

Product: New Holland TD5.100/TD5.110/TD5.65/TD5.75/TD5.80/TD5.90 Tractor Service Repair Manual
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SERVICE MANUAL

TD5.100, TD5.110, TD5.65, TD5.75, TD5.80, TD5.90

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INTRODUCTION

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Note to the Owner

General instructions

Important notice

All maintenance and repair operations described in this manual should be carried out exclusively by the NEW HOLLAND authorised workshops. All instructions detailed should be carefully observed and special equipment indicated should be used if necessary.

Everyone who carries out service operations described without carefully observing these prescriptions will be directly responsible of deriving damages.

Shimming

At each adjustment, select adjusting shims, measure them individually using a micrometer and then sum up recorded values. Do not rely on measuring the whole shimming set, which may be incorrect, or on rated value indicated for each shim.

Rotating shaft seals

To correctly install rotating shaft seals, observe the following instructions:

- Let the seal soak into the same oil as it will seal for at least half an hour before mounting.
- Thoroughly clean the shaft and ensure that the shaft working surface is not damaged.
- Place the sealing lip towards the fluid. In case of a hydrodynamic lip, consider the shaft rotation direction and orient grooves in order that they deviate the fluid towards the inner side of the seal.
- Coat the sealing lip with a thin layer of lubricant (oil rather than grease) and fill with grease the gap between the sealing lip and the dust lip of double lip seals.
- Insert the seal into its seat and press it down using a flat punch. Do not tap the seal with a hammer or a drift.
- Take care to insert the seal perpendicularly to its seat while you are pressing it. Once the seal is settled, ensure that it contacts the thrust element if required.
- To prevent damaging the sealing lip against the shaft, place a suitable protection during installation.

O-rings

Lubricate the O-rings before inserting them into their seats. This will prevent the O-rings from rolling over and twine during mounting which will jeopardise sealing.

Sealers

Apply one of the following sealers: RTV SILMATE, RHODORSIL CAF 1, or **LOCTITE® PIASTIC GASKET** over the mating surfaces marked with an X.

Before applying the sealer, prepare the surface as follows:

- Remove possible scales using a metal brush.
- Thoroughly degrease the surfaces using one of the following cleaning agent: trichlorethylene, petrol or a water and soda solution.

Bearings

It is advisable to heat the bearings to **80 – 90 °C (176 – 194 °F)** before mounting them on their shafts and cool them down before inserting them into their seats with external tapping.

Roll pins

When fitting straight roll pins, ensure that the pin notch is oriented in the direction of the effort to stress the pin. Coil roll pins can be installed in any position.

Notes for spare parts

Use exclusively genuine NEW HOLLAND spare parts.

Only genuine parts guarantee same quality, life, safety as original components as they are the same as mounted in production.

Only the NEW HOLLAND genuine spare parts can offer this guarantee.

All spare parts orders should be complete with the following data:

- Tractor model (commercial name) and frame number.
- Engine type and number.
- Part number of the ordered part, which can be found on the "Microfiches" or the "Spare parts catalogue", which is the base for order processing.

Notes for equipment

Equipment which NEW HOLLAND proposes and shows in this manual are as follows:

- Studied and designed expressly for use on NEW HOLLAND tractors.
- Necessary to make a reliable repair.
- Accurately built and strictly tested to offer efficient and long-lasting working means.

We also remind the repair personnel that having these equipment means:

- Work in optimal technical conditions.
- Obtain best results.
- Save time and effort.
- Work more safely.

Notices

Wear limits indicated for some details should be intended as advised, but not binding values. The words "front", "rear", "right hand", and "left hand" referred to the different parts should be intended as seen from the operator's seat oriented to the normal sense of movement of the tractor.

How to move the tractor with the battery removed

Cables from the external power supply should be connected exclusively to the respective terminals of the tractor positive and negative cables using pliers in good condition which allow proper and steady contact.

Disconnect all services (lights, wind-shield wipers, etc.) before starting the tractor

If it is necessary to check the tractor electrical system, check it only with the power supply connected. At check end, disconnect all services and switch the power supply Off before disconnecting the cables.

Safety rules

Pay attention to this symbol



This warning symbol points out important messages involving personal safety. Carefully read the safety rules contained herein and follow advised precautions to avoid potential hazards and safeguard your safety and personal integrity. In this manual you will find this symbol together with the following key-words:

WARNING – It gives warning about improper repair operations and deriving potential consequences affecting the service technician's personal safety.

DANGER – It gives specific warning about potential dangers for personal safety of the operator or other persons directly or indirectly involved.

To prevent accidents

Most accidents and personal injuries taking place in workshops are due from non-observance of some simple and essential prudential rule and safety precautions. For this reason, **IN MOST CASES THEY CAN BE AVOIDED**. It suffices to foresee possible causes and act consequently with necessary caution and care.

The possibility that an accident might occur with any type of machines should not be disregarded, no matter how well the machine in question was designed and built.

A wise and careful service technician is the best precautions against accidents.

Careful observance of this only basic precaution would be enough to avoid many severe accidents.

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

Safety rules

Generalities

- Carefully follow specified repair and maintenance procedures.
- Do not wear rings, wristwatches, jewels, unbuttoned or flapping clothing such as ties, torn clothes, scarves, open jackets or shirts with open zips which could get hold into moving parts. We advise to use approved safety clothing such as anti-slipping footwear, gloves, safety goggles, helmets, etc.
- Never carry out any repair on the machine if someone is sitting on the operator's seat, except if they are certified operators to assist in the operation to be carried out.
- Never operate the machine or use attachments from a place other than sitting at the operator's seat.
- Never carry out any operation on the machine when the engine is running, except when 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 should be carried out with the greatest care and attention.
- Service stairs 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 warn that the tractor is being serviced. Block the machine and all equipment which should be raised.
- Never check or fill fuel tanks and accumulator batteries, nor use starting liquid if you are smoking or near open flames as such fluids are flammable.
- Brakes are inoperative when they are manually released for maintenance purposes. In such cases, the machine should be kept constantly under control using blocks or similar devices.
- The fuel filling gun should remain always in contact with the filler neck. Maintain this contact until the fuel stops flowing into the tank to avoid possible sparks due to static electricity buildup.
- Use exclusively specified towing points for towing the tractor. Connect parts carefully. Ensure that foreseen pins and/or locks are steadily fixed before applying traction. Do not stop near towing bars, cables or chains working under load.

- To transfer a failed tractor, use a trailer or a low loading platform trolley if available.
- To load and unload the machine from the transportation mean, select a flat area providing a firm support to the trailer or truck wheels. Firmly tie the machine to the truck or trailer platform and block wheels as required by the forwarder.
- For electrical heaters, battery-chargers and similar equipment use exclusive auxiliary power supplies with a efficient ground to avoid electrical shock hazard.
- Always use lifting equipment and similar of appropriate capacity to lift or move heavy components.
- Pay special attention to bystanders.
- Never pour gasoline or diesel oil into open, wide and low containers.
- Never use gasoline, diesel oil or other flammable liquids as cleaning agents. Use nonflammable nontoxic proprietary solvents.
- Wear protection goggles with side guards when cleaning parts using compressed air.
- Do not exceed a pressure of **2.1 bar (30.45 psi)**, in accordance with local regulations.
- Do not run the engine in a closed building without proper ventilation.
- Do not smoke, use open flames, cause sparks in the nearby area when filling fuel or handling highly flammable liquids.
- Do not use flames as light sources when working on a machine or checking for leaks.
- Move with caution when working under a tractor, and also on or near a tractor. Wear proper safety accessories: helmets, goggles and special footwear.
- During checks which should be carried out with the engine running, ask an assistant to seat at the operator's seat and keep the service technician under visual control at any moment.
- In case of operations outside the workshop, drive the tractor to a flat area and block it. If working on an incline cannot be avoided, first block the tractor carefully. Move it to a flat area as soon as possible with a certain extent of safety.
- Ruined or plied cables and chains are unreliable. Do not use them for lifting or trailing. Always handle them wearing gloves of proper thickness.
- Chains should always be safely fastened. Ensure that fastening device is strong enough to hold the load foreseen. No persons should stop near the fastening point, trailing chains or cables.
- The working area should be always kept CLEAN and DRY. Immediately clean any spillage of water or oil.
- Do not pile up grease or oil soaked rags, as they constitute a great fire hazard. Always place them into a metal container. Before starting the tractor or its attachments, check, adjust and block the operator's seat. Also ensure that there are no persons within the tractor or attachment operating range.
- Do not keep into your pockets any object which might fall unobserved into the tractor's inner compartments.
- Whenever there is the possibility of being reached by ejected metal parts or similar, use protection eye mask or goggles with side guards, helmets, special footwear and heavy gloves.
- Wear suitable protection such as tinted eye protection, helmets, special clothing, gloves and footwear whenever it is necessary to carry out welding procedures. All persons standing in the vicinity of the welding process should wear tinted eye protection. NEVER LOOK AT THE WELDING ARC IF YOUR EYES ARE NOT SUITABLY PROTECTED.
- Metal cables with the use get frayed. Always wear adequate protections (heavy gloves, eye protection, etc.)
- Handle all parts with the greatest caution. Keep your hands and fingers far from gaps, moving gears and similar. Always use approved protective equipment, such as eye protection, heavy gloves and protective footwear.

Start up

- Never run the engine in confined spaces which are not equipped with adequate ventilation for exhaust gas extraction.
- Never bring your head, body, arms, legs, feet, hands, fingers near fans or rotating belts.

Engine

- Always loosen the radiator cap very slowly before removing it to allow pressure in the system to dissipate. Coolant should be topped up only when the engine is stopped or idle if hot.
- Do not fill up fuel tank when the engine is running, mainly if it is hot, to avoid ignition of fires in case of fuel spilling.
- Never check or adjust the fan belt tension when the engine is running. Never adjust the fuel injection pump when the tractor is moving.
- Never lubricate the tractor when the engine is running.

Electrical systems

- If it is necessary to use auxiliary batteries, cables must be connected at both sides as follows: (+) to (+) and (–) to (–). Avoid short circuiting the terminals. GAS RELEASED FROM BATTERIES IS HIGHLY FLAMMABLE. During charging, leave the battery compartment uncovered to improve ventilation. Avoid checking the battery charge by means of “jumpers” made by placing metallic objects across the terminals. Avoid sparks or flames near the battery area. Do not smoke to prevent explosion hazards.
- Prior to any service, check for fuel or current leaks. Remove these leaks before going on with the work.
- Do not charge batteries in confined spaces. Ensure that ventilation is appropriate to prevent accidental explosion hazard due to build up of gases released during charging.
- Always disconnect the batteries before performing any type of service 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. For this reason, NEVER USE YOUR HANDS TO CHECK FOR LEAKS, but use a piece of cardboard or a piece of wood to this purpose. If any fluid is injected into the skin, seek medical aid immediately. Lack of immediate medical attention, serious infections or dermatosis may result.
- Always take system pressure readings using the appropriate gauges.

Wheels and tires

- Check that the tires are correctly inflated at the pressure specified by the manufacturer. Periodically check possible damages to the rims and tires.
- Keep off and stay at the tire side when correcting the inflation pressure.
- Check the pressure only when the tractor is unloaded and tires are cold to avoid wrong readings due to over-pressure. Do not reuse parts of recovered wheels as improper welding, brazing or heating may weaken the wheel and make it fail.
- Never cut, nor weld a rim with the inflated tire assembled.
- To remove the wheels, block both front and rear tractor wheels. Raise the tractor and install safe and stable supports under the tractor in accordance with regulations in force.
- Deflate the tire before removing any object caught into the tire tread.
- Never inflate tires using flammable gases as they may originate explosions and cause injuries to bystanders.

Removal and installation

- Lift and handle all heavy components using lifting equipment of adequate capacity. Ensure that parts are supported by appropriate slings and hooks. Use lifting eyes provided to this purpose. Take care of the persons near the loads to be lifted.
- Handle all parts with great care. Do not place your hands or fingers between two parts. Wear approved protective clothing such as safety goggles, gloves and footwear.
- Do not twine chains or metal cables. Always wear protection gloves to handle cables or chains.

Safety rules

Cab air conditioning system

Refrigerant must be handled with extreme care to avoid injury, always wear safety gloves and goggles.

Liquid refrigerant can cause freezing of the skin and serious damage to the eyes, even blindness in some cases.

Keep refrigerant containers away from heat sources, as the increase of internal pressure due to heating could cause the container to explode.

In contact with a naked flame or hot metal surfaces the refrigerant may give off a toxic gas. If inhaled this gas can cause serious harm.

To avoid the possibility of accidents take the simple precautions described below.

The operation of emptying 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 case of accident, proceed as follows:

- If has entered 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 can be treated by gradually warming the injured area with cold water followed by application of a greasy cream. Seek medical assistance.
- The air-conditioning system contains a mixture of refrigerant and oil under high pressure, under no circumstances loosen pipe fittings/couplings or work on pipes without having first evacuated the system.
- For the same reason, never unscrew the compressor oil level plug when the system is charged.
- Do not heat the refrigerant container. Above **50 °C (122 °F)** the pressure increases very rapidly.
- Keep the air-conditioning system away from heat sources to prevent possible explosion due to the increase of pressure in the system.

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% 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 on unless they are to be used immediately.

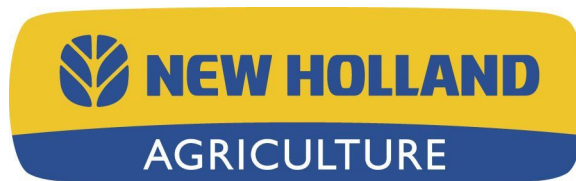
Consumables

COMPONENT TO BE FILLED OR TOPPED UP	QUANTITY		RECOM- MENDED PRODUCTS	INTERNA- TIONAL SPECI- FICATION
	liters/dm3	US gal		
Cooling system: without cab: All models	- 11	- 2.91	Water & Liquid 50 % + 50 % NEW HOLLAND AMBRA ACTIFULL™ OT EXTENDED LIFE COOLANT	-
with cab: All models	13	3.43		
Windscreen washer bottle	2	0.53	Water & cleaning liquid	-
Fuel tank.	110	29.06	Decanted and filtered diesel fuel	-
Engine sump: W/O filter: TD5.65, TD5.80 models	6.9	1.82	NEW HOLLAND AMBRA MASTERGOLD™ HSP ENGINE OILNH 330H	API CH-4 ACEA E5
TD5.75, TD5.90, TD5.100, TD5.110 models	8.6	2.27		
W/ filter : TD5.65, TD5.80 models	7.6	2.01		
TD5.75, TD5.90, TD5.100, TD5.110 models	9.3	2.46		
Brake control circuit	0.4	0.11	NEW HOLLAND AMBRA BRAKE LHM NH 610 A	ISO 7308
Front axle: - axle housing for TD5.65 models	4.5	1.19	NEW HOLLAND AMBRA MULTI G™ HYDRAULIC TRANSMISSION OIL NH 410B	API GL-4 ISO 32/46 SAE 10W - 30
TD5.75, TD5.80, TD5.90, TD5.100, TD5.110 models	7.0	1.85		
- final drives (each): TD5.65 models	0.8	0.21		
TD5.75, TD5.80, TD5.90, TD5.100, TD5.110 models	1.25	0.33		
Rear transmission (bevel drive and brakes), gearbox, hydraulic lift and PTO	43	11.36		
Rear final drives (each)				
- TD5.65	3.9	1.03		
- TD5.75, TD5.80, TD5.90, TD5.100, TD5.110 models	5.3	1.40		
Front wheel hubs			Grease NEW HOLLAND AMBRA GR-9 MULTI-PURPOSE GREASE	NLGI 2
Grease fittings				

NOTICE: Use only heavy-duty, low silicate coolant such as **NEW HOLLAND AMBRA ACTIFULL™ OT EXTENDED LIFE COOLANT**. Automotive antifreeze purchased at local supply store outlets most likely is not low silicate and must not be used in heavy-duty diesel engines. Always have a minimum of 50% ethylene glycol coolant in the cooling system, adjusting the concentration based on ambient temperature, according to coolant label instructions. Use good quality water. Deionized water is ideal for cooling systems and is contained in some prepackaged coolants labeled as pre-mixed with water. If the low silicate ethylene glycol coolant is not pre-charged with supplemental diesel coolant additive/inhibitor, this must be added to the solution to provide protection against corrosion and pitting.

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NEW HOLLAND AMBRA ACTIFULL™ OT EXTENDED LIFE COOLANT	Consumables	9
NEW HOLLAND AMBRA MASTERGOLD™ HSP ENGINE OIL	Consumables	9
NEW HOLLAND AMBRA BRAKE LHM	Consumables	9
NEW HOLLAND AMBRA MULTI G™ HYDRAULIC TRANSMISSION OIL	Consumables	9
NEW HOLLAND AMBRA GR-9 MULTI-PURPOSE GREASE	Consumables	9
NEW HOLLAND AMBRA ACTIFULL™ OT EXTENDED LIFE COOLANT	Consumables	9



SERVICE MANUAL

Engine

TD5.100, TD5.110, TD5.65, TD5.75, TD5.80, TD5.90

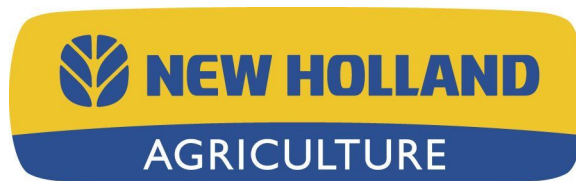
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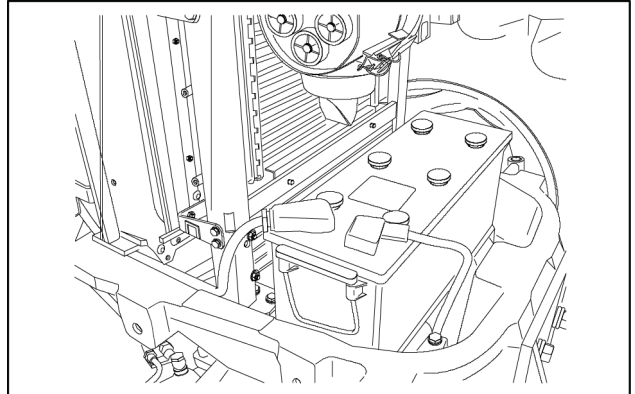
Consumable	Reference	PAGE
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Engine - Remove

ATTENTION: Lift and handle all heavy parts using suitable lifting equipment. Make sure that assemblies or parts are supported by means of suitable slings and hooks. Check that no one is in the vicinity of the load to be lifted.

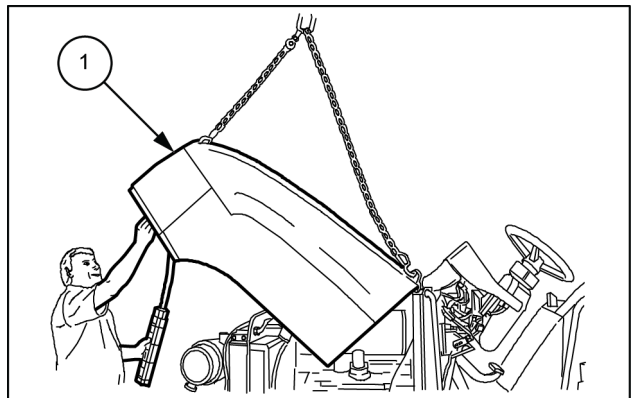
ATTENTION: Always use suitable tools to align holes in parts. NEVER USE FINGERS OR HANDS.

1. Disconnect the negative battery lead.



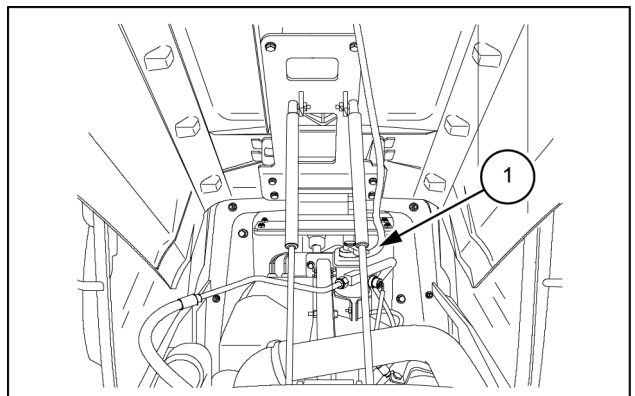
ANIL12TR00106AA 1

2. Attach lifting chains to the bonnet (1) and attach the chain to the hoist.



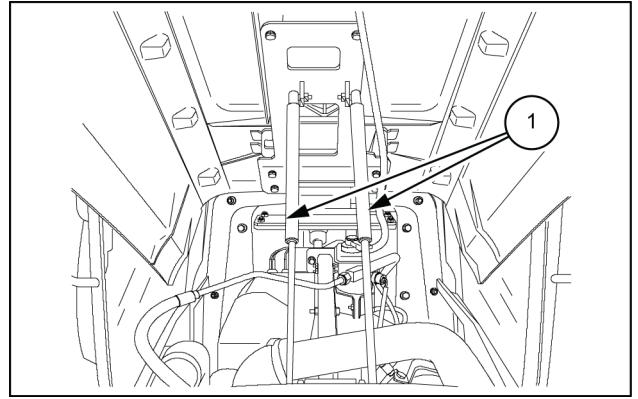
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3. Disconnect the electrical connection (1) of bonnet.



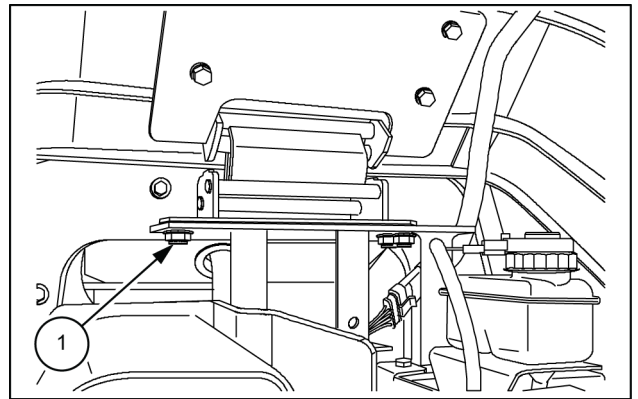
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4. Detach the gas struts (1) from the bonnet.



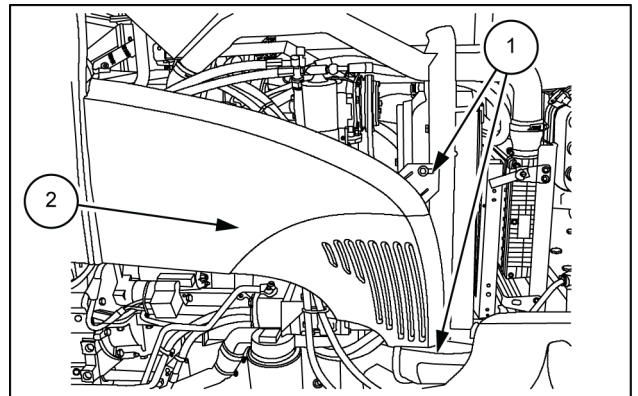
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5. Remove the four bonnet hinge bolts (1) and lift the bonnet clear.



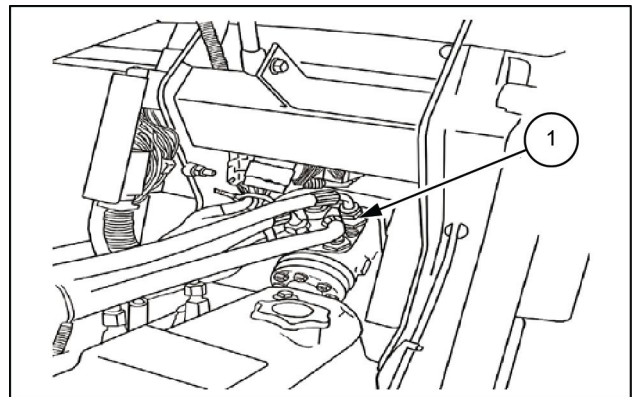
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6. Remove the two retaining bolts (1) and the guard (2) on the right-left hand side of the fan.



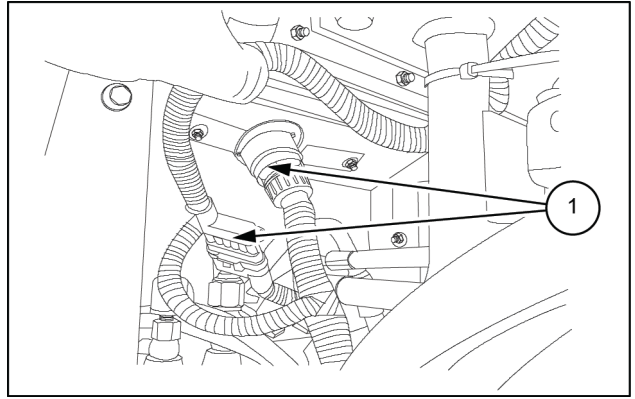
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7. Disconnect the power steering hoses (1).



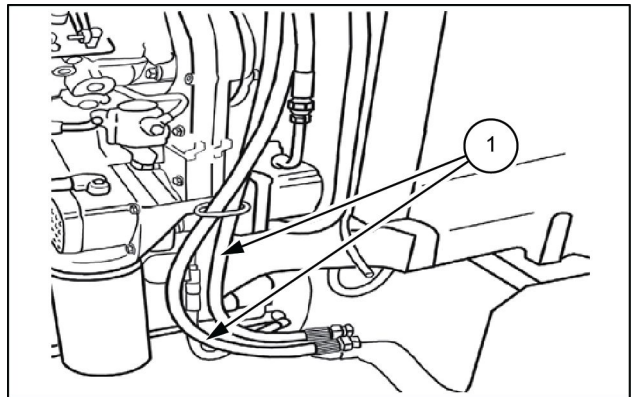
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8. Disconnect the electrical connectors (1).



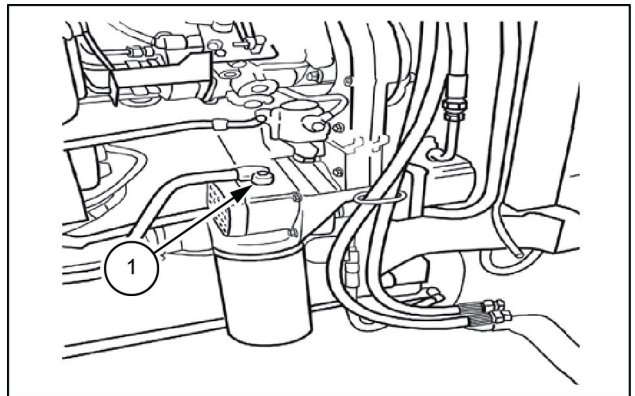
ANIL12TR00113AB 8

9. Disconnect the delivery and return lines (1) to the power steering cylinders.



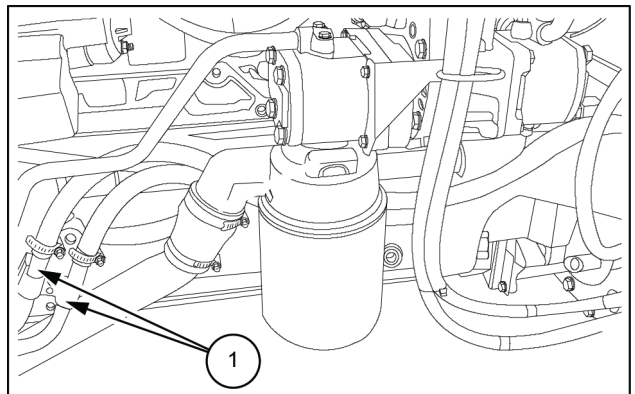
ANIL12TR00114AB 9

10. Remove the hose (1) from the lift pump suction pipe.



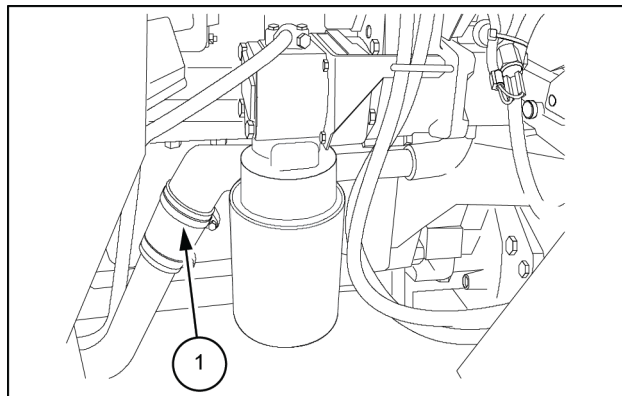
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11. Remove the hose (1) from the Power-Shuttle oil cooler pipe.



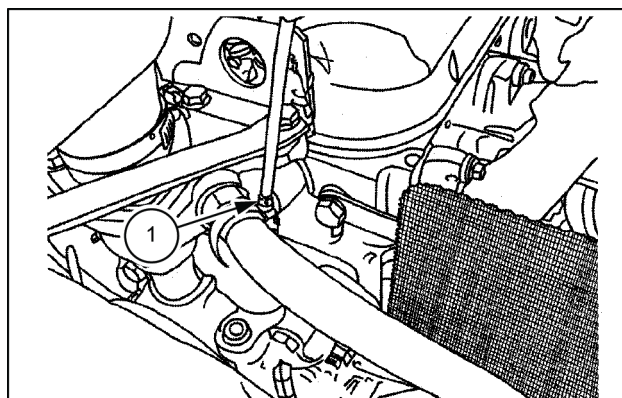
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12. Detach the lift pump delivery pipe (1).



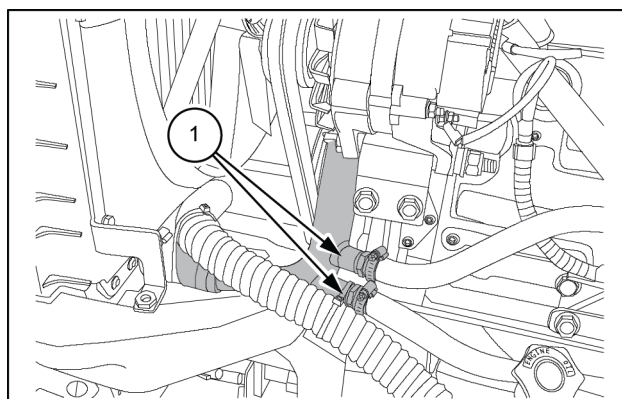
ANIL12TR00117AB 12

13. After draining Off the coolant into suitable containers, unscrew the clamp (1) and remove the cab heating system intake pipe.



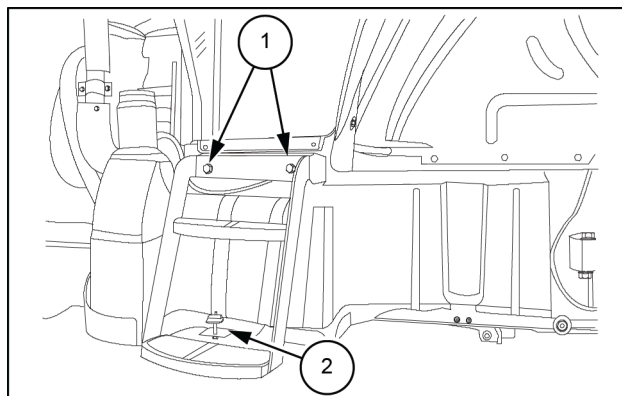
ANIL12TR00118AB 13

14. Loosen the clamps (1) and remove the cab heater outlet pipes (2). (Mark the hoses, before removal, to facilitate refitting in the correct position).



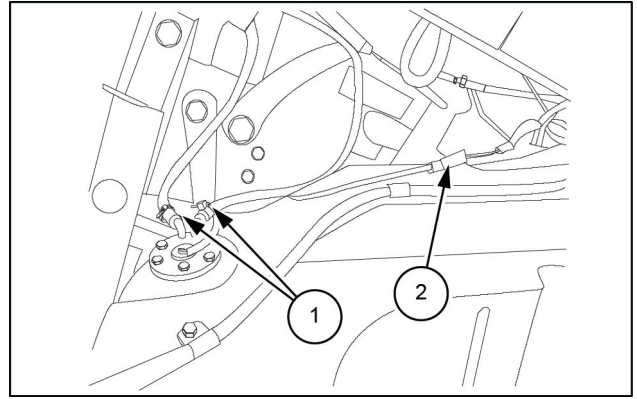
ANIL12TR00119AB 14

15. Remove the bolts (1) and remove the footstep.
16. Remove the bolt (2) which secure the fuel tank and lower the tank.



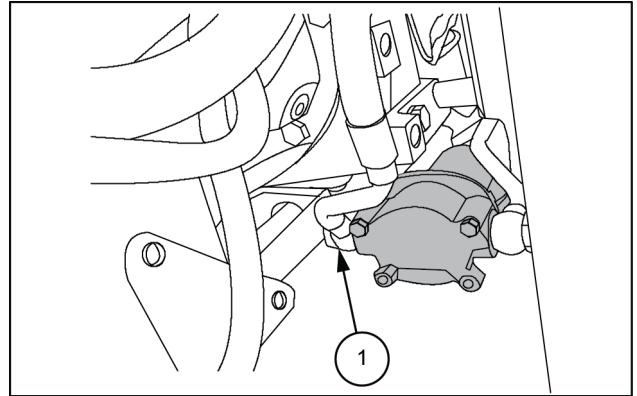
ANIL12TR00120AB 15

17. Loosen the clamps and remove the inlet and return pipes **(1)** from the fuel tank. Remove the sender line **(2)**. (if necessary)



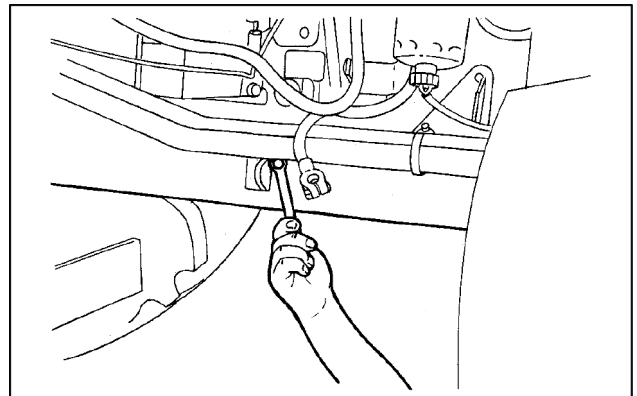
ANIL12TR00121AB 16

18. Remove pipe from Power-Shuttle transmission filter **(1)**.



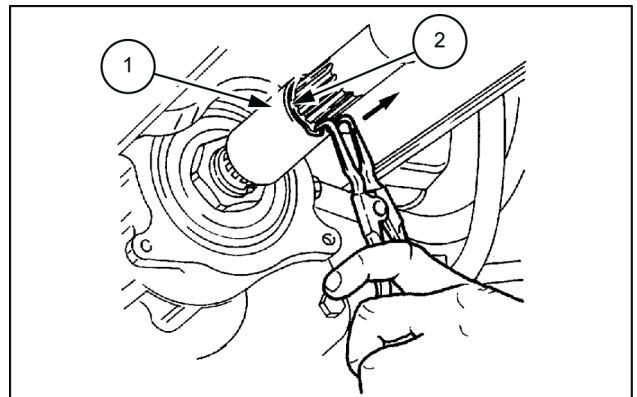
ANIL12TR00122AB 17

19. Remove the front, centre and rear retaining bolts from the front axle drive shaft guard and remove the guard.



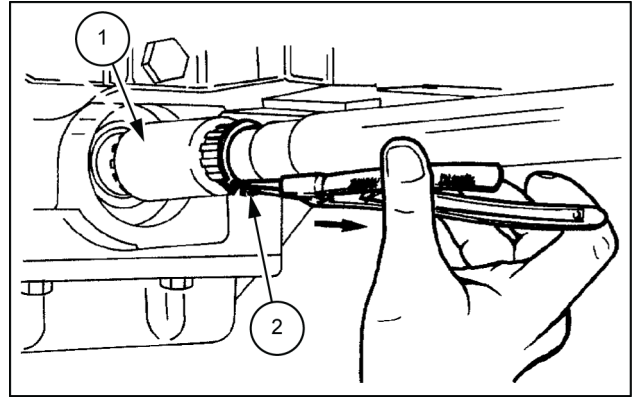
ANIL12TR00123AA 18

20. Remove the circlip **(2)** from the front of the prop shaft and slide the sleeve **(1)**, in the direction shown by the arrow, until it is free of the splines on the front axle.



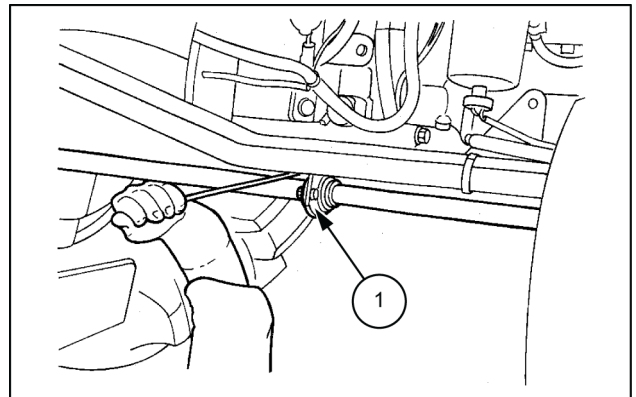
ANIL12TR00124AB 19

21. Remove the circlip (2) from the rear of the prop shaft and slide the sleeve (1), in the direction shown by the arrow, until it is free of the splines on the crankshaft.



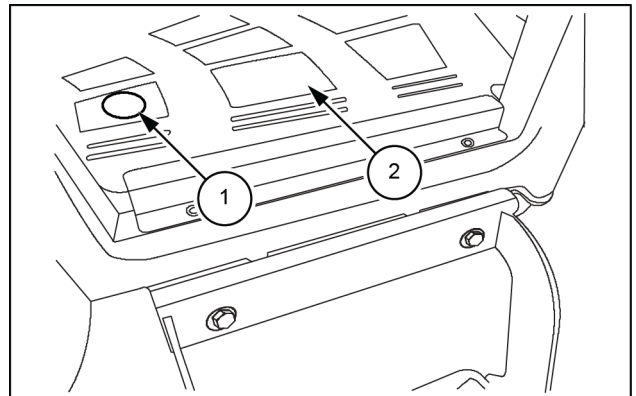
ANIL12TR00125AB 20

22. Remove the middle support bolts (1) from the propeller shaft and remove the shaft complete with support.



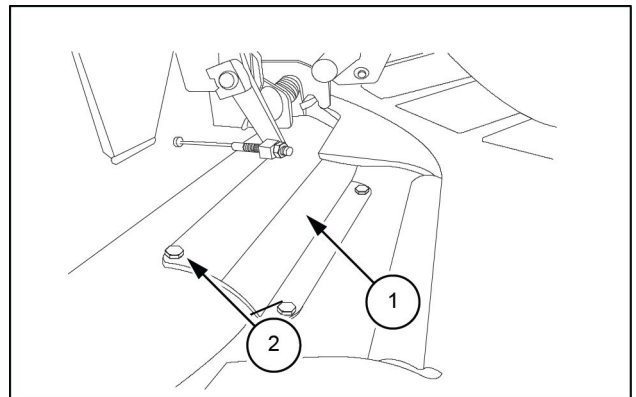
ANIL12TR00126AB 21

23. Remove the retaining bolt (1) from the floor. Remove the floor mat.



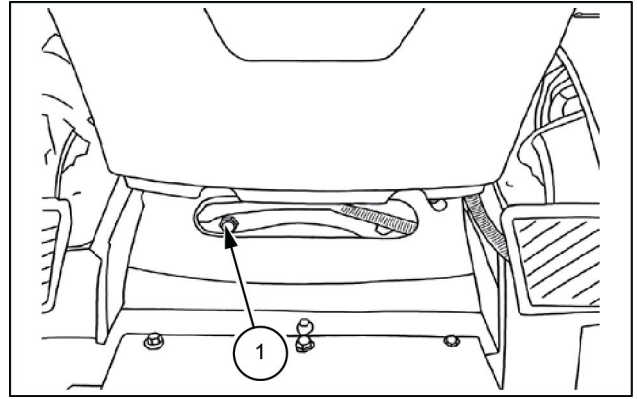
ANIL12TR00127AA 22

24. Loosen the screw (2) of plate (1). Remove the plate (1).



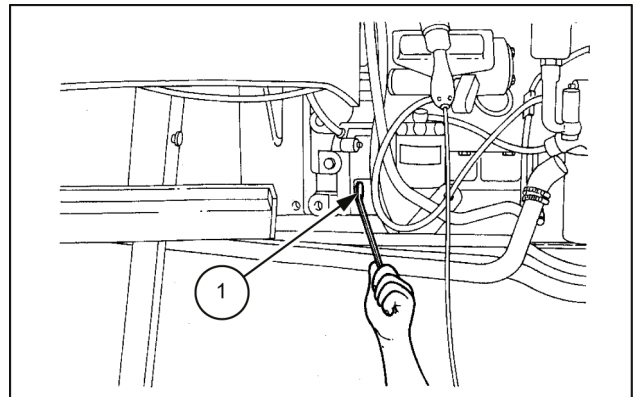
ANIL12TR00128AB 23

25. Unscrew the nuts **(1)** and the bolts securing the engine to the transmission. Access is through the two slots in the cab floor.



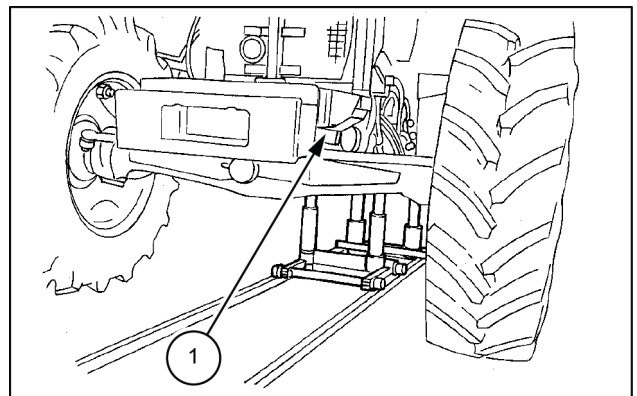
ANIL12TR00129AB 24

26. Unscrew the four lower bolts **(1)** securing the engine to the transmission.



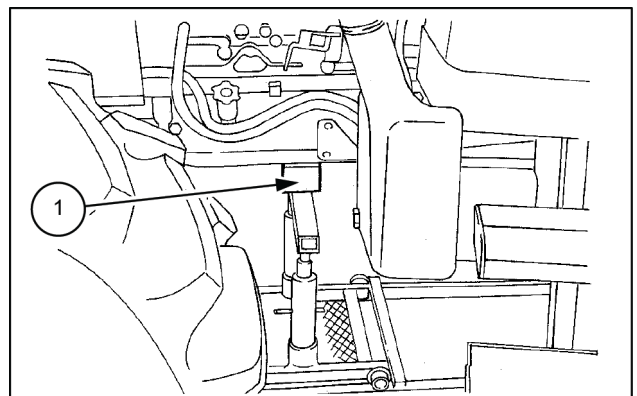
ANIL12TR01500AB 25

27. Position stand 380000236 underneath the tractor and insert a wedge **(1)**, either side of the axle, to prevent the axle from pivoting.



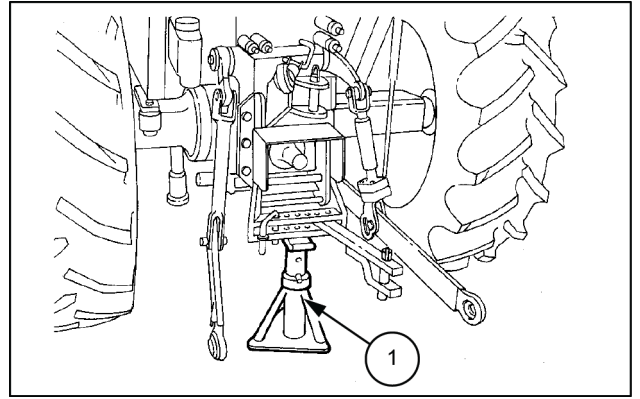
ANIL12TR00130AB 26

28. Insert a wooden block between the stands and the tractor.



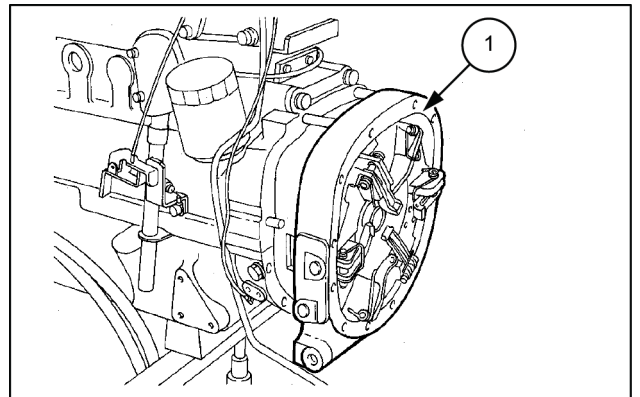
ANIL12TR00131AB 27

29. Place a fixed stand **(1)** underneath the drawbar support and apply the hand brake.



ANIL12TR00132AB 28

30. Unscrew the four remaining bolts securing the engine to the transmission.
31. Separate the engine from the transmission.



ANIL12TR00133AB 29

Engine - Install

To refit the engine, proceed as follows:

1. Check condition of ball bearings pressed in flywheel, replace in the event of excessive noise or binding. To install a new bearing, pack lubricate with grease position the clutch using tool **380000612** (Model TD5.65, TD5.75 and TD5.80) or with tool **380000292** (Model TD5.90, TD5.100 and TD5.110). Fix the clutch to the flywheel with the six bolts.
2. Adjust the coplanarity of the clutch release levers as described.
3. Clean the distance collar and the mating surfaces of the clutch housing, and also scrape all residue of old sealing compound from the mating surface of the engine.
4. Spread **LOCTITE®** sealing compound on the mating surfaces of the engine and distance collar. Fit the distance collar on the studs screwed into the engine.
5. Before connecting transmission casing to engine - front axle assembly, grease discs hubs.
6. Check up the rear wheels with wooden wedges, check that the hand brake is fully on and that the fixed and mobile stands are well positioned.
7. Fit and tighten the bolts securing the clutch housing to the engine.
8. Make sure that no electrical leads or cables are trapped between the two units.
9. Next rotate the crankshaft by turning the cooling fan, so as to allow the sleeve to engage the splines on the power take-off shaft.
10. Remove the stands of tool 380000236 from under the engine and the gearbox/transmission and the stand under the draw bar.
11. Refit the cab heater pipe union on the clutch/engine distance collar. Connect the flexible rubber hoses to the union.
12. Refit the two power steering cylinder oil delivery and return connections.
13. Refit the rigid pipe for driving oil from the transmission and the metal clamps.
14. Connect the flexible pipe to the injector fuel leak-off pipe.
15. Fit the electric cable connected to the fuse holder box and the retaining nut.
16. Fit the electric connections installed on the brake pump and on the brake fluid reservoir.
17. Fit the cab heater delivery and return pipes and insert and associated claps.
18. Connect all the electrical connections
19. Connect the throttle cable to the injection pump.

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