

# SERVICE MANUAL

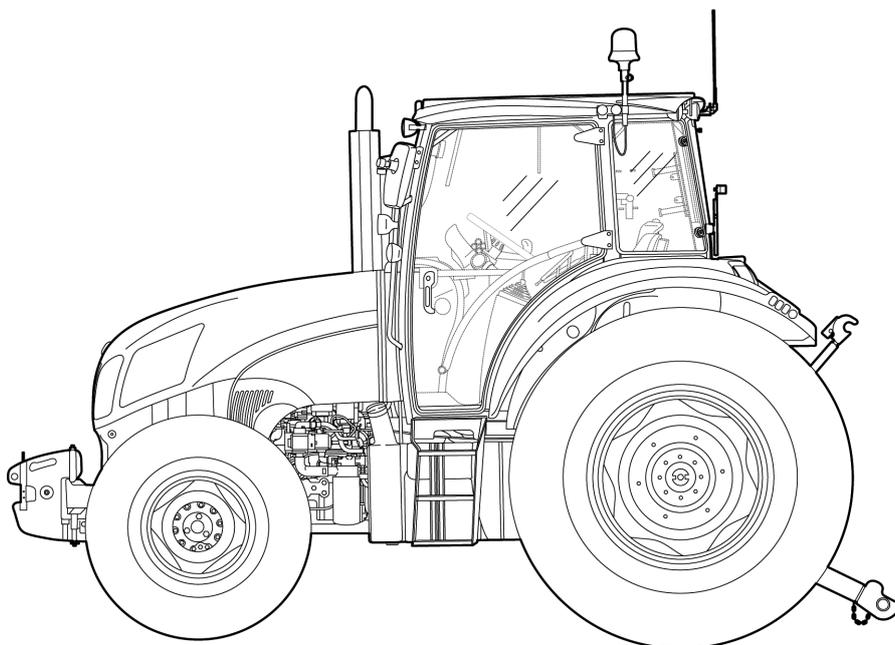
## T5.95 / T5.105 / T5.115 Electro Command Tractor

Part number 47538922  
English  
May 2013





## SERVICE MANUAL



**T5.105 ElectroCommand**  
**T5.115 ElectroCommand**  
**T5.95 ElectroCommand**

## Link Product / Engine

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<b>Product</b>	<b>Market Product</b>	<b>Engine</b>
T5.105 ElectroCommand	International Region	F5DFL413B*A006
T5.105 ElectroCommand	Europe	F5DFL413B*A006
T5.105 ElectroCommand	North America	F5DFL413B*A006
T5.115 ElectroCommand	Europe	F5DFL413A*A002
T5.115 ElectroCommand	International Region	F5DFL413A*A002
T5.115 ElectroCommand	North America	F5DFL413A*A002
T5.95 ElectroCommand	International Region	F5DFL413C*A003
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# INTRODUCTION

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## Capacities

### Fluid capacities and lubricant specifications

	approximate	RECOMMENDED NEW HOLLAND AGRICULTURE PRODUCTS	SPECIFICATION NEW HOLLAND AGRICULTURE	INTERNA- TIONAL SPECI- FICATION
Cooling system:	16 l (4.2 US gal)	Mixture of water and antifreeze <b>NEW HOLLAND AMBRA AGRIFLU</b> at 50 % + 50 %	NH 900 A	-
Windscreen wash reservoir	2 l (0.5 US gal)	Water & cleaning liquid	-	-
Fuel tank:	165 l (43.6 US gal)	Decanted, filtered diesel fuel	-	-
Engine sump: Minimum.	6.4 l (1.7 US gal)	<b>NEW HOLLAND AMBRA UNITEK CJ-4 ENGINE OIL SAE 10W-40</b> or <b>NEW HOLLAND AMBRA UNITEK CJ-4 ENGINE OIL SAE 0W-40</b>	MAT3521	API CJ-4 ACEA E9
Maximum	8.1 l (2.1 US gal)			
Brake control circuit	0.7 l (0.18 US gal)	<b>NEW HOLLAND AMBRA BRAKE LHM</b>	NH 610 A	ISO 7308
Front axle:	4.5 l (1.2 US gal)	<b>NEW HOLLAND AMBRA MULTI G™ HYDRAULIC TRANSMISSION OIL</b>	NH 410 B	API GL4 ISO 32/46 SAE 10W-30
Final drives (each)	1.0 l (0.3 US gal)			
Transmission Ring/Pinion Gears final drives and brakes ECM No. hydraulic lift torque of engine at power steering	63 l (16.6 US gal)			
Front wheel hubs	-	<b>NEW HOLLAND AMBRA GR-9 MULTI-PURPOSE GREASE</b>	NH 710 A	NLGI 2
Grease fittings	-			
Air-conditioning refrigerant	650 g (22.9 oz)	-	-	R134 A
Air-conditioning compressor oil	0.185 l (0.05 US gal)	-	-	SP10

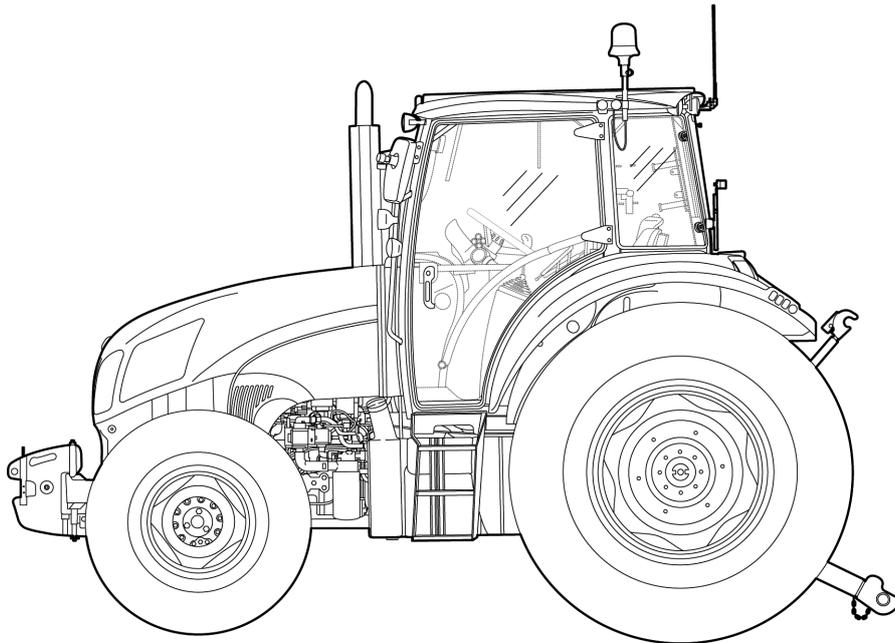
**NOTICE:** Avoid using fuel with sulfur content higher than 50 mg/kg ( 50 ppm or 0.005% )





# SERVICE MANUAL

## Engine



**T5.105 ElectroCommand**  
**T5.115 ElectroCommand**  
**T5.95 ElectroCommand**

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## **Engine - 10**

### **Engine and crankcase - 001**

**T5.105 ElectroCommand  
T5.115 ElectroCommand  
T5.95 ElectroCommand**

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## Engine - 10

### Engine and crankcase - 001

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## Engine - General specification

GENERAL SPECIFICATIONS	4 Cylinders
Engine, technical type: <b>T5.95</b> <b>T5.105</b> <b>T5.115</b>	<b>F5DFL413C*A003</b> <b>F5DFL413B*A006</b> <b>F5DFL413B*A002</b>
Engine rpm - high - nominal - low	<b>2400 - 2500 RPM</b> <b>2300 RPM</b> <b>700 - 800 RPM</b>
Cycle	diesel, 4-stroke
Fuel injection	Direct
Number of cylinders in line	4
Bore - All models - Piston diameter - Piston stroke	<b>99 mm (3.8976 in)</b> <b>110 mm (4.3307 in)</b>
Total displacement: - All models	<b>3400 cm<sup>3</sup></b>
Compression ratio All models	17 ± 0.5 : 1
Maximum Power Output: - <b>T5.95</b> - <b>T5.105</b> - <b>T5.115</b> Maximum power speed	<b>73 kW (99 Hp)</b> <b>79 kW (107 Hp)</b> <b>84 kW (114 Hp)</b> <b>2300 RPM</b>
Peak torque - <b>T5.95</b> - <b>T5.105</b> - <b>T5.115</b> Peak torque speed	<b>407 N·m (300.19 lb ft)</b> <b>444 N·m (327.48 lb ft)</b> <b>461 N·m (340.02 lb ft)</b> <b>1500 RPM</b>
Torque increase - <b>T5.95</b> - <b>T5.105</b> - <b>T5.115</b>	<b>34 %</b> <b>35 %</b> <b>32 %</b>
Power at the power take-off - <b>T5.95</b> - <b>T5.105</b> - <b>T5.115</b>	<b>62.7 kW (85.1 Hp)</b> <b>68.6 kW (93.3 Hp)</b> <b>73.9 kW (100.4 Hp)</b>
Number of main bearings	5
Sump	structural, cast iron
Lubrication	forced, with lobe pump
Pump drive	from crankshaft
Oil filtration	mesh screen on oil intake and filter cartridge on delivery line
Engine oil pressure switch operating pressures: - contacts closing* with decreasing pressure. - contacts opening* with increasing pressure. * with the contacts closed the engine oil pressure warning light is on	<b>0.2 bar (2.90 psi)</b> <b>0.9 bar (13.05 psi)</b>
Cooling	coolant circulation
closing Capacity Fan with viscous joint, fixed to the specific pulley	with five rows of vertical pipes <b>16 l (4.23 US gal)</b> <b>ø 520 mm (20.4724 in)</b>
Coolant pump	intake, in plastic with 10 blades
Coolant thermometer	colored scale divided into three sections
Temperature ranges corresponding to each section: - initial dark blue sector - final red sector	normal temperature high temperature
dark blue area - Start of opening	via thermostat valve <b>80 °C (176.00 °F)</b>

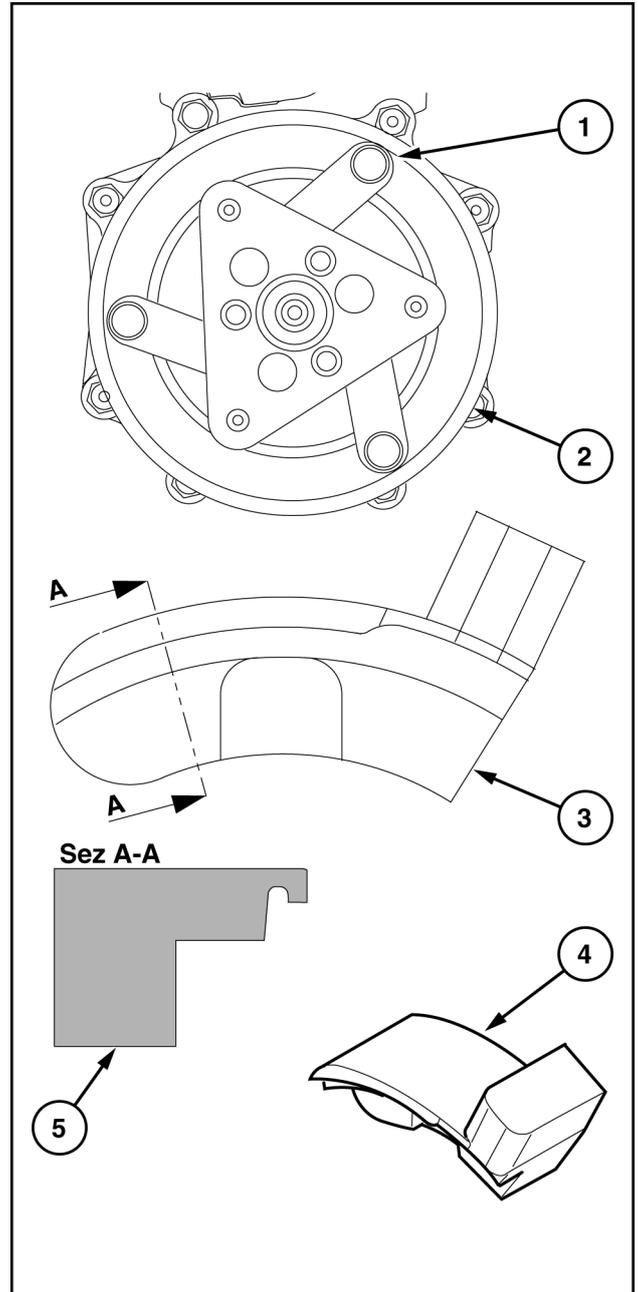
Engine - Engine and crankcase

GENERAL SPECIFICATIONS	4 Cylinders
Timing	overhead valves operated by tappets, rods and rocker arms via the camshaft located in the engine block; the camshaft is driven by the crankshaft using straight-tooth gears
Intake: - start: before <b>P.M.S.</b> - end: after <b>P.M.I.</b>	<p style="text-align: right;"><b>19 °</b> <b>37 °</b></p>
Exhaust: - start: before <b>P.M.I.</b> - end: after <b>P.M.S.</b>	<p style="text-align: right;"><b>61 °</b> <b>21 °</b></p>
Clearance between valves and rocker arms with engine cold.	The valve clearance is hydraulically controlled. Therefore, manual adjustment is not necessary.
Turbocharging	Turbocharged with <b>intercooler</b>
Air cleaning	dual cartridge dry air cleaner, with clogged filter indicator with centrifugal pre-filter and automatic dust ejector
Fuel filtration	by mesh prefilter on the supply pipe, suction line filter with water - fuel separator, low pressure filter and sensor.
Priming pump Injection pump Type Nozzles type Injection pressure	<p style="text-align: center;">Manual mounted on the suction line filter <b>BOSCH</b> High pressure Common Rail control unit <b>HPCR - CP4.1</b> Electro-injectors <b>300 - 1400 bar (4350.00 - 20300.00 psi)</b></p>
Filling: Engine sump Fuel tank	<p style="text-align: center;"><b>6.4 - 8.1 l (1.69 - 2.14 US gal)</b> <b>140 l (36.98 US gal)</b></p>
Anti-pollution system Type:	<p style="text-align: center;">Exhaust gas recycling system <b>EGR</b> Particulate filter <b>DPF*</b></p>
Recommended frequency for renewing filter	every 3000 hours

**NOTE:** \* - For filter maintenance please refer to: ( **Diesel Particulate Filters (DPF) - Dynamic description manual regeneration of the diesel particulate filter (DPF) (55.408)** )

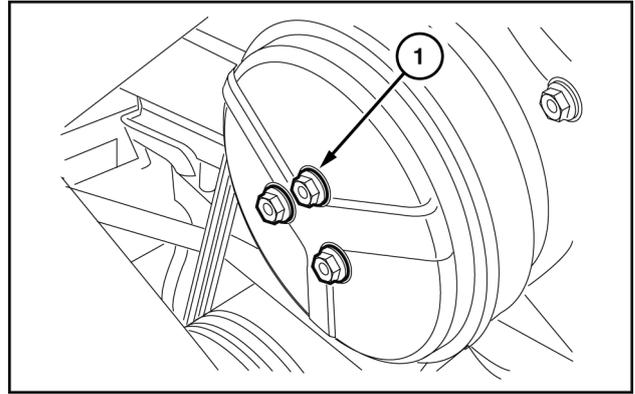
## Engine - Install

1. - Refit the flexible belt on the alternator and take up the slack according to the procedure in **Alternator - Tension adjust belt (55.301)**.
2. - Reposition the compressor and the relevant belt following this procedure:
  - Reposition the compressor on the support and with the relevant pipe support secure it with the screws
  - To fit the belt **polyv** use the tool **380200011**.
  - (1). Compressor clutch actuator drive bracket.
  - (2). **polyv** belt pulley outer edge.
  - (3). Tool recess. It is used to drive the tool; this recess houses the bracket (1).
  - (4). Tail. Used to drive the **polyv** belt in the pulley seat.
  - (5). Hitching. Thanks to this recess, where the outer edge (2) is housed, the tool remains hitched to the compressor.



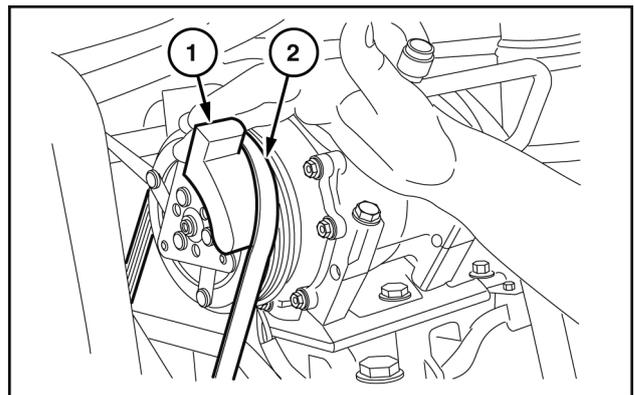
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3. - Take out the bolts (1) and the related compressor clutch dust cover.



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4. Make sure that the **polyv (2)** belt is perfectly housed on the fan pulley.
5. - Move the belt (2) near to the compressor pulley and, keeping the tool **380200011** under the belt, hook it onto the clutch of the compressor at the innermost part so as to slightly force the belt.

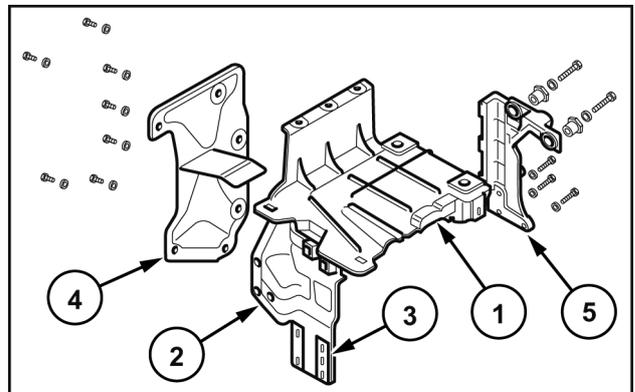


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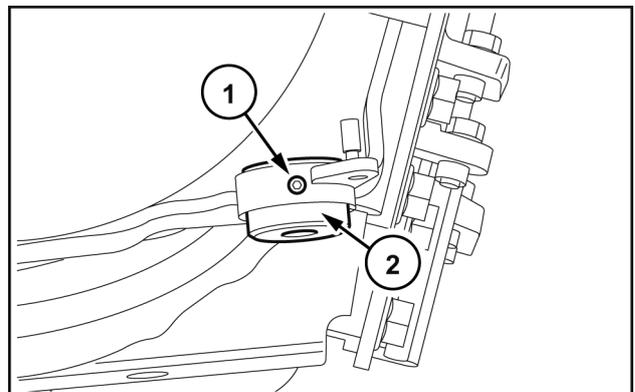
6. - With your left hand on the fan and right hand on the tool, move both clockwise so as to take the belt onto the belt of the compressor.  
 - Put the dust cup back onto the compressor clutch and tighten the three screws taking care to spread a film of thread lock on the ends so they do not come unscrewed.
7. - Where applicable, reposition the viscous joint and the cooling fan.
8. - Apply the required torque settings ( see engine section)
9. - Insert the three hooks of the chain in the eyelets on the engine and, using the hoist, lift the assembly off the platform support.
10. - Position the engine on the front axle, trying to avoid incorrect operations with the hoist so as not to let the engine fan damage the fins of the radiator, then join the two assemblies together with the four retaining bolts and the necessary adjuster spacers for the monobloc/sump support.
11. - Reposition the movable tool for dismantling tractors **380000569** under the engine and place a wooden block in between the point of contact between the tool and engine.

12. - With the aid of the hoist, place the engine on the tool **380000569** and remove the lifting eye bolts previously fitted on the rear of the engine.
13. - Remove the fixed stand previously positioned under the support of the groove of the drive of the front axle and the wooden plug.
14. - Remove the fixed U--bolt fitted beforehand under the ballast support and the two wooden wedges locking the front wheels.
15. - Remove the old sealing paste from the two surfaces between the engine and clutch casing.
16. - Apply **LOCTITE® 518** sealing compound on the engine and clutch casing mating surfaces.
17. - Put a wooden block under the right-hand rear wheel, make sure that the handbrake is fully applied and that all fixed and mobile stands are safely positioned.
18. - The installation phase described here requires the presence of two or three workers to use the movable tool for dismantling tractors **380000569** to move the engine/front axle assembly close to the gearbox.
19. - In the phase of installing the engine/front axle assembly to the gearbox, it is necessary to push on the front wheels, taking great care in the end phase of coupling over both the pipes and the cables/electrical connections to prevent crushing between the two bodies. During this phase, it is moreover necessary to turn the crankshaft with the aid of the radiator cooling fan to help the coupling between the sleeve and the drive shaft.
20. - Secure both assemblies by tightening all the bolts locking the engine to the gearbox.
21. - Disconnect the hoist chains, remove the U--bolt previously fitted under the clutch casing and recover the movable tool for dismantling tractors **380000569**.
22. - Refit the bracket supporting the cab connectors, cab power and cup filter, connect the pipe that joins the latter to the mechanical priming pump on the sediment filter.
23. - On the left-hand side, connect the cab power cable connector, take it onto the maxi fuse box and lock it with clamps.
24. - Return the main engine cable back into position, connect the connectors to the sensors and switches located on the engine, on the control unit and on the maxi fuse box, fasten the wiring with clamps.
25. - Lay out the **FTP** interface - engine cable on the machine, reconnect the various connections and secure the wiring with clamps.
26. - Fit the starter motor back on, then connect the two ground wires on the engine and battery system.

27. - On the right-hand side reconnect the battery positive cable and the wirings to the starter motor, battery cut-off switch and alternator. Fit the guard back onto the starter motor.
28. - Refit the two delivery and return lines to the cab heater and the pipe inserted on the lower sleeve coming from the expansion tank. Refit the upper and lower sleeves of the radiator engine connection. Secure the straps and clamps tightening the pipes.
29. - Reconnect the power steering spool valve oil filter together with the support. Reconnect the power steering oil drain pipe and the supply pipe to the spool valve of the gearbox.
30. - Refit the two oil delivery and return pipes to the cooler and secure them with the relevant clamp.
31. - Reassemble the power steering pump. Fit back on the transmission oil filter assembly and fix the screws, reconnect the delivery piping to the lift and to the power steering anti-cavitation assembly on the pump, the oil filter inlet from the transmission, and the two suction lines from the filter to the pump.
32. - Connect the pipes to the power steering cylinder and the supply to the spool valve.
33. - If it was necessary to remove the **DPF** support proceed as follows:  
 1 – Mount the upper support (1) on the right one (2) with the three Allen screws.  
 2 – Mount the left support (5) securing it to the engine with the three lower screws.  
 3 – Mount the assembly of the supports (1) and (2) to the engine with the four screws in position (3), respecting the reference marks made when dismantling.  
 4 – Secure the support (5) to the support (1) with the two upper screws with the two adjustment bushings.  
 5 – Mount the support (4) to the engine with the two lower screws, fasten the three left screws to the support (5) and with the two upper screws to the support (1)
34. - Fit the **DPF** filter assembly back on, returning the entire unit into position and fastening the four fixing screws of the assembly to the cradle.  
 Observation:  
 If after refitting the **DPF** filter you find a slight misalignment with the axis of the turbine, it is possible to make a correction. On the two screws fixing the filter to the cradle there are two threaded bushings (2) held in position by a grub screw (1).  
 Loosen the grub screw with an Allen wrench, screw the bushing in or out by the amount necessary to correct the misalignment, retighten the grub screw and fix the support.
35. - Refit the upper bracket supporting the casing and secure it with the relevant screws.



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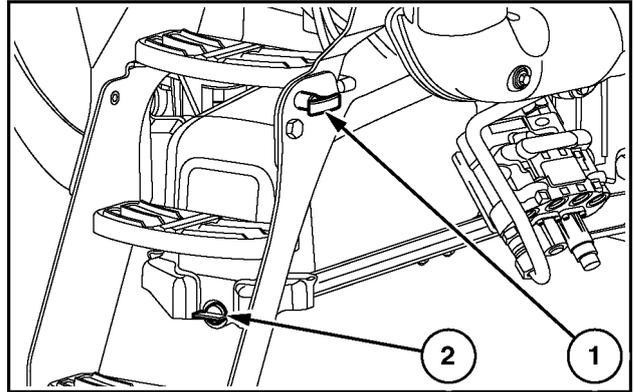


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36. - Reassemble the air cleaner assembly and the relevant support, fix the screws on the filter bracket and on the inlet pipe on the radiator. Refit the sleeves connected to the turbine, to the engine and to the cooling fan assembly, tighten the relevant clamps. Reconnect the pin of the filter clogging sensor.
37. - Refit the two pipes to the radiator **intercooler** and tighten the relevant clamps.
38. - Fit the exhaust pipe back on and tighten the relevant retaining clamps.
39. - Refit the transmission oil drain plug. Refill with oil using a pump.
40. - Refit the propeller shaft together with the central support and the fixing screws, insert the shim and adjust the shaft end float.
41. - Refit the front axle drive shaft guard, tightening the front, central and rear retaining bolts.
42. - Reposition the fuel drain plug on the tank.
43. - Refit the tank lower guard, if applicable, set the fuel tank in position and secure it tightening the relevant retaining clamps. Reconnect the pipes as marked during disassembly.
44. - Using a hydraulic jack, raise the rear of the tractor, remove the mechanical stand under the left gearbox, return the wheel into position and mount the fixing nuts with a pneumatic gun.
45. - Reconnect the air-conditioning pipes and the sensor to the condenser, fix them with clamps and brackets.
46. - Reconnect the air-conditioning pipes on the compressor and lock them with clamps and brackets.
47. - Recharge the air-conditioning system with refrigerant using the specific control unit **380000315**.
48. - Fit the two engine side panels back on and fix the relevant screws.
49. - Refit the front wheel mudguards, if applicable, and tighten the relevant fasteners.
50. - Reposition the pack of ballast weights on the relevant support, fit on the cotter pins and the retaining pin.
51. - Fit the left steps back on, securing them to the cab.
52. - Connect the battery negative lead.
53. - Put the battery cover back on.
54. - Lower the right-hand cab access steps.
55. - Refill the radiator with engine coolant.
56. - Fit the hood back on as described in **Hood - Install (90.100)**

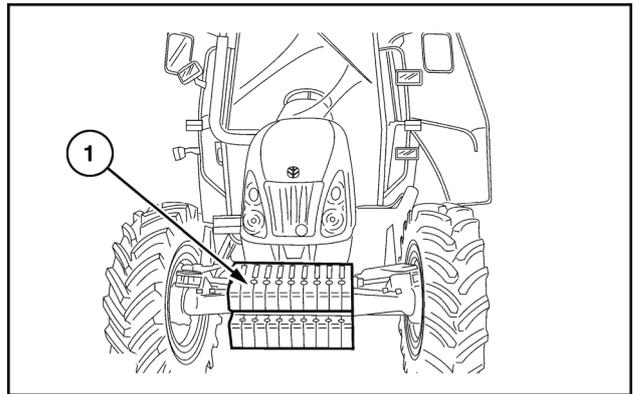
## Engine - Remove

1. Remove the hood (1) as indicated in **Hood - Remove (90.100)**
2. Free the bottom steps of the ladder with the retainer (1), raise it with the knob (2), take off the battery cover, detach the battery negative cable.



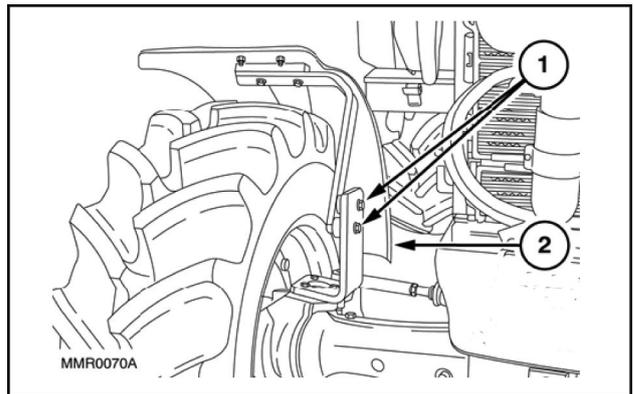
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3. Remove the split pins, retaining pin and front ballast assembly (1) from the support.



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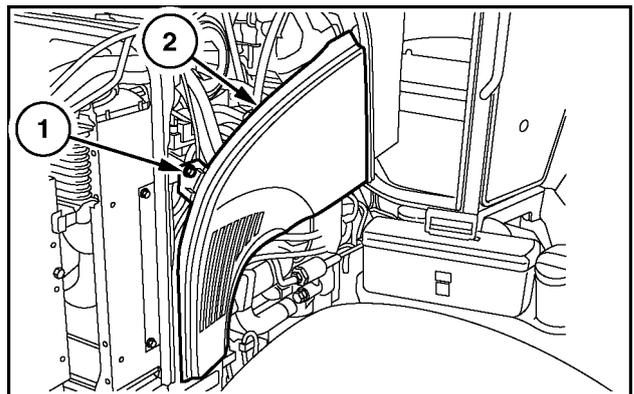
4. Unscrew the fixing screws (1) and remove the front wheel mudguards (2) (if applicable) Do this on both sides.



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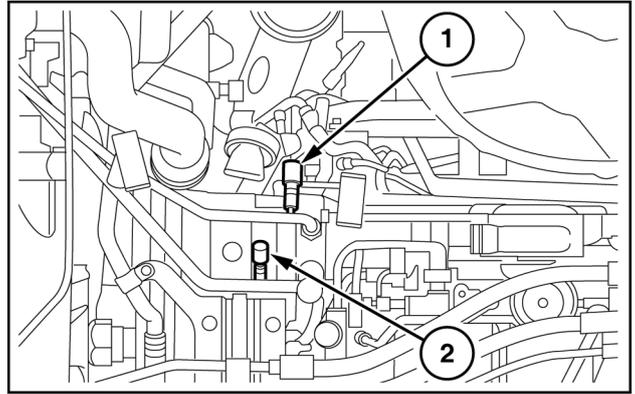
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5. Remove the fixing bolts (1) and detach the engine left-hand side panel (2). Carry out the same operation for the right-hand side panel too. Remove the glove compartment.



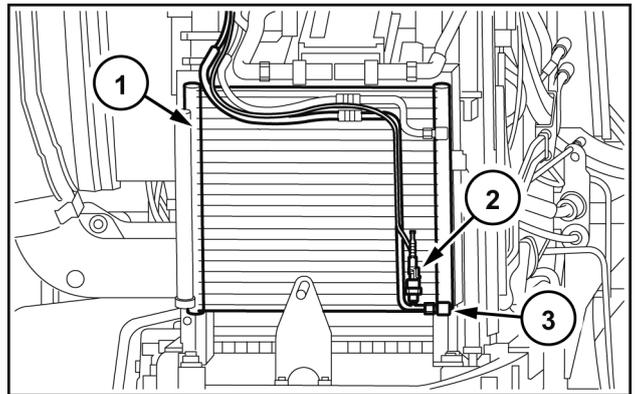
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6. Recover the refrigerant from the system via the connections (1) and (2) using the specific tool **380000315**. Detach the pipe (1), clear the section of brackets and clamps, move it onto the condenser (1, 6), detach the pipe (2), clear the section and take it to the cab.



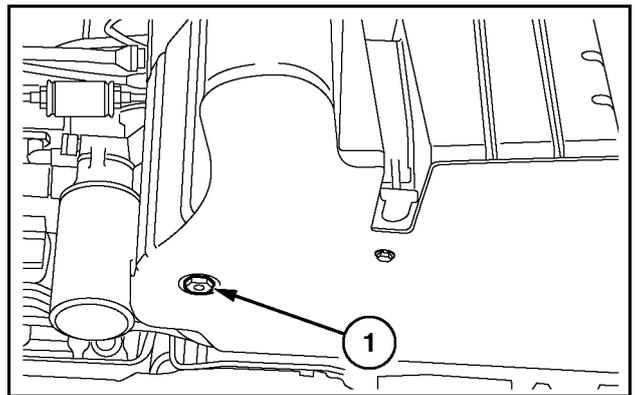
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7. Subsequently go onto the front detach the lower pipe (3) on the condenser (1) free it from any straps or clamps, disconnect the sensor (2) and take it to the cab.



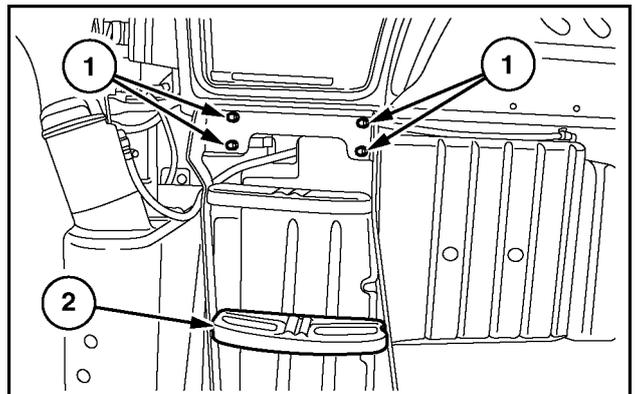
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8. Drain the fuel from the tank by removing the bottom drain plug.



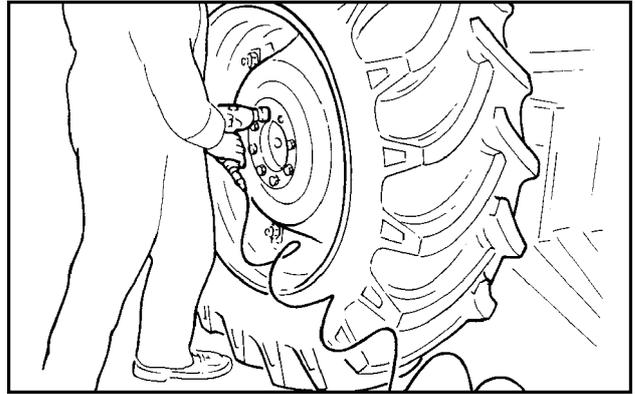
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9. Unscrew the fixing bolts (1) and remove the right-hand steps (2).



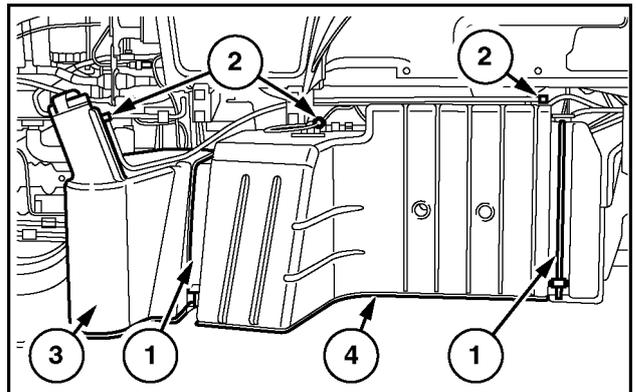
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10. Raise the rear of the tractor with a hydraulic jack, put a mechanical stand under the reduction unit box, with a pneumatic gun remove the left-hand rear wheel retaining nuts, and subsequently take off the wheel.



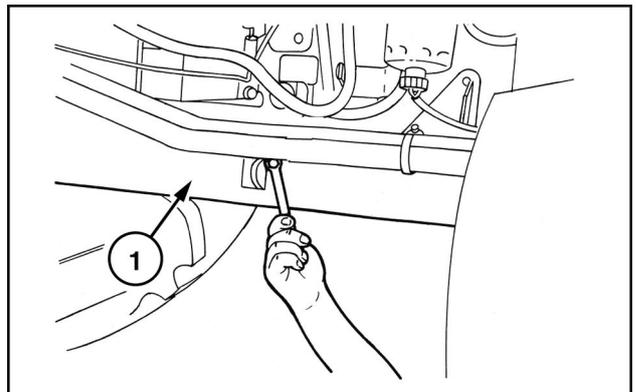
WLAPL4S10C110A 9

11. Detach the tank retaining straps (1), mark and detach the fuel pipes (2) and extract the fuel tank (3). Remove also the bottom tank guard (4)



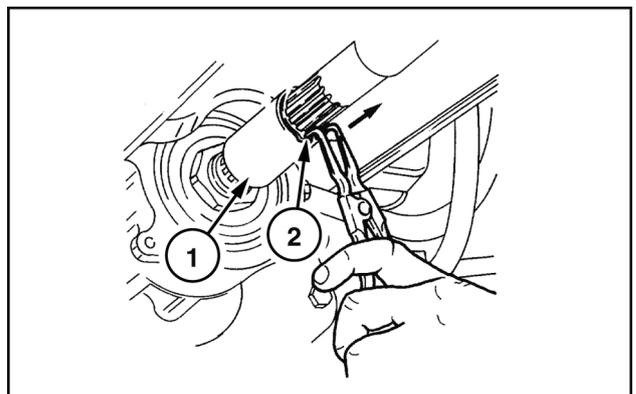
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12. Unscrew the front central and rear retaining bolts on the front axle shaft guard, then remove the guard (1).



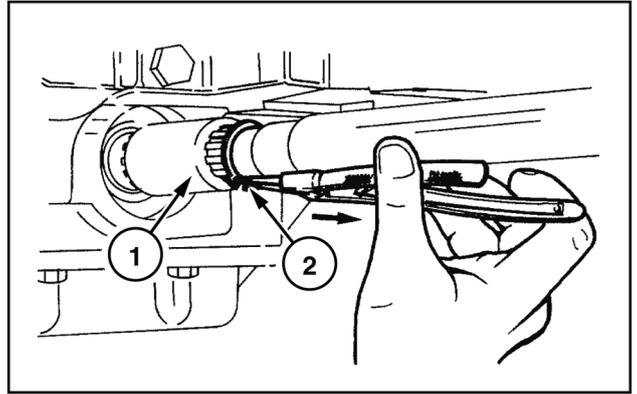
WLAPL4S10C112AA 11

13. Remove the circlip (2) and move the front sleeve (1) in the direction indicated by the arrow until it is released from the groove on the front axle.



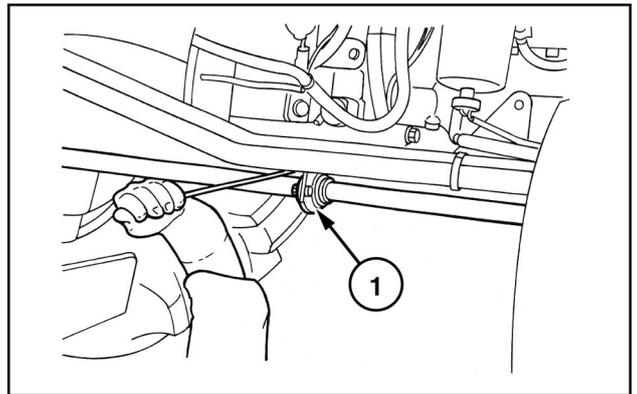
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14. Remove the circlip (2) retaining the coupling sleeve of the propeller shaft (1) on the back, move the sleeve on the shaft.



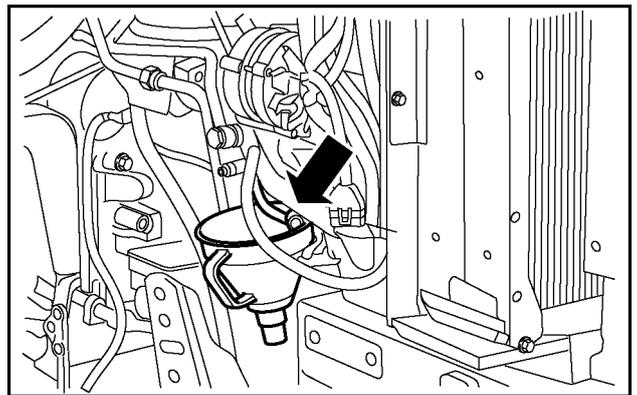
WLAPL4S10C114AA 13

15. Take out the screws fixing the central support (1) of the propeller shaft and remove the shaft together with the support, remove also the shaft end float adjuster shim on the back.



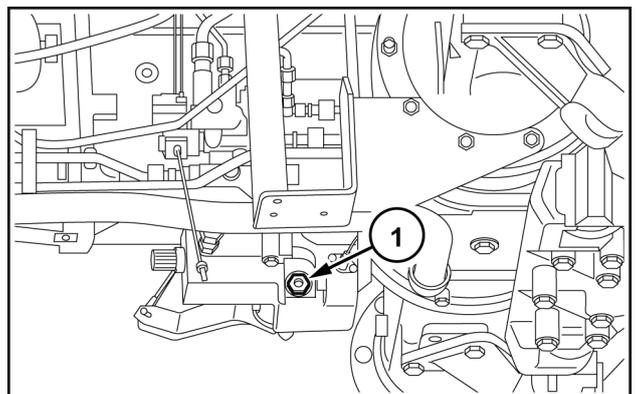
WLAPL4S10C115AA 14

16. Loosen the union of the cab heater radiator coolant return pipe, drain and collect the engine coolant.



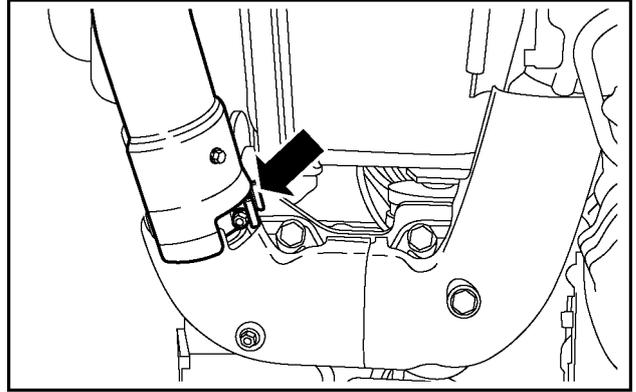
WLAPL4S10C116A 15

17. Take out the plug (1) and drain the oil from the gear-box--transmission casing.



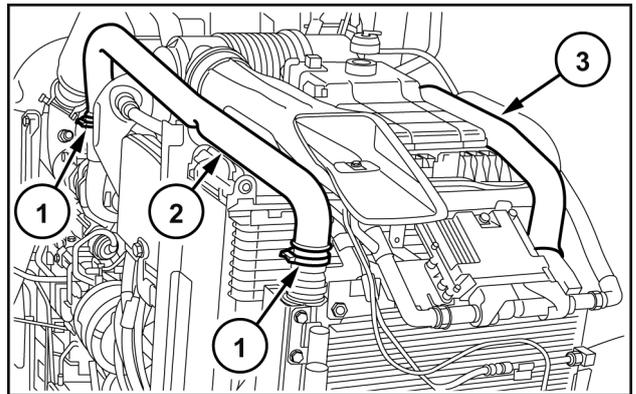
WLAPL4S10C117A 16

18. Loosen the device joining the outlet on the filter **DPF**, free the outlet tube from any brackets fastening it to the cab and remove it.



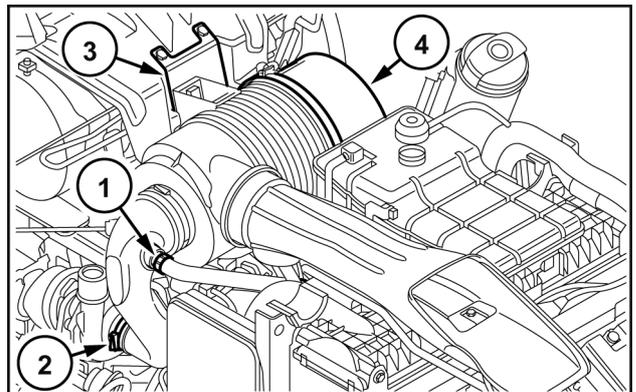
WLAPL4S10C118A 17

19. Loosen the fixing clamps **(1)** and extract the pipe from the turbine to the radiator **intercooler (2)**. Carry out the same operation for the pipe from the radiator **intercooler** to the engine **(3)**.



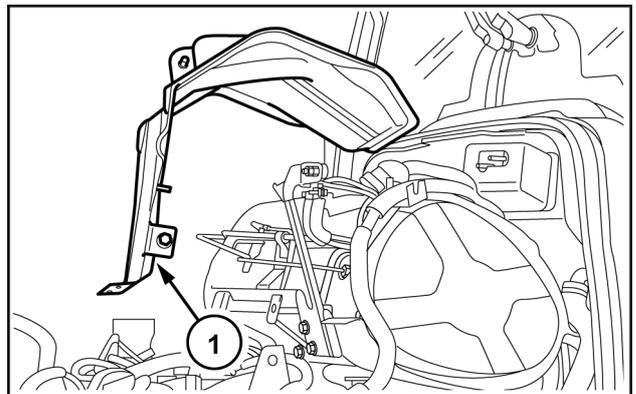
WLAPL4S10C119A 18

20. Loosen the clamp **(2)** fastening the air intake pipe to the turbine, then free the air cleaner **(4)** together with the support bracket **(3)** from the screws fixing it. Disconnect the oil vapor pipe **(1)** on the left-hand side of the engine at the level of the fuel pump; remove it all.



WLAPL4S10C120A 19

21. Free the air cleaner bracket - casing support **(1)** from the fixing screws and remove it.

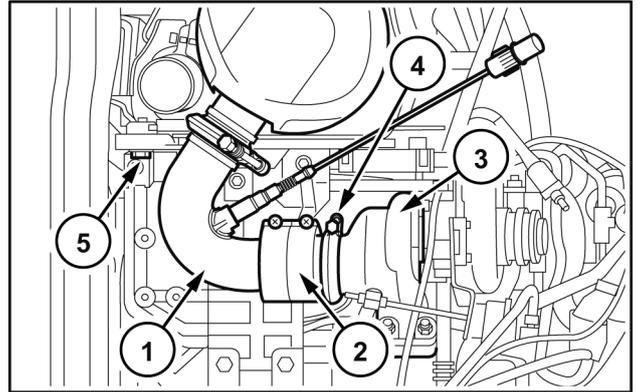


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**ATTENTION:** The filter outlet union **DPF (1) (2)** at its terminal has a decoupler, that responds to temperature variations by changing length.

A small misalignment of the axis of the decoupler with respect to the axis of the turbine outlet (3) would produce an adjustment that would no longer be lengthwise, in line with the direction of the tractor, but abnormal transversal adjustment that would impair its durability.

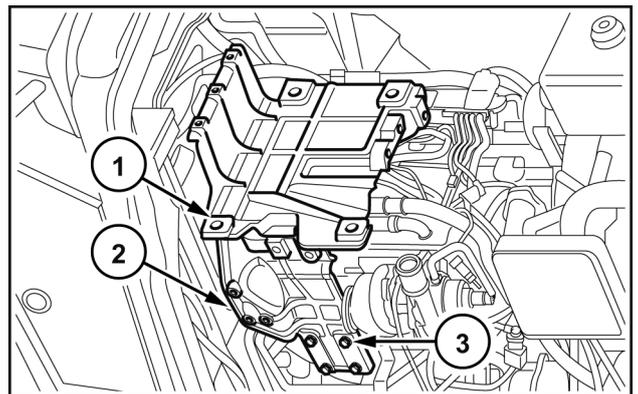
22. Disconnect all the filter sensors, loosen the clamp (4), remove the entire filter together with the sensors, pressure sensing tubes, **lambda** probe and heat guards by undoing the four screws (5) fixing it on the bottom cradle.



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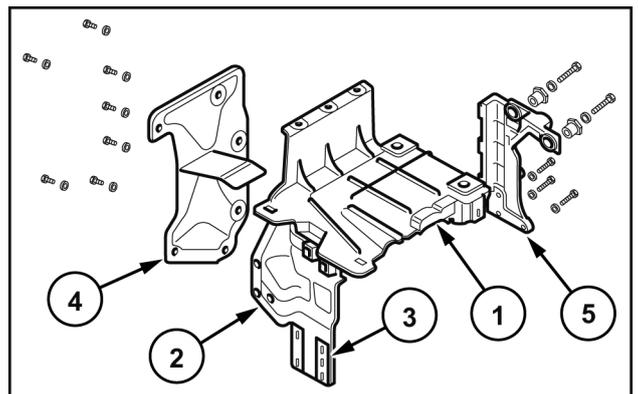
**ATTENTION:** Only if you have to work on the parts underneath the **DPF** support, it is advisable to remove the support.

The top part (1) and the right-hand part (2) should be removed as a block, when possible, by removing the fixing screws (3) to the right of the engine (these screws work on a vertical slot that allows the support (2) to take on various positions in height). Before disassembly, take some references on the position of the unit on the engine, so that during reassembly it is possible to restore it to the exact position in which it was first found.



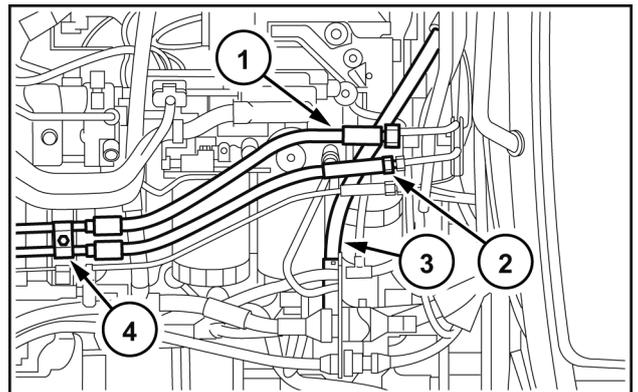
WLAPL4S10C123A 22

23. To remove the rear guard, unscrew the two upper screws fastening the support (4) support (1), to remove the left support, (5) unscrew the two upper screws for the centering bushings and that secure the left bracket to the support (1). As regards removing the support (1) and (2) there are no special instructions to follow.



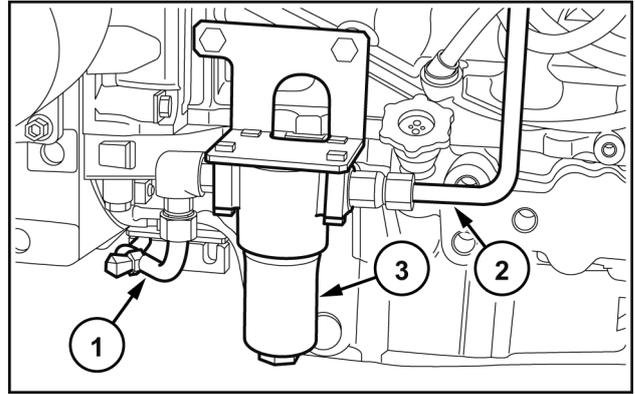
WLAPL4S10C124A 23

24. Detach the steering system pipes (1) and (2) the pipe delivering oil to the spool valve (3). Remove the fixings of the bracket (4) from the engine

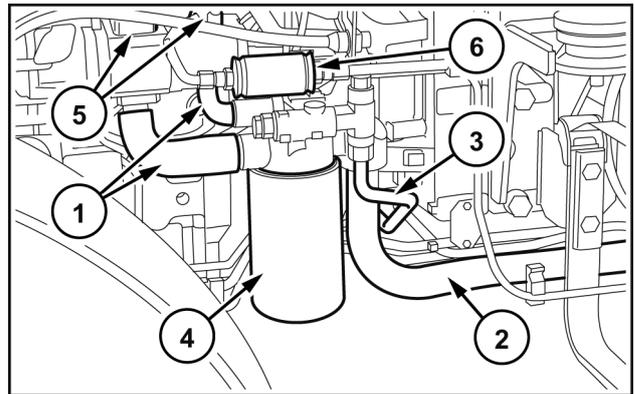


WLAPL4S10C125A 24

25. Detach the power steering spool valve outlet pipe on the gearbox spool valve (2), on the same filter detach the gearbox spool valve supply pipe (1). Subsequently remove the filter together with the support (3).



26. Disconnect the intake pipes from the pump (1) on the pump itself, the oil filter intake pipe from the transmission (2), on the junction under the transmission, at the height of the cab support. Disconnect the delivery line to the lift (3) again at the height of the pipe (2). Detach the delivery pipes (5) to the lift and to the power steering anti-cavitation tank (6) on the pump.

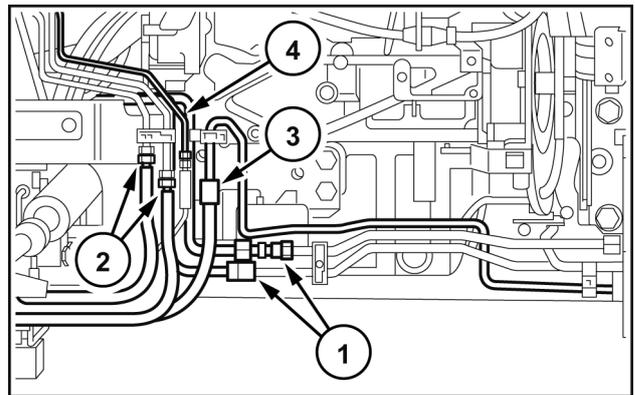


27. Detach the unit together with the filter (4), tank (6), support and the parts of piping disconnected previously.

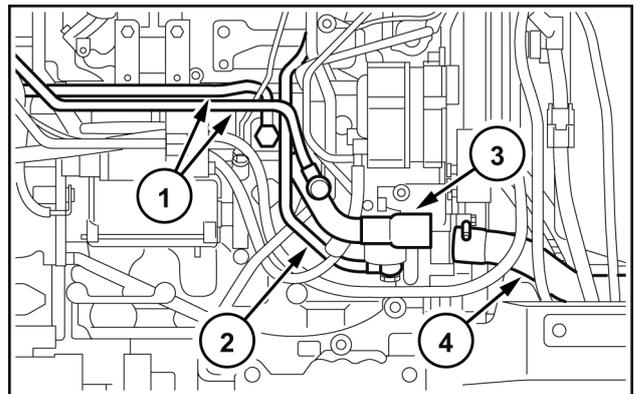
28. Detach the high pressure - power steering pump unit.

29. Detach the pipes of the cooler (1), differential lock (3) and, if applicable, front braking assembly (4).

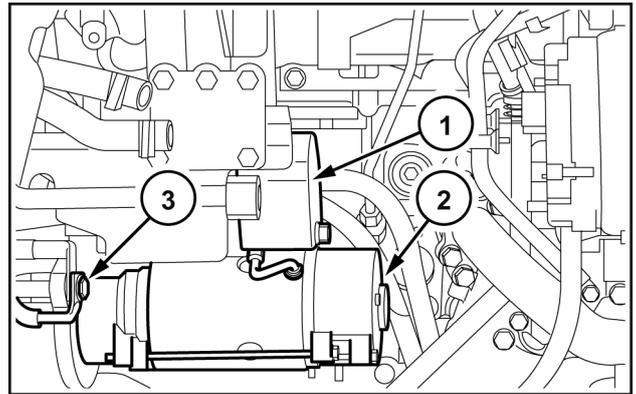
30. Free the pipes previously detached from the supports, brackets and clamps secured to the engine, do the same thing also for the pipes directed to the steering system cylinder (2).



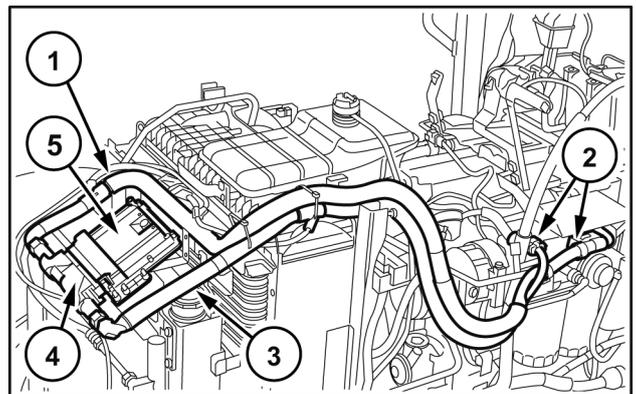
31. On the right-hand side, detach the cab heating pipes, (1), the pipe inserted on the engine sleeve. (3) coming from the expansion tank, then, loosen the clamps and, on the engine, detach the lower (4) and upper rubber sleeves joining radiator - engine.



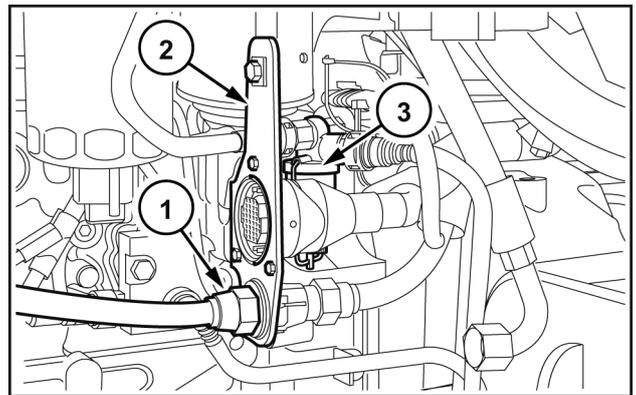
32. On the right-hand side, remove the guard (1) on the starter motor (2), disconnect the starting cable, the battery cut-off switch, the cable joining it to the alternator, also disconnect the alternator and the battery positive terminal, free all the wirings detached from the various clamps.
33. Detach the clamp bolt (3) then remove the ground cables of the engine and battery system, remove the other clamp bolts of the motor and remove it.



34. On the cable (1) of the FTP cable - engine interface detach all the connections (2), leave only those on the maxi fuse box and on the glow plug control unit, then, after cutting the clamps, collect the cable on the front near the control unit (5).
35. On the main engine cable (3) disconnect the connectors, starting from the one on the control unit (4), from the maxi fuse box and from the various switches and sensors located on the engine and, after freeing it from the clamps, move it onto the back at the height of the right-hand steps.



36. On the left-hand side disconnect the connector of the power cable of the cab (1), free it from the clamps and move it onto the maxi fuse box.
37. Detach the bracket (2) supporting the cab connectors, cab power and cup filter (3), disconnect the pipe that joins the latter to the mechanical priming pump on the sediment filter.



38. Hook the rear part of the engine onto a hoist using chains or ropes for the hoisting (apply two eye bolts, one to the right and one to the left, on the upper part of the flange containing the flywheel). Position a fixed stand (2) under the clutch housing (1) near the engine attachment flanging and apply the hand-brake.

