

SERVICE MANUAL

T3.60F / T3.70F / T3.80F

Tractor

Part number 51553302
1st edition English
November 2018





SERVICE MANUAL

T3.60F

T3.70F

T3.80F

Link Product / Engine

Product	Market Product	Engine
T3.60F	North America	8035.25A IIIB
T3.70F	North America	8035.25B IIIB
T3.80F	North America	8035.25C IIIB

Contents

INTRODUCTION

Engine.....	10
[10.001] Engine and crankcase	10.1
Clutch	18
[18.110] Clutch and components	18.1
Transmission.....	21
[21.114] Mechanical transmission	21.1
[21.130] Mechanical transmission external controls.....	21.2
[21.112] Power shuttle transmission.....	21.3
[21.120] Gearbox	21.4
[21.160] Creeper	21.5
Four-Wheel Drive (4WD) system	23
[23.101] Mechanical control	23.1
[23.202] Electro-hydraulic control	23.2
[23.314] Drive shaft.....	23.3
Front axle system	25
[25.100] Powered front axle	25.1
[25.102] Front bevel gear set and differential	25.2
[25.108] Final drive hub, steering knuckles, and shafts	25.3
Rear axle system.....	27
[27.100] Powered rear axle.....	27.1
[27.106] Rear bevel gear set and differential.....	27.2
[27.120] Planetary and final drives	27.3
Hydrostatic drive.....	29
[29.300] Rear hydrostatic transmission.....	29.1
Power Take-Off (PTO)	31

[31.101] Rear mechanical control	31.1
[31.225] Clutches	31.2
Brakes and controls	33
[33.202] Hydraulic service brakes	33.1
[33.110] Parking brake or parking lock	33.2
[33.220] Trailer brake hydraulic control.....	33.3
Hydraulic systems.....	35
[35.525] Auxiliary hydraulic valves and lines	35.1
[35.100] Main lift system.....	35.2
[35.162] Front hitch cylinders and lines	35.3
Steering.....	41
[41.101] Steering control	41.1
[41.216] Cylinders	41.2
Wheels	44
[44.511] Front wheels.....	44.1
Electrical systems	55
[55.000] Electrical system	55.1
[55.100] Harnesses and connectors.....	55.2
[55.201] Engine starting system	55.3
[55.301] Alternator.....	55.4
[55.302] Battery.....	55.5
[55.013] Engine oil system	55.6
[55.512] Cab controls.....	55.7
[55.408] Warning indicators, alarms, and instruments	55.8
[55.DTC] FAULT CODES.....	55.9
Platform, cab, bodywork, and decals	90
[90.110] Operator platform less cab	90.1



INTRODUCTION

Contents

INTRODUCTION

Safety rules	3
Basic instructions	7

Safety rules

Pay attention to this symbol

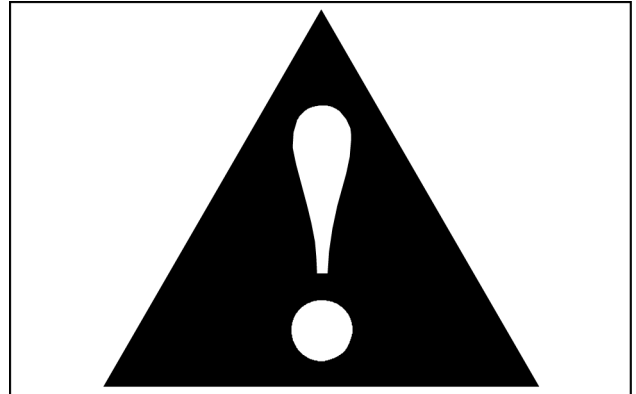
This warning symbol points out important messages concerning your safety.

Carefully read the following safety regulations and observe advised precautions in order to avoid potential hazards and safeguard your health and safety.

In this manual the symbol is accompanied by the following key-words:

WARNING: Warnings concerning unsuitable repair operations that may jeopardise the safety of Repair personnel.

DANGER: Specific warnings concerning potential hazards for operator safety or for other persons directly or indirectly involved.



ANIL15TR0707AA 1

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.

Safety rules

General guidelines:

- Carefully follow specified repair and maintenance procedures.
- Do not wear rings, wristwatches, jewels, unbuttoned or flapping clothing such as ties, torn clothes, scarves, open jackets or shirts with open zips which could get caught on moving parts.
Use approved safety clothing such as anti-slipping 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.
- Do not operate the vehicle or use any of the implements from different positions, other than 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 when manually released for repair or maintenance purposes. Use blocks or similar devices to control the machine in these conditions.

- The fuel nozzle should always be in contact with the filling aperture: Maintain this contact until the fuel stops flowing into the tank to avoid possible sparks due to static electricity buildup.
- Only use specified towing points for towing the vehicle. 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 vehicle to the truck or trailer and lock the wheels in the position used by the carrier.
- 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 petrol or diesel oil into open, wide or low containers.
- Never use gasoline, diesel oil or other inflammable liquids as cleaning agents. Use non-inflammable, non-toxic commercially available solvents.
- Wear safety goggles with side guards when cleaning parts with compressed air.
- Limit the air pressure to a maximum of **2.1 bar**, 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.
- All movements must be carried out carefully when working under, on or near the vehicle. Wear suitable safety clothing, i.e., hard hat, safety goggles and special shoes.
- 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. Move to a flat area as soon as is safely possible.
- 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.
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. Make sure that the hitch-up point is capable of sustaining the load in question. Keep the area near the hitch-up point, chains or cables free of all bystanders.
- 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. Always place them into a metal container.
Before starting the tractor or its attachments, check, adjust and block the operator's seat. Also check that there are no persons within the vehicle or implement range of action.
- Empty pockets of all objects that may fall unobserved into the vehicle parts.
- In the presence of protruding metal parts, use protective goggles or goggles with side guards, helmets, special footwear and gloves.
- 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 DIRECTLY AT THE WELDING ARC WITHOUT SUITABLE EYE PROTECTION.
- Metal cables tend to fray with repeated use. Always use suitable protective devices (gloves, goggles, etc.) when handling cables.
- Handle all parts with great care. Do not put your hands or fingers between moving parts. Always wear suitable safety clothing-safety goggles, gloves and shoes.

Starting

- Never run 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. Filling up with coolant should only be carried out with the engine stopped or idling (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. Do no smoke to prevent explosion hazards.
- Before servicing operations, check for fuel or current leaks. Eliminate any eventual leaks before proceeding with 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 batteries before performing any kind of servicing on the electrical system.

Hydraulic systems

- A liquid leaking from a tiny hole may be almost invisible but, at the same time, be powerful enough to penetrate the skin. Therefore, use a piece of cardboard or wood for this purpose. **NEVER DO IT WITH YOUR HANDS:** If any liquid penetrates skin tissue, call for medical aid immediately. Failure to treat this condition with correct medical procedure may result in serious infection or dermatosis.
- In order to check the pressure in the system use suitable instruments.

Wheels and tyres

- Make sure 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 tyre when checking inflation pressure.
- Only check pressure when the vehicle is unloaded and the tyres are cold, to avoid incorrect readings as a result of over-pressure.
Do not reuse parts of recovered wheels as improper welding, brazing or heating may weaken the wheel and make it fail.
- Never cut or weld a rim mounted with an inflated tyre.
- To remove the wheels, lock both the front and rear vehicle wheels. After having raised the vehicle, position supports underneath, according to regulations in force.
- Deflate the tyre before removing any object caught in the tyre tread.
- Never inflate tyres using inflammable gases, as this may result in explosions and injury to by standards.

Removal and re-fitting

- Lift and handle all heavy parts using suitable hoisting equipment. Make sure that parts are sustained by appropriate hooks and slings. Use the hoisting eyebolts for lifting operations. Extra care should be taken if persons are present near the load to be lifted.
- Handle all parts with carefully. Do not put your hands or fingers between parts. Wear suitable safety clothing, i.e. safety goggles, gloves and footwear.
- Avoid twisting chains or metal cables. Always wear safety gloves when handling cables or chains.

Basic instructions

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.

Battery

Before carrying out any kind of service operation disconnect and isolate the battery negative lead, unless otherwise requested for specific operations (e.g.: operations requiring the engine to be running), after which it is necessary to disconnect the above mentioned lead to complete the work.

Shimming

For each adjustment operation, select adjusting shims and measure 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 indicated for each shim.

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.
- Smear 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.

Sealing compounds

Apply one of the following sealing compounds on the mating surfaces marked with an X: **LOCTITE® 518™** or **LOCTITE® 5205** or **SUPERBOND 559** or **BETALOK A272M**.

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

- Remove any incrustations using a wire brush.
- Thoroughly decrease the surfaces using one of the following cleaning agent: trichlorethylene, petrol or water and soda solution.

Bearings

When installing bearings it is advised to:

- Heat the bearings to **80 – 90 °C (176 – 194 °F)** before fitting on the shafts.
- Allow the bearings to cool before installing them from the outside.

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.

Spare parts

Use genuine parts only.

Only genuine spare parts guarantee the same quality, duration and safety as they are the same parts that are assembled 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 on the "Spare Parts Catalogue", which is the base for order processing.

Notes for equipment

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

- Specifically researched and designed for use with NEW HOLLAND vehicles.
- Necessary to make a 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.
- Save time and effort.
- Working in safe conditions.

Important notes

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 tractor 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.

CONSUMABLES INDEX

Consumable	Reference	PAGE
Loctite® 518™	Basic instructions	7
Loctite® 5205	Basic instructions	7



SERVICE MANUAL

Engine

T3.60F

T3.70F

T3.80F

Contents

Engine - 10

[10.001] Engine and crankcase	10.1
-------------------------------------	------

CONSUMABLES INDEX

Consumable	Reference	PAGE
Loctite® 518™	Engine and crankcase - Install	10.1 / 26



Engine - 10

Engine and crankcase - 001

T3.60F
T3.70F
T3.80F

Contents

Engine - 10

Engine and crankcase - 001

SERVICE

Engine and crankcase

Disassemble	4
Install	23

DIAGNOSTIC

Engine

Troubleshooting	32
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CONSUMABLES INDEX

Consumable	Reference	PAGE
Loctite® 518™	Engine and crankcase - Install	10.1 / 26

Engine and crankcase - Disassemble

ENGINE – Removal

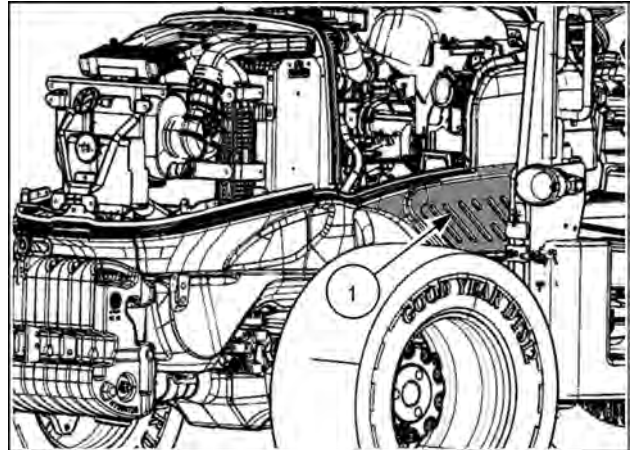
ATTENTION: Use appropriate equipment to hold and lift heavy parts.

Make sure that the body and parts are safely supported safely by ropes and hooks. Make sure that no one is close when you lift heavy loads.

ATTENTION: Use appropriate tools to align holes on parts. NEVER USE YOUR FINGERS OR HANDS

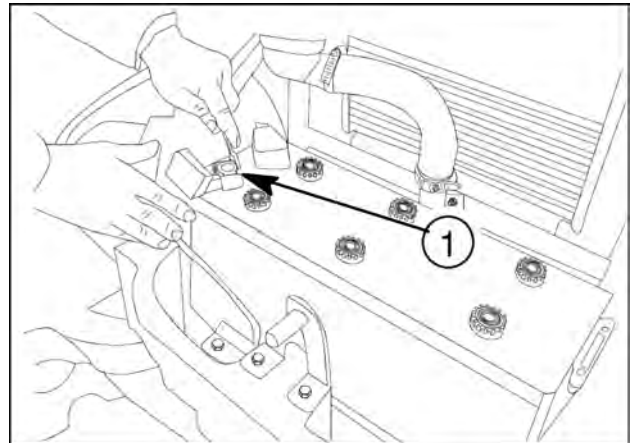
Follow these steps.

1. To access the engine, remove the protective covers (1) on either side.
Remove the cover retaining bolts and remove the side covers.



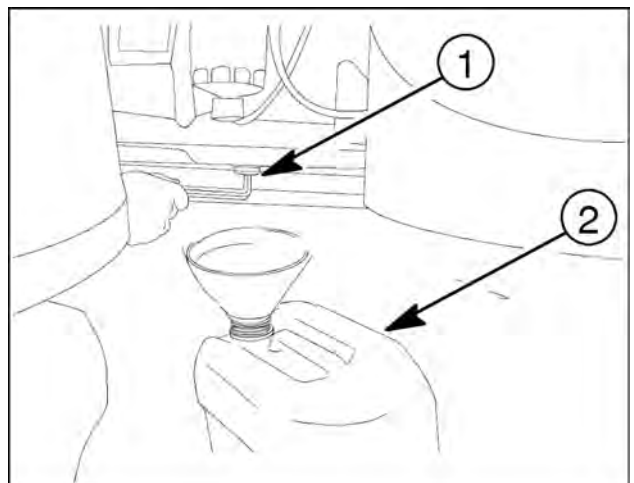
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2. Disconnect the battery terminals (1).



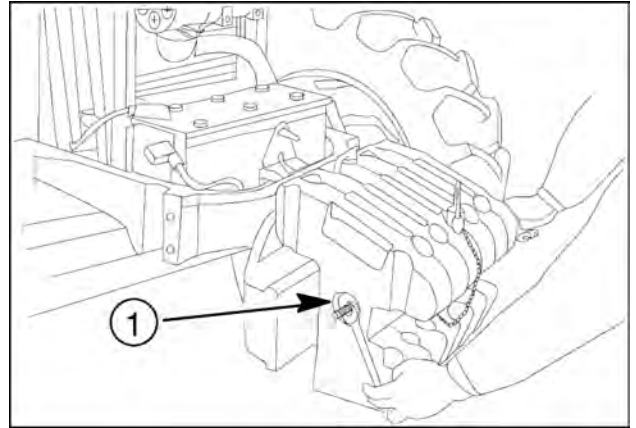
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3. Apply the handbrake. Remove the engine oil drain plug (1). Empty the engine oil into a suitable container (2).
Remove the transmission oil plug and drain the oil into a suitable container.



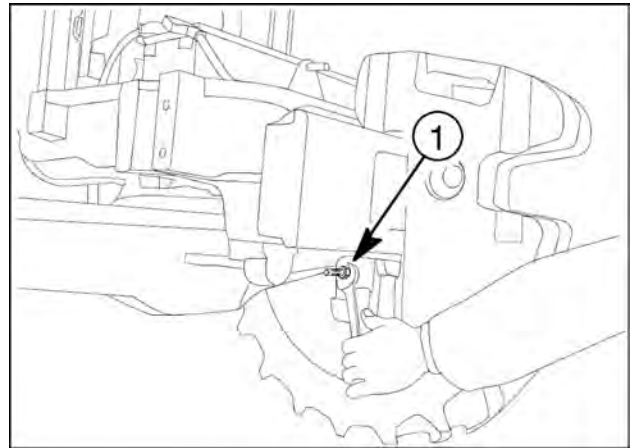
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4. Remove the front weight connection rod **(1)**.



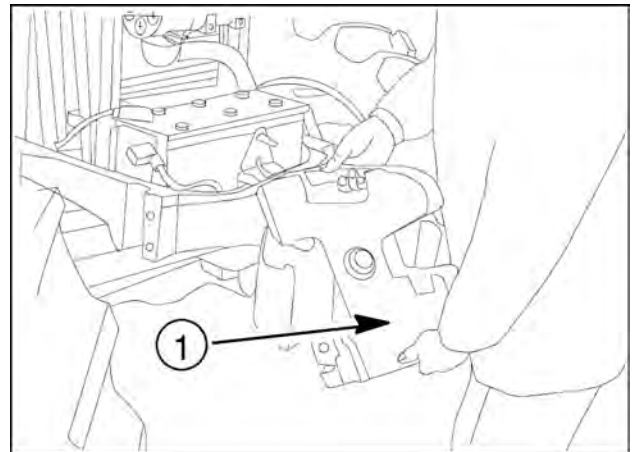
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5. Remove the front weight lower connection rod **(1)**.



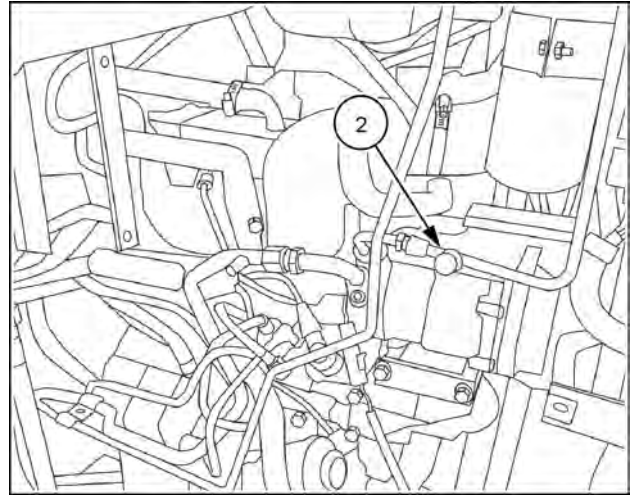
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6. Remove the front weights **(1)**.



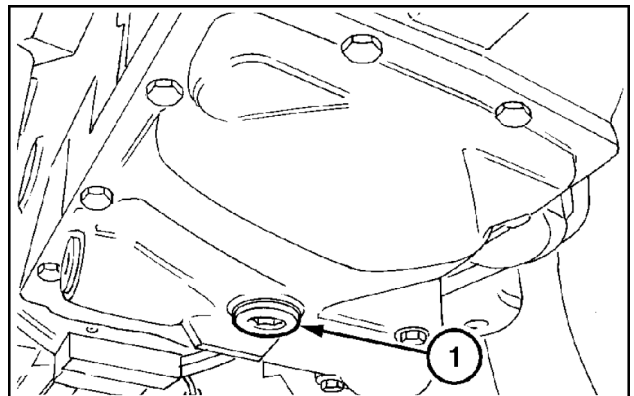
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7. **(1)** Use the specific tool to discharge the refrigerant from the system via the greasers and **(2)**. Remove the bracket strips and separate the two lines. 380000315



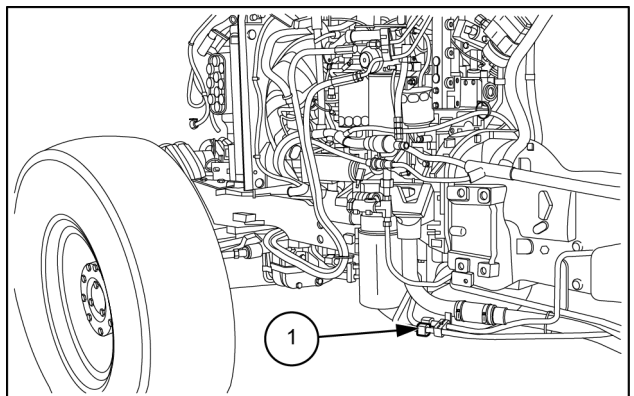
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8. **(1)** Place a suitable container under the drain plug for the gearbox transmission oil **(1)**. Loosen the plug. Drain the oil.



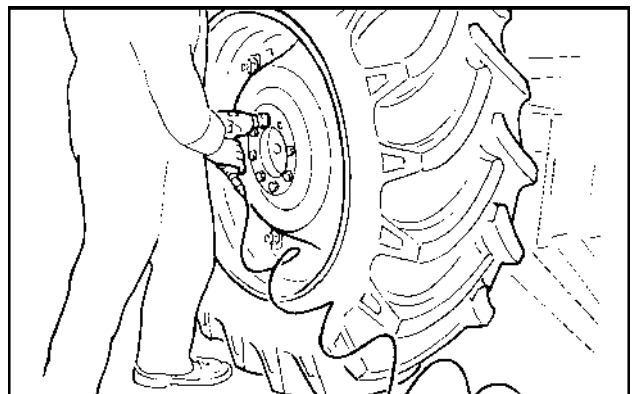
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9. Separate the supply and return pipes for the **(1)** transmission cooling oil at the connection point. Disconnect the hoses from the supports on the engine block.



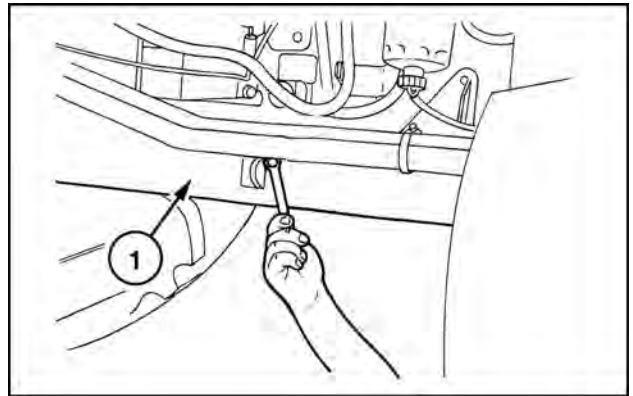
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10. Lift the rear of the tractor with a hydraulic jack. Place a mechanical jack under the crawl speed gear housing. Use an air gun to remove the retaining nuts on the left rear wheel. Then remove the wheel.



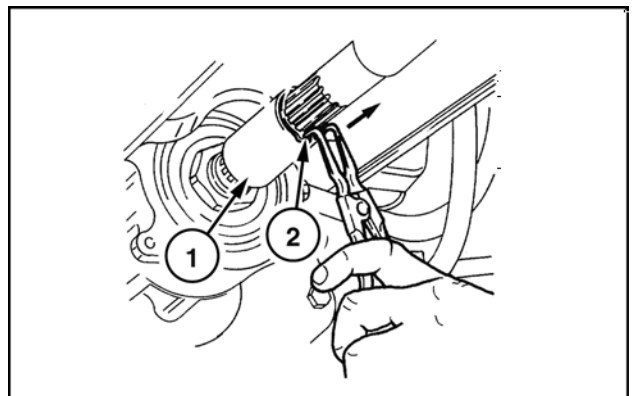
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11. Remove the front center and rear retaining bolts on the front wheel drive control shaft housing. Then remove the guard. **(1)**.



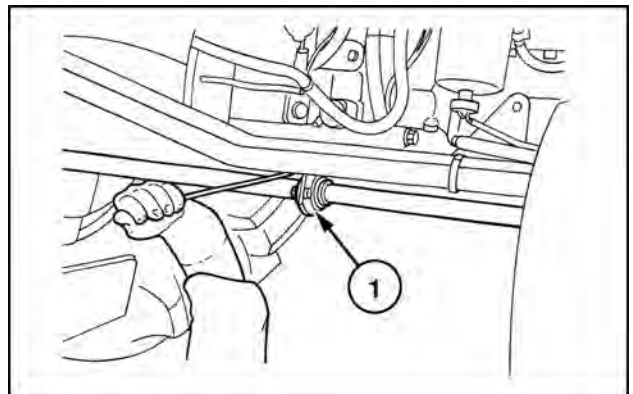
WLAPL4S10C112AA 11

12. Remove the retaining ring **(2)**. Move the front screen in the direction of the arrow **(1)** to remove the screen from the grooves on the front axle.



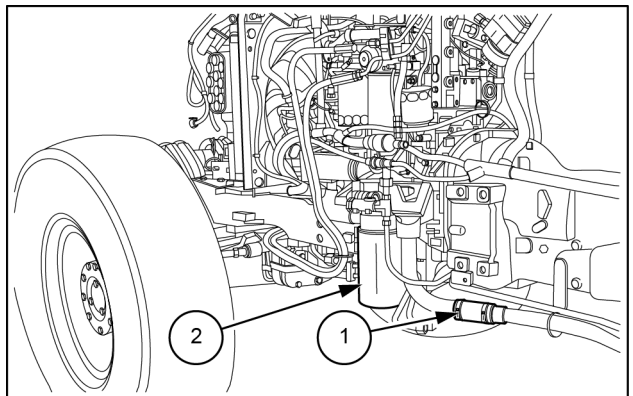
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13. Remove the retaining bolts of the middle bracket of the drive shaft **(1)**. Remove the shaft and the bracket. Remove the adjustment washer that adjusts the shaft space behind.



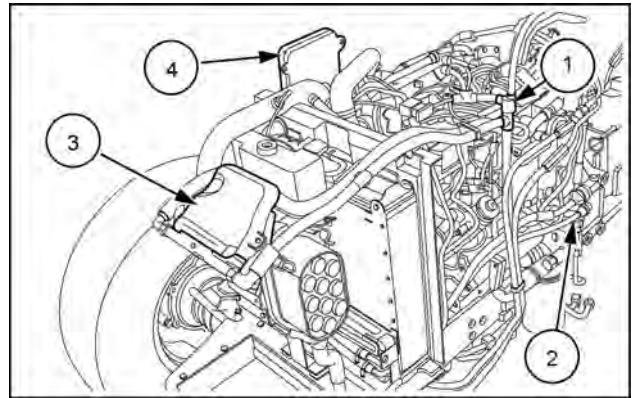
WLAPL4S10C115AA 13

14. Loosen the strips. Separate the suction hose **(1)** that goes to the oil filter from the transmission **(2)**.



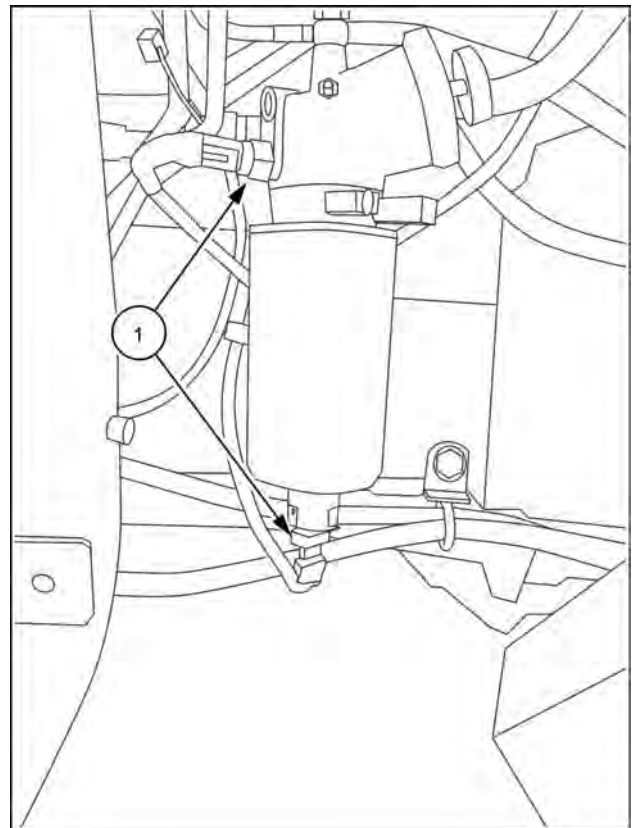
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15. Disconnect all electrical connections that prevent the engine from being removed from the gearbox transmission housing. For example, the main connections **(1)**, the main cab and power connections **(2)**, the engine control unit connections **(3)**, the fuse box **(4)**, the sensors, and the extensions, depending on the tractor model.



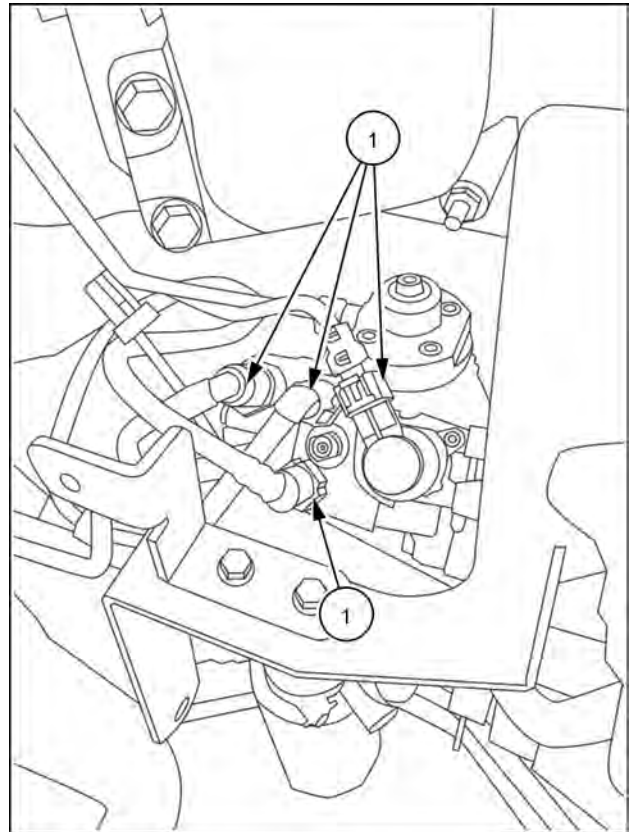
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16. Remove the electrical connections **(1)** on the fuel filter.



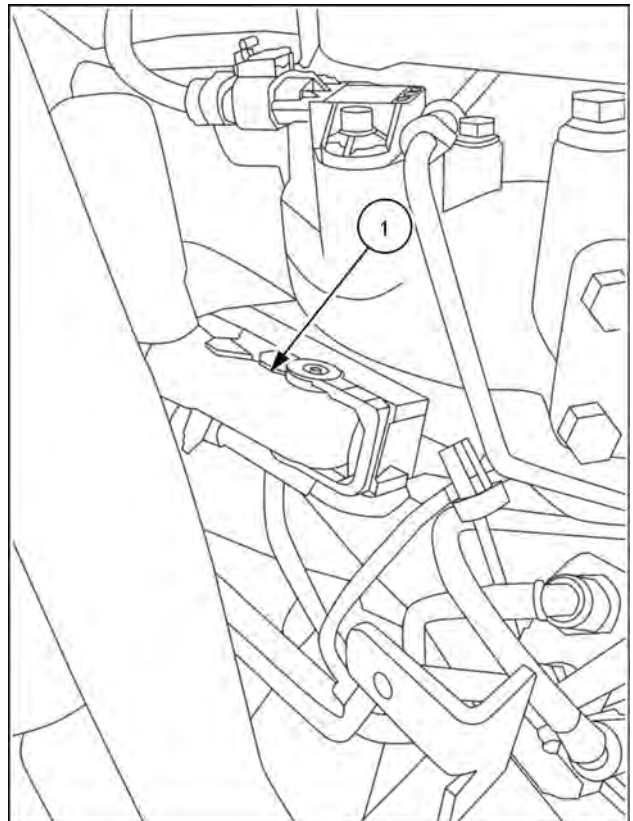
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17. Remove the electrical connections **(1)** on the fuel pump



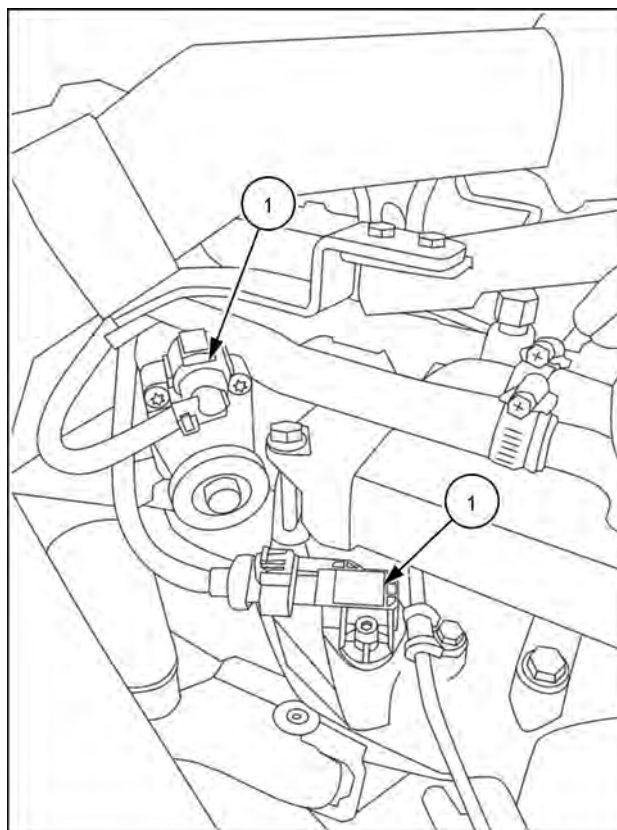
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18. Remove main electrical connection **(1)**.



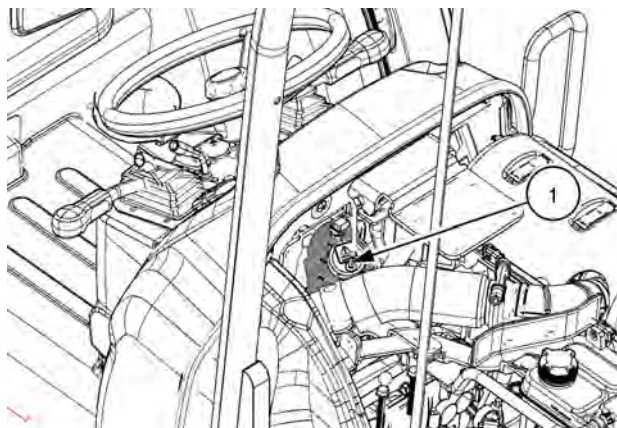
ANIL18TRO1172AA 18

19. Remove the electrical connections **(1)** on the EGR valve and suction line.



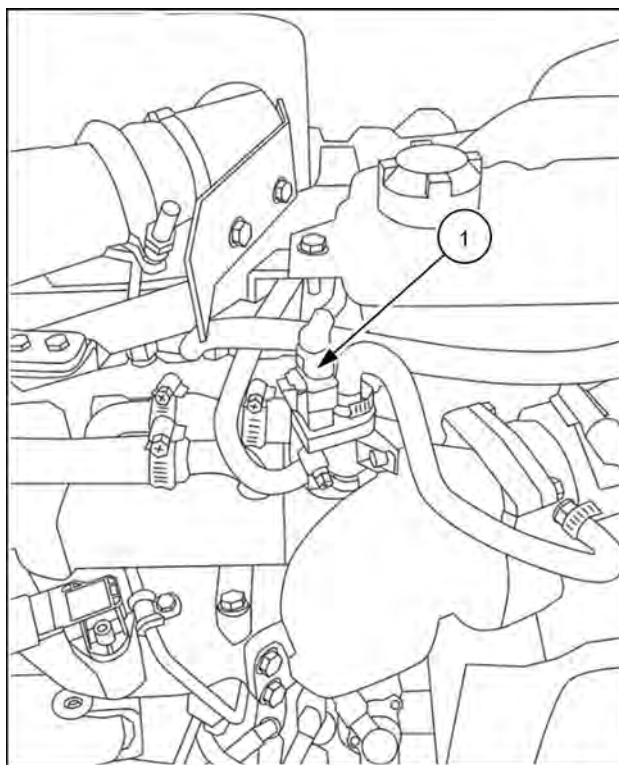
ANIL18TRO1173AA 19

20. Remove the electrical connection **(1)** on the brake oil reservoir



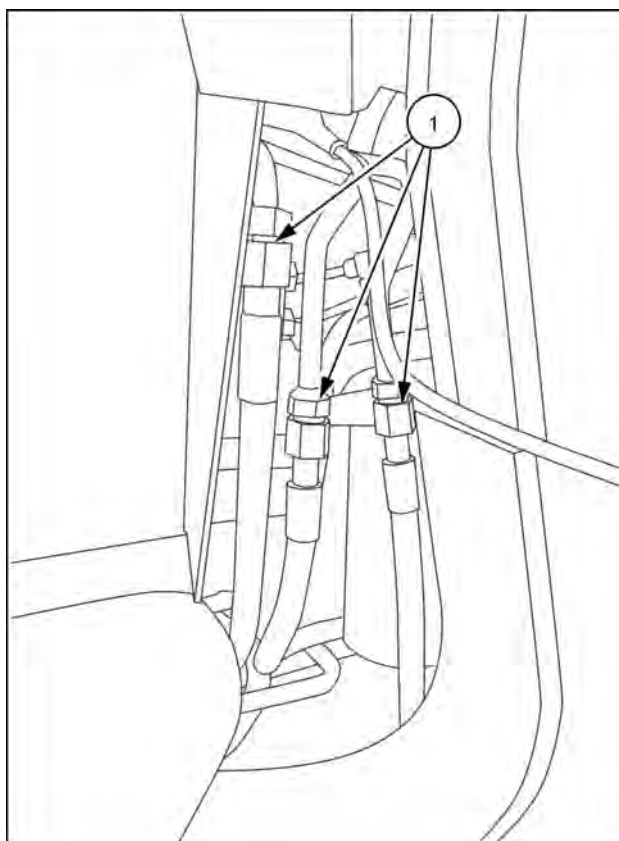
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21. Remove the electrical connection **(1)** on the Waste-gate actuator.



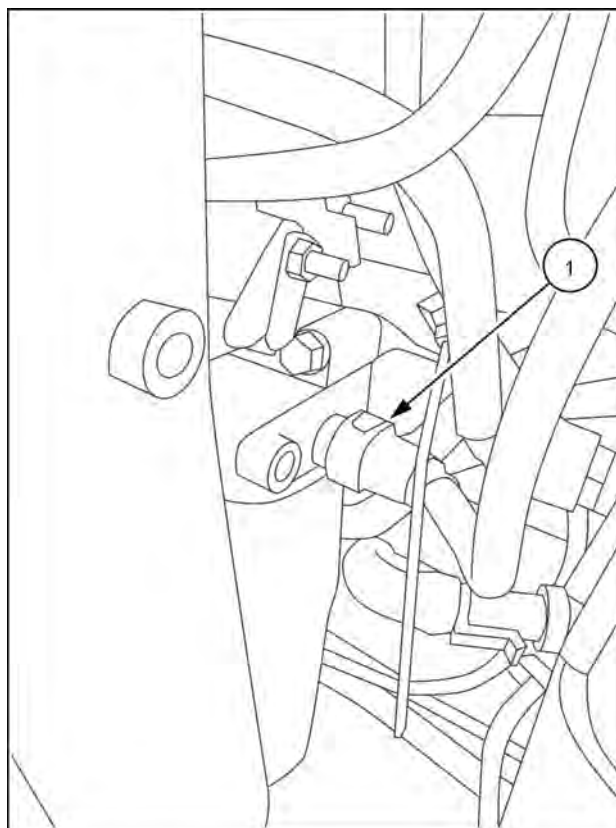
ANIL18TRO1174AA 21

22. Remove the oil pipes **(1)** on right hand side of the front panel

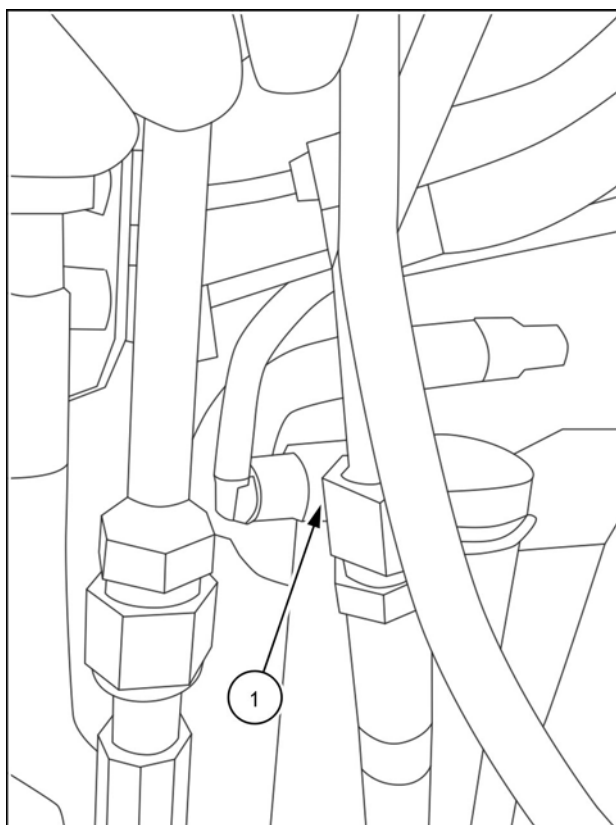


ANIL18TRO1175AA 22

23. Remove the electrical connections **(1)** on fuel filter

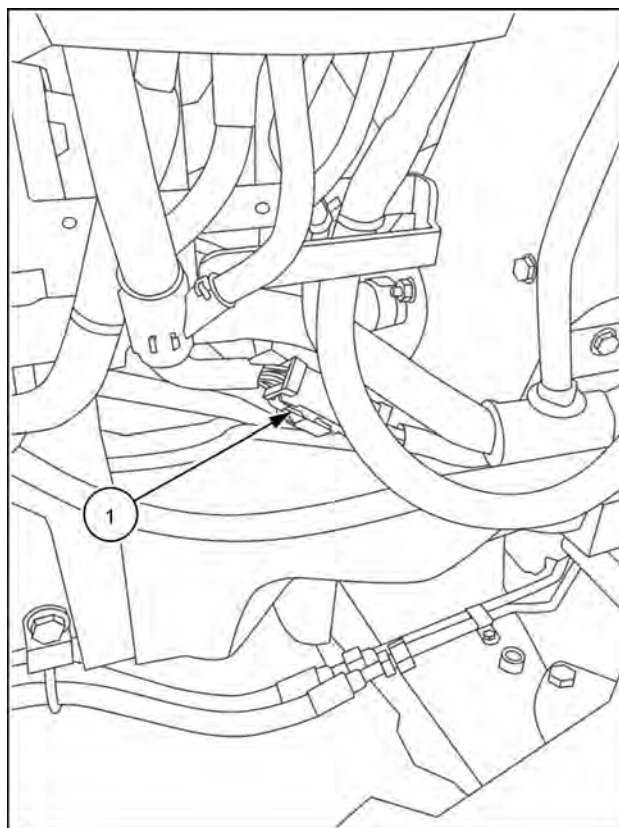


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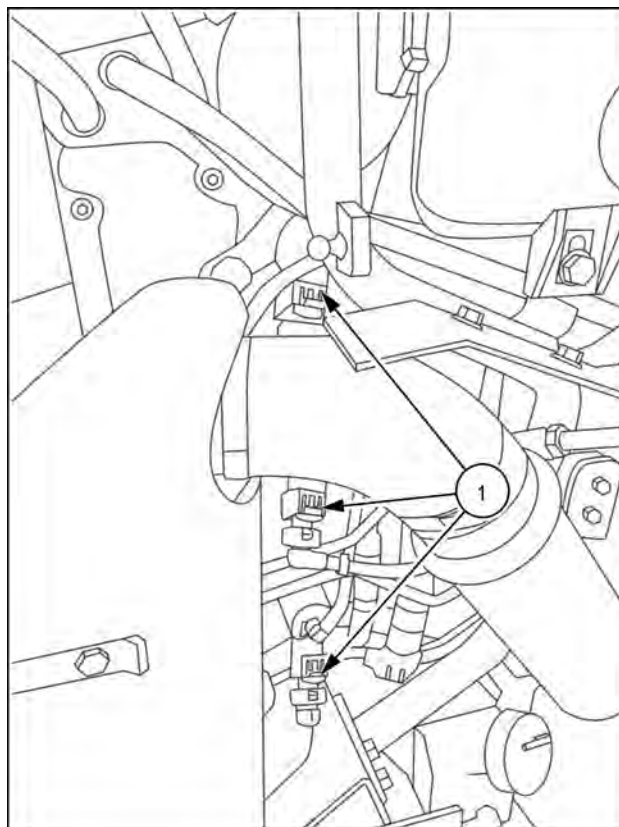
ANIL18TRO1177AA 24

24. Remove the electrical connection **(1)** of the engine fuse panel.



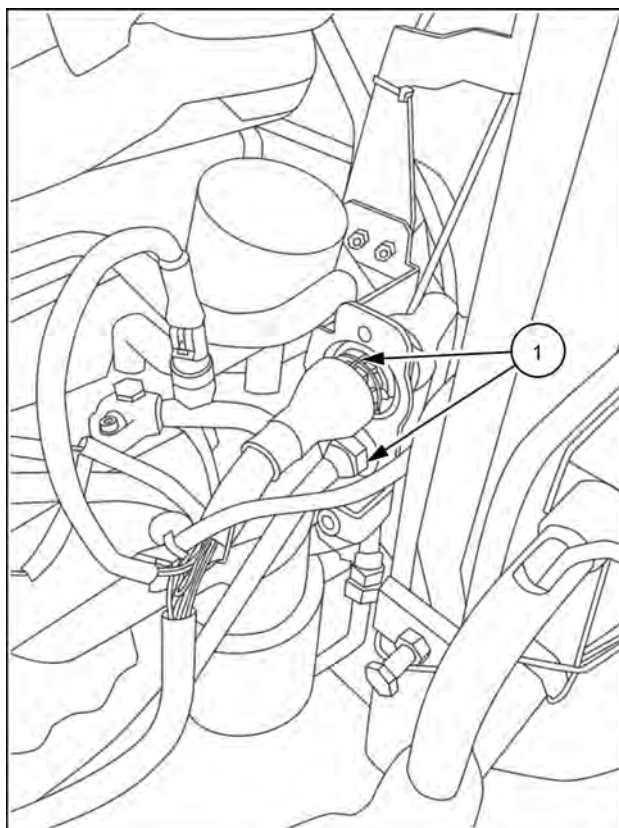
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25. Remove the electrical connections **(1)** on each fuel injector



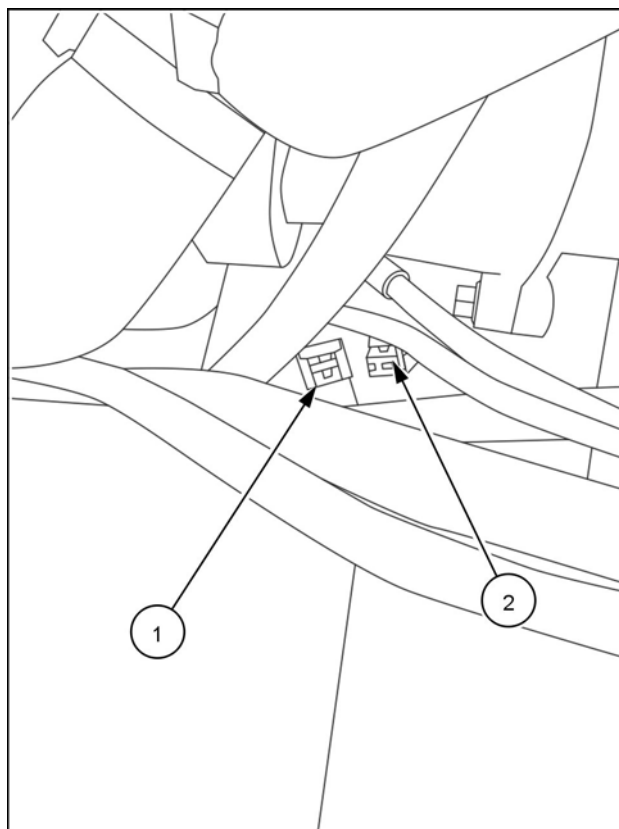
ANIL18TRO1180AA 26

26. Remove the electrical connections **(1)** between engine and front panel



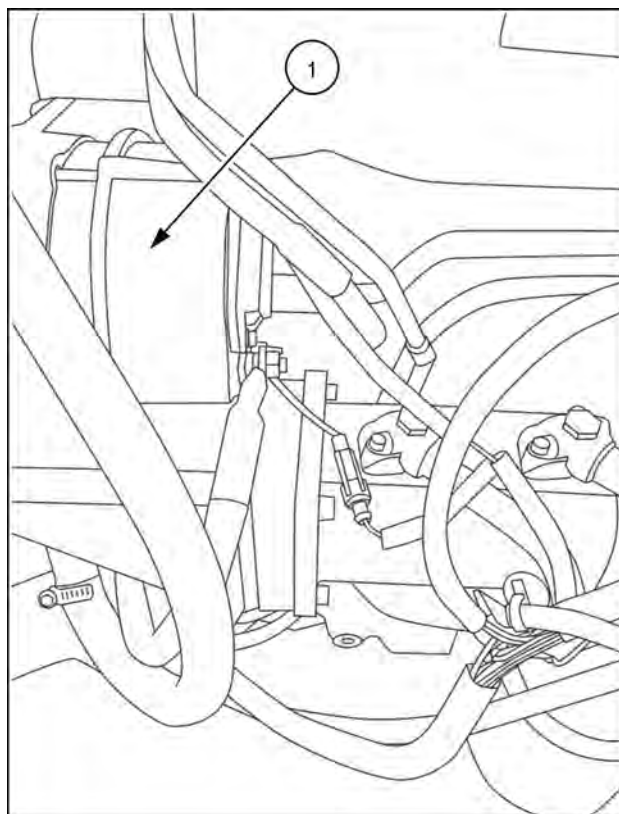
ANIL18TRO1182AA 27

27. Remove the crank shaft sensor **(1)** and cam shaft sensor **(2)**



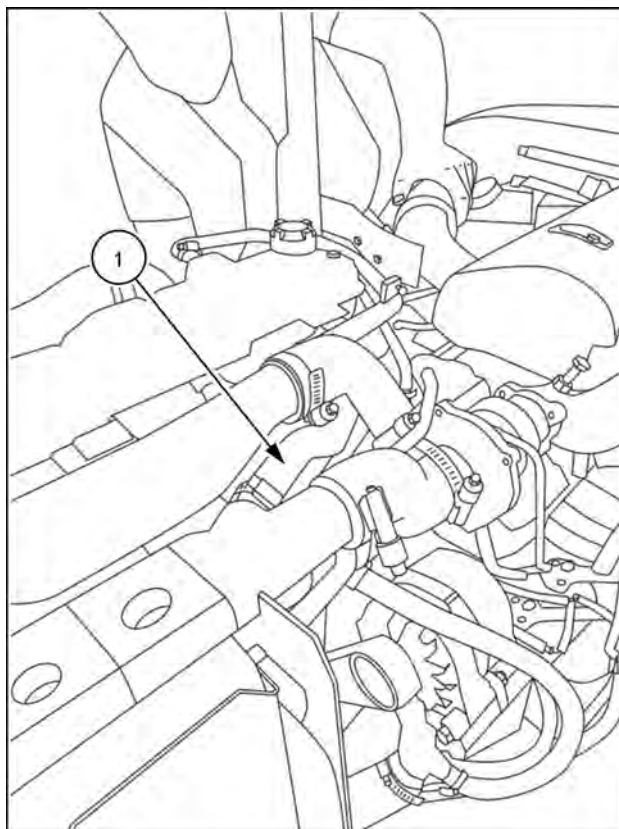
ANIL18TRO1183AA 28

28. Remove the electrical connections on the alternator **(1)** .



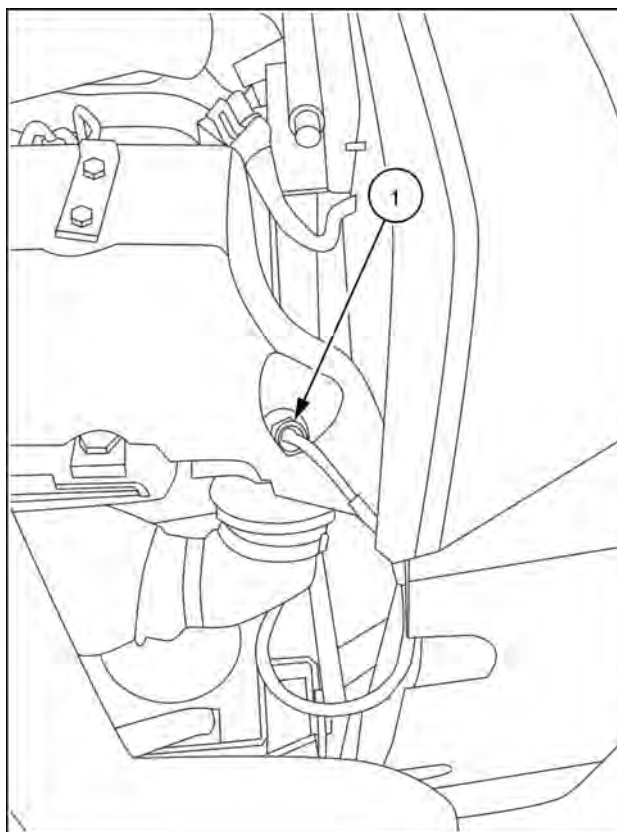
ANIL18TRO1184AA 29

29. Remove the engine vent pipe **(1)** .



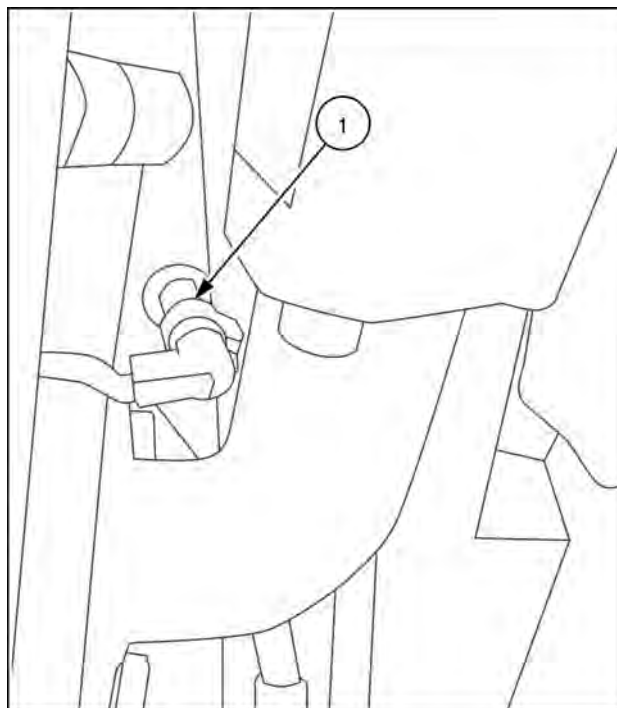
ANIL18TRO1185AA 30

30. Remove the NOx sensor **(1)** on the DOC



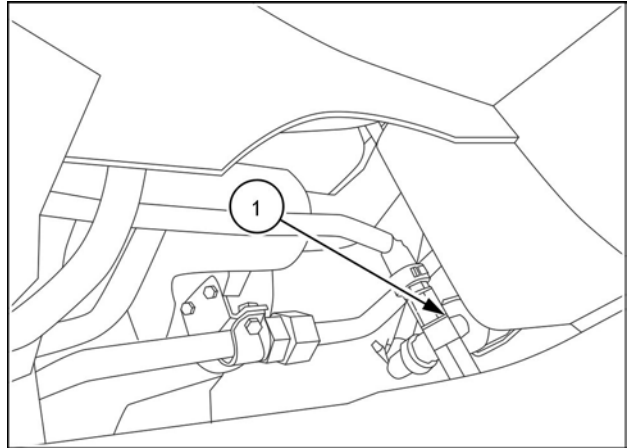
ANIL18TRO1186AA 31

31. Remove engine oil pressure sensor **(1)**



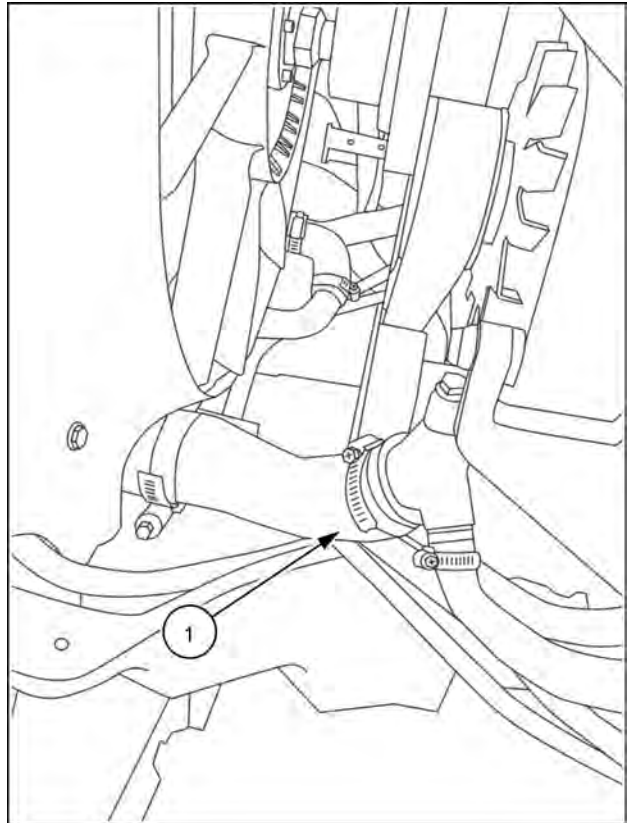
ANIL18TRO1187AA 32

32. Remove fuel pipe (1) from fuel tank



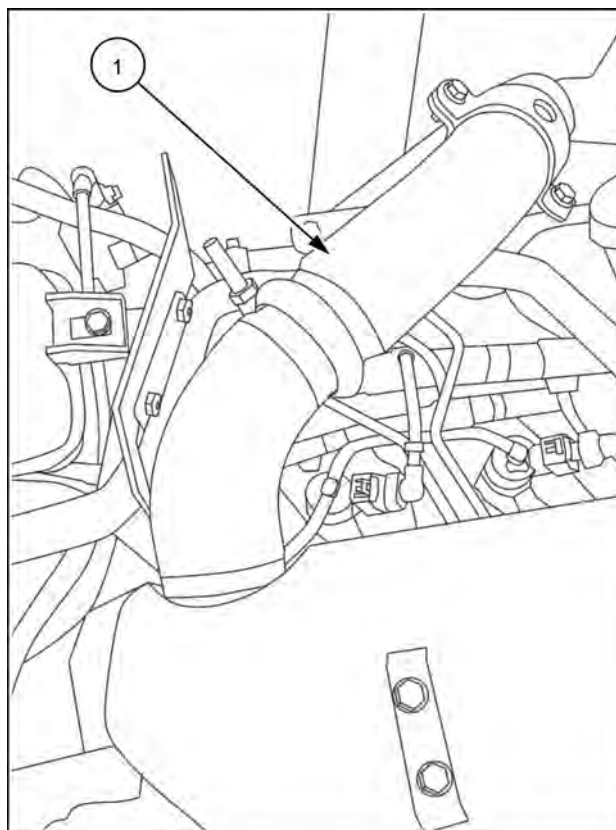
ANIL18TRO1188AA 33

33. Remove coolant pipe (1) from engine



ANIL18TRO1189AA 34

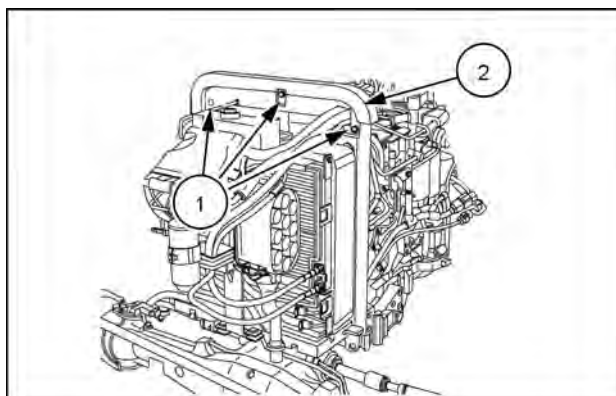
34. Remove exhaust pipe **(1)** from DOC



ANIL18TRO1190AA 35

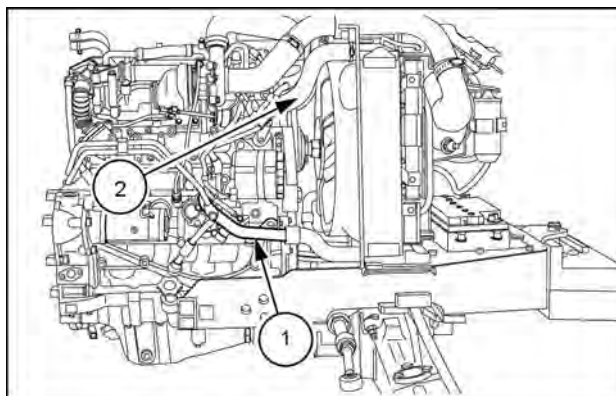
35. Remove the retaining bolts **(1)**. Remove the top radiator guard **(2)**. Remove all the remaining free wire bundles.

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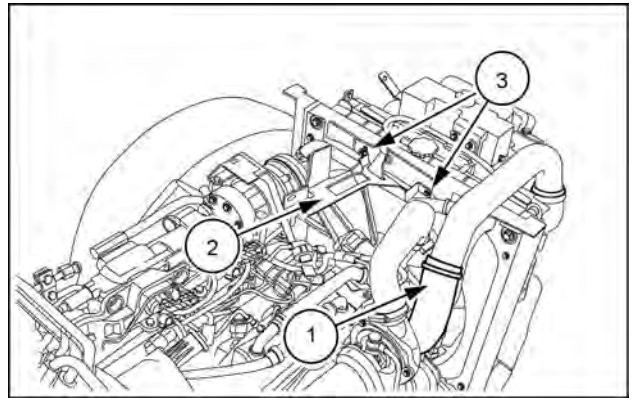
MOIL13TRO2942AA 36

36. Loosen the strip on the inlet of the hose **(1)** that feeds fluid to the radiator. Disconnect the hose. Drain the engine radiator fluid and refill with fluid.
37. Remove the retaining strip. Hose **(2)** that returns the radiator fluid to the engine.



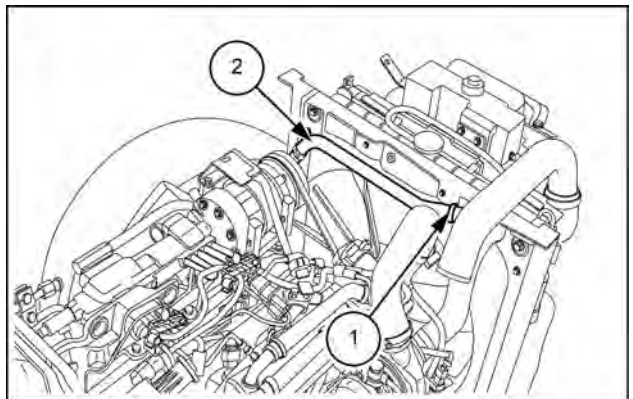
MOIL13TRO2877AB 37

38. Loosen the strip. Disconnect the hose (1) that runs from the air filter to the turbine. Next, remove the two bolts (3) and remove the bracket (2).



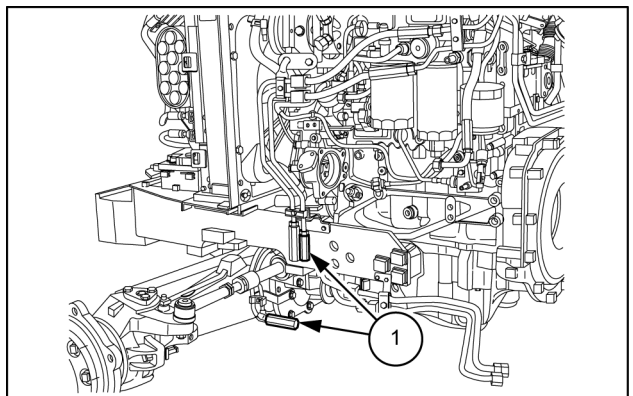
MOIL13TR02890AB 38

39. Loosen the strip (1). Remove the hose (2) that connects the air filter to the injection pump. .



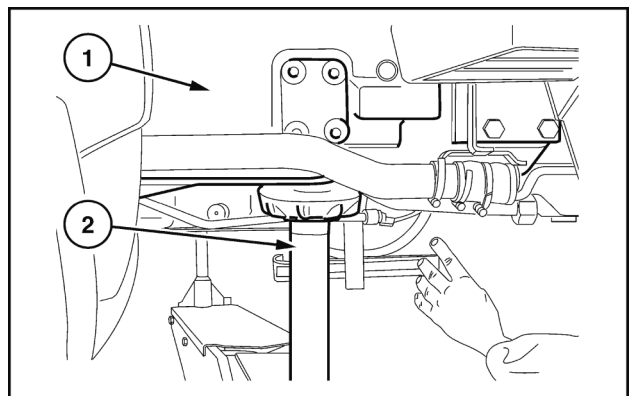
MOIL13TR02891AB 39

40. Disconnect the hydraulic steering hoses (1). Disconnect the lines from the axle bracket. .



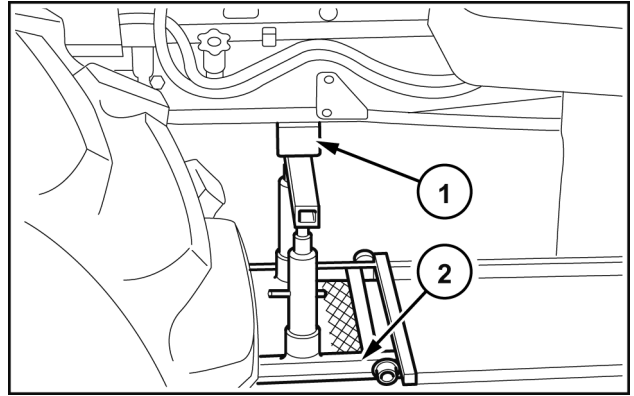
MOIL13TR02881AB 40

41. Attach chains or ropes to the lifting and eye bolts behind the engine and attach to a winch. Place a fixed lifting jack (2) under the clutch body (1) next to the engine retaining flange. Apply the handbrake. .



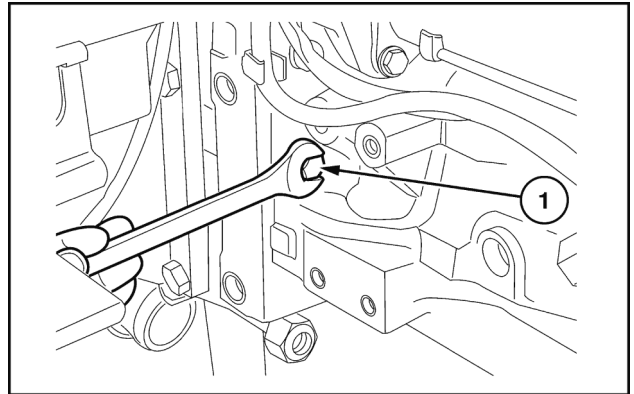
WLAPL4S10C129A 41

42. Place the moving tractor separator tool **(2)** under the engine with the mounting bracket and the adapter plate. Place a wooden block **(1)** at the points of contact between the tool and the motor. Chock the axle to prevent the axle from shaking. **380000405**.



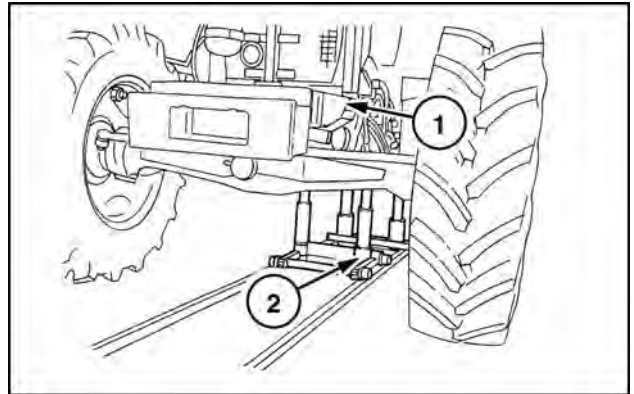
WLAPL4S10C140A 42

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



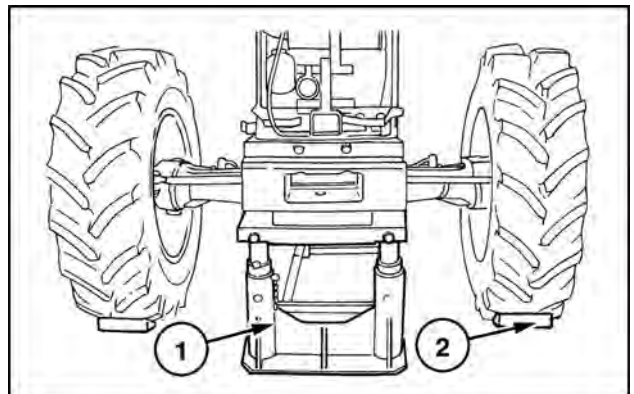
WLAPL4S10C130A 43

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



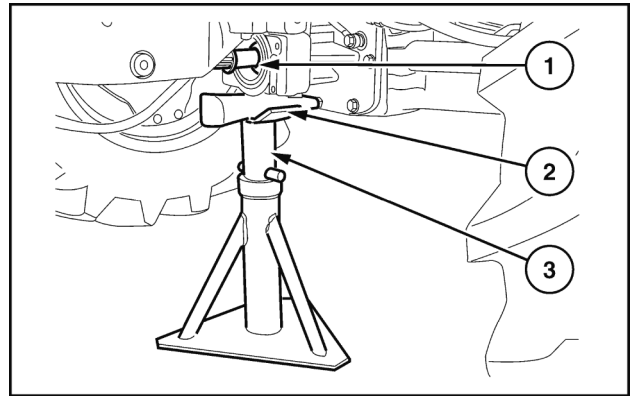
WLAPL4S10C131AA 44

45. Place the fixed lifting jack **(1)** under the additional weight support. Use wooden blocks **(2)** to secure the front wheels.



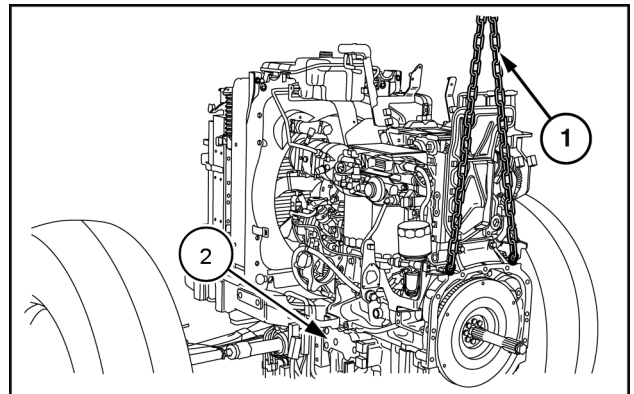
WLAPL4S10C132AA 45

46. Place a wooden stop between parts **(3)** and **(1)**. Place a fixed lifting jack **(3)** under the front axle drive groove **(1)** bracket.



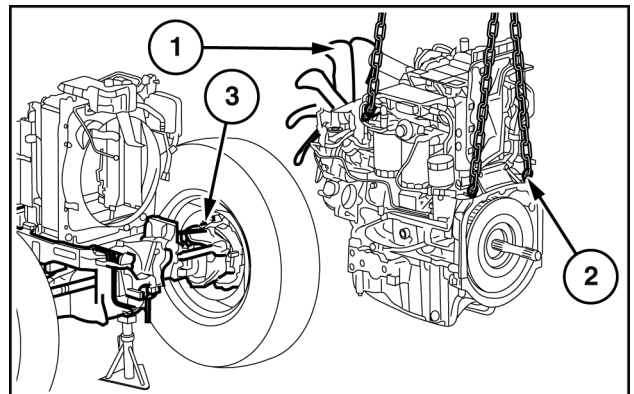
WLAPL4S10C133A 46

47. With the connection assembly firmly secure, place a lifting jack at the rear of the engine to leave slack in the winch.
Add a rope or chain to the front of the engine **(1)**. Keep the engine balanced and take the slack out of the lifting assembly.
48. Remove the bolts that secure the front axle bracket to the engine **(2)**.



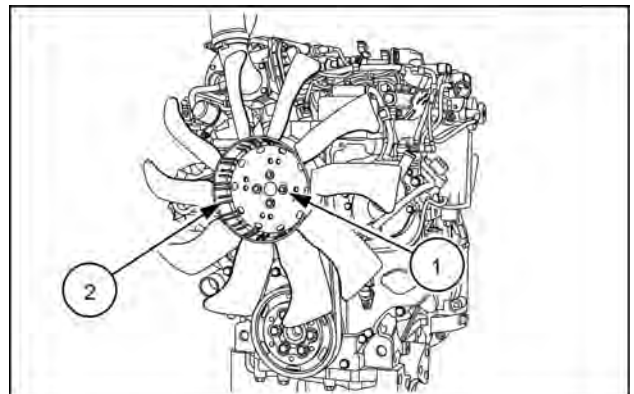
WLAPL4S10C136A 47

49. Check that there is no elbow between the engine and the radiator. Separate the engine **(2)** from the axle **(3)**. To prevent damage to the fins of the radiator on the engine ventilator **(1)** axle, try to avoid incorrect manoeuvres with the winch. Lower the engine **(2)** onto a support bracket.



WLAPL4S10C138A 48

50. Loosen the four bolts **(1)**. Remove the fan **(2)**.



MOIL13TR02885AA 49

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