SERVICE MANUAL

T4030F / T4040F / T4050F / T4060F

Tier 3

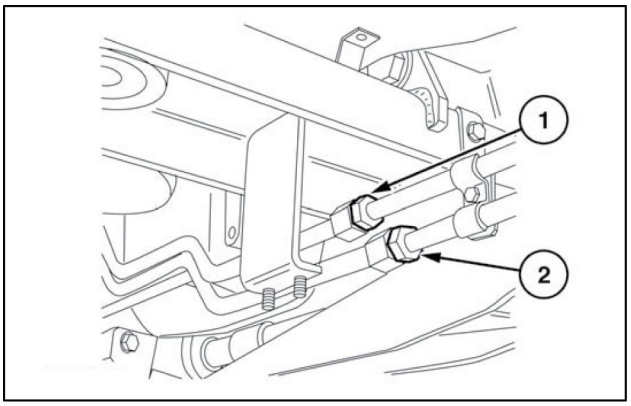
Tractor

T4030F with cab PIN ZCJD09263 - ZDJD10118; T4030F with cab PIN Z8JD05996 - ZCJD10540;
T4030F without cab PIN ZCJD10424 - ZDJD10174; T4030F without cab PIN Z8JD07917 - ZCJD10183;
T4040F with cab PIN ZCJD10607 - ZDJD10900; T4040F with cab PIN Z8JD07561 - ZCJD10129;
T4040F without cab PIN ZCJD09629 - ZDJD10408; T4040F without cab PIN Z8JD05909 - ZCJD10250;
T4050F with cab PIN ZCJD07769 - ZDJD10461; T4050F with cab PIN Z7JD01006 - ZCJD10886;
T4050F without cab PIN ZCJD11040 - ZDJD09876; T4050F without cab PIN Z8JD06807 - ZCJD10135;
T4060F with cab PIN ZBJD14608 - ZDJD11085; T4060F without cab PIN ZCJD06222 - ZDJD11528

Part number 47888341
2nd edition English
July 2016
Replaces part number 84159511

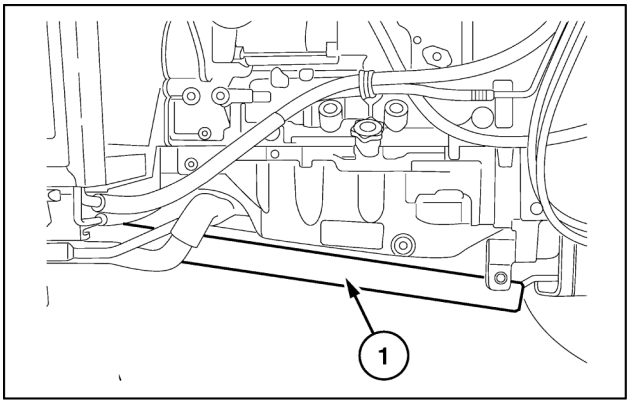
NEW HOLLAND AGRICULTURE

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



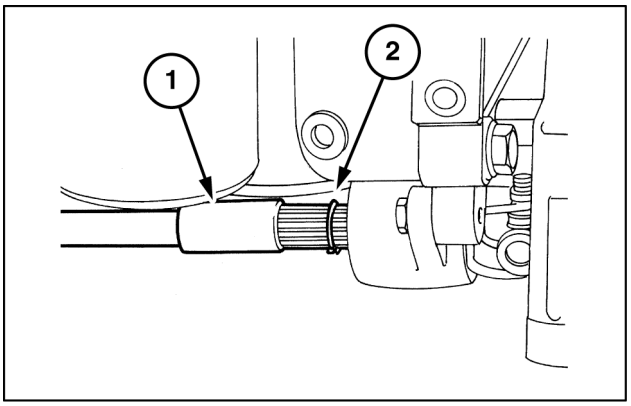
MOLI11F0004AB 4

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



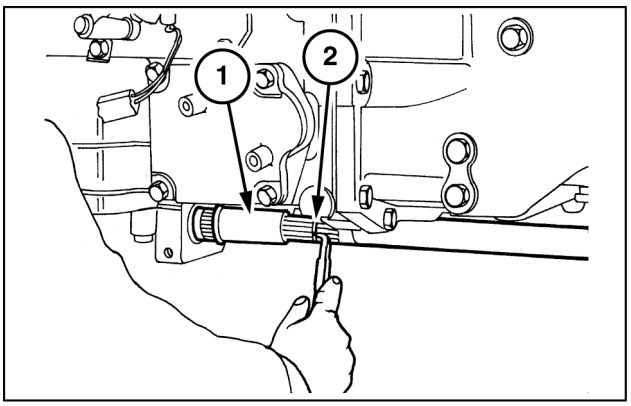
MOLI11F0005AB 5

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



MOLI11F0006AB 6

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



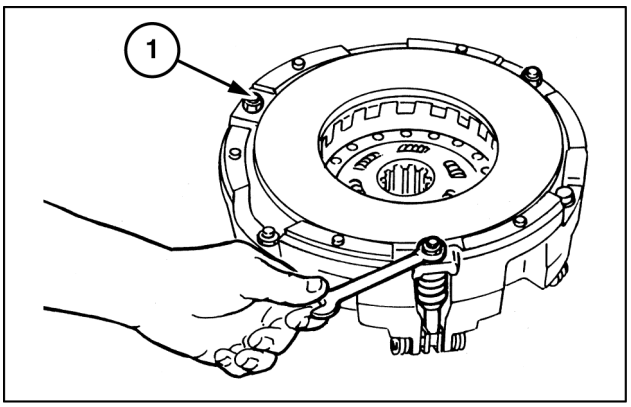
MOLI11F0007AB 7

Clutch - Overhaul

11"/11" Dual disk clutch-test bench overhaul

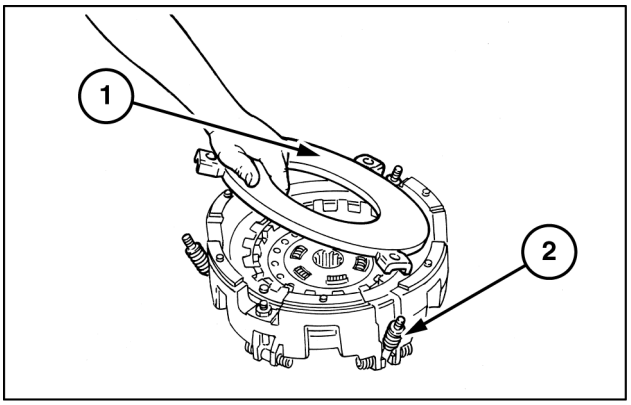
Proceed as follows:

1. Unscrew the three P.T.O. clutch lever adjustment nuts **(1)**.



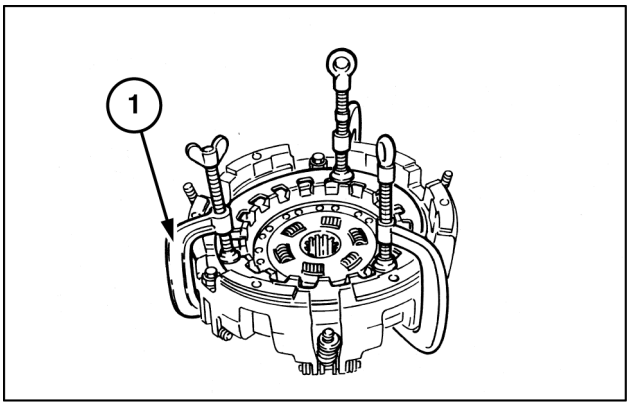
MOLI11F0046AB 1

2. Recover the pressure plate **(1)** with the three coil springs **(2)** and the three washers.



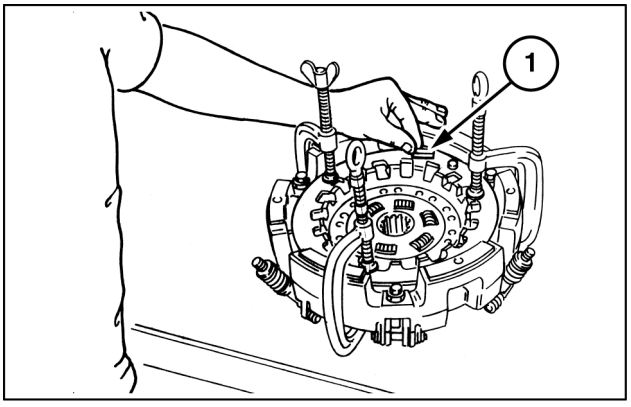
MOLI11F0047AB 2

3. Position three clamps **(1)** at intervals of 120° on the clutch body and gradually and carefully squeeze the belleville spring disk.



MOLI11F0048AB 3

4. Extract the six spring retaining pins **(1)** from their seats.



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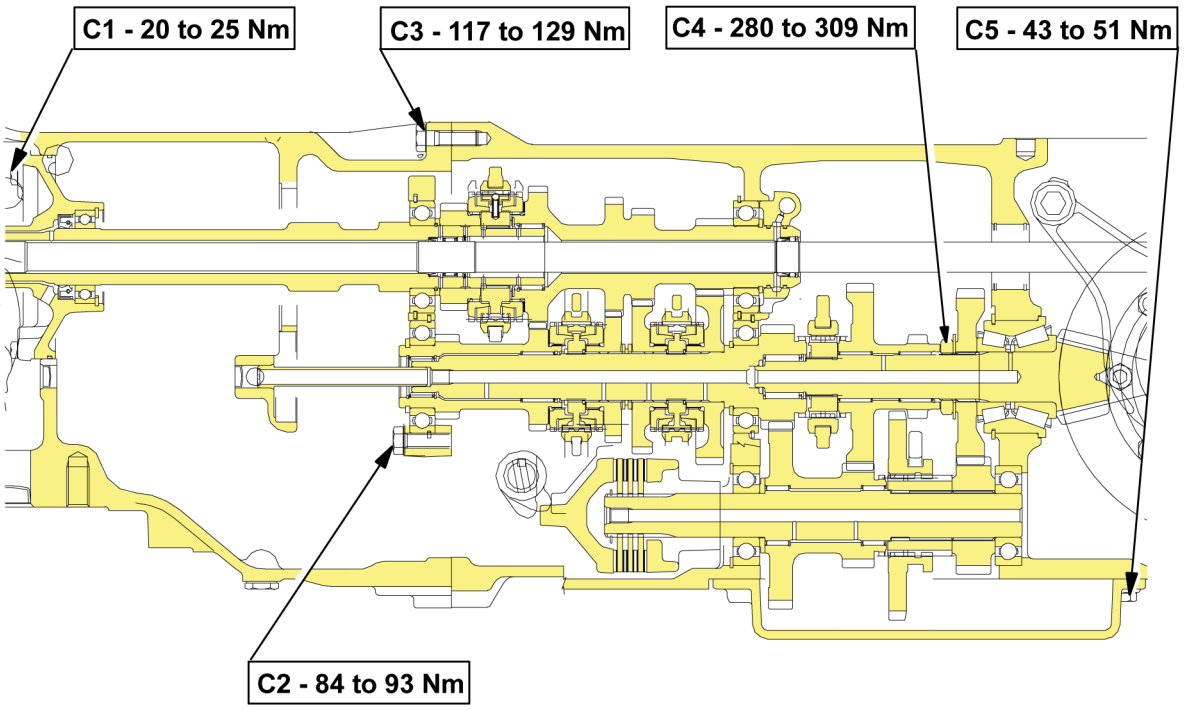
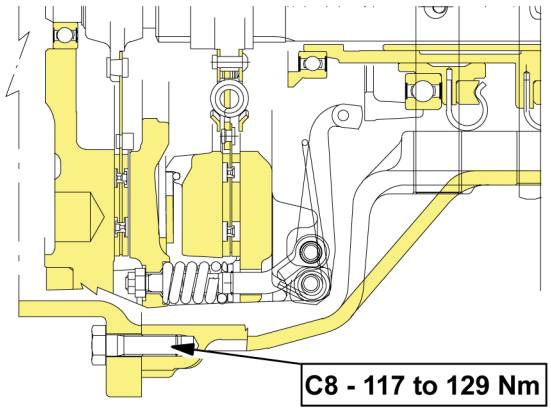
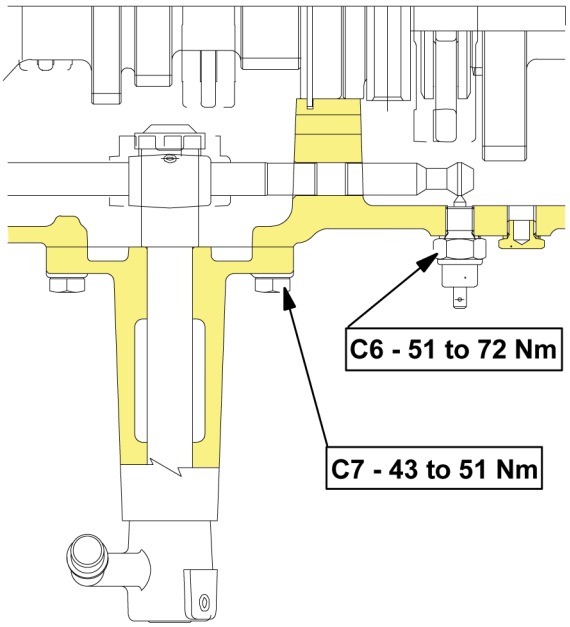
TIGHTENING TORQUES







MOLI11F0079HA 1

Transmission drive housing - Install

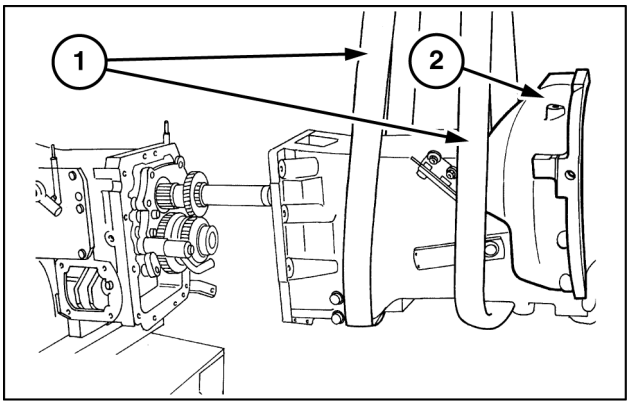
⚠ CAUTION

Pinch hazard!
Always use suitable tools to align mating parts.
DO NOT use your hand or fingers.
Failure to comply could result in minor or moderate injury.

C0044A

To refit the rear transmission-gearbox casing, proceed as follows:

- For the correct orientation of the various parts, refer to the illustrations on **Transmission internal parts - Sectional view (21.140)**, **Clutch - Sectional view (18.110)**.
- Before refitting casings, supports and covers, thoroughly clean and decrease the mating surfaces and apply a strip of sealing compound of about **2 mm** (**0.0787 in**) diameter as shown in the diagram on **Transmission drive housing - Reseal (21.114)**.
- Respect the tightening torques prescribed on **Mechanical transmission - Torque (21.114)**.
- Re-fit the clutch casing on the rear transmission-gearbox case.
- Fit the electric sensors, the drive gear oil union and the parking brake control external lever.
- Fit the support complete with creeper-shuttle control lever, remembering to attach the lever **(2)** to the bracket **(1)** and to insert the unit positioned in an anti-clockwise direction, then straighten-up the unit when it comes into contact with the casing, to facilitate the insertion of the lever **(2)** in the relative teeth.
- Assemble the creeper-reverser external control lever.
- Fit the services control valve.
- Fit the brake disks, the differential axle shafts and final drives.
- Refit the rear transmission-gearbox case and clutch casing to the engine.
- Attach the cab mounting.
- Secure the bracket fastening the auxiliary control valves and trailer brake valve to the cab support bracket.
- Refit the drive shaft.
- Fit the drive shaft front guard.
- Fit the drive shaft rear guard.
- Remove the bracket 380001613 **(1)**.



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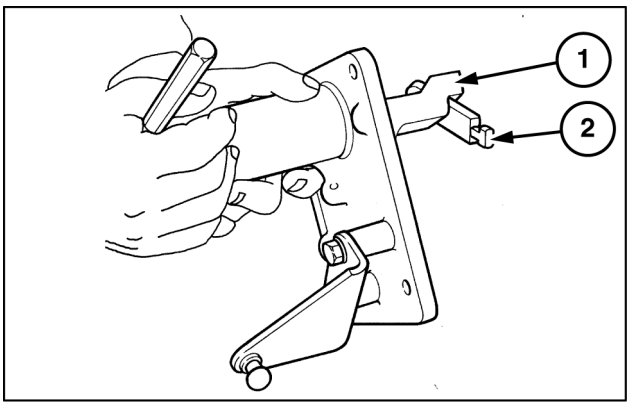

MOLI11F0129AB 2

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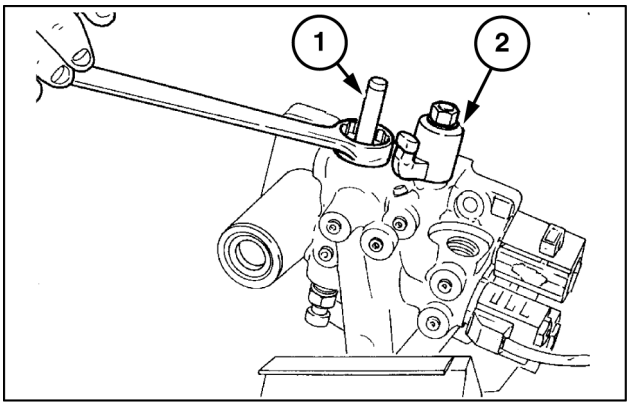
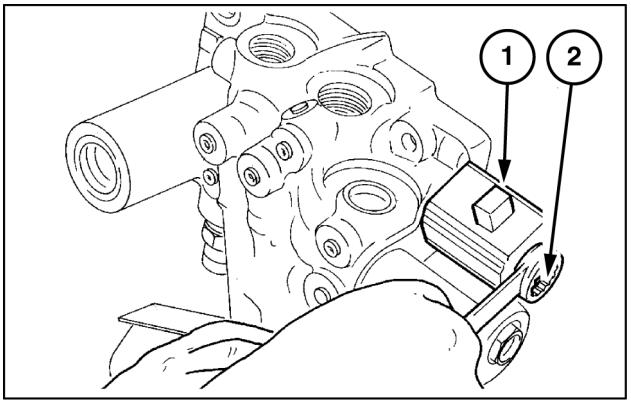
Power shuttle transmission - 112

4. Unscrew the solenoid valve pin **(1)**.
5. Carry out the operation **4** and **3** also for the solenoid valve **(2)**.



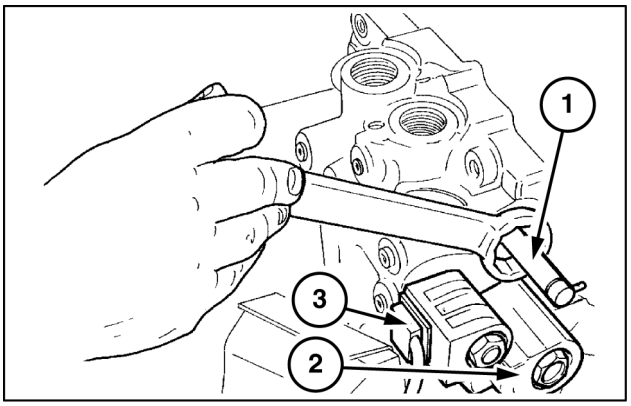
MOLI11F0206AB 4

6. Unscrew the nut **(2)** and extract the solenoid valve **(1)**.



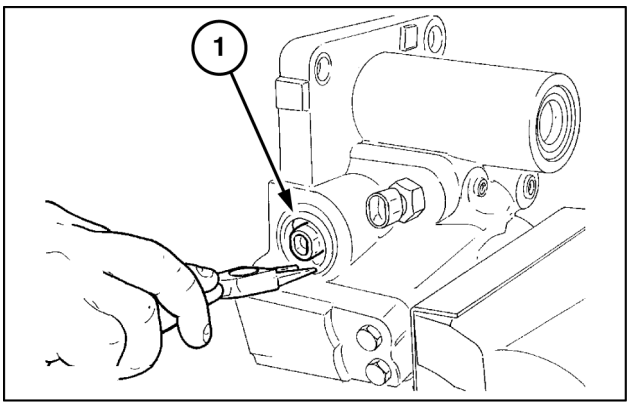
MOLI11F0207AB 5

7. Unscrew the solenoid valve pin **(1)**.
8. Carry out operations **6** and **7** also for solenoid valves **(2)** **(3)**.



MOLI11F0208AB 6

9. Remove the circlip **(1)**.



MOLI11F0209AB 7

Hi-Lo unit - Assemble

⚠ CAUTION

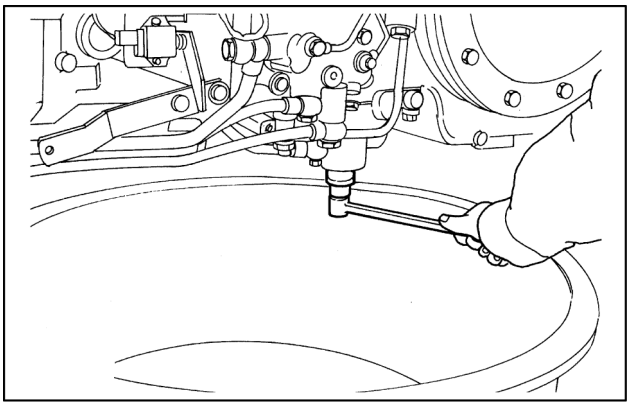
Pinch hazard!
Always use suitable tools to align mating parts.
DO NOT use your hand or fingers.
Failure to comply could result in minor or moderate injury.

C0044A

To refit the splitter device and creeper unit, proceed as follows:

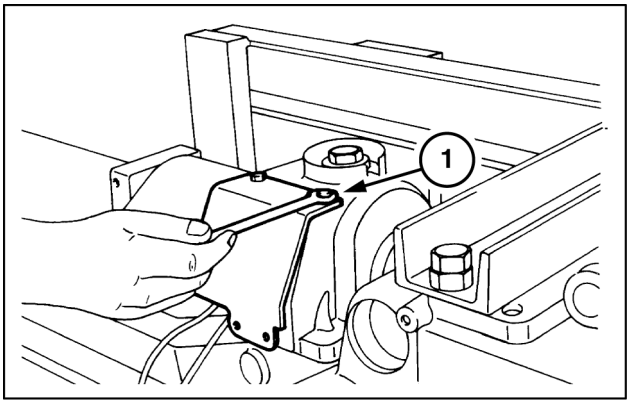
- Refer to the illustrations on **Transmission drive housing - Sectional view (21.130)**, **Creeper - Sectional view (21.160)** and **Creeper - Sectional view Gearbox with splitter and creeper unit (21.160)**.
- Respect the tightening torques prescribed on **Mechanical transmission - General specification (21.114)**.
- Fit the grooved pin, creeper unit driven gear and the relative thrust washers, lock in position using the stop ring.
- Fit the synchronizer, the stop ring and the control fork.
- Assemble the splitter driven gear, the cotter, the synchronizer engaging ring and circlip.
- Assemble the splitter driving gear and relative circlip.
- Fit the splitter driving gear and circlip.
- Fit the lubrication line.
- Fit tools 380001616 and 380001615 (respectively) on the driven and driving shafts.
- Refit the gearbox assembly as described in **Creeper - General specification (21.160)**.
- Install the gearbox casing as described in operation **Transmission drive housing - Remove (21.114)** or **Transmission drive housing - Install (21.114)**.
- Install the cab as described in operation **Cab - Install (90.100)**.

4. Remove the drainage plug of the drive gear casing and collect the oil in a suitable container.



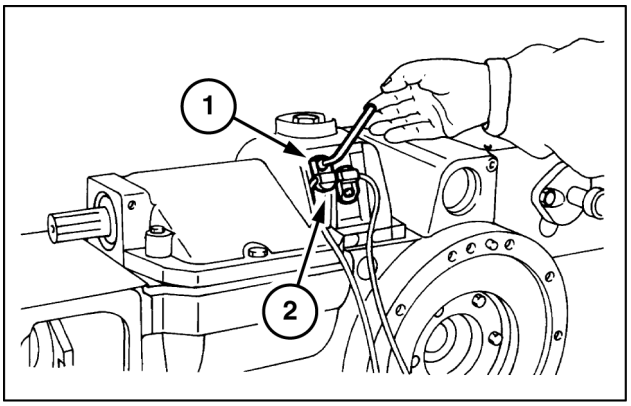
MOLI11F0221AA 4

5. Remove the sensors **(1)** guard cover on the drive gear casing.



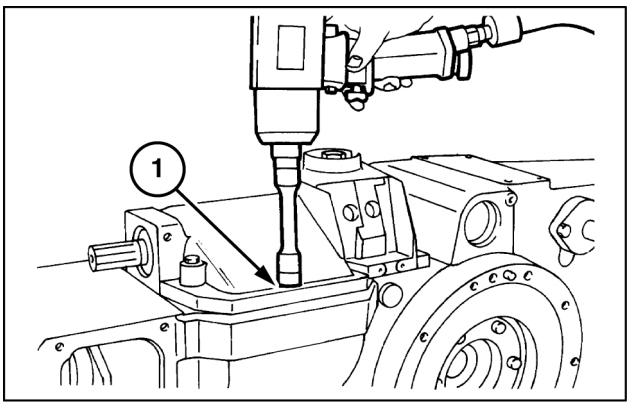
MOLI11F0222AB 5

6. Unscrew the retaining bolts **(1)** on the sensors **(2)** and remove from the drive gear casing.



MOLI11F0223AB 6

7. Unscrew the eight drive gear housing retaining bolts **(1)** on the transmission gearbox.



MOLI11F0224AB 7

Powered front axle - Special tools

NOTICE: *The operations described in this section can only be carried out with ESSENTIAL tools indicated by an (X). To work safely and efficiently and obtain the best results, it is also necessary to use the recommended specific tools listed below and certain other tools, which are to be made according to the drawings included in this manual.*

List of specific tools required for the various operations described in this section.

	380000251	Front axle overhaul stand
X	**380001613**	Front axle and engine support bracket
X	**380001623**	Splined wrench for pinions
X	**380001624**	Wrench for pinion nut
X	**380000248**	Pinion bearing adjustment tool
	380000249	Universal gauge for positioning of front bevel drive pinion
X	**380000252**	Wrench for front differential case bearing threaded adjustment ring
X	**380000295**	Wrench for front axle wheel hub bearing retaining nut
X	**380000265**	Front axle pivot pin removal tool
X	**380000234**	Front axle pivot bearing outer ring removal tool
X	**380000235**	Tool for measurement of rolling drag torque of front axle bearings
	380000240	Universal kit for testing oil pressure for front axle differential lock engagement
	380001625	Pivot pin unit guide dowel

Tool to be made for adjustment of bevel drive pinion; to be used in conjunction with tool 293391 (Mark tool No. 50118 − Measurements in mm).

Construct in UNI C40 material.

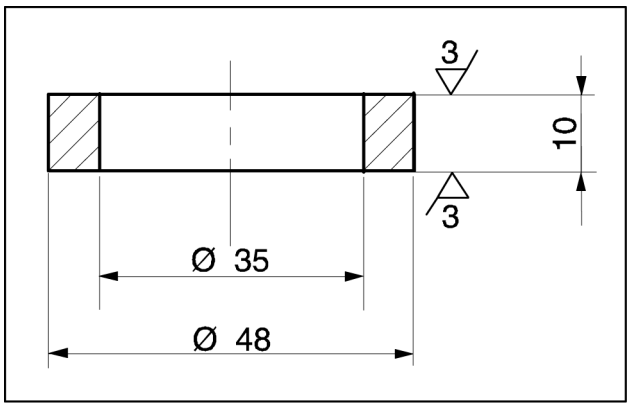


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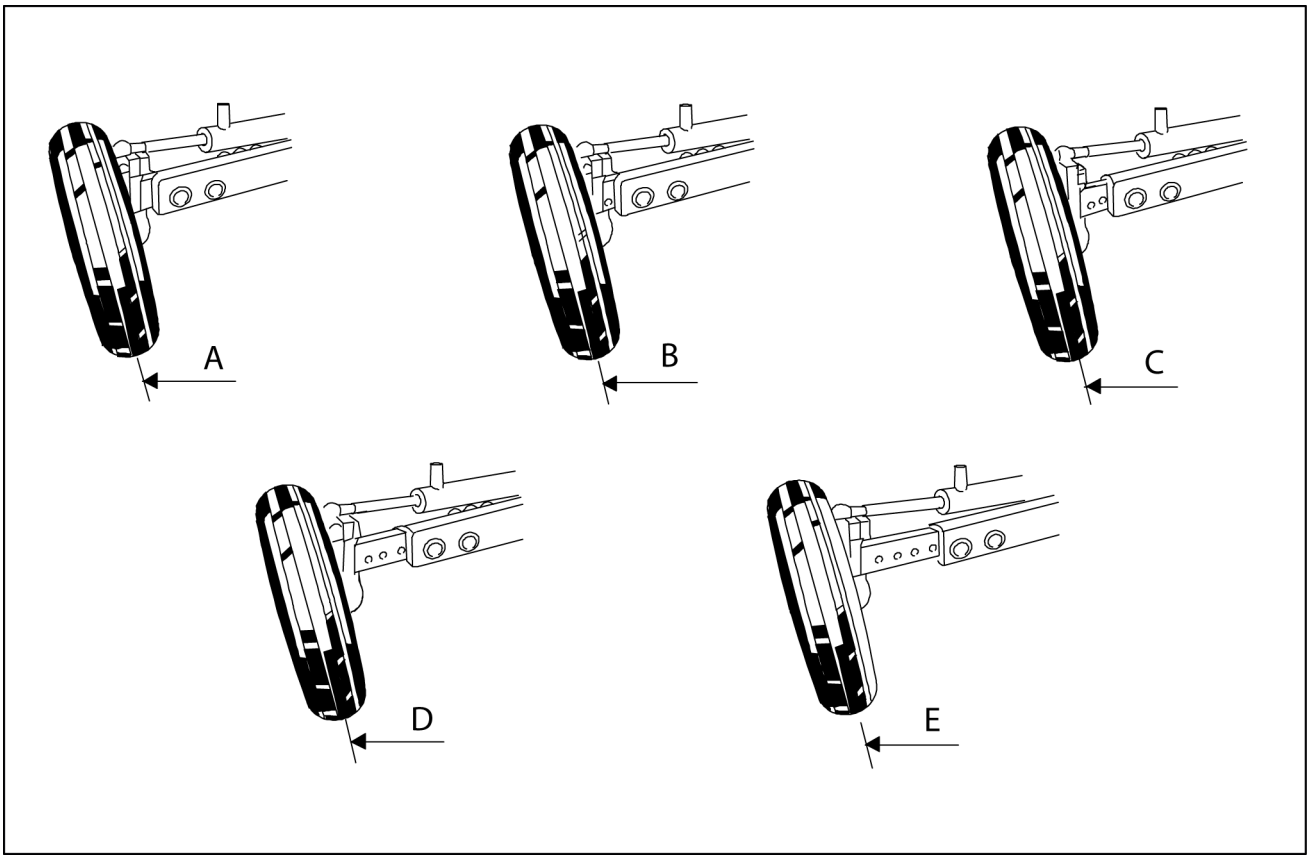
Diagram of 2WD front tracks



MOLI11F0805FB 1

Non-powered front axle - Torque

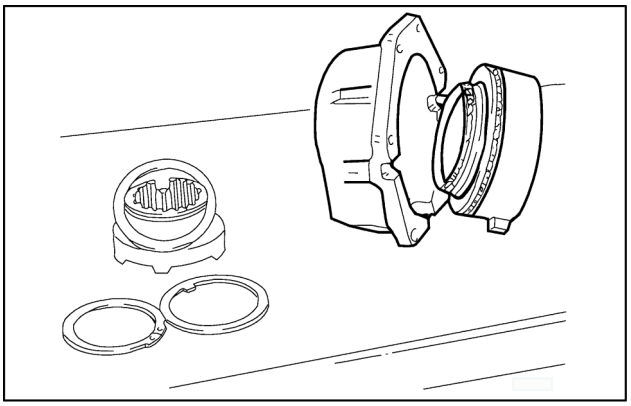
T4030F With cab - Model Year 2012 [ZCJD09263 - ZDJD10118]	NA 2WD
T4030F With cab [Z8JD05996 - ZCJD10540]	NA 2WD
T4030F Without cab - Model Year 2012 [ZCJD10424 - ZDJD10174]	NA 2WD
T4030F Without cab [Z8JD07917 - ZCJD10183]	NA 2WD
T4040F With cab - Model Year 2012 [ZCJD10607 - ZDJD10900]	NA 2WD
T4040F With cab [Z8JD07561 - ZCJD10129]	NA 2WD
T4040F Without cab - Model Year 2012 [ZCJD09629 - ZDJD10408]	NA 2WD
T4040F Without cab [Z8JD05909 - ZCJD10250]	NA 2WD
T4050F With cab - Model Year 2012 [ZCJD07769 - ZDJD10461]	NA 2WD
T4050F With cab [Z7JD01006 - ZCJD10886]	NA 2WD
T4050F Without cab - Model Year 2012 [ZCJD11040 - ZDJD09876]	NA 2WD
T4050F Without cab [Z8JD06807 - ZCJD10135]	NA 2WD
T4060F With cab [ZBJD14608 - ZDJD11085]	NA 2WD
T4060F Without cab [ZCJD06222 - ZDJD11528]	NA 2WD

8. Remove the differential lock piston.

⚠ CAUTION

Pinch hazard!
Always use suitable tools to align mating parts.
DO NOT use your hand or fingers.
Failure to comply could result in minor or moderate injury.

C0044A



MOLI11F0306AA 8

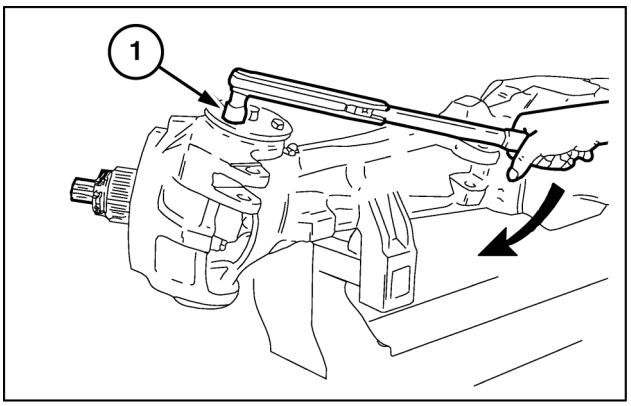
9. To refit the differential lock assembly, proceed as follows:
   - Refer to the instructions on **Powered front axle - Sectional view - Front axle with differential lock (25.100)** for the positioning of the various parts.
   - Respect the tightening torque values prescribed on **Powered front axle - Torque (25.100)**.
   - Carefully check the condition of the two O-ring seals installed on the piston.
   - Install the piston, complete with O-ring seals.
   - Install the sliding sleeve and the relative thrust washers.
   - Assemble the differential lock sleeve and clip.
   - Fit the clutch bell housing complete with spring and piston, securing in position following the removal instructions on **1** to **8** for removal.
   - Refit the oil delivery union.

Steering knuckle and king pin - Assemble

To refit the steering knuckle and wheel hub, proceed as follows:

- Refer to the illustrations on **Powered front axle - Sectional view (25.100)** and **Powered front axle - Sectional view - Front axle with differential lock (25.100)** for the positioning of the various parts.
- Respect the tightening torque values prescribed on **Powered front axle - Torque (25.100)**.
- Assemble the steering knuckle on the axle body and adjust the bearings as follows:

1. Smear **NEW HOLLAND AMBRA GR-9 MULTI-PURPOSE GREASE** on the outer races of the bearings and fit the upper cover, without the adjustment plate, but with tool **380000235 (1)**. Tighten the retaining bolts to a torque of **64 N·m** (**47.2 lb ft**).
2. Fit the lower cover without adjustment plate, lubricate the three retaining bolts with engine oil.
3. Gradually tighten the lower cover bolts in sequence, while simultaneously rotating the casing to allow excess grease to escape.
4. Using a torque wrench and tool **380000235 (1)**, check that the torque required to rotate the casing is **3.9 - 5.9 N·m** (**2.9 - 4.4 lb ft**) without considering the peak starting value. If not, adjust by way of the lower cover bolts.
5. Measure the gap “H” created between the lower cover and the casing adjacent to each of the three bolts.
6. Calculate the average of the three values measured. The total thickness of the adjustment shims **(14)**, (**Powered front axle - Sectional view (25.100)**) to be fitted under the lower cover will be the average obtained, rounded down to the next **0.05 mm** (**0.0020 in**).
7. Partially unscrew the lower cover bolts, insert the shims **(14)**, (**Powered front axle - Sectional view (25.100)**) and tighten the bolts to a torque value of **64 N·m** (**47.2 lb ft**).
8. Check that the torque necessary to rotate the casing is **3.9 - 9.8 N·m** (**2.9 - 7.2 lb ft**), without considering the initial peak torque.
9. If the torque value measured is greater than the prescribed value, increase the thickness of the shims; if the measured value is less than the prescribed value, reduce the thickness of the shims.
10. Remove tool **380000235** and tighten the retaining bolts to a torque value of **64 N·m** (**47.2 lb ft**).
11. Assemble the grease fittings in the upper and lower covers and grease the assembly.
12. Refit the front epicyclic final drive (see **Planetary drive and hub - Disassemble (25.108)** and **Final drive - Disassemble (25.108)**).



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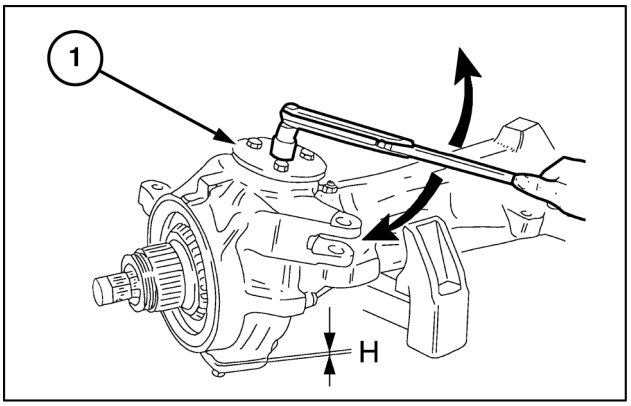

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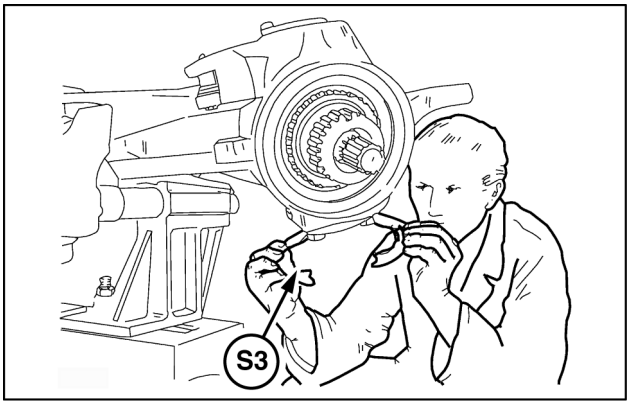

MOLI11F0286AB 3

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Rear axle system - 27

Powered rear axle - 100

Differential lock - Troubleshooting

Problem	Possible Cause	Correction
The differential lock fails to engage	Transmission oil level insufficient	Top up oil level
	Clogged oil filter	Replace filter
	Hydraulic pump faulty	Overhaul or replace pump
	Differential lock control switch faulty	Replace differential lock switch
	No power at solenoid valve: connections loose or damaged, contactor defective	Check electrical connections and replace defective parts
	Differential lock control solenoid valve jammed in discharge position	Overhaul or replace solenoid valve
	Oil leakage through seals, leading to drop in pressure: cylinder piston or feed pipe seals	Replace all defective seals
Differential lock fails to disengage	Differential lock engage/release switch faulty	Replace differential lock switch
	Differential lock solenoid valve jammed in delivery position	Overhaul or replace solenoid valve
	Disengage spring faulty	Remove the hydraulic lift and replace the spring

Contents

Power Take-Off (PTO) - 31

Rear mechanical control - 101

Contents

Power Take-Off (PTO) - 31

Front Power Take-Off (PTO) - 146

Drive shaft - Install

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

- Apply the torque settings listed on **Front Power Take-Off (PTO) - Torque (31.146)**.
- Refit the lower guard and the front power take-off unit, complete with universal joint, to the battery support and tighten the four retaining bolts.
- Assemble the lower support and cardan shaft, tightening the retaining bolts.
- Assemble the upper bracket with stud bolts.
- Assemble the lower pivot pin.
- Assemble the lower bracket, the rest and the retaining bolt on the lower pivot pin.
- Assemble the drive shaft support and tighten the retaining bolts.
- Move the front sleeve forwards and assemble the circlip.
- Move the rear sleeve forwards and assemble the circlip.
- Assemble the drive shaft guard and tighten the retaining bolts.
- Assemble the drive engage shaft and split pin.
- Insert the two front axle tie rods on the tank support, then tighten the retaining nuts.
- Assemble the power take-off upper guard and tighten the retaining bolts.
- Hitch the battery support to a hoist, raise and remove the two stands from under the cab front support brackets.
- Hitch the lift support, complete with hydraulic cylinders and power take-off, to a hoist and re-attach to the front axle casing, tightening the four retaining bolts.
- Assemble the front lift cylinders oil supply piping.
- Assemble the electrical connection and the front lift arms position sensor, tightening the retaining bolts.
- Assemble the electromagnetic coupler electrical connection.
- Assemble the battery.
- Attach the electromagnetic coupler and front lift arms position sensor electrical power supply cables, to the power steering piping, using the bracket and clamp.
- Assemble the front lift upper guard and tighten the retaining bolts.
- Assemble the power take-off guard and tighten the retaining bolts.
- Assemble the lift lower arms, the retaining bolts and the split pins.
- Assemble the front guard.

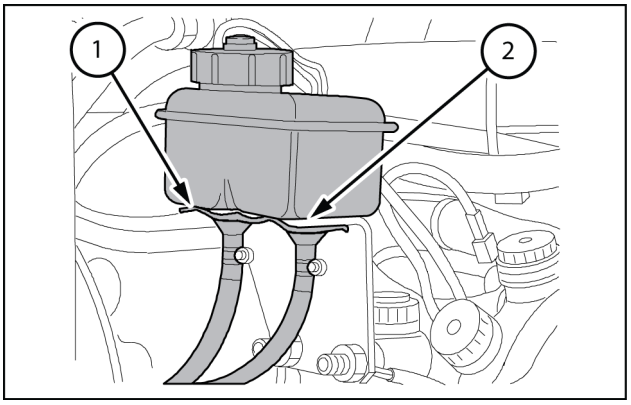
Brake lines - Bleed

Air bleed

Brakes hydraulic system

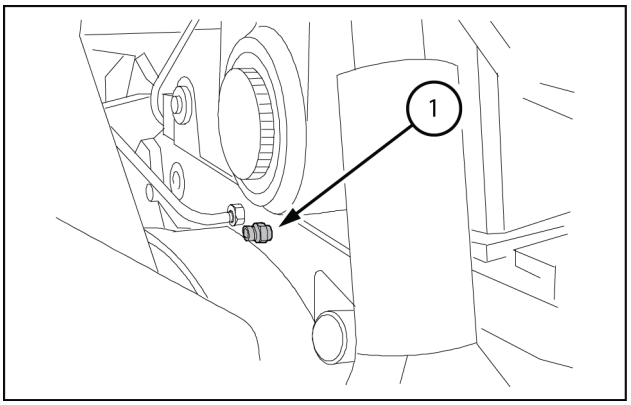
Air must be bled out whenever carrying out work on the brake hydraulic system.
Proceed as follows:

1. Remove the cap and thoroughly clean the external parts of the assemblies near the bleeding screws and the hydraulic oil reservoir cover.
2. Check that the right-hand **(2)** and the left-hand **(1)** brake reservoirs are full, both before and during bleeding.
3. Push the left-hand brake pedal down, slowly and fully, so that the oil is put in pressure.



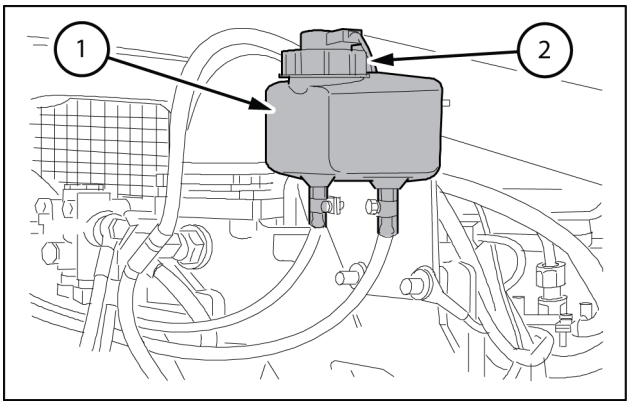
MOLI11F0425AB 1

4. Keep the pedal pressed down, unscrew the bleeding screw **(1)** by half a turn, allowing the oil/air bubble mixture to flow out.
5. Tighten the screw **(1)** and repeat the aforementioned operation until oil without air bubbles flows out.
6. Press the brake pedals again to put the circuit under pressure, i.e.: when the pedal travel returns to normal.
7. Repeat the aforementioned operation on the right-hand part of the brake circuit.
8. On completion of the operation, top up the oil level in the reservoir.



MOLI11F0426AB 2

9. After having bled the rear brake circuit, thoroughly clean the external parts of the assemblies near the hydraulic oil reservoir cover **(2)**.
10. Check that the right-hand brake reservoir **(1)** is full, both before and during bleeding.



MOLI11F0427AB 3

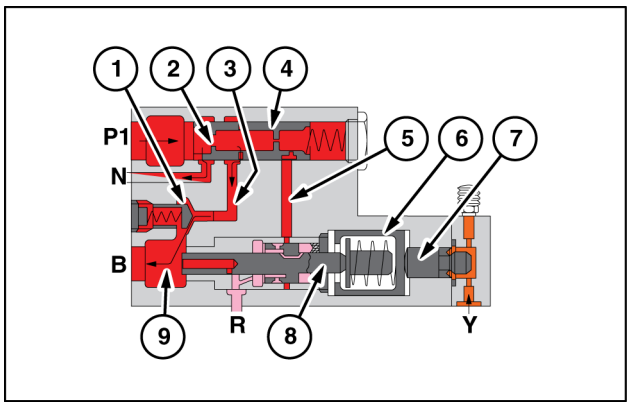
Start of braking

On operating the tractor brake pedals, the oil of the hydrostatic circuit in port "Y" is pressurised and thus shifts the piston **(7)** to the left, the pressure limiter **(6)** and the stem **(8)** which closes the passage between the oil return port "R", trailer brake port "B" and the line **(5)**.

The oil inside the flow control valve **(4)** is maintained at a uniform pressure, allowing the valve element, under the action of the spring, shifts to the left to assume the position indicated in Fig. **3**.

Part of the oil from the hydraulic pump in port "P1" flows to the auxiliary control valves through port "N", while the remaining part arrives at the tractor braking element via the diaphragm **(2)**, line **(3)**, check valve **(1)** and port "B".

As the pressure of the oil in the trailer brake port "B" increases, it acts on the active surface **(9)** of the stem **(8)**, opposing the pressure applied on piston **(7)** by the oil in the hydrostatic tractor brake circuit.



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Pressurized oil

Oil in suction, delivery or return

Pressurised tractor brake circuit oil

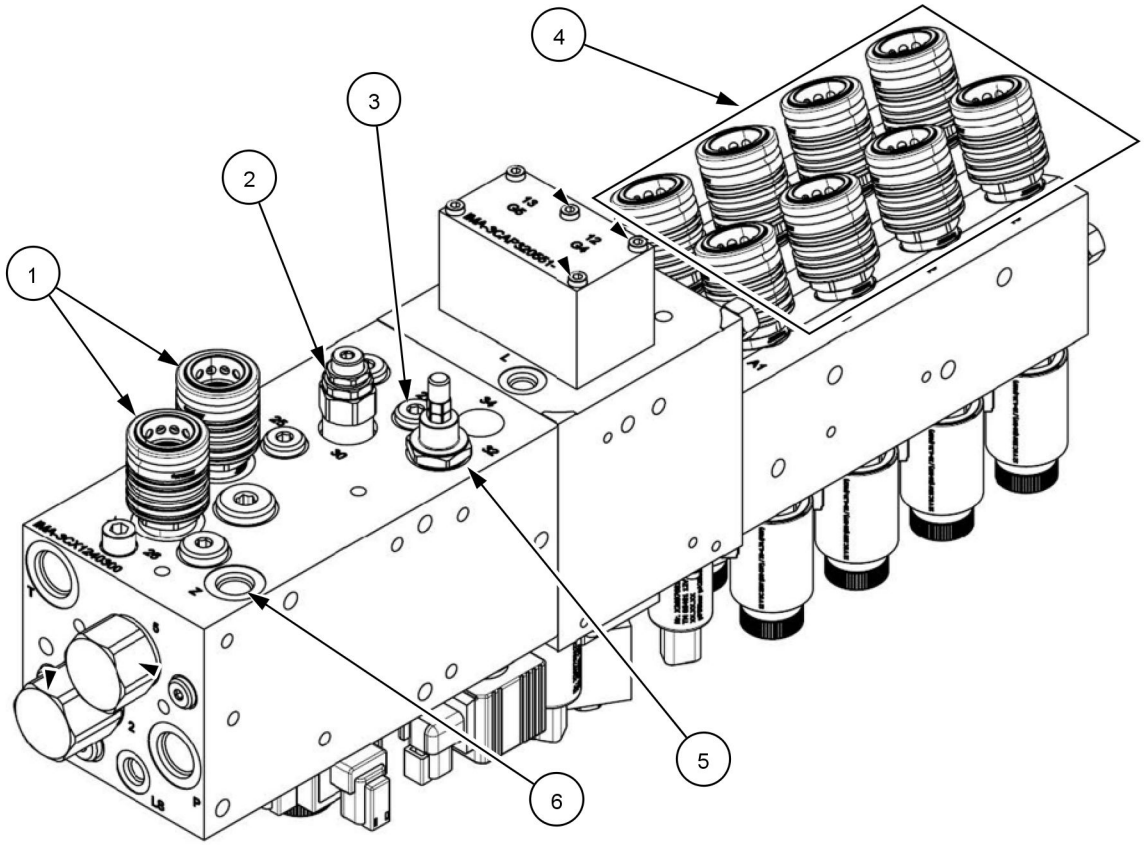
Hydraulic systems - Hydraulic schema - Power Shuttle transmission

Remote control valves - General specification

Filter	Full-flow filter, with paper cartridge, (common to the hydraulic lift circuit)
Pump	Gear pump (common to the hydraulic lift circuit)
Side auxiliary control valves	
Location	Spool valve block on the right of the driver's seat, outside the cab
Method of operation	With joystick secured to the right fender inside the cab
Pressure relief valve setting	**190 - 195 Kg/cm² (2702 - 2774 psi)**
Type	4 controlled delivery spool valves and two spool valves, with maximum flow rate of **20 l/min** for hydraulic motor control

Mid-mount remote control valve - Component localization

T4030F With cab - Model Year 2012 [ZCJD09263 - ZDJD10118]	NA
T4030F With cab [Z8JD05996 - ZCJD10540]	NA
T4040F With cab - Model Year 2012 [ZCJD10607 - ZDJD10900]	NA
T4040F With cab [Z8JD07561 - ZCJD10129]	NA
T4050F With cab - Model Year 2012 [ZCJD07769 - ZDJD10461]	NA
T4050F With cab [Z7JD01006 - ZCJD10886]	NA
T4060F With cab [ZBJD14608 - ZDJD11085]	NA

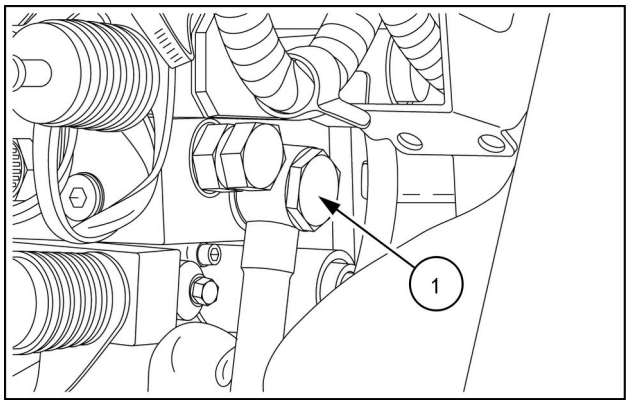


MOIL14TR00232FA 1

View of the side auxiliary control valves

1. Pair of control valves for hydraulic motor control
2. Pressure relief valve
3. Valve Check
4. Quick couplers for side control valves
5. Compensated flow adjustment valve
6. Hole for connecting the front lift control piping (where applicable)

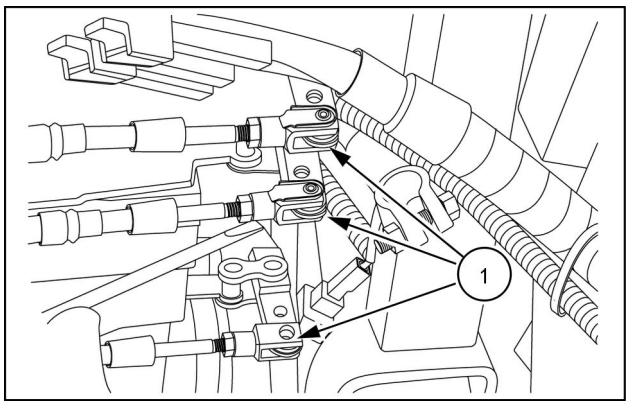
8. Loosen the fitting **(1)**. Remove the oil supply pipe.



MOIL15TR00124AB 8

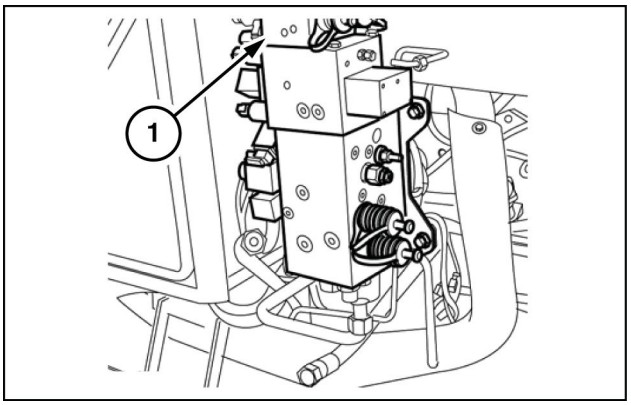
9. Disconnect the battery. Refer to the section: **Battery - Remove (55.302)**

10. Disconnect the control linkages of the auxiliary control valves **(1)**.



MOIL15TR00125AB 9

4. Disconnect the various pipes from the control valve assembly **(1)**. Loosen the screws fixing the assembly to the relevant support. Detach the assembly.



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Lowering phase

When the lift control push button is activated to lower the hydraulic lift arms **(1)**, the microprocessor identifies this variation and transmits a signal to the hydraulic control valve lowering solenoid valve **(10)**. The solenoid valve receives the signal and moves the pilot valve to the left. This allows the oil in the pipe (**(14)**, low pressure circuit), to arrive at the right-hand end of the control valve block pin.

The control valve block pin moves to the left, stopping the pump delivery oil in the pipe **(9)**. The oil in the pipe **(14)**, by means of the control valve block pin, arrives at the lifting valve **(18)**, moving it to the right to act on the non-return valve **(8)** ball.

With the ball moved, the hydraulic control valve oil can flow through the pipe **(7)** and arrive at the control valve, and then, by means of the pipe **(13)**, on to the rear transmission casing.

When the oil is discharged from the lift cylinder, the arms can lower.

The lowering speed is controlled by the signal from the lowering solenoid valve **(10)** which, by opening and closing the pilot valve, allows the control valve block pin to constantly adjust the volume of oil to be sent to the hydraulic lift cylinder **(1)**.

When the tractor operates with controlled draft, the microprocessor lowers the hydraulic lift arms, but measures the draft variations transmitted to the implement, by means of the load measuring pin on the draft transmission rod.

If the draft on the implement exceeds the value set by the operator, the microprocessor sends a signal to the lifting solenoid valve **(16)** and gradually raises the implement until the conditions selected by the operator are obtained. If, after having lifted the implement, the draft drops below the set value, the microprocessor sends a similar signal to increase the working depth of the implement.

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Rear three-point hitch - General specification

Rear hydraulic lift data

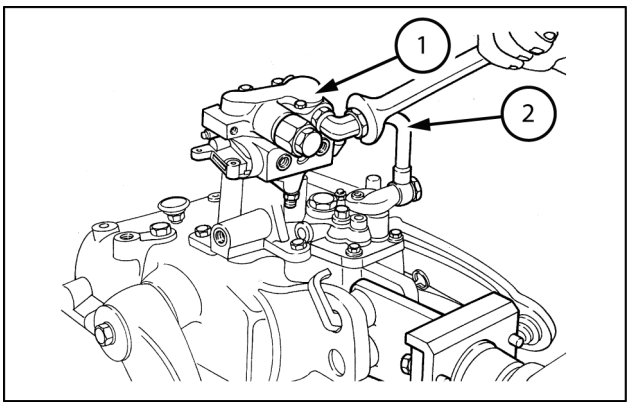
Type	With position/draft control and mixed control
Operation	By means of two independent levers
Setting speed of lift reaction	Automatic, by means of hydraulic device integral to control valve
Lift-O-Matic	Allows fast lifting/lowering operations using push buttons, without using the draft control position levers
Single-acting cylinder	
Rated diameter and stroke	**95 - 128 mm** (**3.740 - 5.039 in**)
Capacity	**907 cm³** (**55.349 in³**)
Pressure relief valve setting	**190 - 195 bar** (**2755 - 2828 psi**)
Cylinder safety valve setting	**210 - 215 bar** (**3045 - 3118 psi**)
Lift piston diameter	**94.98 - 95.000 mm** (**3.739 - 3.740 in**)
Internal diameter of cylinder liner	**95.036 - 95.071 mm** (**3.742 - 3.743 in**)
Clearance between piston and liner	**0.036 - 0.091 mm** (**0.001 - 0.004 in**)
Diameter of arm lifting shaft **(5) Rear three-point hitch - Sectional view (35.724) Figure 1** in relation to bushings	
Right-hand side	**54.97 - 55.000 mm** (**2.164 - 2.165 in**)
Left-hand side	**47.975 - 48.000 mm** (**1.889 - 1.890 in**)
Internal diameter of bushings fitted on lift body:	
Right-hand side **(4) Rear three-point hitch - Sectional view (35.724) Figure 1**	**55.1 - 55.184 mm** (**2.169 - 2.173 in**)(1)
Left-hand side **(6)**	**48.1 - 48.184 mm** (**1.894 - 1.897 in**)(1)
Clearance between lifting arm shaft and relative right-hand side bushings	**0.1 - 0.214 mm** (**0.004 - 0.008 in**)
Clearance between lifting arm shaft and relative left-hand side bushings	**0.1 - 0.209 mm** (**0.004 - 0.008 in**)
Interference between bushings and relative seats	**0.065 - 0.161 mm** (**0.003 - 0.006 in**)
End float of shaft complete with lift arms	**0.2 - 1.4 mm** (**0.008 - 0.055 in**)
External diameter of draft control idler shaft	**21.967 - 22.000 mm** (**0.865 - 0.866 in**)
Internal diameter of seats in support	**22.020 - 22.072 mm** (**0.867 - 0.869 in**)
Clearance between idler shaft and its seat	**0.020 - 0.105 mm** (**0.001 - 0.004 in**)
Diameter of position control idler shaft	**13.973 - 14.000 mm** (**0.550 - 0.551 in**)
Internal diameter of position control idler shaft	**14.016 - 14.059 mm** (**0.552 - 0.554 in**)
Clearance between draft control idler shaft and position control idler shaft	**0.016 - 0.086 mm** (**0.001 - 0.003 in**)
Clearance between control valve block pin **(7) Hitch control valve - Sectional view (35.100) Figure 1** and the relative seat on the control valve block body	**0.008 - 0.012 mm** (**0.0003 - 0.0005 in**)(2)
Clearance between lift control valve **(9)** and the relative seat on the control valve block body	**0.008 - 0.014 mm** (**0.0003 - 0.0006 in**)(2)
Check valve return spring **(3) Hitch control valve - Sectional view (35.100) Figure 1**	
Spring free length	**25.5 mm** (**1.004 in**)
Spring length under load of **52 - 56 N** (**11.69 - 12.59 lb**)	**17.5 mm** (**0.689 in**)
Control valve block pin return spring **(5) Hitch control valve - Sectional view (35.100) Figure 1**	
Spring free length	**50.5 mm** (**1.988 in**)

Rear three-point hitch - Disassemble

Rear hydraulic lift

Disassemble the hydraulic lift as follows:

1. Position the lift on a rotating stand **380000301 (4)** using the bracket **50155 (3)** to be made in the workshop (see **Rear three-point hitch - Special tools (35.723)**).
2. Disconnect the connecting pipe **(2)** between the auxiliary control valve block **(1)** and the lift control valve block, unscrew the retaining bolts and remove the auxiliary control valve blocks **(1)**, recovering the O-ring seals.



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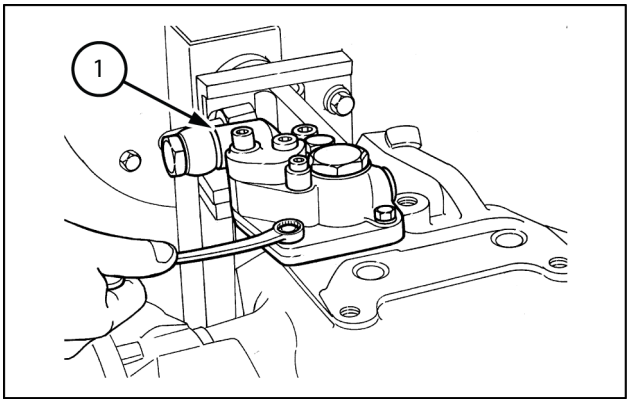
3. Unscrew the retaining bolts and remove the hydraulic lift control valve **(1)**.
4. Rotate the lift, holding the arms.



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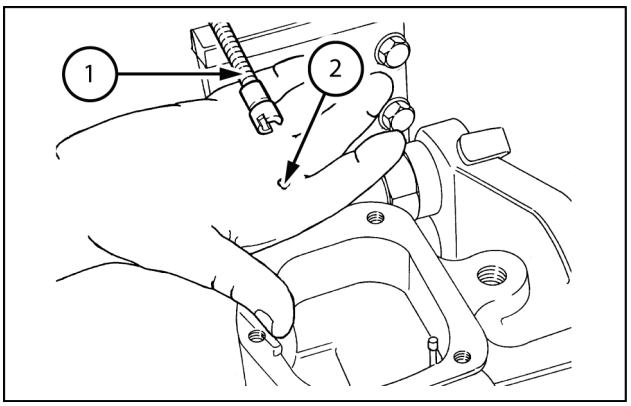
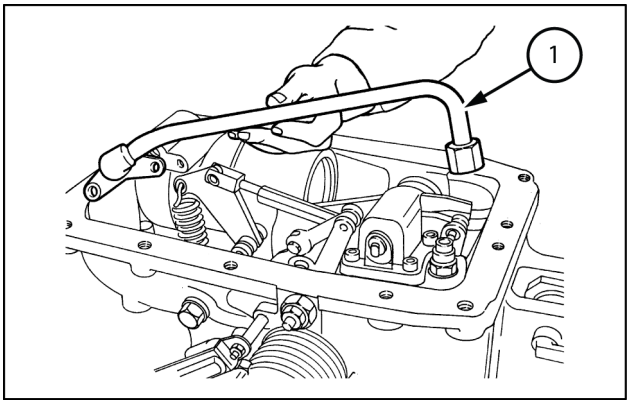
5. Using a magnetic flexible tool **(1)** recover the control valve block pin contact ball **(2)** (making sure it doesn't drop into the lift casing).



MOLI11F0458AB 3

6. Unscrew the front bolts, the rear union, and retrieve the pipe **(1)** delivering oil to the lift cylinder.



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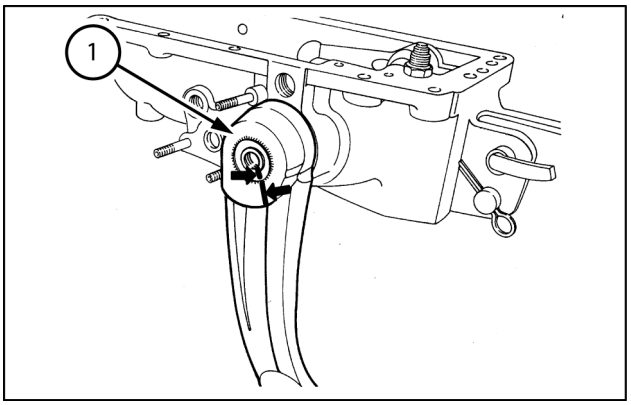
5. Fit the lift arms **(1)** on the shaft, matching up the reference marks. Secure in position with the bolts and washers.
   Fit the oil delivery pipe to the control cylinder.



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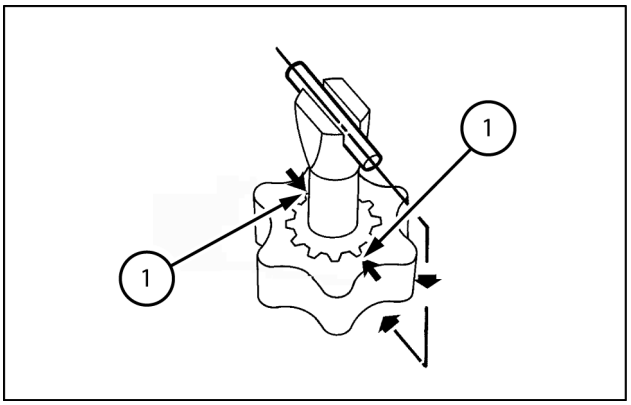
A. Each time the hydrostatic steering is disassembled, turn the rotor over so as to limit wear to the splined coupling.

B. In the drawing below, the rotor shaft has been removed in order to show the phasing between the rotor, rotor drive shaft and the trim pin.

C. Fit the rotor on the drive shaft, remembering that correct timing is obtained by aligning the teeth **(1)**, on the trim pin axis plane (shown in Fig **22**) with the centre line of one compartment on the rotor.



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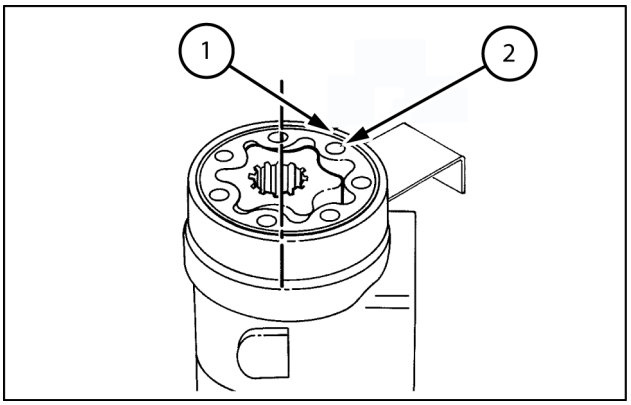
29. Lubricate the two O-ring seals **(1)** with hydraulic oil and insert them in the rotor fixed ring seat, fix in position by aligning the retaining holes **(2)** with those present on the thrust washer.



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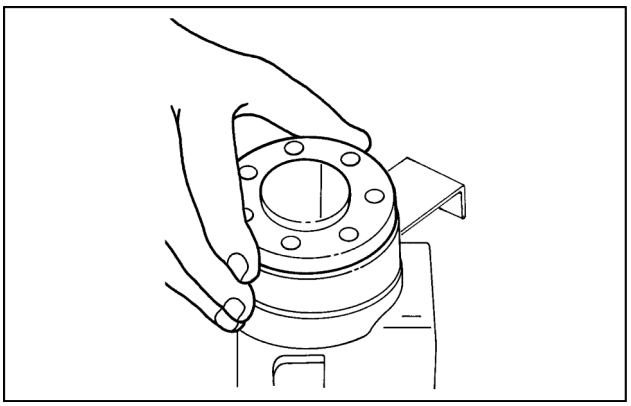
30. Fit the cover aligning the retaining holes with those present on the rotor fixed ring.



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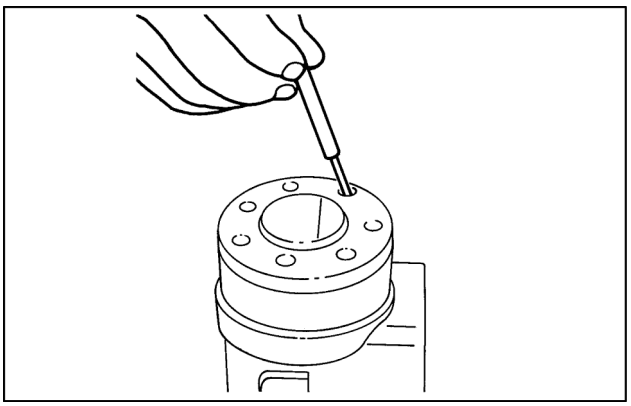
31. Remove retaining tool **380000307** and fit the special screw and washer in the non-return valve seat, shown in the drawing.



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SERVICE

Air conditioning - Special tools

T4030F With cab - Model Year 2012 [ZCJD09263 - ZDJD10118]	NA
T4030F With cab [Z8JD05996 - ZCJD10540]	NA
T4040F With cab - Model Year 2012 [ZCJD10607 - ZDJD10900]	NA
T4040F With cab [Z8JD07561 - ZCJD10129]	NA
T4050F With cab - Model Year 2012 [ZCJD07769 - ZDJD10461]	NA
T4050F With cab [Z7JD01006 - ZCJD10886]	NA
T4060F With cab [ZBJD14608 - ZDJD11085]	NA

Tools required for servicing the cab air conditioning system

NOTICE: *The operations described in this section must only be performed with the ESSENTIAL tools marked with an X.*
To work in safety and to obtain the best possible results whilst saving both time and energy, we recommend that the other specific tools in the list are also used.

List of specific tools required for the various operations described in this section		
X	**380000315**	Evacuation/charging station
	380000314	Acoustic gas leak detector
X	**380000312**	Combs for cleaning and straightening the fins on the condenser and evaporator

Air conditioning - General specification

T4030F With cab - Model Year 2012 [ZCJD09263 - ZDJD10118]	NA
T4030F With cab [Z8JD05996 - ZCJD10540]	NA
T4040F With cab - Model Year 2012 [ZCJD10607 - ZDJD10900]	NA
T4040F With cab [Z8JD07561 - ZCJD10129]	NA
T4050F With cab - Model Year 2012 [ZCJD07769 - ZDJD10461]	NA
T4050F With cab [Z7JD01006 - ZCJD10886]	NA
T4060F With cab [ZBJD14608 - ZDJD11085]	NA

Main components of cab air conditioning system

The air conditioning system comprises five main components:

1. Compressor
2. Condenser
3. Filter/dryer
4. Thermostatic expansion valve
5. Evaporator

To understand the operating cycle of the system, follow the flow of the refrigerant starting from the compressor **(1)**.

The compressor draws in vaporised refrigerant at a pressure of **0.2 - 2.5 bar** (**2.9 - 36.25 psi**) compressing it to a pressure of **10 - 22 bar** (**145 - 319 psi**).

The refrigerant, heated by compression to **120 - 49 °C** (**248 - 120 °F**), is directed to the condenser coil **(2)** (still in vapour form) located on the cab roof.

The air flow, produced by the electric fan on the cab roof of the tractor, near the condenser **(2)**, cools the refrigerant by means of heat exchange.

This action cools the refrigerant to the point of condensation between **40 - 60 °C** (**104 - 140 °F**) depending on the outside temperature, changing the vapour into liquid.

The refrigerant, in liquid state at high pressure, is purified by passing through the filter/dryer **(3)** from where it flows to the expansion valve **(4)**, which restricts the flow of refrigerant and thus reduces its pressure.

As it passes through the expansion valve **(4)**, part of the refrigerant is transformed into vapour and the low temperature mixture of vapour and liquid thus formed enters the evaporator **(5)**.

Here the electric fan causes a continuous circulation of the cab air over the fins of the evaporator **(5)**, helping the refrigerant to absorb heat from the air and thus change completely from a liquid to vapour.

61. Check the quantity of oil flowing from the oil meter, and once the required quantity has been reached, close cocks **(12)** and the cock on the oil meter, and remove the graduated meter.

Charging the cab air conditioning system with refrigerant (after evacuation)

NOTE: *The quantity of refrigerant required to be introduced into the system is* ***800 g*** *(****28.22 oz****) (* ***R134A****refrigerant).*

Refer to Fig. **2**, proceed as follows:

62. Keep switch **(19)** in position 2, with the refrigerant heater in cylinder **(31)** on, and heat the refrigerant for approx. **10 - 15 min** to facilitate transfer from the cylinder to the tractor air conditioning system.
63. According to the refrigerant type, rotate the outer casing **(30)** so that the graduated scale and the pressure values correspond with the pressure reading on gauge **(2)**.
64. Move the external ring **(26)** along the cylinder glass to mark the quantity of refrigerant to be charged.
65. Open cock **(22)** and charge from the high pressure side.
66. Open cock **(3)** , charge approx. **300 g** (**10.58 oz**) of refrigerant, close cock **(3)** and check for leaks.
67. If there are no leaks, continue charging up to the prescribed quantity.
68. On completion of charging operations, turn switch **(19)** to position "0", close cocks (**(3)** and **(22)**), disconnect pipes (**(15)** and **(17)**) and replace the caps on the service valves.

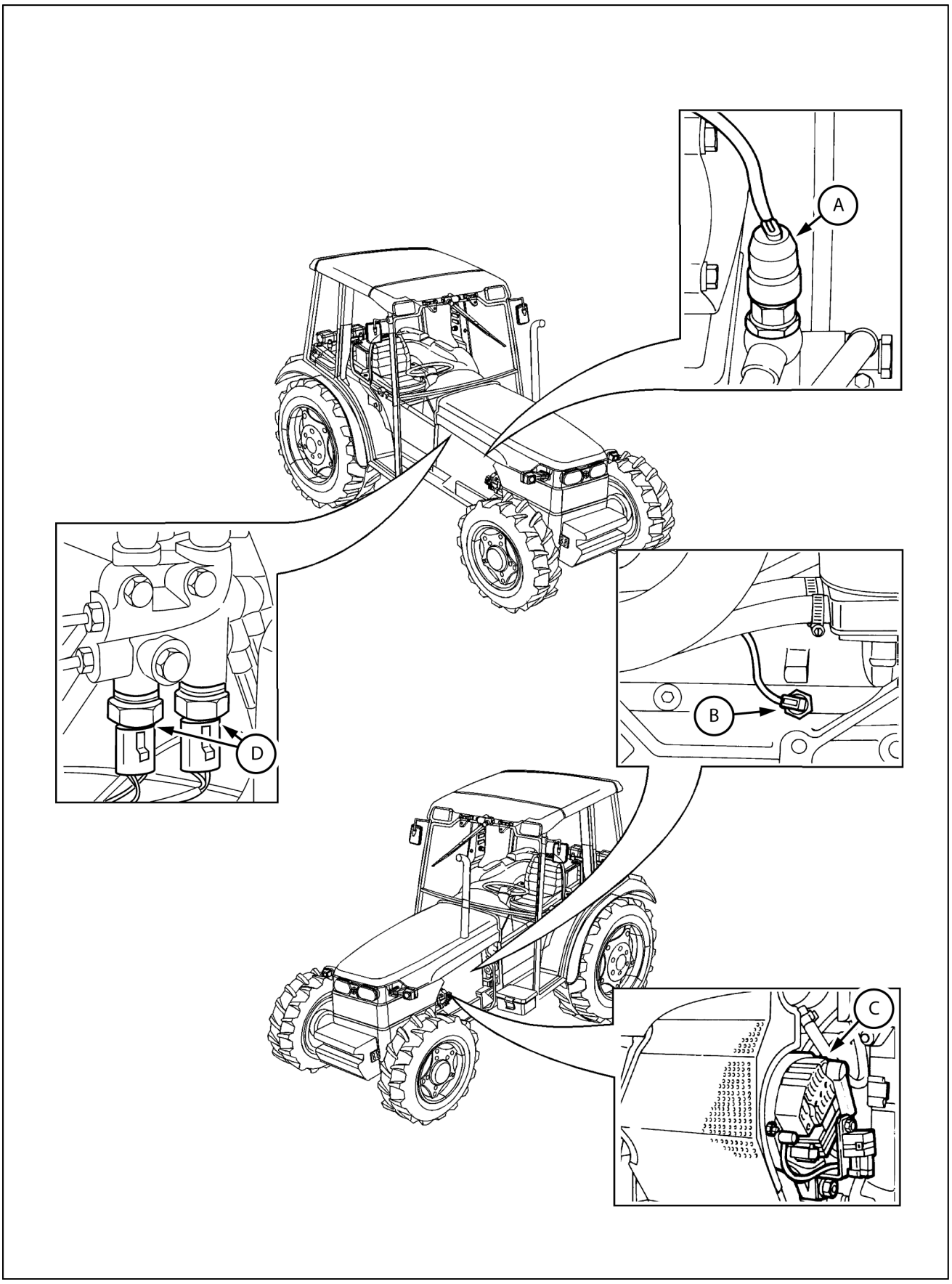
Carry out functional tests with the system set to maximum performance levels, as described below.

Air conditioning - Troubleshooting

T4030F With cab - Model Year 2012 [ZCJD09263 - ZDJD10118]	NA
T4030F With cab [Z8JD05996 - ZCJD10540]	NA
T4040F With cab - Model Year 2012 [ZCJD10607 - ZDJD10900]	NA
T4040F With cab [Z8JD07561 - ZCJD10129]	NA
T4050F With cab - Model Year 2012 [ZCJD07769 - ZDJD10461]	NA
T4050F With cab [Z7JD01006 - ZCJD10886]	NA
T4060F With cab [ZBJD14608 - ZDJD11085]	NA

Problem	Possible Cause	Correction
The air conditioning system does not work	Check fuses	
	Check compressor drive belt tension	
	Check if the clutch coil is receiving power	
	Check that the earth contact is efficient	
	Check the system control devices − relays, wiring, thermostat, etc	
	Visually check the condition of all fittings, unions and pipes	
	Check the clearance between the front disc and pulley of the electromagnetic clutch	
Insufficient cooling: High discharge pressure and/or high suction pressure	Excess refrigerant in system	Bubbles could be visible in the sight glass evacuate refrigerant until a large number of bubbles appear in the sight glass, then add refrigerant to the system until the bubbles disappear
	The condenser is clogged it might not receiving an adequate air flow	Clean condenser fins
	Expansion value malfunctioning	Check the valve, as indicated on **Expansion valve - Dynamic description (50.200)** If the valve fails the test, replace it
Insufficient cooling: Discharge pressure low and/or suction pressure low	Insufficient refrigerant possibly due to small leaks	• Check system for leaks and eliminate if found • Add refrigerant until the bubbles disappear and both pressure gauges show normal readings
Insufficient cooling: Discharge pressure normal and/or suction pressure normal	Humidity in the system	• Evacuate the refrigerant from the system • Replace the filter-dryer • Remove all air from the system then proceed with recharging
Insufficient cooling: High discharge pressure and/or normal suction pressure	Air in system The high pressure gauge reading should be constant and does not fall	• Recover recycle the refrigerant in the system • Replace the filter dryer • Evacuate the system and then recharge
Insufficient cooling: High discharge pressure and/or low suction pressure	Water or ice forms downstream of the restriction (on receiver-drier or on the pipe between the condenser outlet and the expansion valve)	Remove the relevant component and eliminate the restriction or replace the component
Insufficient cooling: Discharge pressure normal and/or suction pressure normal−high	Anti frost switch malfunction With the outside temperature below 30°it the electromagnetic clutch is permanently engaged,	Proceed as follow: • Check as described on **Heating, Ventilation, and Air-Conditioning (HVAC) control system - Dynamic description (55.050)** • Replace the anti-frost switch if it does not function correctly, taking care not to crush the capillary tube. Install the new switch in the same position on the evaporator outlet pipe as the switch that has been replaced

Electrical system - Detailed view



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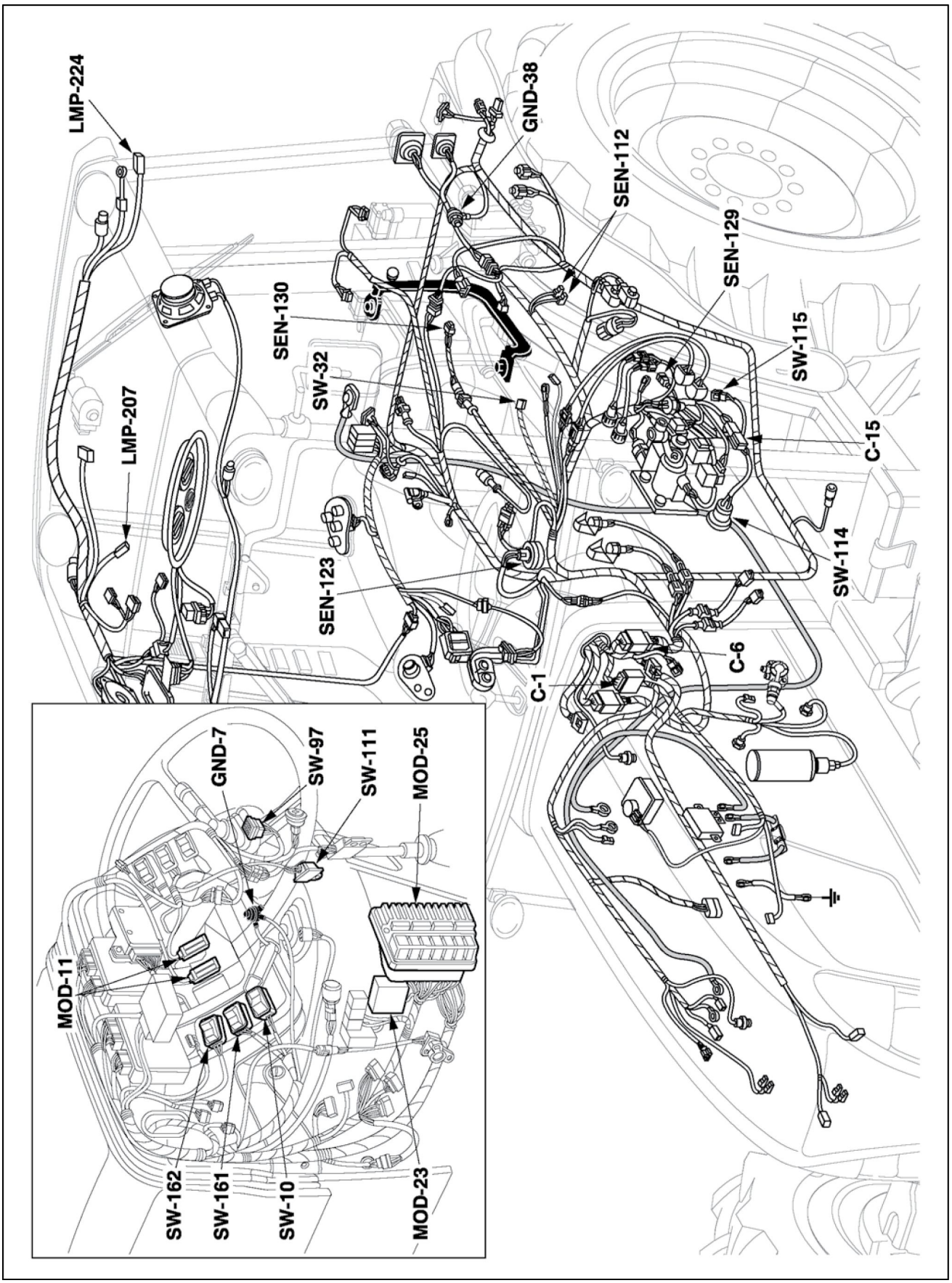
Transmitters, sensors and switches



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Instrument and sensor circuit – Circuit for power take-off, adjustment of control valves and safety devices – Direction indicator and hazard lights circuit (control switches and flasher)

Wiring harnesses - Electrical schematic sheet 09 - Power supplies 1 circuit

T4030F With cab [Z8JD05996 - ZCJD10540]	NA 2WD --- NA Differential lock - Mechanical --- NA Rear lifter - Mechanical control
T4040F With cab [Z8JD07561 - ZCJD10129]	NA 2WD --- NA Differential lock - Mechanical --- NA Rear lifter - Mechanical control
T4050F With cab [Z7JD01006 - ZCJD10886]	NA 2WD --- NA Differential lock - Mechanical --- NA Rear lifter - Mechanical control
T4060F With cab [ZBJD14608 - ZDJD11085]	NA 2WD --- NA Differential lock - Mechanical --- NA Rear lifter - Mechanical control

Refer to **Wiring harnesses - Component localization (55.100)** for component localization.

Component		Description
SW−19		Start switch
MOD−25−A **MOD−25−B** **MOD−25−C** **MOD−25−D**		Fuse box and main relay
	F−1	Horn, full beam flasher
	F−2	Direction indicator and hazard lights
	F−3	**8 A** power socket
	F−4	Differential lock circuit
	F−5	+ Instrument common
	F−11	Starter safety circuit
	F−12	Engine cut-out electromagnet
	F−13	Stabilizer lock circuit
	F−15	Seat circuit, cab users relay
	F−16	Trailer brake and hydraulic adjustment circuit
	F−20	Grid-heater circuit
	F−22	Control valves II/III circuit and hydraulic variant
	F−23	Circuit for adjusting right-hand tie rod and hydraulic motor
	F−30	Key pad supply (+ key)
GND−38		Rear ground
C−216		Connection of fitting for hydraulic variant

Wiring harnesses - Electrical schematic sheet 21 - Work lamp circuit

T4030F With cab [Z8JD05996 - ZCJD10540]	NA 2WD --- NA Differential lock - Mechanical --- NA Rear lifter - Mechanical control
T4040F With cab [Z8JD07561 - ZCJD10129]	NA 2WD --- NA Differential lock - Mechanical --- NA Rear lifter - Mechanical control
T4050F With cab [Z7JD01006 - ZCJD10886]	NA 2WD --- NA Differential lock - Mechanical --- NA Rear lifter - Mechanical control
T4060F With cab [ZBJD14608 - ZDJD11085]	NA 2WD --- NA Differential lock - Mechanical --- NA Rear lifter - Mechanical control

Refer to **Wiring harnesses - Component localization (55.100)** for component localization.

Component	Description
C−2−A	Cab system connection (8 PIN)
GND−57	Cab ground
SW−74−A **SW−74−B**	Work lights switch
LMP−76	Cab front RH work light
LMP−77	Cab front LH work light
LMP−78	Cab rear RH work light
LMP−79	Cab rear LH work light
LMP−82−1	Cab overhead lighting

Wiring harnesses - Electrical schematic sheet 04 - Grid heater circuit

T4030F With cab [Z8JD05996 - ZCJD10540]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Manual engagement --- NA Rear lifter - Mechanical control
T4040F With cab [Z8JD07561 - ZCJD10129]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Manual engagement --- NA Rear lifter - Mechanical control
T4050F With cab [Z7JD01006 - ZCJD10886]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Manual engagement --- NA Rear lifter - Mechanical control

Refer to **Wiring harnesses - Component localization - 4WD, Electrohydraulic differential lock, rear mechanical lift (55.100)** component localization.

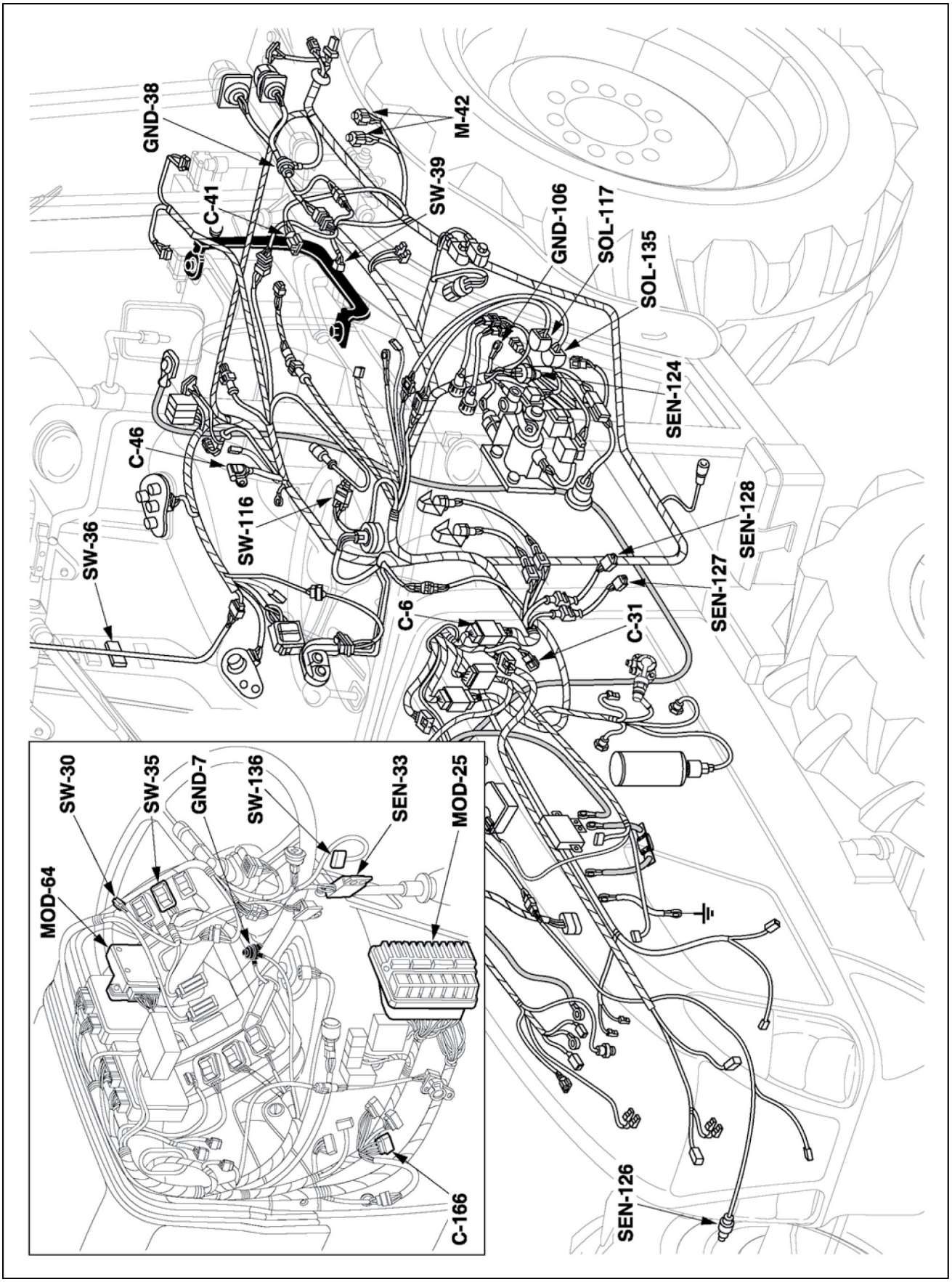
Component	Description
GND−7	Dashboard ground
C−16	Electronic thermostarter connection (6 PIN)
MOD−156	Grid heater electronic module
RLY−157	Grid heater relay (coil)
RLY−158	Grid heater relay (contact)
RES−159	Inlet grid heater
F−160	**125 A** maxi-fuse

Wiring harnesses - Electrical schematic sheet 16 - Intermediate 2 connections circuit

T4030F With cab [Z8JD05996 - ZCJD10540]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Manual engagement --- NA Rear lifter - Mechanical control
T4040F With cab [Z8JD07561 - ZCJD10129]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Manual engagement --- NA Rear lifter - Mechanical control
T4050F With cab [Z7JD01006 - ZCJD10886]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Manual engagement --- NA Rear lifter - Mechanical control

Refer to **Wiring harnesses - Component localization - 4WD, Electrohydraulic differential lock, rear mechanical lift (55.100)** for component localization.

Component	Description
C−62	Fan unit connection



MOLI11F1038HB 1

4WD circuit – Battery cut-out circuit – Power socket, wiper/washer pumps circuit – Brakes, brake lights circuit, differential lock

Wiring harnesses - Electrical schematic sheet 07 - Circuit for power take-off, adjustment of control valves and safety devices

T4030F With cab [Z8JD05996 - ZCJD10540]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement --- NA Rear lifter - Mechanical control
T4040F With cab [Z8JD07561 - ZCJD10129]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement --- NA Rear lifter - Mechanical control
T4050F With cab [Z7JD01006 - ZCJD10886]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement --- NA Rear lifter - Mechanical control
T4060F With cab [ZBJD14608 - ZDJD11085]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement --- NA Rear lifter - Mechanical control

Refer to **Wiring harnesses - Component localization (55.100)** for component localization.

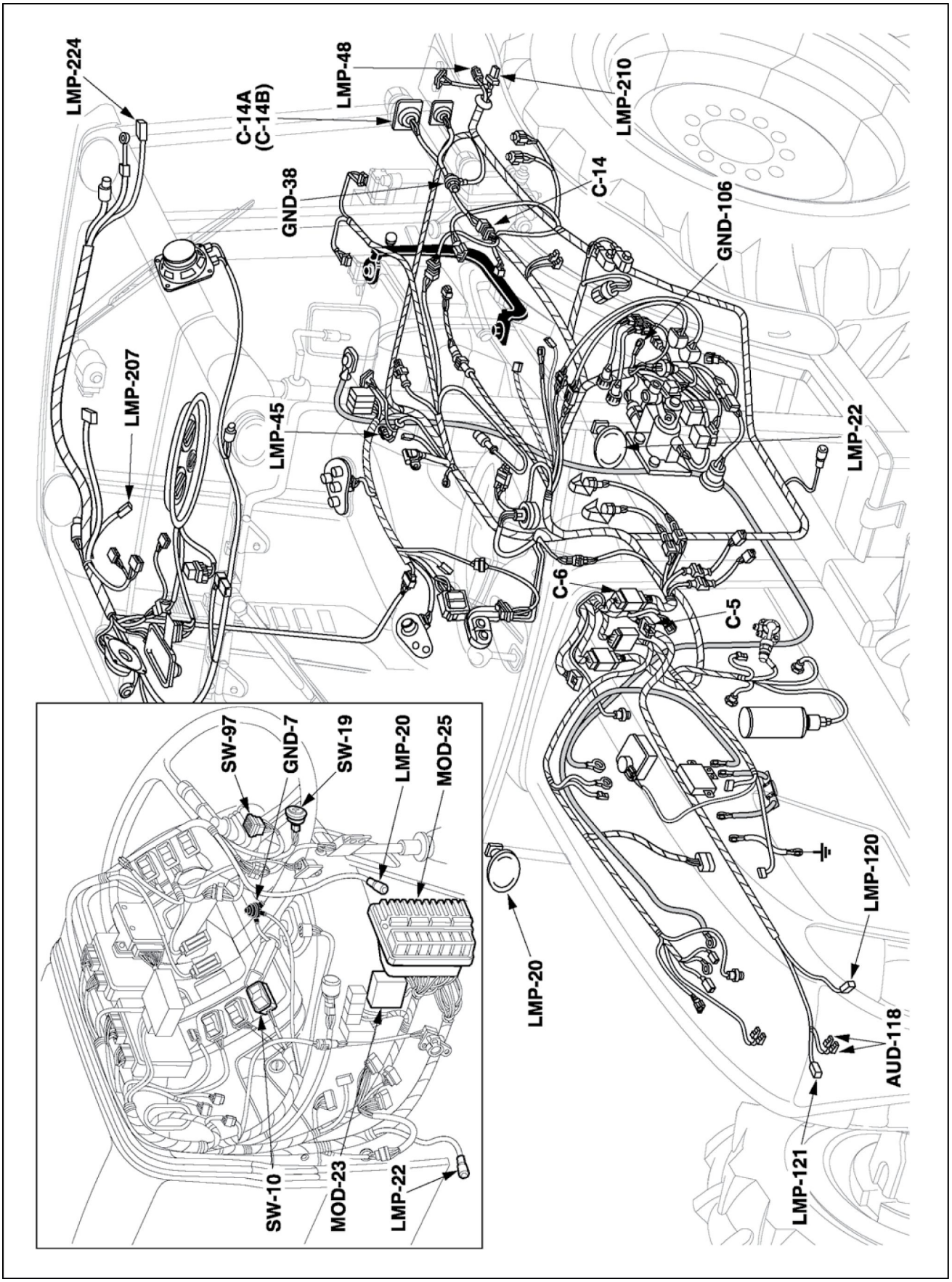
Component	Description
C−6−A	Transmission system connection (24 PIN)
GND−7	Dashboard ground
C−15	Gearbox neutral connection
GND−38	Rear ground
SW−111	Rear P.T.O. switch
SEN−112	Power steering indicator light pressure switch
SW−114	Gearbox neutral switch
SW−115	Splitter switch
SW−217	Third control valve adjustment and control button
SW−218	Second control valve adjustment and control button
SW−222−A **SW−222−B**	Hydraulic circuit motor switch
*	Standard version
**	Splitter version

Wiring harnesses - Electrical schematic sheet 19 - Radio circuit

T4030F With cab [Z8JD05996 - ZCJD10540]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement --- NA Rear lifter - Mechanical control
T4040F With cab [Z8JD07561 - ZCJD10129]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement --- NA Rear lifter - Mechanical control
T4050F With cab [Z7JD01006 - ZCJD10886]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement --- NA Rear lifter - Mechanical control
T4060F With cab [ZBJD14608 - ZDJD11085]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement --- NA Rear lifter - Mechanical control

Refer to **Wiring harnesses - Component localization (55.100)** for component localization.

Component	Description
C−2−A **C−2−B**	Cab system connection (8 PIN)
GND−57	Cab ground
MOD−58	Radio
AUD−60	RH speaker
AUD−61	LH speaker



MOLI11F1081HB 3

Direction indicator and hazard lights circuit (control switches and flasher) – External lights and horn circuit – Power supplies 1 circuit – Power supplies 2 circuit – Seven-pin socket and number plate light circuit

Wiring harnesses - Electrical schematic sheet 09 - Direction indicator and hazard light circuit (control switches and flasher)

T4030F With cab [Z8JD05996 - ZCJD10540]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement --- NA Rear lifter - Electronic control
T4040F With cab [Z8JD07561 - ZCJD10129]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement --- NA Rear lifter - Electronic control
T4050F With cab [Z7JD01006 - ZCJD10886]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement --- NA Rear lifter - Electronic control
T4060F With cab [ZBJD14608 - ZDJD11085]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement --- NA Rear lifter - Electronic control

Refer to **Wiring harnesses - Component localization (55.100)** component localization.

Component		Description
GND−7		Dashboard ground
SW−10−A **SW−10−B**		Hazard lights switch
MOD−23		Electronic flasher
MOD−25−A **MOD−25−B** **MOD−25−C** **MOD−25−D**		Fuse box and main relay
	RLY−3	Side lights circuit
	F−8	ISO side lights, or 7-pin work light (North America)
SW−97		External lights control switch
LMP−207		Rear right-hand SMV light (North America only)
LMP−224		Rear left-hand SMV light (North America only)

Wiring harnesses - Electrical schematic sheet 21 - Cab power supply circuit

T4030F With cab [Z8JD05996 - ZCJD10540]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement --- NA Rear lifter - Electronic control
T4040F With cab [Z8JD07561 - ZCJD10129]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement --- NA Rear lifter - Electronic control
T4050F With cab [Z7JD01006 - ZCJD10886]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement --- NA Rear lifter - Electronic control
T4060F With cab [ZBJD14608 - ZDJD11085]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement --- NA Rear lifter - Electronic control

Refer to **Wiring harnesses - Component localization (55.100)** for component localization.

Component		Description
C−1−A **C−2−B**		Cab system connection (8 PIN)
MOD−75−B		Fuse box and cab relays
	RLY−1	Key-locked cab users circuit
	RLY−2	Rear work lights circuit
	RLY−3	Air-conditioner compressor circuit
	RLY−4	Front work lights circuit
	F−1	Windscreen wiper/washer
	F−2	Rear auxiliary lights
	F−3	Air conditioning fan unit
	F−4	Rotating beacon, cigar lighter
	F−5	Rear window wiper/washer
	F−6	Front worklamps

Wiring harnesses - Electrical schematic sheet 33 - Electronic control unit input/output wiring diagram EDC electronic lift (SA)

T4030F With cab [Z8JD05996 - ZCJD10540]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement --- NA Rear lifter - Electronic control
T4040F With cab [Z8JD07561 - ZCJD10129]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement --- NA Rear lifter - Electronic control
T4050F With cab [Z7JD01006 - ZCJD10886]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement --- NA Rear lifter - Electronic control
T4060F With cab [ZBJD14608 - ZDJD11085]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement --- NA Rear lifter - Electronic control

Refer to **Wiring harnesses - Component localization (55.100)** for component localization.

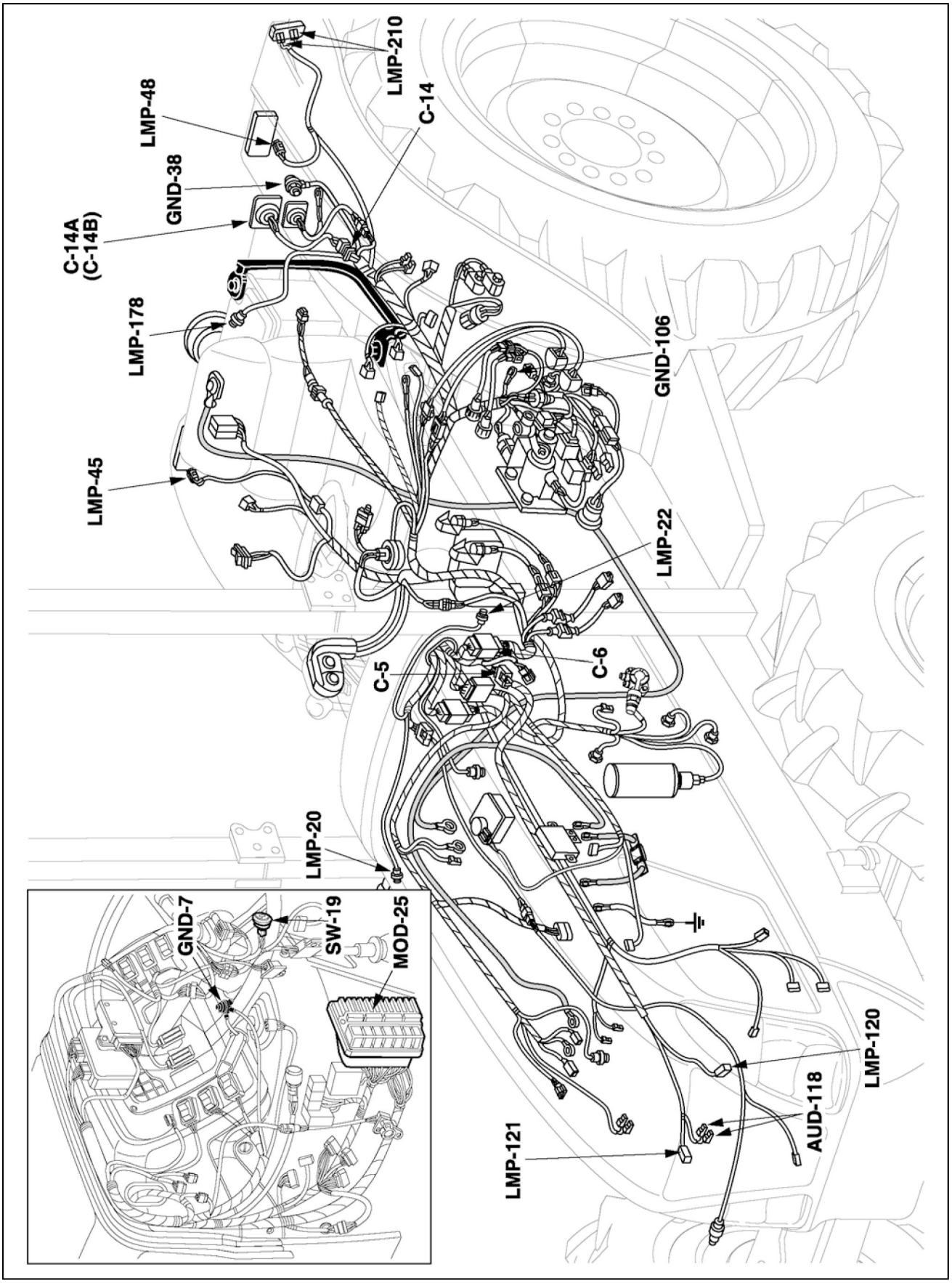
Position	Description
(1)	**+8 V** supply line that the control unit sends to the potentiometers and sensors.
(2)	Working depth lever potentiometer (**MOD−40**)
(3)	Lifting limit potentiometer (**MOD−43**)
(4)	Lowering limit potentiometer (**MOD−43**)
(5)	Drop rate limit potentiometer (**MOD−43**)
(6)	Position / work potentiometer (**MOD−43**)
(7)	Ground entry and work lift switch (**SW−34−A**)
(8)	Raise / lower switches on the mudguards (**SW−37−1**, **SW−37−2**, **SW−37−3**, **SW−37−4 SW−44−1**, **SW−44−2**, **SW−44−3**, **SW−44−4**)
(9)	Draft sensor (**SEN−131**)
(10)	Arms position potentiometer (**SEN−132**)
(11)	CAN BUS line wires input
(12)	Ground that the control unit supplies to the various sensors (observe the triangular end, on all the sensors where at a pin and marked with this symbol they receive ground straight from the control unit).
(13)	Types of grounds
(14)	Disabled lift warning light (**MOD−40**)
(15)	Lowering solenoid valve (**SOL−133**)
(16)	Lifting solenoid valve (**SOL−134**)
(17)	Control unit supplies
	NOTE: *A. The numbers in brackets are the correspondence with the sensors, switches, of the diagram.* *B. On the control unit the connectors are identified with CN1b and corresponds to connector **MOD−27−A**.*

Wiring harnesses - Electrical schematic sheet 06 - Direction indicator and hazard light circuit (Control switches and flasher)

T4030F Without cab [Z8JD07917 - ZCJD10183]	NA 2WD --- NA Differential lock - Mechanical
T4040F Without cab [Z8JD05909 - ZCJD10250]	NA 2WD --- NA Differential lock - Mechanical
T4050F Without cab [Z8JD06807 - ZCJD10135]	NA 2WD --- NA Differential lock - Mechanical
T4060F Without cab [ZCJD06222 - ZDJD11528]	NA 2WD --- NA Differential lock - Mechanical

Refer to for component localization **Wiring harnesses - Component localization (55.100)**

Component		Description
GND−7		Dashboard ground
SW−10−A		Hazard lights switch
MOD−23		Electronic flasher
MOD−25−A		Fuse box and main relay
	RLY−3	ISO side lights circuit
	F−8	Sidelights
GND−38		Rear ground
SW−97		External lights control switch
LMP−207		Rear right-hand SMV light (North America only)
LMP−208		Rear left-hand SMV light (North America only)



MOLI11F1142HB 3

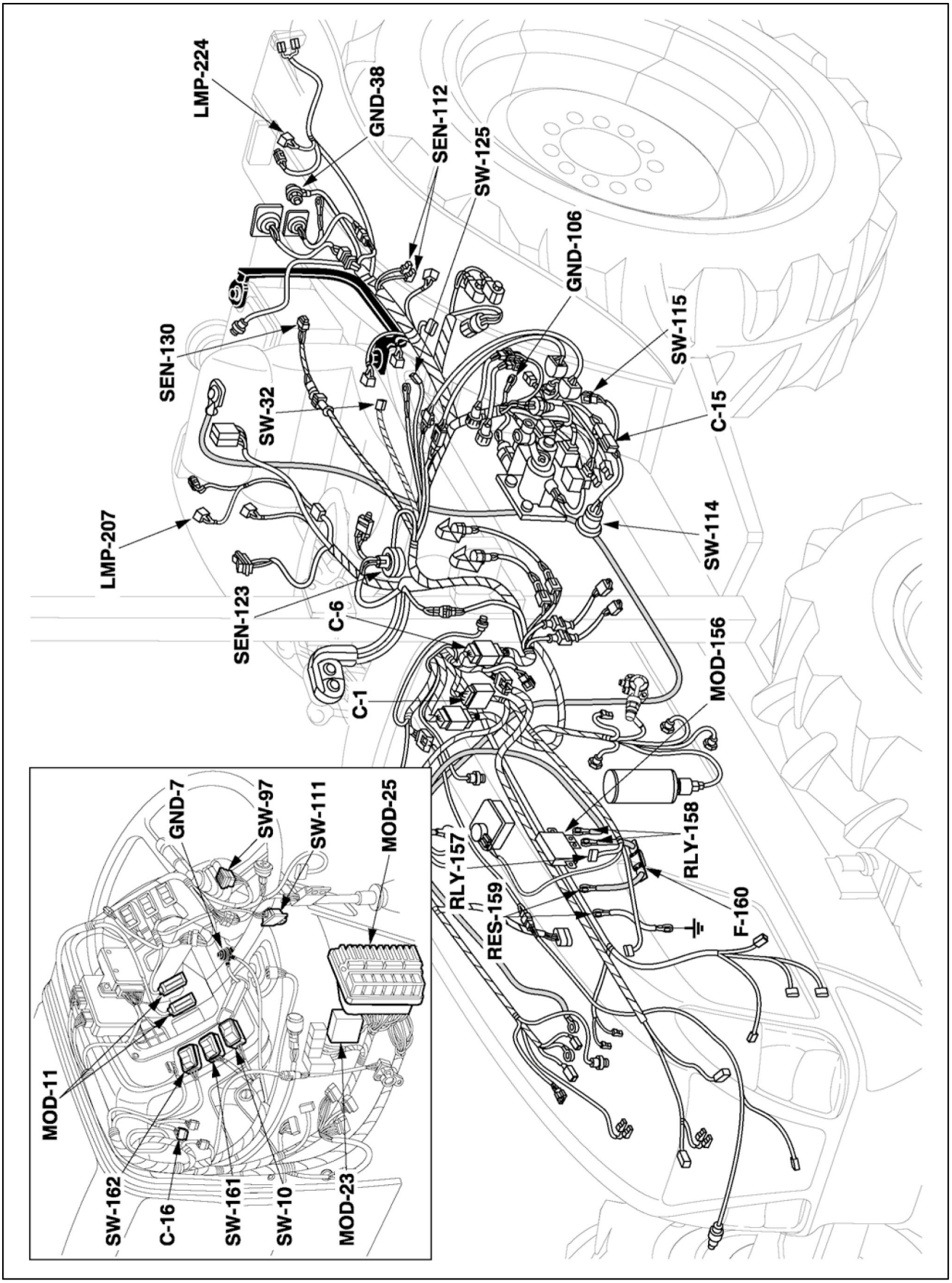
External lights, horn and rear work light circuit – Power supplies 1 circuit – Power supplies 2 circuit – Seven-pin socket and number plate light circuit

Wiring harnesses - Electrical schematic sheet 10 - Power supplies 2 circuit

T4030F Without cab [Z8JD07917 - ZCJD10183]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Manual engagement
T4040F Without cab [Z8JD05909 - ZCJD10250]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Manual engagement
T4050F Without cab [Z8JD06807 - ZCJD10135]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Manual engagement

Refer to **Wiring harnesses - Component localization (55.100)** component localization

Component		Description
GND−7		Dashboard ground
MOD−25−A MOD−25−B MOD−25−C MOD−25−D		Fuse box and main relay
	F−6	Dipped beam headlights
	F−7	Full beam headlights
	RLY−5	Full beam headlight circuit
	RLY−6	Dipped beam headlight circuit
	RLY−10	EHR circuit
	RLY−11	Hydraulic third control valve circuit
	RLY−12	Hydraulic second control valve circuit
	RLY−13	Starter circuit



MOLI11F1161HB 2

Grid-heater circuit – Instrument and sensor circuit – Circuit for power take-off, adjustment of control valves and safety devices – Direction indicator and hazard lights circuit (control switches and flasher)

Wiring harnesses - Electrical schematic sheet 09 - Power supplies 1 circuit

T4030F Without cab [Z8JD07917 - ZCJD10183]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement
T4040F Without cab [Z8JD05909 - ZCJD10250]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement
T4050F Without cab [Z8JD06807 - ZCJD10135]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement
T4060F Without cab [ZCJD06222 - ZDJD11528]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement

Refer to **Wiring harnesses - Component localization (55.100)** for component localization

Component		Description
SW−19		Start switch
MOD−25−A **MOD−25−B** **MOD−25−C** **MOD−25−D**		Fuse box and main relay
	F−1	Horn, full beam flasher
	F−2	Direction indicator and hazard lights
	F−3	**8 A** power socket, digital instrument
	F−4	Differential lock circuit, four-wheel drive circuit
	F−5	+ Instrument common
	F−11	Starter safety circuit
	F−12	Engine cut-out electromagnet
	F−13	Stabilizer lock circuit
	F−14	Power-Shuttle circuit
	F−16	Trailer brake and hydraulic adjustment circuit
	F−18	Permanent 4WD circuit
	F−20	Grid-heater control unit circuit
	F−21	Power-Shuttle lever
	F−22	Control valves II/III circuit and hydraulic variant
	F−23	Circuit for adjusting front right-hand tie rod and hydraulic motor
	F−24	EHR circuit
	F−27	Rear work light circuit
	F−30	Key pad supply (+ key)
GND−38		Rear ground
C−216		Connection of fitting for hydraulic variant

Wiring harnesses - Electrical schematic sheet 21 - Front P.T.O. and front lift circuit

T4030F Without cab [Z8JD07917 - ZCJD10183]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement
T4040F Without cab [Z8JD05909 - ZCJD10250]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement
T4050F Without cab [Z8JD06807 - ZCJD10135]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement
T4060F Without cab [ZCJD06222 - ZDJD11528]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement

Refer to **Wiring harnesses - Component localization (55.100)**component localization

Component	Description
SW−12	Front P.T.O. switch
C−13	Front P.T.O. and lift system connection (13 PIN)
SOL−99	Front lift UP solenoid valve
SOL−100	Front lift DOWN solenoid valve
SEN−101	Front lift arms position sensor
MOD−102	Front electronic lift control panel
SW−103	Front lift up/down switch
MOD–204	Four-wheel drive control unit
SW−205	Front lift UP external control switch
SW−206	Front lift DOWN external control switch
SEN−208	Sensore rilevamento presa di forza anteriore

Wiring harnesses - Electrical schematic sheet 12 - Trailer brake circuit

T4030F With cab - Model Year 2012 [ZCJD09263 - ZDJD10118]	NA 2WD --- NA Differential lock - Mechanical --- NA Rear lifter - Mechanical control
T4040F With cab - Model Year 2012 [ZCJD10607 - ZDJD10900]	NA 2WD --- NA Differential lock - Mechanical --- NA Rear lifter - Mechanical control
T4050F With cab - Model Year 2012 [ZCJD07769 - ZDJD10461]	NA 2WD --- NA Differential lock - Mechanical --- NA Rear lifter - Mechanical control

Component		Description
C–3		Trailer brake circuit intermediate connection (4 PIN)
GND–7		Dashboard ground
C–8		Trailer brake circuit main connection (4 PIN)
SEN–107		Trailer brake indicator light pressure switch
SEN–108		Trailer brake circuit safety pressure switch
SOL–109		Trailer brake solenoid valves
RLY−110−A **RLY−110−B** **RLY−110−C**		Trailer brake circuit relay
	RLY–9	Trailer brake circuit
	RLY–10	Trailer brake circuit
	RLY–13	Trailer brake circuit
GND−181		Trailer brake circuit ground

Wiring harnesses - Electrical schematic sheet 01 - 4WD permanent circuit

T4030F With cab - Model Year 2012 [ZCJD09263 - ZDJD10118]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement --- NA Rear lifter - Mechanical control
T4040F With cab - Model Year 2012 [ZCJD10607 - ZDJD10900]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement --- NA Rear lifter - Mechanical control
T4050F With cab - Model Year 2012 [ZCJD07769 - ZDJD10461]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement --- NA Rear lifter - Mechanical control

Component	Description
C−6−A	Transmission system connection (24 PIN)
GND–7	Dashboard ground
SEN−33	Tilt sensor
SW−35−A **SW−35−B**	4WD control switch
MOD−64	Permanent 4WD control unit
SEN−126	Steering sensor
SEN−127	Rear axle speed sensor
SEN−128	Front axle speed sensor
SOL−135	Four-wheel drive solenoid valve

Wiring harnesses - Electrical schematic sheet 13 - Trailer brake circuit

T4030F With cab - Model Year 2012 [ZCJD09263 - ZDJD10118]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement --- NA Rear lifter - Mechanical control
T4040F With cab - Model Year 2012 [ZCJD10607 - ZDJD10900]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement --- NA Rear lifter - Mechanical control
T4050F With cab - Model Year 2012 [ZCJD07769 - ZDJD10461]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement --- NA Rear lifter - Mechanical control

Component		Description
C−3		Trailer brake circuit intermediate connection (4 PIN)
GND−7		Dashboard ground
C−8		Trailer brake circuit main connection (4 PIN)
SEN–107		Trailer brake indicator light pressure switch
SEN–108		Trailer brake circuit safety pressure switch
SOL–109		Trailer brake solenoid valves
RLY−110−A **RLY−110−B** **RLY−110−C**		Trailer brake circuit relay
	RLY−9	Trailer brake circuit
	RLY−10	Trailer brake circuit
	RLY−13	Trailer brake circuit
GND−181		Trailer brake circuit ground

Wiring harnesses - Electrical schematic sheet 25 - Power-Shuttle (Hi-Lo) 32+16 or 44+16 circuit (dashboard side)

T4030F With cab - Model Year 2012 [ZCJD09263 - ZDJD10118]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement --- NA Rear lifter - Mechanical control
T4040F With cab - Model Year 2012 [ZCJD10607 - ZDJD10900]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement --- NA Rear lifter - Mechanical control
T4050F With cab - Model Year 2012 [ZCJD07769 - ZDJD10461]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement --- NA Rear lifter - Mechanical control

Component	Description
C−9	Power-Shuttle transmission system connection (24 PIN)
C−21	Power-Shuttle system connection (6 PIN)
MOD−150	Power-Shuttle control unit
SW−151	Clutch pedal switch
SW−152	Power-Shuttle control lever
SEN−153	Clutch pedal sensor
GND−155	Dashboard Power-Shuttle ground
C−167	Connection for CAN line (4 PIN)

Wiring harnesses - Electrical schematic sheet 08 - Direction indicator and hazard light circuit (control switches and flasher)

T4030F With cab - Model Year 2012 [ZCJD09263 - ZDJD10118]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement --- NA Rear lifter - Electronic control
T4040F With cab - Model Year 2012 [ZCJD10607 - ZDJD10900]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement --- NA Rear lifter - Electronic control
T4050F With cab - Model Year 2012 [ZCJD07769 - ZDJD10461]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement --- NA Rear lifter - Electronic control

Component		Description
GND–7		Dashboard ground
SW–10		Hazard lights switch
MOD–23		Electronic flasher
MOD−25−A **MOD−25−B** **MOD−25−C** **MOD−25−D**		Fuse box and main relay
	RLY–3D	Side lights circuit
	F–8	**ISO** side lights, or 7-pin work light (North America)
SW−97		External lights control switch
LMP−207		Rear right-hand SMV light (North America only)
LMP–224		Rear left-hand SMV light (North America only)

Wiring harnesses - Electrical schematic sheet 20 - Radio circuit

T4030F With cab - Model Year 2012 [ZCJD09263 - ZDJD10118]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement --- NA Rear lifter - Electronic control
T4040F With cab - Model Year 2012 [ZCJD10607 - ZDJD10900]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement --- NA Rear lifter - Electronic control
T4050F With cab - Model Year 2012 [ZCJD07769 - ZDJD10461]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement --- NA Rear lifter - Electronic control

Component	Description
C−2−A **C−2−B**	Cab system connection (8 PIN)
GND−57	Cab ground
MOD−58	Radio
AUD−60	RH speaker
AUD−61	LH speaker

Wiring harnesses - Electrical schematic sheet 32 - Input/output wiring diagram for the control unit of the mid mount control valves

T4030F With cab - Model Year 2012 [ZCJD09263 - ZDJD10118]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement --- NA Rear lifter - Electronic control
T4040F With cab - Model Year 2012 [ZCJD10607 - ZDJD10900]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement --- NA Rear lifter - Electronic control
T4050F With cab - Model Year 2012 [ZCJD07769 - ZDJD10461]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement --- NA Rear lifter - Electronic control

Position	Description
(1)	Battery (**BAT−83−A**, **BAT−83−B** and **BAT−83−E**)
(2)	Mid mount valves relay (RLY–4D on **MOD−25−A**, **MOD−25−B**, **MOD−25−C** and **MOD−25−D**)
(3)	MMX-A solenoid valve (**SOL−03**)
(4)	MMX-B solenoid valve (**SOL−04**)
(5)	MMY-A solenoid valve (**SOL−05**)
(6)	MMY-B solenoid valve (**SOL−06**)
(7)	Motor-PP solenoid valve (**SOL−01**), **20 l/min** (**5 US gpm**) max. displacement
(8)	A1 solenoid valve (**SOL−07**)
(9)	B1 solenoid valve (**SOL−08**)
(10)	A2 solenoid valve (**SOL−09**)
(11)	B2 solenoid valve (**SOL−010**)
(12)	A3 solenoid valve (**SOL−011**)
(13)	B3 solenoid valve (**SOL−012**)
(14)	A4 solenoid valve (**SOL−013**)
(15)	B4 solenoid valve (**SOL−014**)
(16)	Motor-EN solenoid valve (**SOL−02**), **20 l/min** (**5 US gpm**) max. displacement
(17)	Power ground (GND–7)
(18)	Diagnostic socket pre-disposition
(19)	CAN BUS line wires input, inside the control unit there is the terminator (resistance **120 Ω**)
(20)	SPSL2 solenoid valve (**SOL−016**)
(21)	SPSL1 solenoid valve (**SOL−015**)
(22)	Hydraulic motor potentiometer (RES–4001), controlling the oil displacement to the 2 lower hydraulic motor (max. **20 l/min** (**5 US gpm**))
(23)	Joystick (SW–4003) controlling the eight upper control valves
(24)	Y axis switch (SW–4005), working on control valves placed on Y axis. It's a 2 positions switch and works depending on the chosen color, no activation in middle position
(25)	X axis switch (SW–4004), working on control valves placed on X axis. It's a 3 positions switch and works depending on the chosen color, no activation in middle position
(26)	Motor mode switch (SW–4002), On/Off type
NOTE: *A) The numbers in brackets are the correspondence with the sensors, switches of the diagram.*	

Wiring harnesses - Electrical schematic sheet 12 - Engine, sensors, transmitters and battery cut - out circuit

T4030F Without cab - Model Year 2012 [ZCJD10424 - ZDJD10174]	NA 2WD --- NA Differential lock - Mechanical
T4040F Without cab - Model Year 2012 [ZCJD09629 - ZDJD10408]	NA 2WD --- NA Differential lock - Mechanical
T4050F Without cab - Model Year 2012 [ZCJD11040 - ZDJD09876]	NA 2WD --- NA Differential lock - Mechanical

Component	Description
C−1−A	Front side connection-engine (24 PIN)
GND–7	Dashboard ground
BAT−83−A **BAT−83−B** **BAT−83−E**	Battery
CB–83	Battery isolator
ALT−84−B **ALT−84−C**	Alternator
M−85	Starter motor
SEN−86	Brake fluid level sensor
SEN−87	Air filter clogged sensor
SEN−89	Sediment unit filter sensor
SEN−92	Engine oil pressure sensor
SEN−93	Coolant temperature sensor
SOL−94	Engine cu-tout electromagnet
SOL−95	Solenoid valve to cut-out starting advance, depending on temperature
SW−96	Starting advance thermometric cut-out switch
F−169	**50 A** mega-fuse
SEN−176	Engine RPM sensor
SEN–229	Fuel level sensor

Wiring harnesses - Electrical schematic sheet 10 - Power supplies 2 circuit

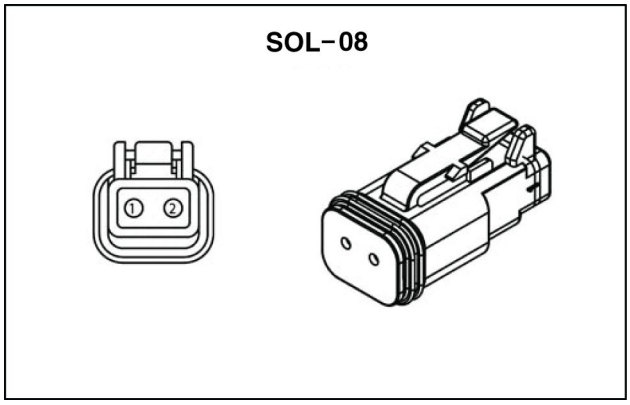
T4030F Without cab - Model Year 2012 [ZCJD10424 - ZDJD10174]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement
T4040F Without cab - Model Year 2012 [ZCJD09629 - ZDJD10408]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement
T4050F Without cab - Model Year 2012 [ZCJD11040 - ZDJD09876]	NA Differential lock - Electro-hydraulic --- NA Four-Wheel Drive (4WD) - Automatic engagement

Component		Description
GND–7		Dashboard ground
MOD−25−A MOD−25−B MOD−25−C MOD−25−D		Fuse box and main relay
	RLY–4D	Mid mount valves circuit
	RLY–5C	Full beam headlight circuit
	RLY–5D	Hydraulic third control valve circuit
	RLY–6C	Dipped beam headlight circuit
	RLY–6D	Hydraulic second control valve circuit
	RLY–31	Engine starter circuit
	F–6	Dipped beam headlights
	F–7	Full beam headlights

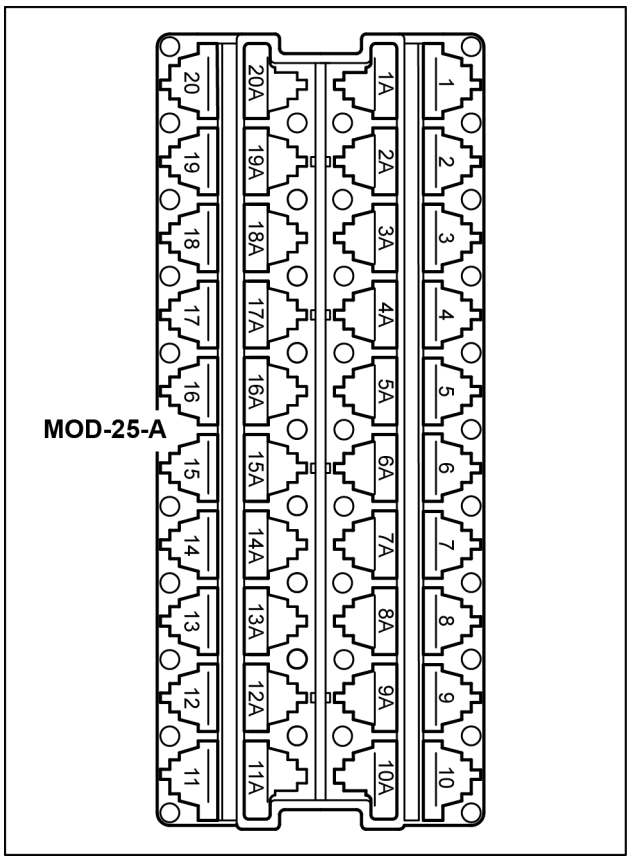
SOL−08

For model with cab

Pin	Col.	Sect.	Pin	Col.	Sect.
1	HM	1.0	2	HN	1.0



MOLI12SPF0205AA 18

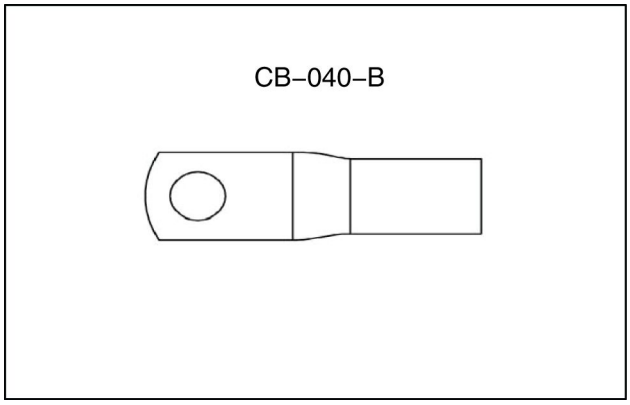


MOLI11F1251BA 3

CB–040–B

For model with cab

Pin	Col.	Sect.	Pin	Col.	Sect.
1	N	50.0	–	–	–



MOLI12SVN0404AA 2

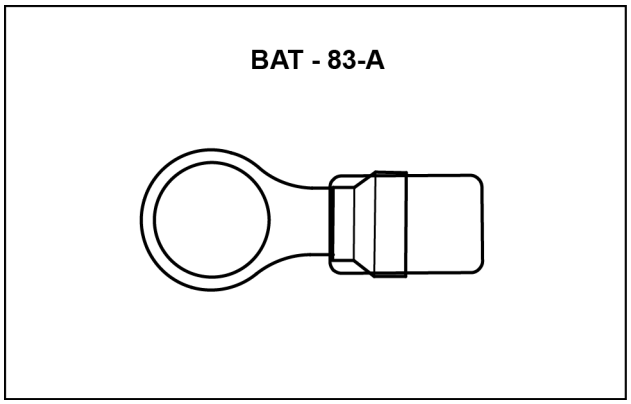
BAT−83−A

For model with cab, version 1

Pin	Col.	Sect.	Pin	Col.	Sect.
1	R	10	2	L	10

For model with cab, version 2

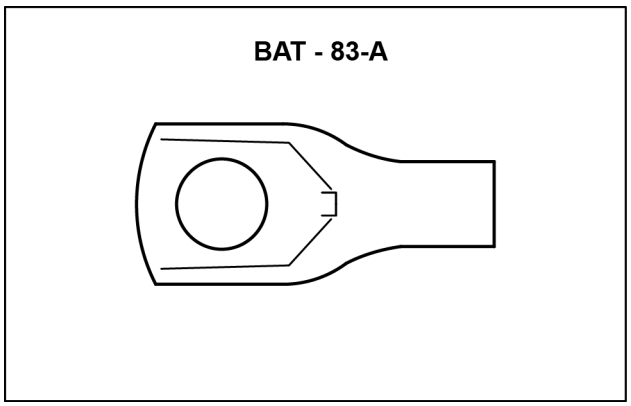
Pin	Col.	Sect.	Pin	Col.	Sect.
1	L	10	1	R	10



MOLI11F1336AA 3

For model with cab, version 3 and 4

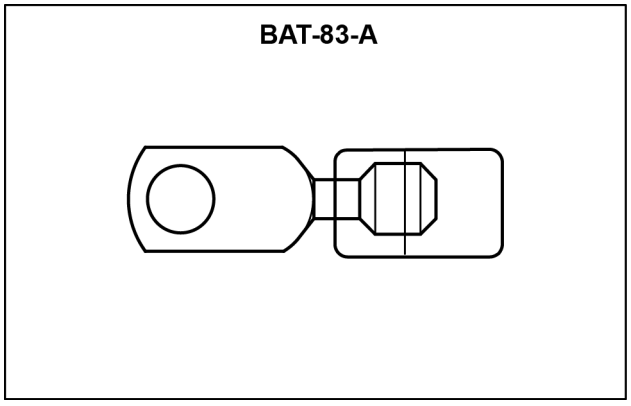
Pin	Col.	Sect.	Pin	Col.	Sect.
1	R	10	1	L	10



MOLI11F1338AA 4

For model without cab

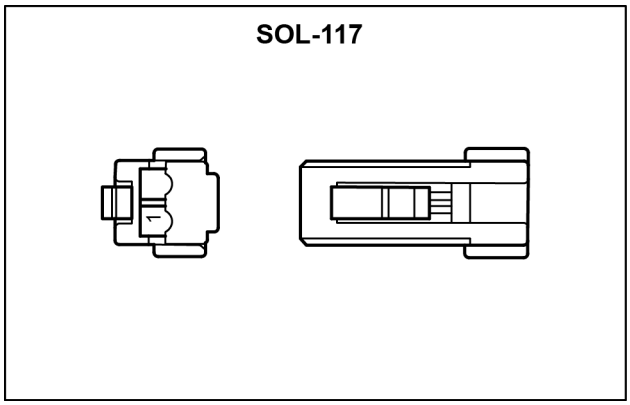
Pin	Col.	Sect.	Pin	Col.	Sect.
1	R	10	–	–	–



MOLI11F1339AA 5

SOL−117

Pin	Col.	Sect.	Pin	Col.	Sect.
1	AR	1.0	–	–	–

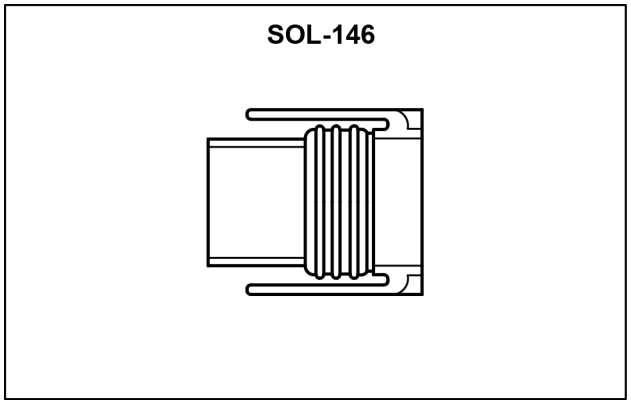


MOLI11F1376AA 9

SOL−146

For Power-Shuttle version

Pin	Col.	Sect.	Pin	Col.	Sect.
A	AN	1.0	B	AR	1.0

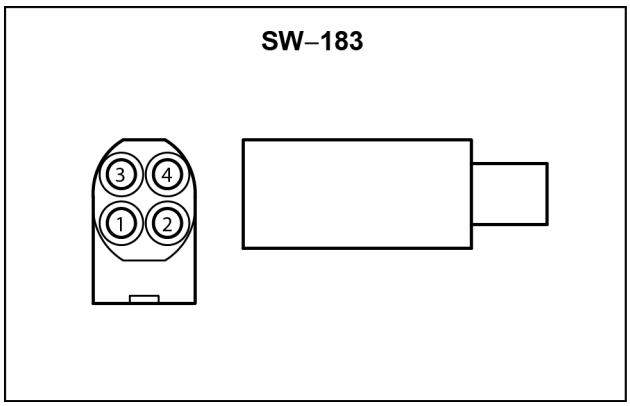


MOLI11F1403AA 5

SW−183

For version with dual command (2-speed power shift)

Pin	Col.	Sect.	Pin	Col.	Sect.
1	AV	1.0	3	MB	1.0
2	C	1.0	4	AG	1.0

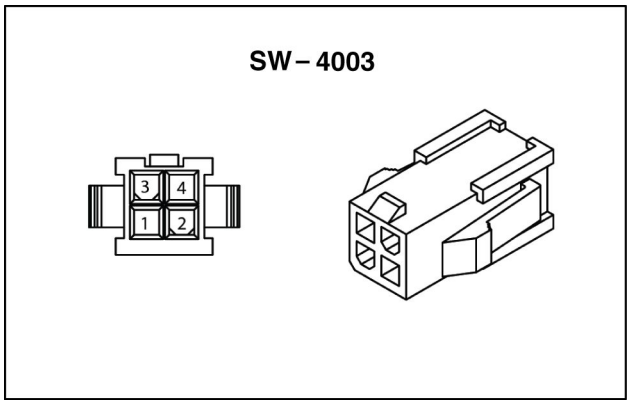


MOLI11F1432AA 3

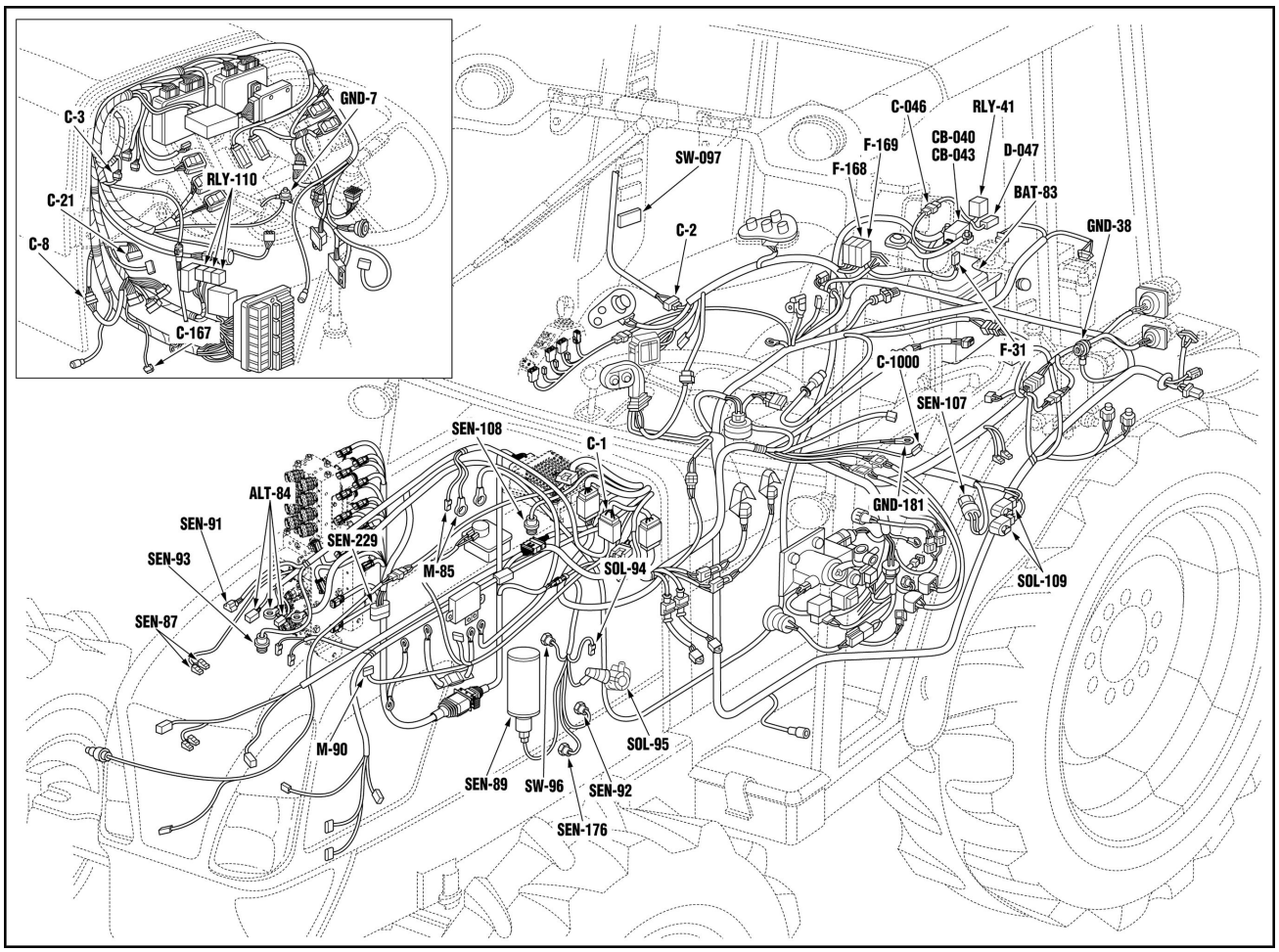
SW−4003

For model with cab

Pin	Col.	Sect.	Pin	Col.	Sect.
A1	CB	0.5	A3	VB	0.5
A2	CB	0.5	A4	BN	0.5



MOLI12SPF0234AA 5



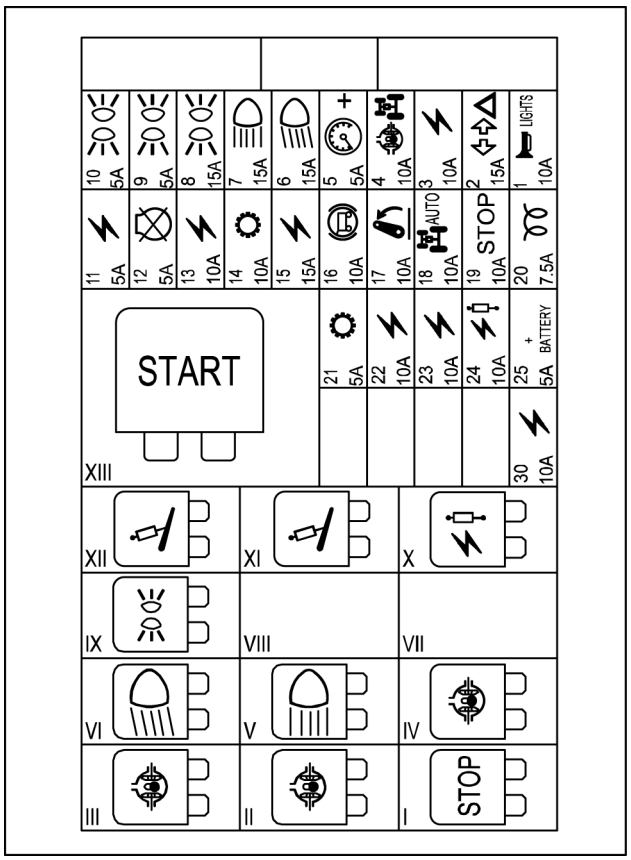
FC6V2C13-16 4

Version (4) Fig. 4

4-wheel drive models with, permanent 4WD, electronic rear lift and electrohydraulic differential lock, fitted for:
Power-Shuttle unit.
Digital instrument.
North America circuit.

List of relay functions

- I Volts. Brake lights circuit
- II Differential lock circuit
- III Differential lock circuit
- IV Differential lock circuit
- V Full beam headlight circuit
- VI Dipped beam headlight circuit
- VII Not used
- VIII Not used
- IX Side lights circuit
- X EHR circuit
- XI Hydraulic third control valve circuit
- XII Hydraulic second control valve circuit
- XII Engine starter circuit maxi-relay



MOLI11F0968BA 4

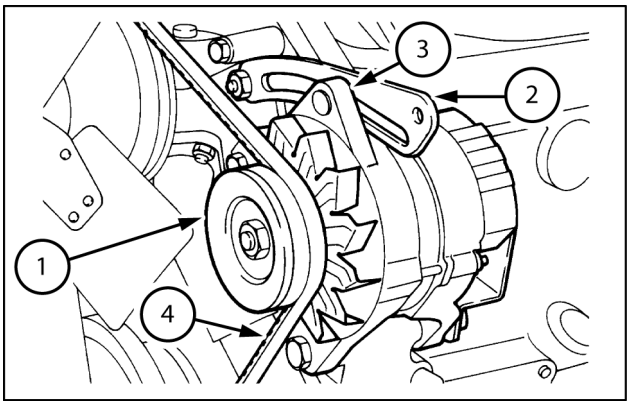
Valves	Amps.	Protected circuits
23	**10 A**	Circuit for adjusting right-hand tie rod
24	**10 A**	Mid mount control valves circuit
25	**5 A**	Electronic control unit power supply, (+battery), seat safety circuit
26	**10 A**	Rotary beacon circuit
27	**5 A**	Rotary beacon circuit
28	–	Not used
29	–	Not used
30	**10 A**	Key pad supply unit (+ key)

Maxi fuses

30 A ISO power socket

Belt for models without air-conditioning Fig. **1**.

- Loosen the nut **(3)** that fastens the alternator to the tensioner bracket **(2)**.
- With a lever, move the alternator **(1)** on the tensioner bracket **(2)** to reach correct belt tension and tighten the securing nut **(3)** to **55 N·m**.

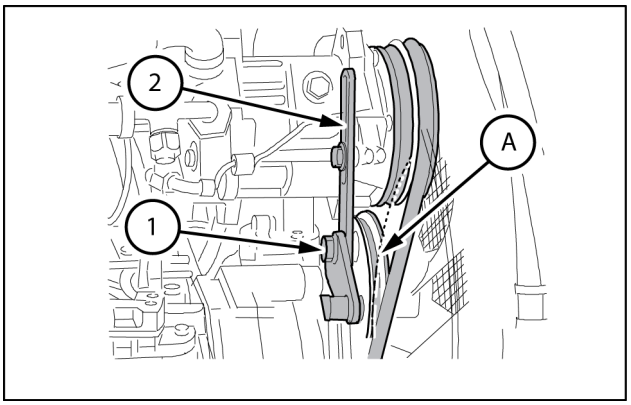


MOLI11F0929AB 1

1. Alternator
2. Belt tensioner
3. Belt retaining nut
4. Belt

Belt for models with air-conditioning Fig. **2**.

- Loosen the belt tensioner **(1)** retaining nut **(2)**.
- Move the belt tensioner arm **(2)** on the bracket until the correct tension on the belt is reached, then tighten the retaining nut **(1)** to a torque value of **55 N·m**.



MOLI11F0930AB 2

1. Belt retaining nut
2. Belt tensioner
3. Belt shape when tensioned

Correct deflection values, measured by applying the following loads to the middle of the belt:

	Model without cab, or with cab without air-conditioning	Model with cab, with air-conditioner
Load	**78 - 98 N**	**147 N**
Deflection	**10 - 11 mm**	**16 mm**

NOTE: *If belts are cracked or require frequent adjustment, they must be replaced.*

Battery - Dynamic description

Description and operation

A “sealed”, maintenance-free battery is installed in all models, located behind the driving seat.

NOTE: *“Maintenance-free” means that the battery does not lose water from the electrolyte in normal conditions of use. Water loss may occur if the battery is charged over* ***14.4 V****. This causes the liquid to boil as a result of the gas formed whilst the battery is fully charging. This event may be caused by a charging system fault, quick recharging or topping up.*

The four main functions of a battery are:

- To supply a source of electric energy for starting, switching on and running the instruments.
- Controlling the electrical system voltage.
- To supply electricity when the power required is higher than that produced by the alternator.
- To support inactive loads from the radio and the microprocessor memory.

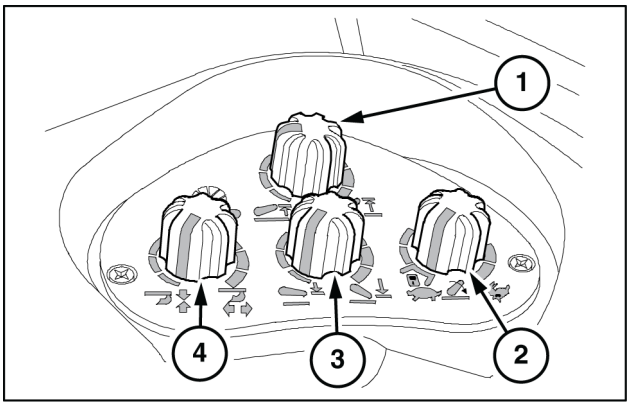
Each element of the battery consists of positive and negative plates, positioned alternatively one next to the other. Each positive plate is separated from the negative plate by means of a porous insulating separator. If one of the positive plates comes into contact with the negative plates in the element, the element will short circuit and be irreparably damaged. All of the positive plates are welded to a bar and form a positive terminal, whereas all of the negative plates are welded to a similar bar and form a negative terminal.

Each positive plate comprises a lead grid with lead peroxide pasted to the grid holes. The negative plates consist of a lead grid with lead sponge pasted to the grid holes.

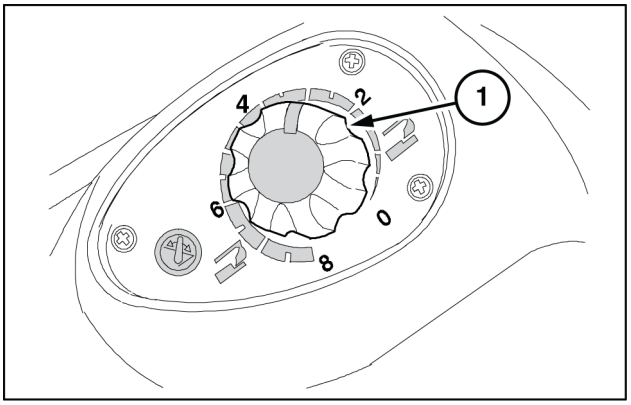
The plates are covered by electrolyte formed by a diluted sulphuric acid solution.

The battery casing is made in polypropylene.

- Set the potentiometers (**(1)**, **(2)**, **(3)** and **(4)**) in the following positions:
- Potentiometer **(1)** to the maximum lifting position (turn clockwise);
- Potentiometer **(2)** to the maximum arm lowering speed position (turn counter-clockwise);
- Potentiometer **(3)** to the maximum lowering position (turn clockwise);
- Potentiometer **(4)** to the control mode position (turn clockwise);
- Set the switch **(2)** (Fig. **10**) on the central position (work).
- Capture the lift by turning the knob **(1)**first completely clockwise, then until it stops in the counterclockwise direction and finally clockwise again on number 2.

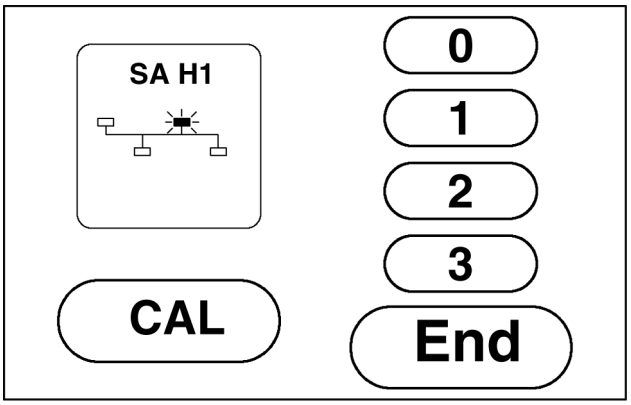


ITIL11T40771A0B 7



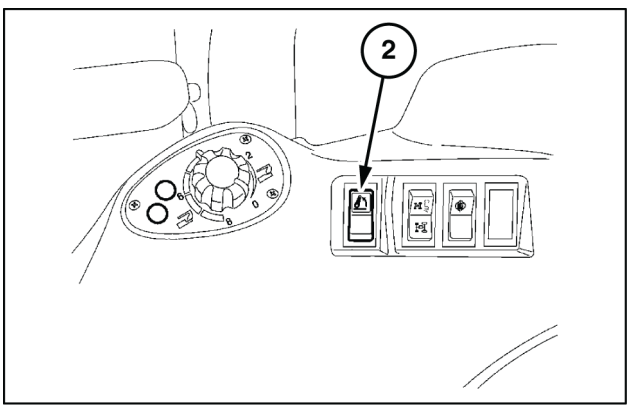
ITIL11T40772A0B 8

- The display will first show "CAL", then in sequence: 0 - 1 - 2 - End.
- Switch off the engine by turning the key start switch onto position "A" **(1)** (Fig. **5**).



ITIL11T40773A0A 9

NOTE: *It is possible to access the solenoid valve calibration procedure also by holding down the switch* ***(2)*** *on the rapid soil entry position, starting the engine and then releasing the switch and putting it into the work position.*



ITIL11T40774A0B 10

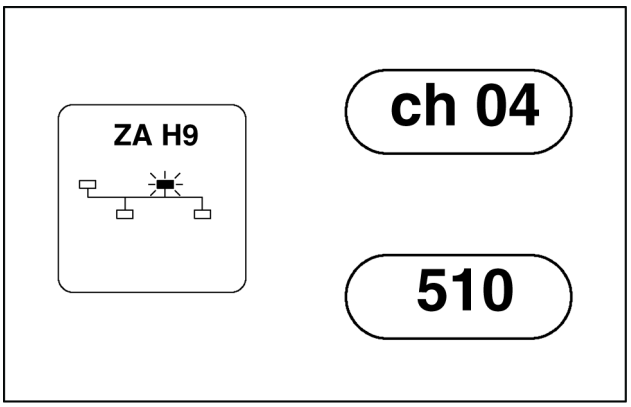
Electronic modules - H9 - Voltmeter diagnostic

H4 - Voltmeter (ZA - SD - SC - SB - SA - MV)

This menu is used to check the values of the power supply voltage, the frequency and the solenoid valve circuits.

Voltmeter of the instrument cluster (ZA)

- Select the module (ZA) and access the H9 menu proceeding as described on **Electronic modules - Configure (55.640)**.
- Move among the available channels using the switch **(2)**, (**Electronic modules - H7 - Vehicle test modes (55.640) Figure 1**); the display will each time show the channel number and the relevant value.

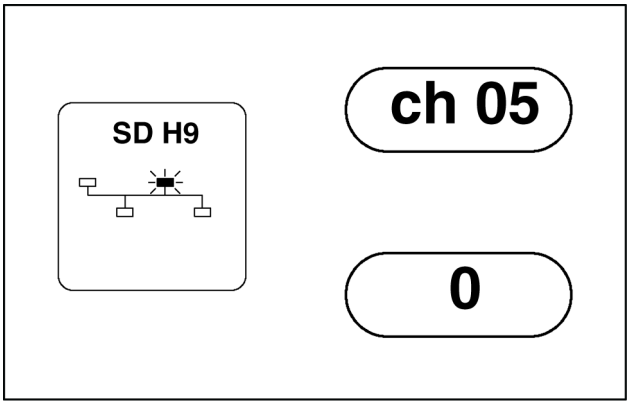


ITIL11T40823A0A 1

Voltmeter - instrument cluster (ZA)		
Channel Number	**Description**	**Measured value**
4	Programming voltage Vpp	400 to 600
7	Power supply voltage +12VF	340 to 670
23	Engine coolant temperature	4 to 680
25	Fuel level	20 to 580

Automatic four-wheel drive and front power take-off engagement voltmeter (SD)

- Select the module (SD) and access the H9 menu proceeding as described on **Electronic modules - Configure (55.640)**.
- Move among the available channels using the switch **(2)**, (**Electronic modules - H7 - Vehicle test modes (55.640) Figure 1**); the display will each time show the channel number and the relevant value.



ITIL11T40824A0A 2

Voltmeter - Four-wheel drive automatic engagement mode (SD)		
Channel Number	**Description**	**Measured value**
5	**5 V** voltage supply to the sensors	800 to 950
7	Power supply voltage +12VF	500 to 900
11	Steering angle sensor (with tractor on level ground)	10 to 900
14	Front power take−off clutch current (with engine running)	650 to 850
21	Steering angle sensor (wheels straight)	10 to 900
	Steering angle sensor (wheels completely turned)	10 to 900
27	Working depth control potentiometer	50 to 850
28	Front lift arms position control potentiometer	50 to 850

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Rear Power Take-Off (PTO) control system - 048

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Electrical systems - 55

Rear three-point hitch electronic control system - 130

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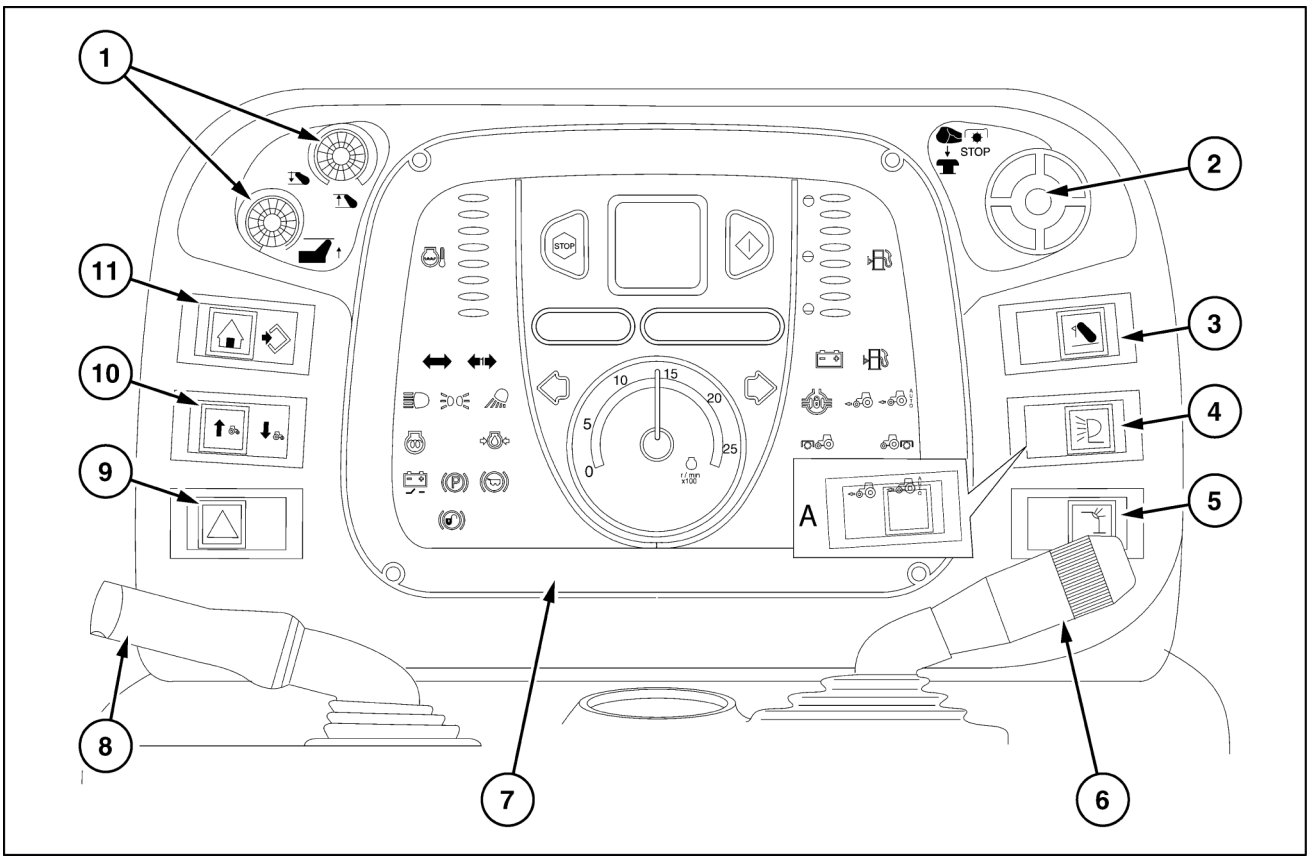
Electrical systems - 55

External lighting - 404

(*) See content for specific models

Instrument cluster - External view



MOLI11F0895FB 1

Digital instrument control panel

1. Commands for setting the front electronic lift for Supersteer models
2. Front P.T.O. control for Supersteer models
3. Front lift up and down switch
4. Bonnet/cab lights switch
5. Angular headlight switch
6. Lights switch
7. Control panel
8. Power-Shuttle control lever
9. Hazard warning lights control switch
10. Switch with dual function (UP DOWN) scrolling forwards or backwards in the menu
11 Switch with dual function for navigating through the menu

NOTE: *The switch* ***(4)*** *on models with roll bar is replaced by the switch "A" of the electrohydraulic four-wheel drive control:*

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

Wiring harnesses - Electrical schematic sheet 05 - Rear electronic lift circuit (55.100.DP-C.20.E.05)

1040-Lift not calibrated

Control Module : Rear electronic lift control unit

Context:
The lift is not disabled.

Possible failure modes:

1. Replace arm lift potentiometer
2. Replace solenoid valve
3. Replace control unit
4. After deleting the memory in H8

Solution:

1. When the cause of the fault code has been rectified, clear the fault code and test the system for normal operation. Check whether the lift has been calibrated.

   A. If the lift has not been calibrated, after replacing the control unit or after using H8 (deleting EEPROM memory) run the lift calibration procedure. Enter the menu HH, select the program H1 then proceed with calibration; without tool. **380000843**, to access calibration, press and hold down push−button Lifting/work/ **SW−34−A** and **SW−34−B** in rapid ground entry while starting the machine, release it after starting.

   B. If the transmission has been calibrated, download the correct level of the software and run the calibration procedure again. If the error is repeated, remove and replace the control unit.

   NOTE: *for a description of the HH menus, refer to* ***Electronic modules - Configure (55.640)****.*

2037-Clutch pedal switch circuit open

Control Module : Power Shuttle control unit

Context:
The tractor is not operative.

Possible failure modes:

1. Faulty connector
2. Incorrect clutch disconnect switch adjustment
3. Clutch disconnect switch faulty
4. Wiring fault
5. ECU fault

Solution:

1. When the cause of the fault code has been rectified, clear the fault code and test the system for normal operation. Check the clutch disconnect switch in H7 ch. 1.

   A. Position the forward/reverse shuttle lever into gear. Operate the clutch pedal from fully depressed to fully released. The display should indicate the switch is closed before 15%. If the switch is turned on much after 15% of pedal travel, adjust the switch as required. If the display does not indicate the switch has closed, continue to step **2**.

   B. If the switch is adjusted correctly, while in H7 ch. 1 wiggle the harness, the disconnect switch connector **SW−151** and the connectors of the control unit **MOD−150** to check for an intermittent circuit. ch. 1 values will change if an intermittent circuit is detected. Repair or replace as necessary.

2. Check the clutch disconnect switch connector **SW−151**, the shuttle lever assembly connector **SW−152**, and the connectors of the control unit **MOD−150**.

   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 **3**.

3. Check the clutch disconnect switch.

   A. Disconnect connector **SW−151**. Check between the component side of connector:
   SW−151 pin 2 and pin 3
   should indicate a closed circuit with the pedal released and an open circuit with the pedal depressed.
   SW−151 pin 1 and pin 4
   should indicate an open circuit with the pedal released and a closed circuit with the pedal depressed. If the switch is not okay, remove and replace the clutch disconnect switch.

   B. If the switch is okay, continue to step **4**.

4. Check for an open circuit.

   A. Turn ignition switch to OFF position. Disconnect the connectors **MOD−150**, **SW−152**. Check between:
   SW−151 pin 1, wire (B) and **MOD−150** pin 19, wire (B)
   SW−151 pin 2, wire (B) and **MOD−150** pin 19, wire (B)
   SW−151 pin 3, wire (RN) and **MOD−150** pin 2, wire (RN)
   SW−151 pin 2, wire (B) and **SW−152** pin 7, wire (B)
   If an open circuit 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.

Wiring harnesses - Electrical schematic sheet 24 - Power-Shuttle 16+16 or 32+16 (splitter) circuit (dashboard side) (55.100.DP-C.20.E.24)

2086-Open circuit at the HI-LO position synchronizer solenoid valve

Control Module : Power shuttle control unit

Context:
The tractor only runs in LO forward and reverse gears.

Possible failure modes:

1. Faulty connector
2. Solenoid valve faulty
3. Wiring fault
4. ECU fault

Solution:

1. When the cause of the fault code has been rectified, clear the fault code and test the system for normal operation. Check the solenoid valve with HH diagnostic programs.

   A. Enter the program H9 of the control unit SB, select the channel ch. 58. With the engine running in forward drive with LO engaged (hare off) press the HI button on the gear lever, the display will show a number that from 0 reaches up to approximately 700-900 then goes back to 0 (energizing solenoid valve for moving synchro in HI-LO position).

   B. If nothing appears on the display and the drive is not reversed, continue to **2**

2. Check the connector of the solenoid valve **SOL−138**, the main cable connector **C−6−A** and the connectors of the control unit **MOD−150**.

   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 **3**

3. Check the shuttle position synchronizer solenoid valve.

   A. Disconnect connector **SOL−138**. Measure the resistance in the connector:
   SOL−138 between pins 1 and 2
   If the resistance indicated is not approximately **7.5 Ω**, remove and replace the solenoid valve.

   B. If the resistance is okay, continue to **4**

4. Check the solenoid valve for a short to ground.

   A. Check between the component side of connector:
   SOL−138 pin 1, and ground
   SOL−138 pin 2, and ground
   If a short to ground is indicated, remove and replace the solenoid.

   B. If a short to ground is not indicated, continue to **5**

5. Check for a short to ground.

   A. Check between:
   SOL−138 pin 1, wire (GN) and ground
   SOL−138 pin 2, wire (GR) and ground
   If a short to ground is indicated, repair or replace the harness as required.

   B. If a short to ground is not indicated, continue to **6**

6. Check for an open circuit.

   A. Disconnect the control unit connector **MOD−150**. Check between:
   SOL−138 pin 1, wire (GN) and **MOD−150** pin 30, wire (GN)

2426-Voltage from gear lever switch too high

Control Module : Power Shuttle control unit

Context:
The tractor runs normally, but with low gears engaged it may not function. In this event, use the tractor in a higher gear.

Possible failure modes:

1. Faulty connector
2. Gear switch faulty
3. Wiring fault
4. ECU fault

Solution:

1. When the cause of the fault code has been rectified, clear the fault code and test the system for normal operation. Check the gear position switch in H5.
   A. Operate the gear lever. Moving it from engaged into the neutral position, the display will show d. 0 and d. 156, if this does not happen, continue to phase **2**.
   B. If the values displayed are okay, while in H5, with the lever in neutral, wiggle the harness, the range switch connector **SW−142**, the main cable connector **C−9**, and the connector of the control unit **MOD−150** to check for an intermittent circuit. In this case the display may change. Repair or replace as necessary.
2. Check the gear switch connector **SW−142**, the main cable connector, and the connector of the control unit **MOD−150**, and the connectors of the control unit **MOD−150**.
   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 **3**.
3. Check the range switch.
   A. Disconnect connector **SW−142**. Measure the resistance between:
   SW−142 pin 1 and pin 2.
   With the gear lever in neutral (button pressed), it should indicate **560 Ω**.
   With the gear lever engaged (button released), it should indicate **2760 Ω**.
   If the resistances indicated are not okay, remove and replace the range switch.
   B. If the gear position switch is okay, continue to step **4**.
4. Check for short to a positive voltage.
   A. Turn the ignition key ON. Measure the voltage between the connector:
   SW−142 pin 2, wire GL and ground
   If a voltage is indicated, repair or replace the harness as required.
   B. If a voltage is not indicated, continue to step **4**.
5. Check for a short to **+8 V** or **+12 V**.
   A. With the key start ON. Measure the voltage between the connector:
   SW−142 pin 1, wire AB and ground
   If the indicated voltage is not approximately **+5 V**, repair or replace the harness as required.
   B. If the voltage is approximately **+5 V**, download the correct software release. If the error is repeated,remove and replace the control unit.

Wiring harnesses - Electrical schematic sheet 25 - Power-Shuttle 16+16 or 32+16 (splitter) circuit (transmission side) (55.100.DP-C.20.E.25)

4720-12V key lines and 12V key solenoid activation line not powered together (12V Key low and 12V key solenoid activation high)

T4030F With cab - Model Year 2012 [ZCJD09263 - ZDJD10118]	NA
T4030F With cab [Z8JD05996 - ZCJD10540]	NA
T4040F With cab - Model Year 2012 [ZCJD10607 - ZDJD10900]	NA
T4040F With cab [Z8JD07561 - ZCJD10129]	NA
T4050F With cab - Model Year 2012 [ZCJD07769 - ZDJD10461]	NA
T4050F With cab [Z7JD01006 - ZCJD10886]	NA
T4060F With cab [ZBJD14608 - ZDJD11085]	NA

Control Module : Mid mount control unit

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

Cause:
The mid mount control unit has detected a voltage less than **7.9 V** at connector **MOD–4007** pin 3, 4 and 14 (C) compared to a voltage greater than **8.1 V** detected at connector **MOD–4007** pin 25 (C).

Possible failure modes:

1. Faulty fuse(s)
2. Faulty connector
3. Faulty wiring harness
4. Faulty mid mount control unit

Solution:

1. Check the mid mount control unit fuses F26 (7.5A), F28 (7.5A) and F29 (7.5A) at **MOD−25−B**.
   A. Ensure the fuses are not blown and that the fit is tight. If a fuse is blown , continue to step **4**
   B. If the fuses are okay, continue to step **2**
2. Check the mid mount control unit connector **MOD–4007**.
   A. Ensure the connector is connected, not damaged, the pins are in the correct position and that the fit is tight. Repair or replace as required.
   B. If the connector is okay, continue to step **3**
3. Check for an open circuit.
   A. Turn the ignition key switch OFF. Disconnect connector **MOD–4007** and relay 4 in **MOD−25−D**. Check between connector:
   MOD–4007 pin 3 (C) and **MOD−25−D** relay 4 pin D87 (C)
   MOD–4007 pin 4 (C) and **MOD−25−D** relay 4 pin D87 (C)
   MOD–4007 pin 14 (C) and **MOD−25−D** relay 4 pin D87 (C)
   If an open circuit is indicated, repair or replace the harness as required.
   B. If no wiring harness problems are indicated, download the correct version of software. If the error code occurs again, remove and replace the mid mount control unit.
4. Replace the blown fuse(s).
   A. If the fuse blows again, disconnect the mid mount control unit connector **MOD–4007**. Check for a short circuit to ground between connector:
   MOD–4007 pin 3 (C) and ground
   MOD–4007 pin 4 (C) and ground
   MOD–4007 pin 14 (C) and ground
   If a short circuit to ground is indicated, repair or replace the harness as required.
   B. If no wiring harness problems are indicated, check for other error codes and continue those tests.

2WD, rear mechanical lift, mechanical differential lock, with cab
Wiring harnesses - Electrical schematic sheet 22 - Mid mount control valves circuit (55.100.DP-C.20.E.22)

4751-Spool X-Axis moves in the opposite way respect to joystick activation (spool rise while joystick low)

T4030F With cab - Model Year 2012 [ZCJD09263 - ZDJD10118]	NA
T4030F With cab [Z8JD05996 - ZCJD10540]	NA
T4040F With cab - Model Year 2012 [ZCJD10607 - ZDJD10900]	NA
T4040F With cab [Z8JD07561 - ZCJD10129]	NA
T4050F With cab - Model Year 2012 [ZCJD07769 - ZDJD10461]	NA
T4050F With cab [Z7JD01006 - ZCJD10886]	NA
T4060F With cab [ZBJD14608 - ZDJD11085]	NA

Control Module : Mid mount control unit

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

Cause:
The mid mount control unit has detected the joystick **SW−4003** signal, while in the lower position is less than **2.28 V** at **MOD–4007** pin 36 and the X-Axis spool **SOL−015** signal, while in the raise position is less than **2.18 V** at **MOD–4007** pin 28.

Possible failure modes:

1. MMX-A and MMX-B solenoid connectors swapped

Solution:

1. Before proceeding clear the error code. Run the machine under normal conditions and retest.
   A. If the error code is not indicated, check that the system is operating correctly.
   B. If the error code is indicated, continue to step **2**
2. Check the mid mount valves MMX-A solenoid valve **SOL−03** and the mid mount valves MMX-B solenoid valve **SOL−04**.
   A. Ensure the connectors are connected, not damaged, the pins are in the correct position and that the fit is tight. Repair or replace as required.
   B. If the connectors are okay, continue to step **3**
3. Check the MMX-A solenoid valve **SOL−03** and the MMX-B solenoid valve **SOL−04** are connected to the correct connector for that solenoid and are not swapped.
   A. Check the connectors:
   SOL−03 with pin 1 (GL) and pin 2 (GN) is connected to the MMX-A rise solenoid
   SOL−04 with pin 1 (GR) and pin 2 (GN) is connected to the MMX-B lower solenoid
   If the connectors are incorrect, swap the connectors as required, clear the error code and check that the system is operating correctly.
   B. If the connectors are okay, check for other error codes relating to the MMX-A solenoid valve, the MMX-B solenoid valve, joystick, mid mount valves SPSL1 solenoid valve or mid mount valves SPSL2 solenoid valve. Follow any diagnostic routines for those errors.

2WD, rear mechanical lift, mechanical differential lock, with cab
Wiring harnesses - Electrical schematic sheet 22 - Mid mount control valves circuit (55.100.DP-C.20.E.22)

2WD, rear mechanical lift, mechanical differential lock, with cab
Wiring harnesses - Electrical schematic sheet 22 - Mid mount control valves circuit (55.100.DP-C.20.E.22)

5. Check for a short circuit.

   A. Check for a short circuit between:
   SOL−011 pin 1 (ZB) and **SOL−011** pin 2 (ZN)
   SOL−012 pin 1 (ZB) and **SOL−012** pin 2 (ZN)
   If a short circuit is indicated, repair or replace as required.

   B. If no wiring harness problems are indicated, download the correct version of software. If the error occurs again, replace the mid mount control unit.

4818-ON/OFF valve X-Axis: Valve A4/B4 solenoid open circuit

T4030F With cab - Model Year 2012 [ZCJD09263 - ZDJD10118]	NA
T4030F With cab [Z8JD05996 - ZCJD10540]	NA
T4040F With cab - Model Year 2012 [ZCJD10607 - ZDJD10900]	NA
T4040F With cab [Z8JD07561 - ZCJD10129]	NA
T4050F With cab - Model Year 2012 [ZCJD07769 - ZDJD10461]	NA
T4050F With cab [Z7JD01006 - ZCJD10886]	NA
T4060F With cab [ZBJD14608 - ZDJD11085]	NA

Control Module : Mid mount control unit

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

Cause:
The mid mount control module **MOD–4007** has detected an open circuit on the A4/B4 mid mount valve solenoids.

Possible failure modes:

1. Faulty connector
2. Faulty wiring harness
3. Faulty A4 solenoid valve
4. Faulty B4 solenoid valve
5. Faulty mid mount control unit

Solution:

1. Check the A4 solenoid valve connector **SOL−013**, the B4 solenoid valve connector **SOL−014**, the inline harness connector **C–4006** and the mid mount control unit connector **MOD–4007**.

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

   B. If the connectors are okay, continue to step **2**

2. Check the solenoid valves.

   A. Disconnect connectors **SOL−013** and **SOL−014**. Measure the resistance between the component side of connectors **SOL−013** and **SOL−014** pin 1 and pin 2. If the resistance value indicated is not between **4 Ω** and **4.6 Ω** replace the relevant solenoid.

   B. If the resistance is between **4 Ω** and **4.6 Ω**, continue to step **3**

3. Check for an open circuit.

   A. Disconnect connector **MOD–4007**. Check for an open circuit between:
   MOD–4007 pin 2 (ZV) and **SOL−013** pin 1 (ZV)
   MOD–4007 pin 2 (ZV) and **SOL−014** pin 1 (ZV)
   SOL−013 pin 2 (ZN) and ground
   SOL−014 pin 2 (ZN) and ground
   If an open circuit is detected, repair or replace the harness as required.

   B. If no wiring harness problems are indicated, download the correct version of software. If the error occurs again, replace the mid mount control unit.

4830-Engine RPM via CAN line: Timeout reception

T4030F With cab - Model Year 2012 [ZCJD09263 - ZDJD10118]	NA
T4030F With cab [Z8JD05996 - ZCJD10540]	NA
T4040F With cab - Model Year 2012 [ZCJD10607 - ZDJD10900]	NA
T4040F With cab [Z8JD07561 - ZCJD10129]	NA
T4050F With cab - Model Year 2012 [ZCJD07769 - ZDJD10461]	NA
T4050F With cab [Z7JD01006 - ZCJD10886]	NA
T4060F With cab [ZBJD14608 - ZDJD11085]	NA

Control Module : Mid mount control unit

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

Possible failure modes:

1. Faulty harness
2. CAN BUS interference
3. Faulty mid mount control unit

Solution:

1. Before proceeding clear the error code. Run the tractor under normal conditions and retest.
   A. If the error code is not indicated, check that the system is operating correctly.
   B. If the error code is indicated, continue to step **2**
2. Check for other CAN related error codes displayed.
   A. If other error codes are displayed, continue to these tests.
   B. If no other error codes are displayed, continue to step **3**
3. Check all power supplies and grounds to the controllers on the CAN BUS.
   A. If a fault is indicated, repair or replace the harness as required.
   B. If the power supplies and grounds are okay, download the correct version of software. If the error code occurs again, remove and replace the mid mount control unit.

6039-Voltage from tilt sensor too high

Control Module : Four-wheel drive control unit

Context:
The control unit ignores the indications of the tilt sensor and follows the logic of the four-wheel drive engagement on the flat surface.

Possible failure modes:

1. Sensor faulty
2. Wiring fault
3. ECU fault

Solution:

1. When the cause of the fault code has been rectified, clear the fault code and test the system for normal operation.

   Check the tilt sensor in H9.

   A. Enter the HH diagnostics program, select program H9 of the control unit SC, at the channel ch. 11, with the tractor on level ground the display will show a number equal to approximately 150-300, if this does not happen, continue to phase **2**.

   B. If the values displayed are okay, while in H9, with the lever in neutral, wiggle the harness, the tilt sensor connector **SEN−33** and the connector of the control unit **MOD−64** to check for an intermittent circuit. In this case the display may change. Repair or replace as necessary.
2. Check the tilt sensor connector **SEN−33** and the connector of the control unit **MOD−64**.

   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 **3**.
3. Check for a short circuit to positive.

   A. Disconnect the control unit connector **MOD−64** and that of the tilt sensor **SEN−33**. Turn the ignition key ON and check between:
   MOD−64 pin 25 wire GV and ground
   If a short to a positive voltage is indicated, repair or replace the wiring harness as required.

   B. If the wiring harness is okay and the error is repeated, replace the sensor. If the error is repeated, download the latest software release, if this is not enough then remove and replace the control unit.

Wiring harnesses - Electrical schematic sheet 01 - 4WD circuit (55.100.DP-C.20.E.01)

13013-SC (control unit of four-wheel drive, lift and front power take-off)+12VF too high

Control Module : Power Shuttle control unit

Context:
Fault that the control unit highlights after a few seconds of supply with a voltage above **18 V**, services disabled.

Possible failure modes:

1. Alternator faulty
2. Batteries of **+12 V** connected in series

Solution:

1. When the cause of the fault code has been rectified, clear the fault code and test the system for normal operation. Check both the alternator and the connection of the batteries.