine or attachments with engine running can result in serious personal injury. Avoid exposure and skin contact with hot exhaust gases and components.
Exhaust parts and streams become very hot during operation. Exhaust gases and components reach temperatures hot enough to burn people, ignite or melt common material.

Exhaust Gas After Treatment System:

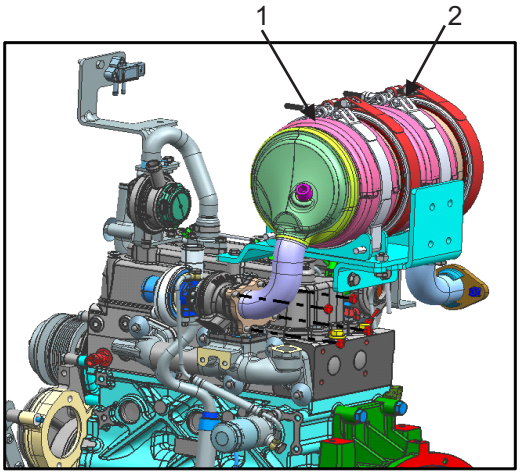


Figure-38
1. DOC 2. DPF

4.2.1 Diesel Oxidation Catalyst (DOC) and Diesel Particulate Filter (DPF)

The engine is equipped with after-treatment emission control devices DOC and DPF. DOC is used to reduce hydrocarbons, carbon monoxide and some particulate matter. On the downstream of DOC, DPF is mounted which traps and holds remaining particulate matters. This trapped soot and other particles gets burnt in DPF by regeneration process.

To avoid unnecessary soot build-up of diesel particulates or soot in the exhaust system:

- Utilize automatic DPF cleaning mode (regeneration)
- Avoid unnecessary idling.
- Use of recommended engine oil.
- Use only ultra-low sulphur fuel. (EN 590 2014)

⚠ ***Caution :*** *Soot on DPF keeps on loading over period of time, which directly results in change in back pressure. This soot can be burnt in DPF using various methods. The burning of soot in DPF is known as regeneration.*

4.2.2. Passive Regeneration

Periodically, the exhaust filter experiences higher temperature levels simply through the engine operating at higher loads. During these times, the higher exhaust temperature cleans a small amount of soot build-up in the DPF. Conversely, unnecessary idling can cause additional DPF soot to accumulate. For the best possible engine operation which requires the least amount of operator interaction, work engine at higher load conditions whenever possible and keep idling to a minimum.

4.2.3. Active Regeneration

If DPF cannot perform continuous passive regeneration due to low load operations, soot needs to be burnt strategically by ECU. Active regeneration is a phenomenon in which thermal management and post injection strategies are implemented. This helps in attaining very high exhaust gas temperatures before DPF. Increased in temperature beyond 500 deg C. would ultimately lead to soot burning. In order to have active regeneration ECU utilizes different triggering points like number of operational hours and differential pressure sensor input.

⚠ ***CAUTION*** *During active regeneration, post injection is used and fuel is burnt directly inside the DPF (burnt by chemical reaction inside the DOC). Through this heat, regeneration occurs inside the DPF, but the combustion increases the temperature of exhaust gas to close to 600 deg C. Stay away from exhaust gas. Extremely hot exhaust gas may burn you. Be careful that neither people nor flammable material are near the exhaust gas outlet.*
Post injection can cause the fuel consumption to increase by a small amount.
Make sure that you do a daily check of the oil level.

- *Servicing machine or attachments during exhaust filter cleaning active regeneration of DPF can result in serious personal injury. Avoid exposure and skin contact with hot exhaust gases and components.*
- *During auto or stationary exhaust filter cleaning operations, the engine will run at elevated idle and hot temperatures for approximately 30 minutes. Exhaust gases and exhaust filter components reach temperatures hot enough to burn people, ignite, or melt common materials.*
- *If the machine is not in a safe location for elevated exhaust temperatures, move the machine to a safe location and check for adequate fuel level before beginning the exhaust filter cleaning process. Any PTO driven devices (if equipped) should be powered off or disconnected.*

Note : If the machine is not able to be moved into a safe location, the operator should temporarily disable auto exhaust filter cleaning by pressing DPF switch in position 2 as mentioned in section 3.14) If the machine is located in a safe location, the auto mode should always be enabled, the switch should be in OFF condition.

Failure to follow the approved ash removal methods may violate state and local hazardous waste laws, along with damage to the DPF resulting in potential denial of the diesel exhaust filter emissions warranty. It is strongly recommended you take the DPF to an authorized Farmtrac service location or other qualified service provider for servicing.

⚠ ***CAUTION :*** *Hot surface indication*  *is present on the muffler. Do not touch or stand near it while operating the tractor.*

4.2.4. Manual Regeneration

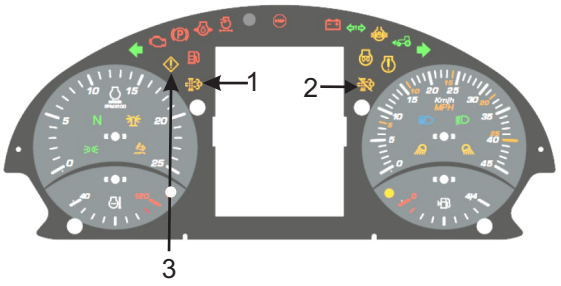
Manual Exhaust Filter Cleaning is an automated process initiated at the request of the operator. This process allows the system to clean the exhaust filter when DPF cleaning signal starts blinking on dashboard. During the process the engine speed will be controlled by the ECU and the machine must remain parked to complete the procedure. Time required for the Manual/Parked regeneration process is dependent upon the level of exhaust filter restriction, ambient temperatures, and current exhaust gas temperature.

The DPF indicator will remain off when DPF regeneration is completed. Allow the engine and the DPF time to return to normal operating temperature before stopping engine. At any time during the parked procedure, the process can be cancelled .

Avoid disabling the cleaning procedure unless absolutely necessary. Repeated disabling or ignoring prompts to perform a manual/parked cleaning procedure will cause additional engine power limitations and can eventually lead to dealer required service. Utilize Exhaust Filter Cleaning AUTO mode to avoid additional service.

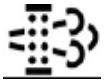
IMPORTANT: The operator will be informed by the operator warning system when the emission control system does not function correctly and/or an engine malfunction is detected by the engine control unit. Ignoring the operator warning signals will lead to an emission related derate, resulting in an effective disablement of non-road mobile machinery operation.

Three indications for DPF regeneration and warnings are present on the instrument cluster.



1. DPF Regeneration
2. DPF Regeneration Inhibit Switch
3. Service Lamp

DPF Regeneration Indication over view

Identification	Symbol on Cluster	Indication	Meaning
DPF Regeneration Lamp		Continuous glow/ Slow Blinking/ Fast Blinking	Depending on the amount of soot loaded and required actin to be taken, the lamp starts indicating.
DPF Regeneration Inhibit lamp		NO/OFF	Lamp will start blinking or remain ON, if DPF inhibit switch is pressed.
Service Lamp		ON/OFF/Blinking	When service lamp starts blinking or remain ON, tractor should be taken to service centre.

4.2.4.1 Operating Procedure for Standard Regeneration (Normal Driving)

Regeneration Operating Procedure

1. Start the engine.
(Make sure that the DPF inhibit switch lamp is OFF).

Note: When the engine is started, the 'Auto Regeneration' mode is automatically activated.
When the DPF inhibit switch is pushed after the engine is started, 'Regeneration Inhibit' mode is activated.

2. If the soot accumulation condition is achieved in DPF, DPF lamp will start glowing.
Continue to operate the tractor, and the regeneration process will begin automatically.
Make sure you are working in safe area as prescribed in caution section. Regeneration will tend to rise the DPF and exhaust gas temperatures.

⚠ **Warning** *Once the regeneration level has been reached, immediately perform the required procedure for regeneration.*
Interrupting the regeneration cycle or continued operation by ignoring the warning signs may cause DPF and engine damage.

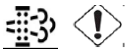
4.2.4.2 Operating Procedure for Stationary Regeneration (Manual Regeneration)

Regeneration Operating Procedure

1. Start the engine.
2. (Make sure that the DPF inhibit switch lamp is OFF).
3. When the soot accumulation has crossed the threshold limit, operator will have to perform stationary/ manual regeneration.
4. At this point operator is instructed to park the tractor in ventilated area (away from flammable material, building, people and animals).
5. Apply parking brakes.
6. Set the gear position to neutral gear.
7. Disconnect the PTO.
8. Lower the implement to the ground.
9. Return the engine rpm to idle speed.
10. Make sure Inhibit switch lamp is off.
11. When all above conditions are met, Press the DPF Regeneration Switch for 7 sec.
12. The engine rpm will automatically rise, and the regeneration process will begin.
13. Operator can either seat on vehicle or stand away from vehicle. If operator is seating on seat then, do not press accelerator pedal as it will stop the regeneration process.
14. This process will be continued for approx. 30 mins.
15. After the lamp turns off, normal tractor work may resume.

NOTE : For normal + stationary regeneration, if operator is performing any formed and after finishing stationary regeneration can be done.

Indicator Lamp Strategy

Regeneration	DPF Lamp	Service Lamp	Buzzer	DPF Inhibit Lamp	Indication	Action by Driver
Driver Assisted Regeneration (PM1)	Slow Blink	OFF	OFF	OFF		Normal Driving+ Stationary Regeneration
Driver Assisted Regeneration (PM2)	Slow Blink	ON	Slow Beep	OFF		Stationary Regeneration

4.2.4.3 Operating Procedure for Service Assisted Regeneration (Stationary/ Manual Regeneration)

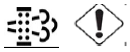
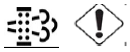
- **Regeneration Operating Procedure**

1. Start the engine.
   (Make sure that the DPF inhibit switch lamp  is OFF).
2. If by any chance earlier DPF lamp indication was missed or driver couldn't perform manual/ parked regeneration, DPF lamp will  start blinking fast.
3. Along with DPF lamp buzzer will start beeping with higher  frequency and Service lamp will be turned ON
4. Engine speed and torque will be de-rated.
5. Stop the work and remove the implement immediately.
6. Slowly take the tractor to Authorised Escorts Service Station

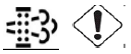
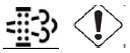
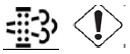
- In case above action is not performed and tractor is continuously run with above indicators, Service lamp will start blinking and driver has to immediately take tractor to service station.

IMPORTANT: *Once the regeneration level has been reached, immediately perform the required procedure for regeneration.*
Interrupting the regeneration cycle or continued operation by ignoring the warning signs may cause DPF and engine damage.

Indicator Lamp Strategy

Regeneration	DPF Lamp	Service Lamp	Buzzer	DPF Inhibit Lamp	Indication	Action by Driver
Service Assisted Regeneration (PM1)	Fast Blink	ON	Fast Beep	OFF		Visit Service Station
Service Assisted Regeneration (PM2)	Fast Blink	Blink	Fast Beep	OFF		Visit Service Station

DPF REGENERATION STRATEGY

Regeneration	DPF Lamp	Service Lamp	Buzzer	DPF Inhibit	Indication	Action by Driver
Standard	ON	OFF	OFF	**Lamp** OFF		Normal Driving
Driver Assisted Regeneration (PM1)	Slow Blink	OFF	OFF	OFF		Normal Driving+ Stationary Regeneration
Driver Assisted Regeneration (PM2)	Slow Blink	ON	Slow Beep	OFF		Stationary Regeneration
Service Assisted Regeneration (PM1)	Fast Blink	ON	Fast Beep	OFF		Visit Service Station (Stationary Regeneration)
Service Assisted Regeneration (PM2)	Fast Blink	Blink	Fast Beep	OFF		Visit Service Station (Stationary Regeneration)
Regeneration inhibit due to ECU	Based on loading	-	-	Blinking		Visit Service Station
Driver Pressed Inhibit Switch	Based on loading	-	-	ON		-

4.2.4.4 . Turbo Engine:

Allow the Engine to run for a few seconds with the starter motors to allow the Turbo compressor to be lubricated. As soon as the engine starts, accelerate to a 900-1100 RPM rate without increasing further until the engine has reached the normal operating temperature.

Turn the ignition key to the contact position no. 3. Then turn the Key to the 'START' position Release the key as soon as the engine fires to and quickly set the accelerator lever to the idling speed.

Do:-

- Pre lube the turbo after oil / filter change.
- Only use oil specified by the manufacturer.
- Oil filters should be as per recommended by the manufacturer.
- Air filters must remove particles greater than 5 micron in size.
- Service intervals must be adhered as per lubrication & maintenance chart.

⚠ ***WARNING:*** *Do not touch or open the turbo when engine is in operation.*

CHAPTER - 5 FOOT CONTROLS

5.1 Differential Lock

Differential Lock is present on the right side of the platform below the main gear lever.

In field conditions including wheel slip, hold down the differential lock pedal, until the lock is felt to engage. If conditions cause a rear wheel to spin at different speed, reduce the engine speed to idle before engaging the differential lock.

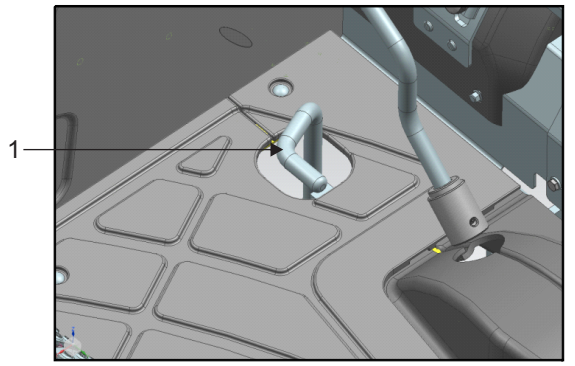


Figure-39
1. Differential Lock

⚠ ***WARNING :*** *Never engage differential lock at speeds above the speed of 5 km/hr or while turning the tractor.*

Never engage the differential lock when driving on road.

Repress one or both brake pedals to disengage the differential lock.

5.2 Foot Accelerator

The foot accelerator 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).*

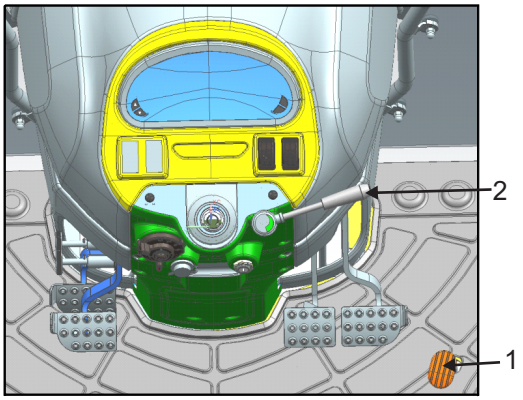


Figure-40
1. Foot Accelerator 2. Hand Throttle

5.3 Foot Brakes

The foot brake pedals 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.

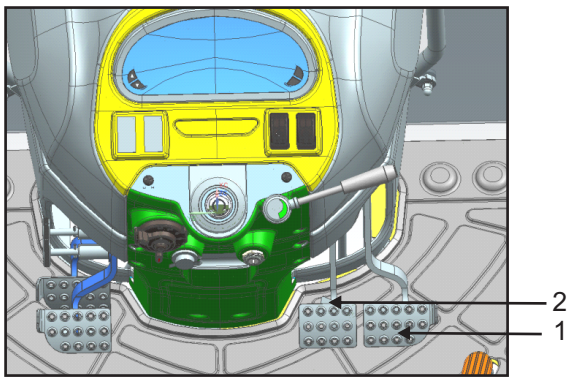


Figure-41
1. Foot Brake 2. Locking Latch

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

5.4 Tractor Parking

Always park the tractor clear off the road with gear lever in neutral position and apply the parking brake.

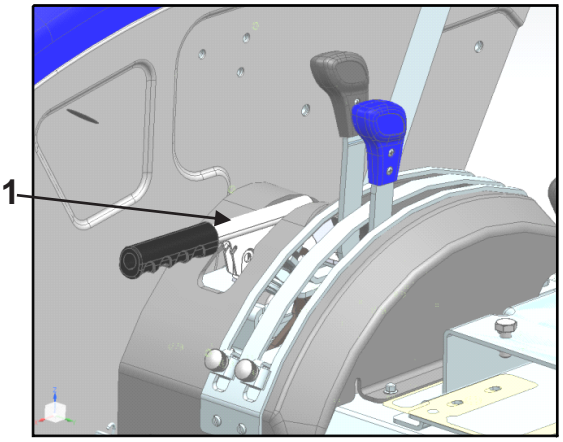


Figure-42
1. Parking Brake

Parking brake lever is situated on the RH side of the driver seat. To operate the parking brake, press the button on the parking brake lever, pull the lever up. To free the parking brake, press the button on the top of the lever and press the lever down.

The parking brake lever is equipped with an alarm which starts beeping when the operator gets off from driver seat leaving the parking brake in disengaged position.

IMPORTANT : Ensure that the parking brake is fully released before driving off.

5.5 Clutch

When the clutch pedal 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 levers.

Clutch pedal is equipped with neutral safety start switch which ensures that the tractor will only start when the clutch pedal is pressed.

Engage clutch pedal lock when tractor is not in use for long period of time or during storage of tractor.

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

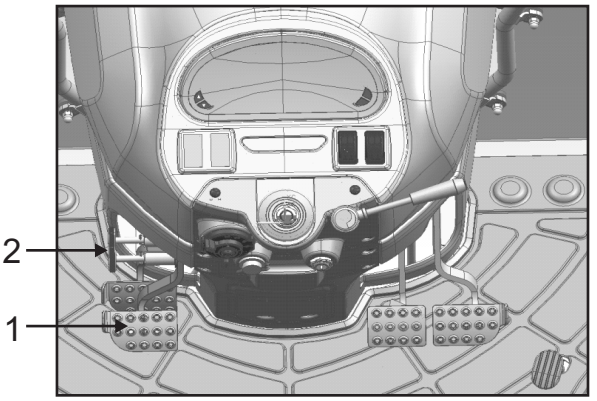


Figure-43
1. Clutch Pedal 2. Clutch Pedal Lock

Four Wheel Drive Lever

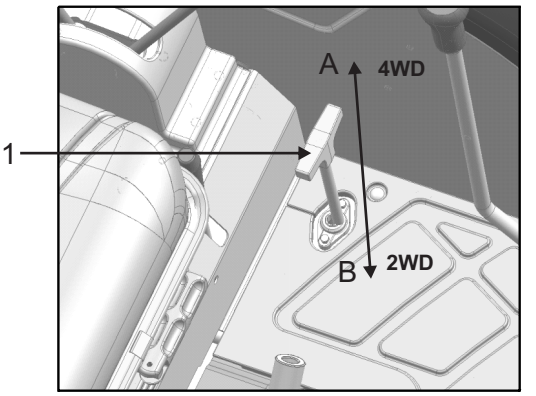


Figure-44
1. 4wd/2Wd Engage lever

Press the clutch & pull the lever (1) up to engage 4wd. Press the lever (1) down to engage 2wd.

Note: *Do not engage 4WD when the tractor speed is more than 8 km/hr.*

5.6 Transmission

The transmission levers are at the side of the gear box. High & Low range can be selected by shifting the lever (1) in backward & forward direction respectively. The both transmission gear levers (1 & (2) operates in the pattern as shown in figure 34.

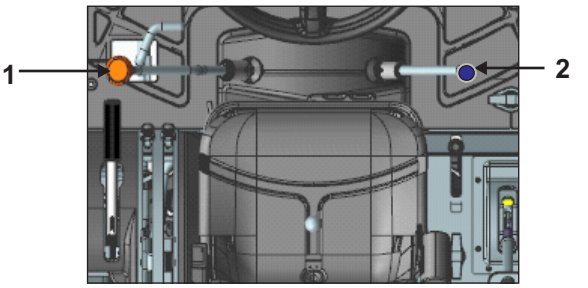


Figure-45
1. Range (High Low Lever) 2. Main Gear lever

Shuttle lever (3) is present on the left hand side of operator seat. It is used to reverse the current speed.

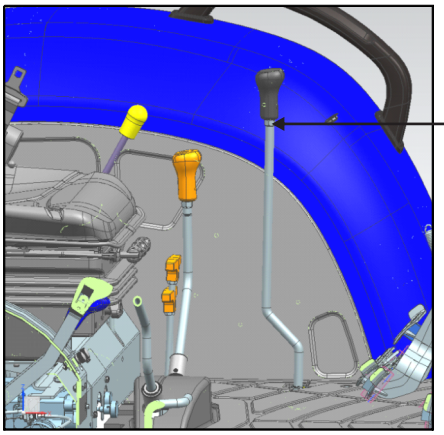


Figure-46
3. Forward Reverse Lever

⚠ ***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.*

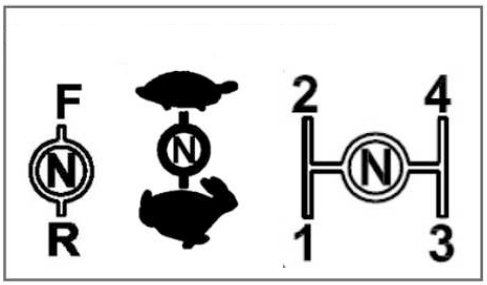


Figure-47
Gear Shift Lever Pattern

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

⚠ ***WARNING :*** *A safety switch prevent operation of the starting motor unless the shuttle 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 left-hand shuttle lever (3) is used to select forward or reverse gear ratio. The right -hand main gearshift lever (2) is used to select any one of four gear ratio. The left-hand range lever (1) 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 above Figure for the gear shift pattern.

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.*

5.7 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 PTO RPM set the engine RPM to 1728.
To obtain 540 E PTO RPM set the engine RPM to 1251.

NOTE : *Select the 540 and 540E before starting any application based upon requirement and 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.*

5.7.1 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 35 rearwards.

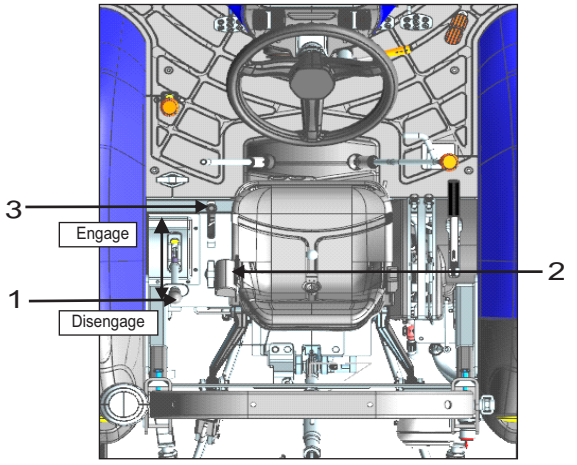


Figure-48 P.T.O. Shifter Lever
1. Independent P.T.O. Clutch Lever
2. P.T.O. Selection Lever 3. PTO ON / OFF lever

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. 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.

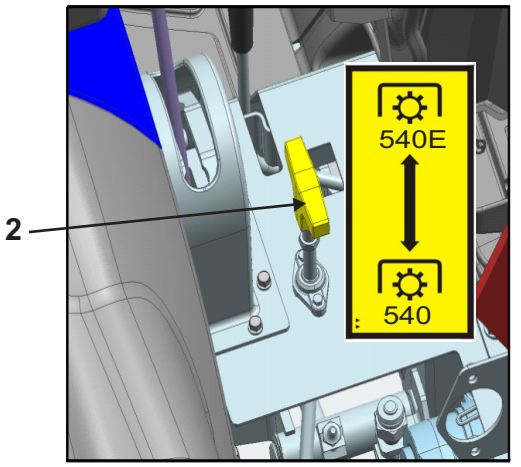


Figure-49. 2. P.T.O. Selection Lever

Bring PTO selection lever (2) to engaged position by pulling it up.

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.*

5.8 HYDRAULIC SYSTEM

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

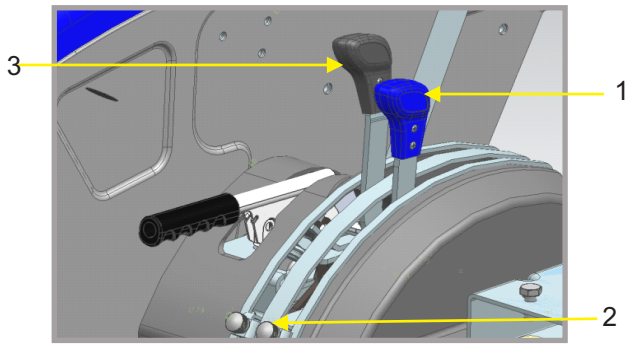


Figure-50. Hydraulic Levers
1. Draft Control lever, 2. Adjustable stop
3. Position Control lever

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.

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.*

5.8.1 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.

5.8.2 Position Control Operation

Set the required implement height/depth using the Position Control Lever.
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.*

5.8.3 Automatic depth and draft system (Blending)

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

5.8.4 Flow Regulation and Hydraulic Lock Knob.

⚠ WARNING :
To avoid personal injury or death :
- Fast lowering speed may cause damage or injury.

The lowering speed can be control by adjusting the flow regulation and hydraulic lock knob.

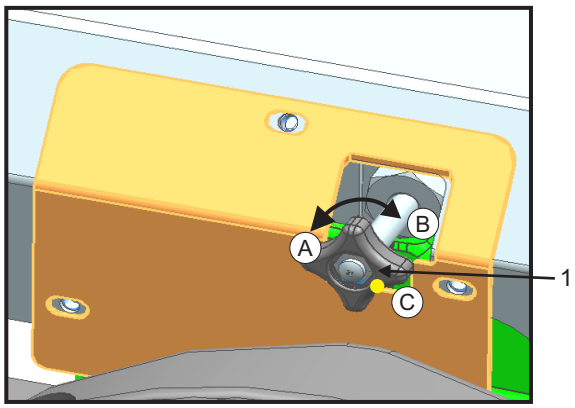


Figure 51
1. Flow Regulation and Hydraulic Lock Knob.
A. "Fast" B. "Slow", C. "Lock"

When the knob is fully tightened by rotating it in clockwise direction to an extreme position, the lower links can be locked in the raised position and will not lower even if draft or position levers are lowered. While transporting
attachments, this locking system should be used. The rate of flow of oil is infinitely variable between the extreme positions of the knob.

5.8.5 Transportation of the Implement

1. Always use position control lever during transportation of the implement.
2. Draft control lever should be in fully down position during transportation of implement .
3. Raise implement using position control lever.
4. Lock the transport lock.
5. Lower position control lever by approx 20-25 mm from raised position.

5.9 Auxiliary Spool Valve

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

It can be used with both single acting as well as double acting cylinders with the help of a selector knob. It has 6 axis of operation.

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

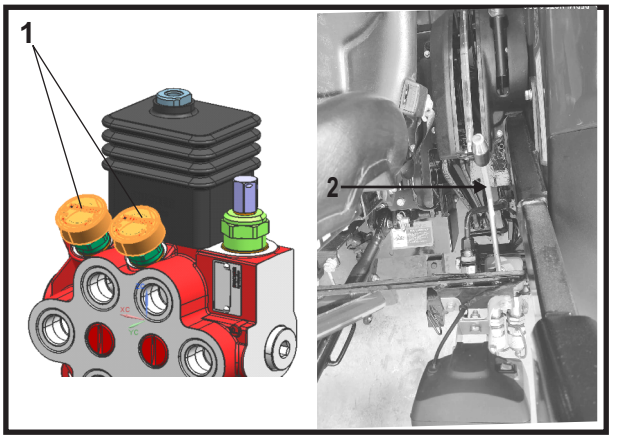


Figure-52
1. SA/DA Control knob, 2. Spool lever

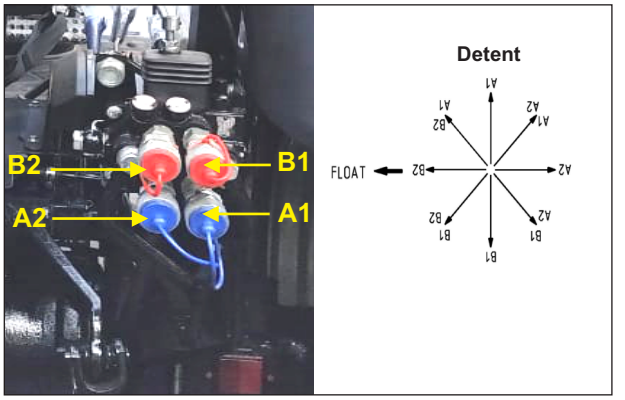


Figure-53
Pattern of Operation

- A1 Port works a s detent when spool valve lever in moved in for ward direction.
- B2 Port works as float when spool valve lever is moved in left direction.
- B2, A1 port works as float detent when spool valve lever pressed diagonally to wards operator seat.

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 by rotating knob in anticlockwise direction.*
- *Operate double acting cylinder in 'D' position of knob by rotating knob in clockwise direction.*

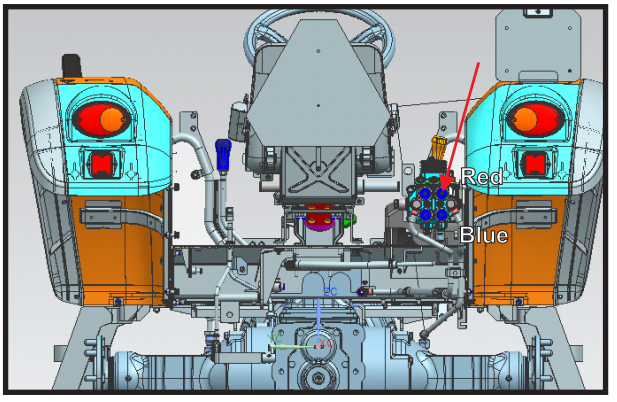


Figure-54
1. Quick Release Coupler

5.10. 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:

1. 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.
2. Lengthen or shorten the top link until the implement mast pin can be inserted through the mast and top link.
3. For detaching the equipment, reverse the attaching procedure.

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

6.11 TOP LINK

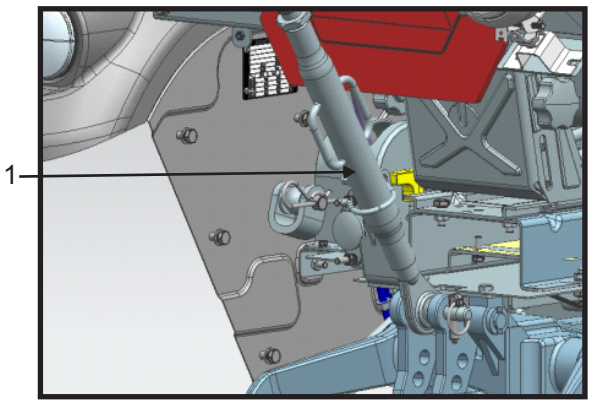


Figure-55
8. 1- Top Link

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 preforming a series of left and right-hand turns with the tractor and implement combination.

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

5.12 Lift Rod

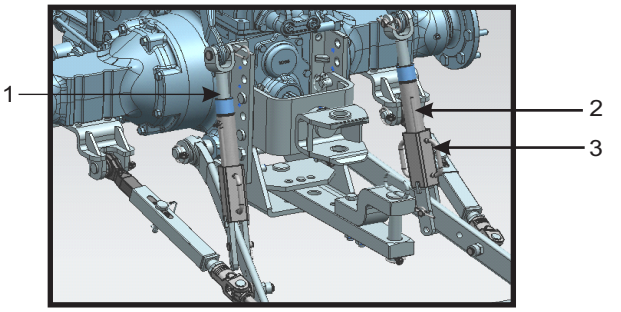


Figure-56
8.1 Lift Rod Adjustment

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

The length of lift rod can be adjusted by crank handle (3) provided on both the lift rods as shown in figure 44.

5.13 Hydraulic Lift Rocker

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 below.

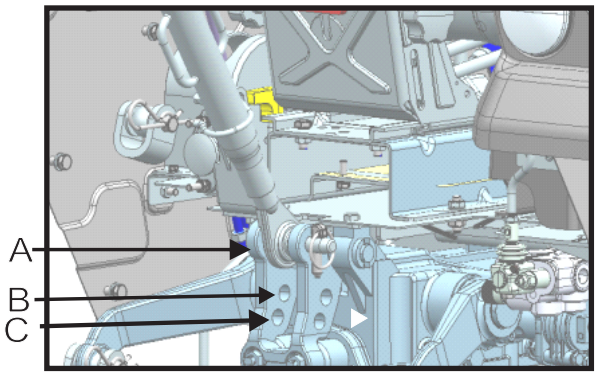


Figure-57
Roker Hole Selection

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.

5.14 Stay bar

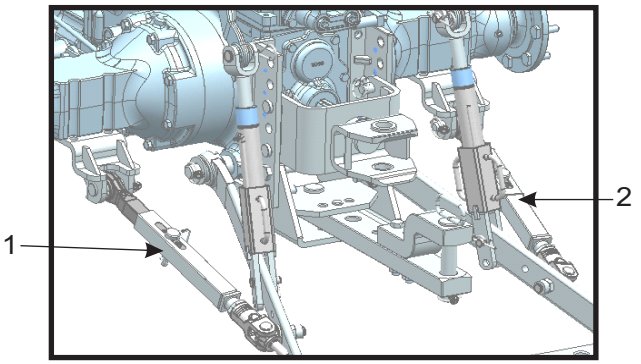


Figure-58 Staybar

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. Lateral free play for draft sensing implements is 2-4 inch

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 46.

5.15 Swinging Drawbar

The 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.

19. Swinging Drawbar Clevis Positions

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 47.

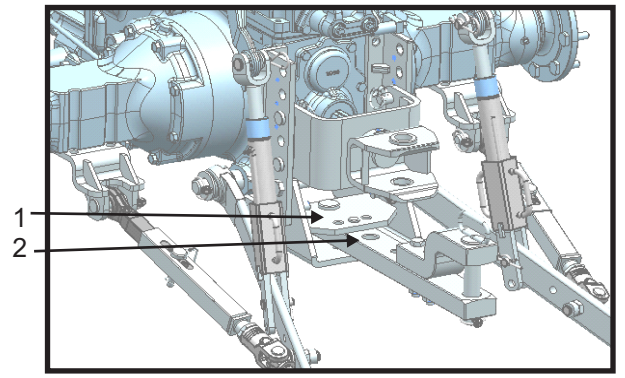


Figure-59
1,2. Swinging Drawbar Locating Points

The drawbar retaining pin may be inserted in either of the holes (1) or (2), 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.

⚠ **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.*

5.16 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)".

5.17 TOE-IN

Toe-in value must be between 4-12 mm.

5.17.1 Toe-in Adjustment (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.

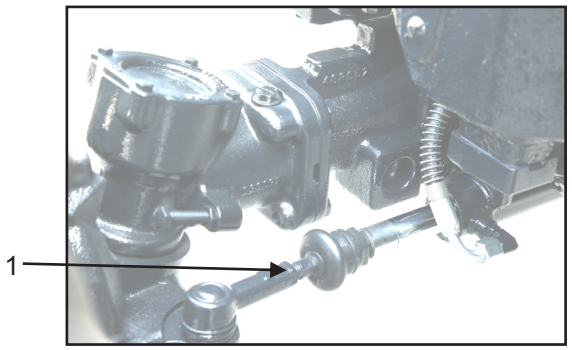


Figure-60
Tie Rod Assy. (Right Hand Side)
1. Link Check nut

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

5.18 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 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.*

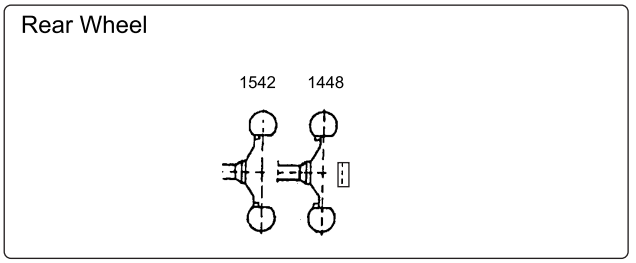


Figure-61

Rear Track Setting 14.9X28

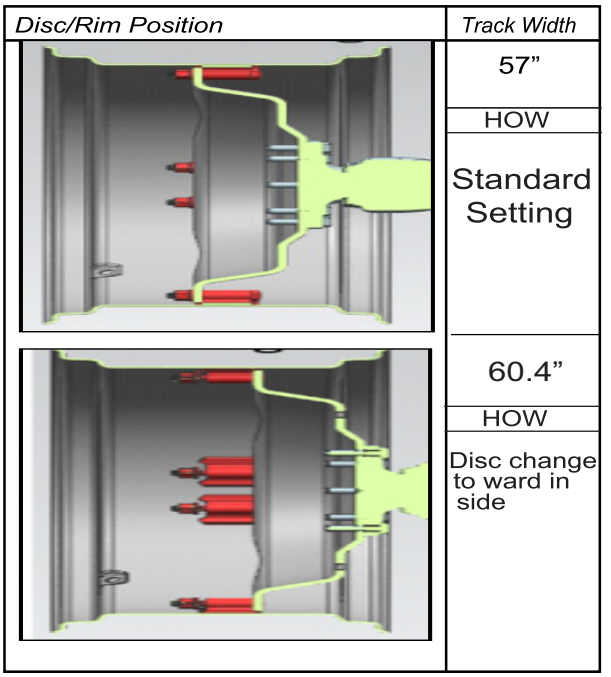


Figure-62

Tyre size:14.9x28/13.6x28

REAR TYRE RIM SETTING

5.19 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 Chapter -5 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*

5.20 Weighing Limitations

For Agri applications –
Front Reaction – 1200 kgs Max.
Rear Reaction- 1500 kgs Max.
Total Tractor Reaction – 2500 kgs Max.

For Transportation purpose (includes Attachments and Implements mounted on Tractor) Front Reaction- 1200 kgs Max.

Rear Reaction – 2000 kgs Max.
Total Tractor Reaction – 2900 kgs Max.

Front and Rear area can be independently ballasted to max. recommended values ensuring total reaction is within the recommended values.

Front loader refer below data.

Permissible Loads vs Wheel Tracks and Vehicle Speed

Trak [mm]	Speed (Km/h)											
	0	2	4	6	8	10	15	20	24	28	32	36
	Dynemic Load (daN)											
1011	2710	2385	2059	1734	1409	1084	1084	1084	1084	1084	1084	1084
1050	2901	2553	2205	1886	1508	1160	1160	1160	1160	1160	1160	1160
1090	3103	2730	2358	1986	1613	1241	1241	1241	1241	1241	1241	1241
1130	3311	2913	2516	2119	1722	1324	1324	1324	1324	1324	1324	1324
1170	3525	3102	2679	2256	1833	1410	1410	1410	1410	1410	1410	1410
1210	3744	3296	2846	2396	1947	1498	1498	1498	1498	1498	1498	1498
1250	3542	3117	2692	2267	1842	1417	1417	1417	1417	1417	1417	1417
1290	3347	2945	2544	2142	1740	1339	1339	1339	1339	1339	1339	1339
1330	3168	2788	2408	2027	1647	1267	1267	1267	1267	1267	1267	1267
1370	3003	2643	2282	1922	1562	1201	1201	1201	1201	1201	1201	1201
1420	2816	2478	2140	1802	1464	1126	1126	1126	1126	1126	1126	1126

5.21 Dampers

Damper is provided under the plat form for better shock absorption.

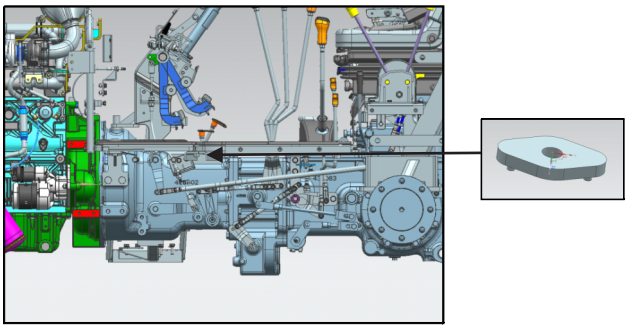


Figure-63
1. Damper

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.*

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-inate the tire with recommended air pressure.

5.22 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 value 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 slat solution with water to avoid freezing.

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

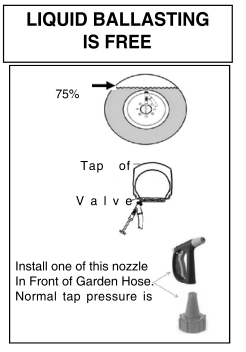
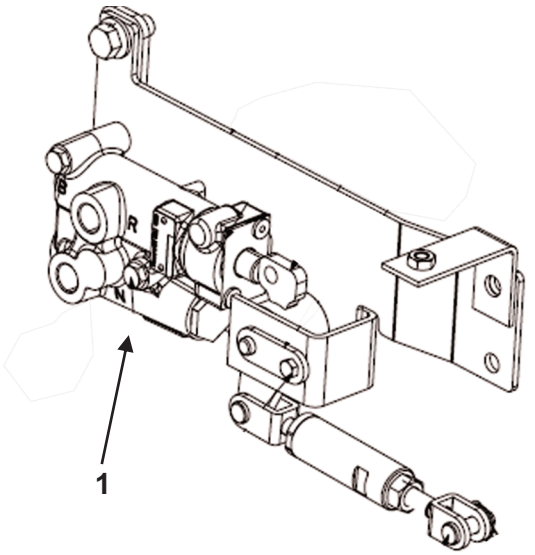
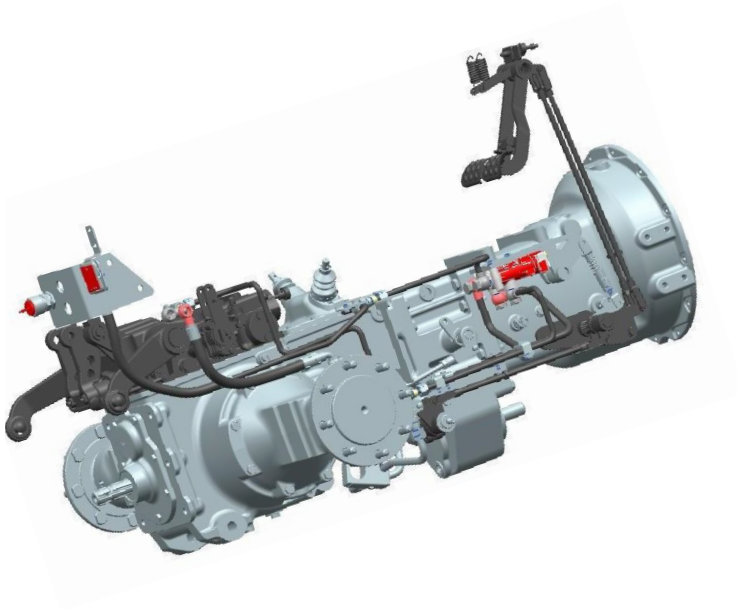


Figure-64

5.23 Hydraulic Trailer Brake

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 froward and it presses the brake valve spool resulting in operation of the trailer brake valve.





Hydraulic Trailer Brake
1. Valve Assembly

⚠ **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.

CHAPTER - 6 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 3 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:

1. Engine oil level
2. Power steering oil level
3. Transmission oil level
4. Rear wheel nuts for tightness
5. Coolant in the radiator to be added
6. Front axle Oil (4WD)

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

1. Change engine oil & filter.
2. Change hydraulic oil filter.
3. Clean, inspect and grease front wheel bearings, pivots regularly. Lubricate daily if used in wet condition.
4. Check and adjust brakes, clutch.
5. Check torque of front end weight clamp bolts.
6. Lubricate all grease points & pivots. Lubricate regularly for wet land conditions.

NOTE: *Ensure that the tractor is on level ground and that all rams are extended, where applicable, before checking oil levels.*

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.
- 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.

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.

FARMTRAC (FT 6050 NETS)

Lubrication and Maintenance Chart

S.No.	Items	Indication on hour meter								Interval
	General Maintenance		10	50	300	600	900	1200	1500	
1	Engine Oil level	Check and refill	✓							After every 10 hrs.
2	Radiator Coolant level	Check and refill	✓							After every 10 hrs.
3	Dry Air cleaner dust collector	Check and clean	✓							After every 10 hrs.
4	Radiator matrix	Check and Clean	✓							After every 10 hrs.
5	Dry air cleaner primary element	Check and Clean	✓							After every 10 hrs.
Note : General maintenance are the daily prechecks to be carried out before operating the tractor										
6	Power Steeering Oil Breather	Check and Clean		✓	✓	✓	✓	✓	✓	At Every Service
7	Greasing	Lubricate		✓	✓	✓	✓	✓	✓	At Every Service
8	Front and rear wheel nut	Check and adjust		✓	✓	✓	✓	✓	✓	At Every Service
9	Battery Electrolyte level	Check and adjust		✓	✓	✓	✓	✓	✓	At Every Service
10	Clutch and brake pedal free play adjustment	Check and adjust		✓	✓	✓	✓	✓	✓	At Every Service
11	Turbo oil filter	Replace		✓	✓	✓	✓	✓	✓	At Every Service
12	Fan/Alternator belt tension	Check and adjust		✓	✓	✓	✓	✓	✓	At Every Service
13	Engine oil	Replace		✓	✓	✓	✓	✓	✓	Every 300 hrs
14	Transmission oil	Replace			✓			✓		First 300 hrs then after every 1200 hrs
15	Front axle oil	Replace			✓			✓		First 300 hrs then after every 1200 hrs
16	Power steering oil	Replace			✓	✓	✓	✓	✓	Every 300 hrs
17	Fuel tap strainer	Check & Clean		✓	✓	✓	✓	✓	✓	At Every Service
18	Engine oil Filter	Replace		✓	✓	✓	✓	✓	✓	At Every Service
19	Fuel filter	Replace			✓	✓	✓	✓	✓	Every 300 hrs
20	Hydraulic oil filter	Replace		✓	✓	✓	✓	✓	✓	At Every Service
21	Hydraulic strainer	Replace			✓			✓		First 300 hrs then after every 1200 hrs
22	Dry Air cleaner outer/ primary element	Replace					✓			Every 900 hrs.
23	Dry Air cleaner inner/secondary element	Replace								After replacing primary/outer element 3 times

24	Coolant	Replace			✓		✓			First 300 hrs then after every 900 hrs.
25	Radiator hose and clamp	Check		✓	✓	✓	✓	✓	✓	At every service
26	Toe In	Check		✓	✓	✓	✓	✓	✓	At every service
27	Engine start system	Check		✓	✓	✓	✓	✓	✓	At every service
28	EGR Valve	Clean							✓	At every 1500 hrs
29	EGR Cooler	Clean							✓	At every 1500 hrs
30	Throttle Valve Actuator	Clean							✓	At every 1500 hrs
31	CCV hose	Clean							✓	At every 1500 hrs

NOTES:

- Grease daily when operating in wet land conditions.
- The primary & secondary fuel filter is recommended to be changed at 300 hrs. Oil change interval will be reduced if the diesel fuel has high sulphur content or if the tractor is operated in extremely cold temperatures.

Oil Grade and Quantity Chart

S.No.	Description	Oil Grade	Quantity (litre)
1	Engine Oil	SAE 15W40 CK 4	5.5 L
2	Transmission oil	ENI Multitech THT GL-4	30 L
3	Power Steering Oil	Transfluid III H	03 L
4	Front Axle Oil	API GL-4	5.9 L

6.1 Front Bonnet

To gain access to the radiator cap, air cleaner, engine rocker valve cover, etc. Insert the key in lock and rotated key in clock wise direction to open front bonnet as shown in figure 1.

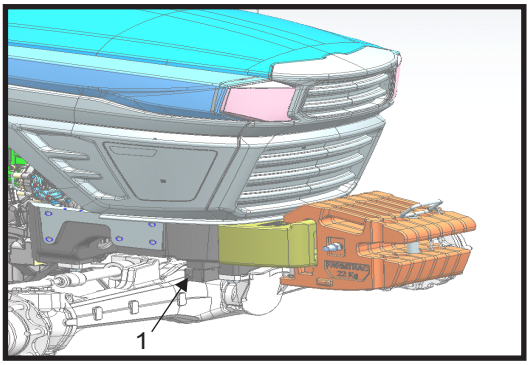
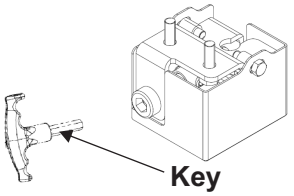


Figure 1.
1. Front Bonnet Lock



6.1.1 Emergency Latch

Emergency Latch is present under the front weight carrier to open front hood as shown in figure below .

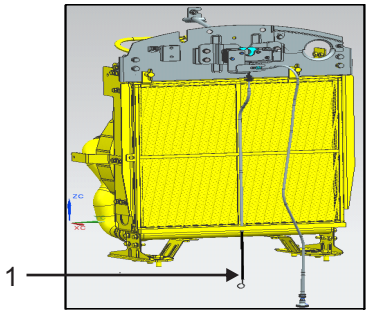


Figure 2.
1. Emergency cable

6.2 Radiator Grill

The mesh is provided in front of the radiator to trap the dust particles.

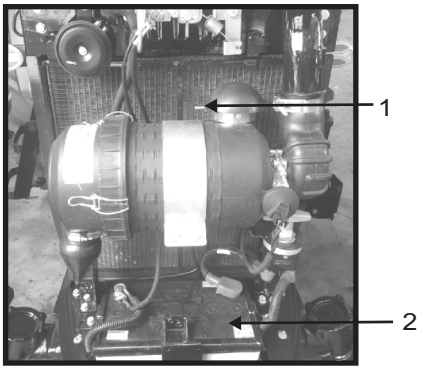


Figure 3. 1. Radiator Grill 2. Battery

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

6.3 Engine Oil Level

Leave the tractor parked on a levelled surface for at least five minutes before checking the level, to allow the oil to settle in the sump. Take out the dipstick, (1) wipe it with a rag and then dip it into sump again, then remove the dipstick again and ensure that the oil level is within the upper/lower mark reaches and does not exceed the upper mark. If necessary, add recommenced engine oil through the oil filler until the required level has been reached.

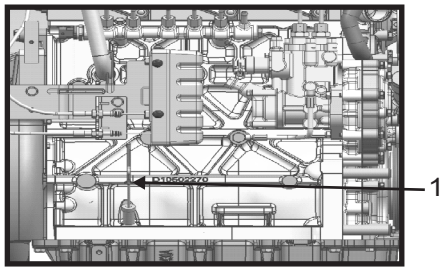


Figure 4. 1. Engine Oil Dipstick

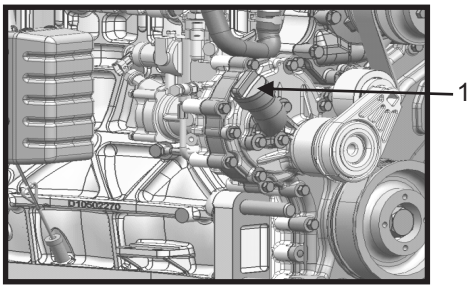


Figure 5. 1. Engine Oil Filling Plug

6.4 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.

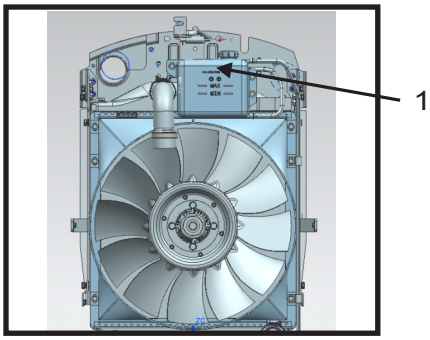


Figure 6. Radiator Coolant Level
1. Coolant Recovery Bottle

RECOVERY BOTTLE DETAILS :

e) VOLUME :- 1.50 Ltrs 100ml
f) MAX. MARK VOLUME : - 0.800 Ltrs.
g) MIN. MARK VOLUME :- 0.600 Ltr.

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

6.5. 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.

6.6 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 are 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

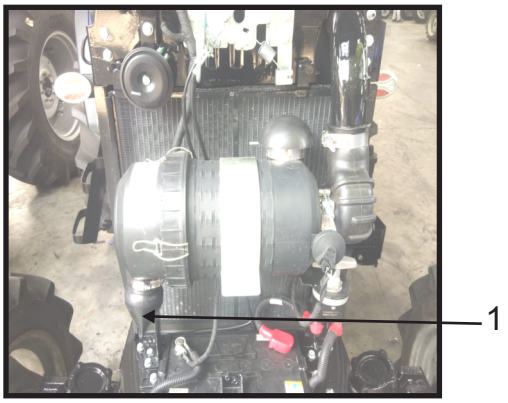


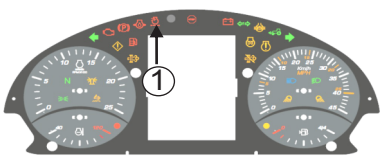
Figure 7. Dry Air Cleaner
1. Dust Collector

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.*

6.7 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 rom lighting.



1. Clogging Sensor Light Indication

6.7.1 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.

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*

7.8 Front and Rear Wheel Nuts

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	191.7 lbf. ft (260 Nm)
Rear disc to rim nuts	180 lbf. ft. (225 Nm)
Front disc to rim	165.9 lbf. ft. (225 Nm)

6.9 Clutch Pedal Free Play

Check clutch free play. it should be (22-25 mm) at the clutch pedal. if adjustments is required, loosen the locknut and remove the split pin (1). Turn the clevis to lengthen or shorten the adjustment rod (2), as require, Secure the split pin and tighten the locknut (3).

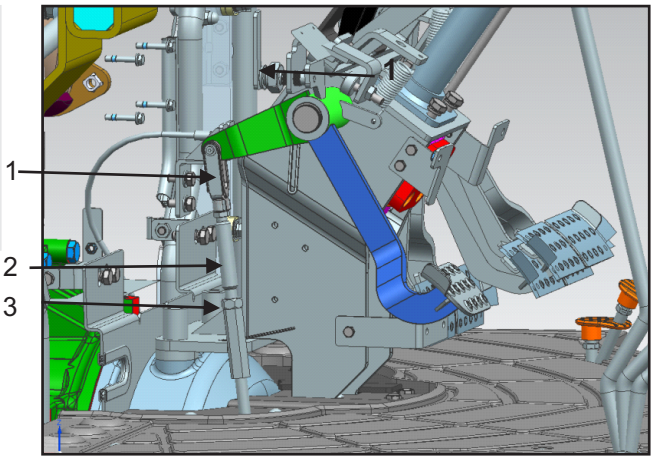


Figure 8. Clutch Pedal Free Play
1. Split pin 2. Adjustment Rod 3. Lock Nut

6.10. Brake Pedal Free Play Adjustment

Check brake free play. it should be (22-25 mm) at the brake pedal. if adjustments is required, loosen the

locknut and remove the split pin and clevis pin. Turn the rod to lengthen or shorten the adjustment rod (3), as require, Secure the split pin and tighten the locknut (2).

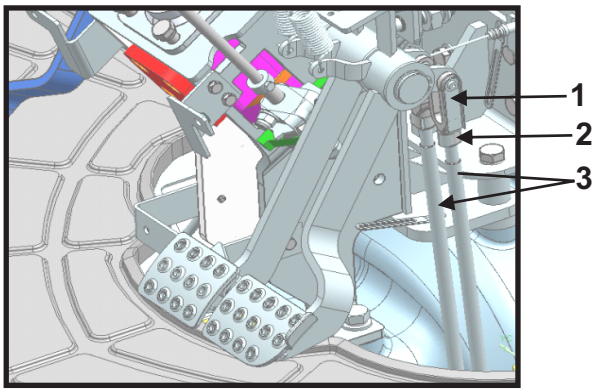


Figure 9. Brake Pedal Free Play
1. Split pin 2. Lock Nut 3. Adjustment Rod

Battery

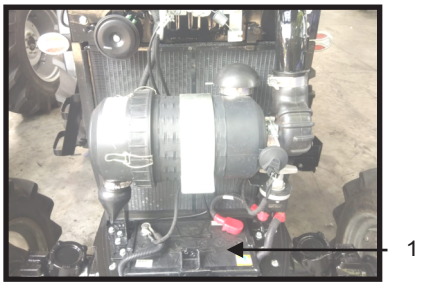


Figure 10.
1. Battery

⚠ ***WARNING***: *Do not use a open flame to check the electrolyte level. Wear eye protection when charging the battery.*

6.11 Grease Fittings and Pivots (From 1 to 6)

Oil all pivots and apply grease to the lubrication fittings, as shown below.

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

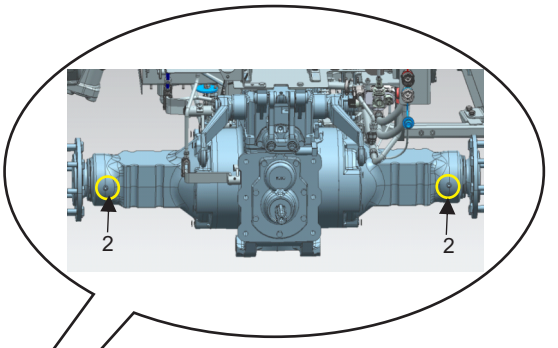


Figure 11
2. LH & RH rear axle greasing point

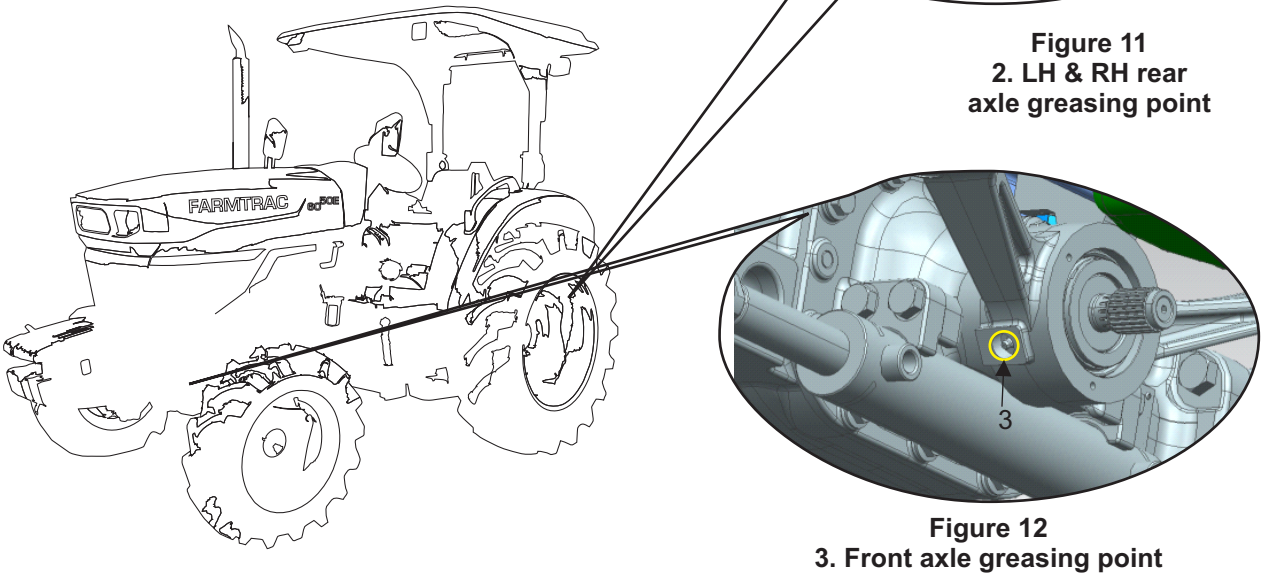


Figure 12
3. Front axle greasing point

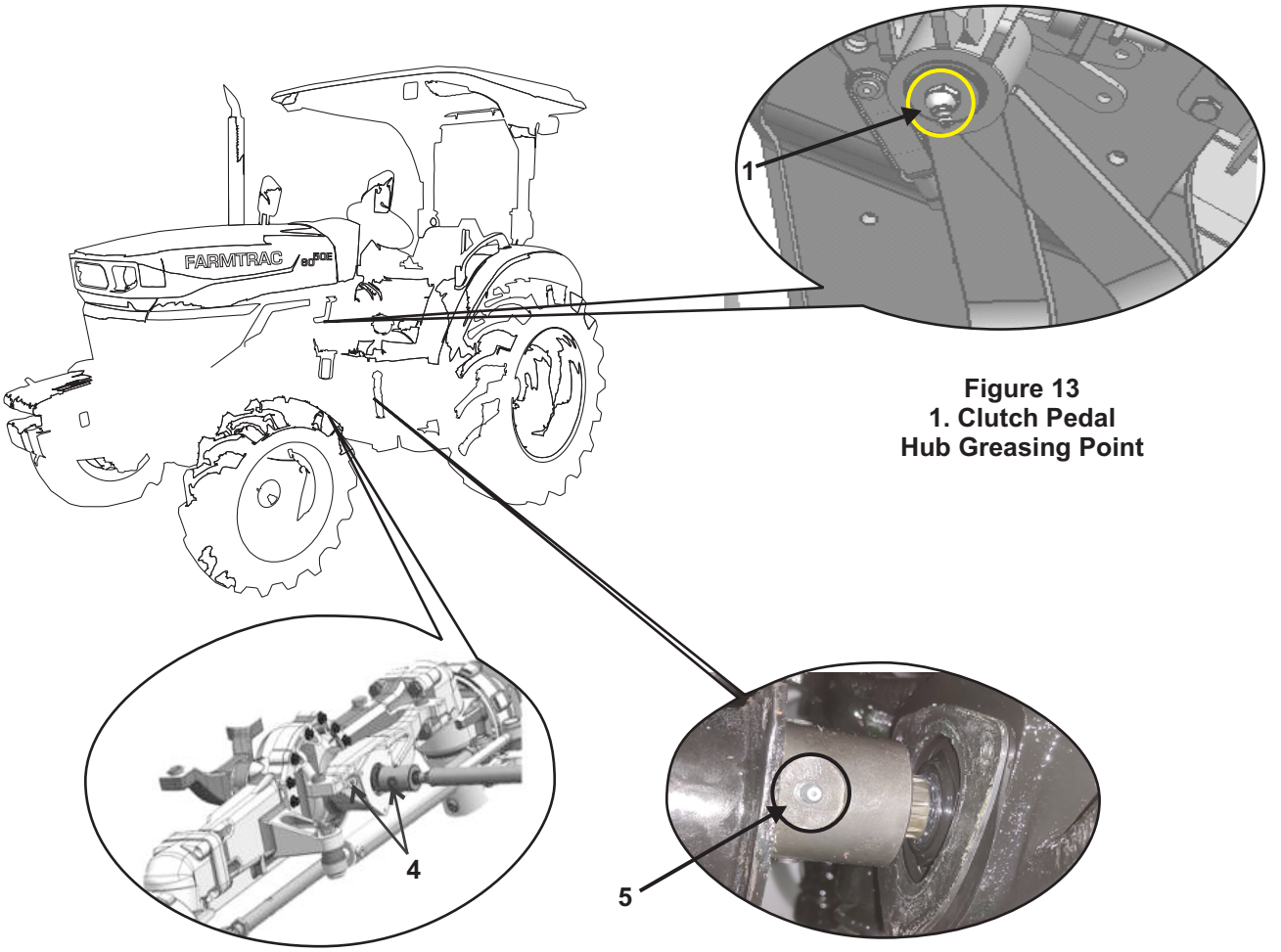


Figure 13
1. Clutch Pedal
Hub Greasing Point

Figure 14
4. Propeller Shaft
Greasing Point
(Front axle side)

Figure 15
5. Propeller Shaft
Greasing Point
(Rear axle side)

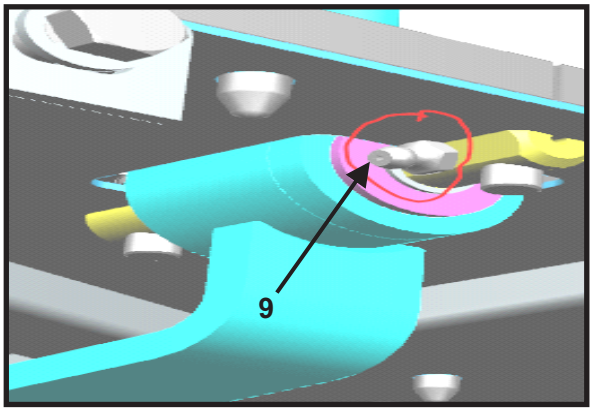


Figure 16.
9. Shuttle Lever Hub
Greasing Point

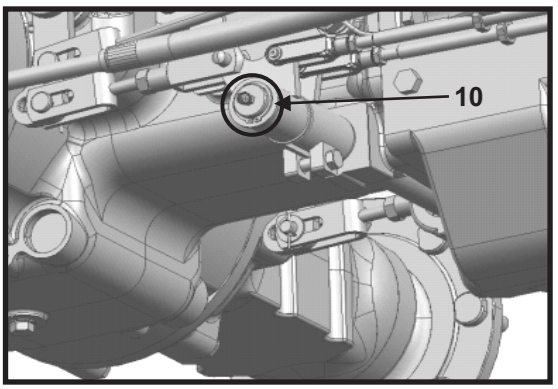


Figure 17.
10. Brake Linkage
Greasing Point

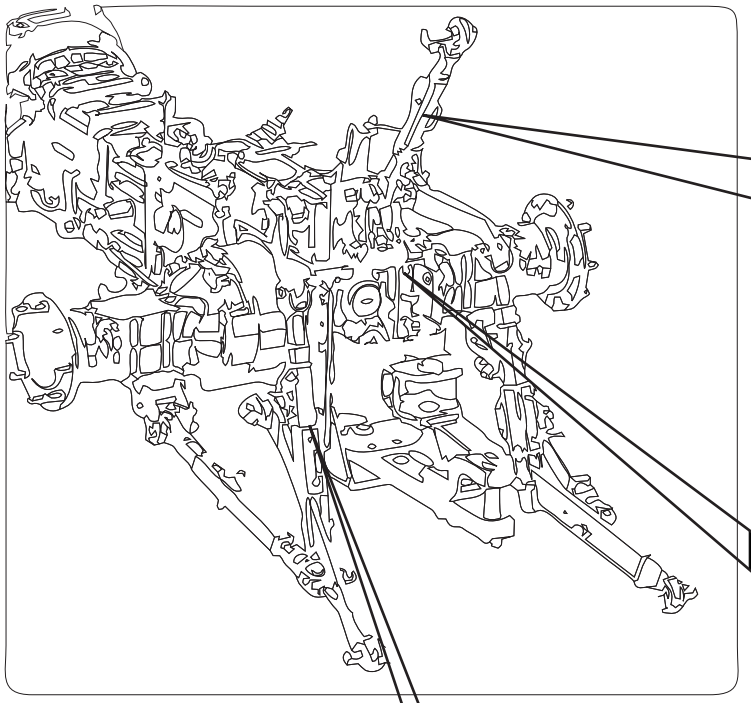


Figure 18
4. Hydraulic lift greasing point

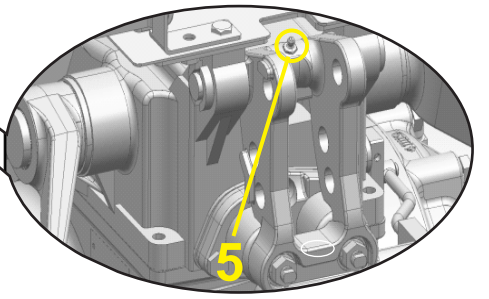


Figure 19
5. Hydraulic lift greasing point

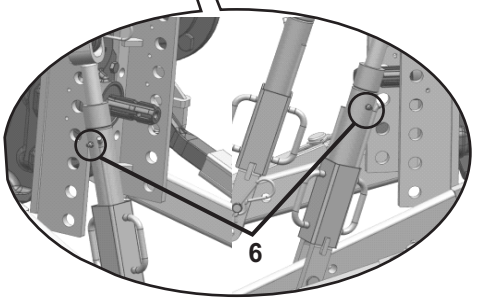


Figure 20
6. Lift rod greasing point

6.12 Engine Oil and Filter (Only after first 50 hrs)

Change Engine oil, turbo charger filter, hydraulic filter, fuel filter after first 50 hrs of run of the engine.

Engine Oil and Filter

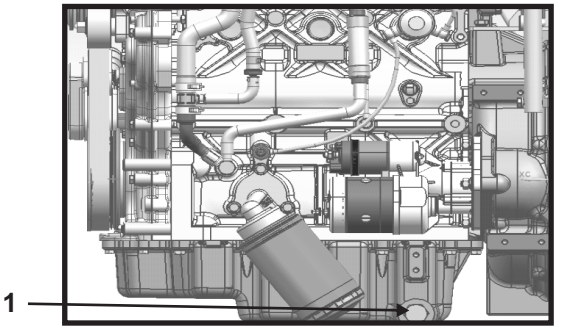


Figure 21
1. Engine Oil Drain Plug

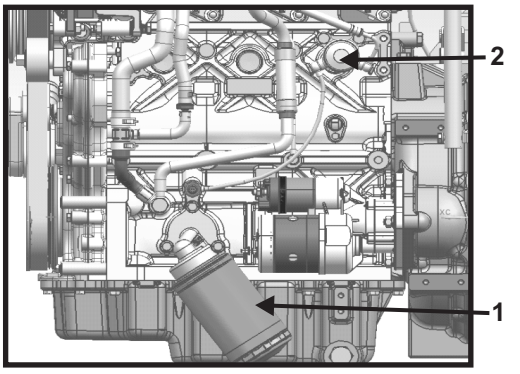


Figure 22. Left Hand Side
1. Engine Oil Filter 2. Turbo Charger Filter

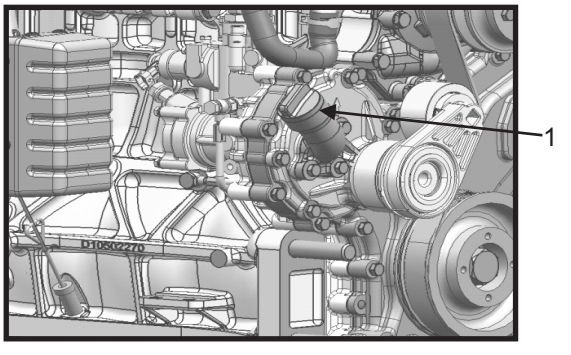


Figure 23. Right Hand Side
1. Filler Plug

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.
Clean the drain plug, remove the filler plug 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 recommended oil, as necessary, until the oil reaches the upper mark on the dipstick.

6.13 Transmission Oil Level

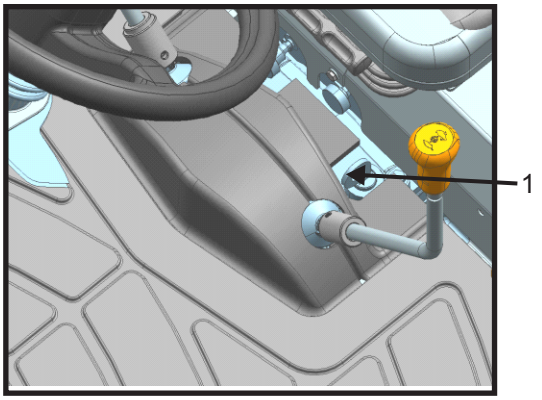


Figure 24. Transmission oil level
1. Dipstick

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

6.14 Hydraulic Oil Filter

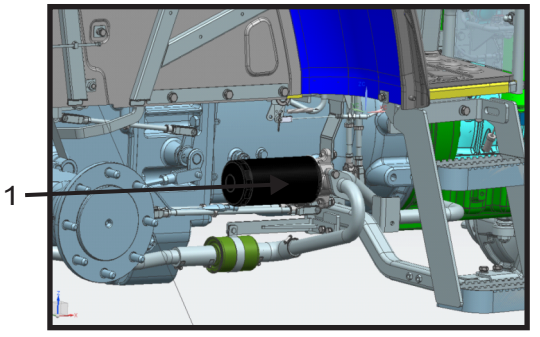


Figure 25. 1. Hydraulic Oil Filter

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 ¾ of a turn. Do not over tighten.

6.15 Fan/Alternator Belt Tension (Auto-tensioner)

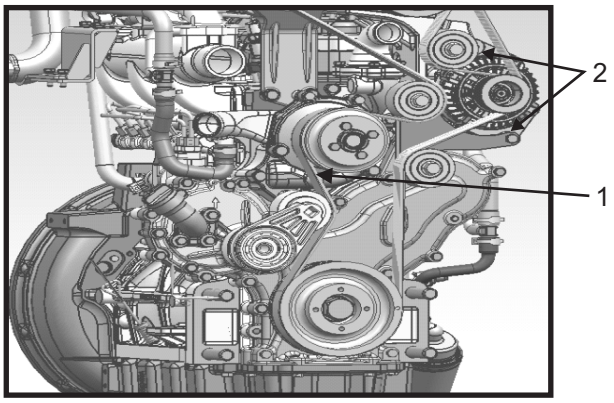


Figure 26. 1. Fan Belt
2. Alternator mounting bolts

It is equipped with auto-tensioner which automatically maintains the fan belt tension.

6.16. Hydraulic Lash Adjuster (HLA) Valve Train

All the stage "V" engines will be occupied with hydraulic lash adjuster valve train which avoids the tappet setting process during the service period. Hydraulic lash adjusters (HLA) are specifically designed to automatically adjust the lash in the valve train.

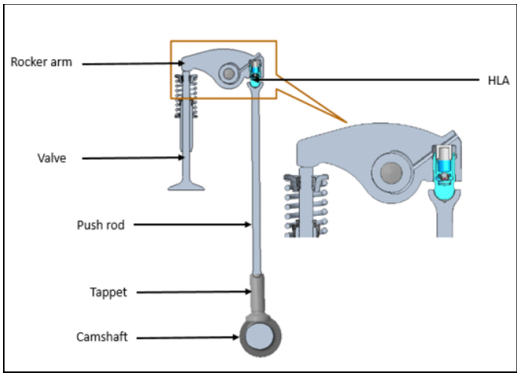


Figure 27.
Hydraulic Lash Adjuster (HLA) Valve Train

HLA valve train is developed for stage V engines to achieve the same performance as mechanical valve train and at the same time it should improve the packaging freedom.

Do's

- Oil passages from sump to head should be free from burrs and imperfections in order ensure no loose particles are entering HLA.
- At engine start up some valves can be noisy, due to presence of air in high pressure chambers of lash adjusters. This phenomenon is not dangerous and can be cured in maximum 20 minutes after engine start up. The engine has not to run at high speed during this start-up phase (maximum 1000 rpm).

Don'ts

- Lash adjusters must not be kept in upside down position from the moment of loading on trays up to the time of assembly on the engine.
- Engine should not be cranked without oil supply which allows air to enter HLA which is not recommended.
- Avoid all those operation that could make the oil drain out without the presence of continuous pressurized oil.
- Pistons should not to be at T D C during assembly of overhead to avoid risks of having valves forcing against pistons, with consequent potential failures of rocker arms.
- If the HLA is solid after assembly, engine must not run for 1.5 hours (time for HLA to reach its working length) to avoid risk of valve-piston hitting.

Possible failure modes

1. **Loss of power/performance**
   Probable Cause: HLA might be solidified, stop the engine and check for faulty rocker arm.
2. **Loss of Engine rotation**
   Probable Cause: Pushrod not as per HLA design, remove rocker arm assembly and check pushrod cup design.
3. **Abnormal tappet noise**
   Probable cause: Lack of oil supply in HLA, resulting in sponginess. Check oil flow through rocker arm, flow should be visible from HLA end.

6.17 Fuel Filter (Bleeding the fuel System)

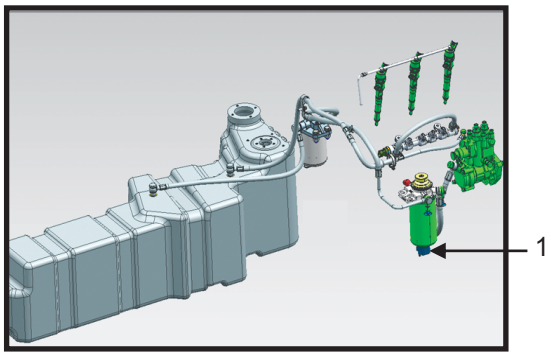


Figure 28. Secondary Fuel Filter
1. Drain Plug

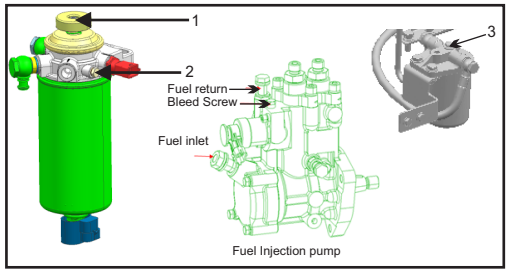


Figure 29.
Secondary Fuel Filter
1. Hand Primer 2. Deflate Screw

Figure 30.
Fuel Injection pump
3. Primary Filter Bleed Screw

1) Loosen the deflate screw in the main filter.
2) Start priming (using hand primer on filter) until fuel comes out of the deflate screw without any air bubble.
3) Tighten the deflate screw.
4) Continue priming till the primer becomes tight for priming.
5) Crank the engine & ensure successful start. If not make use of the bleed screw provided on the pump.
6) Loosen the deflate screw provided on the pump & then repeat the above steps 2,3,4& 5.
7) Keep the engine in running condition for a certain time to remove air in low pressure circuit
.8) Similar screw is provided in primary filter and fuel injection pump for bleeding from respective fuel circuit.

6.18 Dry Air Cleaner Outer Element

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.
Remove the outer element and clean.

6.19. Checking Hoses and Clamp

⚠ WARNING
To avoid personal injury or death:
- Be sure to stop the engine and remove the key before checking radiator hose and clamp.
- Allow engine and coolant to cool down sufficiently before checking.

Check to see if radiator hoses are properly fixed on every service.
1. If hose clamps are loose or water leaks, tighten bands securely.
2. Replace hoses and tighten hose clamps securely, if radiator hoses are swollen, hardened or cracked.
   Replace hoses and hose clamps on every service if checked and found that hoses are swollen, hardened or cracked.

6.20 Rear Axle / Transmission Oil Drain

Remove the drain plug and allow the oil to drain into a suitable container. Replace the plug after the oil has completely drained. Refill the rear axle until the oil reaches up to upper mark on dipstick present on RHS of tractor near the main gear lever.

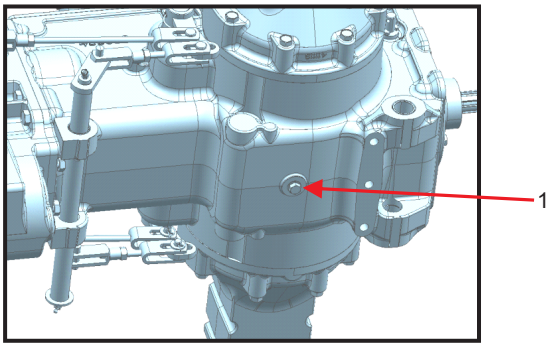


Figure 31.
Rear Axle / Transmission Oil Drain
1. Drain plug

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 (1). If requires top up to the upper mark of the dipstick.

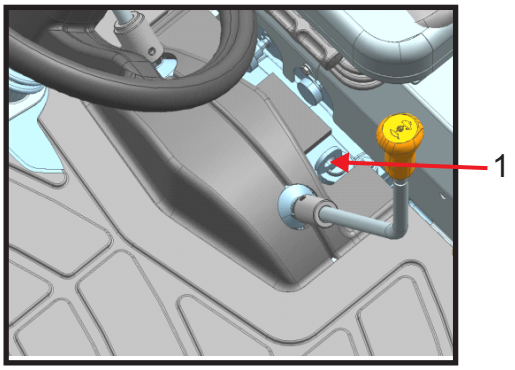


Figure 32.
Transmission oil level
1. Dipstick

6.21 Power Steering Oil- First Change after 300 hrs then after every 1200 hrs.

Check power steering oil level using dipstick (2). It should be between min. & max as shown in figure 29. Change oil after every 300 hrs.

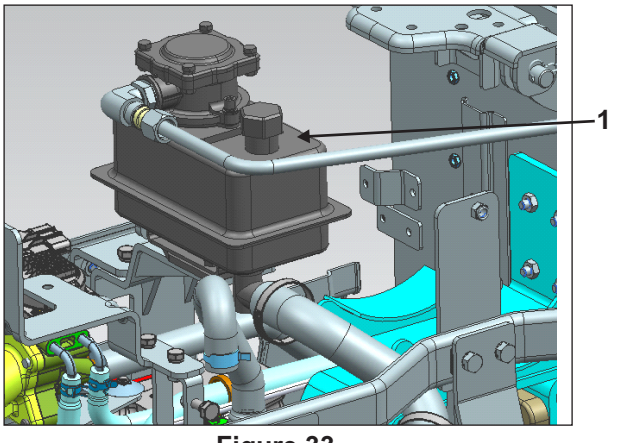


Figure 33.
Power Steering Oil Reservoir

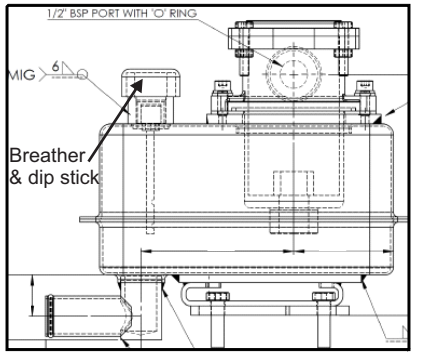


Figure 34.
2. Power Steering Dipstick & Breather

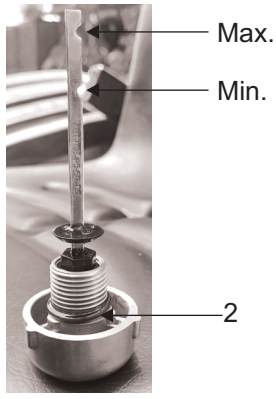


Figure 35.
2. Power Steering Dipstick & Breather

6.22 Hydraulic Strainer

The strainer, which is located below the clutch pedal linkage assembly should be inspected and cleaned or replaced as shown in figure 32, as necessary.

This service should be carried out by your authorized dealer.

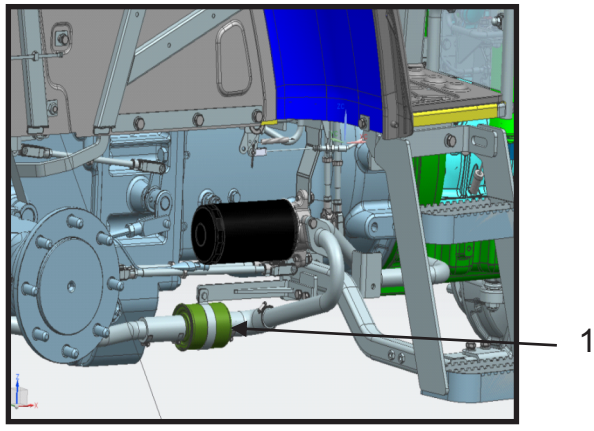


Figure 36.
1. Hydraulic Stainer

6.23 Front Axle oil (4WD)

Remove oil drain plug clean it and drain the oil. After draining the oil tighten the plug. Refill the oil up to the plug level.

To drain the oil, unscrew and remove the plug (1) and then drain plug (2). Drain all oil. Clean with care and assemble the plug (2). Fill to the bottom of the fill plug hole (1) with the specified oil. Wait to allow the oil to flow through the axle. Check oil level and fill to the specified level if necessary. Clean with care and assemble the plug (1) as shown figure 33. Tighten the plug to the prescribed torque.

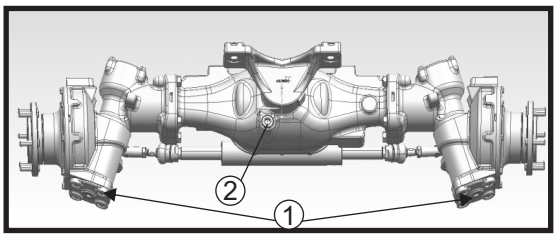


Figure 37.
1. Front axle oil drain plug 2. Inspection Hole

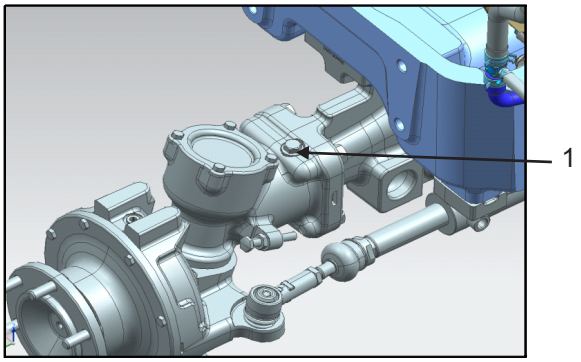
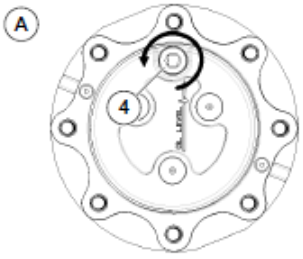
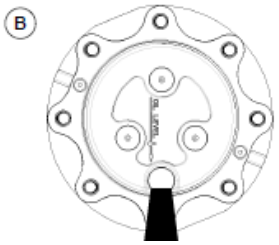


Figure 38.
1. Front axle Dipstick

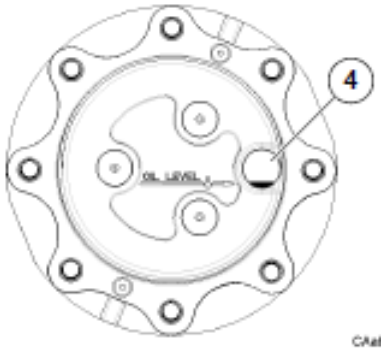
NOTE : *To drain and fill the oil and to check the oil level the axle must be horizontal*.

Before draining the oil from wheel and rotate the wheel end so that the plug (4) is at the highest position (pos. A) and partially unscrew to release possible pressure. Rotate the wheel and so that the plug (4) is toward the ground (pos.B). Remove the plug and drain the oil.





Rotate the wheel and so that are hole (4) in the position as shown in figure below. Fill to the bottom of the fill plug hole with specified oil. Tighten the plug to the prescribed t torque.



6.24 Cooling System Maintenance

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

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.

Draining and refilling the cooling system

⚠ ***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.*

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

Open the radiator drain cock, Figure 35 and allow the coolant to drain. Remove the radiator cap at this stage to increase the drainage rate.

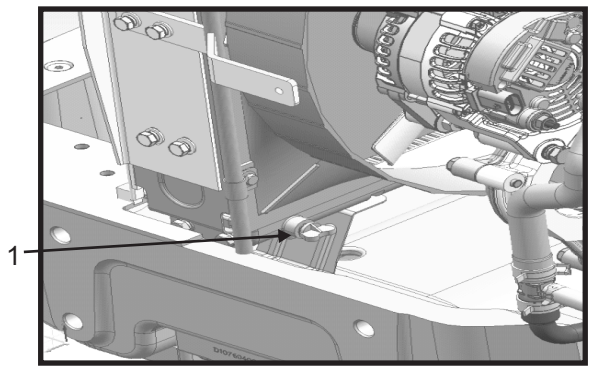


Figure 39.
Draining The cooling system

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

After draining, flush the cooling system with clean water via the radiator filler. After flushing, close 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.

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).

IMPORTANT: *It is essential that an approved radiator 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.

⚠ ***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 with integral regulator -12V, 90 Amp Starter Motor -12V, Positive engagement, solenoid operated.

6.25 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 oil and refill with fresh oil.
- Drain the fuel tank and pour approximately two gallons 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. Run the engine for one hour to disperse the inhibitor throughout the cooling system.
- Lubricate all grease fittings.
- Engage clutch pedal lock when tractor is not in use for long period of time or during storage of tractor.
- 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 (silica gel) 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.
- **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.
- Check the radiator coolant level. If the coolant is within 200 hours of the next change, renew the coolant. 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 (silica gel) 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.

6.26 Fuse Box

Fuse Box is located on the right side above the engine as shown in figure 36.

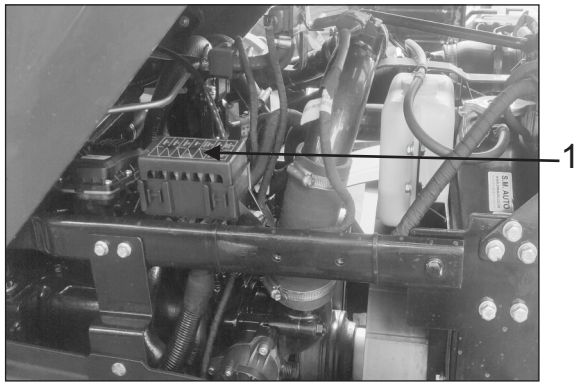
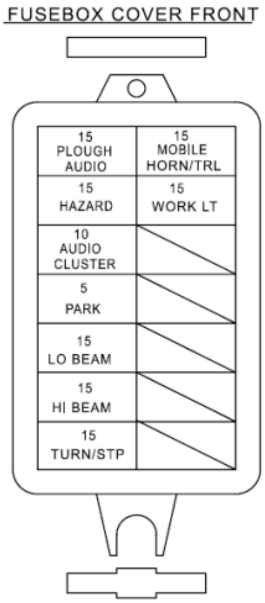


Figure 40.
1. Fuse Box Location



CHAPTER - 7 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.

Model	FARMTRAC 6050 E
Type - NA/ TC/TCI/E-CRT	Common Rail Direct Injection with TC
Swept Volume (cc)	2760
No of Cylinders	3
Bore x Stroke (mm)	98x122
Power at Rated ERPM (HP)	48 HP @ 2000
Rated ERPM	2000
Low Idle RPM	750±5
Cold Start	Yes
PTO	
PTO speed - Standard	540/540E
PTO Speed at ERPM- Standard	540 @ 1728 / 540E @ 1251
Minimum PTO Power (HP)	40 HP
Independent PTO	Yes
TRANSMISSION	
Transmission	8+8
Rear Axle Reduction Type	Epicyclic Reduction
4WD Actuation	Mechanical Actuated
CLUTCH	
Type	Double Clutch
Size	11"x11"
Disc Material	Cerametallic
BRAKES	
Type	Oil Immersed Brakes
Plate Size & No's	03 on Each Side
HYDRAULICS	
Type & Lift Capacity (Kg) at ball joints	1530Kg
Hydraulic pump capacity	Hydraulic (18 cc) / Steering (11 cc) @ 2000ERPM
Hydraulic Auxiliary Valve Assy (Double Spool - Double Acting)	2DA/2SA Convertible Type
STEERING	
Steering	Power Steering
Steering Column	Fixed type
Steering Pump Capacity (cc)	11
FRONT AXLE	
Front Axle	4WD
TYRE	
Front Tyre	Bias - 8x18
Rear Tyre	Agri-13.6x28
ELECTRICAL	
Alternator	12V, 90A
Starter	12V
3-POINT LINKAGES	
3 point linkage (Geometry) category 1/2	Cat 2/Cat 1

SPECIFICATIONS

VEHICLE	
Seat type E Marked	Adjustable type with seat belt - E marked Seat
Max Forward Speed @ Fly up ERMP	29.76
Fuel Tank Capacity, (Liters)	60 - under platform
Fuel Tank Cap- Lockable	No
Air Cleaner Type	Dry type with clogging sensor
Platform	Fully Suspended
Brake Pedals	Suspended
Clutch Pedal	Suspended
Parking Brake	Independent Type
Wheel Base (mm)	1885
Track Width Front (Inch)	“56”
Track Width Rear (Inch)	“57”
OTHER FEATURES BUNDLING	
Safety Start Switch Neutral	Yes
Single key shut off	Ignition Key
Tow Hook Mounting Bracket	Yes
Battery cutoff switch	Yes
Swinging Draw bar	Yes
Differential Lock	Yes
Optional Features	
Ballast - Rear	Yes - 30kg. on each side
Ballast - Front	Yes - 6 No.
Weight Carrier	24 kg

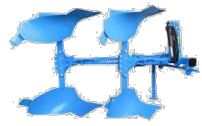
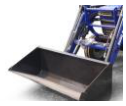
TYRE OPTIONS

Tyre	Tyre Size	Tyre Pressure (psi) - Road	Tyre Pressure (psi) - Field
Front (Agri)	8 x 18	26-28	24-26
Rear (Agri)	13.6 x 28	16-18	14-16

SPEED CHART

	Rear Tyre Size - 13.6x28	
TRACTOR SPEED @ Rated RPM	**Forward (Km/hr)**	**Reverse (Km/hr)**
L1	2.63	2.63
L2	3.85	3.84
L3	5.65	5.64
L4	8.14	8.12
H1	9.65	9.63
H2	14.13	14.10
H3	20.72	20.68
H4	29.82	29.76

SPECIFICATIONS

IMPLEMENT LIMITATION CHART CRDI 50-V			
S. No	**Implement**	**Photos**	**50 HP category**
1	Cultivator Rigid type		11 Tyne width of Cut- 2550-2570 mm Weight- 300-350 Kg LxWxH- 915x2620x1015mm
2	Disc Harrow		Trailed type: 8x8 Width of cut: 1725-1750 mm Weight- 700-750 Kg Disc diameter: 560/610 mm (opt)
			Mounted type: 8x8 Width of cut: 1725-1750 mm Weight: 500-580 Kg Disc dia: 560/610 mm LxWxH- 2350x1825x1270mm
3	Rotavator		Rotavator - 6 feet 7 feet No. of blades- 42 48 Weight:- 500kg 530kg Working width:- 1800mm 2120mm
4	Reversible MB Plough		2 Furrow (12") Width of cut: 600 to 650 mm Working depth: 240-280 mm Weight: 350-400 Kg LXWXH : 2208x1370x1490
5	Rear Mower		6 feet
6	Haulage		~5 ton Total weight: 2000-2500 Kg LXWXH: 3060x1836x612mm
7	Loader		Lifting Capacity at Pivot Pin height (900Kg) S.W.L (Safe Working Load with Standard Bucket) (800 Kg) Standard -Bucket Width (1.65 m) Front End Loader Weight (~750 kg)

NOTE:

- Implement size may vary depending on soil and operating conditions.
- Strictly follow the instructions outlined in the operator's manual of the mounted or trailed machinery or trailer, and do not operate the combination tractor - machine or tractor - trailer unless all instructions have been followed.
- For drawbar applications (plough, harrow, cultivator etc.), use of 4 wheel drive mode is mandatory for better traction & durability.
- While using tractor in sprayer application, it is recommended that operator wears PPE kit so as to get protection from the chemicals being used in sprayer
- Maximum vertical load on the rear hitch : 500 kg. .

TYRE OPTIONS

Maximum Allowed Trailed Masses

ROPS Variant					
Tyre	8-18 & 13.6-28	280/70R16 & 360/70R28	6.00-16 & 13.6-28	280/70R18 & 14.9-28	11.5/80x15.3 & 16.9-24
Tech. permissible mass	3500	3500	3500	3500	3500
Front reaction (A-1)	1200	1200	1200	1200	1200
Rear reaction (A-2)	2300	2300	2300	2300	2300

	T1	T2	T3
Unbraked	2000	2000	2000
Inertia brake	2200	2200	2200
Hydraulic brake	5000	5000	5000
Pneumatic brake	NA	NA	NA

*Wherever provided.

Tyre Pressure and Speed index:

	Tyre Size	Tyre option	Load Capacity Index	Speed Category symbol	Tyre Pressure (Psi) Agriculture	Tyre Pressure (Psi) Haulage
Option 1	8x18	Agriculture	90	A8	24	30
	13.6x28	Agriculture	128/124	A6/A8	18	28
Option 2	280/70 R16	Radial	112	A8/B	24	30
	360/70 R26	Radial	125	A6/A8	18	28
Option 3	6.00-28	Agriculture	94	A8/B	24	30
	13.6-28	Agriculture	128/124	A6/A8	18	28
Option 4	280/70R18	Radial	114	A8/B	24	30
	14.9-28	Agriculture	130/122	A6/A8	18	28
Option 5	11.5/80x15.3	Turf	137/145	A6	24	30
	16.9x24	Turf	133	A8	18	28

Probable Causes and Remedies For P Codes

S.no	DFC_name	Description	Fault Class	P-code (Diagnostic)	DTCSAE (Cluster)	SVS Lamp	Reactions	Causes	Remedies
1	DFC_AFSBattErr	Battery voltage error of HFM sensor	2	P0100	P0100	SVS On	-	1. Battery too low	1. Check battery
2	DFC_AFSPhysRngHi	Physical Range Check high for air mass flow sensor	2	P0100	P1100	SVS On	-	1. HFM drifted too much 2. Wrong HFM connected	1. Check if correct HFM is used 2. Replace HFM
3	DFC_AFSPhysRngLo	Physical Range Check low for air mass flow sensor	2	P0100	P1101	SVS On	-	1. HFM drifted too much 2. Wrong HFM connected	1. Check if correct HFM is used 2. Replace HFM
4	DFC_AFSSRCRawMax	SRC high error for raw value in HFM sensor	2	P0103	P0103	SVS On	-	Wire shorted Sensor faulty	Check wiring harness Change HFM
5	DFC_AFSSRCRawMin	SRC low error for raw value in HFM sensor	2	P0102	P0102	SVS On	-	Wire shorted Sensor faulty	Check wiring harness Change HFM
6	DFC_AfterrunBegin	DFC to indicate if there was an irregular switch off in drive.	2	P2505	P2505	SVS On	-	Detection of irregular switch off of drive	Check for Main relay and K15 connections. Relpace Main relay switch or T15 switch . Clear a fault restart the system .If the error again reported then Replace ECU
7	DFC_AfterrunClose	DFC to indicate if there was an irregular switch off in postdrive	2	P2505	P1505	SVS On	-	Detection of irregular switch off of postdrive	Check for Main relay and K15 connections. Replace Main relay switch or T15 switch Clear a fault restart the system .Again K15 Swtich off .If problem reported again reported then Replace ECU
8	DFC_AfterrunTimeOut	DFC to indicate if there was a timeout	2	P2505	P1506	SVS On	-	Detection of afterrun timeout	Check for Main relay and K15 connections. Replace Main relay switch or T15 switch . Clear a fault restart the system .Again K15 Swtich off .If problem reported .Adjust the after run time out value .After that also pronlem again reported means Replace ECU
9	DFC_BattUSRCMax	Diagnostic Fault Check for Signal Range Max Check of Battery Voltage	3	P0563	P0563	SVS On	- EGR Switch Off - Zero fuel quantity calibration during low idle shut-off -Send error value for Battery voltage defect on CAN -prohibit a regeneration in idle -Enable particulate filter service regeneration in light of motor system	1. Alternator regulator failure	1. Check battery 2. Check wiring harness (K01,K03,K05 shorted to higher voltage) 3. Check alternator 4. Check for blown fuses 5. Check for loose connections at Battey & Alternator +Ve terminal.
10	DFC_BattUSRCMin	Diagnostic Fault Check for Signal Range Min Check of Battery Voltage	3	P0562	P0562	SVS On	- EGR Switch Off - Zero fuel quantity calibration during low idle shut-off -Send error value for Battery voltage defect on CAN -prohibit a regeneration in idle -Enable particulate filter service regeneration in light of motor system	1. Charge indicator bulb/fuse blown off 2) Battery failure 3) Alternator failure 4) Loose wiring harness connection on alternator	1. Check battery 2. Check wiring harness 3. Check alternator 4. Check for loose connections at Battey & Alternator +Ve terminal.
11	DFC_CAN_E_TIMEOUT	DFC generated from DemEvent CAN_E_TIMEOUT	2	P0600	P0600	SVS On	-	1. CAN Hardware registers are not updated within the expected time 2. CAN transmission is not proper because of improper wiring harness	1. Check the CAN frames for proper functioning 2. Check the connectors/wiring harness for any problem/interruption in transmission of data
12	DFC_CEngDsTSRCMax	SRC High for Engine coolant temperature(do	3	P0118	P0118	SVS Blink	- EGR Switch Off - Replacement value min = -20 - Replacement value max = 110deg No trqlim (Normal conditions - till 100deg normal operations, after 100deg escorts specific coolant lamp will be on as warning, after 105 coolant lamp will blink and ovrHt protection will act)	1. Coolant temperature sensor short to battery	1. Check the Coolant temp sensor working and replace if required 2. Check wiring harness for short if any and rectify
13	DFC_CEngDsTSRCMin	SRC low for Engine coolant temperature(do	3	P0117	P0117	SVS Blink	- EGR Switch Off - Replacement value min = -20 - Replacement value max = 110deg No trqlim (Normal conditions - till 100deg normal operations, after 100deg escorts specific coolant lamp will be on as warning, after 105 coolant lamp will blink and ovrHt protection will act)	1. Coolant temperature sensor short circuit to ground 2. Wiring harness problem 3. Wrong sensor fitted	1. Check the Coolant temp sensor working and replace if required 2. Check wiring harness for short if any and rectify
14	DFC_DevLibBattUHi	DFC is set if the battery voltage exceed the higher calibrated limit longer than the debounce time. If the DFC is set, diagnoses of the power stages can be disabled.	2	P0563	P1563	SVS On	- EGR Switch Off	1. Alternator regulator failure (high voltage) 2. Battery issues 4. Battery sensor in ECU is faulty	1. Check battery (check level and specific gravity) 2. Check wiring harness (any short circuit to higher voltage) 3. Check alternator 4. Check for blown fuses
15	DFC_DevLibBattULo	The DFC is set if the battery voltage exceed the lower calibrated limit longer than the debounce time. If the DFC is set, diagnoses of the power stages can be disabled.	2	P0562	P1562	SVS On	- EGR Switch Off	1. Alternator regulator failure (low voltage) 2. Battery issues 4. Battery sensor in ECU is faulty	1. Check battery 2. Check wiring harness (any short circuit to lower voltage) 3. Check alternator

16	DFC_EGRVlvHBrgOpnLd	Open load error for EGRVlv H-Bridge powerstage	7	P0403	P0403	MIL Invisible	- EGR Switch Off - NCD Inducement	1. EGR valve connector not connected/loose connected 2. Wrong connection to EGR valve DC motor 3. EGR valve failure 4. Wiring harness failure	1. Check if connector is connected 2. Check the continuity between EGR valve connector and ECU 3. Check and replace EGR valve if required
17	DFC_EGRVlvHBrgOvrCurr	Over current error for EGRVlv H-Bridge	7	P0488	P0488	MIL Invisible	- EGR Switch Off - NCD Inducement	1. High current flow to ECU H-bridge 2. EGR valve failure/jammed	1. Remove the dust protection cap in the EGR valve and check whether the EGR valve operates freely 2. Change the EGR valve
18	DFC_EGRVlvHBrgOvrTemp	Over temperature error for EGRVlv H-Bridge powerstage	7	P0488	P1488	MIL Invisible	- EGR Switch Off - NCD Inducement	1. DC motor +ve or -ve connection, short to battery for longer time 2. High current flow to ECU H-bridge 3. EGR valve failure/jammed	1. Check for the sensor connector for short circuit to battery 2. Remove the dust protection cap in the EGR valve and check whether the EGR valve operates freely 3. Change the EGR valve
19	DFC_EGRVlvHBrgShCirBatt1	Short circuit to battery on EGR H-bridge Out1 error	7	P0490	P0490	MIL Invisible	- EGR Switch Off - NCD Inducement	1. DC motor +ve short circuit to battery	1. Check the EGR valve wires for short to battery 2. Replace the EGR valve.
20	DFC_EGRVlvHBrgShCirBatt2	Short circuit to battery on EGR H-bridge Out2 error	7	P045D	P045D	MIL Invisible	- EGR Switch Off - NCD Inducement	1. DC motor -ve short circuit to battery	1. Check the EGR valve wires for short to battery 2. Replace the EGR valve.
21	DFC_EGRVlvHBrgShCirGnd1	Short circuit to ground on EGR H-bridge Out1 error	7	P0489	P0489	MIL Invisible	- EGR Switch Off - NCD Inducement	1. DC motor +ve short circuit to ground	1. Check the EGR valve wires for short to ground 2. Replace the EGR valve.
22	DFC_EGRVlvHBrgShCirGnd2	Short circuit to ground on EGR H-bridge Out2 error	7	P045C	P045C	MIL Invisible	- EGR Switch Off - NCD Inducement	1. DC motor -ve short circuit to ground	1. Check the EGR valve wires for short to ground 2. Replace the EGR valve.
23	DFC_EGRVlvHBrgShCirOvrLd	Short circuit over load error for H-Bridge EGRVlv powerstage	7	P0488	P1489	MIL Invisible	- EGR Switch Off - NCD Inducement	1. Over load on H-bridge HW because of short circuit	1. Check for the sensor connector for short circuit to battery 2. Remove the dust protection cap in the EGR valve and check whether the EGR valve operates freely 3. Change the EGR valve
24	DFC_EGRVlvHBrgTempOvrCurr	Temperature dependent over current error for EGRVlv H-Bridge powerstage	7	P0488	P1490	MIL Invisible	- EGR Switch Off - NCD Inducement	1. Over current flow to H-bridge HW due to temperature change	1. Check for the sensor connector for short circuit to battery 2. Remove the dust protection cap in the EGR valve and check whether the EGR valve operates freely 3. Change the EGR valve
25	DFC_EGRVlvHBrgUndrVltg	Under voltage error for EGRVlv H-Bridge powerstage	7	P0488	P1491	MIL Invisible	- EGR Switch Off - NCD Inducement	1. H-bridge HW voltage supply failure	1. Check for battery voltage fluctuation
26	DFC_EGRVlvJamVlvClsd	Jammed EGR valve in closed state	7	P042F	P042F	MIL Invisible	- EGR Switch Off - NCD Inducement	1. EGR valve stuck in closed position	1. Remove the dust protection cap in the EGR valve and check whether the EGR valve operates freely while switching OFF the ignition key 2. Check if the EGR valve postiion wires are shorted to any other signal wire 3. Change the EGR valve
27	DFC_EGRVlvJamVlvOpn	Jammed EGR valve in open state	7	P042E	P042E	MIL Invisible	- EGR Switch Off - NCD Inducement	1. EGR valve is stuck in open position	1. Remove the dust protection cap in the EGR valve and check whether the EGR valve operates freely while switching OFF the ignition key 2. Check if the EGR valve postiion wires are shorted to any other signal wire 3. Change the EGR valve
28	DFC_EGRVlvSRCMax	0	7	P0406	P0406	MIL Invisible	- EGR Switch Off - NCD Inducement	1. Short circuit to battery 2. Sensor not connected 3. Wiring harness problem 4. Wrong sensor	1. Check wiring harness for short circuit between signal wire and battery/sensor supply 2. Check connector is connected 3. Replace the sensor
29	DFC_EGRVlvSRCMin	0	7	P0405	P0405	MIL Invisible	- EGR Switch Off - NCD Inducement	1. Short circuit to ground 2. Wiring harness problem 3. Wrong sensor	1. Check wiring harness for short circuit to ground 2. Replace the sensor
30	DFC_EngICO	Error to indicate Injection cutoff is active	3	P0611	P1610	SVS Blink	Limp home mode. Injection cut off beyound threshold calibrated in EnglCO_n*_T MAP	If any of the DFC_MoF* or DFC_MoC* are set, this requests ICO(Injection cut off - Speed limitation) then along with the respective function DFC, even EnglCO DFC will set.	1. Check the other DFC_MoF* or DFC_MoC* set, follow the remedy steps of that DFC and then Key on and off (with complete afterrun) and restart the vehicle. 2. If the problem persists, replace the ECU
31	DFC_EngPrtOvrSpd	Overspeed detection in component engine protection	3	P0219	P0219	SVS Blink	- Engine Shut Off	1. Engine over speed detected	1. Check if the exhaust flap is working correctly 2. Advice driver to drive without overspeeding engine while coming downhill
32	DFC_EpmCaSI1ErrSig	disturbed signal error camshaft inlet 1	3	P0341	P0341	SVS Blink	No speed limitation, delay start	1. Wiring Harness problem 2. Sensor damaged 3. Excess gap between sensor and cam gear 4. Incorrect fitment of cam sensor	1. Check connector is connected properly 2. Check for continuity between sensor connector pins and ECU pins 3. Check the gap between the cam sensor tip and cam gear sensing surface. Specified gap to be maintained 4. Check for the proper fitment of the cam sensor 5. Replace the sensor if the problem persists
33	DFC_EpmCaSI1NoSig	no signal error camshaft inlet 1	3	P0340	P0340	SVS Blink	No speed limitation, delay start	1. Sensor not connected 2. Wiring Harness problem 3. Sensor damaged 4. Excess gap between sensor and cam gear 5. Incorrect cam gear used	1. Check whether the connector to the cam sensor is connected properly 2. Check for continuity between sensor connector pins and ECU pins. 3. Check the gap between the cam sensor tip and cam gear sensing surface. Specified gap to be maintained 4. Check whether the correct cam gear is fitted 5. Remove the cam gear and check the sensing surface 6. Change the cam sensor

34	DFC_EpmCrSErrSig	DFC for crankshaft signal diagnose - disturbed signal	3	P0336	P0336	SVS Blink	No speed limitation, Back up start.	1. Wiring Harness problem 2. Sensor damaged 3. Excess/inadequate gap between sensor and flywheel 4. Incorrect flywheel used 5. Sensor rubbing on the flywheel	1. Check whether the connector to the crank sensor is connected properly 2. Check for continuity between sensor connector pinsand ECU pins. 3. Check the gap between the crank sensor tip and flywheel surface. Specified gap to be maintained 4. Check whether the correct flywheel is fitted 5. Change crank sensor if the problem still persists
35	DFC_EpmCrSNoSig	DFC for crankshaft signal diagnose - no signal	3	P0335	P0335	SVS Blink	No speed limitation, Back up start.	1. Sensor not connected 2. Wiring Harness problem 3. Sensor damaged 4. Excess gap between sensor and flywheel 5. Incorrect flywheel used	1. Check whether the connector to the crank sensor is connected properly 2. Check for continuity between sensor connector pinsand ECU pins. 3. Check the gap between the crank sensor tip and flywheel surface. Specified gap to be maintained 4. Check whether the correct flywheel is fitted 5. Change crank sensor if the problem still persists
36	DFC_FlSysWtDet	Error path for detection of water in the fuel filter housing	2	P2269	P2269	SVS On	20% Torque limitation	1. Water is detected in the fuel filter water seperator	1. Empty the water from the seperator
37	DFC_FlWLvlSensDefSig	Max threshold error for the sensor self test	3	P2264	P2264	SVS Blink	TrqLim - 40%	1. The connector is disconnected 2. Wire to sensor is shorted or broken 3. Sensor is faulty	1. Check if connector is connected 2. Check if the wiring is short to any constant voltage 3. Change sensor
38	DFC_FlWLvlSig	error to report detection of water in fuel	2	P2264	P1264	SVS On	TrqLim - 40%	1. Water is accumulated in the Fuel filters water seperator	1. Empty water from the water seperator
39	DFC_FuelTPhysRngHi	Physical range check (upper limit) of the fuel temperature	2	P0180	P0180	SVS On	TBD	1. Short circuit with other sensor output wires 2. Failure of sensor	1) Switch Off the Ignition Switch. 2) Check for back out of pins at both sensor connector and ECU connector. 3) Check for damage of pins at both sensor connector and ECU connector. 4) Disconnect the sensor connector & ECU connector. Check the continuity between sensor connector . 5) Check the sensor supply line is not short circuited to Ground. 6) Also check that the Sensor connector Pins are not short with each other. 7) Make the Ignition On with ECU connector connected & check the supply voltage between pin no. 1 & 2 of Sensor Connector. 8) Check the thermistor resistance between pin no. 1&2 of sensor. 9) If still the problem exist,replace the sensor with new one. 10) If still the problem exist, replace the ECU with known good one & recheck again. 11) Upon completion of inspection & repair work, clear the DTC using diagnostic tool.Perform "DTC Confirmation Procedure" & confirm that the trouble has been corrected.
40	DFC_FuelTPhysRngLo	Physical range check (lower limit) of the fuel temperature	2	P0180	P1180	SVS On	TBD	1. Short circuit with other sensor output wires 2. Failure of sensor	1) Switch Off the Ignition Switch. 2) Check for back out of pins at both sensor connector and ECU connector. 3) Check for damage of pins at both sensor connector and ECU connector. 4) Disconnect the sensor connector & ECU connector. Check the continuity between sensor connector pins 1,2 and ECU pins K14,K85 respectively. 5) Check the sensor supply line (Sensor Connector Pin 1) is not short circuited to Ground. 6) Also check that the Sensor connector Pins are not short with each other. 7) Make the Ignition On with ECU connector connected & check the supply voltage between pin no. 1 & 2 of Sensor Connector. It should be > 5 Volts 8) Check the thermistor resistance between pin no. 1&2 of sensor. It should be between aprox. 2.5 K Ohm. 9) If still the problem exist,replace the sensor with new one. 10) If still the problem exist, replace the ECU with known good one & recheck again. 11) Upon completion of inspection & repair work, clear the DTC using diagnostic tool.Perform "DTC Confirmation Procedure" & confirm that the trouble has been corrected.
41	DFC_FuelTSRCMax	SRC max error of the fuel temperature sensor	2	P0183	P0183	SVS On	based on LPC checks Replacement value = 80 Deg	Short circuit to ground	1.Check for proper connection in the connector 2. Check wiring harness for short circuit/continuity 3. Change the sensor if the problem persists
42	DFC_FuelTSRCMin	SRC min error of the fuel temperature sensor	2	P0182	P0182	SVS On	based on LPC checks Replacement value = 80 Deg	1. Charge indicator bulb/fuse blown off 2) Battery failure 3) Alternator failure 4) Loose wiring harness connection on alternator	1. Check wiring harness for any short to ground

43	DFC_InjCtlfacL2MonTrqIntLim	#N/A	3	P0611	P1611	SVS Blink	L1 qsetunbal will be reduced to match the L2 permitted torque through multiplication factor InjCtl_facL2MonTrqIntLim_mp	Safety reaction No 1, If the integral difference between the actual torque and permitted torque is greater than 75msMxTq then Factor to calculate the qsetunbal will be reduced to < 1.	T15 Off -> ON even if error present then Replace ECU
44	DFC_InjCtlstL2LimDrv	#N/A	3	P0611	P1612	SVS Blink	Even after Safety reaction 1, if the integral difference between the actual torque and permitted torque increased then multiplication factor will be equated to 0	Safety reaction No 2, If the integral difference between the actual torque and permitted torque is greater than 175msMxTq, then Factor to calculate the qsetunbal will be made 0. Only low idle quantity is allowed	T15 Off -> ON even if error present then Replace ECU
45	DFC_InjUnStrtPres	Problems with the pressure build-up	3	P1066	P1066	SVS Blink	No Reactions	-	-
46	DFC_InjUnStrtTst	Problems during the engine start	3	P0A0F	P0A0F	SVS Blink	No reaction from DSM. Comes when engine doesn't start	-	-
47	DFC_InjVlv_DI_DcDc	Booster voltage too low	3	P062B	P062B	SVS Blink	0	1. Injector booster error	1. Check by replacing with different injectors 2. Check wiring for any shorts 3. Change ECU
48	DFC_InjVlv_DI_NoLd_0	Open load on the power stage	3	P0201	P0201	SVS Blink	speed lim 1500rpm	1. Injector 1 connector not connected 2. Wiring harness connector fault 3. Faulty injector	1. Check whether the connecter is properly connected to the 1st injector 2. Check for the continuity between 1st injector connector pins 1,2 and ECU connector pins A16,A47 respectively. 3. Change the injector
49	DFC_InjVlv_DI_NoLd_1	Open load on the power stage	3	P0203	P0203	SVS Blink	speed lim 1500rpm	1. Injector 3 connector not connected 2. Wiring harness connector fault 3. Faulty injector	1. Check whether the connecter is properly connected to the 3rd injector 2. Check for the continuity between 3rd injector connector pins 1,2 and ECU connector pins A01,A46 respectively. 3. Change the injector
50	DFC_InjVlv_DI_NoLd_2	Open load on the power stage	3	P0204	P0204	SVS Blink	speed lim 1500rpm	1. Injector 4 connector not connected 2. Wiring harness connector fault 3. Faulty injector	1. Check whether the connecter is properly connected to the 4th injector 2. Check for the continuity between 4th injector connector pins 1,2 and ECU connector pins A17,A33 respectively. 3. Change the injector
51	DFC_InjVlv_DI_ScBnk_0	Short circuit of the HDEV power stage high-side (bank error)	3	P062D	P062D	SVS Blink	Shut off	1. Injector bank 0 -short circuit to battery or ground	1) Switch Off the Ignition Switch. 2) Injector bank 0 consist of Injector 1 &4. 3) Check for back out of pins at both injector connector and ECU connector. 4) Check for damage of pins at both injector connector and ECU connector. 5) Disconnect the injector connector & ECU connector. Check for the continuity between 1st injector connector pins 1,2 and ECU connector pins A16,A47 respectively. Ensure better connections. Check for the continuity between 4th injector connector pins 1,2 and ECU connector pins A17,A33 respectively. Ensure better connections. 5) Make sure that there should not be short between Injector 1& 4. 6) Make the Ignition On with ECU connector connected & check the supply voltage between Injector pin no. 1 & vehicle ground. It should be12 volts for both Injectors. 6) Check the resistance between pin no. 1 & 2 of both Injectors. It should be XX Ohm to XX Ohm 7) Also check that the Injector connector Pins are not short with Battery & Ground. 8) If still the problem exists, replace the Injector with new one. 9) If still the problem exists, replace the ECU with known good one & recheck again. 10) Upon completion of inspection & repair work, clear the DTC using diagnostic tool. Perform "DTC Confirmation Procedure" & confirm that the trouble has been corrected.

52	DFC_InjVlv_DI_ScBnk_1	Short circuit of the HDEV power stage high-side (bank error)	3	P062E	P062E	SVS Blink	Shut off	1. Injector bank 1 -short circuit to battery or ground	1) Switch Off the Ignition Switch. 2) Injector bank 1 consist of Injector 2 & 3.. 3) Check for back out of pins at both injector connector and ECU connector. 4) Check for damage of pins at both injector connector and ECU connector. 5) Disconnect the injector connector & ECU connector. Check for the continuity between 2nd injector connector pins 1,2 and ECU connector pins A02,A31 respectively. Ensure better connections. Check for the continuity between 3rd injector connector pins 1,2 and ECU connector pins A01,A46 respectively. Ensure better connections. 5) Make sure that there should not be short between Injector 2 & 3. 6) Make the Ignition On with ECU connector connected & check the supply voltage between Injector pin no. 1 & vehicle ground. It should be12 volts for both Injectors. 6) Check the resistance between pin no. 1 & 2 of both Injectors. It should be XX Ohm to XX Ohm 7) Also check that the Injector connector Pins are not short with Battery & Ground. 8) If still the problem exists, replace the Injector with new one. 9) If still the problem exists, replace the ECU with known good one & recheck again. 10) Upon completion of inspection & repair work, clear the DTC using diagnostic tool. Perform "DTC Confirmation Procedure" & confirm that the trouble has been corrected.
53	DFC_InjVlv_DI_ScCyl_0	Short circuit of the power stage low-side (cylinder error)	3	P0262	P0262	SVS Blink	Shut off	1. Injector 1 short circuit to ground	1) Switch Off the Ignition Switch. 2) Check for back out of pins at both injector connector and ECU connector. 3) Check for damage of pins at both injector connector and ECU connector. 4) Disconnect the injector connector & ECU connector. Check for the continuity between 1st injector connector pins 1,2 and ECU connector pins A16,A47 respectively. Ensure better connections. 5) Check the injector signal line (Injector Connector Pin 2) is not short circuited to Ground (ECU Connector Pin K 02). 6) Make the Ignition On with ECU connector connected & check the supply voltage between Injector pin no. 1 & vehicle ground. It should be12 volts. 7) Check the resistance between pin no. 1 & 2 of Injector. It should be XX Ohm to XX Ohm 8) Also check that the Injector connector Pins are not short with Injector Body. 9) If still the problem exist, replace the sensor with new one. 10) If still the problem persist, replace the ECU with known good one & recheck again.
54	DFC_InjVlv_DI_ScCyl_1	Short circuit of the power stage low-side (cylinder error)	3	P0268	P0268	SVS Blink	Shut off	1. Injector 3 short circuit to ground	1) Switch Off the Ignition Switch. 2) Check for back out of pins at both injector connector and ECU connector. 3) Check for damage of pins at both injector connector and ECU connector. 4) Disconnect the injector connector & ECU connector. Check for the continuity between 3rd injector connector pins 1,2 and ECU connector pins A01,A46 respectively. Ensure better connections. 5) Check the injector signal line (Injector Connector Pin 2) is not short circuited to Ground. 6) Make the Ignition On with ECU connector connected & check the supply voltage between Injector pin no. 1 & vehicle ground. It should be12 volts. 7) Check the resistance between pin no. 1 & 2 of Injector. It should be XX Ohm to XX Ohm 8) Also check that the Injector connector Pins are not short with Injector Body. 9) If still the problem exist, replace the sensor with new one. 10) If still the problem persist, replace the ECU with known good one & recheck again.

55	DFC_InjVlv_DI_SCVl_2	Short circuit of the power stage low-side (cylinder error)	3	P0271	P0271	SVS Blink	Shut off	1. Injector 4 short circuit to ground	1) Switch Off the Ignition Switch. 2) Check for back out of pins at both injector connector and ECU connector. 3) Check for damage of pins at both injector connector and ECU connector. 4) Disconnect the injector connector & ECU connector. Check for the continuity between 4th injector connector pins 1,2 and ECU connector pins A17,A33 respectively. Ensure better connections. 5) Check the injector signal line (Injector Connector Pin 2) is not short circuited to Ground. 6) Make the Ignition On with ECU connector connected & check the supply voltage between Injector pin no. 1 & vehicle ground. It should be12 volts. 7) Check the resistance between pin no. 1 & 2 of Injector. It should be XX Ohm to XX Ohm 8) Also check that the Injector connector Pins are not short with Injector Body. 9) If still the problem exist, replace the sensor with new one. 10) If still the problem persists, replace the ECU with known good one & recheck again.	1. Check proper flashing of IQA
56	DFC_InjVlv_DI_ScHsLs_0	Short circuit between high-side and low-side of the power stage (high-side non plausible error)	3	P0261	P0261	SVS Blink	speed lim 1500rpm	1. Short circuit between +ve and -ve for injector 1	1) Switch Off the Ignition Switch. 2) Check for damage of pins at both injector connector and ECU connector. 3) Disconnect the injector connector & ECU connector. Check for the continuity between 1st injector connector pins 1,2 and ECU connector pins A16,A47 respectively. Ensure better connections. 4) Ensure that there should not be short circuit between Injector connector Pins 1&2. 5) If still the problem persists, replace the ECU with known good one & recheck again. 6) Upon completion of inspection & repair work, clear the DTC using diagnostic tool. Perform "DTC Confirmation Procedure" & confirm that the trouble has been corrected.	1) Switch Off the Ignition Switch. 2) Check for damage of pins at both injector connector and ECU connector. 3) Disconnect the injector connector & ECU connector. Check for the continuity between 3rd injector connector pins 1,2 and ECU connector pins A01,A46 respectively. Ensure better connections. 4) Ensure that there should not be short circuit between Injector connector Pins 1&2. 5) If still the problem persists, replace the ECU with known good one & recheck again. 6) Upon completion of inspection & repair work, clear the DTC using diagnostic tool. Perform "DTC Confirmation Procedure" & confirm that the trouble has been corrected.	1. Check proper flashing of IQA
57	DFC_InjVlv_DI_ScHsLs_1	Short circuit between high-side and low-side of the power stage (high-side non plausible error)	3	P0267	P0267	SVS Blink	speed lim 1500rpm	1. Short circuit between +ve and -ve for injector 3	1) Switch Off the Ignition Switch. 2) Check for damage of pins at both injector connector and ECU connector. 3) Disconnect the injector connector & ECU connector. Check for the continuity between 4th injector connector pins 1,2 and ECU connector pins A17,A33 respectively. Ensure better connections. 4) Ensure that there should not be short circuit between Injector connector Pins 1&2. 5) If still the problem persists, replace the ECU with known good one & recheck again. 6) Upon completion of inspection & repair work, clear the DTC using diagnostic tool. Perform "DTC Confirmation Procedure" & confirm that the trouble has been corrected.	1. Check proper flashing of IQA
58	DFC_InjVlv_DI_ScHsLs_2	Short circuit between high-side and low-side of the power stage (high-side non plausible error)	3	P0270	P0270	SVS Blink	speed lim 1500rpm	1. Short circuit between +ve and -ve for injector 4	1) Switch Off the Ignition Switch. 2) Check for damage of pins at both injector connector and ECU connector. 3) Disconnect the injector connector & ECU connector. Check for the continuity between 4th injector connector pins 1,2 and ECU connector pins A17,A33 respectively. Ensure better connections. 4) Ensure that there should not be short circuit between Injector connector Pins 1&2. 5) If still the problem persists, replace the ECU with known good one & recheck again. 6) Upon completion of inspection & repair work, clear the DTC using diagnostic tool. Perform "DTC Confirmation Procedure" & confirm that the trouble has been corrected.	1. Check proper flashing of IQA
59	DFC_IVAdjDiatVAdj_0	check of missing injector adjustment value programming	2	P268C	P268C	SVS On	No Reactions	1. The checksum of the injector 1 adjustment code words is not correct 2.The basic correction quantity in at least one injector checkpoint has exceeded the admissible limits 3. No injector adjustment values could be read due to faulty EEPROM access	1. Check proper flashing of IQA
60	DFC_IVAdjDiatVAdj_1	check of missing injector adjustment value programming	2	P268E	P268E	SVS On	No Reactions	1. The checksum of the injector 2 adjustment code words is not correct 2.The basic correction quantity in at least one injector checkpoint has exceeded the admissible limits 3. No injector adjustment values could be read due to faulty EEPROM access	1. Check proper flashing of IQA
61	DFC_IVAdjDiatVAdj_2	check of missing injector adjustment value programming	2	P268F	P268F	SVS On	No Reactions	1. The checksum of the injector 4 adjustment code words is not correct 2.The basic correction quantity in at least one injector checkpoint has exceeded the admissible limits 3. No injector adjustment values could be read due to faulty EEPROM access	1. Check proper flashing of IQA

62	DFC_MeUnOL	Check for open load fault in the metering unit	3	P0251	P0251	SVS Blink	- 40% TrqLim,PRVOpn	1. Check whether the connector is connected 2. Change the wiring harness 3. Change the Metering unit relay	1. Connector not connected 2. Wiring harness problem 3. Metering unit relay failure
63	DFC_MeUnOT	Fault check overtemperature of the metering unit power stage	3	P0252	P0252	SVS Blink	- 40% TrqLim,PRVOpn	1. The fuel metering unit signal is shorted to battery for a longer duration	1. Check the glow plug circuit wiring harness for any short circuit to battery
64	DFC_MeUnSCB	Check for short circuit to battery fault in the metering unit	3	P0254	P0254	SVS Blink	- 40% TrqLim,PRVOpn	1. The fuel metering unit signal short circuit to battery 2. Wiring harness loose connection on	1) Check the pins of connector are not shorted with battery. 2) Check for wiring harness connections. 3) Change themetering unit realy.
65	DFC_MeUnSCG	Check for short circuit to ground fault in the metering unit	3	P0253	P0253	SVS Blink	- Engine Shut Off	1. The fuel metering unit signal short circuit to ground 2. Wiring harness loose connection on -ve	1) Check the pins of connector are not shorted with ground. 2) Check for wiring harness connections. 3) Change the metering unit relay.
66	DFC_MoCADCNTP	function monitoring: fault of ECU ADC - Null Load Test Pulse	3	P060B	P060B	SVS Blink	No response form AccPed. Even though Accped is pressed there will not be any torque increase	1. Diagnostic fault check to report the NTP error in ADC monitoring 2. If the value, converted by the ADC channel, is greater than the applicable threshold MoCADC_uNTPMax_C , after the debounce counter MoCADC_ctDebNTP has reached the final value MoCADC_ctDebNTP_C	1. Error detectetd in the plausibility check of the ADC by no load test pulse test. The ECU has an internal error. 2. Replace ECU
67	DFC_MoCADCTst	function monitoring: fault of ECU ADC - test voltage	3	P060B	P160B	SVS Blink	No response form AccPed. Even though Accped is pressed there will not be any torque increase	1. Diagnostic fault check to report the ADC test error 2. If the value, converted by the ADC, does not lie between MoCADC_uTstMin_C and MoCADC_uTstMax_C , after the debounce counter MoCADC_ctDebTst has reached the final value MoCADC_ctDebTst_C	1.Error detected in the plausibility check of the ADC by voltage test signal. The ECU has an internal error. 2. Replace ECU
68	DFC_MoCSOPICO	Diagnostic fault check to report ICO request from MoCSOP	3	P060B	P161B	SVS Blink	Limp home mode. Injection cut off beyound threshold calibrated in EngICO_n*_T MAP -	1. Injection cut off (ICO) request from MoCSOP module. The ECU has an internal error. 2. Once in a driving cycle the effectiveness of the shutoff−path for safety−critical communication channels (e.g. CAN/FlexRay) are tested. If the communication pins do not return expected state according to state machine a fault is detected.	1. Clear the error through the diagnostic tester. 2. If the problem persists, replace the ECU
69	DFC_MoFAPP	#N/A	3	P060D	P060D	SVS Blink	Limp home mode. Injection cut off beyound threshold calibrated in EngICO_n*_T MAP -	1. Internal ECU issue 2. If there is any plausibility error between App1 and App2 signal in safety SW then this DFC will be detected	1. Clear all errors 2. If error repeats contact to FML service desk 3. Check for L1 APP errors and rectify if any. Replace the APP module and check. Replace ECU
70	DFC_MoFEngBrkECR1	#N/A	3	P061E	P061E	SVS Blink	No Reactions	1. Internal ECU issue 2. ECR1 release requested in level 1 , but not released in level 2.	1. Clear all errors 2. If error repeats contact to FML service desk 3. T15 Off -> ON even if error present then Replace ECU
71	DFC_MoFEngBrkECR2	#N/A	3	P061E	P161E	SVS Blink	No Reactions	1. Internal ECU issue 2. ECR2 release requested in level 1 , but not released in level 2.	1. Clear all errors 2. If error repeats contact to FML service desk 3. T15 Off -> ON even if error present then Replace ECU
72	DFC_MoFEngBrkEXhFlp	#N/A	3	P061E	P161F	SVS Blink	No Reactions	1. Internal ECU issue 2. Exhaust flap release requested in level 1 , but not released in level 2.	1. Clear all errors 2. If error repeats contact to FML service desk 3. T15 Off -> ON even if error present then Replace ECU
73	DFC_MoFESpd	#N/A	3	P061C	P061C	SVS Blink	-Limp home mode. Injection cut off beyound threshold calibrated in EngICO_n*_T MAP	1. Internal ECU issue 2. If the difference between the calculated engine speed from level 1 and engine speed from level 2 is greater than the threshold MoFESpd_nDiffMaxHiResl_C	1. Clear all errors 2. If error repeats contact to FML service desk 3. Check Engine speed sensor for correctness. T15 Off -> ON even if error present then Replace ECU
74	DFC_MoFInjDatET	#N/A	3	P0611	P1613	SVS Blink	Limp home mode. Injection cut off beyound threshold calibrated in EngICO_n*_T MAP	1. Internal ECU issue 2. Diagnostic fault check to report the plausibility error between level 1 energizing time and level 2 information	1. Clear all errors 2. If error repeats contact to FML service desk 3. T15 Off -> ON even if error present then Replace ECU
75	DFC_MoFInjDatPhi	#N/A	3	P0611	P1614	SVS Blink	Limp home mode. Injection cut off beyound threshold calibrated in EngICO_n*_T MAP	1. Internal ECU issue 2. Diagnostic fault check to report the error due to plausibility between the injection begin v/s injection type	1. Clear all errors 2. If error repeats contact to FML service desk 3. T15 Off -> ON even if error present then Replace ECU
76	DFC_MoFInjQntZFC	#N/A	3	P0611	P0611	SVS Blink	No Reactions	1. Internal ECU issue 2. Error in the plausibilisation of ZFC−energizing−times	1. Clear all errors 2. If error repeats contact to FML service desk 3. T15 Off -> ON even if error present then Replace ECU
77	DFC_MoFMode2	#N/A	3	P0611	P1617	SVS Blink	No Reactions	1. Internal ECU issue 2. Error in the PoI2 efficiency received from level 1, the PoI2 injection start angle or the PoI2 injection quantity.	1. Clear all errors 2. If error repeats contact to FML service desk 3. T15 Off -> ON even if error present then Replace ECU

78	DFC_MoFrMode3	#N/A	3	P0611	P1618	SVS Blink	No Reactions	1. Internal ECU issue 2. Error in the Pol3 efficiency received from level 1, the Pol3 injection start angle or the Pol3 injection quantity.	1. Clear all errors 2. If error repeats contact to FMI_service desk 3. T15 Off -> ON even if error present then Replace ECU
79	DFC_MoFrModeErom	#N/A	3	P0611	P1619	SVS Blink	No Reactions	1. Internal ECU issue 2. Error in the operating mode received from level 1	1. Clear all errors 2. If error repeats contact to FMI_service desk 3. T15 Off -> ON even if error present then Replace ECU
80	DFC_MoFrModeTotQntBnd	#N/A	3	P0611	P161D	SVS Blink	No Reactions	1. Internal ECU issue 2. Error in the plausibility check of the quantity correction in level 1	1. Clear all errors 2. If error repeats contact to FMI_service desk 3. T15 Off -> ON even if error present then Replace ECU
81	DFC_MoFQntCor	#N/A	3	P0611	P1620	SVS Blink	No Reactions	1. Internal ECU issue 2. DFC is set if the following conditions are met: - QWC quantity calculated in level 1 is not plausible for a calibratable time (MoFQntCor_ctDebErr_C * 40 ms) - Engine speed (MoFEspd_nEng) is greater than a calibratable threshold (MoFQntCor_nMinErrReac_C) - No engine test is active (MoFETC_stTst == 0) - Wave corrections have taken place (MoFQntCor_stInj != 0)	1. Clear all errors 2. If error repeats contact to FMI_service desk even if error present then Replace ECU
82	DFC_MoFRailP	#N/A	3	P0611	P1615	SVS Blink	Limp home mode. Injection cut off beyound threshold calibrated in EngI(CO_n* _T MAP	1. Internal ECU issue 2. Diagnostic fault check to report the plausibility error in rail pressure monitoring	1. Clear all errors 2. If error repeats contact to FMI_service desk 3. Replace Rail.
83	DFC_MoFStrt	#N/A	3	P0611	P1616	SVS Blink	Engine cranking will be interrupted by L2 and does not allow start in that drive cycle	1. Internal ECU issue 2. Start requested in level 1, but not released in level 2.	1. Clear all errors 2. If error repeats contact to FMI_service desk 3. Check for L1 Starter errors. Replace Starter. Replace ECU
84	DFC_MoFTrqCmpET	#N/A	3	P061A	P061A	SVS Blink	Limp home mode. Injection cut off beyound threshold calibrated in EngI(CO_n* _T MAP	1. Internal ECU issue 2. Fault from monitoring of energizing time comparison during overrun is stored, if the averaged actual energizing time MoFrinjDat_tiTDCAvrg has been exceeding the permitted threshold MoFTrqCmp_tiLimT_CUR for a longer period than the threshold MoFTrqCmp_ctDebOvrETDef_C.	1. Clear all errors 2. If error repeats contact to FMI_service desk 3. T15 Off -> ON even if error present then Replace ECU
85	DFC_MoFTrqCmpTrq	#N/A	3	P061A	P161A	SVS Blink	Limp home mode. Injection cut off beyound threshold calibrated in EngI(CO_n* _T MAP	1. Internal ECU issue 2. Fault from monitoring of torque comparison is stored, if the actual torque has been higher than the permitted torque such that the accumulated torque integral value MoFTrqCmp_wTrqInt exceeds the maximum threshold MoFTrqCmp_wTrqIntThres_C	1. Clear all errors 2. If error repeats contact to FMI_service desk 3. T15 Off -> ON even if error present then Replace ECU
86	DFC_MoFVarPostBldSel	#N/A	3	P061A	P162A	SVS Blink	Limp home mode. Injection cut off beyound threshold calibrated in EngI(CO_n* _T MAP	1. Internal ECU issue 2. Error in the post-build selectable monitoring	1. Clear all errors 2. If error repeats contact to FMI_service desk 3. T15 Off -> ON even if error present then Replace ECU
87	DFC_MOXEMM_FCCU0	DFC for failure in FCCU channel 0	3	P1901	P1901	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure	1. Clear all errors 2. If error repeats contact to FMI_service desk 3. Replace ECU
88	DFC_MOXEMM_FCCU1	DFC for failure in FCCU channel 1	3	P1902	P1902	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure	1. Clear all errors 2. If error repeats contact to FMI_service desk 3. Replace ECU
89	DFC_MOXEMM_FCCU10	DFC for failure in FCCU channel 10	3	P1903	P1903	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure	1. Clear all errors 2. If error repeats contact to FMI_service desk 3. Replace ECU
90	DFC_MOXEMM_FCCU103	DFC for failure in FCCU channel 103	3	P1907	P1907	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure	1. Clear all errors 2. If error repeats contact to FMI_service desk 3. Replace ECU
91	DFC_MOXEMM_FCCU111	DFC for failure in FCCU channel 111	3	P1913	P1913	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure	1. Clear all errors 2. If error repeats contact to FMI_service desk 3. Replace ECU
92	DFC_MOXEMM_FCCU115	DFC for failure in FCCU channel 115	3	P1917	P1917	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure	1. Clear all errors 2. If error repeats contact to FMI_service desk 3. Replace ECU
93	DFC_MOXEMM_FCCU12	DFC for failure in FCCU channel 12	3	P1918	P1918	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure	1. Clear all errors 2. If error repeats contact to FMI_service desk 3. Replace ECU
94	DFC_MOXEMM_FCCU18	DFC for failure in FCCU channel 18	3	P1923	P1923	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure	1. Clear all errors 2. If error repeats contact to FMI_service desk 3. Replace ECU
95	DFC_MOXEMM_FCCU19	DFC for failure in FCCU channel 19	3	P1924	P1924	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure	1. Clear all errors 2. If error repeats contact to FMI_service desk 3. Replace ECU

96	DFC_MOXEMM_FCCU2	DFC for failure in FCCU channel 2	3	P1925	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure 1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
97	DFC_MOXEMM_FCCU20	DFC for failure in channel 20	3	P1926	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure 1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
98	DFC_MOXEMM_FCCU22	DFC for failure in FCCU channel 22	3	P1928	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure 1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
99	DFC_MOXEMM_FCCU25	DFC for failure in FCCU channel 25	3	P1931	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure 1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
100	DFC_MOXEMM_FCCU28	DFC for failure in FCCU channel 28	3	P1934	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure 1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
101	DFC_MOXEMM_FCCU3	DFC for fher in FCCU channel 3	3	P1936	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure 1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
102	DFC_MOXEMM_FCCU31	DFC for failure in FCCU channel 31	3	P1938	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure 1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
103	DFC_MOXEMM_FCCU32	DFC for failure in FCCU channel 32	3	P1939	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure 1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
104	DFC_MOXEMM_FCCU33	DFC for failure in FCCU channel 33	3	P1940	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure 1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
105	DFC_MOXEMM_FCCU34	DFC for failure in FCCU channel 34	3	P1941	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure 1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
106	DFC_MOXEMM_FCCU35	DFC for failure in FCCU channel 35	3	P1942	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure 1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
107	DFC_MOXEMM_FCCU36	DFC for failure in FCCU channel 36	3	P1943	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure 1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
108	DFC_MOXEMM_FCCU37	DFC for failure in FCCU channel 37	3	P1944	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure 1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
109	DFC_MOXEMM_FCCU38	DFC for failure in FCCU channel 38	3	P1945	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure 1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
110	DFC_MOXEMM_FCCU39	DFC for failure in FCCU channel 39	3	P1946	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure 1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
111	DFC_MOXEMM_FCCU40	DFC for failure in FCCU channel 40	3	P1948	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure 1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
112	DFC_MOXEMM_FCCU41	DFC for failure in FCCU channel 41	3	P1949	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure 1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
113	DFC_MOXEMM_FCCU42	DFC for failure in FCCU channel 42	3	P1950	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure 1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
114	DFC_MOXEMM_FCCU43	DFC for failure in FCCU channel 43	3	P1951	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure 1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
115	DFC_MOXEMM_FCCU44	DFC for failure in FCCU channel 44	3	P1952	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure 1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
116	DFC_MOXEMM_FCCU45	DFC for failure in FCCU channel 45	3	P1953	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure 1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
117	DFC_MOXEMM_FCCU46	DFC for failure in FCCU channel 46	3	P1954	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure 1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
118	DFC_MOXEMM_FCCU49	DFC for failure in FCCU channel 49	3	P1957	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure 1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
119	DFC_MOXEMM_FCCU5	DFC for failure in FCCU channel 5	3	P1958	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure 1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
120	DFC_MOXEMM_FCCU50	DFC for failure in FCCU channel 50	3	P1959	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure 1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU

121	DFC_MOXEMM_FCCU51	DFC for failure in FCCU channel 51	3	P1960	P1960	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure	1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
122	DFC_MOXEMM_FCCU52	DFC for failure in FCCU channel 52	3	P1961	P1961	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure	1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
123	DFC_MOXEMM_FCCU53	DFC for failure in FCCU channel 53	3	P1962	P1962	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure	1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
124	DFC_MOXEMM_FCCU54	DFC for failure in FCCU channel 54	3	P1963	P1963	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure	1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
125	DFC_MOXEMM_FCCU55	DFC for failure in FCCU channel 55	3	P1964	P1964	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure	1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
126	DFC_MOXEMM_FCCU56	DFC for failure in FCCU channel 56	3	P1965	P1965	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure	1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
127	DFC_MOXEMM_FCCU57	DFC for failure in FCCU channel 57	3	P1966	P1966	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure	1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
128	DFC_MOXEMM_FCCU58	DFC for failure in FCCU channel 58	3	P1967	P1967	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure	1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
129	DFC_MOXEMM_FCCU59	DFC for failure in FCCU channel 59	3	P1968	P1968	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure	1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
130	DFC_MOXEMM_FCCU6	DFC for failure in FCCU channel 6	3	P1969	P1969	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure	1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
131	DFC_MOXEMM_FCCU63	DFC for failure in FCCU channel 63	3	P1973	P1973	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure	1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
132	DFC_MOXEMM_FCCU64	DFC for failure in FCCU channel 64	3	P1974	P1974	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure	1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
133	DFC_MOXEMM_FCCU65	DFC for failure in FCCU channel 65	3	P1975	P1975	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure	1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
134	DFC_MOXEMM_FCCU70	DFC for failure in FCCU channel 70	3	P1981	P1981	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure	1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
135	DFC_MOXEMM_FCCU71	DFC for failure in FCCU channel 71	3	P1982	P1982	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure	1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
136	DFC_MOXEMM_FCCU74	DFC for failure in FCCU channel 74	3	P1985	P1985	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure	1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
137	DFC_MOXEMM_FCCU75	DFC for failure in FCCU channel 75	3	P1986	P1986	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure	1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
138	DFC_MOXEMM_FCCU78	DFC for failure in FCCU channel 78	3	P1988	P1988	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure	1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
139	DFC_MOXEMM_FCCU79	DFC for failure in FCCU channel 79	3	P1989	P1989	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure	1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
140	DFC_MOXEMM_FCCU80	DFC for failure in FCCU channel 80	3	P1991	P1991	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure	1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
141	DFC_MOXEMM_FCCU81	DFC for failure in FCCU channel 81	3	P1992	P1992	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure	1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
142	DFC_MOXEMM_FCCU85	DFC for failure in FCCU channel 85	3	P1996	P1996	SVS Blink	Not able to crank the vehicle.	1. Internal ECU issue 2. ECU failure	1. Clear all errors 2. If error repeats contact to FMI service desk 3. Replace ECU
143	DFC_MRlyOL	DFC generated from DemEvent MRlyOL: Open load error on the main relay	2	P0685	P0685	SVS On	No Reactions	1. Connector might be disconnected 2. Relay may be faulty	1. Check Wiring harness problem 2. Check fuse 3. Replace main relay
144	DFC_MRlySCB	DFC generated from DemEvent MRlySCB: Short circuit to battery error on the main relay	2	P0685	P1685	SVS On	No Reactions	Main relay short circuit to battery	1. Check for relay short to Battery 2. Clear error and check 3. Replace Main relay

145	DFC_MRlySCG	DFC generated from DemEvent MRlySCG: Short circuit to ground error on the main relay	2	P0685	P1686	SVS On	No Reactions	Main relay short circuit to ground	1.. Check continuity/shorts 2. Clear error and Check 3. Replace Main relay
146	DFC_NplHsChngPPFltDiff	Fault check for Hoseline connection	5	P2452	P2452	AWL On	- Trq reduction	1. Blocked hoseline of the pressure sensor changed 2. Delta Pressure sensor is faulty/drifted 3. End customer changed the hose line of the pressure sensor	1. Check for the blocked hoseline of the pressure sensor changed 2. Check for the proper working of the delta pressure sensor 3. Explain the customer that it is an OBD requirement and doing so is an offense
147	DFC_NplPresSensPPFltDiff	Fault check for the pressure sensor plausibility	5	P2453	P2453	AWL On	- Trq reduction	1. Delta pressure sensor is faulty	1. Check the delta pressure sensor for proper working 2. Replace the delta pressure sensor
148	DFC_OCWDAABEActv	function monitoring: fault of ECU, ABE active, powerstages are shut-off	3	P060C	P060C	SVS Blink	-	1. Internal ECU error 2. ECU failure	1. Clear and check if repeats 2. Replace ECU
149	DFC_OCWDACom	function monitoring: fault of ECU, WDA active by inquiry/response communication	3	P060C	P160C	SVS Blink	-	1. ECU HW -internal error 2. ECU failure	Replace ECU
150	DFC_OCWDAErrPin	function monitoring: fault of ECU, Error Pin active suspision of HW fault	3	P060C	P161C	SVS Blink	-	1. ECU HW -internal error 2. ECU failure	Replace ECU
151	DFC_OCWDAOvrVltg	function monitoring: fault of ECU, WDA active by overvoltage detection	3	P060C	P162C	SVS Blink	-	1. ECU HW -internal error 2. ECU failure	Replace ECU
152	DFC_OilPSwmpPhysRngHi	Maximum oil pressure error in plausibility check	0	0	0	No Lamp	No replacement or freeze value to be caliberated	1. The oil pressure sensor is faulty 2. Drifted due to aging	1. Check for the proper working of the oil pressure sensor 2. Check for the drifting of the sensor 3. Replace the sensor
153	DFC_OilPSwmpPhysRngLo	Minimum oil pressure error in plausibility check	0	0	0	No Lamp	No replacement or freeze value to be caliberated	1. The oil pressure sensor is faulty 2. Drifted due to aging	1. Check for the proper working of the oil pressure sensor 2. Check for the drifting of the sensor 3. Replace the sensor
154	DFC_PEnvSigRngMax	fault check max signal range violated for ambient air pressure sensor	2	P2226	P2226	SVS On	- repl value =1000mBar	1. Environmental pressure sensor is open or shorted to battery	1. Replace the sensor or ECU
155	DFC_PEnvSigRngMin	fault check min signal range violated for ambient air pressure sensor	2	P2226	P1226	SVS On	- repl value = 1000mBar	1. Environmental pressure sensor is shorted to ground	1. Replace the sensor or ECU
156	DFC_PFltAshLdMax	To check if volume of Ash load has exceeded the limit	3	P242F	P242F	SVS Blink	30% Torque limitation	1. Maximum ash mass deposited in the DPF 2.. Damage in the DPF causing delta P to increase more than expected 3. The differential pressure sensor is faulty/drifted	1. Check DPF for external dents or damage 2. Check Delta P sensor for blocks and reading at ignition ON 3. replace DPF
157	DFC_PFltCharPDiffMax	Diagnostic fault check for maximum pressure differential charecterstics	6	P244B	P244B	AWL Blink	Least Trq Limitation(~30%), disable auto regeneration	1. The particulate filter is overloaded/ Clogged 2. The differential pressure sensor is faulty/drifted	1. Regenerate for the filter to not overload 2. Check for the intended differential pressure sensor installed 3. Replace the differential pressure sensor 4. Replace the DPFand reset the DPF related correction through Tester
158	DFC_PFltCharPDiffMin	Diagnostic fault check for minimum pressure differential charecterstics	6	P244A	P244A	AWL Blink	30% Torque limitation	1. The particulate filter is removed 2.The differential pressure sensor is faulty/drifted	1. Check if the delta p sensor hoseline upstream of the DPF is leaking or hanging loose, replace the line accordingly 2. Check for the intended differential pressure sensor installed. replace accordingly 3. Open the clamps and check whether the DPF filter is present in the pipeline or has damage and replace accordingly 4. Replace the differential pressure sensor if the differential pressure is too low at engine not running conditions
159	DFC_PFltEngPrt	Diagnostic fault check for the engine protection	3	P246C	P246C	SVS Blink	10% Torque limitation	1. The differential pressure sensor is faulty/drifted, making a high differential pressure 2. Engine speed is increased beyond the threshold 3. Regeneration required because of engine protection	1. Check the wiring harness of the differential pressure sensor for any disturbed signal 2. Check the intended differential presure sensor is connected 3. Repalce the sensor 4. Check whether the engine speed is within threshold 5. Regenerate the particulate filter
160	DFC_PFltFreq	Diagnostic fault check for too frequent regeneration of the particulate filter	3	P243C	P243C	SVS Blink	20% Torque limitation	1. There are frequent regenerations of the particulate filter more than expected	1. Send the freeze frame and Env condtns data to OEM quality department for further action. OEM to check since this may cause extra Fuel consumption and Oil dilution. These conditions may not have occurred during validation
161	DFC_PFltRgnDmdDrvrErr	Diagnostic fault check for driver demand regeneration button stuck	3	P2458	P2458	SVS Blink	TBD	1. The button is physically stuck 2. The wiring is shorted 3. The button is faulty	1.Check button for any debris around that is making it stuck 2. Check wiring for any short 3. Change Button
162	DFC_PFltRgnPerm	Diagnostic fault check for a locked regeneration	3	P2458	P1458	SVS Blink	No critical reactions required	1. There is frequent regeneration interruption in the system	1. Send the freeze frame and Env condtns data to OEM quality department for further action. OEM to check since this may cause extra Fuel consumption and Oil dilution. These conditions may not have occurred during validation
163	DFC_PFltSotMsMax	Diagnostic fault check for Maximum soot mass	3	P2463	P2463	SVS Blink	20% Torque limitation	1. Regeneration not done in time	1. Do service regeneration
164	DFC_PFltSotMsTrqLim	Diagnostic fault check for Maximum soot mass during torque limitation	3	P243F	P243F	SVS Blink	1600rpm speed limitation	1. The particulate filter is overloaded 2. The differential pressure sensor is faulty/drifted	1. Do clean DPF using procedure (to be discussed later with DPF team) 2. Replace DPF if above is not helping
165	DFC_PIntkVUsLineHiB1	DFC: SRC high in manifold pressure sensor SENT	3	P0237	P0237	SVS Blink	- 800mBar repl value, 30%TrqLIm	1. The boost pressure sensor is disconnected 2. Wrong sensor connected	1. Check the wiring harness of the boost pressure sensor 2. Check the intended sensor is connected 3. Replace the sensor
166	DFC_PIntkVUsLineLoB1	DFC: SRC low in manifold pressure sensor SENT	3	P0238	P0238	SVS Blink	- 800mBar repl value, 30%TrqLIm	1. The boost pressure sensor is disconnected 2. Wrong sensor connected	1. Check the wiring harness of the boost pressure sensor 2. Check the intended sensor is connected 3. Replace the sensor

167	DFC_PIntkVUsPhysRngHi	Physical Range Check high for air pressure at the upstream of intake valve sensor	2	P023D	P023D	SVS On	No Reactions	1. The boost pressure sensor is faulty 2. Drifted due to aging	1. Check for the proper working of the sensor 2. Replace the sensor
168	DFC_PIntkVUsPhysRngLo	Physical Range Check low for air pressure at the upstream of intake valve sensor	2	P023D	P123D	SVS On	No Reactions	1. The boost pressure sensor is faulty 2. Drifted due to aging	1. Check for the proper working of the sensor 2. Replace the sensor
169	DFC_PPFltDiffNplDyn	DFC for dynamic plausibility check for differential pressure across the Particulate filter	3	P2452	P1452	SVS Blink	TBD	1. The delta pressure sensor is faulty/drifted 2. The particulate filter is blocked	1. Check the delta pressure sensor for proper working 2. Replace the delta pressure sensor 3. Check/regenerate the particulate filter
170	DFC_PPFltDiffNplHsLn	DFC to check for hoseline error	3	P2452	P1453	SVS Blink	TBD	1. Hoseline upstream to particulate filter is removed (when the pressure updtream is not above the atmospheric pressure)	1. Check the hoseline upstream for removal
171	DFC_PPFltDiffSot	Diagnostic Fault Check for Soot on hoseline monitoring	3	P2463	P1463	SVS Blink	TBD	1. Hoseline upstream to particulate filter is blocked/dropped off/clogged	1. Check the hoseline upstream for any blockage
172	DFC_PPFltDiffSRCMax	SRC High for PFlt differential pressure sensor	5	P2455	P2455	AWL On	Replacement value- TBD	1. Short circuit to battery 2.Sensor connector removed	1. Check battery 2. Check wiring harness 3. Check alternator 4. Check for blown fuses 5. Check for loose connections at Battey & Alternator +Ve terminal
173	DFC_PPFltDiffSRCMin	SRC low for PFlt differential pressure sensor	5	P2454	P2454	AWL On	Replacement value- TBD	1. Short circuit to ground 2. Wiring harness problem 3. Wrong sensor	1. Check ECU connector pin for short circuit to battery 2. Check for continuity between sensor connector and ECU connector
174	DFC_PRVctOpnMax	Pressure relief valve reached maximum allowed opening count	3	P018F	P018F	SVS Blink	- 30%trqLim	1. Total counter for PLV open condition exceeded the limit	1. Change the rail
175	DFC_PRVFrOpnPresInc	Pressure relief valve is forced to open; perform pressure increase	2	P000F	P000F	SVS On	No Reaction	1. Pump metering unit connector loose/not connected 2. Pump metering unit failure 3. Rail pressure sensor connector loose/not connected 4. Rail pressure sensor failure	1. Check whether the pump metering unit connector is connected properly 2. Check whether the rail pressure sensor connector is connected properly 3. Check the connectivity between metering unit connector pin 2 and ECU connector pin A60 4. Check the connectivity between rail pressure sensor connector pin 2 and ECU connector pin A52 5. Change the pump 6. Change the rail
176	DFC_PRVFrOpnPresShck	Pressure relief valve is forced to open; perform pressure shock	2	P000F	P100F	SVS On	No Reaction	1. Pump metering unit connector loose/not connected 2. Pump metering unit failure 3. Rail pressure sensor connector loose/not connected 4. Rail pressure sensor failure	1. Check whether the pump metering unit connector is connected properly 2. Check whether the rail pressure sensor connector is connected properly 3. Check the connectivity between metering unit connector pin 2 and ECU connector pin A60 4. Check the connectivity between rail pressure sensor connector pin 2 and ECU connector pin A52 5. Change the pump 6. Change the rail
177	DFC_PRVOpn	Pressure relief valve is open	3	P000F	P101F	SVS Blink	- 40%TrqLim,PRVOpn	1. Pump metering unit connector loose/not connected 2. Pump metering unit failure 3. Rail pressure sensor connector loose/not connected 4. Rail pressure sensor failure	1. Check whether the pump metering unit connector is connected properly 2. Check whether the rail pressure sensor connector is connected properly 3. Check the connectivity between metering unit connector pin 2 and ECU connector pin A60 4. Check the connectivity between rail pressure sensor connector pin 2 and ECU connector pin A52 5. Change the pump 6. Change the rail
178	DFC_PRVOpnNotPlaus	Unexpected opening of the pressure relief valve	3	P0090	P0090	SVS Blink	- 40%TrqLim,PRVOpn	-	-
179	DFC_PRVRPOutOfRng	Averaged rail pressure is outside the expected tolerance range	3	P009E	P009E	SVS Blink	- 40%TrqLim,PRVOpn	1. DFC_PRVOpn / limphome is active 2. Engine speed below <HLSDem_nSpLoPRVAltv_C 3. PLV malfunctioning / leakage from the PLV 4. Re-closing of PLV due to decreased fuel delivery from the HP pump 5. PRV has exceeded its life (open count >50 and open time >300minutes)	1. Check for active PRV open errors 2. Check for sufficient engine speed, >HLSDem_nSpLoPRVAltv_C 3. Check for PLV malfunctioning / no leakage from the PLV 4. Check for high pressure pump delivery 5. Check for PRV life (open count <50 and open time <300minutes) 6. Change the rail / pump based on the investigations
180	DFC_PRVtiOpnMax	Pressure relief valve reached maximum allowed opening time	3	P000F	P102F	SVS Blink	- 30%trqLim	1. Total time for PLV open condition exceeded the limit	1. Change the rail

181	DFC_RailMeUn0	Positive governor deviation and setpoint of the fuel volume flow through the metering unit	3	P0251	P1251	SVS Blink	- 30%trqLim	1. Internal leakage in the high pressure pump 2. Fuel leakage in the high pressure circuit 3. Injector nozzle plunger stuck in open position 4. Choked fuel filter 5. Choked strainer 6. Restriction in fuel suction line 7. Pump could not deliver high pressure fuel 8. Injector internal wear high 9. Fuel leaking through PLV 10. Low/No fuel in the fuel tank	1. Check for leakage in high pressure circuit 2. Check for leakage in low pressure cicuit 3. Check the fuel level in fuel tank 4. Check for the bends/crimps in the fuel suction line 5. Clean the strainer 6. Change the fuel filter 7. Change the rail 8. Remove the pump and get it checked from the authorised dealer 9. Remove the injector and get it checked from the authorised dealer
182	DFC_RailMeUn2	Negative governor deviation at zero delivery	3	P0251	P1252	SVS Blink	- 30%trqLim	1. Pump metering unit is stuck in open position 2. Pump metering unit connection loose/not connected 3. Pump metering unit failure 4. Rail pressure sensor connector loose/not connected 5. Rail pressure sensor failure 6. Incorrect/small diameter fuel return lines 7. Choked fuel return lines	1. Check whether the pump metering unit connector is connected properly 2. Check whether the rail pressure sensor connector is connected properly 3. Check for the bends/crimps in the fuel return line 4. Change the fuel return lines 5. Change the fuel accumulator 6. Change the rail 7.Remove the pump and get it checked from the authorised dealer
183	DFC_RailMeUn4	Monitoring for maximum rail pressure	3	P0088	P0088	SVS Blink	- 40%TrqLim,PRVOpn	1. Pump metering unit is stuck in open position 2. Pump metering unit connection loose/not connected 3. Pump metering unit failure 4. Rail pressure sensor connector loose/not connected 5. Rail pressure sensor failure 6. Incorrect/small diameter fuel return lines 7. Choked fuel return lines	1. Check whether the pump metering unit connector is connected properly 2. Check whether the rail pressure sensor connector is connected properly 3. Check for the bends/crimps in the fuel return line 4. Change the fuel return lines 5. Change the fuel accumulator 6. Remove the pump and get it checked from the authorised dealer 7. Change the rail
184	DFC_RailMeUn42	Maximum rail pressure (2nd stage)	3	P0088	P1088	SVS Blink	- Engine Shut Off	1. PLV not fully open 2. Pump metering unit stuck in partial open position	1. Perform a actuator test on the pump metering unit through the diagnostic tester 2. Remove the pump and get it checked from the authorised dealer 3. Change the rail
185	DFC_RailPCVLimpExtd4	Monitoring for maximum rail pressure in limp home mode	3	-	-	SVS Blink	engine off	1. PLV not fully open 2. Pump metering unit stuck in partial open position	1. Perform a actuator test on the pump metering unit through the diagnostic tester 2. Remove the pump and get it checked from the authorised dealer
186	DFC_RailPSRCMax	Exceeding of the maximum rail pressure sensor voltage	3	P0193	P0193	SVS Blink	- 40%TrqLim,PRVOpn	1. Rail pressure sensor connector not connected 2. Short circuit to battery 3. Wiring harness problem 4. Incorrect rail pressure sensor	1. Check whether the rail pressure sensor connector is connected properly 2. Check ECU connector pin A52 for short circuit to battery 3. Check for continuity between sensor connector 1,2,3 and ECU connector pin A40,A52,A06 respectively. 4. Change the rail
187	DFC_RailPSRCMin	Undershooting of the minimum rail pressure sensor voltage	3	P0192	P0192	SVS Blink	- 40%TrqLim,PRVOpn	1. Short circuit to ground 2. Wiring harness problem 3. Incorrect rail pressure sensor	1. Check whether the rail pressure sensor connector is connected properly 2. Check ECU connector pin for short circuit to battery 3. Check for continuity between sensor connector and ECU connector 4. Change the rail
188	DFC_RBA_IOEXTLIB_KEEPALIVE_DRV	DFC generated from DemEvent RBA_IOEXTLIB_KEEPALIVE_DRV: KeepAlive error during runtime at an external device	3	P2505	P1509	SVS Blink	No Reaction /based on project configration keep alive reset will be triggered	Internal ECU issue	1. Check all wiring harness related connections of CY327or CJ950 or L9959 or SMB480 and check for wiring harness continuity and damage. 2. Check battery and vehicle grounding and confirm. Ensure no current is passing through ECU HW. 3. Check vehicle with multiple resets 4. Replace ECU
189	DFC_RBA_IOEXTLIB_KEEPALIVE_INI	DFC generated from DemEvent RBA_IOEXTLIB_KEEPALIVE_INI: KeepAlive error during initialisation phase at an external device	3	P2505	P1510	SVS Blink	No Reaction/based on project configration keep alive reset will be triggered	ECU HW failure due to 1. Vehicle/ECU related handling issues. 2. Vehicle electric architecture/loads leading to ECU internal HW failure. 3. ECU physical connector pin mishandling. 4. Vehicle/Engine wiring harness repair / damage due to rubbing, punching, hitting, electrical/thermal	1. Check all wiring harness related connections and check for wiring harness continuity and damage. 2. Check battery and vehicle grounding and confirm. Ensure no current is passing through ECU HW. 3. Check vehicle with multiple resets 4. Replace ECU
190	DFC_rba_IoSigRtc_StopCounter	DFC generated from DemEvent rba_IoSigRtc_StopCounter: StopCounter counts slower/faster than allowed or no communication with counter possible	3	P2505	P1511	SVS Blink	No Reaction	ECU HW failure due to 1. Vehicle/ECU related handling issues. 2. Vehicle electric architecture/loads leading to ECU internal HW failure. 3. ECU physical connector pin mishandling. 4. Vehicle/Engine wiring harness repair / damage due to rubbing, punching, hitting, electrical/thermal	1. Check all wiring harness related connections and check for wiring harness continuity and damage. 2. Check battery and vehicle grounding and confirm. Ensure no current is passing through ECU HW. 3. Check vehicle with multiple resets 4. Replace ECU

191	DFC_rba_MemDiag_MemReadErr	DFC generated from DemEvent rba_MemDiag_MemReadErr: Read diagnosis for non volatile memory	3	P2505	P1512	SVS Blink	No Reaction	ECU HW failure due to 1. Vehicle/ECU related handling issues. 2. Vehicle electric architecture/loads leading to ECU internal HW failure. 3. ECU physical connector pin mishandling. 4. Vehicle/Engine wiring harness repair / damage due to rubbing, punching, hitting, electrical/thermal	1. Check all wiring harness related connections and check for wiring harness continuity and damage. 2. Check battery and vehicle grounding and confirm. Ensure no current is passing through ECU HW. 3. Check vehicle with multiple resets 4. Replace ECU
192	DFC_rba_MemDiag_MemWrErr	DFC generated from DemEvent rba_MemDiag_MemWrErr: Write diagnosis for non volatile memory	3	P2505	P1513	SVS Blink	No Reaction	ECU HW failure due to 1. Vehicle/ECU related handling issues. 2. Vehicle electric architecture/loads leading to ECU internal HW failure. 3. ECU physical connector pin mishandling. 4. Vehicle/Engine wiring harness repair / damage due to rubbing, punching, hitting, electrical/thermal	1. Check all wiring harness related connections and check for wiring harness continuity and damage. 2. Check battery and vehicle grounding and confirm. Ensure no current is passing through ECU HW. 3. Check vehicle with multiple resets 4. Replace ECU
193	DFC_rba_MemDiagExtd_MemReadSngErr	DFC generated from DemEvent rba_MemDiagExtd_MemReadSngErr: Read diagnosis for not redundant data.	3	P2505	P1514	SVS Blink	No Reaction	ECU HW failure due to 1. Vehicle/ECU related handling issues. 2. Vehicle electric architecture/loads leading to ECU internal HW failure. 3. ECU physical connector pin mishandling. 4. Vehicle/Engine wiring harness repair / damage due to rubbing, punching, hitting, electrical/thermal	1. Check all wiring harness related connections and check for wiring harness continuity and damage. 2. Check battery and vehicle grounding and confirm. Ensure no current is passing through ECU HW. 3. Check vehicle with multiple resets 4. Replace ECU
194	DFC_rba_MRly_Diag_Stk_Event	DFC generated from DemEvent rba_MRly_Diag_Stk_Event: Sticky Main-Relay	3	P1705	P1705	SVS Blink	-	ECU internal issue 1. Degradation of Main relay 2. Tampering of Relay box	Check and replace the main relay or main relay connections
195	DFC_rba_MultiStackTrace_Threshold	DFC generated from DemEvent rba_MultiStackTrace_Threshold: Stack memory threshold overrun	3	P2505	P1515	SVS Blink	-	ECU HW failure due to 1. Vehicle/ECU related handling issues. 2. Vehicle electric architecture/loads leading to ECU internal HW failure. 3. ECU physical connector pin mishandling. 4. Vehicle/Engine wiring harness repair / damage due to rubbing, punching, hitting, electrical/thermal	1. Check all wiring harness related connections and check for wiring harness continuity and damage. 2. Check battery and vehicle grounding and confirm. Ensure no current is passing through ECU HW. 3. Check vehicle with multiple resets 4. Replace ECU
196	DFC_rba_SyC_IrrSwOffTrigEngRun_Event	DFC generated from DemEvent rba_SyC_IrrSwOffTrigEngRun_Event: Observation Counter Irregular Switch Off Counter Triggered by Engine Running	3	P2505	P1516	SVS Blink	-	1. Wiring Harness problem 2. Main Relay failure 3. Battery failure	1. Check for continuity of main relay wairing 2. Check the main relay damages and Replace the Main relay if its damaged 3. Check the battery health and Replace the battery if its damaged
197	DFC_SRCHighAPP1	internal fault path number: short circuit to plus of accelerator pedal signal 1	3	P0123	P0123	SVS Blink	- APP2 takes over with 70% limitation - In case of both APP failure default value of 760mV and speed limitation to 1200	1. Signal wire short circuit to battery 2. APP Module is defective	1.Check for continuity/short to battery between sensor connector pins. 2.If still the problem exist, replace the APP with new one. 3. If still the problem exists, replace the ECU with known good one & recheck again.
198	DFC_SRCHighAPP2	internal fault path number: short circuit to plus of accelerator pedal signal 2	3	P0223	P0223	SVS Blink	- APP1 takes over with 70% limitation - In case of both APP failure default value of 760mV and speed limitation to 1200	1.Signal wire short circuit to battery 2.APP Module is defective	1.Check for continuity/short to battery between sensor connector pins. 2.If still the problem exist, replace the APP with new one. 3. If still the problem exists, replace the ECU with known good one & recheck again.
199	DFC_SRCLowAPP1	internal fault path number: short circuit to GND of accelerator pedal signal 1	3	P0122	P0122	SVS Blink	- APP2 takes over with 70% limitation - In case of both APP failure default value of 760mV and speed limitation to 1200	1. Connector loose/not connected 2. Wiring Harness problem 3. APP Module is defective	1.Check for continuity between sensor connector pins. 2.If still the problem exist, replace the APP with new one. 3. If still the problem exists, replace the ECU with known good one & recheck again.
200	DFC_SRCLowAPP2	internal fault path number: short circuit to GND of accelerator pedal signal 2	3	P0222	P0222	SVS Blink	- APP1 takes over with 70% limitation - In case of both APP failure default value of 760mV and speed limitation to 1200	1. Connector loose/not connected 2. Wiring Harness problem 3. APP Module is defective	1.Check for continuity between sensor connector pins. 2.If still the problem exist, replace the APP with new one. 3. If still the problem exists, replace the ECU with known good one & recheck again.
201	DFC_SSpMon1	DFC generated from DemEvent SSpMon1: Collective error for sensor supply 1	3	P0643	P0643	SVS Blink	- update default value for the sensors connected to the supply. - Accped upto 70% - 1200rpm Limitation - EGR Off - Trq Limitation: 20%	1. Unavailability of 5V supply for EGR, APP2 is short circuit to battery or ground	1. Check for shorting to battery or ground of all sensor supplies. 2. If still the problem exists, replace the ECU with known good one & recheck again. 3. If still persists, change sensors one by one until problem is solved
202	DFC_SSpMon2	DFC generated from DemEvent SSpMon2: Collective error for sensor supply 2	3	P0653	P0653	SVS Blink	- update default value for the sensors connected to the supply. - Accped upto 70% - 1200rpm Limitation - Trq Limitation: 20%	1. Unavailability of 5V supply for APP1, CAS, RPS is short circuit to battery or ground	1. Check for shorting to battery or ground of all sensor supplies. 2. If still the problem exists, replace the ECU with known good one & recheck again. 3. If still persists, change sensors one by one until problem is solved
203	DFC_SSpMon3	DFC generated from DemEvent SSpMon3: Collective error for sensor supply 3	3	P0699	P0699	SVS Blink	- update default value for the sensors connected to the supply.	1. Unavailability of 5V supply for AFS, Boost Temperature or Throttle valve sensor is short circuit to battery or ground	1.Check wiring harness pins A07, A09, K24 for short to battery or ground

204	DFC_StrtHSSCB	Starter relay high side shorted to battery	2	P0615	P0615	SVS On	No critical reactions required	Sharter relay High line short circuit to battery	Check for relay wiring harness Change starter relay
205	DFC_StrtHSSCG	starter relay high side shorted to ground	2	P0615	P1625	SVS On	No critical reactions required	Sharter relay High line short circuit to ground	Check for relay wiring harness Change starter relay
206	DFC_StrtLSOL	Starter relay low side open load	2	P26E4	P16E6	SVS On	No critical reactions required	1. Starter relay not connected 2.wiring harness problem 3.Faulty starter relay	1.check whether the starter relay is connected 2.check for the continuity of starter relay and the ECU pin 3.replace starter relay
207	DFC_StrtLSOvrTemp	Starter relay over temperature error	2	P26E4	P26E4	SVS On	No critical reactions required	Starter relay permanent short circuit to Battery	1. Switch ON & Off the ignition key(with complete afterrun) 2. Clear the error. 3. Try the above step once again 4. Still error is present, check with a diff ECU
208	DFC_StrtLSSCB	starter relay low side shorted to battery	2	P26E4	P16E4	SVS On	No critical reactions required	1.Starter relay wire short circuit to battery 2.Wiring harness problem	1.check Starter relay wiring harness for any short circuit 2.check for the continuity of starter relay and the ECU pin 3.replace starter relay
209	DFC_StrtLSSCG	starter relay low side shorted to ground	2	P26E4	P16E5	SVS On	No critical reactions required	1.Starter relay wire short circuit to ground 2.Wiring harness problem	1.check starter relay wiring harness for any short circuit 2.check for the continuity of starter relay and the ECU pin 3.replace starter relay
210	DFC_SyncAPP	internal fault path number: synchronity error for pedal signals	3	P2135	P2135	SVS Blink	- 1200rpm speed limit, no accped response	1. Faulty Wiring Harness 2.Faulty Accped Module	1. Check for shorts between K81 and K60 2. Check for voltages at 0% accped to see if APP has drifted 3. Replace accped module
211	DFC_SysDiagIndcEGRVlvLvl1	EGRVlv block group inducement level error	9	P1068	P1068	MIL Blink	Inducement level 1	1. EGR relevant errors are present and active	0
212	DFC_SysDiagIndcEGRVlvLvl3	EGRVlv block group inducement level error	9	P1069	P1069	MIL Blink	Inducement level 3	1. EGR relevant errors are present and active	0
213	DFC_SysDiagIndcEGRVlvWarn	EGRVlv block group inducement level warni	8	P2BAC	P2BAC	MIL On	No critical reactions required	1. EGR relevant errors are present	1. Check relevant errors and resolve
214	DFC_T50Err	Defective T50 switch	2	P0512	512	SVS On	No critical reactions required	1. T50 switch is faulty 2. T50 wire is shorted	1. Check for short 2. Change T50 switch
215	DFC_TAFSSRCMax	SRC high error	2	P0113	P0113	SVS On	Replacement value- TBD	Air temperature at flow sensor signal wire short circuit to battery	Check siganl wire short circuit to battery
216	DFC_TAFSSRCMin	SRC low error	2	P0112	P0112	SVS On	Replacement value- TBD	Air temperature at flow sensor signal wire short circuit to ground	Check siganl wire short circuit to ground
217	DFC_TCACDsSRCMax	SRC High for Charge air cooler downstream Temperature	2	P0110	P0110	SVS On	ReplVal = 50 Deg	1. Alternator regulator failure 2. Wiring harness of Boost temperature sensor open load/short to battery	1. Check battery 2. Check wiring harness 3. Check alternator 4. Check for blown fuses 5. Check for loose connections at Battey & Alternator +Ve terminal. 6. Replace the sensor
218	DFC_TCACDsSRCMin	SRC low for Charge air cooler downstream Temperature	2	P0110	P1110	SVS On	ReplVal = 50 Deg	1. Wiring harness of Boost temperature sensor short to ground	1. Check wiring harness for short circuit to ground 2. Replace the sensor
219	DFC_ThrVlvHBrgOpnLd	Open load error for H-bridge of throttle valve	2	P2100	P2100	SVS On	-Throttle valve open	1. Throttle valve connector not connected/loose connected 2. Wrong connection to Throttlevalve DC motor 3. Throttle valve failure 4. Wiring harness failure	1. Check if connector is connected 2. Check the continuity between Throttle valve connector and ECU 3. Check and replace Throttle valve if required
220	DFC_ThrVlvHBrgOvrCurr	Over current error for H-bridge of throttle valve	2	P2100	P1103	SVS On	-Throttle valve open	1. High current flow to ECU H-bridge 2. Throttle valve failure/jammed	1. Remove the dust protection cap in the Throttle valve and check whether the Throttle valve operates freely 2. Change the Throttle valve
221	DFC_ThrVlvHBrgOvrTemp	Over temperature error for H-bridge of throttle valve	2	P2100	P1104	SVS On	-Throttle valve open	1. DC motor +ve or -ve connection, short to battery for longer time 2. High current flow to ECU H-bridge 3. Throttle valve failure/jammed	1. Check for the sensor connector for short circuit to battery 2. Remove the dust protection cap in the Throttle valve and check whether the Throttle valve operates freely 3. Change the Throttle valve
222	DFC_ThrVlvHBrgShCirBatt1	Short circuit to battery on Out1 error for H-bridge of throttle valve	2	P2103	P2103	SVS On	-Throttle valve open	1. DC motor +ve short circuit to battery	1. Check the Throttle valve wires for short to battery 2. Replace the Throttle valve.
223	DFC_ThrVlvHBrgShCirBatt2	Short circuit to battery on Out2 error for H-bridge of throttle valve	2	P210D	P210D	SVS On	-Throttle valve open	1. DC motor -ve short circuit to battery	1. Check the Throttle valve wires for short to battery 2. Replace the Throttle valve.
224	DFC_ThrVlvHBrgShCirGnd1	Short circuit to ground on Out1 error for H-bridge of throttle valve	2	P2102	P2102	SVS On	-Throttle valve open	1. DC motor +ve short circuit to ground	1. Check the Throttle valve wires for short to ground 2. Replace the Throttle valve.
225	DFC_ThrVlvHBrgShCirGnd2	Short circuit to ground on Out2 error for H-bridge of throttle valve	2	P210C	P210C	SVS On	-Throttle valve open	1. DC motor -ve short circuit to ground	1. Check the Throttle valve wires for short to ground 2. Replace the Throttle valve.
226	DFC_ThrVlvHBrgShCirOvrLd	Short circuit over load error for H-bridge of throttle valve	2	P2100	P1105	SVS On	-Throttle valve open	1. Over load on H-bridge HW because of short circuit	1. Check for the sensor connector for short circuit to battery 2. Remove the dust protection cap in the Throttle valve and check whether the Throttle valve operates freely 3. Change the Throttle valve
227	DFC_ThrVlvHBrgTempOvrCurr	Temperature dependent over current error for H-bridge of throttle valve	2	P2100	P1106	SVS On	-Throttle valve open	1. Over current flow to H-bridge HW due to temperature change	1. Check for the sensor connector for short circuit to battery 2. Remove the dust protection cap in the Throttle valve and check whether the Throttle valve operates freely 3. Change the Throttle valve
228	DFC_ThrVlvHBrgUndrVltg	Under voltage error for H-bridge of throttle valve	2	P2100	P1107	SVS On	-Throttle valve open	1. H-bridge HW voltage supply failure	1. Check for battery voltage fluctuation
229	DFC_ThrVlvJamVlvClsd	0	2	P2112	P2112	SVS On	-Throttle valve closed	1. Throttle valve stuck in closed position	1. Remove the dust protection cap in the Throttle valve and check whether the Throttle valve operates freely while switching OFF the ignition key 2. Check if the Throttle valve postiion wires are shorted to any other signal wire 3. Change the Throttle valve

230	DFC_ThrVlvJamVlvOpn	0	2	P2111	P2111	SVS On	-Throttle valve open	1. Throttle valve is stuck in open position	1. Remove the dust protection cap in the Throttle valve and check whether the Throttle valve operates freely while switching OFF the ignition key 2. Check if the Throttle valve postiion wires are shorted to any other signal wire 3. Change the Throttle valve
231	DFC_ThrVlvSRCMax	0	2	P2622	P2622	SVS On	-Throttle valve open	1. Short circuit to battery 2. Sensor not connected 3. Wiring harness problem 4. Wrong sensor	1. Check wiring harness for short circuit between signal wire and battery/sensor supply 2. Check connector is connected 3. Replace the sensor
232	DFC_ThrVlvSRCMin	0	2	P2621	P2621	SVS On	-Throttle valve open	1. Short circuit to ground 2. Wiring harness problem 3. Wrong sensor	1. Check wiring harness for short circuit to ground 2. Replace the sensor
233	DFC_VehVMax	Maximum threshold error for vehicle speed	2	P0503	P0503	SVS On	No critical reactions required	1. Vehicle speed exceeded the limit 2. Faulty sensor 3. Incorrect dataset	1. Change the vehicle speed sensor 2. Approach the nearest dealer and download the correct software for the ECU
234	DFC_VehVNplMon	NPL error for vehicle speed signal over Tachomter or hardware sensor	2	P2162	P2162	SVS On	No critical reactions required	1. Vehicle speed sensor failure	1. Check the vehicle speed sensor 2. Check the sensor and check again
235	DFC_VehVSRCHi	signal level high error for vehicle speed signal over Tachomter or hardware sensor	2	P0503	P1504	SVS On	No critical reactions required	1. Alternator regulator failure 2. Wiring harness of Vehicle speed sensor open load/short to battery	1. Check battery 2. Check wiring harness 3. Check alternator 4. Check for blown fuses 5. Check for loose connections at Battey & Alternator +Ve terminal. 6. Replace the sensor
236	DFC_VehVSRCLo	signal level low error for vehicle speed signal over Tachomter or hardware sensor	2	P0502	P0502	SVS On	No critical reactions required	1. Wiring harness of Vehicle speed sensor short to ground	1. Check wiring harness 2. Replace the sensor

NOTES

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.

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
	Lift cylinder, lift cover castings cracked or porous	See your authorized Dealer
Hydraulic oil overheats	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.

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 fun ctions	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

NOTES

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