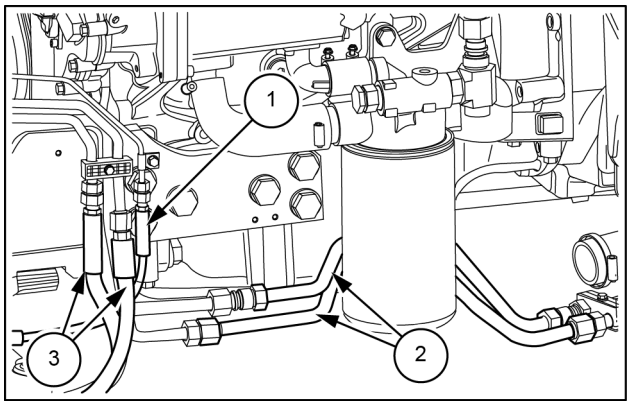
FARMALL® 90C
FARMALL® 100C
FARMALL® 110C
FARMALL® 120C
Efficient Power
Tier 4B (final)
Tractor

SERVICE MANUAL

Part number 47878246
1st edition English
June 2015

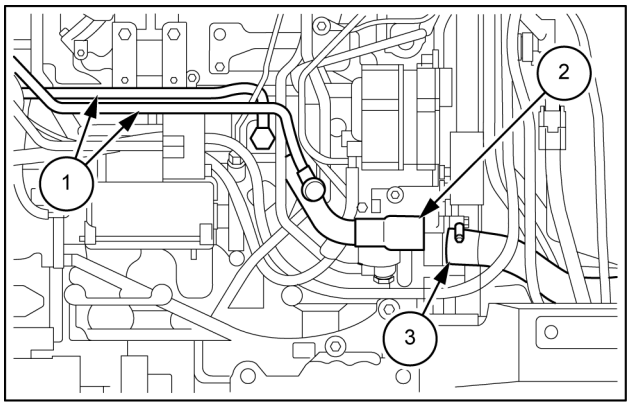
CASE AGRICULTURE

21. Detach the pipes **(2)** of the heat exchanger and, if applicable, of the front braking assembly **(1)**.
22. Free the lines that were previously detached from the supports, brackets, and clamps on the engine. Perform the same operation for the lines directed to the cylinder **(3)**.



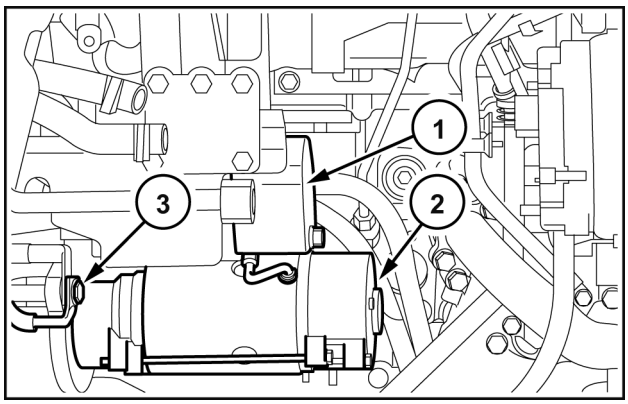
MOIL13TR01800AA 19

23. On the right-hand side, detach the cab heating pipes **(1)**, the pipe inserted on the engine sleeve **(2)** coming from the expansion tank. Then loosen the clamps. Detach from the engine the lower **(3)** and upper rubber sleeves of the radiator–engine connection.



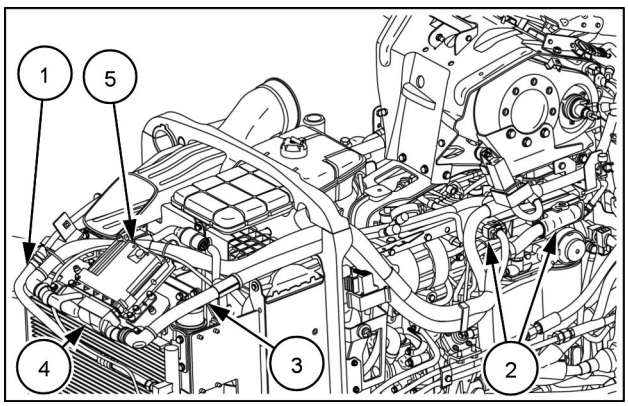
MOIL13TR01739AB 20

24. On the right-hand side, remove the shroud **(1)** on the starter motor **(2)**. Disconnect the starting cable, the battery cut-off switch, and the cable that joins it to the alternator. Also disconnect the alternator and the battery positive. Free all of the wire harnesses detached from the various clamps.
25. Detach the mounting bolt **(3)**. Then remove the ground cable of the engine and battery system. Remove the other mounting bolts of the motor and remove it.



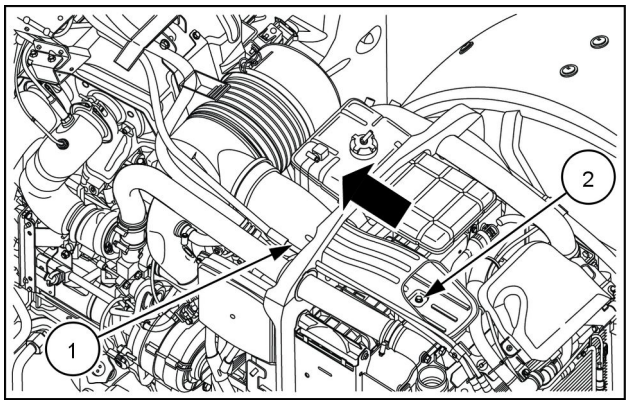
WLAPL4S10C135A 21

26. On the cable **(1)** of the FTP cable–engine interface, detach all of the connections **(2)**. Leave only those connections on the maxi fuse case and on the glow plug controller. Then, after cutting the clamps, pick up the cable on the front, near the controller **(5)**.
27. Starting from the connector on the controller **(4)**, on the main engine cable **(3)** disconnect the connectors from the maxi fuse box and from the various switches and sensors located on the engine. After freeing the connector from the clamps, move the connector onto the back, at the height of the right-hand steps.



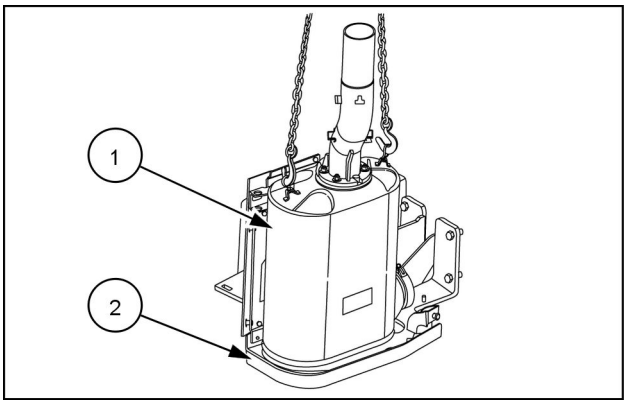
MOIL14TR00614AA 22

6. Fit the intake pipe **(1)** on the air filter housing and securing using the screw **(2)**.



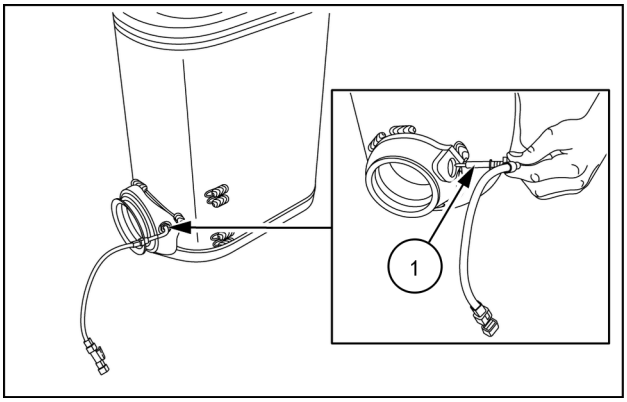
MOIL14TR00673AA 5

13. Remove the muffler and the SCR catalyst from the support **(2)** using a hoist.



MOIL15TR00755AA 11

14. Unscrew and remove the temperature sensor **(1)** upstream the SCR.



MOIL15TR00643AA 12

Contents

Engine - 10

Fan and drive - 414

SERVICE

(*) See content for specific models

Clutch - 18

Clutch hydraulic release control - 104

Farmall® 100C with cab, with Hi-Lo transmission , Farmall® 100C with cab, with mechanical or Power shuttle transmission , Farmall® 100C without cab, with Hi-Lo transmission , Farmall® 100C without cab, with mechanical or Power shuttle transmission , Farmall® 110C with cab, with Hi-Lo transmission , Farmall® 110C with cab, with mechanical or Power shuttle transmission , Farmall® 110C without cab, with Hi-Lo transmission , Farmall® 110C without cab, with mechanical or Power shuttle transmission , Farmall® 120C with cab, with Hi-Lo transmission , Farmall® 120C with cab, with mechanical or Power shuttle transmission , Farmall® 120C without cab, with Hi-Lo transmission , Farmall® 120C without cab, with mechanical or Power shuttle transmission , Farmall® 90C with cab, with Hi-Lo transmission , Farmall® 90C with cab, with mechanical or Power shuttle transmission , Farmall® 90C without cab, with Hi-Lo transmission , Farmall® 90C without cab, with mechanical or Power shuttle transmission

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SERVICE - Technical Publications & Tools

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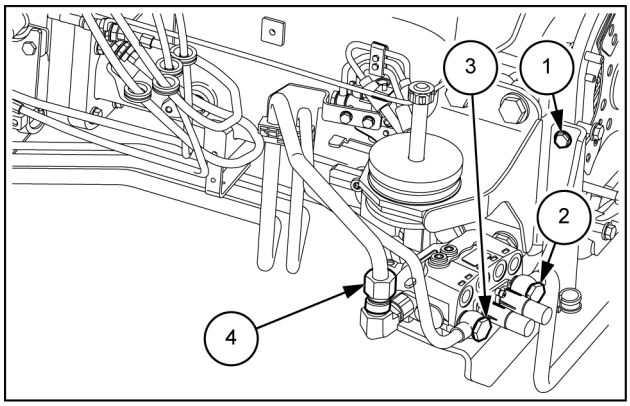
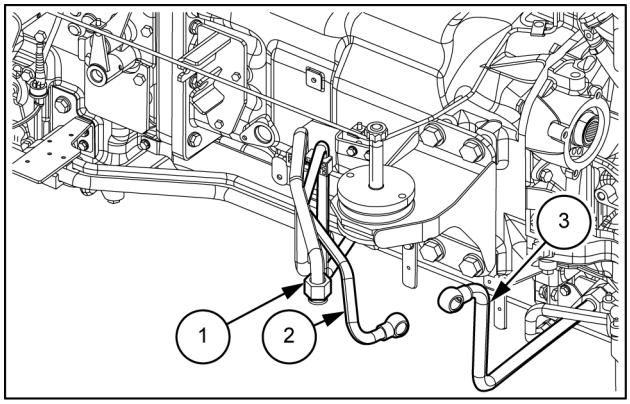
3. Disconnect the pipes **(2)**, **(3)**, and **(4)** from the mid-mount remote valves. Loosen the screws securing the bracket **(1)** supporting the remote valves. Remove the unit.



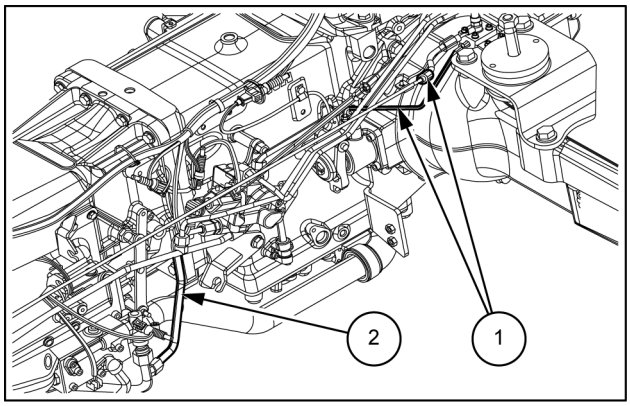
MOIL13TR01569AB 3

4. Disconnect the following pipes from the mid-mount remote valves: return pipe **(1)** to the transmission case, supply pipe **(2)** to the rear-mount remote valves and supply pipe **(3)** to the mid-mount remote valves.



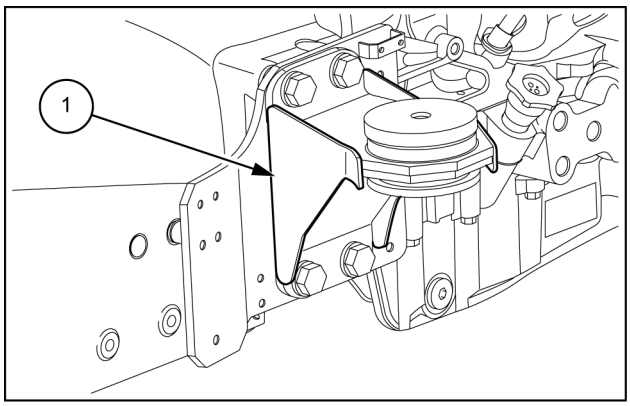
MOIL13TR01426AA 4

5. Disconnect the brake lines **(1)** on both sides.
6. Disconnect the rear transmission lubrication line **(2)**.



MOIL13TR01425AA 5

7. Loosen the respective retaining screws. Remove the support **(1)**. (Do this on both sides.)



MOIL13TR01374AB 6

Contents

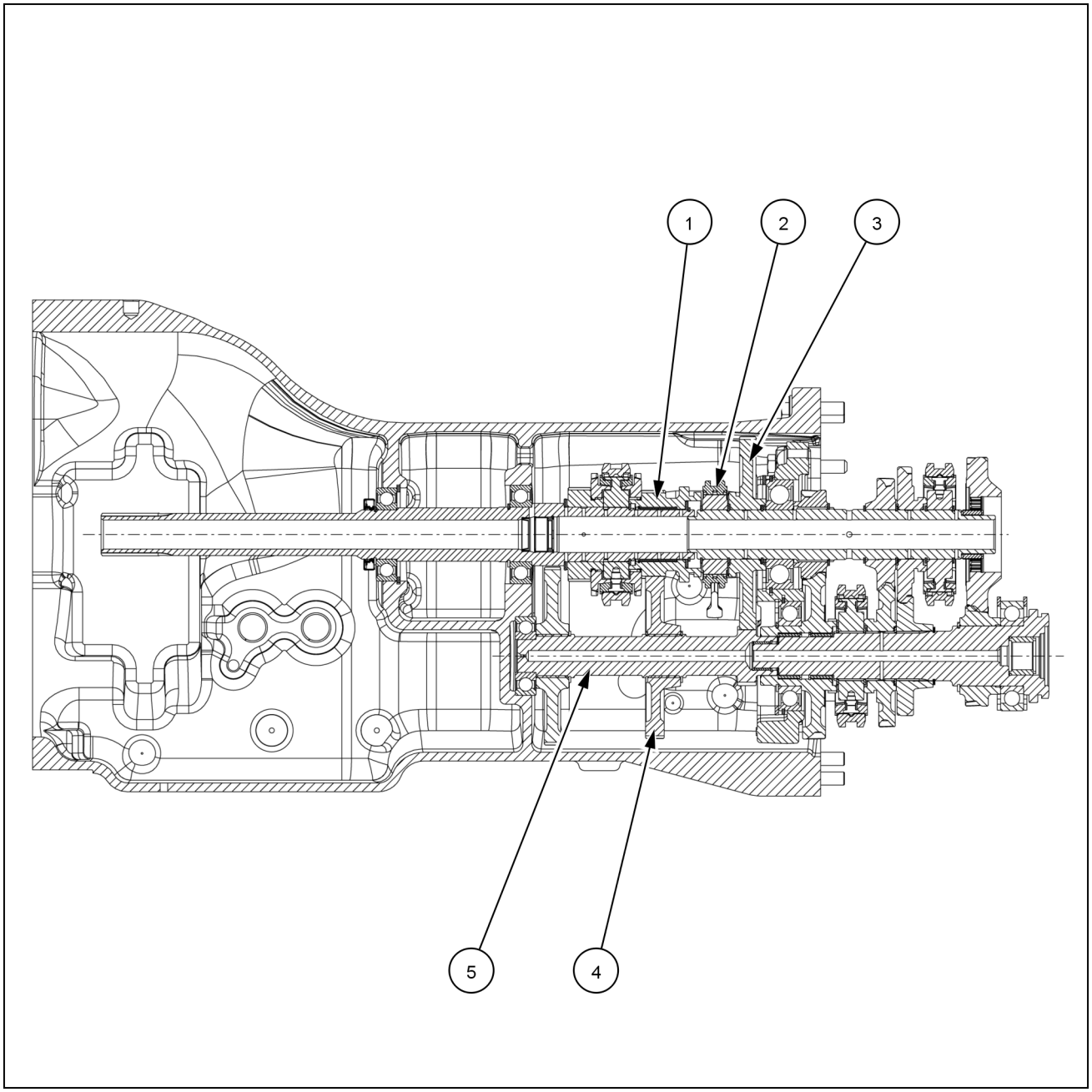
Transmission - 21

Power shuttle transmission external controls - 134

(*) See content for specific models

Creeper - Sectional view

Farmall® 100C with cab, with mechanical or Power shuttle transmission	Transmission - Mechanical
Farmall® 100C without cab, with mechanical or Power shuttle transmission	Transmission - Mechanical
Farmall® 110C with cab, with mechanical or Power shuttle transmission	Transmission - Mechanical
Farmall® 110C without cab, with mechanical or Power shuttle transmission	Transmission - Mechanical
Farmall® 120C with cab, with mechanical or Power shuttle transmission	Transmission - Mechanical
Farmall® 120C without cab, with mechanical or Power shuttle transmission	Transmission - Mechanical
Farmall® 90C with cab, with mechanical or Power shuttle transmission	Transmission - Mechanical
Farmall® 90C without cab, with mechanical or Power shuttle transmission	Transmission - Mechanical



MOIL14TR00327GA 1

Longitudinal section of the creeper and reversing mechanism assembly

1. Creeper driving gear
2. Creeper engagement sleeve
3. Creeper coupling gear
4. Creeper and reversing mechanism assembly shaft
5. Creeper driven gear

Transmission - 21

Transmission generic sub-group - AAA

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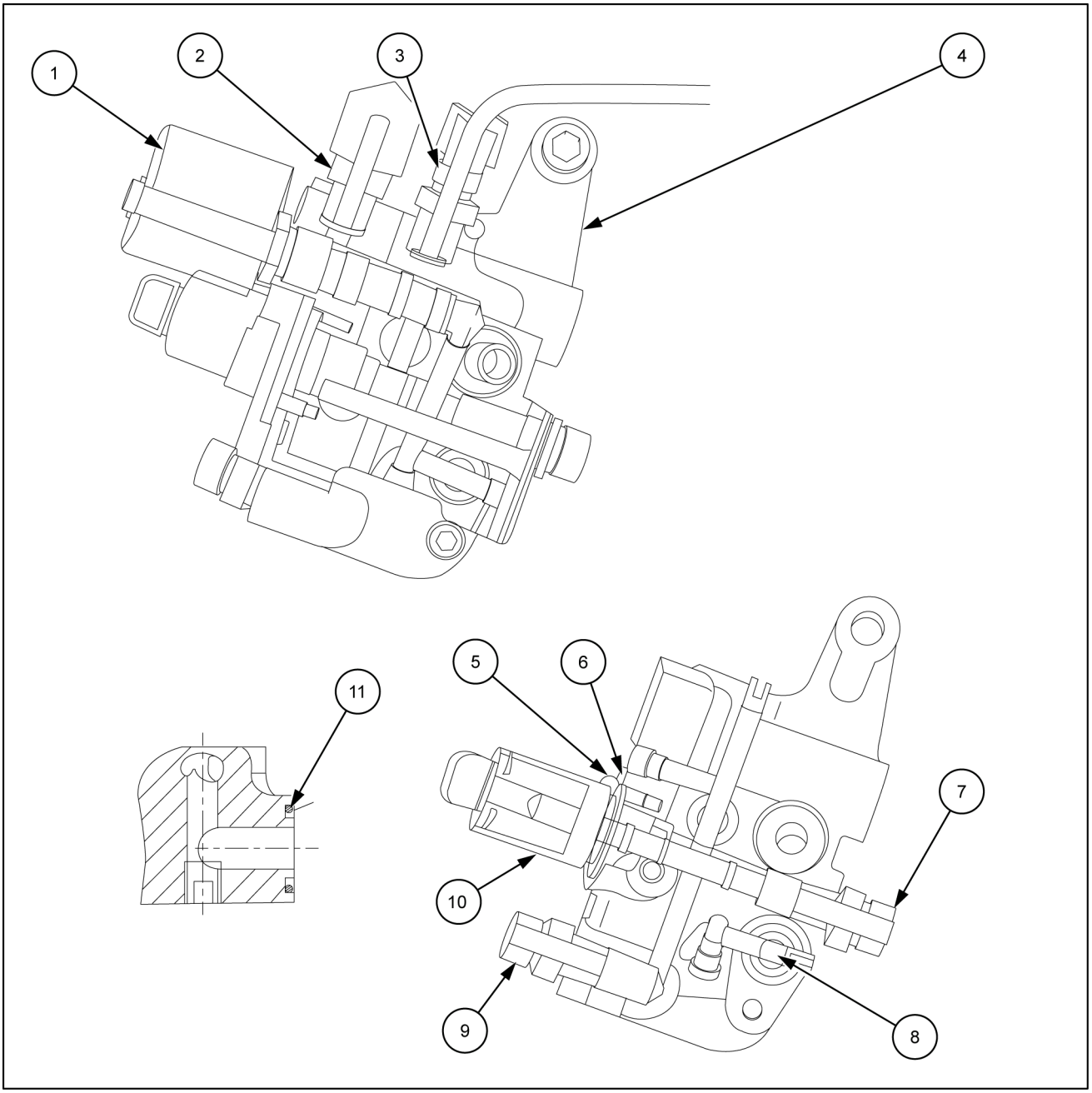
Front-Wheel Drive (FWD) control valve - Sectional view

Sections of the service valve for tractors with four-wheel drive with electrohydraulic control



MOIL13TR01891GB 1

1. Oil delivery solenoid valve to PTO clutch or clutch brake
2. PTO clutch engagement cylinder delivery union
3. Clutch brake delivery union
4. Valve body
5. Valve retaining bolt
6. 4WD control solenoid valve bracket
7. Hydraulic Fitting
8. Outlet line to transmission casing
9. Solenoid valve support oil delivery union
10. 4WD control solenoid valve
11. seal

Drive shaft - General specification

Main specification of drive shaft

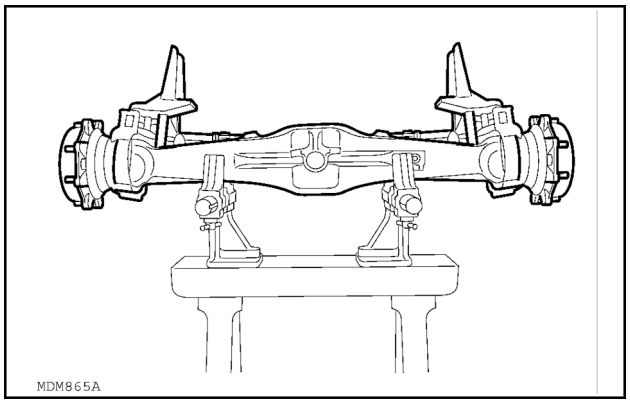
NOTE: *Refer to* ***Front-Wheel Drive (FWD) - Sectional view (23.202)*** *.*

Thickness of rings **(33)** that adjust the position of the front sleeve **(32)** on the **(4RM)** propeller shaft	**1.5 mm** (**0.06 in**)- **1.9 mm** (**0.07 in**) - **2.2 mm** (**0.09 in**) - **2.5 mm** (**0.10 in**) - **2.8 mm** (**0.11 in**) - **3 mm** (**0.12 in**) - **3.3 mm** (**0.13 in**) - **3.7 mm** (**0.15 in**) - **4 mm** (**0.16 in**) - **4.3 mm** (**0.17 in**)
Front sleeve end play **(L)**	**1.20 - 1.70 mm** (**0.05 - 0.07 in**)

Four-Wheel Drive (4WD) axle - Disassemble

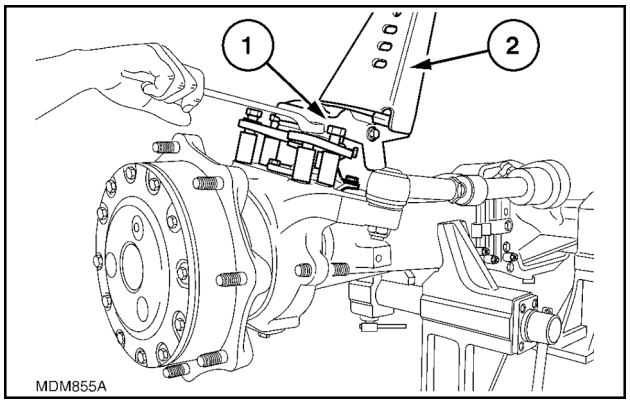
ATTENTION: *Handle all parts with care. Do not put your hands or fingers between parts. Wear the prescribed safety clothing, including goggles, gloves and safety footwear.*

NOTE: *Front axle overhaul operations must be carried out on the stand.*



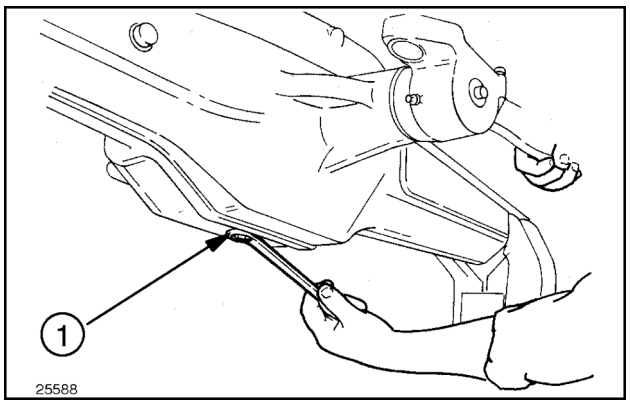
SEZ25CAP1A-13 1

1. Take out the three bolts **(1)** retaining the mudguard support **(2)**.



SEZ25CAP1A-14 2

2. Remove the plug **(1)** and drain the oil from the axle casing.

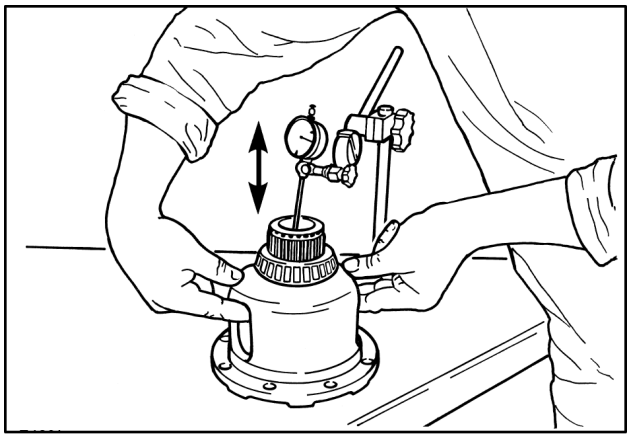


SEZ25CAP1A-15 3

Differential - Overhaul - Differential

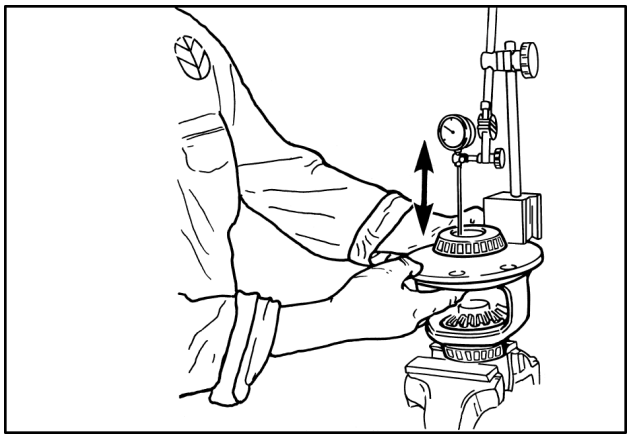
When overhauling the differential assembly it is necessary to adjust the backlash between the teeth of the planet pinions and the side gears.
Proceed as follows:

1. Thoroughly clean the components of the differential to remove any traces of oil that would otherwise prevent accurate backlash measurement.
2. Fit the two planetary pinions without thrust washers on the differential housing.
3. Fit the side pinions complete with thrust washers and pins. Screw down the pin retaining bolts by a few turns to hold the pins in place.
4. Position a dial gauge on the differential housing.
5. Move the left-hand planetary pinion to bring it into full contact with the side pinion and then push it up against the differential housing. Read the end play (Gs) on the dial gauge



MOIL14UTL0092AA 1

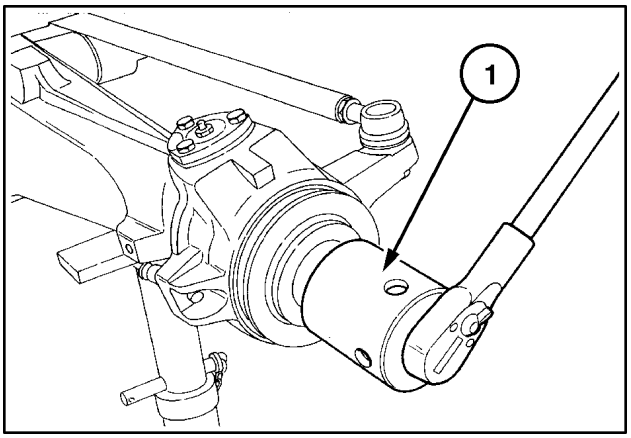
6. Repeat the above operations to measure the end play on the right-hand planetary pinion (Gd).
   The normal backlash between the sides of the side pinion and planetary pinion teeth is **0.15 mm** (**0.01 in**). This takes into consideration that between this value and the planetary pinion end play, there is an average ratio of 1:1.7.
   The axial movement of the planetary pinions corresponding to the normal backlash is:
   0.15 x 1.7 = **0.25 mm** (**0.01 in**)
   Therefore the rings to insert into the differential housing are given by:
   Ss = Gs – **0.25 mm** (**0.01 in**) for left-hand planetary pinion
   Sd = Gd – **0.25 mm** (**0.01 in**) for right-hand planetary pinion



MOIL14UTL0093AA 2

7. Install shims as near as possible to the calculated value. In accordance with the previously described procedure, use a dial gauge to check that the end play of the left-hand planetary pinions and right-hand planetary pinions is approximately **0.25 mm** (**0.01 in**).

4. Use the ring nut and wrench **380000295 (1)** to fully drive the seal into position.



MOIL14UTL0122AA 4

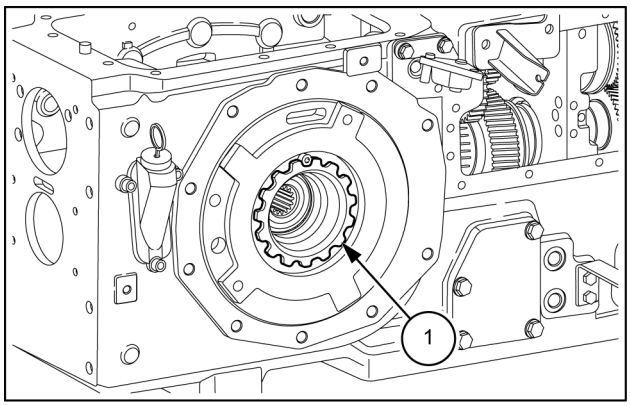
5. Remove tool **380000287** from the hub.

Next operation:
Planetary drive and hub - Assemble (25.108)

Bevel gear - Adjust

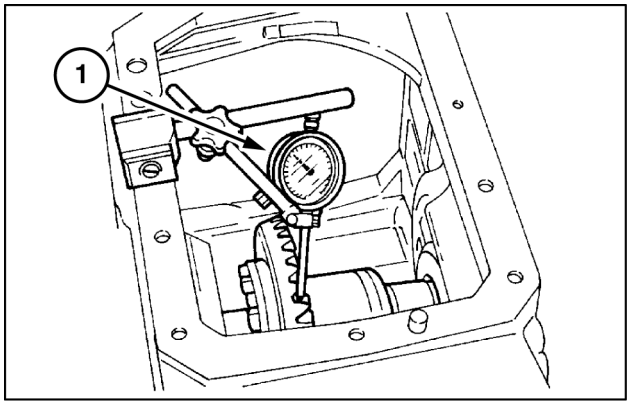
Checking the clearance between the bevel drive teeth

1. With the bevel pinion fitted, Insert the differential sub-component group complete with the crown wheel.
2. Fit the left support screwing it completely by hand, then unscrew by half of round.
3. Tighten the right **(1)** support to a **49.0 N·m** (**36.1 lb ft**) torque, making sure that both left and tight bearings are fully seated rotating for **10 s** the differential.



MOIL13TR01632AB 1

4. Using a **0.0100 mm** (**0.0004 in**) graduated dial gauge **(1)** , measure the radial play on teeth sides between crown wheel and pinion.
5. Tighten and slacken left and right support and check the radial free play obtained is:
   - G = **0.180 - 0.230 mm** (**0.007 - 0.009 in**) (on the average **0.210 mm** (**0.008 in**))



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NOTE: *The variation of radial free play must be in the range of* ***0.060 mm*** *(****0.002 in****) at 3 points (at 120 degrees). If there is a greater variation, it must not exceed* ***0.070 mm*** *(****0.003 in****) , at 4 points (at 90 degrees).*

RATIO BEVEL SET	
Radial freeplay (mm / in)	Crown axial displacement (mm / in)
0.050 mm (**0.002 in**)	**0.070 mm** (**0.003 in**)
0.100 mm (**0.004 in**)	**0.140 mm** (**0.006 in**)
0.150 mm (**0.006 in**)	**0.200 mm** (**0.008 in**)
0.200 mm (**0.008 in**)	**0.270 mm** (**0.011 in**)
0.250 mm (**0.010 in**)	**0.370 mm** (**0.015 in**)
0.300 mm (**0.012 in**)	**0.410 mm** (**0.016 in**)
0.350 mm (**0.014 in**)	**0.480 mm** (**0.019 in**)
0.400 mm (**0.016 in**)	**0.540 mm** (**0.021 in**)

Adjusting the preloading on the bevel drive bearings

NOTE: *Before performing this adjusting you must complete the checking the clearance between the bevel drive teeth.*

Final drive housing - Remove - With Power Shuttle transmission.

Farmall® 100C with cab, with Hi-Lo transmission	
Farmall® 100C with cab, with mechanical or Power shuttle transmission	Transmission - Power Shuttle
Farmall® 110C with cab, with Hi-Lo transmission	
Farmall® 110C with cab, with mechanical or Power shuttle transmission	Transmission - Power Shuttle
Farmall® 120C with cab, with Hi-Lo transmission	
Farmall® 120C with cab, with mechanical or Power shuttle transmission	Transmission - Power Shuttle
Farmall® 90C with cab, with Hi-Lo transmission	
Farmall® 90C with cab, with mechanical or Power shuttle transmission	Transmission - Power Shuttle

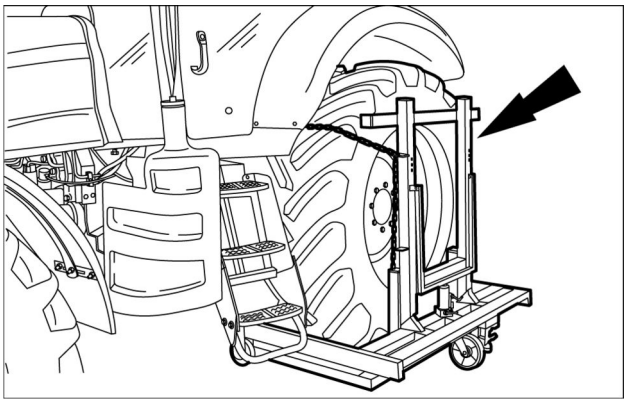
⚠ WARNING

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 could result in death or serious injury.

W0398A

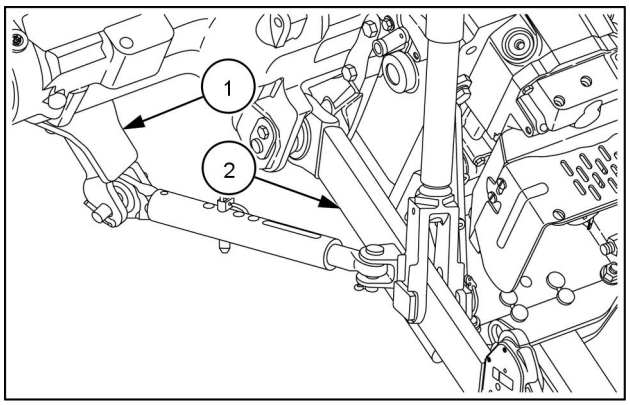
Prior operation:
Fuel tank - Remove (10.216) approximately.

1. Remove the rear wheels as described in **Rear wheel - Remove (44.520)**.



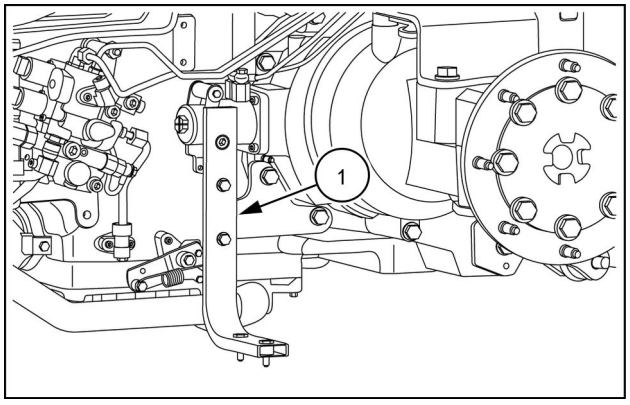
BAIL07APH363AVA 1

2. Remove the stabilizers support bracket **(1)** from both sides, as described in **Stabilizer - Remove (37.120)**.
3. Disconnect the lower arm **(2)** on both sides, as described in **Lower link arm - Remove (37.120)**.



MOIL14TR01310AA 2

4. Remove the rear support **(1)** of the fuel tank as described in **Fuel tank - Remove (10.216)**.



MOIL14TR01786AA 3

SERVICE MANUAL

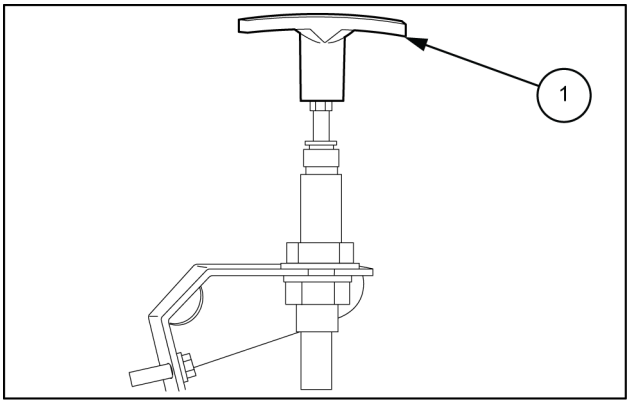
Power Take-Off (PTO)

Farmall® 100C with cab, with Hi-Lo transmission , Farmall® 100C with cab, with mechanical or Power shuttle transmission , Farmall® 100C without cab, with Hi-Lo transmission , Farmall® 100C without cab, with mechanical or Power shuttle transmission , Farmall® 110C with cab, with Hi-Lo transmission , Farmall® 110C with cab, with mechanical or Power shuttle transmission , Farmall® 110C without cab, with Hi-Lo transmission , Farmall® 110C without cab, with mechanical or Power shuttle transmission , Farmall® 120C with cab, with Hi-Lo transmission , Farmall® 120C with cab, with mechanical or Power shuttle transmission , Farmall® 120C without cab, with Hi-Lo transmission , Farmall® 120C without cab, with mechanical or Power shuttle transmission , Farmall® 90C with cab, with Hi-Lo transmission , Farmall® 90C with cab, with mechanical or Power shuttle transmission , Farmall® 90C without cab, with Hi-Lo transmission , Farmall® 90C without cab, with mechanical or Power shuttle transmission

Power Take-Off (PTO) speed rate selector - Adjust - PTO 540/540E RPM

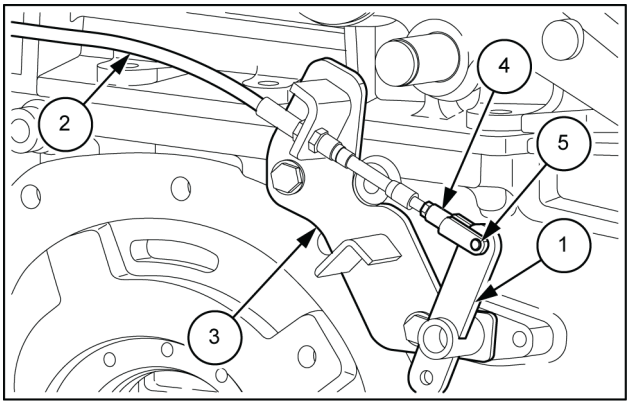
Farmall® 100C with cab, with Hi-Lo transmission	
Farmall® 100C with cab, with mechanical or Power shuttle transmission	Transmission - Power Shuttle
Farmall® 100C without cab, with Hi-Lo transmission	
Farmall® 100C without cab, with mechanical or Power shuttle transmission	Transmission - Power Shuttle
Farmall® 110C with cab, with Hi-Lo transmission	
Farmall® 110C with cab, with mechanical or Power shuttle transmission	Transmission - Power Shuttle
Farmall® 110C without cab, with Hi-Lo transmission	
Farmall® 110C without cab, with mechanical or Power shuttle transmission	Transmission - Power Shuttle
Farmall® 120C with cab, with Hi-Lo transmission	
Farmall® 120C with cab, with mechanical or Power shuttle transmission	Transmission - Power Shuttle
Farmall® 120C without cab, with Hi-Lo transmission	
Farmall® 120C without cab, with mechanical or Power shuttle transmission	Transmission - Power Shuttle
Farmall® 90C with cab, with Hi-Lo transmission	
Farmall® 90C with cab, with mechanical or Power shuttle transmission	Transmission - Power Shuttle
Farmall® 90C without cab, with Hi-Lo transmission	
Farmall® 90C without cab, with mechanical or Power shuttle transmission	Transmission - Power Shuttle

1. Keep the knob **(1)** pressed fully down.



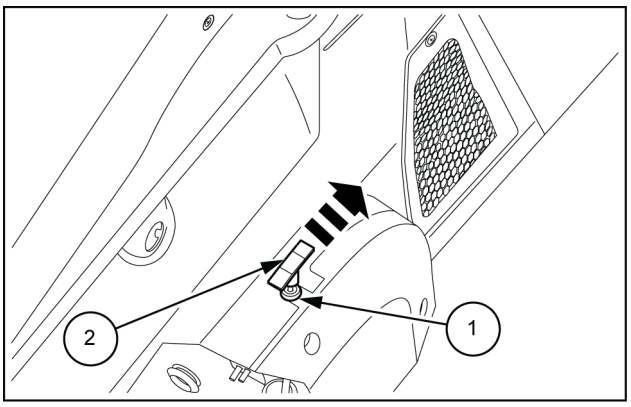
MOIL13TR01479AB 1

2. Pull the lever **(1)** of the gearbox fully backward.
3. Secure the cable **(2)** to the reaction bracket **(3)**.
4. Screw the fork **(4)** onto the end of the threaded cable until you can insert the pin **(5)**.



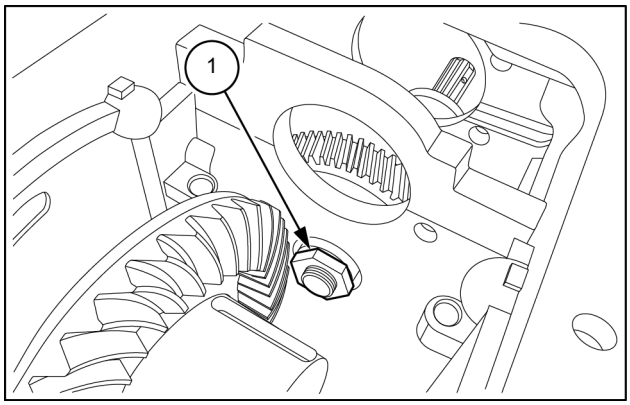
MOIL13TR01480AB 2

5. Loosen the locking nut **(1)** of the knob **(2)**. Orient the knob as indicated in the image below. Tighten the locking nut.



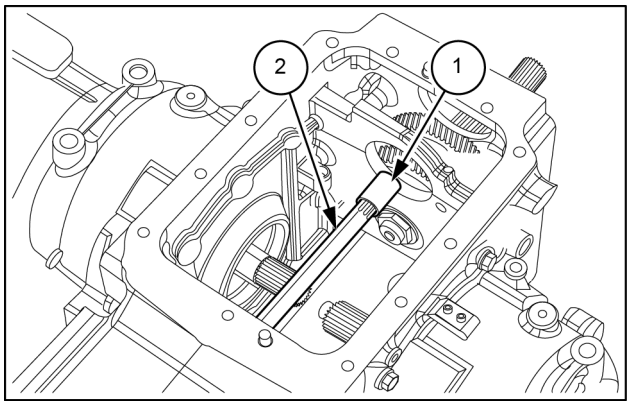
MOIL13TR01481AB 3

3. Screw the lock nut **(1)** onto the driven shaft applying a tightening torque as indicated in (**Rear electro-hydraulic control - Torque (31.104)**) and apply a stake.



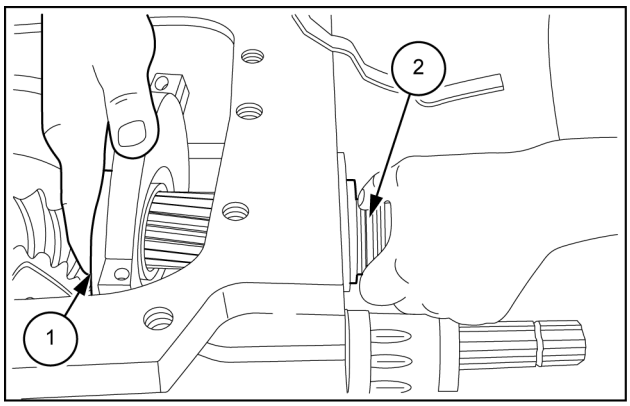
MOIL13TR01905AA 3

4. Position the sleeve **(1)** on the front drive shaft **(2)**.



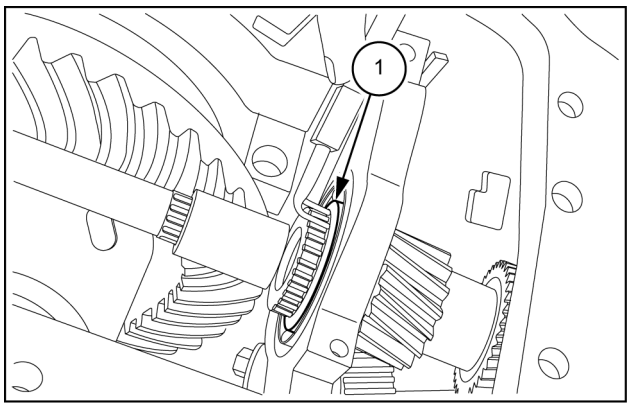
MOIL13TR01913AA 4

5. Install the bearing **(1)** and position the Power take-off (PTO) transmission shaft **(2)** with the remaining bearing.



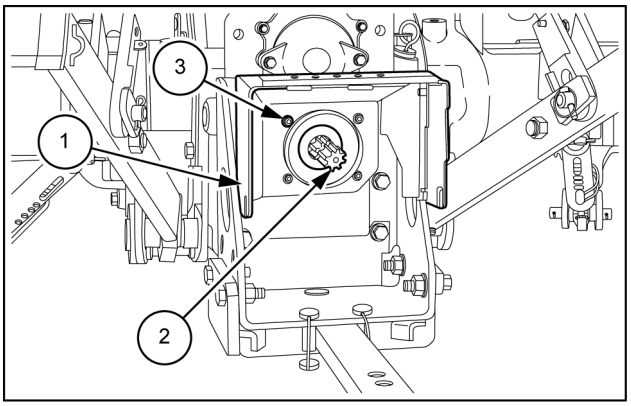
MOIL13TR01553AB 5

6. Position the sealing circlip **(1)** on the PTO transmission shaft.



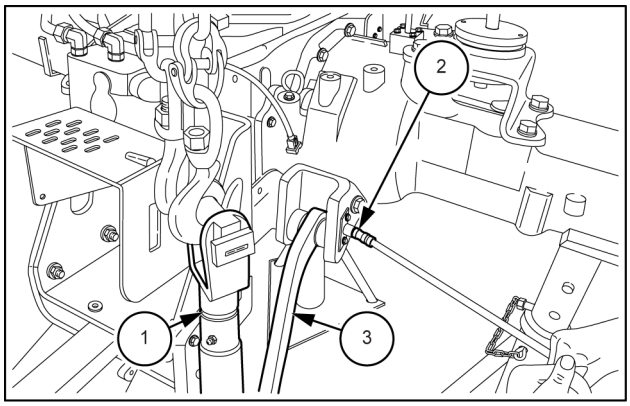
MOIL13TR01544AB 6

3. Position the rear guard **(1)** of the splined output shaft **(2)** tightening the four retaining bolts **(3)**.



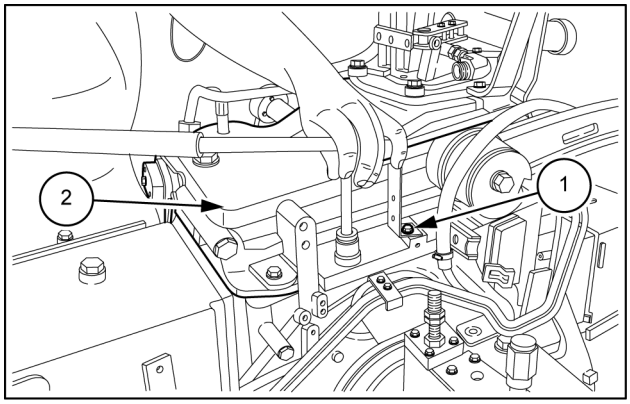
MOIL13TR01653AB 3

3. Connect the tie rods **(1)** to the lifting hook with chain, connected to the hoist, unscrew the respective retaining bolts **(2)**, extract the pins and detach the lower arms **(3)** of the lift.



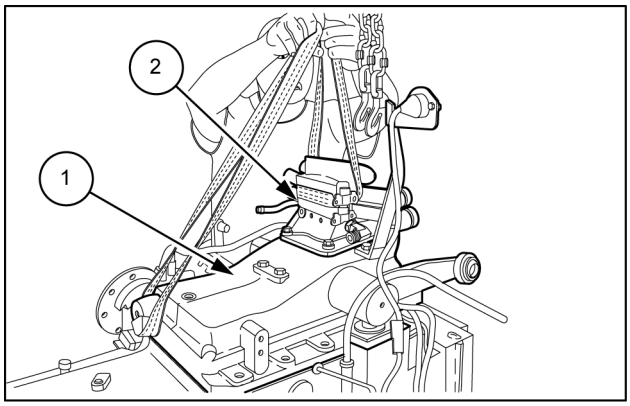
MOIL13TR01531AB 3

4. Unscrew the retaining bolts **(1)** of the lift **(2)** .



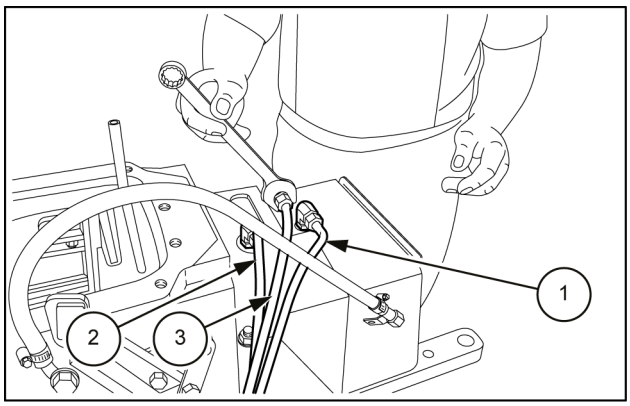
MOIL13TR01532AB 4

5. Disconnect the lines and, with the hoist, raise the lift **(1)** complete with the auxiliary control valves **(2)** .



MOIL13TR01645AB 5

6. Unscrew the fittings and disconnect the oil delivery line **(1)**, brake **(2)** and lubrication line **(3)** of the Power Take-Off (PTO).



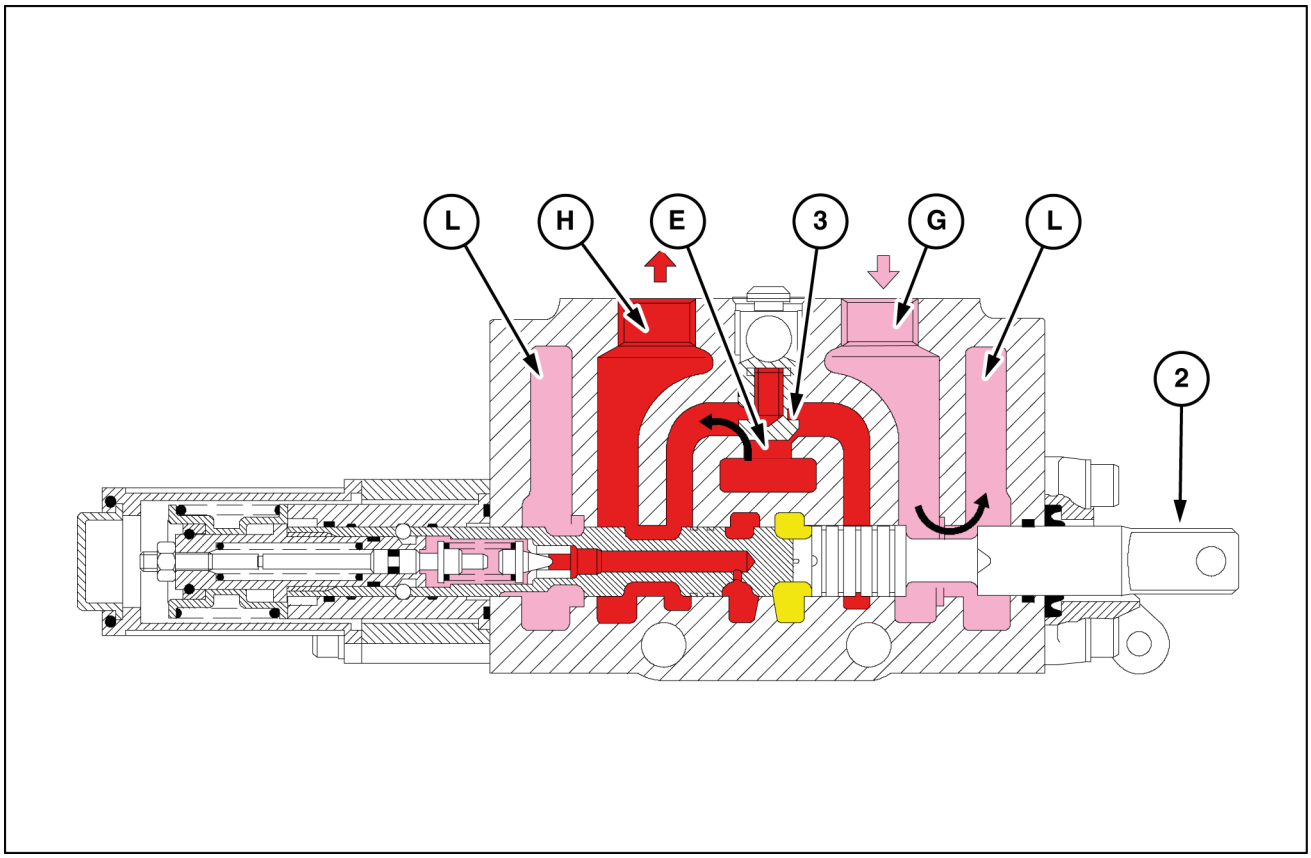
MOIL13TR01534AB 6

Index

Brakes and controls - 33

Hydraulic service brakes - 202

- The control cable moves and shifts the spool **(2)** of the control valve.
- The detent balls **(26)** enter the left-hand groove where they are held in position by the support **(28)** and the spring **(24)**.
- The supply line **(E)** connects with the lower chamber of the cylinder through check valve **(3)** and line **(G)**.
- The upper chamber of the cylinder connects with the drain line **(L)** through line **(H)**, intercepting the supply of oil to the control valve of the hydraulic lift.
- On completion of the lifting movement, the oil pressure increases to **170 - 175 bar** (**2465 - 2538 psi**), and acting through the port **(Y)**, it overcomes the resistance of the spring on the cup of the needle valve **(23)**.
- Inside the chamber **(T)**, the oil pressure increases and, acting on the detent ball support **(28)**, it overcomes the resistance of the spring and moves the support **(28)**. In this condition, the two detent balls **(26)** drop onto the support **(28)**, releasing the spool **(2)** which, under the action of spring **(6)** returns to neutral position. Consequently the entire flow from the pump is conveyed to the lift control valve through lines **(M)**.



MOLI11U0322FB 6

Pressure oil

Oil in suction, delivery or return

Trapped oil

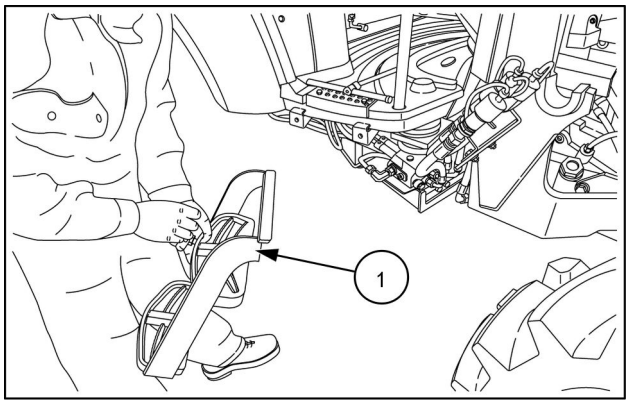
Lower

To operate the lowering stage, you need to pull the control lever forward and trigger the following actions:

- The control cable moves and shifts the spool **(2)** of the control valve.
- The detent balls **(26)** enter the central groove where they are held in position by the support **(28)** and the spring **(24)**.
- The oil in the lower chamber of the cylinder flows to the drain **(L)** through line **(G)**.
- The upper chamber of the cylinder connects with the supply **(E)** through line **(H)** and check valve **(3)**.

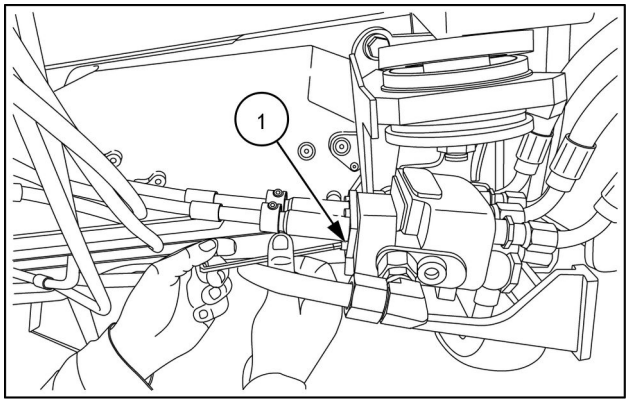
Mid-mount remote control valve - Remove

1. Remove the right-hand ladder **(1)**.



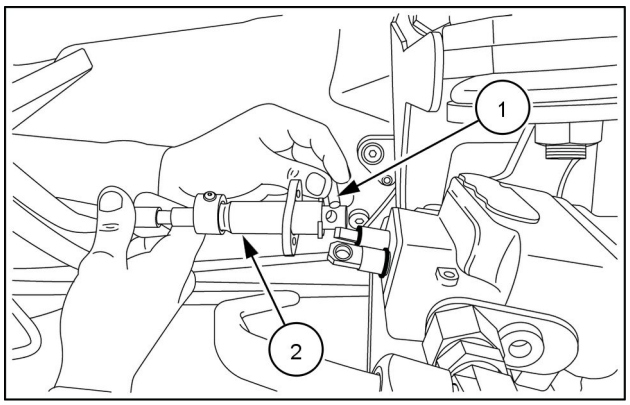
MOIL14TR00003AA 1

2. Loosen the screws **(1)** that secure the mounting flanges of the control cables.



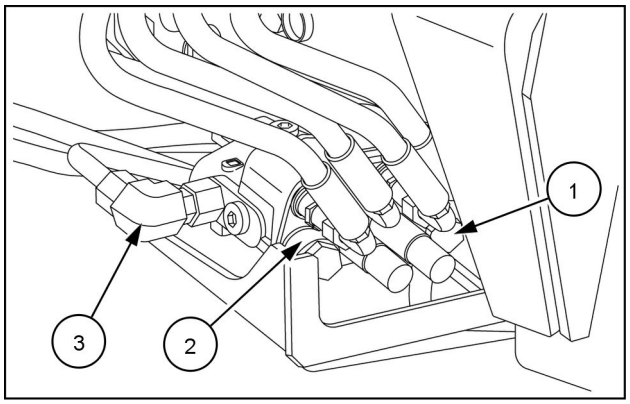
MOIL14TR00004AA 2

3. Remove the pins **(1)** that connect the cables **(2)** to the spools. Disconnect the cables.



MOIL14TR00005AA 3

4. Position a container under the mid-mount control valve to collect the oil.
5. Disconnect the hydraulic inlet lines **(1)**, drain lines **(2)**, and supply lines **(3)** to the auxiliary control valves on the ventral control valve.



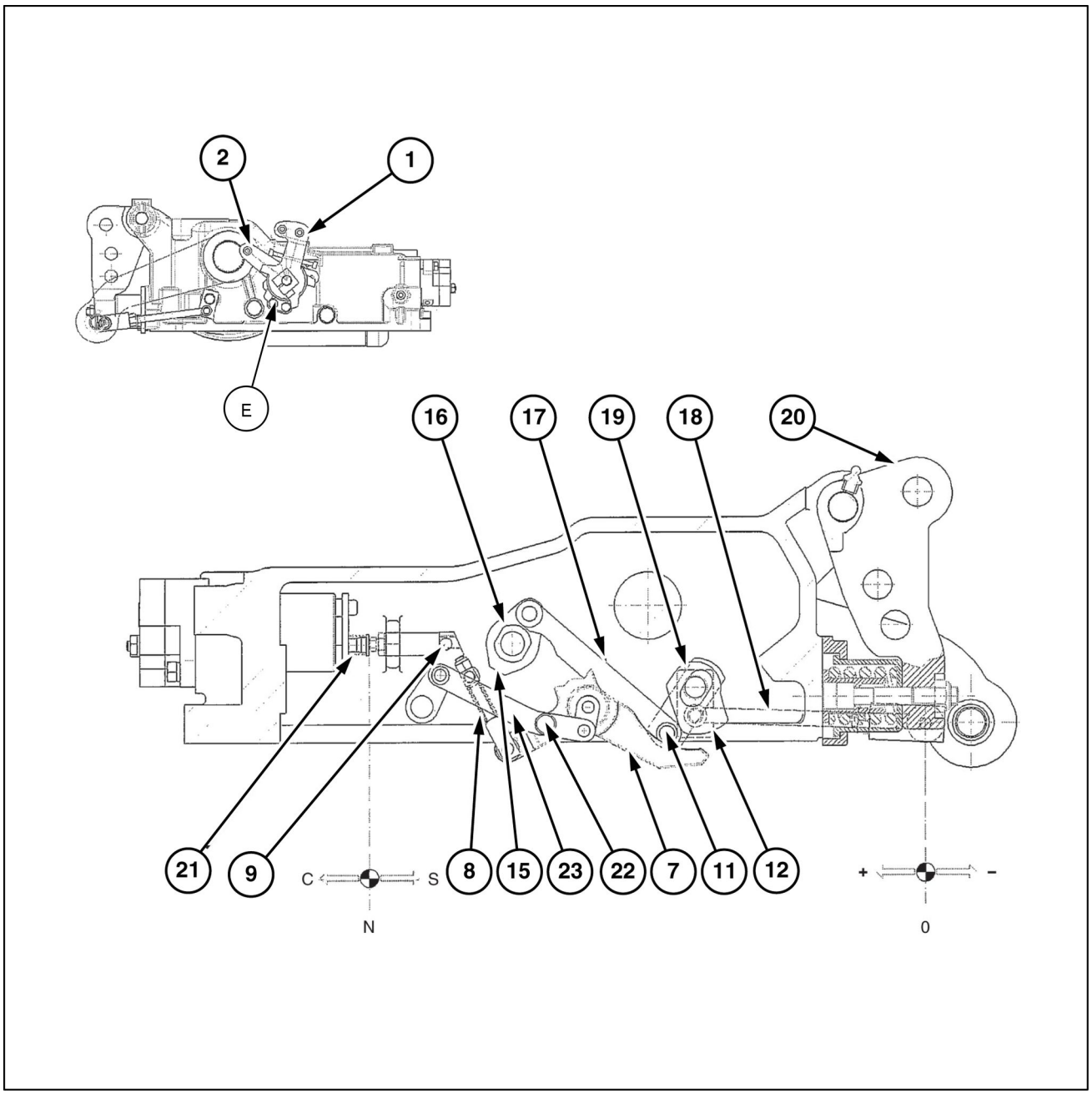
MOIL14TR00662AA 4

Description and operation in lifting phase

When the solenoid valve **(14)** is operated, the solenoid valve overrides the resistance of the spring **(12)** and moves the lift control valve **(11)**. In these conditions, the oil coming from the pump **(10)** can go through the non-return valve **(13)** to the lift cylinder **(7)** and to the pressure compensating valve **(8)**, which will adjust the pressure and discharge any excess through the exhaust duct **(9)**.

Front loader bucket hydraulic system - Troubleshooting

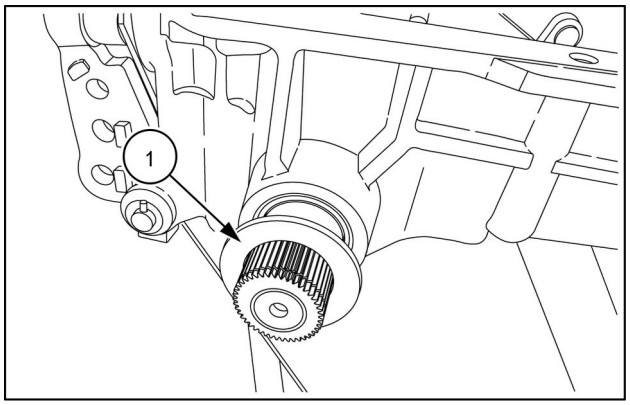
Problem	Possible Cause	Correction
Small lift and tearout capacity	Low oil pressure in the circuit	Check the hydraulic circuit
The loader and implement move slowly or remain stationary.	Hydraulic connections connected incorrectly	Connect the hydraulic connections correctly
	Insufficient quantity of oil in the hydraulic system	Top up oil
	Insufficient oil flow	Check the hydraulic circuit
Loader and/or implement move in wrong direction relative to command given	Incorrect connection of the quick couplers	Connect the quick couplers correctly
Slow lift speed and no loader lift	Engine RPM too low	Adjust the engine rpm
	Load above capacity	Reduce the load
	Problem with the hydraulic connection	Check engagement. Replace if necessary
	Leak from the hydraulic cylinder	Check the cylinder. Replace if necessary
	Insufficient quantity of oil in the hydraulic system	Top up oil
	The oil in the hydraulic circuit is too cold	Wait for the oil in the circuit to reach the operating temperature
	Problem with the hydraulic control valve	Check the hydraulic control valve. Replace if necessary
	Incorrect calibration of the pressure relief valve	Calibrate the pressure relief valve. Replace if necessary.
Load lift height lower than expected	Load above capacity	Reduce the load
	Oil leak from the hydraulic cylinder	Check the cylinder. Replace if necessary
	Problem with the hydraulic control valve	Check the hydraulic control valve. Replace if necessary
	Incorrect calibration of the pressure relief valve	Calibrate the pressure relief valve. Replace if necessary
Air present in the hydraulic circuit	The hydraulic pump sucks in air	Check that the unions are airtight. Check that the seals and lines are efficient
The loader or implement do not complete the specified travel	The hydraulic connections are not correctly connected	Connect the hydraulic connections correctly
	Faulty hydraulic connection	Replace the faulty hydraulic connection
Backward tilt of the implement (MSL models only)	The operator keeps the engine rpm too low	Raise engine speed
	Incorrect calibration of the pressure relief valve	Calibrate the pressure relief valve. Replace if necessary



MOLI11U0893GB 2

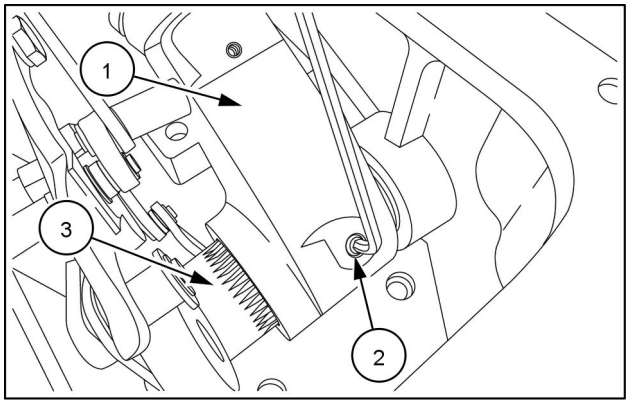
1. Position control lever	17. Tie rod
2. Draft control lever	18. Tie rod
7. Rocker Arm	19. Lever
8. Shock absorber	20. Three-point linkage
9. Transmission lever	21. Control valve control shaft
11. Roller	22. Back stop pin
12. Draft control cam	23. Tie rod
15. Pivot	E. Back stop
16. Shaft	

4. Remove the ring **(1)**.
5. Repeat the operations described so far (from point **1** to point **4**) for the left-hand lift arm too.



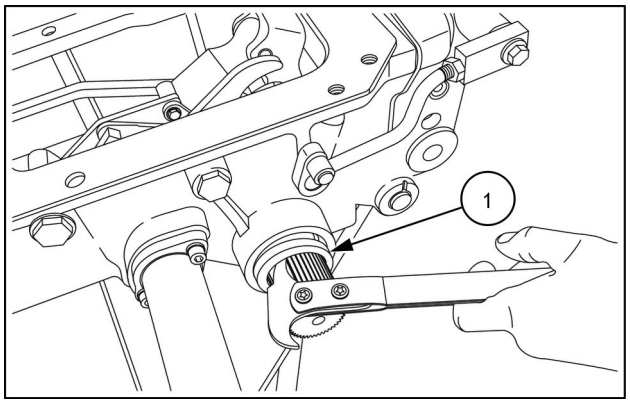
MOIL14UTL0011AA 4

6. With a felt-tip pen, mark the mounting location of the crank **(1)** relative to the shaft **(3)** to facilitate successful reassembly in the original position.
7. Loosen the lock dowel **(2)** of the crank on the shaft.



MOIL14UTL0012AA 5

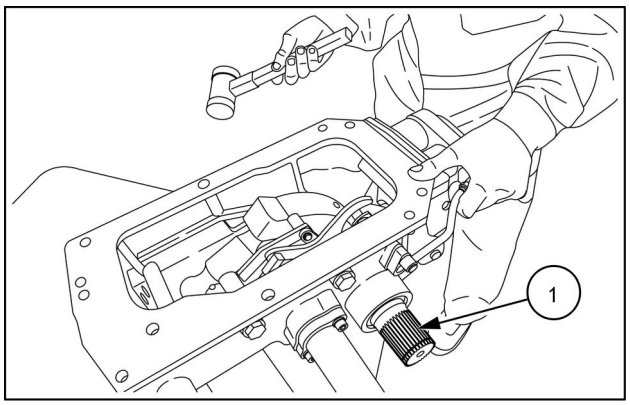
8. Remove the seals **(1)** from both sides.



MOIL14TR00222AA 6

9. Remove the lift shaft **(1)**.

NOTE: *In order to facilitate the release of the lift shaft **(1)**, tap lightly on the lift shaft from left to right with a suitable hammer (made out of ductile material) or by inserting a piece of wood so as not to damage the tip of the shaft.*

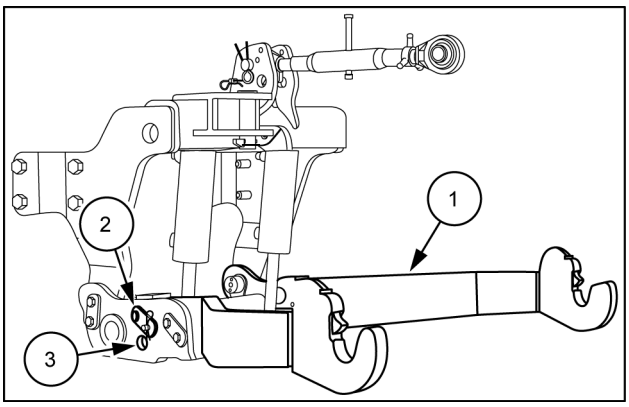


MOIL14UTL0014AA 7

Next operation:
See **Rear lift arm - Assemble (37.110)**.

Extract the pins **(2)**. Lift the lower link arms **(1)** to the maximum height. Reposition the pins **(2)** in the lower holes **(3)**, corresponding to the hole in the arm.
Use the cab controls to lift the arms to the maximum height.

NOTE: *Before using the tractor, ensure that both of the pins are locked in place with the appropriate safety pin.*

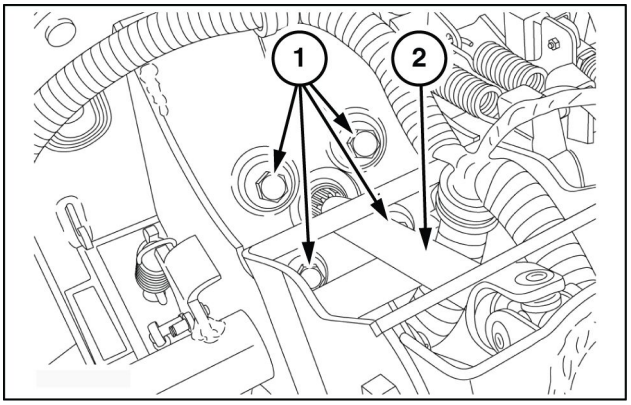


MOIL13TR01198AA 4

Power steering control valve - Install

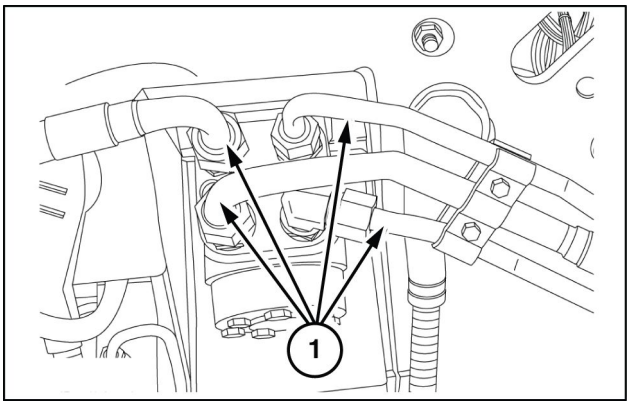
ATTENTION: *Handle all parts with care. Do not put your hands or fingers between parts. Wear the prescribed safety clothing, including goggles, gloves and safety footwear.*

1. Place the steering control valve in position and screw the fixing screws **(1)** to the column.



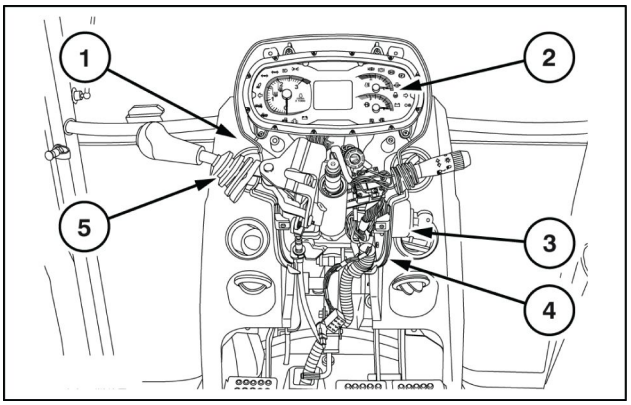
MOLI11U0367AB 1

2. Connect the piping **(1)** to the steering control valve.



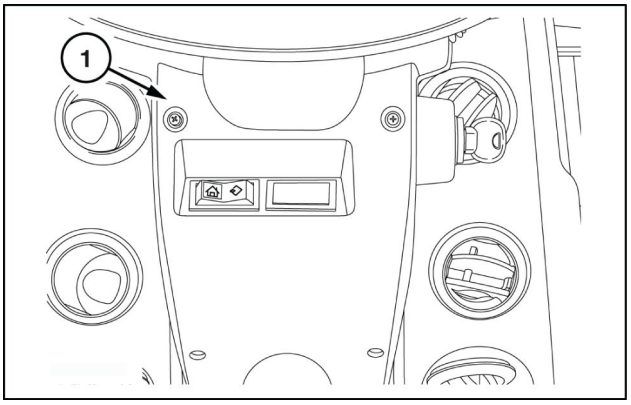
MOLI11U0366AB 2

3. Position and secure the steering column rear guard **(4)**.
4. Position and secure the steering block **(3)** and connect the relevant electric connections.
5. Position and secure the control panel **(2)** and connect the electric connections.
6. Position and secure the Power Shuttle control lever **(5)**.
7. Position and secure the grey guard **(1)**.



MOLI11U0365AA 3

8. Position and secure the black guard **(1)**.



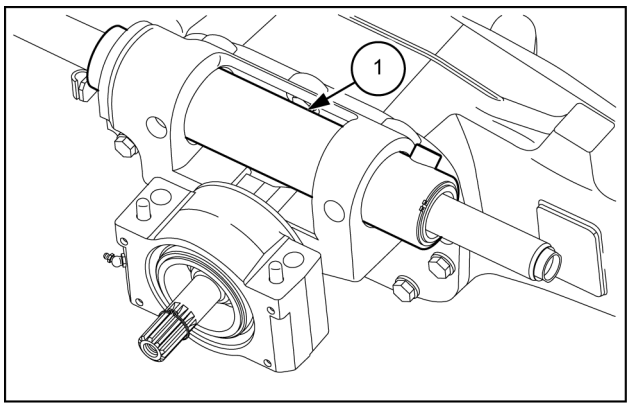
MOLI11U0364AA 4

Steering cylinder - Install - Standard axle

ATTENTION: *Use suitable tools to align the holes. NEVER USE FINGERS OR HANDS.*

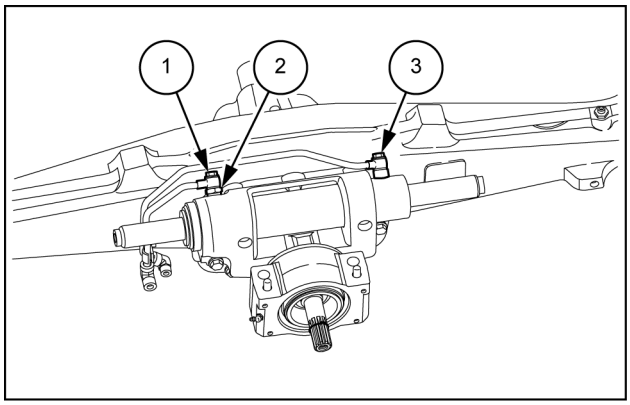
To refit the steering control cylinder, proceed as follows:

1. Position the steering control cylinder **(1)** in its seat on the front axle.



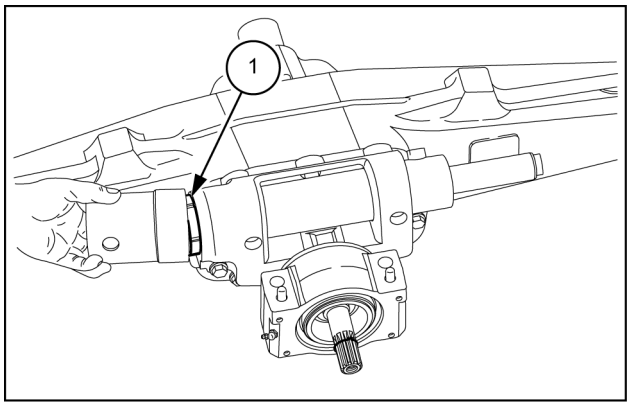
MOIL13TR01746AB 1

2. Screw on the union **(2)** and control pipes **(1)** and **(3)** of the cylinder.



MOIL13TR01743AB 2

3. Screw the cylinder fixing nut **(1)** to the axle.



MOIL13TR01744AB 3

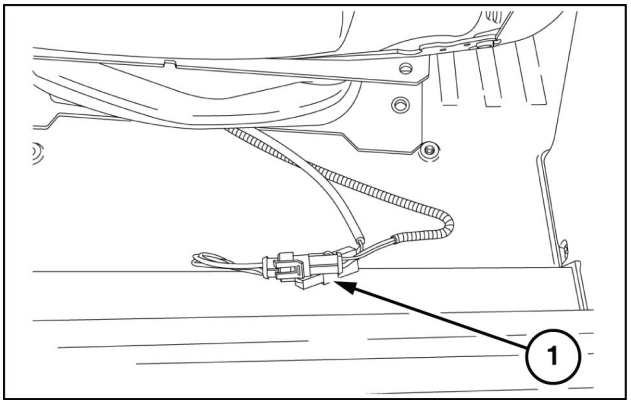
Ventilation - Remove

Farmall® 100C with cab, with Hi-Lo transmission	
Farmall® 100C with cab, with mechanical or Power shuttle transmission	
Farmall® 110C with cab, with Hi-Lo transmission	
Farmall® 110C with cab, with mechanical or Power shuttle transmission	
Farmall® 120C with cab, with Hi-Lo transmission	
Farmall® 120C with cab, with mechanical or Power shuttle transmission	
Farmall® 90C with cab, with Hi-Lo transmission	
Farmall® 90C with cab, with mechanical or Power shuttle transmission	

ATTENTION: *Handle all parts with care.*
Do not put your hands or fingers between parts. Wear the prescribed safety clothing, including goggles, gloves and safety footwear.

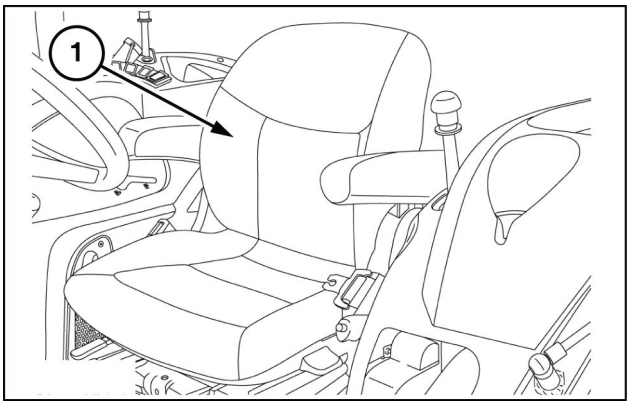
Proceed as follows:

1. Disconnect the electrical connection **(1)** of the seat.



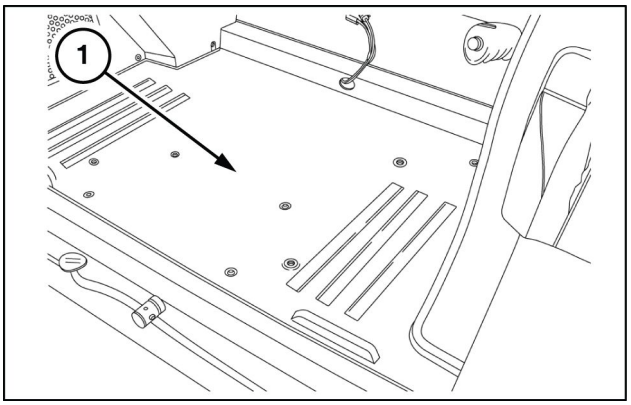
MOLI12U0023AB 1

2. Unscrew the relative retaining bolts and detach the seat **(1)**.



MOLI12U0024AB 2

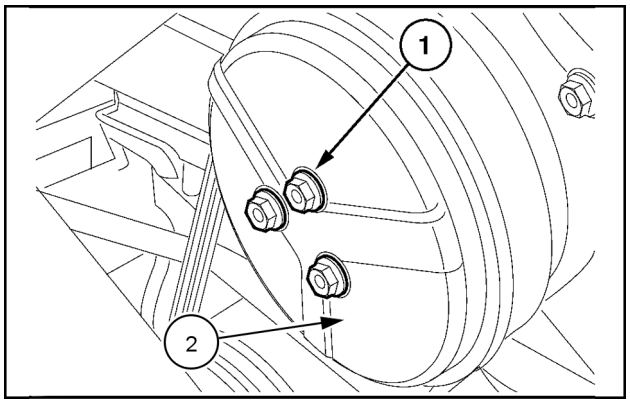
3. Unscrew the relative retaining bolts and detach the seat support **(1)**.



MOLI12U0025AB 3

Ambient Temperature* °C (°F)	High Pressure Gauge Reading kPa (psi)
35 °C (**95 °F**)	**1248 - 1386 kPa** (**181 - 201 psi**)
38 °C (**100 °F**)	**1386 - 1524 kPa** (**201 - 221 psi**)
40.5 °C (**105 °F**)	**1503 - 1641 kPa** (**218 - 238 psi**)
43 °C (**110 °F**)	**1696 - 1834 kPa** (**246 - 266 psi**)
46 °C (**115 °F**)	**1910 - 2048 kPa** (**277 - 297 psi**)
49 °C (**120 °F**)	**2117 - 2255 kPa** (**307 - 327 psi**)

6. Unscrew the three screws **(1)** and remove the air conditioned compressor clutch dust cover **(2)**.



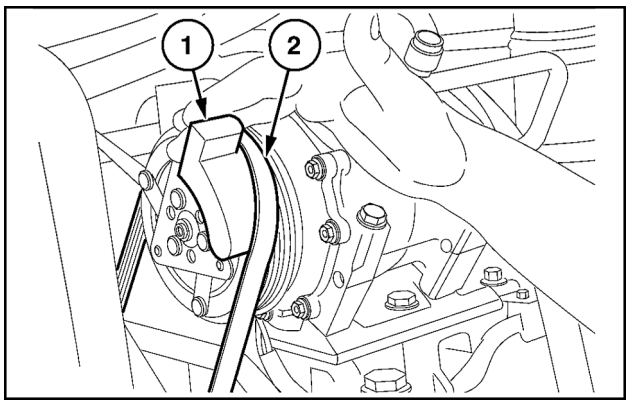
SEZ50CAP1A-5 6

7. Make sure that the air conditioned compressor belt **(2)** is perfectly fitted on the cooling fan pulley.
8. Move the belt **(2)** near to the compressor pulley. 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.

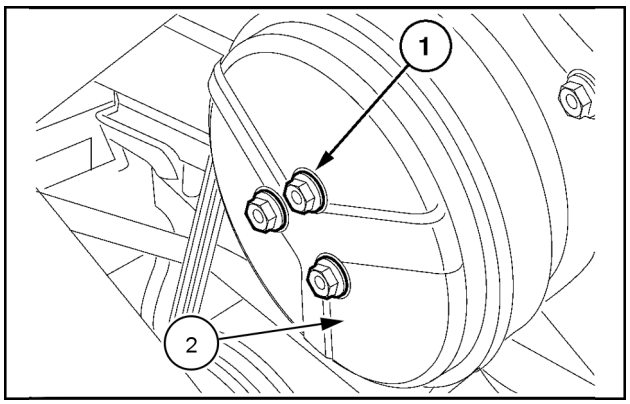
NOTE: *Keeping your hand on the back of the tool and always outside the pulley so as not to get your fingers crushed between the pulley and the relative belt after a sudden movement of the pulley.*

9. - With your left hand on the cooling fan and with your right hand on the tool, move both clockwise so as to take the belt **(2)** onto the pulley of the compressor.
10. Refit the clutch dust cover **(2)** of the air conditioned compressor and screw the three retaining bolts **(1)**.

NOTE: *Apply **LOCTITE® 243™** to the screws.*

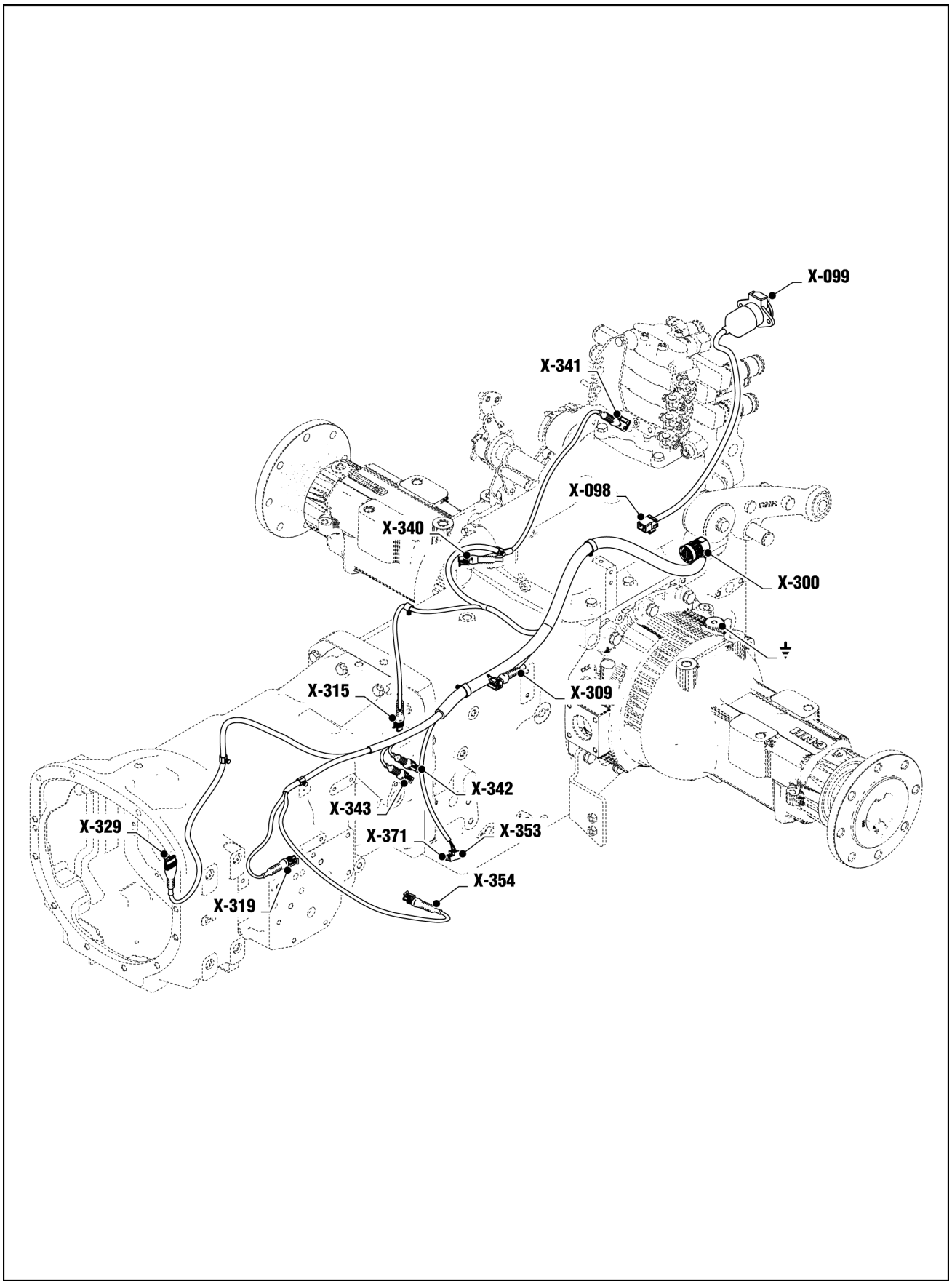


SEZ50CAP1A-13 7



SEZ50CAP1A-5 8

Next operation:
Side panels - Install (90.100) approximately.



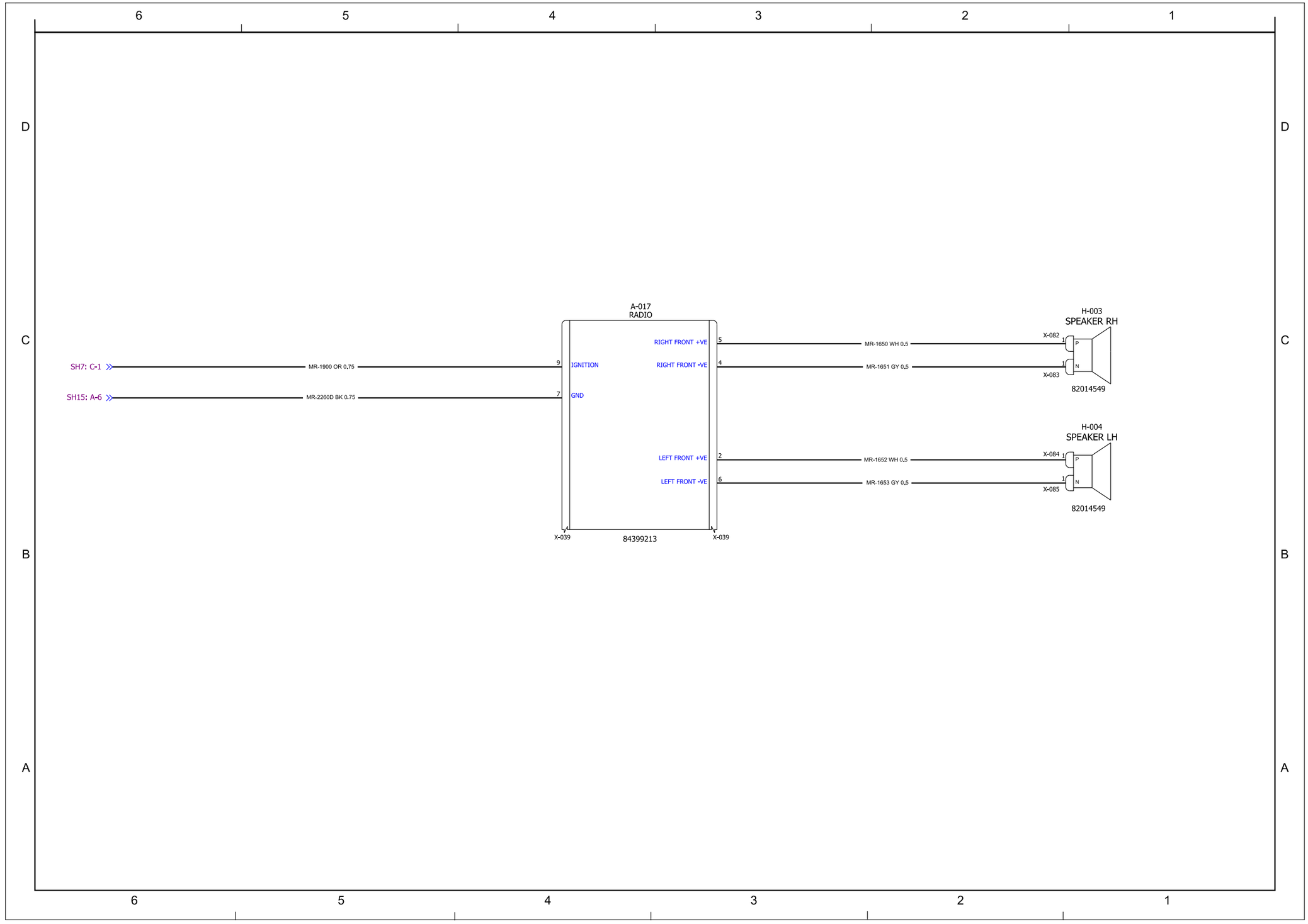
MOIL13TR01268HA 1

Table 05 - Drive cable

Wiring harnesses - Electrical schematic sheet 09 SH09-POWER DISTRIBUTION ENGINE

Farmall® 100C with cab, with mechanical or Power shuttle transmission	
Farmall® 110C with cab, with mechanical or Power shuttle transmission	
Farmall® 120C with cab, with mechanical or Power shuttle transmission	
Farmall® 90C with cab, with mechanical or Power shuttle transmission	

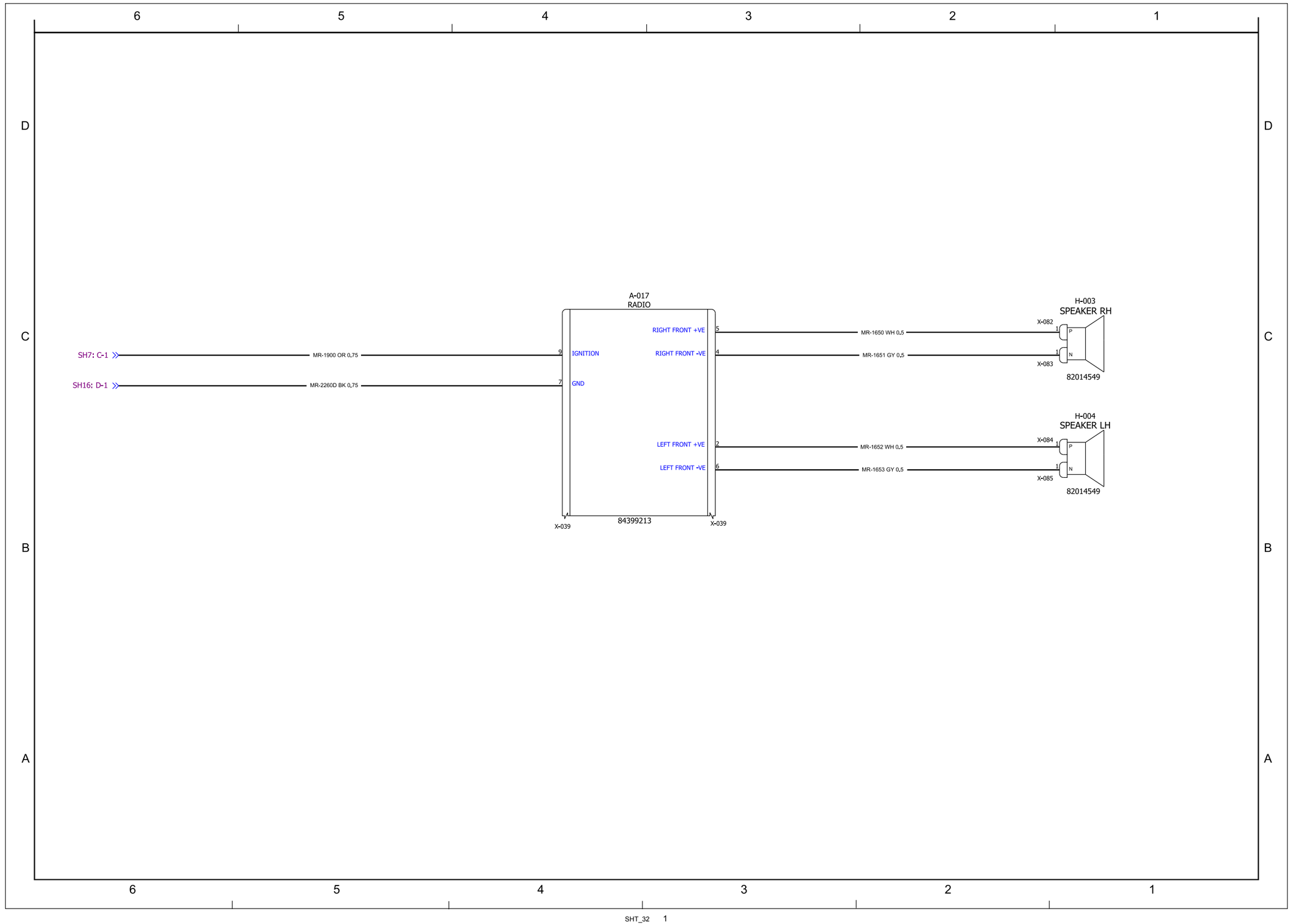
Type	Component	Connector / Link	Description
Fuse	**F-005**		+KEY ENGINE
Fuse	**F-040**		Fuel heater
Fuse	**F-063**		Aux main fuse
Fuse	**F-064**		Aux fuse (purging-heating)
Fuse	**F-065**		Aux fuse (motor pump)
Fuse	**F-068**		HCU Fuse
Relay	**K-032**	**X-190**	Aux main relay
Relay	**K-033**		SCR Main relay
Connector	X-001A	**X-001A**	Cab-Engine inline
Connector	X-001B	X-001B	Engine-cab inline
Connector	X-120	**X-120**	Module Relays R9-R16 + Fuses F37-F40
Connector	X-130	**X-130**	Fuse relay module F1-F32
Connector	X-190	**X-190**	Engine fuse & relays box
Connector	X-926	**X-926**	Adblue quality & level sensor
Connector	X-949A	X-949A	Engine1-2 jumper
Connector	X-949B	**X-949B**	Engine1-2 jumper


6
5
4
3
2
1
D
C
B
A
A-017
RADIO
SH7: C-1
MR-1900 OR 0,75
9
IGNITION
SH15: A-6
MR-2260D BK 0,75
7
GND
RIGHT FRONT +VE
5
MR-1650 WH 0,5
RIGHT FRONT -VE
4
MR-1651 GY 0,5
LEFT FRONT +VE
2
MR-1652 WH 0,5
LEFT FRONT -VE
6
MR-1653 GY 0,5
X-039
84399213
X-039
H-003
SPEAKER RH
X-082
1
P
1
N
X-083
82014549
H-004
SPEAKER LH
X-084
1
P
1
N
X-085
82014549
SHT_27 1

Wiring harnesses - Electrical schematic sheet 14 SH-015_POWER DISTRIBUTION_LIGHTS

Farmall® 100C with cab, with Hi-Lo transmission	
Farmall® 110C with cab, with Hi-Lo transmission	
Farmall® 120C with cab, with Hi-Lo transmission	
Farmall® 90C with cab, with Hi-Lo transmission	

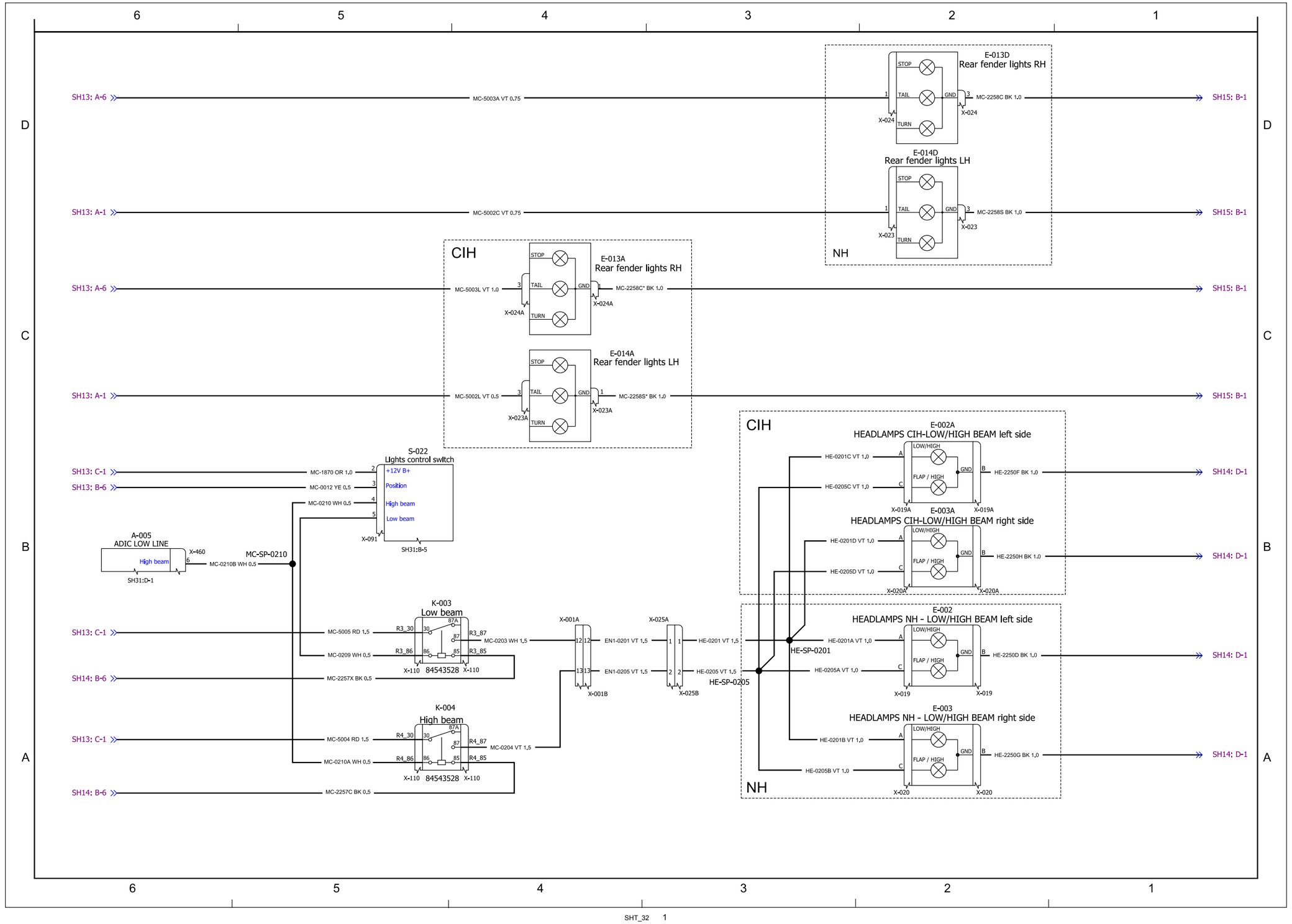
Type	Component	Connector / Link	Description
ECU	**A-005**	**X-460**	ADIC LOW LINE
Fuse	**F-001**		LIGHTS CONTROL SUPPLY B+
Fuse	**F-003**		POSITION LIGHTS
Fuse	**F-013**		LIGHTS CONTROL SUPPLY
Fuse	**F-016**		POSITION LIGHTS 7 POLES
Fuse	**F-019**		FLASHER SUPPLY
Fuse	**F-020**		HIGH BEAM
Fuse	**F-021**		STOP LIGHTS
Fuse	**F-027**		LOW BEAM
Fuse	**F-033**		POSITION LIGHTS
Fuse	**F-045**		WORKLAMP - FRONT
Fuse	**F-046**		WORKLAMP - REAR
Fuse	**F-047**		ROOF LAMP
Relay	**K-002**		POSITION LIGHT
Connector	X-050A	**X-050A**	CAB-ROOF inline
Connector	X-050B	X-050B	CAB-ROOF inline
Connector	X-090	**X-090**	FLASHER UNIT
Connector	X-110	**X-110**	Fuse Relay Module R1-R8 F33-F36
Connector	X-130	**X-130**	Fuse Relay Module F1-F32
Connector	X-150	**X-150**	Fuse and Relay module - ROOF
Connector	X-460	**X-460**	ADIC LL-CN2


6
5
4
3
2
1
D
C
B
A
A-017
RADIO
SH7: C-1
MR-1900 OR 0,75
9
IGNITION
SH16: D-1
MR-2260D BK 0,75
7
GND
RIGHT FRONT +VE
RIGHT FRONT -VE
LEFT FRONT +VE
LEFT FRONT -VE
5
4
2
6
MR-1650 WH 0,5
MR-1651 GY 0,5
MR-1652 WH 0,5
MR-1653 GY 0,5
H-003
SPEAKER RH
X-082
X-083
H-004
SPEAKER LH
X-084
X-085
P
N
82014549
82014549
84399213
X-039
X-039
SHT_32 1

Wiring harnesses - Electrical schematic sheet 14 SH-016_GROUNDING_CHASSIS_1

Farmall® 100C without cab, with Hi-Lo transmission	
Farmall® 110C without cab, with Hi-Lo transmission	
Farmall® 120C without cab, with Hi-Lo transmission	
Farmall® 90C without cab, with Hi-Lo transmission	

Type	Component	Connector / Link	Description
Ground	**GND-002A**	GND-002A	GND CAB FRAME
Ground	**GND-002B**	GND-002B	GND DRIVELINE REAR AXLE
Connector	X-019A	**X-019A**	LH front headlamp
Connector	X-025A	**X-025A**	ENGINE 1 - HOOD inline
Connector	X-025B	X-025B	HOOD-ENGINE 1 inline
Connector	X-325A	**X-325A**	Cab - diverter inline
Connector	X-325B	X-325B	Cab - diverter inline
Connector	X-410	**X-410**	CAB frame GND - Dashboard LH
Connector	X-420	**X-420**	ENGINE GND
Connector	X-604	**X-604**	Battery Ground


6
5
4
3
2
1
D
C
B
A
SH13: A-6
MC-5003A VT 0.75
E-013D
Rear fender lights RH
STOP
TAIL
GND
TURN
MC-2258C BK 1.0
X-024
SH15: B-1
SH13: A-1
MC-5002C VT 0.75
E-014D
Rear fender lights LH
MC-2258S BK 1.0
X-023
NH
CIH
E-013A
Rear fender lights RH
MC-5003L VT 1.0
MC-2258C* BK 1.0
X-024A
E-014A
Rear fender lights LH
MC-5002L VT 0.5
MC-2258S* BK 1.0
X-023A
S-022
Lights control switch
+12V B+
Position
High beam
Low beam
X-091
SH31:B-5
SH13: C-1
MC-1870 OR 1.0
SH13: B-6
MC-0012 YE 0.5
MC-0210 WH 0.5
A-005
ADIC LOW LINE
High beam
X-460
MC-SP-0210
MC-0210B WH 0.5
SH31:D-1
K-003
Low beam
R3_30
R3_87
R3_86
R3_85
MC-5005 RD 1.5
MC-0209 WH 0.5
MC-2257X BK 0.5
MC-0203 WH 1.5
X-110
84543528
X-001A
X-001B
EN1-0201 VT 1.5
EN1-0205 VT 1.5
X-025A
X-025B
HE-0201 VT 1.5
HE-0205 VT 1.5
HE-SP-0205
K-004
High beam
R4_30
R4_87
R4_86
R4_85
MC-5004 RD 1.5
MC-0210A WH 0.5
MC-0204 VT 1.5
MC-2257C BK 0.5
CIH
E-002A
HEADLAMPS CIH-LOW/HIGH BEAM left side
LOW/HIGH
FLAP / HIGH
HE-0201C VT 1.0
HE-0205C VT 1.0
HE-2250F BK 1.0
X-019A
E-003A
HEADLAMPS CIH-LOW/HIGH BEAM right side
HE-0201D VT 1.0
HE-0205D VT 1.0
HE-2250H BK 1.0
X-020A
NH
E-002
HEADLAMPS NH - LOW/HIGH BEAM left side
HE-0201A VT 1.0
HE-0205A VT 1.0
HE-2250D BK 1.0
HE-SP-0201
X-019
E-003
HEADLAMPS NH - LOW/HIGH BEAM right side
HE-0201B VT 1.0
HE-0205B VT 1.0
HE-2250G BK 1.0
X-020
SH14: D-1

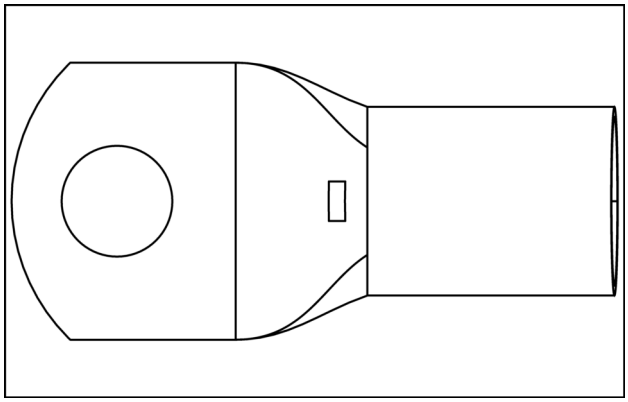
SHT_32 1

Wiring harnesses - Electrical schematic sheet 17 SH21-ENGINE 3 F5C T4B

Farmall® 100C without cab, with mechanical or Power shuttle transmission	
Farmall® 110C without cab, with mechanical or Power shuttle transmission	
Farmall® 120C without cab, with mechanical or Power shuttle transmission	
Farmall® 90C without cab, with mechanical or Power shuttle transmission	

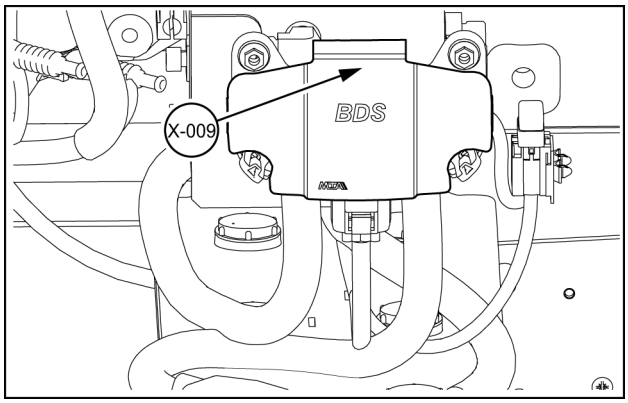
Type	Component	Connector / Link	Description
ECU	**A-005**	**X-450**	ADIC LOW LINE
Sensor	**B-010**	**X-354**	Fuel level sender
Sensor	**B-013**	**X-324**	Electronic Hand throttle
Sensor	**B-014**	**X-321**	Electronic Foot throttle
Relay	**K-013**		ENGINE FUEL HEATER RELAY
Resistor	**R-006**	**X-362**	Fuel heater
Switch	**S-059**	**X-357**	ENGINE INTAKE
Connector	X-001A	**X-001A**	Cab-Engine inline
Connector	X-001B	X-001B	Engine-cab inline
Connector	X-120	**X-120**	Module Relays R9-R16 + Fuses F37-F40
Connector	X-300A	X-300A	Cab-transmission inline
Connector	X-300B	**X-300B**	Trasnmissison-cab inline
Connector	X-321	**X-321**	Electronic Foot throttle
Connector	X-324	**X-324**	Electronic Hand throttle
Connector	X-354	**X-354**	Fuel level sender
Connector	X-357	**X-357**	Engine intake filter
Connector	X-362	**X-362**	Engine Fuel Heater
Connector	X-450	**X-450**	ADIC LOW LINE CN1
Connector	X-460	**X-460**	ADIC LL-CN2
Connector	X-937	**X-937**	Engine Control Module (Connector 2)

X-009 - BDS B (84549335) (Male)



84549335 17

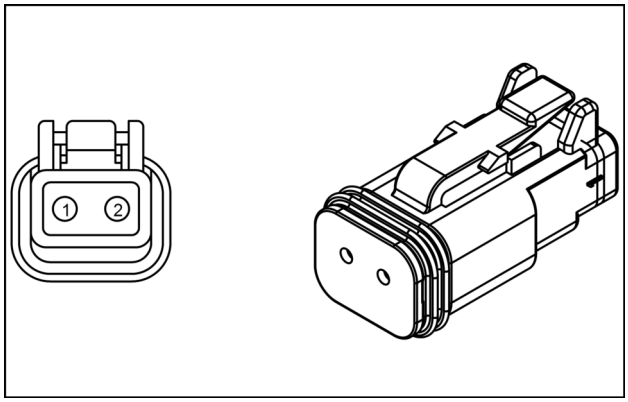
84549335



MOIL13TR00075AA 18

Pin	From	Wire	Description	Color-Size	frame
1	**X-500 (Male) pin 1** Battery positive clamp	BBDS-0066	Battery positive to BDS	RD - 70.0	**SHEET 03**

X-068A - ROOF WORKLAMP FRONT RH CIH [E-024A] (84122124) (Female)

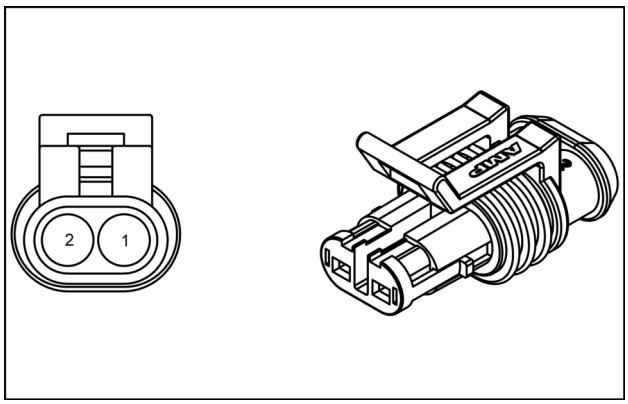


84122124 6

84122124

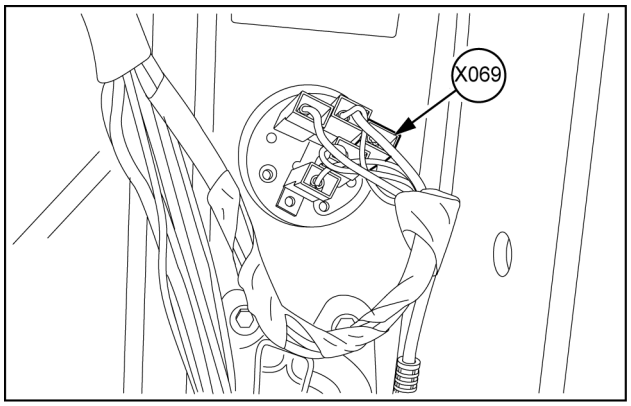
Pin	From	Wire	Description	Color-Size	frame
1	MR-SP-0302-P-X	MR-0302C	WORKLIGHTS FRONT CIH	VT - 1.0	**SHEET 31**
2	**X-404 (Male) pin 1** RH upper pillar GND ROOF	MR-2260R	GND RH ROOF to WL FRONT 1 CIH	BK - 1.0	

X-069 - ROOF WORKLAMP FRONT LH [E-026] (82012083) (Female)



82012083 7

82012083



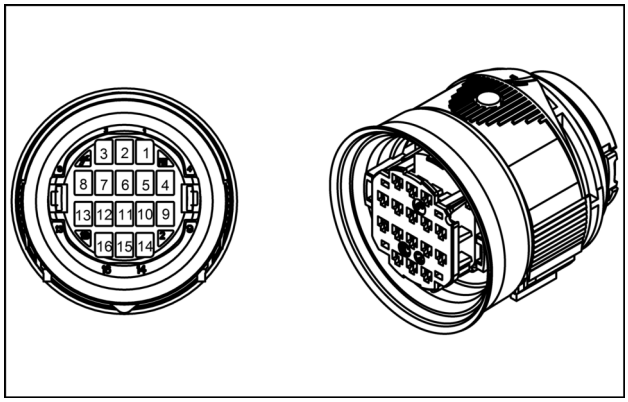
MOIL12TR0418AA 8

Pin	From	Wire	Description	Color-Size	frame
1	MR-SP-0302-P-X	MR-0302B	WORKLIGHTS FRONT	VT - 1.0	**SHEET 31**
2	**X-403 (Male) pin 1** LH upper pillar GND ROOF	MR-2261G	GND LH ROOF to WL FRONT 1 LH	BK - 1.0	

Wire connectors - Component diagram 30

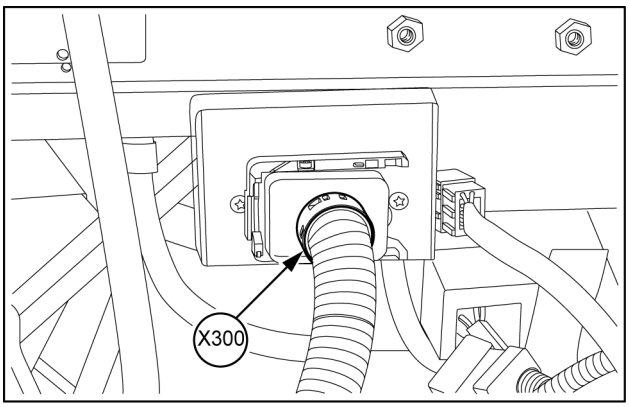
Farmall® 100C with cab, with mechanical or Power shuttle transmission	
Farmall® 110C with cab, with mechanical or Power shuttle transmission	
Farmall® 120C with cab, with mechanical or Power shuttle transmission	
Farmall® 90C with cab, with mechanical or Power shuttle transmission	

X-300B - Trasnmissison-cab inline (84414696) (Female)



84414696 1

84414696



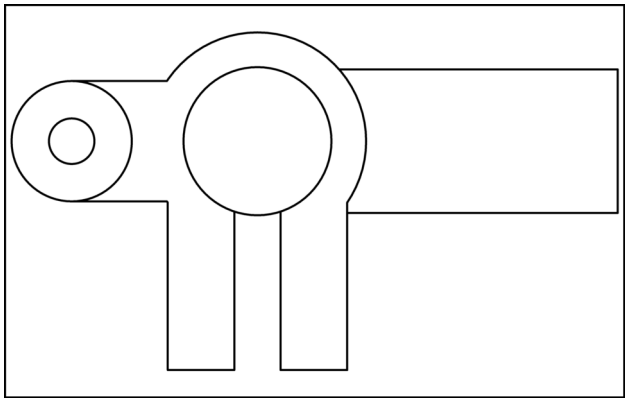
MOIL12TR0456AA 2

Pin	From	Wire	Description	Color-Size	frame
1	**X-196* (Female) pin 1**Power off switch	TR-0265	power off	YE - 1.0	**SHEET 19**
2	TR-SP-2305A-P-X	TR-2305A	sensor GND	BL - 1.0	**SHEET 13**
3	TR-SP-1851-P-X	TR-1851B	TR-1851B	YE - 1.0	**SHEET 21**
4	**X-317 (Female) pin 1**Neutral switch	TR-1857	Security	YE - 1.0	
5	**X-338 (Female) pin 1**Rear PTO safety switch	TR-1850	12V from F-004 to safety	OR - 1.0	**SHEET 08**
6	TR-SP-5100-P-X	TR-5100	12V from F-009 to speed sensor	OR - 1.0	
7	Wheel speed sensor **X-309 (Female) pin 2**	TR-1100	Signl wheel speed	YE - 1.0	**SHEET 19**
8	**X-341 (Female) pin 2** Rear PTO speed sensor	TR-1101	Rear PTO speed signal	YE - 1.0	**SHEET 21**
9	**X-343 (Female) pin 1** Diff.lock solenoid	TR-5102	TR-5102	YE - 0.75	**SHEET 20**
10	**X-342 (Female) pin 1**4WD Solenoid	TR-5101C	TR-5101C	YE - 0.75	
11	**X-354 (Female) pin 2** Fuel level sender	TR-0264	Fuel level signal	YE - 1.0	**SHEET 18**
12	**X-368 (Female) pin 2**Differential lock switch	TR-1102	Differential lock status	YE - 0.75	**SHEET 20**
13	**X-315 (Female) pin 1** Parklock status	TR-0401	Parklock signal	YE - 0.75	**SHEET 23**
14	**X-315 pin 2** Parklock status	TR-0400	Parklock supply	RD - 0.75	**SHEET 07**
15	**X-344 (Female) pin 1** PTO Rear main solenoid	TR-1056A	Rear PTO pos.	WH - 0.75	**SHEET 21**
16	TR-SP-2257C-P-X	TR-2257C	TR-2257C	BK - 1.5	**SHEET 15**

Wire connectors - Component diagram 50

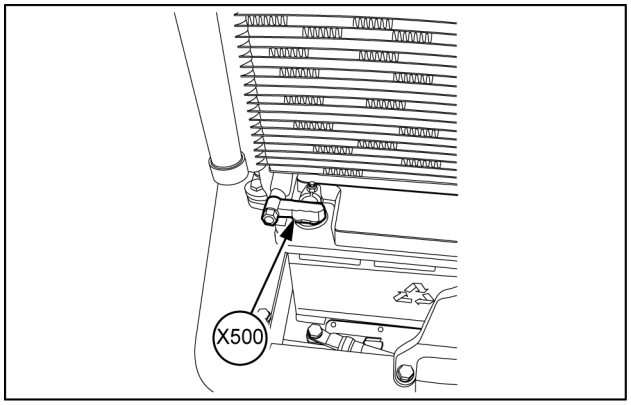
Farmall® 100C with cab, with mechanical or Power shuttle transmission	
Farmall® 110C with cab, with mechanical or Power shuttle transmission	
Farmall® 120C with cab, with mechanical or Power shuttle transmission	
Farmall® 90C with cab, with mechanical or Power shuttle transmission	

X-500 - Battery positive clamp [G-002] (82863787) (Male)



82863787 1

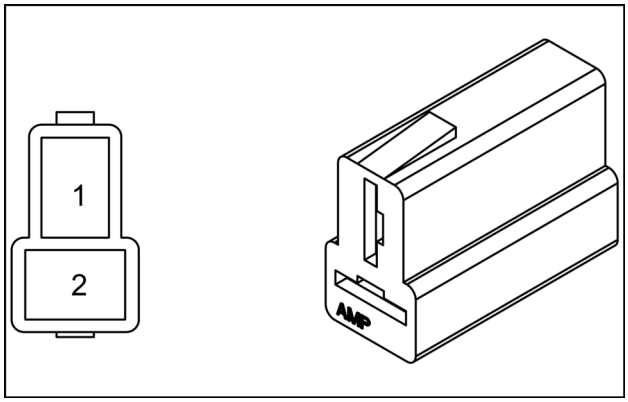
82863787



MOIL12TR0499AA 2

Pin	From	Wire	Description	Color-Size	frame
1	**X-009 (Male) pin 1** BDS B	BBDS-0066	Battery positive to BDS	RD - 70.0	**SHEET 03**

X-501 - 30A Socket (84015523) (Female)

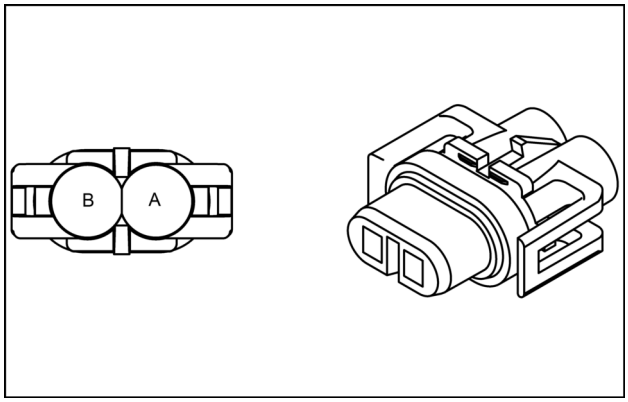


84015523 3

84015523

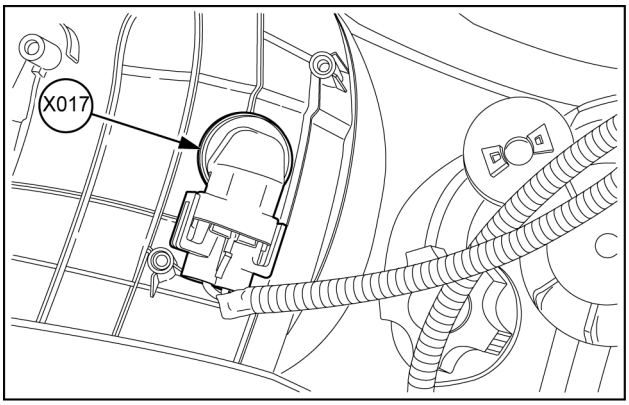
Pin	From	Wire	Description	Color-Size	frame
1	MC-SP-5400-P-X	MC-5400B	MC-5400B	RD - 6.0	**SHEET 26**
2	**X-120 pin F34B** Module Relays R9-R16 + Fuses F37	MC-5402	12V from F-038 to 30A socket	OR - 3.0	**SHEET 12**

X-017 - CORNER LIGHT LH [E-016] (82003123) (Female)



82003123 13

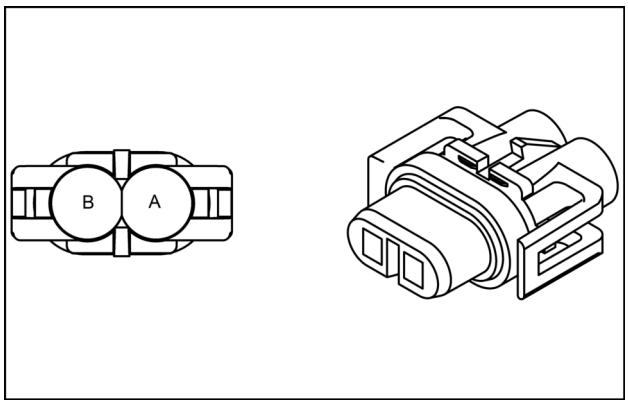
82003123



MOIL12TR0370AA 14

Pin	From	Wire	Description	Color-Size	frame
A	HE-SP-0349-P-X	HE-0349A	Corner lights	VT - 1.0	**SHEET 36**
B	HE-SP-2250-P-X	HE-2250C	Corner light GND	BK - 1.0	**SHEET 15**

X-018 - CORNER LIGHT RH [E-017] (82003123) (Female)



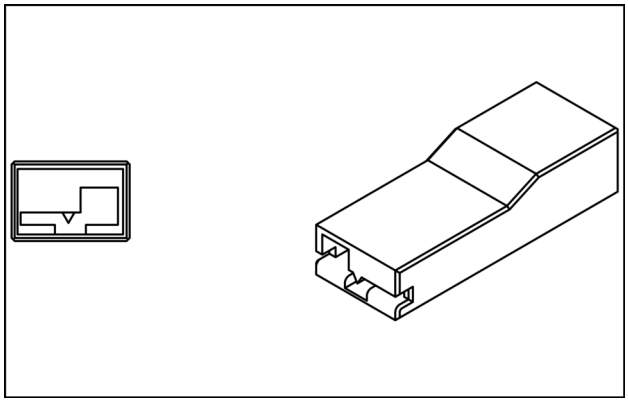
82003123 15

82003123

Wire connectors - Component diagram 08

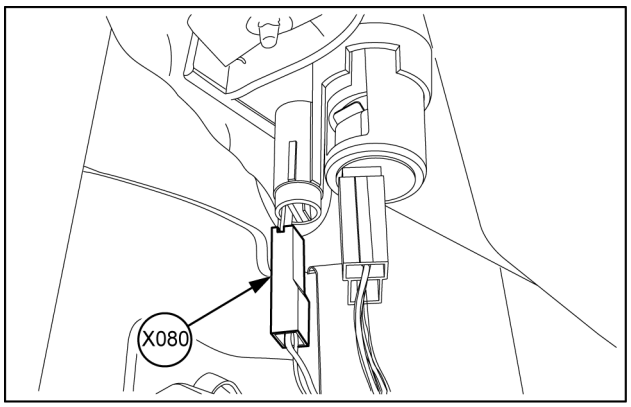
Farmall® 100C with cab, with Hi-Lo transmission	
Farmall® 110C with cab, with Hi-Lo transmission	
Farmall® 120C with cab, with Hi-Lo transmission	
Farmall® 90C with cab, with Hi-Lo transmission	

X-080 - Cigarette socket RH trim light (87705127) (Female)



87705127 1

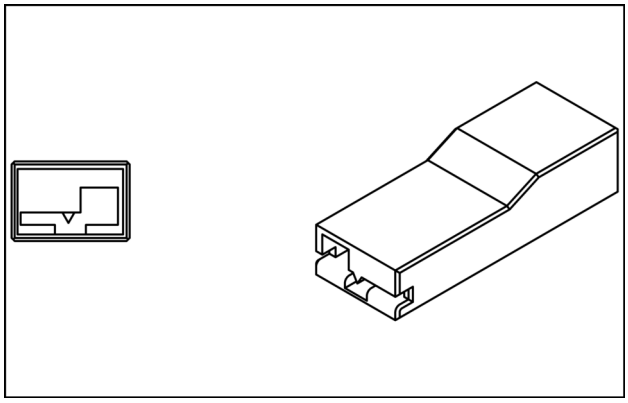
87705127



MOIL12TR0426AA 2

Pin	From	Wire	Description	Color-Size	frame
1	MC-SP-5003-P-X	MC-5003E	Backlighting lighter	VT - 0.5	**SHEET 14**

X-081 - Cigarette socket LH dasboard lig (87705127) (Female)



87705127 3

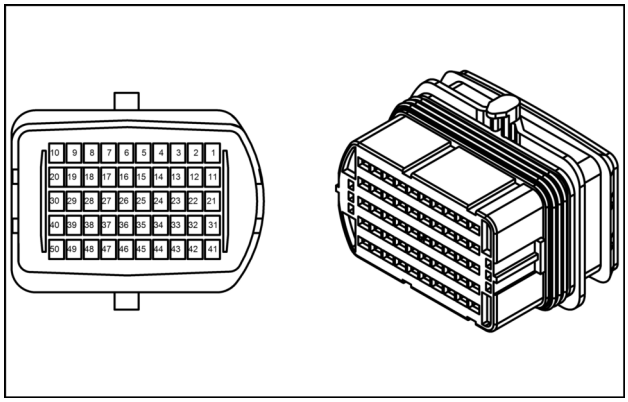
87705127

Pin	From	Wire	Description	Color-Size	frame
1	MC-SP-5003-P-X	MC-5003F	Backlighting lighter OPT	VT - 0.5	**SHEET 14**

Wire connectors - Component diagram 30

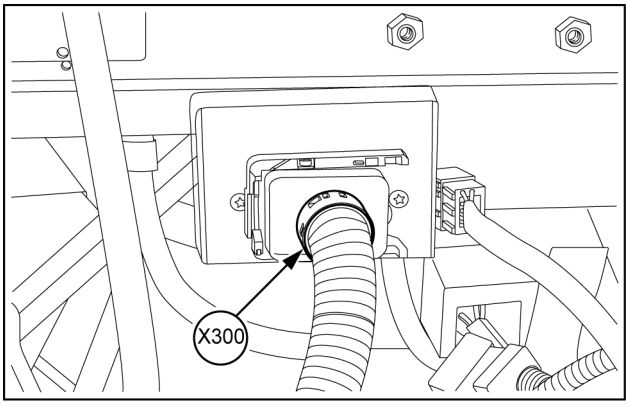
Farmall® 100C with cab, with Hi-Lo transmission	
Farmall® 110C with cab, with Hi-Lo transmission	
Farmall® 120C with cab, with Hi-Lo transmission	
Farmall® 90C with cab, with Hi-Lo transmission	

X-300B - Trasnmissison-cab inline (87708538) (Female)



87708538 1

87708538

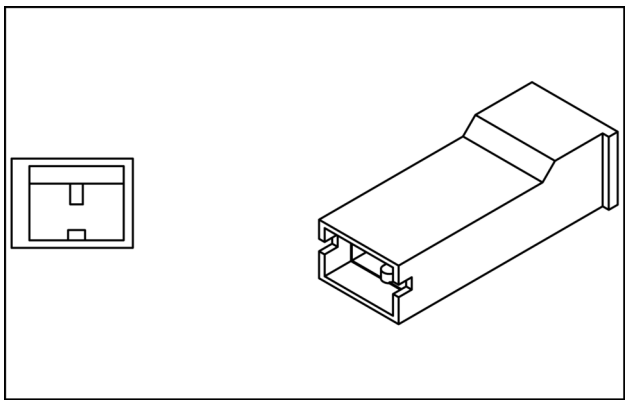


MOIL12TR0456AA 2

Pin	From	Wire	Description	Color-Size	frame
1	**X-340 (Female) pin 2** Clutch A solenoid	TR-1126	Clutch A solenoid, neg.	GY - 1.0	**SHEET 22**
2	**X-365 (Female) pin 2** Clutch B solenoid	TR-1128	Clutch B solenoid, neg.	GY - 1.0	
3	**X-504B1 (Female) pin 1**SAFETY PRESSURE SWITCH B pin1	TR-1141	SAFETY PRESSURE SWITCH B	GN - 1.0	
4	TR-SP-2200A-P-X	TR-2200A	5 Volt from XCM	PK - 1.0	**SHEET 13**
5	**X-340 (Female) pin 1** Clutch A solenoid	TR-1125	Clutch A solenoid, pos.	WH - 1.0	**SHEET 22**
6	**X-365 (Female) pin 1** Clutch B solenoid	TR-1127	Clutch B solenoid, pos.	WH - 1.0	
7	**X-806 (Female) pin 1** Clutch C solenoid	TR-1119	Clutch C sol pos	WH - 1.0	
8	**X-806 (Female) pin 2** Clutch C solenoid	TR-1120	Clutch C solenoid, neg.	GY - 1.0	
9	**X-807 (Female) pin 1** ClutchD solenoid	TR-1121	Clutch D sol., pos.	WH - 1.0	
10	**X-807 (Female) pin 2** ClutchD solenoid	TR-1122	Clutch 2 solenoid, neg.	GY - 1.0	
11	TR-SP-2301-P-X	TR-2301A	XCM sensor GND	BL - 1.0	**SHEET 17**
12	Wheel speed sensor **X-309 (Female) pin 2**	TR-1106	Wheel speed signal	YE - 1.0	**SHEET 22**
13	**X-317 (Female) pin 1**NEUTRAL switch	TR-1857	Gear 1-2	YE - 1.0	
14	TR-SP-5101A-P-X	TR-5101A	12 V from F-011	OR - 1.0	**SHEET 08**

Pin	From	Wire	Description	Color-Size	frame
1	**X-120 pin R6_85** Module Relays R9-R16 + Fuses F37	MC-2258K	GND 30A socket relay [85]	BK - 0.5	**SHEET 06**
1	**X-026 pin 1**8A socket	MC-2258E	GND 8A socket	BK - 1.0	
1	**X-090 pin B8** FLASHER UNIT	MC-2258L	CAB GND to FLASHER - 1	BK - 2.5	
1	**X-801 pin 2**	MC-2258B	RH rear position indicator GND	BK - 1.0	
1	**X-023A pin 1** LH rear fender lamp	MC-2258S*	LH rear fender lamp cih GND	BK - 1.0	
1	**X-024 pin 3** Rear fender lights RH	MC-2258C	Rear fender light RH GND	BK - 1.0	
1	**X-023 pin 3** rear fender lights LH	MC-2258S	Rear fender light LH GND	BK - 1.0	
1	MC-SP-2258A-P-X	MC-2258A	CAB GND	BK - 1.5	
1	**X-029 pin 1** Electrical seat	MC-2258G	GND electric seat	BK - 1.0	
1	**X-802 pin 2**	MC-2258	LH rear direction indicator GND	BK - 1.0	
1	**X-024A pin 1** RH rear fender lamp	MC-2258C*	LH rear fender lamp cih GND	BK - 1.0	
1	**X-325A (Female) pin 2** Cab - diverter inline	MC-2258Z	CAB GND to 3rd distributor solenoid	BK - 1.0	
1	**X-402 pin 1** GND 30/40 A sockets	MC-2258D	GND 30/40A socket	BK - 6.0	
1	**X-027 pin 1** Sigarette socket RH trim	MC-2258R	GND cigar lighter	BK - 1.5	
1	**X-077 pin 1** Washer pump rear	MC-2258N	GND CAB to Rear washer pump	BK - 1.0	
1	**X-389A (Female) pin 2** CAB - REVERSE inline	MC-2258F	Reverse alarm negative	BK - 1.5	
1	**X-076 pin 1** washer pump front	MC-2258M	GND CAB to Front washer pump	BK - 1.0	
1	**X-046A pin 3** CAB-fan motor inline LH	MC-2258P	GND CAB to FAN LH	BK - 2.5	
1	**X-047A pin 3** CAB-fan motor inline RH	MC-2258Q	GND CAB to FAN RH	BK - 2.5	

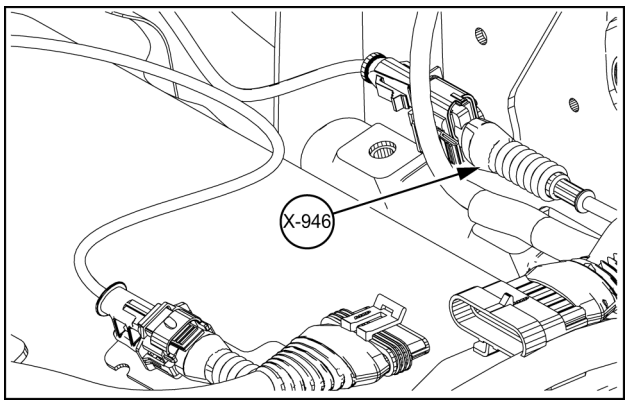
X-402 - GND 30/40 A sockets (87581782) (Female)



87581782 3

87581782

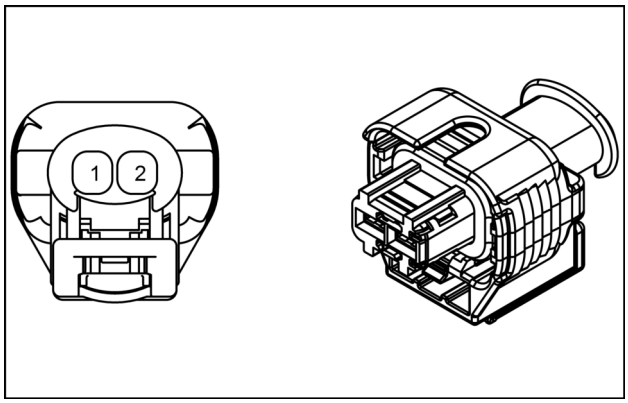
Pin	From	Wire	Description	Color-Size	frame
1	**X-400 pin 1** CAB chassis GND - LH pillar lowe	MC-2258D	GND 30/40A socket	BK - 6.0	**SHEET 31**



MOIL13TR00062AA 9

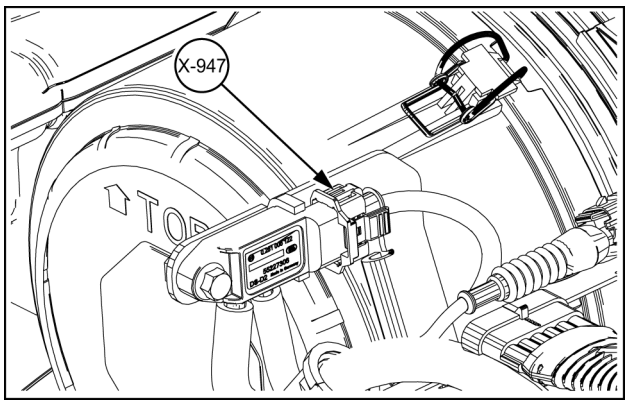
Pin	From	Wire	Description	Color-Size	frame
1	**X-937 (Female) pin 82** Engine Control Module (Connector	EN1-0039	Catalyst upstream +	YE - 0.75	**SHEET 18**
2	**X-937 (Female) pin 81** Engine Control Module (Connector	EN1-0038	Catalyst upstream -	BL - 0.75	

X-947 - Catalyst temp sensor-Downstream [B-028] (84532147) (Female)



84532147 10

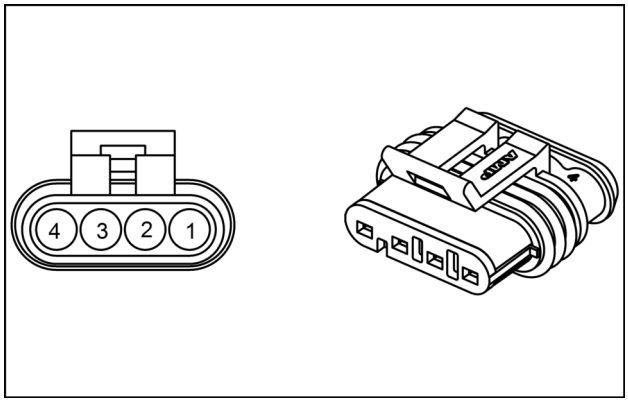
84532147



MOIL13TR00063AA 11

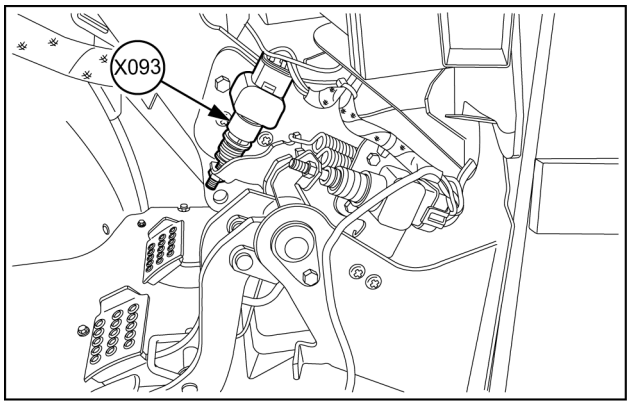
Pin	From	Wire	Description	Color-Size	frame
1	**X-937 (Female) pin 80** Engine Control Module (Connector	EN1-0041	Catalyst downstream +	YE - 0.75	**SHEET 18**
2	**X-937 (Female) pin 79** Engine Control Module (Connector	EN1-0040	Catalyst downstream -	BL - 0.75	

X-093 brake pedal switch - LH [S-031] (87687242) (Female)



87687242 7

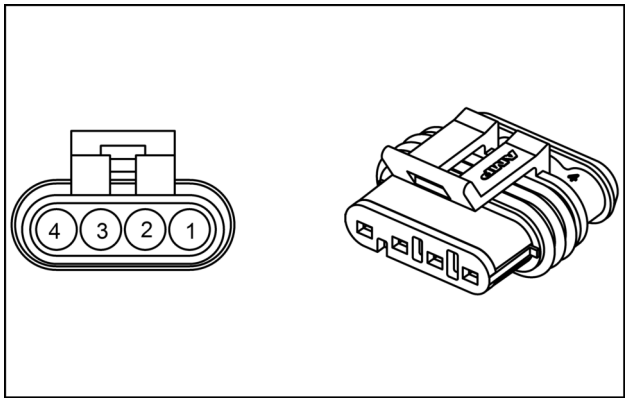
87687242



MOIL12TR0436AA 8

Pin	From	Wire	Description	Color-Size	frame
1	MC-SP-5601-P-X	MC-5601B	12V from F-035 to LH brake lights switch	OR - 1.0	**SHEET 07**
2	MC-SP-0403-P-X	MC-0403A	12V 58 Key from F-021 to switch LH	OR - 1.0	
3	MC-SP-0402-P-X	MC-0402D	LH Stop lights switch	VT - 1.0	
4	**X-210 (Female) pin 22** XCM CN1B	MC-0705	Brake pedal signal LH	YE - 1.0	

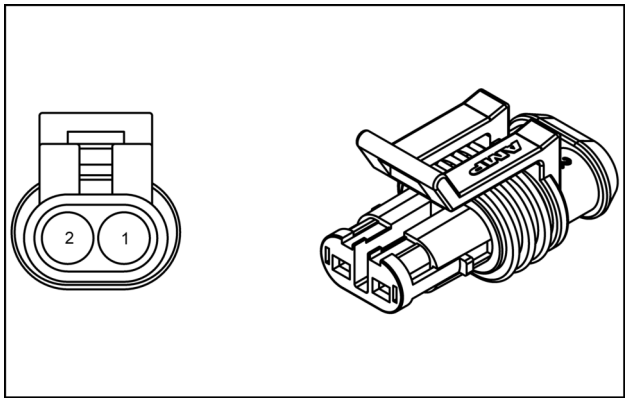
X-094 - Brake pedal switch - RH [S-030] (87687242) (Female)



87687242 9

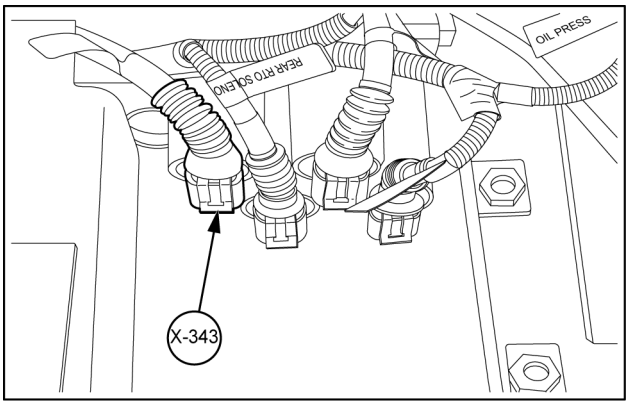
87687242

X-343 - Diff.lock solenoid [Y-011] (82012083) (Female)



82012083 7

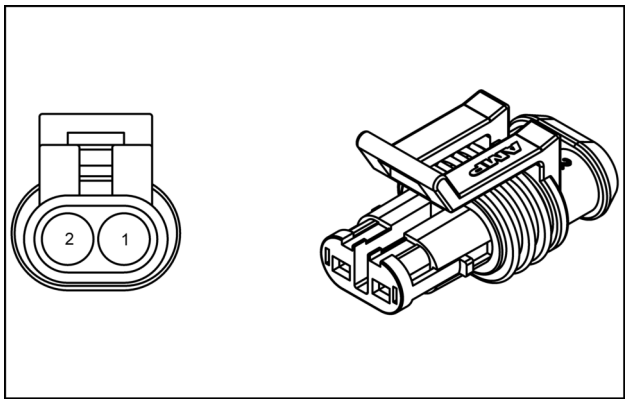
82012083



MOIL12TR00198AA 8

Pin	From	Wire	Description	Color-Size	frame
1	**X-300B (Female) pin 41** Trasnmissison-cab inline	TR-0703	Diff lock solenoid pos	WH - 1.0	**SHEET 22**
2	TR-SP-2257A-P-X	TR-2257B	Diff lock solenoid GND	BK - 1.0	**SHEET 15**

X-344 - PTO Rear main solenoid [Y-012] (82012083) (Female)



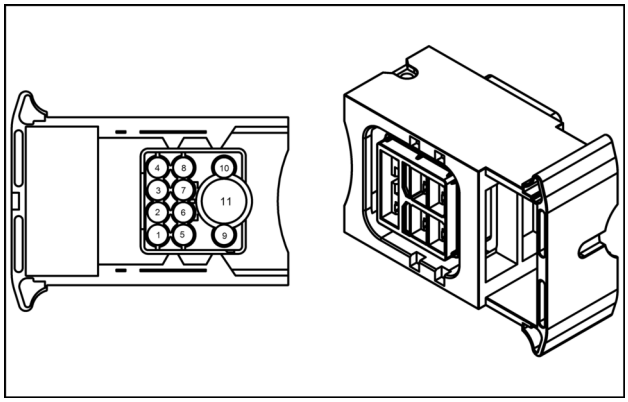
82012083 9

82012083

Wire connectors - Component diagram 92

Farmall® 100C without cab, with Hi-Lo transmission	
Farmall® 110C without cab, with Hi-Lo transmission	
Farmall® 120C without cab, with Hi-Lo transmission	
Farmall® 90C without cab, with Hi-Lo transmission	

X-925 - HCU Unit [A-022] (47514457) (Female)

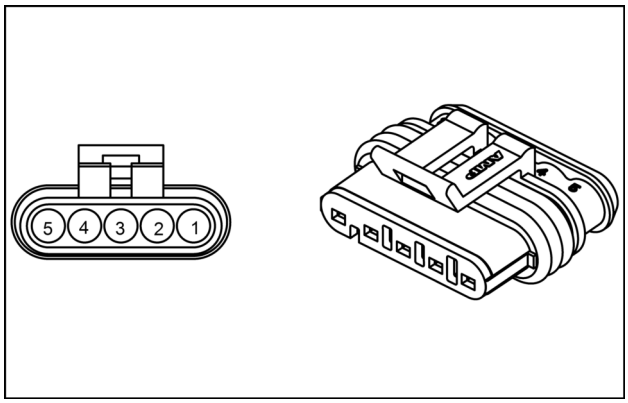


47514457 1

47514457

Pin	From	Wire	Description	Color-Size	Frame
1	**X-356 (Female) pin 11** Denox module	EN1-0061	Motor pump heater	WH - 1.5	**SHEET 17**
2	**X-932 (Female) pin 1** Adblue outlet pipe heater	EN1-0062	Adblue outlet heater +	WH - 1.5	
4	**X-931 (Female) pin 1** Adblue inlet pipe heater	EN1-0063	Adblue inlet heater +	WH - 1.5	
6	EN1-SP-0003-P-X	EN1-0003D	12V from F-055 to HCU	OR - 1.0	**SHEET 04**
7	EN1-SP-2250-P-X	EN1-2250Z	HCU GND	BK - 1.0	**SHEET 17**
9	EN1-SP-0069A-P-X	EN1-0069G	CAN2-L	GN - 0.75	
10	EN1-SP-0055A-P-X	EN1-0055G	CAN2-H	YE - 0.75	
11	**X-190 pin 21** Engine fuse & relays box	EN1-0065	12V from F-068 to HCU	RD - 6.0	

X-926 - Adblue quality & level senso [B-001] (87688719) (Female)

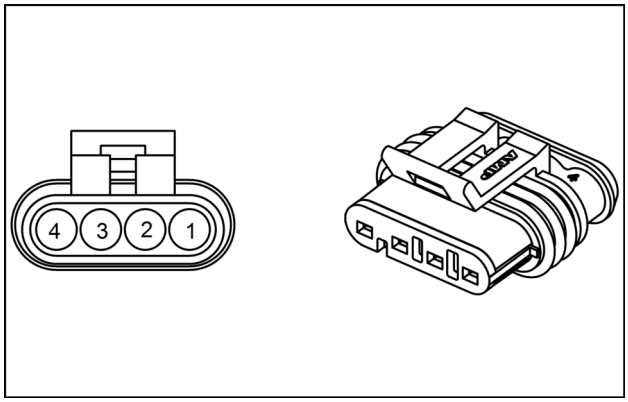


87688719 2

87688719

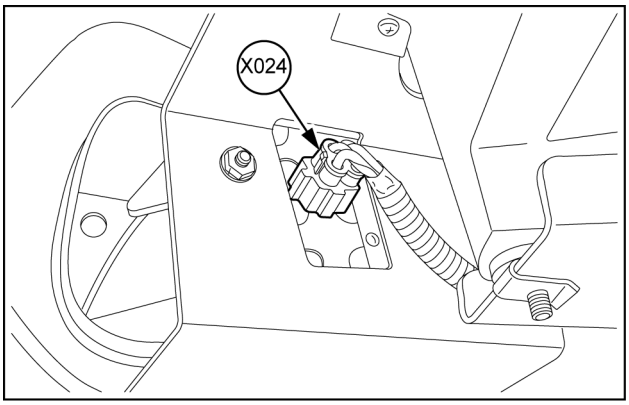
Pin	From	Wire	Description	Color-Size	Frame
1	EN1-SP-0064-P-X	EN1-0064C	12V from F-063 to Adblue quality sensor	OR - 1.0	**SHEET 17**
2	EN1-SP-2250-P-X	EN1-2250Y	Adblue sensor GND	BK - 1.0	
4	EN1-SP-0069B-P-X	EN1-0069F	CAN2-L	GN - 0.75	
5	EN1-SP-0055B-P-X	EN1-0055F	CAN2-H	YE - 0.75	

X-024 - Rear fender lights RH [E-013] (87687242) (Female)



87687242 13

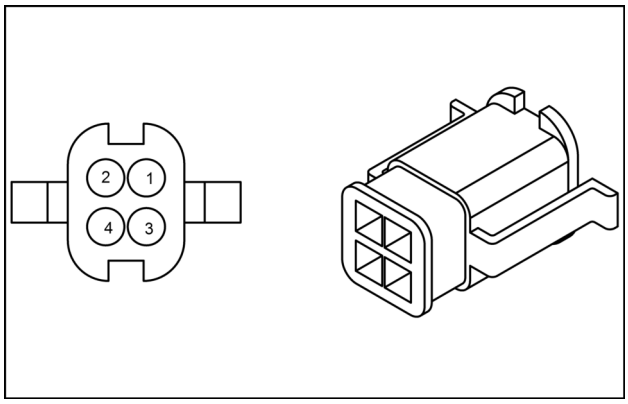
87687242



MOIL12TR0377AA 14

Pin	From	Wire	Description	Color-Size	frame
1	MC-SP-5003-P-X	MC-5003A	Position light to Rh rear lamp	VT - 1.0	**SHEET 13**
3	**X-400 pin 1** CAB GND LH Pillar lower	MC-2258C	Rear fender light RH GND	BK - 1.0	**SHEET 14**
4	MC-SP-0402-P-X	MC-0402A	Stop lights RH	VT - 1.0	**SHEET 22**

X-024A - RH rear fender lamp [E-013A] (87745334) (Female)



87745334 15

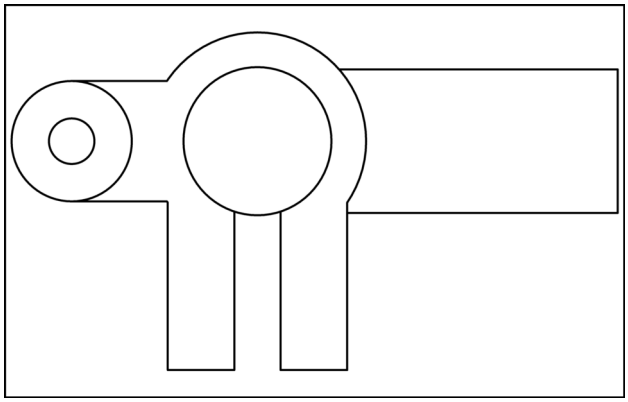
87745334

Pin	From	Wire	Description	Color-Size	frame
1	**X-300B (Female) pin 4** Trasnmissison-cab inline	TR-1857	Security	YE - 1.0	**SHEET 20**
2	TR-SP-1851-P-X	TR-1851A	Security	YE - 1.0	

Wire connectors - Component diagram 60

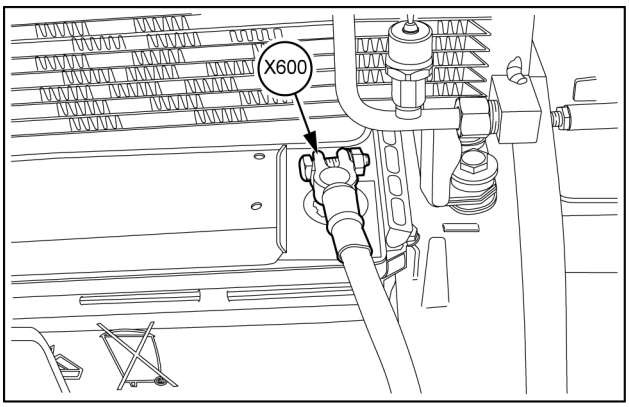
Farmall® 100C without cab, with mechanical or Power shuttle transmission	
Farmall® 110C without cab, with mechanical or Power shuttle transmission	
Farmall® 120C without cab, with mechanical or Power shuttle transmission	
Farmall® 90C without cab, with mechanical or Power shuttle transmission	

X-600 - Battery negative clamp [G-002] (82032329) (Male)



82032329 1

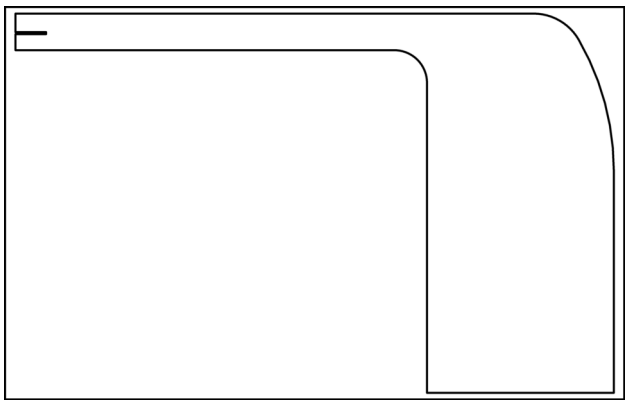
82032329



MOIL12TR0504AA 2

Pin	From	Wire	Description	Color-Size	frame
1	**X-604 (Male) pin 1** Battery Ground	BN-0023	Cable battery negative	BK - 70.0	**SHEET 03**

X-604 - Battery Ground (82013012) (Male)



82013012 3

82013012

Pin	From	Wire	Description	Color-Size	frame
1	**X-600 pin 1** Battery negative clamp	BN-0023	Cable battery negative	BK - 70.0	**SHEET 03**

Fuse and relay box - Component localization – ROPS models

Farmall® 100C without cab, with Hi-Lo transmission	
Farmall® 100C without cab, with mechanical or Power shuttle transmission	
Farmall® 110C without cab, with Hi-Lo transmission	
Farmall® 110C without cab, with mechanical or Power shuttle transmission	
Farmall® 120C without cab, with Hi-Lo transmission	
Farmall® 120C without cab, with mechanical or Power shuttle transmission	
Farmall® 90C without cab, with Hi-Lo transmission	
Farmall® 90C without cab, with mechanical or Power shuttle transmission	

LABEL NAME	COMPONENT NAME	DESCRIPTION
FUSES		
1	F-001	Lights switch power supply [**+12 V** F-058 - **125 A**]
2	F-002	Rear PTO circuit and fender switches power supply [**+12 V** 15/54 key]
3	F-003	Position lights power supply [**+12 V** K-002]
4	F-004	CCU memory power supply [**+12 V** F-061 - **10 A**]
5	F-005	ECU power supply [**+12 V** 15/54 key]
6	F-006	Clutch pedal switch power supply [**+12 V** 58 key]
7	F-007	ADIC, brake fluid level switch and foot throttle power supply [**+12 V** 15/54 key]
8	F-008	ADIC, parking brakes switches end diagnostic socket power supply [**+12 V** F-058 - **125 A**]
9	F-009	Speed sensors power supply [**+12 V** 15/54 key]
13	F-013	Street lights control lever and flasher unite power supply [**+12 V** 15/54 key]
14	F-014	Rear worklamp power supply [**+12 V** K-002]
15	F-015	**8 A** socket power supply [**+12 V** F-058 - **125 A**]
16	F-016	7-pin trailer socket power supply [**+12 V** K-002]
17	F-017	CRPM power supply [**+12 V** 15/54 key]
19	F-019	Flasher unite power supply [**+12 V** F-058 - **125 A**]
20	F-020	High beam power supply [**+12 V** F-058 - **125 A**]
21	F-021	Stop lights power supply [**+12 V** K-001]
23	F-023	Corner lights power supply [**+12 V** K-001]
25	F-025	Reverse gear system power supply [**+12 V** F-058 - **125 A**]
26	F-026	Cigar lighter power supply [**+12 V** F-058 - **125 A**]
27	F-027	Low beam power supply [**+12 V** F-058 - **125 A**]
31	F-031	Service socket power supply [**+12 V** F-058 - **125 A**]
32	F-032	Starter switch power supply [**+12 V** F-058 - **125 A**]
33	F-033	Position lights power supply [**+12 V** K-002]
36	F-036	Diverter power supply [**+12 V** 15/54 key]
38	F-038	**30 A** socket circuit power supply [**+12 V** K-014]
40	F-040	Heating fuel power supply [**+12 V** F-058 - **125 A**]
RELAYS		
1	K-001	Switched service relay
2	K-002	Position lights circuit relay
3	K-003	Rear PTO relay 2
6	K-006	Diverter relay
8	K-008	Rear PTO relay 1
9	K-009	Starting enable relay
10	K-010	Low beam relay
11	K-011	High beam relay
12	K-012	Reverse gear system relay
13	K-013	Fuel heater relay
14	K-014	**30 A** socket circuit relay
15	K-015	PTO lamp relay
16	K-016	Stop lights and 4WD relay

Electrical components - ECU description

Farmall® 100C with cab, with Hi-Lo transmission	
Farmall® 110C with cab, with Hi-Lo transmission	
Farmall® 120C with cab, with Hi-Lo transmission	
Farmall® 90C with cab, with Hi-Lo transmission	

A-001 - XCM (ECU)

Component Type	ECU
Wiring frames	**SHEET 06** **SHEET 08** **SHEET 13** **SHEET 17** **SHEET 21** **SHEET 22** **SHEET 23** **SHEET 24** **SHEET 25** **SHEET 26** **SHEET 28** **SHEET 30** **SHEET 33** **SHEET 39**
Connectors	**X-230 (Female)**

A-003 - EDC potentiometers panel (ECU)

Component Type	ECU
Wiring frames	**SHEET 26**
Connectors	**X-327 (Female)**

A-005 - ADIC LOW LINE (ECU)

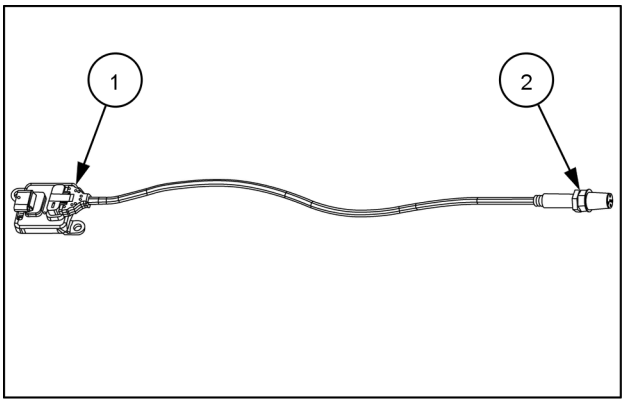
Component Type	ECU
Wiring frames	**SHEET 03** **SHEET 06** **SHEET 13** **SHEET 14** **SHEET 17** **SHEET 20** **SHEET 21** **SHEET 22** **SHEET 23** **SHEET 28** **SHEET 31** **SHEET 34** **SHEET 35** **SHEET 36** **SHEET 38** **SHEET 39**
Connectors	**X-460 (Female)**

A-006 - SHUTTLE LEVER (ECU)

Component Type	ECU
Wiring frames	**SHEET 21**
Connectors	**X-318 (Female)**

A-007 - BDS relay (ECU)

Component Type	ECU
Wiring frames	**SHEET 03**

Functional information	 NHIL13ENG1382AA 3 The NO_x sensor consists of two components, the sensor **(2)** in the exhaust stream, and also the controller **(1)** which reports the data to the Engine Control Unit (ECU) via the engine Controller Area Network (CAN) data bus. Once the Selective Catalytic Reduction (SCR) chamber is up to operating temperature **240.0 °C** (**464.0 °F**), Diesel Exhaust Fluid (DEF)/AdBlue® can be injected into the system per engine calculations (open loop). After approximately **6 - 15 min** (if catalyst and engine temperature is reached and maintained), the NO_x sensors will come online, and DEF/AdBlue® will be injected based on the sensors readings (closed loop). The time delay (Dew point) is needed to ensure no moisture is on the sensing tips of the sensors which could damage them upon initial startup. • The Upstream NO_x sensor will appear online before the Downstream due to its position. • The NH3 sensor will appear online immediately after the Downstream NO_x sensor appears. • If viewing the “Dew Point” parameter of the sensors, it will read “not ready” until the moisture is wicked off the tip of the sensor. Then it will read “Ready”. • When turning the key switch ON then OFF then ON, the dew point (warm up cycle) begins again. The NO_x sensors may return to a “Ready” status quicker than previously depending upon engine shut down time, engine coolant, and catalyst temperature. **Downstream NOx sensor** The downstream NO_x sensor is located directly after the Selective Catalytic Reduction (SCR). This sensor measures the pollutants making it through the Diesel Oxidation Catalyst (DOC) and SCR and out of the tailpipe. The data from this sensor is compared to that of the upstream sensor. If the data between the two sensors becomes more similar, the vehicle's computer may trigger a catalyst inefficiency code, which turns on a warning light.

B-006 - PTO rear speed sensor (Sensor)

Component Type	Sensor
Wiring frames	**SHEET 24**
Connectors	**X-341 (Female)**

B-007 - EDC draft pin sensor RH (Sensor)

Component Type	Sensor
Wiring frames	**SHEET 25**
Connectors	**X-332 (Female)**

F-036 - Front diverter (Fuse)

Component Type	Fuse
Wiring frames	**SHEET 10**

F-038 - 30A Socket (Fuse)

Component Type	Fuse
Wiring frames	**SHEET 11**

F-040 - Fuel heater (Fuse)

Component Type	Fuse
Wiring frames	**SHEET 09**

F-055 - Engine fuse 3 (Fuse)

Component Type	Fuse
Wiring frames	**SHEET 04**
Connectors	**X-049 (Female)**

F-060 - Available (Fuse)

Component Type	Fuse
Wiring frames	**SHEET 04**
Connectors	X-000

F-062 - KAM fuse (Fuse)

Component Type	Fuse
Wiring frames	**SHEET 03**

F-063 - Aux main fuse (Fuse)

Component Type	Fuse
Wiring frames	**SHEET 09**

F-064 - Aux fuse (purging-heating) (Fuse)

Component Type	Fuse
Wiring frames	**SHEET 09**

F-065 - Aux fuse (motor pump) (Fuse)

Component Type	Fuse
Wiring frames	**SHEET 09**

F-068 - HCU Fuse (Fuse)

Component Type	Fuse
Wiring frames	**SHEET 09**

F-088 - Engine fuse 1 (Fuse)

Component Type	Fuse
Wiring frames	**SHEET 04**
Connectors	**X-003 (Female)**

F-089 - Engine fuse 2 (Fuse)

Component Type	Fuse
Wiring frames	**SHEET 04**

INITIAL TESTS

1. The initial tests may be performed without removing any of the charging circuit components from the tractor and enable the following items to be checked:
   - The alternator wiring connections
   - The alternator charging current and controlled voltage
   - The voltage drops in the alternator charging circuit
   - The maximum output performances of the alternator

Required testing equipment:

2. - Voltmeter (type with mobile coil, **0 - 30 V**)
   - Millivoltmeter (**0 - 1 V**)
   - Ammeter (type with mobile coil **0 - 200 A**)
   - **1.5 Ω 200 A** variable load resistor

NOTE: *Most commercial test equipment incorporates several testing devices within a single unit. Use such equipment in accordance with the manufacturers instructions.*

3. See **Alternator - Electrical test (55.301)** for the test procedures.

Diesel Exhaust Fluid (DEF)/AdBlue® supply module - Remove

⚠ WARNING

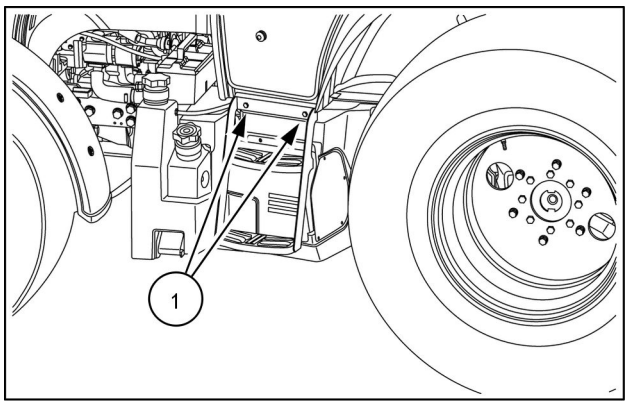
Personal Protective Equipment (PPE) required.
When assembling, operating, or servicing the machine, wear protective clothing and PPE necessary for the particular procedure. Some PPE that may be necessary includes protective shoes, eye and/or face protection, hard hat, heavy gloves, filter mask, and hearing protection.
Failure to comply could result in death or serious injury.

W0353A

NOTE: *Wait three minutes after ignition key-off before commencing any repairs to SCR components.*

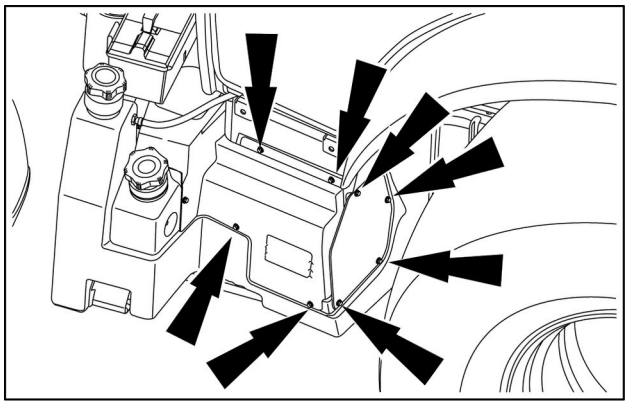
NOTE: *To avoid **DEF/ADBLUE®** contamination of the electrical connectors, first disconnect the **DEF/ADBLUE®** connectors, then disconnect the electrical connectors.*

1. Loosen the fastenings **(1)** to remove the ladder from the left-hand side.



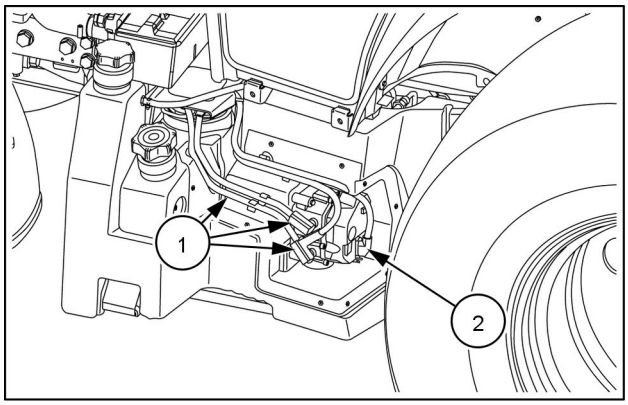
MOIL14TR00997AA 1

2. Loosen the relevant retaining screws to remove the rear shield and the side shield.



MOIL14TR00998AA 2

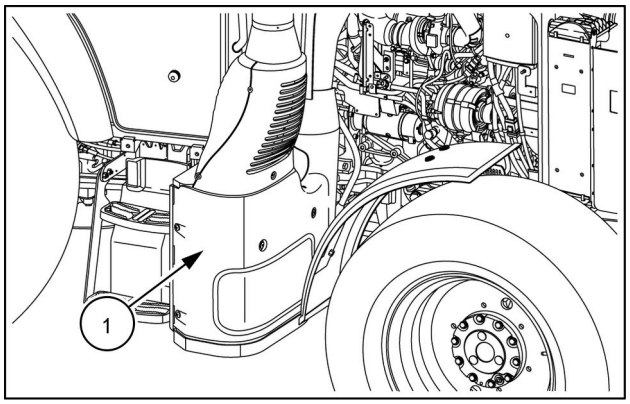
3. Disconnect the **DEF/ADBLUE®** lines **(1)** and the electrical connection **(2)** from the supply module of the Selective Catalytic Reduction (SCR) system.



MOIL14TR00999AA 3

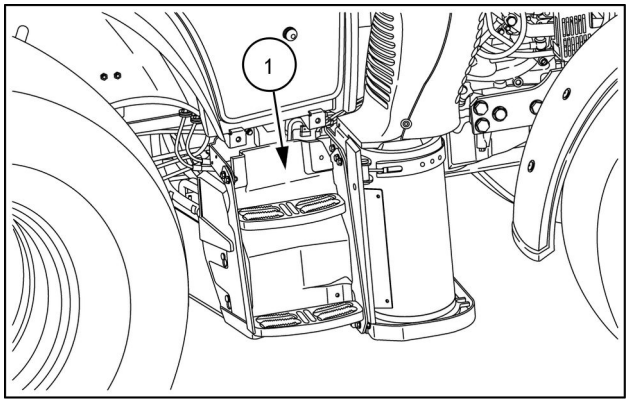
Ammonia (NH3) sensor - Remove

1. Remove the rear shield **(1)** of the muffler for the Selective Catalytic Reduction (SCR) system.



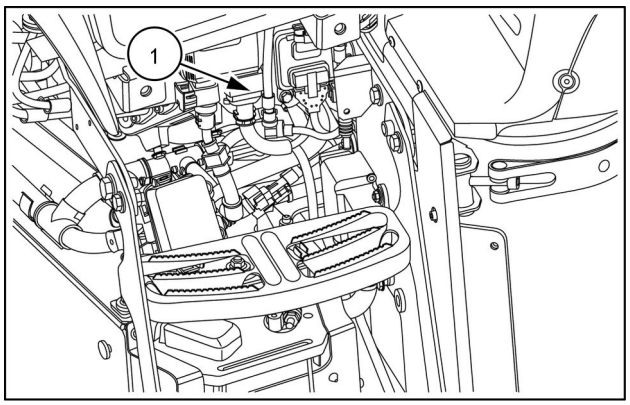
MOIL14TR01007AA 1

2. Remove the cover **(1)** of the battery.



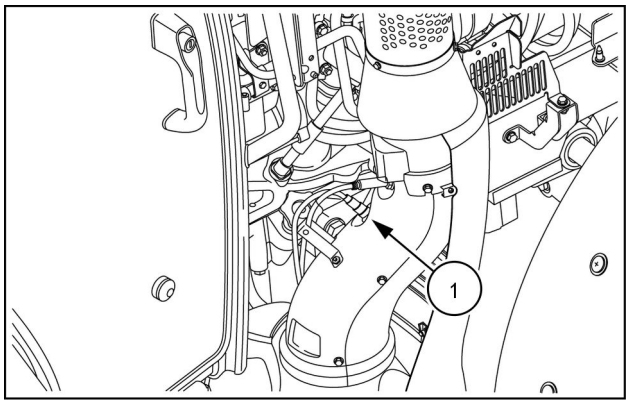
MOIL14TR01009AA 2

3. Disconnect the electrical connection **(1)** of the NH_3 sensor.



MOIL14TR01010AA 3

4. Remove the NH_3 sensor.



MOIL14TR01017AA 4

Software - View - HH menu of Analog Digital Instrument (ADIC)[ZI]

- H3 - CONFIGURATIONS AND OPTIONS
- H4 - VIEW SOFTWARE REVISION NUMBER
- H5 - SWITCH DIAGNOSTICS
- H8 - CLEAR NONVOLATILE MEMORY
- H9 - VOLTMETER DIAGNOSTICS
- HB - DISPLAY STORED ERROR CODES
- HC - CLEAR STORED ERROR CODES
- HE - FREQUENCY INPUTS
- HF - VIEW HARDWARE VERSION INFORMATION

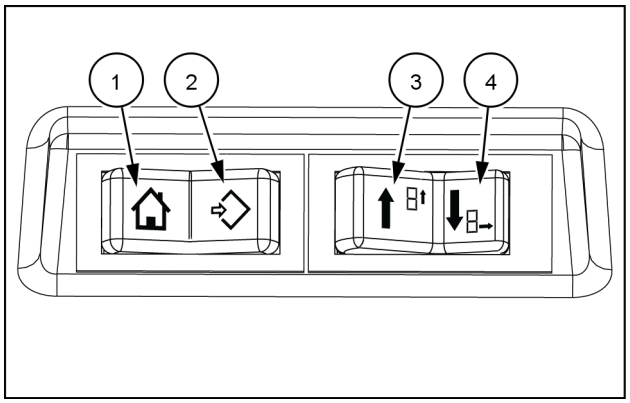
Software - H5 - Switch operation test - Central Control Unit (CCU)[R1]

Farmall® 100C with cab, with Hi-Lo transmission	
Farmall® 100C without cab, with Hi-Lo transmission	
Farmall® 110C with cab, with Hi-Lo transmission	
Farmall® 110C without cab, with Hi-Lo transmission	
Farmall® 120C with cab, with Hi-Lo transmission	
Farmall® 120C without cab, with Hi-Lo transmission	
Farmall® 90C with cab, with Hi-Lo transmission	
Farmall® 90C without cab, with Hi-Lo transmission	

H5 menu is used to check for transitions on switch and analogue input circuits to the control module for diagnostic purposes. On analog inputs, a “transition” means that a fixed threshold was crossed. The display shows a “d _ _” plus a number that indicates which circuit had a transition and beeps momentarily whenever a transition occurs. The number displayed indicates which circuit had a transition.

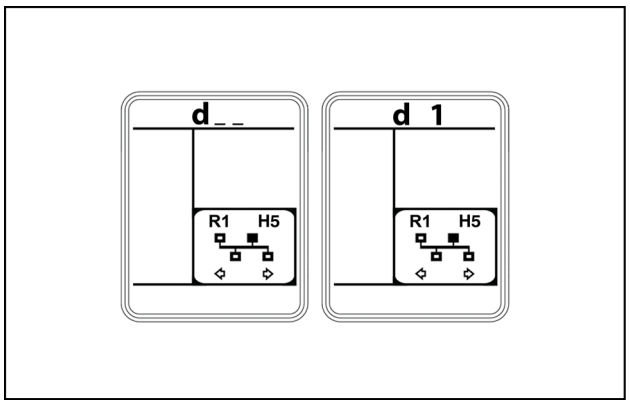
Access the HH menu, as described in **Software - View - HH menu access (55.640)**, for the R1 unit and proceed as follows.

1. Select the H5 menu with the buttons **(3)** or **(4)** and press **(2)** to access the HH menu program.



MOIL15TR00005AA 1

2. The display will show a “d_ _”. On detection of a switch transition, the display will show “d” followed by the switch number for which the transition was detected: if multiple switch transitions are detected then the display will show each circuit in turn. The display will also show “d0” if a transition occurs on a switch input which is undefined for the module.



MOIL15TR00052AA 2

Windshield wiper arm - Install

Farmall® 100C with cab, with Hi-Lo transmission	
Farmall® 100C with cab, with mechanical or Power shuttle transmission	
Farmall® 110C with cab, with Hi-Lo transmission	
Farmall® 110C with cab, with mechanical or Power shuttle transmission	
Farmall® 120C with cab, with Hi-Lo transmission	
Farmall® 120C with cab, with mechanical or Power shuttle transmission	
Farmall® 90C with cab, with Hi-Lo transmission	
Farmall® 90C with cab, with mechanical or Power shuttle transmission	

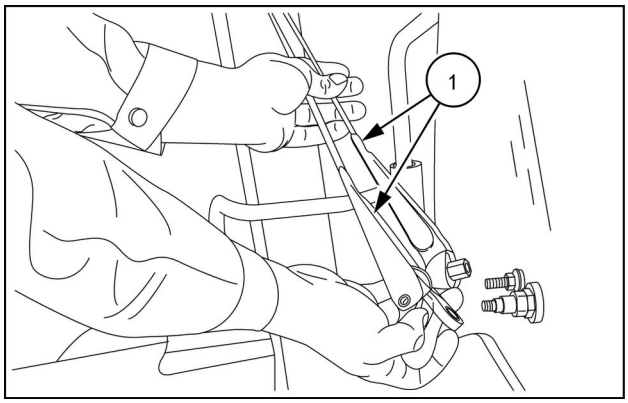
⚠ WARNING

Avoid injury!
Handle all parts carefully. Do not place your hands or fingers between parts. Use Personal Protective Equipment (PPE) as indicated in this manual, including protective goggles, gloves, and safety footwear.
Failure to comply could result in death or serious injury.

W0208A

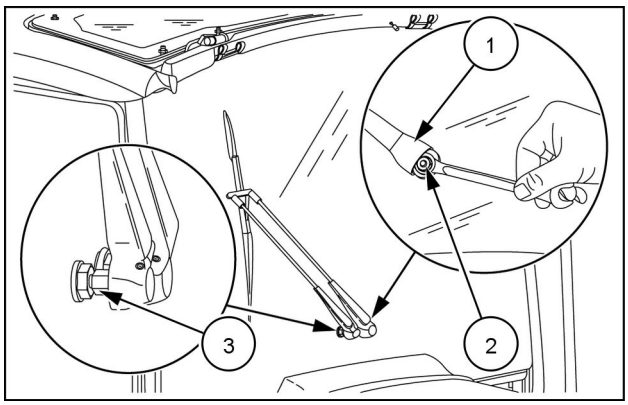
Prior operation:
Windshield wiper arm - Remove (55.518) approximately.

1. Remove the window wiper arms group **(1)** with its brush.



MOIL15TR00926AA 1

2. Screw the retaining nut **(3)** of the window wiper right arm.
3. Screw the retaining nut **(2)**of the window wiper left arm.
4. Close the protection cover **(1)** of the window wiper left arm retaining nut.



MOIL15TR00925AB 2

1017-Left-hand load sensing pin – signal too high

Control Module : CCU

Cause:
L/H LOAD SENSING PIN SIGNAL TOO HIGH (SHORT TO + **12 V**)

Possible failure modes:

1. Faulty connector
2. Faulty load sensing pin
3. Wiring harness faulty
4. Faulty controller

Solution:

1. Check the left-hand load sensing pin connector **X-331**, transmission - cab main connector **X-300B** and the connectors **X-200** and **X-210** of the controller.

   A. Ensure the connectors are connected and not damaged, that the pins are in the correct position and the fit is tight. Repair or replace as necessary.

   B. If the connectors are okay, continue to step **2**
2. Check the load sensing pin in H9, ch 10.

   A. Where possible, remove any implements to ensure the load sensing pins are not under any draft loading. If the value displayed is approximately 47, check for an intermittent circuit to the load sensing pin; repair or replace the harness as required. If the error re--occurs and no intermittent circuit is indicated, download the correct level of software. If the fault re-occurs, remove and replace the controller.

   B. If the value displayed in H9 channel 10 is not approximately 47, continue to step **3**
3. Replace the load sensing pin.

   A. Turn the ignition key switch OFF. Remove and replace the load sensing pin (If a new pin is not available interchange the left and right hand load sensing pins). If the error is cleared, remove and replace the faulty sensing pin.

   B. If the error re-occurs, continue to step **4**
4. Check for a short to + **12 V**.

   A. Disconnect the connectors **X-200** and **X-210** and the connectors **X-331** and **X-332** of both load sensing pins. Turn the ignition key switch ON.
   Check between:
   X-331 pin 1 and ground.
   X-331 pin 2 and ground.
   X-331 pin 3 and ground.
   If a voltage is indicated, repair or replace the harness as required.

   B. If the harness is okay, download the correct level of software. If the fault re-occurs, remove and replace the controller.

Wiring harnesses - Electrical schematic sheet 13 (55.100) Wiring harnesses - Electrical schematic sheet 21 (55.100) Wiring harnesses - Electrical schematic sheet 22 (55.100) Wiring harnesses - Electrical schematic sheet 25 (55.100) Wiring harnesses - Electrical schematic sheet 26 (55.100)

If a short to ground is indicated, repair or replace the harness as required.

B. If the harness is okay, download the correct level software. If the error is repeated, remove and replace the control unit (CCU).

If the switch is not okay, remove and replace the clutch disconnect switch.

B. If the switch is okay, continue with step **6**

6. Check for a short to + **12 V**.

A. Turn the ignition key switch ’ON’. Measure the voltage between the connector:

X-319 pin 2 and ground.
If a voltage is indicated, turn the ignition key switch OFF. Disconnect the connector **X-200**. Turn the ignition key switch ‘ON’. If a voltage is still indicated,repair or replace the harness as required.

B. If no voltage is indicated, download the correct level of software. If the error is repeated, remove and replace the control unit (CCU).

2085-Fuse low error

Control Module : CCU

Context:
Cause:
The + **12 V** supply voltage to the control unit (CCU) is less than + **6 V** at **X-230** pin 1. Clutch A and B safety pressure switches not supplied.
Effects:
The control unit detects no current from the pressure switches of clutches A and B, as a result it considers clutches A and B closed; it ignores this unlikely situation and generates a code that can be displayed even in situations of error code reduction.

Possible failure modes:

1. Fuse **F-009** (**5 A**) blown.

Solution:

1. Check fuse **F-009** (**5 A**).
   If the fuse is broken,

   A. replace it.

   B. If the error is repeated, remove and replace the control unit (CCU).

2438-Voltage from R3 switch too high

Control Module : CCU

Context:
Cause:
Fault codes for the gear or range lever position sensors and for the speed sensor, clutches engaged at maximum pressure and operator not present.
Effects:
The transmission is disabled and the red warning light on the dashboard blinks.

Possible failure modes:

1. Faults on the gear or range lever position sensors:
   2014 - Voltage from the gear neutral position switch is high .
   2015 - Voltage from the gear neutral position switch is low .
   2016 - Voltage from the range position switch (R1) is high .
   2017 - Voltage from the range position switch (R1) Is low .
   2018 - Voltage from the range position switch (R2) is high .
   2019 - Voltage from the range position switch (R2) is low .
2. Faults on the speed sensor:
   1049 - Wheel speed sensor open circuit
   2069 - Wheel speed sensor voltage too low
3. The control unit does not see the operator present.

Solution:

1. With the resolution of the faults generated with code 2030 (see note in the causes) the fault at issue must be resolved too.

3079-Short circuit of high side to low source of injector in cylinder 4

Control Module : ECU

Context:
The Engine Control Unit (ECU) **A-010** monitors the fuel injector power stages for a short circuit condition. If the ECU **A-010** detects a short circuit condition in the injector number 4 circuit, this fault will occur.

Cause:
The ECU **A-010** has detected a short circuit in the fuel injector number 4 circuit.

Possible failure modes:

1. Faulty fuel injector number 4, wiring.
2. Faulty fuel injector number 4, internal failure.
3. Faulty ECU **A-010**, software.

Solution:

1. Verify this fault code is still present and in an active state.

   Use the Easy Engine software provided on the Electronic Service Tool (EST) to check the fault status and to perform the cylinder cut-out test.

   A. If the fault is still present and active, continue with Step **2**.

   B. If the fault is no longer present or is in an inactive state, the fault may be intermittent and not currently active. Continue with Step **8**.

2. Check the fuel injector number 4 internal resistance.

   Disconnect the injector harness (INJ) from the fuel injector number 4 at connector.

   Use a multimeter to measure the resistance of fuel injector number 4 on the injector pins :

From	To	Value
Injector number 4 connector, pin 1	Injector number 4 connector, pin 2	There should be between **.03 - .05 Ω**

   A. If there is between **.03 - .05 Ω**, leave injector number 4 connector disconnected and continue to Step **3**.

   B. If the resistance is not between **.03 - .05 Ω**, fuel injector number 4 solenoid coil has failed. Replace fuel injector number 4.

3. Check the fuel injector number 4 injector harness (INJ) wiring for a short to a voltage source.

   With the key in the OFF position, use a multimeter to perform the following voltage check on the injector harness (INJ) side :

From	To	Value
Injector number 4 connector, pin 1	Chassis ground	There should be no voltage.
Injector number 4 connector, pin 2	Chassis ground	There should be no voltage.

   With the key in the ON position, use a multimeter to perform the following voltage check on the injector harness (INJ) side :

From	To	Value
Injector number 4 connector, pin 1	Chassis ground	There should be no voltage.
Injector number 4 connector, pin 2	Chassis ground	There should be no voltage.

   A. If there is no voltage, leave injector number 4 connector disconnected and continue to Step **4**.

3141-Fuel pump pressure has exceeded desired pressure limits

Control Module : ECU

NOTE: *If the Pressure Relief Valve (PRV) is replaced, it is necessary to perform the Replacement of the Rail Pressure Relief Valve (PRV) - Reset ECU Data with the Electronic Service Tool (EST) before you return the machine to service. See* ***Common rail Relief valve - Configure - Reset ECU data (10.218)*** *within engine technical information, if necessary.*

NOTE: *If the rail pressure sensor* ***B-103*** *is replaced, it is necessary to perform the Replacement of the Rail Pressure sensor - Reset ECU Data with the Electronic Service Tool (EST) before you return the machine to service. See* ***Common rail pressure sensor - Configure - Reset ECU data (Rail pressure sensor) (55.010)*** *within engine technical information, if necessary.*

Context:
The Engine Control Unit (ECU) **B-104** monitors fuel rail pressure. If the ECU **A-010** determines that the requested fuel pressure can not be reached, a leakage in the fuel system is assumed and this fault will occur. For more information regarding fuel system troubleshooting, see **Fuel injection system - Troubleshooting (10.218)** within engine technical information.

Cause:
The ECU **A-010** has determined that a fuel system leakage is present.

Possible failure modes:

1. Faulty fuel filters, clogged.
2. Faulty low pressure fuel lines, clogged or damaged.
3. Faulty high pressure fuel lines, clogged or damaged.
4. Faulty electric fuel pump (if equipped).
5. Faulty charge gear pump, low efficiency.
6. Faulty high pressure pump, low efficiency or excessive leak-off.
7. Faulty fuel injectors, external or internal leakage.
8. Faulty Pressure Relief Valve (PRV), leaking or stuck open.
9. Faulty rail pressure sensor **B-103** or sensor leaking.
10. Faulty fuel metering unit **B-104**
11. Faulty ECU **A-010**, software.

3260-Starter relay LS: open circuit error

Control Module : ECU

Context:
The Engine Control Unit (ECU) **A-010** controls the starter control relay **K-031** using a low side and high side driver. If the ECU **A-010** detects an open circuit in the high side driver circuit, this fault will occur.

Cause:
The ECU **A-010** has detected an open circuit in the starter control relay **K-031** high side driver circuit.

Possible failure modes:

1. Faulty starter control relay **K-031** wiring, open circuit.
2. Faulty starter control relay **K-031**, internal failure.
3. Faulty ECU **A-010**, software.

Solution:

1. Verify fault is present and active.

   Use the Electronic Service Tool (EST) to check the status of this fault.

   A. If the fault is present and active, continue with Step **2**.

   B. If the fault is no longer present or in an inactive state, the fault may be intermittent and not currently active. Continue with Step **4**.

2. Check the starter control relay **K-031** coil for an internal failure.

   Remove the starter control relay **K-031**.

   Use a multimeter to measure the relay coil resistance on the starter control relay **K-031** pins :

From	To	Value
X-190 pin 85	**X-190** pin 86	There should be approximately **70 - 130 Ω**.

   A. If there is approximately **70 - 130 Ω**, leave the starter control relay **K-031** disconnected and continue to Step **3**.

   B. If there is not approximately **70 - 130 Ω**, the relay has failed. Replace the starter control relay **K-031**.

3. Check the starter control relay **K-031** vehicle harness (VE) wiring for an open circuit.

   Disconnect the vehicle harness (VE) from the ECU **A-010** at connector **X-937**.

   With the key in the OFF position, use a multimeter to perform the following continuity check for an open circuit on the vehicle harness (VE) side :

From	To	Value
X-190 pin 23	**X-937** pin 27	There should be continuity.
X-190 pin 24	**X-937** pin 53	There should be continuity.
NOTE: *Wiggle the harness during the check to promote an intermittent electrical connection.*		

   A. If there is no continuity, there is an open circuit in the starter control relay **K-031** wiring in the vehicle harness (VE). Use the appropriate service manual, if necessary, to locate and repair the broken conductor.

   B. If there is continuity, check the ECU **A-010** for the appropriate service manual and re-flash, if necessary.

4. Visually inspect the relevant harnesses and connectors for damage, bent or dislocated pins, corroded terminals, or broken wires. Verify that the connectors are fully installed. Flex the harnesses involved to reveal intermittent breaks or shorts in the wiring concerned. Operate the machine while you monitor the display.

3449-Diagnostic fault check to report the engine speed error

Control Module : ECU

Context:
The Engine Control Unit (ECU) **A-010** monitors engine speed in multiple software levels. If the ECU **A-010** determines that there is plausibility error in the engine speed monitoring, this fault will occur.

Solution:

1. Check the ECU **A-010** for the appropriate software and re-flash, if necessary.
   A. If the fault has been resolved, return the machine to service.
   B. If the fault has not been resolved, escalate an ASIST concern.

3680-Engine speed limitation via fuel injection cut off is active

Control Module : ECU

Context:
The Engine Control Unit (ECU) **A-010** will perform an injection cut-off to limit the engine speed to a controllable range, if needed. Implausible signals from certain parameters such as accelerator pedal signal, fuel injection parameters or engine speed can cause an injection cut-off. If torque or injection quantity are not plausible and engine speed is greater than **1200 RPM**, this fault will occur. Since other active faults may have caused this fault to occur, resolve the related faults first.

Solution:

1. Check the ECU **A-010** for the appropriate software and re-flash, if necessary.

   A. If the fault has been resolved, return the machine to service.

   B. If the fault has not been resolved, escalate an ASIST concern.

3805-Maximum rail pressure exceeded

Control Module : ECU

NOTE: *If the rail pressure sensor* ***B-103*** *is replaced, it is necessary to perform the Replacement of the Rail Pressure sensor - Reset ECU Data with the Electronic Service Tool (EST) before you return the machine to service. See* ***Common rail pressure sensor - Configure - Reset ECU data (Rail pressure sensor) (55.010)*** *within engine technical information, if necessary.*

NOTE: *If the Pressure Relief Valve (PRV) is replaced, it is necessary to perform the Replacement of the Rail Pressure Relief Valve (PRV) - Reset ECU Data with the Electronic Service Tool (EST) before you return the machine to service. See* ***Common rail Relief valve - Configure - Reset ECU data (10.218)*** *within engine technical information, if necessary.*

Context:
The Engine Control Unit (ECU) **A-010** monitors fuel rail pressure using the rail pressure sensor **B-103**. If the ECU **A-010** determines that rail pressure has exceeded **1790 bar** (**25955 psi**), this fault will occur. A Pressure Relief Valve (PRV), integral to the fuel rail, is designed to open in the event of an over-pressure in the fuel rail at approximately **1790 bar** (**25955 psi**). If the ECU **A-010** determines that rail pressure has exceeded this threshold, a PRV failure is assumed. Other active faults may have caused this fault to occur. For more information regarding fuel system troubleshooting, see **Fuel injection system - Troubleshooting (10.218)** within engine technical information.

Cause:
The ECU **A-010** has determined that rail pressure has exceeded **1790 bar** (**25955 psi**).

Possible failure modes:

1. Faulty fuel back-flow, clogged.
2. Faulty PRV, unable to open to clogged return.
3. Faulty fuel metering unit **B-104**, stuck open or internal failure.
4. Faulty rail pressure sensor **B-103**, drifted.
5. Faulty ECU **A-010**, software.

5035-Rear PTO fender switch - input short to 12V

Control Module : CCU

Context:
Effects:
PTO disabled.
With the key ON and pressing the PTO fender switch(es) the central control unit (CCU) signals a fault:

Possible failure modes:

1. Faulty PTO fender switch(es)
2. Wiring fault
3. Central control unit (CCU) fault

Solution:

1. Disconnect the connector of the central control unit (CCU) **X-230** and the connector of the PTO fender switches **X-347** and **X-349**.

   A. Ensure that the connectors are connected, not damaged, the pins are in the correct position and that the fit is tight. Repair or replace as necessary.

   B. If the connectors are okay, continue to step **2**
2. Check the PTO fender switches.

   A. Disconnect both PTO fender switches **X-349** and **X-347**. Using a tester switched onto continuity tests, check whether between:
   X-347 and **X-349** pin 1 and pin 2 there is continuity
   X-347 and **X-349** pin 1 and pin 3 there is continuity only by pressing the button

   B. If the PTO fender switches work properly, pass on to step **3**

   C. otherwise replace the PTO fender switch(es).
3. Check for a short to + **12 V**.

   A. Turn the ignition key switch 'ON'. Measure the voltage between the connector:
   X-349 pin 2 and ground
   X-349 pin 3 and ground
   If positive voltage is detected, turn the key OFF. Disconnect the connector of the (CCU) **X-230** Turn the key ON and repeat the test. If voltage is still indicated, repair or replace the harness as required.

   B. If no voltage is indicated, download the correct level of software. If the error is repeated, remove and replace the central control unit (CCU).

14021-Cranking line - shorted to +12V

Control Module : ADIC

NOTE: *When the cause of the error code has been rectified, clear the error code and test the system for normal operation.*

Cause:
A short to **12 V** has been detected on the instrument cluster unit (ADIC), connector **X-460**, pin 17 for more than 1 minute.

Possible failure modes:

1. Faulty connectors
2. Faulty wiring
3. Ignition relay faulty
4. Instrument cluster unit (ADIC) defective

Solution:

1. Check for other error codes being displayed.
   A. If any other error codes are being displayed , continue to these tests.
   B. If no other error code is displayed, continue to step **2**
2. Check the connector **X-460** on the instrument cluster unit (ADIC) and the connector **X-533 X-533** on the starter relay K-029
   A. Ensure the connectors were connected, not damaged, the pins are in the correct position and that the fit is tight.
   If there are any faults, Repair or replace as needed.
   B. If the connectors are okay, continue to step **3**
3. Check for a short circuit to a positive voltage
   A. Place the shuttle lever in neutral, remove the instrument cluster and keep it connected. Start the unit, and using a suitable push rod check between the pin 17 on the back of connector **X-460** and ground.
   If a voltage is present, Repair or replace wiring harness as needed.
   B. If no voltage is indicated, download the correct level of software. If the fault re-occurs, remove and replace the instrument cluster unit (ADIC).

17308-EGR Valve: Short circuit to ground on Out1 error for H-bridge

Control Module : ECU

NOTE: *Because the Engine Control Unit (ECU)* ***A-010*** *stores historical data relevant to the operation of the Exhaust Gas Recirculation (EGR) valve* ***M-101****, it is necessary to perform the "Replacement of the Exhaust Gas Recirculation Valve (EGR) – Reset ECU Data" with the Electronic Service Tool (EST), if the EGR valve* ***M-101*** *is replaced. See* ***Exhaust Gas Recirculation (EGR) valve - Configure - Reset ECU data (EGR valve) (10.501)*** *within engine technical information, if necessary.*

Context:
The Engine Control Unit (ECU) **A-010** internally monitors the operation of the H-bridge Pulse Width Modulated (PWM) control circuit for the Exhaust Gas Recirculation (EGR) valve **M-101** actuator for electrical defects. If the ECU **A-010** detects a short circuit of the circuit wiring to chassis ground, this fault will occur. For information regarding the functional operation of the EGR valve **M-101**, see **Exhaust Gas Recirculation (EGR) valve - Overview (10.501)** within engine technical information.
For more information regarding the technical specifications of the EGR valve **M-101**, see **Exhaust Gas Recirculation (EGR) valve actuator - Technical Data (55.989)** within engine technical information.

Cause:
The ECU **A-010** is sensing a short to chassis ground condition in the EGR valve **M-101** motor actuator control circuit.

Possible failure modes:

1. Faulty EGR valve **M-101** motor, failed internally.
2. Faulty EGR valve **M-101** circuit wiring, shorted to chassis ground.
3. Faulty ECU **A-010**, software.

Solution:

1. Verify that the fault is present and active.

   Use the Electronic Service Tool (EST) to check the status of this fault.

   A. If the fault is present and active, continue with Step **2**.

   B. If the fault is no longer present or in an inactive state, the fault may be intermittent and not currently active. Continue with Step **6**.

2. Check the EGR valve **M-101** motor actuator for a short to ground condition.

   Disconnect the engine harness (EN) from the EGR valve **M-101** motor actuator connector.

   Use a multimeter to check on the component for a grounded condition :

From	To	Result
EGR valve **M-101** motor actuator connector pin 1	chassis ground	There should be no continuity.

   A. If there is no continuity, leave EGR valve **M-101** motor actuator connector disconnected and continue with Step **3**.

   B. If there is continuity, the EGR valve **M-101** motor has failed internally, replace the EGR valve **M-101**. Then use the EST, see **Exhaust Gas Recirculation (EGR) valve - Configure - Reset ECU data (EGR valve) (10.501)** within engine technical information, if necessary, to perform the "Replacement of the Exhaust Gas Recirculation Valve (EGR) – Reset ECU Data".

3. Check the EGR valve **M-101** motor actuator control circuit for a short to ground condition.

   With the key switch in the OFF position, use a multimeter to check for continuity on the engine harness (EN) side :

17383-IMA type_0 mismatch

Control Module : ECU

Context:
The Engine Control Unit (ECU) **A-010** uses an IMA code to correct fuel trim for each fuel injector equipped with the engine at every key ON. If the ECU **A-010** determines that this trim correction for fuel injector number 1 can not be performed, this fault will occur. For more information about how to configure injector IMA codes, see **Fuel injectors - Configure - IMA codes (10.218)** within engine technical information.

Cause:
The ECU **A-010** has determined that the fuel injector number 1 fuel trim correction can not be performed.

Solution:

1. Use the Electronic Service Tool (EST) ensure that the correct IMA code is programmed to fuel injector number 1.

   A. If the correct code is not programmed. Use the EST to program the correct code.

   B. If the correct code is programmed, continue to Step **2**.

   NOTE: *The IMA code may be under the paint on the fuel injector.*
2. Check the ECU **A-010** for the appropriate software and re-flash, if necessary.

   A. If the fault has been resolved, return the machine to service.

   B. If the fault has not been resolved, escalate an ASIST concern.

17446-Intake throttle valve: over temperature error for H-bridge

Control Module : ECU

Context:
The Engine Control Unit (ECU) **A-010** monitors the throttle valve actuator **M-102** output 1 and output 2 h-bridge circuits. If the ECU **A-010** detects an over temperature/current condition in the throttle valve actuator **M-102** h-bridge circuit, this fault will occur.

Cause:
The ECU **A-010** has detected an over temperature/current condition in the throttle valve actuator **M-102** h-bridge circuit.

Possible failure modes:

1. Faulty throttle valve actuator **M-102** wiring, short to ground condition.
2. Faulty throttle valve actuator **M-102** wiring, short to high source condition.
3. Faulty throttle valve actuator **M-102**, internal failure.
4. Faulty ECU **A-010**, software.

Solution:

1. Verify fault is present and active.

   Use the Electronic Service Tool (EST) to check the status of this fault.

   A. If the fault is present and active, continue with Step **2**.

   B. If the fault is no longer present or in an inactive state, the fault may be intermittent and not currently active. Continue with Step **7**.

2. Check the throttle valve actuator **M-102** h-bridge wiring for a short to battery condition.

   Disconnect the engine harness (EN) from the throttle valve actuator **M-102** at connector.

   Disconnect the vehicle harness (VE) from the ECU **A-010** at connector **X-939**.

   With the key in the ON position, use a multimeter to perform the following voltage check on the engine harness (EN) side :

From	To	Value
Throttle valve actuator connector, pin 6	Chassis ground	There should be no voltage.
Throttle valve actuator connector, pin 2	Chassis ground	There should be no voltage.

   A. If there is voltage, there is a short to battery in the throttle valve actuator **M-102** h-bridge circuit. Use the appropriate service manual, if necessary, to locate and repair the shorted conductor.

   B. If there is no voltage, leave throttle valve actuator connector and **X-939** disconnected and continue to Step **3**.

3. Check the throttle valve actuator **M-102** h-bridge wiring for a short to ground condition.

   With the key in the OFF position, use a multimeter to perform the following continuity check for a short to ground on the engine harness (EN) side :

From	To	Value
Throttle valve actuator connector, pin 6	Chassis ground	There should be no continuity.
Throttle valve actuator connector, pin 2	Chassis ground	There should be no continuity.

17482-Diagnostic fault check for supply module temperature duty cycle in failure range

Control Module : ECU

Context:
The Engine Control Unit (ECU) **A-010** evaluates the data value of a received Pulse Width Modulated (PWM) duty cycle, transmitted by the Diesel Exhaust Fluid (DEF)/AdBlue® supply module **A-021**, by measuring the current time between the falling edges of each PWM period and also measuring the current off-time, which represents the transmitted duty cycle, of that corresponding PWM period. Based on these two measured time data of a PWM period the ECU **A-010**, the receiver of the PWM signal, is able to calculate the current duty cycle of the PWM period independent of the timing accuracy of the DEF/AdBlue® supply module **A-021**, the sender of the PWM signal. The right value is in the range of **5 - 85 %** corresponding to a physical value of **0 - 3500 RPM**. If the DEF/AdBlue® supply module **A-021** transmitted internal pump duty cycle to the ECU **A-010** is lower than expected, this fault will occur.

Cause:
The DEF/AdBlue® supply module **A-021** raw duty cycle value being sent to the ECU **A-010** is less than **4 %**.

Possible failure modes:

1. Faulty DEF/AdBlue® supply module **A-021** data acquisition circuit wiring, open, grounded, or shorted to a voltage source.
2. Faulty DEF/AdBlue® supply module **A-021**, internal failure.
3. Faulty ECU **A-010**, software.

Solution:

1. Verify fault is present and active.

   Use the Electronic Service Tool (EST) to check the status of this fault.

   A. If the fault is present and active, continue with Step **2**.

   B. If the fault is no longer present or in an inactive state, the fault may be intermittent and not currently active. Continue with Step **6**.

2. Check the vehicle harness (VE) data acquisition circuit wiring.

   Disconnect the vehicle harness (VE) from the DEF/AdBlue® supply module **A-021** at connector **X-356**.

   With the key switch in the ON position, use a multimeter to check for voltage on the vehicle harness (VE) side :

From	To	Value
X-356 pin 2	chassis ground	There should be no voltage.

   With the key switch in the OFF position, use a multimeter to check for continuity on the vehicle harness (VE) side :

From	To	Value
X-356 pin 2	chassis ground	There should be no continuity.

   A. If there is voltage in the first check or continuity in the second check, leave connector **X-356** disconnected and continue with Step **3**.

   B. If there is no voltage in the first check and no continuity in the second check, leave connector **X-356** disconnected and continue with Step **4**.

3. Locate the short to a voltage source or ground condition.

   Disconnect the vehicle harness (VE) from the ECU **A-010** at connector **X-937**.

   With the key switch in the ON position, use a multimeter to check for voltage on the vehicle harness (VE) side :

19013-NH3 sensor open or short in temperature cell circuit

Control Module : ECU

Context:
The NH3 control unit **B-002** is required to report information at regular intervals to the Engine Control Unit (ECU) **A-010** via Controller Area Network (CAN). If no signal is sensed on the heater temperature sensing signal line, this fault will occur.

Cause:
The NH3 control unit **B-002** has reported a short to ground or open circuit error via CAN to the ECU **A-010**.

Possible failure modes:

1. Faulty NH3 sensor **B-002**, open or shorted or grounded internally.
2. Faulty NH3 control unit **B-002**, hardware or firmware.
3. Faulty ECU **A-010**, software.

Solution:

1. Verify fault is present and active.

   Use the Electronic Service Tool (EST) to check the status of this fault.

   A. If the fault is present and active, continue with Step **2**.

   B. If the fault is no longer present or in an inactive state, the fault may be intermittent and not currently active. Continue with Step **4**.
2. As there is no method for field testing the temperature sensing portion of the sensor, replace the NH3 sensor **B-002**.

   Then check to see that the fault is resolved.

   A. If the fault is resolved, return the machine to service.

   B. If the fault is not resolved, continue with Step **3**.
3. As there is no method of field testing or re-flashing the NH3 control unit **B-002**, replace the NH3 control unit **B-002**.

   Then check to see that the fault is resolved.

   A. If the fault is resolved, return the machine to service.

   B. If the fault is not resolved, check the ECU **A-010** for the appropriate software and re-flash, if necessary.
4. Visually inspect the relevant harnesses and connectors for damage, bent or dislocated pins, corroded terminals, or broken wires. Verify that the connectors are fully installed. Flex the harnesses involved to reveal intermittent breaks or shorts in the wiring concerned. Operate the machine while you monitor the display.

   A. If you find damage or the display indicates other than normal display readings, then repair the damage discovered during the inspection or locate and repair the other than normal display condition and verify that the error has been resolved.

   B. If you do not find damage and the display indicates only normal readings, then erase the fault code and continue operation.

Wiring harnesses - Electrical schematic sheet 18 (55.100)

19066-Upstream oxidation catalyst temperature sensor voltage is higher than expected

Control Module : ECU

Context:
The Engine Control Unit (ECU) **A-010** monitors the Diesel Oxidation Catalyst (DOC) upstream temperature sensor **B-026**. If the ECU **A-010** detects a voltage greater than **3.59 V** in the DOC upstream temperature sensor **B-026** signal circuit, this fault will occur.

Cause:
The ECU **A-010** has detected a voltage greater than **3.59 V** in the DOC upstream temperature sensor **B-026** signal circuit. If this fault is active, the ECU **A-010** will set the DOC upstream temperature sensor **B-026** value at the last valid value for a preliminary failure, or a fixed replacement value of **79.96 °C** (**175.93 °F**) if the failure is validated.

Possible failure modes:

1. Faulty DOC upstream temperature sensor **B-026** wiring, short to voltage source.
2. Faulty DOC upstream temperature sensor **B-026** wiring, open circuit.
3. Faulty DOC upstream temperature sensor **B-026**, internal failure.
4. Faulty ECU **A-010**, software.

Solution:

1. Verify fault is present and active.

   Use the Electronic Service Tool (EST) to check the status of this fault.

   A. If the fault is present and active, continue with Step **2**.

   B. If the fault is no longer present or in an inactive state, the fault may be intermittent and not currently active. Continue with Step **6**.

2. Check the DOC upstream temperature sensor **B-026** for an internal failure.

   Disconnect the vehicle harness (VE) from the DOC upstream temperature sensor **B-026** at connector **X-945**.

   Use a multimeter to measure the resistance on the DOC upstream temperature sensor **B-026** pins :

From	To	Value
X-945 pin 1	**X-945** pin 2	There should be between **170.2 - 849.7 Ω**.

   A. If there is between **170.2 - 849.7 Ω**, leave connector **X-945** disconnected and continue to Step **3**.

   B. If there is not between **170.2 - 849.7 Ω**, the DOC upstream temperature sensor **B-026** has failed. Replace the DOC upstream temperature sensor **B-026**.

3. Check the DOC upstream temperature sensor **B-026** vehicle harness (VE) wiring for a short circuit.

   With the key in the OFF position, use a multimeter to perform the following voltage check on the vehicle harness side :

From	To	Value
X-945 pin 1	Chassis ground	There should be no voltage.

   A. If there is voltage, there is a short to battery in the DOC upstream temperature sensor **B-026** wiring. Use the appropriate service manual, if necessary, to locate and repair the shorted conductor.

   B. If there is no voltage, leave connector **X-945** disconnected and continue to Step **4**.

From	To	Value
X-932 pin 1	**X-932** pin 2	There should be a nominal amount of resistance, typically **6 - 20 Ω**.

A. If there is a nominal amount of resistance, leave connector **X-932** disconnected and continue with Step **4**.

B. If there is an infinite amount of resistance on the check, the DEF/AdBlue® supply module inlet / back-flow line heater **R-001** is open. Repair or replace the appropriate heater strip.

4. Locate the open circuit condition in the vehicle harness(VE) circuit wiring.

   Place a jumper wire on the vehicle harness (VE) side between connector **X-925** pin 2 and chassis ground.

   Use a multimeter to perform the following continuity check, for an open circuit, on the vehicle harness (VE) side :

From	To	Value
X-932 pin 1	chassis ground	There should be continuity.

   A. If there is no continuity, there is an open circuit condition in the supply side of the control circuit wiring in the vehicle harness (VE) between the HCU **A-022** connector **X-925** pin 2 and the DEF/AdBlue® supply module suction line heater **R-001** connector **X-932**. Use the appropriate service manual, if necessary, to locate and repair the broken conductor.

   B. If there is continuity, there is an open circuit condition in the ground side of the control circuit wiring in the vehicle harness (VE) between the DEF/AdBlue® supply module back-flow line heater **R-001** connector **X-932** pin 2 and chassis ground. Use the appropriate service manual, if necessary, to locate and repair the broken conductor.

   NOTE: *The shared circuit configuration can vary from application to application. Refer to the appropriate service manual electrical schematics, if necessary, to confirm configuration.*

5. As there is no method of field testing or re-flashing the HCU **A-022**, replace the HCU **A-022**.

   Then check to see that this fault has been resolved.

   A. If the fault is resolved, return the machine to service.

   B. If the fault is not resolved, check the ECU **A-010** for the appropriate software and re-flash, if necessary.

6. Visually inspect the relevant harnesses and connectors for damage, bent or dislocated pins, corroded terminals, or broken wires. Verify that the connectors are fully installed. Flex the harnesses involved to reveal intermittent breaks or shorts in the wiring concerned. Operate the machine while you monitor the display.

   A. If you find damage or the display indicates other than normal display readings, then repair the damage discovered during the inspection or locate and repair the other than normal display condition and verify that the error has been resolved.

   B. If you do not find damage and the display indicates only normal readings, then erase the fault code and continue operation.

Wiring harnesses - Electrical schematic sheet 18 (55.100)

19789-SCR inducement: warning, triggered by DEF/AdBlue dosing interruption fault

Control Module : ECU

NOTE: *Since this fault is part of the inducement strategy, it may be necessary to perform the Engine Restart Counter Reset / Unlock Inducement configuration with the Electronic Service Tool (EST) before you return the machine to service, unless this was accomplished as part of the resolution of the fault causing this fault. See* ***Selective Catalytic Reduction (SCR) exhaust treatment - Configure - Engine restart counter reset (10.500)*** *within engine technical information, if necessary.*

Context:
The Engine Control Unit (ECU) **A-010** has triggered an inducement warning. This fault is only for informational purposes and requires no action other than the resolution of the active fault causing this fault to occur. Other active faults related to Selective Catalytic Reduction (SCR) DEF/AdBlue® dosing interruption will cause this fault to occur.

19883-Heater control unit detected an under voltage error - internal system failure

Control Module : ECU

Context:
The Diesel Exhaust Fluid (DEF)/AdBlue® supply module suction line heater **R-001**, the DEF/AdBlue® supply module back flow line heater **R-001**, the DEF/AdBlue® supply module pressure line heater **R-002** and the DEF/AdBlue® supply module **A-021** internal heater are controlled and monitored by the Heater Control Unit (HCU) **A-022**. The HCU **A-022** communicates with the Engine Control Unit (ECU) **A-010** via the Controller Area Network (CAN), providing required information for diagnosis and status of actuation and request of actuation command from the ECU **A-010**. If the HCU **A-022** detects an under voltage condition exists internally, this fault will occur.

Cause:
The HCU **A-022** has notified the ECU **A-010**, via CAN, that it has detected an internal under voltage condition.

Possible failure modes:

1. Faulty HCU **A-022** supply voltage circuit, damaged wiring.
2. Faulty HCU **A-022**, internal failure.
3. Faulty ECU **A-010**, software.

Solution:

1. Verify fault is present and active.

   Use the Electronic Service Tool (EST) to check the status of this fault.

   A. If the fault is present and active, continue with Step **2**.

   B. If the fault is no longer present or in an inactive state, the fault may be intermittent and not currently active. Continue with Step **4**.

2. Check for HCU **A-022** supply voltage.

   Disconnect the vehicle harness (VE) from the HCU **A-022** at connector **X-925**.

   Use a multimeter to check for voltage on the vehicle harness (VE) side :

From	To	Value
X-925 pin 11	chassis ground	There should be approximately **12 V**.
NOTE: *Typically the HCU **A-022** supply voltage is provided directly from the vehicle battery circuit through the battery disconnect switch, if equipped. It may be necessary to use the appropriate vehicle service manual and electrical schematics to confirm this to be the case. The vehicle key switch may need to be placed in the ON position to make this voltage check.*		

   A. If there is significantly less than **12 V**, use the appropriate service manual, if necessary, to locate and restore the HCU **A-022** supply voltage.

   B. If there is approximately **12 V**, leave connector **X-925** disconnected and continue with Step **3**.

3. As there is no method of field testing or re-flashing the HCU **A-022**, replace the HCU **A-022**.

   Then check to see that this fault has been resolved.

   A. If the fault is resolved, return the machine to service.

   B. If the fault is not resolved, check the ECU **A-010** for the appropriate software and re-flash, if necessary.

4. Visually inspect the relevant harnesses and connectors for damage, bent or dislocated pins, corroded terminals, or broken wires. Verify that the connectors are fully installed. Flex the harnesses involved to reveal intermittent breaks or shorts in the wiring concerned. Operate the machine while you monitor the display.

Index

Front loader and bucket - 82

Arm - 100

Cab - Remove

Farmall® 100C with cab, with Hi-Lo transmission	
Farmall® 100C with cab, with mechanical or Power shuttle transmission	
Farmall® 110C with cab, with Hi-Lo transmission	
Farmall® 110C with cab, with mechanical or Power shuttle transmission	
Farmall® 120C with cab, with Hi-Lo transmission	
Farmall® 120C with cab, with mechanical or Power shuttle transmission	
Farmall® 90C with cab, with Hi-Lo transmission	
Farmall® 90C with cab, with mechanical or Power shuttle transmission	

⚠ WARNING

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 could result in death or serious injury.

W0398A

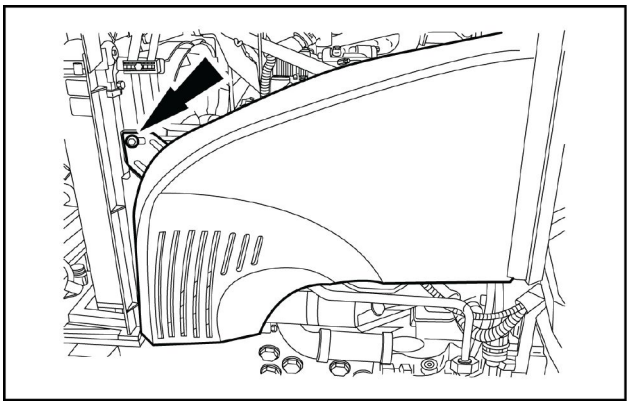
⚠ WARNING

Avoid injury!
Handle all parts carefully. Do not place your hands or fingers between parts. Use Personal Protective Equipment (PPE) as indicated in this manual, including protective goggles, gloves, and safety footwear.
Failure to comply could result in death or serious injury.

W0208A

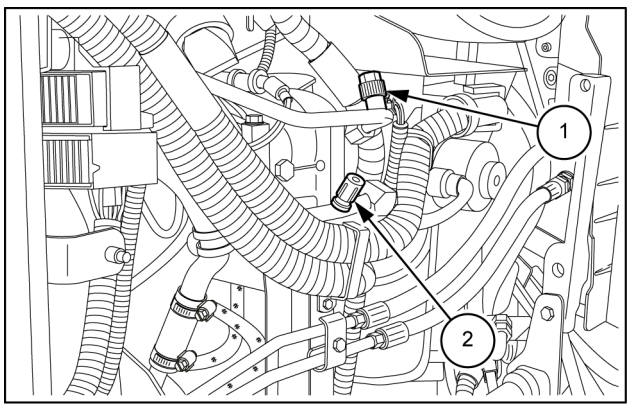
Prior operation:
Hood - Remove (90.100).
Rear wheel - Remove (44.520).

1. Remove the side panels of the engine cover.



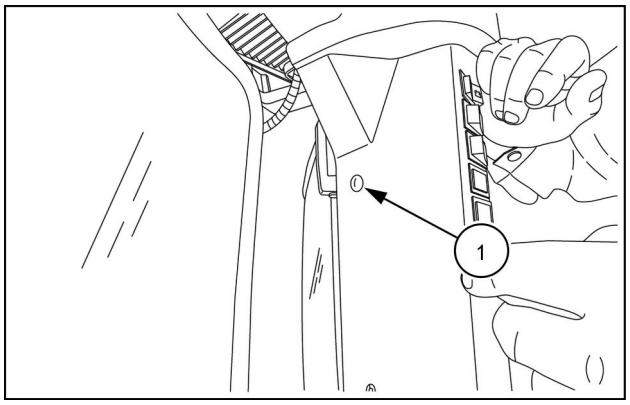
MOLI12U0166AA 1

2. Remove the caps **(1)** and **(2)**. Connect the fittings of the recovery station of the cab air-conditioning system. Drain the refrigerant from the system.



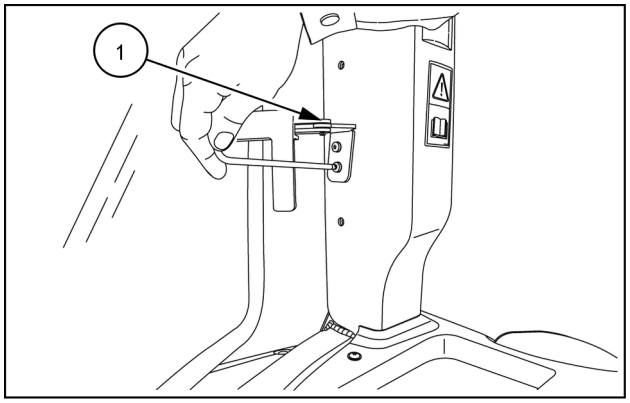
MOIL13TR01691AB 2

12. Install the pressure caps **(1)** in the cover of the left-hand pillar.



MOIL14TR00514AA 12

13. Connect the hinge **(1)** of the left-hand side window.

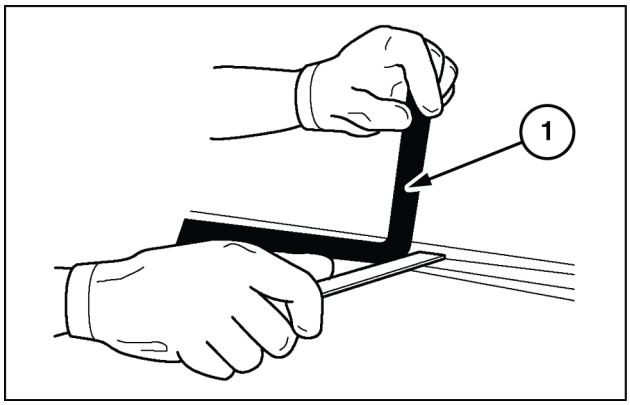


MOIL14TR00419AA 13

7. Using a spatula, remove all the adhesive **(1)** from the window surround, taking care to cause no damage.
8. Remove the adhesive from the window as described in the previous operation.

NOTE: *When replacing a broken window: remove any fragments still attached to the cab and carry out operations No.* ***1****to* ***8****.*

9. Clean the window surround using a suitable solvent.



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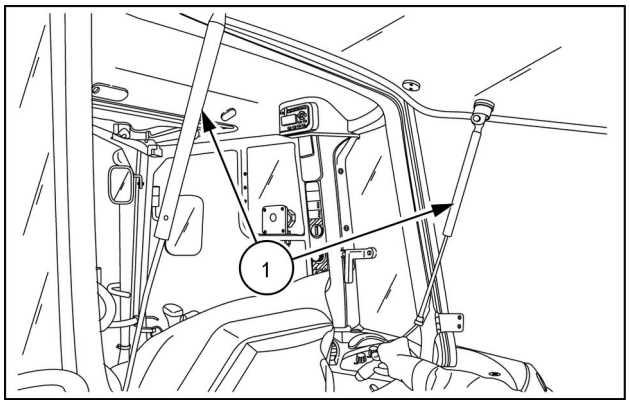
9. Install the rear window pillars **(1)** as described in **Rear window strut - Replace (90.156)**.



MOIL15TR00889AA 7

Platform rear mount - Remove

Farmall® 100C without cab, with Hi-Lo transmission	
Farmall® 100C without cab, with mechanical or Power shuttle transmission	
Farmall® 110C without cab, with Hi-Lo transmission	
Farmall® 110C without cab, with mechanical or Power shuttle transmission	
Farmall® 120C without cab, with Hi-Lo transmission	
Farmall® 120C without cab, with mechanical or Power shuttle transmission	
Farmall® 90C without cab, with Hi-Lo transmission	
Farmall® 90C without cab, with mechanical or Power shuttle transmission	

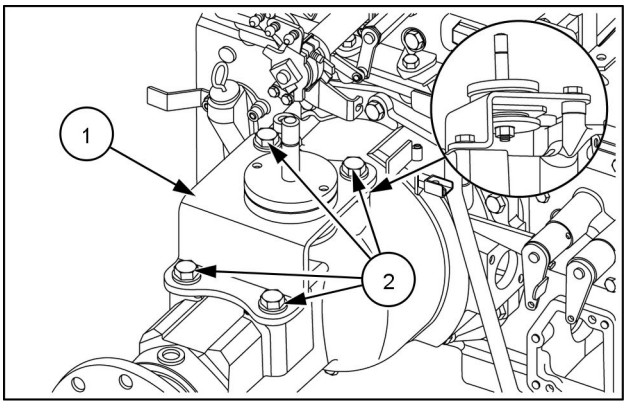
⚠ WARNING

Avoid injury!
Handle all parts carefully. Do not place your hands or fingers between parts. Use Personal Protective Equipment (PPE) as indicated in this manual, including protective goggles, gloves, and safety footwear.
Failure to comply could result in death or serious injury.

W0208A

Prior operation:
Operator platform less cab - Remove (90.110).

1. Loosen the retaining screws **(2)** of the support.
2. Remove the support **(1)**.



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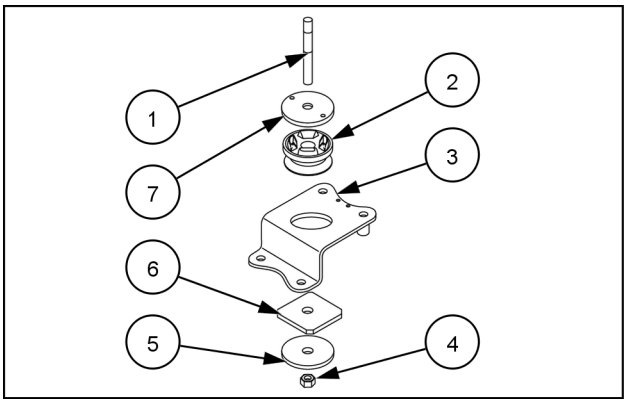
3. Loosen the nut **(4)**. Remove the threaded pin **(1)**. Retrieve the spacer **(7)**.
4. Retrieve the spacers **(5)** and **(6)**.
5. Remove the rubber ring **(2)** from the support **(3)**.



MOIL15TR00152AA 2

Next operation:
Platform rear mount - Install (90.110).