OPERATOR'S MANUAL

Workmaster[™] 95 Workmaster[™] 105 Workmaster[™] 120

Tractor

Part number 90432809 2nd edition English January 2021 Replaces part number 51657039



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Every 3600 hours or two years

EVERY 3600 HOURS OR EVERY 4 YEARS

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1 - GENERAL INFORMATION

Note to the owner

This manual contains information concerning the adjustment and maintenance of your tractors. You have purchased a dependable machine, but only by proper care and operation you can expect to receive the performance and long service built into this equipment. Please have all operators read this manual carefully and keep it available for ready reference.

Your NEW HOLLAND dealer will instruct you in the general operation of your new equipment. (See the 'Delivery Report' at the back of this manual.) Your dealer's staff of factory-trained service technicians will be glad to answer any questions that may arise regarding the operation of your tractor. New Holland Top Service is also available. Call 1-866-NEWHLND (1-866-639-4563) or email na.topservice@cnh.com.

Your NEW HOLLAND dealer carries a complete line of genuine NEW HOLLAND service parts. These parts are manufactured and carefully inspected to insure high quality and accurate fitting of any necessary replacement parts. Be prepared to give your dealer the model and product identification number of your new equipment when ordering parts. Locate these numbers now and record them below. Refer to the 'General Information' section of this manual for the location of the model and product identification numbers of your machine.

Please record the following information



This is the safety alert symbol. It is used with and without signal words to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible death or injury.

Illustrations in this manual may show protective shielding open or removed to better illustrate a particular feature or adjustment.

Replace all shields before operating the machine.

Failure to comply could result in death or serious injury.

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Improvements

CNH Industrial N.V. is continually striving to improve its products. We reserve the right to make improvements or changes when it becomes practical and possible to do so, without incurring any obligation to make changes or additions to the equipment sold previously.

Intended use

DO NOT use this machine for any purpose or in any manner other than as described in the manual, decals, or other product safety information provided with the machine. These materials define the machine's intended use.

Use only approved accessories and attachments designed for your machine. Consult your dealer on changes, additions or modifications that may be required for your machine. Do not make any unauthorized modifications to your machine.

ATTENTION: The engine and fuel system on your machine is designed and built to government emissions standards. Tampering by dealer, customers, operators and users is strictly prohibited by law. Failure to comply could result in government fines, rework charges, invalid warranty. legal action and possible confiscation of the machine until rework to original condition is completed. Engine service and/or repairs must be done by a certified technician only!

Operator's age

All persons who will be operating this machine shall possess a valid local vehicle operating permit and/or other applicable local age work permits.

WARNING

IMPROPER OPERATION OF THIS MACHINE CAN CAUSE DEATH OR SERIOUS INJURY. MAKE SURE THAT EVERY OPERATOR: -is instructed in the safe and proper use of this

machine. -reads and understands the operator's manual for this machine.

-reads and understands ALL safety signs on the machine.

Failure to comply could result in death or serious injury.

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Read and thoroughly understand this manual before operating this machine. If you are an inexperienced operator, study this manual and receive operating instructions from an experienced operator. Your dealer can assist you in learning machine operation and show you proper operating procedures. Keep this manual readily available, preferably with the machine. If the original manual is damaged, order a new one from your dealer.

Electro-magnetic compatibility (EMC)

Interference may arise as a result of add-on equipment that may not necessarily meet the required standards. As such interference can result in serious malfunction of the unit and/or create unsafe situations, you must observe the following:

- The maximum power of emission equipment (radio, telephones, etc.) must not exceed the limits imposed by the national authorities of the country where you use the machine
- The electro-magnetic field generated by the add-on system should not exceed **24 V/m** at any time and at any location in the proximity of electronic components
- The add-on equipment must not interfere with the functioning of the on board electronics

Failure to comply with these rules will render the NEW HOLLAND warranty null and void.

Manual storage



GNIL19TRO1092AA 1

Keep the operator's manual in the storage compartment located on the rear of the seat on your tractor. The operator's manual must be available for use by all operators.

The right hand and left hand side of the tractor used in this manual are the same as your right hand and left hand when sitting in the tractor seat looking forward.

Product Identification Number (PIN)

Vehicle Identification Plate (VIP)

Without cab

In case of a tractor without cab, the VIP (A) is located on the right-hand side of the ROPS frame behind the operator's seat. The first line represents tractor serial number and model while the second line represents unit code and engine serial number followed by transmission serial number. Record the information that is on the decal for quick reference.



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Vehicle Identification Plate (VIP) with cab

In case of a tractor with cab, the VIP (A) is located on the left-hand side of the rear portion of the cab.



GNIL19TRO1288AA 2

Vehicle Identification Plate (VIP) – alternate location

In some tractors the VIP is also available on the right-hand side of the radiator.



GNIL19TRO1214AB 3

Vehicle Identification Number (VIN)

The VIN **(B)** or tractor serial number is stamped on the right-hand side of the front axle support. This numbers is also repeated on the VIP.

VIN.....



GNIL19TRO1099AA 4

Engine identification data plate

The engine identification data plate **(C)** is present on the engine ECU unit and contains the engine serial number and the vehicle identification number. This plate also contain dataset and injector code information.

Engine serial no.....

Engine identification data plate – alternate location

The engine identification data plate (C) is present on the radiator flap on the right-hand side.





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Engine identification plate

The engine identification plate (**D**) is placed on right-hand side on the engine sump.

This plate contains engine and its emission related information.

Engine identification plate – alternate location

The engine identification plate **(D)** is also present on the engine shroud on the right-hand side.

Transmission Product Identification Number (PIN)

The transmission product identification number (PIN) **(E)** is stamped on right-hand side of transmission housing near steering column. This information is repeated on tractor identification decal. Record the transmission PIN below for quick reference.

Transmission PIN.....

NOTE: Mat on the operator's platform needs to be removed to access the transmission PIN.

Cab identification data plate - with cab

The cab identification data plate (F) is stamped on rear side frame.

The cab identification plate contain information such as structure serial number, model, vehicle weight and structure test report.







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GNIL19TRO1437AA 10

Machine orientation



(A) Front(C) Left-hand side

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(B) Rear(D) Right-hand side

Selective Catalytic Reduction (SCR) system

What is Selective Catalytic Reduction (SCR)?

Your NEW HOLLAND machine is equipped with additional components to comply with national and local exhaust emissions requirements. The main components of the SCR system include the SCR catalyst, the Diesel Exhaust Fluid (DEF)/AdBlue® injection unit, the DEF/AdBlue® tank, and the DEF/AdBlue® dosing control unit.

How does Selective Catalytic Reduction (SCR) work?

During combustion, harmful Nitrogen Oxide (NOx) molecules are formed in the exhaust. By injecting a DEF/AdBlue® solution into the exhaust prior to a catalyst, the NOx can be converted to harmless elemental Nitrogen and water. This happens when the NOx molecules react inside the catalyst with the heat generated by the engine and the ammonia in the DEF/AdBlue® solution.

NOTICE: Prolonged idling of the machine with no load for more than **6** h will cause damage to the SCR catalyst.

During cold engine operation at low engine coolant and ambient air temperatures, water vapor will be visible from the exhaust. This water vapor will resemble steam or light white smoke, and will dissipate as the engine and machine components warm. This water vapor is considered normal.

NOTE: After engine shutdown, the SCR system will perform a purge cycle, which permits the supply module to continue to run for up to **70 s**. This is considered normal and requires no action from the operator.

What is Diesel Exhaust Fluid (DEF)/AdBlue®?

DEF/AdBlue® is a clear, colorless, non-toxic, aqueous urea solution (32.5%) with a slight ammonia odor. It is used to chemically reduce NO_x emissions from heavy-duty diesel-powered vehicles. DEF/AdBlue® is neither explosive nor harmful to the environment. DEF/AdBlue® is classified under the minimum-risk category of transportable fluids.

International standard **ISO 22241-1** defines DEF/Ad-Blue® quality. The American Petroleum Institute (API®) has a voluntary certification program for DEF/AdBlue®. To ensure that DEF/AdBlue® satisfies the requirements of ISO 22241, look for the API® DEF Certification Mark[™] whenever you purchase DEF/AdBlue®. API Diesel Exhaust Fluid Certification Mark is a registered trademark of API in the United States and or other countries.



Finding Diesel Exhaust Fluid (DEF)/AdBlue®

Your NEW HOLLAND dealer is fully equipped to accommodate all your DEF/AdBlue® needs.

New Holland Top Service: 1-866-639-4563 na.topservice@newholland.com

Storage, handling, and transport

NOTICE: Storage temperatures above 30 °C (86 °F) greatly reduce the shelf life of DEF/AdBlue®.

DEF/AdBlue® has a typical shelf life of 6-12 months. Refer to the SHELF LIFE table below. In order for DEF/AdBlue® to remain in a useable condition, storage requirements must be met.

- Store between -11 °C (12 °F) and 30 °C (86 °F).
- Use only an approved DEF/AdBlue® container. Contact your dealer to obtain proper storage container(s).
- Keep container tightly closed.
- Keep container in a cool, well-ventilated area.
- Keep away from heat and direct sunlight.

If the machine will exceed a four month shut down period: 2. Drain the DEF/AdBlue® tank.

- 1. Perform a complete after-run procedure.
- 3. Flush the tank with deionized water.

4. Drain the deionized water.

1. Fill the **DEF/AdBlue**® tank.

NOTICE: Do not disconnect any electrical connections from the **DEF/AdBlue**® system.

- 2. Replace the main filter in the supply module.
- 3. Start machine.

Machine start-up after extended shutdown:

Thawing

• Your NEW HOLLAND machine is equipped with an internal tank heater to thaw frozen DEF/AdBlue®. Your machine will still function until the DEF/AdBlue® begins to flow. The SCR system will then function normally.

NOTE: You may notice a slight reduction in engine torque in high demand situations until the DEF/AdBlue® is fully thawed.

• Do not heat DEF/AdBlue® for long periods of time at temperatures above **30** °C (**86** °F). This causes the solution to decompose, which very slowly decreases the expected shelf life.

NOTICE: Do not use an anti-gelling or freeze point improver in your DEF/AdBlue[®]. The **32.5%** solution is specifically designed to provide the optimum NO_x reduction properties. Any further blending or adjusting of the DEF/AdBlue[®] mixture will lessen its ability to perform correctly and may cause damage to the SCR components.

Handling and supply of additives, if any.

- Personal Protective Equipment (PPE) is not required under normal conditions. If splashing is likely, wear eye protection. For prolonged or repeated contact, impervious gloves are recommended. Follow the precautions listed in the SAFETY INFORMATION chapter when handling any service fluid.
- No additives are required.

NOTICE: Contaminated DEF/AdBlue[®] can affect the performance of your machine. Follow all instructions in this manual when handling DEF/AdBlue[®].

Shelf life

Constant ambient storage temperature	Minimum shelf life		
Less than or equal to 10 °C (50 °F)	36 months		
Less than or equal to 25 °C (77 °F) ¹	18 months		
Less than or equal to 30 °C (86 °F)	12 months		
Less than or equal to 35 °C (95 °F)	6 months		
Greater than 35 °C (95 °F)	_2		
¹ To prevent decomposition of DEF/AdBlue®, prolonged transportation or storage above 25 °C (77 °F) should be avoided.			

² Significant loss of shelf life: check every batch before use. See your NEW HOLLAND dealer for more information on testing.

NOTE: The main factors taken into account to define the shelf life in the table above are the ambient storage temperature and the initial alkalinity of DEF/AdBlue®. The difference in evaporation between vented and non-vented storage containers is an additional factor.

NOTE: The information in this table is for reference only and has been provided by the International Organization for Standardization, Document number **ISO 22241-3** Diesel engines - NO_x reduction agent AUS 32 - Part 3: Handling, transportation and storage.

NOTE: DEF/AdBlue® that remains in the tank of the machine after the season does not require any special precautions unless storage exceeds the shelf life table above.

Disposal

• Dispose of DEF/AdBlue® and any filter accumulations in accordance with all applicable Federal, State, and local laws governing waste disposal.

Hydrocarbon management

If the engine is run at low idle speed for a prolonged period of time, hydrocarbons can accumulate in the SCR catalyst. To manage this accumulation, your machine will monitor current conditions and increase idle speed and/or activate the exhaust flap to increase the temperature inside the SCR catalyst and eliminate the hydrocarbons.

There are three messages that can be displayed to inform you that hydrocarbon management is active:

1. Low Idle Increase Active - The engine low idle speed has been increased to elevate exhaust temperatures in the SCR catalyst.

NOTE: This automatic engine idle speed increase is active on the machine when the following conditions are satisfied:

- Transmission in neutral and clutch released
- Vehicle speed = 0 km/h (0 mph)
- Power Take-Off (PTO) not engaged
- Electronic remote control valves not active (where fitted)
- 2. Low Idle Increase Recommended The engine control module desires to increase the engine speed when operating at lower temperatures or with lighter engine loads in order to elevate SCR temperatures.
- 3. SCR Catalyst Full The SCR catalyst has become clogged with hydrocarbon accumulation.
 - A. Place the machine in park and apply the hand brake (if equipped).
 - B. Manually increase the engine speed to 1500 RPM and allow the machine to run until the warning light turns off.

NOTE: This procedure may take approximately 1 - 2h to complete depending on the ambient air temperature.

NOTICE: Do not turn off the engine, drive the machine, or increase the load on the machine to avoid damage to the catalyst.

Emissions overview

US Environmental Protection Agency (EPA) Warranty Statement

FPT Industrial S.p.A. warrants to the ultimate purchaser and each subsequent purchaser that the engine is designed, built and equipped so as to conform with US Environmental Protection Agency (EPA) regulations applicable at the time of manufacture and that it is free from defects in workmanship or material which would cause it not to meet these regulations for a period of:

- 2 years or 1,500 hours of operation, whichever occurs first, for engines less than **19 kW** (**25 Hp**)
- 5 years or 3,000 hours of operation, whichever occurs first, for engines greater than or equal to 19 kW (25 Hp)

NOTE: This warranty applies to all units operated in the United States or Canada.

Coverage

The model year, class of diesel engine, and emission application determination for your engine are identified on the Emission Control Information Label. This label is affixed to one of the following areas of the engine: the top of engine's rocker arm cover, the right-hand side of the oil pan, and the right-hand side of the engine front gear cover. The warranty period begins on the date the new equipment is sold to the first retail purchaser. The presence of the emission control label is the indication that the engine conforms to the applicable standards. Any emission control system parts which are proven defective during normal use will be repaired or replaced during the warranty period.

The engine owner has responsibility to perform all the required maintenance listed in the Owner's Manual. FPT Industrial S.p.A. will not deny an emission warranty claim solely because no record of maintenance exists; however, a claim may be denied if failure to perform maintenance resulted in the failure of a warranted part.

It is recommended that replacement parts used for maintenance or repairs be FPT Industrial S.p.A. Service Parts to maintain the quality originally designed into your emission certified engine. The use of non- FPT Industrial S.p.A. parts does not invalidate the warranty on other components unless the use of such parts causes damage to warranted parts.

The manufacturer is liable for damages to other engine components caused by the failure of any warranted emission control system part. FPT Industrial S.p.A. is not responsible for failures resulting from improper repair or the use of parts that are not genuine FPT Industrial S.p.A. or FPT Industrial S.p.A. approved parts.

Component coverage

New engines certified for sale and registered will have the following items covered by the emission warranty, depending on the emission level of the engine, if the items were first installed on the new engine as original equipment:

Fuel injection system

- · Fuel injection pump
- Fuel injectors
- · Fuel injection lines

Air induction system

- Intake manifold
- Turbocharger system (includes exhaust manifold)
- Charge air cooler

Positive Crankcase Ventilation (PCV) system (if applicable)

- PCV valve
- Oil fill cap

Exhaust after treatment Devices (if applicable)

- Diesel Oxidation Catalyst (DOC)
- Diesel Particulate Filter (DPF)
- Selective Catalytic Reduction (SCR)
- Diesel Exhaust Fluid (DEF) tank and dispensing systems

Exhaust Gas Recirculation Systems (EGR)

- EGR valve assembly
- EGR cooler

Cold Start Enrichment Systems

Electronic Control Units, Sensors, Solenoids, and Wiring harnesses used in above systems

Emissions warranty does not cover

- Repairs arising from storage deterioration, failure to maintain the equipment, negligence, alteration, improper use of the equipment, collision or other accident, vandalism, or other casualty, or operation beyond rated capacity or specification.
- Repairs arising from abuse or neglect, including but not limited to: operation without adequate coolant or lubricants, adjustments to the fuel system outside equipment specifications, over-speeding, improper storage, starting, warm-up, or shutdown practices, incorrect fuel or contaminated fuel, oil or other fluids.
- Normal maintenance services, such as engine tune-ups, engine fuel system cleaning, checks, adjustments, shimming, etc.
- Items replaced due to customer demand.
- Labor charges performed by anyone except a dealer authorized by contract to repair the equipment, unless they qualify under special provisions (i.e. outside labor).
- Any and all travel costs for items such as towing, service calls, or transporting a unit to and from the place where the warranty service is performed.
- Normal maintenance costs, including but not limited to: lubricants, coolants, fluids, fuel, filters, and associated labor. Lubricants, filters, and coolants may qualify for warranty reimbursement if they require replacement as a DIRECT RESULT of a defect in material or workmanship.
- Claims involving the inspection or reconditioning of units after storage or prior use.
- Repairs arising from service performed by agents not approved by NEW HOLLAND.
- Repairs arising from any unauthorized modification to the product or the use of non- NEW HOLLAND parts, implements or attachments.
- Removal, replacement, or installation of non- NEW HOLLAND optional equipment, attachments or components.
- Premiums charged for overtime labor costs or out of shop expenses.
- Economic loss including lost profits, crop loss, equipment rental, or other expense.
- Unauthorized modification or updating machines without a warrantable failure.
- Any and all costs of dealer shop supplies incurred with repairs, including but not limited to: solvents, cleaners, anti-seize lubricants, loctite[™], sealant, adhesive, oil-dry, shop towels, etc.
- Failure of the machine, its implements or attachments caused by improper field application or loading.
- Any and all costs for coolant, fuel, or lube (oil) analysis including supplies and lab recommendations.
- · Cost associated with cleaning of machine in preparation for servicing.

California Emission Control Warranty Statement

Your warranty rights and obligations

California Air Resources Board and FPT Industrial S.p.A. are pleased to explain the emission control system warranty on 2018 through 2020 off-road diesel engines. In California, new heavy-duty off-road engines must be designed, built and equipped to meet the State's stringent anti-smog standards. FPT Industrial S.p.A. must warrant the emission control system on your 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, FPT Industrial S.p.A. will repair your heavy-duty off-road engine at no cost to you including diagnosis, parts and labor.

MANUFACTURER'S WARRANTY COVERAGE:

The 2018-2020 heavy-duty off-road engines are warranted for 5 years or 3000 hours, whichever comes first. If any emission-related part on your engine is defective, the part will be repaired or replaced by FPT Industrial S.p.A.

OWNER'S WARRANTY RESPONSIBILITIES:

- As the off-road engine owner, you are responsible for the performance of the required maintenance listed in your owner's manual. FPT Industrial S.p.A. recommends that you retain all receipts covering maintenance on your offroad engine, but NEW HOLLAND cannot deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.
- As the off-road engine owner, you should however be aware that FPT Industrial S.p.A. may deny you warranty coverage if your off-road engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.
- Your engine is designed to operate on Ultra Low Sulfur 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 ARB suggests that you present your off-road engine to a NEW HOLLAND dealer as soon as a problem exists. The warranty repairs should be completed by the dealer as expeditiously as possible.

If you have any questions regarding your warranty rights and responsibilities, you should contact NAFTA Technical Service Group at 1-630-481-2905 or email: fpt-na-warranty@fptindustrial.com.

CALIFORNIA EMISSION CONTROL WARRANTY PARTS LIST

Fuel injection system

- · Fuel injection pump
- Fuel injectors
- Fuel injection lines

Air induction system

- Intake manifold
- · Turbocharger system (includes exhaust manifold)
- · Charge air cooler

Positive Crankcase Ventilation (PCV) system (if applicable)

- PCV valve
- Oil fill cap

Exhaust after treatment Devices (if applicable)

• Diesel Oxidation Catalyst (DOC)

- · Diesel Particulate Filter (DPF)
- Selective Catalytic Reduction (SCR)
- Diesel Exhaust Fluid (DEF) tank and dispensing systems

Exhaust Gas Recirculation Systems (EGR)

- EGR valve assembly
- EGR cooler

Cold Start Enrichment Systems

Electronic Control Units, Sensors, Solenoids, and Wiring harnesses used in above systems

Miscellaneous items used in above systems, such as hoses, belts, connectors, tubing, gaskets, and mounting hardware.

Emission Control Information Labels

2 - SAFETY INFORMATION

Personal safety

Personal safety



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible death or injury.

Throughout this manual you will find the signal words DANGER, WARNING, and CAUTION followed by special instructions. These precautions are intended for the personal safety of you and those working with you.

Read and understand all the safety messages in this manual before you operate or service the machine.

A DANGER indicates a hazardous situation that, if not avoided, will result in death or serious injury.

A WARNING indicates a hazardous situation that, if not avoided, could result in death or serious injury.

A CAUTION indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

FAILURE TO FOLLOW DANGER, WARNING, AND CAUTION MESSAGES COULD RESULT IN DEATH OR SERIOUS INJURY.

Machine safety

NOTICE: Notice indicates a situation that, if not avoided, could result in machine or property damage.

Throughout this manual you will find the signal word Notice followed by special instructions to prevent machine or property damage. The word Notice is used to address practices not related to personal safety.

Information

NOTE: Note indicates additional information that clarifies steps, procedures, or other information in this manual.

Throughout this manual you will find the word Note followed by additional information about a step, procedure, or other information in the manual. The word Note is not intended to address personal safety or property damage.

Safety rules

A General safety rules A

Modifications made to this machine may increase the likelihood or potential for debris accumulations that would normally not be present. Modifications include frame-mounted attachments, plates, screens, or other aftermarket equipment. Operators of modified machines must be aware of accumulations of organic debris and/or material and overall machine cleanliness.

Modified machines require additional and more frequent inspection and cleaning during usage. The machine may require inspection and cleaning multiple times per day during usage. Operators must be aware of the operating environment and conditions. Operators must take appropriate actions to maintain the machines during use. In particular, pay attention to the following machine areas:

- 1. In and around the engine compartment
- 2. Hot exhaust components
- 3. Moving, turning, or rotating machine components

Operators that operate the machine in a typical applications and/or conditions must be aware of accumulations of organic debris and/or material and overall machine cleanliness. Pay particular attention where material accumulations are possible or may result.

Machines that operate in a typical applications or conditions require additional and more frequent inspection and cleaning during usage. The machine may require inspection and cleaning multiple times per day during usage. Operators must be aware of the operating environment and conditions. Operators must take appropriate actions to maintain the machines during use. In particular, pay attention to the following machine areas:

- 1. In and around the engine compartment
- 2. Hot exhaust components
- 3. Moving, turning, or rotating machine components

Use caution when you operate the machine on slopes. Raised equipment, full tanks and other loads will change the center of gravity of the machine. The machine can tip or roll over when near ditches and embankments or uneven surfaces.

Never permit anyone other than the operator to ride on the machine.

Never operate the machine under the influence of alcohol or drugs, or while you are otherwise impaired.

When digging or using ground-engaging attachments, be aware of buried cables. Contact local utilities to determine the locations of services.

Pay attention to overhead power lines and hanging obstacles. High voltage lines may require significant clearance for safety.

Hydraulic oil or diesel fuel leaking under pressure can penetrate the skin, causing serious injury or infection.

- Do not use your hand to check for leaks. Use a piece of cardboard or paper.
- Stop the engine, remove the key, and relieve the pressure before you connect or disconnect fluid lines.
- Make sure that all components are in good condition. Tighten all connections before you start the engine or pressurize the system.

- If hydraulic fluid or diesel fuel penetrates the skin, seek medical attention immediately.
- Continuous long term contact with hydraulic fluid may cause skin cancer. Avoid long term contact and wash the skin promptly with soap and water.

Keep clear of moving parts. Loose clothing, jewelry, watches, long hair, and other loose or hanging items can become entangled in moving parts.

Wear protective equipment when appropriate.

Do not attempt to remove material from any part of the machine while it is being operated or while components are in motion.

Make sure that all guards and shields are in good condition and properly installed before you operate the machine. Never operate the machine with shields removed. Always close access doors or panels before you operate the machine.

Dirty or slippery steps, ladders, walkways, and platforms can cause falls. Make sure these surfaces remain clean and clear of debris.

A person or pet within the operating area of a machine can be struck or crushed by the machine or its equipment. DO NOT allow anyone to enter the work area. Raised equipment and/or loads can fall unexpectedly and crush persons underneath. Never allow anyone to enter the area underneath raised equipment during operation.

Never operate the engine in enclosed spaces as harmful exhaust gases may build up.

Before you start the machine, be sure that all controls are in neutral or park lock position.

Start the engine only from the operator's seat. If you bypass the safety start switch, the engine can start with the transmission in gear. Do not connect or short across terminals on the starter solenoid. Attach jumper cables as described in the manual. Starting in gear may cause death or serious injury.

Always keep windows, mirrors, all lighting, and Slow-Moving Vehicle (SMV) emblem clean to provide the best possible visibility while you operate the machine.

Operate controls only when seated in the operator's seat, except for those controls expressly intended for use from other locations.

Before you leave the machine:

- 1. Park the machine on a firm, level surface.
- 2. Put all controls in neutral or park lock position.

A General maintenance safety A

Keep the area used for servicing the machine clean and dry. Clean up spilled fluids.

Service the machine on a firm, level surface.

Install guards and shields after you service the machine.

Close all access doors and install all panels after servicing the machine.

Do not attempt to clean, lubricate, clear obstructions, or make adjustments to the machine while it is in motion or while the engine is running.

Always make sure that working area is clear of tools, parts, other persons and pets before you start operating the machine.

Unsupported hydraulic cylinders can lose pressure and drop the equipment, causing a crushing hazard. Do not leave equipment in a raised position while parked or during service, unless the equipment is securely supported.

Jack or lift the machine only at jack or lift points indicated in this manual.

Incorrect towing procedures can cause accidents. When you tow a disabled machine follow the procedure in this manual. Use only rigid tow bars.

- 3. Engage the parking brake. Use wheel chocks if required.
- 4. Lower all hydraulic equipment Implements, header, etc.
- 5. Turn off the engine and remove the key.

When, due to exceptional circumstances, you would decide to keep the engine running after you leave the operator's station, then you must follow these precautions:

- 1. Bring the engine to low idle speed.
- 2. Disengage all drive systems.

3. **A WARNING**

Some components may continue to run down after you disengage drive systems. Make sure all drive systems are fully disengaged.

Failure to comply could result in death or serious injury.

Shift the transmission into neutral.

4. Apply the parking brake.

Stop the engine, remove the key, and relieve pressure before you connect or disconnect fluid lines.

Stop the engine and remove the key before you connect or disconnect electrical connections.

Scalding can result from incorrect removal of coolant caps. Cooling systems operate under pressure. Hot coolant can spray out if you remove a cap while the system is hot. Allow the system to cool before you remove the cap. When you remove the cap, turn it slowly to allow pressure to escape before you completely remove the cap.

Replace damaged or worn tubes, hoses, electrical wiring, etc.

The engine, transmission, exhaust components, and hydraulic lines may become hot during operation. Take care when you service such components. Allow surfaces to cool before you handle or disconnect hot components. Wear protective equipment when appropriate.

When welding, follow the instructions in the manual. Always disconnect the battery before you weld on the machine. Always wash your hands after you handle battery components.

$oldsymbol{A}$ Wheels and tires $oldsymbol{A}$

Make sure that tires are correctly inflated. Do not exceed any recommended load or pressure. Follow the instructions in the manual for proper tire inflation.

Tires are heavy. Handling tires without proper equipment could cause death or serious injury.

Never weld on a wheel with a tire installed. Always remove the tire completely from the wheel prior to welding.

Always have a qualified tire technician service the tires and wheels. If a tire has lost all pressure, take the tire and

$oldsymbol{A}$ Driving on public roads and general transportation safety $oldsymbol{A}$

Comply with local laws and regulations.

Use appropriate lighting to meet local regulations.

Make sure that the SMV emblem is visible.

Make sure that the brake pedal latch is engaged. You must lock brake pedals together for road travel.

Use safety chains for trailed equipment when safety chains are provided with machine or equipment.

Lift implements and attachments high enough above ground to prevent accidental contact with road.

When you transport equipment or a machine on a transport trailer, make sure that it is properly secured. Be sure the SMV on the equipment or machine is covered while being transported on a trailer.

Be aware of overhead structures or power lines and make sure that the machine and/or attachments can pass safely under.

Travel speed should be such that you maintain complete control and machine stability at all times.

Slow down and signal before turning.

Pull over to allow faster traffic to pass.

$oldsymbol{A}$ Fire and explosion prevention $oldsymbol{A}$

Fuel or oil that is leaked or spilled on hot surfaces or electrical components can cause a fire.

Crop materials, trash, debris, bird nests, or flammable material can ignite on hot surfaces.

Always have a fire extinguisher on or near the machine.

Make sure that the fire extinguisher(s) is maintained and serviced according to the manufacturer's instructions.

At least once each day and at the end of the day, remove all trash and debris from the machine especially around wheel to a tire shop or your dealer for service. Explosive separation of the tire can cause serious injury.

Do not weld to a wheel or rim until the tire is completely removed. Inflated tires can generate a gas mixture with the air that can be ignited by high temperatures from welding procedures performed on the wheel or rim. Removing the air or loosening the tire on the rim (breaking the bead) will NOT eliminate the hazard. This condition can exist whether tires are inflated or deflated. The tire must be completely removed from the wheel or rim prior to welding the wheel or rim.

Follow correct towing procedure for equipment with or without brakes.

Agricultural trailers and towed agricultural machines shall be equipped with brakes if the maximum fully loaded mass is greater than **1500.0 kg** (**3306.9 lb**) and greater than 1.5 times the mass of the towing unit used for normal operation.

Agricultural trailers and towed agricultural machines without brakes shall not be towed at speeds greater than **32 km/h**, or the maximum speed recommended by the manufacturer, whichever is less.

Agricultural trailers and towed agricultural machines with brakes may be towed:

- At speeds up to 40 km/h, or the maximum speed recommended by the manufacturer, whichever is less, if the maximum fully loaded mass is no greater than 4.5 times the mass of the towing unit;
- At speeds up to 50 km/h, or the maximum speed recommended by the manufacturer, whichever is less, if the maximum fully loaded mass is no greater than 3.0 times the mass of the towing unit.

Towed bulk carrier equipment shall be equipped with brakes if the equipment mass ratio is equal to or greater than 4.0.

hot components such as the engine, transmission, exhaust, battery, etc. More frequent cleaning of your machine may be necessary depending on the operating environment and conditions.

At least once each day, remove debris accumulation around moving components such as bearings, pulleys, belts, gears, cleaning fans, etc. More frequent cleaning of your machine may be necessary depending on the operating environment and conditions. Inspect the electrical system for loose connections and frayed insulation. Repair or replace loose or damaged parts.

Do not store oily rags or other flammable material on the machine.

A General battery safety A

Always wear eye protection when you work with batteries.

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

Ventilate the area when you charge a battery or use a battery in an enclosed area.

Disconnect the negative (-) terminal first and reconnect the negative (-) terminal last.

When you weld on the machine, disconnect both terminals of the battery.

Do not weld, grind, or smoke near a battery.

When you use auxiliary batteries or connect jumper cables to start the engine, use the procedure shown in the operator's manual. Do not short across terminals.

$oldsymbol{A}$ Safety instructions for the passenger seat $oldsymbol{A}$

A folding passenger seat is available for some markets where local legislation permits.

The presence of a passenger is permissible for road use, while for working in the field the seat should be used by an instructor for training new operators or by service technicians for fault diagnosis and checking problems.

When the instructional seat is occupied, the following precautions must be followed:

A Operator presence system A

Your machine is equipped with an operator presence system to prevent the use of some features while the operator is not in the operator's seat.

A Power Take-Off (PTO)

PTO-driven machinery can cause death or serious injury. Before you work on or near the PTO shaft or service or clear the driven machine, put the PTO lever in the disengage position, stop the engine, and remove the key.

Whenever a PTO is in operation, a guard must be in place to prevent death or injury to the operator or bystanders.

Do not weld or flame cut any items that contain flammable material. Clean items thoroughly with non-flammable solvents before welding or flame-cutting.

Do not expose the machine to flames, burning brush, or explosives.

Promptly investigate any unusual smells or odors that may occur during operation of the machine.

Follow the manufacturer's instructions when you store and handle batteries.

Battery post, terminals, and related accessories contain lead and lead compounds. Wash hands after handling.

Battery acid causes burns. Batteries contain sulfuric acid. Avoid contact with skin, eyes, or clothing. Antidote (external): Flush with water. Antidote (eyes): flush with water for 15 minutes and seek medical attention immediately. Antidote (internal): Drink large quantities of water or milk. Do not induce vomiting. Seek medical attention immediately.

Keep out of reach of children and other unauthorized persons.

- Machine should be driven only at slow speeds and over level ground.
- Avoid quick starts or stops.
- · Avoid sharp turns.
- · Always wear correctly adjusted seat belts.
- Keep door closed at all times.

Never disconnect or bypass the operator presence system.

If the operator presence system is inoperable, then it must be repaired.

When doing stationary PTO work, keep clear of all moving parts and make sure that appropriate guards are in place.

Never use a spline adaptor:

- Match the right tractor PTO spline and speed with the PTO driveshaft provided with an implement. This will assure proper geometry and operating speed.
- Never operate 540 RPM implements at 1000 RPM.

- Never operate **1000 RPM** implements at **540 RPM**.
- Use of PTO adaptors will void the warranty of the driveshaft, and the PTO drive train of the machine and implement.

$oldsymbol{A}$ Reflectors and warning lights $oldsymbol{A}$

You must use flashing amber warning lights when you operate equipment on public roads.

A Seat belts A

Seat belts must be worn at all times.

Seat belt inspection and maintenance:

- Keep seat belts in good condition.
- Keep sharp edges and items than can cause damage away from the belts.
- Periodically check belts, buckles, retractors, tethers, slack take-up system, and mounting bolts for damage and wear.
- Replace all parts that have damage or wear.

Safety rules - Operator protective structure

A Operator protective structure A

Definition of cab category 1

The cab meets the requirements defined in EN 15695–1. This means that the air delivery and filtration system does

Definition of cab category 2

The cab meets the requirements defined in EN 15695–1. This means that the air delivery and filtration system provides protection against dust and that the minimum differential pressure is ensured. Necessary filtered fresh air flow rate can be obtained using the air-conditioning system and setting the fan on maximum speed, provided that doors, windows, and hatches are closed.

The cab category 1 does not guarantee a full protection against dust, aerosols, and vapors. The cab category 2 provides protection against dust. For application of plant protection products (e.g. pesticides, fungicides, herbicides, etc.), please refer to the instructions provided by the supplier of the chemical agent as well as instructions provided by the sprayer's manufacturer. Use the special devices and Personal Protective Equipment (PPE) also when inside the cab and, particularly, on tractors without a cab. • For correct hitch geometry, refer to the operator's manual for each implement you connect.

- Replace belts that have cuts that can make the belt weak.
- Check that bolts are tight on the seat bracket or mounting.
- If the belt is attached to the seat, make sure that the seat or seat brackets are mounted securely.
- · Keep seat belts clean and dry.
- Clean belts only with soap solution and warm water.
- Do not use bleach or dye on the belts because this can make the belts weak.

not provide a specified level of protection against hazardous substances, but does provide protection from external atmospheric conditions (e.g. rain, wind, snow, etc).

Although the air delivery system cannot offer full protection, partial protection can be achieved by following some basic rules:

- Always use PPE and protective clothing.
- Keep doors, windows, and hatches closed during the spraying operation.
- · Keep the cab interior clean.
- Do not enter the cab with contaminated shoes and/or clothing.
- Keep all used PPE outside the cab.
- Bring the wire harness of the remote sprayer control box into the tractor cab.
- Use only genuine filters and ensure that the filter is correctly installed.
- Check the condition of the sealing material and filters, replacing them if damaged.

Operator protections

Roll over protective structure (ROPS)

This tractor is provided with either a ROPS structure or a ROPS cab, offering protection against roll over related hazards. In addition, always consider the following precautions:

- Do not use the tractor beyond its limits of terrain gradient and stability. Using the tractor beyond these limits may result in roll- over or a tip-over. Observe the recommendations in this manual and pay particular attention when going down steep hills in a loaded condition.
- Do not drive the tractor on or near the edge of ditches, canals, dykes, or embankments with ground that is unstable or dug out by rodents. The tractor may sink sideways and roll over.
- Do not use the tractor on unstable bridge heads and poor bridge floors. These constructions may collapse and cause the tractor to roll over. Always inspect the condition and carrying capacity of bridges and ramps before crossing.
- Always use the seat belt when operating the tractor. The ROPS cab or ROPS structure will only be fully effective when the driver remains attached to their seat.
- Do not use the tractor beyond the respective limits of dynamic stability. High speed, abrupt maneuvers, and fast and tight cornering will increase the risk of roll over.
- Do not use the tractor for pulling work, in cases where you do not know whether the load will yield, for instance, when pulling stumps. The tractor may flip over backwards if the stump does not yield.
- Be extremely cautious when working with the tractor on forage silos without side concrete walls. Dual wheels or a wide track setting may improve the sideways stability of the tractor.

Falling over protective structure (FOPS)

A FOPS-certified canopy/cab provides protection against falling objects according to OECD code 10 standard. It is recommended to use a certified FOPS when you work with front-end loaders or in forestry applications. A canopy/cab that is not FOPS-certified offers insufficient

• Be cautious that the center of gravity of the tractor may increase when loads on the front-end loader or the three-point linkage are raised. In these conditions, the tractor may roll over earlier than expected.

Do not attach any device to the protective structure for pulling purposes. Do not drill holes into the protective structure.

The protective structure and interconnecting components are a certified system. Any damage, fire, corrosion, or modification will weaken the structure and reduce your protection. If this occurs, the protective structure must be replaced so that it will provide the same protection as a new protective structure. Contact your dealer for protective structure inspection and replacement.

After an accident, fire, tip or roll over, the following must be performed by a qualified technician before returning the machine to field or job site operation

- The protective structure must be replaced.
- The mounting or suspension for the Protective Structure, operator seat and suspension, seat belts and mounting components and wiring within the operator's protective system must be carefully inspected for damage.
- All damaged parts must be replaced.

Do not weld, drill holes, attempt to straighten or repair the protective structure. Modification in any way can reduce the structural integrity of the structure which could cause death or serious injury in the event of fire, tip, roll over collision or accident.

protection against falling rocks, bricks, or pieces of concrete.

The FOPS level on your tractor canopy/cab is certified according to OECD code 10.

Installation and working with a front-end loader on tractors equipped with a cab

Do not use the front-end loader without taking precautions against falling objects.

Please consider the following precautions when working with a front-end loader:

- Do not lift the front-end loader to a height from which objects may fall or roll on the driver.
- Use always the correct attachment (grab forks, buckets, etc) for the specific task to perform and ensure that the load is securely kept in place.
- Install only a front-end loader with a parallel guidance system and use it all the time; this system will ensure that the load in the bucket will remain horizontal, regardless of the height of the lifting booms.

Installation and working with a front-end loader on tractors without a cab

It is not recommended to install a front-end loader on a tractor without a cab, that cannot offer a minimum protection against falling objects.

Strictly observe the following precautionary warnings:

- Do not lift the front-end loader to a height from which objects may fall or roll on the driver.
- Use always the correct attachment (grab forks, buckets, etc) for the specific task to perform and ensure that the load is securely kept in place.

General precautions to be followed when working with a front-end loader

- Do not allow bystanders in the maneuvering zone of the tractor that is equipped with a front-end loader. Do not allow bystanders to stand near or under the lifted bucket of a front-end loader.
- Do not use the front-end loader as a lift for persons for activities that must be done at a certain height (for example, cleaning eaves).

Operator Protective Structures (OPS)

This tractor is not provided with an OPS. Carefully read the following important information, especially when working in a forestry environment.

Forestry applications

This tractor is not designed for heavy forestry applications. Usage is prohibited unless a certified FORESTRY KIT is installed. Contact your dealer to verify whether a forestry kit exists for this tractor model. Only a forestry specific kit will provide necessary protection against falling trees.

Do not use the front-end loader in an area with overhead power lines. In case of contact with overhead power lines, jump from the tractor without making simultaneous contact between the tractor and the ground. When possible, disconnect the power lines

from the grounds.

• Install only a front-end loader with a parallel guidance

system and use it all the time; this system will ensure

that the load in the bucket will remain horizontal. re-

If available, install a FOPS or ask the supplier of the

front-end to install either a FOPS-certified structure on

main ROPS or at least a minimal structure offering partial protection from falling objects (e.g. a "suncanopy").

gardless of the height of the lifting booms.

Protection against penetrating objects (OPS) can be obtained only by fitting a specific KIT. Contact your dealer to verify whether an OPS-certified KIT is available for your tractor

Safety rules - HVAC system

Air-conditioning system A

The air-conditioning system is under high pressure. Do not disconnect any lines. The release of high pressure can cause serious injury.

A Personal Protective Equipment (PPE)

Wear Personal Protective Equipment (PPE) such as hard hat, eye protection, heavy gloves, hearing protection, protective clothing, etc.

▲ Do Not Operate tag ▲

Before you start servicing the machine, attach a 'Do Not Operate' warning tag to the machine in an area that will be visible. The air-conditioning system contains gases that are harmful to the environment when released into the atmosphere. Do not attempt to service or repair the system.Only trained service technicians can service, repair, or recharge the air-conditioning system.

\Lambda Hazardous chemicals 🗚

If you are exposed to or come in contact with hazardous chemicals you can be seriously injured. The fluids, lubricants, paints, adhesives, coolant, etc. required for the function of your machine can be hazardous. They may be attractive and harmful to domestic animals as well as humans.

Material Safety Data Sheets (MSDS) provide information about the chemical substances within a product, safe handling and storage procedures, first aid measures, and procedures to take in the event of a spill or accidental release. MSDS are available from your dealer.

Before you service your machine check the MSDS for each lubricant, fluid, etc. used in this machine. This information indicates the associated risks and will help you service the machine safely. Follow the information in the MSDS, and on manufacturer containers, as well as the information in this manual, when you service the machine.

A Utility safety A

When digging or using ground-engaging equipment, be aware of buried cables and other services. Contact your local utilities or authorities, as appropriate, to determine the locations of services.

Make sure that the machine has sufficient clearance to pass in all directions. Pay special attention to overhead power lines and hanging obstacles. High voltage lines may require significant clearance for safety. Contact local authorities or utilities to obtain safe clearance distances from high voltage power lines.

Retract raised or extended components, if necessary. Remove or lower radio antennas or other accessories. Should a contact between the machine and an electric

A Electrical storm safety

Do not operate machine during an electrical storm.

If you are on the ground during an electrical storm, stay away from machinery and equipment. Seek shelter in a permanent, protected structure.

$oldsymbol{A}$ Mounting and dismounting $oldsymbol{A}$

Mount and dismount the machine only at designated locations that have handholds, steps, and/or or ladders.

Do not jump off of the machine.

Make sure that steps, ladders, and platforms remain clean and clear of debris and foreign substances. Injury may result from slippery surfaces.

Face the machine when you mount and dismount the machine.

Dispose of all fluids, filters, and containers in an environmentally safe manner according to local laws and regulations. Check with local environmental and recycling centers or your dealer for correct disposal information.

Store fluids and filters in accordance with local laws and regulations. Use only appropriate containers for the storage of chemicals or petrochemical substances.

Keep out of reach or children or other unauthorized persons.

Applied chemicals require additional precautions. Obtain complete information from the manufacturer or distributor of the chemicals before you use them.

power source occur, the following precautions must be taken:

- Stop the machine movement immediately.
- Apply the parking brake, stop the engine, and remove the key.
- Check if you can safely leave the cab or your actual position without contact with electrical wires. If not, stay in your position and call for help. If you can leave your position without touching lines, jump clear of the machine to make sure that you do not make contact with the ground and the machine at the same time.
- Do not permit anyone to touch the machine until power has been shut off to the power lines.

If an electrical storm should strike during operation, remain in the cab. Do not leave the cab or operator's platform. Do not make contact with the ground or objects outside the machine.

Maintain a three-point contact with steps, ladders, and hand supports.

Never mount or dismount from a moving machine.

Do not use the steering wheel or other controls or accessories as hand supports when you enter or exit the cab or operator's platform.

A Working at heights A

When the normal use and maintenance of the machine requires you to work at heights:

- · Correctly use installed steps, ladders, and railings.
- Never use ladders, steps, or railings while the machine is moving.

lacksquare Lifting and overhead loads lacksquare

Never use loader buckets, forks, etc. or other lifting, handling, or digging equipment to lift persons.

Do not use raised equipment as a work platform.

Know the full area of movement of the machine and equipment and do not enter or permit anyone to enter the area of movement while the machine is in operation.

Never enter or permit anyone to enter the area underneath raised equipment. Equipment and/or loads can fall unexpectedly and crush persons underneath it.

Do not leave equipment in raised position while parked or during service, unless securely supported. Hydraulic cylinders must be mechanically locked or supported if they are left in a raised position for service or access.

Safety rules – Front end loader

A Front end loader

Apply only the bucket on the loader. Other applications are allowed only if approved beforehand by NEW HOL-LAND. Consult your dealer.

Improper use of the loader may cause serious personal injury or death.

Carefully read the information given before using the tractor with the loader. Lack of experience and knowledge may cause accidents.

Operate the tractor and the loader only if you are sitting correctly in the driver's seat.

It is recommended to use the tractor and loader with a protective frame or cab. The overturning of a tractor without a protective frame or cab may cause death or serious injuries. If the tractor is not provided with a protective structure and seat belts, consult your dealer.

Add the recommended ballast and/or the rear weight to obtain good stability.

Move the tractor at low speed.

Never use the loader to lift or transport people in the bucket, on the frame, or on the tool. If a person falls from the tractor or from the loader during transportation or operation, this may cause serious personal injury or death. • Do not stand on surfaces that are not designated as steps or platforms.

Do not use the machine as a lift, ladder, or platform for working at heights.

Loader buckets, forks, etc. or other lifting, handling, or digging equipment and its load will change the center of gravity of the machine. This can cause the machine to tip on slopes or uneven ground.

Load items can fall off the loader bucket or lifting equipment and crush the operator. Care must be taken when lifting a load. Use proper lifting equipment.

Do not lift load higher than necessary. Lower loads to transport. Remember to leave appropriate clearance to the ground and other obstacles.

Equipment and associated loads can block visibility and cause an accident. Do not operate with insufficient visibility.

Never allow anyone to arrive under the loader shovel or to reach the shovel by means of the lift arms when the loader is raised.

Do not walk or work with a loader with the bucket raised, or an attachment, unless it is firmly blocked or held in position.

Accidental operation of a control lever or leakages in the hydraulic system could cause the main frame to drop quickly or could cause the implement to unload, resulting in serious personal injury or death.

Avoid contact with overhead electric wires and with obstacles when the loader is raised. Contact with electric wires may cause risk of electrocution.

Ensure that all of the dismantled loaders are on a stable surface.

Do not repair, remove or replace the parts of the loader while it is in parked position.

Do not use the loader for shifting loads with large dimensions (bales of hay, tree trunks, etc.) without suitable accessories. Improper use of the loader for managing and removing heavy objects must be avoided.

Ecology and the environment

Soil, air, and water quality is important for all industries and life in general. When legislation does not yet rule the treatment of some of the substances that advanced technology requires, sound judgment should govern the use and disposal of products of a chemical and petrochemical nature.

Familiarize yourself with the relative legislation applicable to your country, and make sure that you understand this legislation. Where no legislation exists, obtain information from suppliers of oils, filters, batteries, fuels, anti-freeze, cleaning agents, etc., with regard to the effect of these substances on man and nature and how to safely store, use, and dispose of these substances. Your NEW HOLLAND dealer can also provide assistance.

Helpful hints

- Avoid the use of cans or other inappropriate pressurized fuel delivery systems to fill tanks. Such delivery systems may cause considerable spillage.
- In general, avoid skin contact with all fuels, oils, acids, solvents, etc. Most of these products contain sub-stances that may be harmful to your health.
- Modern oils contain additives. Do not burn contaminated fuels and or waste oils in ordinary heating systems.
- Avoid spillage when you drain fluids such as used engine coolant mixtures, engine oil, hydraulic fluid, brake fluid, etc. Do not mix drained brake fluids or fuels with lubricants. Store all drained fluids safely until you can dispose of the fluids in a proper way that complies with all local legislation and available resources.
- Do not allow coolant mixtures to get into the soil. Collect and dispose of coolant mixtures properly.
- Do not open the air-conditioning system yourself. It contains gases that should not be released into the atmosphere. Your NEW HOLLAND dealer or air-conditioning specialist has a special extractor for this purpose and can recharge the system properly.
- Repair any leaks or defects in the engine cooling system or hydraulic system immediately.
- Do not increase the pressure in a pressurized circuit as this may lead to a component failure.

Battery recycling

Batteries and electric accumulators contain several substances that can have a harmful effect on the environment if the batteries are not properly recycled after use. Improper disposal of batteries can contaminate the soil, groundwater, and waterways. NEW HOLLAND strongly recommends that you return all used batteries to a NEW HOLLAND dealer, who will dispose of the used batteries or recycle the used batteries properly. In some countries, this is a legal requirement.



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Mandatory battery recycling

NOTE: The following requirements are mandatory in Brazil.

Batteries are made of lead plates and a sulfuric acid solution. Because batteries contain heavy metals such as lead, CONAMA Resolution 401/2008 requires you to return all used batteries to the battery dealer when you replace any batteries. Do not dispose of batteries in your household garbage.

Points of sale are obliged to:

- Accept the return of your used batteries
- · Store the returned batteries in a suitable location
- Send the returned batteries to the battery manufacturer for recycling

Safety signs – Without cab

The following safety signs are placed on your machine as a guide for your safety and for those working with you. Walk around the machine and note the content and location of these safety signs before operating your machine.

Keep safety signs clean and legible. Clean safety signs with a soft cloth, water, and a gentle detergent. Do not use solvent, gasoline, or other harsh chemicals. Solvents, gasoline, and other harsh chemicals may damage or remove safety signs.

Replace all safety signs that are damaged, missing, painted over, or illegible. If a safety sign is on a part that is replaced, make sure the safety sign is installed on the new part. See your dealer for replacement safety signs.



Safety signs that display the "Read Operator's Manual" symbol are intended to direct the operator to the operator's manual for further information regarding maintenance, adjustments, or procedures for particular areas of the machine. When a safety sign displays this symbol, see the appropriate page of the operator's manual.



GNIL19TRO1041FB 1
















Safety signs – With cab



GNIL19TRO1287FA 1



















Instructional signs – Without cab

The following instructional signs have been placed on your tractor in the area indicated. They are intended to instruct you and those working with you. Please take this manual and walk around your tractor to note the content and location of these signs. Review the signs and operating instructions detailed in this manual with the tractor operators. Keep the signs clean and legible. If they become damaged or illegible, obtain replacements from your authorized NEW HOLLAND dealer.

Keep instructional signs clean and legible. Clean instructional signs with a soft cloth, water, and a gentle detergent. Do not use solvent, gasoline, or other harsh chemicals. Solvents, gasoline, and other harsh chemicals may damage or remove instructional signs.



GNIL19TRO1041FB 1











Instructional signs – With cab

The following instructional signs have been placed on your tractor in the area indicated. They are intended to instruct you and those working with you. Please take this manual and walk around your tractor to note the content and location of these signs. Review the signs and operating instructions detailed in this manual with the tractor operators. Keep the signs clean and legible. If they become damaged or illegible, obtain replacements from your authorized NEW HOLLAND dealer.

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GNIL19TRO1287FA 1











Roll Over Protection Structure (ROPS)

Misuse hazard!

Your machine is equipped with an operator protective structure. DO NOT weld, drill holes, attempt to straighten, or repair the protective structure. Modification in any way can reduce the structural integrity of the structure. Failure to comply could result in death or serious injury.

W0001B

WARNING

Crushing hazard!

Always wear the seat belt when operating the machine with the Roll Over Protective Structure (ROPS) in the upright position. If the ROPS is in the folded position, the seat belt should not be used. Raise the ROPS and wear the seat belt as soon as conditions allow. Failure to comply could result in death or serious injury.

W0462A

Roll-over hazard!

A folded Roll-Over Protective Structure (ROPS) does not provide roll-over protection. Do not operate the machine with the ROPS folded as a standard operating mode. Raise the ROPS immediately after low clearance use or transport.

Failure to comply could result in death or serious injury.

W0938A

Roll Over Protective Structure (ROPS)

A foldable Roll Over Protective Structure (ROPS) (1), and seat belts are standard equipment on this tractor at the time of factory assembly. Operate with this ROPS in the "up" position whenever possible. Use the ROPS in the "folded" position only when absolutely necessary. If the ROPS was deleted by the original purchaser or has been removed, it is recommended that you equip your tractor with a ROPS and seat belts.

Roll-over hazard!

Always pull from the drawbar. DO NOT attach chains or ropes to the Roll Over Protective Structure (ROPS) for pulling purposes, as the machine could tip over. When driving through door openings or under low overhead objects, make sure there is sufficient clearance for the ROPS.

Failure to comply could result in death or serious injury.

Crushing hazard!

DO NOT operate the machine with the Roll-Over Protective Structure (ROPS) removed. Remove the ROPS only for service or replacement.

Failure to comply will result in death or serious injury.

D0032A

Roll-over hazard!

A folded Roll-Over Protective Structure (ROPS) does not provide roll-over protection. Do not operate the machine with the ROPS folded as a standard operating mode. Raise the ROPS immediately after low clearance use or transport.

Failure to comply will result in death or serious injury.

D0058A



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Roll Over Protective Structure (ROPS) Folding Procedure

To fold the ROPS into the "DOWN" position, remove retaining ring (1), from the pin (2). Remove pin from the latching bracket, on both sides of the ROPS.



Rotate top part of ROPS downward (only **90°** rotation is allowed). Reinstall pin **(2)** into lower retaining hole **(3)**. Re-attach the retaining ring **(1)** on both side.



2-44

3 - CONTROLS AND INSTRUMENTS

ACCESS TO OPERATOR'S PLATFORM

Before operating

WARNING

Improper operation or service of this machine can result in an accident. Read and understand the SAFETY INFORMA-

TION Section before you operate or service the machine.

Failure to comply could result in death or serious injury.

Read this section thoroughly. The controls and instruments section details the location and operation of the various instruments, switches, and controls on your tractor. Even if you operate other tractors, you should thoroughly read this section of the manual and ensure that you are familiar with the location and function of all the features of the tractor.

Do not start the engine, or attempt to drive or operate the tractor until you are fully familiar with all the controls. It is too late to learn once the tractor is moving. If you have any questions about any aspect of operation of the tractor, consult your authorized dealer.

Pay particular attention to the recommendations for running-in to ensure that your tractor will give the long and dependable service for which it was designed.

Access to operator's platform

A WARNING

Fall hazard!

Jumping on or off the machine could cause an injury. Always face the machine, use the handrails and steps, and get on or off slowly. Maintain a three-point contact to avoid falling: both hands on the handrails and one foot on the step, or one hand on the handrail and both feet on the steps.

Failure to comply could result in death or serious injury.

W0141A

With cab

A wide opening door (1) on both the sides permits entry to the cab aided by convenient grab handles (2) and footstep with anti- slip treads (3).

NOTE: Use the left-hand side door for entry and exit into the cab and the right- hand door should only be used in emergencies to exit the cab.

Use the cab door key to lock or unlock the cab door from the outside. With the door unlocked, press button (4) and pull the door towards you. The door is fitted with gas struts to hold them in the fully open position.

Before climbing on, check that the step treads are clean and free of dirt and foreign substances. Slippery areas can be a cause of accidents.

Climb the steps facing inwards and enter the cab. Sit in the driver's seat and fasten the safety belt.

Opening the doors from the inside

To leave the cab, release the safety belt, lift the release lever (1) under the grab handle. Use the grab handle to push the door open.

Climb down the steps facing inwards.

Fall hazard!

When entering or exiting the cab, never use the control levers as handholds. Always mount and dismount the machine in a safe way. Maintain a three-point contact with steps, ladders, and/or handholds. Failure to comply could result in minor or moderate injury.

GNIL19TRO1349AA 1



GNIL19TRO1283AA 2

Without cab

Always use footstep $(\ensuremath{\textbf{1}})$ and $(\ensuremath{\textbf{2}})$ to access the operator's platform

Footstep (1) on the left-hand side of the tractor comes as a standard part with the tractor whereas footstep (2) is available via DIA kit.

NOTE: Before climbing on, check that the step treads are clean and free of dirt and foreign substances. Slippery areas can be a cause of accidents.



GNIL19TRO1041FB 3

CAB INTERIOR

Sunshield

To use the sunshield, pull it down with the tab (1). Pull the tab (2) to roll up the sunshield.



GNIL19TRO1351AA

Overhead sunshield

Use the tab (1) to roll and pull the overhead sunshield (2).



GNIL19TRO1344AA 2

Roof hatch

To open the roof, push the handle (1) upward. The roof is kept in the open position by the articulation of the handles. Pull the handle (1) downward to close the roof.



GNIL19TRO1254AA 3

Cab roof light

Press the switch (1) to operate the cab roof light

Internal rear-view mirror

Adjust the mirror **(2)** turning it into position on its supporting arm.



GNIL19TRO1253AA 4

Rear window

To open, pull handle **(1)** upwards and push forward. The windscreen will be held in the open position by special struts.



GNIL19TRO1258AA 5

Passenger's seat

The passenger's seat (1) is available on the left-hand side of the operator's seat. The seat rolls up automatically if not in use.

Audio system

The cab is equipped with the radio (1).

NOTE: The radio works only with the power switch ON (contact).



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7

Lighters

The cigar lighter is located on the left-hand side of the operator's seat. To turn it on, press button (1). When the heating element has reached the right temperature, the cigar lighter disconnects automatically.

Cup holder

The cup holder (2) is available on the left-hand side of the operator's seat in the shown loaction.



Heating, Ventilation, and Air Conditioning (HVAC)

The air-conditioning system can supply either cool or warm dehumidified air.

NOTICE: Before starting or stopping the engine, check that the air conditioning is OFF.

The knob (1) incorporates two different functions:

- Fan speed adjustment: 4 different speeds are available by simply turning the knob.
- Switching on the air conditioning.



GNIL19TRO1348AA 9

To switch on the air conditioning function, it is necessary to perform the following actions in sequence:

- 1. Turn on the electric fan on one of the four possible speeds, from 1 to 4.
- 2. With the electric fan running, press the knob (1) and check that the warning light (3) is on, confirming that the air conditioning has started.

NOTE: Do not invert the air conditioner activation procedure. Press the knob (1) before activating the electric fan, it could damage the knob.

NOTE: The air conditioner starts up only if the electric fan is activated in one of the four positions. The air conditioning cannot work when the electric fan is off. The indicator light (3) comes on to signal the air conditioner has started up.

After a few minutes of operation, the air coming out of the vents must be cold. If this does not occur, switch off the air-conditioning and seek specialist help.

To quickly reduce in cab temperature operate the air conditioner with the blower speed set to maximum and the heater control fully off. When the air has cooled sufficiently, adjust the fan control to maintain the desired temperature. The windows and doors should remain closed.

Under certain conditions, it may be desirable to operate both the air conditioner and heater together, e.g. to demist the windscreen and interior door glass on a cold morning. (The air conditioner, as well as cooling, also removes moisture from the air in the cab). Run the engine to normal operating temperature, turn the heater temperature control (2) and blower control (1) to the maximum settings (fully clockwise). Turn on the air conditioner and adjust the air vents to direct the air flow, as required.

When the windows are clear, turn the air conditioner off and adjust the heater controls to maintain the desired cab air temperature.

NOTICE: Run the engine at idle speed for at least **3 min** after switching on the air conditioner, if the air conditioner has been out of use for more than 30 days.

Always turn the air conditioner off when cooled or dehumified air is not required. For proper operation of the air

Adjustable air vents

Adjustable air vents (3) are provided throughout the cab roof for even distribution of heated or cooled air. Each vent may be independently adjusted to direct the air flow (with the fan control actuated) onto the side windows or the operator. conditioner, ensure that the cab air filters are serviced regularly.



GNIL19TRO1253AA 10
Routine inspections

At least once every three months:

- · Eliminate any foreign bodies from the condenser fins and evaporator
- · Check the tension of the compressor belt
- Check the condition of the tubing, connections and mounting brackets
- Check that the fixing screws and nuts, pulleys and compressor are correctly tightened

Annual maintenance

At the start of the season, have the specialist personnel from the NEW HOLLAND service network carry out the following operations:

- Check the oil level in the compressor
- · Check system pressure and, if necessary, fill the system with R134A
- Drain the air conditioning system and replace the dehydration filter, only if strictly necessary
- Fill the air conditioning system with R134A
- · Check operation of system

OPERATOR'S SEAT

Operator's seat

Your tractor is equipped with a seat (1). Before operating the tractor, it is important to adjust the seat to the most comfortable position. See the following text and illustrations for details.



Pneumatic operator's seat

Adjustment of the pneumatic suspension

Adjustments to the pneumatic suspension are made using the knob (2) (see image 1) of the air compressor. On reaching the ideal height, release the knob to turn off the compressor and set the height reached.

Seat position forward/back adjustment

From the driver's seat, pull the lever (3) upwards and then move the seat forwards or backwards. After moving the seat, release the lever and check that the seat is locked in the correct position.

Backrest inclination adjustment

To adjust the inclination of the backrest, pull the lever (4) upwards, find the ideal position for the backrest and release the lever to lock the backrest in position.

Mechanical operator's seat

Seat height adjustment

Turn the knob (1) counter-clockwise to raise the seat height and clockwise to decrease the seat height.

Seat position forward/back adjustment

From the driver's seat, pull the lever (2) upwards and then move the seat forwards or backwards. After moving the seat, release the lever and check that the seat is locked in the correct position.





GNIL19TRO1114AA 3

Seat belt

WARNING

Equipment failure could cause accident or injury!

Always fasten the seat belt securely before you operate the machine. Inspect seat belt parts for wear and damage. Replace any and all worn or damaged parts of the seat belt prior to operation.

Failure to comply could result in death or serious injury.

W0046C

To fasten the seat belt, pull the belt from the retractor and push the tongue (1) into the buckle end (2) until a 'click' indicates that the tongue is properly engaged. Press the red release button (3) on the buckle and remove the tongue from the buckle.

Cleaning the seat and seat belt

The seat belt may be sponged with clean, soapy water. Do not use solvents, bleach or dye on the belt as these chemicals will weaken the webbing.

Replace the seat belt when the seat beltshows signs of fraying, damage or general wear.

Do not use solvents to clean the seat. Use only warm water with a little detergent added or a proprietary brand of automotive upholstery cleaner. Avoid wetting the seat more than is absolutely necessary.

Crushing hazard!

Always wear the seat belt when operating the machine with the Roll Over Protective Structure (ROPS) in the upright position. If the ROPS is in the folded position, the seat belt should not be used. Raise the ROPS and wear the seat belt as soon as conditions allow. Failure to comply could result in death or serious injury.

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FORWARD CONTROLS

Instrument cluster



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The indicator lights on the control panel inform you of the operational condition of the machine. Some of these indicate faults arising during operation. An indicator light coming on may be followed by a continuous or intermittent buzzer. Depending on the severity of the trouble, the alarm will sound.

NOTE: There may be excessive feature symbols on the cluster. These features may not be applicable to the unit.



Trailer direction indicator light (green)

This indicator light flashes together with the tractor/trailer direction indicators, if the first trailer is connected



High beam headlights (blue)

This indicator light will illuminate when the tractor headlights are switched to high beam.



Marker lights (green)

This indicator light is illuminated when the tractor lights are turned on.



Stop warning light (red)

If the red "Stop" warning light illuminates, switch off the tractor immediately and look for the cause. A warning symbol will appear on the display confirming the location of the fault.



Engine coolant temperature gauge

This instrument indicates the temperature of the engine coolant.



This indicator light illuminates and the display shows a warning symbol . The light blinks for 4 seconds, after which the symbol on the display disappears and the indicator light stays on steady. To display the fault, you need to go to the menu. Stop the tractor and investigate the cause of the trouble.

Parking brake warning light (red)

This indicator illuminates when the key start switch is turned ON with the parking brake applied. If the key-start switch is turned OFF and the parking brake is not applied, or the operator leaves the seat without applying the parking brake, a warning buzzer will sound for approximately 10 seconds or until the parking brake has been applied.

Engine oil pressure warning light (red)

This indicator light together with the red (5). "Stop" indicator light indicates the e ngine oil pressure is too low. Stop the engine and investigate the cause.

NOTE: With low engine oil pressure, this warning light illuminates when the start switch is in the contact position (supply to accessories - ignition).



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Cold start device (amber)

The indicator lights up when the glow plugs are turned on by the key switch.

Right-hand direction indicator (green)

This indicator light flashes at the same time as the tractor's right-hand direction indicator. With the tractor running, if the turn signal is not switched off within 20 seconds, an intermittent alarm comes on. This audible warning comes on if the direction indicator is not turned off within five minutes with the tractor stationary.

Four-Wheel Drive (4WD) indicator (green)

This indicator lights up when the 4WD is engaged.



Battery charging warning light (red)

A steady light indicates that the alternator is not charging the battery.



Fuel reserve (amber)

The light comes on when the tractor needs to be refueled.



15

Fuel level gauge

This instrument shows the fuel level in the tank.

Revolution counter

Indicates the engine - RPM . Each subdivision of the graduated scale represents 100 RPM



Rear Power Take-Off (PTO) indicator light (yellow)

Lights up when the engine is running and the rear Power Take-Off (PTO) is engaged. The indicator light will start to flash if the engine speed exceeds the maximum allowable engine speed for the PTO..

Left-hand direction indicator (green)



This indicator light flashes at the same time as the tractor's left-hand direction indicator. With the tractor running, if the turn signal is not switched off within 20 seconds, an intermittent alarm comes on. This audible warning comes on if the direction indicator is not turned off within five minutes with the tractor stationary.

Work lights (amber)

This indicator light illuminates when the work lights are switched on.



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Brake failure (red)

This indicator light illuminates in case of brake failure.



Engine constant rpm indicator light (amber)

The warning indicator turns on the when the engine rpm control function is activated.



Information display

The display shows information on the operational condition of the machine and highlights any trouble in the form of symbols or error codes.

Tachometer

The tachometer **(1)** indicates the engine speed in Revolutions Per Minute (RPM). Each division on the scale represents **100 RPM**. Therefore, with the needle indicating 20, the engine is running at **2000 RPM**.

Engine speed

NOTICE: Never run the engine continuously or for a long periods of time at speeds between **2800 – 3000 RPM** (yellow area **(A)** on the tachometer) to avoid damage to the engine. Never exceed **3000 RPM** (red area **(B)** on the tachometer). For appropriate use, always operate the engine under **2600 RPM**.

Engine coolant temperature gauge

The temperature display (1) indicates the temperature of the engine coolant.

- green area (A) = normal temperature
- red area (B) = temperature too high

If the engine overheats, slow the engine to idling speed (without stopping the engine) and, if the light stays on, have the cooling system checked.

Fuel level gauge

This instrument (1) indicates the level of diesel in the tank and only works when the ignition key is turned to ON.



GNIL19TRO1100AA 2





GNIL19TRO1102AA 4

Central display

The central Liquid Crystal Display (LCD) provides the operator with a range of information

- 1. Rear Power Take-Off (PTO) speed
- 2. Tractor hours
- 3. Urea level
- 4. Battery voltage
- 5. Tractor speed
- 6. CRPM Functionality



GNIL19TRO1105AA 5

Forward controls

Shuttle shift lever (1)

The shuttle shift lever (1) is used to change the direction of travel, between forward and reverse.

NOTE: The shuttle lever must be in the neutral (middle) position to activate the safety start system and allow the engine to start.

Mechanical shuttle

Use the shuttle shift lever (1) to engage the transmission into forward or reverse. To change the drive direction first stop the tractor. You must press the clutch pedal (see **3-21**) in order to shift the transmission. Move the lever forward to enable the tractor to travel forward and rearward to enable the tractor to travel in reverse.

Power shuttle

To select forward travel, move the lever upward toward the steering wheel and forward.

To select reverse travel, move the lever upward toward the steering wheel and backward.

To change the drive direction first slow the tractor almost to a halt, keep the lever raised and move it either forward or backwards.

NOTICE: When operating in temperatures below **-18.0** °C (**-0.4** °F) with cold transmission oil, avoid shuttle operations, as far as practicable, until the oil has warmed up.



GNIL19TRO1048AA 1

Multifunction control lever (2)

The multi-function lever (2) controls the horn, the turn indicators, headlight full beam flasher, and switching from dipped to full beam front headlights.

Turn indicators

To indicate a left-hand turn, push the lever (1) forward to position (A).

To indicate a right-hand turn, pull the lever (1) backward into position (B)

Full beam flasher

With the lights off or dipped, pull the lever **(1)** toward you to flash full beam lights. When released, the lever will automatically return to the original position.

Side lights

Turn the rotary switch (4) so that its pointer (3) is aligned with the symbol (1).

Dipped beam headlights

Turn the rotary switch (4) so that its pointer (3) is aligned with the symbol (5).

Main high beam

With the lights on dipped beam, move lever downwards.

NOTE: The stem light switch operates with the key-start switch in "ON" position.

Horn

Press the end of control (4) on the stem shown by the arrow in figure.

NOTE: When the pointer (3) is aligned with the symbol (2) all the lights are off.







Analog-Digital Instrument Cluster (ADIC) programming switches (with cab)

- (1) CRPM up-down switch
- (2) CRPM 1-2 switch
- (3) Up down switch
- (4) Home/enter switch

Reversible fan switch for machines without cab (optional) (1)

Press the rocker switch **(1)** to reverse the direction of fan rotation.

The optional reversible fan allows the operator to reverse the air flow through the radiator/coolers and front grille. Depressing the switch will cause the fan blades to rotate through **180°** on the hub, thereby reversing the flow of the air. The complete process takes approximately **30 s**.

NOTE: As the engine fan generates considerable air flow, it is recommended the engine speed be reduced when reversing the fan. This will prevent unnecessary strain on the fan belt.

At the end of the process the fan blades will automatically return to the normal working position.

The process can be stopped at any time by depressing the fan switch again.

Beacon light switch (2) (optional - available as DIA kit)

Press the switch (2) to turn on the beacon light.



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GNIL19TRO1104AA 6

Power Take-Off (PTO) intention switch (1)

Press the switch once to keep PTO running even when you are not on driver seat.

In normal condition tractor will stop after **10 s**.

Symbol (A), image 8, is shown on central display when this switch is operated.



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Head lamp work light switch (1)

Press the rocker switch (1) to turn on the head lamp work light.

Plough lamp switch (2) (without cab)

Press the rocker switch (2) to turn on the plough lamp.

Four-Wheel Drive (4WD) switch (3)

Press the switch (3) to engage the 4WD.

NOTE: In case of mechanical 4WD, see 3-29.



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Hazard warning light switch

The hazard warning lights switch **(1)** activates the hazard flashing warning lights **(2)** located on each side of the Roll Over Protective Structure (ROPS) **(3)**.

The hazard flashing warning lights can be activated with the key switch in any position. For your protection, use the flasher warning lights and the Slow Moving Vehicle (SMV) emblem (4) when travelling on public roads, day or night.



Key start/stop switch

The key switch (1) activates electrical equipment, lights, gauges, and starter motor.



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Forward controls

Forward control identification for cab



- 1. Shuttle shift lever
- 2. Multifunction lever
- 3. CRPM up-down switch
- 4. CRPM 1-2 switch
- 5. Up down switch
- 6. Home/enter switch

- ILI9TRO1252FA I
 - 7. Head lamp work light switch
 - 8. Front wiper switch
 - 9. Four-wheel Drive (4WD) switch
 - 10. Hazard warning light switch
 - 11. Key start/stop switch
 - 12. Power Take-Off (PTO) intention switch

NOTE: See **3-15** for functioning of the controls shown above.

Clutch pedal

When the clutch pedal (1) is depressed, the drive between the engine and the transmission will be disengaged. Use the clutch pedal to transfer engine power smoothly to the rear wheels when moving off from a stationary position.

NOTICE: Always depress the clutch pedal before engaging or disengaging a gear.

NOTICE: Do not use the clutch pedal as a footrest when driving the tractor. Such action will lead to clutch slippage and premature clutch failure.

Brake pedals

A WARNING

Loss of control hazard!

One-sided brake force exists if you do not use the brake pedal latch, and if you do not depress the left and right pedals at the same time. ALWAYS use the brake pedal latch when traveling at transport speeds and/or when a trailer with hydraulic or air-applied brakes is attached to the machine.

Failure to comply could result in death or serious injury.

W0375A

Brake pedals

The left-hand and right-hand foot brakes (1) and (2), may be operated independently to assist turning in confined spaces or locked together for normal stopping. When operating in the field the brake pedals may be unlocked. However, due to the proximity of the pedals to one another, it is still possible to apply both brakes together when required. To lock the pedals together, pivot the latch (3) into the right-hand brake pedal (2) slot.

NOTE: The brake latch is used to lock both brake pedals together. Brake pedals must be locked together for road travel. This will make sure uniform brake application and maximum stopping ability.

NOTE: In case of electro-hydraulic Four-Wheel Drive (4WD), 4WD will engage automatically when the brakes are applied and will be disengaged when the brakes are released.



GNIL19TRO1043AA 1



GNIL19TRO1043AA 1

Foot throttle pedal

The foot throttle pedal (1) may be used independently of the hand throttle lever to control the speed of the tractor. Use the foot throttle pedal when you drive on the main road or on the highway.

NOTE: See image **1** for machines without cab and **2** for machines with cab.



GNIL19TRO1251AA 2

Steering wheel tilt adjustment

WARNING

Driving hazard! Do not adjust the steering column while driving. Before adjusting the steering column: - stop the machine, - put the gearshift lever in neutral, and - apply the parking brake. Failure to comply could result in death or serious injury.

The steering wheel is fitted with a pedal to adjust the angle. Press the pedal (1) to adjust the steering wheel. Determine the most suitable position of the steering wheel for driving. Release the pedal after making the adjustment.

NOTE: See image **1** for machines without cab and **2** for machines with cab.



GNIL19TRO1251AA 2

W1032A

LEFT-HAND SIDE CONTROLS

Transmission range lever

For without cab version

Use the transmission range lever (1) to select any one of the high range, low range, or the medium range, which triples the number of available speeds. Always depress the clutch pedal fully and bring the tractor to a complete stop prior to moving the transmission range lever.

NOTICE: Do not attempt to change range gears while the tractor is moving. The range gears are not synchronized. The clutch pedal must be fully depressed and the tractor stopped to change gear ratios with the range shift lever.

See the transmission range shift pattern in image 2.







GNII 15TR00170AA 2

Power Take-Off (PTO) controls

Entanglement hazard! Do not wear loose clothing when operating Power Take-Off (PTO) driven equipment. Failure to comply could result in death or serious injury.

In case of mechanical Power Take-Off (PTO), the PTO clutch lever (1) is located on the left-hand side of the operator's platform. The PTO clutch lever (1) is used to engage or disengage the power transmission to the rear PTO shaft from engine.

See **9-1** for PTO RPM and their corresponding engine RPM.

Shift the lever (1) forward to engage the PTO and rearward to disengage the PTO.

NOTE: See image 2 for mechanical PTO for cab version.

NOTE: In case of electro-hydraulic PTO, see 3-30.

NOTE: The **540 RPM** to **1000 RPM** PTO version change can be achieved by changing the PTO shaft.

Entanglement hazard!

Make sure all people and obstructions are clear of the implement before engaging the tractor Power Take-Off (PTO). Failure to comply will result in death or serious injury.

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Power Take-Off (PTO) speed selector lever (if equipped)

The Power Take-Off (PTO) speed selector lever (2) is located on the left-hand side below the operator's seat.

See **9-1** for PTO RPM and their corresponding engine RPM.

Without Cab

Shift lever (2) forward to get PTO 540 RPM and shift the lever (2) rearward to get PTO 540E RPM.



GNIL19TRO1137BA 3



GNIL19TRO1341AA 4

With Cab

Shift lever (2) rearward to get PTO 540 RPM and shift the lever (2) forward to get PTO 540E RPM.

Parking brake

Unexpected machine movement! When the machine is parked and the engine is switched off, the parking brake must be applied. Use wheel chocks if parking on a steep slope.

Failure to comply could result in minor or moderate injury.

Parking brake (1) is of lever type and is present on the left hand side of the operator's seat. To engage the brake, pull the lever upward. To release the parking brake, press the button (2) at the end of the lever fully and push the lever downward.

NOTICE: Make sure that the park brake is fully released before driving the tractor.

NOTE: See image 2 for the cab version.



GNIL19TRO1341AA 2

Creeper speed selection lever

Without cab version

For operations requiring extra low ground speeds, a reduction gear set (creeper gears) is offered.

It gives 8 additional forward and 8 additional reverse speeds in low and medium range

To get these creeper speeds in, stop the tractor, press clutch and pull the lever (1) in upward direction. Engage the required range gear (low or medium) and in same range you will get the reduced speeds (creeper speeds).

NOTE: It is not possible to select the high range when creeper is engaged.

NOTE: See **3-31** for the creeper lever location for the cab version.



GNIL19TRO1137BA 1

Four-Wheel Drive(4WD) lever - Mechanical 4WD drive

4WD drive can increase the tractor's grip on the surface. Benefits of this are particularly noticeable when working on uneven surface, muddy surface, slippery surfaces, ploughed ground, or in difficult conditions.

In case of mechanical 4WD, use the lever **(1)** to engage and disengage the 4WD when the tractor is at low speed or preferably at the low speeds of the engine.

To engage 4WD pull the lever upward and push the lever downward to disengage the 4WD.

NOTE: In case of electro—hydraulic 4WD, see 3-15.

NOTICE: Do not use 4WD on hard surfaces to prevent premature wear of front tires. Abnormal tire wear is caused by incorrect tire pressures.

NOTE: See 2 for cab version.





RIGHT-HAND SIDE CONTROLS

Right-hand side controls

Hand throttle (1)

The hand throttle lever (1) should be used during field operation of the tractor. Push the lever forward to increase the engine speed and rearward to reduce the engine speed.



USB charger

The USB charger (2) is available on the right-hand side of the operator's seat which can be used to charge mobiles. A load of not more than **10 A** should be applied on USB charger. More than **10 A** load may lead the fuse to blow.



GNIL19TRO1095AA 2

Power Take-Off switch (optional)

In case of electro-hydraulic PTO, pull the switch (3) to engage the PTO.

See **9-1** for PTO RPM and their corresponding engine RPM.

NOTE: In case of mechanical PTO, see 3-25.

Cup holder

The cup holder (3) is available on the right-hand side of the operator's seat.

Mobile holder

Loss of control hazard! Only use hands free phone operation while driving. Obey all jobsite regulations restricting use of mobile phones. Failure to comply could result in death or serious injury.

W1273A

The mobile holder (5) is available on the right-hand side of the operator's seat.



GNIL19TRO1042AA 3



GNIL19TRO1042AA

Right-hand side controls

For cab version



1. Electro-hydraulic Power Take-Off (PTO) switch (if available)

2. Rear wiper switch

- 4. Cab rear work lamp switch
- 5. Rotating beacon switch (optional - available as DIA kit)

NOTE: For functioning of each control, see **3-30**.

Creeper control lever

For operations requiring extra low ground speeds, a reduction gear set (creeper gears) is offered.

It gives 8 additional forward and 8 additional reverse speeds in low and medium range

To get these creeper speeds in, stop the tractor, press clutch and pull the lever (7) in upward direction. Engage the required range gear (low or medium) and in same range you will get the reduced speeds (creeper speeds).

3. Cab front work lamp 6. Hand throttle switch



Differential lock pedal

WARNING

Loss of control hazard! Never use the differential lock at speeds above 5.0 km/h (3.1 mph) or at any time when turning the machine.

Failure to comply could result in death or serious injury.

Differential lock pedal

Depress the differential lock pedal **(1)** to engage the differential lock in the following cases:

- During plowing, to reduce slippage of the land-side wheel.
- When one of the rear wheels loses grip due to uneven, muddy, or loose soil.

NOTICE: If one rear wheel spins at higher speed than the other, reduce the engine speed before trying to engage the differential lock. This will avoid shock loads and the risk of damage to the internal components.

NOTE: See image **1** for the without cab version and see image **(2)** for the cab version.



GNIL19TRO1053AA 1

Transmission main shift lever

Without cab version

Transmission main shift lever

The transmission main shift lever (1), see image 2, operates in the pattern shown in image 1. To change the gears while in the selected range, depress the clutch pedal, stop the tractor, and shift the transmission main shift lever into the necessary gear.



GNIL15TR00171AB 1

The main transmission shift lever (1) is used to select any one of the four forward or reverse gears.



GNIL19TRO1053AA 2

Transmission control lever

With cab version

The transmission range shift lever (1) and transmission main shift lever (2) for the without cab version are located on the right-hand side of the operator's seat.



Transmission range shift lever

Use the transmission range lever (1), image 1, to select any one of the high range, low range, or the medium range, which triples the number of available speeds. Always depress the clutch pedal fully and bring the tractor to a complete stop prior to moving the transmission range lever. See the transmission range shift pattern in image 2.

NOTICE: Do not attempt to change range gears while the tractor is moving. The range gears are not synchronized. The clutch pedal must be fully depressed and the tractor stopped to change gear ratios with the range shift lever.

Transmission main shift lever

The transmission main shift lever (2), see image 1, is used to select any one of the four forward or reverse gears. The transmission main shift lever (2) operates in the pattern shown in image 3. To change the gears while in the selected range, depress the clutch pedal, stop the tractor, and shift the transmission main shift lever into the necessary gear.



GNIL19TRO1314AA 2



GNIL15TR00171AB 3

REARWARD CONTROLS

Trailer electrical socket

Trailer electrical socket

A standard 7-pin trailer socket is a standard equipment and the 7-pin trailer socket is mounted on the rear side of the tractor.

The trailer socket pin connections are as follows:

Pin No.	Circuit
1	Ground (White)
2	Side Marker Lights
3	Left-hand flashing and turn indicator
4	Stop Lamp
5	Right-hand flashing and turn indicator
6	Tail Lamp
7	Battery supply

NOTE: See image **1** for the without cab version and see image **2** for the cab version.





GNIL19TRO1289AA 2

DISPLAY SETTINGS

Instrument cluster Analog-Digital Instrument Cluster (ADIC) - Program

The multifunction Liquid Crystal Display (LCD) **(1)** can show useful and necessary information when driving and a menu for making the following adjustments:

- Programmed maintenance.
- Sound level on/off on pressing the buttons.
- Viewing active error codes and warning messages.



GNIL19TRO1105AA 1

Navigate the menu with the rocker switches (1) and (2). Each rocker switch provides two controls, depending on the position where the rocker switch is pressed.

To enter the "SETUP MENU", turn the start switch key (3) to position (B), panel powered, and subsequently keep the switch (1) pressed on the symbol (B) for more than three seconds.

NOTE: See image 2 for the without cab version and see image 3 for the cab version.





GNIL19TRO1108AA 4



MOIL12TRO0042AB 5

Switch (1)

(A) Exit/Cancel. Use this switch position to cancel or guit the setting and programming modes.

(B) Menu/Enter. Use this switch position to enter the menu or confirm the settings.

Switch (2)

(C) Up arrow = scrolling up through the menu or numerical value. Press this switch position repeatedly to scroll forwards in the menu or change the value of a number.

(D) Down arrow = scrolling down through the menu or numerical value. Press this switch position to scroll backwards in the menu or to move to the right of a position.

Adjusting the dashboard/display brightness

NOTE: During this adjustment bear in mind that the illumination will always be greater with the marker lights off, whereas with the marker lights on there will automatically be a decrease in the brightness of the display.



GNIL14TR00585FA 1

Brightness of warning lights and indicator pointers

- 1. With the panel powered, press and hold down the switch (2) on the up arrow (C) for 3 seconds
- 2. The central display will show the detail (S1).
- 3. Release the direction key to pass on to the next screen **(S2)**.
- 4. Press switch (2) on symbol (C) to increase or on symbol (D) to decrease the brightness of the warning lights and hands of the indicators, to set the required brightness.
- 5. Press the switch (1) on the symbol (B) to save the setting.
- 6. Two seconds after saving you are automatically returned to the initial condition.
- 7. Press the switch (2) on the symbol (D) again to exit the programming menu.

NOTE: If you want to stop the adjustment without saving, press the switch (1) on the symbol (A) to exit the adjustment.



GNIL14TR00584FA

Central display brightness

- 1. With the panel powered, press and hold down the switch (2) on the up arrow (D) for 3 seconds.
- 2. The central display will show the detail (S1).
- 3. Release the direction key to pass on to the next screen (S2).
- 4. Press the switch (2) on the symbol (C) to increase or on the symbol (D) to decrease the brightness of the central display until you reach the desired brightness.
- 5. Press the switch (1) on the symbol (B) to save the setting.
- 6. Two seconds after saving you are automatically returned to the initial condition.
- 7. Press the switch (2) on the symbol (D) again to exit the programming menu.

NOTE: If you want to stop the adjustment without saving, press the switch (1) on the symbol (A) to exit the adjustment.



Calibrating speed

MOIL14TR01417FA

Check that the circumference of the fitted tires is as shown on the "CAL manual" screen, otherwise it will be necessary to recalibrate the electronic control module to display the precise exact ground speed. It is possible to recalibrate the module, manually or automatically.

Manual calibration

To calibrate the module manually, it is indispensable to know the rolling circumference of the new tire.

- Press the switch (2) on the symbol (B) for more than three seconds to enter the programming menu. • The central display will show "SETUP MENU". Release the switch (2); the display will show "CAL".
- Press and release the switch (2) on the symbol (B); the display will show "CAL manual".
- Press and release the switch (2) on the symbol (B).
- Press the switch (3) on the symbol (C) to change the flashing value, press the symbol (D) to move to the next digit. In this way you enter the rolling circumference of the new tire.
- Press the switch (2) on the symbol (B) to save the new added measurement.

If you want to stop the programming, press the switch (2) on the symbol (A). Press the same symbol again to exit the programming menu.



MOIL14TR01417FA 2

Auto calibration

Select a stretch of dry, firm, level ground (preferably concrete) and carefully measure out a distance of exactly 100 m (328 ft). Mark the start and finish of this measured distance with a bold chalk line.

- Press the switch (2) on the symbol (B) for more than three seconds to enter the programming menu. The central display will show "SETUP MENU". Release the switch (2); the display will show "CAL".
- Press and release the switch (2) on the symbol (B); the display will show "CAL manual".
- Press and release the switch (3) on the symbol (D); the display will show "CAL auto".
- Press and release the switch (2) on the symbol (B); the display will show "CAL READY".
- Now select a suitable gear to give a constant speed greater than 2 km/h (1.2 mph), and, at the start of the drawn line, press and release the switch (2) on the symbol (B); the display will flash "CAL ON".

NOTE: The ground speed must be constant and must not drop under **2 km/h** (**1.2 mph**). If the speed is less than as prescribed, calibration will not be successful.

When the middle of the front tires goes over the end line, press the switch (2) again on the symbol (B) and, if the procedure has been performed correctly, the display will show "CAL OK". Now press the switch (2) on the symbol (B) again to save the setting. If on the contrary the procedure has not been performed correctly the display will show "CAL NOT OK" and the procedure must be repeated.

If you want to stop the procedure and quit the programming menu, repeatedly press the switch (2) on the symbol (A).

If on the contrary you want to repeat the calibration, press the switch (2) on the symbol (A) until the display shows "CAL auto". From this position, repeat the procedure, taking care that the tractor speed is constant and greater than 2 km/h (1.2 mph).



Activating/deactivating buzzer

MOIL12TRO0050FB 1

If you want to turn on or off the audible warning signal that sounds each time a button is pressed, proceed as follows:

- Press the switch (1) on the symbol (B) for longer than three seconds to enter the programming menu The central display shows the words "SETUP MENU". Release the switch.
- Press the switch (2) on the symbol (D) a number of consecutive times until the display shows "BEEP ON/OFF".
- 3. Press the switch (1) on the symbol (B). The display will show the last setting made, "BEEP ON" or "BEEP

OFF". Press the switch (2) on the symbol (D) or (C) to change the setting.

- 4. "ON" = warning signal "BEEP" ON
- 5. "OFF" = warning signal "BEEP" OFF
- After selecting the desired condition (ON or OFF), press the switch (1) on the symbol (B) to confirm. The display will show "Value ON Saved" when enabling the audible warning signal. The display will show "Value OFF Saved" when disabling the audible warning signal.

NOTE: If you want to stop the display, press the switch (1) on the symbol (A). This will automatically return you to the initial page display "BEEP ON/OFF". Press the same symbol again to exit the programming menu.

Programming maintenance work



Setting a maintenance reminder for heavy-duty use

This function allows the operator to program maintenance according to two levels of importance: "routine (LIGHT)" or "heavy-duty use (HEAVY)". Proceed as follows:

- 1. Press the switch (1) on the symbol (B) for more than three seconds to enter the programming menu The display will show "SETUP MENU". Release the switch.
- Press the switch (2) on the symbol (D) a number of times until the display shows the symbol for programming maintenance intervals (S1).
- 3. Press the switch (1) on the symbol (B). The display will show the "Heavy" screen with the hours that remain until maintenance is due. The setting cannot be changed at this stage.

- 4. Press the switch (1) on the symbol (B) to change the setting of the first flashing digit. (In the above example, the number "2").
- 5. Press the switch (2) on the symbol (C) to increase the value. Press the same switch on the symbol (D) to move to the next digit.
- If you do not want to save the new setting and go back to the start of programming, press the switch (1) on the symbol (A).
- To save the new maintenance schedule, press the switch (1) on the symbol (B). The display will show confirmation that the new value has been saved.
- 8. After two seconds, you will exit the programming menu for maintenance operations.

NOTE: As the time for the programmed work approaches, the display will show a warning in the number of operating hours that remain until maintenance is due. At the end of the countdown, the display will show "Heavy " followed by an alarm message to indicate that the time has expired. At the end of the count, in the maintenance work programming menu, the counter will show three dashes and must be re-programmed as described above.


MOIL12TRO0049FD 2

Setting a maintenance reminder for light use

Setting a reminder for routine maintenance

- 1. Press the switch **(1)** on the symbol **(B)** for longer than three seconds to enter the programming menu. Release the switch.
- 2. Press the switch (2) on the symbol (D) a number of times until the display shows the symbol for programming maintenance intervals (S1).
- 3. Press the switch **(1)** on the symbol **(B)**. The display will show the "Heavy" screen with the hours that remain until maintenance is due.
- Press the switch (2) on the symbol (D). The display will show the "Light" screen with the hours that remain until maintenance is due. The setting cannot be changed at this stage.
- 5. Press the switch **(1)** on the symbol **(B)** to change the setting of the first flashing digit. (In the above example, the number "5").

- 6. Press the switch (2) on the symbol (C) to increase the value. Press the symbol (D) to move to the next digit.
- 7. If you do not want to save the new setting and go back to the start of programming, repeatedly press the switch (1) on the side with the symbol (A).
- 8. To store the new maintenance program, press the switch (1) on the symbol (B). The display will show confirmation that the new value has been saved.
- 9. After two seconds, you will exit the programming menu for maintenance operations.

NOTE: As the time for the programmed work approaches, the display will show a warning in the number of operating hours that remain until maintenance is due. At the end of the countdown, the display will show "Light " followed by an alarm message to indicate that the time has expired. At the end of the count, in the maintenance work programming menu, the counter will show three dashes and must be re-programmed as described above.





MOIL12TRO0055FC 1

f it is necessary to know the list of error codes or warnings that are stored by the control unit and that are not permanently visible, proceed as described below:

- Press the switch (1) on the symbol (B) for longer than three seconds to enter the programming menu The central display shows the words "SETUP MENU". Release the switch.
- 2. Press the switch (2) on the symbol (D) a number of consecutive times until the display shows the symbol for the error codes (S1).
- 3. Press the switch (1) on the symbol (B) to display the error codes in the memory.

The error codes or warnings are displayed in two different ways:

- The symbol of the failed component appears on the display together with its error code. Stop the work. Contact the authorized dealer. The error codes or warnings are displayed in two different ways:
- 2. The display will show only the symbol with no error code. When only the symbol is displayed, this is a warning. The warning symbols indicate conditions. Although these conditions do not compromise the operation of the tractor, these warning symbols should not be ignored. Take appropriate action where necessary.
- 3. Press the switch (1) on the symbol (A) to exit the error codes display.

NOTE: The current error codes are displayed in sequence. Each code is displayed three times blinking for four seconds.

Display warnings overview

There are a number of warning/advisory symbols that may appear on the display (3). This may be accompanied by the illumination of the warning lights (1) or (2) and by an audible alarm, depending on the severity of the fault.

Illumination of the red warning light **(1)** is normally associated with a critical condition. Stop the tractor immediately when this warning light comes on. The warning light will stay on until the fault is corrected or the engine is switched off.

Illumination of the amber warning light (2) is normally associated with a non-critical condition. When this indicator light illuminates, the operator can continue working. The fault should be rectified as soon as possible.

The following information concern the fluid **DEF/AdBlue®** and they can be displayed in conjunction with other of warning and/or indication symbols and warning indicators.

- (A) Emblem DEF/AdBlue®
- (B) Warning symbol
- (C) Percentage of DEF/AdBlue®





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MOIL14TR00472AC 2

Brake and Steering

DISPLAY	PANEL LIGHT	WARNING LIGHT	ALARM	CAUSE	ACTION
@ •	flashing	Flashing for 4 s and then continuous	Safety	 When the engine is running or the key is ON and the operator has left the operator's seat without applying the park lock Faulty seat switch 	Apply the park lock. If the flashing persists, have the seat switch checked.
D 🛃)	Flashing	Safety	Handbrake / Park brake engaged during driving	Release the hand brake.
-	(\mathbb{P})	-	Non-critical	Handbrake not applied. The signal is only made with the starter key OFF and the hand brake is not engaged.	Apply the hand brake.

Transmission

DISPLAY	PANEL LIGHT	WARNING LIGHT	ALARM	CAUSE	ACTION
Þ	-	Flashing	Safety	When the engine is running and rear Power Take-Off (PTO) is engaged without the operator.	The warning light will remain lit until the operator returns to his seat or the power take-off is disengaged.

Engine

DISPLAY	PANEL LIGHT	WARNING LIGHT	ALARM	CAUSE	ACTION
STOP	-	Flashing	Critical	Engine coolant temperature too high. The tractor will be stopped automatically in a short time.	Bring the engine on low idle for few seconds and shut down. Leave it to cool. Make sure the radiator is clean and the fluid is at the right level.
۵ اسالسا	Ş	Flashing for 4 s and then continuous	Critical	Engine oil pressure too low.	Stop the machine immediately, check the oil level and top up if necessary.
<u>5</u>	-	Flashing for 4 s and then continuous	-	Engine intake air cleaner blocked	Clean the filtering cartridges as described in the maintenance section.
<u>[i]</u> }	-	Flashing for 4 s and then continuous	Critical	Water in fuel.	Clean the filter as described in the maintenance section. Start the engine and if the signal stays on, have your dealer check the system.

DISPLAY	PANEL LIGHT	WARNING LIGHT	ALARM	CAUSE	REMEDY
5 CP	-	Flashing light for 4 s and then continuous	Non-critical	The DEF/AdBlue ® fluid level is less than 10% of the tank volume	Refill with DEF/AdBlue ®. Reset the system by cycling the key switch OFF then ON.
	-	Flashing light	Critical	The DEF/AdBlue® fluid level is less than 5% of the tank volume (0% will be displayed) Up to 65% torque reduction and 40% engine speed reduction within 40 min of engine running time.	Refill with DEF/AdBlue ® immediately. Reset the system by cycling the key switch OFF then ON.
(1 2 3	-	Flashing light	Critical	The DEF/AdBlue® fluid tank has been empty for 60 min . Engine working torque further limited to reach low idle speed within 30 min of engine running time.	Refill with DEF/AdBlue ®. Reset the system by cycling the key switch OFF then ON.
23 23:45	-	Flashing light	Critical	Emergency restart is active without speed or torque limitation for 30 s . After 30 s , the speed and torque ramp down immediately to low idle.	Refill with DEF/AdBlue ®. Reset the system by cycling the key switch OFF then ON.

Level DEF/AdBlue®

DEF/AdBlue® quality

DISPLAY	PANEL LIGHT	WARNING LIGHT	ALARM	CAUSE	REMEDY
-	-	Flashing light	Non-critical	The DEF/AdBlue® quality/concentration is questionable. No engine power loss.	Drain the DEF/AdBlue® tank. Clean the tank. Refill the tank with new DEF/AdBlue® . Contact your local authorized dealer if failure persists.
() 2/3	-	Flashing light	Critical	The DEF/AdBlue® fluid quality/concentration is questionable 60 min after the previous warning regarding the quality. Up to 65% torque reduction and 40% engine speed reduction within 40 min of engine running time. If the symbol is displayed during a validation re-start, then the remaining re-start attempts, upon a total of three available, are displayed below the symbol.	Drain the DEF/AdBlue ® tank. Clean the tank. Refill the tank with new DEF/AdBlue ®. Contact your local authorized dealer if failure persists.

DISPLAY	PANEL LIGHT	WARNING LIGHT	ALARM	CAUSE	REMEDY
2/3	_	Flashing for	Critical	The DEF/AdBlue® fluid quality/concentration is questionable 220 min after the initial warning regarding the quality. Engine working torque further limited to reach low idle speed within 30 min of engine running time. If the symbol is displayed during a validation re-start, then the remaining re-start attempts, upon a total of three available, are displayed below the symbol.	Drain the DEF/AdBlue ® tank. Clean the tank. Refill the tank with new DEF/AdBlue ®. Contact your local authorized dealer if failure persists.
323 23:45	-	Flashing light	Critical	Emergency restart is active without speed or torque limitation for 30 s . After 30 s , the speed and torque ramp down immediately to low idle.	Drain the DEF/AdBlue® tank. Clean the tank. Refill the tank with new DEF/AdBlue® . Contact your local authorized dealer if failure persists.

DEF/AdBlue® injection failure

DISPLAY	PANEL LIGHT	WARNING LIGHT	ALARM	CAUSE	REMEDY
	-	Flashing light	Non-critical	DEF/AdBlue ® injection failure detected. Up to 25% torque reduction within 25 min of engine running time.	Contact your local authorized dealer for repair.
ی 2/3	-	Flashing light	Critical	DEF/AdBlue® injection failure detected 25 min after the initial warning about the injection problem. Up to 65% torque reduction and 40% engine speed reduction within 40 min of engine running time. If the symbol is displayed during a validation re-start, then the remaining re-start attempts, upon a total of three available, are displayed below the symbol.	Contact your local authorized dealer for repair.
මී 2/3	-	Flashing light	Critical	DEF/AdBlue® injection failure detected 250 min after the initial warning. Engine working torque further limited to reach low idle speed within 30 min of engine running time. If the symbol is displayed during a validation re-start, then the remaining re-start attempts, upon a total of three available, are displayed below the symbol.	Contact your local authorized dealer for repair.

3 - CONTROLS AND INSTRUMENTS

DISPLAY	PANEL LIGHT	WARNING LIGHT	ALARM	CAUSE	REMEDY
23 23:45	-	Flashing light	Critical	Emergency restart is active without speed or torque limitation for 30 s , then after 30 s , the speed and torque ramps down immediately to low idle.	Contact your local authorized dealer for repair.

SCR system healing

DISPLAY	PANEL LIGHT	WARNING LIGHT	ALARM	CAUSE	REMEDY
2/3 23	-	Flashing light	Non-critical	After key on, the engine needs to be started. If the symbol is displayed during a validation re-start, then the remaining re-start attempts, upon a total of three available, are displayed on the right top corner and the time left allowing engine operation without speed and torque limitation is displayed at the bottom.	Start engine.
<i>≕</i> }; ^{2/3} 23	-	Flashing light	Non-critical	Engine target conditions are achieved. If the symbol is displayed during a validation re-start, then the remaining re-start attempts, upon a total of three available, are displayed on the right top corner and the time left allowing engine operation without speed and torque limitation is displayed at the bottom.	Maintain current conditions until the engine auto-diagnosis is completed.

Hydrocarbon management

DISPLAY	PANEL LIGHT	WARNING LIGHT	ALARM	CAUSE	REMEDY
	-	Flashing light	-	Low Idle Increase Active. First threshold level of Hydrocarbon accumulation is reached. Engine speed is automatically increased (at around 1100 RPM) until the hydrocarbon level falls under the threshold.	No action required. NOTE: This automatic en- gine idle speed increase is inhibited if certain features are active on the machine. For example: the transmission is in gear, the Power Take-Off (PTO) is engaged, or the re- mote hydraulics are activated.
	-	Flashing light	-	Low Idle Increase Recommended. Second threshold level of Hydrocarbon accumulation is reached.	Operate the engine at a speed higher than 1100 RPM until the icon disappears.
₽	-	Flashing light	Non-critical	SCR Catalyst Full. Hydrocarbon level is critical, very critical or Selective Catalytic Reduction (SCR) filter is full.	Operate the engine at a speed higher than 1500 RPM until the icon disappears. If the icon is persistent contact your authorized dealer

DISPLAY	PANEL LIGHT	WARNING LIGHT	ALARM	CAUSE	REMEDY
<u>∎</u> 3° ^о №		-	Single	Automatic regeneration on. It lights up when automatic regeneration of the diesel particulate filter is started.	It is possible to continue working during the procedure of filter regeneration.
OFF	-		'beep'	It lights up when automatic regeneration of the diesel particulate filter has ended.	At the end of the procedure the icon goes out and the display returns to its normal functions.
		-	Single 'beep'	Automatic regeneration was prevented by the operator. Reminder every 5 minutes.	Enable automatic regeneration as soon as possible.

Charging system

DISPLAY	PANEL LIGHT	WARNING LIGHT	ALARM	CAUSE	ACTION
ţ.	-	Flashing for 4 s and then continuous	Non-critical	When battery voltage is below 9 Volts for more than 5 seconds.	Recharge/renew the battery.
• •	- +	Flashing for 4 s and then continuous	-	If the warning light fails to go out a few seconds after starting, it means that the alternator is not charging the battery.	Have your dealer check the system.
₽ ₽₽ ↑	-	Flashing for 4 s and then continuous	-	Battery voltage too high.	Call your local dealer.

Service

DISPLAY	PANEL LIGHT	WARNING LIGHT	ALARM	CAUSE	ACTION	
Ц LIGHT Д 2	-	Flashing for 4 s and then continuous	-	Request for "light" maintenance	Carry out the programmed type of maintenance at the scheduled time.	
X HEAVY X 10	-	Flashing for 4 s and then continuous	-	Request for "heavy duty" maintenance	Carry out the programmed type of maintenance at the scheduled time.	

Lighting system

DISPLAY	PANEL LIGHT	WARNING LIGHT	ALARM	CAUSE	ACTION	
-	<u>ڳُ</u>	-	Non-critical	Turn indicators	Turn off the direction indicators after completing the manoeuvre.	
-		-	Non-critical	Position lights on with starter key OFF.	Switch off the side lights.	

Constant engine speed

This Engine Speed Management (ESM) system is used to pre-set one or two constant engine rpm suited to the work to be carried out.

When enabled, the ESM system constantly monitors any variations in load and in the engine RPM. If the engine load increases and the speed decreases, the ESM system automatically compensates any variations in speed and load by adjusting the engine speed management system in order to ensure a constant speed at the value set.

To set a program, proceed as follows:

- 1. Turn the vehicle engine on.
- 2. Press the switch (1) to position (A) to select the first program.
- 3. Press the switch (2) to position (C) to increase the engine rpm or to position (D) to decrease the engine rpm and set them to the desired value.
- 4. The new engine rpm value is set for the first program.
- If necessary set the second program press the switch (1) to position (B) and repeat the operation described in step three.

To activate a program, proceed as follows:

- 1. With the engine running, press the switch (1) to position (A) to activate the first program.
- 2. On the central display, the number 1 appears next to the symbol (3) to indicate the program that has been activated.
- 3. This illuminates the warning indicator (4) on the instrument cluster.
- If you want to select the second program press the switch (1) to position (B)

To deactivate the system, press the switch (1) to the position of the activated program.

NOTE: For the exact location of the two switches (1) and (2), See 3-10.



MOIL16TR03447AA





MOIL16TR03481AA 3

4 - OPERATING INSTRUCTIONS

STARTING THE UNIT

Starting the tractor

Run-over hazard!

Start engine only from operator's seat. If you bypass the safety start switch, the engine can start with the transmission in gear and the machine will move. DO NOT short or connect across terminals of the starter solenoid. Failure to comply will result in death or serious injury.

To start the engine:

- 1. Step onto the tractor from left-hand side only.
- 2. Sit on the operator's seat and fasten seat belt.
- 3. Make sure that both gear-shift levers and shuttle lever are in neutral.

NOTICE: Neutral start switch prevents operation of the starting motor unless the gear levers are in the neutral position.

- 4. Make sure the Power Take-Off (PTO) is disengaged.
- 5. Depress the clutch pedal.

NOTICE: Clutch switch prevents operation of the starting motor unless the clutch pedal is depressed.

6. Turn the key switch to the start position. Release the key when the engine starts.

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

A three-position key-start switch is installed. The key-start switch positions are as follows:

Position A	No power to circuits (key can be removed). Engine shutdown.
Position B	Standby for engine start up. Operation of the indicators, of the instrument cluster and of the pre-heating glow plugs.
Position C	Power supplied to various circuits. Engine start up: when released, the key returns automatically to position B.



Starting a cold engine

- 1. Place the hand throttle lever (2) in the halfway position.
- 2. Place both the gear levers (3) in the neutral position.
- 3. Place transmission shuttle shift lever **(4)** in the neutral position.
- 4. Make sure that the Power Take-Off (PTO) is disengaged.
- 5. Depress the clutch pedal (5).

6. **A WARNING**

Explosion hazard!

DO NOT use ether starting fluid. Serious engine damage, explosion, death, or serious personal injury could occur.

Failure to comply could result in death or serious injury.

Turn the key switch (1), fully clockwise to the "START" position (C) to operate the starting motor. Do not operate the starter motor for more than 10 s.

- 7. After the engine starts, allow the key switch to return to the "RUN" position (**B**).
- 8. Return the hand throttle lever to the idle position and check that all warning lights are off and gauge readings are normal.









3



GNIL19TRO1043AA 4



GNIL19TRO1108AA 5

Starting a cold engine in cold weather

Your tractor has a diesel engine. Before starting a cold engine, the precombustion chambers of the engine must be heated with electrical glow plug heating elements.

1. **A WARNING**

Explosion hazard!

DO NOT use ether starting fluid. Serious engine damage, explosion, death, or serious personal injury could occur.

Failure to comply could result in death or serious injury.

W0148A

Turn the keyswitch (1), image 6 fully clockwise to the "START" (C) position to operate the starting motor. Do not operate the starter motor for more than 10 s.

Turn the keyswitch (1), image 6 to position (B). The glow



plug is activated and the indicator is illuminated. Wait for the glow plug indicator to turn off and then turn the key (1) fully clockwise to position (C) to operate the starting motor. Release the key as soon as the engine starts. Do not operate the starter motor for more than 10 seconds.

NOTICE: When starting the machine after long periods, avoid immediate use of hydraulics. It is necessary to allow time for enough lubrication of all moving parts before subjecting them to work loads, particularly if outdoor temperatures approach 0.0 °C (32.0 °F). Run the engine at 1300 – 1500 RPM for about 15 min to bring the rear drive oil up to normal operating temperature.

NOTE: A coolant immersion heater is available as a dealer installed option. This heater allows for easier starting in temperatures below **-20** °C (**-4** °F) by warming the engine coolant.



GNIL19TRO1108AA 6

Starting in warm weather or when the engine is hot

- 1. Place the hand throttle lever (2) in the halfway position.
- 2. Place both gear levers (3) in the neutral position.
- 3. Place transmission shuttle shift lever **(4)** in the neutral position.
- 4. Depress the clutch pedal (5).
- Turn the key switch (1), fully clockwise to the "START" (C) position to operate the starting motor. Do not operate the starter motor for more than 10 s.
- 6. After the engine starts, allow the key to return to the "RUN" position.
- 7. Return the hand throttle lever to the idle position and check that all warning lights are off and gauge readings are normal.





GNIL19TRO1048AA 8







GNIL19TRO1108AA 10

Alarm	Ignition key	Parking brake	SEAT IN or OUT	Power Take- Off (PTO) clutch	Hi-Low range lever	Logic control		
NO	OFF	Change of state	Either	Either	Either	Electronic module		
Yes	ON	Not engaged	OUT	Either	Either	Electronic module		
Yes	ON (Engine running)	Either	OUT	Engaged - Stationary enabled	Either	Electronic module		
Yes and shutdown	ON (Engine running)	Either	Operator gets out of the seat	Engaged - Stationary disabled	Engaged (High or low)	Electronic module, harness logic and Engine Control Unit (ECU)		
Yes	ON (Engine running)	Engaged	OUT	Either	Engaged (High or low)	Electronic module, harness logic and Engine Control Unit (ECU)		
Yes	ON (Engine running)	Either	Operator gets out of the seat	Engaged - Stationary enabled along with PTO intention switch	Either	Logic control by Analog- Digital Instrument Cluster (ADIC)		
Either (seat IN or OUT) = Operator may or may not be on the seat								
Either (Hi-Low range lever) = High-Low lever engaged or disengaged								
	Either (PTO clutch) = PTO engaged or disengaged							
Change of state = Engage to disengage								

OPERATOR ALERT LOGIC TABLE

STOPPING THE UNIT

Shut off the engine

To shut off the engine, carry out the following procedure

- 1. Remain in the operator's seat.
- 2. Bring the tractor to a complete stop.
- 3. Bring the hand throttle lever to the idle position.
- 4. Apply the park brake.
- 5. Place both gear shift levers and the shuttle shift lever are in neutral position.
- 6. Place the PTO clutch lever in the disengaged position.

7. **A WARNING**

ous injury.

Crushing hazard! ALWAYS make sure the work area is clear of bystanders and domestic animals before raising or lowering the equipment. Failure to comply could result in death or seri-

W0123A

Move the hydraulic lift position control lever fully forward to lower all hydraulic equipment to the ground.

8. Place the key switch (1) into the "STOP" position (A).



GNIL19TRO1108AA

1

5 - TRANSPORT OPERATIONS

ROAD TRANSPORT

Carrying the tractor on a transporter

WARNING

Transport hazard!

The machine can slip or fall from a ramp or trailer. Make sure the ramp and trailer are not slippery. Remove all oil, grease, ice, etc. Move the machine on or off the trailer with machine centered on the trailer or ramp.

Failure to comply could result in death or serious injury.

A WARNING

Transport hazard!

Collision of high speed road traffic and slow moving machines can cause death or personal injury. On roads use transport lighting according to local laws. Make sure the Slow Moving Vehicle (SMV) emblem is visible.

Failure to comply could result in death or serious injury.

To transport the tractor it is necessary to load it onto a suitable means of transportation; platform of the truck or trailer equipped with a double axle.

Engage the Parking Brake.

Secure the tractor on the vehicle with suitable anchoring belts or chains. Secure the rear of the tractor using the tow bar or tow bar supports and the front of the tractor using the towing hook.



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W0152A

W0244A

NOTICE: Do not hook or connect chains around the front axle drive shaft, the power steering cylinders, the front axle itself or other parts of the tractor which could be damaged either by the chains or excessive strain.

On models fitted with the turbocharger, cover the exhaust outlet to prevent the turbocharger rotating in the wind, resulting in possible damage to the bearings. The turbocharger turbine must be prevented from rotating freely (with the engine off), as the shaft bearings will not be lubricated.

PREPARING FOR ROAD TRANSPORT

Road transport

A WARNING

Transport hazard!

The machine can slip or fall from a ramp or trailer. Make sure the ramp and trailer are not slippery. Remove all oil, grease, ice, etc. Move the machine on or off the trailer with machine centered on the trailer or ramp. Failure to comply could result in death or serious injury.

W0152A

Make sure that the Slow Moving Vehicle (SMV) emblem (1) is visible while road transport. The Slow Moving Vehicle (SMV) emblem mounting bracket is available at the rear of the tractor.

NOTE: SMV must always be mounted on the tractor. There is no separate storage space for SMV.

NOTE: See image **1** for the without cab version and see image **2** for the cab version.

A WARNING

Transport hazard! Collision of high speed road traffic and slow

moving machines can cause death or personal injury. On roads use transport lighting according to local laws. Make sure the Slow Moving Vehicle (SMV) emblem is visible. Failure to comply could result in death or serious injury.

W0244A







GNIL19TRO1259AA 2

RECOVERY TRANSPORT

Towing the tractor

Loss of control hazard!

Do not tow the machine faster than 8 kph (5 mph). The steering is much slower and steering wheel effort is much greater without the engine running. Failure to comply could result in death or serious injury.

W0076A

Hazard to bystanders!

Do not use cables or rope to tow the machine. If the cable or rope breaks or slips, it may whip back with enough force to cause serious injury. When using a chain, attach the chain with the hook's open side facing UP. If the hook slips, it will drop down instead of flying up. Failure to comply could result in death or serious injury.

W0441A

NOTICE: The tractor should only be towed a short distance, such as out of a building. Do not tow on roadways or as a method of transport.

If towing the tractor obey the following instructions

- 1. Use a strong chain when towing the tractor
- 2. Tow the tractor from the rear using only the drawbar, rear tow hitch, or the three-point hitch.
- 3. Tow the tractor from the front using the tow pin in the front weights or front support. Have an operator steer and brake the tractor.
- 4. If possible, run the engine to provide lubrication, to avoid damaging the transmission or other components that turn, but that are not lubricated during towing, such as the transmission and power steering.

6 - WORKING OPERATIONS

GENERAL INFORMATION

Field operation

Before operating

A WARNING

IMPROPER OPERATION OF THIS MACHINE CAN CAUSE DEATH OR SERIOUS INJURY. MAKE SURE THAT EVERY OPERATOR: -learns and practices the safe use of machine controls in a safe, clear area before operating the machine on a job site. -clears the work area of all bystanders. -observes pertinent laws and regulations. -follows the instructions in this operator's manual. Failure to comply could result in death or serious injury.

Read this section carefully for a thorough understanding of operational requirements. Even if you operate other tractors, you should thoroughly read this section of the manual and ensure that you are familiar with the location and function of all the controls of this tractor

Do not start the engine or attempt to drive or operate the tractor until you are fully familiar with all controls. It is too late to learn once the tractor is moving. If you have any questions about the operation of tractor, consult your Authorized Dealer.

Tractor specifications and dimensions will be found in **9-1** and **9-9**.

Running-in procedure

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

POWER TAKE OFF (PTO)

Power Take-Off (PTO) safety rules

A WARNING

Entanglement hazard!

Before attaching or detaching equipment or changing the Power Take-Off (PTO) shaft: 1) Apply the parking brake. 2) Move all controls to neutral and PTO control knob to the disengaged position. 3) Stop the engine and remove the key. 4) Wait for the PTO shaft to stop turning before leaving the cab. Failure to comply could result in death or serious injury.

W0323A

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

Do not operate the engine without a load. This can be as harmful to the engine as overloading. Ensure that the engine is subjected to heavy as well as light loads during the running-in period.

Pre-operation checks

Perform daily lubrication and maintenance operation in accordance with **7-12**.

After completing the daily maintenance operations, perform a walk around visual inspection of the tractor. Pay particular attention and check the following items:

- 1. Fan belt for cracks.
- 2. Engine area for accumulation of debris.
- 3. Hoses, lines, and fittings for leaks and damages
- 4. Tires for damage.
- 5. Hardware for looseness.
- 6. Leakage at joints.

Make any necessary repairs before using the tractor.

NOTICE: In case the poultry house unit has to be used in field for other work, replace the horizontal silencer pipe with downdraft silencer pipe.

W0322A

W0337A

W0112A

W0423B

WARNING

Entanglement hazard! The Power Take-Off (PTO) guard must be installed when operating PTO-driven equipment. Failure to comply could result in death or serious injury.

WARNING

Entanglement hazard! Do not wear loose clothing when operating Power Take-Off (PTO) driven equipment. Failure to comply could result in death or serious injury.

WARNING

Flying objects!

Do not use the implement at a higher Power Take-Off (PTO) RPM than recommended. Machine damage due to vibration may occur, resulting in loose parts and flying debris. Failure to comply could result in death or serious injury.

Moving parts!

Disengage the Power Take-Off (PTO), turn off the engine, and remove the key. Wait for all movement to stop before leaving the operator's position. Never adjust, lubricate, clean, or unplug machine with the engine running.

Failure to comply could result in death or serious injury.

WARNING

Unexpected movement!

Disengage the Power Take-Off (PTO) after each use. This prevents an attached implement from moving unintentionally.

Failure to comply could result in death or serious injury.

Attaching Power-Take Off (PTO) driven equipment

Before attaching or detaching equipment or changing the Power-Take Off (PTO) shaft :

- Make sure that all levers (shuttle lever, gear shifter, and range shifter) are in neutral.
- Make sure that the PTO switch (PTO lever in case of mechanical PTO) is in the disengaged position.
- · Apply the parking brake.
- Stop the engine.
- Make sure that PTO shaft has stopped rotating before getting off the tractor.

Mount or hitch the implement to the tractor as outlined in 6-8.

Power Take Off (PTO)

Description

The Power Take-Off (PTO) transfers engine power directly to mounted or trailed equipment through a splined shaft **(1)** at the rear of the tractor.

A PTO flip-up guard (2) is standard equipment. This guard serves as a support for drive-line shields used with PTO driven equipment, and provides safety for the operator. Do not modify the guard.

The PTO system is independent, that is, the PTO may be engaged or disengaged whether the tractor is moving or stationary. Rotation of the PTO shaft is not affected by the main clutch and tractor speed, but is related directly to the speed of the engine.

See **9-1** for PTO RPM and their corresponding engine RPM.

The **540 RPM** to **1000 RPM** PTO version change can be achieved by changing the PTO shaft.

Attaching Power-Take Off (PTO) driven implements

To connect PTO driven implement to the PTO shaft, remove the PTO cap (1) and store in the toolbox. Attach the implement to the PTO shaft.

NOTICE: After attaching mounted implement, carefully raise and lower using Position Control lever and check clearances and PTO shaft slide range and proper fit. When attaching trailed implement, make sure the drawbar is correctly set.



GNIL19TRO1148AB 1



GNIL19TRO0815AB 2

Drawbar length adjustment

Adjust the drawbar length so that there is **356.0 mm** (**14.0 in**) from the end of the rear PTO shaft to the center of the drawbar pin hole.

NOTE: Recommended drawbar mounting position is second hole.

NOTE: Clevis assembly is available as Dealer Installed Accessory (DIA) kit.

Power-Take Off (PTO) operation

Avoid injury! Observe ALL precautions listed below when operating Power Take-Off (PTO) driven equipment. Failure to comply could result in death or serious injury.

W0435A

Entanglement hazard! Make sure all people and obstructions are clear of the implement before engaging the tractor Power Take-Off (PTO). Failure to comply will result in death or serious injury.

- 1. Check that you are using the correct PTO speed for the implement.
- 2. Follow the operator's instructions in the operator's manual.
- 3. Make sure that the PTO guard is installed when using PTO driven equipment
- 4. DO NOT wear loose clothing when operating PTO driven equipment.
- 5. Firmly apply the parking brake, place all control levers in the neutral position, and block all four wheels before operating any stationary PTO equipment.
- 6. DO NOT approach, clean, or adjust PTO driven equipment while the engine is still running.
- 7. Stop the engine and remove the key. Wait until the PTO and the equipment stop turning before leaving the machine or before working on the PTO, or the equipment.
- 8. With the engine stopped and key removed, the PTO brake is released and the shaft may be turned by hand to assist in the installation or removal of the implement shaft.

NOTE: The images shown in the below instruction are for tractors without cab. See **3-25** for the cab version. The

Power-Take Off (PTO) engagement (mechanical PTO)

- 1. To engage the PTO, press the clutch pedal, and pull lever (1) towards the operator's seat and then push forward until handle engages the notch in the quadrant.
- 2. The PTO system is independent of the tractor ground speed, and the following operations can be performed.
- The tractor ground travel can be stopped without stopping the PTO.
- The PTO can be stopped without stopping the tractor ground travel.

NOTE: If the operator leaves the seat without disengaging the PTO, an alarm will sound.

Power-Take Off (PTO) engagement (electrohydraulic PTO)

- 1. To engage the PTO, press the clutch pedal, and pull the switch (1).
- 2. The PTO system is independent of the tractor ground speed, and the following operations can be performed.
- The tractor ground travel can be stopped without stopping the PTO.
- The PTO can be stopped without stopping the tractor ground travel.

NOTE: If the operator leaves the seat without disengaging the PTO, an alarm will sound.

working of the below controls is same in both the version of tractors.



GNIL19TRO1137BA 3



GNIL19TRO1042AA 4

Power-Take Off (PTO) disengagement (mechanical PTO)

1. Pull the PTO lever (1) rearward to disengage the PTO.

NOTE: The PTO will stop automatically when disengaged due to a internal frictional brake.

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GNIL19TRO1137BA 5

Power-Take Off (PTO) disengagement (electrohydraulic PTO)

1. Push the PTO switch (1) to disengage the PTO.

NOTE: The PTO will stop automatically when disengaged due to a internal frictional brake.

GNIL19TRO1042AA 6

Power-Take Off (PTO) speed selector lever (if available)

Without Cab

Shift lever (1) forward to get PTO **540 RPM** and shift the lever (1) rearward to get PTO **540E RPM**.



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With Cab

Shift lever (1) forward to get PTO **540E RPM** and shift the lever (1) rearward to get PTO **540 RPM** whichever is available.



THREE POINT LINKAGE

Three-point linkage



The three-point linkage enables semi-mounted and fully mounted implements to be connected to the tractor, and be controlled by the tractor hydraulic system. The three-point linkage consists of two lower links (1) connected to the rear axle housing. The rear end of the lower links are connected to the lower hitch pins on the implement.

The lower links are raised and lowered by means of the lift rods (2) connected to the lift arms. The right-hand lift rod is readily adjusted to ease the attachment of implements and to level the implement after attaching.

The top link (3) is connected to a bracket on the hydraulic lift housing. The rear of the top link should be connected to the upper hitch pin of a mounted implement. The top link is also adjustable to aid implement setting.

Adjustable stabilizers (4) are connected to each lower link. The stabilizers limit side to side movement of the lower links and attached implement. Adjust stabilizers so that there is not any interference between the tires and the lower links.

Attaching three-point equipment

A WARNING

Entanglement hazard!

Before attaching or detaching equipment or changing the Power Take-Off (PTO) shaft: 1) Apply the parking brake. 2) Move all controls to neutral and PTO control knob to the disengaged position. 3) Stop the engine and remove the key. 4) Wait for the PTO shaft to stop turning before leaving the cab. Failure to comply could result in death or serious injury.

W0323A

Collision hazard! Always make sure the area behind the machine is clear of all persons, animals, and obstructions BE-FORE backing up. Failure to comply could result in death or serious injury.

Pinch hazard!

Always use the position control lever when attaching, detaching, or transporting implements. Failure to comply could result in death or serious injury.

W0466A

NOTE: Before attaching implements read the following text carefully.

Most implements can be attached to the tractor as follows: Position the tractor so that the lower link hitch points are level with and slightly ahead of the implement hitch pins. Carefully bring the tractor rearwards to match the tractor and implement hitch points. First attach the left-hand lower link (1) then by adjusting the levelling box (2) attach the right-hand lower link (3).

 Image: Constrained state
 Image: Constrained state

 Image: Constrained state
 Image: Constrained state

Lengthen or shorten the top link (4) until the implement mast pin (5) can be inserted through the mast and upper link of the implement.

link of the implement.

abilizers **(6)** to limit side to side movement of the

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Adjust stabilizers **(6)** to limit side to side movement of the lower links and attached implement. Adjust stabilizers so that there is not any interference with tires and lower links when moving attached implement side to side.

NOTICE: When attaching mounted or semi mounted implement to the three-point linkage, make sure that there is adequate clearance between the implement and the rear of the tractor. The clearances in the raised position should be checked by raising the implement carefully with position control lever. With the implement fully raised there must be at least **100 mm (4 in)**. clearance between the implement and the nearest part of the tractor.

NOTICE: Make sure that the telescoping stabilizers (6) are adjusted to suit the equipment. Remove the swinging drawbar, if close mounted equipment is being attached.



Detaching three-point equipment

- When detaching implement, the procedure is the reverse of attaching. The following hints will make detaching easier and safer.
- Always park the implement on a level, firm surface.
- The implement should be supported so that the implement cannot tip or fall when detached from the tractor.
- Always relieve all hydraulic pressure in any remote cylinders before detaching.

Lift rods, lower links and top link

Crushing hazard!

Before disconnecting a lift rod from the lower link, lower the attached implement to the ground, and stop the engine. Make sure the attached implement is correctly supported and no pressure remains in the hydraulic system before removing the lift rod securing pins.

Failure to comply could result in death or serious injury.

W0034A

Left-hand lift rod

NOTE: Left-hand lift rod (1) is adjustable but must be removed from the lift arm before length can be changed.

To lengthen or shorten the left-hand lift rod (1):

1. Remove retaining clip (2) and pin (2) from lift rod.

2. Rotate the top half of the lift rod clockwise to reduce length.

3. Rotate the top half of the lift rod counter-clockwise to increase the length.

CHERETORY

Right-hand lift rod

NOTE: The right-hand lift rod (3) is readily adjustable even when connected between lift arm and lower link.

To lengthen or shorten the right-hand lift rod, lift the jug handle up **(4)** and rotate clockwise to increase the length and counter-clockwise to reduce the length.

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GNIL19TRO1148AB 2

Top Link

To adjust the top link length: 1. Hold the link end **(1)** and rotate the sleeve **(2)** to lengthen or shorten the top link.

Hydraulic draft sensing spring adjustment

When operating in Draft Control, the top link and hydraulic draft sensing spring transmit draft signals to the control valve within the hydraulic system. The top link attachment to the draft sensing spring affects draft signals.

The draft sensing spring bracket contains three holes for attaching the top link. The bottom hole (1) is recommended for light draft loads and light equipment. With the top link in the bottom hole, the hydraulic system is most sensitive to draft signals. Use the middle hole (2) for heavier draft loads and equipment, and the top hole (3) for the heaviest loads. With the top link in the top hole, the hydraulic system is least sensitive to draft signals.

NOTICE: When mounting a category *I*, three-point hitch mounted implement, it may be necessary to remove the drawbar and drawbar support to obtain clearance between tractor and implement.



GNIL19TRO1121AA 3



GNIL19TRO1121AA 4

Towing attachments

Overturning hazard!

Always use the drawbar, pick-up hitch, or lower links in the lowered position for pull-type work. Do not pull from the lower links if they are above the horizontal position. Failure to comply could result in death or serious injury. W0417A

P1

P3

 \bigcirc

 \bigcirc

Swinging/extendable drawbar

Use the drawbar to tow agricultural implements and trailers. The drawbar length may be adjusted by inserting the pin in the series of holes (P1), (P2), and (P3) in the drawbar. The maximum static vertical load carrying capacity at the position P1 is 800.0 kg (1763.7 lb), P2 is 1200.0 kg (2645.5 lb), and P3 is 1500.0 kg (3306.9 lb)

NOTICE: Safety chain provision is available in the vehicle. When transporting equipment on roads, a safety chain with a tensile strength equal to the gross weight of the implement should be installed between the tractor and implement hitch.

Collision hazard!

During road transport, the drawbar must be locked in the center position, and the implement must be centered behind the tractor. Failure to comply could result in death or serious injury. W0324A

Drawbar swing may be adjusted by location of pins (2).

Telescoping stabilizers and flex end links

Telescoping stabilizers and lower lift arms with flex ends are a standard equipment, for the tractor. The telescoping stabilizers (1) use a pin and multiple hole arrangement for easy adjustment, for side to side movement of the threepoint linkage. The flex ends (2) on the lower lift arms are adjusted by pushing down on the clamp (3) and sliding the ends to the desired length. Once the implement is attached, push in on the flex ends until the ends are in the latched position in the arms,

NOTICE: Cycle the three point linkage through the entire travel and check for interference with the rear tires. If interference is present, adjust stabilizers as needed.

Machine damage can cause accidents! Only operate three-point equipment with both flex ends returned to the latched position. Failure to comply could result in death or serious injury.

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GNIL 19TRO1050FB





HYDRAULIC SYSTEM

Hydraulic systems - Operating

Hydraulic Power Lift (HPL)

This is an open-center hydraulic system, where a hydraulic gear pump constantly circulates hydraulic oil through the hydraulic system. Transmission lubrication oil is used as the hydraulic oil. The system allows the operator to select any of the three controls (position control, draft control, and float control).

The Hydraulic Power Lift (HPL) system is operated by the position control lever (1), draft control lever (2), the Lift-O-Matic button (3), and the response control knob (4).

NOTICE: Some mounted or semi-mounted equipment may interfere with and cause damage to tractor sheet metal. To avoid damage check for clearance between tractor and implements.



GNIL19TRO1042AA 1



GNIL19TRO1053AA 2

Control identification for cab version

- 1. Position control lever
- 2. Draft control lever
- 3. Lift-O-Matic



GNIL19TRO1256FA 3

Position control

The position control lever (1) sets the lower position of the hydraulic lift. Position control is best for fixed-level implements that operate above the ground, such as mowers, rakes, and sprayers. Position control keeps the equipment at one position at all times, so it is not recommenced for any ground-engaging equipment, unless the field is very flat and the soil is very consistent.

To set the position control, move the draft control lever (2) to its full forward position. Then set the implement position lower by moving the position control lever, forward, or set implement position higher by moving the lever rearward. When operating in position control, the tractor and implement become a single unit that reacts to changing terrain as one piece of equipment. Once you have position control set, you can raise and lower the attached implement at the end of each pass.

Draft control

The draft control lever (2) sets the desired depth of the attached implement. Draft control is best when using implements that operate in the ground, such as plows, harrows, or cultivators. The draft loading on the implement increases and decreases as the working depth or the soil resistance changes.

To set the draft control, move the position control lever (1) to the full forward position. Then set the implement draft depth lower by moving the draft control lever rearward, or set implement draft depth higher by moving the lever forward.

Implement depth will be proportional to draft, depending on the soil conditions. With draft control, the lift keeps the tractive effort steady automatically.

Combined draft and position control

You can use Draft and Position Control together to operate in Draft Control but prevent the implement from sinking excessively when soil conditions change. First set the draft control lever (2) with the position control lever (1) fully forward. Then move the position control lever back until the link arms start to rise. The position control lever sets the lowered position of the hydraulic lift.

Float operation

Move the position control lever (1) and the draft control lever (2) fully forward. The three-point linkage will now be free to 'float' and follow the ground contour. This feature is useful for scraper blades etc.



GNIL19TRO1042AA 4



GNIL19TRO1042AA 5

Lift-O-Matic button

NOTICE: When using the Lift-O-Matic controlled implements connected to the PTO, adjust the lifting rods to maximum length to prevent damage to the drive shaft.

To raise the implement at the end of each pass, or whenever required, move the latch **(5)** rearward to release the fast raise button **(6)**. The three-point linkage (and the implement) will rise to the full height without the need to move either the position or draft control lever.

To lower the implement, simply press the fast raise button **(6)** fully in, and the implement will lower to the preset depth, set by the position control lever or draft control lever.

Height limiter - Lift-O-Matic (if fitted)

The height limiter allows the operator to control the height of the lift arms or the lower links with the Lift-O-Matic lever. Start the engine. By using the position control lever, raise the lift arms to the desired height. This is the desired maximum height of the lower links which the operator wants to attain by releasing the Lift-O-Matic button.

Rotate the knob (7) in the anti-clockwise direction till the cam profile (8) of the sector touches the raised position in the bracket of the Lift-O-Matic lever. Lower the position control lever. Now by operating the Lift-O-Matic lever, the lower links will raise only to the preset height.

However this preset height with the height limiter will not have any influence on the position control lever and the draft control lever travel or functioning. The lower links can be raised beyond the pre-set height by using the position control lever and draft control lever.

Response control

The response control knob (4) varies the speed of drop of the lower links.

Clockwise rotation -- Increases speed of drop Counter-clockwise rotation – Decreases speed of drop

NOTICE: To lock implements in transport position when driving on road, fully raise position control lever (1) and screw out (rotate counter clockwise) knob (4).



GNIL19TRO1042AA 6



GNIL13TR00074AA 7



GNIL19TRO1053AA 8
Rear remote control valve(s)

Open center remote valves (9) and quick couplers are installed on rear Hydraulic Power Lift (HPL).

The control levers are positioned on the operator right hand side.

The remote valves are convertible (single acting or double acting). To set the remote valve to double acting, screw in the conversion valve knob (\mathbf{K}) and screw out the conversion valve knob (\mathbf{K}) to set the remote valve to single acting.

Couplers are push-pull type to permit the rapid attachment and removal of hoses.

NOTE: See image **9**. Use port B of the remote valves in case of single acting cylinder operation. In case of double acting cylinder operation, it is recommended to connect the B ports of the remote valves to lifting ports of implement cylinders and connect the A ports of the remote valves to lowering ports of implement cylinders.

NOTE: Dedicated Mid-Mount Valve (MMV) option is available for loader application, regular remote should not be used for loader application.

To operate the remote control valve, move control lever (10) for valve number 1. Move control lever (11) for valve number 2.

Similarly, a third remote valve lever **(12)** is available in case of three remote valves to operate the valve number 3.

NOTE: See image **10** for the without cab version and see image **11** for the cab version.



GNIL20TRO0295AA 9



GNIL19TRO1120AA 10



GNIL19TRO1256FA 11

Open center remote valves	Valve 1	Valve 2	Valve 3
Positions: Raise / neutral / lower	Yes	Yes	Yes
Position: Float	Yes	No	Yes
Convertible single/double acting	Yes	Yes	Yes
Double acting only	No	No	No
Flow control	DIA	No	No
Detents on raise, lower positions	No	Yes	No
Detent on float position	Yes	NA	Yes

Open center remote valves	Valve 1	Valve 3			
Kick out (@ 165 bar)	No	Yes	No		
Control type	lever + bowden				
Identification code on levers	Green	Blue	Brown		

WHEEL TRACK ADJUSTMENT

Wheel tread settings

Two–wheel drive (2WD) front axle tread setting

- The front axle consists of a hollow center beam (1) with a telescopic section (2) at each end. Seven holes at 50 mm (1.97 in) intervals are provided in the telescopic sections for adjustment purposes. Adjustment of the front wheel track width is effected by extending both ends of the axle equally.
- 2. To extend the axle, apply the hand brake and place blocks at the front and rear of the rear wheels. Jack up the front axle and place on axle stands. Remove the securing bolts, (3), securing the left-hand telescopic section to the center beam.
- 3. Repeat the same for the right-hand side of the axle.
- 4. The tie rod is adjustable and consists of a central, hollow tube with a solid extendible section at each end. The left-hand end of the tie rod has a number of notches (1) at 50 mm (1.97 in) intervals.
- 5. A locating bolt (2) passes through a clamp and one of the notches in the solid section and locks the tie rod assembly at the desired length. Additionally, the right-hand end of the tie rod is threaded (3) to provide fine adjustment of toe-in.
- 6. Remove the locating bolt (2) from the left-hand end of the tie rod. This will permit the tie rod to extend or retract freely.



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7. Reset both axle telescopic sections. Passing the securing bolts through the center beam and telescopic sections, as indicated in **3** and table below:

Securing bolt location	7.50-16	10.00-16
Light duty 2WD fro	ont axle	
AC	1445 mm	1489 mm
BD	1545 mm	1589 mm
CE	1645 mm	1689 mm
DF	1745 mm	1789 mm
EG	1845 mm	1889 mm
FH	1945 mm	1989 mm
Heavy duty 2WD f	ront axle	
AC	1591 mm	1550 mm
BD	1691 mm	1650 mm
CE	1791 mm	1750 mm
DF	1891 mm	1850 mm
EG	1991 mm	1950 mm
FH	2091 mm	2050 mm



NOTE: The tread settings shown are approximate. The front wheel discs are off-set, relative to the center line of the rim. The tread settings in the table are with the dished side of the wheel nearest the axle hub. If the front wheels are reversed on the hubs the tread settings shown in the table will be increased by approximately **25 mm (0.98 in)** and will increase by approximately **20 mm (0.79 in)** when the tire dimension is 10×16.

See **7-34** for correct torque value.

Front wheel toe-in

After resetting the track width, the front wheel toe-in may require adjustment. For correct operation, the front wheels should be parallel or toe-in slightly.

NOTICE: Incorrect toe-in setting may result in abnormal wear of front tires.

To measure the toe in proceed as follows

- Measure the distance (1) between the wheel rims at hub height at the front of the wheels. Rotate both front wheels by 180° and check the measurements again, this time at the rear of the wheels (2)
- 2. This will eliminate wheel rim run-out errors. The correct toe-in setting is **0-5 mm**, i.e., the measurement taken at the front of the rims should be the same as the rear or be smaller by up to **5 mm** (**0.20 in**).



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Tie Rod - Steering (Right-hand side - Illustrated)

- 1. The tie rod located behind the axle must be disengaged to permit adjustment of the axle.
- 2. The tie rod is telescopic and consists of a central hollow tube with a solid extendible section at each end.
- 3. Remove the locating bolt (1) from both ends of the tie rod.
- 4. The position for the setting of the steering cylinder will also change respectively.
- 5. Left-hand and right-hand axle telescopic sections, passing the securing bolts through the center beam and telescopic sections, as indicated in image **3**, see chart.
- 6. Remove the nut (1) at the right-hand end of the tie rod and withdraw tie rod from arm (2)
- 7. Loosen the bolt (3) and rotate the threaded end to shorten or lengthen tie rod assembly until the toe-in is correct. Tighten all bolts/nuts securely.



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Front wheel (4WD) and rear wheel tread adjustment

A WARNING

Roll-over hazard!

Never operate the machine with a loose wheel rim or disc. Always tighten nuts to the specified torque value and at the recommended intervals.

Failure to comply could result in death or serious injury.

W0346A

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

The sectioned drawings shown in the table illustrate the wheel rim and disc positions viewed from rear of the tractor relative to the hub at various track width settings. Track width (the distance between the center of the tires) are nominal and may vary by as much as **13 mm (0.5 in)**.

See 7-34 for correct torque value.

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

NOTICE: With certain options and/or tire sizes narrower track settings may not be possible due to minimal clearance between tires and fenders or equipment.



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	Turno Sino				Tra	cks			
	Tyre Size	Α	В	С	D	E	F	G	Н
Rear	16.9R34					1640	1836	1740	1936
Front	13.6R24							1745	1851
		-		-				-	
Rear	18.4R30				1620		1726	1820	2020
Front	12.4R24				1690			1708	1818
Rear	16.9R30				1620		1726	1820	2020
Front	11.2R24				1690			1708	1818
Rear	19.5L-24				1647			1734	1847
Front	12.5/80-18	1610							
Rear	500/60-22.5**	1660							
Front	11.5/80-15.3**	1740							

NOTE: * All dimensions are at wheel center.

BALLASTING AND TIRES

Ballasting and tires

Selecting Ballast

Roll-over hazard!

A tractor without adequate ballasting, wheel base, and tire spacing can be unstable when operating the implement on an incline. Read the tractor operator's manual for exact instructions. If instructions are not available, you must conduct suitable tests in safe conditions to assess stability.

Failure to comply could result in death or serious injury.

W0190A

When tractor horsepower loads vary the optimum weight of the tractor will change. This means that ballast may have to be added or removed to maintain the best tractor performance. Proper ballast will greatly improve tractor operation and ride.

The amount of ballast required is effected by

- · Weight of tractor
- Soil and Traction condition
- Type of implement fully-mounted, semi-mounted or Increased soil compaction trailed.
- Working speed.
- Tractor horsepower & load

** Applicable only for tractors without cab

- Type and size of tires
- Tire Pressure

Do not use more ballast than needed. Excess ballast should be removed when the excess ballast is not required.

Too little Ballast

- Rough ride
- · Excessive wheel slip
- Power loss
- Tire wear
- Excessive fuel consumption
- Lower productivity

Too much Ballast

- Higher maintenance costs
- · Increased driveline wear
- Power loss
- Excessive fuel consumption
- Lower productivity

For maximum tractor performance in heavy draft conditions weight should be added to the tractor in the form of liquid ballast, cast iron weights or combination of both.

Front end ballast may be required for stability and steering control when weight is transferred from the front wheels to the rear wheels as the implement is raised by the tractor three-point linkage.

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

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

When using front mounted equipment, it may be necessary to add weight to the rear wheels to maintain traction and stability.

Ballast limitations

Ballast should be limited by the tire capacity or tractor capacity. Each tire has a recommended carrying capacity, which should not be exceeded.

NOTICE: Do not exceed the tractor gross vehicle weight of tractors, see **9-9**. This can cause overload condition that may invalidate the warranty and may exceed the load rating of the tires. The maximum recommended gross vehicle weight is the weight of the tractor plus ballast plus any mounted equipment/ implement in the raised position. **NOTICE:** Only sufficient weight should be added to provide traction and stability. Adding more weight than necessary results in unnecessary loads being put on the tractor and higher fuel consumption. When adding weight adhere to the maximum tire capacity loading stated in the tables at the end of this Section. If further information or assistance is required on tractor weighing consult your Authorized Dealer.

Roll-over hazard!

If proper stability cannot be achieved within the following weight limitations, reduce the load on the machine until you achieve stability.

Failure to comply could result in death or serious injury.



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Rear wheel weights (optional)

The rear wheels can be fitted with cast iron wheel weights (1). The maximum recommended rear ballast weights is :

Tire Size	Maximum no. of weights per wheel	Maximum rear wheel weight
All tires excluding 500/60-22.5	2 x 50 kg	200.0 kg (440.9 lb)
All tires excluding 500/60-22.5	3 x 50 kg	300.0 kg (661.4 lb)
All tires excluding 500/60-22.5	4 x 50 kg	400.0 kg (881.8 lb)
500/60-22.5 Tire	2 x 32 kg	128.0 kg (282.2 lb)
500/60-22.5 Tire	3 x 32 kg	192.0 kg (423.3 lb)
500/60-22.5 Tire	4 x 32 kg	256.0 kg (564.4 lb)

See image **2** for the rim **(1)** along with the weights **(2)** mounted outwards i.e. away from the operator seat.

NOTE: See image **3** for the rim **(1)** along with the weights **(2)** mounted inwards i.e. towards the operator seat. This configuration is not available for the tire size 500/60-22.5.

NOTE: 4 x **50 kg** configuration of the weight is not possible while the rim along with the weight is mounted inwards. See image (3).

Tightening torque:

See 7-34 for torque value.



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Front ballast weights (optional)

The front ballast weights (1) and front carrier (2) are available from your authorized dealer, which can be mounted on a wafer weights can be mounted and clamped together by means of the long through bolt (3). The recommended front ballast weight is:

Front weight	Front carrier	Total weight
40 kg x 8	70 kg	320.0 kg (705.5 lb)
40 kg x 10	70 kg	400.0 kg (881.8 lb)







Tire inflation

Explosion hazard!

Welding to a wheel can create an explosive air and gas mixture. Removing air from the tire or loosening the tire on the wheel (breaking the bead) will NOT eliminate the hazard. ALWAYS remove the tire completely from the wheel before welding.

Failure to comply will result in death or serious injury.

D0033A

Explosion hazard!

When inflating tires, use a clip-on air chuck with a gauge, remote valve, and hose long enough to allow you to stand to one side and NOT in front of or over the wheel assembly. Keep others out of the DANGER AREA. Never inflate a tire beyond the maximum allowable pressure printed on the tire. Failure to comply could result in death or serious injury.

W0059A

A WARNING

Explosion hazard!

Do not remove, install, or make repairs to a tire on a wheel rim. Take the tire and rim to a tire shop where persons with special training and special safety tools are available. Failure to comply could result in death or serious injury.

W0365A

Recommended Two-Wheel Drive (2WD) tire combination

	Deer Tiree	Pressure			
Front lifes	Real files	Frontal	Rear		
7.50 - 16	16.9 - 30				
10.00 - 16	16.9 - 34	2.5 bar (36.2 psi)	1.6 bar (23.2 psi)		
	18.4 - 34				

Mandatory Four-Wheel Drive (4WD) tire combination

Front tiroo	Door Tiroo	Pressure			
FIONUTIES	Real files	Frontal	Rear		
12.4 - 24	18.4 - 30				
13.6 - 24 **	16.9 - 34 **	1 6 hor (22 2 noi)	1 6 hor (22 2 noi)		
11.2 - 24	16.9 - 30	1.6 bar (23.2 psi)	1.6 bar (23.2 psi)		
12.5/80-18	19.5L 24				
11.5/80-15.3	500/60-22.5	5.0 bar (73.0 psi)	2.4 bar (35.0 psi)		

Upon receiving your tractor, check the air pressure in the tires and recheck every 50 hours or weekly. See above table for tire pressure for normal operation.

When checking tire pressures, inspect the tires for damaged tread and side walls. Incorrect pressure will lead to premature tire failure.

Do not exceed the load for the pressures listed. Do not over-inflate or under-inflate the tire.

To avoid the possibility of tire creep (movement of the tire on the rim), tire pressure below **90 kPa** (**13 psi**) should not be used with cross ply tires for operations having a high torque requirement, e.g., sub-soiling, heavy transport, etc. When mounted implements are used on tractor, loads may be increased by **20%** with no increase in inflation pressure, if operated at speeds up to **6 km/h** (**4 mph**).

For haulage service, it is recommended that the tire be inflated to the maximum pressure stipulated in the table.

The above chart is for guidance only. For exact information regarding inflation pressures and loads for your particular tires, consult your dealer.

When replacing tire in case of 4WD, use only recommended tire size and make.

Not using the right size and make of tire may result in uneven wear of tire. Consult your dealer for more information.

Liquid ballast

Liquid ballast (optional)

It is a common practice to add weight to the tractor by filling the rear tires with liquid. A calcium chloride and water solution is recommended due to the low freezing point and greater density (weight per gallon) than pure water.

Never exceed the total recommended weight for the tractor. Because special equipment is required to fill the tires, consult your dealer. Tires should never be filled beyond **75%**. At **75%** full, the liquid will come to the valve stem (1) when the valve stem is at the highest point, at the top of the wheel.

Rear tire liquid

Ballast weights (per tire)

600 g/L (5 lbs/gal) CaCl2 % Solution



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Tire Size	Weight per tire
16.9-30	250.0 L (66.0 US gal)
16.9-34	260.0 L (68.7 US gal)
18.4-30	320.0 L (84.5 US gal)

7 - MAINTENANCE

GENERAL INFORMATION

Lubrication and maintenance general information

Introduction

This section gives full details of the service procedures necessary to maintain your tractor at peak efficiency. The lubrication and maintenance chart provides a ready reference to these requirements ,see **7-12**. Each operation being numbered for easy reference. If in doubt about any aspect of lubrication and maintenance, consult your authorized dealer.

Safety precautions

Read and observe all safety precautions listed in "Servicing the Tractor" in the safety rules section at the front of this Manual. See **2-2**.

NOTE: Dispose of used filters and fluids properly.

Maintenance hazard!

Always stop the machine before performing any lubrication. Observe the following precautions before leaving the operator's platform: Disengage all drives. Engage the parking brake. Raise the header. Engage the header lifter safety latch. Turn the machine engine OFF. Remove the ignition key. Failure to comply could result in minor or moderate injury.

10 hours or daily check

Coolant: check coolant level (top up if required)

- Air filter: check clogging indicator (clean if required)
- Check engine oil

During first 50 hour operation

In addition to the regular maintenance operations listed, check the following items every 10 hours or daily during the first 50 hours of operation:

- · Check engine oil.
- Check Transmission/Hydraulic, rear axle oil level.
- · Wheel nuts for tightness.

NOTICE: Park the tractor on level ground and where applicable, extend all cylinders on implements or attachments before checking these oil levels.

The first 50 hour service

At the first 50-hours service, ensure that the following additional service operations are carried out. The items are listed in the "First 50-Hour service" check list

- Change hydraulic oil filter.
- Check and tighten all cooling system hose connections.
- · Check and tighten all air intake connections.
- Check and torque front end weight bolts.
- Check torque of all wheel nuts

NOTICE: Items listed in first 50-hours service are important. If not performed, early component failure and reduced tractor life may result.

Preventing system contamination

To prevent contamination when changing oils, filters, etc., always clean the area around the filler caps, level and drain plugs, dipsticks, and filters prior to removal. To prevent dirt entry during greasing, wipe dirt from the grease fittings before greasing. Wipe excess grease from the fitting after greasing.

Flexibility of maintenance intervals

The intervals listed in the lubrication and maintenance chart are guidelines to be used when operating in normal working conditions.

Adjust the service intervals for environment and extreme working conditions. Intervals should be reduced under

adverse (Wet, muddy, sandy, or extremely dusty) working conditions.

Lubrication and maintenance chart

The chart lists the intervals when the routine checks, lubrication, service and/or adjustments should be performed. Use the chart as a quick reference guide when servicing the tractor, see **7-12**.

Warranty notice

NOTICE: While any company can perform necessary maintenance or repairs on your equipment, NEW HOL-LAND strongly recommends that you use only authorized NEW HOLLAND dealers and products that meet the given specifications. Improperly or incorrectly performed maintenance and repair voids the equipment warranty and may affect service intervals.

General specification

NEW HOLLAND prefers the use of engine oils that meet CNH Industrial standard **MAT3571** in your engine.

You may also use engine oils that meet CNH Industrial standard MAT3572 in your engine.

You may use other engine oils if the engine oils meet **API CJ-4** or **API CK-4** or **ACEA E6** or **ACEA E9** performance requirements.

NEW HOLLAND engine oils exceed API and ACEA performance requirements.

NOTE: Do not put performance additives or other oil additive products in the engine crankcase. See your NEW HOLLAND dealer for approved engine oil additives, engine oil analysis test package information.

RE	CO	ИМЕ	NDE	D VIS	SCOS	SITY	GRA	DES	AT	VAR	/ING	AME	BIEN	T TE	MPE	RATI	JRE	LIMI [.]	ΓS
		(H)		-	-	-	-	-	S	SAE ()W-4	0		-		_			I
																			1
	(H) SAE 10W-40							I											
																			1
				(H)					S	<u>AE 1</u>	<u>0W-3</u>	30							1
																			1
						(H)					S	<u>AE 1</u>	5W-4	40					1
-40	°C	-30	°C	-20	o°C	-10	°C	0	°C	10	°C	20	°C	30	°C	40	°C	50	°C
-40	°F	-22	°F	-4	°F	14	°F	32	°F	50	°F	68	°F	86	°F	104	۱°F	122	: °F
(H) =	(H) = Engine oil pan or coolant block heater recommended in this range						eater r	ecom	mend	ed in t	his ra	nge							

Engine oil and filter service intervals

NEW HOLLAND develops the oil/filter change intervals given in this manual from tests with NEW HOLLAND lubricants/filters.

Engine oil and filter service interval recommendations are based on type of engine oil, oil filter used, sulfur, bio-diesel content of diesel fuel. See diesel fuel recommendations for the approved Diesel fuel sulfur content, Bio-Diesel blends, and fuel specification information.

Always change engine oil and oil filter at the service intervals described in your maintenance chart. See 7-12.

NOTICE: Service intervals must be reduced by **50%** (Maximum **300** h) when using engine oils that do not meet CNH Industrial standards **MAT3571** or **MAT3572**. Service intervals must be reduced by **20%** (Maximum of **500** h) when using engine oils that meet CNH Industrial standard **MAT3572**.

Refueling the tractor

A WARNING

Fire hazard! When handling diesel fuel, observe the following precautions:

1. Do not smoke.

2. Never fill the tank when the engine is running.

3. Wipe up spilled fuel immediately.

Failure to comply could result in death or serious injury.

Fuel requirements (recommended fuel)

• During refueling, make sure the fuel does not contain any residue; in this case use specific filters.

Refueling the tractor

The fuel tank filler cap (1) is located at the rear of the front hood. Before removing the cap, wipe all dust and dirt from around the cap to prevent debris from falling into the tank while filling.

Use an approved fuel container and check the inside of the container periodically for cleanliness.

NOTICE: The fuel cap is a vented-type. Use only an approved NEW HOLLAND replacement cap to prevent fuel system-related problems.

If there is no filter on the storage tank or fuel container, filter the fuel through a 100-mesh or finer screen when filling the tractor fuel tank. Keep the tractor tank as full as possible (without filling to capacity) to minimize condensation.

NOTICE: It is a good practice to fill the fuel tank at the end of each day, as this will reduce overnight condensation.

Fuel storage

Take the following precautions to ensure that the stored fuel is kept free of dirt, water and other contaminants.

- 1. Store the fuel in black iron tanks, not galvanized tanks, as the zinc coating will react with the fuel and form compounds that will contaminate the injection pump and injectors.
- 2. Install bulk storage tanks away from direct sunlight.

- Avoid using fuel mixed with water or other substances which may damage the engine.
- Use only recommended fuel. See 7-9.

Antifreeze diesel additive

A WARNING

Chemical hazard! Follow the instructions on the container when handling anti-freeze. Failure to comply could result in death or serious injury.



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- 3. Keep the tank slightly tilted so that the sediments will settle away from the outlet pipe. To facilitate moisture and sediment removal provide a drain plug at the lowest point at the end opposite the outlet pipe.
- 4. If fuel is not filtered from the storage tank, put a funnel with a fine mesh screen in the fuel tank filler neck when refuelling.
- 5. Arrange fuel purchase so summer grade fuels are not held over & used in winter.





Fuel saving tips for optimum performance

Proper maintenance of tractor reduces fuel consumption to a greater extent.

- 1. Store fuel in properly cleaned, rust and contamination free containers.
- 2. Always fill the tank at the end of each day to reduce overnight condensation of moisture in the air, in turn to avoid damage to the fuel system.
- 3. Fuel filters should be replaced as per recommended time schedule as the filtering capacity is not retained after this specified time. It may allow harmful contamination and damage the fuel injection system. Follow the service schedule for draining the water from the filters and cleaning the feed pump filter.
- 4. Always use genuine fuel filters available from your Authorized Dealers.
- 5. Stop diesel leakage, if any, immediately.
- 6. Dirt particles entering the engine causes early wear of liners and piston rings, resulting in loss of power, engine oil & fuel consumption. Clean the pre-cleaner bowl daily and change the air cleaner oil as mentioned in service schedule. Ensure that there is no leakage through hoses and the air cleaner bowl seal is in good condition, keep hose clamps tight.
- 7. Check the Radiator coolant level daily and top-up with clean water only. Radiator fins should always be kept clean. Should it be necessary to replace expansion tank cap, use only genuine cap of the specified pressure. Never try to remove the thermostat. Check and adjust fan belt tension regularly. Ignoring these, will result in engine over heating and heavy diesel consumption.
- 8. Follow the running-in procedure given in this manual for optimum performance of your tractor.

- 9. Do not run the engine in idle condition for more than two minutes. It may result in wastage of fuel.
- 10. Do not rest your foot on clutch pedal, as this will cause clutch slippage, loss of engine power and increased fuel consumption. Maintain the specified clutch pedal free play.
- 11. Always drive the tractor in proper gear.
- 12. Use a lower gear while driving down a slope and use brakes sparingly.
- 13. Maintain proper tire pressures for field work as well as for roadwork. Refer the tire pressure chart given in this manual. Worn out tires causes wheel slippage and waste fuel. Re-tread or replace the tires if they are badly worn out. Adhere to tire ballasting as and when required to reduce wheel slippage and fuel consumption.
- 14. Always use matching implements to cut down the diesel wastage. Implements should be maintained in good condition, as usage of worn out implements will waste fuel.
- 15. Always plow length wise and plan your field run to reduce fuel consumption. Adjust the wheel track to suit the implement and avoid overlap when working in the field.
- 16. When using a PTO driven equipment, operate the engine at the recommended speed to reduce fuel consumption.
- 17. For machines equipped with Four-Wheel Drive (4WD), use 4WD for traction related usage for better traction and fuel efficiency.

Biodiesel fuel

Fatty Acid Methyl Ester Biodiesel (Biodiesel Fuel) consists of a family of fuels derived from vegetable oils treated with methyl esters.

The use of biodiesel blends meeting Specification Standards ASTM 6751 or EN14214 are approved for your engine up to B5 (**5%** blend ratio). It is highly recommended to use biodiesel fuel from accredited suppliers to maintain quality and consistency of the fuel.

NOTICE: It is imperative that you check which blend is approved for your engine with your local dealer. Beware that the use of Biodiesel Fuel that does not comply with the Standards mentioned above could lead to severe damage to the engine and fuel system of your machine. The use of fuels that are not approved may void Warranty coverage.

Biodiesel Fuel Usage Conditions

NOTICE: The Biodiesel Fuel must meet the fuel Specification mentioned above.

Biodiesel Fuel must be purchased from a trusted supplier that understands the product and maintains good fuel quality. Biodiesel Fuel must be pre-blended by the supplier. Mixing Biodiesel Fuels on-site can result incorrect mixture that can lead to problems with both engine and fuel system.

Engine performance is affected by the use of Biodiesel Fuel. There may be up to 12 percent reduction in power or torque depending on the blend used.

NOTICE: DO NOT modify the engine and/or injection pump settings to recover the reduced performance.

The reduced power must be accepted if using any Biodiesel Fuel blend.

Some modification may be required to allow your engine to run Biodiesel Fuel. Consult you dealer for complete information on these modifications.

Biodiesel Fuel has a higher cloud point than Diesel Fuel.

NOTICE: The uses of high Biodiesel Fuel blends are not recommended in cold weather conditions.

With Biodiesel Fuels, it may be necessary to change the engine oil, engine oil filter and fuel filter elements more frequently than with Diesel Fuels. Biodiesel Fuel can remove rust and particles from the inside of on-site fuel storage tanks that would normally adhere to the sides of the tank. Like particles deposits that commonly occur with Diesel Fuel, these particles can become trapped by the machine fuel filters, causing blockage and shortening filter life. In cold weather, this is more likely to happen. Consult you dealer for information on cold weather operation and proper maintenance intervals when using any Biodiesel Fuel blend.

When handling Biodiesel Fuel, care must be taken not to allow water into the fuel supply. Biodiesel Fuel will actually attract moisture from the atmosphere. Fuel tanks must be kept as full as possible to limit the amount of air and water vapors in them. It may be necessary to drain the fuel filter water tap more frequently.

Potential oxidation and stability could be a problem with the fuel stored in the machine.

NOTICE: Machines must not be stored for more than 3 months with Biodiesel Fuel blends in the fuel system.

If long storage periods are necessary, the engine must run on Diesel Fuel for 20 hours to flush the Biodiesel Fuel out of the engine fuel system prior to storage.

NOTICE: Biodiesel Fuel must not be stored in on-site storage tanks for more than 3 months.

Any spillage of Biodiesel Fuel must be cleaned up immediately before it can cause damage to the environment and the paint finish of the machine.

Before using Biodiesel Fuel blends you should consult with your dealer to receive full information about the approved blend for your machine and any detailed conditions of its usage.

NOTICE: Be aware that not fulfilling the requirements and conditions of Biodiesel Fuel usage may void your machine's Warranty coverage.

Opening the hood

Guards

To gain access to perform inspection, lubrication and maintenance operations, the hood and certain access panels may need to be opened and removed.

Engine hood

The hood is hinged at the rear to allow easy and safe access to the various engine components. In order to open the hood, press the lock button (1), and raise the hood.



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Organic Acid Technology (OAT) coolant

NEW HOLLAND requires the use of a fully formulated Organic Acid Technology (OAT) based coolant. The coolant must meet the specifications outlined in the CNH Industrial material specification MAT3724. Use of coolant not meeting this specification is not allowed. Mixing of different coolant brands is not recommended.

NOTICE: OAT coolant is mandatory for all FPT engines compliant to Tier 4B (final) or Stage V emissions using Selective Catalytic Reduction (SCR). NEVER mix OAT coolant with IAT coolant. Under no circumstances should you top off a cooling system with only water.

Use distilled or demineralized water for diluting when using OAT coolant concentrate. The optimum OAT coolant to water concentration is 50/50. This concentration will protect the cooling system to -37 °C (-35 °F). Do not exceed 60% by volume ethylene glycol-based coolant. The heat dissipation and antifreeze properties may otherwise be negatively affected. You can use a refractometer to check the concentration level. If distilled or demineralized water is not available, use water for dilution with the following properties:

Property	Limit Maximum
Total Solids	340 ppm
Total Hardness	170 ppm
Chloride (Cl)	40 ppm
Sulfate (SO4)	100 ppm
Acidity pH	5.5 to 9.0

You should not use Supplemental Coolant Additives (SCA). Do not add rust inhibitors or other additives to your vehicle's cooling system. Contact your NEW HOLLAND dealer for approved additives and coolant analysis test package information.

Service intervals

See **7-12** for the proper service intervals. Drain and flush the cooling system at the recommended drain interval, then fill with fresh coolant.

Definitions

Inorganic Acid Technology (IAT) coolant:

A coolant that relies on inorganic inhibitors such as silicates, nitrites, and phosphates for corrosion and cavitation protection

Organic Acid Technology (OAT) coolant:

A coolant that relies on inhibitors such as organic acid salts for corrosion and cavitation protection.

Consumables

Recommended		lute mette sel	Approximat	e quantities	
fluids and application	HOLLAND products	specification	Two-Wheel Drive (2WD)	Four-Wheel Drive (4WD)	
Fuel tank	Decanted filtered diesel fuel	_	90.0 L (23.8 US gal)		
Engine oil	ENGINE OIL SEMI-SYNTHETIC 10W-40 or ENGINE OIL FULL SYNTHETIC SAE 0W-40	SAE 10W-40 API CJ-4 ACEA E9	8.5 L (2.2 US gal)		
Brake control circuit	HYDRAULIC ACTUATOR FLUID LHM	ISO 7308	0.7 L (0.2	2 US gal)	
Front axle differential			-	4.5 L (1.2 US gal)	
Front axle final drive (each)			-	1.0 L (0.3 US gal)	
Transmission oil or rear axle oil (mechanical) without cab			53.0 L (14.0 US gal)	55.0 L (14.5 US gal)	
Transmission oil or rear axle oil (power shuttle) without cab	Hydraulic Transmission Oil - Premium	SAE 10W-30 API GL-4 ISO VG-32/46	55.0 L (14.5 US gal)	57.0 L (15.1 US gal)	
Transmission oil or rear axle oil (mechanical) with cab			59.0 L (15.6 US gal)	61.0 L (16.1 US gal)	
Transmission oil or rear axle oil (power shuttle) with cab			61.0 L (16.1 US gal)	63.0 L (16.6 US gal)	
Grease fittings or bearings	MULTI-PURPOSE GREASE EXTREME PRESSURE AND ANTI-WEAR NLGI 2	NLGI 2	As re-	quired	
Cooling system	OAT EXTENDED LIFE COOLANT/ANTIFREEZE (If a premixed coolant is not available, mix the concentrate with 50% of distilled water)	ASTM D 3306	16.0 L (4.	2 US gal)	
DEF/AdBlue®	DIESEL EXHAUST FLUID (DEF)/ ADBLUE®	_	11.0 L (2.9 US gal)		
Air-conditioning compressor oil	_	SP10		_	

Protecting the electrical system during charging or welding

A DANGER

Hazardous chemicals!

Battery electrolyte contains sulfuric acid. Contact with skin and eyes could result in severe irritation and burns. Always wear splash-proof goggles and protective clothing (gloves and aprons). Wash hands after handling.

Failure to comply will result in death or serious injury.

Precautions

To avoid damage to the electrical systems, always observe the following:

- 1. Never make a break in any of the charging circuit connections, when the engine is running.
- 2. Never short any of the charging components to earth.
- 3. Do not use a slave battery of higher than **12 V** nominal voltage.
- 4. Always disconnect the ground cable from the batteries before carrying out arc welding on the tractor or on any implement attached to the tractor.
- 5. Position the welder ground cable clamp as close to the welding area as possible.
- 6. Never allow welding cables to lay on, near or across any electrical wiring or electronic component while work is in progress.
- 7. Always disconnect the negative cable from the batteries when charging the batteries in the tractor with a battery charger.

Protection of the Alternator

Protection of the Alternator

- 1. Before carrying out any operation on the alternator please disconnect the battery.
- 2. Never check the working of the alternator by connecting positive and negative terminals.

- 3. Do not run the alternator without battery in the circuit.
- 4. Do not use high voltage bulbs as warning light.

Maintenance of the Battery

- 1. Batteries should not be allowed to discharge completely. If the tractor is to be stored for a period of more than 2 weeks, the battery should be removed from the tractor and stored in dry location in a wooden platform. Trickle charge every 2 to 3weeks to maintain the battery in good condition.
- 2. Ensure that the electrolyte level in all battery cells is preferably at the maximum level. However, in general, the level should be between minimum and maximum marks. Add distilled water, if the electrolyte level is found below the minimum level. Do not use well/tap water. Do not top off with acid.
- 3. The specific gravity in every cell of the battery should ideally be between 1.260 1.230. At any point of time, specific gravity in cells should not fall below 1.230. If the reading is below 1.230, then the battery shows symptoms of a discharged battery. Please refer it to your Battery Dealer.
- 4. Always apply the battery terminals with petroleum jelly to avoid current leakage and rusting. Never use grease for the same purpose.
- 5. Always disconnect the ground terminals (negative terminal) of the battery, while carrying out any repairs on the tractor, especially during welding.
- 6. Do not crank the engine for more than ten seconds at one time. Wait for about thirty seconds and then crank again.

Starter Motor

- 1. Starter motor mounting nuts should be tight.
- 2. Give sufficient time between consecutive starts.
- 3. Do not run the starter motor for more than ten seconds.
- 4. Do not run the starter motor without any load.
- 5. Do not run the starter motor with discharged battery.

General battery maintenance

Hazardous chemicals!

Battery electrolyte contains sulfuric acid. Contact with skin and eyes could result in severe irritation and burns. Always wear splash-proof goggles and protective clothing (gloves and aprons). Wash hands after handling.

Failure to comply will result in death or serious injury.

D0105A

The battery is located behind the right-hand side footboard.

The battery electrolyte level should be between the minimum and maximum lines provided on battery container. If necessary, top off with distilled or de-mineralized water until the level is correct. Do not overfill. Never use tap water or water from rain barrel or other source.

To prevent the formation of corrosion, the terminals should be cleaned and smeared with petroleum jelly. Do not apply grease to the battery terminals.

Explosive gas!

Batteries emit explosive hydrogen gas and other fumes while charging. Ventilate the charging area. Keep the battery away from sparks, open flames, and other ignition sources. Never charge a frozen battery. Failure to comply could result in death or serious injury.



GNIL19TRO1125AA 1

MAINTENANCE CHART

Maintenance chart

Grease							Lubricate						
Test								Drain fluid					
Cleaning									ge fluid				
Replace								Filling					
Tighte	en								Г	Α	djust		
Check		1								Γ			
Maintenance action	1										Page no.		
Every 10 hou	irs	of	op	era	atio	on	or d	dai	ly				
Engine oil level - Check	Х	Π	T	Τ	Τ				Ť	Т	7-13		
Ini	tia	50) h	ou	rs								
Maintenance - Tighten	Ι	х			Τ						7-15		
Maintenance - Check	х				1						7-15		
Maintenance - Replace			х								7-15		
Maintenance - Cleaning)	x	1						7-16		
Maintenance - Test)	x						7-16		
Maintenance - Grease)	x					7-16		
Ev	ery	/ 50	0 h	ou	irs						•		
Lubrication points	Γ					X					7-16		
Eve	ery	10	0 ł	າວເ	urs	5					•		
Transmission oil cooler	Ľ)	x	Т						7-18		
Intercooler)	x	1						7-19		
Air-conditioning condenser)	x	1						7-20		
Cab air filters)	x							7-21		
Cab recirculated air filter - Recirculation Filters)	x							7-22		
Every 300 hours													
Hydraulic oil filter			х								7-23		
Power shuttle transmission oil filter - Replace (If			х								7-24		
equipped)													
Dry air filter - External cartridge			>	×							7-25		
Alternator belt	х										7-26		
Front axle (4WD) oil level							х				7-27		
Battery electrolyte level	х										7-28		
Filter (reversible fan compressor)			х								7-29		
Every 600 hours													
Engine oil and filter			х								7-30		
Fuel filter replacement			х								7-31		
Diesel Exhaust Fluid (DEF)/AdBlue®/ARLA filters)	x							7-33		
- Cleaning - In line filter													
Wheel bolt torque	х										7-34		
EVERY 1200 HOURS OR ANNUALLY													
Air cleaner			х								7-35		
Drain off water and deposits from the fuel tank							х				7-36		
Blowby recirculation filter - Replace			х								7-37		
Change the cab air filters			х								7-38		
Replace cab recirculated air filter - Recirculation Filters			х								7-39		
Every 1200 hours or two years													
Transmission/Hydraulic oil - Change fluid				Τ	Τ	Т		х	Τ		7-40		
Four-Wheel Drive (4WD) front axle differential oil	1		╡		Ť	╡		х			7-41		
Four-Wheel Drive (4WD) front axle hub oil - Change	t	H	\neg	╈	╉	╈	Н	х	+	\top	7-42		
fluid													

Grease								Lubricate						
Test							Drain fluid							
Cleaning								ſ		Cł	าล	ng	e fluid	
Replace								Filling						
Tighte												A	djust	
Check	_										Ī	_		
Maintenance action													Page no.	
Diesel Exhaust Fluid (DEF)/AdBlue®/ARLA filters - Replace - In line filter			х										7-43	
Every 2 years														
Receiver-dryer - Replace		Í	Х										7-44	
Every 3600 hours or two years														
Diesel Exhaust Fluid (DEF)/AdBlue®/ARLA filters - Replace - Main Filter			x										7-44	
EVERY 3600 HOURS OR EVERY 4 YEARS														
Engine coolant									х				7-44	
As required														
Radiator expansion tank	х												7-46	
Windshield washer reservoir										x			7-46	
Radiator	х												7-46	
Brake pedal	Х												7-47	
Compressor belt - Air conditioner belt	х												7-48	
Tire pressure	х												7-49	
External lighting											х		7-50	
Fuses and relays			х										7-52	
Fuel tank - Cleaning - Filler neck filter				х									7-55	
Diesel Exhaust Fluid (DEF)/AdBlue®/ARLA tank - Cleaning - Filler neck filter				x									7-56	
Fuel cooler - Cleaning				Х									7-57	
Radiator screen cleaning				х									7-58	
At warning message display														
Air cleaner				х									7-59	
Brake fluid level										x			7-60	
Fuel filters - Drain fluid							2	х					7-61	
Diesel Exhaust Fluid (DEF)/AdBlue®/ARLA tank - Change fluid							T		x	Ţ			7-62	

Every 10 hours of operation or daily

Engine oil level - Check

To check the engine oil level, proceed as follows.

- Park the tractor on flat ground.
- Shut down the engine. •
- Allow at least five minutes for the oil to settle in the • sump:
- Unscrew and remove the cap (1) provided with dipstick, clean it with a cloth and replace it in its filler neck (2).
- · Remove the dipstick again and check that the oil level is between the "MIN and MAX" marks.
- · If necessary, top up with engine oil through the fill point (2) to reach the level.
- · Put the dipstick back into its union and close it properly.



NOTE: See 7-9 for recommended oil grade.



A red warning light on the instrument panel shows when the oil level is low. Do not fill above the notch MAX on the dipstick. Excess oil burns, creates smoke and gives a false

indication of oil consumption.

Initial 50 hours

Maintenance - Tighten

- 1. Bolts and lock nuts tightening
 - Cab
 - Disc to hub
 - Disc to rim
 - Ballast
 - Exhaust manifold

Maintenance - Check

- 1. Level check
 - Cooling fluid
 - Front axle differential and hub oil
 - Engine oil
 - Transmission oil
 - · Liquid to the windshield washer reservoir
- 2. Functionality and integrity
 - Radiator
 - Charge air cooler
 - Air conditioning condenser
 - Transmission oil heat exchanger
 - Air conditioning compressor belt
 - Poly-v belt
 - Fluid & Oil Leaks
 - · Hose and hose connections
 - · Compressor belt for the air brakes on the trailer
 - Tire and tire pressure
 - Seatbelt
 - Safety signs (make sure decals are perfectly legible)
- 3. Adjust
 - Park Brake
 - Stroke pedal brake

Maintenance - Replace

- 1. Replace
 - Transmission oil filter
 - Fuel filters

Maintenance - Cleaning

- 1. Cleaning
 - Dry air filter External cartridge
 - Cab air filters
 - Cab recirculated air filter
 - · Auxiliary services oil filter
 - Fuel prefilter

Maintenance - Test

- 1. Operation
 - Lights and instruments
 - Calibrate transmission clutches
 - Transmission and gear selection
 - Power Take-Off (PTO)
 - Hydraulic system (lift and remote control valve)
 - Joystick
 - Engine including throttle
 - Steering
 - Differential lock engagement and disengagement
 - 4WD engagement and disengagement
 - Brake and brake pedal latching pin
 - Neutral start switches

Maintenance - Grease

- 1. Greasing
 - All grease fittings

Every 50 hours

Lubrication points

Apply grease with the help of a grease gun to the lubrication fittings. Use only genuine tractor grease (recommended).

NOTE: Grease daily when operating in adverse conditions, but do not over grease, as it can cause damage to seals.

Two-Wheel Drive (2WD)

- 1.Front axle spindle LH
- 2. Front axle spindle RH
- 3. Front axle lever RH
- 4. PTO clutch shaft assembly RH (mech)
- 5. PTO clutch shaft assembly LH (mech)
- 6. Clutch main shaft assembly RH (mech)
- 7. Clutch main shaft assembly LH (mech)
- 8. Clutch pedal assembly RH (PS)
- 9. Clutch pedal assembly LH (PS)
- 10. Clutch pedal assembly (mech)
- 11. Rear axle RH up
- 12. Rear axle RH down
- 13. Rear axle LH up
- 14. Rear axle LH down
- 15. Front axle body
- 16. Steering cylinder hinge
- 17. MDC Link RH
- 18. MDC Link LH

Four-Wheel Drive (4WD)

- 1. 1. Front axle LH upper
 - 2. Front axle LH lower
 - 3. Front axle front hinge
 - 4. Front axle rear hinge
 - 5. Front axle RH upper
 - 6. Front axle RH lower
 - 7. PTO clutch shaft assembly RH (mech)
 - 8. PTO clucth shaft assembly LH (mech)
 - 9. Clutch main shaft assembly RH (mech)
 - 10. Clutch main shaft assembly LH (mech)
 - 11. Clutch pedal assembly RH (PS)
 - 12. Clutch pedal assembly LH (PS)
 - 13. Clutch pedal assembly (mech)
 - 14. Rear axle RH up
 - 15. Rear axle RH down
 - 16. Rear axle LH up
 - 17. Rear axle LH down
 - 18. Front axle body
 - 19. Steering cylinder hinge



GNIL19TRO1141GB 1



GNIL19TRO1140GB 2

Every 100 hours

Transmission oil cooler

Check that no dirt has accumulated on the fins and that they are not obstructed. If necessary, clean them. Unlock the clip (1) and slide the power shuttle oil cooler

(2) forward.

Clean the power shuttle oil cooler (2) with a jet of air or water from the back towards the front.

After cleaning, fix the power shuttle oil cooler (2) in its earlier position.

NOTE: For cleaning, use compressed air or a pressure washer not exceeding **7.0 bar** (**101.5 psi**).

NOTE: If the grilles are blocked with any oily substances, apply a detergent solution and remove it with a pressure washer.



GNIL19TRO1208EA 1

Intercooler

Check that no dirt has accumulated on the fins and that they are not obstructed. If necessary, clean them.

Unlock the clip (1) and slide the power shuttle oil cooler (2) forward.

Clean the intercooler (3) with a jet of air or water from the back towards the front.

After cleaning, fix the power shuttle oil cooler (2) in its earlier position.

NOTE: For cleaning, use compressed air or a pressure washer not exceeding **7.0 bar** (**101.5 psi**).

NOTE: If the grilles are blocked with any oily substances, apply a detergent solution and remove it with a pressure washer.

NOTICE: If using a pressure washer, take care not to direct the jet of water onto the cover of the engine air cleaner.



Air-conditioning condenser

Check no dirt has accumulated on the fins and that they are not obstructed. If necessary, clean them as follow:

- Open the hood and unlock the pin (1).
- Slide the air condenser (3) on the rail towards the right with the help of support (2).
- Clean the condenser with a jet of air or water from the back side towards the front side.

NOTE: For cleaning, use compressed air or a pressure washer not exceeding **7 bar** (**101.5 psi**)

• Check that the fins are not out of shape, if necessary carefully straighten them.



GNIL19TRO1430AB 1

Cab air filters

To clean the cab air cleaners proceed as follows:

- 1. Unscrew the retaining screws (2) to remove the cover (1) from the rear fender.
- 2. Open the filter retaining clips (3).
- 3. Remove the filter (4)
- 4. Clean the filter (4) by one of two methods:



GNIL19TRO0096AB

- Tap the filter gently on a flat surface with the outward-facing part downwards
- Clean with a jet of compressed air with a maximum pressure of 2.0 bar (29.0 psi) at a minimum distance of 10.0 cm (3.9 in)
- 5. Clean the filter seat with a cloth.
- 7. Refit the clean filter with the arrows on the label pointing towards the inside of the fender.
- 8. Close the filter retaining clips (3).
- 9. Refit the cover (1).

NOTE: Repeat the same operations on all the filters.



Cab recirculated air filter - Recirculation Filters

- 1. Loosen the screws (1) and remove the grill (2).
- 2. Clean the cab air recirculation filter contained inside.
- 3. Install the grill (2) and tighten the screws (1).



GNIL19TRO0943AB 1

Every 300 hours

Hydraulic oil filter

- 1. Position a container under the oil filter of the hydraulic circuit (1) to collect the oil that flows out during the operation.
- 2. Loosen the filter (1). Empty the filter in accordance with current regulations.
- 3. Apply a light coating of oil to the seal of the new filter.
- 4. Tighten until the seal contacts the mounting surface. Then tighten another 3/4 of a turn by hand.
- 5. Dispose of the filter replaced and the oil that flowed out during the operation according to current regulations.



GNIL19TRO1136AA

Power shuttle transmission oil filter - Replace (If equipped)

- 1. Place a container under the filter **(1)** in order to collect the oil that will flow out during the operation.
- 2. Replace the filter located inside the container **(1)**. Dispose of the filter in accordance with local regulations.
- 3. Fill clean oil in the new filter and lightly oil the seal.
- 4. Turn until the seal contacts the mounting surface, then tighten three-quarters of a turn.
- 5. Dispose of the oil that flowed out during the operation in accordance with local regulations.



GNIL19TRO1052AA 1
Dry air filter - External cartridge

To clean the engine air cleaner, proceed as follows:

- 1. Open the locking hooks (1) of the cover (2).
- 2. Remove the (2) cover.
- 3. Remove the external cartridge of the engine air cleaner.

NOTE: Never remove the internal safety cartridge to clean with compressed air, but replace it together with the external cartridge at the prescribed time.

- 4. Place the external cartridge facing downwards on a flat surface (figure A).
- Smack the cartridge a few times with the palm of your hand to eliminate any residues of dust, paying attention not to damage it.
 Alternatively, clean it with a jet of compressed air at

Alternatively, clean it with a jet of compressed air at a pressure less than **5 bar** (**72.5 psi**) in the direction shown in figure B, at a distance of at least **20 cm** (**7.9 in**).

NOTICE: When cleaning, never use diesel, petrol, solvents or water so as not to damage the filtering cartridge.

- 6. After cleaning, check that the pleated paper part of the cartridge is intact and has no cuts or holes in it. Otherwise replace.
- 7. Clean the inside parts of the filter housing carefully with a damp cloth.
- 8. Reinstall the clean filter.
- 9. Refit the cover (2) on the filter housing, making sure that it seals perfectly and lock it in position with the hooks (1).





MOIL15TR00185AB 2

Alternator belt

WARNING

Entanglement hazard!

Always stop the engine and engage the parking brake, unless otherwise instructed in this manual, before checking and/or adjusting any drive belt or chain. Failure to comply could result in death or serious injury.

Inspect the belt (1) over its entire length, checking for chafing, cracking, cuts, and general wear. If in doubt, contact the authorized dealer to install a new belt.



7-26

Front axle (4WD) oil level

- 1. Check the oil level as follows:
- 2. Park tractor on a level surface;
- 3. Remove plug (1). Some oil should flow out of the plug hole.
- 4. If necessary, top up via plug hole (1) until the oil overflows.



GNIL13TR00108AA 1

NOTE: See 7-9 for recommended oil grade.

Battery electrolyte level

 Battery is located behind the right-hand side foot step. Battery electrolyte level should be between min. and Max. lines provided on battery container.

 Battery has a feature "Magic Eye" - a transparent window on top of battery which indicates the condition of battery based on the color indication shown.
Green - Indicates battery is OK Yellow - Indicates battery requires charging Red - Indicates distilled water needs to be added.

- 3. If necessary, top up with distilled or demineralized water until the level is correct. Do not overfill. Never use tap water or water from rain barrel or other source.
- 4. To prevent formation of corrosion, terminals should be cleaned and smeared with petroleum jelly (Vaseline) only. Do not apply grease to the battery terminals.

NOTICE: In the event that battery is severely discharged, such that the terminal voltage is below **7 V**, recovery will require a special charging procedure, Contact your authorized dealer.

Battery preventive maintenance

Open Circuit Voltage (OCV) of the battery should be between **12.4 – 12.6 V**. Charge the battery if the OCV is low.

Specific gravity of each cell of the battery should be 1.240. Charge or fill electrolyte if the specific gravity is low.







GNIL14TR00589AA 2

Filter (reversible fan compressor)

Replace the air filter as below.

- 1. Unfasten and remove the polluted air filter (1) by hand.
- 2. Fasten the new air filter by hand.



GNIL19TRO1442AA 1

Every 600 hours

Engine oil and filter

Engine oil and filter replacement

- 1. Warm the engine to operating temperature.
- 2. Park the tractor on level ground.
- 3. Shut off the engine.
- 4. Remove both drain plugs (1) and collect the oil in a suitable container.



5. Remove and discard the engine oil filter (3).

- 6. Clean the filter mounting surface before installing new filter.
- 7. Lubricate the seal of new filter with clean engine oil.
- 8. Install the new filter, tighten filter until the seal meets the mating surface, then tighten additional 3/4 of a turn. Do not over tighten.

NOTICE: Always change engine oil filter, when changing engine oil.

- 9. Replace the drain plugs and refill the engine with clean oil at filler cap (3).
- 10. Run the engine for a minute or so to circulate the oil, and shut off the engine.
- 11. Add clean oil, as necessary, until the oil level is between minimum and maximum marks on the dipstick.

NOTICE: Do not fill above the maximum mark on the dipstick. Excessive oil will be burned off within a short time and give a false impression of oil consumption.

DCUTLNEIT058S7A 1



GNIL19TRO1097AA 2



DCUTLNEIT058S7A 3

Fuel filter replacement

NOTICE: Before loosening or disconnecting any part of the fuel injection system, thoroughly clean the area to be worked on to prevent contamination.

Replace the fuel filters as follows:

- Empty the fuel filters which have been removed 1. previously. Dispose of the filters in accordance with current local regulations.
- 2. Clean the surface of the fuel prefilter seat.
- 3. Lightly oil the seal of the new first stage fuel filter (3). Screw the pre-filter into contact with the support. Tighten the pre-filter by hand by 3/4 of a turn or by a maximum of one full turn.
- 4. Reconnect the fuel prefilter sensor.
- 5. Re-install the tube (4).
- 6. Reinstall the bracket (1). Secure the bracket with the relevant bolts (2).

NOTE: in this phase, the filter (1) figure 4 must be removed.

Check that there are no deposits of impurities in the cup filter. If there are deposits of impurities inside the cup filter, proceed as follows:

- 7. Loosen the screw (1).
- 8. Remove the glass container (2).
- Remove the internal strainer screen. Clean the 9. filter

NOTE: If, after cleaning, the filter is still dirty, it will need to be replaced.

- 10. Refit the strainer screen.
- 11. Reinstall the glass container (2). Secure the glass container with the screw (1).

Bleed the system as follows:

12. Loosen the bleed screw (1).

NOTE: one turn of the bleed screw is sufficient (1) to let out the air and fuel.

- 13. Push the priming pump (2) until the fuel starts to come out of the bleed screw (1).
- 14. Tighten the bleed screw (1).











MOIL14TR01267AA 3 Replace the fuel filter (1)

- 15. Clean the surface of the fuel filter seat .
- 16. Lightly oil the seal of the new fuel filter (1). Screw the filter into contact with the support. Tighten the filter by hand by 3/4 of a turn or by a maximum of one full turn.
- 17. Disconnect the fuel return line (2).
- Push the priming pump (3) until the fuel starts to come out of the connector of the fuel return line (2).
- 19. Reconnect the fuel return line (2).



MOIL14TR01268AA 4

Diesel Exhaust Fluid (DEF)/AdBlue®/ARLA filters - Cleaning - In line filter

1. The in-line filter is located in the quick connector of the suction line for the **DEF/AdBlue**® fluid, behind the cover on the DEF tank. This filter must be cleaned by an authorized dealer.



GNIL19TRO1118AA 1

Wheel bolt torque

- 1. Check the front and rear wheel nuts for tightness.
- 2. The specified torque values are shown in the table for reference.

Front disc to hub bolts (4WD)	248 N·m (183 lb ft)
Front disc to hub bolts (2WD)	352 N⋅m (260 lb ft)
Front wheel assembly with 2WD HD axle (1/2–20 UNF)	159 N⋅m (117 lb ft)
Rear disc to hub bolts	352 N⋅m (260 lb ft)
Rear wheel weight to disc	248 N·m (183 lb ft)

EVERY 1200 HOURS OR ANNUALLY

Air cleaner

To clean the engine air filter, proceed as follows:

- 1. Open the locking hooks (1) of the cover (2).
- 2. Remove the (2) cover.
- 3. Remove the external cartridge (4) of the engine air cleaner.
- 4. Replace the internal (3) and external (4) cartridges
- 5. Reposition the cover (2) and lock the hooks (1).

NOTE: Never remove the internal safety cartridge (3) to clean it with compressed air, but replace it together with the external cartridge at the prescribed time.



GNIL19TRO1119AA 3

Drain off water and deposits from the fuel tank

With the tractor on a level surface and the engine off, drain the fuel as described below:

- 1. Place a suitable container under the tank.
- 2. Remove the plug (1) and drain the fuel to eliminate any impurities in the tank.
- 3. Re-install the plug (1).
- 4. Fill the tank with clean fuel.
- 5. Dispose of the fuel according to current regulations.



GNIL19TRO1145AA 1

NOTE: If necessary purge the fuel as described on page **7-31**.

Blowby recirculation filter - Replace

1. Contact an authorized dealer to replace the engine breather filter located beneath the crankcase (1).



23119872 1

Change the cab air filters

To clean the cab air cleaners proceed as follows:

- 1. Unscrew the retaining screws (2) to remove the cover (1) from the rear fender.
- 2. Open the filter retaining clips (3).
- 3. Remove the filter (4).



4

GNIL19TRO0096AB

GNIL19TRO0097AB

2

- 5. Clean the filter seat with a cloth.
- 7. Refit the new filter with the arrows on the label pointing towards the inside of the fender.
- 8. Close the filter retaining clips (3).
- 9. Refit the cover (1).

NOTE: Repeat the same operations on all the filters.



Replace cab recirculated air filter - Recirculation Filters

- 1. Loosen the screws (1) and remove the grill (2).
- 2. Remove the cab air recirculation filter contained inside and replace it with a new genuine one.
- 3. Install the grill (2) and tighten the screws (1).



GNIL19TRO0943AB 1

Every 1200 hours or two years

Transmission/Hydraulic oil - Change fluid

A WARNING

Burn hazard! Be very careful to avoid contact with hot fluids. If fluid is extremely hot, allow it to cool to a moderately warm temperature before proceeding. Failure to comply could result in death or serious injury.

- 1. Prior to changing oil, run the engine and operate the hydraulic/transmission system until the oil is warm.
- 2. Park the tractor on level ground, lower the three point linkage and stop the engine. Engage the parking brake and block wheels.

To drain the transmission oil:

- 1. Remove the drain plug **(1)**. Drain the oil in to a suitable container.
- 2. Reinstall the drain plug after the oil is drained.
- 3. Remove the dipstick (2) and add oil through dipstick hole. Add oil until level is to upper mark on the dipstick. Do not overfill.
- 4. Start the engine and operate the hydraulic system. Fully raise and lower the three point linkage.
- 5. Shut off the tractor and wait for few minutes, for checking the system for leaks.
- 6. Check the oil level. The oil level should be between the two marks on dipstick.



GNIL19TRO1122AA

C



GNIL19TRO1126AA 2

GNIL19TRO1127AA

3

NOTICE: Use a funnel (3) with a flexible hose (4) attached to it to fill the transmission common oil in order to minimize the oil spillage.

NOTICE: Do not fill above the 'MAX' mark on the dipstick.

NOTE: See 7-9 for correct oil grade and quantity.

Four-Wheel Drive (4WD) front axle differential oil - Change fluid

- 1. Remove the drain plug (1) and collect the oil in a suitable container.
- 2. Replace the plug and fill the differential with oil at fill plug (2) until oil level is at the bottom of the fill port.



3. Add the oil through fill port, until correct oil level is obtained.

NOTE: See 7-9 for correct oil grade and quantity.

Four-Wheel Drive (4WD) front axle hub oil - Change fluid

1. Drain the front axle hub oil by positioning the wheel so the filler plug (1) is closest to the ground. Remove the plug and allow the oil to drain.

- 2. Reposition the wheel so the filler hole (2) is level with the center of the hub, midway from the top to the bottom. Fill the hub until the oil level is at the bottom of the fill port.
- 3. Add the oil through fill port, until correct oil level is obtained.

NOTE: See 7-9 for correct oil grade and quantity.





76073647N 2

Diesel Exhaust Fluid (DEF)/AdBlue®/ARLA filters - Replace - In line filter

 The in-line filter (70 μm) is located in the quick connector of the suction line for the **DEF/AdBlue**® fluid, behind the cover on the DEF tank. This filter must be replaced by an authorized dealer.



GNIL19TRO1118AA 1

Every 2 years

Receiver-dryer - Replace

1. Every two years to go to an authorized dealer for replacement of the drier filter (1) of the air conditioning system.



Every 3600 hours or two years

Diesel Exhaust Fluid (DEF)/AdBlue®/ARLA filters - Replace - Main Filter

1. The main filter for the **DEF/AdBlue**® fluid **(1)**, (10 μm), is located under the supply module. This filter must be replaced by an authorized dealer.



GNIL19TRO1145AA 1

EVERY 3600 HOURS OR EVERY 4 YEARS

Engine coolant

WARNING

Hot liquid under pressure! Service when cool. Failure to comply could result in death or serious injury.

W1187A

NOTICE: It is essential that a genuine approved pressure cap is used. If the cap is misplaced or damaged, obtain a replacement from your Authorized NEW HOLLAND Dealer.

 Open the radiator drain plug (1) and allow the coolant to drain. (Drain cock is on the rear, left-hand side of the radiator). Remove the radiator pressure cap to increase the drainage rate.

2. After draining, flush the cooling system with distilled water through the radiator filler. When the flushing process is complete, re-install the drain plug (1). Open the cap (2) and refill the cooling system with a premixed coolant (if not available use 50/50 solution of OAT antifreeze and distilled water) through the expansion tank upto the notch (3) in the expansion tank. Re-install the pressure cap.







DCAPLT5NE060S7A 2

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

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

- 3. Start the engine and allow it to run until the engine's thermostatic valve will be opened and all the air will be ejected by the cooling system (the coolant level in the expansion tank should decrease).
- 4. Stop the engine, wait for the coolant to cool and top the coolant up to the notch **(3)**, figure **2**.
- 5. Re-install the cap (2).

As required

Radiator expansion tank

Burn hazard!

Hot coolant can spray and scald if you remove the radiator or deaeration tank cap while the system is hot. To remove the cap: allow the system to cool, turn the cap to the first notch, and wait for all pressure to release. Remove the cap only after all pressure has released. Failure to comply could result in death or serious injury.

W0367A

Peak power operation, followed by a rapid reduction in power requirement and engine speed, may cause the coolant to boil and be discharged from the radiator overflow tube. Normally, this loss of coolant is small and of little consequence, but repeated loss can significantly lower the coolant level and necessitate topping off. An additional expansion tank is provided to fill the coolant. Fill the tank by removing cap **(1)**.



GNIL19TRO1124AA

NOTICE: Never use tractor without expansion tap cap (1) as this will result into boiling and hence evaporation of the engine coolant.

Windshield washer reservoir

To add liquid to the windshield washer tank:

- Remove the cap (1).
- Fill up the tank (2) with washing liquid.
- Re-install the plug (1).

NOTICE: Mix antifreeze with the water in the winter.



GNIL19TRO1288AA

Radiator

Check that no dirt has accumulated on the fins and that they are not obstructed. If necessary, clean them. Clean the radiator with a jet of air or water from the back towards the front.

NOTE: For cleaning, use compressed air or a pressure washer not exceeding **7.0 bar** (**101.5 psi**).

NOTE: If the grilles are blocked with any oily substances, apply a detergent solution and remove it with a pressure washer.

Brake pedal

Equipment failure could cause accident or injury! Immediately contact your dealer if brake system malfunctions or shows signs of wear, including leakage. Failure to comply could result in death or serious injury.

- 1. Visually check that the articulations and brake pedals drive linkage (1) are not damaged.
 - Check that the pin (2) joining the pedals engages properly.



GNIL19TRO1043AA 1

Compressor belt - Air conditioner belt

WARNING

Entanglement hazard! Always stop the engine and engage the parking brake, unless otherwise instructed in this manual,

before checking and/or adjusting any drive belt or chain. Failure to comply could result in death or serious injury.

anure to comply could result in death or serious injury

Inspect the belt (1) over its entire length, checking for chafing, cracking, cuts, and general wear. If in doubt, contact the authorized dealer to install a new belt.



W0097A

Tire pressure

Connect a pressure gauge to the tyre valve and check that the pressure is as prescribed.

Check and adjust the front and rear tire pressures. Inspect the tread and sidewalls for damage.

Adjust the tire pressures to suit the load being carried.



NOTE: If the tires are ballasted with a calcium chloride/ water solution, use a special tire gauge as the solution will corrode a standard- type gauge. Check pressure with the valve stem at the bottom.

External lighting

Front headlight and work lamp

Make sure the light beam produced by the various lights is directed correctly to prevent dazzling drivers of oncoming vehicles. See 3-15 for external lighting control switches.

Adjust the head light so that the high beam is 100 -400 mm below the centre of the headlight at a distance of **6 m**.

Front lights – bulb replacement

- 1. Open the tractor hood.
- 3. Remove the electrical connector (1).
- 4. Remove the screws (2), and remove bulb.
- 5. Replace the bulb assembly.



GNIL19TRO1143AA

Rear plough lamp

6. The rear plough lamp (1) should be aimed downward to provide illumination close to the machine.

NOTE: Do not illuminate the plough lamp during highway travel.



GNII 19TRO1148AB 2

Stop/turn/position lights - bulb replacement

1. The bulbs are accessible after removal of the plastic lenses assembly

- 2. Remove the two screws (1) and take out the lens assembly (2).
- The bulbs can be removed by pressing in and turning approximately 20° counterclockwise. Reassemble in reverse order.



4. Tail light (3) and flasher/turn signal light (4).

NOTICE: When replacing the lenses, take care not to overtighten the retaining screws.



20108814 4

Cab work lamps (if available)

 Loosen the locking nuts (A) and (B) and adjust the position of the cab work lamps as per the requirement. After adjusting the position correctly, tighten the nuts (A) and (B).



GNIL19TRO0421AB 5

Bulb rating (W) and type	Workmaster 95	Workmaster 105	Workmaster 120
Turn Indicators - rear (amber)	P21W	P21W	P21W
Turn Indicators - front (amber)	P21W	P21W	P21W
SMV	1	1	1
ASAE 279.11 Rear reflector	2	2	2
Low beam	55W / HB5	55W / HB5	55W / H4
Main beam	60W / HB5	60W / HB5	60W / H4
Stop lights (red)	P21/5W	P21/5W	P21/5W

Fuses and relays

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

1. The main harness fuse and relay box is located at the left-hand side of the steering column.

Without cab version

	R16	SPARE 40	30А SOCKET	814		RSE N R12	SPARE 38	LOW BEAM	ED R10
PTO LAMP	R15	€ 50A EN 20A 39	ENGINE FUEL HEATER	۲13	HIGI BEA	₩ ED R11	SPARE 37		í ∰ _{R9}
REAR PTO 1 In In In In In In In In In In In In In	R8	FRONT 7.5A	FRONT DIVERTER	R6	rea 5	R рто 2 - О го R4	SPARE 34		
BRAKE STOP	LIGHT R7	SPARE 35		R5	FRO	RKLIGHT RKLIGHT R3	난 7.5A 유 Position 33		HED DE R1
30 NAR POWER 30A	29 s 26 s	PARE	28 SPARE 25 SPARE	A 32	A 31	15 SPARE 12 USB/ 15 A 10	14 workling		13 LIGHTS SUPPLY 10A -
24 SPARE	23 s 20 t	PARE	22 beacon 10A II 19 flasher	се измитсн 40,	оскет ватт 30/	9 sensor 8 pto 7.5A	7.5A 8 кам а 5A 5+ кеч енділи		A CA SWITCHED 5A A REV SW
15A 🛄 18 spare	15A 17 ^s		15A (A) 16 POSITION 7 POLES 10A (C) (C)	×	Ň	5A 3 POSITION LIGHTS 5A = 0 0=	5A 2 PEA 5A &	ہ ہے چوڑ	5A (1)) LIGHTS B+ 5A = 0 (1)

GNIL19TRO1111BA 1

With cab version



GNIL19TRO1342FA 2

2. A fuse and relay box is also located behind the battery box.



GNIL19TRO1112AA 3

Fuse and relays in Power Distribution Unit (PDU) box

3. Below fuse and relays are available inside the PDU box located on the right-hand side behind the radiator.



GNIL19TRO1467FA 4

Serial number	Description	Serial number	Description
1	20 A Engine fuse 1	5	60 A Glow plug fuse
2	7.5 A Engine fuse 2	6	125 A Cab power fuse
3	7.5 A Engine fuse 3	7	Engine power relay
4	60 A Engine main fuse	8	Starter motor relay

Fuel tank - Cleaning - Filler neck filter

Periodically check for dirt inside the filter present in the fuel tank filler neck.

- 1. Extract the filter (1) from its seat.
- 2. Clean the filter with low pressure compressed air to remove any impurities present in it.
- 3. Refit the filter in its housing.



MOIL15TR01948AA 1

Diesel Exhaust Fluid (DEF)/AdBlue®/ARLA tank - Cleaning - Filler neck filter

- 1. Periodically check the filter in the reservoir filler neck **DEF/AdBlue**® for dirt.
 - 1. Turn the filter **(1)** counter-clockwise. Remove the filter from its seat.
 - 2. Clean it with low pressure compressed air to remove any impurities present in it.
 - 3. Reposition the filter in its seat. Turn the filter clockwise to lock the filter.



MOIL14TR00456AA 1

Fuel cooler - Cleaning

Check that no dirt has accumulated on the fins and that they are not obstructed. If necessary, clean them.

Unlock the clip (1) and rotate the power shuttle oil cooler (2) forward.

Clean the fuel cooler (3) with a jet of air or water from the back towards the front.

After cleaning, fix the power shuttle oil cooler (2) in its earlier position.

NOTE: For cleaning, use compressed air or a pressure washer not exceeding **7.0 bar** (**101.5 psi**).

NOTE: If the grilles are blocked with any oily substances, apply a detergent solution and remove it with a pressure washer.



GNIL19TRO1208EA

Radiator screen cleaning

1. Raise the engine hood and slide the radiator screen (1) out and clean as required.



GNIL19TRO1211AA 1

At warning message display

Air cleaner

To clean the engine air cleaner, proceed as follows:

- 1. Open the locking hooks (1) of the cover (2).
- 2. Remove the (2) cover.
- 3. Remove the external cartridge of the engine air cleaner.

NOTE: Never remove the internal safety cartridge to clean with compressed air, but replace it together with the external cartridge at the prescribed time.

- 4. Place the external cartridge facing downwards on a flat surface (figure A).
- 5. Smack the cartridge a few times with the palm of your hand to eliminate any residues of dust, paying attention not to damage it.

Alternatively, clean it with a jet of compressed air at a pressure less than **5 bar** (**72.5 psi**) in the direction shown in figure B, at a distance of at least **20 cm** (**7.9 in**).

NOTICE: When cleaning, never use diesel, petrol, solvents or water so as not to damage the filtering cartridge.

- 6. After cleaning, check that the pleated paper part of the cartridge is intact and has no cuts or holes in it. Otherwise replace.
- 7. Clean the inside parts of the filter housing carefully with a damp cloth.
- 8. Reinstall the clean filter.
- 9. Refit the cover (2) on the filter housing, making sure that it seals perfectly and lock it in position with the hooks (1).





MOIL15TR00185AB 2

Brake fluid level

Check that the level of the fluid is always above the minimum level (1) indicated on the reservoir. If necessary, proceed as follows:

- 1. Unscrew the plug (3).
- 2. Fill with brake oil.
- 3. Screw the cap (3) back in place.

NOTE: Do not overfill the tank beyond the maximum oil level (2).



GNIL19TRO1142AA

NOTICE: If the light remains illuminated, even after adding fluid, contact your dealer to have the trouble resolved. The braking members protect your safety too, you are recommended not to try and resolve any trouble with the hydraulic system on your own.
Fuel filters - Drain fluid



When the central display of the instrument panel shows the following symbol it means that there is water in the fuel, drain the fuel filter immediately.

- Place a container under the filter (1).
- Remove the sensor wire (3) from the drain plug.
- Open the drain plug (2) on the separator filter by loosening the knob.
- Allow contaminated fuel to drain until only clean fuel runs out.
- Close the drain plug and refit the sensor wire.
- Dispose of the drained fuel appropriately.



GNIL19TRO1097AA 1

NOTE: Dispose of the drained fuel according to current regulations.

Diesel Exhaust Fluid (DEF)/AdBlue®/ARLA tank - Change fluid



When the central display of the instrument cluster shows the following symbol relating to the poor quality of the **DEF/AdBlue**® fluid, it must be replaced as follows.

- 1. To change the **DEF/AdBlue**® fluid, proceed as follows:
 - 1. Place a container under the tank.
 - 2. Remove the plug (1) and drain all the fluid.
 - 3. Re-install the plug (1).
 - 4. Fill the tank with new DEF/AdBlue® fluid.
 - 5. Dispose of the **DEF/AdBlue**® fluid according to current regulations.



GNIL19TRO1145AA 1

STORAGE

Tractor storage

The following text is given for your information and guidance. For further information concerning long term storage of your tractor, please consult your Authorized New Holland Dealer.

Tractor storage

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

- Clean the tractor.
- Drain the engine and transmission/rear axle and refill with clean oil.
- Check the radiator coolant level. If storing tractor in cold weather conditions, check the strength of the antifreeze, with an antifreeze tester, to verify proper cold protection.
- Lubricate all grease fittings.
- Using the tractor hydraulic system in Position Control, raise the lift linkage and support the lift arms in the raised position.
- Remove the battery and store in a warm, dry atmosphere. Recharge periodically.
- Raise the tractor and place supports under the axles to take weight off the tires.
- •

Preparation for use after storage

After extended storage, prepare the tractor for further use, as follows:

- Inflate the tires to the correct pressure and lower the tractor to the ground.
- Refill the fuel tank.
- Check the radiator coolant level.
- Check all oil levels.
- Install fully charged battery.
- · Remove the exhaust pipe covering.
- Start the engine and check that all instruments and controls are functioning correctly. Using the tractor hydraulic system in Position Control, fully raise the lift linkage and remove the supports.
- Drive the tractor without load to ensure that it is operating satisfactorily.

Touch-up Paint

The following New Holland paints are recommended for touch-up paint repairs.

Color	Part No.	Amount
New Holland Bright Blue	86109144DS 86109141DS	16 oz Spray Quart
CNH Dark Gray	B96104 B96105	16 oz Spray Quart
Bianco White (Wheels)	9624698-DS 9624699-DS	16 oz Spray Quart
Med Gloss Black	94792-DS 9624700-DS	16 oz Spray Quart

8 - TROUBLESHOOTING

SYMPTOM(S)

Viewing error codes

Error codes transmission

The tractor's electronic control units are able to detect operating faults or errors occurring in key areas such as the engine, gearbox, electric systems.

Should a malfunction or error occur, the relevant symbol and error code will appear in the display.

This display may be accompanied by the amber or red warning lights on the control panel coming on and by an audible warning, depending on the severity of the fault. Contact your NEW HOLLAND authorized dealer's specialized personnel where envisaged.



GNIL19TRO1105AA 1

Problem	Possible Cause	Correction
The engine will not start	Incorrect starting procedure	See starting procedure
or starts with difficulty		
	Fuel level low or empty	Check the fuel level
	Air in fuel system	Bleed fuel system
	Engine oil viscosity not right	Use oil of right viscosity
	Fuel not suitable for ambient temperature	Use correct type of fuel for temperature
		conditions
	Fuel system contaminated	Clean system
	Fuel filter clogged	Replace filter element
	Fuel injector fault	Contact your dealer
The engine does not run	Fuel system contaminated	Clean system
properly and/or cuts out		
	Fuel injector fault	Contact your dealer
Engine does not develop	Engine overload	Change to lower gear or reduce load
full power		
	Air filter clogged	Carry out maintenance on air filter
	Incorrect fuel type	Use the right fuel
	Low engine operating temperature	Check thermostat
	Fuel injector fault	Have your dealer check the injectors
	Implement incorrectly set	See equipment manual
	Improper valve clearance	Check and adjust
	Idling speed too low	Contact your dealer
Abnormal engine	Oil level low	Top up fluid level
knocking		
	Oil pressure low	Contact your dealer
Low engine operating	Thermostat malfunction	Replace thermostat
temperature		
	Fan viscous coupling malfunction	Contact your Dealer
Oil pressure low	Oil level low	Add oil as required
	Oil grade or viscosity wrong	Drain and refill with oil of correct grade and
Free contract of the		
	Oil level too nign	Reduce oil level
consumption		
	Oil viscosity wrong	
	Oli leaking	Repair leaks

Engine - Troubleshooting

Problem	Possible Cause	Correction
	Breather pipe filter clogged	Replace breather pipe filter
Engine overheating	Radiator core clogged	Clean radiator
	Engine overload	Change to lower gear or reduce load
	Engine oil level low	Top up fluid level
	Coolant level low	Top up fluid level in expansion tank. Check system for leaks
	Expansion tank cap defective	Replace cap
	Fan belt slipping or worn	Check tensioning device. If necessary, re- place the belt
	Cooling system clogged	Flush cooling system
	Thermostat malfunction	Check thermostat
	Hoses leaking	Tighten hose connectors
	Temperature indicator or gauge malfunc- tion	Contact your dealer
Excessive fuel consumption	Incorrect fuel type	Use right fuel type
-	Air filter dirty or clogged	Carry out maintenance on air filter
	Engine overload	Change to lower gear or reduce load
	Improper valve clearance	Check and adjust
	Equipment wrongly adjusted	Refer to equipment manual for correct op-
		eration
	Engine temperature too low	Check thermostat
	Excessive ballast	Adjust ballast to correct weight
	Fuel injection nozzles clogged	Have your dealer service the injectors

Electrical systems - Troubleshooting

Problem	Possible Cause	Correction
The electrical system	Battery terminals loose or corroded.	Clean and tighten battery terminals.
does not work.		
	Discharged battery.	Charge or replace battery.
	Fusible link wire failure.	Check for cause of failure and replace fusible link.
Low starter motor speed	Connections loose or corroded.	Clean and tighten terminals.
and difficulty in starting engine.		
_	Battery discharged.	Charge or replace battery.
	Improper ground circuit.	Check and clean ground connections.
Starter motor does not	High-low selector gear & gear shifter levers	Place shift levers in the neutral position.
function.	not in neutral.	
	Connections loose or corroded.	Clean and tighten connections.
	Battery discharged.	Charge or replace battery.
	Faulty starter motor.	Replace starter motor.
Battery charge indicator light illuminates with the engine running.	Fan belt loose or broken.	Adjust belt tension or replace belt.
	Alternator faulty.	Check charging system, repair as needed.
	Faulty battery.	Replace battery.
Battery not charging.	Faulty alternator.	Contact your authorized dealer.
	Terminals loose or corroded.	Clean and tighten terminals.
	Fan belt loose or broken.	Adjust fan belt tension or replace belt.
	Faulty battery.	Replace battery.
The battery warning light comes on	The alternating current generator does not charge the battery	Check and, if appropriate, replace the alter- nating current generator Apply to a service workshop

Hydraulic systems - Troubleshooting

Problem	Possible Cause	Correction
3-point does not raise	Low hydraulic oil level.	Check hydraulic oil level, add oil as
when the control valve		needed.
lever is actuated.		
	Hydraulic oil filter clogged.	Replace hydraulic oil filter.
	Faulty hydraulic pump.	Contact you authorized dealer.
	Control valve linkage misadjusted.	Contact you authorized dealer.
3–point linkage does not	Low hydraulic oil level.	Check hydraulic oil level, add oil as
lift fully.		needed.
	Hydraulic oil filter clogged.	Replace hydraulic oil filter.
	Control valve linkage misadjusted.	Contact you authorized dealer.
	Control valve internally linkage misadjusted	Contact you authorized dealer.
Hydraulic fluid is	Hydraulic control valve not returning to neu-	Return all control valve levers to the neutral
overheating.	tral position.	position.
	Hydraulic fluid level is to low.	Check hydraulic fluid level, add oil as
		needed.
	Hydraulic filter clogged.	Replace hydraulic filter.
3–point linkage lowers	Drop rate speed control misadjusted.	Adjust drop rate control for faster drop
slowly.		speed.
	3-point linkage binding	Check for damaged parts or corrosion.
Auxiliary hydraulic	Hose to coupler connections not correct.	Check hose and valve couplers for damage
functions do not function		or contamination.
properly.		
	Auxiliary system overloaded.	Reduce load on system.

Brakes and controls - Troubleshooting

Problem	Possible Cause	Correction
Brakes actuate only when pedals are depressed fully.	Incorrect brake pedal linkage adjustment.	Adjust brake pedal linkage for proper pedal travel.
Tractor pulls to one side when brakes are applied.	Brake pedals linkage not adjusted equally.	Adjust brake pedals linkages equally.
Brakes noisy during engagement.	Transmission oil contamination.	Drain and replace transmission oil.
	Brake discs worn or contaminated.	Replace brake discs.

Cab climate control - Troubleshooting

Problem	Possible Cause	Correction	
Dust in cab	Filter seal ineffective	Check condition of filter seal	
	Filter clogged	Clean or replace filter	
	Filter defective	Replace filter	
	Excessive air draughts	Block draughts	
Poor recirculation air	Filter clogged or air circulation filter clogged	Clean or replace filter(s)	
	Heater or humidifier radiator core clogged	Call your Dealer	
Air-conditioning not	Condenser clogged	Clean the radiator, oil exchanger and con-	
cooling properly		denser	
	Refrigerant low	Call your Dealer	
	Compressor belt slips or is damaged	Check the automatic belt-tensioning de-	
		vice and the state of the belt	
	Heating on	Turn the temperature control fully	
		anti-clockwise for maximum cooling	

Front loader and bucket - Troubleshooting

Problem	Possible Cause	Correction
The loader is slow or is	Hydraulic oil too dense.	Change the oil currently used with a more
not rising and/or is not		suitable one.
dumping the bucket.		
	Tractor hydraulic filter is clogged.	Change the filter.
	Tractor hydraulic pump is worn. Repair or replace the pump.	
	Oil line clogged or holed.	Check all the hoses for leaks, damage or
		crushing. Change the damaged hoses or
		eliminate the leaks.
	Hydraulic pressure points faulty.	Check the pressure points of the hoses for
		leaks, replace them if necessary.
	Control valve not working correctly.	Inspect, clean, repair or replace control
		valve.
	Air in the hydraulic circuit.	Clear the air from the hydraulic circuit by
		running a number of lifting and lowering cy-
	cles at low speeds.	
	Tractor switching valve in wrong position.	Turn valve switch.
	Leaks in hydraulic cylinders.	Exchange the seals.
	Wrong hydraulic pipe connection.	Check connections again.
	Tractor hydraulic valve faulty.	Clean or replace the valve.
The loader vibrates when	The pins of the arm and cylinder joints have	Clean the area of the grease nipples and
lifted or lowered.	no grease.	grease as recommended.
	Leak in air suction line.	Check, tighten or replace the suction line.
	Air in hydraulic circuit.	Perform a lifting and lowering cycle of the
		boom and bucket.
	Oil level too low.	Add oil as required.
Pump is noisy.	The inlet line is choked or has oil leaks.	Check leaks and connection of the pipes.
		Tighten or replace the pipe concerned. Re-
	• • • • •	place filter if necessary.
	Oil level too low.	Add oil as required.
	Pump worn or damaged.	Repair or replace pump.
Bucket teeth bent or	Only one pair of teeth was under the load.	Make sure to have three or more teeth un-
broken.		der the load.

Error code identification

NOTE: Should any trouble occur, the central display on the instrument panel will show a warning symbol and a fourdigit error code. To resolve the problem, contact your authorised NEW HOLLAND dealer and report the error code displayed.

Fault code of digital instrument

NOTE: should a malfunction occur, the central display on the instrument panel will show a warning symbol and a four-or five-digit error code. To resolve the problem, contact your authorised NEW HOLLAND dealer and report the error code displayed.

Symbol on display	Error code	Area of fault
Ū	From 3001 to 4000 and 17001 to 18000	Engine
	From 14001 to 15000	Electrical or electronic problems
Ö	From 19001 to 20000	DENOx

9 - SPECIFICATIONS

General specification

	Workmaster 95	Workmaster 105	Workmaster 120
Engine			
Model		F5C	
Emission Level		Tier 4 Final - For EPA known a	s Tier 4B
Engine net horsepower	73.0 kW (97.9 Hp)	84.0 kW (112.6 Hp)	90.0 kW (120.6 Hp)
PTO Horsepower	78.0 Hp	92.0 Hp	100.0 Нр
Cylinders		4	
Bore		99.0 mm (3.9 in)	
Stroke		110.0 mm (4.3 in)	
Displacement		3400 cm ³ (207.5 in ³)	
Compression Ratio		17+/-0.5:1	
Firing Order		1 - 3 - 4 - 2	
Aspiration		TCA	
Low Idle Speed		800±50 RPM	
High Idle Speed		2450±50 RPM	
Rated Speed	2300 RPM		
Cooling system			
Туре	Р	ressurized Liquid with Recirculat	ting bypass
Water Pump		Centrifugal	0)1
Drive	poly V-Belt		
Belt Deflection	Auto Adiustable		
Fan Diameter	520 mm (20.47 in)		
Number of Fan Blades	10		
Thermostat:			
Start to Open	78.0 °C (172.4 °F)		
Fully Open		94.0 °C (201.2 °F)	
Expansion tank cap		90 kPa (13 psi)	
Antifreeze		OAT	

	Electrical system	
Alternator	120 A	
Battery type	12 V	
	Negative Ground	
	110 A·h / 800 CCA (without cab)	
	165 A·h / 900 CCA (with cab)	
Starter Motor - Type	Solenoid operated	
Starter kw (hp) Rating	4.2 kW (5.7 Hp)	
Cold-start aid	Glow plug base	
Fuel system		
Fuel Type	Decanted, filtered diesel fuel	
Type of fuel to use		
If above -7 °C	ASTM D975 2-D S15	
If below -7 °C	ASTM D975 1-D S15	
Injection Pump:		
Туре	CRDI	

	Brakes
Туре	Oil Immersed acting on differential shafts
Actuation	Hydraulic
Number of discs per side	4
Disc thickness	4.75 mm (0.2 in)
Total lining area	210.0 mm² (0.3 in²)
Steering	
Туре	Power
Pump flow	29 / 37 L/min
Steering Pressure	175 – 195 bar
Turns Lock to Lock	
2WD	3.5
4WD	3
Maximum Steering Angle	
2WD	91.4°
4WD	62°
Turn radius	
Without brakes (2WD light duty)	3610.0 mm (142.1 in) with 7.50-16 front tyres and track of 1445 mm @ 52° steering angle
Without brakes (2WD heavy duty)	3320.0 mm (130.7 in) with 10.0-16 front tyres and track of 1475 mm @ 51° steering angle
Without brakes (4WD)	4500.0 mm (177.2 in) with 12.4R24 front tyres and track of 1620 mm @ 42.27° steering angle

Power Take–Off (PTO)

Туре	Independent
Clutch material	Organic
Control	Hand Lever (mechanical) / switch (electro-hydraulic)
Shaft Size	35 mm (1-3/8 in)
Number of Splines	6 or 21
Engine Speed for E40 BBM	Mechanical PTO – 1958 RPM
Engine Speed for 540 KPM	Hydraulic PTO – 1876 RPM
Engine Speed for 540E RPM	1535 RPM
Engine Speed for 1000 RPM	2125 RPM
Workmaster 95	78 Hp
Workmaster 105	92 Hp
Workmaster 120	100 Hp

	Clute	h evetom			
Power snuttle	`		6 Plates	、	
Clutch disc diameter (power shutti	e)		143.0 mm (5.6 in)	
Clutch disc diameter (mechanical)			310.0 mm (12.0 ir	1)	
PTO clutch disc diameter (electro-	hydraulic)		133.0 mm (5.2 in)	
PTO clutch disc diameter (mechar	ical)		280.0 mm (11.0 in	ı)	
	Hydrau	ilic system			
Туре	Open center				
Pump Type	Gear, engine driven				
Pump Capacity	48.5 / 64 / 82 L/min				
	Tolerance –10%				
Pump pressure	190 – 205 bar				
Number of rear remote available		2 /	3		
Draft control		Avail	able		
3-Point linkage					
	OECD p	rocedure			
	Maximum lift throu	gh power range at	Links horizontal at	maximum hydraulic	
	90% of maximum	hydraulic pressure	pressure	e 190 bar	
	171 bar		MAS	T 610	
	MASI 610				
Rear tire 18.4-30, SLR - 720 mm ,	Ball end	24 in to rear	Ball end	24 in to rear	
Minimum mechanica	advantage : Li	nkage setting –	upper link lowe	r position	
Without assist ram	2018.86 kg	1490.62 kg	2370.64 kg	1889.70 kg	
With two assist rams (60 mm	3654.64 kg	2914.07 kg	4636.80 kg	3696.02 kg	

bore each)		g		9	····	
Maximum mechanical advantage : Linkage setting – upper link upper position						
Less assist rar	n	2018.86 kg	1651.68 kg	2281.4 kg	2102.24 kg	
Two assist ram	าร	3654.64 kg	3229.26 kg	4462.3 kg	4111.82 kg	

NOTE: All values of 3- Point linkage have been practically observed in tests with a tolerance of 10% on the theoretical value given in the above table.

Rear tire speed (km/h) at 2300 RPM (rated engine speed)

12x12 Mechanical shuttle

Gears	538	600	695	720	745
F1	1.44	1.61	1.87	1.93	2.00
F2	1.83	2.04	2.36	2.45	2.53
F3	2.48	2.77	3.20	3.32	3.43
F4	3.67	4.09	4.74	4.91	5.08
F5	3.86	4.30	4.98	5.16	5.34
F6	4.88	5.44	6.31	6.53	6.76
F7	6.62	7.38	8.55	8.86	9.16
F8	9.79	10.92	12.65	13.11	13.56
F9	10.15	11.32	13.11	13.58	14.05
F10	12.85	14.33	16.60	17.19	17.79
F11	17.42	19.43	22.50	23.31	24.12
F12	25.78	28.75	33.30	34.50	35.70
			-		
R1	1.46	1.63	1.89	1.96	2.02
R2	1.85	2.06	2.39	2.48	2.56
R3	2.51	2.80	3.24	3.36	3.48
R4	3.72	4.14	4.80	4.97	5.14
R5	3.90	4.35	5.04	5.22	5.40
R6	4.94	5.51	6.38	6.61	6.84
R7	6.70	7.47	8.65	8.96	9.28
R8	9.91	11.06	12.81	13.27	13.73
R9	10.27	11.45	13.27	13.74	14.22
R10	13.00	14.50	16.80	17.40	18.01
R11	17.63	19.66	22.77	23.59	24.41
R12	26.09	29.10	33.71	34.92	36.13

20x20 Mechanical shuttle

Gears	538	600	695	720	745
F1	0.25	0.28	0.33	0.34	0.35
F2	0.32	0.36	0.41	0.43	0.44
F3	0.44	0.49	0.56	0.58	0.60
F4	0.64	0.72	0.83	0.86	0.89
F5	0.68	0.75	0.87	0.91	0.94
F6	0.86	0.96	1.11	1.15	1.19
F7	1.16	1.30	1.50	1.56	1.61
F8	1.72	1.92	2.22	2.30	2.38
F9	1.44	1.61	1.87	1.93	2.00
F10	1.83	2.04	2.36	2.45	2.53
F11	2.48	2.77	3.20	3.32	3.43
F12	3.67	4.09	4.74	4.91	5.08
F13	3.86	4.30	4.98	5.16	5.34
F14	4.88	5.44	6.31	6.53	6.76
F15	6.62	7.38	8.55	8.86	9.16
F16	9.79	10.92	12.65	13.11	13.56
F17	10.15	11.32	13.11	13.58	14.05
F18	12.85	14.33	16.60	17.19	17.79
F19	17.42	19.43	22.50	23.31	24.12
F20	25.78	28.75	33.30	34.50	35.70
	-	-	-	_	-
R1	0.26	0.29	0.33	0.34	0.36
R2	0.33	0.36	0.42	0.44	0.45
R3	0.44	0.49	0.57	0.59	0.61
R4	0.65	0.73	0.84	0.87	0.90
R5	0.69	0.76	0.89	0.92	0.95
R6	0.87	0.97	1.12	1.16	1.20
R7	1.18	1.31	1.52	1.57	1.63
R8	1.74	1.94	2.25	2.33	2.41
R9	1.46	1.63	1.89	1.96	2.02
R10	1.85	2.06	2.39	2.48	2.56
R11	2.51	2.80	3.24	3.36	3.48
R12	3.72	4.14	4.80	4.97	5.14
R13	3.90	4.35	5.04	5.22	5.40
R14	4.94	5.51	6.38	6.61	6.84
R15	6.70	7.47	8.65	8.96	9.28
R16	9.91	11.06	12.81	13.27	13.73
R17	10.27	11.45	13.27	13.74	14.22
R18	13.00	14.50	16.80	17.40	18.01
R19	17.63	19.66	22.77	23.59	24.41
R20	26.09	29.10	33.71	34.92	36.13

12x12 Power shuttle

Gears	538	600	695	720	745
F1	1.23	1.38	1.59	1.65	1.71
F2	1.83	2.04	2.36	2.45	2.53
F3	2.48	2.77	3.20	3.32	3.43
F4	3.67	4.09	4.74	4.91	5.08
F5	3.29	3.67	4.25	4.41	4.56
F6	4.88	5.44	6.31	6.53	6.76
F7	6.62	7.38	8.55	8.86	9.16
F8	9.79	10.92	12.65	13.11	13.56
F9	8.67	9.66	11.19	11.60	12.00
F10	12.85	14.33	16.60	17.19	17.79
F11	17.42	19.43	22.50	23.31	24.12
F12	25.78	28.75	33.30	34.50	35.70
		-			
R1	1.22	1.36	1.57	1.63	1.69
R2	1.80	2.01	2.33	2.41	2.50
R3	2.45	2.73	3.16	3.27	3.39
R4	3.62	4.04	4.68	4.85	5.01
R5	3.25	3.62	4.20	4.35	4.50
R6	4.82	5.37	6.22	6.44	6.67
R7	6.53	7.28	8.43	8.74	9.04
R8	9.66	10.78	12.48	12.93	13.38
R9	8.55	9.53	11.04	11.44	11.84
R10	12.67	14.13	16.37	16.96	17.55
R11	17.18	19.16	22.20	23.00	23.79
R12	25.43	28.36	32.85	34.03	35.22

20x20 Power shuttle

Gears	538	600	695	720	745
F1	0.21	0.24	0.28	0.29	0.30
F2	0.32	0.35	0.41	0.43	0.44
F3	0.43	0.48	0.56	0.58	0.60
F4	0.64	0.71	0.82	0.85	0.88
F5	0.57	0.64	0.74	0.76	0.79
F6	0.85	0.95	1.09	1.13	1.17
F7	1.15	1.28	1.48	1.54	1.59
F8	1.70	1.90	2.20	2.28	2.35
F9	1.23	1.38	1.59	1.65	1.71
F10	1.83	2.04	2.36	2.45	2.53
F11	2.48	2.77	3.20	3.32	3.43
F12	3.67	4.09	4.74	4.91	5.08
F13	3.29	3.67	4.25	4.41	4.56
F14	4.88	5.44	6.31	6.53	6.76
F15	6.62	7.38	8.55	8.86	9.16
F16	9.79	10.92	12.65	13.11	13.56
F17	8.67	9.66	11.19	11.60	12.00
F18	12.85	14.33	16.60	17.19	17.79
F19	17.42	19.43	22.50	23.31	24.12
F20	25.78	28.75	33.30	34.50	35.70
	1				
R1	0.21	0.24	0.28	0.29	0.30
R2	0.32	0.35	0.41	0.42	0.44
R3	0.43	0.48	0.56	0.58	0.60
R4	0.64	0.71	0.82	0.85	0.88
R5	0.57	0.64	0.74	0.76	0.79
R6	0.85	0.94	1.09	1.13	1.17
R7	1.15	1.28	1.48	1.54	1.59
R8	1.70	1.89	2.19	2.27	2.35
R9	1.23	1.37	1.59	1.65	1.71
R10	1.83	2.04	2.36	2.45	2.53
R11	2.48	2.76	3.20	3.32	3.43
R12	3.67	4.09	4.74	4.91	5.08
R13	3.29	3.67	4.25	4.40	4.55
R14	4.88	5.44	6.30	6.53	6.75
R15	6.61	7.37	8.54	8.85	9.15
R16	9.78	10.91	12.64	13.09	13.55
R17	8.66	9.65	11.18	11.58	11.99
R18	12.83	14.31	16.58	17.17	17.77
R19	17.40	19.41	22.48	23.29	24.09
R20	25.75	28.72	33.27	34.46	35.66

Tractor dimensions - General

Without cab version



NOTICE: The following dimensions are based on standard tractors fitted with tire sizes as shown. Allowance must be given for tires of larger or smaller dimensions.

-			
А	Across fender	Standard fender	1523.0 mm (60.0 in)
		Extended fender	2015.0 mm (79.3 in)
В	Ground clearance	Under 4WD axle 500/60-22.5	Minimum 258.0 mm (10.2 in)
		Under 4WD axle 16.9X34	Maximum 435.0 mm (17.1 in)
С	Across flanges	Front 4WD	1584.0 mm (62.4 in)
D	Across flanges	Rear	1568.0 mm (61.7 in)
F	Overall height with 500/60-22.5 / 16.9X34	To the ROPS top	2375/2605 mm
F	Overall height with 500/60-22.5 / 16.9X34	To the ROPS folded	1630/1848 mm
F	Overall height with 500/60-22.5 / 16.9X34	To the CANOPY top	2475/2688 mm
G	Ground clearance	Under rear axle	Minimum 237.5 mm (9.4 in) Maximum 450.5 mm (9.4 in)
Н	Front overhang	Front ballast	198.0 mm (7.8 in)
J	Wheel base	2WD	2175.0 mm (85.6 in)
J	Wheel base	4WD	2125.0 mm (83.7 in)
К	Overall length (till front weight carrier)	2WD	3955.0 mm (155.7 in)
К	Overall length (till front weight carrier)	4WD	3940.0 mm (155.1 in)
L	Vehicle height overall rear ax (w/o) Canopy	kle over centerline - ROPS	1900.0 mm (74.8 in)
L	Vehicle height overall rear axle over centerline - ROPS with Canopy		1969.0 mm (77.5 in)
L	Vehicle height overall rear axle over centerline - ROPS folded		1128.0 mm (44.4 in)
To to	p of exhaust (optional)		2336/2549 mm

Tractor total weight (without ballast, without operator and with fuel)

	4WD Axle ROPS	2WD HD Axle ROPS	2WD Axle ROPS
On front axle	1580.0 kg (3483.3 lb)	1425.0 kg (3141.6 lb)	1386.0 kg (3055.6 lb)
On rear axle	1915.0 kg (4221.9 lb)	1895.0 kg (4177.8 lb)	1880.0 kg (4144.7 lb)
Total weight	3495.0 kg (7705.2 lb)	3320.0 kg (7319.3 lb)	3266.0 kg (7200.3 lb)
Maximum permissible unrestricted weight front	4370.0 kg (5952.5 lb)	2400.0 kg (5291.1 lb)	1200.0 kg (2645.5 lb)
Maximum permissible weight rear	4000.0 kg (8818.5 lb)	3780.0 kg (8333.5 lb)	3780.0 kg (8333.5 lb)
Total Permissible weight	6000.0 kg (13227.7 lb)	6000.0 kg (13227.7 lb)	6000.0 kg (13415.1 lb)

NOTE: The above weight is based on a low spec configuration. Total weight can be different according to available configuration.

With cab version



GNIL19TRO1285FB 2

<u> </u>	1		
А	Across fender	Standard fender	1823.0 mm (71.8 in)
В	Ground clearance	Under 4WD axle 19.5L_24	Minimum 331.0 mm (13.0 in)
		Under 4WD axle 16.9X34	Maximum 435.0 mm (17.1 in)
С	Across flanges	Front 4WD	1584.0 mm (62.4 in)
D	Across flanges	Rear	1568.0 mm (61.7 in)
Е	Overall height with 19.5L_24 / 16.9X34	To top of exhaust	2427/2551 mm
F	Overall height with 19.5L_24 / 16.9X34	To the cab roof	2550/2690 mm
G	Ground clearance	Under rear axle	Minimum 326.5 mm (12.9 in) Maximum 450.5 mm (9.4 in)
Н	Front overhang	Weight carrier	198.0 mm (7.8 in)
J	Wheel base	2WD	2310.0 mm (90.9 in)
J	Wheel base	4WD	2260.0 mm (89.0 in)
К	Overall length (till front weight carrier)	2WD	4105.0 mm (161.6 in)
К	Overall length (till front weight carrier)	4WD	4091.0 mm (161.1 in)
L	Vehicle height overall rear ax	le over centerline - cab	1940.0 mm (76.4 in)

Tractor total weight (without ballast, operator and with fuel)

	4WD axle cab	2WD HD axle cab	2WD axle cab
On front axle	1480.0 kg (3262.8 lb)	1450.0 kg (3196.7 lb)	1403.0 kg (3093.1 lb)
On rear axle	2380.0 kg (5247.0 lb)	2265.0 kg (4993.5 lb)	2304.0 kg (5079.5 lb)
Total weight	3860.0 kg (8509.8 lb)	3715.0 kg (8190.2 lb)	3707 kg (8172.5 lb)
Maximum permissible unrestricted weight front	4370.0 kg (5952.5 lb)	2400.0 kg (5291.1 lb)	1200.0 kg (2645.5 lb)

	4WD axle cab	2WD HD axle cab	2WD axle cab
Maximum permissible weight rear	4000.0 kg (8818.5 lb)	3780.0 kg (8333.5 lb)	3780.0 kg (8333.5 lb)
Total Permissible weight	6000.0 kg (13227.7 lb)	6000.0 kg (13227.7 lb)	6000.0 kg (13415.1 lb)

NOTE: The above weight is based on a low spec configuration. Total weight can be different according to available configuration.

10 - ACCESSORIES

Front-end loader



GNIL19TRO1146FA 1

		632TL			637TL							
				L	575							
Din	nension	NO S	ELF LEVE	ELING	MECHANICAL SELF LEVELING							
		73" Stan- dard Bucket	73" High capacity Bucket	83" Bucket	73" Stan- dard Bucket	73" High capacity Bucket	83" Bucket					
Max rear a	idmissible tyres		16.9-34"			16.9-34"						
A	Maximum Lift Height@Pivot Pin mm/in		3410/134.	5		3410/134.5						
В	Max Lift Height under bucket in Level position mm/in		3170/124.8	3	3170/124.8							
С	Dump Clearance at 45° mm/in		2500/98.4		2500/98.4							
D	Digging Depth mm/in		130/5.1		130/5.1							
E	Reach @ maximum lift at 45° mm/in		960/37.8			960/37.8						
F	Reach @ ground level mm/in		2220/87.4			2220/87.4	1					
G	Bucket rollback angle		40°			40°						
H	Bucket Dump angle		53°			53°						
I	Bucket rollback at max. height		45°	45°								
Bucket Struck Capacity (cu Yard)	0.63	0.78	0.9	0.63	0.63 0.78 0.9						
Bucket Heaped Capacity	(Cu Yard)	0.78	0.94	1.07	0.78	1.07						

10 - ACCESSORIES

	632TL	637TL
	L	575
Dimension	NO SELF LEVELING	MECHANICAL SELF LEVELING
Lift capacity Max Height@pivot pins kg/lbs	1470/57.9	1200/47.2
Lift capacity Max Height@800mm Kg/lbs	920/36.2	1440/56.7
Lift capacity@59 in high@pivot pins Kg/lbs	1780/70.0	1460/57.5
Lift capacity@ 59 in high@800mm Kg/lbs	1300/51.2	1480/58.2
Boom breakout force@pivot pins KN/lbs	21/4721	17.1/3844.2
Boom breakout force@ 800mm KN/lbs	13.8/3102.4	15/3372
Bucket Rollback force@max height KN/lbs	13.5/3035	11/2473
Bucket Rollback force@ground level KN/lbs	17.8/4001.6	14.2/3192.3
Weight - 4WD Axle ROPS (Without ballast, withou	t operator, with fuel) and LIGH	IT loader @max load
On front axle (kg)		3790
On rear axle (kg)		1320
Total weight (kg)		5110

Total weight (kg)	5110										
Weight - 4WD Axle CAB (Without ballast, without operator, with fuel) and LIGHT loader @max load											
On front axle (kg)	4880										
On rear axle (kg)	770										
Total weight (kg)	5650										

Control valve joystick - Overview

A WARNING

Escaping fluid!

Joystick positions

Do not connect or disconnect hydraulic quick coupler under pressurized conditions. Make sure all hydraulic pressure is removed from the system before connecting or disconnecting hydraulic quick coupler.

Failure to comply could result in death or serious injury.

(A) Lever forward – lowering function

- (B) Lever backward lifting function
- (E) Lever completely forward float function
- (C) Lever to the right lowering function
- (D) Lever to the left lifting function

Moving the joystick lever diagonally operates two control valves simultaneously. This function is useful when working with loaders, fertiliser spreaders, combined seed drills/fertiliser spreaders, etc.

Safety latch

To use the joystick, disengage the safety latch (1) by pulling the safety latch out. When the joystick is not being used, push the safety latch in to lock the joystick and to prevent the joystick from being operated accidentally.

WARNING

Avoid injury and/or machine damage! Before disconnecting the couplers, you must: -lower the connected attachments, -stop the engine,

-move the control levers forward and backward to discharge pressure from the hydraulic system.

Failure to comply could result in death or serious injury.







NOTE: Do not hold the joystick at either the extended or retracted position when the cylinder has reached the travel limit, as this would result in the system operating at maximum pressure, thus opening the relief valve. If

Third auxiliary hydraulic service

Tools with auxiliary hydraulic services, such as silage forks or bale grab buckets, may be controlled using an electronically controlled auxiliary hydraulic circuit.

The auxiliary control valve is situated on the cross member of the loader. The auxiliary control valve is controlled by the right-hand button (2) on the joystick.

The third auxiliary hydraulic service is controlled by holding down the button (2). When you release the button, the supply to the third service is interrupted. allowed to continue for long periods of time the oil will overheat, which may lead to problems with hydraulic and drive line components.



Canopy assembly

A canopy assembly DIA kit is also available.



11 - FORMS AND DECLARATIONS

Pre-delivery report - Owner's copy

Check and adjust as required

Workmaster 95/105/120

Inoperative service checks

- 1. ____Tire Pressure,
- 2. ____Air Cleaner Element & Hose Connections,
- 3. ____Radiator Coolant Level,
- 4. ____Fan Belt Tension,
- 5. ____Battery Cleanliness, Vent Openings, Electrolyte Level & Charge,
- 6. Engine Oil Level,
- 7. ____Power Steering Reservoir Oil Level,
- 8. ____ Transmission & Rear Axle Oil Level,
- 9. <u>Hydraulic Lift Control Drop</u> Rate Adjustment (Response Control),
- 10. ____Top Link (present),
- 11. ____Brake Adjustment & Pedal Equalization,
- 12. ____Rear Wheel Bolt Torque
- 13. ____Front Wheel Bolt Torque
- 14. ____Front Wheel Toe-in,
- 15. ____Fuel Level,
- 16. ____Body Panels & Paint Condition,
- 17. <u>Seat Functions</u>,

Safety items check

- <u>ROPS Installed,</u>
 <u>Seat Belts Installed,</u>
- 3. PTO Shield Installed,
- 4. ____SMV Emblem Installed,
- 5. Safety Decals Installed,
- 6. ____ Neutral Start Switches Operation,
- 7. Park Brake & Latch Operation,
- 8. ____ Flashing Lights/Tail Lights Operation,
- 9. Operator's Manual (present),

Operative service checks

All operating checks are to be performed with tractor at normal operating temperature.

- 1. ____Lights & Instruments for Proper Operation & Fuel Shut Down with Key Switch Off
- 2. ____Fluid & Oil Leaks
- 3. <u>Maximum No-load High & Idle</u> Speed Adjustments,
- 4. ____PTO Engagement & Disengagement
- 5. Hydraulic System: _____Selector Lever for Position Control -

Dealer Representative's	Γ	Date
Signature		

"I have been instructed in the operation, maintenance, and safety features of this machine as detailed in the operator's manual."

Owner's Signature

Date

Pre-delivery report - Dealer's copy

Check and adjust as required

Workmaster 95/105/120

Inoperative service checks

- 1. ____Tire Pressure,
- 2. ____Air Cleaner Element & Hose Connections,
- 3. ____Radiator Coolant Level,
- 4. ____Fan Belt Tension,
- 5. ___Battery Cleanliness, Vent Openings, Electrolyte Level & Charge,
- 6. Engine Oil Level,
- 7. ____Power Steering Reservoir Oil Level,
- 8. ____Transmission & Rear Axle Oil Level,
- 9. ____Hydraulic Lift Control Drop Rate Adjustment (Response Control),
- 10. ____Top Link (present),
- 11. ____Brake Adjustment & Pedal Equalization,
- 12. ____Rear Wheel Bolt Torque
- 13. ____Front Wheel Bolt Torque
- 14. ____Front Wheel Toe-in,
- 15. ____Fuel Level,
- 16. ___Body Panels & Paint Condition,
- 17. ____Seat Functions,

Dealer Representative's Signature

"I have been instructed in the operation, maintenance, and safety features of this machine as detailed in the operator's manual."

Owner's Signature

Safety items check

- 1. ____ROPS Installed, Seat Belts Installed, 2. ____ PTO Shield Installed. 3. SMV Emblem Installed. 4. 5. Safety Decals Installed, Neutral Start Switches Operation, 6. 7. Park Brake & Latch Operation, 8. Flashing Lights/Tail Lights Operation, 9. Operator's Manual (present), **Operative service checks** All operating checks are to be performed with tractor at normal operating temperature. 1. ____Lights & Instruments for Proper Operation & Fuel Shut Down with Key Switch Off 2. Fluid & Oil Leaks 3. Maximum No-load High & Idle Speed Adjustments, 4. PTO Engagement & Disengagement
 - 5. Hydraulic System: _____Selector Lever for Position Control -

Date

Date

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