

FARMALL® 105U EP
FARMALL® 115U EP
With 16x16 Semi-Powershift Transmission
Tractor

FARMALL® 105U EP PIN ZxJKxxxxx and above
FARMALL® 115U EP PIN ZEJK14976 and above

SERVICE MANUAL

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SERVICE MANUAL

Farmall® 105U EP with 16x16 Semi-Powershift transmission [ZxJKxxxxx -]
Farmall® 115U EP with 16x16 Semi-Powershift transmission [ZEJK14976 -]

Contents

INTRODUCTION

Engine.....	10
[10.001] Engine and crankcase	10.1
[10.216] Fuel tanks	10.2
[10.501] Exhaust Gas Recirculation (EGR) - Diesel Particulate Filter (DPF) exhaust treatment	10.3
[10.414] Fan and drive	10.4
Transmission.....	21
[21.111] Semi-Powershift transmission	21.1
[21.133] Semi-Powershift transmission external controls	21.2
[21.103] Semi-Powershift transmission lubrication system.....	21.3
[21.152] Semi-Powershift transmission internal components	21.4
[21.160] Creeper	21.5
[21.118] Transmission/Rear drive	21.6
Four-Wheel Drive (4WD) system	23
[23.202] Electro-hydraulic control	23.1
[23.314] Drive shaft.....	23.2
Front axle system	25
[25.100] Powered front axle	25.1
[25.102] Front bevel gear set and differential	25.2
[25.108] Final drive hub, steering knuckles, and shafts	25.3
Rear axle system.....	27
[27.100] Powered rear axle.....	27.1
[27.106] Rear bevel gear set and differential	27.2
[27.120] Planetary and final drives	27.3
[27.126] Spur gear and final drives.....	27.4

Power Take-Off (PTO)	31
[31.104] Rear electro-hydraulic control	31.1
[31.114] Two-speed rear Power Take-Off (PTO)	31.2
[31.116] Three-speed rear Power Take-Off (PTO)	31.3
[31.146] Front Power Take-Off (PTO)	31.4
Brakes and controls	33
[33.202] Hydraulic service brakes	33.1
[33.110] Parking brake or parking lock	33.2
[33.220] Trailer brake hydraulic control	33.3
[33.224] Trailer brake pneumatic control	33.4
[33.204] Front axle brake	33.5
Hydraulic systems	35
[35.000] Hydraulic systems	35.1
[35.104] Fixed displacement pump	35.2
[35.322] Regulated/Low pressure system	35.3
[35.204] Remote control valves	35.4
[35.114] Three-point hitch control valve	35.5
[35.162] Front hitch cylinders and lines	35.6
Hitches, drawbars, and implement couplings	37
[37.110] Rear three-point hitch	37.1
[37.162] Front hitch	37.2
Steering	41
[41.101] Steering control	41.1
[41.200] Hydraulic control components	41.2
[41.216] Cylinders	41.3
Cab climate control	50
[50.100] Heating	50.1
[50.200] Air conditioning	50.2

Electrical systems	55
[55.000] Electrical system	55.1
[55.100] Harnesses and connectors.....	55.2
[55.201] Engine starting system	55.3
[55.301] Alternator.....	55.4
[55.302] Battery.....	55.5
[55.640] Electronic modules	55.6
[55.408] Warning indicators, alarms, and instruments	55.7
[55.DTC] FAULT CODES.....	55.8
Platform, cab, bodywork, and decals.....	90
[90.150] Cab.....	90.1
[90.160] Cab interior trim and panels.....	90.2
[90.100] Engine hood and panels	90.3



INTRODUCTION

Contents

INTRODUCTION

Capacities	3
------------------	---

Capacities

Fluid capacities and lubricant specifications

	approximate	RECOMMENDED CASE IH PRODUCTS	SPECIFICATION CASE IH	INTERNATIONAL SPECIFICATION
Cooling system:	16 l (4.2 US gal)	Mixture of water and antifreeze CASE IH AKCELA PREMIUM ANTI-FREEZE at 50 % + 50 %	MS1710	-
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)	CASE IH AKCELA UNITEK NO. 1™ SBL CJ-4 SAE 10W-40 or CASE IH AKCELA UNITEK NO. 1™ SSL CJ-4 SAE 0W-40	MAT3521	API CJ-4 ACEA E9
Maximum	8.1 l (2.1 US gal)			
Brake control circuit	0.7 l (0.18 US gal)	CASE IH AKCELA LHM FLUID	-	ISO 7308
Front axle:	4.5 l (1.2 US gal)	CASE IH AKCELA NEXPLORE™ FLUID	MAT3525	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	-	CASE IH AKCELA 251H EP MULTI-PURPOSE GREASE	-	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

Farmall® 105U EP with 16x16 Semi-Powershift transmission [ZxJKxxxxx -]
Farmall® 115U EP with 16x16 Semi-Powershift transmission [ZEJK14976 -]

Contents

Engine - 10

[10.001] Engine and crankcase	10.1
[10.216] Fuel tanks	10.2
[10.501] Exhaust Gas Recirculation (EGR) - Diesel Particulate Filter (DPF) exhaust treatment	10.3
[10.414] Fan and drive	10.4



Engine - 10

Engine and crankcase - 001

Farmall® 105U EP with 16x16 Semi-Powershift transmission [ZxJKxxxxx -]
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Contents

Engine - 10

Engine and crankcase - 001

TECHNICAL DATA

Engine	
General specification	3

SERVICE

Engine	
Remove	5
Install	15

Engine - General specification

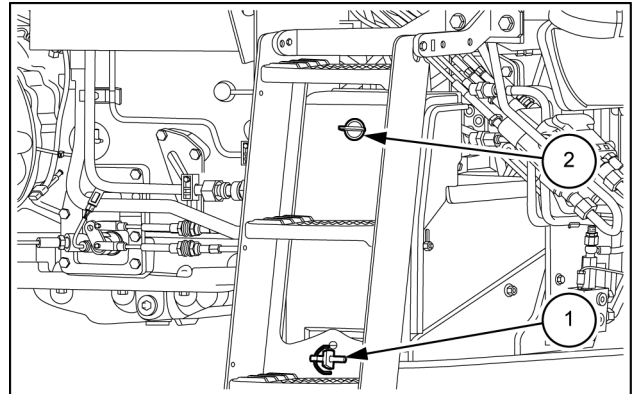
GENERAL SPECIFICATIONS	4 Cylinders
Engine, technical type: Farmall 105U Farmall 115U	F5DFL413B*A006 F5DFL413B*A002
Engine rpm - high - nominal - low	2400 - 2500 RPM 2300 RPM 700 - 800 RPM
Cycle	diesel, 4-stroke
Fuel injection	Direct
Number of cylinders in line	4
Bore - All models - Piston diameter - Piston stroke	99 mm (3.8976 in) 110 mm (4.3307 in)
Total displacement: - All models	3400 cm³
Compression ratio All models	17 ± 0.5 : 1
Maximum Power Output: - Farmall 105U - Farmall 115U Maximum power speed	79 kW (107 Hp) 84 kW (114 Hp) 2300 RPM
Peak torque - Farmall 105U - Farmall 115U Peak torque speed	444 N·m (327.48 lb ft) 461 N·m (340.02 lb ft) 1500 RPM
Torque increase - Farmall 105U - Farmall 115U	35 % 32 %
Power at the power take-off - Farmall 105U - Farmall 115U	68.6 kW (93.3 Hp) 73.9 kW (100.4 Hp)
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	0.2 bar (2.90 psi) 0.9 bar (13.05 psi)
Cooling	coolant circulation
closing Capacity Fan with viscous joint, fixed to the specific pulley	with five rows of vertical pipes 16 l (4.23 US gal) ø 520 mm (20.4724 in)
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 80 °C (176.00 °F)
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

GENERAL SPECIFICATIONS	4 Cylinders
Intake: - start: before P.M.S. - end: after P.M.I.	19 ° 37 °
Exhaust: - start: before P.M.I. - end: after P.M.S.	61 ° 21 °
Clearance between valves and rocker arms with engine cold.	The valve clearance is hydraulically controlled. Therefore, manual adjustment is not necessary.
Turbocharging	Turbocharged with intercooler
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	Manual mounted on the suction line filter BOSCH High pressure Common Rail control unit HPCR - CP4.1 Electro-injectors 300 - 1400 bar (4350.00 - 20300.00 psi)
Filling: Engine sump Fuel tank	6.4 - 8.1 l (1.69 - 2.14 US gal) 140 l (36.98 US gal)
Anti-pollution system Type:	Exhaust gas recycling system EGR Particulate filter DPF*
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)*)

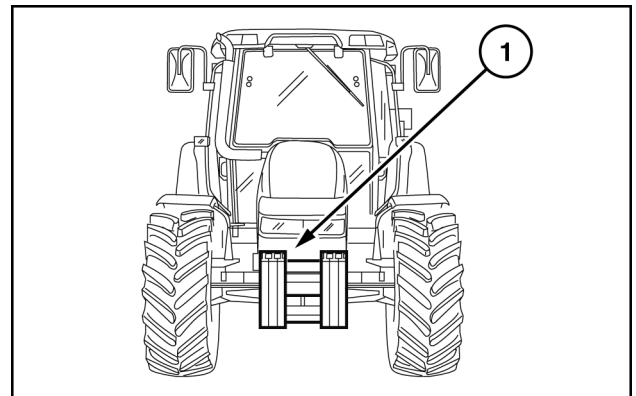
Engine - Remove

1. Remove the engine hood (1), as indicated in **Hood - Remove (90.100)**.
2. Open the lock (1) to release the lower steps of the ladder. Remove the battery cover (2). Disconnect the negative cable of the battery.



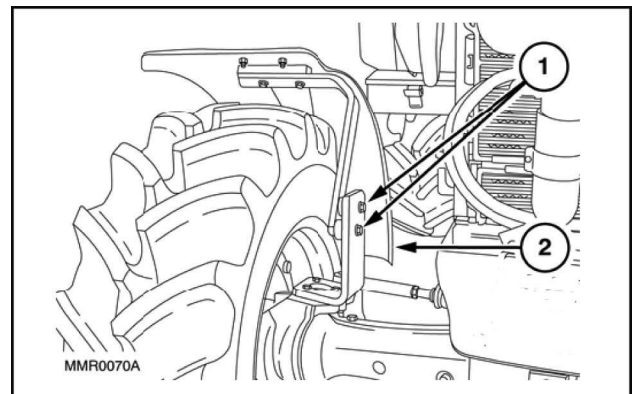
MOIL12TR00670AA 1

3. Remove the cotter pins, retaining pin, and the complete front ballasts (1) from the relative support.



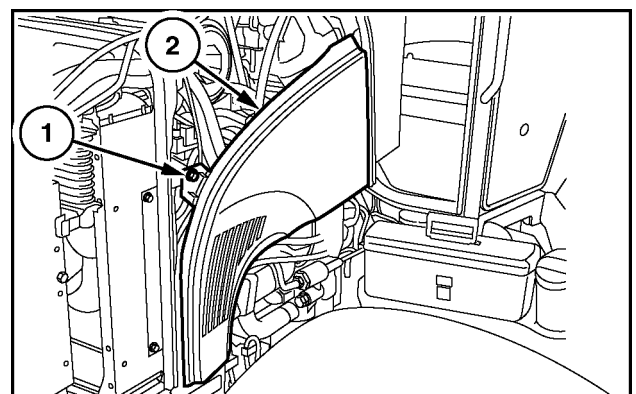
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4. Loosen the retaining screws (1). Remove the front fenders (2) from both sides (if present).



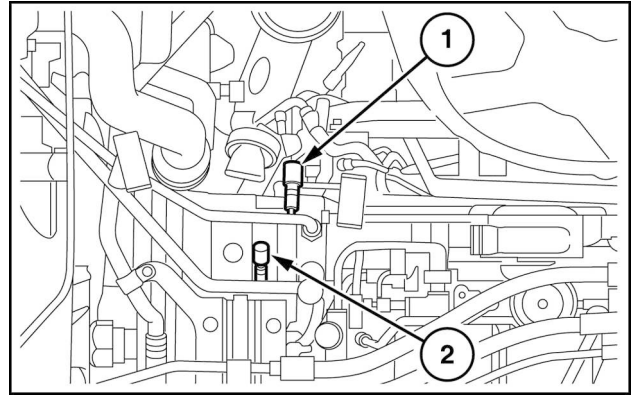
WLAPL4S10C104A 3

5. Remove the retaining screws (1). Remove the left-hand engine side panel (2). Perform the same operation for the right-hand side panel. Remove the storage compartment.



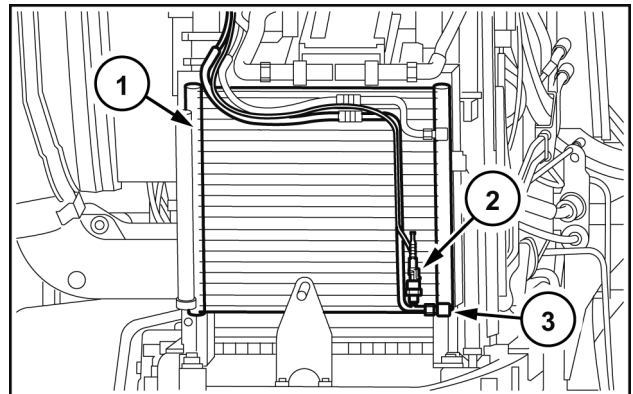
WLAPL4S10C105A 4

6. Use the special tool **380000315** to recover the refrigerant liquid from the system via the fittings **(1)** and **(2)**. Remove the tube **(1)**. Clear the section of brackets and clamps. Move the tube onto the capacitor (**(1)**, **(6)**). Remove the tube **(2)**. Clear the section. Move the tube onto the cab.



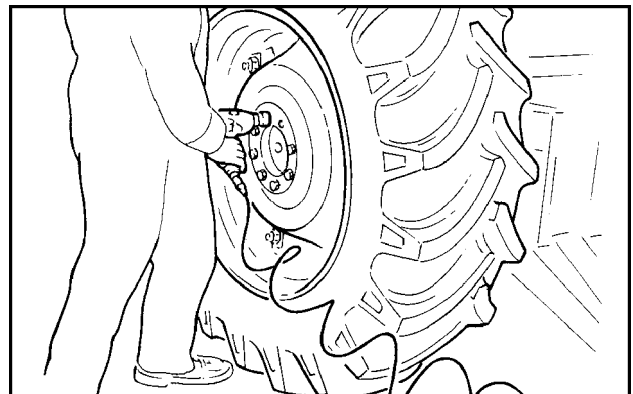
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7. At the front of the engine, remove the lower tube **(3)** on the capacitor **(1)**. Free the tube from any straps or clamps. Disconnect the sensor **(2)**. Move the tube onto the cab.



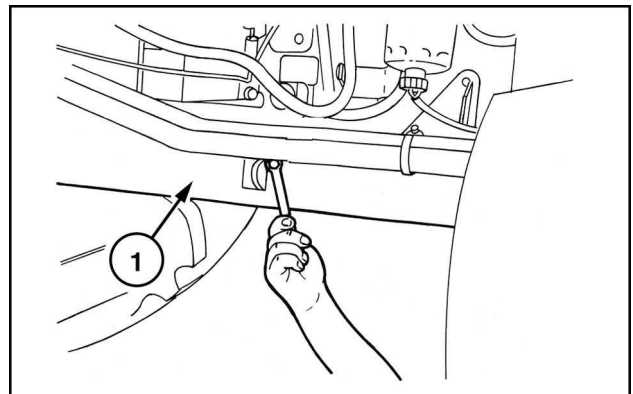
WLAPL4S10C107A 6

8. Raise the rear of the tractor with a hydraulic jack. Place a mechanical jack stand under the reduction gear box. Use a pneumatic gun to remove the retaining nuts of the left-hand rear wheel. Then remove the wheel.



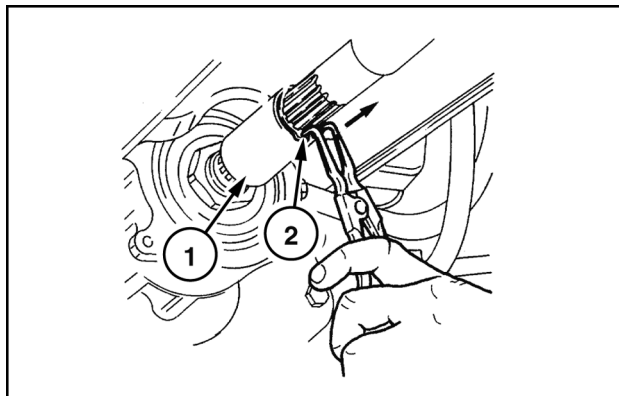
WLAPL4S10C110A 7

9. Loosen the front, central, and rear retaining screws of the curtain **(1)** of the front axle control shaft. Remove the curtain.



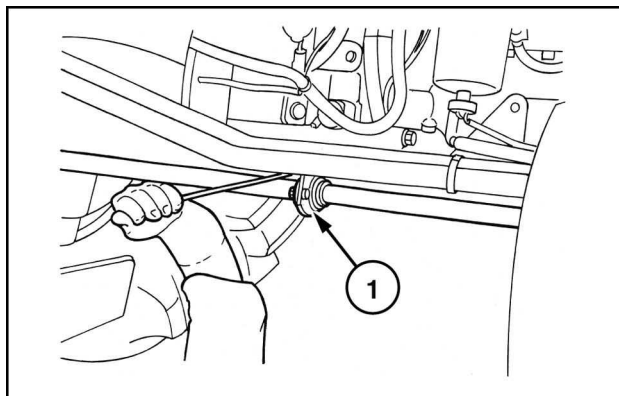
WLAPL4S10C112AA 8

10. Remove the circlip (2). Move the front sleeve (1) in the direction indicated by the arrow in order to release the sleeve from the groove on the front axle.



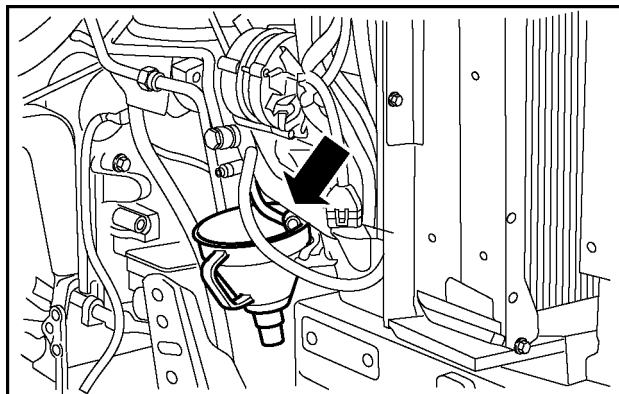
WLAPL4S10C113AA 9

11. Remove the screws that secure the central support (1) from the drive shaft. Retrieve the shaft together with the support. Retrieve the shim that adjusts the clearance of the shaft on the back.



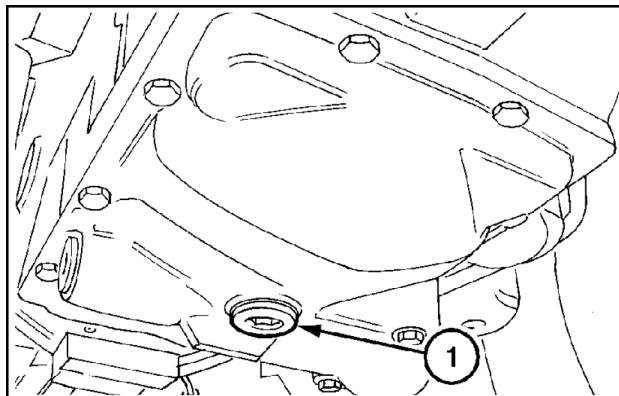
WLAPL4S10C115AA 10

12. Loosen the inlet of the water return line from the cab heater radiator. Drain and retrieve the engine coolant.



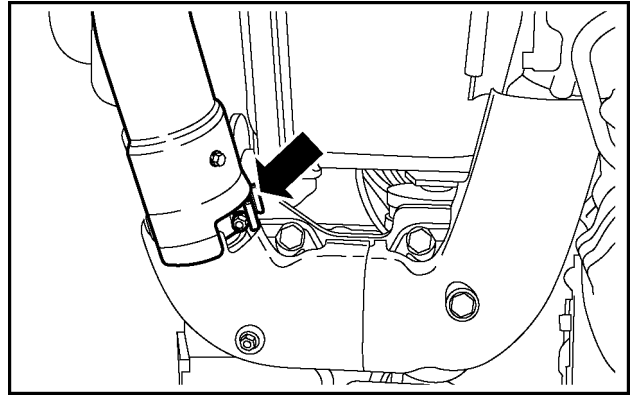
WLAPL4S10C116A 11

13. Remove the cap (1). Drain the oil from the transmission box.



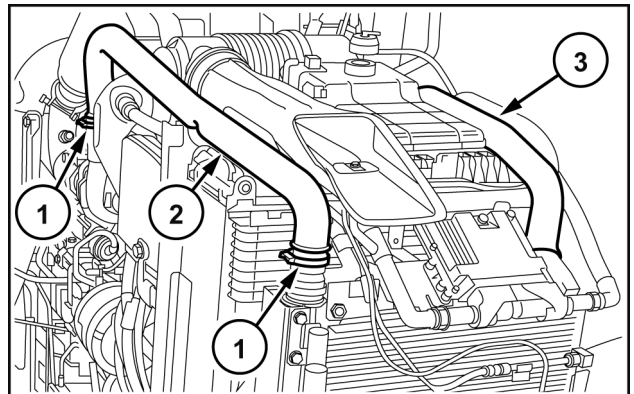
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14. Loosen the device that fastens the muffler to the exhaust pipe. Free the exhaust pipe from any cab support fastening brackets. Loosen the connection to the DPF filter. Then remove the exhaust pipe.



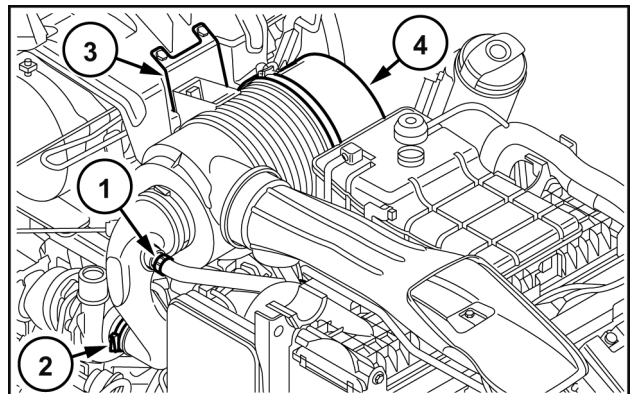
WLAPL4S10C118A 13

15. Loosen the fixing clamps (1). Extract the tubing from the turbine to the radiator intercooler (2). Perform the same operation for the tubing from the radiator intercooler to the engine (3).



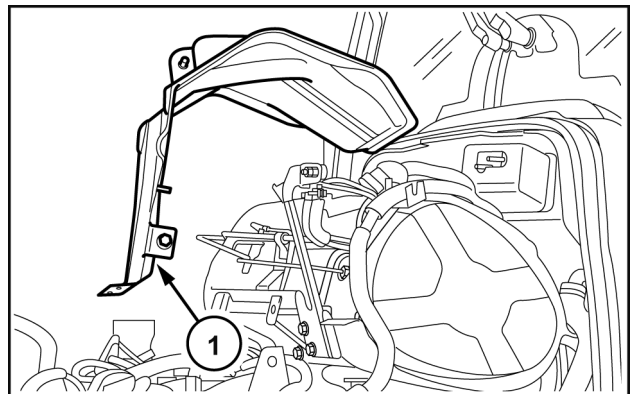
WLAPL4S10C119A 14

16. Loosen the clamp (2) that joins the air inlet duct to the turbine. Release the air filter (4), together with the bracket (3), from the retaining screws. On the left-hand side of the engine, disconnect the oil vapor duct (1) from the fuel pump.



WLAPL4S10C120A 15

17. Release the air filter support (1) from the retaining screws. Remove the air filter support.

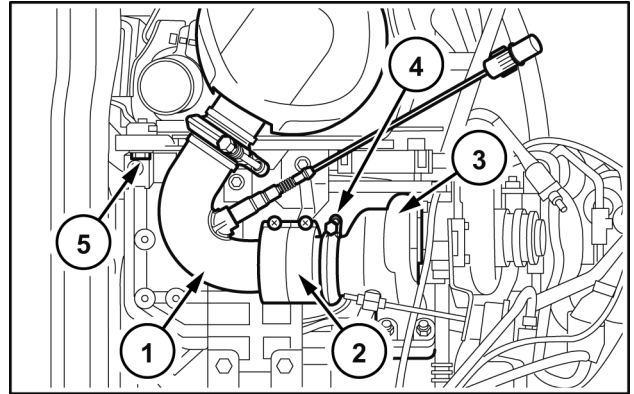


WLAPL4S10C121A 16

ATTENTION: The DPF (1) filter outlet union has a decoupler at the end (2). The decoupler only responds to temperature variations longitudinally.

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 longitudinal, in line with the direction of the tractor. This small misalignment would produce an abnormal transversal adjustment, which would affect its durability.

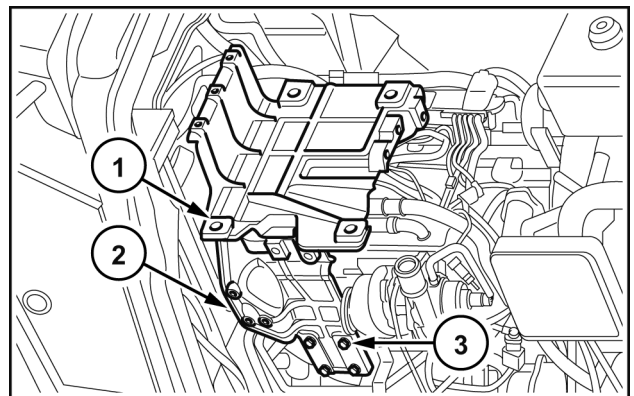
18. Disconnect all of the filter sensors. Loosen the clamp (4). Loosen the four screws (5) that secure the filter to the bottom support to remove the filter together with the sensors and heat shields.



WLAPL4S10C122A 17

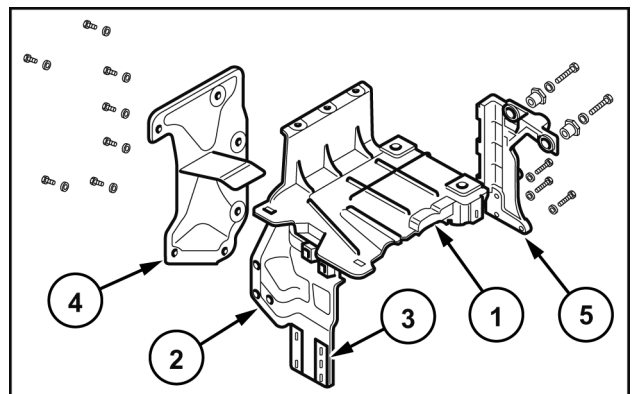
ATTENTION: Only if you have to work on the parts underneath the DPF filter support, it is advisable to remove the support.

When possible, you should remove the upper part (1) and the right-hand part (2) as a block. To do this, remove the retaining screws (3) on the right-hand side of the engine. (These screws work on a vertical slot, so that the support (2) can have various height positions.) Before disassembly, it is necessary to take some references of the position on the engine, so that you can return the block to the original position during reassembly.



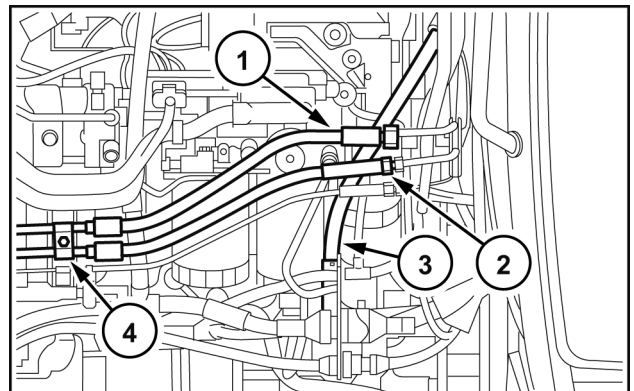
WLAPL4S10C123A 18

19. To remove the rear shield, loosen the two screws that fix the support (4) to the support (1). To remove the left-hand support (5), loosen the two retaining screws on the left-hand bracket (1). Retrieve the respective centering bushings.



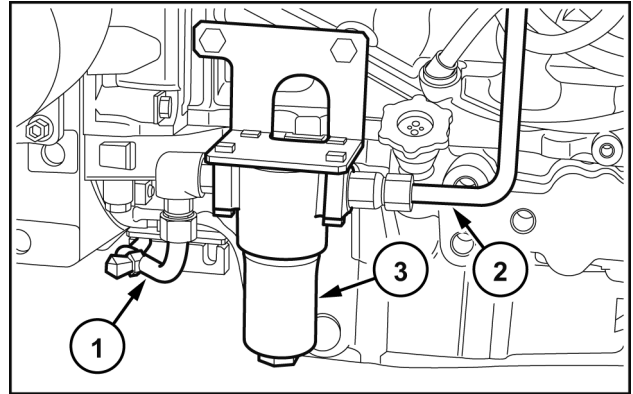
WLAPL4S10C124A 19

20. Disconnect the steering control lines (1) and (2). Disconnect the oil supply line to the distributor (3). Remove the fastening (4) of the engine lines.



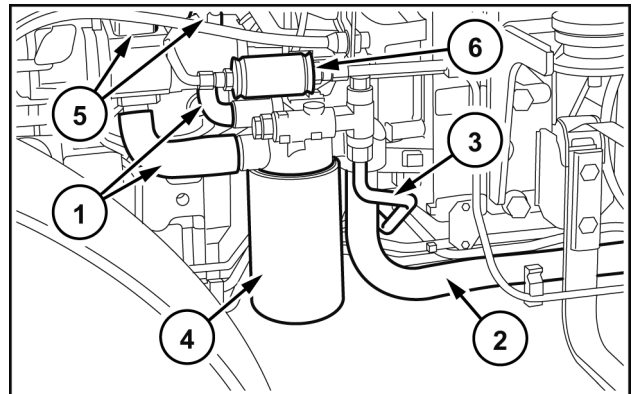
WLAPL4S10C125A 20

21. Disconnect the exhaust pipe **(2)** of the power-steering control valve. Disconnect the power supply line **(1)** of the transmission control valve. Then remove the filter **(3)** together with the support.



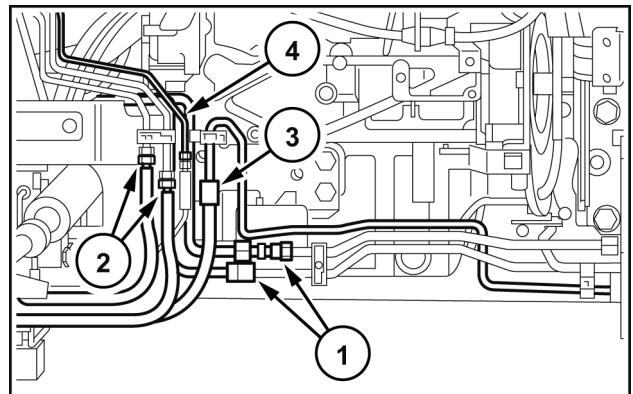
WLAPL4S10C126A 21

22. Disconnect the inlet pipes from the pump **(1)**. Disconnect the inlet pipe **(2)** from the transmission oil filter, at the height of the cab support. Disconnect the supply line to the lift **(3)**. Disconnect the supply lines **(5)** to the lift and to the power-steering anti-cavitation tank **(6)**.
23. Remove the filter assembly **(4)** together with the tank **(6)**, support, and parts of the tubing that were previously disconnected.
24. Remove the power-steering pump assembly from the high-pressure circuit.



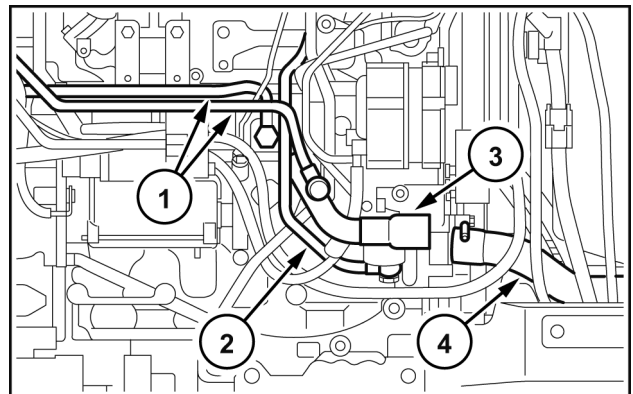
WLAPL4S10C127A 22

25. Remove the tubes of the heat exchanger **(1)**, differential lock **(3)**, and (if applicable) front braking assembly **(4)**.
26. Release the lines that were previously disconnected from the supports, brackets, and clamps secured to the engine. Do the same for the lines directed to the steering cylinder **(2)**.



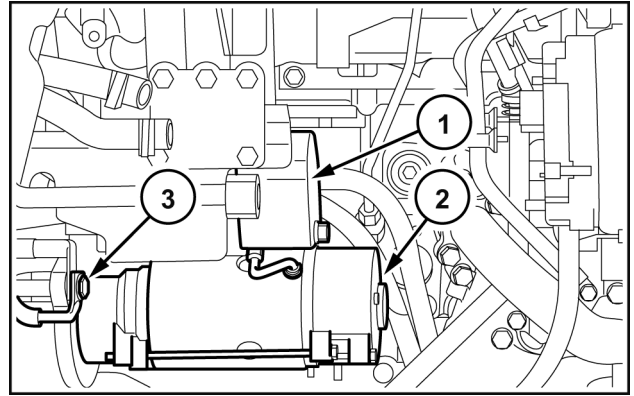
WLAPL4S10C128A 23

27. On the right-hand side of the engine, disconnect the cab heating lines **(1)**. Disconnect the tubing from the expansion tank that is inserted on the engine sleeve **(3)**. Loosen the clamps. On the engine, disconnect the connecting rubber sleeves **(4)** of the radiator.



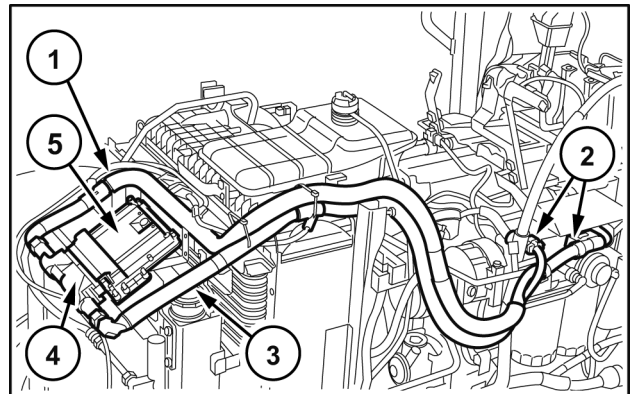
WLAPL4S10C134A 24

28. On the right-hand side, remove the guard (1) on the starter motor (2). Disconnect the starter cable and battery isolator. Disconnect the alternator and the respective connecting cable. Release all of the wiring from the fixing clamps.
29. Loosen the fastening (3). Remove the ground connection cable. Remove starter



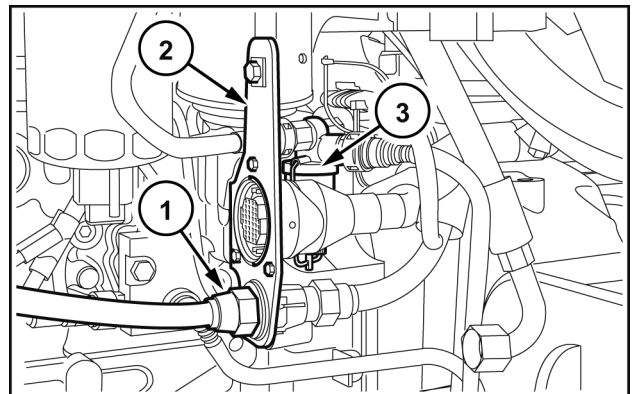
WLAPL4S10C135A 25

30. On the FTP interface cable (1) with the motor, disconnect all of the connections (2), except for the connections on the maxi fuse compartment and on the glow plug controller. After you cut the fixing clamps, reconnect the cable on the front near the controller (5).
31. On the main engine cable (3), disconnect the connectors from the controller (4) including the maxi fuse compartment, switches, and sensors positioned on the engine. After you cut the fixing clamps, move the cable onto the rear of the engine at the height of the right-hand ladder.



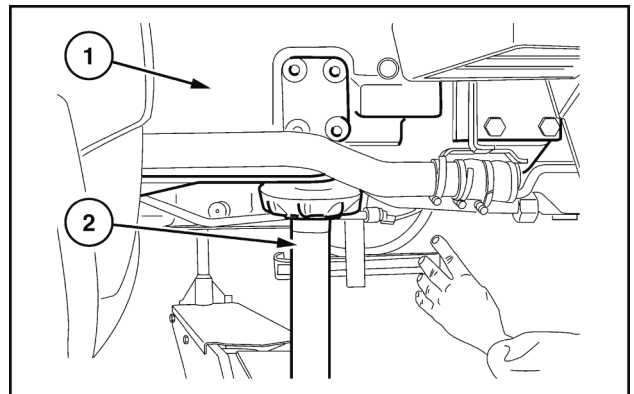
WLAPL4S10C137A 26

32. On the left-hand side, disconnect the cab power cable connector (1). Release the connector from the clamps. Move the connector onto the maxi fuse compartment.
33. Remove the bracket (2) of the cab electrical connectors, cab electrical supply, and cup filter (3). Disconnect the tubing that joins the cup filter to the mechanical priming pump on the sediment filter.



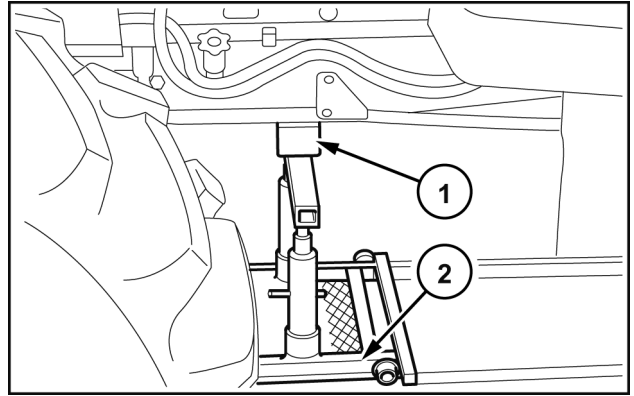
WLAPL4S10C139A 27

34. Hook the rear part of the engine to a hoist using chains or ropes for lifting. (Apply two eyebolts, one to the right-hand side and one to the left-hand side, on the upper part of the flange containing the flywheel.) Position a fixed jack stand (2) under the clutch case (1) near the engine attachment flanging.



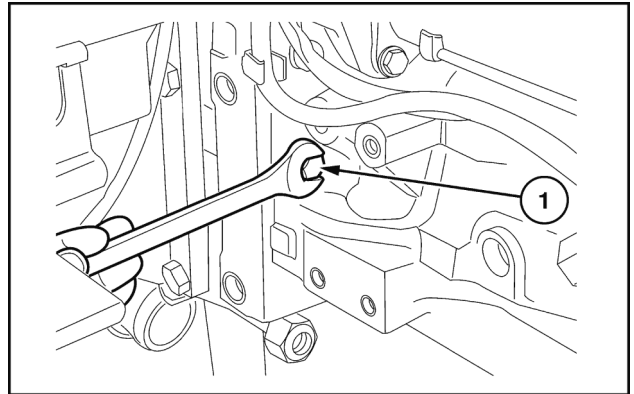
WLAPL4S10C129A 28

35. Position the movable tractor splitting tool **380003114 (2)** with the support bracket and adapter plate under the engine. Place a wooden block **(1)** at the points of contact between the tool and the engine. Wedge the axle to prevent swinging.



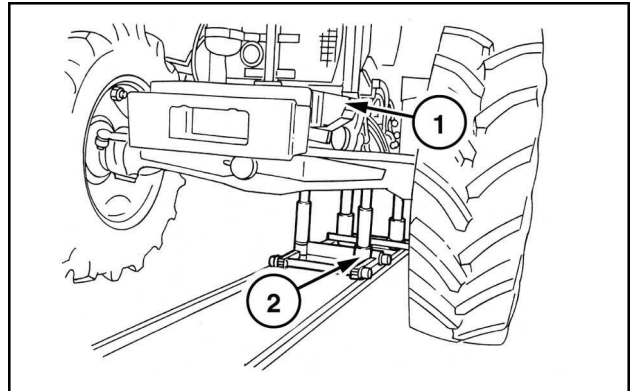
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36. Remove the retaining bolts **(1)** between the engine and the transmission.



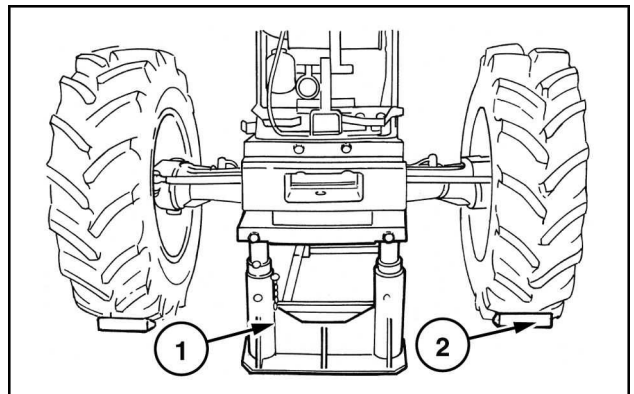
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37. Separate the engine **(1)** from the transmission with the tool **380003114 (2)**.



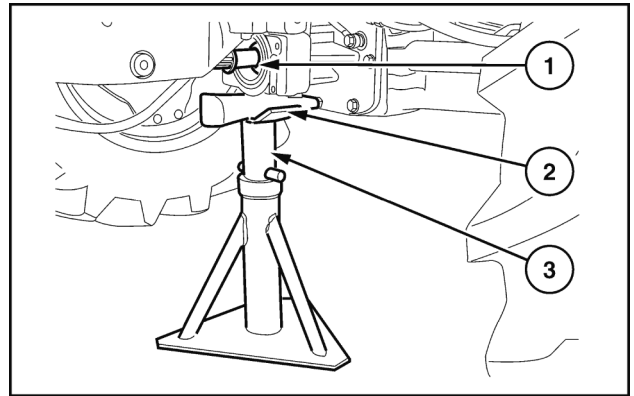
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38. Insert the fixed jack stand **(1)** under the ballast support. Chock the front wheels with wooden blocks **(2)**.



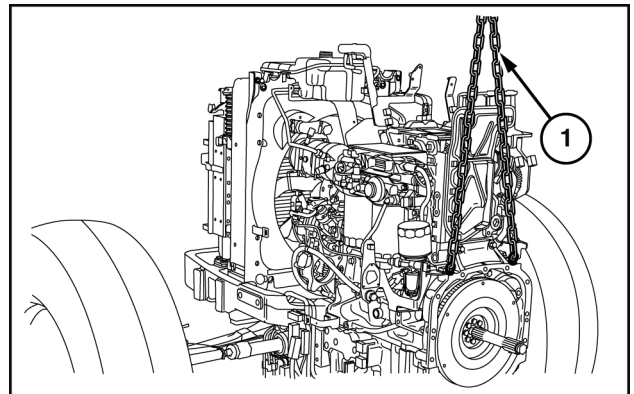
WLAPL4S10C132AA 32

39. Position a fixed jack stand **(3)** under the support of the groove **(1)** of the power take-off of the front axle. Insert a wooden plug between parts **(3)** and **(1)**.



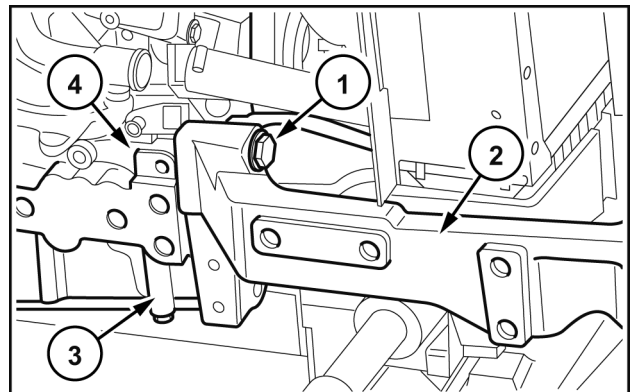
WLAPL4S10C133A 33

40. Position a jack stand under the rear of the engine in order to be able to safely release the hoist with the coupling device.
Add a rope or chain also on the front of the engine.
Take up the slack with the lifting device. Keep the engine balanced.



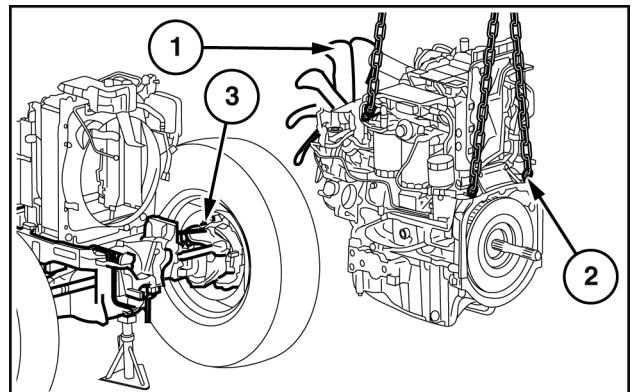
WLAPL4S10C136A 34

41. Remove the screws **(1)** that secure the front axle support **(2)** to the engine. Retrieve the adjuster spacers of the engine block **(4)** or sump **(3)**.



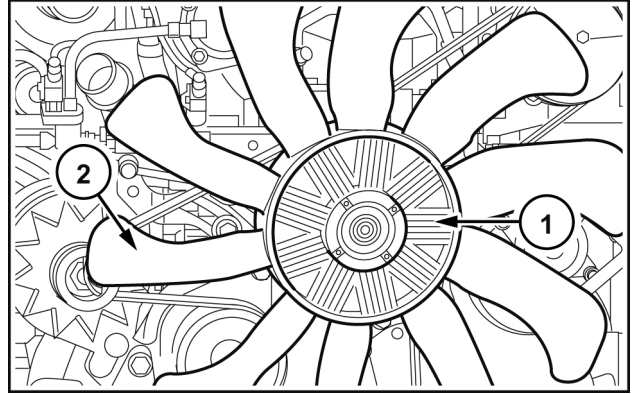
WLAPL4S10C141A 35

42. Check that there are no brackets between the engine and the cooling assembly. Remove the engine **(2)** from the front axle **(3)**. Try to avoid incorrect engine maneuvers in order to not damage the fins or the radiator **(1)** on the axle. Then rest the engine **(2)** on a suitable support.



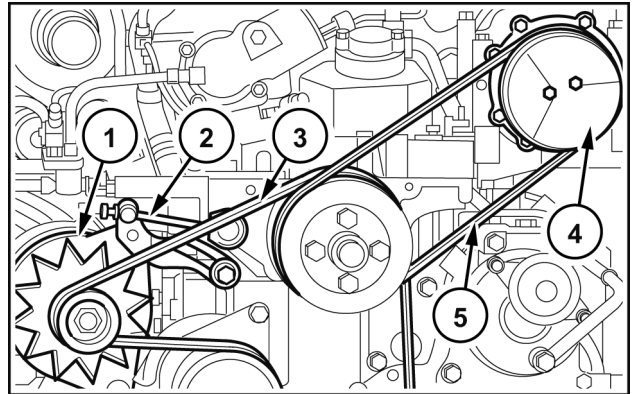
WLAPL4S10C138A 36

43. Remove the viscous coupling **(1)**, if applicable, together with the fan **(2)**.



WLAPL4S10C144A 37

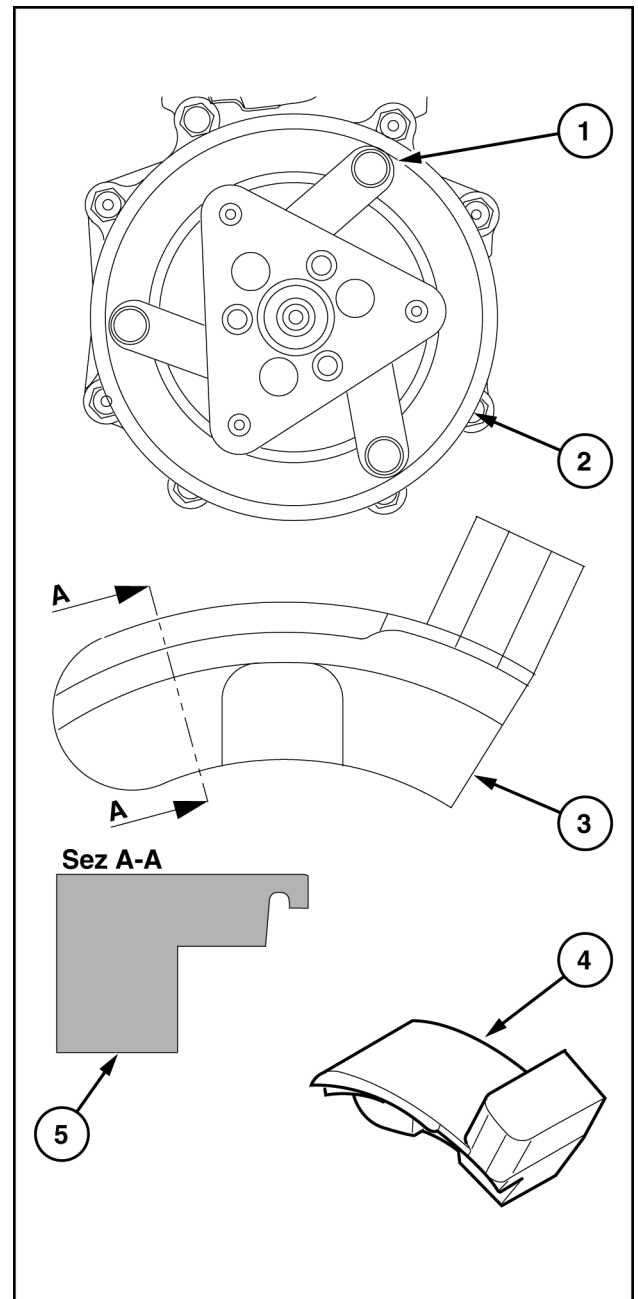
44. Loosen the supercharger retaining screws **(4)**. Remove the belt **(5)**. Then remove the supercharger.
45. Completely loosen the belt tensioner **(2)**. Remove the elastic belt **(3)**. Then remove the alternator **(1)**.



WLAPL4S10C145A 38

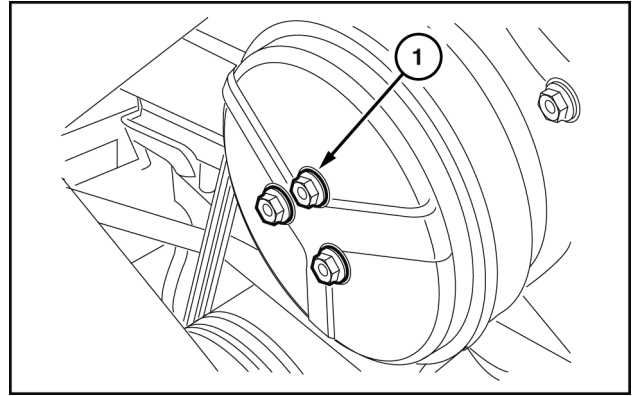
Engine - Install

1. - Refit the flexible belt on the alternator and take up the slack according to the procedure in **Accessory belt - Tension adjust (10.414)**.
2. - Reposition the compressor and the relevant belt following this procedure:
 - Put the compressor back on the support and with the related pipe support. Secure with the bolts
 - To fit the polyv belt, use tool **380200011**.
 - (1). Compressor clutch actuator drive bracket.
 - (2). Outer edge of polyv belt pulley.
 - (3). Tool recess. 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.



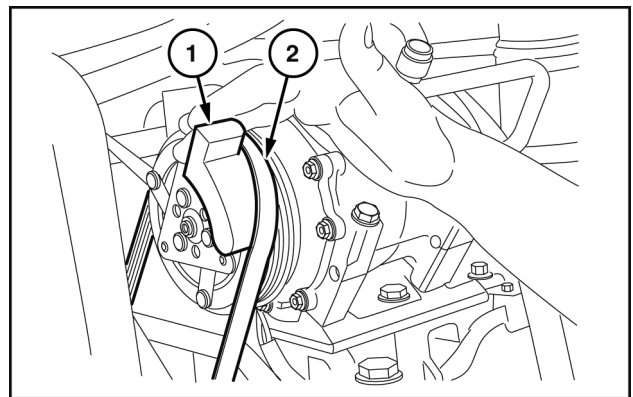
WLAPL4S10C101C 1

3. - Remove the three bolts **(1)** and the related dust cover for the compressor clutch.



WLAPL4S10C142A 2

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



WLAPL4S10C143A 3

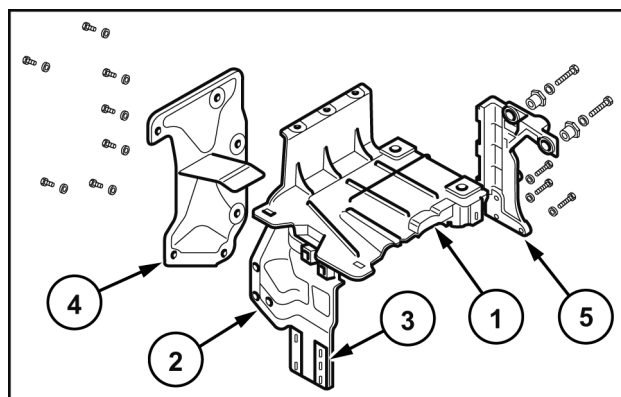
6. - With your left hand on the fan and right hand on the tool, move both clockwise in order to take the belt onto the compressor pulley.
- Put the dust cup back onto the compressor clutch. Tighten the three screws, ensuring that you spread a film of thread lock on the ends so that they do not come loose.
7. - If present, reposition the viscous coupling and reposition 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. Using a hoist, lift the assembly off the platform support.
10. - Position the engine on the front axle. Try to avoid incorrect operations with the hoist so as not to let the engine fan damage the fins of the radiator. Then use the four retaining screws and the necessary adjuster spacers of the engine block/sump to join the two assemblies together.
11. - Reposition the movable tractor splitting tool **380003114** under the engine. Place a wooden block in the point of contact between the tool and the engine.

12. - Use the hoist to rest the engine on the tool **380003114**. Remove the lifting eyebolts previously fitted on the rear of the engine.
13. - Remove the fixed jack stand previously positioned under the support of the groove of the front axle drive and the wooden plug.
14. - Remove the fixed jack stand previously installed under the ballast support. Remove the two wooden wedges for locking the front wheels.
15. - Remove the old sealing paste from the two surfaces between the engine and clutch case.
16. - Apply **LOCTITE® 518™** sealing compound on the mating surfaces of the engine and clutch case.
17. - Put a wooden wedge under the right-hand rear wheel. Make sure that the hand brake is fully applied and that all fixed and mobile stands are safely positioned.
18. - The installation phase described below requires the presence of two or three workers to use the movable tractor splitting tool **380003114** to accurately bring the engine/front axle assembly towards the gearbox case.
19. - In the phase of installing the engine/front axle assembly to the gearbox case, 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. Moreover, during this phase it is necessary to turn the crankshaft with the aid of the radiator cooling fan to aid coupling between the sleeve and the drive shaft.
20. - Tighten all of the screws that lock the engine to the gearbox case to secure both of the assemblies.
21. - Disconnect the hoist chains. Remove the jack stand previously placed under the clutch case. Retrieve the movable tractor splitting tool **380003114**.
22. - Refit the bracket for the cab connectors, cab power and cup filter. Connect the pipe that joins the cup filter to the mechanical priming pump on the sediment filter.
23. - On the left-hand side, connect the cab power cable connector. Bring the cab power cable connector to the maxi fuse compartment. Lock the cab power cable connector with clamps.
24. - Return the main engine cable back into position. Connect the connectors to the sensors and the switches located on the engine, on the control unit and on the maxi fuse compartment. Secure the wiring with clamps.
25. - Lay out the FTP interface - engine cable on the machine. Reconnect the various connections. Secure the wiring harnesses with clamps.
26. - Refit the starter motor. Then connect the two ground wires on the engine and battery system.

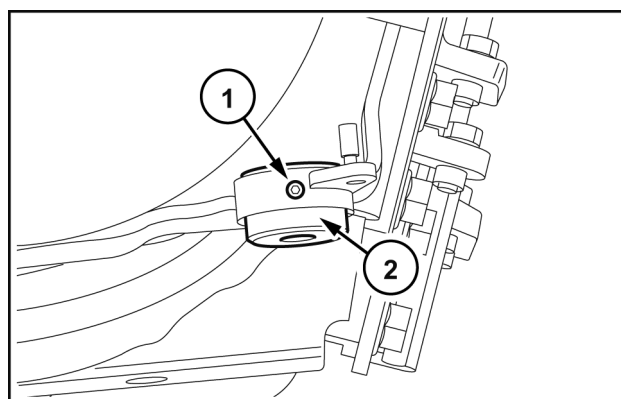
27. - On the right-hand side, reconnect the positive battery cable and reconnect the wiring harnesses to the starter motor, battery isolator switch and alternator. Refit the shield on the starter motor.
28. - Refit the supply and return lines to the cab heater and the pipe inserted on the lower sleeve coming from the expansion tank. Refit the upper and lower sleeves of the engine radiator connection. Secure the straps and clamps tightening the pipes.
29. - Reconnect the oil filter of the power steering control valve, together with the support. Reconnect the oil drain line from the power steering and reconnect the supply line to the gearbox control valve.
30. - Refit the two oil delivery and return pipes to the heat exchanger and secure the pipes with the relevant clamp.
31. - Refit the power steering pump. Refit the transmission oil filter assembly and secure the screws. Reconnect the supply line to the lift and to the power steering anti-cavitation assembly on the pump. Reconnect the oil filter inlet from the transmission. Reconnect the two suction lines from the filter to the pump.
32. - Connect the lines to the power steering cylinder and the control valve supply.
33. - If it is necessary to remove the support DPF, proceed as follows:
 - 1 – Mount the upper support (1) on the right-hand one (2) with the three Allen screws.
 - 2 – Mount the left-hand 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) on the engine with the two lower screws. Secure the three left-hand screws to the support (5). Secure the two upper screws to the support (1) .
34. - Refit the entire DPF filter. Return the entire unit into position. Secure the four retaining bolts of the assembly itself 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 bolts that secure the filter to the cradle there are two threaded bushings (2), which are held in position by a grub screw (1). Loosen the grub screw with an Allen key. Tighten or loosen the bushing by the amount necessary to correct the misalignment. Retighten the grub screw. Secure the support.
35. - Refit the upper bracket that supports the hood. Secure the upper bracket with the relevant screws.



WLAPL4S10C124A 4



WLAPL4S10C146A 5

36. - Refit the air cleaner assembly and the relevant support. Secure the screws on the filter bracket and on the inlet duct 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 piston pin of the filter clog sensor.
37. - Refit the two lines to the intercooler radiator. Tighten the relevant clamps.
38. - Refit the drain tube. Tighten the relevant retaining clamps.
39. - Refit the transmission oil drain plug. Refill with oil using a pump.
40. - Refit the drive shaft together with the central support and the retaining bolts. Insert the shim and adjust the shaft end play.
41. - Refit the guard of the front axle control shaft. Tighten the front retaining bolts, the central retaining bolts, and the rear retaining bolts.
42. - Reposition the fuel drain plug on the tank.
43. - Refit the lower guard for the tank, if present. Put the fuel tank in position. Tighten the relevant retaining straps to secure the fuel tank. Reconnect the lines as marked during disassembly.
44. - Using a hydraulic jack, raise the rear of the tractor. Remove the mechanical jack stand under the left-hand reduction gear. Put the wheel back into position and fit the retaining nuts with a pneumatic gun.
45. - Reconnect the air conditioning lines and the sensor to the condenser. Secure the air conditioning lines and the sensor with clamps and brackets.
46. - Reconnect the air conditioning lines on the compressor. Secure the air conditioning lines with clamps and clamping brackets.
47. - Use the control unit **380000315** to recharge the refrigerant of the air conditioning system.
48. - Refit the two engine side panels. Secure with the relevant screws.
49. - Refit the fenders of the front wheels, if present. Tighten the relevant fasteners.
50. - Reposition the ballast pack on the relevant support. Fit the cotter pins and fit the retaining pin.
51. - Refit the left-hand ladder. Secure the ladder to the cab.
52. - Connect the negative battery cable.
53. - Refit the battery cover.
54. - Lower the right-hand ladder for cab access.
55. - Refill the radiator with engine coolant.
56. - Refit the engine hood, as indicated in **Hood - Install (90.100)**.

Index

Engine - 10

Engine and crankcase - 001

Engine - General specification	3
Engine - Install	15
Engine - Remove	5



Engine - 10

Fuel tanks - 216

Farmall® 105U EP with 16x16 Semi-Powershift transmission [ZxJKxxxxx -]
Farmall® 115U EP with 16x16 Semi-Powershift transmission [ZEJK14976 -]

Contents

Engine - 10

Fuel tanks - 216

SERVICE

Fuel tank	
Remove	3
Install	6

Fuel tank - Remove

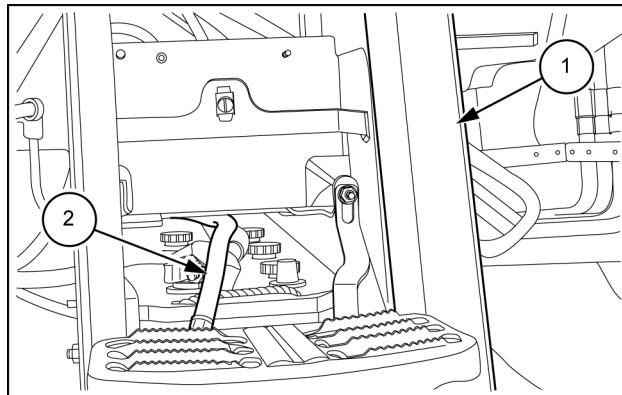
⚠ DANGER

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.

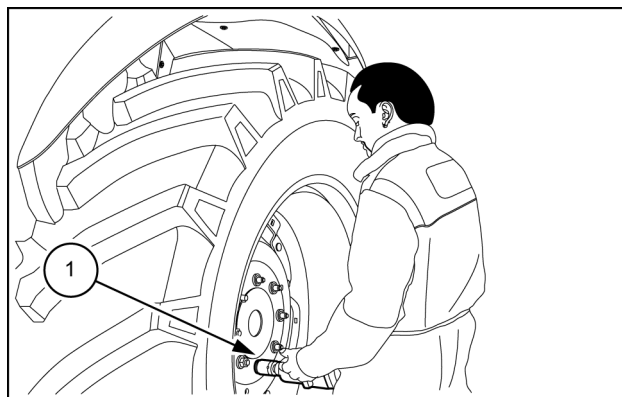
D0076A

1. Lift the steps (1), remove the battery guard and detach the negative battery cable (2).



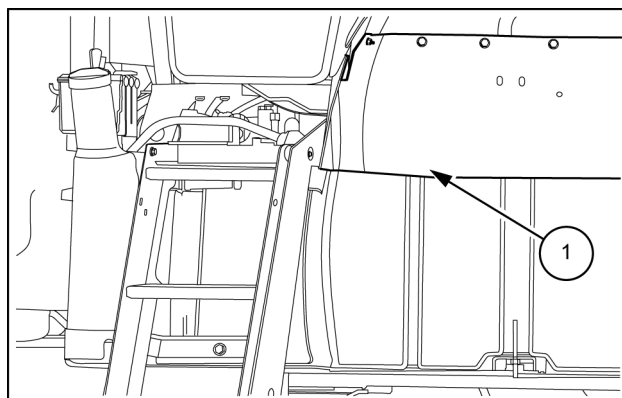
MOIL12TR00738AA 1

2. Using a hydraulic jack, remove the left wheel (1) and place a suitable stand under the axle.



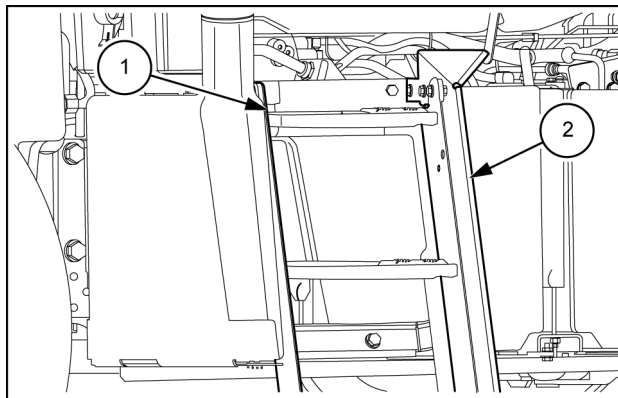
MOIL12TR00737AA 2

3. Remove the lower left mudguard extension (1).



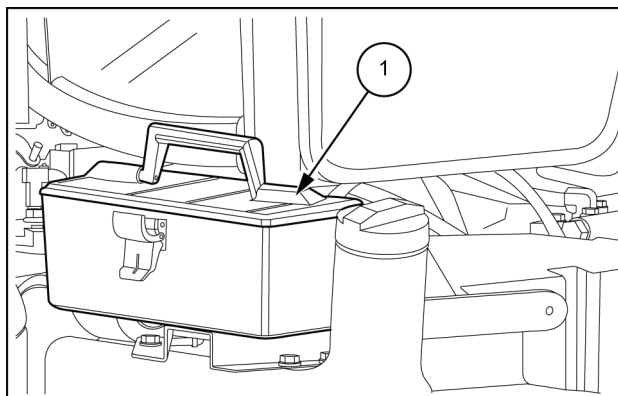
MOIL12TR00739AA 3

4. Remove the steps (1) together with the guard (2).



MOIL12TR00740AA 4

5. Remove the tool box (1).

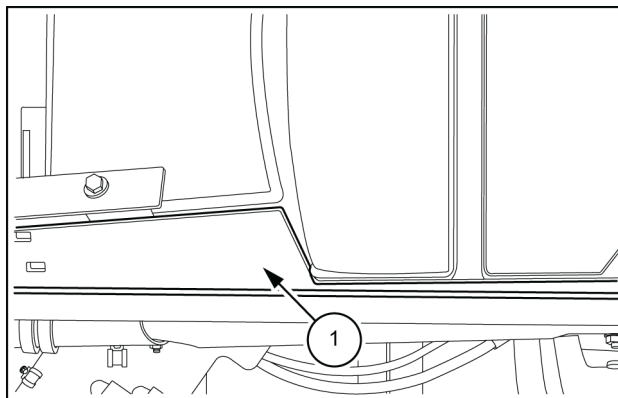


MOIL12TR00741AA 5

6. Remove any diesel still left in the tank with a pump.

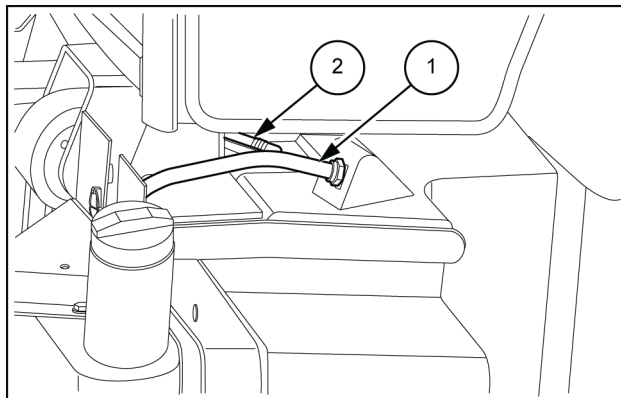
NOTE: There are two plastic refuelling unions on the rear of the tank, one at the bottom and one at the top, sealed with a rubber cap and a clip; the tank can also be emptied from the bottom union.

7. Remove the bottom tank guard (1).



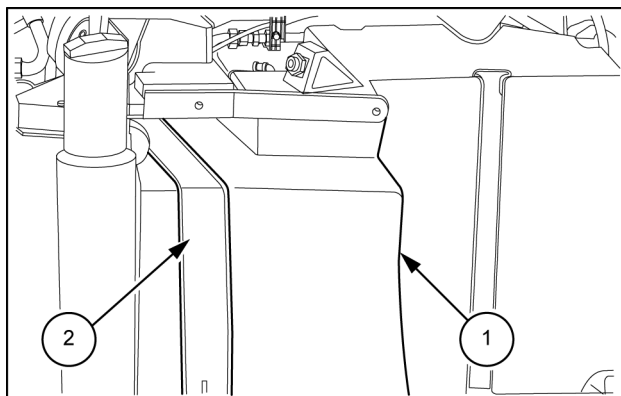
MOIL12TR00742AA 6

8. Remove the breather pipe (1) as well as the suction and return pipe (2).



MOIL12TR00743AA 7

9. Very carefully remove the screws holding the front (2) and rear brackets in place on the relative racks. Place a mechanical jack under the tank (1), touching on the bottom. With the help of another person holding the tank to keep it balanced, now lift it by approximately **2 cm (0.8 in)**, move it to the right of the machine so that the straps unhook from the racks. Then lower it all by around **3 cm (1.2 in) ÷ 5 cm (2.0 in)** so that the tank fits under the step support.



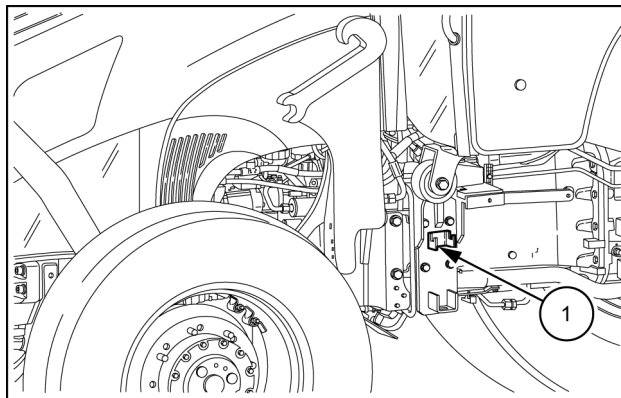
MOIL12TR00744AA 8

10. The rest the tank on a pallet and then remove the straps.

Fuel tank - Install

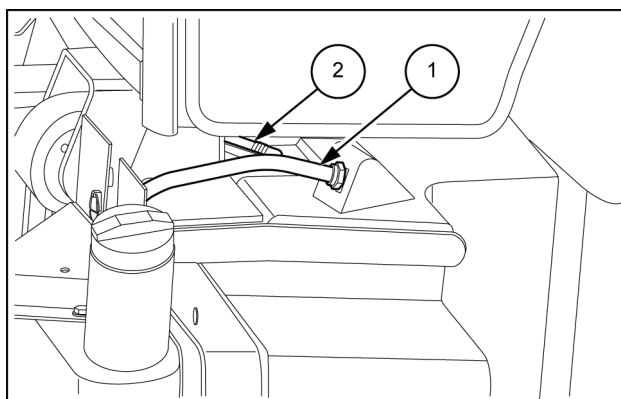
For reassembly operations proceed as follows:

1. With the help of another person and a mechanical jack, hook the tank with the brackets back on to the front **(1)** and rear racks.



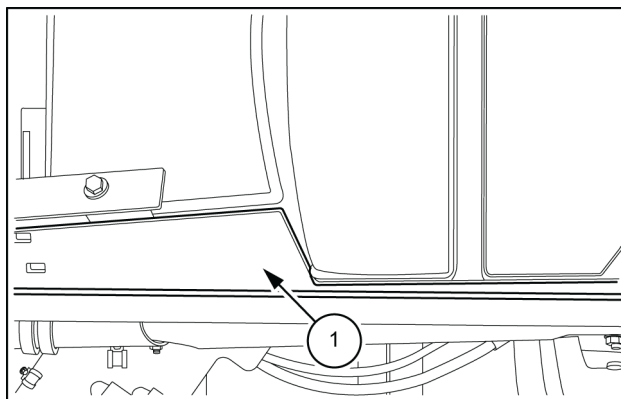
MOIL12TR00745AA 1

2. The screw on the screws holding the straps onto the relative racks.
3. Fit the breather pipes **(1)**, suction pipe and return pipe **(2)** back on.



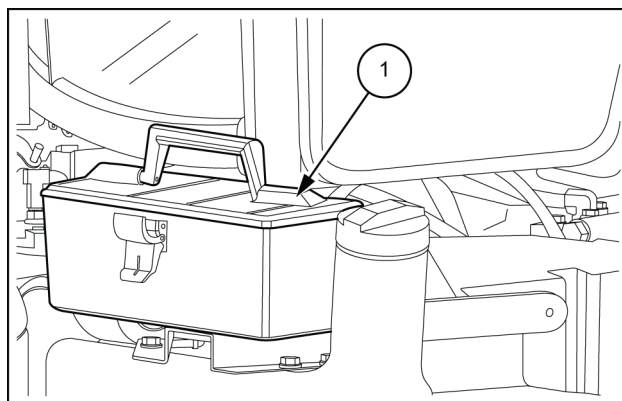
MOIL12TR00743AA 2

4. Re-assemble the bottom tank guard **(1)**.



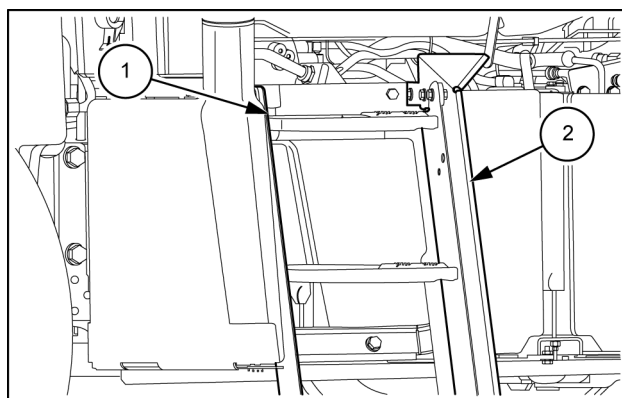
MOIL12TR00742AA 3

5. Re-assemble the tool box **(1)**.



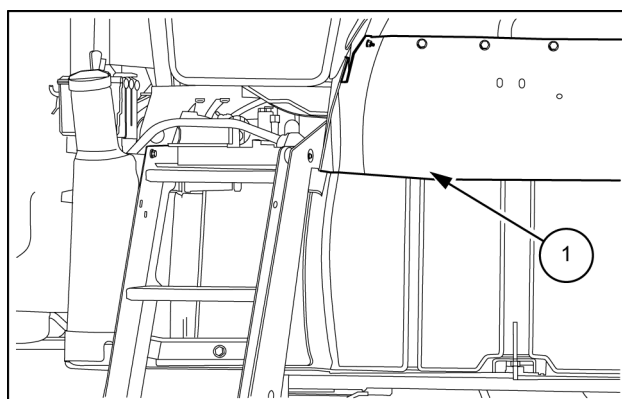
MOIL12TR00741AA 4

6. Re-assemble the step **(1)** and the guard **(2)**.



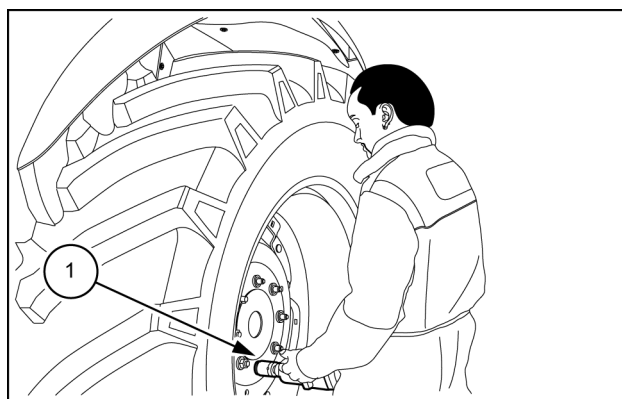
MOIL12TR00740AA 5

7. Re-assemble the left lower mudguard extension **(1)**.



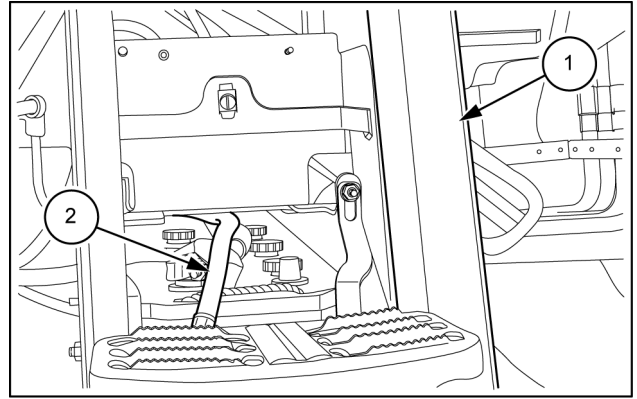
MOIL12TR00739AA 6

8. Replace the left wheel **(1)**.



MOIL12TR00737AA 7

9. Reconnect the negative battery cable **(2)** and reposition the step **(1)**.



MOIL12TR00738AA 8

10. Fill up the tank with fuel.

Index

Engine - 10

Fuel tanks - 216

Fuel tank - Install	6
Fuel tank - Remove	3



Engine - 10

Exhaust Gas Recirculation (EGR) - Diesel Particulate Filter (DPF) exhaust treatment - 501

Farmall® 105U EP with 16x16 Semi-Powershift transmission [ZxJKxxxxx -]
Farmall® 115U EP with 16x16 Semi-Powershift transmission [ZEJK14976 -]

Contents

Engine - 10

Exhaust Gas Recirculation (EGR) - Diesel Particulate Filter (DPF) exhaust treatment - 501

TECHNICAL DATA

Diesel Particulate Filters (DPF)

Torque	3
General specification Installation measurements	4

FUNCTIONAL DATA

Exhaust Gas Recirculation (EGR) valve

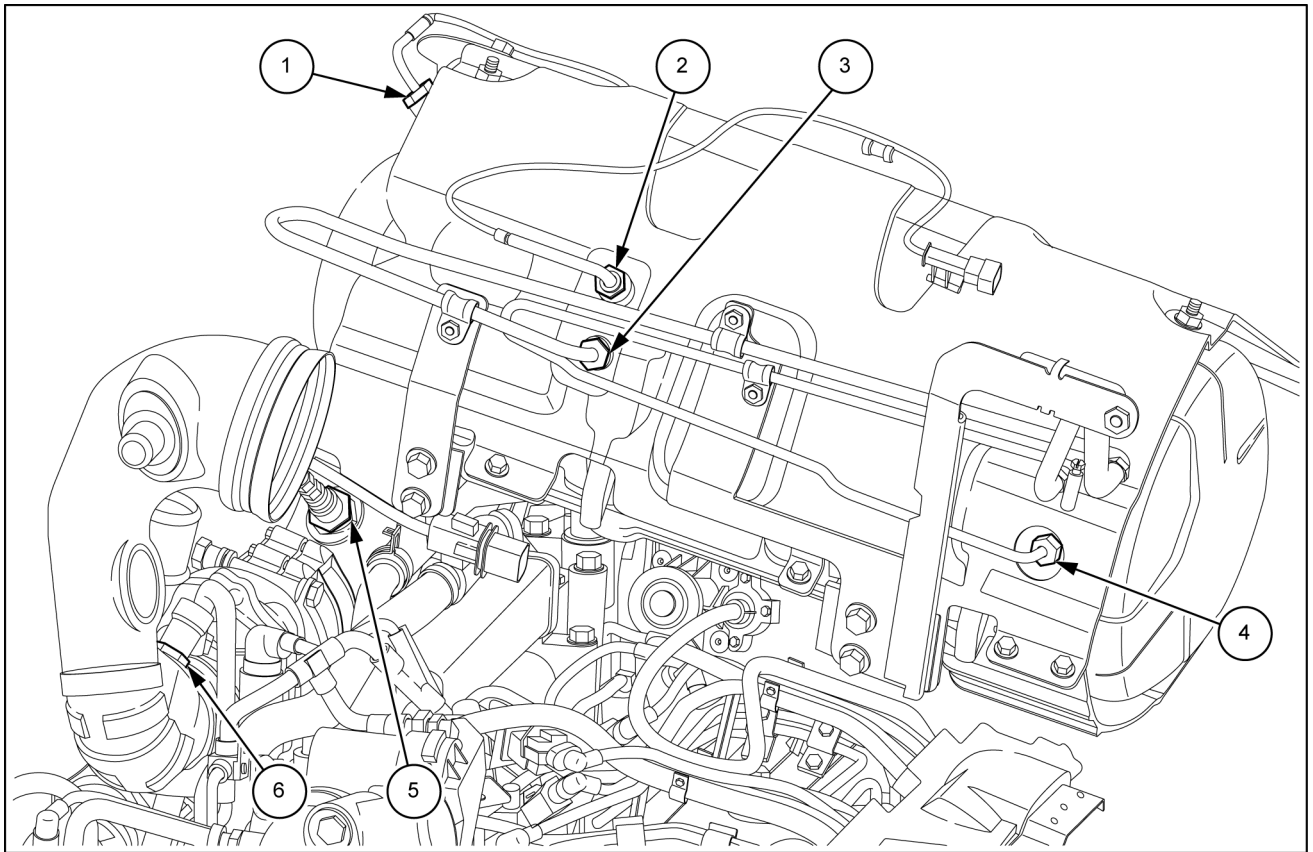
Diesel Particulate Filters (DPF) - Dynamic description manual regeneration of the diesel particulate filter (DPF)	6
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SERVICE

Diesel Particulate Filters (DPF)

Remove for periodic replacement	11
Install for periodic replacement	15
Remove DPF with support	16
Remove DPF with support	20
Install on the DPF filter	24
Install DPF with support	27

Diesel Particulate Filters (DPF) - Torque

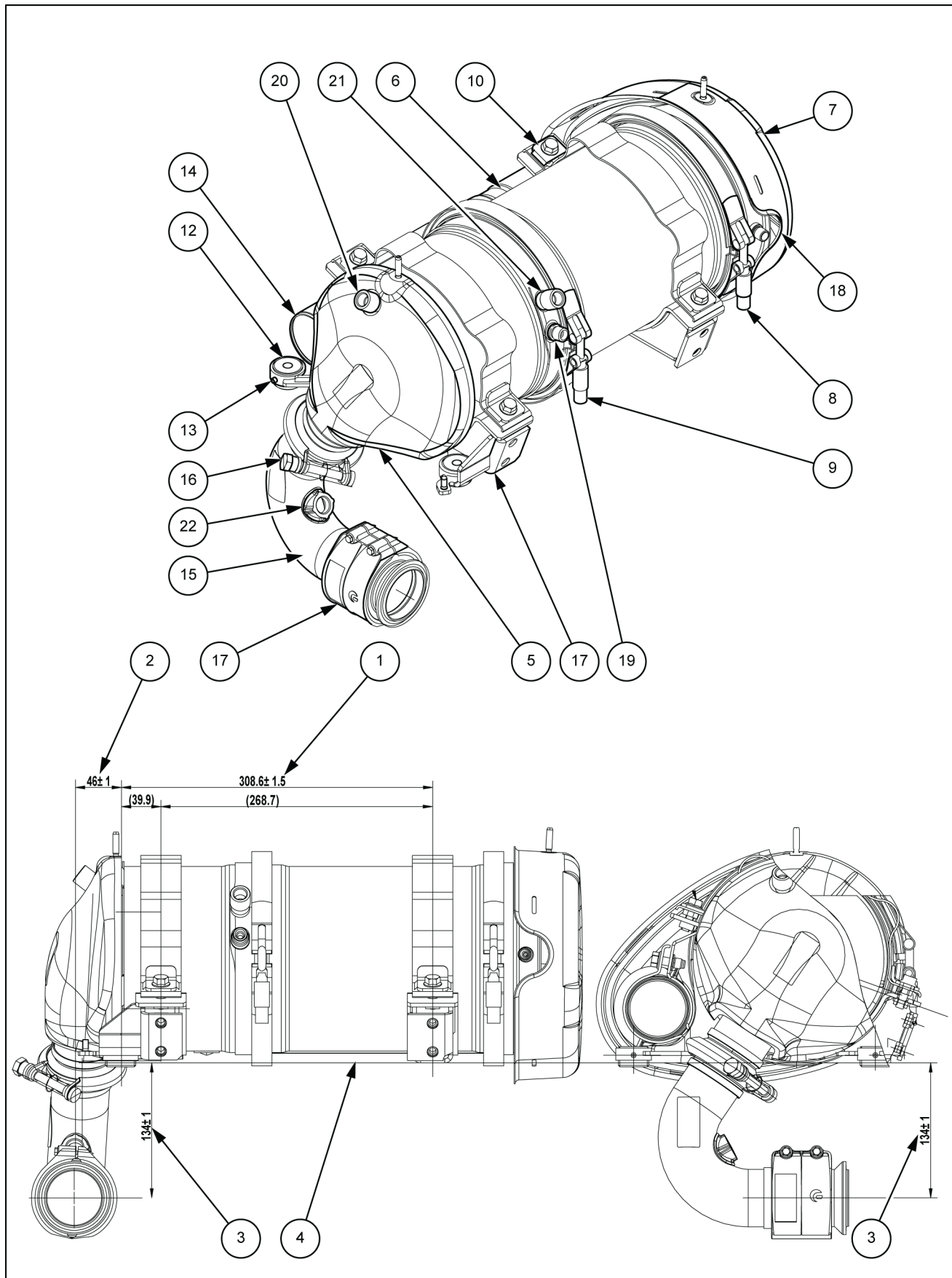


MOIL12APL92 1

TORQUE SETTINGS

No.	Part to tighten	Thread size	Torque settings		
			Nm	kg	lbf. ft
1	Gas temperature sensor on DPF intake	M 14x1.5	40.5 to 49.5	4.14 to 5.12	30.2 to 36.9
2	DPF filter first section temperature sensor	M 14x1.5	40.5 to 49.5	4.14 to 5.12	30.2 to 36.9
3	Pressure pipe fitting on turbine side	M 14x1.5	40.5 to 49.5	4.14 to 5.12	30.2 to 36.9
4	Pressure pipe fitting on muffler side	M 12x1.5	27 to 33	2.80 to 3.42	20.1 to 24.6
5	Lambda sensor	M 18x1.5	45 to 55	4.66 to 5.70	33.6 to 41
6	Air temperature sensor	M 12x1.5	15 to 25	1.55 to 2.59	9 to 18.6

Diesel Particulate Filters (DPF) - General specification Installation measurements



MOIL12APL104 1

Measurements to respect for installing the filter — Legend of components — Legend of sensor fixing holes:

1. **308.6 mm (12.1496 in) ± 1.5 mm (0.0591 in)** Distance between the two bands of the cradle, the one with the set fixing holes **(10)** and the one with the adjustable fixing holes **(11)** .
2. **46 mm (1.8110 in) ± 1 mm (0.0394 in)** Distance between the centre of the turbine or the centre of the union of the decoupler/turbine and the adjustable filter fixing bushings **(12)** .
3. **134 mm (5.2756 in) ± 1 mm (0.0394 in)** Distance between the centre of the turbine or the centre of the union / turbine and the band supporting surface **(4)** with set fixing holes on the filter support.
4. Band supporting surface with set fixing holes.
5. Initial part of the DPF filter, connected with the sleeve. **(15)** to the turbine.
6. Middle part of the DPF filter, inside which there is the ceramic part to clean.
7. End part of the DPF filter, connected with the sleeve. **(14)** to the exhaust pipe.
8. Clamp retaining the middle part **(6)** \ end part **(7)** .
9. Clamp retaining the middle part **(6)** \ initial part **(5)** .
10. Band with the set fixing holes.
11. Band with the adjustable fixing holes.
12. Threaded bushings, screwing them in or out enables changing the adjustment distance **(3)** .
13. Grub screw fixing the bushing **(12)** .
14. Filter outlet union, it is inserted on the exhaust pipe.
15. Union joining the filter to the turbine.
16. Clamp fixing the union **(15)** to the filter.
17. Tutor, protects the decoupler during the handling from the supplier, it is dismantled after assembly (it is advised to keep one to hand and to reassemble it before starting to disassemble the filter so that the decoupler undergoes no deformation).
18. Gas pressure detection after the middle part of the filter, the pipe that goes on the differential pressure sensor is connected here.
19. Gas pressure detection before the middle part of the filter, the pipe that goes on the differential pressure sensor is connected here.
20. Exhaust gas temperature sensor from the turbine.
21. Exhaust gas temperature sensor to the intake of the middle part of the filter.
22. Lambda sensor.

Diesel Particulate Filters (DPF) - Dynamic description manual regeneration of the diesel particulate filter (DPF)

A diesel particulate filter (DPF) is a device designed to remove polluting diesel engine particulate from exhaust gas; when clogged, it needs to be regenerated.

The diesel particulate filter can be regenerated automatically or by forcing.

The regeneration process is signaled to the operator on the central monitor of the dashboard and with an acoustic signal. The indication is necessary for the purposes of safety to warn the operator about the high exhaust temperature reached during the process.

The automatic regeneration shall not affect engine performance. During the procedure, the operator can continue working normally.

Under certain operating conditions automatic regeneration might not be completed (engine continuously stopping and starting, lengthy periods at idle speed) and it must then be repeated.



The start of automatic regeneration, if set, is highlighted with the following warning light blinking on the dashboard and the same symbol appears every 5 minutes on the central monitor with the word "ON" combined with a single beep. On concluding the operation the symbol appears with the word "OFF".

When the level of soot exceeds a certain level, the electronic control unit asks you to proceed with manual filter regeneration.

NOTICE: If the filter is not regenerated when required, whether manually or by forcing, the functionality of the filter is impaired. Continuing to ignore this request, besides greatly reducing engine horsepower, damages the filter to such an extent that it is necessary for the dealer to replace the filter with a new one.

When the following warnings appear on the dashboard it is necessary to proceed as follows:

DPF to be regenerated

Start of automatic regeneration or, with the control, start of forced regeneration

Image legend:

- (A) - Warning light on the dashboard
- (B) - Flasher
- (C) - On
- (D) - Off
- (E) - Central display

Spia su cruscotto (A)			
	Lampeggiante (B)	Accesa (C)	Spenta (D)
Display centrale (E)			

WLAPL4S55C111A 1

DPF to be regenerated

Low severity

Automatic regeneration inhibited, only start of forced regeneration with control

Spia su cruscotto			
	Lampeggiante	Spenta	Accesa
Display centrale			

DCAPLT5NE058S3A 2

DPF to be regenerated High severity

Automatic regeneration inhibited, only start of forced re-generation with control

Spia su cruscotto			
	Lampeggiante	Spenta	Accesa
Display centrale	 3433		

DCAPLT5NE059S3A 3

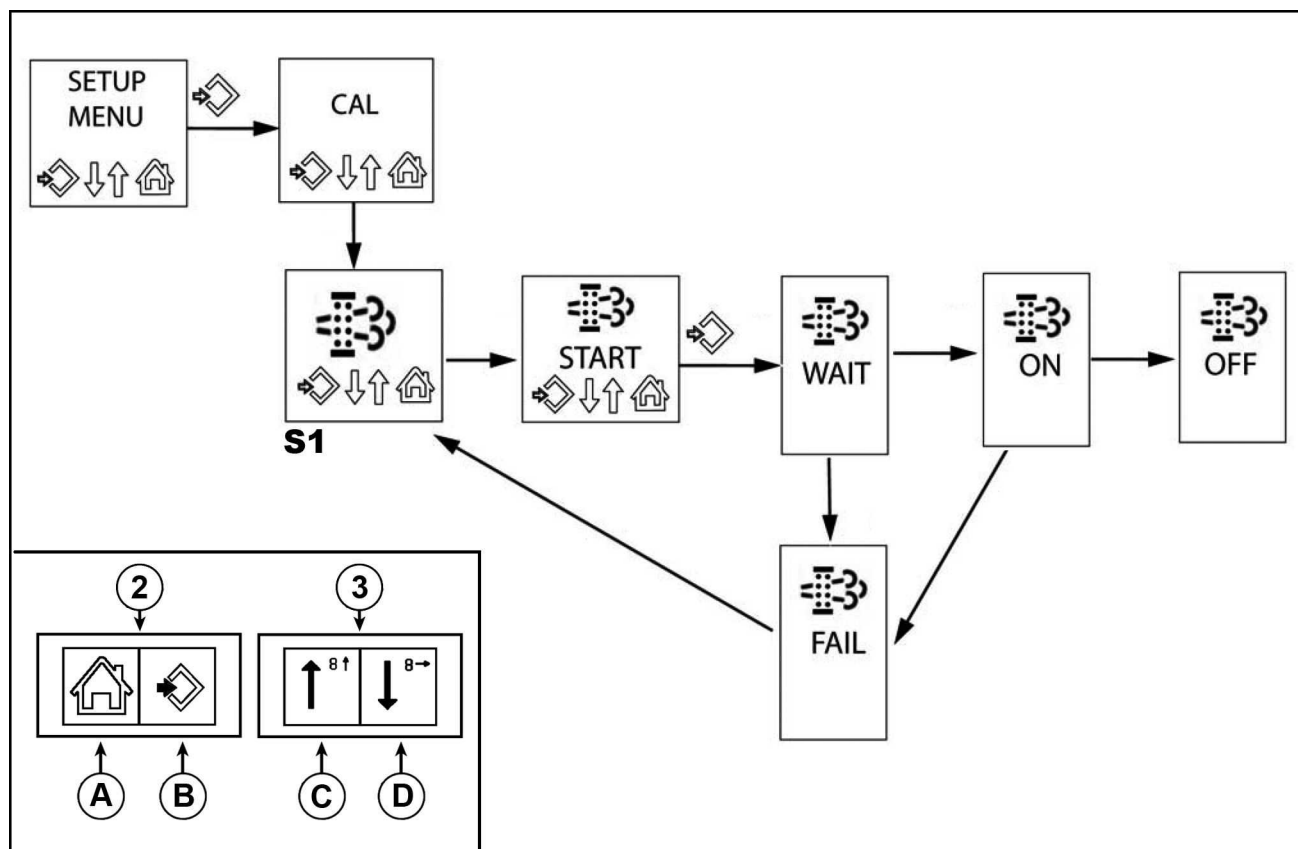
DPF damaged Technical support required

Automatic and forced regeneration inhibited

Spia su cruscotto			
	Lampeggiante	Spenta	Accesa
Display centrale	 3434		

DCAPLT5NE060S3A 4

Manual regeneration of the diesel particulate filter DPF



DCAPLT5NE072S3F 5

To be able to activate the procedure of manual regeneration when required, it is necessary to stop work for the entire duration of the procedure (15 — 20 min) and get into the following conditions:

- engine running, machine stationary and hand brake on
- hand throttle at minimum position
- foot throttle released
- PTO not engaged
- hydraulic system not active

NOTE: If the conditions described above are changed, throughout the entire process of regeneration, the operation is stopped.

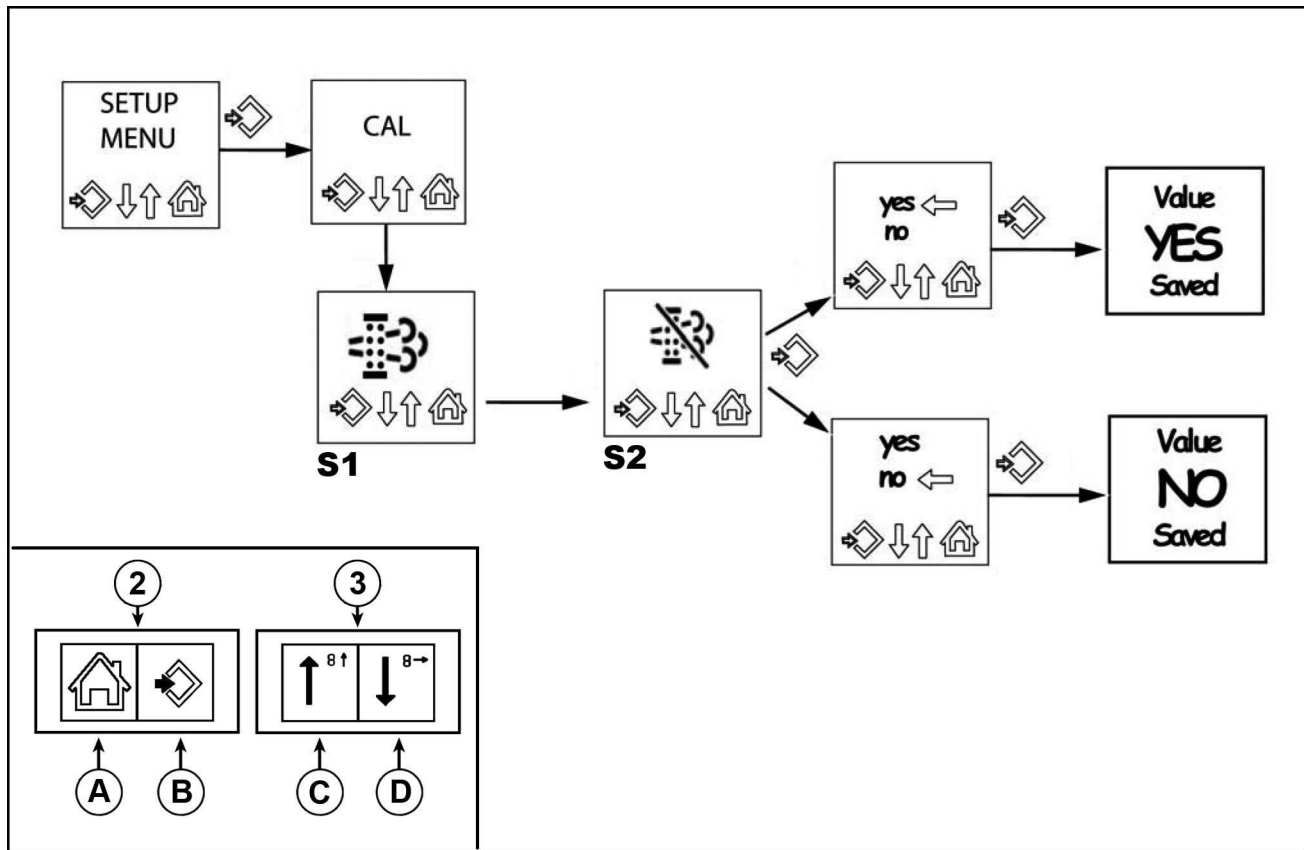
To activate forced regeneration, proceed as follows:

- Press the switch (2) on the symbol (B) for more than three seconds to enter the programming menu. The central monitor will show "SETUP MENU". Release the symbol (B).
- Press the switch (3) on the symbol (D) a number of consecutive times until the monitor shows the symbol of the filter (S1).
- Press the switch (2) on the symbol (B).
- If manual filter regeneration is required, the monitor will automatically display "START" with the symbol of the filter.
- Press the switch (2) on the symbol (B) to move on to the message "WAIT". Filter regeneration now commences. In this phase, if everything proceeds normally, the operator must give no commands and the electronic control unit will automatically display the various phases of the procedure.
- At the end of regeneration the monitor will show "OFF" with the filter symbol. After two seconds the control unit automatically returns to the initial situation. Press the switch (2) on the symbol (A) a number of times until you exit the programming menu.

NOTE: If during manual regeneration the operator modifies the conditions described above, or other conditions connected with the engine are not satisfactory, regeneration is stopped. The stop is signaled to the operator by the

monitor displaying the filter symbol together with "FAIL" and a single acoustic signal. After 2 seconds, the control unit goes back into the situation at the start of regeneration "START". From this situation, after restoring the necessary conditions to carry out the operation it is necessary to press the switch (2) on the symbol (B) to restart the regeneration procedure.

Automatic diesel particulate filter regeneration inhibition DPF



DCAPLT5NE071S3F 6

If you want to inhibit or enable automatic regeneration of the diesel particulate filter, proceed as described below:

- Press the switch (2) on the symbol (B) for more than three seconds to enter the programming menu
The central monitor will show "SETUP MENU". Release the symbol (B).
- Press the switch (3) on the symbol (D) a number of consecutive times until the monitor shows the symbol of the filter S1 .
- Press the switch (2) on the symbol (B) and press the switch (3) on the symbol (D) to display the screen S2 then press button (B)
- YES = automatic regeneration of the filter INHIBITED
- NO = automatic regeneration of the filter ENABLED
- It is possible to change the setting status by moving with the direction keys of the switch (3) on the symbols (C) and (D) to pass from "yes" to "no" and vice versa, then confirm by pressing the switch (2) on the symbol (B).



If automatic regeneration is disabled the following warning light on the dashboard remains on steady



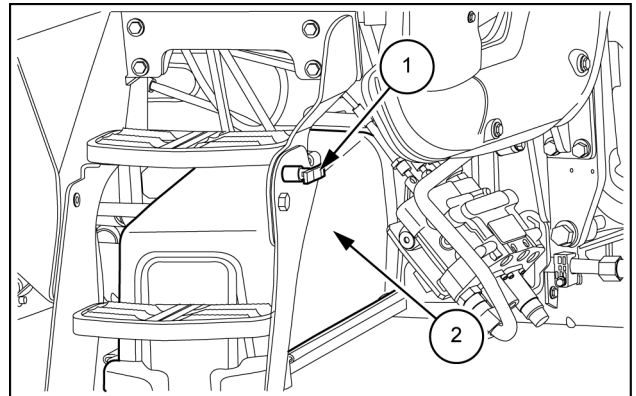
and every 5 minutes the central monitor shows the following symbol combined with a single beep.

If the setting in the system matches the needs of the work to perform, press the switch (2) on the symbol (A) a number of times to exit the programming menu.

NOTICE: It is always advisable to have the automatic regeneration function ENABLED.

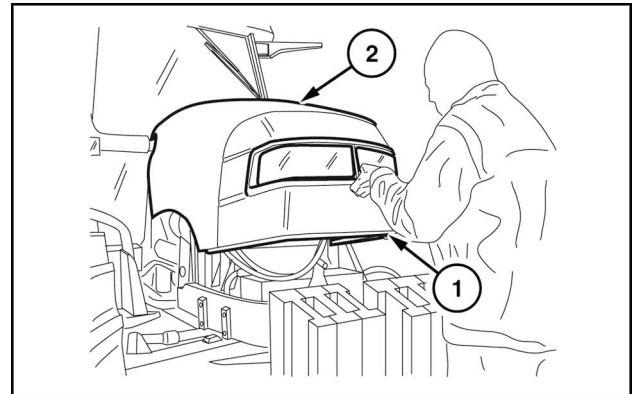
Diesel Particulate Filters (DPF) - Remove for periodic replacement

1. Using the lever (1) pull up the steps, take off the cover (2), then disconnect the battery negative cable.



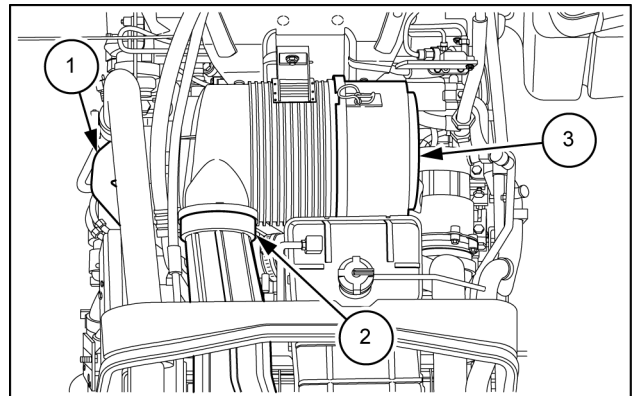
MOIL12APL91 1

2. Use the lever (1) to open the hood.
3. Remove the hood (2), as described in **Hood - Remove (90.100)**.



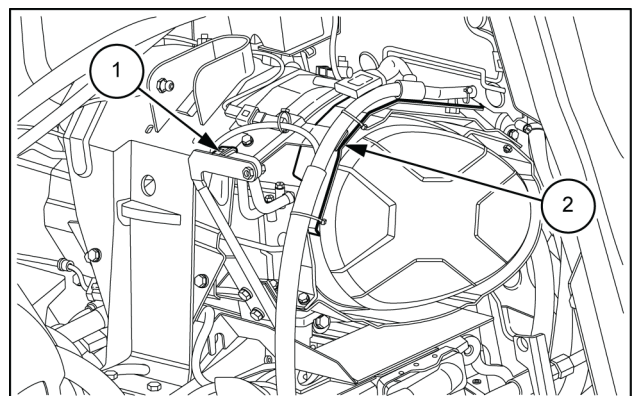
WLAPL4S90C133A 2

4. Loosen the clamp of the connection pipe (1) between the air cleaner (3) and turbine, unscrew the retaining screws of the air intake pipe (2) then slide it towards the front so that it comes out of the filter inlet. Then, after disconnecting the clogged filter sensor connection, remove the filter from the bonnet support.



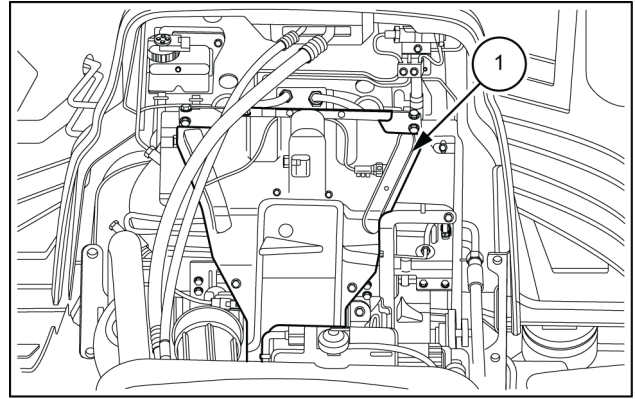
MOIL12APL111 3

5. Disconnect the connectors on the pressure differential sensor (1), on the two temperature sensors and on the lambda sensor, unscrew the system heat shield (2) and position everything on the left-hand side of the engine.



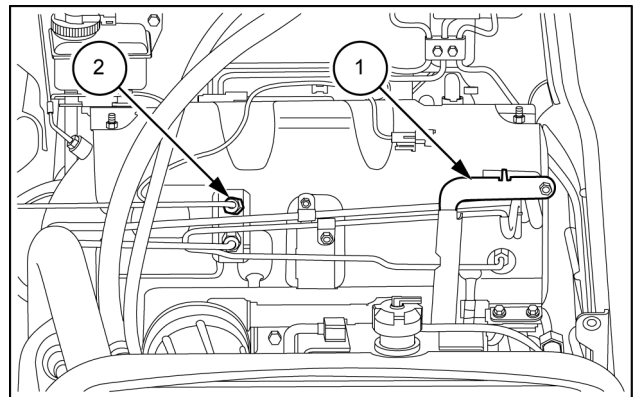
MOIL12APL113 4

6. Remove the bonnet support (1) .



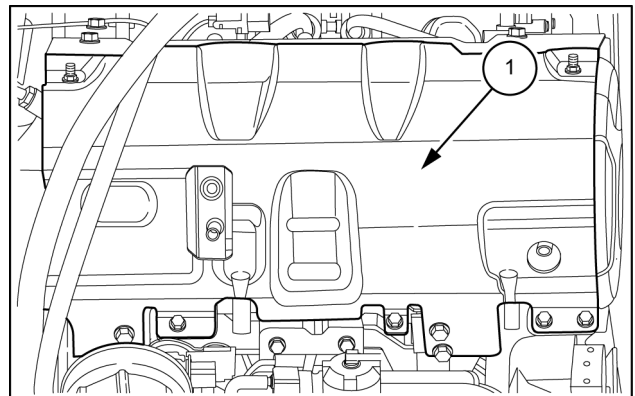
MOIL12APL115 5

7. Unscrew the pressure differential unit (1) with its pipes, brackets, clamps and sensor.
8. Unscrew the temperature sensor (2).



MOIL12APL125 6

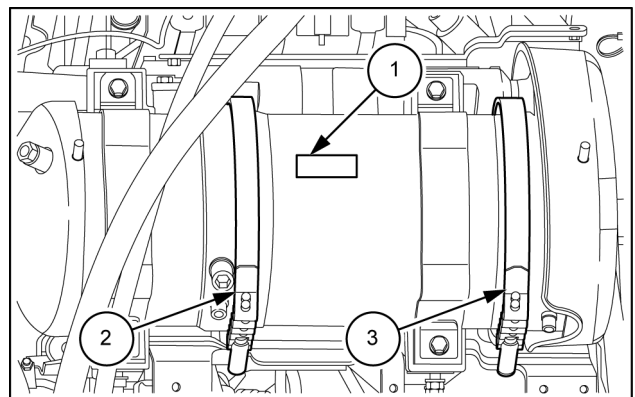
9. Unscrew the filter's upper heat shield (1), the lower one stays in position.



MOIL12APL114 7

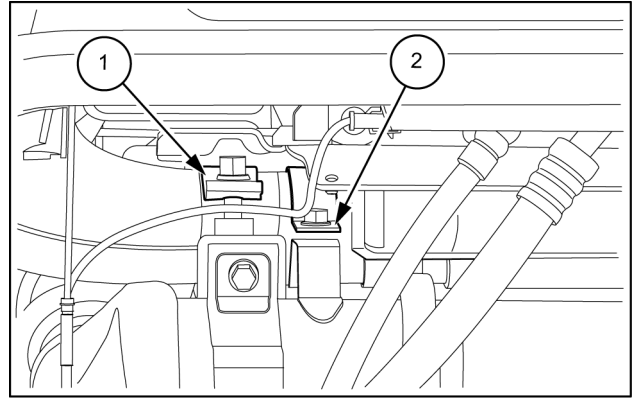
10. Mark the filter as shown in the figure.

NOTE: The right-hand marking must include the first part of the filter, the middle part (1) including the clamp joining them (2) . The left-hand one will include the middle part, the left-hand one and the clamp (3) .



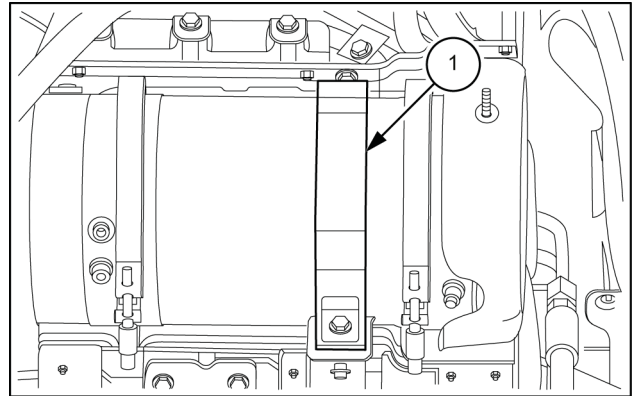
MOIL12APL112 8

11. Loosen the clamp **(1)** joining the muffler to the DPF outlet pipe. The clamp **(2)** , that keeps the filter outlet pipe parallel to the filter's first section.



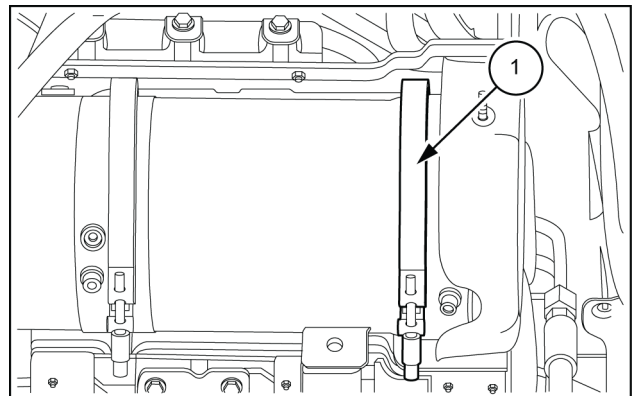
MOIL12APL107 9

12. Remove the left-hand clamp **(1)** fastening the filter to the machine.



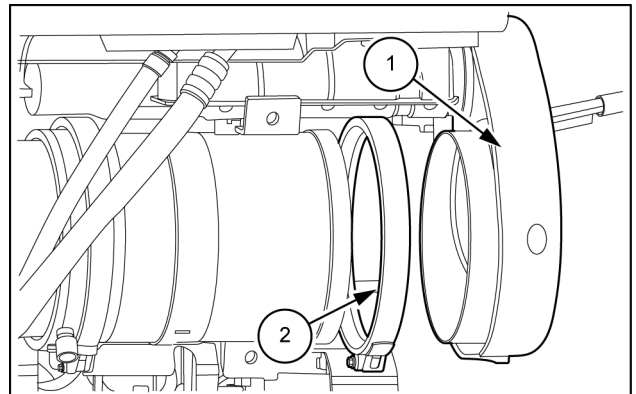
MOIL12APL109 10

13. Loosen the left-hand clamp **(1)** fastening the middle and left parts of the filter.



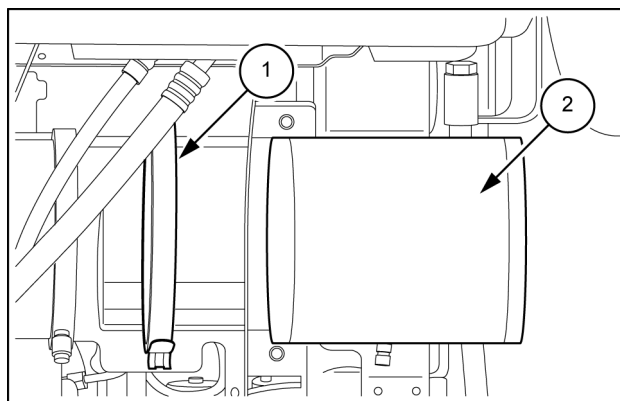
MOIL12APL105 11

14. Remove the left part of the filter **(1)** , with the clamp **(2)** removing the copper gasket.



MOIL12APL110 12

15. Subsequently, after loosening the right-hand clamp **(1)**
, remove the middle part of the filter **(2)** .



MOIL12APL108 13

Diesel Particulate Filters (DPF) - Install for periodic replacement

NOTE: For the tightening torques please refer to **Diesel Particulate Filters (DPF) - Torque (10.501)**.

1. Reassemble the middle part of the DPF filter with the relevant clamp; tighten the clamp, paying attention to the orientation of the parts.
2. Reassemble the left part of the DPF filter with the relevant clamp; tighten it, paying attention to the orientation of the parts.

NOTE: If the clamp and the gasket are rusty and in a poor condition, change them.

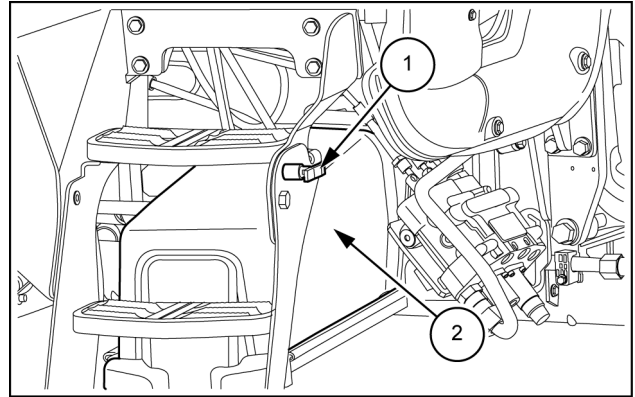
3. Reassemble the left-hand clamp fastening the filter on the cradle.
4. Position the collar fastening the filter pipe to the muffler and tighten it, tighten also the top of the collar that fixes the pipe to the cradle.
5. Fit the filter upper heat shield back on.
6. Fit the temperature sensor back on.

NOTE: To reassemble the pressure differential unit proceed as described in chapter **Diesel Particulate Filters (DPF) - Install (10.501)**.

7. Fit the hood support back on.
8. Reassemble the system heat shield and reconnect the pressure, lambda and pressure differential sensors, position the wiring harness and, if necessary, secure it with ties.
9. Fit the air cleaner onto the hose connecting it to the turbine, then secure it to the hood support with the relevant screws.
10. Tighten the clamp on the hose, run the intake duct towards the filter then tighten it with the relevant screws; reconnect the connector to the clogged filter sensor.
11. Refit the hood. See **Hood - Install (90.100)**.
12. Reconnect the battery cable, replace the cover and lower the steps.

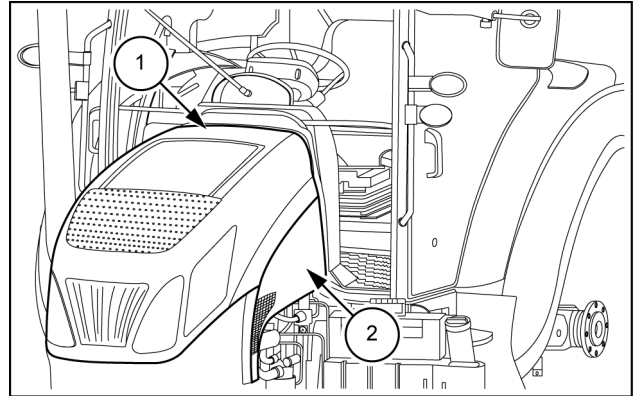
Diesel Particulate Filters (DPF) - Remove DPF with support

1. Using the lever (1) pull up the steps, take off the cover (2) , then disconnect the battery negative cable.



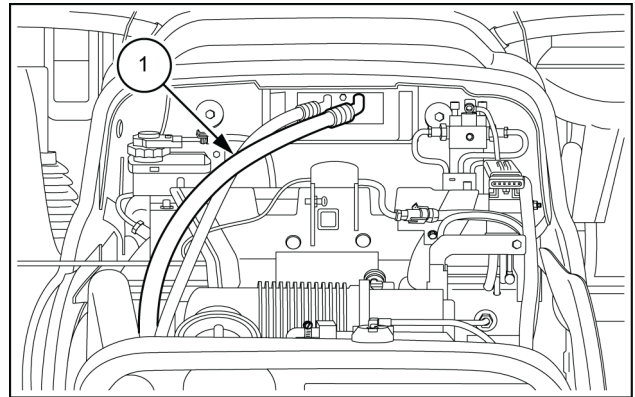
MOIL12APL91 1

2. Raise the hood, disconnect the headlights connector from the engine cable, then, after having slung it to the hoist with a belt, remove the hood (1) see, **Hood - Remove (90.100)** .
3. Remove the side panels (2) on both sides.



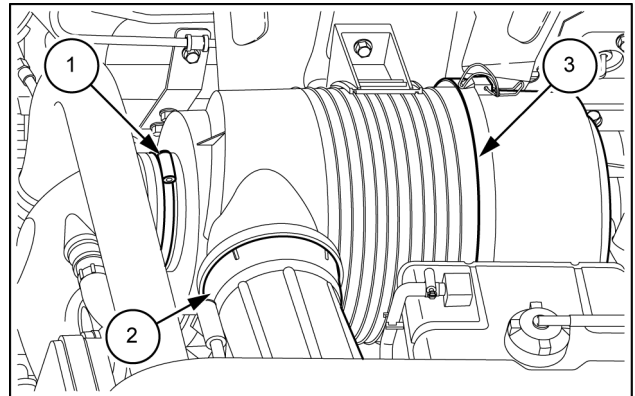
MOIL12APL106 2

4. With the air conditioning circuit gas recovery power pack, recover the gas (1) .
5. Disconnect the air conditioning pipes (1) , on the control panel side.



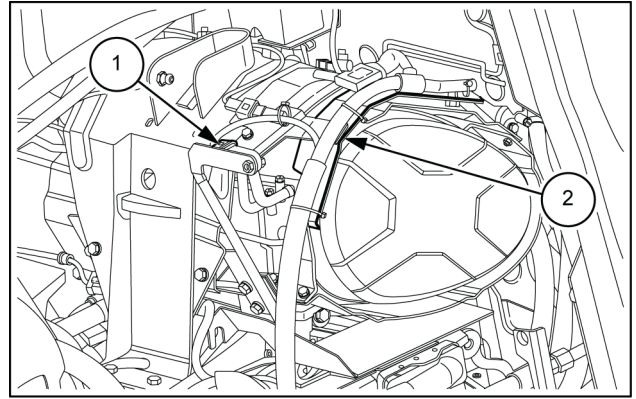
MOIL12APL93 3

6. Loosen the clamp (1) , retaining the air cleaner / turbine connection pipe, unscrew the screws on the air intake pipe (2) , then run it towards the front so as to make it come out of the air cleaner.
7. Disconnect the connector on the clogged filter sensor, unscrew the filter (3) from the hood support and extract it.



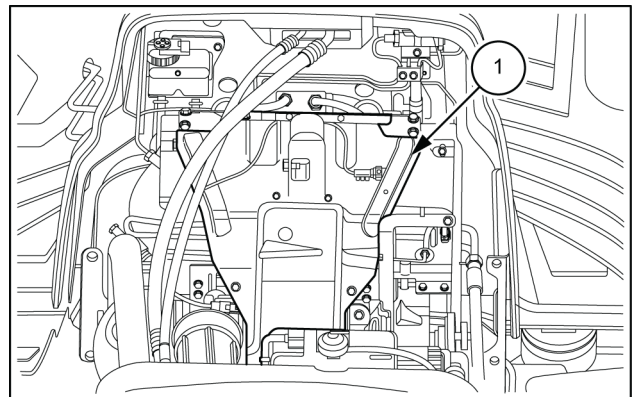
MOIL12APL94 4

8. Disconnect the connectors on the pressure differential sensor **(1)** , on the two temperature sensors and on the lambda sensor, unscrew the system heat shield **(2)** and position everything on the left-hand side of the engine.



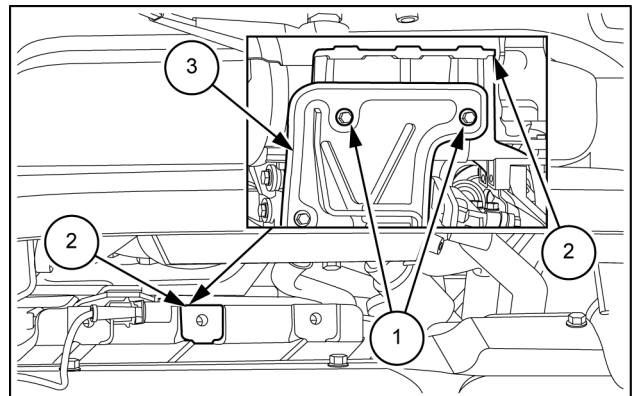
MOIL12APL113 5

9. Remove the complete hood support **(1)** .



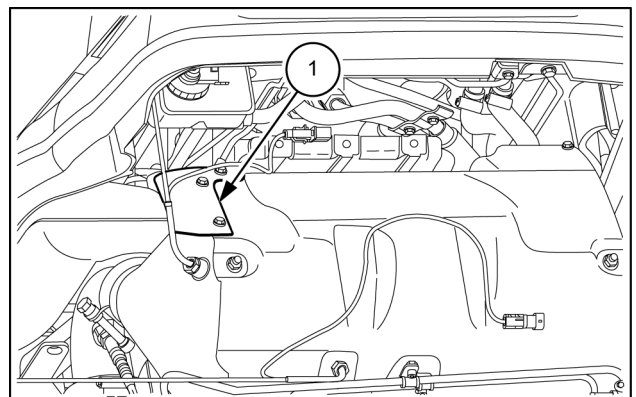
MOIL12APL115 6

10. In the gap on the left of the brakes reservoir, behind the filter, take out the screws **(1)** that join the cross support **(2)** of the filter and the rear support **(3)** .



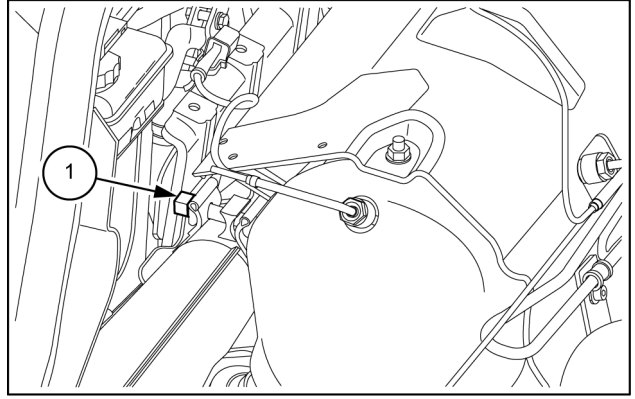
MOIL12APL97 7

11. Remove the brakes reservoir heat shield **(1)**.



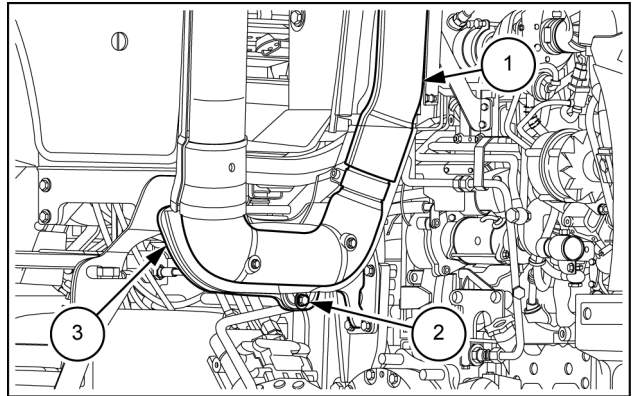
MOIL12APL98 8

12. Loosen the clamp (1) fastening the exhaust pipe to the DPF filter.



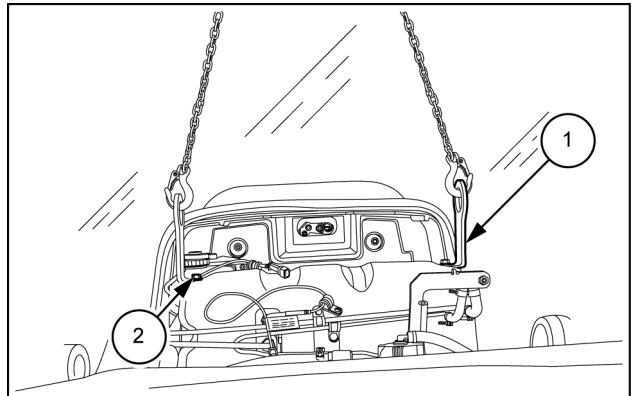
MOIL12APL99 9

13. Using a belt, sling the muffler, at two points at least, take up the slack with a hoist. Take out the screws (2) fastening the exhaust pipe (1) to the support (3). Then extract all of the pipe from the right-hand side of the tractor and put it down on a pallet on the ground.



MOIL12APL100 10

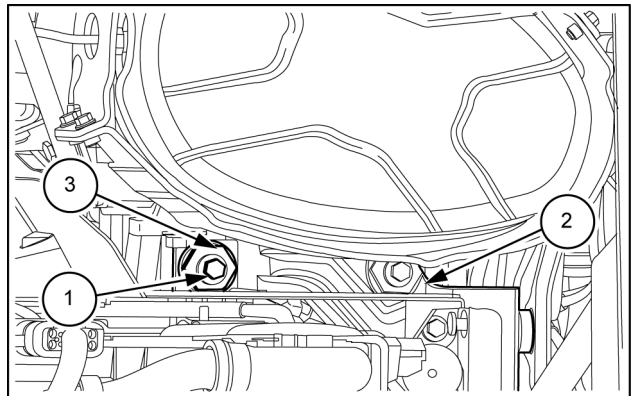
14. Put two eyebolts (1) on the screws retaining the upper heat shield of the filter. Using a chain, hook on the filter and take up the slack in the chains.



MOIL12APL101 11

15. On the left-hand side, under the filter remove the two screws (1) on the adjustment bushings (3) of the filter left support (2).

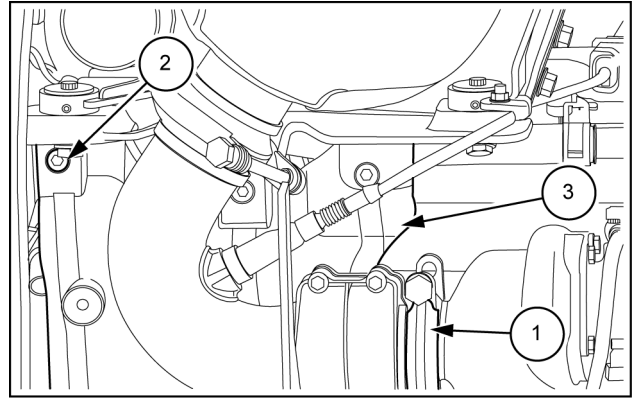
NOTE: After taking out the screws, unscrew the bushings so as to create a gap between the filter assembly and the left support.



MOIL12APL102 12

16. On the right-hand side, loosen the clamp (1), for fixing the filter decoupler to the turbine, move it towards the front. Take out the three hex socket screws (2) fastening the right support (3) to the transversal one.

NOTE: These screws have been fitted by the supplier and a few drops of Loctite have been used to prevent them, over time, from coming loose.



MOIL12APL103 13

17. Using the hoist, raise the filter, taking great care that there are no wiring harnesses and tie-rods connected or obstructing the passage, then rest the filter with the cross support on a workbench.

NOTE: With the machine in these conditions it is possible to work on the engine, for example on the valve cover, and, if the right-hand support is not removed, it is possible to reassemble the filter without making any special adjustments.

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