SERVICE MANUAL

TS6.110 / TS6.110 HC / TS6.120 / TS6.120 HC / TS6.130 / TS6.140 Tier 4B (final)

Tractor

PIN NT00001M and above

Part number 47924635
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SERVICE MANUAL

TS6.110 110 HP TIER 4B (final) engine, 2WD, and ROPS. , TS6.110 110 HP TIER 4B (final) engine, 2WD, and cab. , TS6.110 110 HP TIER 4B (final) engine, 4WD, and ROPS. , TS6.110 110 HP TIER 4B (final) engine, 4WD, and cab. , TS6.110 HC 110 HP TIER 4B (final) engine, High Clearance (HC), 4WD, and ROPS. , TS6.110 HC 110 HP TIER 4B (final) engine, High Clearance (HC), 4WD, and cab. , TS6.120 119 HP TIER 4B (final) engine, 2WD, and ROPS. , TS6.120 119 HP TIER 4B (final) engine, 2WD, and cab. , TS6.120 119 HP TIER 4B (final) engine, 4WD, and ROPS. , TS6.120 119 HP TIER 4B (final) engine, 4WD, and cab. , TS6.120 HC 119 HP TIER 4B (final) engine, High Clearance (HC), 4WD, and ROPS. , TS6.120 HC 119 HP TIER 4B (final) engine, High Clearance (HC), 4WD, and cab. , TS6.130 130 HP Tier 4B (final) engine, 2WD, and ROPS. , TS6.130 130 HP Tier 4B (final) engine, 2WD, and cab. , TS6.130 130 HP Tier 4B (final) engine, 4WD, and ROPS. , TS6.130 130 HP Tier 4B (final) engine, 4WD, and cab. , TS6.140 139 HP TIER 4B (final) engine, 2WD, and ROPS. , TS6.140 139 HP TIER 4B (final) engine, 2WD, and cab. , TS6.140 139 HP TIER 4B (final) engine, 4WD, and ROPS. , TS6.140 139 HP TIER 4B (final) engine, 4WD, and cab.

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Link Product / Engine

Product	Market Product	Engine
TS6.110 110 HP TIER 4B (final) engine, 2WD, and ROPS.	North America	F4DFE413U*B001
TS6.110 110 HP TIER 4B (final) engine, 4WD, and ROPS.	North America	F4DFE413U*B001
TS6.110 110 HP TIER 4B (final) engine, 2WD, and cab.	North America	F4DFE413U*B001
TS6.110 110 HP TIER 4B (final) engine, 4WD, and cab.	North America	F4DFE413U*B001
TS6.110 HC 110 HP TIER 4B (final) engine, High Clearance (HC), 4WD, and ROPS.	North America	F4DFE413U*B001
TS6.110 HC 110 HP TIER 4B (final) engine, High Clearance (HC), 4WD, and cab.	North America	F4DFE413U*B001
TS6.120 119 HP TIER 4B (final) engine, 2WD, and ROPS.	North America	F4DFE413T*B001
TS6.120 119 HP TIER 4B (final) engine, 4WD, and ROPS.	North America	F4DFE413T*B001
TS6.120 119 HP TIER 4B (final) engine, 2WD, and cab.	North America	F4DFE413T*B001
TS6.120 119 HP TIER 4B (final) engine, 4WD, and cab.	North America	F4DFE413T*B001
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TS6.130 130 HP Tier 4B (final) engine, 2WD, and ROPS.	North America	F4DFE413S*B001
TS6.130 130 HP Tier 4B (final) engine, 4WD, and ROPS.	North America	F4DFE413S*B001
TS6.130 130 HP Tier 4B (final) engine, 2WD, and cab.	North America	F4DFE413S*B001
TS6.130 130 HP Tier 4B (final) engine, 4WD, and cab.	North America	F4DFE413S*B001
TS6.140 139 HP TIER 4B (final) engine, 2WD, and ROPS.	North America	F4DFE413R*B001
TS6.140 139 HP TIER 4B (final) engine, 4WD, and ROPS.	North America	F4DFE413R*B001
TS6.140 139 HP TIER 4B (final) engine, 2WD, and cab.	North America	F4DFE413R*B001
TS6.140 139 HP TIER 4B (final) engine, 4WD, and cab.	North America	F4DFE413R*B001

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INTRODUCTION

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INTRODUCTION

Foreword - Important notice regarding equipment servicing

All repair and maintenance work listed in this manual must be carried out only by qualified dealership personnel, strictly complying with the instructions given, and using, whenever possible, the special tools.

Anyone who performs repair and maintenance operations without complying with the procedures provided herein shall be responsible for any subsequent damages.

The manufacturer and all the organizations of its distribution chain, including - without limitation - national, regional, or local dealers, reject any responsibility for damages caused by parts and/or components not approved by the manufacturer, including those used for the servicing or repair of the product manufactured or marketed by the manufacturer. In any case, no warranty is given or attributed on the product manufactured or marketed by the manufacturer in case of damages caused by parts and/or components not approved by the manufacturer.

The manufacturer reserves the right to make improvements in design and changes in specifications at any time without notice and without incurring any obligation to install them on units previously sold. Specifications, descriptions, and illustrative material herein are as accurate as known at time of publication but are subject to change without notice.

In case of questions, refer to your NEW HOLLAND Sales and Service Networks.

Safety rules

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.

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

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

⚠ 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

⚠ General safety rules ⚠

Use caution when operating 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, drugs, or while 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 engine, remove key and relieve the pressure before connecting or disconnecting fluid lines.
- Make sure all components are in good condition and tighten all connections before starting the engine or pressurizing 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 components are in motion.

Make sure all guards and shields are in good condition and properly installed before operating the machine. Never operate the machine with shields removed. Always close access doors or panels before operating 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 engine in enclosed spaces as harmful exhaust gases may build up.

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

Start the engine only from the operator’s seat. If the safety start switch is bypassed, 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 operating the machine.

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

Before leaving the machine:

1. Park machine on a firm level surface.
2. Put all controls in neutral or park lock position.
3. Engage park brake. Use wheel chocks if required.
4. Lower all hydraulic equipment — Implements, header, etc.
5. Turn off engine and remove key.

When, due to exceptional circumstances, you would decide to keep the engine running after leaving the operator's station, then the following precautions must be followed:

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.

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   Shift the transmission into neutral.
4. Apply the parking brake.

⚠ General maintenance safety ⚠

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

Service machine on a firm level surface.

Install guards and shields after servicing 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 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 securely supported.

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

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

Stop the engine, remove key and relieve pressure before disconnecting or connecting fluid lines.

Stop the engine and remove key before disconnecting or connecting electrical connections.

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

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

Engine, transmission, exhaust components, and hydraulic lines may become hot during operation. Take care when servicing such components. Allow surfaces to cool before handling or disconnecting hot components. Wear protective equipment when appropriate.

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

⚠ Wheels and tires ⚠

Make sure tires are correctly inflated. Do not exceed recommended load or pressure. Follow 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 tire completely from 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 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 SMV emblem is visible.

Make sure brake pedal latch is engaged. Brake pedals must be locked together for road travel.

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

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

When transporting equipment or machine on a transport trailer, make sure 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 the machine and/or attachments can pass safely under.

Travel speed should be such that complete control and machine stability is maintained at all times.

Slow down and signal before turning.

Pull over to allow faster traffic to pass.

Follow correct towing procedure for equipment with or without brakes.

⚠ Fire and explosion prevention ⚠

Fuel or oil 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 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 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 fan, etc. More frequent cleaning of your machine may be necessary depending on the operating environment and conditions.

Inspect the electrical system for loose connections or 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.

⚠ California Proposition 65 ⚠

CALIFORNIA
PROPOSITION 65 WARNING

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

Battery post, terminals and related accessories contain lead and lead compounds.

Wash hands after handling

⚠ General battery safety ⚠

Always wear eye protection when working with batteries.

Do not create sparks or have open flame near battery.

Ventilate when charging or using in an enclosed area.

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

When welding on the machine, disconnect both terminals of the battery.

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

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

Follow manufacturer's instructions when storing and handling 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.

⚠ Instructional seat safety ⚠

Passengers are not permitted to ride on the machine.

The instructional seat is to be used only when training a new operator or when a service technician is diagnosing a problem.

When required for the purposes of training or diagnostics, only one person may accompany the operator and that person must be seated in the instructional seat.

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

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

⚠ Operator presence system ⚠

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.

The operator presence system should never be disconnected or bypassed.

If the system is inoperable, the system must be repaired.

⚠ Power Take-Off (PTO) ⚠

Power Take-Off (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.

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.
- For correct hitch geometry, refer to the operator's manual for each implement you connect.

⚠ Reflectors and warning lights ⚠

Flashing amber warning lights must be used when operating on public roads.

(1) – Hazard light switch

Press the hazard signal button on the front console to activate. The switch flashes simultaneously along with the front and rear directional indicators.

(2) – Beacon switch (rotary beacon located on cab roof)

Press the beacon toggle switch to activate. The beacon toggle switch is located on the right-hand pillar on tractors that have a cab.

⚠ Seat belts ⚠

Seat belts must be worn at all times.

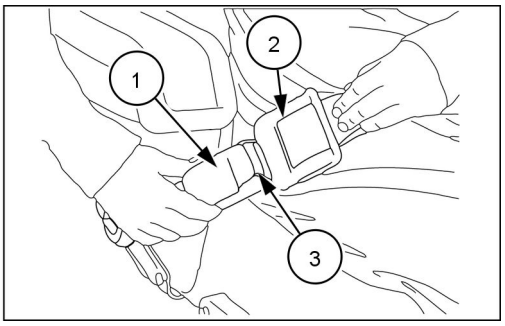
Seat belt inspection and maintenance:

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

To fasten the seat belt, pull the seat belt strap **(1)** across the body and insert it into the buckle **(2)** until you hear the seat belt click into position, indicating the seat belt is fastened.

To release the seat belt, press the button **(3)** on the buckle **(2)** and guide the strap back into the belt retractor.

NOTE: *The operator presence sensor, installed under the seat, is connected to an audible alarm which will sound if the operator exits the seat with the PTO engaged or if the parking brake is not applied.*



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⚠ Operator protective structure ⚠

⚠ DANGER

Crushing hazard!
Do not change the Roll Over Protective Structure (ROPS) in any way. Unauthorized changes such as welding, drilling, or cutting will weaken the ROPS and decrease your protection. Have an authorized dealer replace the ROPS if damage of any kind occurs. DO NOT TRY TO REPAIR THE ROPS.
Failure to comply will result in death or serious injury.

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⚠ DANGER

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 will result in death or serious injury.

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⚠ DANGER

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.

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⚠ DANGER

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 will result in death or serious injury.

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Your machine is equipped with an operator protective structure, such as: Roll Over Protective Structure (ROPS), Falling Object Protective Structure (FOPS), or a cab with ROPS. A ROPS may be a frame, a two-posted, or four-posted structure used for the protection of the operator to minimize the possibility of serious injury. The mounting structure and fasteners forming the mounting connection with the machine are part of the ROPS.

The protective structure is a special safety component of your machine.

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 NEW HOLLAND 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 operations:

- 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.

Seat belts are part of your protective system and must be worn at all times. The operator must be held to the seat inside the frame in order for the protective system to work.

⚠ Air-conditioning system ⚠

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

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.

Service, repair, or recharging must be performed only by a trained service technician.

⚠ 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.

⚠ 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 be taken in the event of a spill or accidental release. MSDS are available from your NEW HOLLAND 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, on manufacturer containers, as well as the information in this manual when servicing 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 NEW HOLLAND 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.

Additional precautions are required for applied chemicals. Obtain complete information from the manufacturer or distributor of the chemicals before using them.

⚠ Utility safety ⚠

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 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 power source occur, the following precautions must be taken:

- Stop the machine movement immediately.
- Apply the park 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 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.

⚠ 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.

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.

⚠ Mounting and dismounting ⚠

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

Do not jump off the machine.

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

Face the machine when mounting and dismounting.

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

Never mount or dismount from a moving machine.

Do not use the steering wheel or other controls or accessories as handholds when entering or exiting the cab or operator's platform.

⚠ Working at heights ⚠

When the normal use and maintenance of the machine requires working at heights:

- Correctly use installed steps, ladders, and railings.
- Never use ladders, steps, or railings while the machine is moving.
- Do not stand on surfaces which are not designated as steps or platforms.

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

⚠ Lifting and overhead loads ⚠

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.

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.

Safety rules - 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.

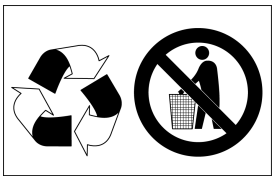
Familiarize yourself with the relative legislation applicable to your country, and make sure that you understand this legislation. Where no legislation exists, obtain information from suppliers of oils, filters, batteries, fuels, anti-freeze, cleaning agents, etc., with regard to the effect of these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

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 substances 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.
- The air-conditioning system contains gases that should not be released into the atmosphere. Consult an air-conditioning specialist or use a special extractor to 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.
- Protect hoses during welding. Penetrating weld splatter may burn a hole or weaken hoses, allowing the loss of oils, coolant, etc.

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.



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

Basic instructions - Shop and assembly

Shimming

For each adjustment operation, select adjusting shims and measure the adjusting shims individually using a micrometer, then add up the recorded values. Do not rely on measuring the entire shimming set, which may be incorrect, or the rated value shown on each shim.

Rotating shaft seals

For correct rotating shaft seal installation, proceed as follows:

1. Before assembly, allow the seal to soak in the oil it will be sealing for at least thirty minutes.
2. Thoroughly clean the shaft and check that the working surface on the shaft is not damaged.
3. Position the sealing lip facing the fluid.

   NOTE: *With hydrodynamic lips, take into consideration the shaft rotation direction and position the grooves so that they will move the fluid towards the inner side of the seal.*
4. Coat the sealing lip with a thin layer of lubricant (use oil rather than grease). Fill the gap between the sealing lip and the dust lip on double lip seals with grease.
5. Insert the seal in its seat and press down using a flat punch or seal installation tool. Do not tap the seal with a hammer or mallet.
6. While you insert the seal, check that the seal is perpendicular to the seat. When the seal settles, make sure that the seal makes contact with the thrust element, if required.
7. To prevent damage to the seal lip on the shaft, position a protective guard during installation operations.

O-ring seals

Lubricate the O-ring seals before you insert them in the seats. This will prevent the O-ring seals from overturning and twisting, which would jeopardize sealing efficiency.

Sealing compounds

Apply a sealing compound on the mating surfaces when specified by the procedure. Before you apply the sealing compound, prepare the surfaces as directed by the product container.

Spare parts

Only use CNH Original Parts or NEW HOLLAND Original Parts.

Only genuine spare parts guarantee the same quality, duration, and safety as original parts, as they are the same parts that are assembled during standard production. Only CNH Original Parts or NEW HOLLAND Original Parts can offer this guarantee.

When ordering spare parts, always provide the following information:

- Machine model (commercial name) and Product Identification Number (PIN)
- Part number of the ordered part, which can be found in the parts catalog

Protecting the electronic and/or electrical systems during charging and welding

To avoid damage to the electronic and/or electrical systems, always observe the following practices:

1. Never make or break any of the charging circuit connections when the engine is running, including the battery connections.
2. Never short any of the charging components to ground.
3. Always disconnect the ground cable from the battery before arc welding on the machine or on any machine attachment.
   - Position the welder ground clamp as close to the welding area as possible.
   - If you weld in close proximity to a computer module, then you should remove the module from the machine.
   - Never allow welding cables to lie on, near, or across any electrical wiring or electronic component while you weld.
4. Always disconnect the negative cable from the battery when charging the battery in the machine with a battery charger.

   NOTICE: *If you must weld on the unit, you must disconnect the battery ground cable from the machine battery. The electronic monitoring system and charging system will be damaged if this is not done.*
5. Remove the battery ground cable. Reconnect the cable when you complete welding.

⚠ 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.
Failure to comply could result in death or serious injury.

W0111A

Special tools

The special tools that NEW HOLLAND suggests and illustrate in this manual have been specifically researched and designed for use with NEW HOLLAND machines. The special tools are essential for reliable repair operations. The special tools are accurately built and rigorously tested to offer efficient and long-lasting operation.

By using these tools, repair personnel will benefit from:

- Operating in optimal technical conditions
- Obtaining the best results
- Saving time and effort
- Working in safe conditions

Basic instructions Hydraulic contamination

Contamination in the hydraulic system is a major cause of the malfunction of hydraulic components. Contamination is any foreign material in the hydraulic oil.

Contamination can enter the hydraulic system in several ways:

- When you drain the oil or disconnect any line
- When you disassemble a component
- From normal wear of the hydraulic components
- From damaged seals or worn seals
- From a damaged component in the hydraulic system

All hydraulic systems operate with some contamination. The design of the components in this hydraulic system permits efficient operation with a small amount of contamination. An increase in this amount of contamination can cause problems in the hydraulic system.

The following list includes some of these problems:

- Cylinder rod seals that leak
- Control valve spools that do not return to neutral
- Movement of control valve spools is difficult
- Hydraulic oil that becomes too hot
- Pump gears, housing, and other parts that wear rapidly
- Relief valves or check valves held open by dirt
- Quick failure of components that have been repaired
- Slow cycle times are slow. The machine does not have enough power.

If your machine has any of these problems, check the hydraulic oil for contamination.

There are two types of contamination: microscopic and visible.

Microscopic contamination occurs when very fine particles of foreign material are suspended in the hydraulic oil. These particles are too small to see or feel. Microscopic contamination can be found by identification of the following problems or by testing in a laboratory.

Examples of problems caused by microscopic contamination:

- Cylinder rod seals that leak
- Control valve spools that do not return to neutral
- The hydraulic system has a high operating temperature

Visible contamination is foreign material that can be found by sight, touch, or odor. Visible contamination can cause a sudden failure of components.

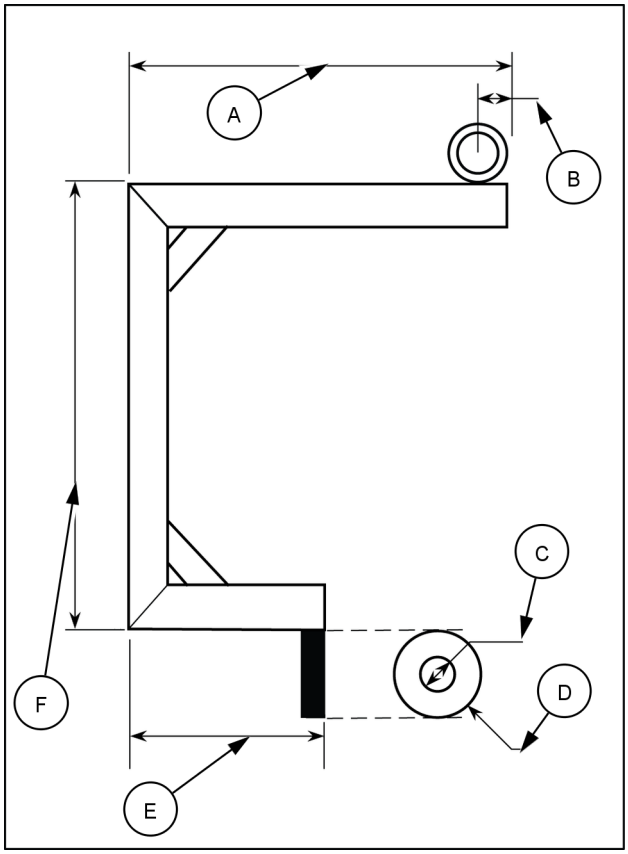
Examples of problems caused by visible contamination:

- Particles of metal or dirt in the oil
- Air in the oil
- Dark or thick oil
- Oil with an odor of burned oil
- Water in the oil

If you find contamination, use a portable filter to clean the hydraulic system.

Special tools – Lifting device for removing and -installing the transmission front cover

A suitable lifting device is required for remove-install the transmission front cover. This device is fabricated locally. See the specifications.



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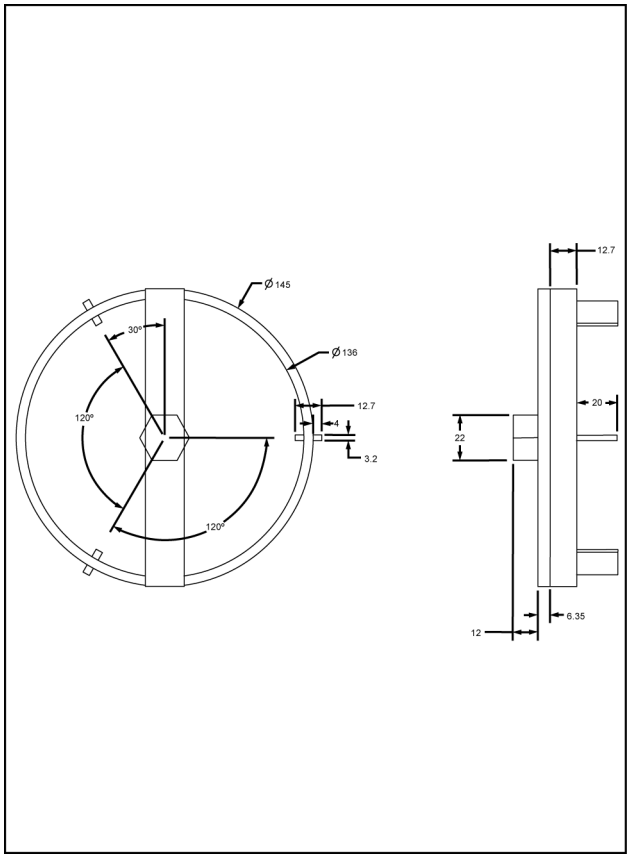
(A) 393 mm (15 in)
(B) 35 mm (1.377949 in)
(C) 36 mm (1.417319 in)
(D) 86 mm (3 in)
(E) 203 mm (8 in)
(F) 406 mm (16 in)

Special tools - Diesel Exhaust Fluid (DEF)/AdBlue® tank level and temperature sensor

A suitable device is required for removal and installation of the **DEF/ADBLUE®** tank level and temperature sensor **B-096**. This device can be fabricated locally. See the specifications below:



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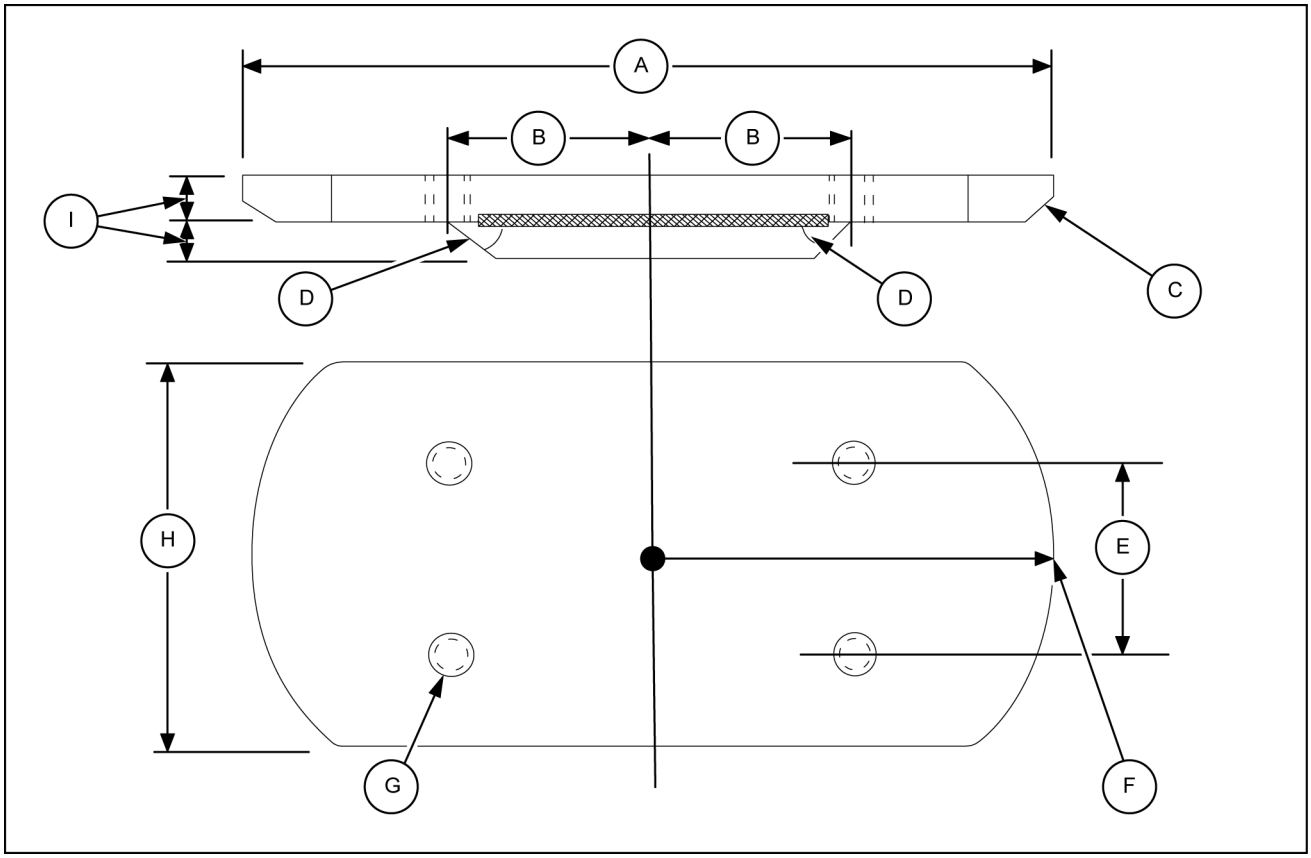
Special tools - Device for assist the removal and installation of the planetary ring gear

A suitable device is required for the removal and installation of the planetary ring gear. This device can be fabricated locally. See the specifications below:



NHIL15TR00720FB 1

(A) 254.0 mm (**10.0 in**)
(B) 76.2 mm (**3.0 in**)
(C) 45 °
(D) 60 °
(E) 63.5 mm (**2.5 in**)
(F) Radius = **127.0 mm** (**5.0 in**)
(G) 4 x **12.7 mm** (**0.5 in**) in B.S.W.
(H) 101.6 mm (**4.0 in**)
(I) 12.7 mm (**0.5 in**)

Special tools - Three-point hitch adjustment tools

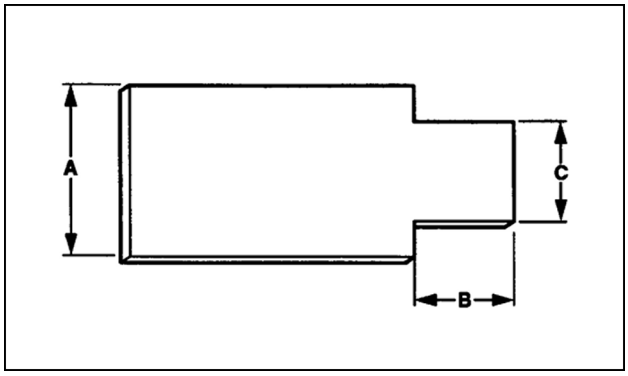
Two suitable devices are required for adjust the hitch control valve. Those devices can be fabricated locally. See the specifications below:

Control valve depth gauge

NOTE: *Previous tool part number FT8527 or FNH04654.*

Use a piece of steel with a thickness of **3.0 mm** (**0.12 in**) and the following dimensions to create the hydraulic power lift control valve depth gauge tool.

- Dimension **(A)** = **20.0 mm** (**0.79 in**)
- Dimension **(B)** = **11.7 mm** (**0.46 in**)
- Dimension **(C)** = **12.0 mm** (**0.47 in**)



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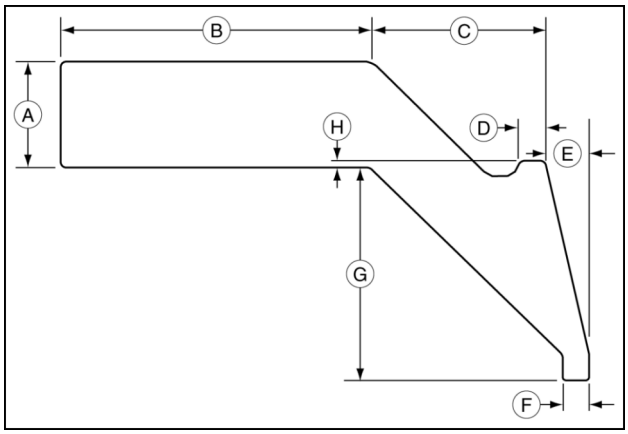
Control linkage rod and roller setting gauge

NOTE: *Previous tool part number FNH00014.*

Use a piece of steel with a thickness of **3.0 mm** (**0.12 in**) and the following dimensions to create the control linkage rod and roller setting gauge tool.

- Dimension **(A)** = **25.0 mm** (**0.98 in**)
- Dimension **(B)** = **72.0 mm** (**2.83 in**)
- Dimension **(C)** = **41.0 mm** (**1.61 in**)
- Dimension **(D)** = **6.0 mm** (**0.24 in**)
- Dimension **(E)** = **10.0 mm** (**0.39 in**)
- Dimension **(F)** = **6.0 mm** (**0.24 in**)
- Dimension **(G)** = **49.5 mm** (**1.95 in**)
- Dimension **(H)** = **0.76 mm** (**0.03 in**)



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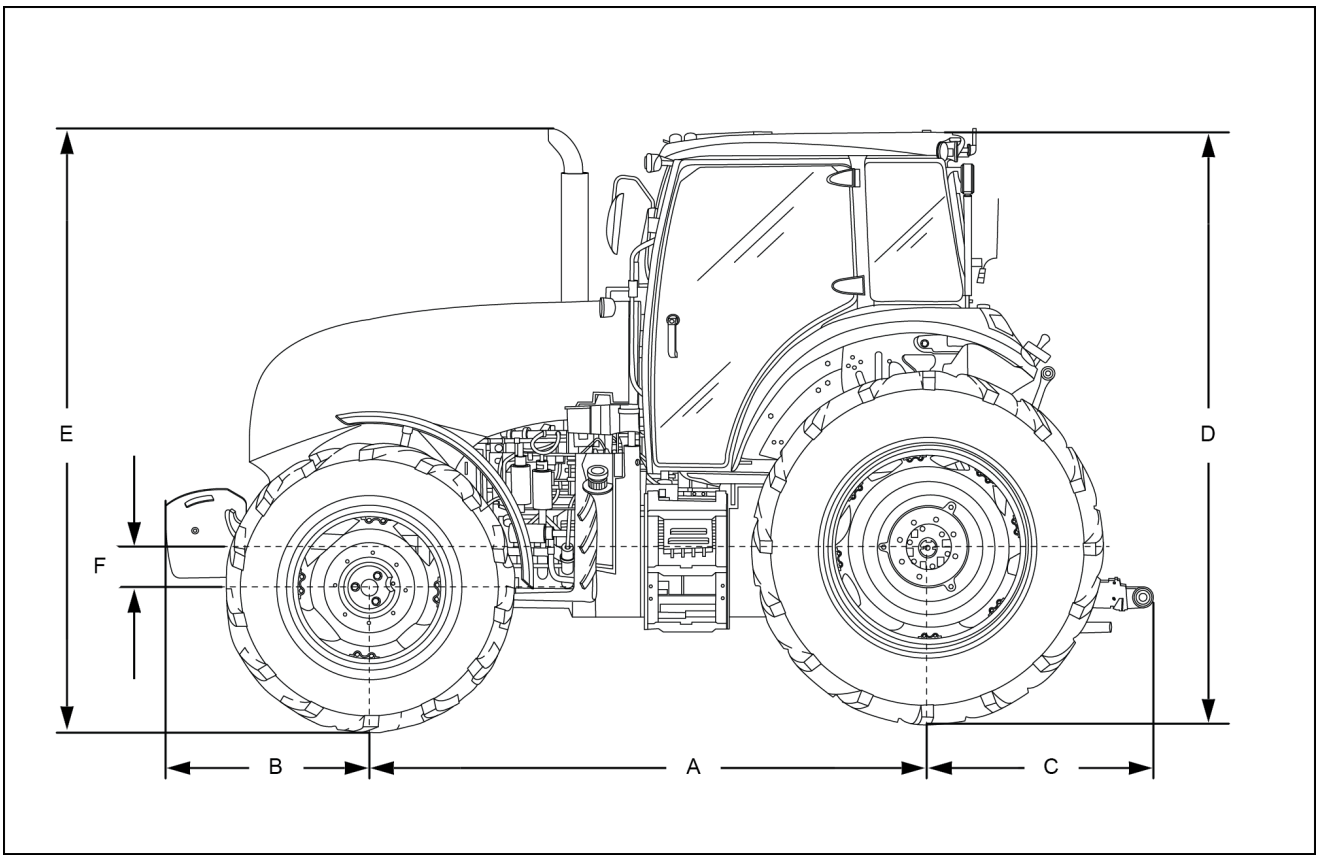
General specification - Length and height



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NOTE: *Acronyms used in this section: Four-Wheel Drive (4WD), Two-Wheel Drive (2WD), Roll Over Protective Structure (ROPS), High Clearance (HC)*

NOTE: *The dimensions in this table are for a 2WD machine with 10.00–16 front tires and 18.4–38 rear tires and a 4WD machine with 14.9–28 front tires and 18.4–38 rear tires.*

	TS6.110 TS6.120	**TS6.130 TS6.140**
(A) Wheelbase		
2WD Standard duty front axle	**2550 mm (100.4 in)**	Not applicable
2WD Heavy duty front axle	**2432 mm (95.7 in)**	**2432 mm (95.7 in)**
4WD	**2520 mm (99.2 in)**	**2640 mm (103.9 in)**
(B) Front overhang		
2WD Standard duty front axle	**1037 mm (40.8 in)**	Not applicable
2WD Heavy duty front axle	**1150 mm (45.3 in)**	**1150 mm (45.3 in)**
4WD	**1070 mm (42.1 in)**	**950 mm (37.4 in)**
(C) Rear overhang	**1100 mm (43.3 in)**	**1100 mm (43.3 in)**
(D) Cab height	**2800 mm (110.2 in)**	**2800 mm (110.2 in)**
(D) ROPS Height	**2980 mm (117.3 in)**	**2980 mm (117.3 in)**
(E) Exhaust height	**2790 mm (109.8 in)**	**2790 mm (109.8 in)**
(F) Axle offset, front to rear		
2WD Standard duty front axle	**340 mm (13.4 in)**	Not applicable
2WD Heavy duty front axle	**425 mm (16.7 in)**	**425 mm (16.7 in)**
4WD	**180 mm (7.1 in)**	**180 mm (7.1 in)**