SERVICE MANUAL

T4.80F / T4.90F / T4.100F / T4.110F

Tractor

PIN ZHLH00094 and above

Part number 51523354
1st edition English
August 2018

NEW HOLLAND AGRICULTURE

SERVICE MANUAL

T4.100F With cab [ZHLH01567 -], T4.100F Without cab [ZHLH01600 -], T4.110F With cab [ZHLH00094 -], T4.110F Without cab [ZHLH01580 -], T4.80F With cab [ZHLH01907 -], T4.80F Without cab [ZHLH01219 -], T4.90F With cab [ZHLH01868 -], T4.90F Without cab [ZHLH01862 -]

Link Product / Engine

Product	Market Product	Engine
T4.100F With cab [ZHLH01567 -]	Latin America	F5DFL413K*C001
T4.100F With cab [ZHLH01567 -]	Australia New Zealand	F5DFL413K*C001
T4.100F Without cab [ZHLH01600 -]	Latin America	F5DFL413K*C001
T4.100F Without cab [ZHLH01600 -]	Australia New Zealand	F5DFL413K*C001
T4.110F With cab [ZHLH00094 -]	Australia New Zealand	F5DFL413J*C002
T4.110F With cab [ZHLH00094 -]	Latin America	F5DFL413J*C002
T4.110F Without cab [ZHLH01580 -]	Australia New Zealand	F5DFL413J*C002
T4.110F Without cab [ZHLH01580 -]	Latin America	F5DFL413J*C002
T4.80F With cab [ZHLH01907 -]	Latin America	F5DFL413B*H001
T4.80F With cab [ZHLH01907 -]	Australia New Zealand	F5DFL413B*H001
T4.80F Without cab [ZHLH01219 -]	Australia New Zealand	F5DFL413B*H001
T4.80F Without cab [ZHLH01219 -]	Latin America	F5DFL413B*H001
T4.90F With cab [ZHLH01868 -]	Latin America	F5DFL413L*C001
T4.90F With cab [ZHLH01868 -]	Australia New Zealand	F5DFL413L*C001
T4.90F Without cab [ZHLH01862 -]	Australia New Zealand	F5DFL413L*C001
T4.90F Without cab [ZHLH01862 -]	Latin America	F5DFL413L*C001

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INTRODUCTION

(*) See content for specific models

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.

Note to the Owner WARNINGS FOR AIR CONDITIONING SYSTEM REPAIR OPERATIONS

T4.100F With cab [ZHLH01567 -]	ANZ --- LA
T4.110F With cab [ZHLH00094 -]	ANZ --- LA
T4.80F With cab [ZHLH01907 -]	ANZ --- LA
T4.90F With cab [ZHLH01868 -]	ANZ --- LA

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

T4.100F With cab [ZHLH01567 -]	ANZ --- LA
T4.110F With cab [ZHLH00094 -]	ANZ --- LA
T4.80F With cab [ZHLH01907 -]	ANZ --- LA
T4.90F With cab [ZHLH01868 -]	ANZ --- LA

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.

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.

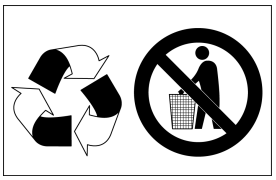
Familiarize yourself with the relative legislation applicable to your country, and make sure that you understand this legislation. Where no legislation exists, obtain information from suppliers of oils, filters, batteries, fuels, anti-freeze, cleaning agents, etc., with regard to the effect of these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

Engine cooling system - Basic instructions

T4.100F With cab [ZHLH01567 -]	ANZ --- LA
T4.100F Without cab [ZHLH01600 -]	ANZ --- LA
T4.110F With cab [ZHLH00094 -]	LA
T4.110F Without cab [ZHLH01580 -]	ANZ --- LA
T4.80F With cab [ZHLH01907 -]	LA
T4.80F Without cab [ZHLH01219 -]	LA
T4.90F With cab [ZHLH01868 -]	ANZ --- LA
T4.90F Without cab [ZHLH01862 -]	ANZ --- LA

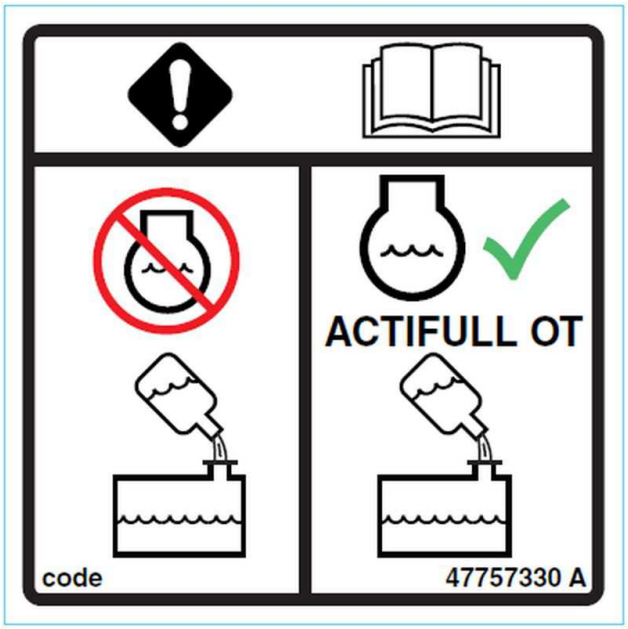
Depending on the date of manufacture, your cooling system may be equipped with conventional ethylene glycol coolant such as **NEW HOLLAND AMBRA AGRIFLU** or an Organic Acid Technology (OAT) coolant solution such as **NEW HOLLAND AMBRA ACTIFULL™ OT EXTENDED LIFE COOLANT**. You can easily identify **NEW HOLLAND AMBRA ACTIFULL™ OT EXTENDED LIFE COOLANT** by its yellow color. You should never mix the coolant types.

The coolant solution used must meet the following CNH Industrial material specifications for either coolant type:

- **MAT3624** for OAT coolant
- **MAT3620** for conventional coolant

The decal shown is located near the fill point of the cooling system whenever the factory fill is **NEW HOLLAND AMBRA ACTIFULL™ OT EXTENDED LIFE COOLANT**. This decal is available in three different sizes. See the table below for the associated part numbers.

CNH Industrial part number	Size
47757330	**50 mm** x **50 mm**
47757331	**75 mm** x **75 mm**
47757332	**100 mm** x **100 mm**



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NOTICE: *NEVER mix OAT coolant with conventional coolant. Under no circumstances should you top off a cooling system with only water. You can use a refractometer to check the concentration level. You should not use Supplemental Coolant Additives (SCA) when using* ***NEW HOLLAND AMBRA ACTIFULL™ OT EXTENDED LIFE COOLANT****. Change the coolant solution at the change interval recommended.*

If you need to change a machine from conventional coolant to OAT coolant or vice versa, you should follow the “Changing coolant types” procedure below to attain the full benefit of the coolant.

Changing coolant types

To change coolant from OAT coolant to conventional coolant (or vice versa):

1. Empty the engine cooling system by draining the coolant into a suitable container.
2. Fill the system with clean water.
3. Start the engine and run the engine for at least **30 min**.

   NOTE: *Make sure that you activate the heating system (if equipped) to circulate fluid through the heater core.*
4. Repeat Steps 1 to 3 for a total of two washes.
5. Fill the system with conventional coolant (or OAT coolant).
6. Operate the engine until it is warm. Inspect the machine for leaks.
7. If you are changing to OAT coolant, then attach the decal (CNH Industrial part number 47757330) to indicate the use of OAT coolant in the cooling system.

You may notice the older version of the OAT decal (CNH Industrial part number 47488993) on some applications.

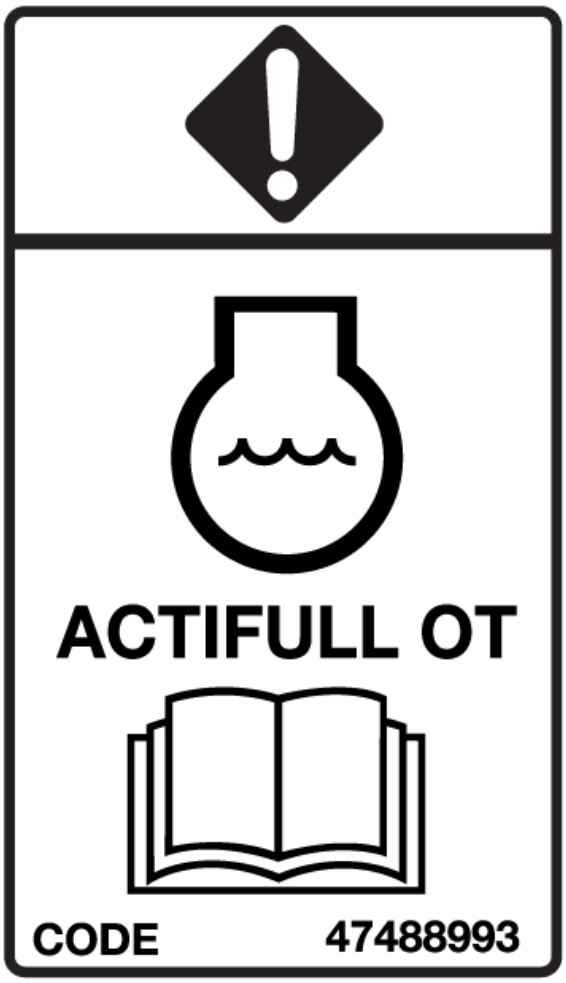
Definitions

Conventional coolant:

A coolant that relies on inorganic inhibitors such as silicates, nitrites, and phosphates for corrosion and cavitation protection.

Organic Acid Technology (OAT) coolant:

A coolant that relies on inhibitors such as organic acid salts for corrosion and cavitation protection.



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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.

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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

Torque - Standard torque data for hydraulic connections

General information

- Hydraulic connections require a minimum assembly torque in order to provide zero leakage at rated pressure with adequate fatigue resistance. Over-torquing of a hydraulic connection can also lead to leakage or failure. For some connections, NEW HOLLAND requires a different torque value than is listed in the ISO and SAE standards.
- The torque values in this document should be used whenever possible or applicable.

  NOTICE: *Always follow the instructions in this manual for specific torque values when you service components. The information in this section is for general guidance only when a procedure contains no specific torque value.*

Tolerance

- The tolerance for all torque values is ± **10%**. This tolerance must include all assembly variation, not only the torque wrench repeatability.

Lubrication

Application of grease or other lubricants to hydraulic connectors should be avoided. If clean hydraulic oil is already on the connection, it is not required to remove the oil. Generally, application of grease:

- May cause a significant change in the torque required to properly tighten the connection.
- May reduce the connection's resistance to vibration.
- Excessive grease may displace an elastomer seal during tightening.
- Grease extrusion when connection is tightened may be mistaken for leakage.

NEW HOLLAND products generally use O-Ring Boss (ORB) connectors that have Teflon™-coated O-rings, eliminating the need for O-ring lubrication during installation. For connections which are made into aluminum manifolds or with stainless steel connectors, it may be required to apply a lubricant to prevent galling.

Use of **LOCTITE®** and other thread-locking compounds is prohibited. These compounds:

- May cause a significant change in the torque required to properly tighten the connections.
- Reduce the serviceability of the joint.
- May prevent the O-ring from properly sealing if the compound gets on the O-ring.

Torque values for metric O-Ring Boss (ORB) port connections

	S-Series *		L-Series **	
Metric thread	**Ferrous N·m (lb ft) ± 10%**	**Non-Ferrous N·m (lb ft) ± 10%**	**Ferrous N·m (lb ft) ± 10%**	**Non-Ferrous N·m (lb ft) ± 10%**
M8 x 1	10.5 (7.7)	6.3 (4.6)	8.5 (6.3)	5 (3.7)
M10 x 1	21 (15.5)	12.5 (9.2)	15.5 (11.4)	9.3 (6.9)
M12 x 1.5	37 (27.3)	22 (16.2)	27 (19.9)	16 (11.8)
M14 x 1.5	47 (34.7)	28 (20.7)	37 (27.3)	22 (16.2)
M16 x 1.5	58 (42.8)	35 (25.8)	42 (31)	25 (18.4)
M18 x 1.5	74 (54.6)	44 (32.5)	47 (34.7)	28 (20.7)
M22 x 1.5	105 (77.4)	63 (46.5)	63 (46.5)	38 (28)
M27 x 2	178 (131.3)	107 (78.9)	105 (77.4)	63 (46.5)
M30 x 2	225 (166)	135 (99.6)	136 (100.3)	82 (60.5)
M33 x 2	325 (239.7)	195 (143.8)	168 (123.9)	101 (74.5)
M42 x 2	345 (254.5)	207 (152.7)	220 (162.3)	132 (97.4)
M48 x 2	440 (324.5)	264 (194.7)	273 (201.4)	164 (121)
M60 x 2	525 (387.2)	315 (232.3)	330 (243.4)	198 (146)

* S-Series connectors are used with O-Ring Face Seals (ORFS).

** L-Series connectors are used with **37°** flare.

Torque values for metric O-Ring Boss (ORB) port plugs

	Ferrous		Non-ferrous
Metric thread	**Internal hex N·m (lb ft) ± 10%**	**External hex N·m (lb ft) ± 10%**	**N·m (lb ft) ± 10%**
M8 x 1	8.5 (6.3)	10.5 (7.7)	6.3 (4.6)
M10 x 1	16 (11.8)	21 (15.5)	12.5 (9.2)
M12 x 1.5	23 (17)	37 (27.3)	22 (16.2)
M14 x 1.5	47 (34.7)	47 (34.7)	28 (20.7)
M16 x 1.5	58 (42.8)	58 (42.8)	35 (25.8)
M18 x 1.5	74 (54.6)	74 (54.6)	44 (32.5)
M22 x 1.5	105 (77.4)	105 (77.4)	63 (46.5)
M27 x 2	178 (131.3)	178 (131.3)	107 (78.9)
M30 x 2	225 (166)	225 (166)	135 (99.6)
M33 x 2	325 (239.7)	325 (239.7)	195 (143.8)
M42 x 2	345 (254.5)	345 (254.5)	207 (152.7)
M48 x 2	440 (324.5)	440 (324.5)	264 (194.7)
M60 x 2	525 (387.2)	525 (387.2)	315 (232.3)

Torque values for port connections (British Standard Pipe Parallel (BSPP) thread ports and stud ends)

	Metric tube Outside Diameter (OD) mm (in)		Ferrous		Non-Ferrous	
BSPP thread G- Gas; A- medium coarse threads	**S-Series ***	**L-Series ****	**S-Series N·m (lb ft) ± 10%**	**L-Series N·m (lb ft) ± 10%**	**S-Series N·m (lb ft) ± 10%**	**L-Series N·m (lb ft) ± 10%**
G 1/8 A	–	6 (0.236)	–	21 (15.5)	–	12.5 (9.2)
G 1/4 A	6 (0.236) or 8 (0.315)	8 (0.315) or 10 (0.394)	63 (46.5)	53 (39.1)	38 (28)	32 (23.6)
G 3/8 A	10 (0.394) or 12 (0.472)	12 (0.472)	95 (70.1)	84 (62)	57 (42)	50 (36.9)
G 1/2 A	16 (0.630)	15 (0.591) or 18 (0.709)	136 (100.3)	105 (77.4)	82 (60.5)	63 (46.5)
G 3/4 A	20 (0.787)	22 (0.866)	210 (154.9)	210 (154.9)	126 (92.9)	126 (92.9)
G 1 A	25 (0.984)	28 (1.102)	400 (295)	400 (295)	240 (177)	240 (177)
G 1 1/4 A	30 (1.181)	35 (1.378)	525 (387.2)	525 (387.2)	315 (232.3)	315 (232.3)
G 1 1/2 A	38 (1.496)	42 (1.654)	660 (486.8)	660 (486.8)	396 (292.1)	396 (292.1)

* S-Series connectors are used with O-Ring Face Seals (ORFS).

** L-Series connectors are used with **37°** flare.

Torque values for metric port connections (Metric face-seal ports and stud ends)

	Metric tube Outside Diameter (OD) mm (in)		Ferrous		Non-Ferrous	
Metric thread	**S-Series ***	**L-Series ****	**S-Series N·m (lb ft) ± 10%**	**L-Series N·m (lb ft) ± 10%**	**S-Series N·m (lb ft) ± 10%**	**L-Series N·m (lb ft) ± 10%**
M10 x 1	–	4 (0.157)	–	21 (15.5)	–	12.5 (9.2)
M12 x 1.5	4 (0.157)	6 (0.236)	47 (34.7)	32 (23.6)	28 (20.7)	19 (14)
M14 x 1.5	5 (0.197)	7 (0.276)	63 (46.5)	53 (39.1)	38 (28)	32 (23.6)
M16 x 1.5	7 (0.276)	9 (0.354)	84 (62)	63 (46.5)	50 (36.9)	38 (28)
M18 x 1.5	8 (0.315)	11 (0.433)	105 (77.4)	84 (62)	63 (46.5)	50 (36.9)
M20 x 1.5	10 (0.394)	–	147 (108.4)	–	88 (64.9)	–
M22 x 1.5	12 (0.472)	14 (0.551)	158 (116.5)	147 (108.4)	95 (70.1)	88 (64.9)
M26 x 1.5	–	18 (0.709)	–	210 (154.9)	–	126 (92.9)
M27 x 1.2	16 (0.630)	–	210 (154.9)		126 (92.9)	–
M33 x 2	20 (0.787)	23 (0.906)	400 (295)	400 (295)	240 (177)	240 (177)
M42 x 2	25 (0.984)	30 (1.181)	525 (387.2)	525 (387.2)	315 (232.3)	315 (232.3)
M48 x 2	32 (1.260)	36 (1.417)	630 (464.7)	630 (464.7)	396 (292.1)	396 (292.1)

* S-Series connectors are used with O-Ring Face Seals (ORFS).

** L-Series connectors are used with **37°** flare.

Torque values for Inch O-Ring Boss (ORB) port non-adjustable connections

			S-Series *		L-Series **	
SAE dash size	UN/UNF thread size	Inch tube OD mm (in)	Ferrous N·m (lb ft) ± 10%	Non-Ferrous N·m (lb ft) ± 10%	Ferrous N·m (lb ft) ± 10%	Non-Ferrous N·m (lb ft) ± 10%
2	5/16-24	3.18 (0.125)	–	–	8.5 (6.3)	5 (3.7)
3	3/8-24	4.76 (0.187)	15.5 (11.4)	9.3 (6.9)	10.5 (7.7)	6.3 (4.6)
4	7/16-20	6.35 (0.250)	37 (27.3)	22 (16.2)	19 (14)	11.5 (8.5)
5	1/2-20	7.94 (0.313)	42 (31)	25 (18.4)	26 (19.2)	15.5 (11.4)
6	9/16-18	9.52 (0.375)	47 (34.7)	28 (20.7)	32 (23.6)	19 (14)
8	3/4-16	12.7 (0.500)	89 (65.6)	53 (39.1)	53 (39.1)	32 (23.6)
10	7/8-14	15.88 (0.625)	121 (89.2)	73 (53.8)	63 (46.5)	38 (28)
12	1-1/16-12	19.05 (0.750)	178 (131.3)	107 (78.9)	100 (73.8)	60 (44.3)
14	1-3/16-12	22.22 (0.875)	225 (166)	135 (99.6)	131 (96.6)	79 (58.3)
16	1-5/16-12	25.4 (1.000)	283 (208.7)	170 (125.4)	156 (115.1)	94 (69.3)
20	1-5/8-12	31.75 (1.250)	300 (221.3)	180 (132.8)	210 (154.9)	126 (92.9)
24	1-7/8-12	38.1 (1.500)	388 (286.2)	233 (171.9)	220 (162.3)	132 (97.4)
32	2-1/2-12	50.8 (2.000)	388 (286.2)	233 (171.9)	315 (232.3)	189 (139.4)

* S-Series connectors are used with O-Ring Face Seals (ORFS).

** L-Series connectors are used with **37°** flare.

Torque values for inch O-Ring Boss (ORB) port adjustable connections

			S-Series *		L-Series **	
SAE dash size	UN/UNF thread size	Inch tube OD mm (in)	Ferrous N·m (lb ft) ± 10%	Non-Ferrous N·m (lb ft) ± 10%	Ferrous N·m (lb ft) ± 10%	Non-Ferrous N·m (lb ft) ± 10%
2	5/16-24	3.18 (0.125)	–	–	8.5 (6.3)	5 (3.7)
3	3/8-24	4.76 (0.187)	10.5 (7.7)	9.3 (6.9)	10.5 (7.7)	6.3 (4.6)
4	7/16-20	6.35 (0.250)	21 (15.5)	21 (15.5)	19 (14)	11.5 (8.5)
5	1/2-20	7.94 (0.313)	42 (31)	25 (18.4)	26 (19.2)	15.5 (11.4)
6	9/16-18	9.52 (0.375)	47 (34.7)	28 (20.7)	32 (23.6)	19 (14)
8	3/4-16	12.7 (0.500)	89 (65.6)	53 (39.1)	53 (39.1)	32 (23.6)
10	7/8-14	15.88 (0.625)	121 (89.2)	73 (53.8)	63 (46.5)	38 (28)
12	1-1/16-12	19.05 (0.750)	178 (131.3)	107 (78.9)	100 (73.8)	60 (44.3)
14	1-3/16-12	22.22 (0.875)	225 (166)	135 (99.6)	131 (96.6)	79 (58.3)
16	1-5/16-12	25.4 (1.000)	285 (210.2)	170 (125.4)	156 (115.1)	94 (69.3)
20	1-5/8-12	31.75 (1.250)	300 (221.3)	180 (132.8)	210 (154.9)	126 (92.9)
24	1-7/8-12	38.1 (1.500)	388 (286.2)	233 (171.9)	220 (162.3)	132 (97.4)
32	2-1/2-12	50.8 (2.000)	388 (286.2)	233 (171.9)	315 (232.3)	189 (139.4)

* S-Series connectors are used with O-Ring Face Seals (ORFS).

** L-Series connectors are used with **37°** flare.

Torque values for inch O-Ring Boss (ORB) port plugs

		Ferrous		Non-Ferrous
SAE dash size	UN/UNF thread size	Internal hex N·m (lb ft) ± 10%	External hex N·m (lb ft) ± 10%	N·m (lb ft) ± 10%
2	5/16-24	7.5 (5.5)	12.5 (9.2)	7.5 (5.5)
3	3/8-24	14.5 (10.7)	21 (15.5)	12.5 (9.2)
4	7/16-20	21 (15.5)	37 (27.3)	22 (16.2)
5	1/2-20	28 (20.7)	42 (31)	25 (18.4)
6	9/16-18	47 (34.7)	47 (34.7)	28 (20.7)
8	3/4-16	89 (65.6)	89 (65.6)	53 (39.1)
10	7/8-14	116 (85.6)	116 (85.6)	70 (51.6)
12	1-1/16-12	176 (129.8)	176 (129.8)	106 (78.2)
14	1-3/16-12	247 (182.2)	247 (182.2)	148 (109.2)
16	1-5/16-12	284 (209.5)	284 (209.5)	170 (125.4)
20	1-5/8-12	357 (263.3)	357 (263.3)	214 (157.8)
24	1-7/8-12	441 (325.3)	441 (325.3)	265 (195.5)
32	2-1/2-12	536 (395.3)	536 (395.3)	322 (237.5)

Torque values for four-bolt flange connections (Metric Screws, Class 10.9)

Metric size mm	Imperial size in	Screw code 61	Code 61 N·m (lb ft) ± 10%	Screw code 62	Code 62 N·m (lb ft) ± 10%
13	1/2	M8 x 1.25	34 (25.1)	M8 x 1.25	34 (25.1)
19	3/4	M10 x 1.5	74 (54.6)	M10 x 1.5	74 (54.6)
25	1	M10 x 1.5	74 (54.6)	M12 x 1.75	137 (101)
32	1-1/4	M10 x 1.5	74 (54.6)	M12 x 1.75	137 (101)
				M14 x 1.5	189 (139.4)
38	1-1/2	M12 x 1.75	137 (101)	M16 x 2	310 (228.6)
51	2	M12 x 1.75	137 (101)	M20 x 2.5	575 (424.1)
64	2-1/2	M12 x 1.75	137 (101)	M24 x 3	575 (424.1)
76	3	M16 x 2	310 (228.6)	M30 x 3.5	680 (501.5)
89	3-1/2	M16 x 2	310 (228.6)	–	–
102	4	M16 x 2	310 (228.6)	–	–
127	5	M16 x 2	310 (228.6)	–	–

Torque values for four-bolt flange connections (Metric Screws, Class 8.8)

Metric size mm	Imperial size in	Screw code 61	Code 61 N·m (lb ft) ± 10%	Screw code 62	Code 62 N·m (lb ft) ± 10%
13	1/2	M8 x 1.25	29 (21.4)	M8 x 1.25	29 (21.4)
19	3/4	M10 x 1.5	57(42)	M10 x 1.5	57(42)
25	1	M10 x 1.5	57(42)	M12 x 1.75	100 (73.8)
32	1-1/4	M10 x 1.5	57(42)	M12 x 1.75	100 (73.8)
				M14 x 1.5	160 (118)
38	1-1/2	M12 x 1.75	100 (73.8)	M16 x 2	250 (184.4)
51	2	M12 x 1.75	100 (73.8)	M20 x 2.5	500 (368.8)
64	2-1/2	M12 x 1.75	100 (73.8)	M24 x 3	575 (424.1)
76	3	M16 x 2	250 (184.4)	M30 x 3.5	680 (501.5)
89	3-1/2	M16 x 2	250 (184.4)	–	–
102	4	M16 x 2	250 (184.4)	–	–
127	5	M16 x 2	250 (184.4)	–	–

Torque values for four-bolt flange connections (Inch Screws, Grade 8)

Metric size mm	Imperial size in	Screw code 61	Code 61 N·m (lb ft) ± 10%	Screw code 62	Code 62 N·m (lb ft) ± 10%
13	1/2	5/16-18	34 (25.1)	5/16-18	34 (25.1)
19	3/4	3/8-16	63 (46.5)	3/8-16	63 (46.5)
25	1	3/8-16	63 (46.5)	7/16-14	97 (71.5)
32	1-1/4	7/16-14	97 (71.5)	1/2-13	158 (116.5)
38	1-1/2	1/2-13	158 (116.5)	5/8-11	310 (228.6)
51	2	1/2-13	158 (116.5)	3/4-10	473 (348.9)
64	2-1/2	1/2-13	158 (116.5)	–	–
76	3	5/8-11	310 (228.6)	–	–
89	3-1/2	5/8-11	310 (228.6)	–	–
102	4	5/8-11	310 (228.6)	–	–
127	5	5/8-11	310 (228.6)	–	–

Tapered thread connection tightening

British Standard Pipe Taper (BSPT) thread size (inch)	National Pipe Thread Fuel (NPTF) thread size (inch)	Turns from finger tight
1/8-28	1/8-27	2 - 3
1/4-19	1/4-18	2 - 3
3/8-19	3/8-18	2 - 3
1/2-14	1/2-14	2 - 3
3/4-14	3/4-14	2 - 3
1-11	1-11 1/2	1.5 - 2.5
1-1/4-11	1-1/4-11 1/2	1.5 - 2.5
1-1/2-11	1-1/2-11 1/2	1.5 - 2.5
2-11	2-11 1/2	1.5 - 2.5

Torque values for banjo bolt connections (Copper washer style)

Bolt thread (metric)	Hex size (mm)	Torque N·m (lb ft) ± 10%
M8 x 1.25	13	13 (9.6)
M10 x 1.25	17	16 (11.8)
M12 x 1.5	17	40 (29.5)
M14 x 1.5	19	45 (33.2)
M16 x 1.5	22	48 (35.4)
M18 x 1.5	24	50 (36.9)
M20 x 1.5	27	73 (53.8)
M22 x 1.5	32	73 (53.8)
M24 x 1.5	32	73 (53.8)

Torque values for O-Ring Face Seals (ORFS) connections

SAE dash size	UN/UNF thread size	Inch tube OD (mm)	Metric tube OD (mm)	Hex size (mm) (Reference only)	* Swivel nut torque N·m (lb ft) ± 10%	** Swivel nut torque N·m (lb ft) ± 10%
4	9/16-18	6.35	6	17	27 (19.9)	27 (19.9)
5	5/8-18	7.94	8	19	34 (25.1)	34 (25.1)
6	11/16-16	9.52	10	22	44 (32.5)	44 (32.5)
8	13/16-16	12.7	12	24	65 (47.9)	65 (47.9)
10	1-14	15.88	16	30	100 (73.8)	100 (73.8)
12	1-3/16-12	19.05	20	36	150 (110.6)	131 (96.6)
14	1-5/16-12	22.23	22	41	163 (120.2)	131 (96.6)
16	1-7/16-12	25.4	25	41	210 (154.9) ***	131 (96.9)
20	1-11/16-12	31.75	30	50	280 (206.5) ***	178 (131.3)
24	2-12	38.1	38	60	375 (276.6) ***	210 (154.9)

* High/Medium-pressure applications > **50 bar** (**725 psi**).

** Low-pressure applications < **50 bar** (**725 psi**).

*** It is recommended to use a four-bolt flange connection instead of O-Ring Face Seals (ORFS) sizes "16" and up.

Torque values for 37° flare connections - Joint Industry Council (JIC)

SAE dash size	UN/UNF thread size	Metric tube OD (mm)	Inch tube OD (mm)	Swivel nut torque N·m (lb ft) ± 10%
2	5/16-24	–	3.18	8.25 (6.1)
3	3/8-24	–	4.76	11.5 (8.5)
4	7/16-20	6	6.35	15.5 (11.4)
5	1/2-20	8	7.94	20 (14.8)
6	9/16-18	10	9.52	25 (18.4)
8	3/4-16	12	12.7	52 (38.4)
10	7/8-14	16	15.88	81 (59.7)
12	1-1/16-12	20	19.05	112 (82.6)
14	1-3/16-12	–	22.22	133 (98.1)
16	1-5/16-12	25	25.4	155 (114.3)
20	1-5/8-12	30/32	31.75	180 (132.8)
24	1-7/8-12	38	38.1	225 (166)
32	2-1/2-12	50	50.8	348 (256.7)

Torque values for 30° flare, 60° cone connections

Nominal size (mm)	British Standard Pipe Parallel (BSPP) thread size	Hex size (mm)	Swivel nut torque N·m (lb ft) ± 10%
5, 6, 6.3	G 1/4	17	25 (18.4)
8, 9, 10	G 3/8	19	34 (25.1)
12, 12.5	G 1/2	22	64 (47.2)
15, 16, 19	G 3/4	30	132 (97.4)
25	G 1	36	196 (144.6)
31.5, 32	G 1-1/4	46	225 (166)
38	G 1-1/2	50	255 (188.1)
50, 51	G 2	65	316 (223.1)

Capacities

SYSTEM OR COMPONENTS		QUANTITY
Engine (cooling)		Cab models **16.00 L** (**3.52 UK gal**) Model without cab **14.00 L** (**3.08 UK gal**)
Engine (lubrication)	filter included	**9.50 L** (**2.09 UK gal**) **8.36 kg** (**18.43 lb**)
	Only oil sump (MIN-MAX)	**6.4 – 8.1 L** (**1.4 – 1.8 UK gal**) **5.63 – 7.13 kg** (**12.41 – 15.72 lb**)
Braking system		**0.50 L** (**0.11 UK gal**)
With front brakes		**0.20 L** (**0.04 UK gal**)
Front axle housing		**2.80 L** (**0.62 UK gal**)
Front axle final drives (each) - with brakes		**1.75 L** (**0.38 UK gal**)
Front axle final drives (each) - without brakes		**1.00 L** (**0.22 UK gal**)
Rear axle (bevel drive, final drives and brakes), transmission, hydraulic lift, power take-off and hydrostatic steering		**44.00 L** (**9.68 UK gal**)
Coolant		**1.075 kg** (**2.370 lb**)
Air-conditioning compressor		**0.180 L** (**0.040 UK gal**)
Windscreen--washer reservoir		**2.00 L** (**0.44 UK gal**)
Fuel tank		**96.00 L** (**21.12 UK gal**)

NOTE: *the total capacity of the fuel tank indicated in the table includes the capacity of both tanks on the tractor.*

Consumables

	RECOMMENDED PRODUCTS	SPECIFICATION NEW HOLLAND	INTERNATIONAL SPECIFICATION
Engine cooling system	Conventional coolant: **NEW HOLLAND AMBRA AGRIFLU** mixed **50%** with distilled water	MAT3620	ASTM D 6210 Type 1-FF (Ethylene glycol base concentrate)
	Alternative type coolant: **NEW HOLLAND AMBRA ACTIFULL™ OT EXTENDED LIFE COOLANT** (If the premixed coolant is not available, mix the concentrate with 50% distilled water)	MAT3624	ASTM 6210
Windscreen wash reservoir	Water and Detergent liquid	-	-
Fuel tank	Decanted and filtered diesel fuel	-	-
Engine (lubrication)	**NEW HOLLAND AMBRA UNITEK MASTERGOLD SBL CJ-4 SAE 10W-40** or **NEW HOLLAND AMBRA UNITEK MASTERGOLD SSL CJ-4 SAE 0W-40**	**MAT3521**	**API CJ-4**
	or **NEW HOLLAND AMBRA MASTERGOLD™ ENGINE OIL CK-4 SAE 15W-40**	**MAT3522**	
Brake circuit	**BRAKE LHM FLUID**	**NH610A**	**ISO 7308**
Front axle housing	**NEW HOLLAND AMBRA MULTI G™ HYDRAULIC TRANSMISSION OIL**	**NH410B**	**API GL-4 ISO 32/46 SAE 10W30**
Front axle final drives			**API GL-5 MIL-L-2105 D SAE 80W90**
Rear axle (bevel drive, final drives and brakes), transmission, hydraulic lift, power take-off and hydrostatic steering	**NEW HOLLAND AMBRA MULTI G™ HYDRAULIC TRANSMISSION OIL**	**NH410B**	**API GL-4 ISO 32/46 SAE 10W30**
Grease nipples	**NEW HOLLAND AMBRA GR-9 MULTI-PURPOSE GREASE**	**NH710A**	**NLGI 2**
Air-conditioning system. Refrigerant fluid	—	—	**R134A**
Air-conditioning system. Compressor oil	—	—	SP−10

Plates - Product identification

T4.100F With cab [ZHLH01567 -]	ANZ --- LA
T4.100F Without cab [ZHLH01600 -]	ANZ --- LA
T4.110F	ANZ --- LA
T4.80F With cab [ZHLH01907 -]	ANZ --- LA
T4.80F Without cab [ZHLH01219 -]	ANZ --- LA
T4.90F With cab [ZHLH01868 -]	ANZ --- LA
T4.90F Without cab [ZHLH01862 -]	ANZ --- LA

The series numbers identify the tractor and main parts. The identification data must be supplied by the dealer for requests for spare parts or service operations. Identification data is of fundamental importance in the event of theft of the tractor. The location of the various identification data is shown below.

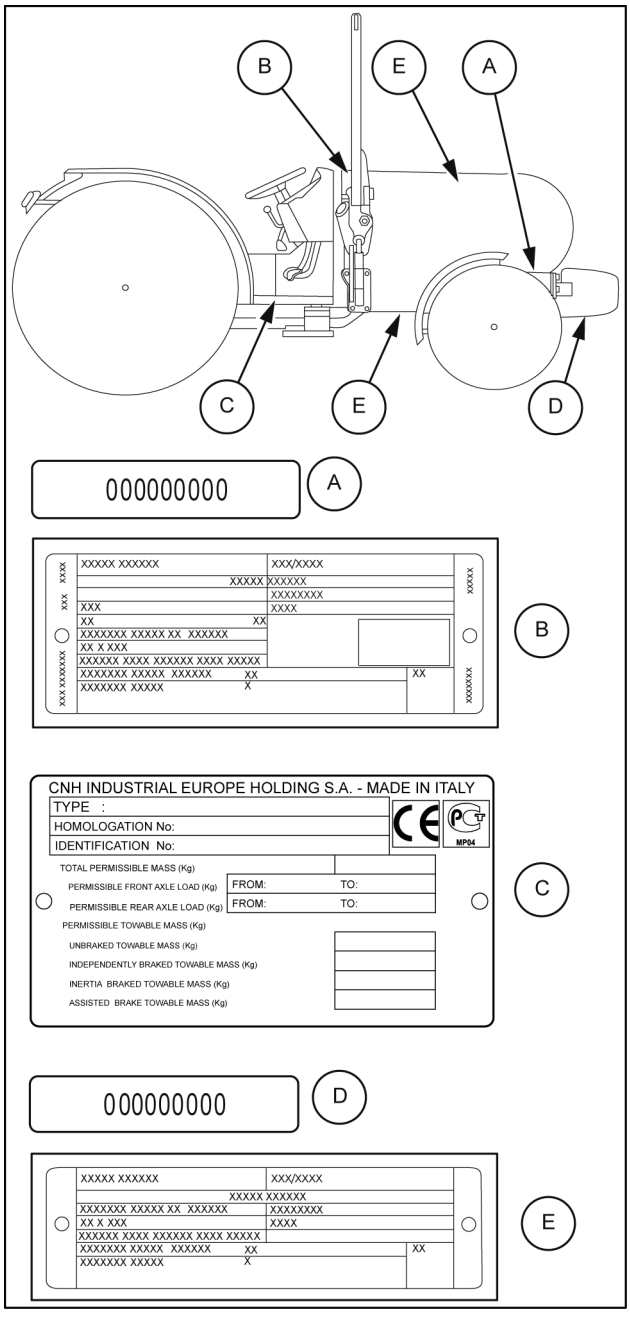
A. Frame identification data plate
The tractor's product identification number (PIN) is stamped over the front support. It gives the safety frame identification data.

B. Roll Over Protective Structure (ROPS) identification data plate
The plate gives the identification data for the rops frame fitted on the machine.

C. Frame and engine type identification summary data plate
It links the identification number with the product identification number (PIN) and the machine's engine.

D. Front axle identification plate
The plate is located on the component and gives the identification data for the axle fitted on the machine.

E. Engine identification data plate
The plate with the engine data installed on the tractor is fitted on the right or left hand side of the engine (depending on the model).



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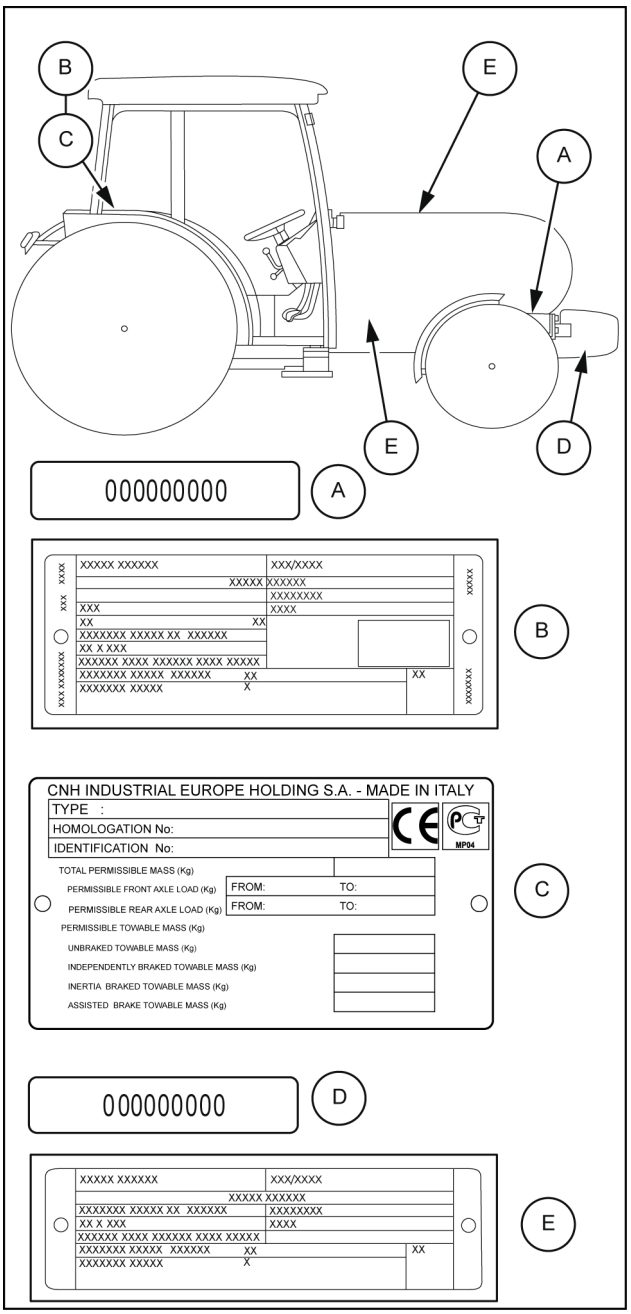
A. Frame identification data plate
The tractor's product identification number (PIN) is stamped over the front support. It gives the safety frame identification data.

B. Cab identification data plate
The cab identification plate is located at the rear on the left−hand side as shown in the figure.

C. Frame and engine type identification summary data plate
It links the identification number with the product identification number (PIN) and the machine's engine.

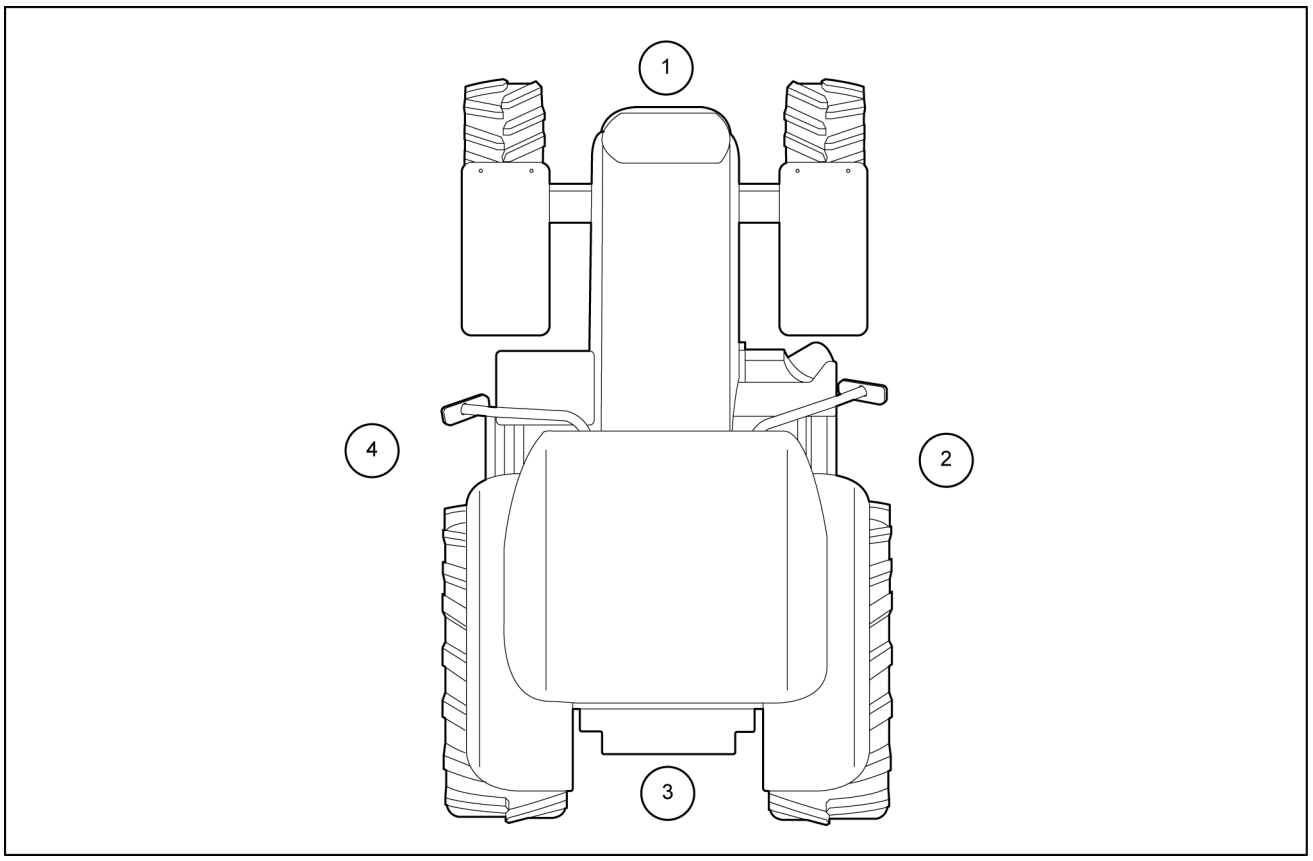
D. Front axle identification plate
The plate is located on the component and gives the identification data for the axle fitted on the machine.

E. Engine identification data plate
The plate with the engine data installed on the tractor is fitted on the right or left hand side of the engine (depending on the model).



MOIL13TR00767CB 2

Product identification



MOIL13TR01750FB 1

The following terms are used in this manual in order to indicate direction, as seen from the operator's seat:

(1) Front

(2) Right

(3) Rear

(4) Left

SERVICE MANUAL

Engine

T4.100F With cab [ZHLH01567 -], T4.100F Without cab [ZHLH01600 -], T4.110F With cab [ZHLH00094 -], T4.110F Without cab [ZHLH01580 -], T4.80F With cab [ZHLH01907 -], T4.80F Without cab [ZHLH01219 -], T4.90F With cab [ZHLH01868 -], T4.90F Without cab [ZHLH01862 -]

Contents

Engine - 10

Engine - 10

Engine and crankcase - 001

T4.100F With cab [ZHLH01567 -], T4.100F Without cab [ZHLH01600 -], T4.110F With cab [ZHLH00094 -], T4.110F Without cab [ZHLH01580 -], T4.80F With cab [ZHLH01907 -], T4.80F Without cab [ZHLH01219 -], T4.90F With cab [ZHLH01868 -], T4.90F Without cab [ZHLH01862 -]

Contents

Engine - 10

Engine and crankcase - 001

SERVICE

Engine - Remove from transmission

⚠ WARNING

Burn hazard!
Be very careful to avoid contact with hot fluids. If fluid is extremely hot, allow it to cool to a moderately warm temperature before proceeding.
Failure to comply could result in death or serious injury.

W0362A

⚠ WARNING

Hot surface possible!
Wait for all components to cool before performing any operation.
Failure to comply could result in death or serious injury.

W0251A

⚠ CAUTION

Hot area!
Use care when working near hot components. Wear protective gloves.
Failure to comply could result in minor or moderate injury.

C0034A

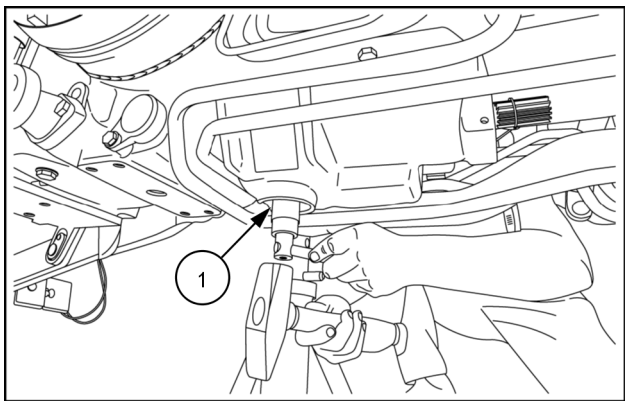
⚠ WARNING

Chemical hazard!
When handling fuel, lubricants, and other service chemicals, follow the manufacturer's instructions. Wear Personal Protective Equipment (PPE) as instructed. Do not smoke or use open flame. Collect fluids in proper containers. Obey all local and environmental regulations when disposing of chemicals.
Failure to comply could result in death or serious injury.

W0371A

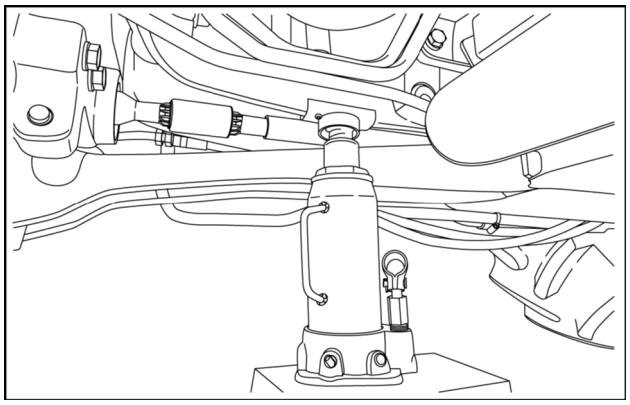
Prior operation:
A. Remove the front ballast - See **Front ballast - Remove (39.140)**.

1. Carefully clean the area around the central drain plug **(1)** on the transmission.
2. Use a suitable container to collect the transmission oil.
3. Loosen the central drain plug **(1)** on the transmission and drain the transmission oil.
4. Replace the central drain plug **(1)** on the transmission.
5. Tighten the central drain plug **(1)** on the transmission.
6. Carefully clean all the parts contaminated by any leaking hydraulic fluid.
7. Remove the cab – See **Cab and platform - Remove (90.150)**.
8. Remove the transmission drive shaft going from the transmission to the front axle - See **Front drive shaft - Remove (23.314)**.



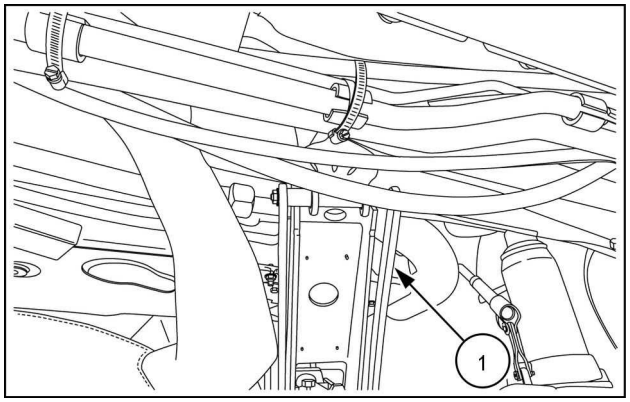
MOIL16TR01450AA 1

9. Use a suitable hydraulic lift and position it under the oil sump of the engine.



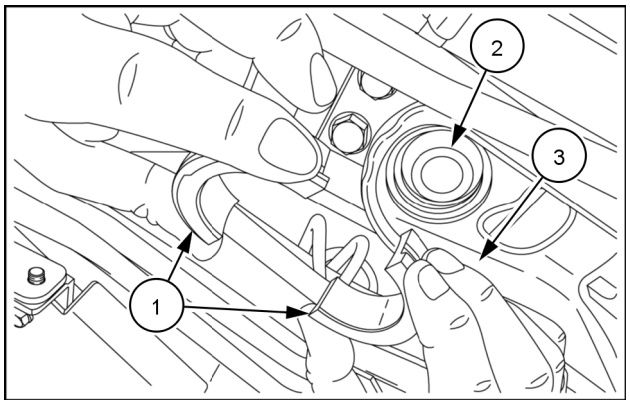
MOIL16TR01451AA 2

10. Use a second suitable hydraulic lift and position it under the swinging arm **(1)**.



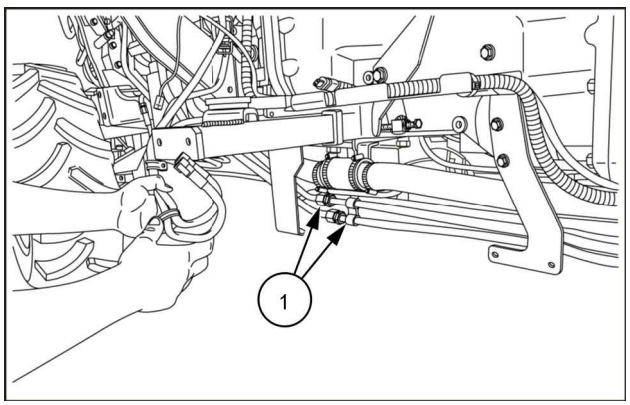
MOIL16TR01452AA 3

11. Remove the snap ring fixing the half bushes **(1)** to the rear ball joint **(2)** of the swinging arm **(3)**.
12. Push down on the hydraulic lifts and extract the half bushes **(1)** on the rear ball joint **(2)**.



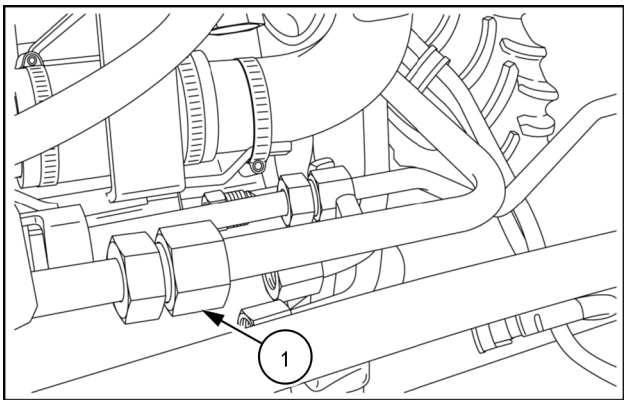
MOIL16TR01453AA 4

13. Carefully clean the area around the couplings **(1)** on the intermediate delivery and return pipes on the transmission oil exchanger.
14. Use a suitable container to collect the transmission oil.
15. Loosen the couplings **(1)** on the intermediate delivery and return pipes on the transmission oil exchanger.



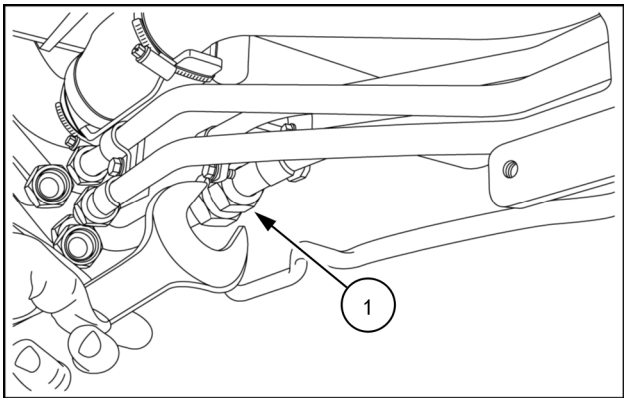
MOIL16TR01454AA 5

16. Carefully clean the area around the coupling **(1)** of the intermediate differential oil delivery pipe on the left-hand side of the vehicle.
17. Use a suitable container to collect the transmission oil.
18. Loosen the coupling **(1)** of the intermediate differential oil delivery pipe on the left-hand side of the vehicle.



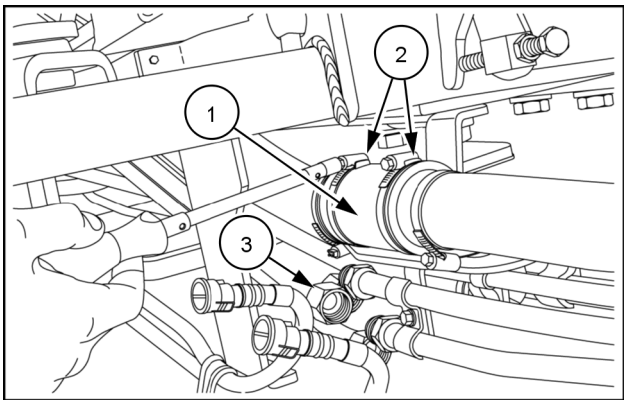
MOIL16TR01455AA 6

19. Carefully clean the area around the coupling **(1)** of the intermediate delivery pipe connected to the transmission oil filter.
20. Use a suitable container to collect the transmission oil.
21. Loosen the coupling **(1)** of the intermediate delivery pipe connected to the transmission oil filter.
22. Carefully clean all the parts contaminated by any leaking hydraulic fluid.



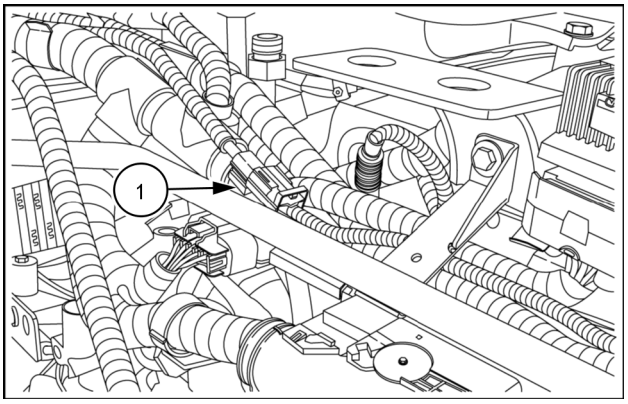
MOIL16TR01456AA 7

23. Carefully clean the area around the sleeve **(1)** of the intermediate delivery pipe connected to the transmission oil filter.
24. Use a suitable container to collect the transmission oil.
25. Loosen the two screw collars **(2)** on the sleeve **(1)** of the intermediate delivery pipe connected to the transmission oil filter.
26. Loosen the screw collar **(3)** fixing the sleeve **(1)** of the intermediate delivery pipe connected to the transmission oil filter.
27. Disconnect the sleeve **(1)** of the intermediate delivery pipe connected to the transmission oil filter.
28. Carefully clean all the parts contaminated by any leaking hydraulic fluid.



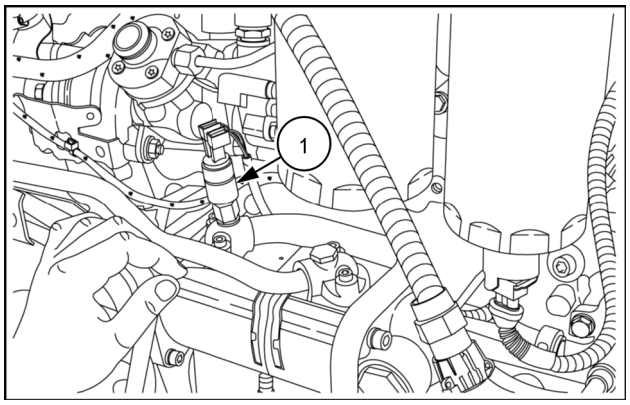
MOIL16TR01457AA 8

29. Carefully clean the area around the connector **(1)** of the steering sensor.
30. Disconnect the steering sensor connector **(1)**.
31. Disconnect the connector cable **(1)** from the steering sensor.



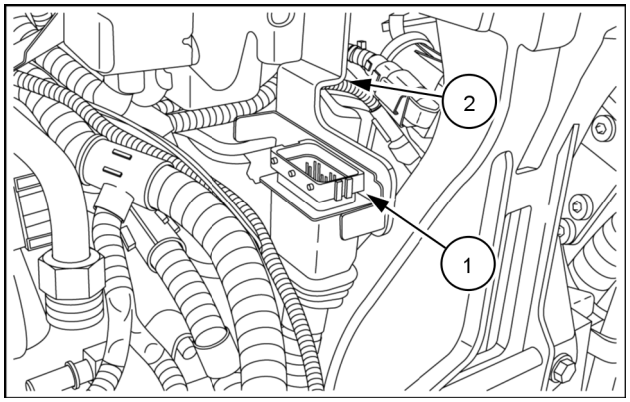
MOIL16TR01459AA 9

32. Carefully clean the area around the connector **(1)** of the hydraulic fluid pressure sensor.
33. Disconnect the connector **(1)** of the hydraulic fluid pressure sensor.
34. Disconnect the connector cable **(1)** from the hydraulic fluid pressure sensor.



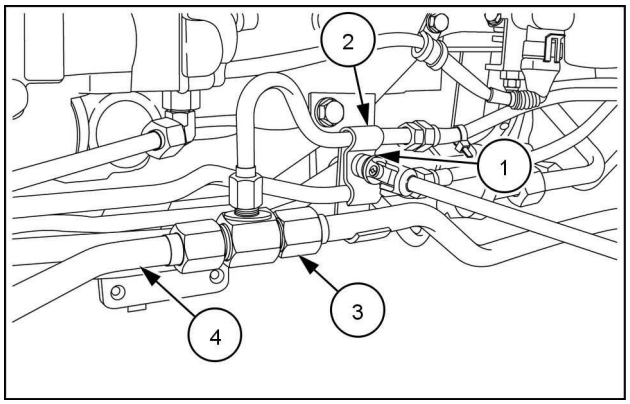
MOIL16TR01460AA 10

35. Carefully clean the area around the connector **(1)**.
36. Disconnect connector **(1)**.
37. Unclamp the connector **(1)** from the support bracket **(2)**.



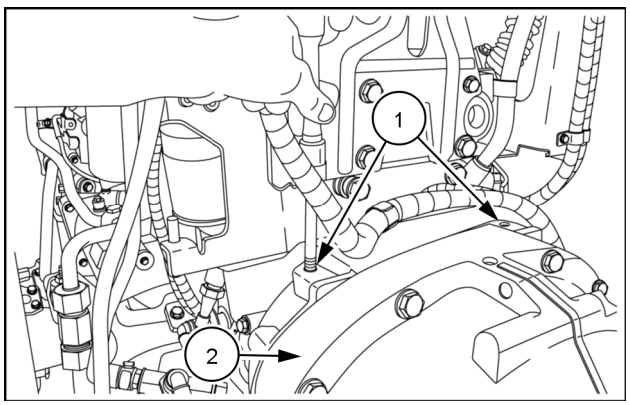
MOIL16TR01458AA 11

38. Loosen the screw **(1)** and remove the collar **(2)**.
39. Loosen the sleeve **(3)** of the oil delivery pipe **(4)**.



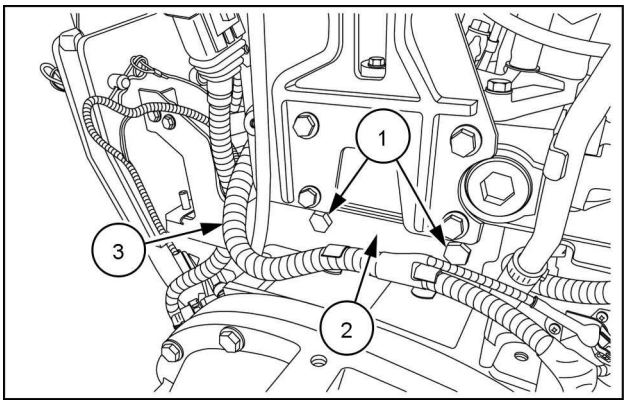
MOIL16TR01462AA 12

40. Carefully clean the area around the two holes **(1)** on the upper side of the clutch bell **(2)**.
41. Restore the thread in the two holes **(1)** on the upper side of the clutch bell **(2)**.



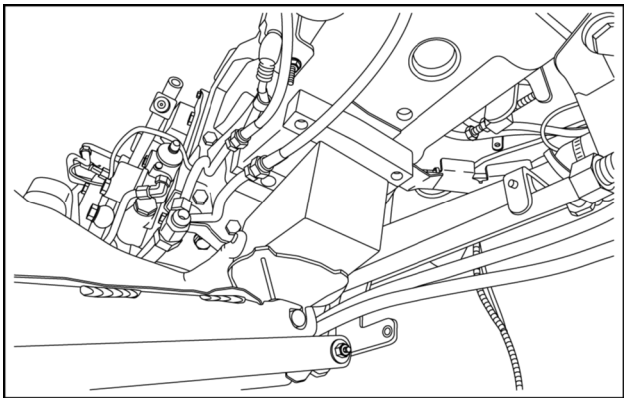
MOIL16TR01463AA 13

42. Loosen the two screws **(1)** securing the bracket **(2)**.
43. Remove the bracket **(2)** and the cable **(3)**.
44. Arrange two eyebolts suitable for lifting the engine.
45. Prepare a hoist and chains/straps that are suitable for lifting the engine.



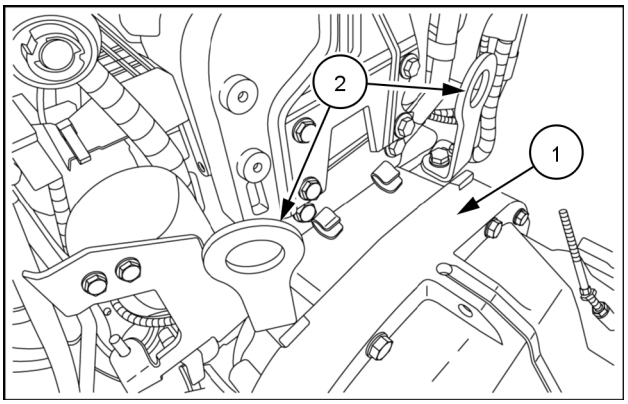
MOIL16TR01461AA 14

46. Place a suitable lift under the transmission housing.



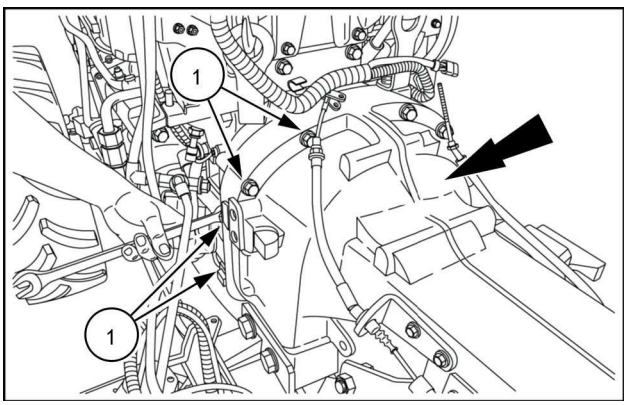
MOIL16TR01464AA 15

47. Clean the area around the clutch bell **(1)**.
48. Correctly position the two eyebolts **(1)**, and using the correct screws, lock into the holes on the upper face of the clutch bell **(2)**.
49. Correctly hook the chains/straps to the eyebolts **(1)**.
50. Use a suitable tool to separate the engine from the transmission.



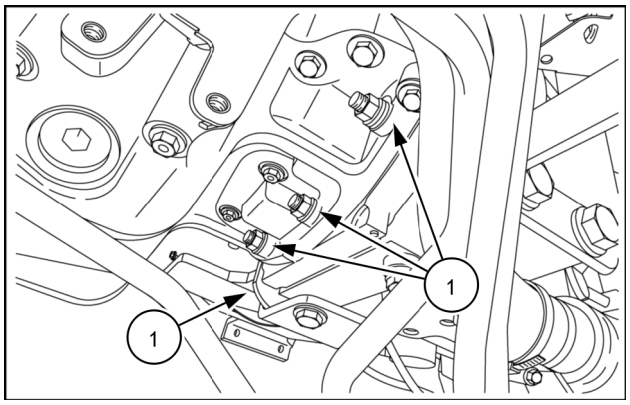
MOIL16TR01465AA 16

51. Loosen the four fastening screws **(1)** on the left-hand side of the clutch bell.
52. Repeat for the four fastening screws on the right-hand side of the clutch bell.



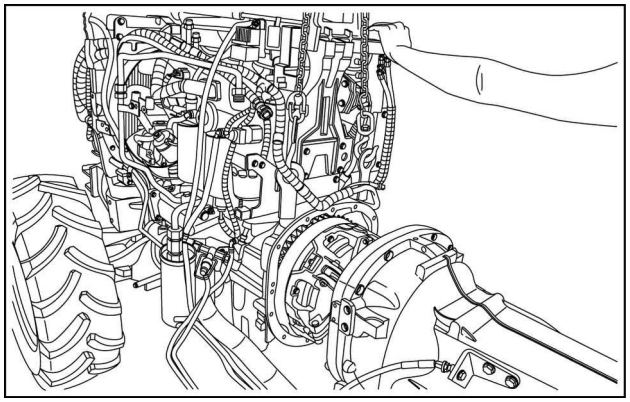
MOIL16TR01466AA 17

53. Loosen the four retaining nuts **(1)** on the lower side of the clutch bell.



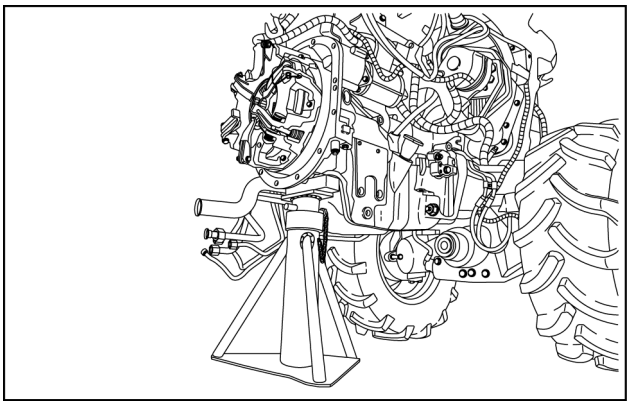
MOIL16TR01467AA 18

54. Using a suitable tool, separate the engine from the transmission.



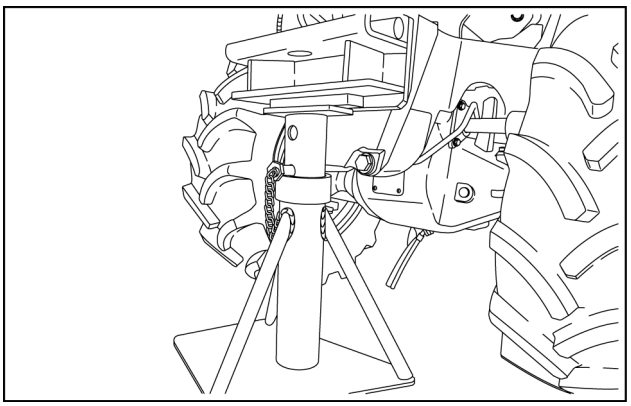
MOIL16TR01468AA 19

55. Place a suitable bracket under the clutch bell on the engine side.
56. Place a suitable bracket under the clutch bell on the engine side.



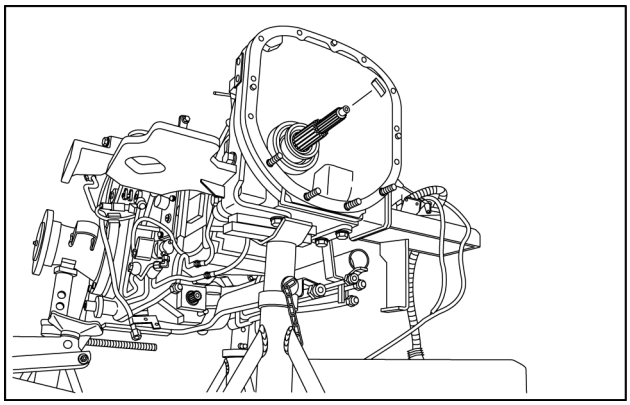
MOIL16TR01469AA 20

57. Place a suitable bracket under the support bracket of the front ballasts.
58. Place a suitable bracket under the support bracket of the front ballasts.
59. Unclamp the chains on the eyebolts and free the engine.



MOIL16TR01470AA 21

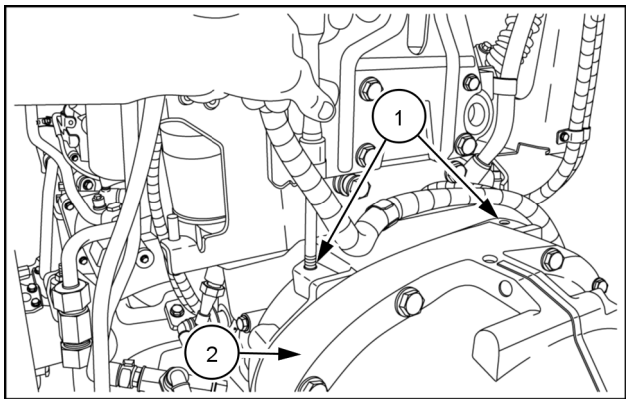
60. Place a suitable bracket under the clutch bell on the transmission side.
61. Place a suitable bracket under the clutch bell on the transmission side.



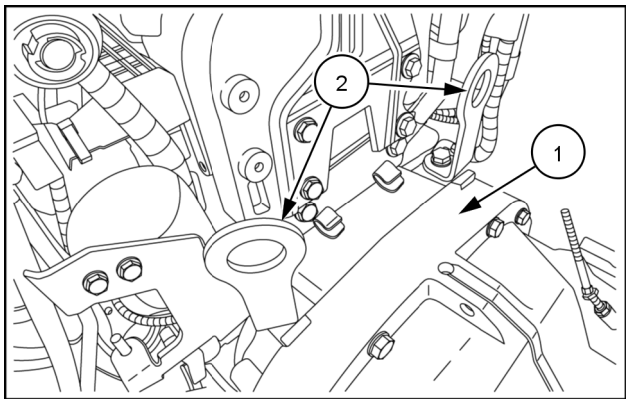
MOIL16TR01471AA 22

Engine - Install to the transmission

1. Retrieve the transmission assembly and carefully clean the area around the clutch bell.
2. Retrieve the front axle and engine assembly and clean the clutch bell.
3. Arrange two eyebolts suitable for lifting the engine.
4. Prepare a hoist and chains/straps that are suitable for lifting the engine.
5. Arrange two eyebolts suitable for lifting the engine.
6. Prepare a hoist and chains/straps that are suitable for lifting the engine.
7. Carefully clean the area around the two holes **(1)** on the upper side of the clutch bell **(2)**.
8. Restore the thread in the two holes **(1)** on the upper side of the clutch bell **(2)**.
9. Correctly position the two eyebolts **(1)**, and using the correct screws, lock into the holes on the upper face of the clutch bell **(2)**.
10. Correctly hook the chains/straps to the eyebolts **(1)**.

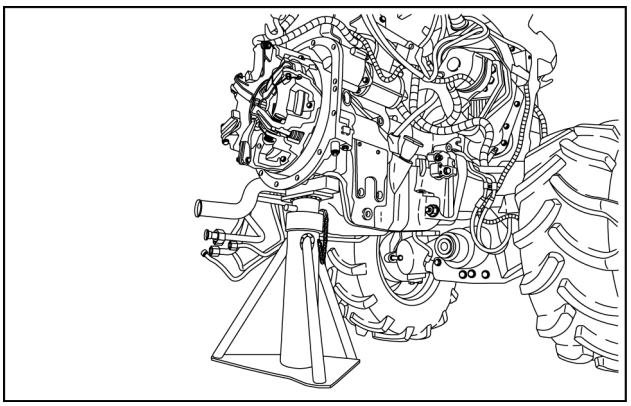


MOIL16TR01463AA 1



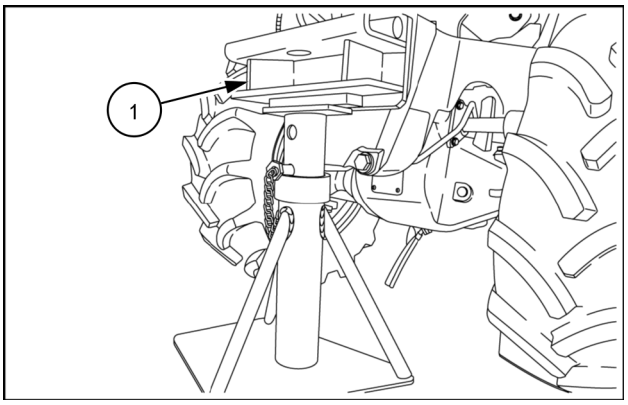
MOIL16TR01465AA 2

11. Remove any supports positioned under the clutch bell on the engine side.



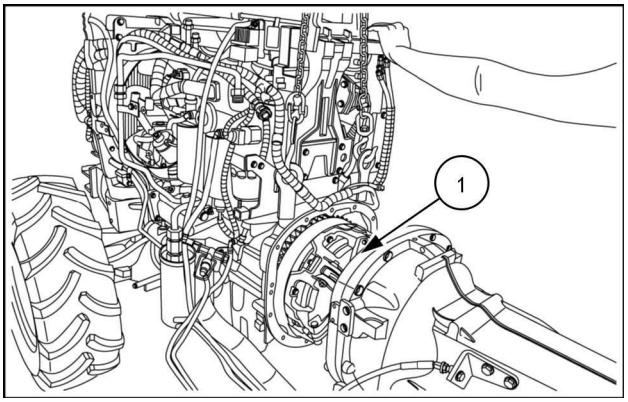
MOIL16TR01469AA 3

12. Remove any supports positioned under the support bracket **(1)** of the front ballasts.
13. Use a suitable tool to fit the transmission to the engine.



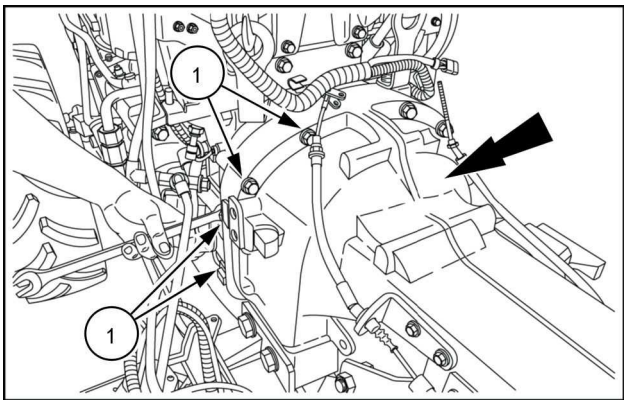
MOIL16TR01470AA 4

14. Apply suitable sealing paste to the coupling face **(1)** of the transmission clutch bell.
15. Using a suitable tool, move the engine closer to the transmission.



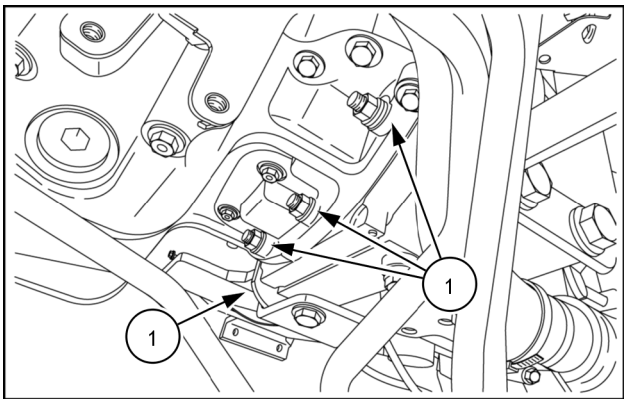
MOIL16TR01468AA 5

16. Tighten the four fastening screws **(1)** on the left-hand side of the clutch bell and tighten to the prescribed torque.
17. Repeat for the four fastening screws on the right-hand side of the clutch bell **(1)**.



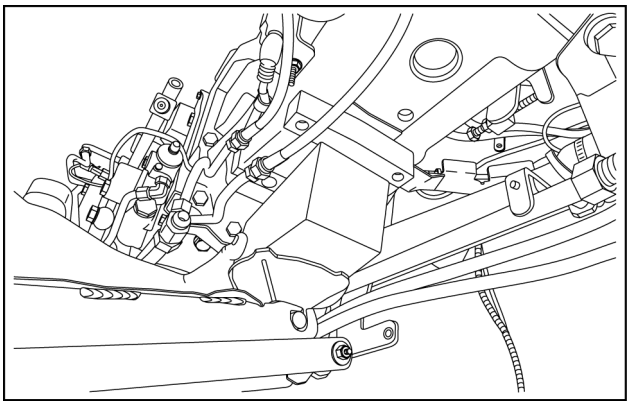
MOIL16TR01466AA 6

18. Tighten the four retaining nuts **(1)** on the lower side of the clutch bell and tighten to the prescribed torque.
19. Carefully clean all the parts contaminated by any sealing paste residue.
20. Unclamp the chains on the eyebolts and free the engine.
21. Remove the two eyebolts used to lift the engine.
22. Remove any supports positioned under the clutch bell on the transmission side.



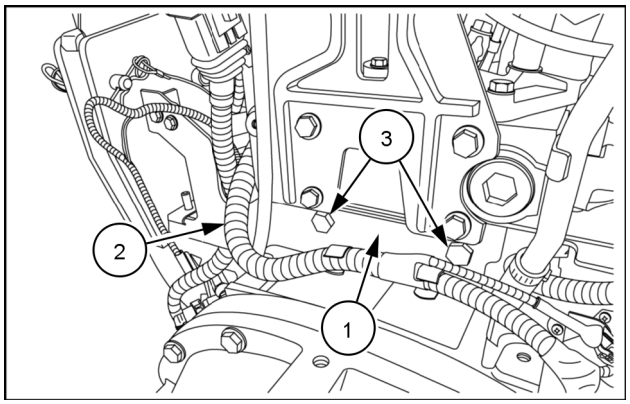
MOIL16TR01467AA 7

23. Remove any supports positioned under the transmission housing.



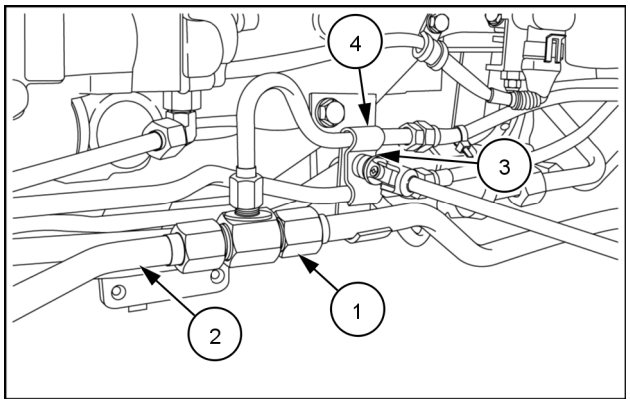
MOIL16TR01464AA 8

24. Retrieve and carefully clean the bracket **(1)**.
25. Correctly position the cable **(2)**.
26. Correctly position the bracket **(1)** in its housing on the engine.
27. Tighten the two screws **(3)** which fix the bracket **(1)** in place.



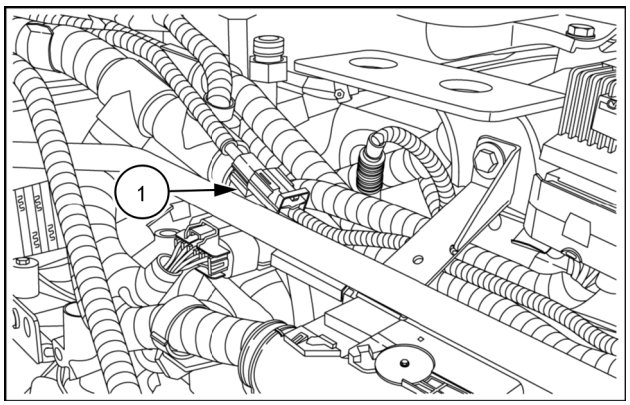
MOIL16TR01461AA 9

28. Carefully clean the area around the sleeve **(1)** of the oil delivery pipe **(2)**.
29. Tighten the sleeve **(1)** of the oil delivery pipe **(2)**.
30. Retrieve the collar **(3)** and position it correctly in its housing.
31. Tighten the fastening screw **(4)** on the collar **(2)**.



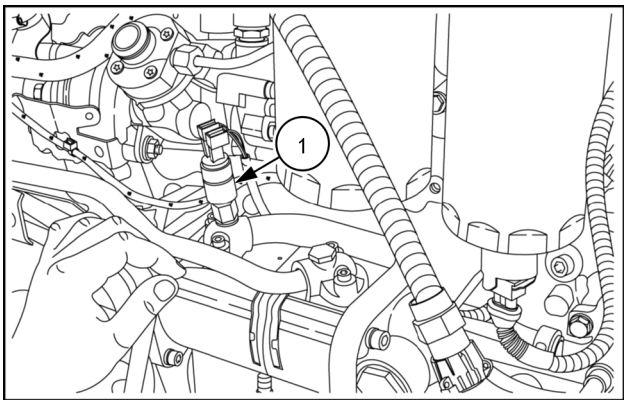
MOIL16TR01462AA 10

32. Carefully clean the area around the connector **(1)** of the steering sensor.
33. Correctly position the connector cable **(1)** of the steering sensor.
34. Connect the steering sensor connector **(1)**.



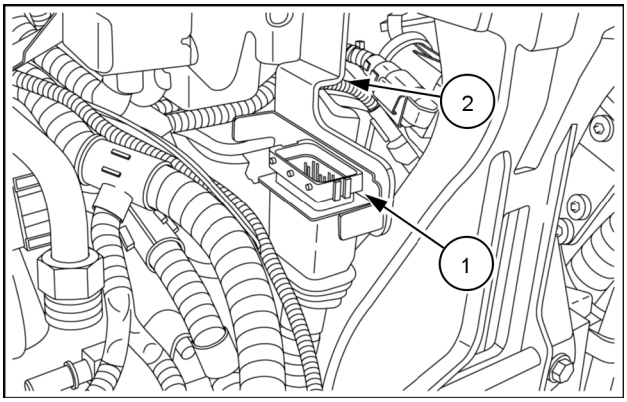
MOIL16TR01459AA 11

35. Carefully clean the area around the connector **(1)** of the hydraulic fluid pressure sensor.
36. Correctly position the connector cable **(1)** of the hydraulic fluid pressure sensor.
37. Connect the connector **(1)** of the hydraulic fluid pressure sensor.



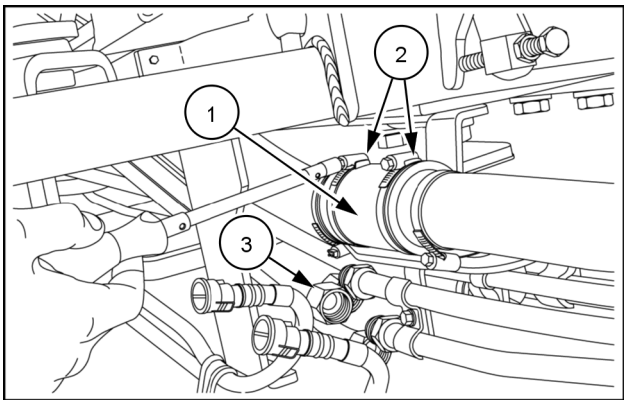
MOIL16TR01460AA 12

38. Carefully clean the area around the connector **(1)**.
39. Fasten the connector **(1)** to the support bracket **(2)**.
40. Connect the connector **(1)**.



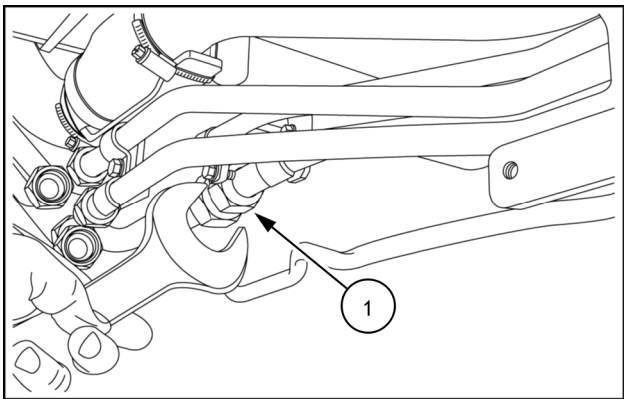
MOIL16TR01458AA 13

41. Carefully clean the area around the sleeve **(1)** of the intermediate delivery pipe connected to the transmission oil filter.
42. Connect the sleeve **(1)** of the intermediate delivery pipe connected to the transmission oil filter.
43. Tighten the two screw collars **(2)** on the sleeve **(1)** of the intermediate delivery pipe connected to the transmission oil filter.
44. Tighten the screw collar **(3)** fixing the sleeve **(1)** to the intermediate delivery pipe connected to the transmission oil filter.



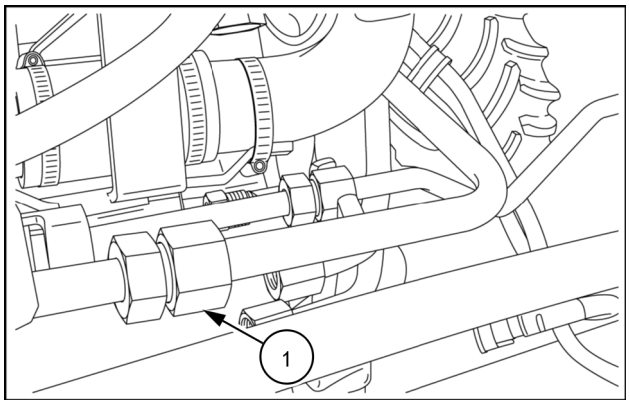
MOIL16TR01457AA 14

45. Carefully clean the area around the coupling **(1)** of the intermediate delivery pipe connected to the transmission oil filter.
46. Correctly connect the coupling **(1)** of the intermediate delivery pipe connected to the transmission oil filter.
47. Tighten the coupling **(1)** of the intermediate delivery pipe connected to the transmission oil filter.



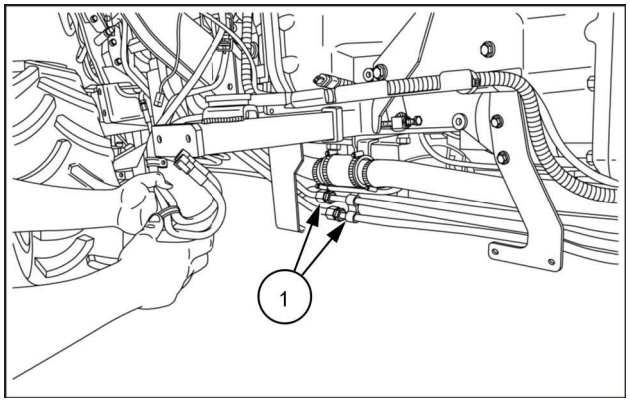
MOIL16TR01456AA 15

48. Carefully clean the area around the coupling **(1)** of the intermediate differential oil delivery pipe on the left-hand side of the vehicle.
49. Correctly connect the coupling **(1)** of the intermediate differential oil delivery pipe on the left-hand side of the vehicle.
50. Tighten the coupling **(1)** of the intermediate differential oil delivery pipe on the left-hand side of the vehicle.



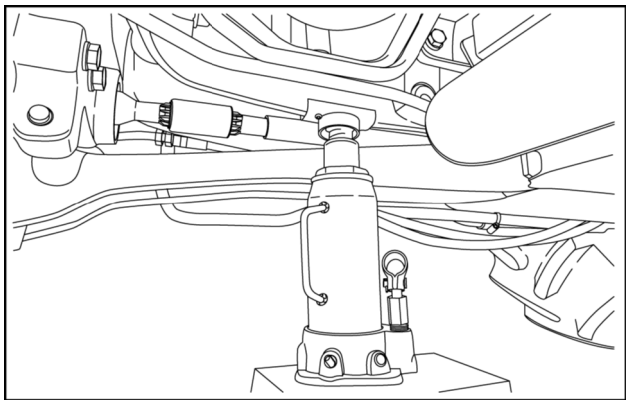
MOIL16TR01455AA 16

51. Carefully clean the area around the couplings **(1)** on the intermediate delivery and return pipes on the transmission oil exchanger.
52. Correctly connect **(1)** the intermediate delivery and return pipes to the transmission oil exchanger.
53. Tighten the couplings **(1)** on the intermediate delivery and return pipes to the transmission oil exchanger.



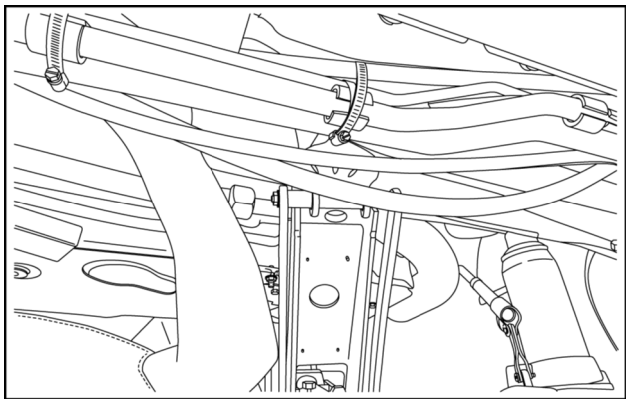
MOIL16TR01454AA 17

54. Use a suitable hydraulic lift and position it under the oil sump of the engine.



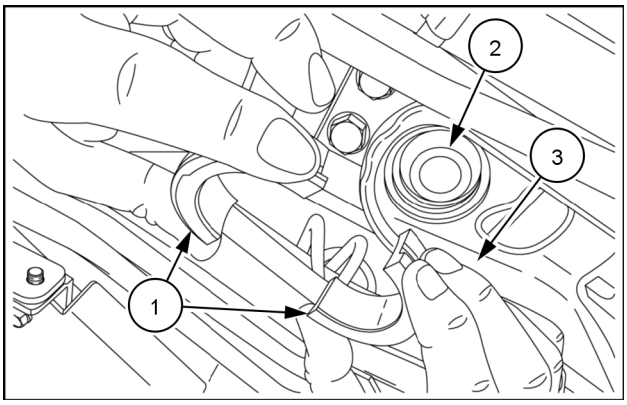
MOIL16TR01451AA 18

55. Use a second suitable hydraulic lift and position it under the swinging arm **(1)**.



MOIL16TR01452AA 19

56. Push down on the hydraulic lifts and correctly position the half bushes **(1)** on the rear ball joint **(2)**.
57. Position the snap ring fixing the half bushes **(1)** to the rear ball joint **(2)** of the swinging arm **(3)**.
58. Refit the transmission drive shaft going from the transmission to the front axle - See **Front drive shaft - Install (23.314)**.



MOIL16TR01453AA 20

Next operation:
A. Reattach the cab – See **Cab and platform - Install (90.150)**.
B. Top up the transmission oil level - See **Transmission drive housing - Level make up (21.118)**.
C. Refit the front ballast - See **Front ballast - Install (39.140)**.

Engine - Remove from transmission

⚠ WARNING

Burn hazard!
Be very careful to avoid contact with hot fluids. If fluid is extremely hot, allow it to cool to a moderately warm temperature before proceeding.
Failure to comply could result in death or serious injury.

W0362A

⚠ WARNING

Hot surface possible!
Wait for all components to cool before performing any operation.
Failure to comply could result in death or serious injury.

W0251A

⚠ CAUTION

Hot area!
Use care when working near hot components. Wear protective gloves.
Failure to comply could result in minor or moderate injury.

C0034A

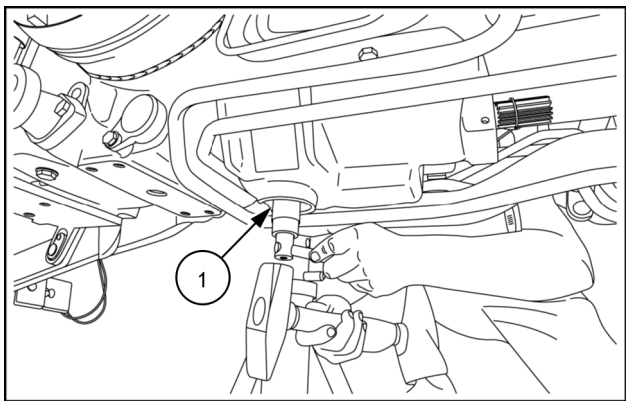
⚠ WARNING

Chemical hazard!
When handling fuel, lubricants, and other service chemicals, follow the manufacturer's instructions. Wear Personal Protective Equipment (PPE) as instructed. Do not smoke or use open flame. Collect fluids in proper containers. Obey all local and environmental regulations when disposing of chemicals.
Failure to comply could result in death or serious injury.

W0371A

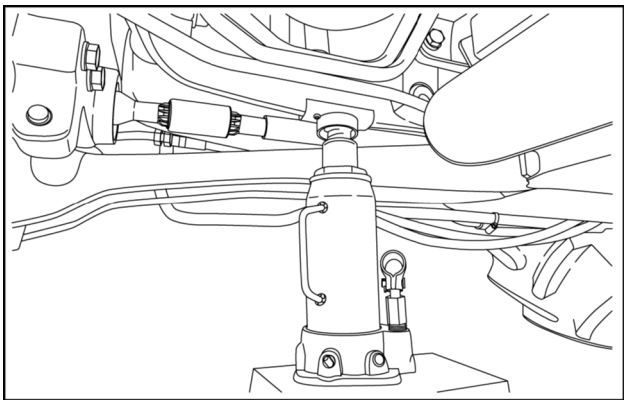
Prior operation:
A. Remove the front ballast - See **Front ballast - Remove (39.140)**.

1. Carefully clean the area around the central drain plug **(1)** on the transmission.
2. Use a suitable container to collect the transmission oil.
3. Loosen the central drain plug **(1)** on the transmission and drain the transmission oil.
4. Replace the central drain plug **(1)** on the transmission.
5. Tighten the central drain plug **(1)** on the transmission.
6. Carefully clean all the parts contaminated by any leaking hydraulic fluid.
7. Remove the operator platform – See **Platform - Remove (90.110)**.
8. Remove the transmission drive shaft going from the transmission to the front axle - See **Front drive shaft - Remove (23.314)**.



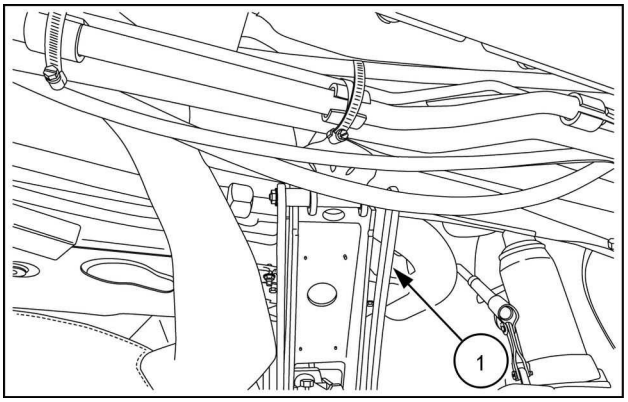
MOIL16TR01450AA 1

9. Use a suitable hydraulic lift and position it under the oil sump of the engine.



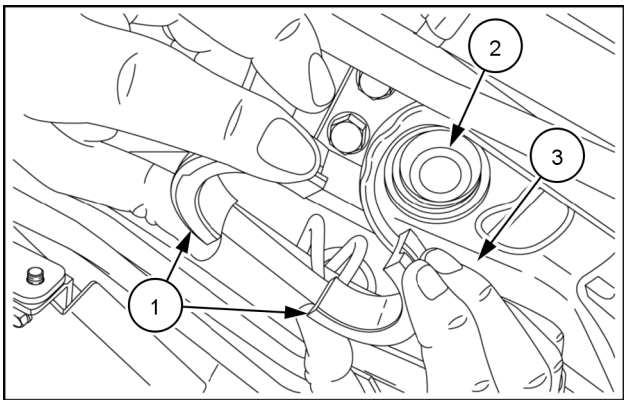
MOIL16TR01451AA 2

10. Use a second suitable hydraulic lift and position it under the swinging arm **(1)**.



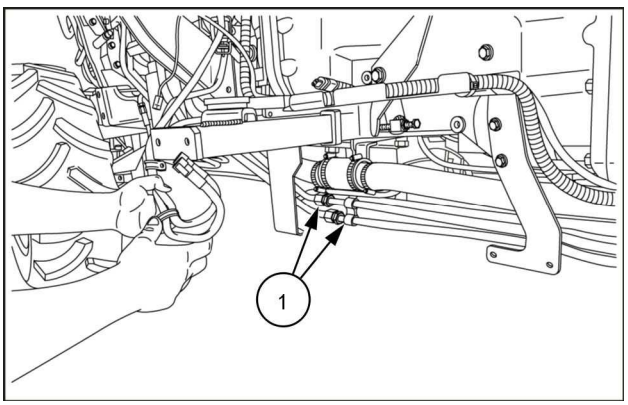
MOIL16TR01452AA 3

11. Remove the snap ring fixing the half bushes **(1)** to the rear ball joint **(2)** of the swinging arm **(3)**.
12. Push down on the hydraulic lifts and extract the half bushes **(1)** on the rear ball joint **(2)**.



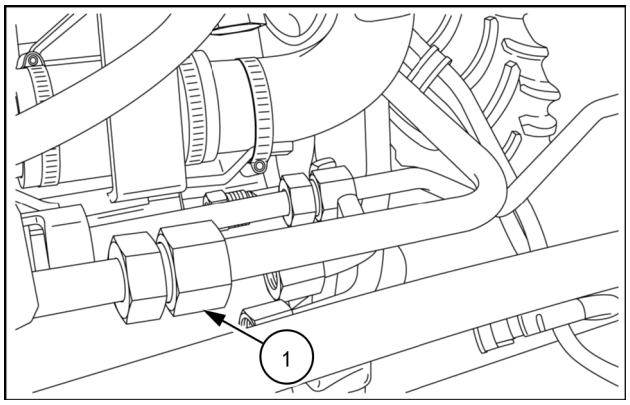
MOIL16TR01453AA 4

13. Carefully clean the area around the couplings **(1)** on the intermediate delivery and return pipes on the transmission oil exchanger.
14. Use a suitable container to collect the transmission oil.
15. Loosen the couplings **(1)** on the intermediate delivery and return pipes on the transmission oil exchanger.



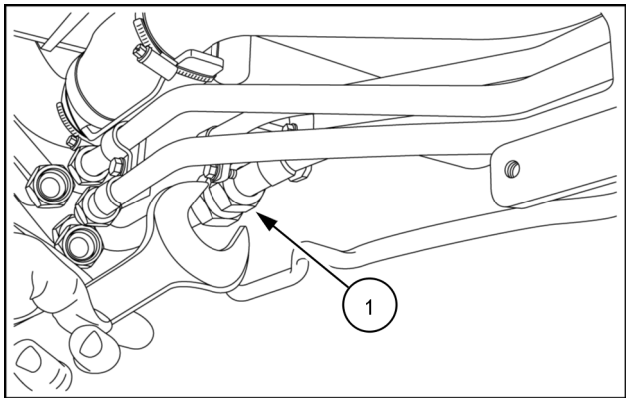
MOIL16TR01454AA 5

16. Carefully clean the area around the coupling **(1)** of the intermediate differential oil delivery pipe on the left-hand side of the vehicle.
17. Use a suitable container to collect the transmission oil.
18. Loosen the coupling **(1)** of the intermediate differential oil delivery pipe on the left-hand side of the vehicle.



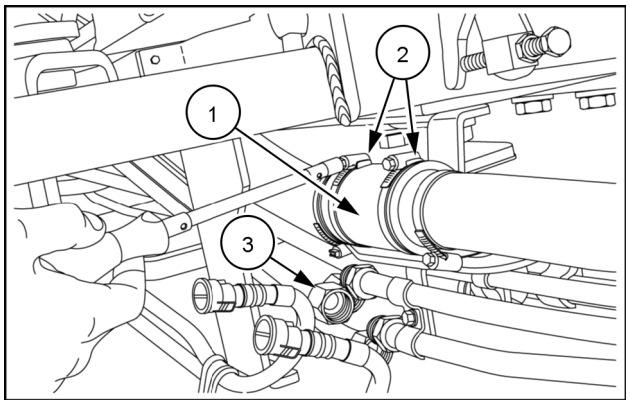
MOIL16TR01455AA 6

19. Carefully clean the area around the coupling **(1)** of the intermediate delivery pipe connected to the transmission oil filter.
20. Use a suitable container to collect the transmission oil.
21. Loosen the coupling **(1)** of the intermediate delivery pipe connected to the transmission oil filter.
22. Carefully clean all the parts contaminated by any leaking hydraulic fluid.



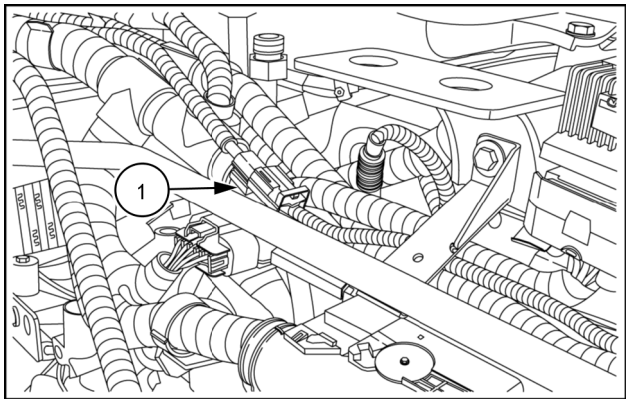
MOIL16TR01456AA 7

23. Carefully clean the area around the sleeve **(1)** of the intermediate delivery pipe connected to the transmission oil filter.
24. Use a suitable container to collect the transmission oil.
25. Loosen the two screw collars **(2)** on the sleeve **(1)** of the intermediate delivery pipe connected to the transmission oil filter.
26. Loosen the screw collar **(3)** fixing the sleeve **(1)** of the intermediate delivery pipe connected to the transmission oil filter.
27. Disconnect the sleeve **(1)** of the intermediate delivery pipe connected to the transmission oil filter.
28. Carefully clean all the parts contaminated by any leaking hydraulic fluid.



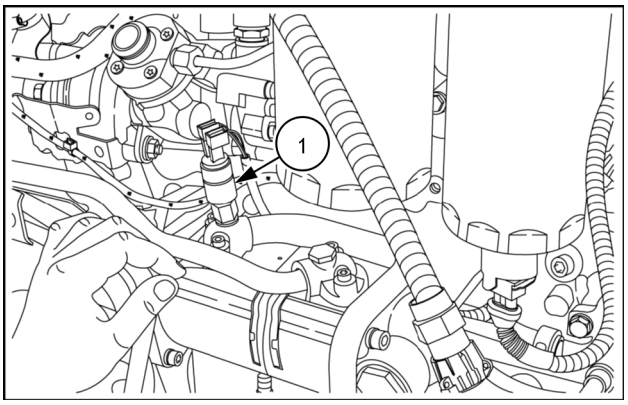
MOIL16TR01457AA 8

29. Carefully clean the area around the connector **(1)** of the steering sensor.
30. Disconnect the steering sensor connector **(1)**.
31. Disconnect the connector cable **(1)** from the steering sensor.



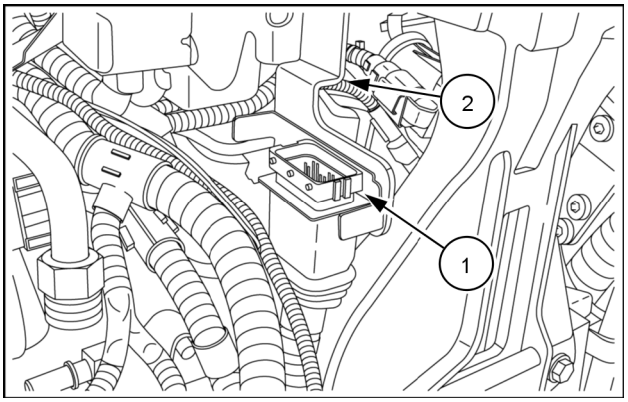
MOIL16TR01459AA 9

32. Carefully clean the area around the connector **(1)** of the hydraulic fluid pressure sensor.
33. Disconnect the connector **(1)** of the hydraulic fluid pressure sensor.
34. Disconnect the connector cable **(1)** from the hydraulic fluid pressure sensor.



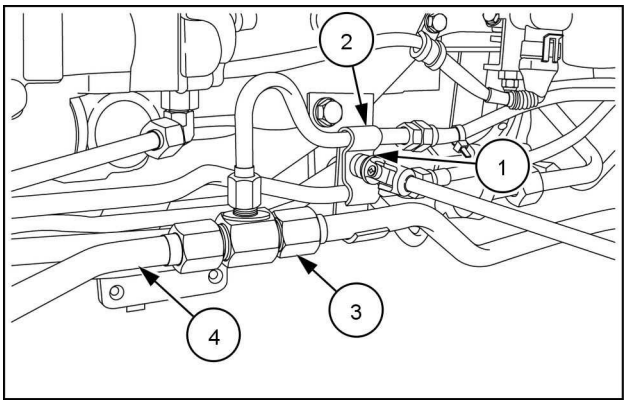
MOIL16TR01460AA 10

35. Carefully clean the area around the connector **(1)**.
36. Disconnect connector **(1)**.
37. Unclamp the connector **(1)** from the support bracket **(2)**.



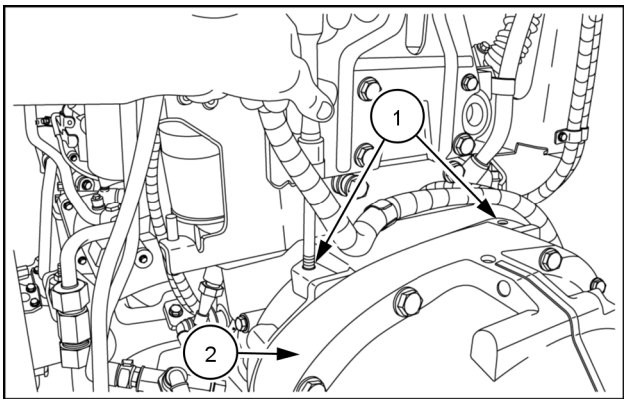
MOIL16TR01458AA 11

38. Loosen the screw **(1)** and remove the collar **(2)**.
39. Loosen the sleeve **(3)** of the oil delivery pipe **(4)**.



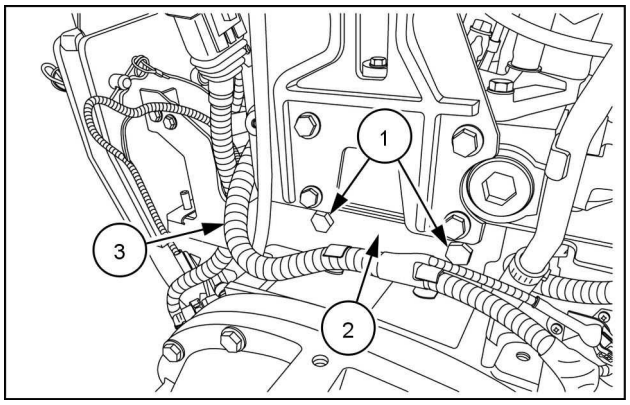
MOIL16TR01462AA 12

40. Carefully clean the area around the two holes **(1)** on the upper side of the clutch bell **(2)**.
41. Restore the thread in the two holes **(1)** on the upper side of the clutch bell **(2)**.



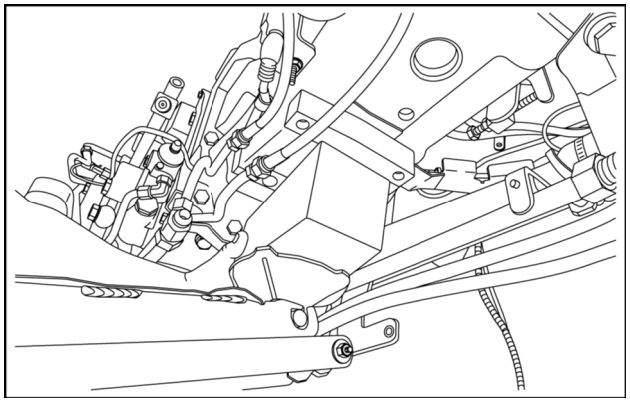
MOIL16TR01463AA 13

42. Loosen the two screws **(1)** securing the bracket **(2)**.
43. Remove the bracket **(2)** and the cable **(3)**.
44. Arrange two eyebolts suitable for lifting the engine.
45. Prepare a hoist and chains/straps that are suitable for lifting the engine.



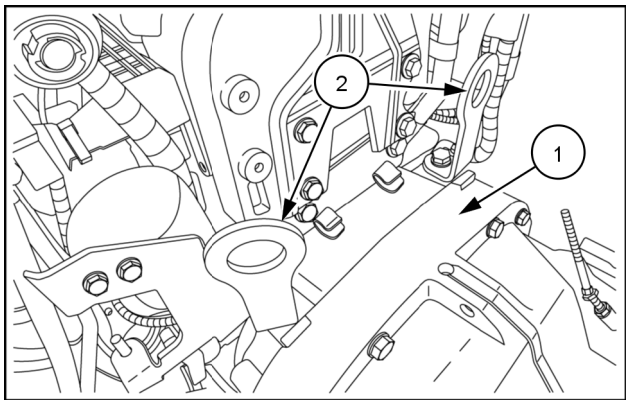
MOIL16TR01461AA 14

46. Place a suitable lift under the transmission housing.



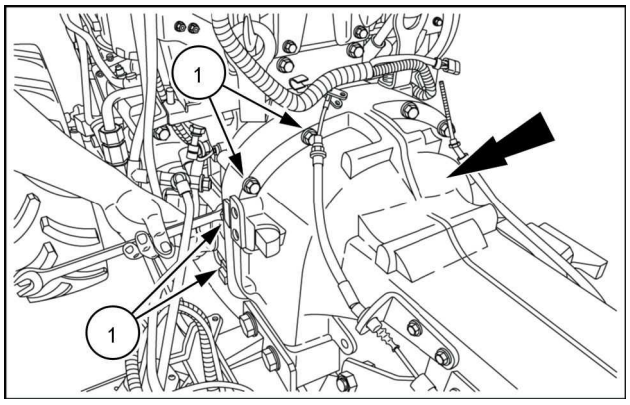
MOIL16TR01464AA 15

47. Clean the area around the clutch bell **(1)**.
48. Correctly position the two eyebolts **(1)**, and using the correct screws, lock into the holes on the upper face of the clutch bell **(2)**.
49. Correctly hook the chains/straps to the eyebolts **(1)**.
50. Use a suitable tool to separate the engine from the transmission.



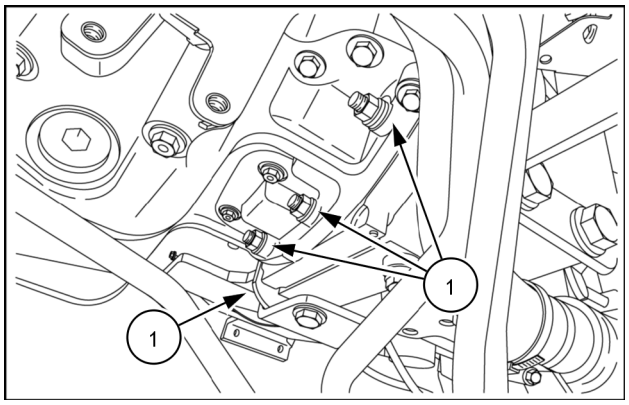
MOIL16TR01465AA 16

51. Loosen the four fastening screws **(1)** on the left-hand side of the clutch bell.
52. Repeat for the four fastening screws on the right-hand side of the clutch bell.



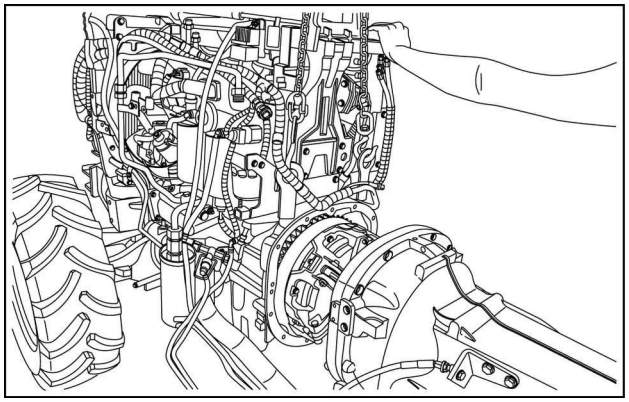
MOIL16TR01466AA 17

53. Loosen the four retaining nuts **(1)** on the lower side of the clutch bell.



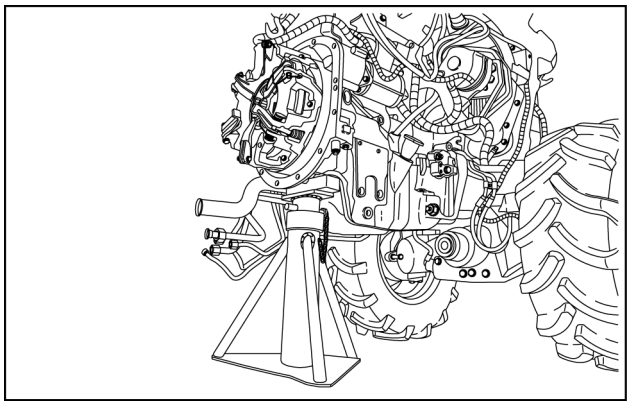
MOIL16TR01467AA 18

54. Using a suitable tool, separate the engine from the transmission.



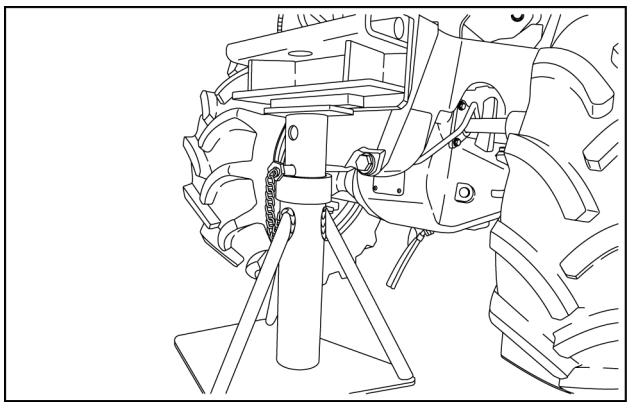
MOIL16TR01468AA 19

55. Place a suitable bracket under the clutch bell on the engine side.
56. Place a suitable bracket under the clutch bell on the engine side.



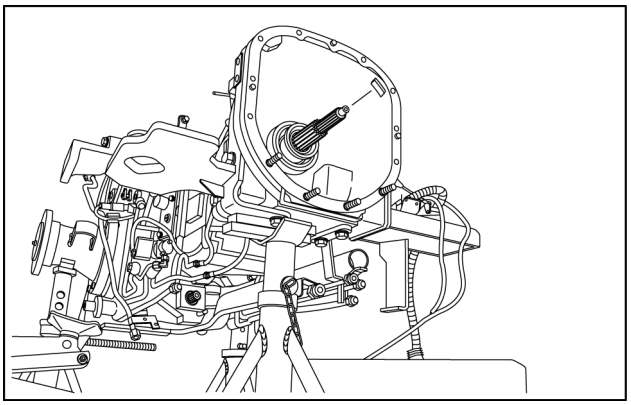
MOIL16TR01469AA 20

57. Place a suitable bracket under the support bracket of the front ballasts.
58. Place a suitable bracket under the support bracket of the front ballasts.
59. Unclamp the chains on the eyebolts and free the engine.



MOIL16TR01470AA 21

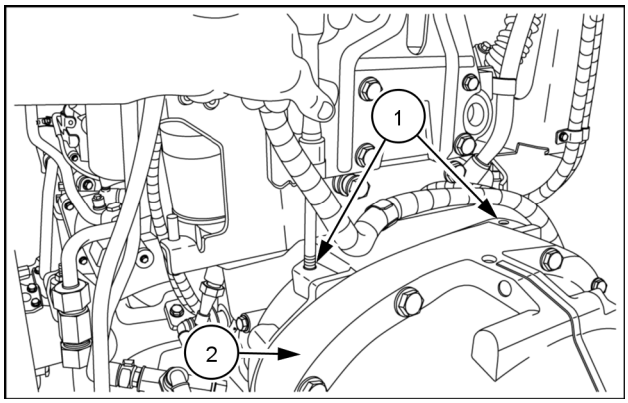
60. Place a suitable bracket under the clutch bell on the transmission side.
61. Place a suitable bracket under the clutch bell on the transmission side.



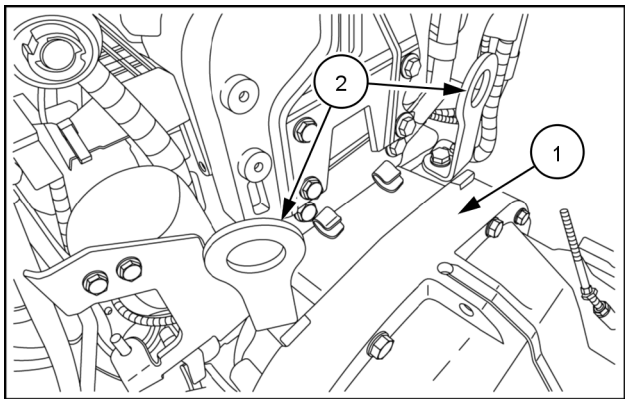
MOIL16TR01471AA 22

Engine - Install to the transmission

1. Retrieve the transmission assembly and carefully clean the area around the clutch bell.
2. Retrieve the front axle and engine assembly and clean the clutch bell.
3. Arrange two eyebolts suitable for lifting the engine.
4. Prepare a hoist and chains/straps that are suitable for lifting the engine.
5. Arrange two eyebolts suitable for lifting the engine.
6. Prepare a hoist and chains/straps that are suitable for lifting the engine.
7. Carefully clean the area around the two holes **(1)** on the upper side of the clutch bell **(2)**.
8. Restore the thread in the two holes **(1)** on the upper side of the clutch bell **(2)**.
9. Correctly position the two eyebolts **(1)**, and using the correct screws, lock into the holes on the upper face of the clutch bell **(2)**.
10. Correctly hook the chains/straps to the eyebolts **(1)**.

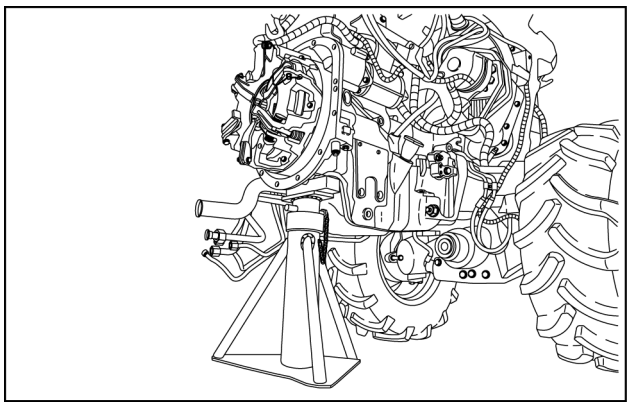


MOIL16TR01463AA 1



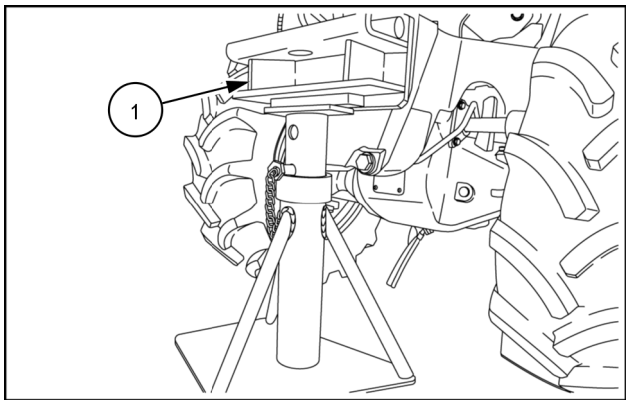
MOIL16TR01465AA 2

11. Remove any supports positioned under the clutch bell on the engine side.



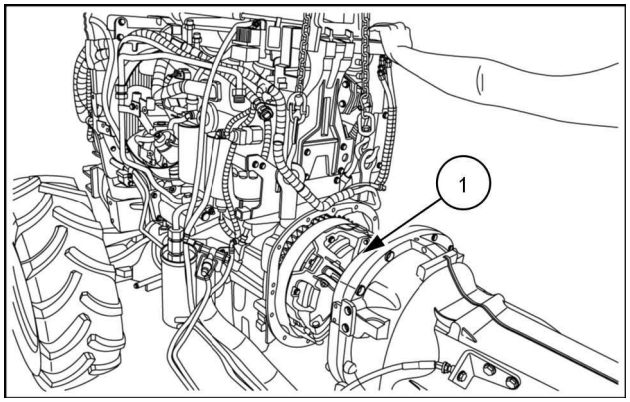
MOIL16TR01469AA 3

12. Remove any supports positioned under the support bracket **(1)** of the front ballasts.
13. Use a suitable tool to fit the transmission to the engine.



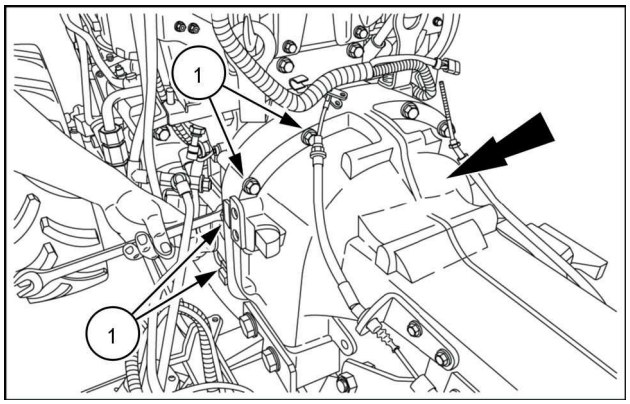
MOIL16TR01470AA 4

14. Apply suitable sealing paste to the coupling face **(1)** of the transmission clutch bell.
15. Using a suitable tool, move the engine closer to the transmission.



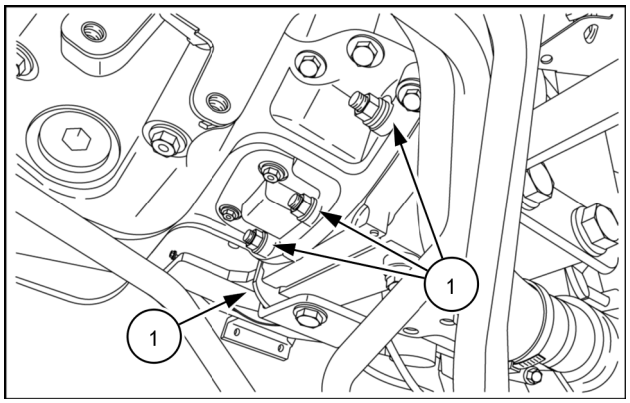
MOIL16TR01468AA 5

16. Tighten the four fastening screws **(1)** on the left-hand side of the clutch bell and tighten to the prescribed torque.
17. Repeat for the four fastening screws on the right-hand side of the clutch bell **(1)**.



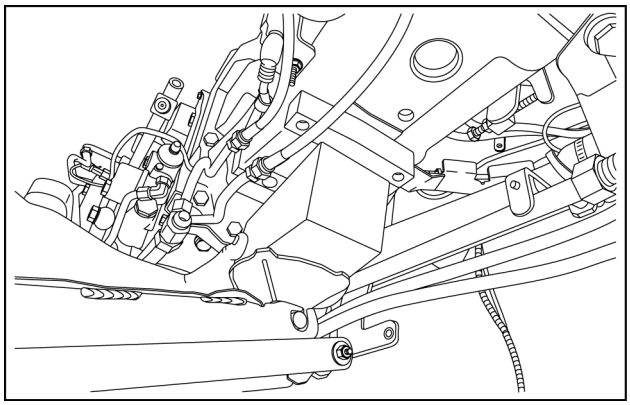
MOIL16TR01466AA 6

18. Tighten the four retaining nuts **(1)** on the lower side of the clutch bell and tighten to the prescribed torque.
19. Carefully clean all the parts contaminated by any sealing paste residue.
20. Unclamp the chains on the eyebolts and free the engine.
21. Remove the two eyebolts used to lift the engine.
22. Remove any supports positioned under the clutch bell on the transmission side.



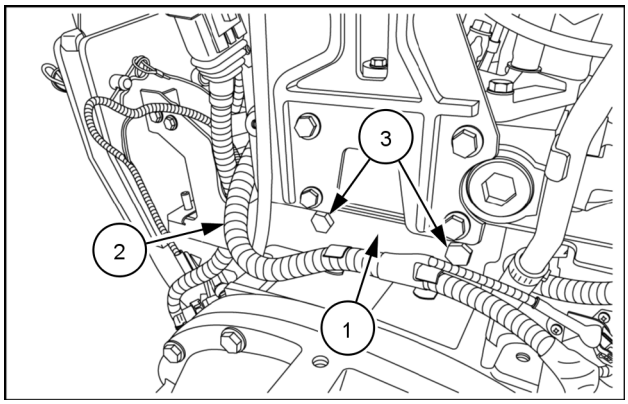
MOIL16TR01467AA 7

23. Remove any supports positioned under the transmission housing.



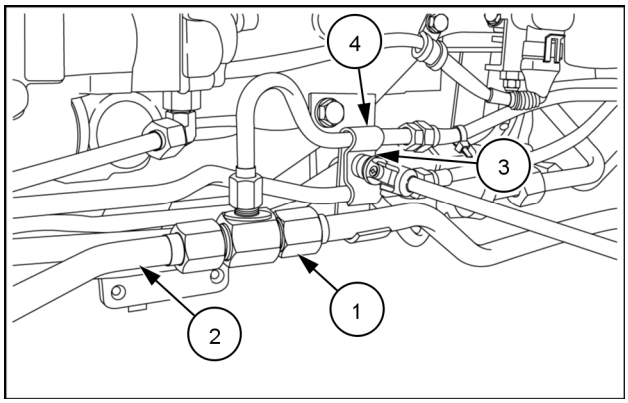
MOIL16TR01464AA 8

24. Retrieve and carefully clean the bracket **(1)**.
25. Correctly position the cable **(2)**.
26. Correctly position the bracket **(1)** in its housing on the engine.
27. Tighten the two screws **(3)** which fix the bracket **(1)** in place.



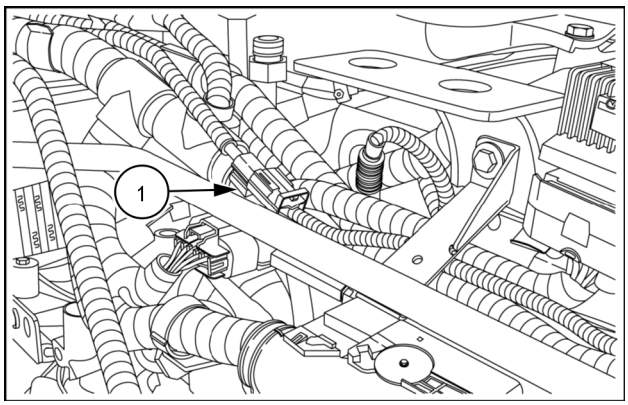
MOIL16TR01461AA 9

28. Carefully clean the area around the sleeve **(1)** of the oil delivery pipe **(2)**.
29. Tighten the sleeve **(1)** of the oil delivery pipe **(2)**.
30. Retrieve the collar **(3)** and position it correctly in its housing.
31. Tighten the fastening screw **(4)** on the collar **(2)**.



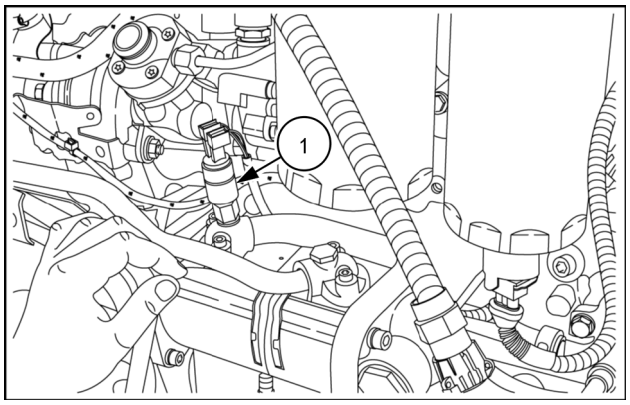
MOIL16TR01462AA 10

32. Carefully clean the area around the connector **(1)** of the steering sensor.
33. Correctly position the connector cable **(1)** of the steering sensor.
34. Connect the steering sensor connector **(1)**.



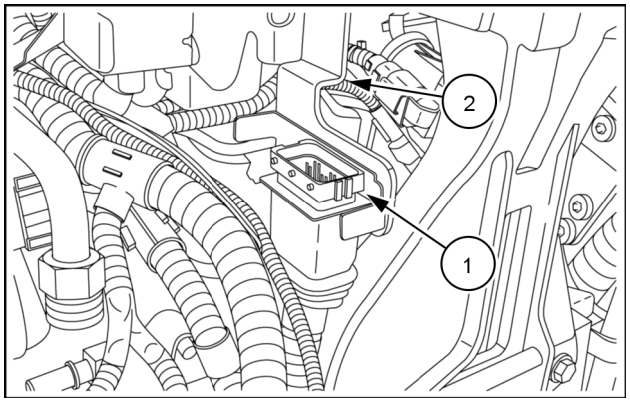
MOIL16TR01459AA 11

35. Carefully clean the area around the connector **(1)** of the hydraulic fluid pressure sensor.
36. Correctly position the connector cable **(1)** of the hydraulic fluid pressure sensor.
37. Connect the connector **(1)** of the hydraulic fluid pressure sensor.



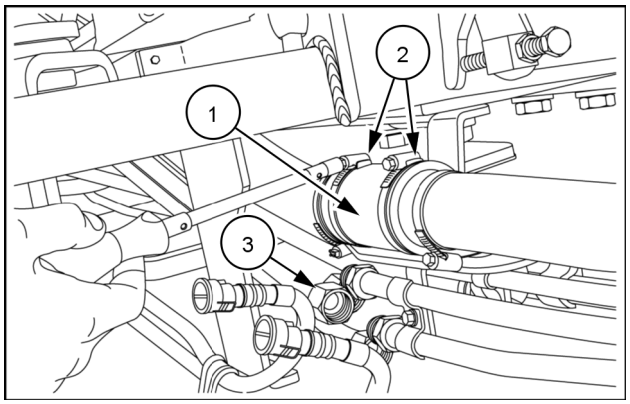
MOIL16TR01460AA 12

38. Carefully clean the area around the connector **(1)**.
39. Fasten the connector **(1)** to the support bracket **(2)**.
40. Connect the connector **(1)**.



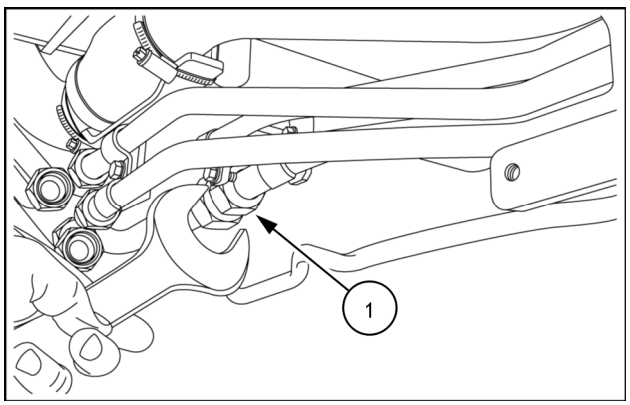
MOIL16TR01458AA 13

41. Carefully clean the area around the sleeve **(1)** of the intermediate delivery pipe connected to the transmission oil filter.
42. Connect the sleeve **(1)** of the intermediate delivery pipe connected to the transmission oil filter.
43. Tighten the two screw collars **(2)** on the sleeve **(1)** of the intermediate delivery pipe connected to the transmission oil filter.
44. Tighten the screw collar **(3)** fixing the sleeve **(1)** to the intermediate delivery pipe connected to the transmission oil filter.



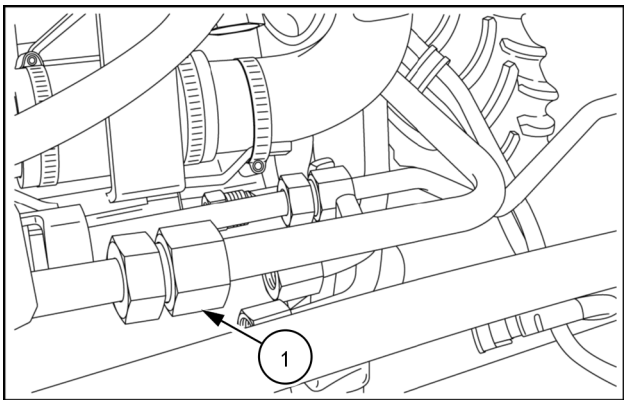
MOIL16TR01457AA 14

45. Carefully clean the area around the coupling **(1)** of the intermediate delivery pipe connected to the transmission oil filter.
46. Correctly connect the coupling **(1)** of the intermediate delivery pipe connected to the transmission oil filter.
47. Tighten the coupling **(1)** of the intermediate delivery pipe connected to the transmission oil filter.



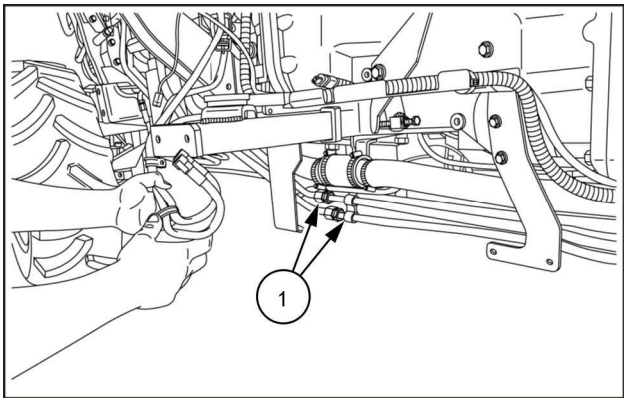
MOIL16TR01456AA 15

48. Carefully clean the area around the coupling **(1)** of the intermediate differential oil delivery pipe on the left-hand side of the vehicle.
49. Correctly connect the coupling **(1)** of the intermediate differential oil delivery pipe on the left-hand side of the vehicle.
50. Tighten the coupling **(1)** of the intermediate differential oil delivery pipe on the left-hand side of the vehicle.



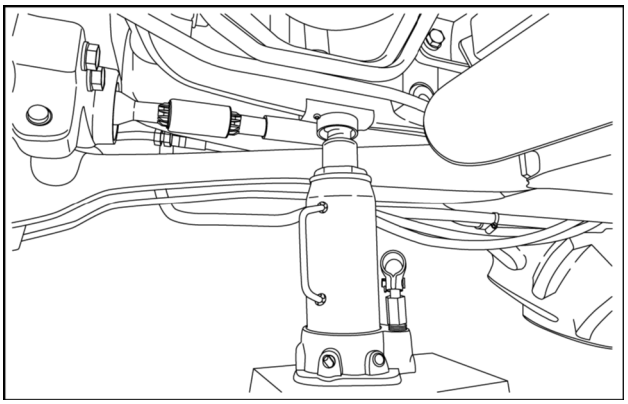
MOIL16TR01455AA 16

51. Carefully clean the area around the couplings **(1)** on the intermediate delivery and return pipes on the transmission oil exchanger.
52. Correctly connect **(1)** the intermediate delivery and return pipes to the transmission oil exchanger.
53. Tighten the couplings **(1)** on the intermediate delivery and return pipes to the transmission oil exchanger.



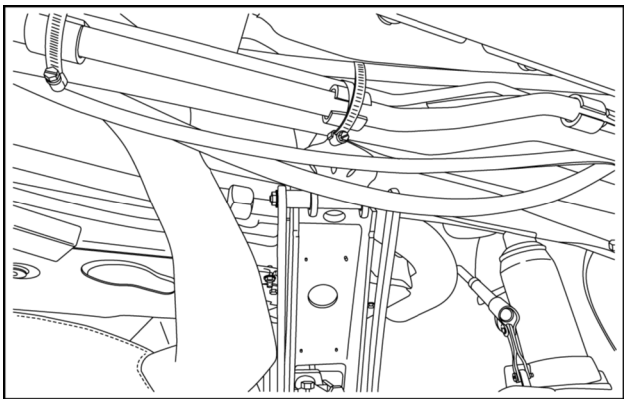
MOIL16TR01454AA 17

54. Use a suitable hydraulic lift and position it under the oil sump of the engine.



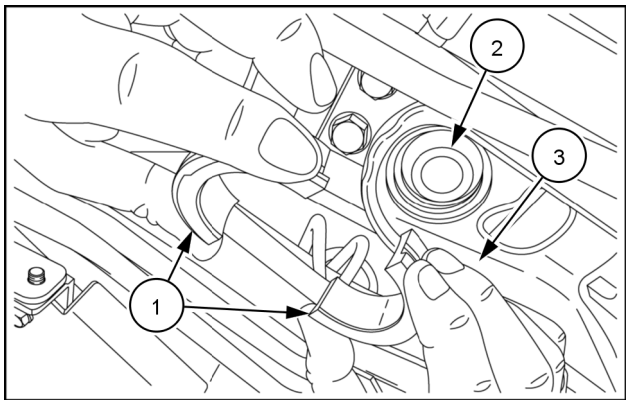
MOIL16TR01451AA 18

55. Use a second suitable hydraulic lift and position it under the swinging arm **(1)**.



MOIL16TR01452AA 19

56. Push down on the hydraulic lifts and correctly position the half bushes **(1)** on the rear ball joint **(2)**.
57. Position the seeger fixing the half bushes **(1)** to the rear ball joint **(2)** of the swinging arm **(3)**.
58. Refit the transmission drive shaft going from the transmission to the front axle - See **Front drive shaft - Install (23.314)**.



MOIL16TR01453AA 20

Next operation:
A. Refit the operator platform – See **Platform - Install (90.110)**.
B. Top up the transmission oil level - See **Transmission drive housing - Level make up (21.118)**.
C. Refit the front ballast - See **Front ballast - Install (39.140)**.

Engine - Level make up

⚠ WARNING

Hot surface possible!
Wait for all components to cool before performing any operation.
Failure to comply could result in death or serious injury.

W0251A

⚠ CAUTION

Hot area!
Use care when working near hot components. Wear protective gloves.
Failure to comply could result in minor or moderate injury.

C0034A

⚠ WARNING

Burn hazard!
Be very careful to avoid contact with hot fluids. If fluid is extremely hot, allow it to cool to a moderately warm temperature before proceeding.
Failure to comply could result in death or serious injury.

W0362A

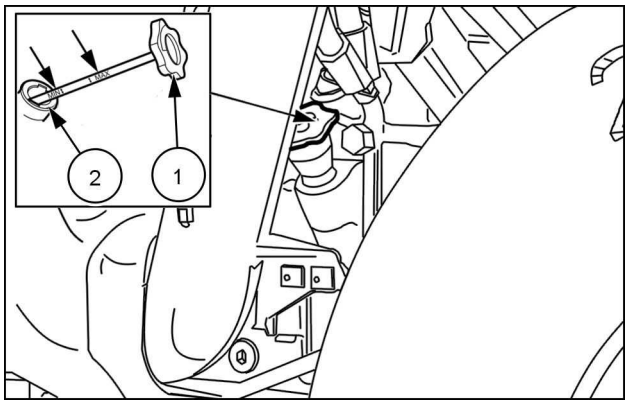
⚠ WARNING

Chemical hazard!
When handling fuel, lubricants, and other service chemicals, follow the manufacturer's instructions. Wear Personal Protective Equipment (PPE) as instructed. Do not smoke or use open flame. Collect fluids in proper containers. Obey all local and environmental regulations when disposing of chemicals.
Failure to comply could result in death or serious injury.

W0371A

Check the engine oil level with the engine cold or once having waited at least five minutes after stopping the engine.

1. Clean the area around the dipstick cap **(1)** thoroughly.
2. Unscrew the dipstick cap **(1)** from its seat and check that the engine oil level is between the notches marked “MIN” and “MAX”. If necessary, top up with the recommended oil to the correct level via the filler neck **(2)**.
3. Replace the oil dipstick cap **(1)** in the filler neck **(2)** and tighten.



MOIL16TR03961AA 1

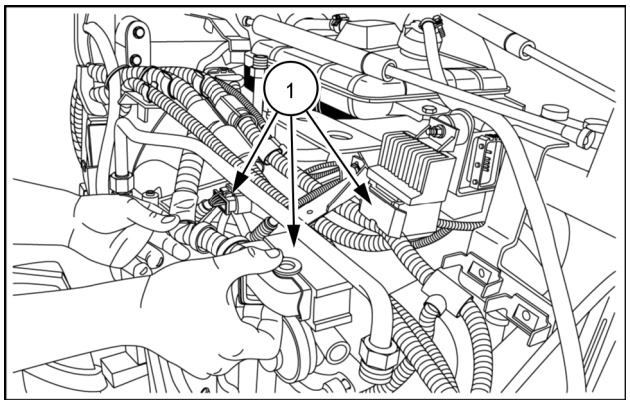
NOTICE: *never mix different types of lubricant oil, as this may interfere with engine operation.*

NOTICE: *the engine oil level must not go above the "MAX" mark on the dipstick, to prevent the excess oil burning, which would generate smoke and give incorrect oil consumption information.*

Engine - Remove

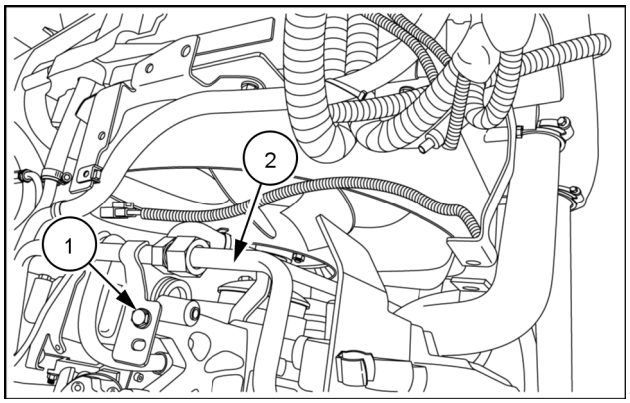
Prior operation:
A. Uncouple the engine from the drive line - See **Engine - Remove from transmission (10.001)**.

1. Carefully clean the area around the engine injection system connectors **(1)**, the steering sensor and the pre-heating system on the right-hand side of the vehicle.
2. Disconnect the three connectors **(1)** on the right-hand side of the engine.



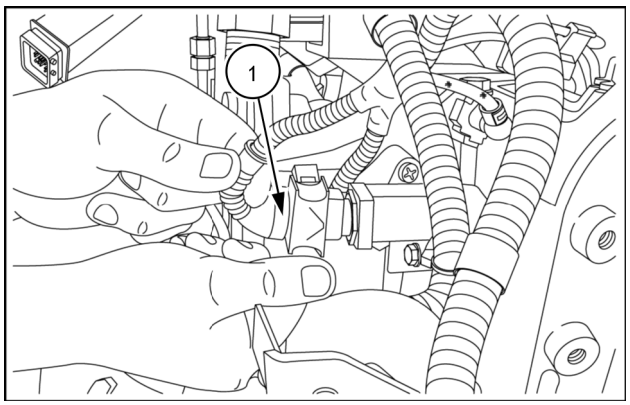
MOIL16TR01600AA 1

3. Loosen the retaining screw **(1)** on the support bracket for the intermediate power steering hose **(2)** .



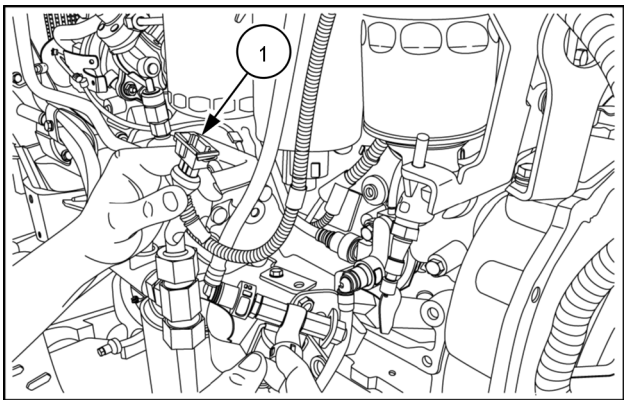
MOIL16TR01603AA 2

4. Carefully clean the area around the fuel pressure sensor connector **(1)**.
5. Disconnect the fuel pressure sensor connector **(1)**.



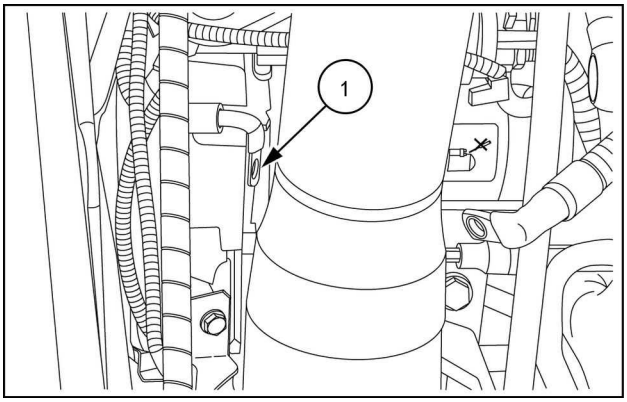
MOIL16TR01601AA 3

6. Carefully clean the area around the fuel prefilter water sensor connector **(1)**.
7. Disconnect the fuel prefilter water sensor connector **(1)**.



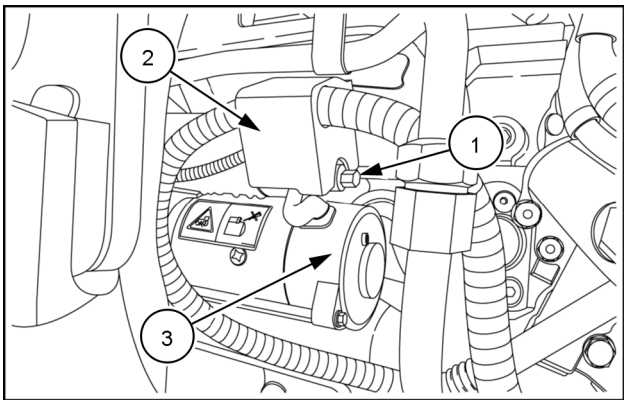
MOIL16TR01602AA 4

8. Tighten the negative prong (-) cable terminal **(1)** screws on the flange connecting the starter motor with the vehicle engine.
9. Free the negative prong (-) cable n the flange connecting the starter motor with the vehicle engine.



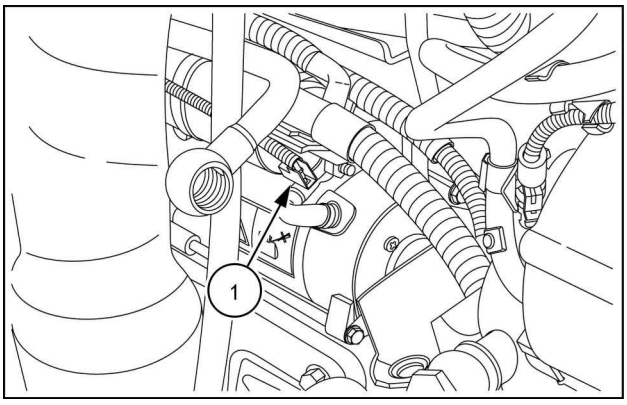
MOIL15TR03623AA 5

10. Carefully clean the area around the engine starter motor **(3)**.
11. Loosen the terminal protection **(2)** screw **(1)** for the positive prong (+) power supply cables for the starter motor **(3)**.
12. Move the cable terminal protection along the power cable.



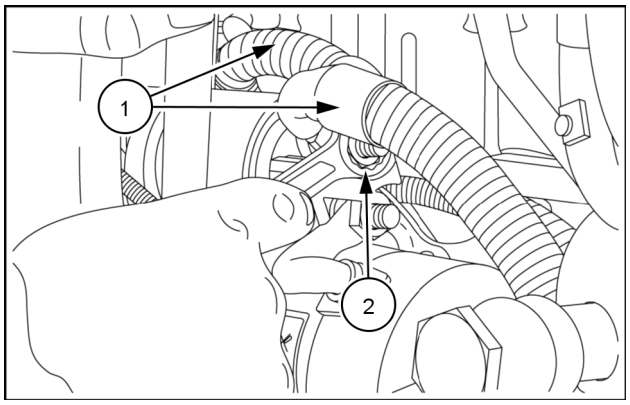
MOIL15TR03619AA 6

13. Disconnect connector **(1)**.



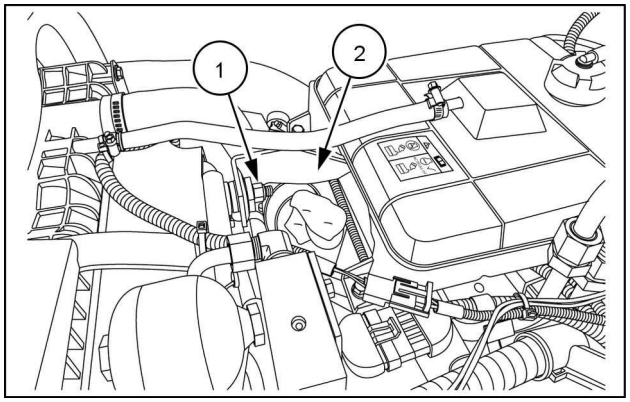
MOIL15TR03620AA 7

14. Unscrew the retaining nut **(2)** securing the terminals of the power supply cables positive prong (+) . **(1)**
15. Free the wiring from the starter motor.



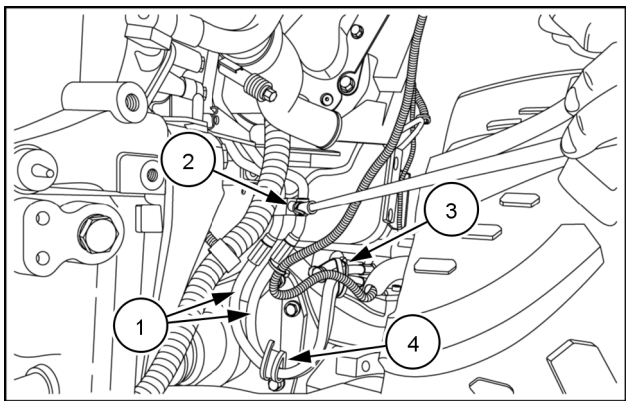
MOIL15TR03621AA 8

16. Unscrew the mounting bolt **(1)** securing the radiator to the expansion tank support bracket **(2)**.



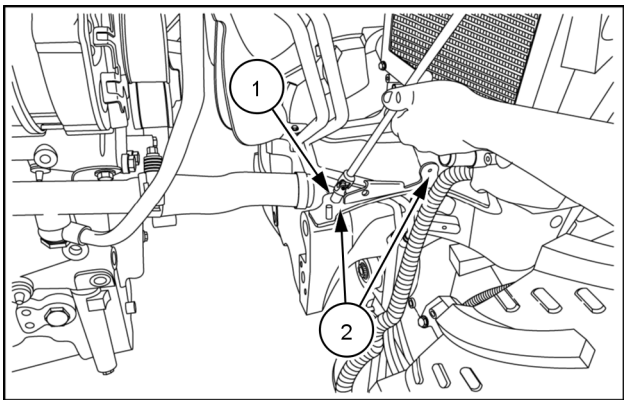
MOIL16TR01036AA 9

17. Detach the hose from the air filter box to the turbosupercharger – See **Air cleaner connection between filter and engine - Remove (10.202)**.
18. Detach the aftercooler pressure line – See **Aftercooler supply lines - Remove (10.310)**.
19. Detach the aftercooler outlet tube – See **Aftercooler outlet lines - Remove (10.310)**.
20. Detach the radiator hose to the water pump - See **Radiator to water pump hoses - Remove (10.400)**.
21. Detach the radiator coolant pipe - See **Radiator coolant tubes - Remove (10.400)**.
22. Detach the expansion tank - See **Expansion tank - Remove (10.400)**.
23. Carefully clean the area around the power steering hoses **(1)** on the chassis of the vehicle.
24. Loosen the retaining screw **(2)** of the power steering hose **(1)** holder bracket onto the vehicle chassis
25. Remove the power steering hose **(1)** holder bracket on the chassis from its housing and place in a suitable area.
26. Loosen the two clamps **(3)** and **(4)** the power steering hose supports **(1)** on the rear axle
27. Disconnect the power steering hoses **(1)** and place them back on the front axle.



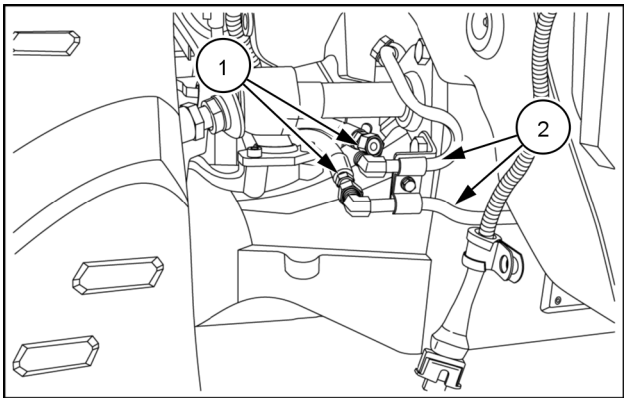
MOIL16TR01604AA 10

28. Clean the area around the bracket **(1)** thoroughly.
29. Loosen the two bolts **(2)** securing the bracket **(1)**.
30. Remove the bracket **(1)** from its seat and put it in a suitable place.



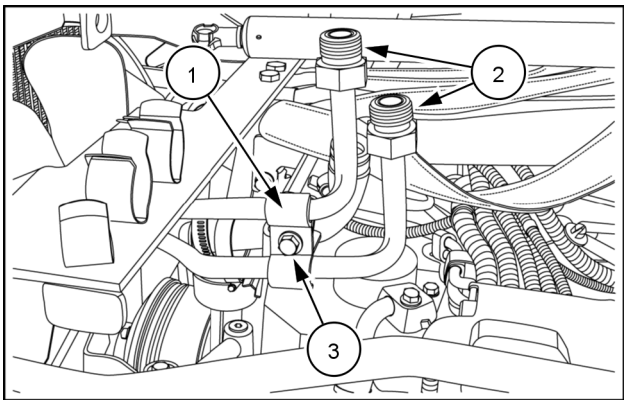
MOIL16TR01605AA 11

31. Provide a suitable container for collecting the hydraulic oil from beneath the two connections **(1)** of the power steering hoses **(2)** on the right-hand side of the vehicle.
32. Carefully clean the area around the two connections **(1)** of the power steering hoses **(2)** on the right-hand side of the vehicle.
33. Loosen the two connections **(1)** and disconnect the power steering hoses **(2)** on the right-hand side of the vehicle.



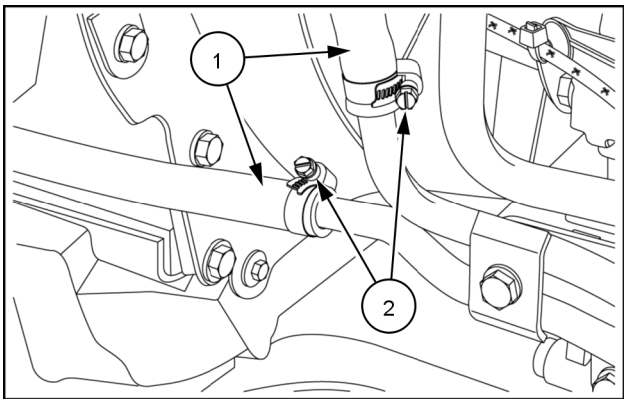
MOIL16TR01606AA 12

34. Carefully clean the area around the power steering hose **(2)** holder bracket **(1)**.
35. Loosen the retaining screw **(3)** of the power steering hose **(2)** holder bracket **(1)**.
36. Remove the bracket **(1)** from its seat and put it in a suitable place.
37. Free the power steering hoses **(2)**.



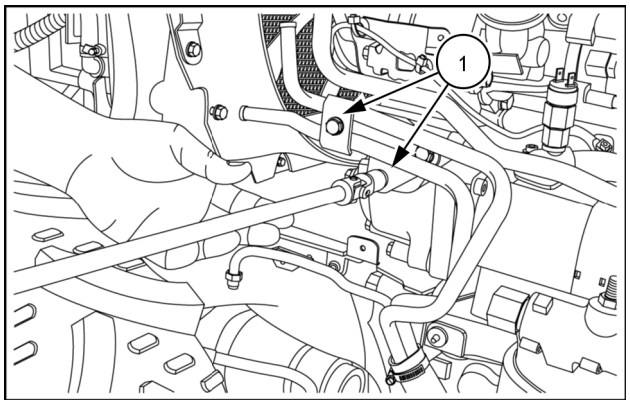
MOIL16TR01607AA 13

38. Carefully clean the area around the two heat exchanger oil delivery and return hoses **(1)**.
39. Loosen the two screw collars **(2)**.
40. Disconnect the two heat exchanger oil delivery and return hoses **(1)**.



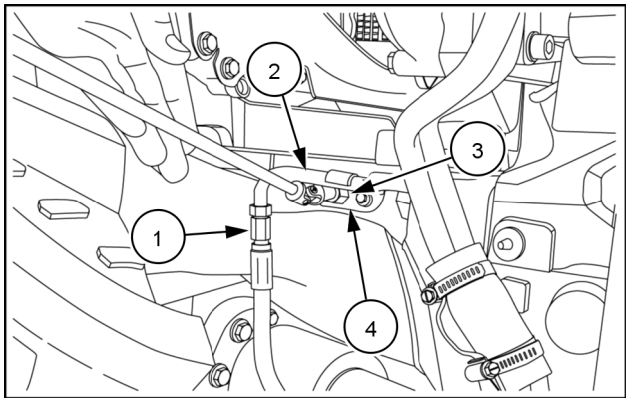
MOIL16TR01609AA 14

41. Loosen the two screws **(1)** that fix the heat exchanger oil delivery and return hose fixing bracket in place.
42. Remove the bracket from its housing and place in a suitable area.
43. Free the delivery and return pipes from the heat exchanger.



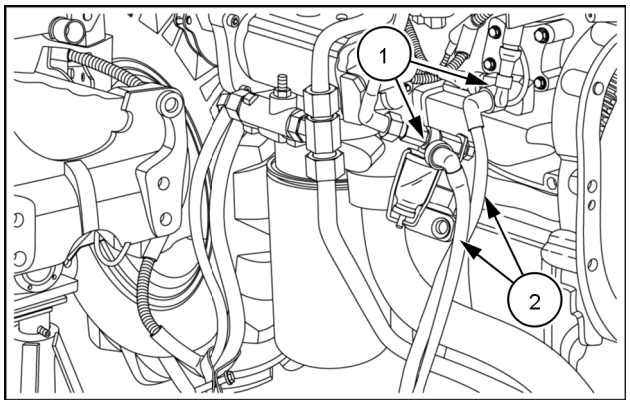
MOIL16TR01608AA 15

44. Clean the area around the pipe **(2)** connector **(1)** thoroughly.
45. Loosen the pipe **(2)** connector **(1)**.
46. Loosen the retaining bolt **(3)** of the pipe holder **(2)** bracket **(4)**.
47. Remove the bracket **(4)** from its seat and put it in a suitable place.
48. Free the pipe **(2)**.



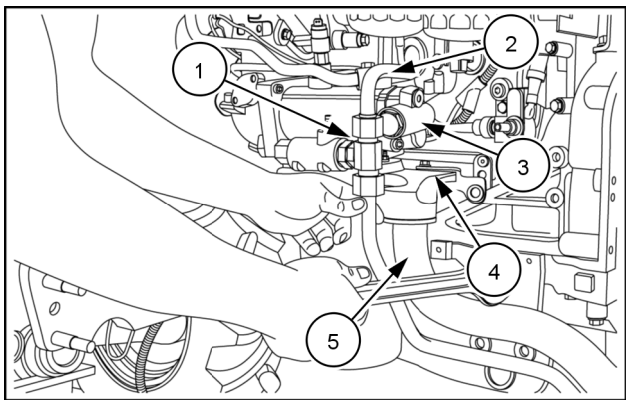
MOIL16TR01610AA 16

49. Disconnect the quick connectors **(1)** of the fuel delivery and return pipes **(2)**.
50. Free the fuel delivery and return pipes **(2)**.



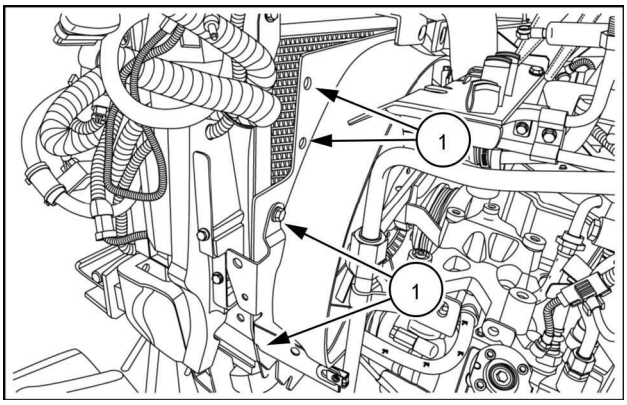
MOIL16TR01611AA 17

51. Detach the drive line oil filter - See **Transmission oil filter - Remove mount (21.104)**.
52. Carefully clean the area around the three-way connector **(1)** of the oil pump **(3)** delivery pipe **(2)**.
53. Loosen the three-way connector **(1)** of the oil pump **(3)** delivery pipe **(2)**.
54. Remove the oil pump **(3)** delivery pipe **(2)** from its housing and place in a suitable area.
55. Unscrew the screw **(4)** securing the oil inlet pipe **(5)**.
56. Remove the oil inlet pipe **(5)**.



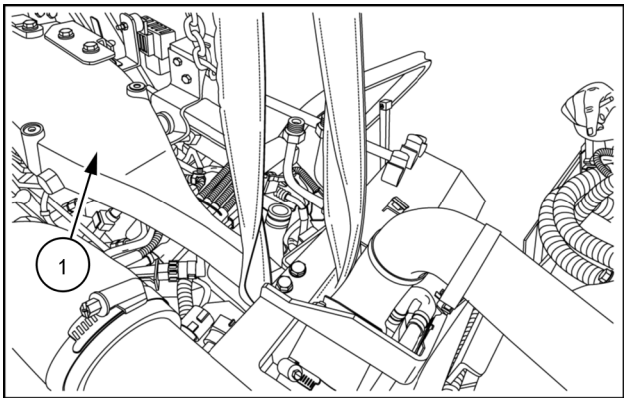
MOIL16TR01612AA 18

57. Carefully clean the area around the radiator air conveyor.
58. Loosen the four screws **(1)** which fix the radiator air conveyor onto the left-hand side of the vehicle.
59. Repeat the operation for the four screws which fix the radiator air conveyor onto the right-hand side of the vehicle.



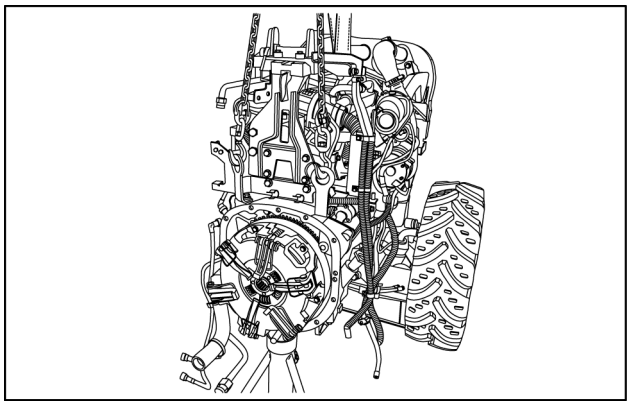
MOIL16TR01613AA 19

60. Prepare a host and a strap that is suitable for the removal of the expansion tank support bracket **(1)**.
61. Correctly connect the strap to the expansion tank support bracket **(1)**.
62. Arrange two eyebolts suitable for lifting the engine.
63. Prepare a hoist and chains/straps that are suitable for lifting the engine.



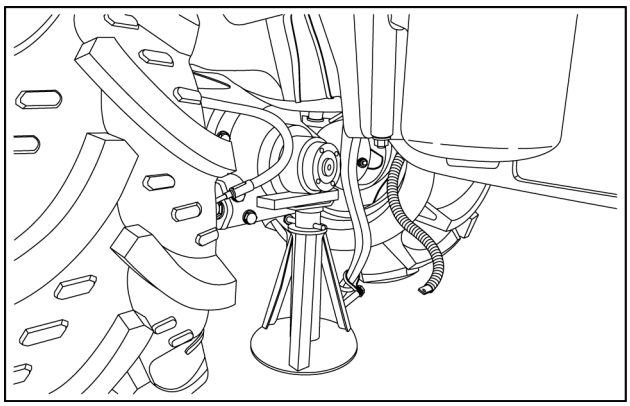
MOIL16TR01614AA 20

64. Carefully clean the area around the clutch bell on the engine.
65. Correctly position the two eyebolts on the engine and block them using the relative screws on the engine clutch housing.
66. Correctly hook the chains/straps to the eyebolts.
67. Prepare a suitable tool for separating the engine from the front axle.



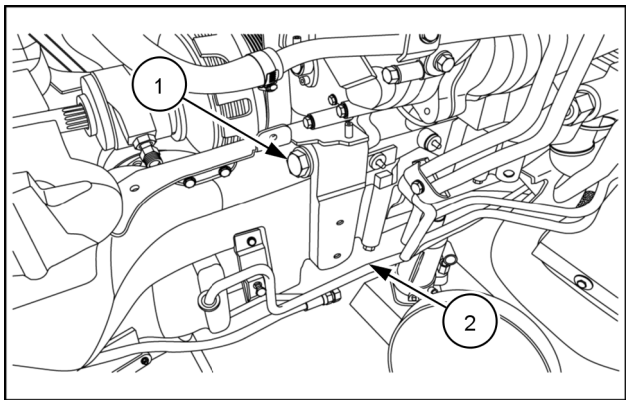
MOIL16TR01615AA 21

68. Remove any supports positioned under the clutch bell and position them under the front axle of the vehicle, in line with the transmission drive shaft joint.



MOIL16TR01616AA 22

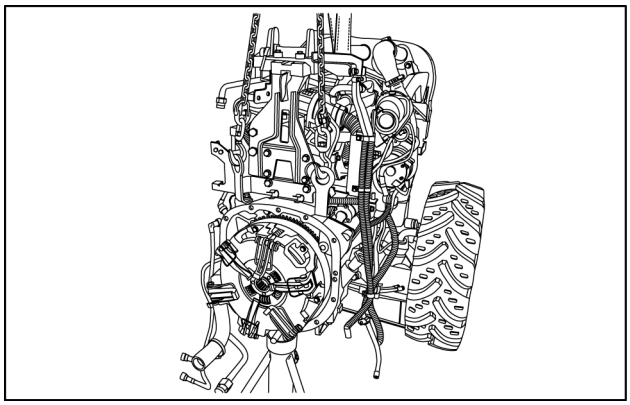
69. Loosen the screw **(1)** and the nut **(2)** which join the engine to the front axle on the left-hand side of the vehicle.
70. Repeat the operation above for the screw and nut on the right-hand side of the vehicle.
71. With the help of a suitable tool, separate the engine from the front axle.
72. Remove the radiator air conveyor from its housing and place it somewhere suitable.
73. Position the engine on a suitable stand.



MOIL16TR01617AA 23

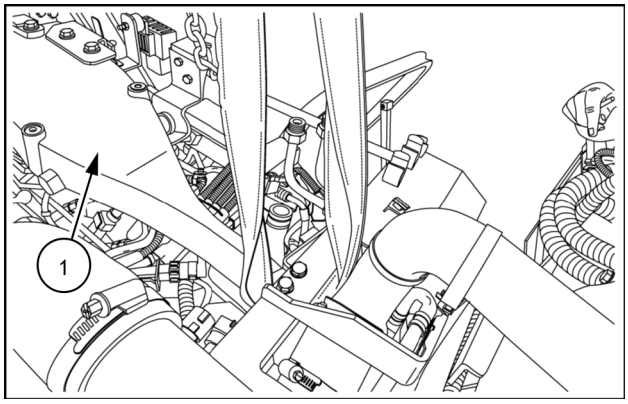
Engine - Install

1. Prepare a hoist and chains/straps that are suitable for lifting the engine.
2. Arrange two eyebolts suitable for lifting the engine.
3. Retrieve the engine and clean carefully.
4. Retrieve and carefully clean the front axle of the vehicle.
5. Retrieve and clean the radiator air conveyor.
6. Correctly position the radiator air conveyor in its housing.
7. Carefully clean the area around the clutch bell on the engine.
8. Correctly position the two eyebolts on the engine and block them using the relative screws on the engine clutch housing.
9. Correctly hook the chains/straps to the eyebolts.



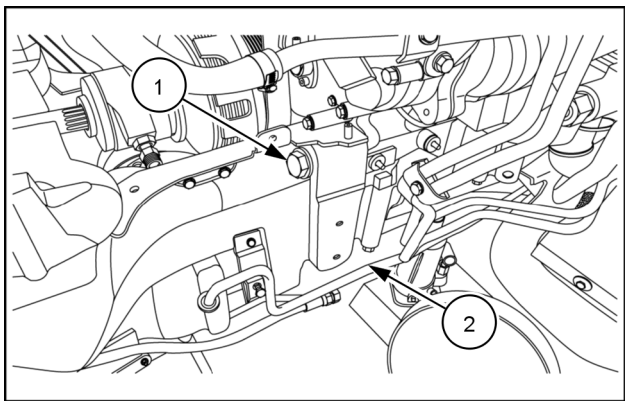
MOIL16TR01615AA 1

10. Prepare a host and a strap that is suitable for the removal of the expansion tank support bracket **(1)**.
11. Correctly connect the strap to the expansion tank support bracket **(1)**.
12. Prepare a suitable tool for connecting the engine to the front axle.



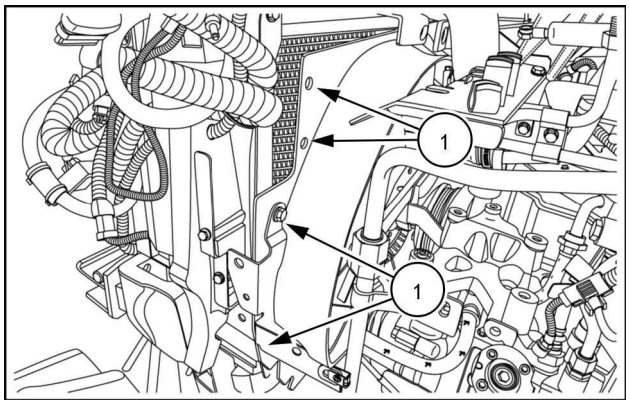
MOIL16TR01614AA 2

13. Correctly position the engine in respect of the front axle of the vehicle.
14. Tighten the screw **(1)** and the nut **(2)** which join the engine to the front axle on the left-hand side of the vehicle and lock in place, tightening to the prescribed torque.
15. Repeat the operation above for the screws on the right-hand side of the vehicle and lock in place, tightening to the prescribed torque.
16. Remove the chains/straps used for lifting the engine.
17. Remove the eyebolts used to lift the engine.



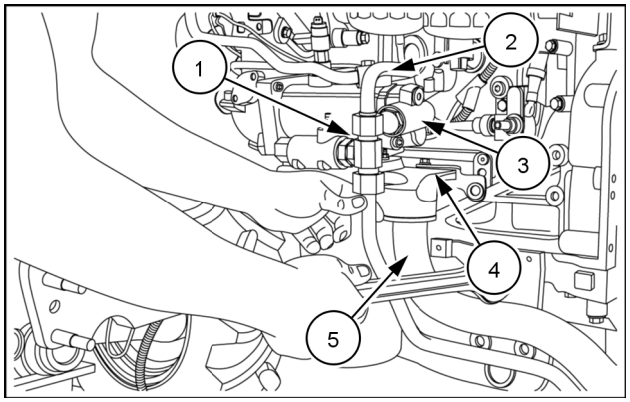
MOIL16TR01617AA 3

18. Tighten the four screws **(1)** which fix the radiator air conveyor onto the left-hand side of the vehicle.
19. Repeat the operation for the four screws which fix the radiator air conveyor onto the right-hand side of the vehicle.



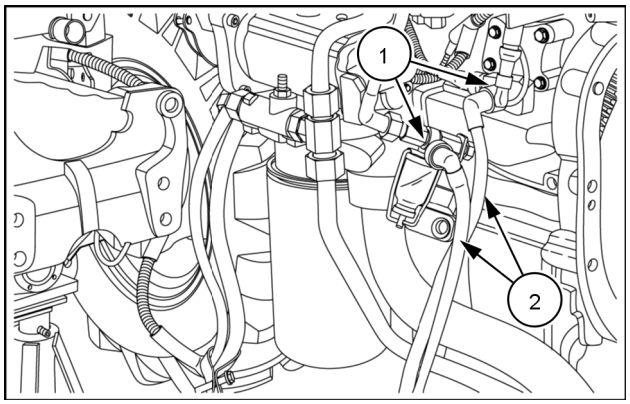
MOIL16TR01613AA 4

20. Carefully clean the area around the three-way connector **(1)** of the oil pump **(3)** delivery pipe **(2)**.
21. Correctly take the oil pump **(3)** delivery pipe **(2)** from its housing and place in a suitable area.
22. Tighten the three-way connector **(1)** of the oil pump **(3)** delivery pipe **(2)**.
23. Correctly position the oil inlet pipe **(5)**.
24. Screw in the screw **(4)** securing the oil inlet pipe **(5)**.
25. Reattach the transmission oil filter - See **Transmission oil filter - Install mount (21.104)**.



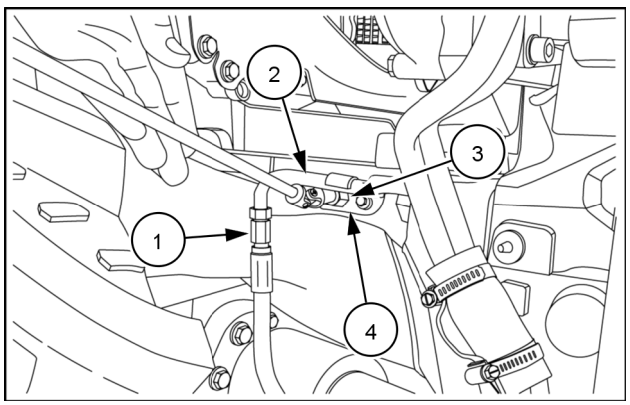
MOIL16TR01612AA 5

26. Carefully clean the area around the quick connectors **(1)** of the fuel delivery and return pipes **(2)**.
27. Correctly connect the quick connectors **(1)** of the fuel delivery and return pipes **(2)**.



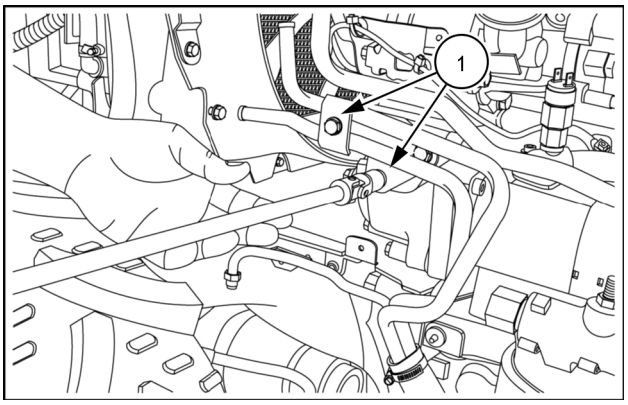
MOIL16TR01611AA 6

28. Clean the area around the pipe thoroughly **(2)**.
29. Retrieve and carefully clean the bracket **(4)**.
30. Correctly position the bracket **(4)** and the pipe **(2)**.
31. Tighten the retaining bolt **(3)** of the pipe holder **(2)** bracket **(4)**.
32. Connect the pipe **(2)** correctly.
33. Tighten the pipe **(2)** connector **(1)**.



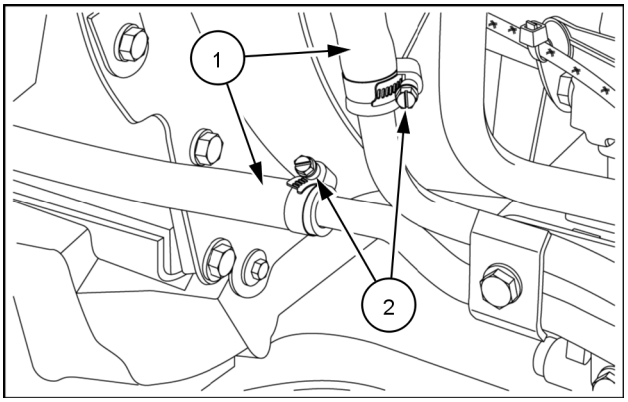
MOIL16TR01610AA 7

34. Carefully clean the area around the heat exchanger oil delivery and return hose fixing bracket.
35. Retrieve and carefully clean the bracket.
36. Correctly position the bracket in its housing.
37. Tighten the two screws **(1)** that fix the heat exchanger oil delivery and return hose fixing bracket in place.



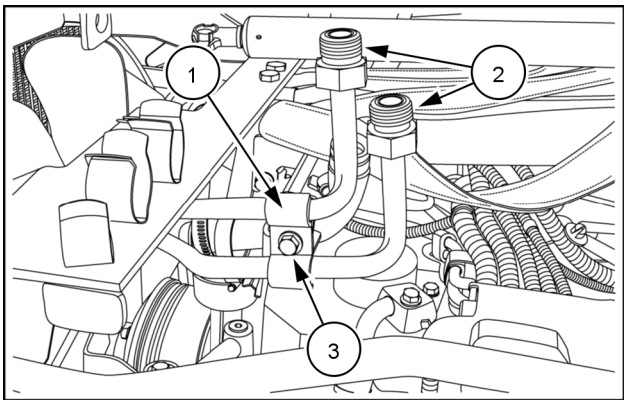
MOIL16TR01608AA 8

38. Correctly connect the two heat exchanger oil delivery and return hoses **(1)**.
39. Tighten the two screw collars **(2)**.



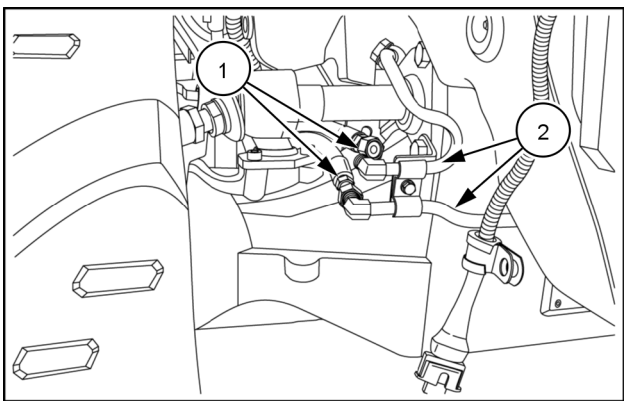
MOIL16TR01609AA 9

40. Carefully clean the area around the power steering hose **(2)** holder bracket **(1)**.
41. Retrieve and carefully clean the power steering hose **(2)** holder bracket **(1)**.
42. Correctly position the bracket **(1)** in its housing
43. Tighten the retaining screw **(3)** of the power steering hose **(2)** holder bracket **(1)**.



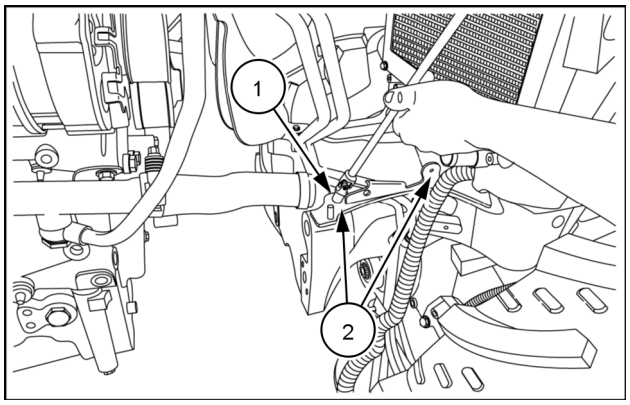
MOIL16TR01607AA 10

44. Carefully clean the area around the two connections **(1)** of the power steering hoses **(2)** on the right-hand side of the vehicle.
45. Correctly connect the power steering hoses **(2)** on the right-hand side of the vehicle.
46. Tighten the two connections **(1)** of the power steering hoses **(2)** on the right-hand side of the vehicle.



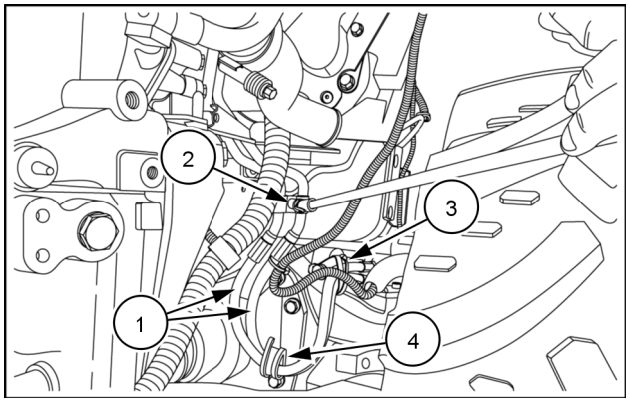
MOIL16TR01606AA 11

47. Clean the area around the bracket **(1)** thoroughly.
48. Retrieve and carefully clean the bracket **(1)**.
49. Correctly position the bracket **(1)** in its seat.
50. Tighten the two screws **(2)** which fix the bracket **(1)** in place.

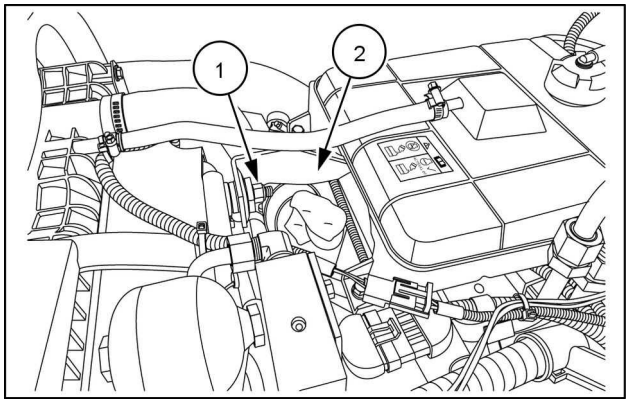


MOIL16TR01605AA 12

51. Carefully clean the area around the power steering hoses **(1)** on the chassis of the vehicle.
52. Correctly connect the power steering hoses **(1)**.
53. Tighten the two clamps **(3)** and **(4)** the power steering hose supports **(1)** on the rear axle
54. Retrieve and carefully clean the power steering hose **(1)** holder bracket.
55. Correctly position the power steering hose **(1)** holder bracket on the chassis.
56. Tighten the retaining screw **(2)** of the power steering hose **(1)** holder bracket onto the vehicle chassis.
57. Reattach the expansion tank - See **Expansion tank - Install (10.400)**.
58. Reattach the radiator coolant pipe - See **Radiator coolant tubes - Install (10.400)**.
59. Reattach the radiator hose to the water pump - See **Radiator to water pump hoses - Install (10.400)**.
60. Reattach the aftercooler outlet tube – See **After-cooler outlet lines - Install (10.310)**.
61. Detach the aftercooler pressure line – See **After-cooler supply lines - Install (10.310)**.
62. Reattach the hose from the air filter box to the turbosupercharger – See **Air cleaner connection between filter and engine - Install (10.202)**.
63. Tighten the mounting bolt **(1)** securing the radiator to the expansion tank support bracket **(2)**.



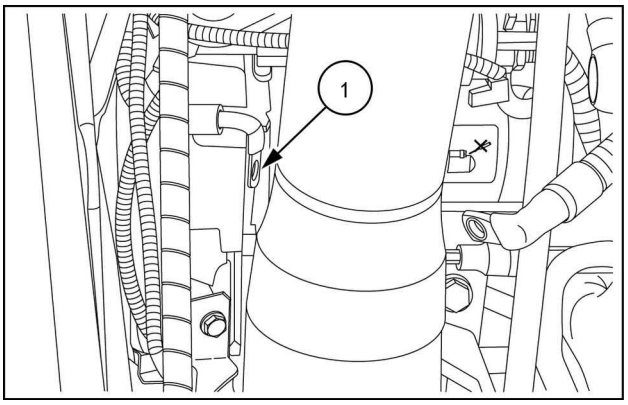
MOIL16TR01604AA 13



MOIL16TR01036AA 14

64. Correctly position the negative prong (-) cable terminal **(1)** on the flange connecting the starter motor with the vehicle engine

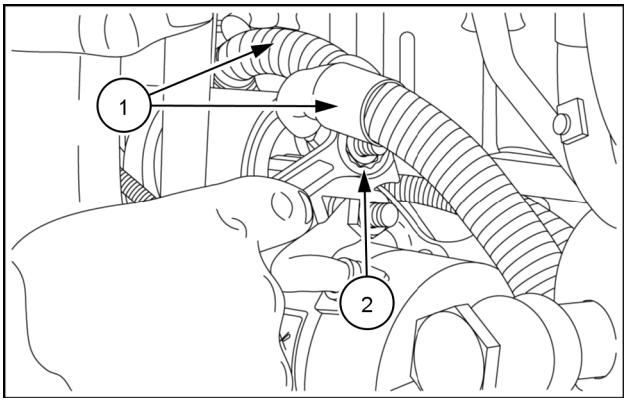
65. Tighten the negative prong (-) cable terminal **(1)** screws on the flange connecting the starter motor with the vehicle engine.



MOIL15TR03623AA 15

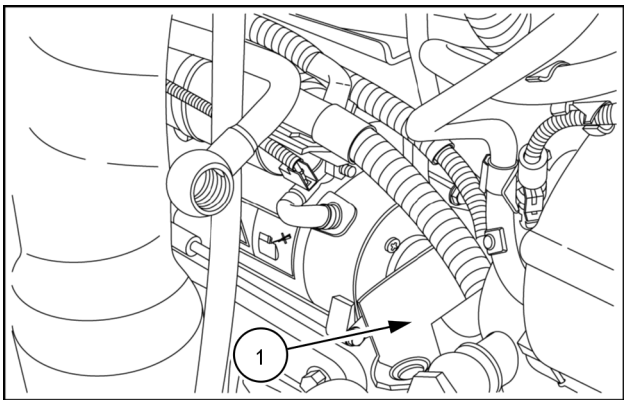
66. Correctly position the positive prong (+) cable terminals **(1)** which supply the starter motor.

67. Tighten the retaining nut **(2)** securing the terminals of the power supply cables **(1)** positive prong (+).



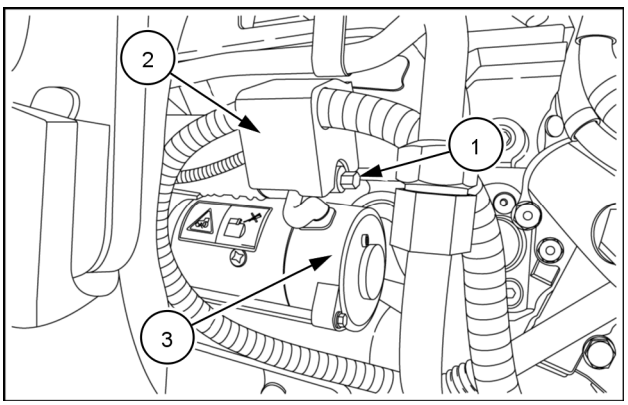
MOIL15TR03621AA 16

68. Move the protection **(1)** along the power supply cable and position correctly on the starter motor



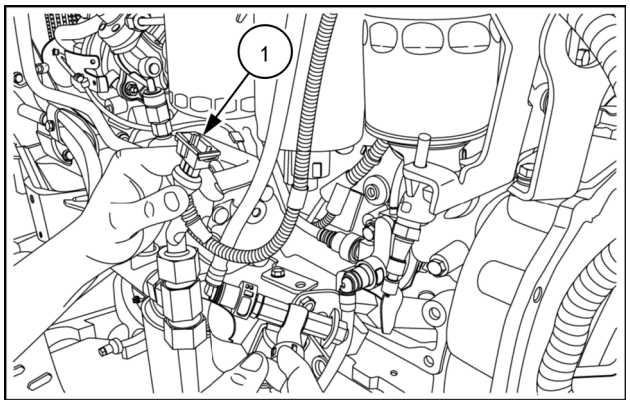
MOIL15TR03620AA 17

69. Tighten the terminal protection **(2)** screw **(1)** for the positive prong (+) power supply cables for the starter motor **(3)**.



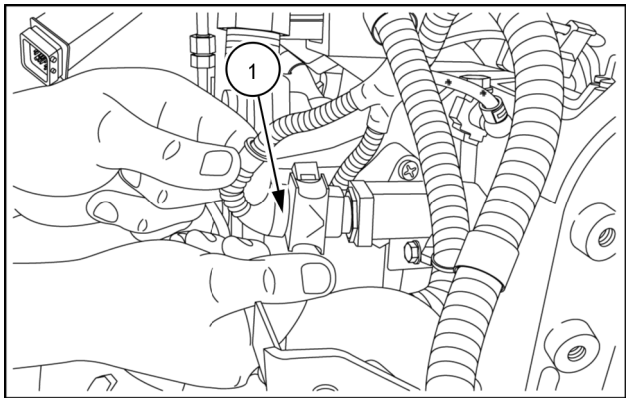
MOIL15TR03619AA 18

70. Carefully clean the area around the fuel prefilter water sensor connector **(1)**.
71. Connect the fuel prefilter water sensor connector **(1)**.



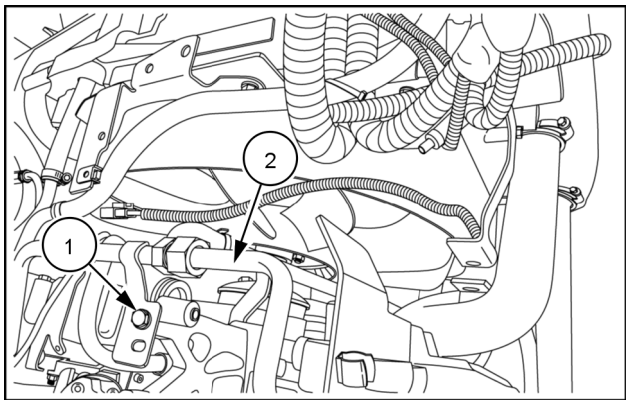
MOIL16TR01602AA 19

72. Carefully clean the area around the fuel pressure sensor connector **(1)**.
73. Connect the fuel pressure sensor connector **(1)**.



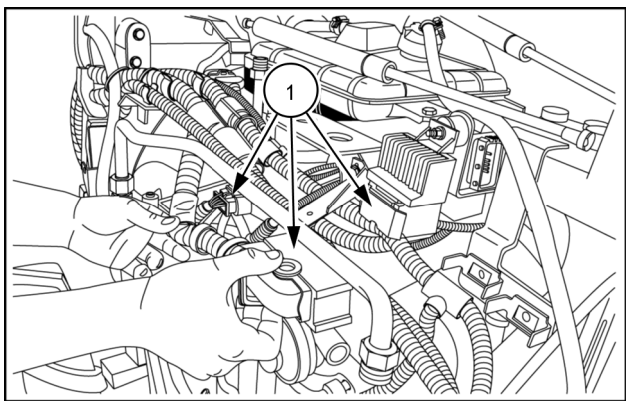
MOIL16TR01601AA 20

74. Tighten the retaining screw **(1)** on the support bracket for the intermediate power steering hose **(2)** .



MOIL16TR01603AA 21

75. Carefully clean the area of the connectors **(1)** of the engine injection system, the steering sensor and the pre-heating system on the right side of the vehicle.
76. Connect the three connectors **(1)** on the right-hand side of the engine.



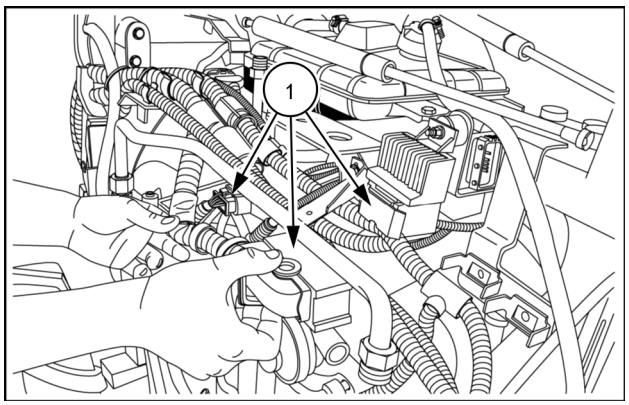
MOIL16TR01600AA 22

Next operation:
A. Reattach the engine to the drive line – See **Engine - Install to the transmission (10.001)**.

Engine - Remove

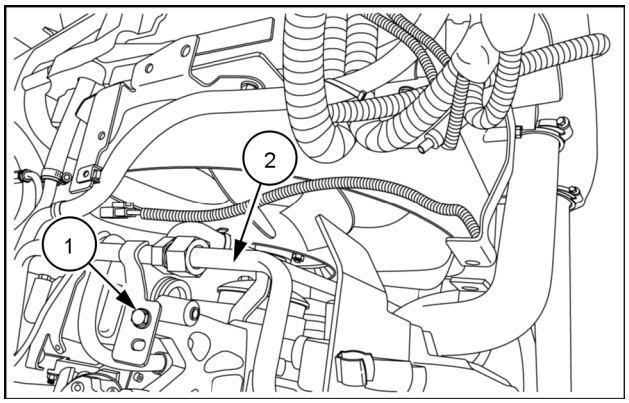
Prior operation:
A. Uncouple the engine from the drive line - See **Engine - Remove from transmission (10.001)**.
B. Remove the right and left anti roll-over chassis protection supports (ROPS) – See **Roll Over Protective Structure (ROPS) support - Remove - Left-hand side (90.114)** and **Roll Over Protective Structure (ROPS) support - Remove - Right-hand side (90.114)**.

1. Carefully clean the area of the connectors **(1)** of the engine injection system, the steering sensor and the pre-heating system on the right side of the vehicle.
2. Disconnect the three connectors **(1)** on the right-hand side of the engine.



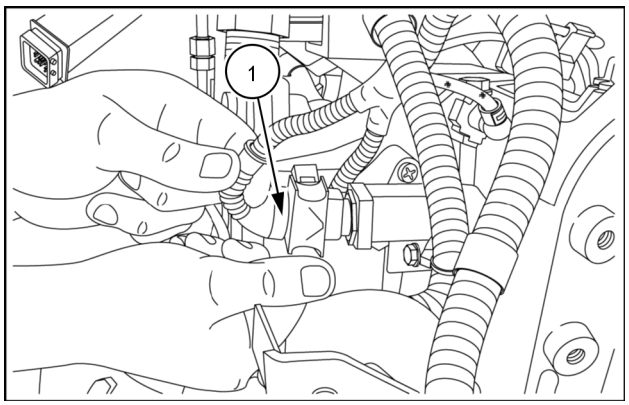
MOIL16TR01600AA 1

3. Loosen the retaining screw **(1)** on the support bracket for the intermediate power steering hose **(2)** .



MOIL16TR01603AA 2

4. Carefully clean the area around the fuel pressure sensor connector **(1)**.
5. Disconnect the fuel pressure sensor connector **(1)**.



MOIL16TR01601AA 3