SERVICE MANUAL

T4.75 PowerStar™
Tier 4B (final)
Tractor

PIN ZDAH00008 and above

Part number 47711469
1st edition English
May 2014

Link Product / Engine

Product	Market Product	Engine
T4.75 Powerstar Less cab, Tier 4B (Final) [ZxAHxxxxx]	North America	F5DFL463A*F017
T4.75 Powerstar Less cab, Tier 4B (Final) [ZxAHxxxxx]	Latin America	F5DFL463A*F017
T4.75 Powerstar With cab, Tier 4B (Final) [ZxAHxxxxx]	North America	F5DFL463A*F017
T4.75 Powerstar With cab, Tier 4B (Final) [ZxAHxxxxx]	Latin America	F5DFL463A*F017

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Advice

IMPORTANT NOTICE

All maintenance and repair work described in this manual must be performed exclusively by NEW HOLLAND service technicians, in strict accordance with the instructions given and using any specific tools necessary.
Anyone performing the operations described herein without strictly following the instructions is personally responsible for any eventual injury or damage to property.

Note to the Owner WARNINGS FOR AIR CONDITIONING SYSTEM REPAIR OPERATIONS

Starting the system at low temperatures can damage the compressor. Only operate the air conditioner when the engine is hot and the temperature inside the cab is at least **20 °C** (**68.00 °F**).
When disconnecting the hoses, close the ends with plastic caps to prevent foreign matter and humidity from getting inside the hoses.
Handle the thermostatic sensor carefully to avoid damage that may prevent efficient system operation.
Always use two spanners to unscrew the hose fittings to avoid twisting the fitting.
Do not use any type of engine oil to lubricate the compressor and the system.
Never leave the compressor oil container open, always make sure that it is tightly closed. If left exposed the oil will absorb humidity from the air and may, subsequently, damage the system.
Do not transfer compressor oil from the original container to another container.
Do not introduce any additives to the compressor oil. Any additional substances could contain elements which are incompatible with the chemical base of the refrigerant and thus alter its characteristics.
Check that the thermostatic sensor is correctly inserted in the fins on the evaporator to ensure efficient system operation.

Safety rules SAFETY REGULATIONS

TO PREVENT ACCIDENTS

Most accidents or injuries that occur in workshops are the result of non--observance of simple and fundamental safety regulations.
For this reason, IN MOST CASES THESE ACCIDENTS CAN BE AVOIDED: by foreseeing possible causes and consequently acting with the necessary caution and care.
Accidents may occur with all types of vehicle, regardless of how well it was designed and built.
A careful and judicious service technician is the best guarantee against accidents.
Precise observance of the most basic safety rule is normally sufficient to avoid many serious accidents.

DANGER: Never carry out any cleaning, lubrication or maintenance operations when the engine is running.

GENERAL

- Carefully follow specified repair and maintenance procedures.
- Do not wear rings, wristwatches, jewellery, unbuttoned or loose articles of clothing such as: ties, torn clothing, scarves, open jackets or shirts with open zips that may remain entangled in moving parts.
  It is advised to wear approved safety clothing, e.g: non--slip footwear, gloves, safety goggles, helmets, etc.
- Do not carry out repair operations with someone sitting in the driver's seat, unless the person is a trained technician who is assisting with the operation in question.
- Operate the vehicle and use the implements exclusively from the driver's seat.
- Do not carry out operations on the vehicle with the engine running, unless specifically indicated.
- Stop the engine and ensure that all pressure is relieved from hydraulic circuits before removing caps, covers, valves, etc.
- All repair and maintenance operations must be carried out using extreme care and attention.
- Service steps and platforms used in a workshop or in the field should be built in compliance with the safety rules in force.
- Disconnect the batteries and label all controls to indicate that the vehicle is being serviced. Block the machine and all equipment which should be raised.
- Do not check or fill fuel tanks, accumulator batteries, nor use starting liquid when smoking or near naked flames, as these fluids are inflammable.
- Brakes are inoperative if manually released for repair or maintenance purposes.
  In such cases, the machine should be kept constantly under control using blocks or similar devices.
- The fuel nozzle should always be in contact with the filling aperture. Maintain this position until filling operations are completed in order to avoid possible sparks caused by the accumulation of static electricity.
- Only use specified towing points for towing the tractor, connect parts carefully.Make sure that all pins and/or locks are secured in position before applying traction.
  Never remain near the towing bars, cables or chains that are operating under load
- Transport vehicles that cannot be driven using a trailer or a low--loading platform trolley, if available.
- When loading or unloading the vehicle from the trailer (or other means of transport), select a flat area capable of sustaining the trailer or truck wheels, firmly secure the tractor to the truck or trailer and lock the wheels in the position.
- Electric heaters, battery--chargers and similar equipment must only be powered by auxiliary power supplies with efficient ground insulation to avoid electrical shock hazards.
- Always use suitable hoisting or lifting devices when raising or moving heavy parts.
- Take extra care if bystanders are present.
- Never pour gasoline or diesel oil into open, wide and low containers.
- Never use gasoline, diesel oil or other inflammable liquids as cleaning agents. Use non-flammable non-toxic proprietary solvents.
- Wear safety goggles with side guards when cleaning parts with compressed air.
- Limit the air pressure to a maximum of **2.1 bar** (**30.5 psi**), according to local regulations.

- Do not run the engine in confined spaces without suitable ventilation.
- Do not smoke, use naked flames, or cause sparks in the area when fuel filling or handling highly inflammable liquids.
- Never use naked flames for lighting when working on the machine or checking for leaks.
- All movements must be carried out carefully when working under, on or near the vehicle and wear protective equipment: helmets, goggles and special footwear.
- When carrying out checks with the engine running, request the assistance of an operator in the driver's seat. The operator must maintain visual contact with the service technician at all times.
- If operating outside the workshop, position the vehicle on a flat surface and lock in position. If working on a slope, lock the vehicle in position and move to a flat area as soon as is safely possible.
- Damaged or bent chains or cables are unreliable. Do not use them for lifting or towing.
  Always use suitable protective gloves when handling chains or cables.
- Chains should always be safely secured. Ensure that fastening device is strong enough to hold the load foreseen. No persons should stop near the fastening point, trailing chains or cables.
- Maintenance and repair operations must be carried out in a CLEAN and DRY area, eliminate any water or oil spillage immediately.
- Do not create piles of oil or grease--soaked rags as they represent a serious fire hazard; store them in a closed metal container.
  Before starting the vehicle or implements, make sure that the driver's seat is locked in position and always check that the area is free of persons or obstacles.
- Empty pockets of all objects that may fall unobserved into the vehicle parts when disassembled.
- In the presence of protruding metal parts, use protective goggles or goggles with side guards, helmets, special footwear and gloves.
- Handle all parts carefully, do not put your hands or fingers between moving parts, wear suitable safety clothing -- safety goggles, gloves and shoes.

WELDING OPERATIONS

- When welding, use protective safety devices: tinted safety goggles, helmets, special overalls, gloves and footwear. All persons present in the area where welding is taking place must wear tinted goggles.
  NEVER LOOK AT THE WELDING ARC IF YOUR EYES ARE NOT SUITABLY PROTECTED.
- Where possible, remove the part or tool that requires arc welding from the tractor.
- Disconnect both battery leads. Isolate the cable ends to avoid contact with each other and the tractor.
- Position the welder ground clamp as near as possible to the area where welding is taking place.
- Remove the electronic control units located on the tractor if welding is to be carried out near these control units.
- Never allow welding cables to lay on, near or across any electrical wiring or electronic component while welding is in progress.
- Metal cables tend to fray with repeated use. Always use suitable protective devices (gloves, goggles, etc.) when handling cables.

START UP

- Never start the engine in confined spaces that are not equipped with adequate ventilation for exhaust gas extraction.
- Never place the head, body, limbs, feet, hands or fingers near fans or rotating belts.

ENGINE

- Always loosen the radiator cap slowly before removing it to allow any remaining pressure in the system to be discharged. Coolant should be topped up only when the engine is stopped or idle if hot.
- Never fill up with fuel when the engine is running, especially if hot, in order to prevent the outbreak of fire as a result of fuel spillage
- Never check or adjust fan belt tension when the engine is running.
  Never adjust the fuel injection pump when the vehicle is moving.

- Never lubricate the vehicle when the engine is running.

ELECTRICAL SYSTEMS

- If it is necessary to use auxiliary batteries, remember that both ends of the cables must be connected as follows: (+) with (+) and (-) with (-).
- Avoid short-circuiting the terminals. GAS RELEASED FROM BATTERIES IS HIGHLY INFLAMMABLE.
- During charging, leave the battery compartment uncovered to improve ventilation.
- Never check the battery charge using ”jumpers” (metal objects placed on the terminals).
- Avoid sparks or flames near the battery zone to prevent explosion hazards.
- Before servicing operations, check for fuel or current leaks. Eliminate any eventual leaks before starting work.
- Never charge batteries in confined spaces. Make sure that there is adequate ventilation in order to prevent accidental explosion hazards as a result of the accumulation of gases released during charging operations.
- Always disconnect the battery before performing any kind of servicing on the electrical system.

HYDRAULIC SYSTEMS

- Some fluid slowly coming out from a very small port can be almost invisible and be strong enough to penetrate the skin. Check for leaks using a piece of cardboard, NEVER USE HANDS.
- If any liquid penetrates skin tissue, call for medical aid immediately
- Serious skin infections may result if medical attention is not given.
- Use the specific tools when checking pressure values on the hydraulic system.

WHEELS AND TYRES

- Check that the tyres are correctly inflated at the pressure specified by the manufacturer.
  Periodically check possible damages to the rims and tyres.
- Stand away from (at the side of) the tire when checking inflation pressure.
- Only check pressure when the vehicle is unloaded and the tires are cold, to avoid incorrect readings as a result of over--pressure.
- Do not re--use parts of recovered wheels as incorrect welding or brazing may heat the material, causing it to weaken and eventually damage or break the wheel.
- Never cut, nor weld a rim with the inflated tyre assembled.
- When removing the wheels, lock both the front and rear vehicle wheels.
- Always position support stands when raising the vehicle, in order to conform to current safety regulations.
- Deflate the tyre before removing any object caught into the tyre tread.
- Never inflate tires using inflammable gases; this could cause an explosion and put operator safety at risk.

REMOVAL AND RE-FITTING

- Lift and handle all heavy parts using suitable lifting equipment and make sure that all slings and hooks are correctly secured.
- Handle all parts carefully during lifting operations, keep an eye on the personnel working near the load to be lifted. Never insert hands or fingers between parts, always wear approved accident prevention clothing (goggles, gloves and work boots).
- Avoid twisting chains or metal cables and always wear safety gloves when handling cables or chains.

Personal safety CAB AIR CONDITIONING SYSTEM

SAFETY REGULATIONS

- The refrigerant must be handled with great care in order to avoid personal injury; always use safety goggles and gloves.
- Liquid refrigerant can cause freezing of the skin and serious damage to the eyes, sometimes resulting in permanent blindness.
- Keep the refrigerant container away from heat sources. Heat will cause an increase in pressure of the refrigerant and could cause the container to explode.
- If refrigerant comes into contact with a naked flame or a hot metal surface it produces a toxic gas, which is dangerous if inhaled.
- In order to avoid accidents follow the simple precautions described below.
- The operation of emptying and charging the system must be carried out in a well-ventilated area, well away from any naked flames.
- During the charging and emptying operations, take the necessary precautions to protect the face and above all the eyes from accidental contact with refrigerant.
- In the event of an accident, proceed as follows:
  - if refrigerant splashes into the eyes, wash immediately with a few drops of mineral oil, then wash them thoroughly with a solution of boric acid and water (one spoonful of acid in 1/4 cup of water) and seek medical assistance immediately.
  - freezing of the skin caused by contact with liquid refrigerant may be treated by gradually warming the injured area with cold water, followed by the application of a greasy cream. Request medical assistance.
  - the air conditioning system contains a mixture of refrigerant and oil under high pressure; under no circumstances loosen pipe fittings/unions or work on the pipes without having first drained the system.
  - do not loosen or remove the compressor oil level check cap with the system pressurized.
  - do not heat the refrigerant container. If the temperature exceeds **50 °C** (**122.00 °F**) the pressure will increase very rapidly.
  - keep the air conditioning system away from heat sources to prevent explosions as a result of an increase in pressure in the system piping.
- When transferring refrigerant from one container to another, only use homologated liquid refrigerant containers equipped with safety valves.
- Never fill liquid refrigerant containers over **80 %** (**80.0 %**) of their maximum capacity.
- Do not modify the settings of safety valves and the control devices.
- Never connect the recovery/recycling and evacuation/charging stations to electrical power outlets with voltages other than those specified; do not leave the stations powered up unless they are to be used immediately.

Basic instructions

BATTERY

Before commencing any work on the vehicle, always disconnect and isolate the negative lead from the battery, unless otherwise indicated for a specific operation (for example: an operation to be carried out with the engine running), on completion of which the negative lead should be disconnected before proceeding with the work.

SHIMMING

At each adjustment, select the shims measuring them one at a time with a micrometer and summing the values obtained: do not measure the complete pack of shims all together or rely on the nominal values indicated on the shims as these could produce incorrect measurements.

ROTATING SHAFT SEALS

For correct rotating shaft seal installation, proceed as follows:

- before assembly, allow the seal to soak in the oil it will be sealing for at least thirty minutes;
- thoroughly clean the shaft and check that the working surface on the shaft is not damaged;
- position the sealing lip facing the fluid; with hydrodynamic lips, take into consideration the shaft rotation direction and position the grooves so that they will deviate the fluid towards the inner side of the seal;
- coat the sealing lip with a thin layer of lubricant (use oil rather than grease) and fill the gap between the sealing lip and the dust lip on double lip seals with grease;
- insert the seal in its seat and press down using a flat punch; do not tap the seal with a hammer or mallet;
- whilst inserting the seal, check that it is perpendicular to the seat; once settled, make sure that it makes contact with the thrust element, if required;
- to prevent damaging the seal lip on the shaft, position a protective guard during installation operations.

O--RING SEALS

Lubricate the O--RING seals before inserting them in the seats, this will prevent them from overturning and twisting, which would jeopardise sealing efficiency.

sealants

Apply one of the following sealing compounds on the mating surfaces marked with an X: **RTV 1473**, **RHODORSIL® CAF 1**or **LOCTITE PLASTIC GASKET**.

Before applying the sealing compound, prepare the surfaces as follows:

- remove any incrustations using a wire brush;
- thoroughly de--grease the surfaces using one of the following cleaning agents: trichlorethylene, petrol or a water and soda solution.

BEARINGS

When installing bearings it is advised to:

- heat the bearings to 80 ÷ 90 °C before fitting on the shafts;
- allow the bearings to cool before installing them.

SPRING PINS

When fitting split socket elastic pins, ensure that the pin notch is positioned in the direction of the force required to stress the pin.
Spiral spring pins do not require special positioning.

NOTICES

Wear limit values indicated for certain parts are recommended, but not binding. The terms “front”, “rear”, “right-hand” and “left-hand” (when referred to different parts) are intended as seen from the driving position with the tractor in the normal direction of movement.

MOVING THE TRACTOR WITH THE BATTERY REMOVED

External power supply cables should only be connected to the respective positive and negative cable terminals, using efficient clamps that guarantee adequate and secure contact. Disconnect all services (lights, windshield wipers, etc.) before starting the vehicle. If the vehicle electrical system requires checking, carry out operations with the power supply connected; Once checking is completed, disconnect all services and switch off the power supply before disconnecting the cables.

Special tools NOTES FOR EQUIPMENT

The tools that NEW HOLLAND propose and illustrate in this manual are:

- specifically researched and designed for use with NEW HOLLAND vehicles;
- necessary to make reliable repair;
- accurately built and strictly tested to offer efficient and long--lasting working means.

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.

Consumables

Refueling

Component to be filled or topped up	Quantity	Recommended NEW HOLLAND products	NEW HOLLAND specifications	International specifications
Cooling system: - without cab: - with cab	**14 l** **16 l**	Water and **NEW HOLLAND AMBRA AGRIFLU** fluid **50 %** + **50 %**	**MS1710**	-
Windscreen wash reservoir	**2 l**	Water and fluid	-	-
Fuel tank	**90 l**	Decanted and filtered diesel fuel	-	-
Engine oil sump	**8.5 l**	**NEW HOLLAND AMBRA MASTERGOLD™ HSP ENGINE OIL**	**NH330H** (**SAE 15W40**) **NH324H** (**SAE 10W - 30**)	**API CI4 /CH-4** **ACEA E7/E5**
Brake circuit control	**0.7 l**	**NEW HOLLAND AMBRA BRAKE LHM** oil	-	**ISO 7308**
Front axle: - axle housing - final reduction gears (each)	**4.5 l** **1.0 l**	**NEW HOLLAND AMBRA MULTI G™ HYDRAULIC TRANSMISSION OIL** oil	**NH410B**	**API GL-4** **ISO 32/46** **SAE 10W30**
Rear transmission (crown wheel and pinion, final reduction gears and brakes), gearbox, hydraulic lift, PTO and hydraulic steering: - with mechanical transmissions (*) - with hydraulic transmissions (*)	**36.0 L** (**9.5 US gal**) **39.0 L** (**10.3 US gal**)	**NEW HOLLAND AMBRA MULTI G™ HYDRAULIC TRANSMISSION OIL** oil	**NH410B**	**API GL-4** **ISO 32/46** **SAE 10W30**
Pressure grease fittings	-	**NEW HOLLAND AMBRA GR-9 MULTI-PURPOSE GREASE**	**NH710A**	**NLGI 2**
Air-conditioning system: - refrigerant - oil	**1.3 l** **0.185 l**	-	-	**R-134a** **SP10**

(*) :
– **38.5 L** (**10.2 US gal**) for mechanical transmissions with front loader.
– **41.5 L** (**11.0 US gal**) for hydraulic transmissions with front loader.

Part identification

Use solely genuine parts, which guarantee the same quality, duration and safety as the original parts as they are identical to the ones fitted during production.
Only genuine parts can offer this guarantee.

When ordering spare parts, always provide the following information:

- tractor model (commercial name) and frame number;
- engine type and number;
- part number of the ordered part, which can be found in the “Microfiches” or the “Spare Parts Catalogue”, used for order processing.

SERVICE MANUAL

Engine

T4.75 Powerstar Less cab, Tier 4B (Final) [ZxAHxxxxx]
T4.75 Powerstar With cab, Tier 4B (Final) [ZxAHxxxxx]

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Engine and crankcase - 001

T4.75 Powerstar Less cab, Tier 4B (Final) [ZxAHxxxxx]
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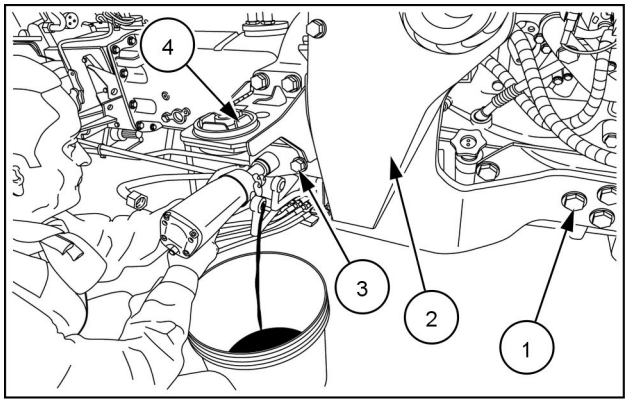
SERVICE

Engine - Remove

NOTE: *For models with front-end loaders only, perform the following points before carrying out the instructions below:*

– Remove the cab including the platform (see **Cab - Remove (90.150)**) or just the platform (see **Operator platform less cab - Remove (90.110)**)
– Remove the mid mount valves (see **Mid-mount remote control valve - Remove (35.204)**)

– Loosen the retaining bolts **(1)** and **(3)**. Remove the cab support or platform **(4)**. Remove the front-end loader support **(2)**.



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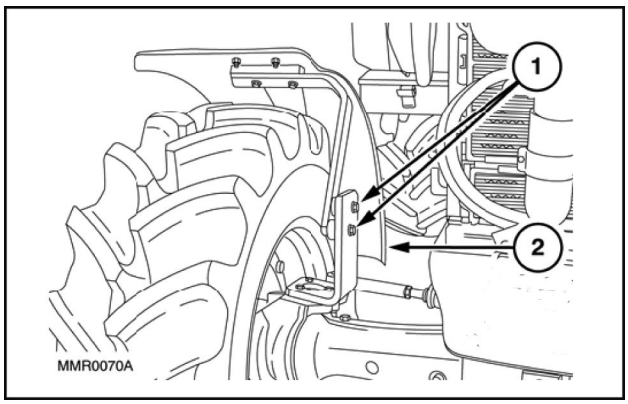
NOTE: *The following operations are valid for all versions.*

1. Remove the hood, as described in **Hood - Remove (90.100)** .
2. Remove the battery, as described in **Battery - Remove (55.302)** .
3. Remove the fuel tank, as described in **Fuel tank - Remove (10.216)** .
4. Loosen the retaining bolts **(1)**. Remove the front wheel fenders **(2)**, if any, from both sides.



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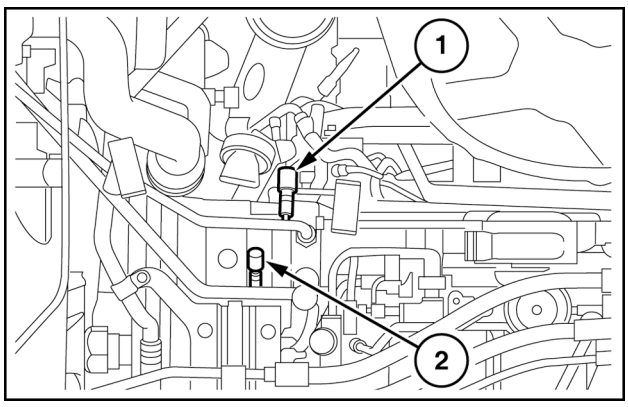
5. Recover the refrigerant from the system via the fittings **(1)** and **(2)**, using the special tool **380000315**.
   Detach the two lines by disconnecting any support straps.



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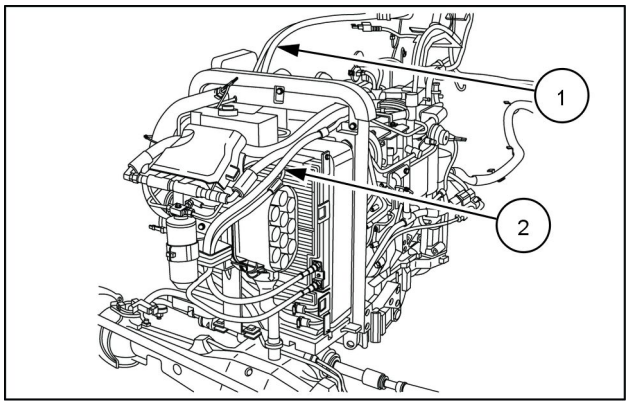
6. Disconnect and remove the lines from the cab air conditioning and heating (if any) **(1)** and **(2)**.



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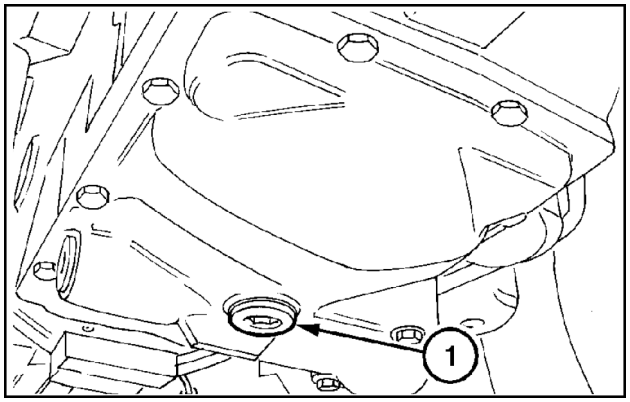
7. Place a suitable container under the drain plug **(1)** for the gearbox-transmission oil. Loosen the plug. Drain the oil.



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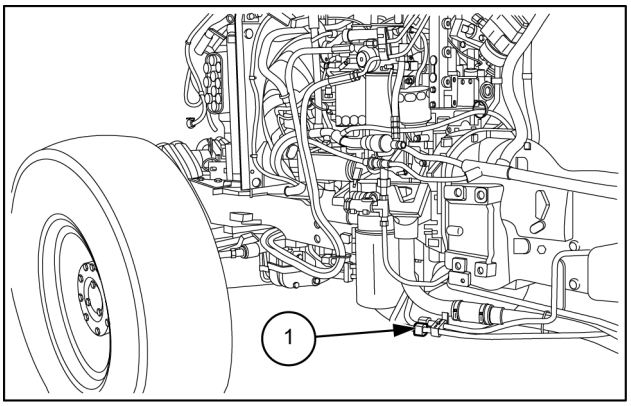
8. Detach the supply and return pipes for the transmission cooling oil at the connection point **(1)**. Release the pipes from their anchorage on the engine block.



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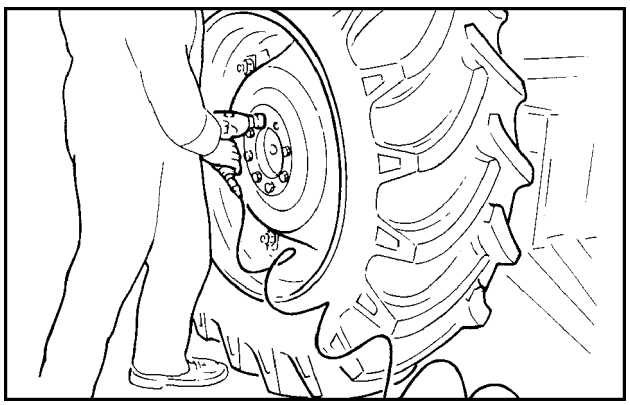
9. Raise the rear of the tractor with a hydraulic jack. Place a mechanical jack stand under the reduction gear case. Use a pneumatic gun to remove the retaining nuts of the left-hand rear wheel. Then remove the wheel.



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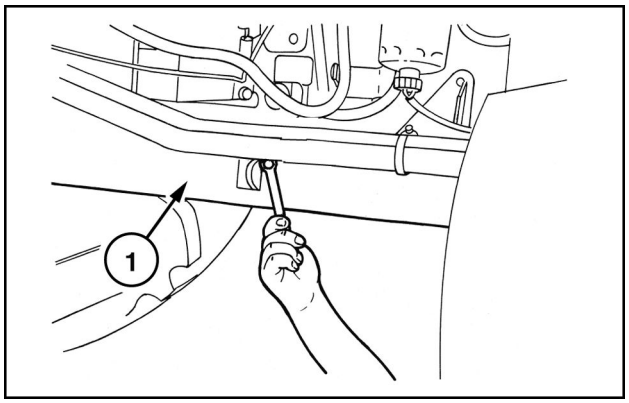
10. Remove the front, central, and rear retaining bolts on the guard of the front-wheel drive control shaft. Then remove the guard **(1)**.



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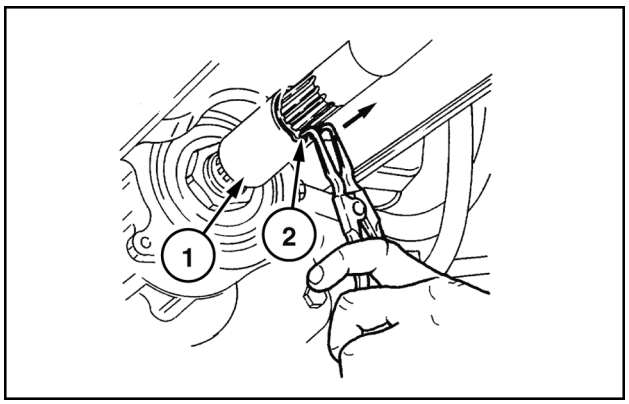
11. Remove the snap ring **(2)** and move the front sleeve **(1)** in the direction indicated by the arrow in order to release it from the groove on the front axle.



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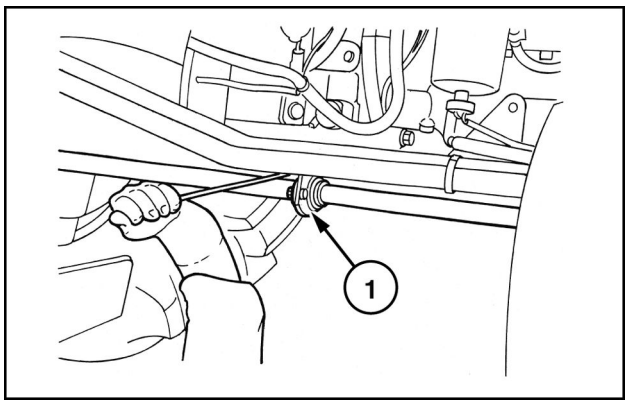
12. Remove the bolts that secure the central support **(1)** of the drive shaft. Remove the shaft complete with the support. Also remove the shim that adjusts the clearance of the shaft on the back.



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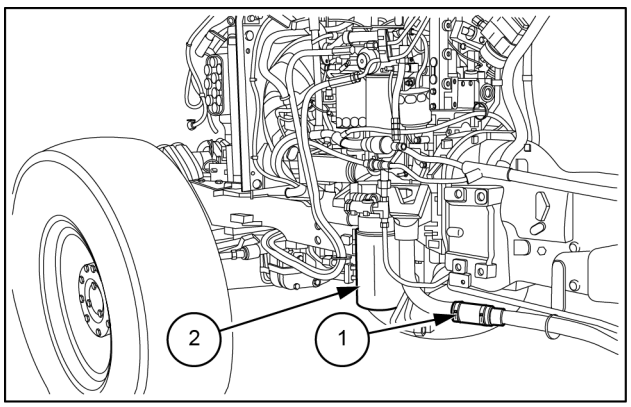
13. Loosen the straps. Detach the suction tube **(1)** to the oil filter from the transmission **(2)**.



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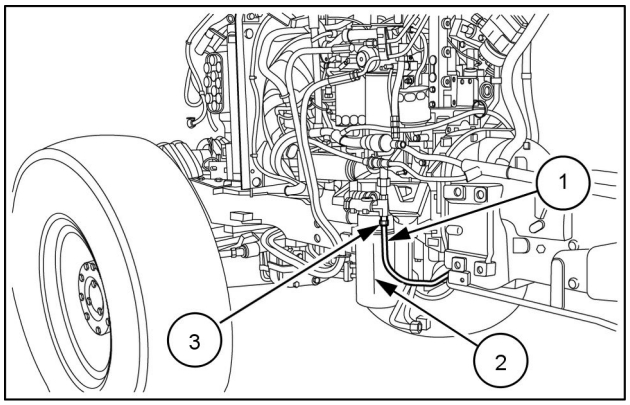
14. For machines with a hydraulic lift and mid mount valves, disconnect the oil supply tube to the distributor of the lift and of the mid mount valves **(1)**, if any, at the connection point **(3)**.
    Remove the transmission oil filter **(2)**.



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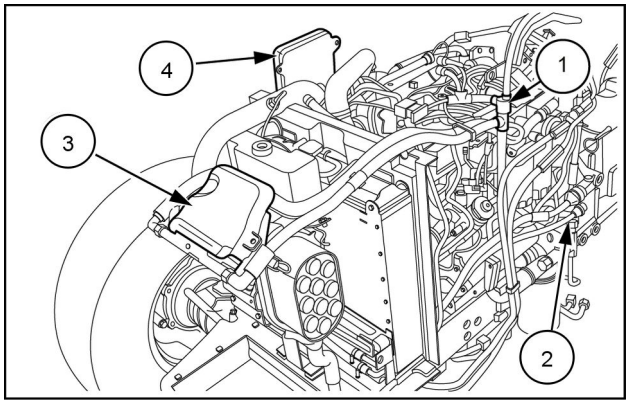
15. Disconnect all of the electrical connections that prevent the detachment of the engine from the gear-box-transmission case, such as main connections **(1)**, main cab connection and power **(2)**, engine control unit connections **(3)**, fuse compartment **(4)**, sensors, and extensions according to the tractor model.



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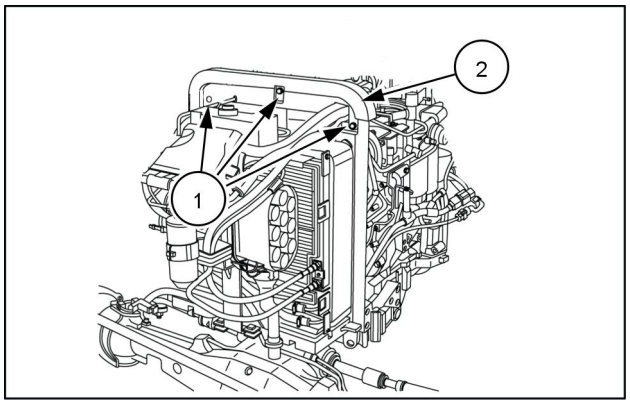
16. Loosen the retaining bolts **(1)**. Remove the top radiator guard **(2)**.
    Remove all of the remaining free wire harnesses.



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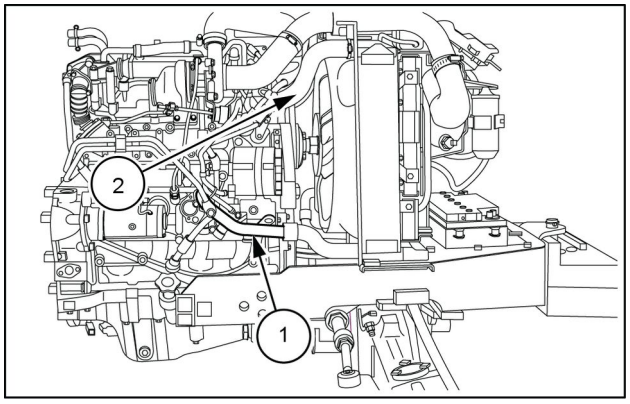
17. Loosen the strap on the inlet of the tubing **(1)** that supplies water to the radiator. Disconnect the tube. Drain and recharge the engine coolant.
18. Loosen the retain strap. Disconnect the tube **(2)** that returns the coolant to the engine.



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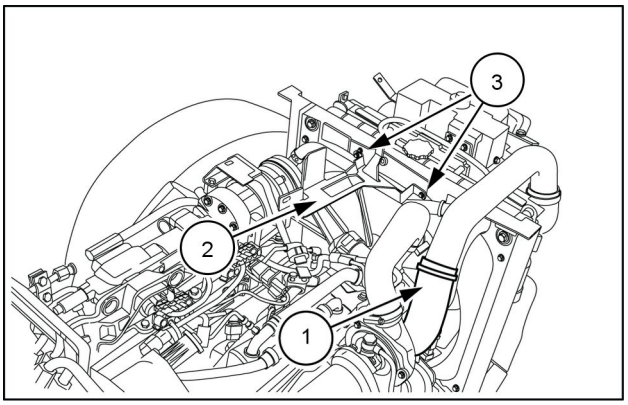
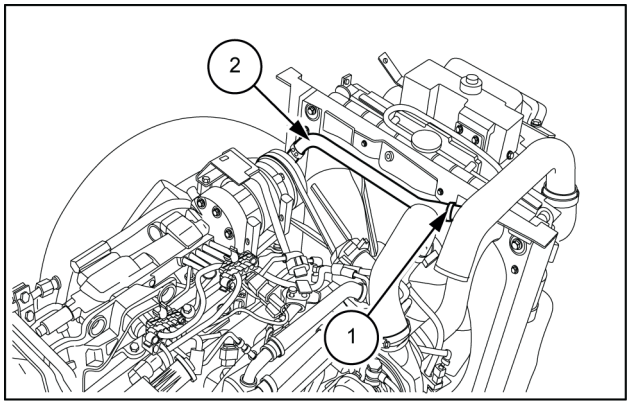
19. Loosen the strap. Disconnect the tube **(1)** that goes from the air cleaner to the turbine.
Then remove the hood support **(2)** by removing the two bolts **(3)**.



MOIL13TR02890AB 16

20. Loosen the strap **(1)**. Disconnect the tube **(2)** that connects the air cleaner to the injection pump.



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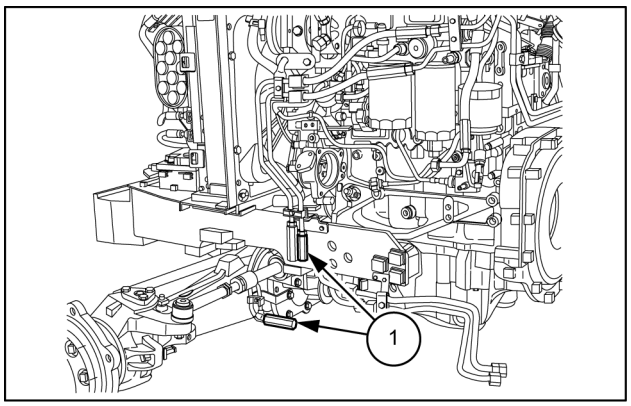
21. Disconnect the hydraulic steering lines **(1)**. Release the lines from the front axle support.



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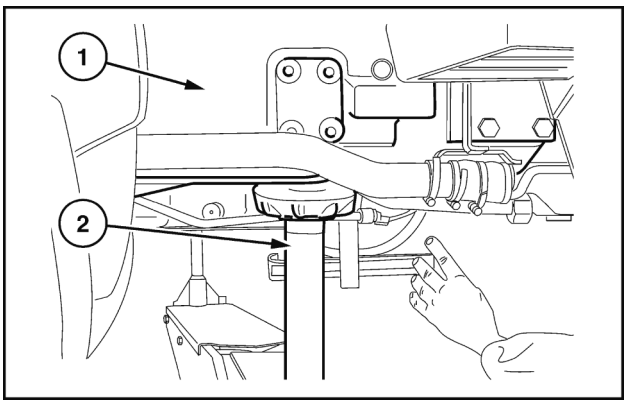
22. Hook the rear of the engine to a hoist using chains or ropes for lifting and eyebolts.
Position a fixed jack stand **(2)** under the clutch case **(1)** near the engine attachment flanging. Apply the hand brake.



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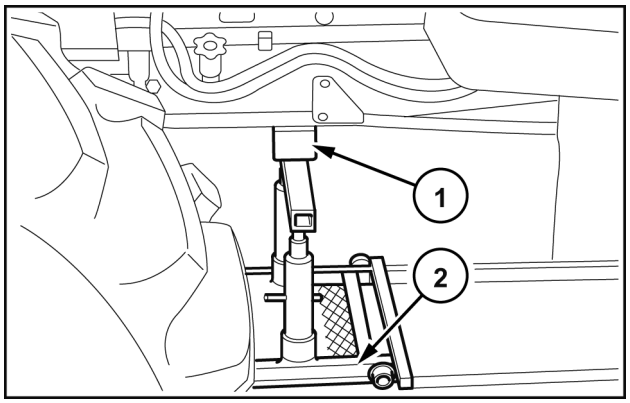
23. Position the movable tractor splitting tool **380000405 (2)** with the mounting bracket and adapter plate under the engine. Place a block of wood **(1)** at the points of contact between the tool and the engine.
Wedge the axle to prevent swinging.



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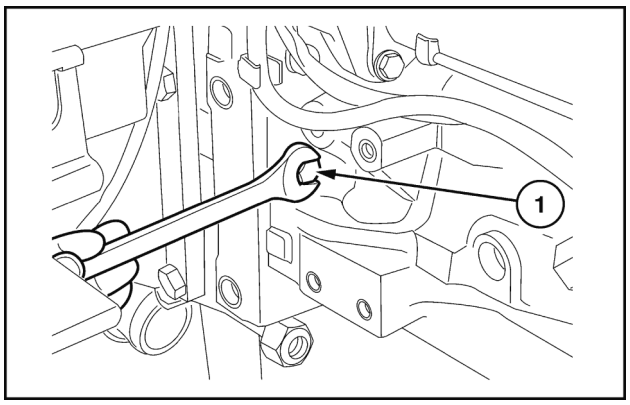
24. Remove the retaining bolts **(1)** between the engine and the transmission.



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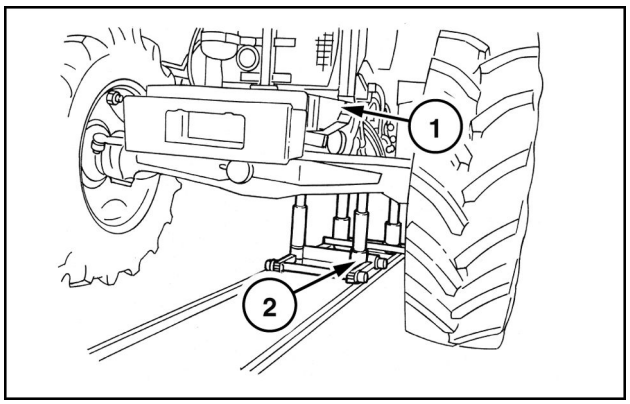
25. Separate the engine from the transmission with the tool **380000405 (2)** .



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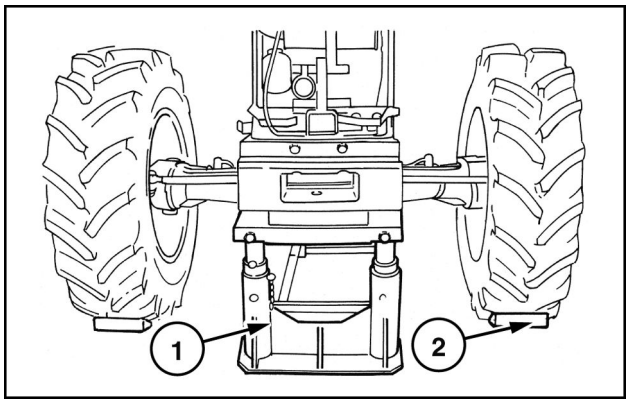
26. Insert the fixed jack stand **(1)** under the ballast support. Chock the front wheels with wooden blocks **(2)**.



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