

OPERATOR'S MANUAL

L213 L221

L216 L223

L218 L225

L220 L230

Tier 4

200 Series Skid Steer Loader

C227

C232

C238

Tier 4

200 Series Compact Track Loader

Part number 47540696

1st edition English

July 2013

Replaces part number 47407032



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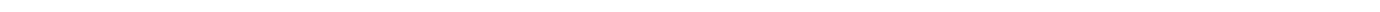
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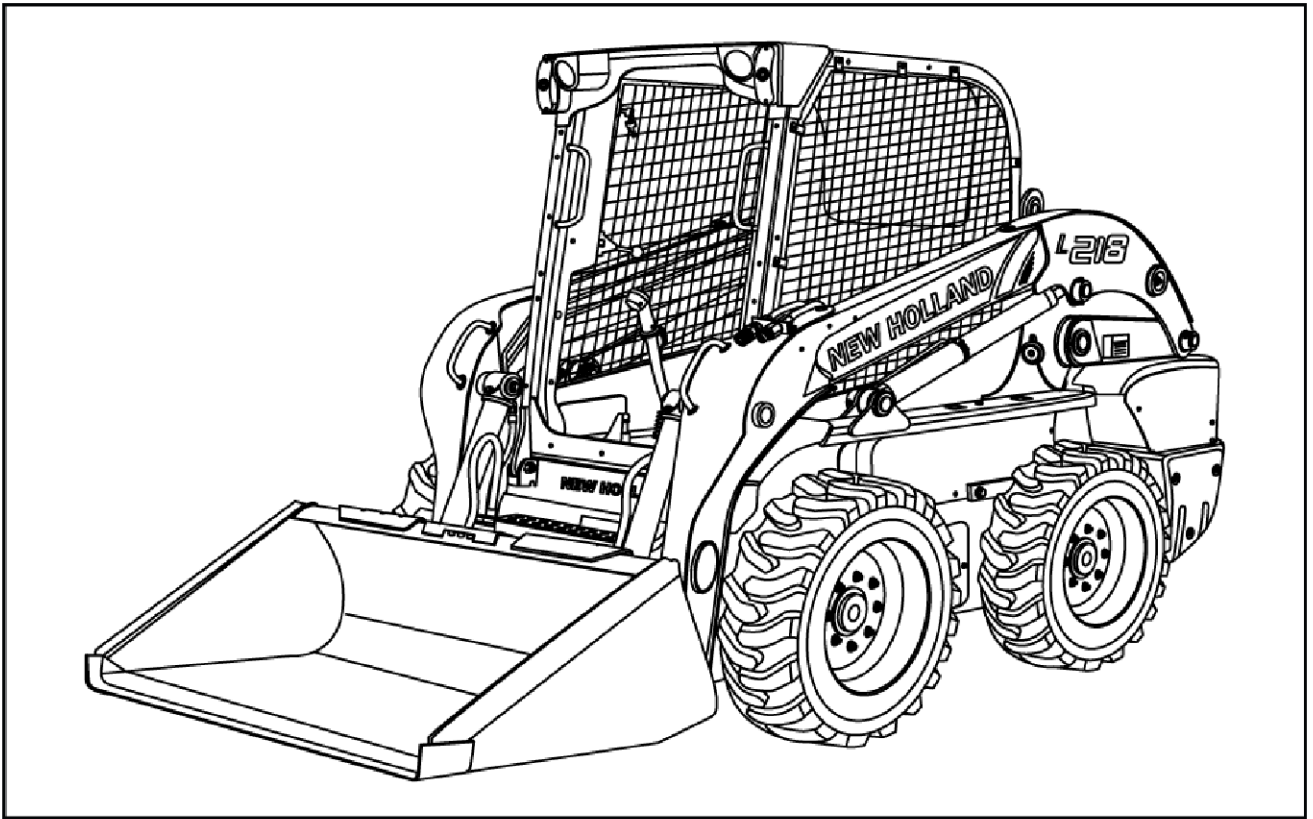
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1 - GENERAL INFORMATION

Note to the Owner



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CNH AMERICA LLC
P.O. Box 9228
Wichita, Kansas
U.S.A
67277



DEALER'S STAMP OR
CARD

This manual contains important information about the safe operation, adjustment, and maintenance of your skid steer. Refer to the detailed INDEX at the end of this manual for locating specific items about your machine. The skid steer conforms to current safety regulations. Use this manual as a guide. Your skid steer will remain a reliable working tool as long as it is kept in good working condition and serviced properly.

This skid steer, with standard equipment and authorized attachments, is intended for above ground material handling. Use only approved accessories and attachments designed for your machine.

This operators manual is to be stored in the manual compartment equipped on this machine. Make sure this manual is complete and in good condition. Contact your dealer to obtain additional manuals. Contact your dealer for any further information or assistance about your machine. Your dealer has corporation approved service parts. Your dealer has technicians with special training that know the best methods or repair and maintenance for your skid steer. Your New Holland Construction Dealer is available for any further information. New Holland Construction Customer Service is also available. Call 1-888-365-NHCE (1-888-365-6423) or email customerservice.na@cnh.com.

The information in this manual is provided on the basis of information that was available at the time that the manual was written. Settings, procedures, part numbers, software, and other items can change. These changes can affect the service that is given to the machine. Ensure that you have complete and current information from your dealer before you start any machine operation.

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 and on machine decals, 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.

DO NOT operate or permit anyone to operate or service this machine until you or the other persons have read and understand the safety, operation, and maintenance instructions in this manual. Use only trained operators who have demonstrated the ability to operate and service this machine correctly and safely. All persons who will be operating this machine shall possess a valid local vehicle operating permit and/or other applicable local age work permit. The information in this manual is provided on the basis of information that was available at the time that the manual was written. Settings, procedures, part numbers, software and other items can change. These changes can affect the service that is given to the machine. Ensure that you have complete and most current information from your dealer before you start your machine operation.

DO NOT use this machine for any application or purpose other than those described in this manual. Consult an authorized dealer on changes, additions or modifications that can be required for this machine to comply with various country regulations and safety requirements. Unauthorized modifications will cause serious injury or death. Anyone making such unauthorized modifications is responsible for the consequences.

ATTENTION: *The engine and fuel system on your machine is designed and built to government emissions standards. Tampering by dealers, customers and operators 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!*

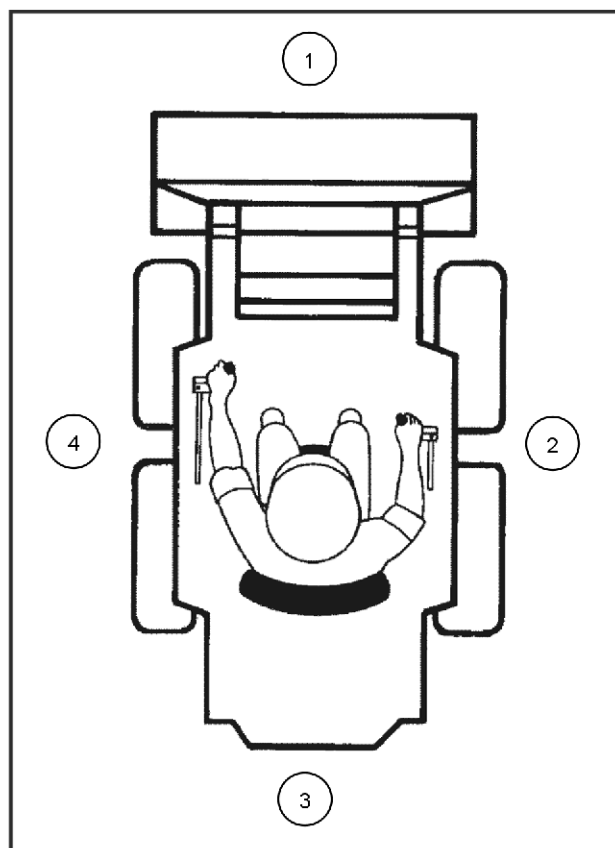
Electro-Magnetic Compatibility (EMC)

Interference may arise as a result of add-on equipment which 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 CONSTRUCTION warranty null and void.

Right, left, front and rear of the machine



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The terms front (1), right (2), rear (3), and left (4) are used in this manual to indicate the direction as seen from the operator's seat.

Product Identification Number (PIN)

Write your machine model number, Product Identification Number (PIN) and serial numbers on the lines provided below. Always give these numbers and component plate numbers to your dealer when you need parts or information for your machine.

Make a record of the numbers. Keep this record and your manufacturers statement of origin in a safe place. If the machine is stolen, report the numbers to your local law enforcement agency.

MACHINE

Machine Model and Type

Product Identification Number

Year of Build

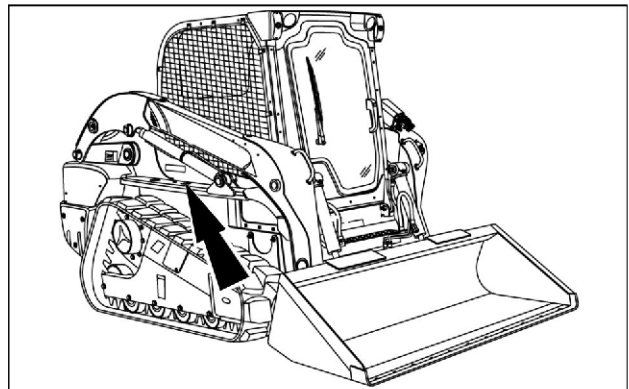
Engine Serial Number

Hydrostatic Pump Serial Number

Bucket Serial Number

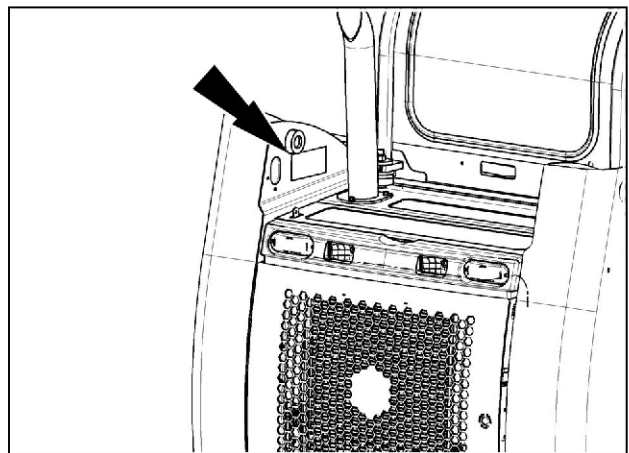
Product Identification Number (PIN).

- Outside right side of chassis - vertical lift



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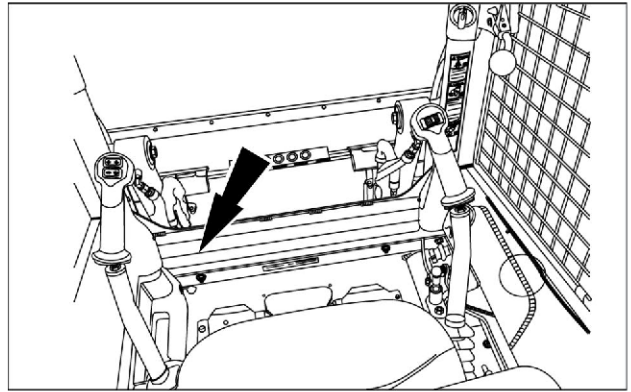
- Inside left side lift arm tower - radial lift



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Roll Over Protective Structure (ROPS) certification plate.

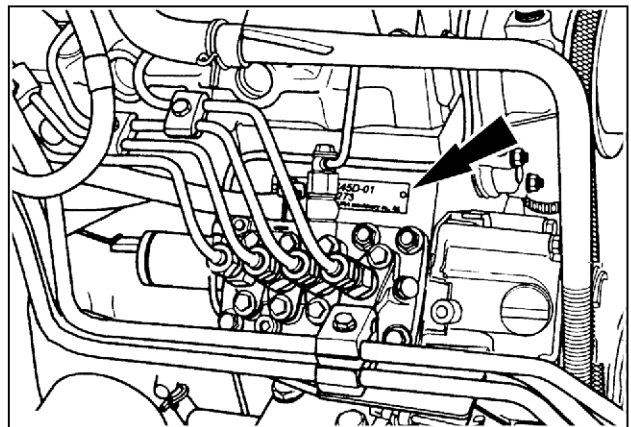
- Front edge (lower) inside cab.



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Engine serial number plate location for Models L213 and L216

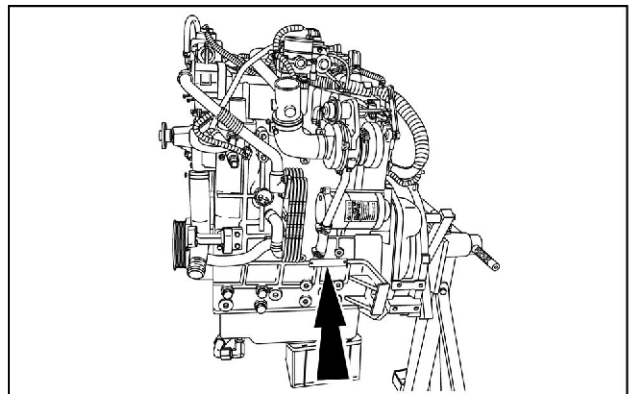
- On the fuel injection pump.



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Engine serial number plate location for Models L218 and L220

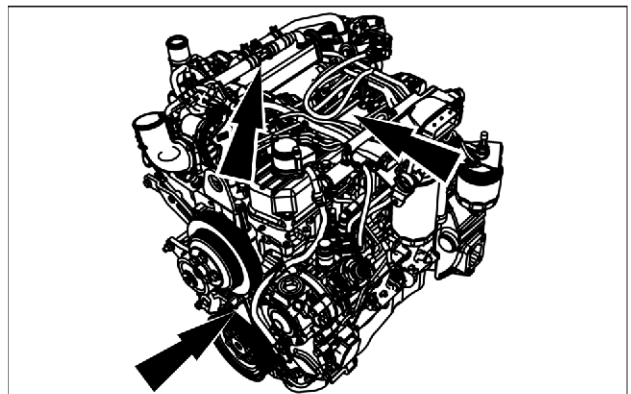
- On the right-hand side of the engine.



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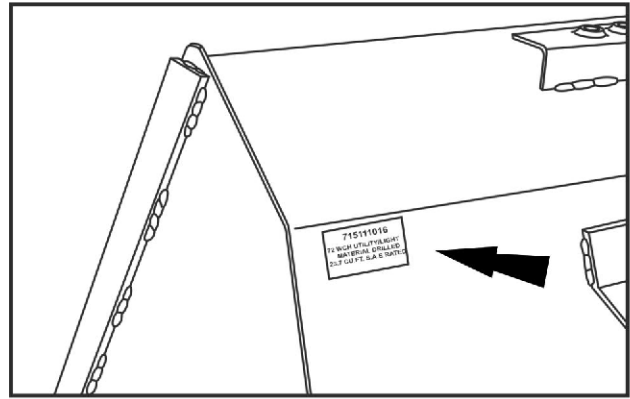
Engine serial number plate location for Models L221, L223, L225, L230, L232, L238, C227, C232, and C238

- On top of the Exhaust Gas Recirculation (EGR) cooler.
- On top of the valve cover.
- The serial number is also stamped on the engine front cover.



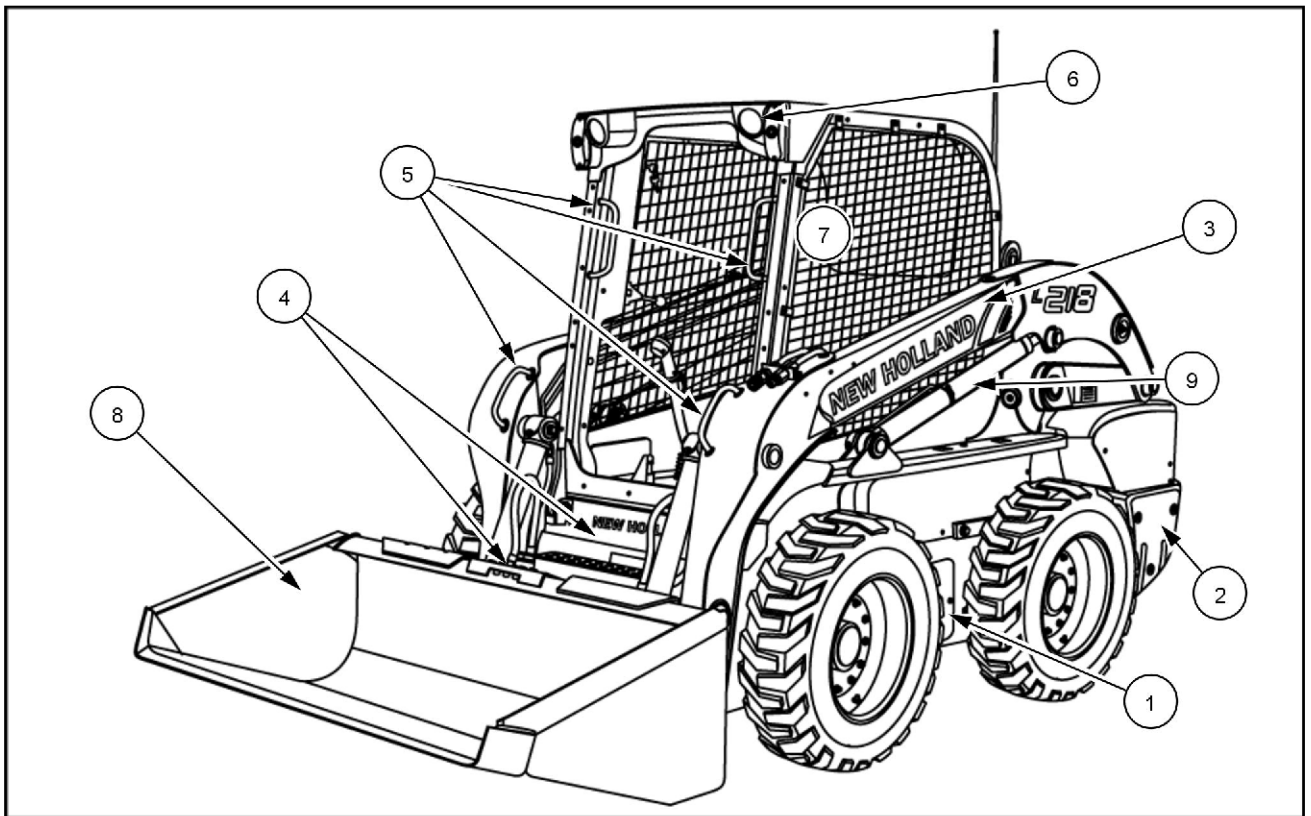
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Bucket identification plate



BT04F026-01 7

Machine components



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- | | |
|-------------------------------------|-------------------------------------|
| (1) Chain compartment access | (6) Front light |
| (2) Service access cover | (7) Operator's compartment |
| (3) Loader lift arm | (8) Bucket |
| (4) Steps | (9) Loader arm lift cylinder |
| (5) Hand holds | |

Emissions overview

What is Exhaust Gas Recirculation (EGR)?

Your NEW HOLLAND CONSTRUCTION machine is equipped with additional components to comply with national and local exhaust emissions requirements. EGR works by recirculating a portion of the engine exhaust gasses back into the engine combustion chamber to lower combustion temperatures.

What is a Diesel Oxidation Catalyst (DOC)?

The DOC is used without the Diesel Particulate Filter (DPF) on models L218, L220, L221, and C227 only. The other models use the DPF with the DOC. The oxidation catalyst is the first section of the DPF assembly. The catalyst converts the NOx in the exhaust stream to harmless gases and water.

What is a Diesel Particulate Filter (DPF)?

A Diesel Particulate Filter (DPF) is a filter mounted in the exhaust stream. During normal operating conditions, the exhaust gasses pass through the porous walls of the DPF and trap Particulate Matter (PM) generated by the combustion process of the engine. When channels inside the DPF fill up with PM, the system must be cleaned. The cleaning process is called regeneration.

How does the regeneration process work?

When the DPF becomes restricted, the system will need to be cleaned or regenerated by raising exhaust temperatures to burn off the trapped Particulate Matter (PM). This process is usually done automatically, but may require a manual regeneration sequence to be activated depending on operating conditions. Burned PM will leave behind traces of ash within the DPF. The ash must be cleaned out by a NEW HOLLAND CONSTRUCTION dealer outfitted with machines specifically designed to clean DPF systems. See page **7-28** for service intervals.

Automatic regeneration

When the DPF enters automatic regeneration mode, the display will indicate "DPF ON". Several conditions need to be followed to properly let the machine perform this function.

- During this mode do not idle or shut the machine down.
- If you idle the engine or shut down the engine, the regeneration will continue automatically when all required conditions are met again.
- Hot exhaust gasses will be generated. Use in a well ventilated area away from combustible materials.
- Use the machine under normal work scenarios until the automatic regeneration process has completed.

Manual regeneration

When automatic regeneration of the DPF is inhibited or unsuccessful, manual regeneration is used. During the manual regeneration mode, the display will indicate "DPF ON". Several conditions need to be followed to properly let the machine perform this function.

- During this mode, the machine will be unusable.
- Move the machine to a safe place away from combustible materials.
- Hot exhaust gasses will be generated. Use in a well ventilated area away from combustible materials.
- Follow any prompts on the instrument cluster to start the regeneration.
- Let the regeneration finish before shutting the machine off.

Finding a Diesel Particulate Filter (DPF) cleaning facility

To find a NEW HOLLAND CONSTRUCTION dealer that is fully equipped to service your DPF system, please call the number below.

New Holland Construction Customer Service: 1-888-365-6423
customerservice.na@newholland.com

US Environmental Protection Agency (EPA) and California Emissions Control Warranty Statement

NEW HOLLAND CONSTRUCTION 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 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. NEW HOLLAND CONSTRUCTION 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 NEW HOLLAND CONSTRUCTION Service Parts to maintain the quality originally designed into your emission certified engine. The use of non- NEW HOLLAND CONSTRUCTION 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. NEW HOLLAND CONSTRUCTION is not responsible for failures resulting from improper repair or the use of parts that are not genuine NEW HOLLAND CONSTRUCTION or NEW HOLLAND CONSTRUCTION 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 | • Turbocharger system (includes exhaust manifold) |
| • Fuel injection pump | • Charge air cooler |
| • Fuel injectors | Positive crankcase ventilation system (if applicable) |
| • Fuel injection lines | • PCV valve |
| Air induction system | • Oil fill cap |
| • Intake manifold | |

Exhaust after treatment Devices (if applicable)

- Catalytic Converter
- Diesel Particulate Filter (DPF)

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 CONSTRUCTION.
- Repairs arising from any unauthorized modification to the product or the use of non- NEW HOLLAND CONSTRUCTION parts, implements or attachments.
- Removal, replacement, or installation of non- NEW HOLLAND CONSTRUCTION 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.

2 - SAFETY INFORMATION

Signal word definitions


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 and on machine decals, 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.

 DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury. The color associated with DANGER is RED.

 WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury. The color associated with WARNING is ORANGE.

 CAUTION, used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury. The color associated with CAUTION is YELLOW.

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

Machine safety

NOTICE: Notice indicates a situation which, 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 which 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

General safety rules

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.
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:

General maintenance safety

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.

Wheels and tires

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

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

3. **WARNING**

Some components may continue to run down after disengaging drive systems. Make sure all drive systems are fully disengaged. Failure to comply could result in death or serious injury.

W0113A

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.

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.

⚠ Driving on public roads and general transportation safety ⚠

Comply with local laws and regulations.

Use appropriate lighting to meet local regulations.

Make sure that the SMV emblem is visible.

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.

⚠ Fire and explosion prevention ⚠

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 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.

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.

⚠ General battery safety ⚠

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.

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. This is a California Proposition 65 warning.

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.

