Mahindra
Rise.

Close

OPERATOR'S MANUAL

6065/6075 2WD & 4WD

TIER-4

ra Group • Mahindra USA, Inc. • 9020 Jackrabbit Road, Suite 600 • Houston, Texas 77095 • 1-877-449-7771 •

OPERATOR'S MANUAL

6065/6075 2WD & 4WD

OPEN STATION

TIER-4 FINAL

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Product Warranty

Product warranty is provided as part of Mahindra & Mahindra Limited support program for customers who operate and maintain their equipment as described in this manual.

Engine related warranties stated in this manual refer only to emissions-related parts and components of your engine. The complete engine warranty, less emission-related parts and components, is provided separately as the Limited Warranty for New Mahindra & Mahindra Limited Commercial & Consumer Equipment.

Mahindra & Mahindra Limited And California Emission Control System Warranty (heavy duty off-road Compression ignition engines)

Your Warranty Rights and Obligations

The California Air Resources Board (CARB) and Mahindra & Mahindra Limited are pleased to explain the emission control system warranty on your heavy duty off-road compression ignition engine. In California, new heavy-duty off road compression ignition engines must be designed, built and equipped to meet the State's stringent anti-smog standards. Mahindra & Mahindra Limited must warrant the emission control system on your heavy duty off-road compression ignition engine for the periods of time listed below provided there has been no abuse, neglect or improper maintenance of your engine.

Your emission control system may include parts such as the fuel-injection system and the air induction system. Also included may be hoses, belts, connectors and other emission-related assemblies.

Where a warrantable condition exists, Mahindra & Mahindra Limited will repair your heavy duty off-road compression ignition engine at no cost to you including diagnosis, parts and labor.

Mahindra & Mahindra Limited Emission Control System Warranty Coverage

In California, heavy duty off-road compression ignition engine emissions control-related parts are warranted by Mahindra & Mahindra Limited for five years or 3000 hours of operation, whichever occurs first. If any emission related part on your engine is defective, the part will be repaired or replaced by Mahindra & Mahindra Limited.

Owner's Warranty Responsibilities

As the heavy duty off-road compression ignition engine owner, you are responsible for the performance of the required maintenance listed in your owner's manual. Mahindra & Mahindra Limited recommends that you retain all receipts covering maintenance on your heavy duty off-road engine, but Mahindra & Mahindra Limited cannot deny warranty solely for lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

As the heavy duty off-road engine owner, you should however be aware that Mahindra & Mahindra Limited may deny you warranty coverage if your heavy duty off-road engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

Your engine is designed to operate on Diesel fuel only. Use of any other fuel may result in your engine no longer operating in compliance with California's emissions requirements.

You are responsible for initiating the warranty process. The CARB suggests that you present your heavy duty off-road engine to an authorized Mahindra & Mahindra Limited Commercial and Consumer Equipment Dealer / Retailer as soon as a problem exists. The warranty repairs should be completed in a reasonable amount of time, not to exceed 30 days.

"If you have any question regarding your warranty rights and responsibilities, you should contact Mahindra, USA Inc at 1-877-449-7771.

Length of Warranty Coverage

Mahindra & Mahindra Limited warrants to the initial owner and each subsequent purchaser that the heavy duty off-road compression ignition engine is:

- Designed, built and equipped so as to conform with all applicable regulations adopted by the California Air Resources Board (CARB) pursuant to its authority in Chapters 1 and 2, Part, Division 26 of the Health and Safety Code; and
- Free from defects in materials and workmanship which can cause the failure of a warranted part to be identical in all material respects to the part as described in the application of Mahindra & Mahindra Limited for certification for a period of five years or 3000 hours of operation, whichever occurs first, after the engine is delivered to the initial retail purchaser. Mahindra & Mahindra Limited is liable for damages to other engine components caused by the failure of a warranted part during the warranty period. If any emission related part on your engine is defective, the part will be repaired or replaced by Mahindra & Mahindra Limited.

Warranted Parts

Coverage under this warranty extends only to the parts listed (the emission control system parts) to the extent these parts were present on the engine purchased.

Emission Control Warranty for California

Fuel Metering System:

- Fuel Pump
- Rail
- Injector

Air Induction System:

- Mixing Elbow
- Intake Manifold
- Turbocharger
- Charge Air Cooler

Exhaust Gas Recirculation (EGR) System:

- EGR valve

Positive Crankcase Ventilation (PCV) System

Miscellaneous Items Used in Above Systems:

- Electronic Control Unit
- Hoses, connectors, assemblies, clamps, fittings, tubing, sealing gaskets and mounting hardware

Since emission related parts may vary slightly from model to model, certain models may not contain all of these parts and certain models may contain functionally equivalent parts.

Warranty Service and Charges

Warranty service shall be provided during customary business hours at any authorized Mahindra & Mahindra Limited Commercial and Consumer Equipment Retailer. Repair or replacement of any warranted part will be performed at no charge to the owner, including diagnostic labor which leads to the determination that a warranted part is defective, if the diagnostic work is performed at an authorized Mahindra & Mahindra Limited Commercial and Consumer Equipment Retailer. Any parts replaced under this warranty shall become the property of Mahindra & Mahindra Limited.

Maintenance Warranty Coverage

a) Any warranted part which is not scheduled for replacement as required maintenance shall be warranted for the warranty period defined in subsection "Length of Warranty Coverage." If any such part fails during the period of warranty coverage, it shall be repaired or replaced by Mahindra & Mahindra Limited. Any such part repaired or replaced under the warranty shall be warranted for the remaining warranty period.

b) Any warranted part which is scheduled only for regular inspection shall be warranted for the warranty period defined in subsection "Length of Warranty Coverage" to the effect of "repair or replace as necessary" shall not reduce the period of warranty coverage. Any such part repaired or replaced under the warranty shall be warranted for the remaining warranty period.

c) Any warranted part which is scheduled for replacement as required maintenance shall be warranted for the period of time prior to the first scheduled replacement point for that part. If the part fails prior to the first scheduled replacement, the part shall be repaired or replaced by Mahindra & Mahindra Limited. Any such part repaired or replaced under the warranty shall be warranted for the remainder of the period prior to the first scheduled replacement point for that part.

d) Repair or replacement of any warranted part under the warranty provision of this statement shall be performed at no charge to the owner at an authorized Mahindra & Mahindra Limited warranty station.

e) Notwithstanding the provisions of subsection "d" above, warranty services or repairs shall be provided at all authorized Mahindra & Mahindra Limited Commercial and Consumer Equipment Retailer and distribution centers that are franchised to service the subject engines.

f) The owner shall not be charged for diagnostic labor that leads to the determination that a warranted part is in fact defective, provided that such diagnostic work is performed at an authorized Mahindra & Mahindra Limited warranty station.

g) Mahindra & Mahindra Limited shall be liable for damages to other engine components proximately caused by a failure under warranty of any warranted part.

h) Throughout the engine's warranty period defined in subsection "Length of Warranty Coverage", Mahindra & Mahindra Limited shall maintain a supply of warranted parts sufficient to meet the expected demand for such parts.

i) Any replacement part may be used in the performance of any maintenance or repairs and must be provided without charge to the owner. It is not necessary for replacement parts to be the same brand or by the same manufacturer as the original part sold with the engine. Such use shall not reduce the warranty obligations of Mahindra & Mahindra Limited.

j) Add-on or modified parts may not be used. Such use shall be grounds for disallowing a warranty claim made in accordance with this warranty statement shall not be liable under this article to warrant failures of warranted parts caused by the use of such an add-on or modified part.

Emission Control Warranty for California

k) The Executive Officer may request and in such case, Mahindra & Mahindra Limited shall provide, any documents which describe warranty procedures or policies of Mahindra & Mahindra Limited.

Consequential Warranty Coverage

Warranty coverage shall extend to the failure of any engine components caused by the failure of any warranted part still under warranty.

Limitations

This Emission Control System Warranty shall NOT cover any of the following:

a) Repair or replacement required as a result of (i) misuse or neglect, (ii) improper maintenance or unapproved modifications, (iii) repairs improperly performed or replacements improperly installed, (iv) use of replacement parts or accessories not conforming to Mahindra & Mahindra Limited specifications which adversely affect performance and/or durability, (v) alterations or modifications not recommended or approved in writing by Mahindra & Mahindra Limited.

b) Replacement parts, other services and adjustments necessary for normal maintenance.

c) Transportation to and from the Mahindra & Mahindra Limited Commercial and Consumer Equipment Retailer, or service calls made by the Retailer.

Limited Liability

a) The liability of Mahindra & Mahindra Limited under this Emission Control System Warranty is limited solely to the remedying of defects in materials or workmanship. This warranty does not cover inconvenience or loss of use of the heavy duty off-road compression ignition engine or transportation of the engine to or from the Mahindra & Mahindra Limited Commercial and Consumer Equipment Retailer. Mahindra & Mahindra Limited SHALL NOT BE LIABLE FOR ANY OTHER EXPENSE, LOSS, OR DAMAGE, WHETHER DIRECT, INCIDENTAL, CONSEQUENTIAL (EXCEPT AS LISTED ABOVE UNDER "COVERAGE") OR EXEMPLARY ARISING IN CONNECTION WITH THE SALE OR USE OF OR INABILITY TO USE THE HEAVY DUTY OFF-ROAD COMPRESSION IGNITION ENGINE FOR ANY OTHER PURPOSE.

b) NO EXPRESS EMISSION CONTROL SYSTEM WARRANTY IS GIVEN BY Mahindra & Mahindra Limited WITH RESPECT TO THE ENGINE EXCEPT AS SPECIFICALLY SET FORTH IN THIS DOCUMENT. ANY EMISSION CONTROL SYSTEM WARRANTY IMPLIED BY LAW, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, IS EXPRESSLY LIMITED TO THE EMISSION CONTROL SYSTEM WARRANTY TERMS SET FORTH IN THIS DOCUMENT.

c) No dealer is authorized to modify this California and Mahindra & Mahindra Limited Emission Control System Warranty.

Emission Control Warranty for Federal

Product Warranty

Product warranty is provided as part of Mahindra & Mahindra Limited support program for customers who operate and maintain their equipment as described in this manual.

Engine related warranties stated in this manual refer only to emissions-related parts and components of your engine. The complete engine warranty, less emission-related parts and components, is provided separately as the Limited Warranty for New Mahindra & Mahindra Limited Commercial & Consumer Equipment.

Mahindra & Mahindra Limited, Federal Emission Control System Warranty (Non-Road Diesel)

Your Warranty Rights and Obligations

The United States Environmental Protection Agency (EPA) and Mahindra & Mahindra Limited are pleased to explain the emission control system warranty on your non-road diesel equipment engines must be designed, built and equipped to meet the U.S. EPA regulations for non-road diesel engines. Mahindra & Mahindra Limited must warrant the emission control system on your non-road diesel equipment engine for the periods of time listed below provided there has been no abuse, neglect or improper maintenance of your non-road diesel equipment engine.

Your emission control system may include parts such as the fuel-injection system and the air induction system. Also included may be connectors and other emission related assemblies.

Where a warrantable condition exists, Mahindra & Mahindra Limited will repair your non-road diesel equipment engine at no cost to you including diagnosis, parts and labor.

Mahindra & Mahindra Limited Emission Control System Warranty Coverage

Your non-road diesel equipment engine emissions control-related parts are warranted by Mahindra & Mahindra Limited for five years or 3000 hours of operation, whichever occurs first. If any emission related part on your engine is defective, the part will be repaired or replaced by Mahindra & Mahindra Limited.

Owner's Warranty Responsibilities

As the non-road diesel equipment engine owner, you are responsible for the performance of the required maintenance listed in your owner's manual. Mahindra & Mahindra Limited recommends that you retain all receipts covering maintenance on your non-road diesel equipment engine, but Mahindra & Mahindra Limited cannot deny warranty solely for lack of receipts or for your failure to ensure all scheduled maintenance is performed.

As the non-road diesel equipment engine owner, you should however be aware that Mahindra & Mahindra Limited may deny you warranty coverage if your non-road diesel equipment engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

You are responsible for presenting your non-road diesel equipment engine to an authorized Mahindra & Mahindra Limited Commercial and Consumer Equipment Retailer as soon as a problem exists. The warranty repairs should be completed in a reasonable amount of time, not to exceed 30 days.

"If you have any question regarding your warranty rights and responsibilities, you should contact (Mahindra, USA Inc) at 1-877-449-7771.

Length of Warranty Coverage

Mahindra & Mahindra Limited warrants to the initial owner and each subsequent purchaser that the non-road diesel equipment engine is:

- Designed, built and equipped so as to conform with all applicable regulations of the United States Environmental Protection Agency (EPA) for non-road diesel equipment engines;
- Free from defects in materials and workmanship which can cause the failure of an emission warranted part for a period of five years or 3000 hours of operation, whichever occurs first, after the engine is delivered to the initial retail purchaser. Mahindra & Mahindra Limited is liable for damages to other engine components caused by the failure of a warranted part during the warranty period. If any emission related part on your engine is defective, the part will be repaired or replaced by Mahindra & Mahindra Limited.

Warranted Parts

Coverage under this warranty extends only to the parts listed below (the emission control system parts) to the extent these parts were present on the engine purchased.

Fuel Metering System:

- Fuel Pump
- Rail
- Injector

Air Induction System:

- Mixing Elbow
- Intake Manifold
- Turbocharger
- Charge Air Cooler

Emission Control Warranty for Federal

Electrical Exhaust Gas Recirculation (EGR) System:

- EEGR valve

Positive Crankcase Ventilation (PCV) System

Miscellaneous Items Used in Above Systems:

- Electronic Control Unit
- Hoses, connectors, assemblies, clamps, fittings, tubing, sealing gaskets and mounting hardware

Since emission related parts may vary slightly from model to model, certain models may not contain all of these parts and certain models may contain functionally equivalent parts.

Warranty Service and Charges

Warranty service shall be provided during customary business hours at any authorized Mahindra & Mahindra Limited Commercial and Consumer Equipment Retailer. Repair or replacement of any warranted part will be performed at no charge to the owner, including diagnostic labor which leads to the determination that a warranted part is defective, if the diagnostic work is performed at an authorized Mahindra & Mahindra Limited Commercial and Consumer Equipment Retailer. Any parts replaced under this warranty shall become the property of Mahindra & Mahindra Limited.

Maintenance Warranty Coverage

a) Any warranted part which is not scheduled for replacement as required maintenance shall be warranted as to defects for the warranty period. Any such part repaired or replaced under the warranty shall be warranted for the remaining warranty period.

b) Any warranted part which is scheduled only for regular inspection to the effect of "repair or replace as necessary" shall be warranted as to defects for the warranty period. Any such part repaired or replaced under the warranty shall be warranted for the remaining warranty period.

c) Any warranted part which is scheduled for replacement as required maintenance shall be warranted as to defects only for the period of time up to the first scheduled replacement for that part. Any such part repaired or replaced under the warranty shall be warranted for the remainder of the period prior to the first scheduled replacement point for that part.

d) Normal maintenance, replacement or repair of emission control devices and systems, which are being done at the customer's expense, may be performed by any repair establishment or individual; however, warranty repairs must be performed by an authorized Mahindra & Mahindra Limited Commercial and Consumer Equipment Retailer.

e) Any replacement part that is equivalent in performance and durability may be used in the performance of any non-warranty maintenance or repairs, and shall not reduce the warranty obligations of Mahindra & Mahindra Limited.

f) The owner shall not be charged for diagnostic labor that leads to the determination that a warranted part is in fact defective, provided that such diagnostic work is performed at an authorized Mahindra & Mahindra Limited warranty station.

g) Mahindra & Mahindra Limited shall be liable for damages to other engine components proximately caused by a failure under warranty of any warranted part.

h) Throughout the engine's warranty period defined in subsection "Length of Warranty Coverage", Mahindra & Mahindra Limited shall maintain a supply of warranted parts sufficient to meet the expected demand for such parts.

Consequential Warranty Coverage

Warranty coverage shall extend to the failure of any engine components caused by the failure of any warranted part still under warranty.

Limitations

This Emission Control System Warranty shall NOT cover any of the following:

a) Repair or replacement required as a result of (i) misuse or neglect, (ii) improper maintenance or unapproved modifications, (iii) repairs improperly performed or replacements improperly installed, (iv) use of replacement parts or accessories not conforming to Mahindra & Mahindra Limited specifications which adversely affect performance and/or durability, (v) alterations or modifications not recommended or approved in writing by Mahindra & Mahindra Limited.

b) Replacement parts, other services and adjustments necessary for normal maintenance.

c) Transportation to and from the Mahindra & Mahindra Limited Commercial and Consumer Equipment Retailer, or service calls made by the Retailer.

Limited Liability

a) The liability of Mahindra & Mahindra Limited under this Emission Control System Warranty is limited solely to the remedying of defects in materials or workmanship. This warranty does not cover inconvenience or loss of use of the non-road diesel equipment engine or transportation of the engine to or from the Mahindra

& Mahindra Limited Commercial and Consumer Equipment Retailer. Mahindra & Mahindra Limited SHALL NOT BE LIABLE FOR ANY OTHER EXPENSE, LOSS, OR DAMAGE, WHETHER DIRECT, INCIDENTAL, CONSEQUENTIAL (EXCEPT AS LISTED ABOVE UNDER "COVERAGE") OR EXEMPLARY ARISING IN CONNECTION WITH THE SALE OR USE OF OR INABILITY TO USE THE NON-ROAD DIESEL ENGINE FOR ANY OTHER PURPOSE.

b) NO EXPRESS EMISSION CONTROL SYSTEM WARRANTY IS GIVEN BY Mahindra & Mahindra Limited WITH RESPECT TO THE ENGINE EXCEPT AS SPECIFICALLY SET FORTH IN THIS DOCUMENT. ANY EMISSION CONTROL SYSTEM WARRANTY IMPLIED BY LAW, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, IS EXPRESSLY LIMITED TO THE EMISSION CONTROL SYSTEM WARRANTY TERMS SET FORTH IN THIS DOCUMENT.

c) No dealer is authorized to modify this Federal and Mahindra & Mahindra Limited Emission Control System Warranty.

About This Manual

This Manual has been prepared to assist you in following the correct procedure for break-in, operation and maintenance of your new Mahindra tractor.

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

We have enclosed a page on new tractor inspection sheets. The first sheet is the dealer's copy and should be removed by the dealer after the inspection has been carried out. The second sheet is your copy of the service performed. Ensure that you & the dealer sign both copies.

Read this manual carefully and keep it in a convenient place for future reference. If at any time you require advice concerning your tractor, do not hesitate to contact your authorised Mahindra dealer. He has trained personnel, genuine Mahindra parts and necessary equipments to undertake all your service requirements.

Mahindra USA Inc's. policy is one of continuous improvement, and the right to change prices, specifications or equipments at any time without notice is reserved.

All data given in this book is subject to production variations. Dimensions & weight are approximate only and the illustrations do not necessarily show tractors in standard condition. For exact information about any particular tractor, please consult your Mahindra dealer.

Introduction

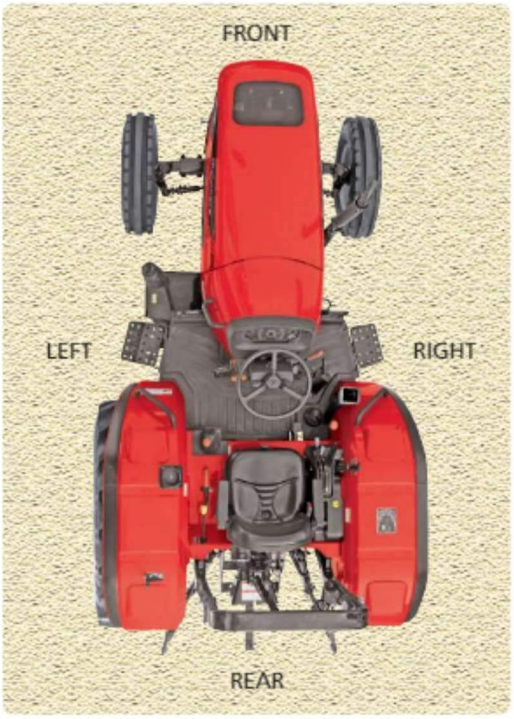
Tractor

The word, 'Tractor' has been derived from 'traction' which means pulling. A tractor is required to pull or haul an equipment, implement or trolley, which are coupled to the tractor chassis through suitable linkage. A tractor can also be used as a prime mover as it has a power outlet source which is also called Power Take Off or PTO shaft.

In this book the operating, maintenance and storage instructions for 2WD/4WD models of Mahindra diesel tractors have been compiled. This material has been prepared in detail to help you in better understanding of maintenance and efficient operation of the Tractor.

If you need any information not given in this manual, or require the services of a trained mechanic, please get in touch with the Mahindra Dealer in your locality. Dealers are kept informed of the latest methods of servicing tractors. They stock genuine repair parts and are backed by the company's full support.

Throughout this manual, the use of the terms LEFT, RIGHT, FRONT and REAR must be understood, to avoid any confusion when following the instructions. The LEFT and RIGHT means left and right sides of the tractor when facing forward in the driver's seat. Reference to the FRONT indicates the radiator end of the tractor, while the REAR, indicates the drawbar end.



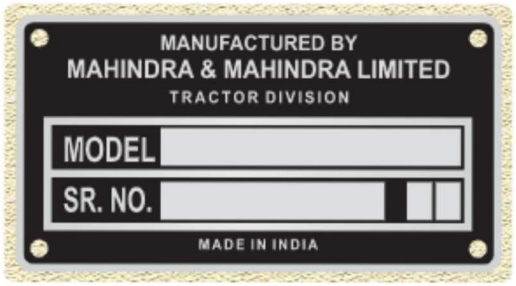
Tractor Serial Number

The tractor serial number can be identified from below mentioned locations :

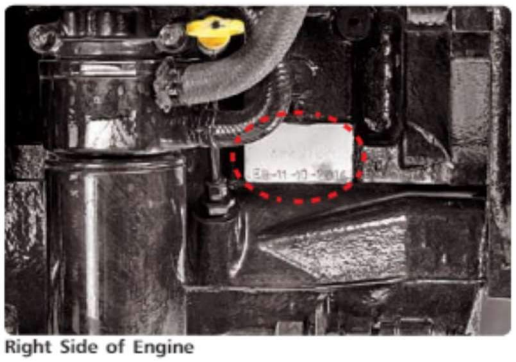
1. A plate rivetted on tractor.
2. Number punched on the right side of Engine.

For easy reference, we suggest you to write this number in the space provided in the owner's personal data.

When spare parts are required, always specify the tractor and tractor serial number. This will facilitate faster delivery and help ensure that the correct part for your particular tractor is received.



A plate rivetted on tractor



Right Side of Engine

General Description

General Construction

The transmission case, clutch housing, engine and front axle are bolted together to form a rigid unit.

Engine

This tractor is fitted with fuel-efficient US EPA certified Mahindra-VNEM 373 (6075) and VNEM 363 (6065) engine. This engine is 3 cylinder, turbocharged, intercooled with high pressure common rail injection system meeting EPA TIER-4 FINAL emission norms.

Front Axle & Wheels (2WD)

This is a three piece front axle with square tube design mounted on a central pivot pin. The front wheels are mounted on taper roller bearings housed in a hub which itself is mounted on the steering knuckle. The front track width is adjusted by adjusting the front axle tubes.

Front Axle & Wheels (4WD)

Front Axle is live front axle, with planetary reduction gear and with LSD (Limited Slip Differential). The front wheels are directly mounted on the axle. The front track is adjustable with adjustment provided on the rims. The turning angles are all preset.

Power Steering

The Power Steering System consists of a Hydrostatic Steering Unit (HSU), Hydraulic cylinder, Reservoir common for Transmission, Hydraulics and Power Steering.

Clutch

Tractor is fitted with hydraulic control valve to engage/disengage drive to transmission. For Independent PTO a separate hydraulically operated clutch pack is mounted on the PTO Shaft.

Transmission

The transmission is combination type wherein the Speed shifting is of synchroshift type whereas the range shifting is of collarshift type. Forward/Reverse shifting is with wet clutch.

The speed gear shifting arrangement is provided on RH side of operator's seat. Speed gears can be operated in 5 modes.

Rear Axle & Wheels

The rear axle is mounted on bearings and is enclosed in a removable housing which is bolted to the transmission case. The rim & disc, fitted with rear tires, are bolted to the outer flange of rear axle. The Rear track adjustment is provided on the rims.

Oil Immersed Brakes

Mahindra tractors are provided with independent oil immersed brakes operated by two independent pedals which can be latched together for road travel. A hand brake lever is fitted for parking. To assist in making sharp turns at slow speeds in the field, unlatch the brake pedals and depress the right or left brake pedal as required.

A parking brake lever is fitted on RH side of operator's seat.

Hydraulic System

The tractor is fitted with fully "live" Hydraulic System. Using a pump driven directly from the Engine. It is able to operate the three-point linkage and auxiliary valve entirely independent of any clutch movement when changing gear or operating the power take-off. The Oil reservoir is common with that of transmission.

Three Point Linkages

Three Point Linkage is available in Cat-I & Cat-II geometry with adjustable lower link.

Electrical System

A 12 volt battery is used to crank the engine with the starter motor. The electrical system is comprised of the horn, head lamp, front parking lamp, safety switch, parking & turn signal lamp, plough lamp, brake light, instrument cluster, alternator and fuse box.

Safety

PTO and transmission neutral switch are a standard feature.

Sheet Metal

Bonnet, scuttle, fuel tank, side panels, front grille & panel, fenders and bracketaries including floor panels etc. are constructed of sheet metal. After undergoing through chemical reaction, it is first primed & then painted.

We at Mahindra USA Inc. and your Mahindra Dealer want you to be completely satisfied with your investment. Normally any problems with your equipment will be handled by your Dealer's service department. Sometimes, however, misunderstanding can occur. If you feel that your problem has not been handled to your satisfaction, we suggest the following:

Contact the Owner or General Manager of the dealership, explain the problem, and request assistance. Your Dealer has direct access to the Mahindra office. If you cannot obtain satisfaction through your Dealer, contact the Mahindra USA Inc. office (1-877-449-7771) and provide the following:

- Your Name, Address and Telephone number
- Model and Tractor Serial number
- Dealer Name and Address
- Tractor Purchase Date and Hours used
- Nature of Problem

Before contacting Mahindra USA Inc. office, be aware that your problem is likely to be resolved at your retail Mahindra dealership by Dealer personnel. So it is important that your initial contact be with your retail Mahindra Dealer.

Owner's Personal Data

A sticker having important engine information is fitted on the LH side of engine.

EMISSION CONTROL INFORMATION

THIS ENGINE COMPLIES WITH U.S.EPA REGULATIONS FOR 2017 NONROAD COMPRESSION ENGINES AND 2017 CALIFORNIA REGULATIONS FOR OFF-ROAD DIESEL CYCLE ENGINES.
THIS ENGINE IS CERTIFIED TO OPERATE ON ULTRA LOW SULFUR FUEL ONLY.

EMISSION CONTROL SYSTEM: TC, CAC, DFI, ECM, EM, EGR, OC
ENGINE FAMILY : HMMLL02.6M63 ENGINE MODEL : VMEM363
ENGINE DISPLACEMENT : 2.649 Lts. FIRING ORDER : 1-3-2
INJECTION TIMING : ECU CONTROLLED RATED HP(SAE) :63HP@2100RPM
VALVE LASH (COLD) : INLET-0.012 IN EXHAUST - 0.016 IN
FUEL RATE AT RATED HP: 66mm3/STROKE POWER CATEGORY: 37≤KW<56

MAHINDRA & MAHINDRA LTD. INDIA

6065 - EPA & CARB Sticker (for reference only)

EMISSION CONTROL INFORMATION

THIS ENGINE COMPLIES WITH U.S.EPA REGULATIONS FOR 2017 NONROAD COMPRESSION ENGINES AND 2017 CALIFORNIA REGULATIONS FOR OFF-ROAD DIESEL CYCLE ENGINES.
THIS ENGINE IS CERTIFIED TO OPERATE ON ULTRA LOW SULFUR FUEL ONLY.

EMISSION CONTROL SYSTEM: TC, CAC, DFI, ECM, EM, EGR, OC
ENGINE FAMILY : HMMLL02.6M73 ENGINE MODEL : VMEM373
ENGINE DISPLACEMENT : 2.649 Lts. FIRING ORDER : 1-3-2
INJECTION TIMING : ECU CONTROLLED RATED HP(SAE) :73HP@2100RPM
VALVE LASH (COLD) : INLET-0.012 IN EXHAUST - 0.016 IN
FUEL RATE AT RATED HP: 75mm3/STROKE POWER CATEGORY: 37≤KW<56

MAHINDRA & MAHINDRA LTD. INDIA

6075 - EPA & CARB Sticker (for reference only)

Name :

Address :

Tractor Details

Model :

Tractor Serial Number :

Date of Purchase :

Expiration of Warranty :

Nearest Authorized Dealer

Name :

Address :

Telephone No. :

Fax No. :

Keep this operators manual safely for regular reference. Ensure that all operators have access to it and that they understand its contents.

Roll Over Protective Structure (ROPS)

Mahindra USA Inc. tractors are fitted with a frame for the protection of tractor operator to minimize serious operator injury resulting from accidental roll over. These frames, known as ROPS, form a safety zone within which the operator is offered some protection in the event that the tractor turns over. It is necessary that the tractor operator fasten the seat belt around him/her to be protected by the ROPS.

The mounting structure and fasteners forming the mounting connection with the tractor are part of the ROPS.

(ROPS) Maintenance and Inspection

The ROPS has been certified to industry and/or government standards. Any damage or alteration to the ROPS, mounting hardware or seat belt voids the certification and will reduce or eliminate protection for the operator, in the event of a roll-over.

The ROPS, mounting hardware and seat belt should be checked after the first 100 hrs. of machine operation and every 500 hours thereafter for any evidence of damage, wear or cracks. In the event of damage or alteration the ROPS must be replaced prior to further operation of the machine. The seat belt must be worn during machine operation when it is equipped with a certified ROPS. Failure to do so will reduce or eliminate protection of the operator in the event of a roll-over.

Substitution of mounting hardware, seat belt etc. with components not equal to or superior to the original certified components will void the certification and will reduce or eliminate protection for the operator in the event of a roll-over.

Damage of the ROPS

If the Tractor has rolled over or the ROPS has been damaged (such as striking an overhead object during transport), it must be replaced to provide the original protection. After an accident, check for damages to the 1. ROPS 2. Seat 3. Seat belt & seat mountings. Before you operate a Tractor, replace all damaged parts.

⚠ WARNING

When improperly operated, a tractor can roll over. For low clearance storage only, the roll bar may be folded. No protection is provided when the tractor is operated with the roll bar in the folded position. Always raise the roll bar immediately after low clearance storage. Always use the seat belt when the roll bar is raised. Seat belts save lives when they are used. Do not use the seat belt when the roll bar is lowered.

⚠ WARNING

Never attach chains or ropes to the ROPS for pulling purposes; this will cause the tractor to tip backwards. Always pull from the tractor drawbar. Be careful when driving through door openings or under low overhead objects. Make sure there is sufficient overhead clearance for the ROPS.

If the ROPS is removed or replaced, make certain that the proper hardware is used to replace the ROPS and the recommended torque values are applied to the attaching bolts.

Always wear your seat belt if the tractor is equipped with a ROPS.

Safety Instructions

Recognize Safety Information

This symbol means ATTENTION ! YOUR SAFETY IS INVOLVED. The message that follows the symbol contains important information about safety. Carefully read the message.

Signal Words

A signal word - DANGER, WARNING OR CAUTION is used with safety alert symbol. DANGER identifies the most serious hazards. Safety signs with signal word - DANGER OR WARNING are typically near specific hazards.

General precautions are listed on CAUTION safety signs.

Read Safety Instructions

Carefully read all safety instructions given in this manual for your safety. Tampering with any of the safety devices can cause serious injuries or death. Keep all safety signs in good condition. Replace missing or damaged safety signs.

Keep your tractor in proper condition and do not allow any unauthorized modifications to be carried out on the tractor which may impair the function / safety and affect tractor life.

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 or interfere with your control of the machine.
5. Never allow children to operate the machine even under adult supervision.
6. Never allow children to play on the machine or on the implement.
7. Use extra caution when backing up. Look behind and down to make sure are is clear before moving.
8. When parking your machine if at all possible park on a firm, flat and lever surface; if not, park across a slope. Set the parking brake(s), lower the implements to the ground, remove the key from the ignition and lock the cab door (if equipped) and chock the wheels.

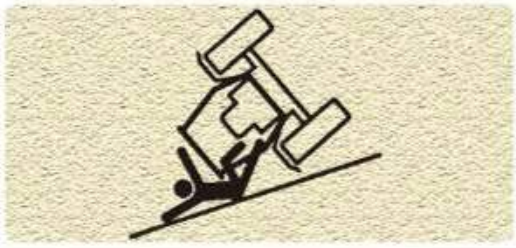
Precautions To Avoid Tipping

Do not drive where the tractor could slip or tip.

Stay alert for holes and rocks in the terrain, and other hidden hazards.

Slow down before you make a sharp turn.

Driving forward out of a ditch or mired condition could cause tractor to tip over backward. Back out of these situations if possible.



Use Of ROPS And Seat Belt

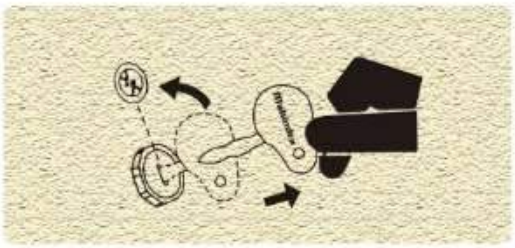
The Roll Over Protective Structure (ROPS) has been certified to industry and/or government standards. Any damage or alteration to the ROPS, mounting hardware, or Seat belt voids the certification and will reduce or eliminate protection for the operator in the event of a roll-over. The ROPS, mounting hardware, and seat belt should be checked after the first 100 hours of tractor operation and every 500 hours thereafter for any evidence of damage, wear or cracks. In the event of damage or alteration, the ROPS must be replaced prior to further operation of the tractor.

The seat belt must be worn during machine operation when the machine is equipped with a certified ROPS. Failure to do so will reduce or eliminate protection for the operator in the event of a roll-over.

Park Tractor Safely

Before parking the tractor :

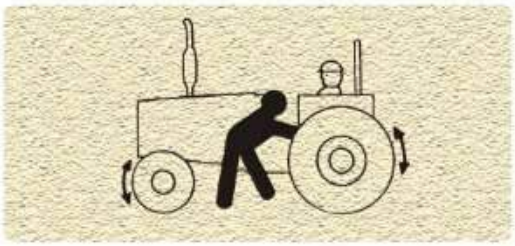
Lower all equipments to the ground, bring transmission in neutral. Engage the parking brake. Stop the engine and remove the key.



Keep Riders Off Tractor

Do not allow riders on the tractor.

Riders on tractors are subject to injury such as being struck by foreign objects and being thrown off from the tractor.



Handle Fuel Safely — Avoid Fires

Handle fuel with care. It is highly flammable. Do not refuel the tractor while smoking or near open flame or sparks.

Always stop engine before refueling tractors.

Always keep your tractor clean of accumulated grease and debris. Always clean up spilled fuel.

Stay Clear of Rotating Shafts

Entanglement in rotating shaft can cause serious injury or death.

Keep PTO shields in place at all times.

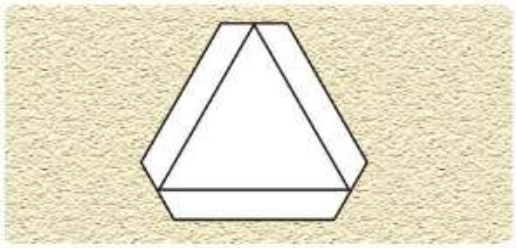
Wear close fitting clothing. Stop the engine and be sure PTO drive is stopped before making adjustments, connections, or cleaning out PTO driven equipment.

Safety Instructions

Always Use Safety Lights And Devices

Use of hazard warning lights and turn signals are recommended when driving the tractor on public roads unless prohibited by state or local regulations.

Use slow moving vehicle (SMV) sign when driving on public road during both day & night time, unless prohibited by law.



Service Tractor Safely

Do not wear a necktie, scarf or loose clothing when you work near moving parts. If these items were to get caught, severe injury could result.

Remove rings and other jewellery to prevent electrical shorts and entanglement in moving parts.

Never work on the tires with improper equipment or without the necessary experience. Incorrect tire fitment may put your safety at risk.

Practice Safe Maintenance

Understand service procedure before doing work. Keep the surrounding area of the tractor clean & dry.

Do not attempt to service tractor when it is in motion. Keep body and clothing away from rotating shafts. Always lower equipment to the ground. Stop the engine. Remove the key. Allow tractor to cool before any work/repair is performed on it.

Securely support any tractor components that must be raised for service work.

Keep all parts in good condition and properly installed. Replace worn or broken parts. Replace damaged or missing decals. Remove any buildup of grease or oil from the tractor.

Disconnect the battery ground cable (- ve) before making adjustments on electrical systems or welding on tractor.

Prevent Acid Burns

Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, cause holes in clothing and cause blindness if it contacts the eye.

For adequate safety always :

1. Fill batteries in a well-ventilated area.
2. Wear eye protection and acid proof hand gloves.
3. Avoid breathing direct fumes when electrolyte is added.
4. Do not add water to electrolyte as it may splash off causing severe burns.

If you spill acid on yourself :

1. Flush your skin with water.
2. Flush your eyes with water for 10-15 minutes. Get medical attention immediately.

Prevent Battery Explosions

Keep sparks, lighted matches, and open flame away from the top of battery. Battery gas can explode.

Never check battery charge by placing a metal object across the poles.

Avoid High-pressure Fluids

Escaping fluid under pressure can penetrate the skin causing serious injury. Keep hands and body away from pinholes and nozzles which eject fluids under high pressure. Do not operate Auxiliary valve when terminal pipes are open.

If any fluid is injected into the skin. Consult your doctor immediately.

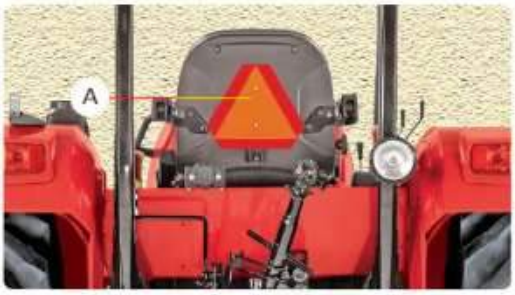
Work In Ventilated Area

Do not start the tractor in an enclosed building unless the doors & windows are open for proper ventilation, as tractor exhaust fumes can cause sickness or death. If it is necessary to run an engine in an enclosed area remove the exhaust fumes by connecting exhaust pipe extension and drawing them out with an exhaust fan.

Slow Moving Vehicle Emblem (SMV)

Observe the following precautions when operating the tractor on road.

1. Ensure that Slow Moving Vehicle (A) emblem affixed on back side of operator seat is clean and visible.
2. If towed or rear-mounted equipment obstructs this emblem, install SMV emblem on equipment.



Tractor Runaway

Avoid possible injury or death from possible runaway. Do not start the engine by shorting across electrical circuit.

The tractor will start in gear if starting circuit is bypassed.

NEVER start engine while standing on ground. Start engine only from operator's seat with, transmission in neutral position, hand brake lever engaged and PTO lever in disengaged position.

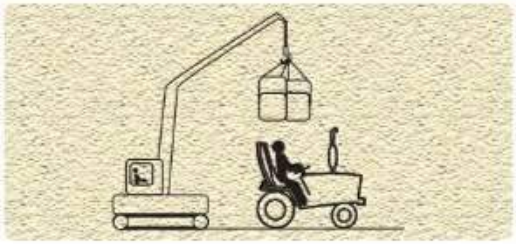
The tractor can start only if the transmission is in neutral position and PTO lever in neutral as well.

For additional safety keep, the engine starting key in OFF position, transmission in neutral position, hand brake lever engaged, PTO lever in disengaged position while servicing the tractor.

Safety Instructions

Overhead Protection

This tractor does not have any protection from overhead falling objects. Do not use this tractor in an application where there is a risk of falling objects striking the operator.



Sunlight Protection

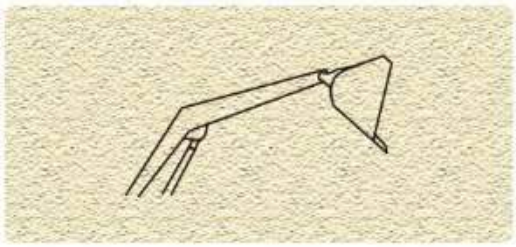
To Protect the operator from the sun light, it is recommended to use the canopy.

Hearing Protection

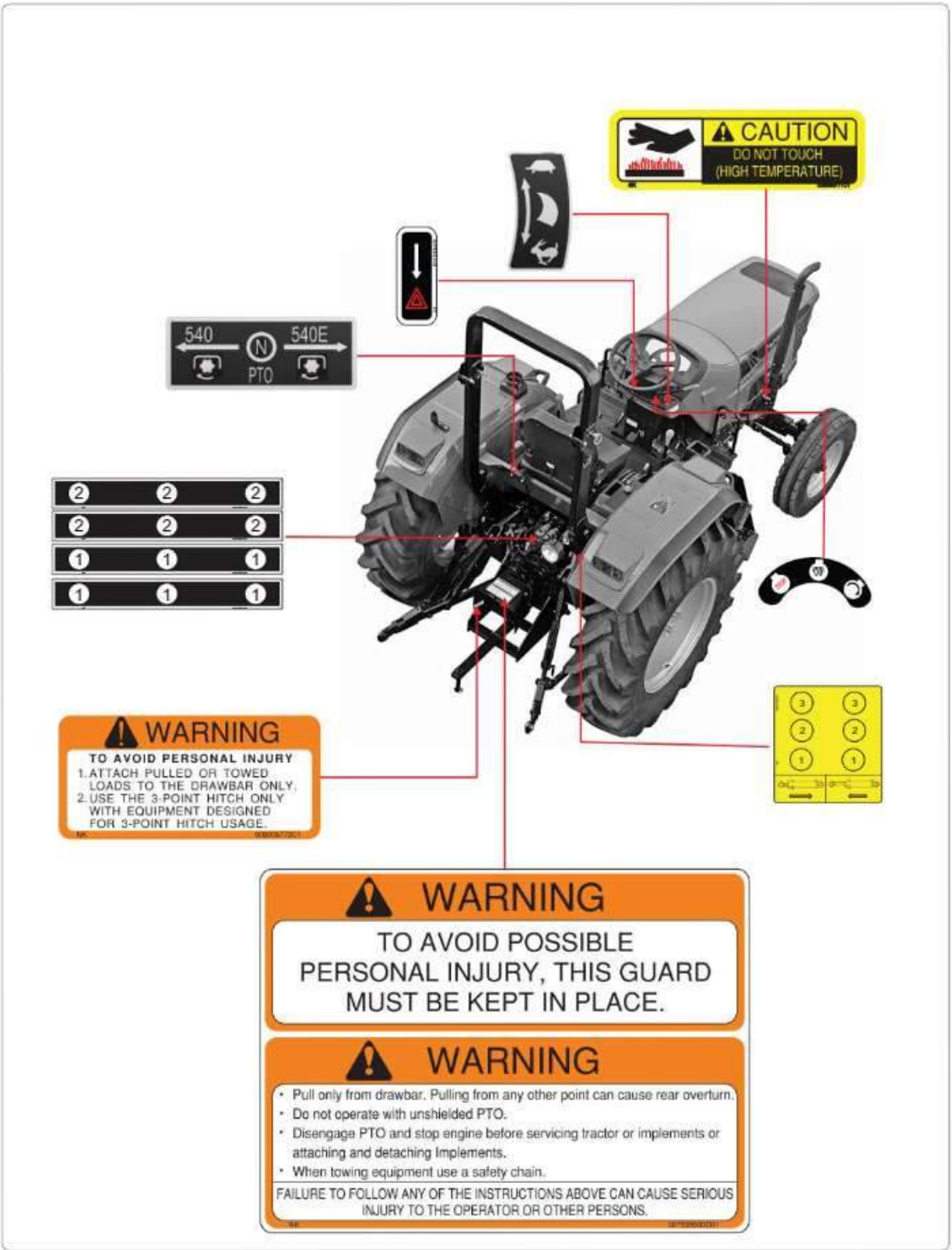
It is recommended to use hearing protection while tractor is in operation.

Precautions While Using Loader

When using a loader, be conscious of bucket location at all times, particularly when raising a loader with bucket rolled back.

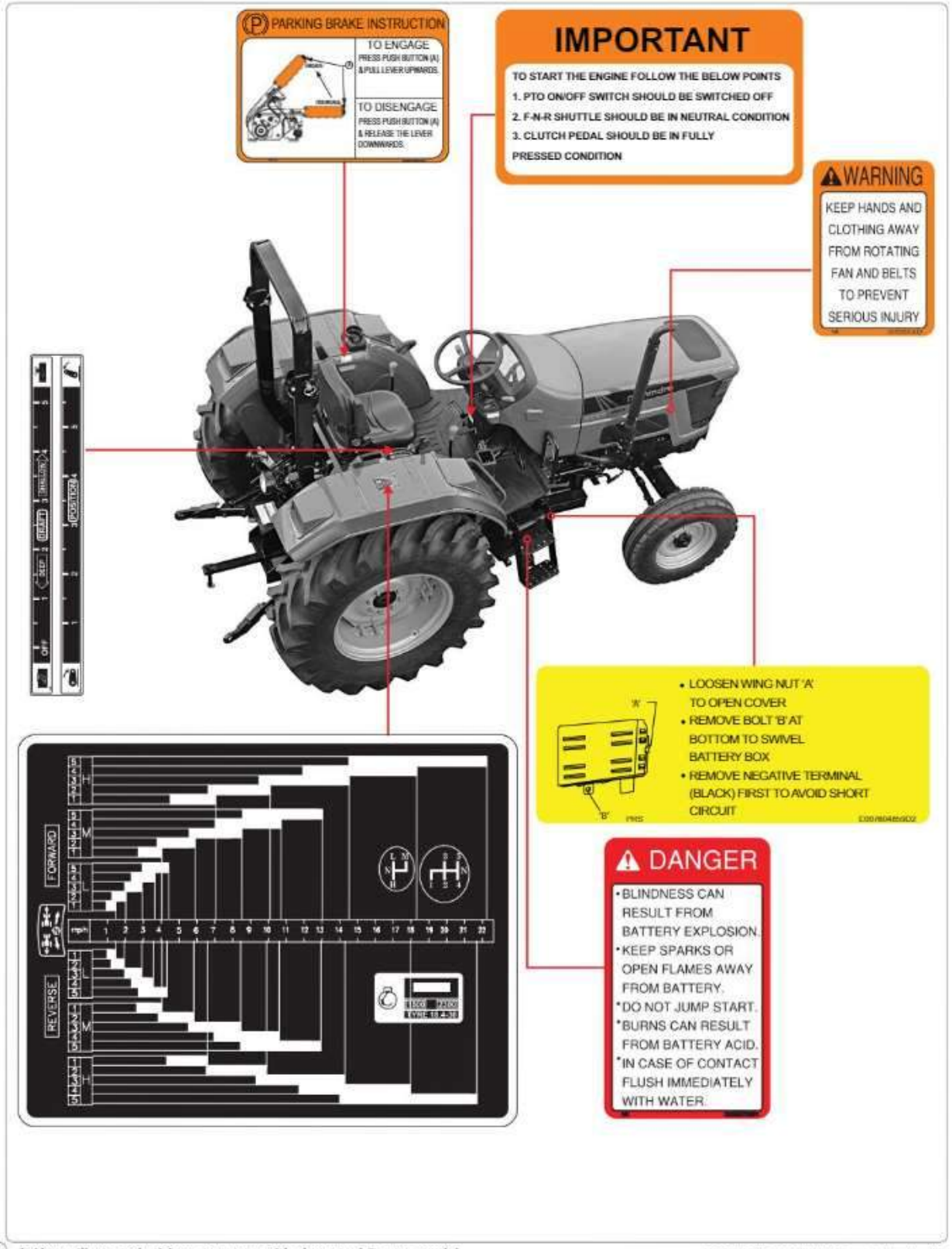


NOTE: Tractor shown in safety instructions for reference only.

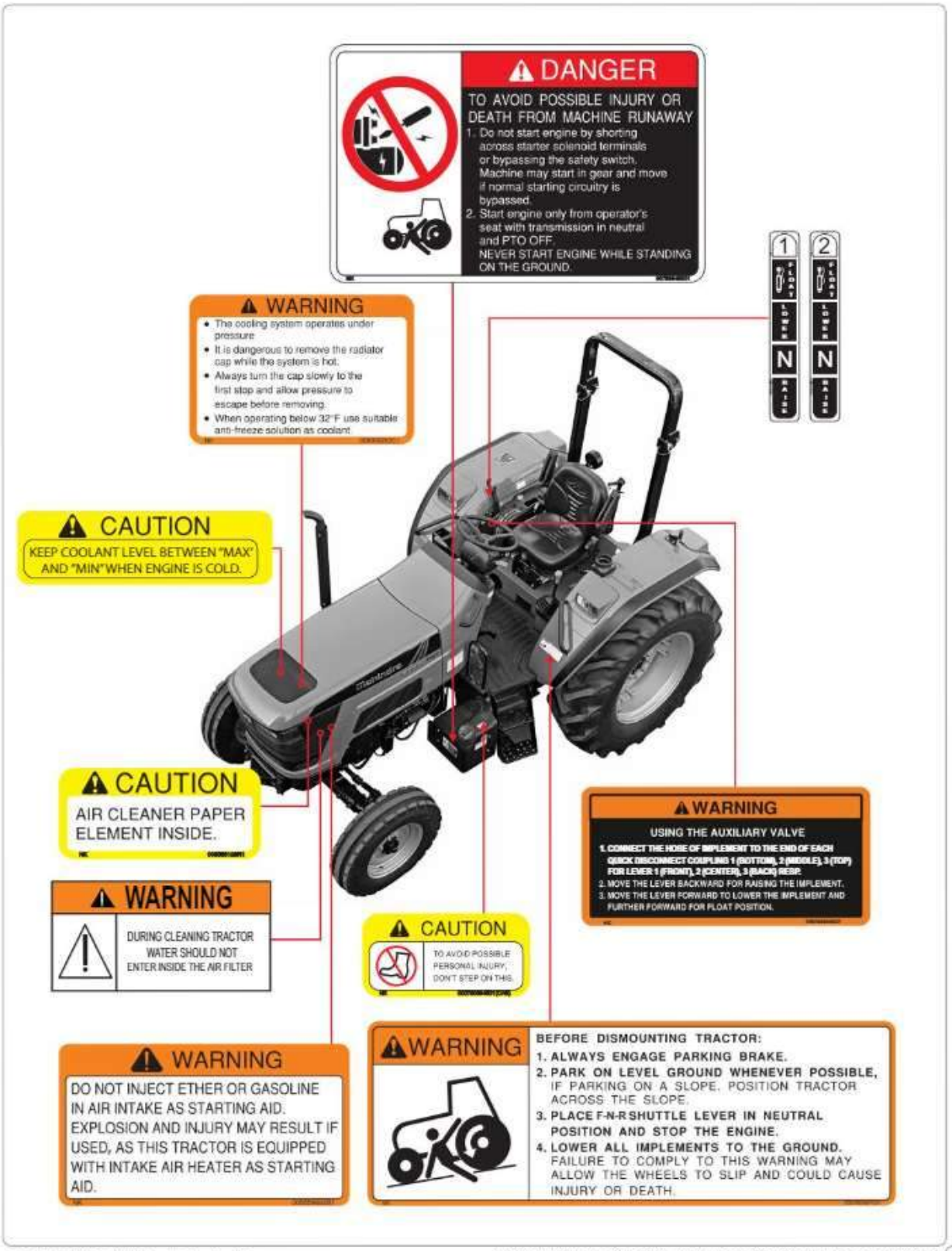


* Above Illustrated stickers may vary with the actual Tractor model

Safety Signs

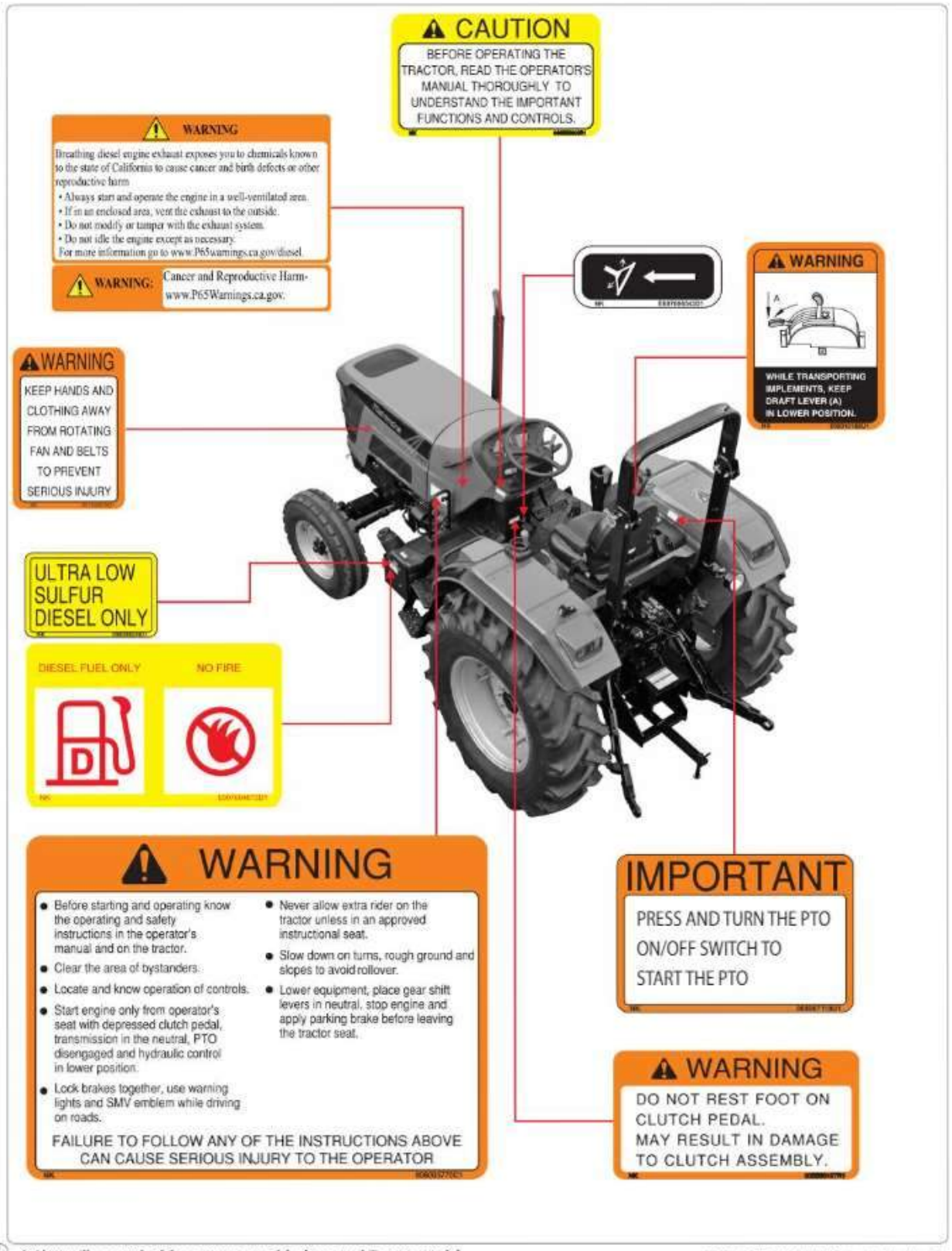


* Above Illustrated stickers may vary with the actual Tractor model



* Above Illustrated stickers may vary with the actual Tractor model

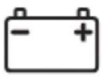
Safety Signs



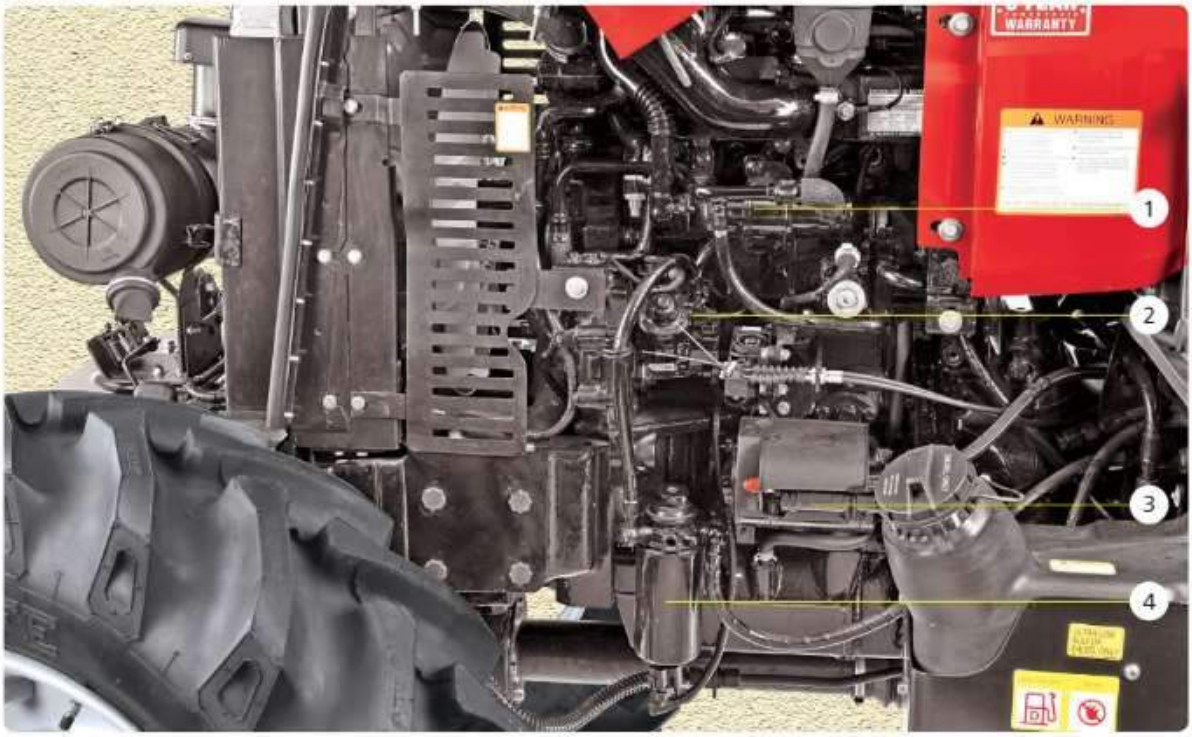
* Above Illustrated stickers may vary with the actual Tractor model

Universal Symbols

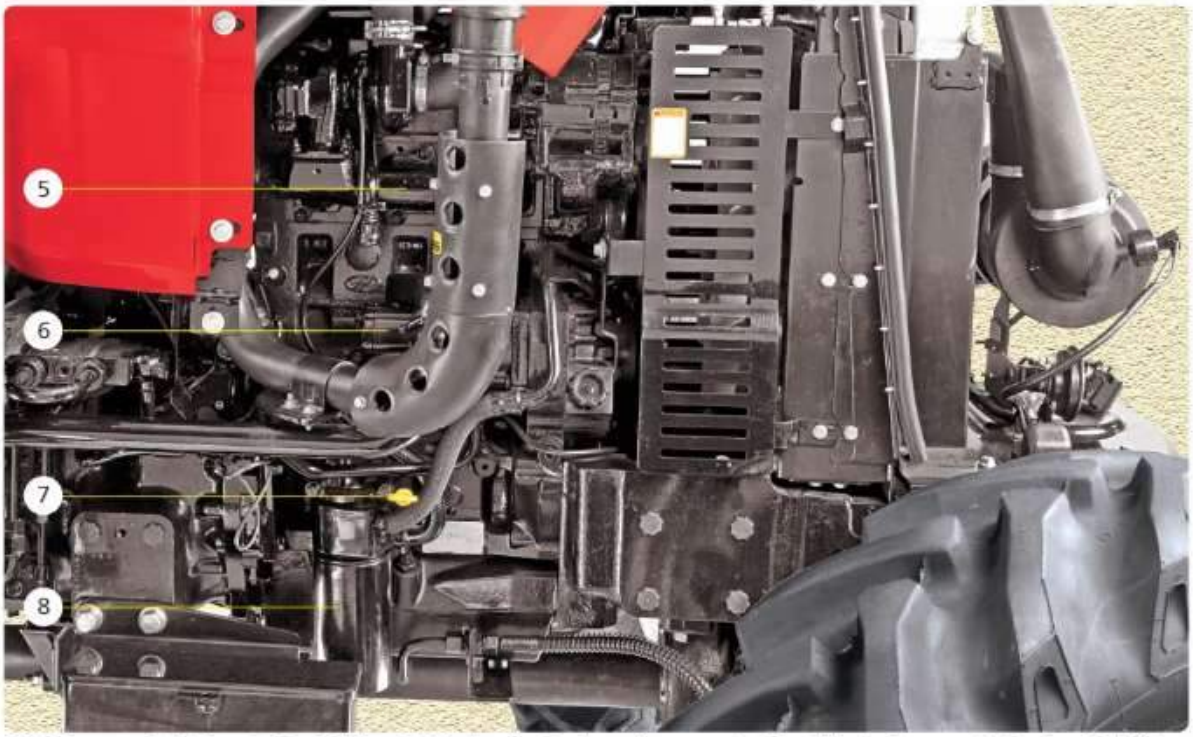
Some of the universal symbols have been shown below with an indication of their meaning.

 Engine speed (rpmX100)	 Pressurized-open slowly	 Cold start device
 Hours, recorded	 Continuous variable	 "Tortoise" slow or minimum setting
 Engine coolant temperature	 Warning	 "Hare" fast or maximum setting
 Fuel level	 Hazard warning	 Transmission oil pressure
 Engine stop control	 Neutral	 Turn signal
 Lights	 Fan	 Transmission oil temperature
 Horn	 Power take off engaged	 Parking brake
 Engine oil pressure	 Power take off disengaged	 Work lamps
 Air filter	 Lift arm/raise	 Differential lock
 Battery charge	 Lift arm/lower	 See operator's manual
 MIL (Malfunction Indicator Lamp)	 Check Engine Indicator	

LH & RH View of Engine



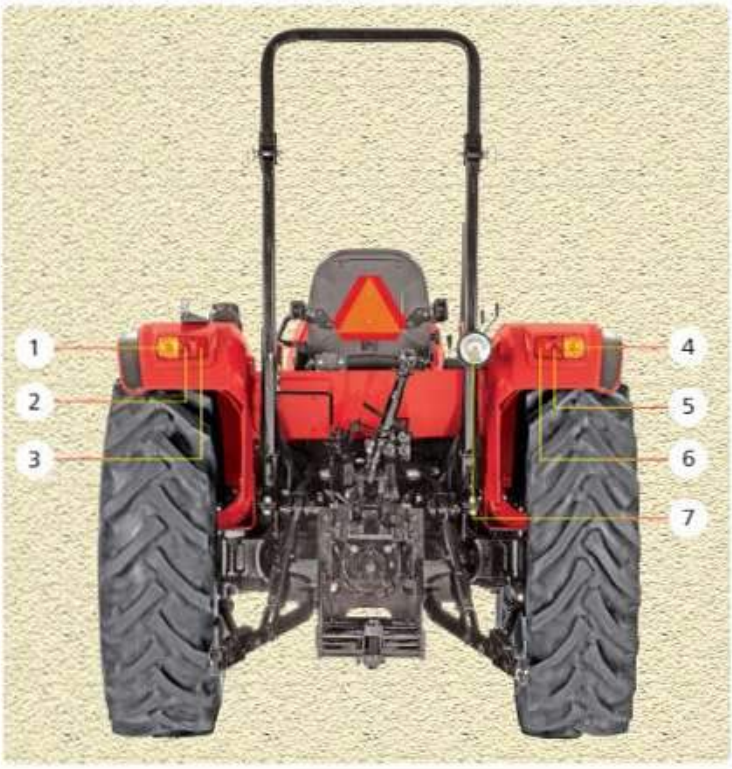
LH View : 1. EGR Cooler 2. Fuel Pump 3. Starter Motor 4. Fuel Filter



RH View : 5. Exhaust Manifold 6. Hydraulic Tandem Pump 7. Dipstick Engine 8. Engine Oil Filter

Front View :

1. Front Turn Signal (RH)
2. Position Lamp / Reflector (RH)
3. Front Position (RH)
4. Head Lamp (RH)
5. Front Turn Signal (LH)
6. Position Lamp / Reflector (LH)
7. Front Position (LH)
8. Head Lamp (LH)



Rear View :

1. Rear Turn Signal (LH)
2. Position Lamp / Reflector (LH)
3. Rear Brake Lamp (LH)
4. Rear Turn Signal (RH)
5. Position Lamp / Reflector (RH)
6. Rear Brake Lamp (RH)
7. Plow Lamp

LH - Left Side
RH - Right Side

Controls, Instruments & Operations

The following pages in this section detail the location and function of 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 Mahindra USA Inc. Tractor Dealer.

This section explains briefly the operation of instruments, and controls. Full details wherever necessary will be found in forthcoming chapters at relevant operating sections.

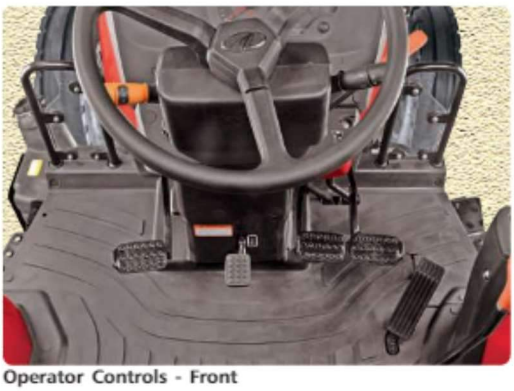
⚠ CAUTION

To facilitate explanations, some illustrations in this manual show panels or covers in removed condition. Never use the tractor without any of the panels or guards in place.

⚠ WARNING

The operator must be thoroughly acquainted with the location and use of all instruments and controls regardless of experience, must read this section carefully before attempting to operate the tractor.

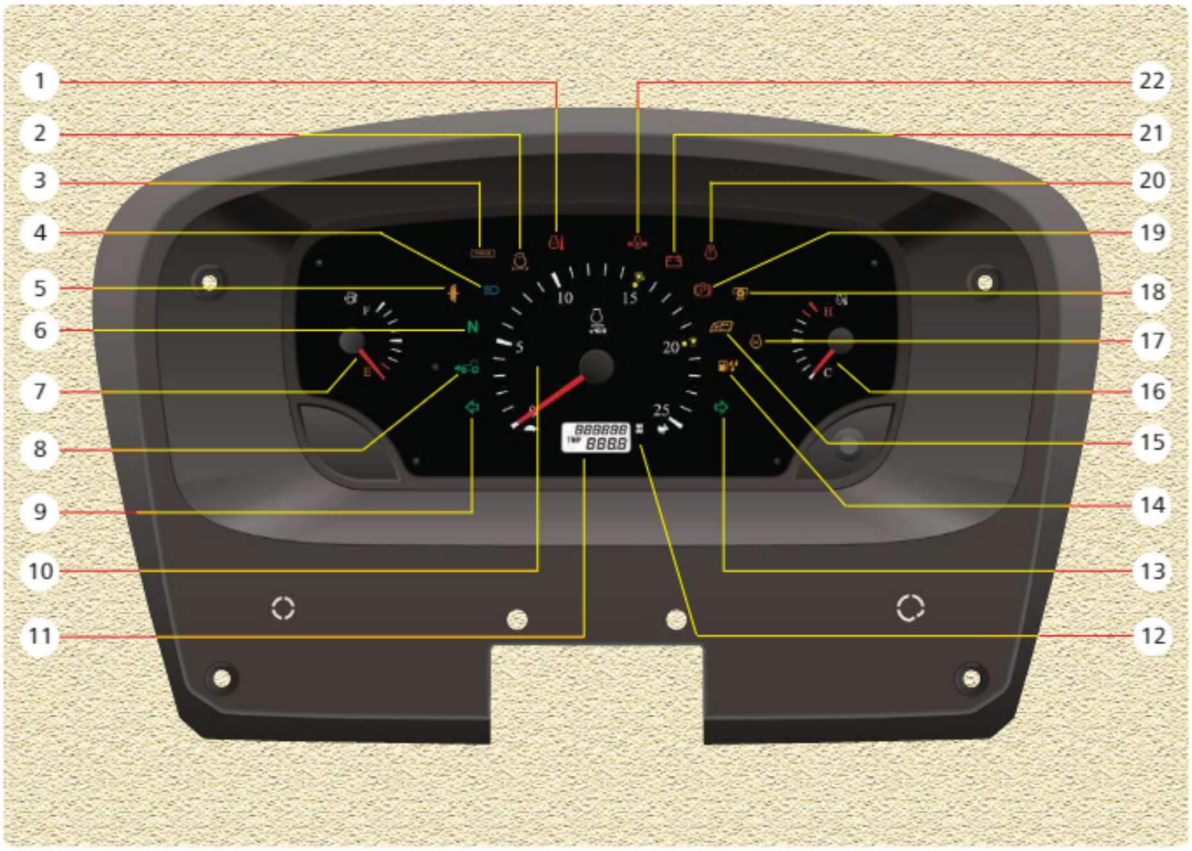
Instrument Cluster



Operator Controls - Front

Operator Controls - LH, RH

Switches



Instrument Cluster

The Instrument Cluster is a descriptive unit that gives the user various indications about the working of the tractor and its various features. It consists of the following.

1. Engine Coolant Temperature Warning Indicator
2. Air Filter Clogging Indicator
3. Check Engine Indicator
4. High Beam Indicator
5. Clutch Over Ride Indicator
6. F-R Shuttle Neutral Indicator
7. Fuel Level Gauge
8. 4WD Indicator
9. LH Turn Indicator
10. Tachometer
11. Trip Hour Indicator
12. Tractor Run Hour Indicator
13. RH Turn Indicator
14. Water In Fuel Indicator
15. Service Reminder Indicator
16. Coolant Temperature Gauge
17. Cold Start Device Indicator
18. PTO Indicator
19. Parking Brake Indicator
20. MIL Indicator
21. Battery Charging Indicator
22. Low Oil Pressure Indicator

Instrument Cluster

Engine Coolant Temperature Warning Indicator

This is a Red LED and is located on top of tachometer. It will glow continuously when temperature of coolant rises above 228.2^{0}F. The pointer of Temperature gauge will lie in the RED band under such condition. Also to warn the operator, A beeper will also give an audio warning. (60 beeps / Min)

⚠ WARNING

Continued operation of engine despite the high temperature warning indicator glowing may lead to engine seizure.

Air Filter Clogging Indicator

This is an Amber LED and glows when Air filter is clogged. This gives an indication to the customer that the air filter needs to be cleaned for proper functioning.

Check Engine Indicator

This indicator will glow when the starter switch is turned to "ON" position. This indicator will turn-off after engine is CRANKED. A malfunction other than Emission, such as Sensor failures would be indicated by a continuously "GLOWING" or "BLINKING" Indicator, even past CRANKING of the engine. In such an event, get the problem rectified by an authorized Mahindra Dealer.

High Beam Indicator

This is a Blue LED and glows when Head Lamps are operated in High Beam.

Clutch Over Ride Indicator

Optional feature: This is an Amber LED & Glows when clutch Pedal is pressed for more than 10 sec.

This symbol will be glowing if the feature is equipped.

F-R Shuttle Neutral Indicator

This is a Green LED and glows when the F-R shuttle shift lever is not in neutral position.

Fuel Gauge

The Fuel Gauge is displayed on the left side of rpm meter when viewed from the driver's seat. It indicates quantity of fuel available in the fuel tank. The indication is divided into 9 stages. The Red zone indicates that the fuel level is less and the tractor should be refueled for uninterrupted run.

Graduation	Gallons / Liters
E	3.43 / 13
1	5.55 / 21
2	7.40 / 28
3	9.51 / 36
4	11.62 / 44
5	13.21 / 50
6	15.85 / 60
7	17.96 / 68
F	21.13 / 80

Low fuel indication & buzzer ON at 2nd Graduation & OFF at 3rd Graduation. Buzzer sound at the rate of 15 beeps per min.

4WD Indicator

This is a Green LED and glows when 4WD is engaged. This LED will glow only in 4WD tractor version.

Turn Indicator

These are Green LEDs. LH and RH turn indicators are provided to indicate the direction of turning. A blinking LH turn indicator implies that the LH Turn Signal indicator of tractor is ON whereas a blinking RH turn indicator implies that the RH Turn Signal indicator of tractor is ON.

No. of flashes of these LEDs: 60-120 counts/minute

If the count is more than 140 per minute, then it is an indication that one of the bulbs is not functioning.

Tachometer

This gives the number of Revolution per Minute of the engine. To arrive at the rpm value at any given point of time, multiply the pointer reading by 100.

Example: If the reading shows 15, the actual engine rpm value = 15 x 100 = 1500

Trip Hour Counter

This is a LCD hour counter located under the tachometer. It is operated by signal from ECU, when the engine is running. Trip hour counter displays the running hours for the particular trip. The run hour is calculated in real time, i.e. 60 minutes of tractor run is calculated as 1 hour only. After 999 hours is completed, the count restarts from 0. The blinking of the symbol indicates that the run time is counted on real time.

Tractor Run Hour Counter

This is a LCD hour counter located under the tachometer. It is operated by signal from ECU, when the engine is running. Hour counter displays the cumulative engine running hours. The run hour is calculated in real time, i.e. 60 minutes of tractor run is calculated as 1 hour only.

Trip Hour Reset Button

This is located on cluster bezel and is used to reset the trip hour meter as and when required. This can be done by continuously pressing the button for 5 seconds.

Water In Fuel Indicator

This is Amber LED and glows when water is accumulated in the fuel filter. The operator has to drain the water by opening the sensor in fuel filter.

IMPORTANT

Failing to drain the water will lead to reduced engine performance and life. After draining the water tighten the sensor.

Instrument Cluster

Service Reminder Indicator

This is an amber color LED and glows continuously when the service of tractor is due. This function is set for first 50th hour and 500, 900, 1300, 1700 hrs ... of engine running. The operator is thus indicated for General Service Due. Resetting can be done by authorized Mahindra Dealer as soon as the general service is done.

Coolant Temperature Gauge

The temperature gauge is displayed on the right side of instrument panel when viewed from the driver's seat. This gauge indicates coolant temperature of the engine. When the pointer lies in RED band:

1. Indicates the engine coolant temperature is going to exceed the limit.
2. Identify the cause by running the engine at low idle rpm for some time before switching OFF.
3. Further engine operation should be done only after elimination of the problem.

Graduation	Temperature (°F)
C	104
1	105.8 - 122
2	131
3	132.8 - 167
4	168.8 - 215.6
5	222.8 - 224.6
6	226.4
7	226.4 - 228.2
H	231.8 - 248

High temperature indication will blink (30 cycles / min) at 228.2°F and switch off at 226.4°F.

High temperature Buzzer will give 60 beep / min at 228.2°F and switch off at 226.4°F.

Cold Start Device Indicator

When the key is turned to 2nd position, the cold start indicator glows to indicate the activation of heater element provided in engine's intake elbow. The indicator continues to glow for approx. 45 seconds. A timer controls this time.

1. Turn the key to "ON" position and wait till the heater indicator is goes-off.
2. Crank the engine when the heater indicator light is off

PTO Indicator

This is Amber color indication for PTO. This indicates when PTO is ON position.

Parking Brake Indicator

This is a Red LED and glows when the Parking Brake is applied.

⚠ WARNING

The park brake should not be used for more than 1 hours with ignition on condition as this will result in damage of brake lamps.

MIL Indicator

This indicator will glow when the starter switch is turned to "ON" position. This indicator will turn-off after engine is CRANKED.

A malfunction in the electronic emission control system (ECU) is indicated by a continuously "GLOWING" or "BLINKING" Indicator, even past CRANKING of the engine. In such an event, get the problem rectified by an authorized Mahindra Dealer.

Battery Charging Indicator

This is a Red LED and glows when the battery is not getting charged. Also this LED will glow during ignition ON and should go OFF immediately after engine rpm reaches 800 rpm.

⚠ WARNING

During engine running, if this LED glows it means Battery is not getting charged. A beeper will also give an audio warning in such case.

Low Oil Pressure Indicator

This is a Red LED and glows when the engine is operating at Low oil pressure. & also to warn the operator, a beeper will also give an audio warning.

This indicator will also glow when the Key is in ON position before starting the engine and continue to glow till engine oil pressure builds up after starting the engine.

⚠ WARNING

Continued operation of engine despite the low oil pressure indicator glowing may lead to engine seizure.

Beeper Output Provision

The Beeper will beep at different rate during following conditions.

Description	Beeps/min
High Coolant Temperature	60
Engine Low Oil Pressure	40
Low Battery Charge	30
Low Fuel	15
Air Filter Clog	10

Switches

1. Ignition Key Switch

This is a key operated 3-way rotary switch located on RH side of steering column cover. It operates in clockwise direction and the positions are as follows:

1. **OFF**
2. **IGNITION:** This Position gives a readiness to the electrical circuit for operating plough lamp switch, brake light switch and turn signal switch. This puts ON the supply to instrument cluster and readiness to the electrical circuits for operation of light switch.
3. **START:** Turning the key to this position activates the starting circuit for starting the engine. When released, the key springs back to ignition position.

2. Steering Column Mounted Combination Switch (A)

This is multi-functional switch mounted on steering column. It consists of following operation switches.

1. Light Control
2. Dipper
3. Turn Signal
4. Horn

3.1 Light Switch

This is 3-way rotary switch. The operations are as follows:

1. Off
2. Illuminates instrument cluster illumination lamp and position lamps.
3. Illuminates low/high beam of head lamp in addition to the position lamp with respect to the position of the dipper.

3.2 Dipper Switch

This is a 3 way lever switch. It operates in up and down direction and the operations are as follows.

Center : Operate Low beam of Headlamp

Down side : Operate High beam of Headlamp

Up side : Passing through (Momentary switch)

3.3 Turn Signal Switch

This is 3-way rotary lever switch. It operates in front and forth direction and the positions are as follows.

Center : OFF

Forward : Operates left turn signal lamp

Rearward : Operates right turn signal lamp

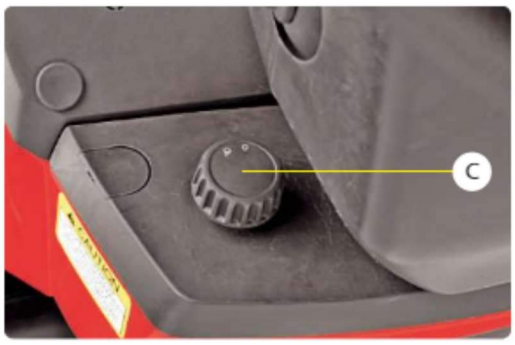
3.4 Horn (B)

This is push button switch (B). Pressing this switch will enable the horn and releasing it will disable the Horn.

3. Plough Lamp Switch (C)

This is a 2-way rotary switch located on the LH side of the scuttle extension cover.

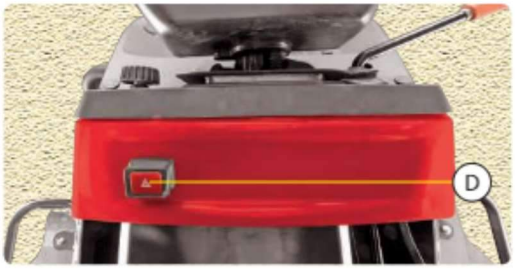
1. Off
2. Illuminates Plough Lamp



4. Hazard Switch (D)

This is push type switch located bottom side of Steering column cover. The operations are as follows.

On Position - Operates left and right turn signal lamp simultaneously. This operation can be performed even if the key switch is in OFF position.



5. Brake Switch

The function of this switch is to automatically turn on the stop lamp when the brake pedal is pressed.

6. Forward Reverse Switch (E)

This is a 3 way lever switch. It operates by lifting the lever then up and down direction and the operations are as follows.

Center : Neutral position.

Forward : Vehicle move in forward direction.

Rearward : Vehicle move in reverse direction.

1. Moving the lever up and down without lifting, can damage the switch.
2. Don't hold the lever while getting on or off the tractor.

7. PTO ON/OFF Switch

This switch is used to engage the PTO Clutch with PTO shaft. The Operation of the switch is as follows.

To switch ON the PTO: PUSH and Rotate the Knob, Clock wise as shown in image below.

To Switch OFF the PTO: Press the knob.

⚠ WARNING

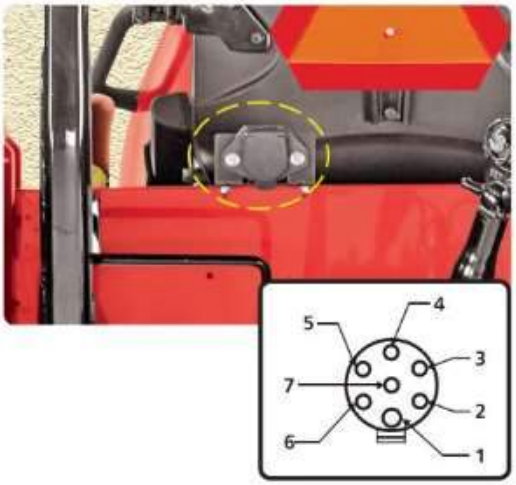
For operation switch knob to be pressed and then to be rotated. Failing to do this will lead to permanent damage of switch

Seven Pole Socket:

It is used to provide supply for any trailer which is attached at the rear.

The seven pins have the following functions.

PIN NO	FUNCTION
1	Ground
2	No function
3	Right turn indicator
4	Brake signal
5	Left turn indicator
6	IGN supply (12V)
7	Park illumination



Mobile Charger Socket:

This is a power socket which provides 12V supply. This can be used for charging mobiles or other electrical devices.

NOTE:

Maximum Power Rating : 7A

⚠ WARNING

This socket is only provided for mobile charging application.

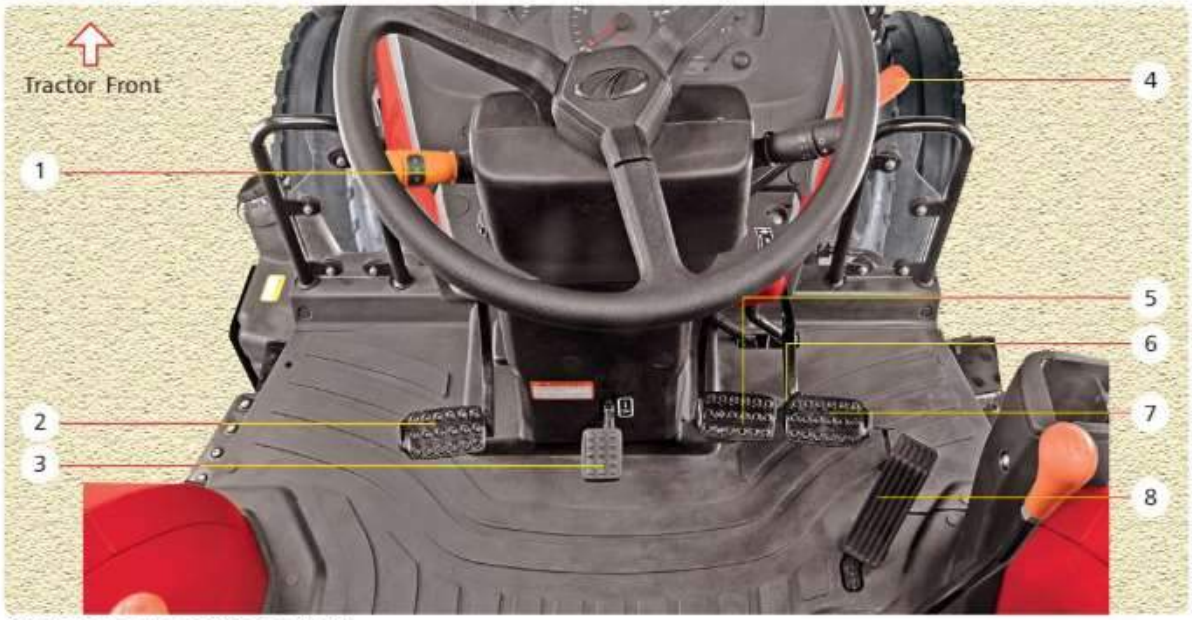
Fuse Box:

The fuse box is located inside the scuttle hood. To access the Fuse box, open the Extension cover behind the Clutch pedal.

⚠ WARNING

Always replace fuse with correct rating. Failing to do this will damage the wiring harness.

Controls



Operator's Front Side Controls

Operator's LH & RH Side Controls

Controls

1. F-R Shuttle Shift Lever
2. Clutch/Inching Pedal
3. Tilt Steering Pedal
4. Hand Throttle
5. Brake Pedal LH
6. Brake Pedal Latch
7. Brake Pedal RH
8. Foot Throttle
9. Auxiliary Valve Lever
10. Position Control Lever
11. Draft Control Lever
12. Gear Shifter Lever
13. Differential Lock Pedal
14. PTO Lever
15. Parking Brake
16. Range Shifter Lever
17. 4WD Engagement Lever

Operator Seat

The operator seat can be adjusted for position, tilt and weight of operator. These adjustments are to be done prior to starting the engine.

Adjusting Seat Position

1. Sit on the operator seat.
2. Lift the lever (D) upwards & slide the seat forward or rearward to desired position.
3. Release lever to lock seat in position. Ensure that all controls can be accessed easily.

Weight Adjustment

To achieve optimum seat suspension, turn the knob (B) till the weight indicator registers your approximate weight on indicator (C).

Tilt Adjustment

To achieve optimum seat tilt, turn the knob (F) till the desired angle of tilt is achieved.

Using Seat belt

Use a seat belt when you operate with roll over protective structure (ROPS) to minimise chance of injury from an accident such as an overturn. Do not jump if machine tips.

Fasten Seat belt

1. Pull belt end (A) across operator lap.
2. Install tab into buckle (G). A click will be heard when the tab locks into the buckle.

Release Seat belt

Press red button (E). The seat belt will automatically retract.

⚠ CAUTION

Attempting to adjust the seat while driving the tractor may cause the operator to lose control of the tractor.

⚠ WARNING

Do not use seat belt if operating without a ROPS or with an optional folding ROPS in the folded position.

Tilt Steering

The steering can be tilted towards or away from the operator as per the need and convenience of operator and is recommended to be done in tractor parked condition.

Tilt Adjustment

1. Park the tractor safely.
2. Press the tilt steering pedal (H) by foot.
3. Tilt the steering wheel to desired position.
4. Release foot pressure on the pedal.

⚠ CAUTION

Attempting to adjust the steering wheel while driving the tractor may cause the operator to lose control of the tractor.

Lock the steering wheel in position before driving the tractor.

Hand Throttle Operation

Use the Hand Throttle Lever to set a constant engine speed for stationary operation or for field operation wherever desired.

Increasing Engine Speed : Pull throttle lever towards operator as indicated in the sticker on the dashboard.

Engine Tachometer Speeds :

a. Low Idle speed - 850 ± 50 rpm
b. Rated engine speed - 2100 rpm
c. High Idle speed - 2300 rpm ± 50 rpm

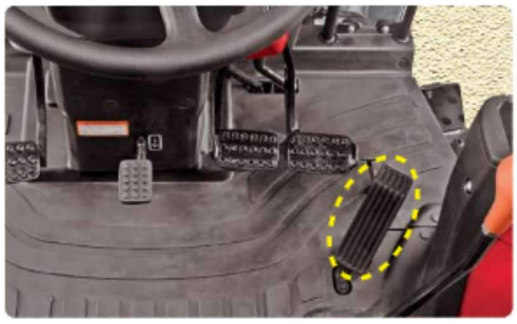
Decreasing Engine Speed : Push throttle lever away from the operator as indicated in the sticker on the dashboard

Constant Speed Setting : Certain operations may require a particular engine speed. This can be achieved by resting the Hand Throttle Lever in a position where you get the desired engine speed.

Foot Throttle Operation

When tractor operation requires repeated speed change, use the foot throttle pedal to temporarily increase engine speed above hand throttle setting. We recommend to keep the hand throttle at minimum and use foot throttle when driving on highway.

a. Set the hand throttle lever at desired rpm.
b. Depress foot throttle pedal to Increase Engine rpm.
c. Release foot throttle pedal to decrease Engine rpm to achieve the previous engine speed set by hand throttle lever.



4WD Engagement Lever

This lever is located on L.H side of operator's seat. It is used to engage or disengage the drive to front wheels and is recommended to be done with tractor in stand still condition.

1. Depress clutch pedal and stop the tractor motion completely.
2. Lift the lever upwards to engage the drive to front wheels.
3. Press the lever downwards to disengage the drive.

⚠ WARNING

Do not engage or disengage the 4WD lever while the tractor is in motion.

Brake

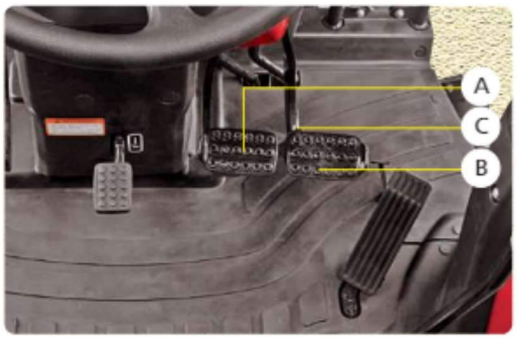
Two independent brake pedals are provided for LH and RH wheel braking to enable sharp turns during field operations.

- To make a sharp turn to the left, depress LH brake pedal (A).
- To make a sharp turn to the right, depress RH brake pedal (B).

The brakes can be latched together to act simultaneously by means of brake pedal latch (C) as follows,

1. Rotate brake pedal latch (C) until it locks into LH brake pedal (A).
2. Depress any of the brake pedal to slow or stop the tractor.
3. When brakes are applied with brake pedals latched together, the tractor should stop in a straight line. Check and adjust brake settings if the tractor is dragged to either side on applying brakes.

The hand throttle lever should be brought to low idle rpm position before applying brakes.



⚠ CAUTION

Using unlocked brakes to stop the tractor at high speeds may cause accidental turning or tipping.

Lock pedals together when not using the turn brakes or for road travel.

Slow down before making a turn.

Do not apply independent brakes while an attachment is engaged with the ground. This can cause damage to the attachment, three point linkage of tractor and may also result in tipping of the tractor.

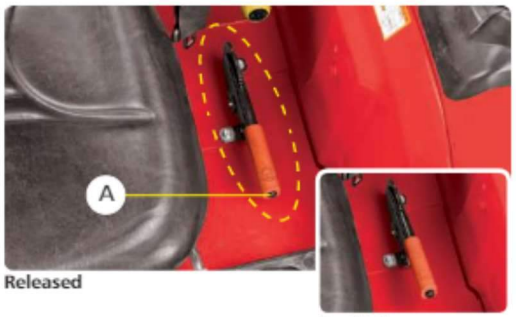
Parking Brake

The Parking brake lever is provided at the LH side of the operator's seat on the rear platform.

To engage the parking brake, pull the lever upwards fully. Parking brake indicator on instrument cluster will glow when the hand brake is applied.

To release the parking brake, pull the lever upwards slightly, press the locking button (A) and push the lever downwards. Parking brake indicator on instrument cluster will glow if you are driving with an incorrectly released hand brake.

Always ensure to unlock parking brake before driving the tractor.



Released

Applied

⚠ CAUTION

Always lock the parking brake when the tractor is left unattended.

Differential Lock Pedal

This pedal located on the RH side of the operator's seat when depressed by heel pressure, operates a differential lock mechanism which locks both of the axle shafts together.

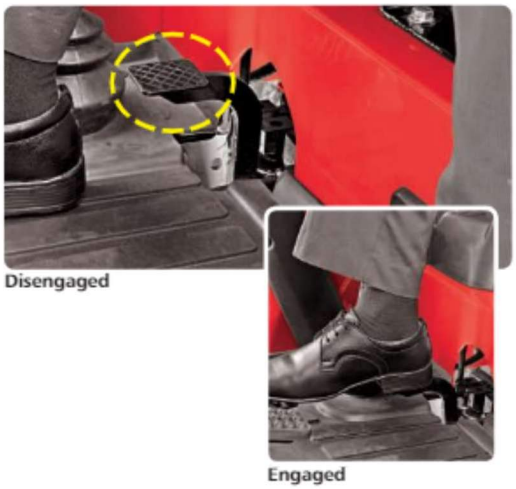
Its purpose is to overcome the one-wheel slip encountered under bad field conditions, especially when ploughing or when hauling heavy trailers on slippery surfaces.

Differential lock is designed for occasional use. Do not attempt to lock differential while,

a. The tractor is in high speed.

b. Turning tractor.

Releasing the pedal pressure disengages the differential lock.



Disengaged

Engaged

⚠ CAUTION

The differential lock design is solely for the use with pneumatic tires. If steel wheels, girdles etc. are fitted, the differential lock should be removed as a precaution.

⚠ WARNING

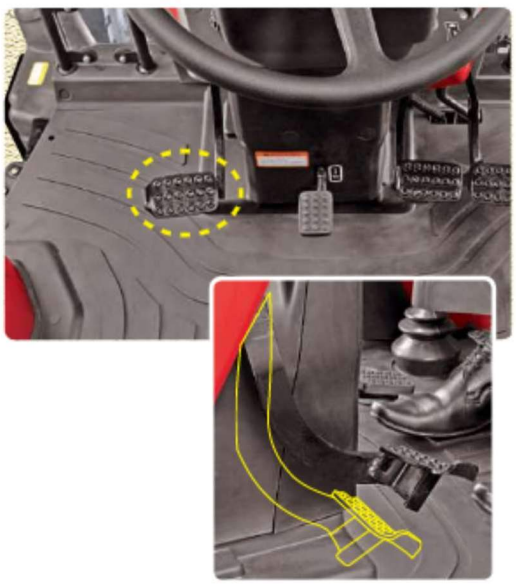
Attempting to turn the tractor while differential lock is engaged may result in damage to transmission.

Clutch / Inching Pedal

Tractor is fitted with hydraulic control valve to engage / disengage drive to transmission. For independent PTO aseparate hydraulically operated clutch pack is mounted on the PTO shaft.

Main clutch gives drive to the transmission and is operated by clutch pedal.

Depressing the clutch pedal fully disengages the drive to gear box for selection of different speeds.



PTO

This tractor is equipped with Dual PTO option, namely 540 and 540E.

To select required PTO rpm, shift the lever and put it in required position.

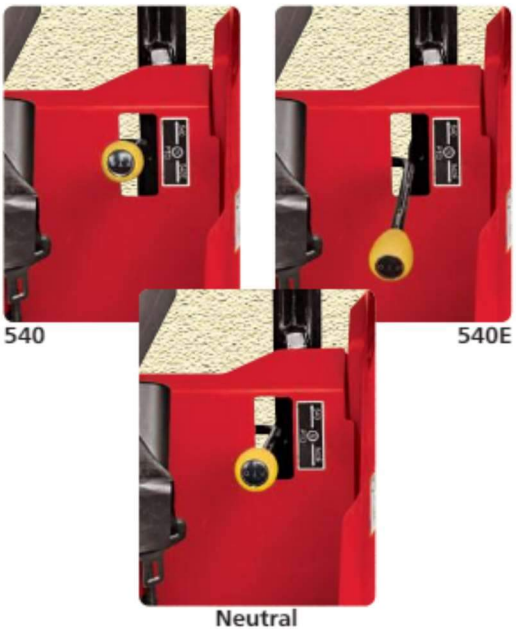
PTO will not be operable in case of Neutral position.

540

With 540 position selected and the engine running at the indicated speed, the PTO shaft will rotate at 540 rpm.

540E

540E is an economy mode that allows the PTO to rotate at 540 rpm with a lower engine speed.



⚠ WARNING

The free play of the PTO clutch is preset at factory. It is not recommended to adjust the same through PTO clutch linkage.

NOTE :

The clutch may require replacement due to normal wear, if loss of power to PTO shaft is observed when PTO lever is engaged. Your local Mahindra dealer should identify and rectify the issue.

⚠ WARNING

When PTO drive is not in use keep the PTO lever in disengaged position.

⚠ WARNING

Firmly apply the parking brakes, place all gear shift levers in neutral and block all four wheels before operating any stationary PTO equipment

Do not approach or work on the PTO shaft or equipment while the PTO is in motion.

Shut-off engine and the PTO and wait for all movement to stop before working on the PTO or equipment.

Range Shift Lever

This lever is located on L.H side of operator's seat. This lever has three positions as follows,

1. Low – for Low speed range
2. Neutral
3. Medium – for Medium speed range
4. High – for High speed range

This lever enables 3 different speed options for every Speed Gear selection. The lever can be engaged as follows,

1. Depress Clutch pedal and stop tractor motion completely.
2. Choose High/Medium/Low speed range to match work application.
3. Release clutch pedal gradually.

Refer Chart for road speed of tractor in different positions.

⚠ WARNING

Never shift Range shift lever while the tractor is in motion.

Tractor road speed in different positions of F-R Shuttle, Range and Speed Levers.

6065 2WD/4WD				
Gears	Kmph		mph	
	Forward	Reverse	Forward	Reverse
L1	1.8	1.7	1.1	1.0
L2	2.5	2.4	1.6	1.5
L3	3.6	3.5	2.3	2.2
L4	4.6	4.4	2.9	2.7
L5	6.2	5.9	3.8	3.7
M1	5.2	4.9	3.2	3.1
M2	7.5	7.1	4.7	4.4
M3	10.8	10.3	6.7	6.4
M4	13.6	13.0	8.4	8.1
M5	18.2	17.4	11.3	10.8
H1	9.7	9.3	6.1	5.8
H2	14.1	13.5	8.8	8.4
H3	20.3	19.4	12.6	12.0
H4	25.6	24.4	15.9	15.2
H5	34.4	32.8	21.4	20.4

6075 4WD				
Gears	Kmph		mph	
	Forward	Reverse	Forward	Reverse
L1	1.8	1.7	1.1	1.1
L2	2.6	2.5	1.6	1.6
L3	3.8	3.6	2.3	2.2
L4	4.8	4.5	3.0	2.8
L5	6.4	6.1	4.0	3.8
M1	5.4	5.1	3.3	3.2
M2	7.8	7.4	4.8	4.6
M3	11.2	10.7	6.9	6.6
M4	14.1	13.4	8.7	8.3
M5	18.9	18.0	11.8	11.2
H1	10.1	9.6	6.3	6.0
H2	14.6	14.0	9.1	8.7
H3	21.1	20.1	13.1	12.5
H4	26.5	25.3	16.5	15.7
H5	35.6	34.0	22.1	21.1

F-R Shuttle Shift Lever

This lever is located on L.H side of Steering. This lever enables to choose the direction of tractor motion and has three positions as follows,

1. Forward – for forward motion of tractor.
2. Reverse – for rearward motion of tractor.
3. Neutral

The lever can be engaged as follows,

1. Lift the Forward / Reverse shuttle shift lever from its neutral position and shift to choose Forward or Reverse mode as desired.
2. Forward / Reverse shifts can be made without depressing clutch pedal at any speed.

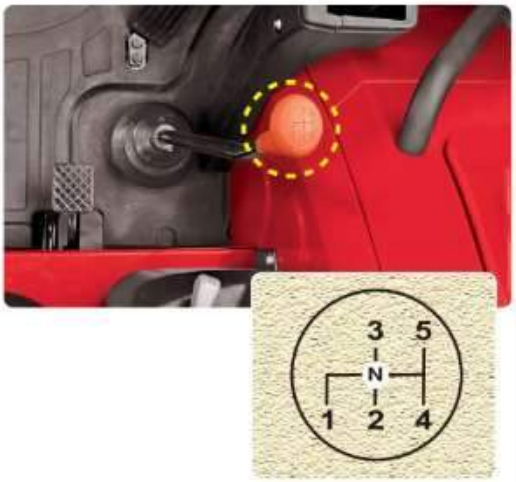
Speed Shift Lever

This lever is located on RH side of operator's seat. This lever has six positions. This lever enables 5 different speed options within a particular "Range Gear" selection. The road speed increases in higher gears.

1. Depress Clutch pedal completely.
2. Choose any one gear to match work application.
3. Release clutch pedal gradually.

The gears can be shifted on-the-go.

Refer speed chart (page-48) for road speed of tractor in different positions.



Auxiliary Valve

The auxiliary valve is equipped with 2 lever operated valves.

Each valve has four positions as follows :

a. Float (F) Detent

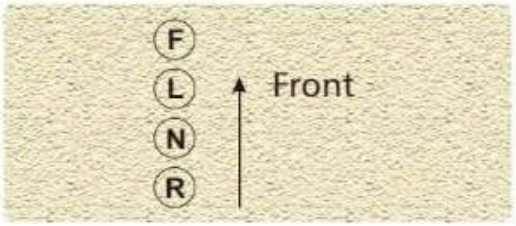
b. Lower (L) Detent

c. Neutral (N)

d. Raise (R) Detent

The lever returns to neutral position from lower or raise position when the cylinder is fully retracted / extended.

Keep the levers in neutral position (N) when auxiliary valve is not in use.



⚠ WARNING

Failure to comply will result in overheating the hydraulic oil and may cause injury or damage.

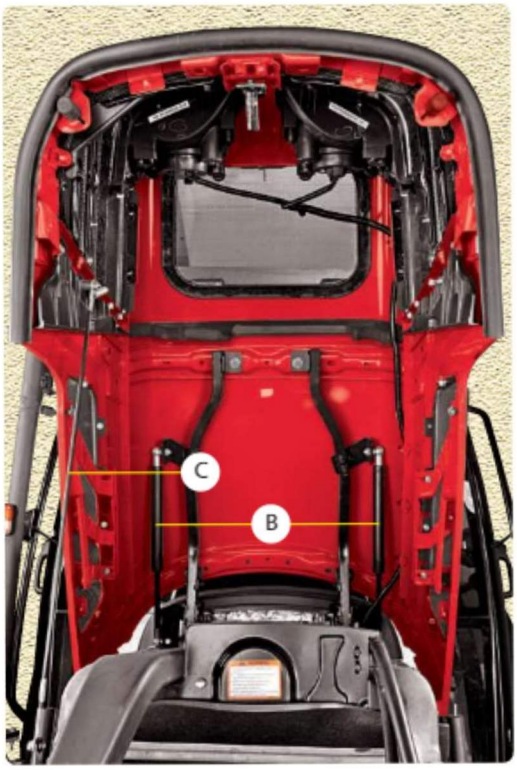
Opening the Hood

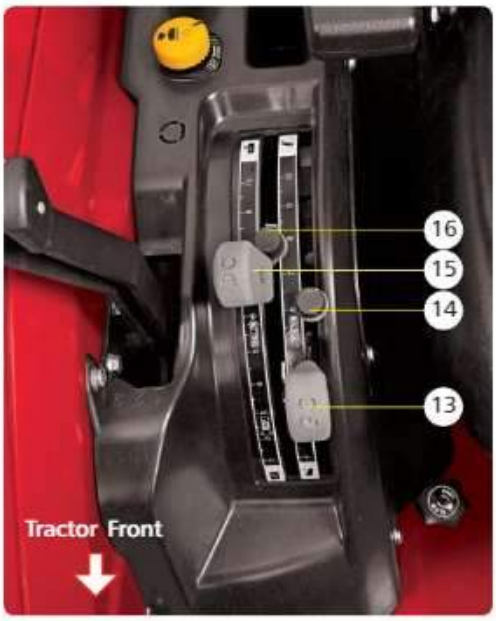
The hood is hinged at the rear side and opens away from the operator as follows,

1. Pull the lever (A). The hood will unlock.
2. Lift the hood upwards by hand. Two gas springs (B) provided inside will assist in minimising the effort for lifting.
3. The bonnet strap (C) provided on the bonnet will help the hood to stop at desired angle.
4. The mounting of the bonnet strap on the radiator bracket can be removed to open the bonnet fully.

Closing the Hood

1. Ensure the bonnet strap (C) is mounted on both the ends on the tractor.
2. Pull and press the hood downwards until it locks.





Three Point Linkage

1. Top Link.
2. Lift Arm LH
3. Adjustable Lift Rod LH
4. Stabiliser LH
5. Lower Link LH
6. Lift Arm RH
7. Draft Sensing Bracket
8. Adjustable Lift Rod RH
9. Stabiliser RH
10. Lower Link RH
11. Drawbar
12. Towing Pin

Quadrant Assembly

13. Position Control Lever
14. Position Control Stop Screw
15. Draft Control Lever
16. Draft Control Stop Screw

Position Control - Operation

Quadrant Assembly

This system incorporates a Position control and a Draft control. Both these controls are within easy reach of the operator.

⚠ WARNING

The operator must be thoroughly acquainted with the location and use of all controls regardless of experience, must read this section carefully before attempting to operate the tractor.

Position Control

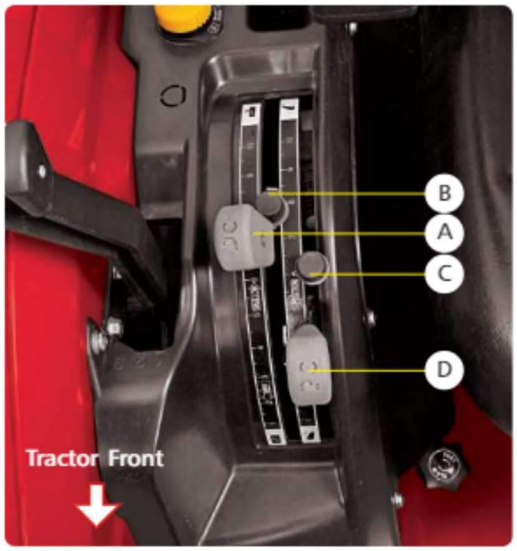
This lever (D) controls the lifting and lowering of all implements used on the three point linkage.

1. Moving the lever Forward will lower the implement.
2. Moving the lever Rearward will raise the implement.

The control can also be set by PC stop screw (C) to govern the height of out-of-ground implements such as mowers, rakes etc., so that the implement can be lowered to exactly the same height at the commencement of each turn.

PC lever (D) should be used for the following applications:

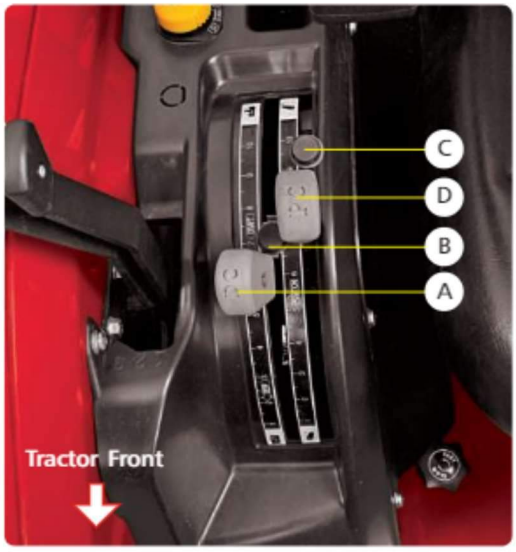
1. TRANSPORT of implements and turn around at the end of the field.
2. CONSTANT DEPTH of implements on level terrain and for non-ground engaging implements such as spreaders or sprayers. Place the PC lever at desired depth.



Setting of Position Control

1. Move the DC lever (A) to its forward most position.
2. Move the PC lever (D) back to the upper limit and allow the implement to lift fully.
3. Move the PC lever (D) forward until the implement has reached the desired working height.
4. Set the position control stop screw (C) against the PC lever and tighten the knob.

Whenever the PC lever is returned to the front position till the stopper, the implement will return to the same preset height.



Draft Control

As the draft of the implement varies due to irregularities of ground contour, soil texture, or pitching of the tractor, the load on the top link of the three point linkage will vary. These changes are transferred through the internal mechanism into hydraulic valve movement.

By means of the top link, the draft control system reacts not only when the top link is in compression, as is usually the case, when plowing, but also when the top link is in tension, as with shallow working implements. An increase in implement draft will increase the compression or reduce the tension on the top link and the system will go to lift. Conversely, a decrease in implement draft will cause the system to go lower.

Due to setting of the draft control lever, the load required to maintain the valve in the hold position is governed. Therefore, the load the tractor has to pull is maintained irrespective of ground contour, soil conditions, or the pitching of the tractor.

The lever is moved Forward to deepen the implement and Rearward to shallow it.

Setting the Draft Control

1. Move the PC lever (D) to its forward most position.
2. Move the position control stop screw (C) to the front of the quadrant and lock it.
3. Lift the implement off the ground by pulling the PC lever back to upper limit.
4. Lower the implement into work by moving the PC lever to its forward most position. The faster the lever is moved forward the quicker the implement will drop.
5. Move the tractor slowly in forward direction. When the implement has reached the desired working depth, move the draft control lever (A) rearward, until the linkage begins to lift, due to the load on top link. This will be the position of the lever for that particular depth in a particular type of ground.
6. Having obtained a desired setting move DC Stop screw (B) until it touches the DC lever (A) and lock it in this position.

When the soil texture remains constant, the implement weight is partially carried on the three point linkage. Therefore, proportion of the implement weight is transferred to the tractor rear wheels to improve traction. When a condition arises which causes an increase in draft, the system will lift and all the weight of the implement will be transferred to the tractor rear wheels to provide maximum traction. As soon as the draft returns to normal, the system goes to lower position and the situation returns to its former condition.

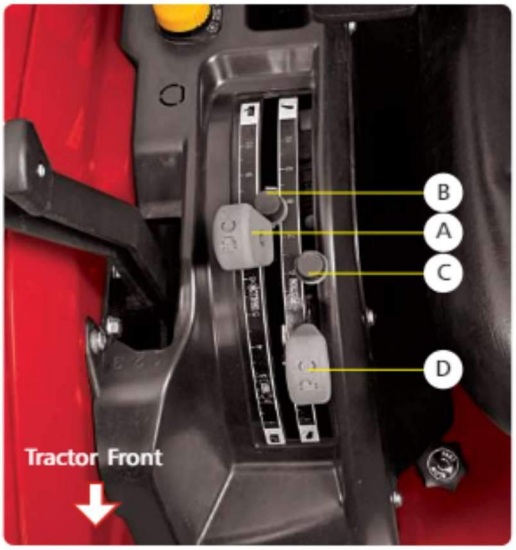
When the front wheels of the tractor drop into a furrow, the tendency for the implements is to lift out of the ground. As the implement lifts, the draft decreases and the system goes lower to maintain the pre-set depth. If the rear wheel drops into a furrow, the reverse will occur.

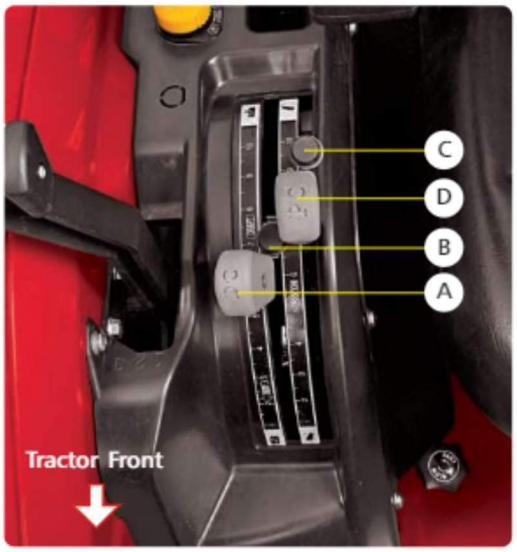
Thus under all operating conditions, the "Vary-Touch" system provides maximum traction and constant implement depth.

⚠ 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.

Under No Circumstances must the Draft Control Lever be used to Lift the implement to its uppermost Position. To do so will cause overheating of the system. All movements into and out of the soil must be made by using the Position Control lever.





Three Point Linkage

Toplink

It is used to attach the implement and control its inclination front-to-rear with respect to ground. The distance between its two ball-joints can be increased or decreased by rotating the turn-buckle as follows,

1. Loosen the locknut (A).
2. Clockwise rotation of turn buckle will decrease the distance.
3. Anticlockwise rotation will increase the distance.
4. Tighten the locknut (A) after desired adjustment.

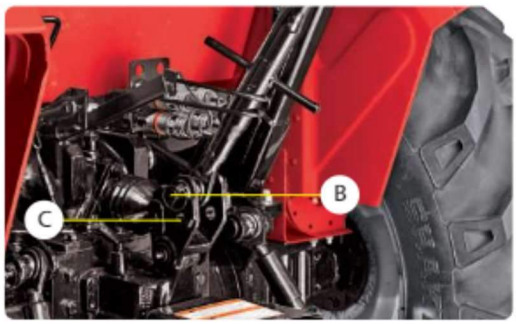
Draft Sensing Bracket

Draft sensing bracket transfers the toplink force to the draft sensing mechanism. It has two holes (B) and (C) for hitching the toplink.

Maximum achievable depth of implement increases as the toplink is shifted from top to lower holes.

Top Hole (B) : Attach toplink to hole (B) where higher and medium draft sensitivity is required Viz. Cultivator in soft soil.

Lower Hole (C) : Attach toplink to hole (C) where very Low draft sensitivity is required Viz. Plow in hard soil.



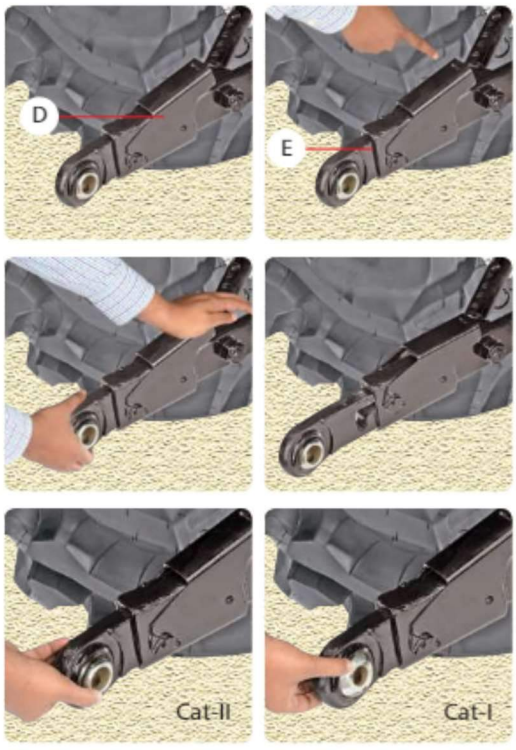
Contact your Mahindra dealer to understand hitching position of toplink for specific implements used by you.

Telescopic Lower Links

Telescopic Lower Links are provided for ease of hitching the implement as follows,

1. Slowly back tractor into position to align the lower links with implement pins.
2. Park tractor safely.
3. Press the bracket (D) in lower link and pull link (E) to extend as needed.
4. Connect lower links to the implement. Sit on operator's seat and start engine.
5. Back tractor until each lock lever snaps and secures each lower link in the lock position.

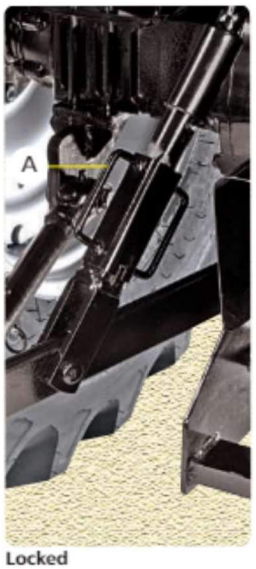
Lower link is available with adaptability of Cat-I & Cat-II implements. The eyeball can be rotated suitably for attaching Cat-I & Cat-II implements.



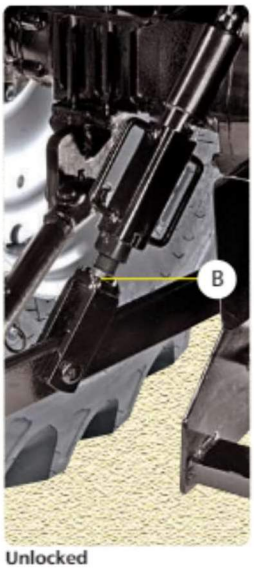
Adjustable Lift Rods

Use turn handle (A) on the adjustable lift rod to raise or lower the Telescopic Lower Link for side-to-side leveling of implement with respect to ground.

1. Raise lift rod turn handle (A) out of locking tab (B).
2. Rotate turn handle (A) clockwise to raise the lower link or anticlockwise for lowering.
3. After adjustment, make sure to engage handle (A) with locking tab (B). Always transport the implement with turn handle in this position.



Locked



Unlocked

Stabilizers

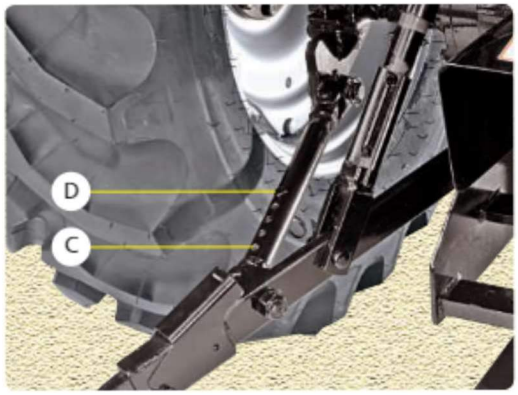
These are provided for adjustment of width between two lower links according to varying implement spans.

These enable to keep the implement in either FIXED or FLOATING position.

Placing the locating pin in (C) position shall keep the stabilizer and implement in "Fixed" position.

Placing the locating pin in (D) position shall keep the stabilizer and implement in "Float" position.

We recommend to use the fixed position while transporting the implement.



Swinging Drawbar

Tractor can be equipped with a drawbar for connecting to pull behind implements. It can swing from side to side and can be adjusted fore and aft. It can be set at various positions.

The distance between end of PTO shaft and implement / attachment pin hole can be set at three positions. In each position the dimensions achieved are as per chart.

Certain heavy equipment such as a loaded single axle trailer can place excessive strain on the drawbar. Strain is greatly increased by rough road and high speed. Static vertical load on drawbar should not exceed as stated in chart.

The drawbar can also be offset from the center on both sides. See your implement operator's manual for drawbar positions.

The drawbar must be locked in center position when

1. Operating a drawbar pulled PTO driven implement.
2. Towing implements/Trailers on road or field.

⚠ WARNING

Rear roll-over can result if pulling from wrong location on tractor. Hitch only to drawbar. Use three point hitch only with implements designed for its use, not as a drawbar.

Adjusting Drawbar Length

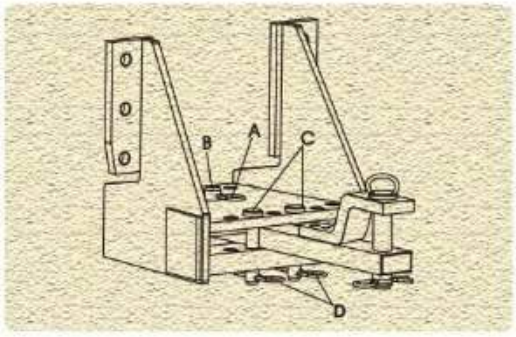
1. Remove Nut (A).
2. Pull drawbar pin (B)
3. Slide drawbar to desired position.
4. Insert the drawbar pin (B) in hole of drawbar.
5. Lock the drawbar pin (B) in position with Nut (A)

⚠ WARNING

Try to balance the load primarily on the implement wheels. Avoid overloading the drawbar. Add Jerrycan weights for improved stability. Engage the clutch smoothly, avoid jerking and use brakes cautiously to avoid jack-knifing.

Using Swinging Drawbar

1. Remove "R" pin (D) of both pins (C).
2. Remove both pins (C).
3. Shift to next holes as desired.
4. Lock the "R" pins.
5. See your implement operator's manual for drawbar positions.



Jerrycan Weights

To obtain additional level of traction and stability, these weights are provided as an optional fitment.

With loader application on the tractor, these weights are to be removed. However the weight mounting bracket shall not be removed and can be used for towing purpose.

For procuring "Jerrycan Weights" if required contact your Mahindra Dealer.

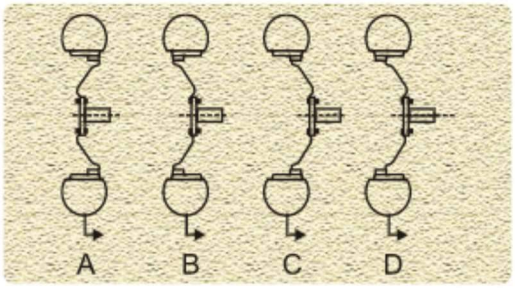
Wheel Tread Adjustment

Setting various offset combinations can do adjustment of the Front and Rear wheel tread.

The Wheel tread obtained with Front and Rear Tire are as follows :

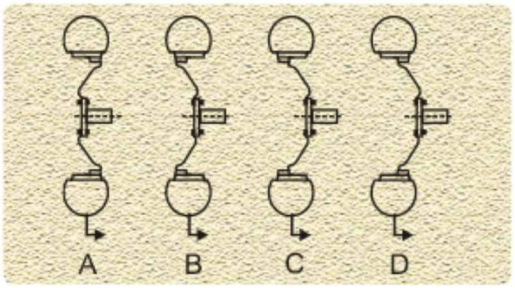
Front Tires

	6065 2WD 9.5L x 15		6065 / 6075 4WD 11.2 x 24	
	Track Length Inches	Track Length mm	Track Length Inches	Track Length mm
Offset A	55 (Standard)	1397 (Standard)	62 (Standard)	1575 (Standard)
Offset B	57	1448	66	1676
Offset C	–	–	70	1778
Offset D	–	–	74	1880



Rear Tires

	6065 2WD / 6065 4WD 16.9 x 28		6075 4WD 16.9 x 30 & 19.5 x 24	
	Track Length Inches	Track Length mm	Track Length Inches	Track Length mm
Offset A	60 (Standard)	1524 (Standard)	60 (Standard)	1524 (Standard)
Offset B	64	1626	64	1626
Offset C	68	1727	68	1727
Offset D	72	1829	72	1829



*66 & 70 inch Front tracks are applicable for Loader around 80 inch bucket width.

Track width >72 inch is not recommended for Loader

Recommended Track combinations are:

Front Track	62	66*	70*
Rear Track	60	60	64
		64	68

Pneumatic Tires

Adding Liquid Weight

Tractor tire can be 80% filled with liquid as follows,

1. Raise the wheel. Rotate the tire until the valve, stem is at 1'O Clock position.
2. Remove the valve core housing and screw on the adapter.
3. Force liquid into the tire from a tank placed at least five feet higher than the tractor tire, or by using a compress or and pressure tank filled with water.
4. When the liquid has reached the required level, remove the adapter, screw in the valve core and inflate to the recommended pressure.

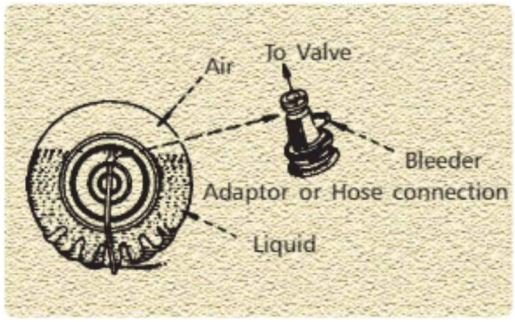
Where ambient temperatures are likely to fall below freezing point use calcium chloride solution, methanol for antifreeze.

The instructions and recommendation shown below should be followed in order to secure maximum life and efficient service from pneumatic tires.

Inflation

Keep tires properly inflated to the pressure as shown in the Chart below. Under inflation will damage tire cord and may cause the tire to slip on the rim and tear out the tube valve stem. Over inflation results in excessive slippage, causing rapid tire wear. Air pressure should be checked once a week with an accurate low pressure gauge having one pound graduations. Air pressure should not be allowed to drop or exceed the recommendations.

Always see that the tire valve caps are in place and screwed tight. The caps prevent loss of air through the valve core. Further, they prevent debris from entering and damaging the valve core and air chamber in the tires.



Exceptions (Rear Tires only)

When ploughing with a moulded plough, the left hand or land wheel should be inflated to 2 psi (0.14 kg/cm²) lower than right hand or furrow wheel.

Chart A-1

MODEL	Tire Size		Tire Type	Tire SLR (inch)	Tire Capacity lbs @ mph	Rolling Circumference (inch)	Ply Rating	Inflation Pressure psi
6065 2WD	Front	9.5 x 15	Ag Tires	13.5	2040 @ 30	89	6 PR	32
	Rear	16.9 x 28	Ag Tires	26.0	3640 @ 25	170	6 PR	18
6065 4WD	Front	11.2 x 24	Ag Tires	20.1	2540 @ 25	130	8 PR	36
	Rear	16.9 x 28	Ag Tires	26.0	3640 @ 25	170	6 PR	18
	Front	12.5/80 x 18	Industrial Tires	17.4	4710 @ 25	114	10 PR	46
	Rear	19.5 x 24	Industrial Tires	23.5	6000 @ 25	154	8 PR	24
6075 4WD	Front	11.2 x 24	Ag Tires	20.1	2540 @ 25	130	8 PR	36
	Rear	16.9 x 30	Ag Tires	27.0	3740 @ 25	176	6 PR	18
	Front	12.5/80 x 18	Industrial Tires	17.4	4710 @ 25	114	10 PR	46
	Rear	19.5 x 24	Industrial Tires	23.5	6000 @ 25	154	8 PR	24

Care of Tires

Cuts in tires should be repaired immediately. If Neglected, it will decrease the tire life. Avoid stumps, stones, deep ruts and other hazards. Keep tires free from oil and grease as both destroy rubber. After using the tractor for spraying, wash off any chemicals that may be left on the tractor and tires.

Shipping Tractors Equipped with Pneumatic Tires

When tractors are transported on a carrier, inflation pressure should be as follows to make possible rigid blocking and to prevent bouncing.

Front - 23 psi (1.61 kg/cm^2)

Rear - 23 psi (1.61 kg/cm^2)

Tire Protection during Storage

When not in use the tractor should be stored where the tires are protected from light. Before storing the tractor clean the tires thoroughly. Jack up the tractor so that the load is off the tires when it is to be out of service for a long period. If it is not jacked up, the tires should be inflated at regular intervals. Before putting the tractor in service, always inflate tires to the correct operating pressures.

Do not load tires beyond their rated capacity.

Mounting Tires on the Rim

After mounting a new or old tire on the rim, inflate it to 30 psi (2.10 kg/cm^2) pressure to seat the tire bead on the rim flange and to prevent the tire from creeping and shearing off the valve. Then deflate or inflate tire to correct operating pressure.

⚠ WARNING

Inflating or servicing tires can be dangerous. Whenever possible, trained personnel should be called in to service or install tires. In any event to avoid the possibility of serious or fatal injury, follow the safety precautions below:

- Upon receiving your tractor, check the air pressure in the tires and recheck every 50 hours or weekly.
- When checking tire pressures, inspect the tires for damaged tread and side walls. Neglected damage will lead to early tire failure.
- Inflation pressure affects the amount of weight that a tire may carry. Do not over or under inflate the tires.
- Never attempt tire repairs on a public road or highway.
- Do not inflate a steering tire above the manufacturer's maximum pressure shown on the tire or beyond the maximum shown in the tire pressure and load Chart A-1. If tire is not marked with the maximum pressure.
- Never inflate a traction tire (front tire on a four wheel drive tractor or any rear tire) over 35 psi (2.46 kg/cm^2). If the bead does not seat on the rim by the time this pressure is reached, deflate the tire, relubricate the bead with a soap/water solution and re-inflate. Do not use oil or grease. Inflation beyond 35 psi (2.46 kg/cm^2) with unseated beads may break the bead or rim with explosive force sufficient to cause a serious injury.
- After seating the beads, adjust inflation pressure to the recommended operating pressure.
- Do not re-inflate a tire that has been run flat or seriously under-inflated until it has been inspected for damage by a qualified person.
- Torque wheel to axle nuts to specification after re-installing the wheel. Check nut tightness daily until torque stabilizes.
- Ensure the jack is placed on a firm, level surface.
- Ensure the jack has adequate capacity to lift your tractor.
- Use jack stands or other suitable blocking to support the tractor while repairing tires.
- 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, repair or use a damaged rim.
- Do not inflate a tire unless the rim is mounted on the tractor or is secured so that it will not move if the tire or rim should suddenly fail.
- When fitting a new or repaired tire, use a clip on valve adapter with a remote gauge that allows the operator to stand clear of the tire while inflating it. Use a safety cage, if available.

Before Starting the Tractor

1. Clean the tractor.
2. Make all prestart checks according to preventive maintenance schedule.
3. Check coolant level in surge tank & oil level in engine, transmission and steering.
4. Check fuel level in fuel tank.
5. Ensure all the tires are properly inflated as per the load conditions.
6. For operator's maximum comfort, adjust seat suspension as per the operator's weight. Also adjust seat position forward or rearward as per operators convenience to operate all controls and switches.
7. If, necessary, ballast the tractor.
8. Adjust wheel tread, if necessary.
9. Adjust stabilizer and three point linkage.
10. For purpose of safety, check that all covers, and guards are correctly in position before starting the engine or using the tractor.

Starting the Tractor

1. Move the controls as under :
   a. Forward reverse shuttle lever in neutral.
   b. Speed and Range shift lever in neutral.
   c. PC and DC levers in lowermost position.
   d. PTO switch is in OFF position.
   e. Auxiliary valve lever in neutral position.
2. Turn the Key to ON position and observe SELF TEST function of instrument cluster. The Intake manifold heater will glow for 35 seconds. After self-check MIL, Check engine, LOP and Battery charging telltales will Glow. Once engine started these telltales will get off within 10 sec.
3. Turn the starter key in clockwise to engage the starter and hold in this position till the engine fires. When released, the key springs back to the "ON" position.
4. Idle the Engine for 1 to 2 minutes before driving it. If required, warm-up the engine at suitable speed. For faster warm-up, raise the engine rpm to approx. 2000.

Stopping the Engine

a. Idle the Engine for 1 to 2 minutes.
b. Turn the Key to "OFF" position.

⚠ WARNING

Do not use starting fluid. Tractor is equipped with intake manifold heater.

NOTE : The starter safety switches are provided on the transmission speed shifter and PTO switch. The tractor can be started when speed shifter lever is in neutral and PTO switch is in OFF position.

⚠ CAUTION

The engine should not be put under full load immediately after start.

Do not accelerate the engine rapidly.

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

Do not crank the starter continuously for more than 30 seconds to avoid starter motor failure.

Don't operate the engine in low idle speed for more than 10 mins. Doing so will affect the performance of the turbocharger.

Don't turn the starter key to start position while engine is running. This may lead to starter motor failure.

NOTE: It is normal for the engine to be louder and have bluish-white exhaust smoke during engine warm-up. The amount of smoke depends on the temperature of air entering the engine. In cold weather, idle the engine and warm-up for 5 minutes at approx. 2000 rpm before loading.

Cold Starting Aid

A heater element (A) is provided in engine intake manifold to aid the engine starting during cold weather [for temperatures below 20°C (68°F)].

When the Key is turned to "ON" position, the element is activated. The heater indicator in the instrument cluster indicates the heater element operation. Based on the prevailing ambient cold temperature, the heater operating duration is adjusted automatically. The element continues to heat the air in the intake manifold for some specific duration.

Follow the below procedure during the cold weather starts:

1. Turn the Key to "ON" position and hold it till the heater indicator is put-off.
2. Crank the engine when the heater indicator is put-off.

NOTE : Engine runs at a higher idle rpm (about 1200 rpm) and drops gradually to the normal idling speed (850 rpm) until coolant temperature reaches to 68°F (20°C).

The heater indicator glows for some specific duration after starting the engine, depending on the ambient temperature.

Cold Starting Aid

Glow Plug

The tractor is equipped with Intake Manifold Heater for easy startability in cold conditions. However to enhance the startability in extreme cold ambient conditions, the tractor is equipped with provision for fitment of glow plugs (an optional fitment). These glow plugs can be fitted in the cylinder head after removing the plugs.

A glow plug kit consisting of requisite spares is available with Mahindra dealer. Contact your nearest Mahindra dealer for further details on installation and maintenance of glow plugs.

Driving the Tractor

With the engine running and the clutch in disengaged position, engage Forward Reverse shuttle, Speed lever and the Range lever to their appropriate desired positions. Free the parking brake. Slowly release the clutch and tractor will start moving.

During the field operations, assistance in making sharp turns can be gained by applying pressure to the independent foot brake pedal of the side to which the turn is to be made.

The brakes can be latched together to act simultaneously by means of the brake pedal latch.

Do not attempt to start the engine while standing beside the Tractor, because serious injury or death would occur. Always sit on the operator's seat.

Always latch the brake pedals together when tractor is not being used in field.

⚠ CAUTION

Do not apply load on tractor at low engine speeds.

IMPORTANT

If the engine stalls while operating under load, restart engine immediately to prevent abnormal heat build up in engine.

TRACTOR STORAGE

If the tractor is not in frequent use, make sure the battery connections are removed & installed properly.

However if the tractor is to be out of service for extended period, it should be stored in a dry place. Leaving the tractor exposed to weather will shorten its life considerably.

When placing the tractor in storage for more than a month, follow the procedure given below,

1. Wash down and thoroughly clean and dry the tractor.
2. Completely lubricate the tractor in accordance with the lubrication chart.
3. Drain the fuel tank, water trap, feed pump and fuel filters.
4. Disconnect the return pipe at the fuel tank and connect a suitable tubing to allow excess fuel to drain into a container. Fill the system with calibrating oil (if available) of 4 US gallon (15 lit.) quantity.
5. Drain the old lubricating oil from the crankcase sump and fill to normal level with new rust preventive lubricating oil.
6. Run the engine for 1.5 minutes. Switch off the engine. Remove the starting key.
7. If calibrating oil is filled, drain it from the fuel tank only.
8. Seal the fuel system with the same quantity of calibrating oil (if available) in it.
9. Remove the hose between intercooler air outlet and intake manifold of the engine and spray rust preventive oil through the air intake while the engine is being turned.
10. Drain the engine cooling system.
11. Plug all orifices which expose the internal parts of engine to the atmosphere. Detach additional weights from tractor, if any.
12. Jack the tractor so that the tires are clear off the ground. If this is not possible, check tire pressures regularly and keep inflated to recommended pressures. Rotate wheels periodically to prevent them from standing on the same place for long periods.
13. Remove batteries and store in a cool dry place, keep topped up and fully charged.
14. Keep the clutch disengaged.
15. Disconnect the hydraulic accessories.

LONG-TERM TRACTOR STORAGE

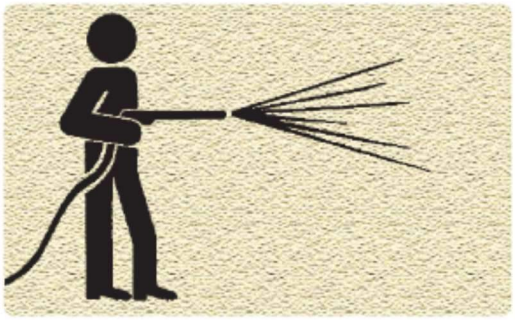
1. When the tractor will not be used for a long time, carry out the regular cleaning procedures. Drain the oil and replace with new oil.
2. Run the engine for approx. 5 min. to ensure that it has new oil throughout the engine.
3. Drain the coolant from the radiator and remove the ignition key.
4. Lubricate all grease and oil points on the tractor.
5. Check the pressures and add a small amount of extra pressure.
6. Lower any implement to the ground or store in a shady dry place.
7. Place a piece of wood under each tire to preserve the tire.
8. After refilling the engine with the coolant run the engine for approx. 5-10 min. at 1500-2000 rpm every month as a corrosion prevention measure.
9. Either remove the battery or the negative terminal to avoid any short circuits and fires.
10. Remove the ignition key and store in a safe place.

USING THE TRACTOR AFTER STORAGE

1. Check tire air pressure and inflate, if necessary
2. Jack the tractor up and remove the support blocks from under the front and rear axles.
3. Install the battery. Be sure it is fully charged.
4. Check the fan and alternator belt tension.
5. Refill the engine coolant into the cooling system.
6. Drain the rust preventive oil from engine and oil filter and fill the crankcase with specified oil & refit oil filter.
7. Check all fluid level (engine oil, transmission / hydraulic oil and engine coolant.
8. Remove the extra plugs, if fitted on the engine.
9. Service air cleaner.
10. Drain the calibrating oil from fuel system and fill the fuel tank with clean fuel.
11. Open all the doors and windows or move the tractor out of storage room, to avoid danger from exhaust fumes. Then start the engine and run it at 1500 rpm to ensure that the lubricant attains operating temperature and reaches all points. Observe all gauges and be sure they are functioning properly and reading normal. Ensure there is no evidence of oil or water leakage. Now run the engine at low idle rpm for 1 minute and shut off the engine. Remove the key and apply the parking brake.
12. If the tractor is being used after long storage, carry out a full check of all oils and coolant.
13. Refit the battery and run the engine at idle for 30 min. to ensure optimum engine life.

Cleaning the Tractor

IMPORTANT



Reduce corrosion from road salt and sea salt. Promptly wash equipment transported by truck during winter months.

Avoid malfunction or damage to machine components. Do not direct high-pressure spray at electronic or electrical components and connectors, bearings, hydraulic seals, fuel injection pumps, or other sensitive components. Reduce water pressure to wash sensitive components.

Avoid water penetration behind seals, electric & electronic connectors and similar components. Do not direct spray on these components at an angle less than 45°.

Avoid discoloration of machine paint. Do not use strong soaps, chemical detergents, or cleaning agents that contain acids, caustics, or abrasives. Do not allow cleaning agents to dry on machine. Promptly rinse machine after washing with a cleaning agent.

Use a top-to-bottom wash sequence. Wash behind panels and in hidden areas where salt can accumulate during transport.

If a cleaning agent is used, the agent must be the correct concentration. Do not allow cleaning agent to dry on machine, promptly rinse from top to bottom.

Incorrect detergent, excessive concentration, a delay in rinsing, or incomplete rinsing can discolor paint.

Using High Pressure Washers

IMPORTANT

High-pressure washers are a very effective means of cleaning the tractor. To avoid damage to the tractor, do not go closer than 1m (39 in.) and spray at an angle between 45° and 90° when cleaning sealing surfaces, seals and decals. Maximum pressure must not exceed 12000 kPa (120 bar; 1740 psi).

Do not, under any circumstances, spray or wash components (e.g. the engine) with cold water when hot. Do not use rotary nozzles or water at temperatures over 50°C (122°F), and do not aim at seals. Keep the water jet moving at all times. Cooling units, the hitch jaw, bearings and electronic/electrical equipment must not be cleaned with high-pressure washers. Follow the instructions in the high-pressure washer operator's manual and manuals of attached equipment.

Precautions

Operating the Tractor

1. Before starting the tractor ensure parking brake is engaged, place the PTO switch in the "OFF" position, hydraulic control levers in downward position, remote control valve levers and transmission in neutral.
2. Do not apply load on tractor at low engine speeds. Always apply heavy loads at full throttle rpm of engine.
3. Do not start the engine or operate controls while standing besides the tractor. Always sit on the tractor seat when starting the engine or operating controls.
4. Transmission Neutral switch

   In order to prevent accidental starting of the tractor in gear, safety switches are provided. The starting system of the tractor is connected through switches on F-R shuttle shift lever and PTO switch. These become operative to complete the starting circuit only if the F-R shuttle shift lever is in neutral position and PTO switch is in "OFF" position. Do not bypass the safety Key Switch.

   Consult your Mahindra tractor Dealer if your safety starting switch malfunctions.
5. Avoid accidental contact with the gear shifter lever while the engine is running. Unexpected tractor movement can result from such contact and may cause accident.
6. Do not get off or climb the tractor while it is in motion.
7. Shut off the engine and apply the parking brake before getting off the tractor.
8. Do not operate tractor in an enclosed building without adequate ventilation. Exhaust fumes can cause death.
9. Do not park the tractor on a steep slope.
10. If power steering ceases to operate, stop the tractor immediately.
11. Pull only from the swinging drawbar or the lower link drawbar in the down position. Use only a drawbar pin that locks in place. Pulling from the tractor rear axle carriers or any point above the rear axle may cause the tractor's front end to lift and the tractor to turnover.
12. Always use hydraulic position control lever when attaching equipment / implements and when transporting equipment. Be sure that the hydraulic couplers are properly mounted and will disconnect safely in case of accidental detachment of implement.
13. Do not leave equipment / implements in the raised position.
14. Use the turn signal lamps and slow moving vehicle (SMV) signs when driving on public roads during both day and night time, unless prohibited by law.
15. Dim tractor Head lamps when meeting a vehicle at night. Be sure the Head lamps are adjusted to prevent blinding on the eyes of oncoming vehicle operator.
16. Emergency stopping instruction : If tractor fails to stop even after application of brakes shut off the engine while the tractor is in gear and clutch engaged.

A careful operator is the best operator. Most accidents can be avoided by observing certain precautions. Read and take the following precautions before operating the tractor to prevent accidents. The tractor should be operated only by those who are responsible and instructed to do so.

The Tractor

1. Read the operator's manual carefully before using the tractor. Lack of operating knowledge can lead to accidents.
2. Use an approved rollover bar and seat belt for safe operation. Overturning of a tractor without a rollover bar can result in death or injury.
3. Do not remove ROPS (Roll Over Protective Structure). Always use the seat belt.
4. Be aware that fiber glass canopies do not give any protection.
5. To prevent falls, keep steps and platform cleared of mud, oil and debris.
6. Do not permit anyone but the operator to ride on the tractor. There is no safe place for extra riders.
7. Replace all missing, illegible or damaged safety signs.
8. Keep safety signs clean of dirt and grease.

Driving the Tractor

1. Watch where you are going especially at row ends, on roads, around trees and low hanging obstacles.
2. To avoid rollover, drive the tractor with care and at speeds compatible with safety, especially when operating over rough ground, crossing ditches or slopes, and when turning at corners.
3. Lock the tractor brake pedals together when transporting on roads to provide proper wheel braking.
4. Keep the tractor in the same gear when going downhill as used on uphill. Do not coast or free wheel down hills.
5. Any towed vehicle and/or trailer, whose total weight exceeds that of the towing tractor, must be equipped with its own brakes for safe operation.
6. When the tractor is stuck or tires are frozen to the ground, back out to prevent roll over.
7. Always check overhead clearance, especially when transporting the tractor.
8. Do not engage the range shift or 4WD engagement lever while the tractor is in motion.
9. The "balancing" of the braking system should be checked every week, or whenever the tractor is taken on the road after working extensively or when one brake is used more often than the other. If this precaution is not taken an accident may occur. Hand brake should only be used for parking purpose.
10. When driving on wet, icy or graveled surfaces, reduce speed and be sure tractor is properly ballasted to avoid skidding and loss of steering control. For best control, engage front wheel drive.
11. Use extra caution when front wheel drive is used on slopes. Compared to 2-wheel drive, a front wheel drive maintains traction on steeper slopes increasing the possibility of tip over.

Servicing the Tractor

1. Keep the tractor in good operating condition for your safety. An improperly maintained tractor can be hazardous.
2. Stop the engine before performing any service on tractor.
3. 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. First turn the cap slowly to first stop and allow the pressure to escape before removing the cap entirely.
4. The fuel in injection system is under very high pressure and can penetrate the skin. Unqualified persons should not remove or attempt to adjust fuel pump, injectors or any part of the fuel injection system. Failure to follow these instructions can result in serious injury.
5. Keep open flames away from battery or cold weather starting aids to prevent fire or explosions.
6. Do not alter or permit anyone else to modify or alter this tractor or any of its components or functions.
7. Ensure all electrical connections are secure and clean.
8. Ensure that no connection in the charging circuit, including battery, is broken while engine is running.
9. Observe correct polarity when refitting the battery or when using a slave battery to start the engine.
10. Do not short the Alternator output leads to check its working.

Operating the PTO (Power Take Off)

1. When operating PTO driven equipment, shut off the engine and wait until the PTO stops before getting off the tractor and disconnecting the equipment.
2. Do not wear loose clothing when operating the power take-off or near rotating equipment.
3. When operating stationary PTO driven equipment, always apply the tractor parking brake and block the rear wheels from front and rear side.
4. To avoid injury, always move down flip part of PTO shield. Do not clean, adjust or service PTO driven equipment when the tractor engine is running.
5. Make sure the PTO master shield is installed at all times and always replace the PTO shield cap when the PTO is not in use.

ROPS

1. Never attach chains or ropes to the ROPS for pulling purposes; this will cause the tractor to tip backwards.
2. Always pull from the tractor drawbar.
3. Be careful when driving through door openings or under low overhead objects. Make sure there is sufficient overhead clearance for the ROPS.
4. If the ROPS is removed or replaced, make certain that the proper hardware is used to replace the ROPS and the recommended torque values are applied to the attaching bolts.
5. Always wear your seat belt if the tractor is equipped with a ROPS.

Transporting Tractor on a Trailer

1. Drive machine forward onto a trailer.
2. Lower any attachments to trailer deck.
3. Lock the parking brake.
4. Stop the engine.
5. Remove the key.
6. Fasten tractor to trailer with heavy-duty straps, chains or cables. Both front and rear straps must be directed down and outward from the tractor. Trailer must have signs and lights as required by law.
7. Cover the silencer outlet with water proof material to avoid entry of foreign material.

Towing

1. Hitch the towed load only to the drawbar. Lock the drawbar and pin in place.
2. Before descending a hill, shift to a gear low enough to control tractor travel speed without having to use the brake pedals to brake the tractor and installed attachments.
3. Try to balance the load primarily on the implement wheels. Avoid overloading the drawbar. Add Jerrycan weights for improved stability. Engage the clutch smoothly, avoid jerking and use brakes cautiously to avoid jack-knifing.
4. Use 3 point hitch only with implements designed for its use, not as a drawbar.

IMPORTANT

1. Pull PTO "ON-OFF" rearward to OFF position.
2. Disengage differential lock.
3. Place Range shift lever in neutral
4. Place Speed shift lever in neutral.
5. Place F-R Shuttle shift lever in neutral.
6. Disengage 4WD.
7. Connect LH & RH brake pedals together to slow down or brake the tractor.

Diesel Fuel

1. Keep the equipment clean and properly maintained.
2. Always use recommended Diesel Fuel.
3. Under no circumstances should gasoline, alcohol or blended fuels be added to diesel fuel. These combinations can create an increased fire or explosive hazard. Such blends are more explosive than pure gasoline in a closed container, such as a fuel tank. DO NOT USE THESE BLENDS.
4. Never remove the fuel cap or refuel the tractor with the engine running.
5. Do not smoke while refuelling or standing near fuel.
6. Maintain control of the fuel filler pipe when filling fuel.
7. Do not fill the fuel tank to capacity. Allow room for expansion.
8. Wipe up spilled fuel immediately.
9. Always tighten the fuel cap securely.
10. If the original fuel tank cap is lost, replace it with Mahindra approved cap. A non-approved cap may not be safe.
11. Do not drive equipment near open fire.
12. Never use fuel for cleaning purposes.
13. Arrange fuel purchases such that winter grade fuel are not held over and used in the spring.

NOTE: It is suggested that after repairs if any of the safety decal/sign is peeled/damaged, the same must be replaced immediately in interest of your safety.

DO'S - For Better Performance

DO - Ensure that all safety shields are in place and in good condition.

DO - Read all operating instructions before commencing to operate tractor.

DO - Ensure all lights are in 'OFF' position before starting the tractor.

DO - Carry out all maintenance tasks without fail.

DO - Keep the air cleaner clean.

DO - Ensure that the correct grade of lubricating oils are used and that they are replenished and changed at the recommended intervals.

DO - Watch the oil pressure warning light and investigate any abnormality immediately.

DO - Keep the radiator filled with clean anti-freeze mixture. Drain the system only in an emergency and fill before starting the engine.

DO - Ensure that the transmission is in neutral before starting the engine.

DO - Keep all fuel in clean storage and use a filter when filling the tank.

DO - Attend to minor adjustments and repairs as soon as necessity is apparent.

DO - Allow the engine to cool before removing the radiator cap and remove the radiator cap slowly.

DO - Shift into low gear when driving down steep hills.

DO - Latch the brake pedals together when driving on a highway.

DO - Keep draft control lever and position control lever fully down when not in use.

DO - Visit Dealer for adjustment on Injector pressure. Adjust if required.

DO - Keep the auxiliary valve levers in neutral (N) when not in use.

DO - Replace both clutch and brake cables after 1000 hours of tractor operation.

DONT'S - For Safe Operation

DON'T - Run the engine without the air cleaner.

DON'T - Start the tractor in high idle.

DON'T - Start the tractor in an enclosed building unless the doors and windows are open for proper ventilation.

DON'T - Operate the tractor or engine while lubricating or cleaning.

DON'T - Allow the tractor to run out of diesel fuel otherwise it will be necessary to bleed the system.

DON'T - Tamper with the fuel injection pump. If the seal is broken the warranty becomes void. Tampering with the injection pump may constitute an EPA violation. Significant fines could apply.

DON'T - Allow the engine to run idle for a long period.

DON'T - Run the engine if it is not firing on all cylinders.

DON'T - Ride the brake or clutch pedal. This will result in excessive wear of the brake linings, clutch driven member and clutch release bearing.

DON'T - Use the independent brakes for making turns on the highway or at high speeds.

DON'T - Refuel the tractor with the engine running.

DON'T - Use draft control lever for lifting of implements.

DON'T - Start the engine with the P.T.O. engaged.

DON'T - Use the hand throttle while driving on roads.

DON'T - Run cold engine at full throttle.

DON'T - Run the tractor on road with 4WD engaged above 10 mph.

DON'T - Operate the power steering when the oil level is below the minimum level in the reservoir.

DON'T - Run the tractor if the power steering system is damaged. In this condition, contact the Dealer.

DON'T - Park the tractor on a gradient with transmission gear engaged and with no parking brake.

Do's & Dont's

(For Service & Maintenance)

DO'S - ECU (Electronic Control Unit)

DO - Ensure right terminals /connections are made to battery

DO - Check for condition of fuses, relay & wiring harness before replacing ECU

DO - Always use anti static mat, straps & gloves while handling ECU to avoid electrical overstress (EOS)

DO - Tightening torque of mounting screws to be maintained

DO - Ensure proper dataset is flashed into the ECU & also ensure proper dataset is selected while flashing into ECU.

DO - After mounting ECU, as soon as possible assemble the harness connector

DO - Ensure proper grounding / earthing. Ground line of ECU to be free from paints, dust

DO - Make sure there are no joints in the cable between PC/laptop and Diagnostic connector

DO - Ensure proper grounding / earthing

DO - Ground line of ECU to be free from paints

DO - Ensure no power interruptions, communi-cation loss during flashing of dataset to ECU.

DO'S - Sensor (Engine Speed Sensor)

DO - Engine speed sensor must be removed from its packing just prior to installation in the vehicle.

DO - Sensor to be mounted by pushing it into place.

DO - First support of wire after connection: Max 9.84 in. It should be on the sensor carrier.

DO - Replace damaged O-Ring.

DO - The storage area must be dry, dust-free and within the per missible storage temperature range.

DO - Clean and grease O-Ring prior to installation with mineral oil-based grease.

DO - Fix with only partially self-sealing cylindrical screw M6X12.

DO - Tightening Torque specification should be 70.8 ± 17.7 lbf-in.

DO - Storage temperature: -4°F to 122°F.

DO - Short-term storage temperature: 14°F to 131°F at 85%

DO'S - Sensor (Accelerator Pedal Sensor)

DO - Tightening Torque of the retaining screws should not exceed 79.66 ± 13.28 lbf-in.

DO - Use only self locking screws.

DO - After damage or in doubt of damage (e.g. dropped APM) the APM has to be separated and scrapped.

DONT'S - ECU (Electronic Control Unit)

DON'T - Avoid jump starting

DON'T - Do not allow part to fall

DON'T - Don't try to dismount parts

DON'T - Avoid any damages to ECU while handling and assembly

DON'T - While ignition is ON, avoid removing or assembling sensors / actuators / ECU / ECU MAIN RELAY coupler

DON'T - Before removing ECU connector, wait upto 1 min after switching OFF the ignition key

DON'T - When vehicle is off-road, avoid using battery source for direct supply to FIE components

DON'T - Avoid short circuit with high current flow while welding, towing & servicing the vehicle

DON'T - Ensure no power interruptions, communi-cation loss during flashing of dataset to ECU

DONT'S - Sensor (Engine Speed Sensor)

DON'T - Don't drop the sensor.

DON'T - Direct sunlight must be avoided.

DON'T - The sensor is mounted by pushing it into place (not by hammering).

DON'T - Sensor should not be kept near any strong Magnetic Materials.

DON'T - Do not short circuit the connector pins while the sensor is functioning.

DON'T - Do not Hammer the sensor while fitting.

DON'T - Do not bend sensor wire with radius less than R = 2 in.

DON'T - Angle between sensor exit and first support of wire should not be more than 90°.

DON'T - Sensor should not be kept near Hot medium or objects with Temp > 248°F.

DON'T - None of the application guidelines should be deviated (Air gap etc).

DON'T - Engine speed sensor must not be removed from its packaging until immediately prior to installation in the vehicle.

DONT'S - Sensor (Accelerator Pedal Sensor)

DON'T - Don't drop the sensor.

DON'T - Do not exceed the maximum permissible tightening Torque.

(For Service & Maintenance)

DO'S - Sensor (Phase Sensor)

DO - Phase Sensor should be unpacked directly before installation.

DO - Sensor to be mounted by pushing it into place.

DO - Clean and grease O-Ring prior to installation with mineral oil-based grease

DO - First support of wire after connection: Max 9.84 in. It should be on the sensor carrier.

DO - Sensor terminal pins should be free from water/ moisture.

DO - Fix with only partially microcapsuled screw M6.

DO - Tightening Torque specification should be 70.8±4.43 lbf-in.

DO - Parts as delivered to assembly shall be clean and free of debris, residual abrasive material and corro-sion products affecting function or appearance.

DO - The storage area must be dry, dust-free and within the permissible. storage temperature range. Direct sunlight must be avoided.

DO - Before mounting coat the seal ring with mineral based oil lubrication.

DO - Storage temperature: -40°F to +176°F at 0...80% humidity for 4 years.

DO'S - Sensor (Coolant Temperature Sensor)

DO - Protect parts against rain, snow and solar radiation and store them dry and dust-free.

DO - Storage temperature is -22°F to 140°F with relative humidity 0 to 60%

DO - During service - After removing temperature sensor, existing Aluminum washer is to be carefully cut (without damaging the brass threading) and taken out.

DO - Replace the washer with Copper washer

DO'S - Sensor (Boost Pressure Sensor)

DO - Don't drop the sensor.

DO - Do not Hammer the sensor while fitting.

DO - Do not short circuit the connector pins while the sensor is functioning.

DO - The pressure sensors have to be stored in their original packaging

DO - The storage temperature: 32°F...104°F with relative humidity: 40% ... 60% for maximum 3 years.

DO - The sensor must be protected against external affect (e.g. - precipitation, vapour). It has to be ensured that the O-ring will not be damaged at assembly.

DO - Sealing surface should be lubricated slightly (eg. non-acid paraffin oils like e.g. 'Shell Ondina'. Don't use silicone based lubricants.

DO - While changing a Boost pressure sensor take care that both sensor and wire harness connector parts stay clear of moisture or dirt.

DONT'S - Sensor (Phase Sensor)

DON'T - Don't drop the sensor.

DON'T - Do not Hammer the sensor while fitting.

DON'T - Do not bend sensor wire between the connection and the first support.

DON'T - None of the application guidelines should be deviated (Air gap etc).

DON'T - Sensor should not be kept near hot medium or objects with Temp > 320°F.

DON'T - The installation is made by pressing in and not forcing in with blunt instrument (e.g., hammer).

DON'T - The Phase sensor should be unpacked directly before installing in the car or on the test bench.

DON'T - Do not touch the sensor pins or the wiring harness pins with hand (to avoid ESD).

DON'T - If the sensor is taken out of its installation bore after having operated under thermal and mechanical loads, it is not allowed to put the same sensor back in the installation bore. Instead, it has to be replaced by a new sensor in order to ensure tightness.

DON'T - Mount sensor by pushing in (not knocking, no tools allowed) until seat of flange.

DONT'S - Sensor (Coolant Temperature Sensor)

DON'T - Don't drop the sensor.

DON'T - Do not exceed the maximum permissible tightening torque is 221.27 lbf-in.

DONT'S - Sensor (Boost Pressure Sensor)

DON'T - Temperature of mounting area should not exceed 266°F.

DON'T - NOx level @ mounting position should be less than 200ppm

DON'T - In case of O-ring is damage, replace the sensor

DON'T - The sensor must not be mounted with striking tools (e.g. hammer)

DON'T - The pressure sensor must not fall to concrete ground from more than 1m height, nor be exposed to pushes which are comparable to this stress.

DON'T - Introduction of foreign substances into the pressure port, except for those substances found in normal operation, must be prevented. A contamination of the interior of the connector interface must be avoided.

DON'T - During disassembly from vehicle, the O-ring has to stay with DS-S3.

DON'T - For reinstallation of the same DS-S3/TF, only a clearly undamaged O-ring may be used again.

DON'T - Dust, water or other corrosive fluid must not enter into the connector interface.

Cooling System

The cooling system consists of :

A. Radiator
B. Recovery Bottle
C. Hoses & Connections
D. Thermostat
E. Belts
F. Water Pump
G. Fan

To ensure an even temperature within the engine, the cylinder head and cylinder walls of the engine are water cooled. This water is in turn cooled in the radiator. The water is circulated from the radiator to the engine and back through the radiator by means of a water pump.

Radiator

The radiator consists of a cluster of hollow tubes enshrined into a number of fins and enclosed at both ends vide a Top Tank and a bottom tank.

Air sucked by Fan passes through the radiator fins thereby cooling the coolant flowing through radiator tubes.

The fins should be kept clear of mud or dirt accumulation. Over heating may be caused by bent or clogged radiator fins. If the spaces between the radiator fins become clogged, clean them with compressed air or coolant blown from engine side.

Radiator Cap

A pressurized radiator cap is provided which is set at 13 psi (0.9 kg/cm2) pressure. This cap ensures better cooling and avoids loss of coolant due to evaporation. It also reduces corrosion in engine sleeve & crankcase, hence it is strongly recommended that the engine should not be run without radiator cap. Also ensure that rubber gasket is intact & perfectly sealing the system pressure.

Surge Tank

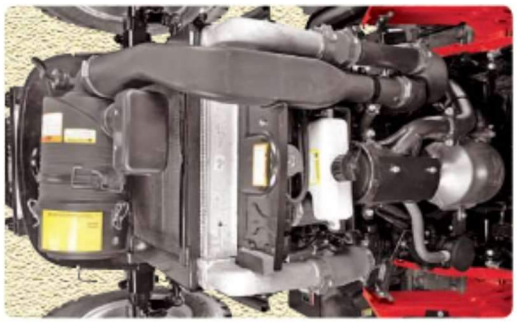
When the engine is in operation, certain amount of coolant passes out of the radiator overflow pipe. This coolant is not allowed to escape into the atmosphere and captured into a surge tank.

When the engine is not operating and the coolant cools down, certain amount of coolant comes back into the radiator from surge tank. The surge tank thus helps to prevent loss of coolant.

Thermostat

This device prevents coolant circulating through the radiator until the engine reaches its operating temperature. With the thermostat closed, the coolant circulates only through the engine block.

It is important that if the thermostat is defective, do not attempt to repair it, replace with new. When installing a new thermostat, ensure the valve is facing upward. The thermostat operating temperature is 180°F (82°C).



⚠ WARNING

When straightening bent fins be careful not to damage the tubes or to break the bond between the fins and tubes.

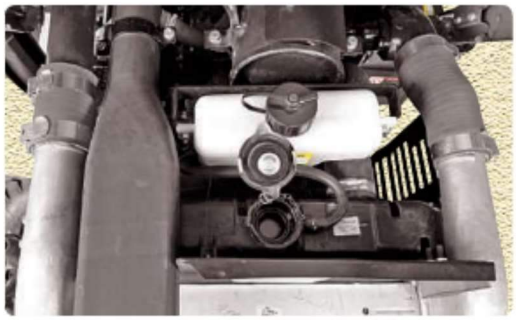
⚠ WARNING

The cooling system operates under pressure.

- It is dangerous to remove the radiator cap while the system is hot.
- Always turn the cap slowly to the first stop, and allow pressure to escape before removing the cap completely.

⚠ WARNING

Do not run the engine when the cooling system is empty, and do not add cold coolant or cold antifreeze solution if the engine is hot.



⚠ WARNING

Do not run the engine without the thermostat.

Water Pump

The water pump is equipped with a sealed bearing. Adjusting or greasing will not be necessary.

Hose Connections

Check periodically to ensure all the connections are in good order and the clips are tight. A leaking connection results in loss of coolant and thus engine efficiency.

When using antifreeze in the cooling system, it is absolutely essential to have efficient connection so check these and should there be any doubt as to their serviceability, renew.

Fan & Fan Belts

A plastic fan is mounted on water pump and is driven vide fan belt by the main drive pulley. While the engine is in operation, the fan sucks air through the radiator core.

Slippage of belt on pulley can cause over heating. The Fan belts shall always be dry and free from oil or Grease. Incorrect belt tension results in its rapid wear.

Main drive pulley is assembled on a roller bearing mounted shaft. Grease nipple is provided on front cover to grease the bearings. Grease the bearings every 600 hrs. of operation.

Belt Adjustment

To adjust belt tension, loosen the alternator on the adjustable bracket and lock the bolt in the location that gives correct belt tension (270-320 N) such that the belt can be depressed without much effort by the thumb, 0.25 to 0.4 inch.

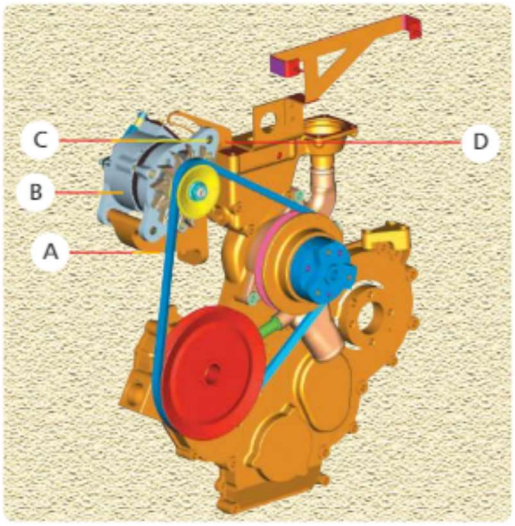
Belt Removal

1. Loosen the Nut (C).
2. Push the alternator down.
3. Ease the fan belt off the alternator pulley.
4. Ease the fan belt off the main drive pulley.
5. Slide out the belt from water pump pulley over the fan blades.

Belt Replacement

Reverse the procedure of fan belt removal stated above.

Adjust the fan belt tension as previously detailed.



A. Alternator Mounting
B. Alternator
C. Adjusting Nut
D. Adjusting Bracket

NOTE: Under normal conditions use Lithium based NLGI-2 grease with EP additives.

Contact your Mahindra dealer for grade of grease to be used under extreme ambient conditions.

Cooling System

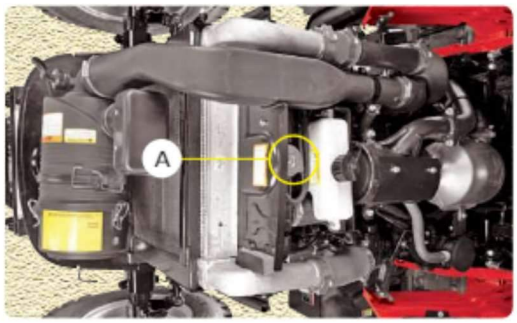
Draining the System

Two drain plugs must be opened. One is on LH side of crankcase and one on radiator bottom tank. To speed up draining, remove the radiator cap. Ensure that the drains are not clogged. Close the taps after draining is complete.

Cleaning out Dirt and Sludge

Drain cooling system as directed above. Fill the cooling system with a solution of 2.2 lb. of ordinary baking soda to 8.0 litres (2.11 US Gallons) of water.

Do not replace the radiator cap. Operate the engine until the coolant is hot. Drain, flush with clean water and refill with a rust inhibitor or anti-freeze solution.

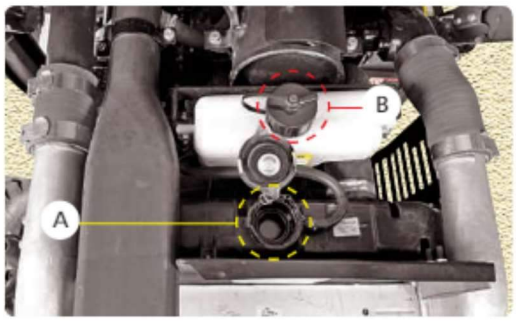


Adding Coolant to the System

Allow the engine to cool if it is hot.

1. Open the Hood.
2. Remove the radiator cap.
3. Fill the radiator from fill neck (A) with clean coolant upto a level approx. 2" below the radiator neck.
4. Start the engine and let it idle to remove air from the system. Coolant level in radiator will reduce.
5. Slowly pour coolant into the radiator until the coolant level in radiator does not go down further.
6. Fill coolant in surge tank from fill neck (B) upto the Max level mark.
7. Refit the radiator cap.
8. Shut down the engine.
9. Close the hood.

Ensure that the filler cap is clean and free of dirt particles before replacing.



Cooling System Protection

A common cause of the engine overheating is a rust clogged cooling system. Rust causes overheating by interfering with circulation and cooling. The tractors are filled with a mixture of new low silicate antifreeze (50% - antifreeze - 50% water) with a rust inhibitor in it. Fill upto the mark given. (approximately 2.4 gallon)

Use of approved supplemental corrosion inhibitor along with ethylene glycol will add increased rust prevention, reduce scale formation, minimize cylinder wall erosion & reduce foaming or tendency to foam.

Antifreeze : There are numerous antifreeze products marketed today. Diesel engines are adversely affected by the additives added to protect the aluminum surfaces. Antifreeze suitable for diesel engines conforms to an industry recognised standards which limits silicates to 0.1%. Once silica-gel has formed it is very difficult and costly to remove.

Low silicate antifreeze is available through out the United States. We are listing below some low silicate antifreezes that meet GM 6038 M formulation specification. There may be other suppliers who can make available low silicate antifreezes.

No.	Company	Product
1	Texaco (1)	2354 / 2055 Startex (Was JC-04)
2	BASF WYANDOTTE	241-7
3	Shell	ShellZone-LS
4	International Harvester	I.H. Antifreeze
5	Old Water Trading	Full Force
6	Conoco	Fleet Antifreeze
7	Northern Petrochemical	All Weather (NPC 220)

NOTE:

% Anti Freeze/% Water	50/50	60/40
Freeze Protection	–34°F –36.67°C	–64°F –53°C
Boil over protection	+265°F 129°C	+275°F 135°C

(with 13 psi (0.91kg/cm^2) radiator cap)

Recommended change period : 1 year or when ever the radiator water is drained.

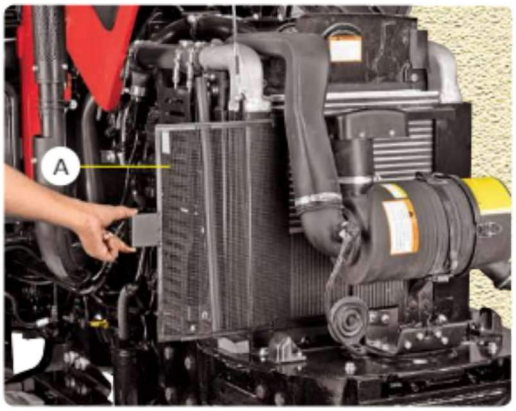
Thresh Guard

A wiremesh thresh guard is provided, at the front of the radiator which restricts thresh and other coarse particles from entering into Radiator fins. It thus prolongs the duration between two cleanings of radiator.

To clean thresh guard, Open the hood.

Then remove the thresh guard (A) as shown. Clean it thoroughly.

Re-assemble the thresh guard after cleaning.



Air Intake System

Air Cleaner

The important function of the air cleaner is to filter the air entering into combustion chamber so that no dust or chaff etc. enters the engine to cause abrasion and excessive wear. Thus it is most important that the air cleaner should have regular maintenance to continually and efficiently protect the engine from dust and other harmful substances.

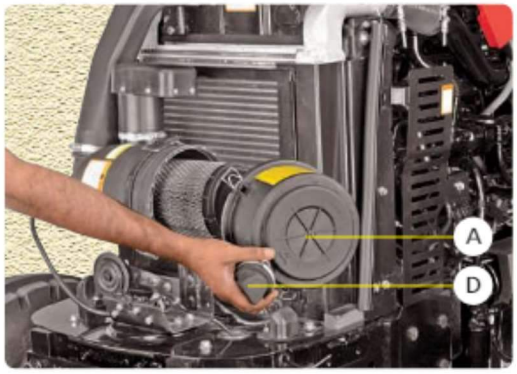
The air cleaner comprises of the following parts:

Body Air-Cleaner

This serves as the main frame for housing all parts associated with the air cleaner system.

Cyclopack or built-in Pre-Cleaner

The coarse dust particles are separated by the curved blades of the Cyclopack (A) and get collected in the dust collector.

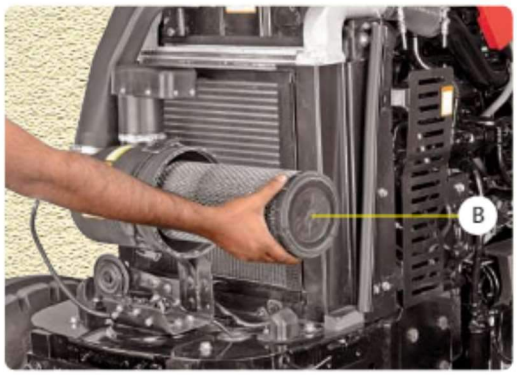


Paper Element Filter

Paper element filter (B) screens the fine impurities. This has to be cleaned by compressed air during every service or earlier if required. The filter should be replaced after every 2 cleanings or 900 hrs. or earlier if required.

Safety Cartridge

Safety cartridge (C) fits inside the paper element filter. It is a safeguard against uncontrolled dust entry into engine due to paper filter element rupture and also when the paper element is removed for cleaning



Dust Collector Bowl (D)

It collects the dust and releases it automatically.

The following are the service instructions for the Air Cleaner assembly :

1. Check functioning of auto unloader of the dust collector regularly.
2. Paper element of air cleaner should be cleaned with compressed air every 300 hrs. or earlier if required.
3. Paper element of air cleaner should be replaced after every 2 cleanings or 900 hrs. or even earlier if required.
4. Safety Cartridge should be replaced after every 900 hrs. or earlier if required.
5. Assemble the air cleaner and refit the same on the Tractor ensuring all joints to be leak-proof.
6. After ensuring all fittings to be O.K., start the Tractor.

NOTE : During every service of dry type air cleaner, the paper element should be cleaned with compressed air directed from inside to outside. Even after this if the element is found choked, replace it with a new one. Do not use dirty or damaged paper element as the impure air may severely reduce the engine performance/ life.

Hose and Clamps

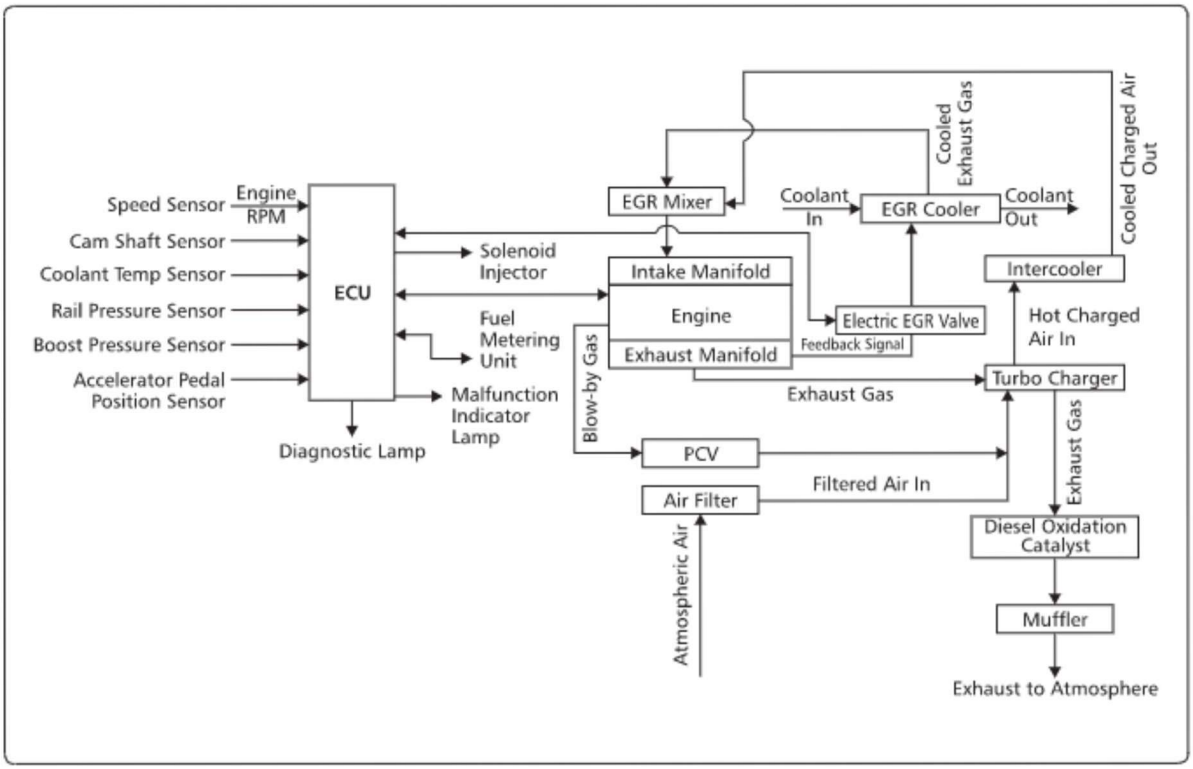
Check Hose clamps for proper tightness.

EMISSION CONTROL SYSTEM (ECS)

The tractor engine is equipped with the following emission control systems

1. Positive Crankcase Ventilation (PCV) system
2. Exhaust Gas Recirculation (EGR) system
3. Diesel Oxidation Catalyst (DOC)
4. Under-Hood Muffler (UHM)

The schematic layout of the ECS is as follows :



Positive Crankcase Ventilation (PCV) System

The tractor engine is equipped with a crankcase ventilation system using a ProVent 150 oil separator. This separates the oil efficiently from the engine blow-by gases through a high performance media, maintains the crankcase pressure within acceptable safe limits and also provides excellent protection for the turbocharger and components fitted downstream.

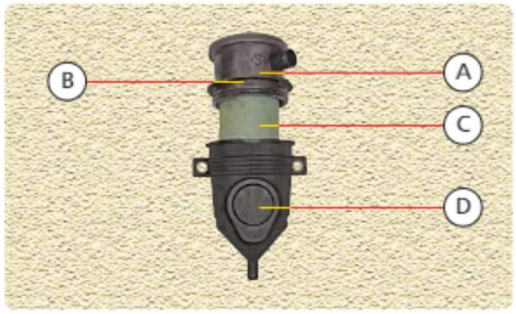
The maintenance of the PCV system essentially involves replacing the oil separator filter media. The oil filter media must be replaced after 1500 operating hours as indicated in the service schedule for continued performance of the engine.

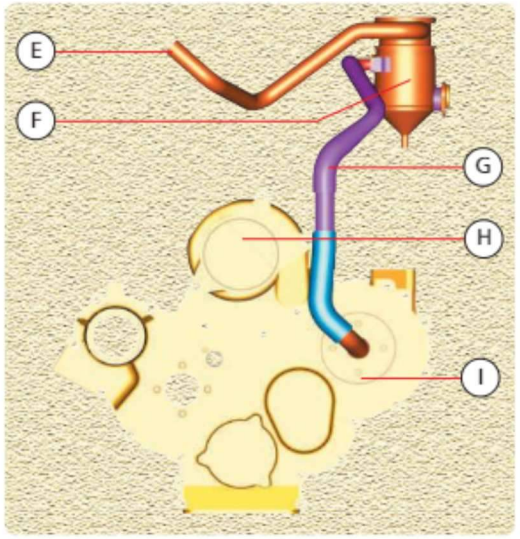
Removing the Oil Separator

1. Rotate the cover (A) approx. half a turn anticlockwise and remove. If the cover is difficult to move, a tool (e.g. screwdriver) can be used to turn the cover.
2. Pull the oil separator (C) upwards to remove and dispose of as per local waste regulations.

Assembly the Oil Separator

1. Clean housing, cover and sealing surfaces.
2. Change O-ring (B) and rub in a small amount of engine oil.
3. Slide the new oil separator into the housing (D) with a new, slightly oiled O-ring.
4. Put on the cover (A) and turn clockwise until it latches into place.





PCV - Layout

E - PCV Outlet to Air Induction
F - Oil Drain Hole
G - PCV Oil Separator
H - Pre Oil-separator
I - Cover Plate

NOTE:

Maintenance intervals may need to be shortened depending on the operating conditions. In normal mode, if the O-ring is intact and oil leaks through the bypass valve, this indicates that the oil separator is worn and must be replaced immediately.

Change the PCV oil separator filter and oil pre-separator as per the service schedule.

Check the oil separator regularly to ensure that it is free from damage and external soiling.

⚠ CAUTION

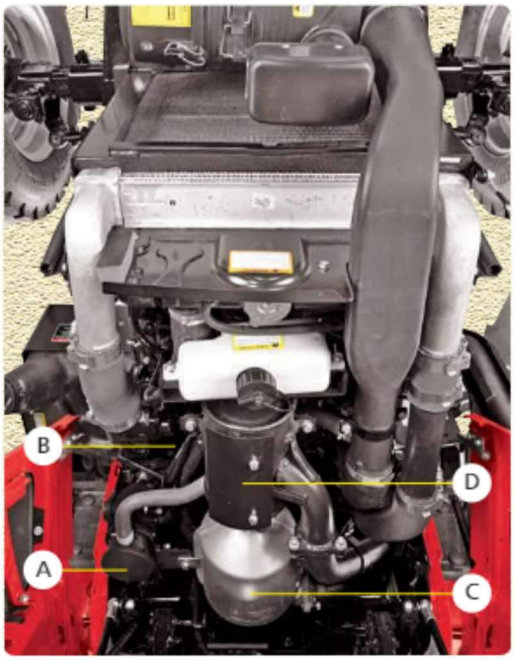
Always carry out the maintenance work only when the engine is switched off and parked properly.

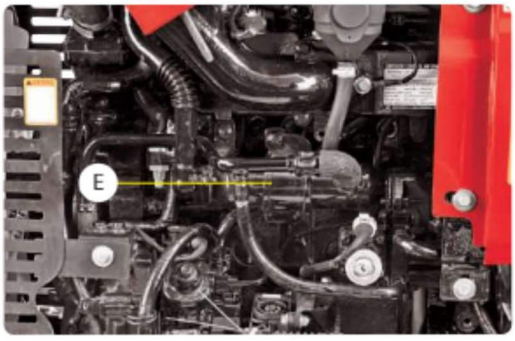
Never start the engine without an oil separator and/or cover.

Exhaust Gas Recirculation (EGR) System

The tractor engine is equipped with an Electric controlled EGR system. This system comprises the following units,

- Electric EGR Valve
- EGR Mixing Unit
- EGR Cooler





A - PCV Oil Separator
B - Electric EGR Valve
C - DOC
D - UHM
E - EGR Cooler

NOTE:

Check the EGR system regularly to ensure that its electrical, pipe and hose connections are proper and damage free and free from external soiling and leakages.

Periodic inspection and tightening of mounting hardware is typically appropriate.

A faulty EGR system is noticeable by,

1. Black smoke.
2. Reduction in engine power output.
3. Abnormal vehicle vibrations.
4. Emission control system indicator blinks continuously past two minutes.

If you observe the above conditions in your tractor, please immediately consult a Mahindra authorized dealer/service centre and get the problem rectified.

Emission Control System (ECS)

Diesel Oxidation Catalyst (DOC)

A Diesel Oxidation Catalyst (DOC) is an emission control device which uses a chemical process in order to break down pollutants from diesel engines in the exhaust stream, turning them into less harmful components. It is a part of the exhaust system which can be found fitted next to the turbocharger.

Under-Hood Muffler (UHM)

An Under-Hood Muffler (UHM) is a noise control device which reduces exhaust noise by absorption. It is a part of the exhaust system which can be found fitted next to the DOC.

NOTE:

Avoid running the engine at low idle speed.

Avoid frequent cold starts.

Periodic inspection and tightening of mounting hardware is typically appropriate.

⚠ CAUTION

The DOC may be damaged by excessive fuel or oil consumption or a poorly maintained engine.

Always use recommended fuel and lubricating oil for your engine.

Exhaust system operates at high temperature. Wait until the temperature cools down to carry out any maintenance work in the exhaust system or nearby area.

Never operate the tractor without the DOC and UHM.

Never operate the tractor with improperly fitted or physically damaged DOC and UHM

Never let the water into the exhaust system which may damage the exhaust system.

Service your vehicle periodically as recommended.

Using Proper Fuel

Use proper diesel fuel to help prevent decreased engine performance and increased exhaust emissions. Failure to follow the fuel requirements listed below can void your engine warranty.

Diesel fuels specified to EN 590 or ASTM D975 Grade No.1-D S15 are recommended.

Clean Diesel Fuel

Diesel Fuel should be poured so that no sediment can enter the tractor fuel tank whilst it is being filled. Fuel storage facilities should allow for the periodic removal of sediment from the bottom of the storage tank.

The Diesel fuel filters will remove any sediment still present in the fuel and ensure that the fuel reaching the injection pump and injectors is free of impurities. The fuel filter should be serviced regularly to ensure maximum engine reliability.

Bleeding the Fuel Filter

The presence of air in the fuel can cause fuel stoppages.

The air should be completely bled so that the tractor operates satisfactorily. Loosen air bleeding screw (B) on fuel filter and push hand primer (A) down till you get the flow of fuel free of air from air bleeding screw. Retighten the screw (B).

Bleeding the Fuel Pump

Disconnect the fuel pump backflow hose to the fuel tank. Then push the hand primer (A) until the fuel comes out from the fuel pump backflow and the resistance encountered by activating the hand primer is big enough. Then connect the fuel pump backflow hose.

Fuel Tank and Fuel Pipes

Fill the tank each time the tractor finishes the days work. This prevents condensation inside the fuel tank. Check regularly to ensure all fuel pipe unions are tight and in good order. Ensure that vent hole provided on fuel tank cap is not choked. Ensure that strainer fitted in the tank is intact and free from any damages. Water or dirt settled in the bottom of fuel tank should be drained daily, before starting the engine by loosening the drain cock till clean diesel flows.

⚠ CAUTION

Escaping diesel fluid under pressure can penetrate the skin causing serious injury.

Do not use your hand to check for leaks. Use a piece of cardboard or paper to search for leaks.

Stop engine and relieve pressure before connecting or disconnecting lines.

Tighten all connections before pressurizing lines.

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

NOTE: Do not use diesel fuel with sulphur content more than 15 ppm.

Tractor Front

Fuel Filter

This filter provides clean, moisture free fuel for the injection process. A hand primer is provided to manually remove excess air from the fuel filter and fuel lines.

Major Components:

- Hand Primer
- Air Bleeding Screw
- Fuel Filter

Fuel enters the filter at inlet (A) and flows through the filter element separating water its contents before flowing through outlets (B) to the fuel injection pump.

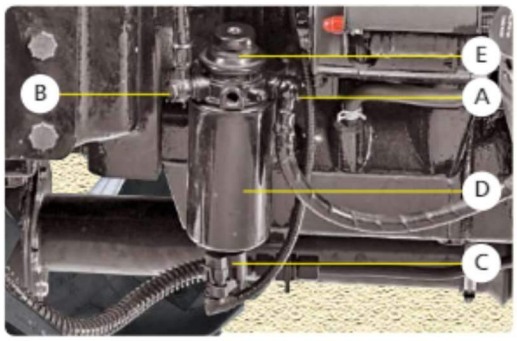
Since water and contaminants settle at the bottom of the sediment bowl, a drain plug (i.e. Adaptor cum Water Sensor) is provided.

Drain water from the fuel filter when water level indicator in instrument cluster glows on.

To drain water from fuel filter, unscrew the water sensor in anticlockwise direction by hand. Rotate only 1 to 2 turns by hand. Place a small tray to collect water or water and diesel emulsion. Tighten water sensor by rotating clockwise. Tightening torque 17.7 to 26.6 lbf in. (2 to 3 Nm) or hand tighten and fix connector (C).

Servicing the Fuel Filter

1. It is recommended to replace the fuel filter every 250 hrs.
2. To remove Filter, unscrew the filter (D) from adaptor (E).
3. Check O'rings of fuel filter for any crack/damage. Smear oil on the new O'ring before installation.
4. Assemble the new filter. Do not over tighten.
5. Clean Water Sensor to remove sludge & retighten to filter.
6. Prime the system and bleed the filter. Tighten the bleeding screw.



NOTE : Drain water once in a week or whenever the water level indicator on dashboard glows "ON" continuously, if water contamination is excessive. Continued driving with water accumulation in fuel filter will cause damage to the fuel pump / other fuel system components.

NOTE : Replace fuel filter at the recommended period or whenever it gets clogged. Discard the old filter and do not repair or clean the filter.

Always fit the spin-on filter dry.

Oil Level Check

Check engine oil before starting the engine.

1. Remove dipstick gauge (A) provided on the right hand side of the crankcase.
2. Oil level should be between the two marks provided on the dipstick.

Oil Change

Change Engine Oil as per Routine Service Schedule given in this Manual.

1. Ensure that the engine is stopped before changing oil.
2. Remove the drain plug provided at bottom of oil sump.
3. Allow the oil to drain completely.
4. Now reinstall the drain plug (B). Service the oil filter as explained below.
5. Remove the oil filler cap (C) in the front cover to expose the oil filler neck.
6. Refill the oil sump slowly by recommended grade of oil.
7. Clean and place the oil filler cap again.

Engine Oil Filter

The life of engine and turbocharger depends upon clean oil being circulated to its bearings. In the normal course of engine operation the lubricating oil undergoes changes which produce harmful by-products. The purpose of the oil filter is to separate and remove dirt and other injurious foreign materials from the oil and prevent these from being circulated in the engine.

The Engine oil filter should be replaced as per Routine Service Schedule given in this Manual or whenever engine oil is changed.

Changing Spin On Filter

1. Ensure that engine is stopped before changing filter.
2. Remove the lub oil filter Guard.
3. Unscrew the oil filter.
4. Prime the new spin-on filter with clean oil.
5. Screw the new filter to the adapter.
6. Move the Hand and foot throttle to engine "Idle" position.
7. Start the engine, check the oil pressure to see whether the lubricating oil is circulating through the engine.
8. Inspect the oil filter for oil leaks.

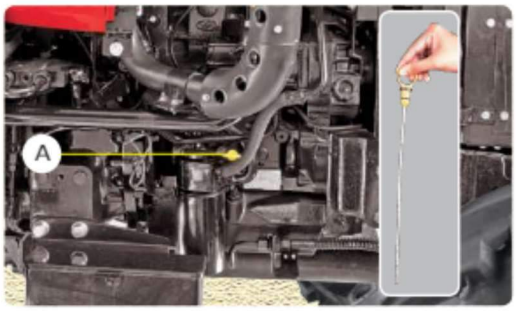
NOTE : Stop the engine immediately if Oil pressure is not recorded within 10 seconds of engine starting or Leakage is observed. Get the cause identified and rectified before proceeding further.

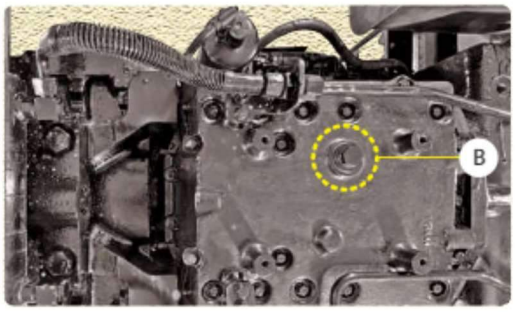
Turbocharger

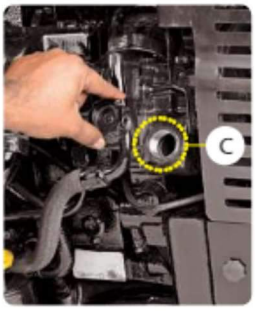
Check the turbocharger periodically as follows.

1. Move the Hand and foot throttle to low engine "Idle" position.
2. Inspect the oil filter for oil leaks through oil supply and drain line.
3. Stop the engine immediately if leakage or abnormal sound is observed. Get the cause identified and rectified before proceeding further.

Never allow to let the oil level drop below the 'Lower' mark. Add only recommended grade of oil.







⚠ CAUTION

Do not drain the oil when the engine is hot. Wait for the engine to cool.

NOTE: Engine oil and filter element must be changed after initial 50 hrs. of operation in new tractor or whenever major overhaul of engine is carried out and subsequently after every 500 hrs. or 1 year, whichever is earlier.

To avoid delays, we recommend that you carry extra filter elements on hand so that replacements can be made at the correct time. The FILTER is located on the right-hand side of the crankcase.

Filling oil takes time. Allow sufficient time for the oil to settle down in crankcase.

Dispose of the used oil properly.

Battery Maintenance Cleaning

Battery terminals must be kept clean and tight. The cable terminals will corrode and interfere with battery performance unless regularly checked. A light smear of petroleum jelly on the terminal posts and connections will help to resist corrosion.

Occasionally remove the connections and clean the terminal posts with wire wool or emery cloth, smear with petroleum jelly and reassemble.

Wash the battery top with warm water and soda. Ensure that none of this solution gets into the battery cells. Finally rinse with plain water. The vent holes in the filler caps should be open at all times.

Servicing

Check the battery at every 50 hours of operation for electrolyte level and specific gravity. If the battery shows need of charging it must be given immediate attention. Keeping the battery fully charged not only preserve its life but makes itself available for instant use when needed.

When replacing the battery the earth cable must be connected to the negative (–) terminal and the battery cover secured in its correct position.

Do not, under any circumstances, allow an electric spark or open flame near the battery, during or immediately after charging. Do not lay steel tools across the terminals, as this may result in a spark or a short circuit which could cause an explosion. Be careful to avoid spilling electrolyte on hands or clothing.

Effect of Low Temperatures

Battery capacity is greatly reduced in cold condition which has a decided numbing effect on the electrochemical action of the battery. Taking 100% of cranking power at 80^0F (26.67^0C) then at 32^0F (0^0C), only 65% and at 0^0F only 40% cranking power is available.

If your tractor is not to be operated for some time during winter months, it is advisable to remove the battery and store in a dry place where the temperature will not fall below freezing point.

Maintaining the electrical system in good working order will enable the alternator to provide the current needed necessary to keep battery fully charged thus ensuring maximum efficiency of the electrical devices.

Alternator

Following checks of alternator charging system will avoid many problems that might otherwise develop.

1. Check belt tension. Refer cooling system in this manual for proper belt tension.
2. Keep pulley nut tight.
3. Check alternator terminals and cable connections for good condition, secure fastening and freedom from corrosion.
4. Check battery cables and connections for good condition, secure fastening & freedom from corrosion.
5. Check electrolyte level in battery. If battery will not take adequate charge, or is otherwise unsatisfactory replace battery.

Ensure that the terminals are clamped tight, and the battery is securely fastened down in the battery tray.

Do not over-tighten.

⚠ CAUTION

Always remove the battery only after disconnecting the terminals to avoid any damage to the terminals.

IMPORTANT

During long storage of vehicle without operation, Battery –ve terminal to be disconnected to avoid battery draining. Failing to do will induce problem in starting & also reduce the life of battery.

⚠ CAUTION

Before working on any part of the electrical system disconnect the battery ground cable. Do not reconnect this cable until all electrical work has been completed. This will prevent short circuits and damage to electrical units.

Electric storage batteries give off a highly inflammable gas when charging and continue to do so some time after receiving a steady charge.

NOTE : Contact 'Exide' Dealer for Warranty.

Website : www.exideworld.com

⚠ WARNING

When the alternator is charging, an explosive gas is produced inside the battery. Do not use an exposed flame and do not smoke while checking the battery.

NOTE : Alternator Maintenance should be done by authorized Dealer.

Too tight a belt will cause rapid wear of belt and damage to bearings.

A slack belt will not drive the Alternator, and therefore the battery will not be charged.

Charging Circuit

Should the battery be in a low state of charge, which will be shown by lack of power when starting and poor lights and may be due to either alternator not charging or giving lower intermittent output, then proceed as below :

- Check Battery Charging Indicator when the engine is running steadily at working speed.
- If the Battery Charging Indicator glows, have the equipment checked by your Mahindra tractor Dealer.
- Inspect alternator drive belt and adjust as necessary.
- Examine the charging and field circuit wiring, tighten any loose connections, replace any broken cables, pay particular attention to the connections.

Starter Motor Removal

1. Disconnect the earth cable from the battery, battery to starter solenoid coil cable, key switch to solenoid coil cable.
2. Remove the mounting bolts and withdraw the starter motor. To install the starter motor, reverse the above procedure.

⚠ WARNING

To avoid damage to alternator charging system, service precautions should be observed as follows,

1. Never make or break any of the charging circuit connections, including the battery when engine is running.
2. Never short any of the charging compo-nents to ground.
3. Do not use a jumper battery of higher than 12 volt.

Always disconnect the battery ground cable before carrying out arc welding on the tractor or any implement attached to the tractor.

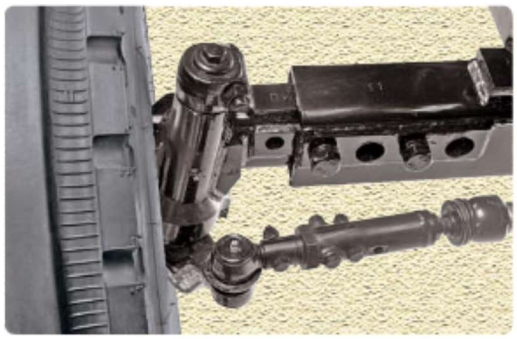
Use only specified cable for replacement.

IMPORTANT

The starter motor should be removed, and a replacement motor or drive end bracket be fitted, a check must be made of the out of mesh clearance after assembling the starter motor to the engine. The dimension between the leading edge of the pinion and the engine flywheel should be no less than 0.125" (3.17 mm).

Front Axle & Power Steering (2WD)

Front Axle - Front Wheel "Toe-in" Check :



In the event of the tie rod setting being interfered with, it is necessary to adjust the TOE-IN. Before measuring and adjusting the TOE-IN, ensure the front wheels are in the straight ahead position and the front axle is not tilted.

After adjusting the front wheel tread and with all connections secured, the front wheel Toe-in value shall be 0.2 +/- 0.04 in. (5 +/- 1 mm).

Measure the distance between the centre of the tires on front side. Mark the point measured and turn the wheels half revolution so that the marked points are at the rear. Measure again the distance between these two points and this distance must be the same as measured before without variance. To adjust the TOE-IN shorten or extend the tie rod clockwise or anti-clockwise. When the TOE-IN adjustments have been made the tractor should be jacked-up and the axle tilted to its maximum tilt position. In this position the wheels should be turned to the full left side lock and at this angle the welded stop on the steering knuckle pivot pin sleeve should be hard against the stop on the steering knuckle.

To adjust TOE-IN, use open spanner to adjust length of connecting rod. After setting required values, torque of 1106.34 lbf in. to be applied to the check nut and relock the lock plate.

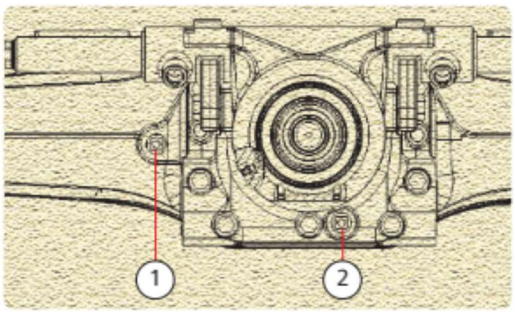
Tips for maintaining the power steering system :

- Maintain correct inflation of front tires.
- Always use a puller to remove the steering wheel. Do not use a hammer, torch or crow bar.
- Investigate and immediately correct any play, rattle, shimmy, or other unusual condition in the steering system.
- Do not attempt to weld any broken steering component. Replace the component with original part only.
- Do not cold straighten, hot straighten or bend any steering part.
- Prevent dirt or other foreign matter from entering the hydraulic system. Clean off around filler caps before checking oil level.
- Investigate and correct any external leakage in the steering system.
- Comply with the manufacturers specifications for replacing the filter, first change after 100 hrs. and then 400 hrs. interval subsequently.
- Transmission oil to be replaced at 1300 hrs. While replacing oil, strainer to be cleaned thoroughly.

Axle Oil Change

To drain the oil unscrew and remove the fill plug (1) then the drain plug (2). Drain all oil.

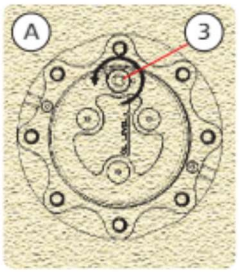
Fill to the bottom of the fill plug hole (1) with the specified oil. Wait to allow the oil to flow through the axle. Check oil level and fill to the specified level if necessary. Clean with care and tighten the plugs.

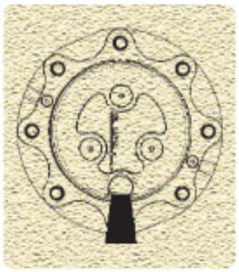


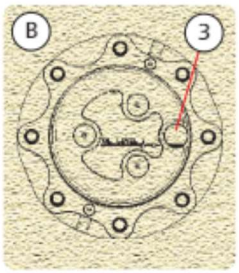
Reduction Gear Oil Change

To drain and fill the oil and to check the oil level the axle must be horizontal. Before draining the oil from wheel end rotate the wheel end so that the plug (3) is at the highest position A and partially unscrew to release possible pressure. Rotate the wheel end so that the plug (3) is toward the ground. Remove the plug and drain the oil.

Rotate the wheel end so that the hole (3) is in the position B. Fill to the bottom of the fill plug hole with specified oil. Tighten the plug after filling.







Front Axle - Front Wheel "Toe-in" Check

In the event of the tie rod setting being interfered with, it is necessary to adjust the TOE-IN. Before measuring and adjusting the TOE-IN, ensure the front wheels are in the straight ahead position and the front axle is not tilted.

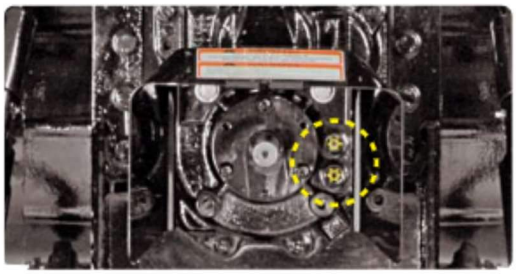
After adjusting the front wheel tread and with all connections secured, the front wheel Toe-in shall be as follows,

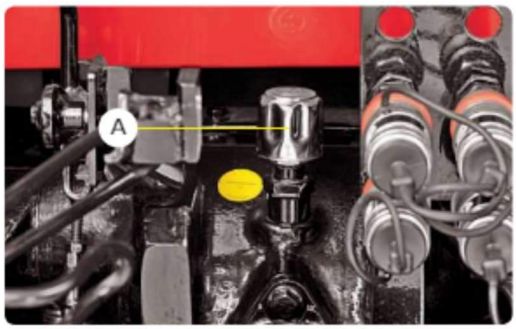
Measure the distance between the outer edges of the wheel rims at the same height as the hub caps. Mark the point measured and turn the wheels half revolution so that the marked points are at the rear. Measure again the distance between these two points and this distance must be the same as measured before without variance. To adjust the TOE-IN shorten or extend the tie rod clockwise or anti-clockwise.

Adding Hydraulic and Transmission Oil

Change Transmission & Hydraulic oil at every 1300 hrs. of operation. While changing the complete oil of transmission, oil has to be filled in rear housing. Check the level of oil in the Transmission & Hydraulic reservoir as follows:

1. Keep the tractor on level ground.
2. To check oil level, two visible windows are provided on PTO housing.
3. Oil must be visible till the upper level of top window.
4. Fill oil if required by removing the filler cap (A).
5. Add oil of specified grade only.



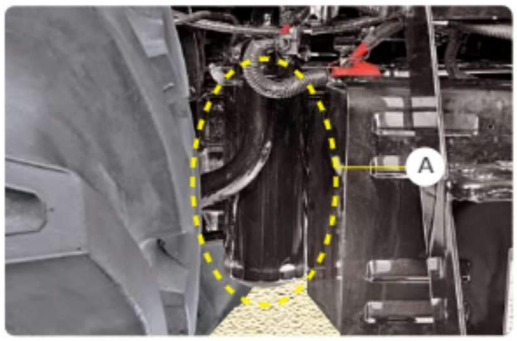


Hydraulic and Transmission Suction Oil Filter

Change Hydraulics and Transmission oil filter (A) initially at 100 hrs. and subsequently at every 500 hrs. of operation.

These Spin-on type filters are located behind on RH side of the tractor. Remove old spin-on filters.

Prime the new spin-on filter with clean oil, and fit them.



NOTE : The Hydraulic and Transmission filter though resembles with engine oil filter, it differs in construction and usage. Hence these are not interchangeable.

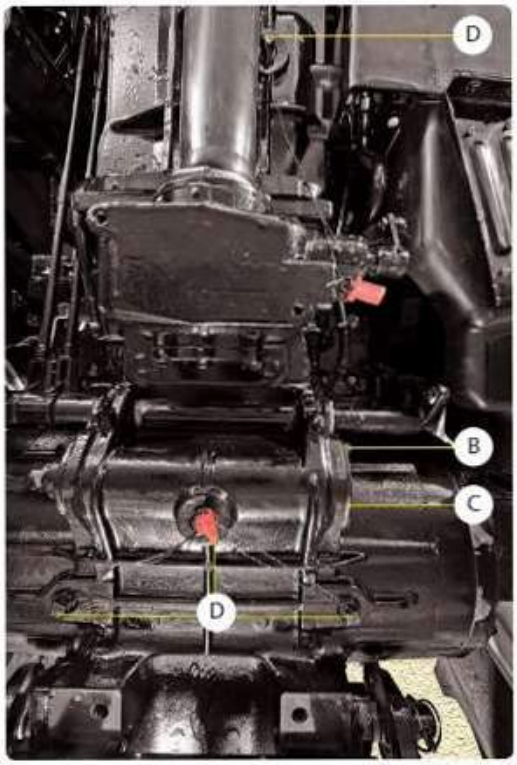
Hydraulics, Transmission & Brake Pedal Free Play

Hydraulic and Transmission Strainer

Clean suction strainer during every oil change. The suction strainer is located inside the rear housing and can be removed as follows:

1) Remove the end cover plate (C) by unscrewing three bolts (B).
2) Pull the suction strainer out from housing.
3) Clean the strainer in clean diesel fuel, using a soft brush, then blow dry with compressed air.
4) Refit the strainer.
5) Refit the cover plate and suction filter.

   For Service/Replacement of strainer contact your Mahindra Dealer.



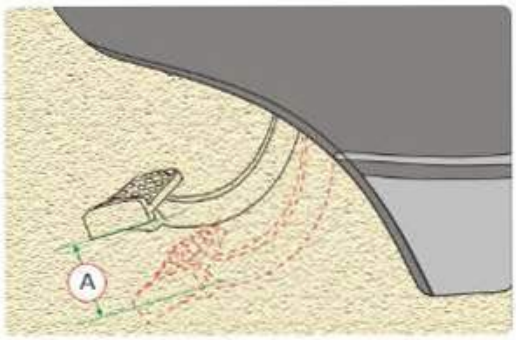
Transmission Oil Drain

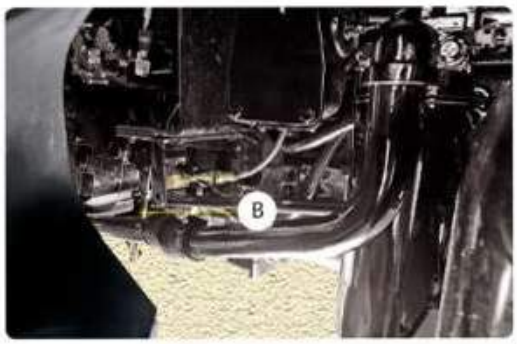
Transmission oil can be drained from the 4 drain plugs (D), 1 each on speed housing and rear housing and 2 on rear axle housings.

Check and Adjust Brake Pedal Free Play

Measure free play of pedal stroke (A). Ensure free play is within specified limits. If free play is not within specified limits, adjust brake linkage by rotating turn buckle (B).

NOTE: Free play of brake pedal should be between 1 in (25 mm) to 1.2 in (30 mm).

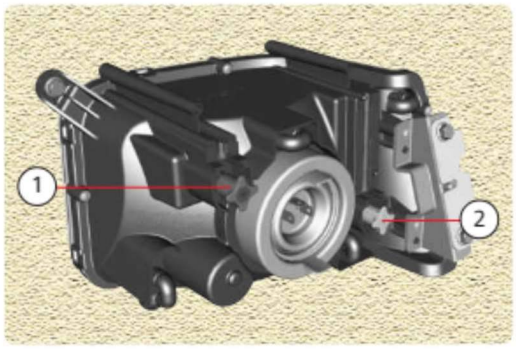




Head Lamp Adjustment

Head Lamp Adjustment

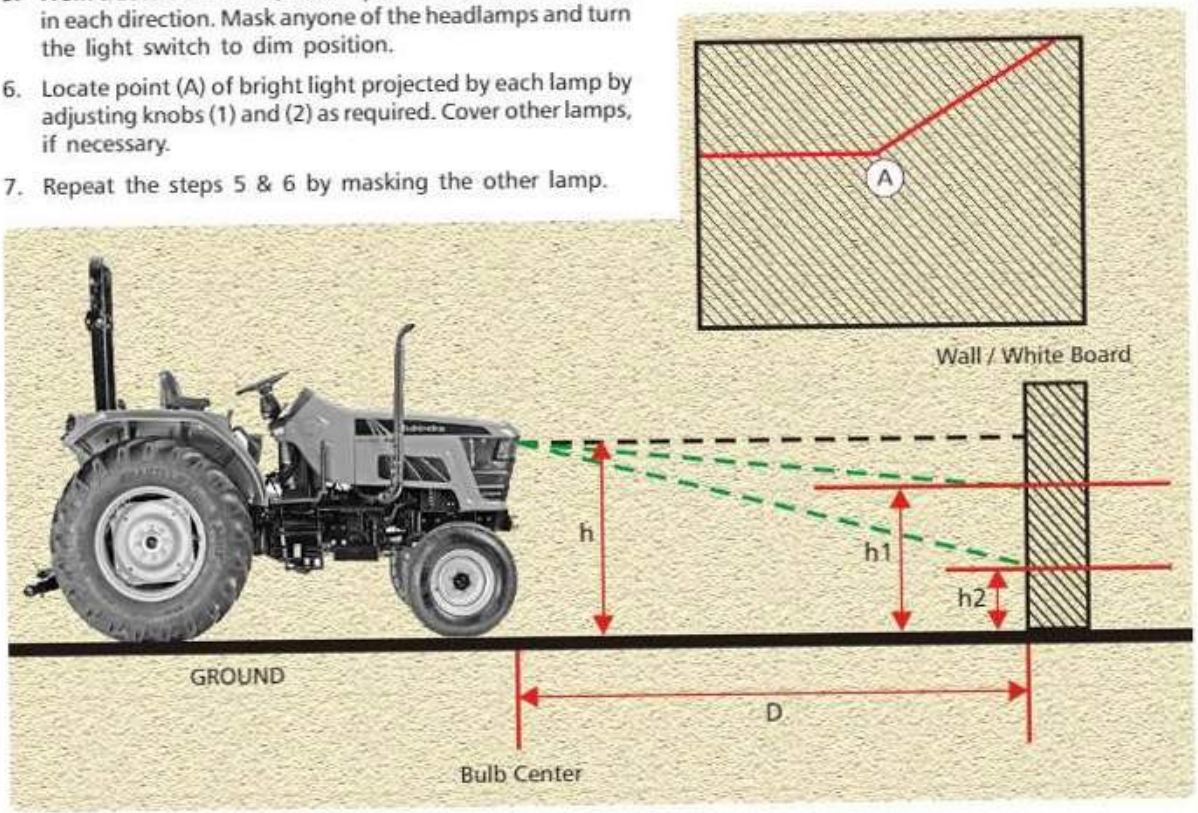
1. For adjusting the aiming horizontally or vertically use the knobs sown in the image.
2. Turning the knob (1) clockwise will tilt the head lamp beam upward and turning anticlockwise will tilt the beam downward.
3. Turning the knob (2) clockwise will move the head lamp beam towards right of the operator's view and turning anticlockwise will move the beam towards left of the operator's view.



Head Lamp Adjustment

Aiming Head Lamps

1. Park the tractor on level ground at a desired distance (D) from a wall.
2. Measure centre of head lamp to ground height. Place a strip of masking tape on the wall at the same height.
3. Place a piece of tape, folded in the middle to make a point, on the top front center of the hood.
4. Using the tape on hood as a guide, sight across steering wheel and hood to locate tractor centerline. Mark tractor centerline on wall.
5. From tractor centerline, mark a point 5 inch (127 mm) out in each direction. Mask anyone of the headlamps and turn the light switch to dim position.
6. Locate point (A) of bright light projected by each lamp by adjusting knobs (1) and (2) as required. Cover other lamps, if necessary.
7. Repeat the steps 5 & 6 by masking the other lamp.



h1 = D - (h x 0.04)
h2 = D - (h x 0.015)
units in mm

NOTE: Ensure the light cut off is always between the heights h1 & h2 for optimum coverage of distance.

h - Bulb center distance to Ground

h1 - distance between ground to upper level cut off

h2 - distance between Ground to lower level cut off.

D - Distance between Tractor to Board

⚠ CAUTION

Exceeding the height "h1" will cause glare to the upcoming vehicles.

Falling behind the height "h2" will reduce the distance of light beam.

Lubricants

General

Mahindra recommendation of oil is based on the trials done under specific test conditions. Actual performance of oil may vary in extremely severe environment or operating condition. Hence, ensure oil change as recommended in normal condition and in extremely arduous conditions, it is necessary to reduce the change periods. It is detrimental to use a lubricant for more than the specified period.

Lubricant Storage

Oils used for the tractor should be protected from exposure to dust, water contamination and ensure used oil disposal as per environmental / regulatory requirements.

Alternate Lubricants

Conditions in certain locations may warrant usage of other lubricants then recommended in the manual. In such cases, the alternates may be used provided they meet the minimum performance levels specified.

Mixing of Lubricants

It is generally advised not to mix different brands or types of oil considering the compatibility issues.

Engine oil

Refer Table A for oil specifications.

Recommended Oils

1. Mahindra Part No.MCJ15W40
2. Mahindra Part No. MFSHD5W30
3. Mahindra M-Star Ultra Plus

Transmission, Hydraulics and Oil Immersed Brakes

Use specific Tractor Transmission Fluids which are recommended for oil immersed brake application.

Following oils are recommended for optimal performance

1. Warren THF Purple
2. m-UTTO 2

Check with Mahindra service engineer for suitability of any other oils before using.

For implements / loader attachments, use only the recommended oils. Do not mix different brand of oils as it may cause performance deterioration especially at lower ambient temperature.

Factory filled oil is m-UTTO 2

Chassis Lubricant (CL)

Lithium or Lithium complex type grease with Extreme Pressure (EP) additive is recommended. Depending on the expected ambient temperature range during the operation, use grease as mentioned below.

For Temperature up to 5°F	Mineral grease NLGI 2 grade
For Temperature below 5°F	Synthetic grease NLGI 2 grade

Front Axle

Use gear oil complying to API GL5, MIL-L-2105D specifications. Please refer oil specification chart for oil viscosity grade at different range of ambient temperature.

⚠ CAUTION

If the engine / tractor is not operated for longer time, there are possibilities oil deterioration can occur. Hence, it is recommended to change the engine oil after every year if the tractor / engine is idle or operated less frequently.

Further, in long idle condition lack of lubrication can occur. Hence, it is suggested to check oil level before start, top-up 200 to 300 ml of oil, run the engine at low rpm for 5 min. and then start normal operation. This will allow the oil to lubricate all the engine parts optimally.

Oil Specifications Chart (Table A)

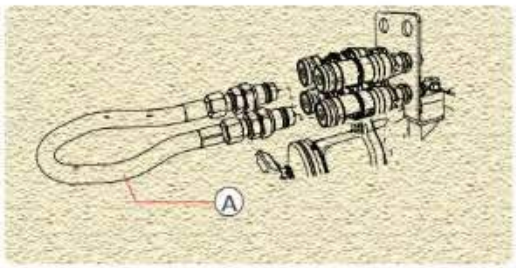
Sr. No.	Application	Capacity Gallon/Quarts	Ambient Temperature	
			up to 5°F	below 5°F and up to –13°F
1.	Crankcase	2.25/8.98	API CJ-4, SAE 15W-40	API CJ-4, SAE 5W-30
2.	Transmission & Hydraulics	14.52/58.12	SAE 80W - Tractor Transmission Hydraulic Oil	
3.	Lubrication Fittings	As required	Mineral grease NLGI 2 grade	Synthetic grease NLGI 2 grade
4.	Front Axle	1.48 / 5.92	GL-5, SAE 80W-90	GL-5, SAE 75W-90

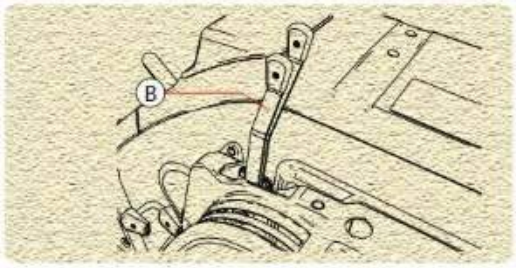
Warm-up procedure -Transmission-Hydraulic Oil

Warm-up procedure for Transmission-Hydraulic Oil in Cold weather

Steering,transmission and hydraulic systems are slow to function when a tractor is started in cold weather.

1. Connect the jumper hose (A) ends into the hydraulic couplers of aux valve 1, as shown in Fig.
2. Apply parking brake, and assure tractor F/R shuttle, speed and range transmission levers are in neutral.
3. Operator should not engage F/R shuttle, speed and range transmission levers until the warm-up process is completed.
4. Start the engine and idle at 850 RPM for 2 minutes, and then slowly increase RPM to 1500.
5. Move the aux lever 1 (B), as shown in Fig. in raise condition (rearward) until oil warms to operating temperature.
6. To check warm-up progress, turn the steering wheel side to side. When the wheel turns smoothly, without hesitation, oil has warmed up sufficiently to operating temperature.
7. After warming up, gradually increase the engine RPM to high Idle for a minute.
8. Return aux lever 1 (B) to neutral position.
9. Remove jumper hose (A).





⚠ CAUTION

Overheated hydraulic oil may cause personal injury and component malfunctions. To prevent hydraulic oil from overheating, DO NOT hold aux valve lever in operating position for an extended period beyond that the required for warm-up.

Temperature	Idling Time	Remarks
0°C or higher / 32°F or higher	At least 10 min.	All electrical lamps to be in off condition during idling. It is required to do idling at lower speed only, however increase the engine speed above 1500 rpm after 10-15 minutes during idling
0°C ~ 10°C / 32°F ~ 14°F	10 ~ 20 min.	
–10°C ~ –20°C / 14°F ~ –4°F	20 ~ 30 min.	
–20°C or less / –4°F or less	At least 30 min.	

Special Bolt Torques N.m / Lbs. ft.		
	N.m	Lbs. ft.
Bolt for swinging drawbar mounting	275 ± 25	185 - 221
Nut carrier rear axle	112 ± 12	74 - 91
Drain plug for engine oil pan	85 ± 5	59 - 66
Bolt fender mounting M8	21 - 24	16 - 18
Bolt fender mounting M12	65 ± 5	48 - 52
Nut for front axle support	200 - 225	148 - 167
Nut for jerrycan weight	340 - 400	240 - 262
Nut steering wheel	50 - 55	37 - 41
Nut rear wheel	350 - 400	260 - 295
Nut rear wheel weight	250 - 275	184 - 202
Nut rear wheel rim / disc	200 - 280	148 - 206
Nut front wheel	290 - 300	213 - 221
Nut front wheel rim / disc	200 - 280	148 - 206
Nut lock spiral pinion bevel shaft	180 - 200	132 - 162
Drop box drain plug	60 - 70	44 - 51
Transmission drain plugs	60 - 70	44 - 51

Specifications

MAHINDRA – 6065 2WD TIER-4

ENGINE

Four Stroke, Turbocharged, Intercooled, Direct Injection, Water Cooled Diesel Engine, Comply with US TIER-4 Norms

Model	: VNEM 363
No. of Cylinders	: 3
Displacement	: 161.6 in^3
Bore	: 3.78 in
Stroke	: 4.8 in
Compression Ratio	: 17.2:1
Max. Engine HP* (Manufacturing Rating)	: 62 HP (± 5%)
Rated Speed	: 2100 rpm
Max. Torque @ rpm	: 2195 lbf. in ± 5% @ 1500
Torque @ Rated Speed	: 1858.65 lbf. in ± 5% @ 2100
High Idle rpm	: 2300 ± 50
Low Idle rpm	: 850 ± 50
Fuel Injection Pump	: Common Rail System - BOSCH
Cylinder Sleeve	: Wet Replaceable
Air Cleaner	: Dry Type - 7 inch
Cold Starting Aid	: Provision for block heater on crankcase and glow plug heater (dummy) in the cylinder head. Heater plug in the air intake system.
Exhaust system	: DOC / Under hood muffler / Up swept silencer
Firing Order	: 1 - 3 - 2
Accelerator	: Hand & Foot Accelerator assisted by Electronic Sensor

ELECTRICAL

Battery	: 12V, 104 Ahms
Starter type, rating & power	: 12 V, 3.6 kW pre-engage solenoid type.
Alternator	: 12V, 55Amp, External fan
Instrumentation	: Gauges : Stepper motor based gauges, rpm Gauge, Fuel gauge & Temp. Gauge Indicators : LED based indication - Engine Oil pressure, Battery charging, Neutral, Turn signal(RH and LH separate), Head light (high beam), Parking brake, Air cleaner filter, High temp. 4WD engaged, PTO engaged, air intake heater indication, Service due indicator, MIL, CHK ENG, LCD - Hour meter, Trip hour meter
Switches	: Key switch, Head lamp, Park, Turn indicator lamp & Horn activation, PST activation with interlock, New Hazard switch, PTO Switch with safety, plough lamp switch.
Electrical System for CRDI	: C55 ECU & supportive sensors
Socket	: Mobile charger & trailer socket to suit ASABE standard
Lighting	: Wrap around Headlamp (LHD), Clear lens fender lamps & Plough lamp on RH fender

CLUTCH

Main Clutch	: Power Shuttle with torsional damper (Wet)
PTO Clutch	: Wet Clutch

TRANSMISSION

Type	: Full Synchro mesh with Forward Reverse power shuttle
Range	: Constant mesh
No. of speed	: 15 forward, 15 reverse with shuttle shift, high, low & medium selection lever and foot operated differential lock

STEERING

: Hydrostatic Power Steering (common oil for Hydraulics, Transmission & Power Steering)

POWER TAKE OFF

Type	: 2 speed Independent Single Lever PTO
P.T.O. HP*	: 53.5 HP (± 5%)
P.T.O. rpm	: 540 @ 1993 & 540E @ 1469
P.T.O. Operation	: Solenoid operated Push button

BRAKES

OIB brakes foot operated, independently with provision of interlock for simultaneous operation. Cable type hand brake is fitted for parking.

Type	: Oil Immersed Brakes
Disc diameter	: 8.75 in. OD (222 mm), Ball & Ramp type

HYDRAULIC SYSTEM

Live Hydraulics with Position and Draft control, Adjustable lift rods at both ends and Quick Coupler

Lift capacity at hitch	: 4850.2 lbs
Maximum pressure (with Auxiliary valve)	: 2755.72 - 2857.24 psi
Hydraulic Pump output	: 11.1 gpm
Steering Pump output	: 4.62 gpm
Three Point linkage	: Telescopic lower links with Cat-I/Cat-II rotating ball three point linkage and stabilizer
Features	: Quick Coupler, Lowering Valve
Standard Fitment	: Double Spool aux valve with detent, float & kick back
Optional Fitments	: 3 Spool Aux Valve

OPERATOR STATION

: Open Station

* Manufacturer's estimate under standard condition.

MAHINDRA – 6065 2WD TIER-4

DIMENSIONS (STANDARD)

Length overall	:	148.43 in
Width overall setting	:	77.56 in
Height overall	:	106.29 in
Ground clearance	:	14.17 in
Wheel base	:	84.65 in

TREAD ADJUSTMENT

Front	:	57 (Standard)
Rear	:	60 (Standard), 64, 68 & 72

SEAT : Suspension seat with weight, back angle & arm rest adjustment.

OPERATING WEIGHT (APPROX.)

Basic Tractor Including Fuel, Oil Coolant, Hydraulic System, Three Point Linkage, Transmission, PTO, Lighting and Wheel Sizes (Front - 9.5L x 15 & Rear - 16.9 x 28), without ROPS & Seat.

WEIGHT DISTRIBUTION

Weight : 6283.17 lb

TIRES

Front (standard) - Ag	:	9.5L x 15
Rear (standard) - Ag	:	16.9 x 28

TURNING RADIUS (Minimum)

With brakes	:	149.61 ± 5.91 in
Without brakes	:	153.54 ± 5.91 in

CAPACITIES	US Gallons	Quarts
Fuel tank	23.78	95.1
Cooling system	2.64	10.57
Engine oil	2.25	8.98
Transmission/Hydraulics/ Power Steering	14.52	58.12

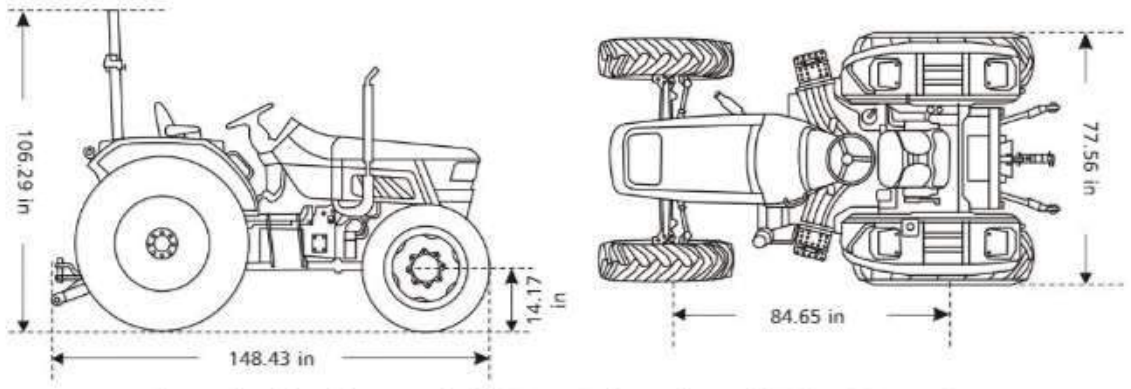
Speeds :

Speed chart with Independent PTO transmission in mph for standard 16.9 x 28 tire as per rolling radius 0.687m at 147kPa pressure.

Tractor road speed in different positions of F-R Shuttle, Range and Speed levers.

Gears	Kmph		mph	
	Forward	Reverse	Forward	Reverse
L1	1.8	1.7	1.1	1.0
L2	2.5	2.4	1.6	1.5
L3	3.6	3.5	2.3	2.2
L4	4.6	4.4	2.9	2.7
L5	6.2	5.9	3.8	3.7
M1	5.2	4.9	3.2	3.1
M2	7.5	7.1	4.7	4.4
M3	10.8	10.3	6.7	6.4
M4	13.6	13.0	8.4	8.1
M5	18.2	17.4	11.3	10.8
H1	9.7	9.3	6.1	5.8
H2	14.1	13.5	8.8	8.4
H3	20.3	19.4	12.6	12.0
H4	25.6	24.4	15.9	15.2
H5	34.4	32.8	21.4	20.4

Note :- One US gallon = 4 quarts.



Dimensions based on standard 9.5L x 15 front tires and 16.9 x 28 rear tires.

Note : Roll over protection structure is standard fitment on all tractors.
Specifications and design subject to change without notice.

* Manufacturer's estimate under standard condition.

Specifications

MAHINDRA – 6065 4WD TIER-4

ENGINE

Four Stroke, Turbocharged, Intercooled, Direct Injection, Water Cooled Diesel Engine, Comply with US TIER-4 Norms

Model	: VNEM 363
No. of Cylinders	: 3
Displacement	: 161.6 in³
Bore	: 3.78 in
Stroke	: 4.8 in
Compression Ratio	: 17.2:1
Max. Engine HP* (Manufacturing Rating)	: 62 HP (± 5%)
Rated Speed	: 2100 rpm
Max. Torque @ rpm	: 2195 lbf. in ± 5% @ 1500
Torque @ Rated Speed	: 1858.65 lbf. in ± 5% @ 2100
High Idle rpm	: 2300 ± 50
Low Idle rpm	: 850 ± 50
Fuel Injection Pump	: Common Rail System - BOSCH
Cylinder Sleeve	: Wet Replaceable
Air Cleaner	: Dry Type - 7 inch
Cold Starting Aid	: Provision for block heater on crankcase and glow plug heater (dummy) in the cylinder head. Heater plug in the air intake system.
Exhaust system	: DOC / Under hood muffler / Up swept silencer
Firing Order	: 1 - 3 - 2
Accelerator	: Hand & Foot Accelerator assisted by Electronic Sensor

ELECTRICAL

Battery	: 12V, 104 Ahms
Starter type, rating & power	: 12 V, 3.6 kW pre-engage solenoid type.
Alternator	: 12V, 55Amp, External fan
Instrumentation	: Gauges : Stepper motor based gauges, rpm Gauge, Fuel gauge & Temp. Gauge Indicators : LED based indication - Engine Oil pressure, Battery charging, Neutral, Turn signal(RH and LH separate), Head light (high beam), Parking brake, Air cleaner filter, High temp. 4WD engaged, PTO engaged, air intake heater indication, Service due indicator, MIL, CHK ENG, LCD - Hour meter, Trip hour meter
Switches	: Key switch, Head lamp, Park, Turn indicator lamp & Horn activation, PST activation with interlock, New Hazard switch, PTO Switch with safety, plough lamp switch.
Electrical System for CRDI	: C55 ECU & supportive sensors
Socket	: Mobile charger & trailer socket to suit ASABE standard
Lighting	: Wrap around Headlamp (LHD), Clear lens fender lamps & Plough lamp on RH fender

CLUTCH

Main Clutch	: Power Shuttle with torsional damper (Wet)
PTO Clutch	: Wet Clutch

TRANSMISSION

Type	: Full Synchro mesh with Forward Reverse power shuttle
Range	: Constant mesh
No. of speed	: 15 forward, 15 reverse with shuttle shift, high, low & medium selection lever & foot operated differential lock

STEERING : Hydrostatic Power Steering (common oil for Hydraulics, Transmission & Power Steering)

POWER TAKE OFF

Type	: 2 speed Independent Single Lever PTO
P.T.O. HP*	: 53.5 HP (± 5%)
P.T.O. rpm	: 540 @ 1993 & 540E @ 1469
P.T.O. Operation	: Solenoid operated Push button

BRAKES

OIB brakes foot operated, independently with provision of interlock for simultaneous operation. Cable type hand brake is fitted for parking.

Type	: Oil Immersed Brakes
Disc diameter	: 8.75 in. OD (222 mm), Ball & Ramp type

4WD FRONT AXLE

Make & Model	: CARRARO DRIVETECH
Flange to flange front wheel mounting distance	: 64.57 in
Axle Weight	: 521.4 lb

HYDRAULIC SYSTEM

Live Hydraulics with Position and Draft control, Adjustable lift rods at both ends and Quick Coupler

Lift capacity at hitch	: 4850.2 lbs
Maximum pressure (with Auxiliary valve)	: 2755.72 - 2857.24 psi
Hydraulic Pump output	: 11.1 gpm
Steering Pump output	: 4.62 gpm
Three Point linkage	: Telescopic lower links with Cat-I/Cat-II rotating ball three point linkage and stabilizer
Features	: Quick Coupler, Lowering Valve
Standard Fitment	: Double Spool aux valve with detent, float & kick back
Optional Fitments	: 3 Spool Aux Valve

OPERATOR STATION : Open Station

* Manufacturer's estimate under standard condition.

MAHINDRA – 6065 4WD TIER-4

DIMENSIONS (STANDARD)

Length overall	:	148.43 in
Width overall setting	:	77.56 in
Height overall	:	106.29 in
Ground clearance	:	20.12 in
Wheel base	:	87.4 in

TREAD ADJUSTMENT

Front	:	62 (Standard), 66, 70 & 74
Rear	:	60 (Standard), 64, 68 & 72
SEAT	:	Suspension seat with weight, back angle & arm rest adjustment.

OPERATING WEIGHT (APPROX.)

Basic Tractor including Fuel, Oil Coolant, Hydraulic System, Three Point Linkage, Transmission, PTO, Lighting and Wheel Sizes (Front - 11.2 x 24 & Rear - 16.9 x 28), without ROPS & Seat.

WEIGHT DISTRIBUTION

Weight		:	6547.73 lb
TIRES			
Front (standard) -	Ag	:	11.2 x 24
	Ind	:	12.5/80 x 18
Rear (standard) -	Ag	:	16.9 x 28
	Ind	:	19.5L x 24

TURNING RADIUS (Minimum)

With brakes	:	149.61 ± 5.91 in
Without brakes	:	161.42 ± 5.91 in

Note :- One US gallon = 4 quarts.

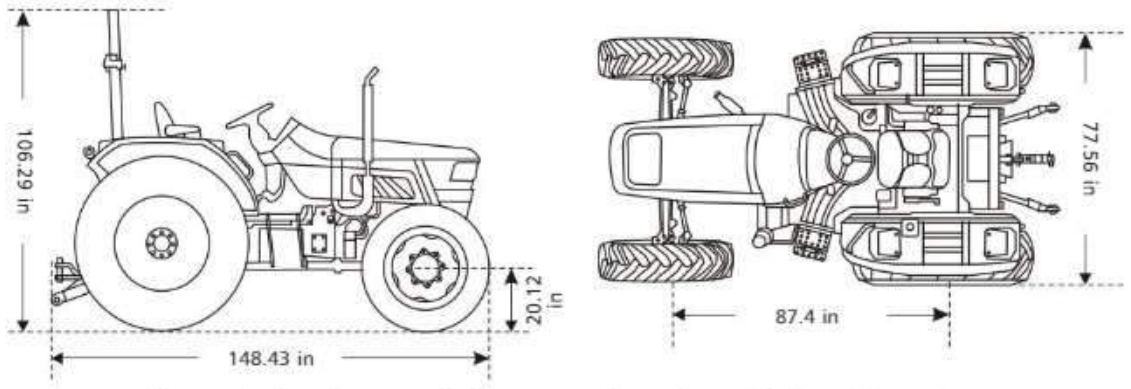
CAPACITIES	US Gallons	Quarts
Fuel tank	23.78	95.1
Cooling system	2.64	10.57
Engine oil	2.25	8.98
Transmission/Hydraulics/ Power Steering	14.52	58.12
Front Axle	1.48	5.92

Speeds :

Speed chart with Independent PTO transmission in mph for standard 16.9 x 28 tire as per rolling radius 0.687m at 147kPa pressure.

Tractor road speed in different positions of F-R Shuttle, Range and Speed levers.

Gears	Kmph		mph	
	Forward	Reverse	Forward	Reverse
L1	1.8	1.7	1.1	1.0
L2	2.5	2.4	1.6	1.5
L3	3.6	3.5	2.3	2.2
L4	4.6	4.4	2.9	2.7
L5	6.2	5.9	3.8	3.7
M1	5.2	4.9	3.2	3.1
M2	7.5	7.1	4.7	4.4
M3	10.8	10.3	6.7	6.4
M4	13.6	13.0	8.4	8.1
M5	18.2	17.4	11.3	10.8
H1	9.7	9.3	6.1	5.8
H2	14.1	13.5	8.8	8.4
H3	20.3	19.4	12.6	12.0
H4	25.6	24.4	15.9	15.2
H5	34.4	32.8	21.4	20.4



Dimensions based on standard 11.2 x 24 front tires and 16.9 x 28 rear tires.

Note : Roll over protection structure is standard fitment on all tractors.
Specifications and design subject to change without notice.

* Manufacturer's estimate under standard condition.

Specifications

MAHINDRA – 6075 4WD TIER-4

ENGINE

Four Stroke, Turbocharged, Intercooled, Direct Injection, Water Cooled Diesel Engine, Comply with US TIER-4 Norms

Model	: VNEM 373
No. of Cylinders	: 3
Displacement	: 161.6 in^3
Bore	: 3.78 in
Stroke	: 4.8 in
Compression Ratio	: 17.2:1
Max. Engine HP* (Manufacturing Rating)	: 71 HP (± 5%)
Rated Speed	: 2100 rpm
Max. Torque @ rpm	: 2513.61 lbf. in ± 5% @ 1500
Torque @ Rated Speed	: 2124.18 lbf. in ± 5% @ 2100
High Idle rpm	: 2300 ± 50
Low Idle rpm	: 850 ± 50
Fuel Injection Pump	: Common Rail System - BOSCH
Cylinder Sleeve	: Wet Replaceable
Air Cleaner	: Dry Type - 7 inch
Cold Starting Aid	: Provision for block heater on crankcase and glow plug heater (dummy) in the cylinder head. Heater plug in the air intake system.
Exhaust system	: DOC / Under hood muffler / Up swept silencer
Firing Order	: 1 - 3 - 2
Accelerator	: Hand & Foot Accelerator assisted by Electronic Sensor

ELECTRICAL

Battery	: 12V, 104 Ahms
Starter type, rating & power	: 12 V, 3.6 kW pre-engage solenoid type.
Alternator	: 12V, 55 Amp, External fan
Instrumentation	: Gauges : Stepper motor based gauges, rpm Gauge, Fuel gauge & Temp. Gauge Indicators : LED based indication - Engine Oil pressure, Battery charging, Neutral, Turn signal(RH and LH separate), Head light (high beam), Parking brake, Air cleaner filter, High temp. 4WD engaged, PTO engaged, air intake heater indication, Service due indicator, MIL, CHK ENG, LCD - Hour meter, Trip hour meter
Switches	: Key switch, Head lamp, Park, Turn indicator lamp & Horn activation, PST activation with interlock, New Hazard switch, PTO Switch with safety, plough lamp switch.
Electrical System for CRDI	: C55 ECU & supportive sensors
Socket	: Mobile charger & trailer socket to suit ASABE standard
Lighting	: Wrap around Headlamp (LHD), Clear lens fender lamps & Plough lamp on RH fender

CLUTCH

Main Clutch	: Power Shuttle with torsional damper (Wet)
PTO Clutch	: Wet Clutch

TRANSMISSION

Type	: Full Synchro mesh with Forward Reverse power shuttle
Range	: Constant mesh
No. of speed	: 15 forward, 15 reverse with shuttle shift, high, low & medium selection lever & foot operated differential lock

STEERING : Hydrostatic Power Steering (common oil for Hydraulics, Transmission & Power Steering)

POWER TAKE OFF

Type	: 2 speed Independent Single Lever PTO
P.T.O. HP*	: 61 HP (± 5%)
P.T.O. rpm	: 540 @ 1993 & 540E @ 1469
P.T.O. Operation	: Solenoid operated Push button

BRAKES

OIB brakes foot operated, independently with provision of interlock for simultaneous operation. Cable type hand brake is fitted for parking.

Type	: Oil Immersed Brakes
Disc diameter	: 8.75 in. OD (222 mm), Ball & Ramp type

4WD FRONT AXLE

Make & Model	: CARRARO DRIVETECH
Flange to flange front wheel mounting distance	: 64.57 in
Axle Weight	: 521.4 lb

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Lift capacity at hitch	: 4850.2 lbs
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Hydraulic Pump output	: 11.1 gpm
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Three Point linkage	: Telescopic lower links with Cat-I/Cat-II rotating ball three point linkage and stabilizer
Features	: Quick Coupler, Lowering Valve
Standard Fitment	: Double Spool aux valve with detent, float & kick back
Optional Fitments	: 3 Spool Aux Valve

OPERATOR STATION : Open Station

* Manufacturer's estimate under standard condition.

MAHINDRA – 6075 4WD TIER-4

DIMENSIONS (STANDARD)

Length overall	:	148.43 in
Width overall setting	:	77.56 in
Height overall	:	106.29 in
Ground clearance	:	20.12 in
Wheel base	:	87.4 in

TREAD ADJUSTMENT

Front	:	62 (Standard), 66, 70 & 74
Rear	:	60 (Standard), 64, 68 & 72
SEAT	:	Suspension seat with weight, back angle & arm rest adjustment.

OPERATING WEIGHT (APPROX.)

Basic Tractor including Fuel, Oil Coolant, Hydraulic System, Three Point Linkage, Transmission, PTO, Lighting and Wheel Sizes (Front - 11.2 x 24 & Rear - 16.9 x 30), without ROPS & Seat.

WEIGHT DISTRIBUTION

Weight	:	6547.73 lb

TIRES

Front (standard) -	Ag	:	11.2 x 24
	Ind	:	12.5/80 x 18
Rear (standard) -	Ag	:	16.9 x 30
	Ind	:	19.5L x 24

TURNING RADIUS (Minimum)

With brakes	:	149.61 ± 5.91 in
Without brakes	:	161.42 ± 5.91 in

Note :- One US gallon = 4 quarts.

CAPACITIES	US Gallons	Quarts
Fuel tank	23.78	95.1
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Front Axle	1.48	5.92

Speeds :

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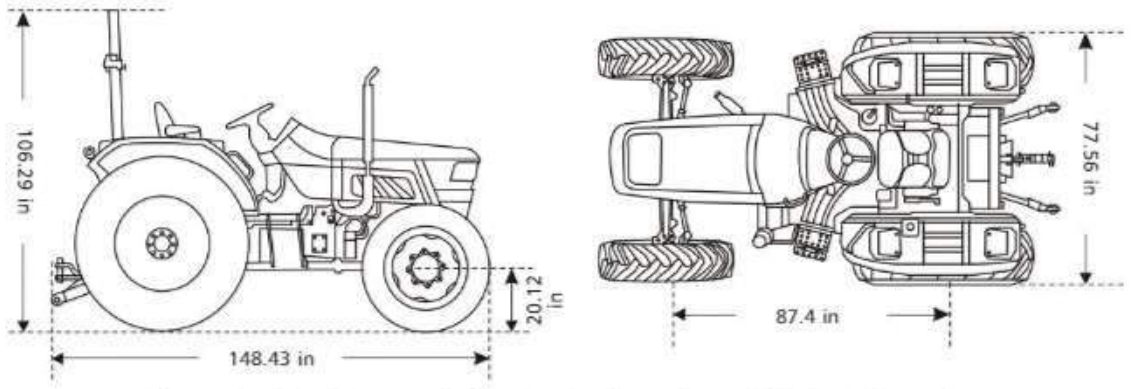
L3	3.8	3.6	2.3	2.2
L4	4.8	4.5	3.0	2.8
L5	6.4	6.1	4.0	3.8
M1	5.4	5.1	3.3	3.2
M2	7.8	7.4	4.8	4.6
M3	11.2	10.7	6.9	6.6
M4	14.1	13.4	8.7	8.3
M5	18.9	18.0	11.8	11.2
H1	10.1	9.6	6.3	6.0
H2	14.6	14.0	9.1	8.7
H3	21.1	20.1	13.1	12.5
H4	26.5	25.3	16.5	15.7
H5	35.6	34.0	22.1	21.1



Dimensions based on standard 11.2 x 24 front tires and 16.9 x 30 rear tires.

Note : Roll over protection structure is standard fitment on all tractors.
Specifications and design subject to change without notice.

* Manufacturer's estimate under standard condition.

Precautions for CRDI Engines

Potential Issue/ Failure Mode	Causes	Precautions / Solutions
Injector rattling / sticky / blocked.	Contaminated fuel causing deposition of very fine residue / dirt inside injectors having fine tolerances	1. Efficient fuel filtration system with water separator and indicator. 2 Customer & dealer education on importance of quality of fuel for CRDI Engines. 3. Maintain and change the fuel filter regularly according to the manufacturer's recommendations. 4. When changing the fuel filter it is beneficial to empty the old filters contents into a clean container and inspect for evidence of water and foreign debris
Reduced power & increased fuel consumption of engine	When the injector becomes dirty, the full ignition detonation of the fuel results in less power & more fuel consumption	
Poor fuel economy and / or bluish white smoke at idle	Nozzle erosion causing seepage of fuel.	
Engine not starting due to water ingress / Engine Misfiring / Wiring harness cut / Shorting of wiring harness	1. Rain water entry into harness 2. Water ingress in puddling operation. 3. Electrical wiring harness tampering is done in the field for doing all extra connections. 4. A fuel tank that is hot from continuous driving will suddenly be cooled if submerged in cold water and will cause a slight suction back into the tank. This will allow water to enter the tank through any loose or leaking seals, hoses, fuel level sender unit gaskets etc. 5. Solenoid coil windings short.	1. Ensure that the filler cap seal is in good condition and all fuel lines and connections to the tank are in good condition and tight (especially in puddling application). 2. Wiring harness tampering should be mandatorily avoided & to be linked with warranty acceptance / rejection criteria. 3. All the wiring harness couplers should be made water sealed & all Dealers to be instructed & trained for proper assembly, removal & replacement of electrical connectors & couplers. 4. Proper enclosures should be designed to avoid exposure of electrical sensors e.g. Boost pressure, crankshaft position, Accelerator pedal sensors, etc. to dust, water, mud, etc. 5. No extra welding during implement fitments to be carried out. 6. Wiring harness protection conduits / cot tubes to be used. 7. Proper routing of wiring harness with clips to avoid contact with moving parts or hot surfaces like exhaust manifold/UHMs to be done.
ECU - Electronic Control Unit failures	1. Vibrations 2. Handling / tampering	1. Mounting with AVMs to be explored. 2. No accessibility to user/customer for loosening. 3. Keep fuel hose clamps tight and ensure anti vibration clamps on injector lines are tight, with the rubber insulators in the correct position.
High degree of engine maintenance and costly spare parts.	Lapses in service maintenance practices like clogged fuel filter may lead to damaging entire fuel system & replacement will be costly.	Change of fuel filter as per service maintenance interval is a MUST.
May expect more warranty disputes like rejecting claims.	Lapses in service maintenance practices.	Educating customers during promotional events / service camps etc.
The cost of "good will" claims may rise.	It is very difficult to prove the fuel adulteration as a root cause without opening engine. The warranty claims will be rejected by QA after receiving & opening these engines at warranty yard.	Proper training of dealer mechanics & workmen to handle problems reported. Diagnosis should be preferably done at workshops than in the field by proper trained personnel only.

If any trouble is experienced, make sure of the cause before attempting to make any adjustments. Before making any adjustments make note of the previous setting, in case, the new adjustment is not effective.

PROBABLE CAUSE	POSSIBLE REMEDY
ENGINE	
Engine Fails To Start	
Defective key switch	Inspect for faulty cables and terminals. Replace key switch if necessary.
Battery too low to turn engine	Charge or install new battery.
Faulty sensors	*
Improper sensor connection	Check the electrical connection to the sensors.
Faulty CR fuel injection system functioning	*
Engine oil too heavy	Drain oil and refill with correct grade.
Internal seizure	*
Starter motor inoperative	Inspect cables and terminals. Check for tightness of mounting screw. Inspect brushes for wear or damage and commutator for dirt, wear or damage.
No fuel	Check fuel tank.
Cold weather	Use cold weather starting aids and start with throttle at 1/2 to 1/3 position .
Water, dirt, or air in fuel system	Drain, flush, fill and bleed system.
Clogged fuel filter	Replace filter element.
Dirty or faulty injectors	*
Engine Cranks But Will Not Start	
Faulty CR fuel injection system functioning	*
Faulty sensors	*
Improper sensor connection	Check the electrical connection to the sensors.
Water in fuel	Drain system, clean and refill with proper fuel.
Fuel system clogged	Check through and remove blockage.
Batteries discharged	Charge or replace.
Lack of compression	*
Intake or Exhaust system clogged	Service air cleaner and check air intake for restriction. Clean exhaust system.
Lubricating oil of wrong viscosity	Drain and refill with proper lubricant - (refer to LUBRICANT SPECIFICATION).
Loss Of Power	
Faulty CR fuel injection system functioning	*
Engine overloaded	Reduce load or shift to lowergear.
Restriction or leakage in the air intake system	Check the air intake system & rectify it.
Restriction or leakage in the exhaust system	Check the exhaust system & rectify it.
Restriction in fuel supply	Clean fuel system.
Water in the fuel	Drain and clean fuel system.
Air lock in fuel system	Check vent hole in tank filler cap.
Faulty valve action	*
Clogged fuel filter	Replace filter element & bleed the fuel system.
Lack of engine compression	*
Engine overheating	*

PROBABLE CAUSE	POSSIBLE REMEDY
Clutch plate slippage	*
Brakes dragging	Check brake linkages for free movement & adjust free play.
Dirty or faulty injectors	*
Turbocharger malfunctioning	*
Faulty EGR system functioning	*
Engine Misfires	
Restriction in engine air supply	Check air cleaning system.
Air lock in fuel system	Vent air from fuel system.
Poor compression	*
Sticking valves	*
Faulty CR fuel injection system functioning	*
Vent in fuel tank cap obstructed	Clean cap in solvent. Blow dry.
Low coolant temperature	Remove and check thermostat.
Clogged fuel filter	Replace filter element.
Water, dirt, or air in fuel system	Drain, flush, fill and bleed system.
Dirty or faulty injectors	*
Engine Does Not Idle Properly	
Low idle rpm too low	Check and correct.
Restriction in fuel delivery	Inspect fuel system. Clean out fuel lines.
Injection nozzles defective	*
Faulty CR fuel injection system functioning	*
Poor compression	*
Sticking valves	*
Accelataror pedal sensor malfunctioning	*
Engine Operates Unevenly And Vibrates	
Valve and spring assembly inoperative	*
Faulty CR fuel injection system functioning	*
Injection nozzles defective	*
Faulty EGR system functioning	*
Engine Knocks	
One or more cylinders misfiring	Refer ENGINE MISFIRES.
Loose main or connecting rod bearing	*
Injection nozzles defective	*
Insufficient oil	Add oil.
Low coolant temperature	Remove and check thermostat.
Faulty CR fuel injection system functioning	*
Excessive Oil Consumption	
Crankcase oil to light	Use proper viscosity oil
Piston rings worn, broken, stuck or not staggered	*
Oil level in crankcase too high	Maintain correct oil level.
Oil leaking	Rectify the leakage.
Sump drain plug loose or worn	Tighten or replace.
Overheating	Refer to ENGINE OVERHEATS.

* See Mahindra Tractor Dealer

PROBABLE CAUSE	POSSIBLE REMEDY
PCV system clogged	Check for blockage or shrinkage in the PCV system hoses & rectify it. Check the filter element & replace it if required.
	Check the PCV oil pre-separator and replace it if required.
Engine operating temperature too low	Check the thermostat opening temperature.
Restricted turbocharger drain pipe	Check & rectify it.
Turbocharger malfunctioning	Refer TURBOCHARGER troubleshooting.
Engine Overheats	
Faulty heat indicator	Replace.
Cooling system clogged	Clean out radiator and engine
Fan and water pump belt slipping	Check tension and make proper adjustment.
Insufficient oil	Maintain proper oil level.
Defective thermostat	*
Water pump defective	*
Faulty CR fuel injection system functioning	*
Valve clearance incorrect	*
Clutch plate slippage	*
Brakes dragging	Check brake linkages for free movement and adjust free pedal play.
Engine overloaded	Select gear according to load.
Low coolant level	Fill cooling system to proper level; check radiator, coolant recovery tank, and hoses for loose connections or leaks.
Faulty radiator cap	Have service person check.
Dirty radiator core or grille screens	Remove all thresh.
Defective thermostat	Remove and check thermostat
Faulty radiator cowl	Check the cowl for gap between cowl & radiator. Check for any breakage & replace it.
Lubricating Oil Pressure Too High Or Too Low	
Defective oil pressure indicator	Replace.
Wrong viscosity, diluted or insufficient oil	Refer to LUBRICANT SPECIFICATIONS. Select correct grade of oil, drain fill crankcase with oil of proper viscosity and quality.
Broken, loose or plugged oil lines	Replace, clean and tighten./*
Low oil level in the crankcase	Add oil and check for oil leakage, also refer to LUBRICATION GUIDE and ENGINE AND CHASSIS. LUBRICANT SPECIFICATIONS.
Defective or dirty oil pressure regulating valve	*
Oil pump strainer clogged or pump not working	*
Worn bearings	*
Clogged oil filter	Change filter element.
Clogged oil cooler	Change the oil cooler.
Excessive Smoke	
Air cleaner pipe clogged	Remove, check and clean.
Improper grade of fuel/oil	Drain off and replace with correct grade of fuel/oil.
Worn pistons, rings and/or sleeves	*

PROBABLE CAUSE	POSSIBLE REMEDY
Air-cleaner clogged/Paper element choked	Remove and clean. If defective, replace paper element.
Incorrect valve adjustment	Set valve clearance as specified.
Faulty CR fuel injection system functioning	*
Engine overloaded with respect to gear selection	Select gear according to load.
Engine Emits White Smoke	
Improper type of fuel	Use proper fuel.
Low engine temperature	Warm engine to normal operating temperature.
Defective thermostat	Remove and check thermostat.
Restriction / choking of fuel lines	Clean lines, replace filter element if required
Faulty CR fuel injection system functioning	*
Engine Emits Blue Smoke	
Air leak between compressor & intake manifold	Check and rectify.
Air leak between intake manifold & engine	Check and rectify.
Foreign object in exhaust manifold (from engine)	*
Restricted turbocharger oil drain line	Check and rectify.
Turbocharger malfunctioning	*
Faulty CR fuel injection system functioning	*
PCV system clogged	Check for blockage or shrinkage in the PCV system hoses & rectify it. Check the filter element & replace it if required.
	Check the PCV oil pre-separator and replace it if required.
Engine Emits Black or Gray Exhaust Smoke	
Improper type of fuel	Use proper fuel.
Clogged or dirty air cleaner	Service air cleaner.
Engine overloaded	Reduce load or shift to a lower gear.
Injection nozzles dirty	*
Restriction or leakage in the air intake system	Check and rectify it.
Foreign object in exhaust manifold (from engine)	*
Restriction or leakage in the exhaust system	Check and rectify it.
Faulty EGR system functioning	*
Turbocharger malfunctioning	Refer TURBOCHARGER troubleshooting
Excessive Fuel Consumption	
Valve clearance incorrect	*
Fuel leaks	Tighten or replace fuel lines.
Engine overloaded	Select the gear with respect to load, speed, & soil condition.
Engine not operating at proper temperature	Check cooling system and thermostat.
Air cleaner clogged	Service the air cleaner.
Incorrect viscosity or quantity of lubricating oil	Refer to LUBRICANT SPECIFICATIONS. Keep oil up to the correct level.
Faulty CR fuel injection system functioning	*
Incorrect tire pressure	Inflate/deflate up to recommended pressure to avoid wheel slippage and improper tire wear.
Improper type of fuel	Use proper fuel.
Faulty injectors	*

PROBABLE CAUSE	POSSIBLE REMEDY
TURBOCHARGER	
Turbocharger Noisy	
Restriction or leakage in the air intake system	Check and rectify it.
Foreign object in exhaust manifold (from engine)	*
Restriction or leakage in the exhaust system	Check and rectify it.
Excessive dirt build up on compressor wheel and/or diffuser vanes	*
Turbocharger bearing defective	*
Foreign body damage on compressor or turbine	*
Insufficient oil supply to turbocharger	*
Turbocharger compressor / turbine wheel defective	*
Oil Leak From Compressor Seal / Turbine Seal	
Restricted compressor intake duct	Check and rectify. /*
Foreign object in exhaust manifold (from engine)	Check and rectify. /*
Restricted exhaust system	Check and rectify.
Restricted turbocharger oil drain line	Check and rectify.
Turbocharger bearing housing sludged or coked	*
Excessive dirt build up on compressor wheel and/or diffuser vanes	*
Turbocharger bearing defective	*
HYDRAULICS	
No Lifting Or Slow Lifting	
Low/no oil in system	Check & fill oil to correct level.
Suction filter clogged	Clean filter replace damaged.
Hydraulic pump has lost its efficiency	Get the pump replaced.
Control valve defective	*
Control linkage defective	*
System overloaded	Reduce load on system.
Hydraulic oil too cold	Allow oil to warm.
Screen clogged	Clean or replace screen.
Hydraulic Lift Arms Lifting Without Lever Operation	
Control valve/linkage defects	*
System Overheating	
Air in the system	Locate the source of air entry and seal it.
Water in the system	Drain oil & refill.

Trouble Shooting

PROBABLE CAUSE	POSSIBLE REMEDY
BRAKES	
Does not hold or slips	Adjust brakes or change linings if needed. Linings oil soaked; check bull pinion shaft oil seal. /*
Drag or uneven	Adjust brakes.
Return spring broken	Replace.
Will not release	Release hand-brake. Check brake shaft for seizure.
TRANSMISSION	
Hard to shift gears	Use correct viscosity lubricant. /*
Shifter fork or lever defective	Replace. /*
Gears slipping out of mesh	*
Excessive noise	Check oil level, use proper viscosity lubricant. /*
Damaged parts	*
Noisy gear shifting	*
REAR WHEELS	
Do not turn	Release brake lock. Transmission, differential or clutch faulty. Refer to TRANSMISSION above. /*
Engine clutch drags	*
ELECTRICALS	
Battery Does Not Charge	
Loose or corroded connections	Clean and tighten connections.
Sulfated or worn-out battery	Check electrolyte level and specific gravity.
Loose or defective fan belt	Adjust belt tension or replace belt.
Low engine speed	Increase speed.
Alternator malfunctioning	*
Charging System Indicator Glows With Engine Running	
Defective battery	Check electrolyte level and specific gravity.
Defective alternator	Have your Mahindra dealer check alternator.
Loose defective fan belt	Adjust belt tension or replace ball.
Starter Inoperative	
Loose or corroded connections	Clean and tighten loose connections.
Low battery output	Check electrolyte level and specific gravity.
Gear shift lever in gear	Move lever to neutral.
PTO engaged	Disengage PTO.
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.
No Lights	
Fuse blown	Replace fuse.
Loose wiring or improper connections causing mal-functioning	Check wiring to see that all connections are clean and tight.
Lights burn dim	Re-charge battery, tighten cable terminals, check lamps, clean contacts.

PROBABLE CAUSE	POSSIBLE REMEDY
POWER STEERING	
Steering wander	Check the size of tires. Check tire pressure.
	Check for loose or worn steering linkage parts.
	Check wheel bearings for wear.
	Check front wheel alignment.
No recovery for open cylinder unit	Check tire pressure.
	Check for tightness of front axle kingpins.
	Check for alignment of steering column.
Shimmy	Check for proper mounting of tires.
	Check steering linkages for looseners, improper adjustment, wear and rectify accordingly.
	Check for air in hydraulic system and bleed.
High steering effort in one direction	Check if the vehicle is overloaded.
	Check for correct hydraulic system pressure.
	Check if the flow plate value is stuck due to excessive heat in the system.
	Check for correct size tires.
	Check for vehicle overloading.
	Check the hydraulic fluid level.
	Check for correct flow pressure of the pump.
	Check if the steering linkages are binding.
	Check for restriction in fluid return line.
Lost motion (Lash) at the steering wheel	Check for firmness of steering wheel on column.
	Check for components of the steering linkages.
	Check for tightness of flow unit at mounting.
	Check for air in the hydraulic system & bleed it.
Excessive heat (200^{0}F Maximum)	Check for correct size of hose.
	Check for the centering of control unit.
	Check for excessive fluid flow.

Tractor History Card

Date	Job	Card No.	Nature of Defect	Parts Replaced	W/Claim No. and Date	Remarks

Service Record

Date	Tractor Hours	Nature / Type of Repair / Service Carried Out

Part Replacement Record

Date	Part Description	Qty	Cost	Date	Part Description	Qty.	Cost

Daily Operating Log

Date	Job Done	Machine Hours		Fuel Consumed	Engine Oil Topped Up	Remarks
		Start	End			

Tractor Storage Precautions

Precautions to be taken for Tractor Storage

Sr. No.	Activity	Objective	Every 15 days	Every 45 days	More than 45 days
1	a) First start the engine & allow it to idle for 2 to 3 minutes.	Lubrication to internal parts of the Engine.	✓		
	b) Then run the tractor for 10 minutes from once place to another place at 1800 to 2000 rpm.	Lubrication to internal parts of the Transmission.	✓		
		Charging of the battery.	✓		
		Splashing of fuel from inside of the fuel tank.	✓		
2	Operate all electricals such as switches, flasher, lamps, horn.	To avoid malfunctioning due to oxidation of the contacts.	✓		
3	Drain the water inside the fuel tank using drain plug.	To avoid algae / rust formation & subsequent chocking of the fuel lines.		✓	
4	Raise the lift arms of hydraulics to their full raised position & lock the hydraulic system using the isolating valve on right hand side of control valve.	This raised position will fill the cylinder & protect it's walls from corrosion.		✓	
5	Apply anti-oxidant spray on the battery / alternator / starter motor terminals.	To avoid oxidation of terminals.		✓	
6	Clean sheet metal & chassis with dry cloth.	To avoid accumulation dust which may result into detoriation of paint quality.		✓	
7	Keep the tractor with hand brake disengaged.	To avoid locking of the brakes			*
8	De-clutching - Place spacers between clutch pedal & foot plate to keep clutch plate free.	To avoid sticking of the clutch plate & subsequent damage.			*
9	Masking (with tape) of all the openings (Such as aircleaner, fuel tank cap, silencer, breathers of engine / brakes / transmission / hydraulic unit).	To avoid rusting due to moisture entry.			*
10	Disconnect battery terminals.	To avoid discharge of the battery.			*

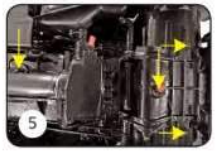
✓ Indicates activity to be carried out at these intervals.

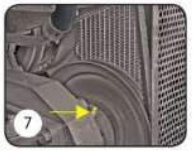
* To be done whenever tractor is not in use for a long period of time i.e. more than 45 days.

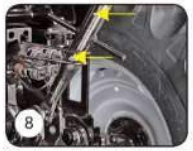
a) It is recommended to fill the fuel tank with diesel fuel & top up the tank to prevent any condensation in unfilled portion of the tank resulting into rust formation & contamination.

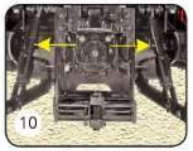
b) If the tractor is standstill (not run) for more than 3 months then it is recommended to replace the diesel to avoid detoriation in the performance.

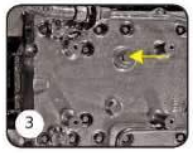
Lubrication and Greasing Chart

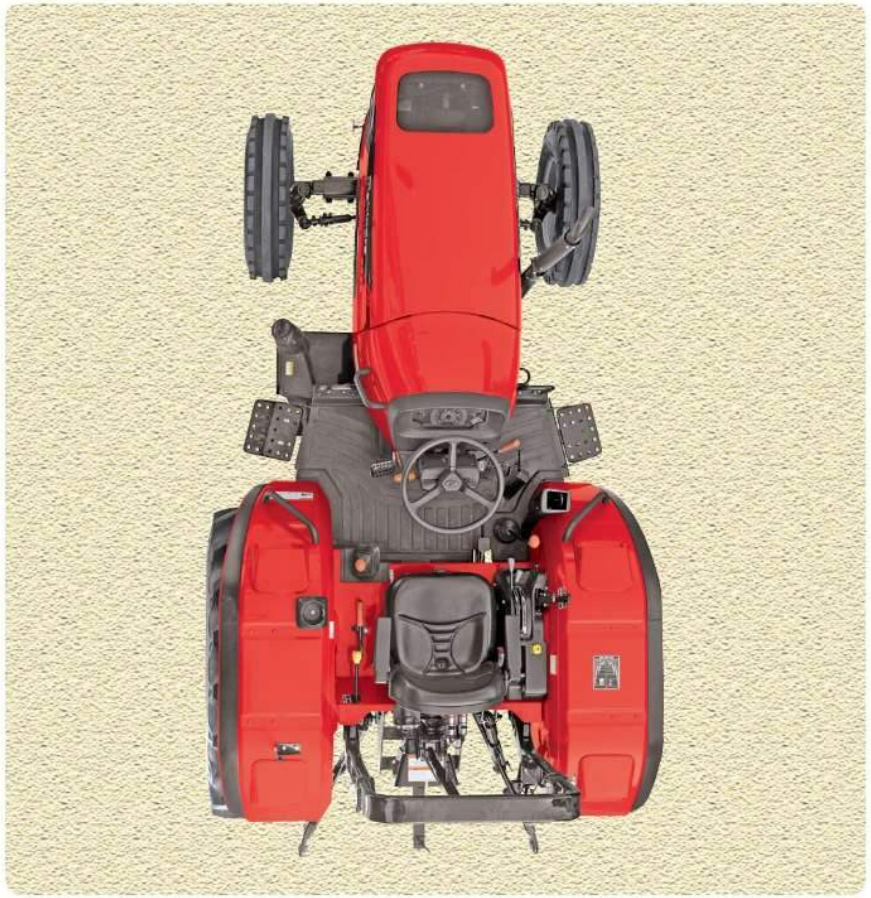






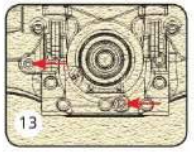






No.	Description	Lubricant
1	Engine Oil Filler Cap	EO
2	Engine Oil Dipstick	EO
3	Crankcase Drain Plug	EO
4	Transmission Oil Filling	GO
5	Transmission Oil Drain Plug	GO
6	Transmission Oil Level Window	GO
7	Roller Bearing Front Cover	CL
8	Top Link	CL
9	Bell Crank	CL
10	Lift Rod LH / RH	CL
11	Front Axle Central Trunnion Support	CL
12	Hub Reduction Steering Case LH/RH	CL
13	Front Axle Oil Drain Plug	FO
14	Hub Housing Level Plug LH/RH-4WD	FO
15	Hub Housing Fill Plug LH/RH-4WD	FO

EO - Engine Oil
GO - Transmission Gear Oil
CL - Chassis Lubricant
FO - Front Axle Oil



Routine Service Schedule

CHECK POINTS	Perio-dically	10 Hrs. or Daily	50 Hrs.	100 Hrs.	150 Hrs.	200 Hrs.	250 Hrs.	300 Hrs.	350 Hrs.	400 Hrs.	450 Hrs.	500 Hrs.	550 Hrs.	600 Hrs.	650 Hrs.	700 Hrs.	750 Hrs.	800 Hrs.	850 Hrs.	900 Hrs.	950 Hrs.	1000 Hrs.	Since then
ENGINE																							
Check Oil Level and Top-up if necessary		●																					Daily
Change Oil and Filter Element			#									■										■	Every 500 Hrs. or 1 year
Change Oil Pre-Separator																							Every 1500 Hrs.
Torque Cylinder Head Bolts and adjust Valve Clearance																						■	Every 1000 Hrs.
Change PCV Oil Separator Filter Element																							Every 1500 Hrs.
Radiator Descaling																						■	Every 1000 Hrs.
Rubber Clutch Gear Hydraulic Pump																						■	Every 1000 Hrs.
Greasing for Roller Bearing at Front Cover **														■									Every 600 Hrs.
AIR INTAKE SYSTEM																							
Clean dust collector	●	●																					Daily
Check Air-cleaner connections and tighten if required							■					■					■					■	Every 250 Hrs.
Clean Primary Element								■						■						■			Every 300 Hrs.
Change Primary Element																				■			Every 900 Hrs.
Change Safety Cartridge																				■			Every 900 Hrs.
FUEL SYSTEM																							
Drain Water from Fuel Filters (every 15 days)	*																						Periodically
Change Fuel Filter (earlier, if required)							■					■					■					■	Every 250 Hrs.
EGR SYSTEM																							
Cleaning of EGR Valve, Venturi, Intake Manifold, Cooler & Pipings																							Every 1500 Hrs.
COOLING SYSTEM																							
Check Coolant Level and Top-up if necessary			●																				Every 50 Hrs.
Check Radiator Hose Connection & tighten if required			●																				Every 50 Hrs.
Check Fan Belt tension and adjust if necessary			#					■					■					■					Every 250 Hrs.
Flush Cooling System																						■	Every 1000 Hrs.
ELECTRICAL SYSTEM																							
Clean Battery Terminals							■					■					■					■	Every 250 Hrs.
Check Starter Motor and Alternator Carbon Brushes & replace if necessary																						■	Every 1000 Hrs.
TRANSMISSION																							
Check Oil Level and Top-up if necessary			#					■					■					■					Every 250 Hrs.
Change Oil																							Every 1300 Hrs.
Change Oil Filter			#								■								■				Every 400 Hrs.
HYDRAULIC SYSTEM																							
Change Suction Filter				#										■									Every 500 Hrs.
Clean Suction Strainer																							Every 1300 Hrs.
BRAKES																							
Check and Adjust Brake Pedal Free Play	*																						Periodically
STEERING																							
Check Steering Wheel Play & Set Toe-in										■								■					Every 400 Hrs.
FRONT AXLE, WHEELS AND TIRES																							
Check Oil Level				#								■								■			Every 400 Hrs.
Change Oil						#																	Every 1500 Hrs.
Check Tire Pressure	*																						Periodically
Torque Wheel Nuts			#					■					■					■					Every 250 Hrs.
GREASE ALL NIPPLES	*		●																				Every 250 Hrs.

* Depends upon the conditions in which the tractor is being operated.
\# Indicates that this must be done initially at specified hrs.
■ Activity due.
● Repeat the activity.
** Shell Retinax Grease EP2

CALIFORNIA
Proposition 65 Warning

Breathing diesel engine exhaust exposes you to chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

- Always start and operate the engine is a well-ventilated area.
- If in an enclosed area, vent the exhaust to the outside.
- Do not modify or tamper with the exhaust system.
- Do not idle the engine except as necessary.

For more information go to www.P65warnings.ca.gov/diesel.

WARNING: Cancer and Reproductive Harm-

www.P65warnings.ca.gov.

The state of California requires the above two warnings.