

QUANTUM® 75F
QUANTUM® 85F
QUANTUM® 95F
QUANTUM® 105F
Tractor

SERVICE MANUAL

Part number 47888384

English

July 2016

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Link Product / Engine

Product	Market Product	Engine
Quantum® 105F With cab [ZBJG14783 -]	Australia New Zealand	F4CE9484
Quantum® 105F With cab [ZBJG14783 -]	Europe	F4CE9484
Quantum® 105F With cab [ZBJG14783 -]	Asia Pacific	F4CE9484
Quantum® 105F With cab [ZBJG14783 -]	Middle East Africa	F4CE9484
Quantum® 75F With cab [ZAJG16199 - ZCJG10860]	Europe	F5AE9484B
Quantum® 75F With cab [ZAJG16199 - ZCJG10860]	Asia Pacific	F5AE9484B
Quantum® 75F With cab [ZAJG16199 - ZCJG10860]	Australia New Zealand	F5AE9484B
Quantum® 75F With cab [ZAJG16199 - ZCJG10860]	Middle East Africa	F5AE9484B
Quantum® 75F Without cab [ZAJG21267 - ZCJG03540]	Middle East Africa	F5AE9484B
Quantum® 75F Without cab [ZAJG21267 - ZCJG03540]	Australia New Zealand	F5AE9484B
Quantum® 75F Without cab [ZAJG21267 - ZCJG03540]	Asia Pacific	F5AE9484B
Quantum® 75F Without cab [ZAJG21267 - ZCJG03540]	Europe	F5AE9484B
Quantum® 75F With cab - Model Year 2012 [ZCJG15258 -]	Australia New Zealand	F5AE9484B
Quantum® 75F With cab - Model Year 2012 [ZCJG15258 -]	Europe	F5AE9484B
Quantum® 75F With cab - Model Year 2012 [ZCJG15258 -]	Asia Pacific	F5AE9484B
Quantum® 75F With cab - Model Year 2012 [ZCJG15258 -]	Middle East Africa	F5AE9484B
Quantum® 75F Without cab - Model Year 2012 [ZCJG13695 -]	Asia Pacific	F5AE9484B
Quantum® 75F Without cab - Model Year 2012 [ZCJG13695 -]	Middle East Africa	F5AE9484B
Quantum® 75F Without cab - Model Year 2012 [ZCJG13695 -]	Australia New Zealand	F5AE9484B
Quantum® 75F Without cab - Model Year 2012 [ZCJG13695 -]	Europe	F5AE9484B
Quantum® 85F With cab [ZAJG19324 - ZCJG10865]	Middle East Africa	F5AE9484G
Quantum® 85F With cab [ZAJG19324 - ZCJG10865]	Australia New Zealand	F5AE9484G
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Product	Market Product	Engine
Quantum® 85F Without cab [ZAJG18220 - ZBJG24583]	Middle East Africa	F5AE9484G
Quantum® 85F Without cab [ZAJG18220 - ZBJG24583]	Europe	F5AE9484G
Quantum® 85F Without cab [ZAJG18220 - ZBJG24583]	Australia New Zealand	F5AE9484G
Quantum® 85F Without cab [ZAJG18220 - ZBJG24583]	Asia Pacific	F5AE9484G
Quantum® 85F With cab - Model Year 2012 [ZCJG13761 -]	Middle East Africa	F5AE9484G
Quantum® 85F With cab - Model Year 2012 [ZCJG13761 -]	Asia Pacific	F5AE9484G
Quantum® 85F With cab - Model Year 2012 [ZCJG13761 -]	Australia New Zealand	F5AE9484G
Quantum® 85F With cab - Model Year 2012 [ZCJG13761 -]	Europe	F5AE9484G
Quantum® 85F Without cab - Model Year 2012 [ZCJG08362 -]	Australia New Zealand	F5AE9484G
Quantum® 85F Without cab - Model Year 2012 [ZCJG08362 -]	Middle East Africa	F5AE9484G
Quantum® 85F Without cab - Model Year 2012 [ZCJG08362 -]	Europe	F5AE9484G
Quantum® 85F Without cab - Model Year 2012 [ZCJG08362 -]	Asia Pacific	F5AE9484G
Quantum® 95F With cab [ZAJG13164 - ZCJG10879]	Asia Pacific	F4CE9484
Quantum® 95F With cab [ZAJG13164 - ZCJG10879]	Europe	F4CE9484
Quantum® 95F With cab [ZAJG13164 - ZCJG10879]	Middle East Africa	F4CE9484
Quantum® 95F With cab [ZAJG13164 - ZCJG10879]	Australia New Zealand	F4CE9484
Quantum® 95F With cab - Model Year 2012 [ZCJG08440 -]	Europe	F4CE9484
Quantum® 95F With cab - Model Year 2012 [ZCJG08440 -]	Asia Pacific	F4CE9484
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INTRODUCTION

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.

INTRODUCTION

- 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.



SERVICE MANUAL

Engine

Quantum® 105F With cab [ZBJG14783 -], Quantum® 75F With cab - Model Year 2012 [ZCJG15258 -], Quantum® 75F With cab [ZAJG16199 - ZCJG10860], Quantum® 75F Without cab - Model Year 2012 [ZCJG13695 -], Quantum® 75F Without cab [ZAJG21267 - ZCJG03540], Quantum® 85F With cab - Model Year 2012 [ZCJG13761 -], Quantum® 85F With cab [ZAJG19324 - ZCJG10865], Quantum® 85F Without cab - Model Year 2012 [ZCJG08362 -], Quantum® 85F Without cab [ZAJG18220 - ZBJG24583], Quantum® 95F With cab - Model Year 2012 [ZCJG08440 -], Quantum® 95F With cab [ZAJG13164 - ZCJG10879]

Engine and crankcase - Remove

⚠ DANGER

Heavy objects!

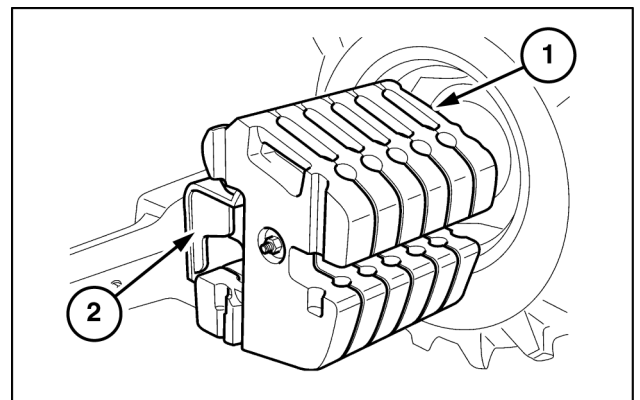
Lift and handle all heavy components using lifting equipment with adequate capacity. Always support units or parts with suitable slings or hooks. Make sure the work area is clear of all bystanders.

Failure to comply will result in death or serious injury.

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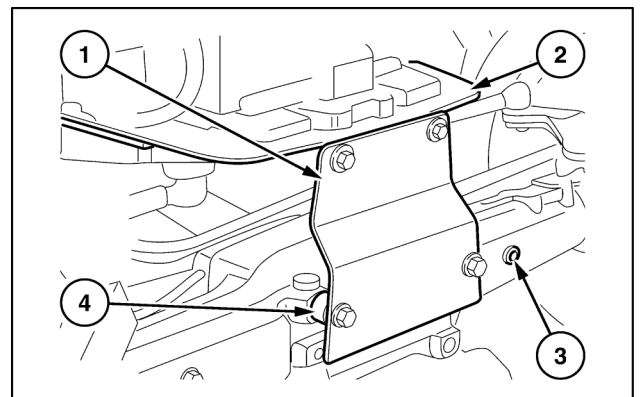
ATTENTION: Use suitable tools to align the holes. Never use fingers or hands.

1. Remove the cab as described in operation **Cab - Remove (90.100)**.
2. Extract the fixing pin and remove the ballast (1), unscrew the retaining screws and retrieve the ballast support (2).



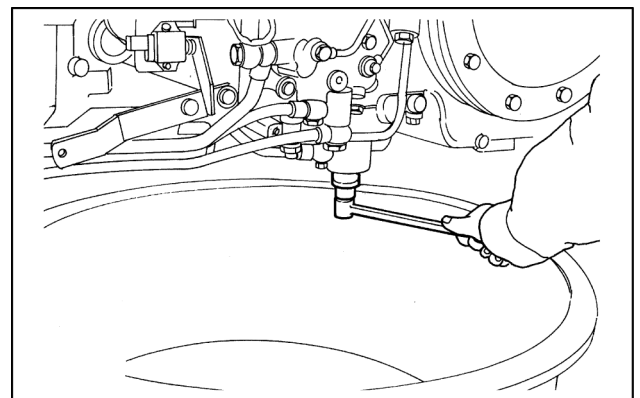
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3. Position and secure the bracket **380001613 (1)** complete with spacers **50162 (4)** on the front axle **(3)** and the related support **(2)**.



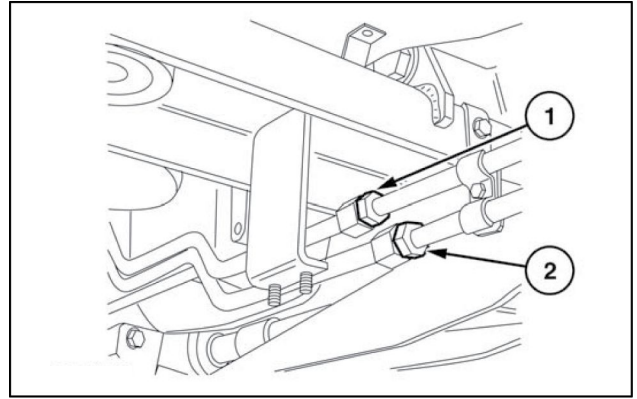
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4. Unscrew the plug and drain the oil from the rear transmission casing (the prescribed quantity is **42 l**).



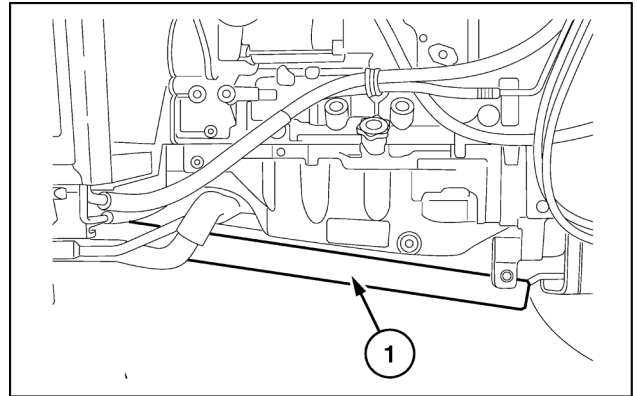
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5. Disconnect the pipes **(1)** and **(2)** of the transmission oil cooler and of the front axle differential lock.



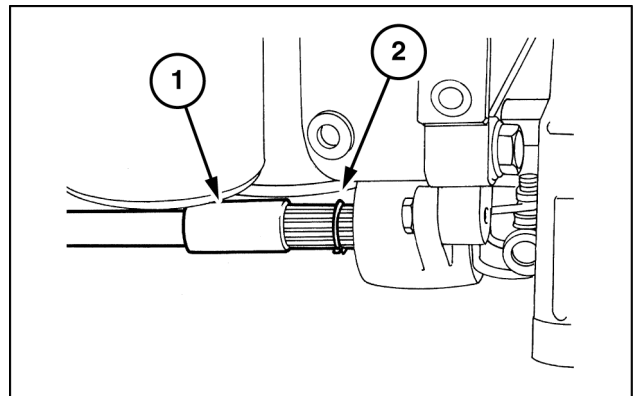
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6. Unscrew the front and rear retaining bolts, unscrew the front pivot pin retaining screw and remove the bracket **(1)**.
Unscrew the relative retaining bolts and remove the rear guard.



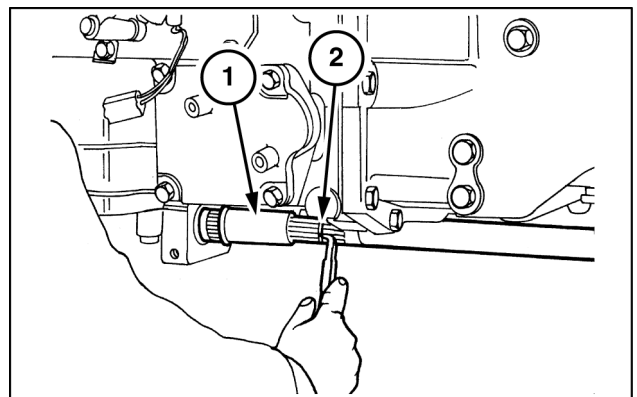
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7. Remove the circlip **(2)** and move the front sleeve **(1)** backwards in order to free it from the groove on the front axle.



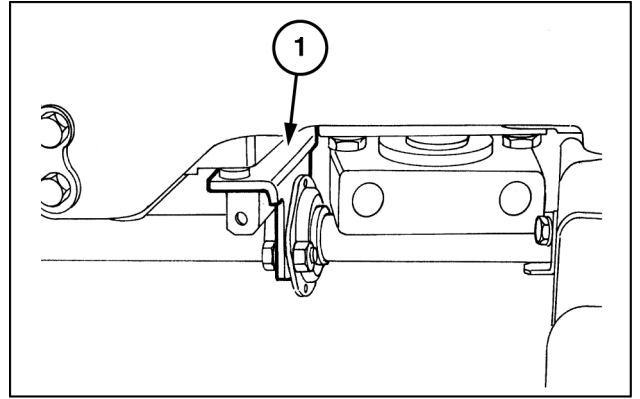
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8. Remove the circlip **(2)** and move the rear sleeve **(1)** in order to release it from the groove on the drive.



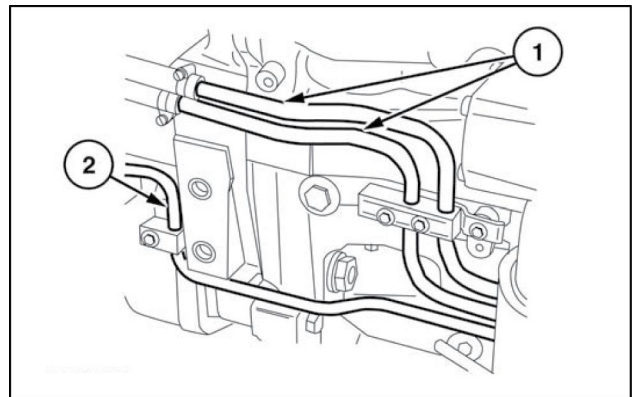
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9. Unscrew the transmission shaft central support **(1)** retaining bolts and remove the shaft and support.



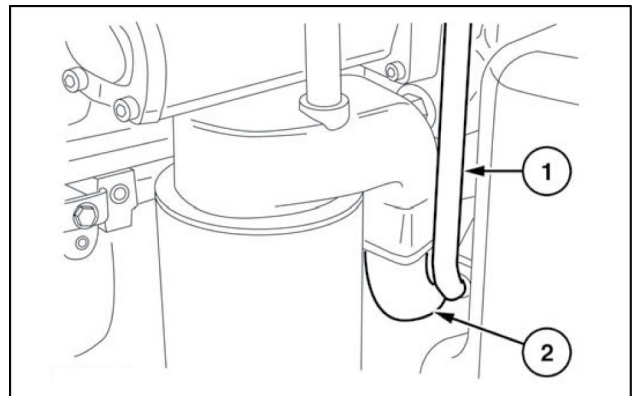
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10. Disconnect: The transmission oil cooler pipes **(1)** and the front axle differential lock pipe **(2)**.



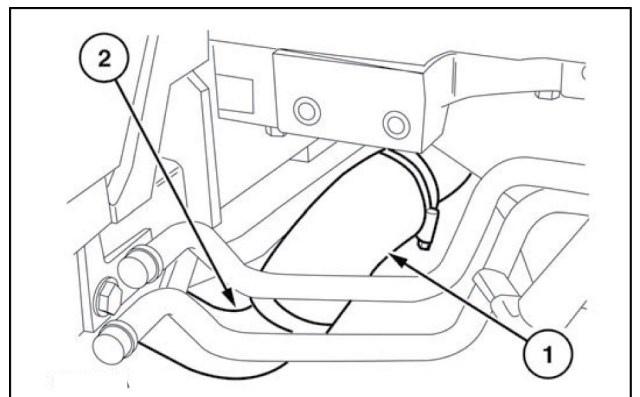
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11. Unscrew: The retaining bolts of the pipe **(1)** delivering oil to the pump and the bolts retaining the pipe **(2)** to the filter support.



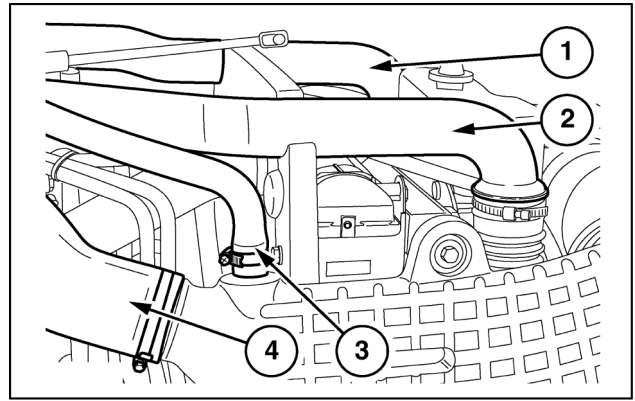
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12. Loosen the related clamps and remove the sleeve **(2)** from the pipe **(1)** and remove the transmission oil inlet pipe together with the above-mentioned sleeve.



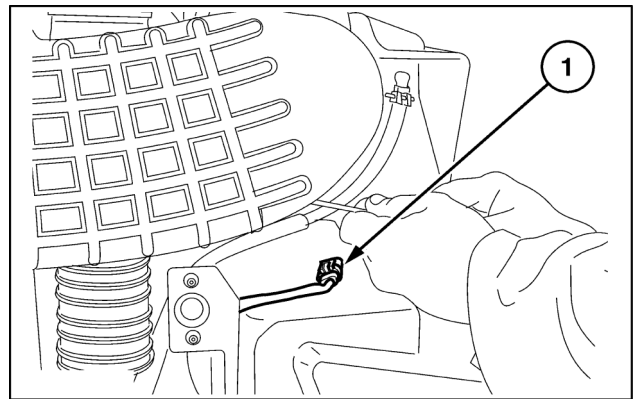
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13. Unscrew the fixing clamps and disconnect the pipes **(1)** and **(2)** from the cooler, the sleeve **(4)** between the air filter and the turbocharger and the oil vapor recirculation pipe **(3)**.



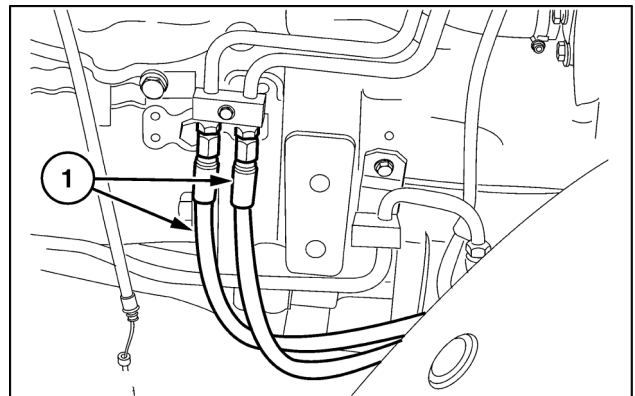
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14. Disconnect the secondary tank fuel level connection **(1)** and the clogged air filter pressure switch connection.



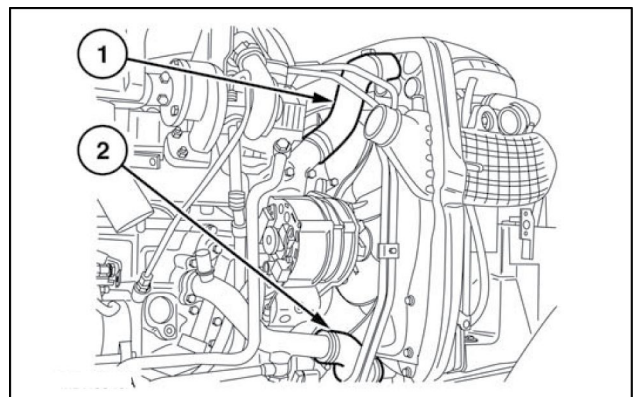
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15. Disconnect the steering hydraulic cylinder control pipes **(1)**.



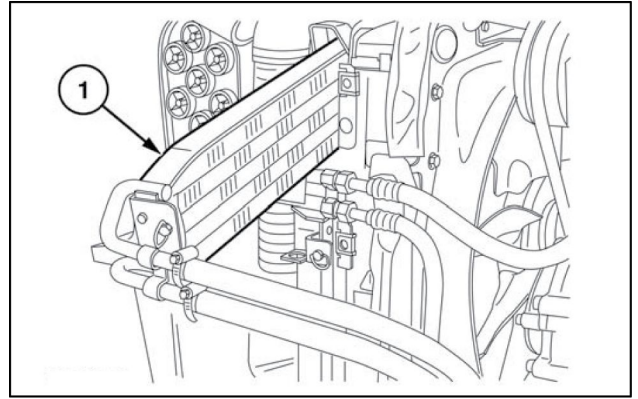
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16. Unscrew the fixing clamps and detach the upper **(1)** and lower **(2)** sleeves from the engine radiator.



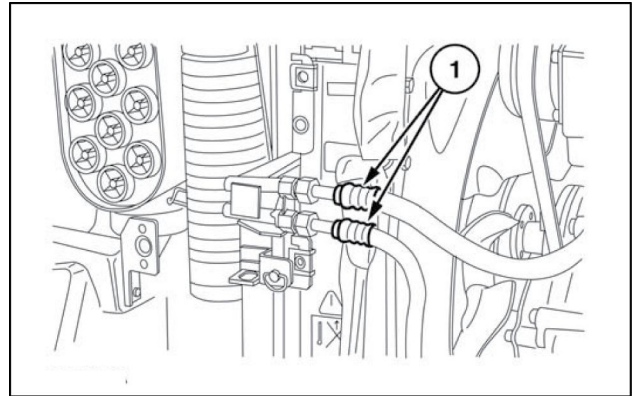
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17. Unhook the catch and extract the transmission oil radiator (1).



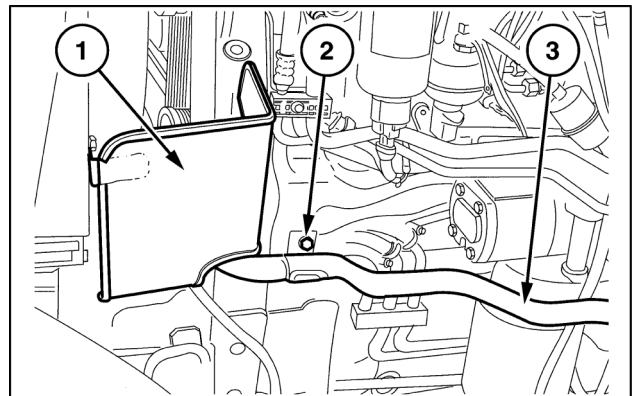
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18. Disconnect the pipes (1) of the air-conditioning system from the related condenser.



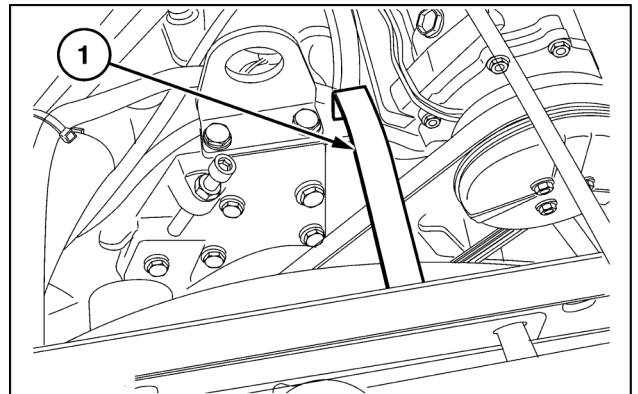
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19. Unscrew the fixing screws and remove the guard (1), unscrew the fixing screw (2), loosen the related clamp and detach the pipe (3) joining the main tank to the secondary one.



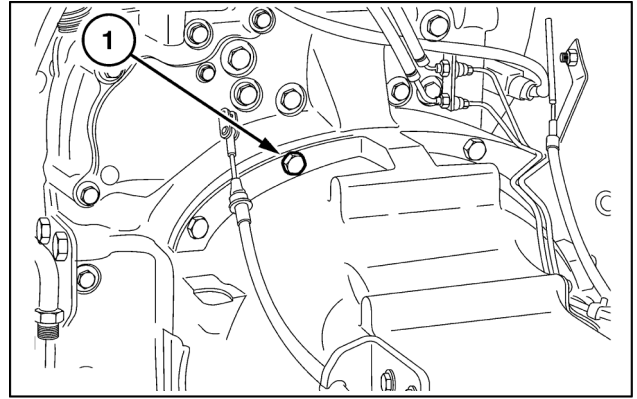
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20. Unscrew the fixing screw and detach the bracket (1) locking the engine radiator.



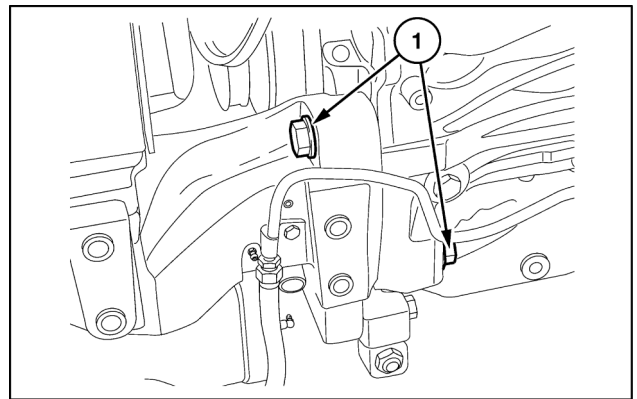
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21. Position a fixed stand under the transmission-clutch casing.
22. Connect the engine to the hoist using a chain and make it take up the strain.
23. Unscrew the bolts (1) securing the engine to the transmission-clutch casing and detach the engine assembly and front axle.



MOL11F0020AB 20

24. Set up two fixed stands: One under the axle support at the rear and the other under the front side.
25. Unscrew the bolts (1) on both sides and separate the engine from the axle-support assembly with the radiators.
26. Rest the engine on an adequate support.



MOL11F0021AB 21



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Engine - Install

▲ CAUTION

Pinch hazard!

Always use suitable tools to align mating parts.

DO NOT use your hand or fingers.

Failure to comply could result in minor or moderate injury.

C0044A

- Respect the tightening torques as prescribed.
- Connect the engine, with chains, to the hoist.
- Refit the engine to the front axle-support assembly with the radiator and cooler.
- Before refitting the engine to the clutch box carefully clean the mating surfaces and apply sealing compound (**0.002 m** diameter), according to the diagram **Transmission drive housing - Reseal (21.114)**.
- Position the engine on the clutch casing and secure it with the specific bolts.
- Position and secure the retaining bracket between the radiator and engine.
- Secure the pipe joining the main tank to the secondary one.
- Position and secure the guard between the radiator and engine.
- Connect the air-conditioning system pipes to the condenser.
- Insert the transmission oil radiator into its seat and secure it.
- Connect and secure the top and bottom sleeves to the engine radiator.
- Connect the steering cylinder control piping.
- Connect the electrical connections of the secondary tank fuel level and clogged air filter.
- Position and secure the connecting pipes of the cooler, turbocharger, air filter and oil vapour recirculation.
- Position and connect the transmission oil inlet pipe.
- Position and secure the pipes of the transmission oil filter support.
- Connect the transmission oil cooler and front axle differential lock pipes.
- Position the propeller shaft, secure the central support, slide the two front and rear sleeves and secure them with the circlips.
- Position the propeller shaft front bracket and secure it.

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