SERVICE MANUAL

TL60E / TL75E / TL85E / TL95E

Tractor

Part number 47835583
English
October 2015

AGRICULTURE

Foreword - Important notice regarding equipment servicing

All repair and maintenance work listed in this manual must be carried out only by qualified dealership personnel, strictly complying with the instructions given, and using, whenever possible, the special tools.

Anyone who performs repair and maintenance operations without complying with the procedures provided herein shall be responsible for any subsequent damages.

The manufacturer and all the organizations of its distribution chain, including - without limitation - national, regional, or local dealers, reject any responsibility for damages caused by parts and/or components not approved by the manufacturer, including those used for the servicing or repair of the product manufactured or marketed by the manufacturer. In any case, no warranty is given or attributed on the product manufactured or marketed by the manufacturer in case of damages caused by parts and/or components not approved by the manufacturer.

The manufacturer reserves the right to make improvements in design and changes in specifications at any time without notice and without incurring any obligation to install them on units previously sold. Specifications, descriptions, and illustrative material herein are as accurate as known at time of publication but are subject to change without notice.

In case of questions, refer to your NEW HOLLAND Sales and Service Networks.

Safety rules - Ecology and the environment

Soil, air, and water quality is important for all industries and life in general. When legislation does not yet rule the treatment of some of the substances that advanced technology requires, sound judgment should govern the use and disposal of products of a chemical and petrochemical nature.

Familiarize yourself with the relative legislation applicable to your country, and make sure that you understand this legislation. Where no legislation exists, obtain information from suppliers of oils, filters, batteries, fuels, anti-freeze, cleaning agents, etc., with regard to the effect of these substances on man and nature and how to safely store, use, and dispose of these substances.

Helpful hints

- Avoid the use of cans or other inappropriate pressurized fuel delivery systems to fill tanks. Such delivery systems may cause considerable spillage.
- In general, avoid skin contact with all fuels, oils, acids, solvents, etc. Most of these products contain substances that may be harmful to your health.
- Modern oils contain additives. Do not burn contaminated fuels and or waste oils in ordinary heating systems.
- Avoid spillage when you drain fluids such as used engine coolant mixtures, engine oil, hydraulic fluid, brake fluid, etc. Do not mix drained brake fluids or fuels with lubricants. Store all drained fluids safely until you can dispose of the fluids in a proper way that complies with all local legislation and available resources.
- Do not allow coolant mixtures to get into the soil. Collect and dispose of coolant mixtures properly.
- The air-conditioning system contains gases that should not be released into the atmosphere. Consult an air-conditioning specialist or use a special extractor to recharge the system properly.
- Repair any leaks or defects in the engine cooling system or hydraulic system immediately.
- Do not increase the pressure in a pressurized circuit as this may lead to a component failure.
- Protect hoses during welding. Penetrating weld splatter may burn a hole or weaken hoses, allowing the loss of oils, coolant, etc.

Battery recycling

Batteries and electric accumulators contain several substances that can have a harmful effect on the environment if the batteries are not properly recycled after use. Improper disposal of batteries can contaminate the soil, groundwater, and waterways. NEW HOLLAND strongly recommends that you return all used batteries to a NEW HOLLAND dealer, who will dispose of the used batteries or recycle the used batteries properly. In some countries, this is a legal requirement.

Mandatory battery recycling

NOTE: *The following requirements are mandatory in Brazil.*

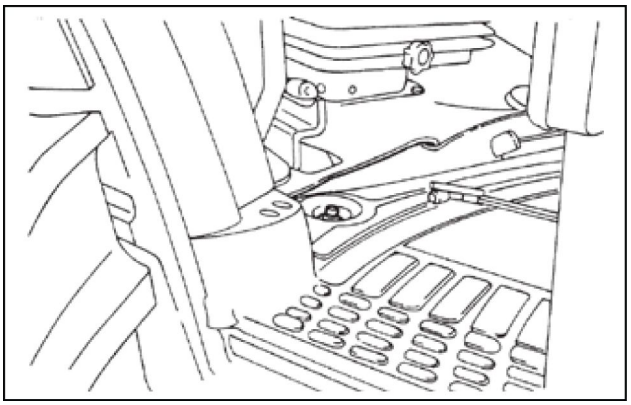
Batteries are made of lead plates and a sulfuric acid solution. Because batteries contain heavy metals such as lead, CONAMA Resolution 401/2008 requires you to return all used batteries to the battery dealer when you replace any batteries. Do not dispose of batteries in your household garbage.

Points of sale are obliged to:

- Accept the return of your used batteries
- Store the returned batteries in a suitable location
- Send the returned batteries to the battery manufacturer for recycling

CONSUMABLES INDEX

21. Lift the front of the platform or cab floor mat.



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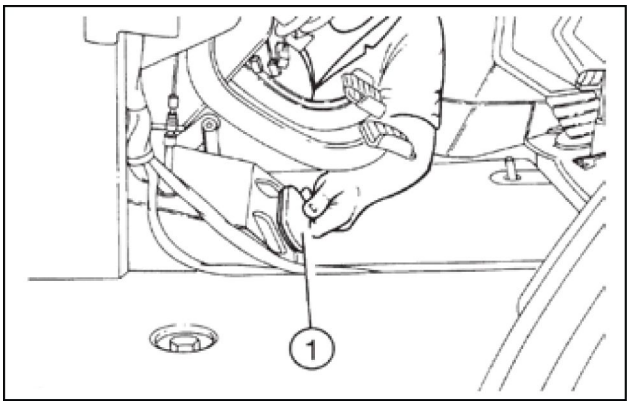
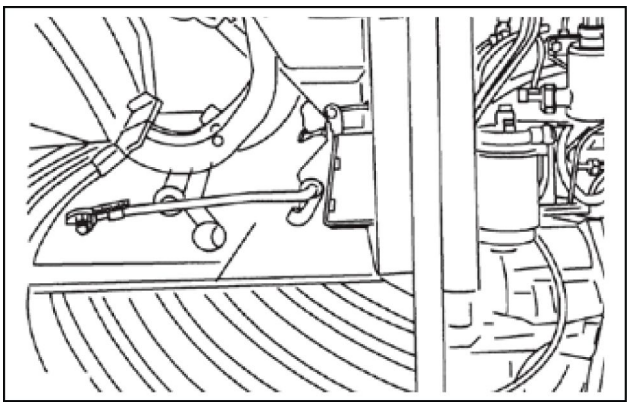
22. Remove the covers **(1)** to access the upper screws securing the engine.



LAIL11TL1127A0A 12

23. Disconnect the control pedal throttle cable.



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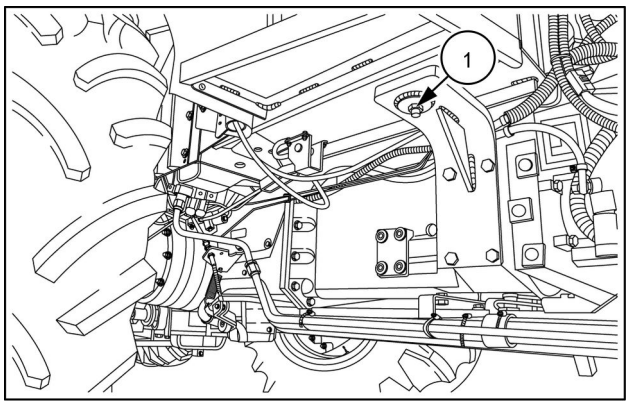
24. Loosen the front two bolts **(1)** securing the cab to the relative supports.

NOTE: *Repeat the procedure on the other side of the machine.*



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Engine - Compression test

TL60E 12x4, 4WD, new cab [HCCZTL60CFC438464 -]	
TL60E Without cab, 12x4, 4WD [ZDCL05524 -]	
TL60E	LA
TL75E 12x12, 20x12, 4WD, new cab [HCCZTL75CFC437744 -]	
TL75E 12x4, 2WD, new cab [HCCZTL75CFC438464 -]	
TL75E Without cab, 2WD, 12x4 [ZDCY12367 -]	
TL85E 12x12, 20x12, 4WD, new cab [HCCZTL75CFC438464 -]	
TL85E 12x4, 12x12, 2WD, new cab [HCCZTL85CFC437744 -]	
TL85E Without cab, 2WD [ZEC134399 -]	
TL85E Without cab, 4WD [ZDCL04468 -]	
TL95E 12x12, 20x12, 4WD, new cab [HCCZTL95EFC438464 -]	
TL95E Without cab, 4WD [ZDC112512 -]	

⚠ WARNING

Chemical hazard!
When handling fuel, lubricants, and other service chemicals, follow the manufacturer's instructions. Wear Personal Protective Equipment (PPE) as instructed. Do not smoke or use open flame. Collect fluids in proper containers. Obey all local and environmental regulations when disposing of chemicals.
Failure to comply could result in death or serious injury.

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Compression is a measurement that can indicate the state of the cylinder sealing components (rings and valves). Even compression in the different cylinders ensures regular operation of the engine. This is because each cylinder injects the same amount of fuel with each stroke. Low compression reduces engine performance and does not allow all of the fuel to burn. This is because there is not enough air for perfect combustion. As a result, the engine consumes more fuel and releases white smoke through the exhaust. Compression depends on the engine temperature. Only measure compression when the engine is at operating temperature. Compression values will be lower when the engine is cold and higher when the engine is hot.

Test procedures

1. Make sure that the battery is fully charged.
2. Start the engine. Keep the engine running until the temperature of the liquid coolant stabilizes. Observe the machine's instrument cluster.
3. Turn the engine OFF. Remove the key from the key switch
4. Remove the injector and the seat washer from the first cylinder.
5. Clean the internal diameter of the injector.
6. Disconnect the coil of the injector pump.
7. Turn the engine to expel any loose particles.
8. Install the dummy injector nozzle **380000617** in the injector site. Use a new seat washer and the mounting bolts of the injector.
9. Connect the compression meter **380000303** and the hose to the adapter of the dummy injector.

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Rotary injection pump - Remove

TL60E 12x4, 4WD, new cab [HCCZTL60CFC438464 -]	
TL60E Without cab, 12x4, 4WD [ZDCL05524 -]	
TL60E	LA
TL75E 12x12, 20x12, 4WD, new cab [HCCZTL75CFC437744 -]	
TL75E 12x4, 2WD, new cab [HCCZTL75CFC438464 -]	
TL75E Without cab, 2WD, 12x4 [ZDCY12367 -]	
TL75E	LA
TL85E 12x12, 20x12, 4WD, new cab [HCCZTL75CFC438464 -]	
TL85E 12x4, 12x12, 2WD, new cab [HCCZTL85CFC437744 -]	
TL85E Without cab, 2WD [ZEC134399 -]	
TL85E Without cab, 4WD [ZDCL04468 -]	
TL85E	LA
TL95E 12x12, 20x12, 4WD, new cab [HCCZTL95EFC438464 -]	
TL95E Without cab, 4WD [ZDC112512 -]	
TL95E	LA

For Bosch and Delphi injection pumps

⚠ WARNING

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

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⚠ 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.

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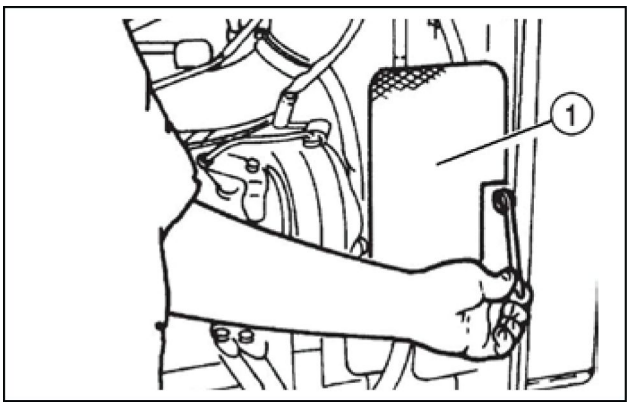
1. Remove the exhaust tube and open the hood.
2. Disconnect the negative battery cable.
3. Remove the protection screen **(1)** by loosening the three fixing bolts on the right-hand side of the blower.



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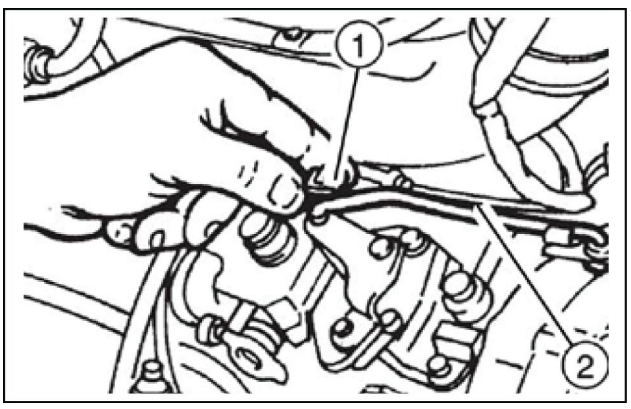
4. Remove the throttle control return spring **(1)** and remove the throttle lever **(2)**.



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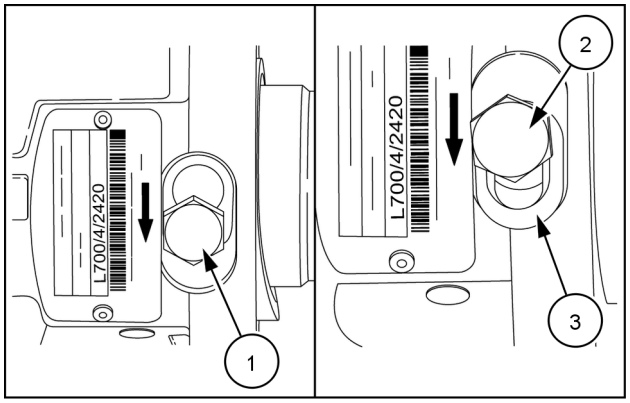
Rotary injection pump - Timing adjust Delphi DP 150 injection pump

TL60E 12x4, 4WD, new cab [HCCZTL60CFC438464 -]	
TL60E Without cab, 12x4, 4WD [ZDCL05524 -]	
TL75E 12x12, 20x12, 4WD, new cab [HCCZTL75CFC437744 -]	
TL75E 12x4, 2WD, new cab [HCCZTL75CFC438464 -]	
TL75E Without cab, 2WD, 12x4 [ZDCY12367 -]	
TL85E 12x12, 20x12, 4WD, new cab [HCCZTL75CFC438464 -]	
TL85E 12x4, 12x12, 2WD, new cab [HCCZTL85CFC437744 -]	
TL85E Without cab, 2WD [ZEC134399 -]	
TL85E Without cab, 4WD [ZDCL04468 -]	LA ---
TL95E 12x12, 20x12, 4WD, new cab [HCCZTL95EFC438464 -]	
TL95E Without cab, 4WD [ZDC112512 -]	

NOTE: *The following procedure ensures an accuracy of approximately **1 °** of tolerance if the engine is at top dead center (TDC) during assembly.*

1. With the pump on a workbench, partially loosen the side bolt **(1)** and move the spacer ferrule **(2)** to the unlock position **(3)**. Tighten the bolt and lock the ferrule. This way, the fuel pump shaft can turn freely.

NOTICE: *Starting the engine with the pump shaft locked can cause serious damage to the injector pump.*



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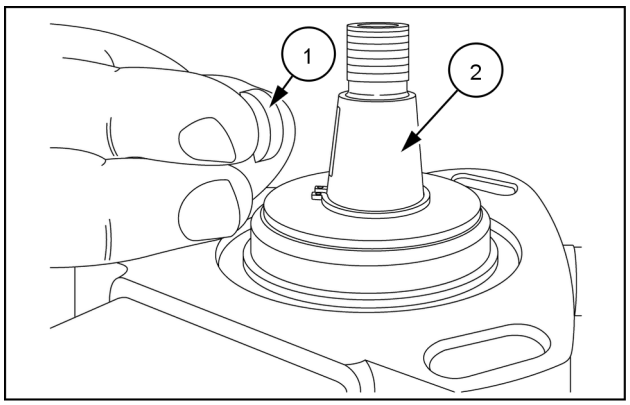
2. Assemble the keyway **(1)** on the pump shaft **(2)**.



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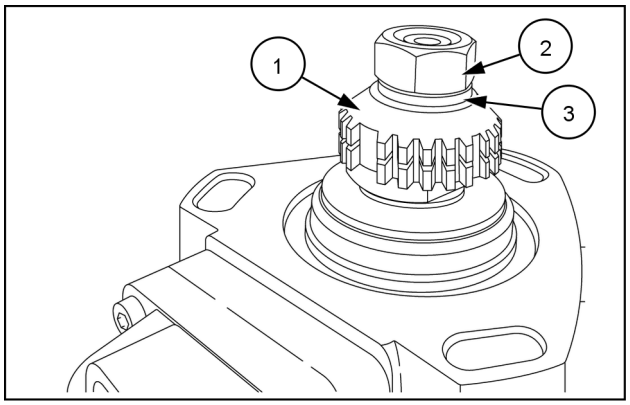
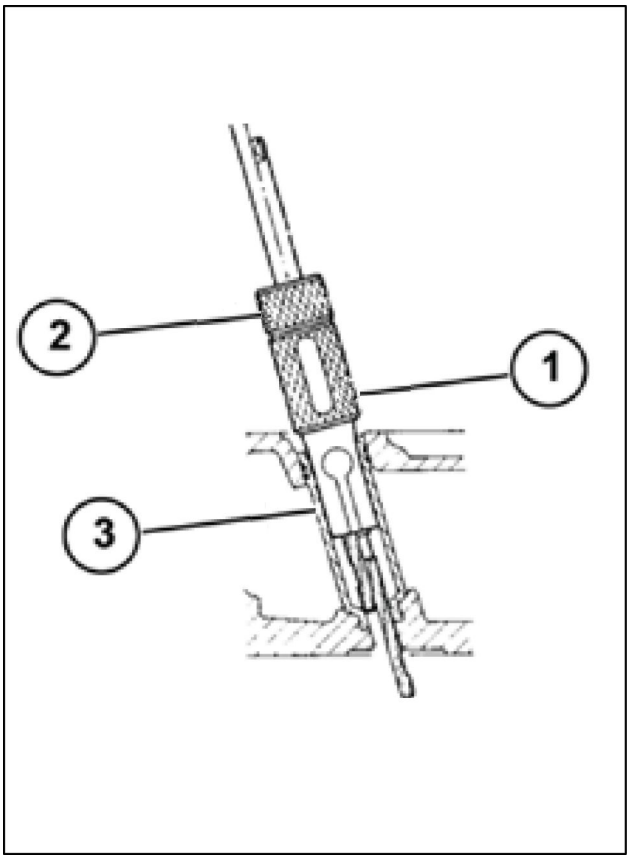
3. Assemble the gear **(1)** on the shaft with the washer **(3)** and the nut **(2)**.



CUIL14TR01374AA 3

2. Position the special tool 380000830 **(1)** in the new sleeve. Secure the bushing in the seat by tightening the nut **(2)** counter-clockwise. Insert the special tool 380000831 **(3)** in the bushing **(1)** and then in the lower part of the sleeve.



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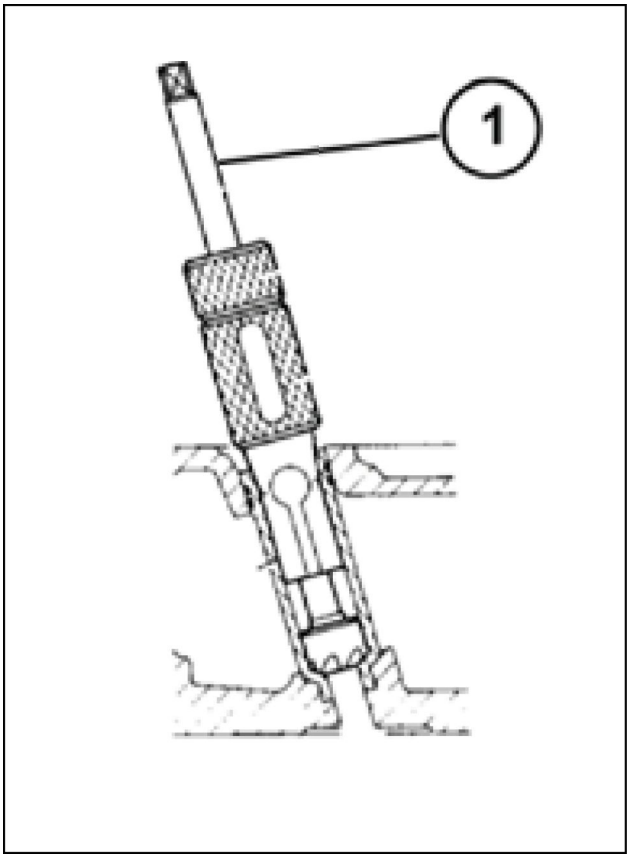
3. Remove the tool 380000831. Fit the tool 380000833 **(1)** to adjust the seat of the injector so that the surface is smooth and free of burrs or tool marks.



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(*) See content for specific models

Clutch - Remove

TL60E 12x4, 4WD, new cab [HCCZTL60CFC438464 -]	
TL60E Without cab, 12x4, 4WD [ZDCL05524 -]	
TL60E	LA
TL75E 12x12, 20x12, 4WD, new cab [HCCZTL75CFC437744 -]	
TL75E 12x4, 2WD, new cab [HCCZTL75CFC438464 -]	
TL75E Without cab, 2WD, 12x4 [ZDCY12367 -]	
TL75E	LA
TL85E 12x12, 20x12, 4WD, new cab [HCCZTL75CFC438464 -]	
TL85E 12x4, 12x12, 2WD, new cab [HCCZTL85CFC437744 -]	
TL85E Without cab, 2WD [ZEC134399 -]	
TL85E Without cab, 4WD [ZDCL04468 -]	
TL85E	LA
TL95E 12x12, 20x12, 4WD, new cab [HCCZTL95EFC438464 -]	
TL95E Without cab, 4WD [ZDC112512 -]	
TL95E	LA

⚠ DANGER

Heavy objects!
Lift and handle all heavy components using lifting equipment with adequate capacity. Always support units or parts with suitable slings or hooks. Make sure the work area is clear of all bystanders. Failure to comply will result in death or serious injury.

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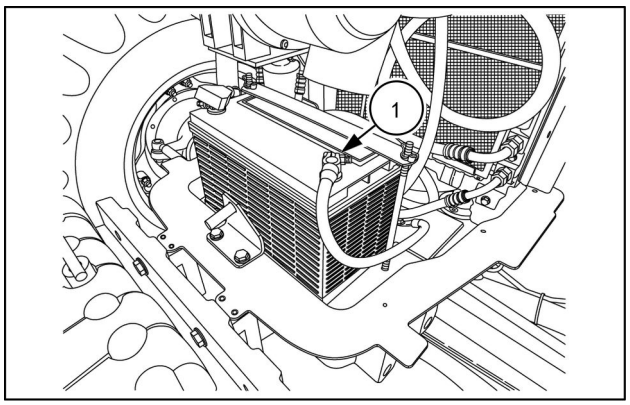
Prior operation:
Engine - Remove (10.001) .

1. Disconnect the negative (−) battery cable **(1)** from the battery.



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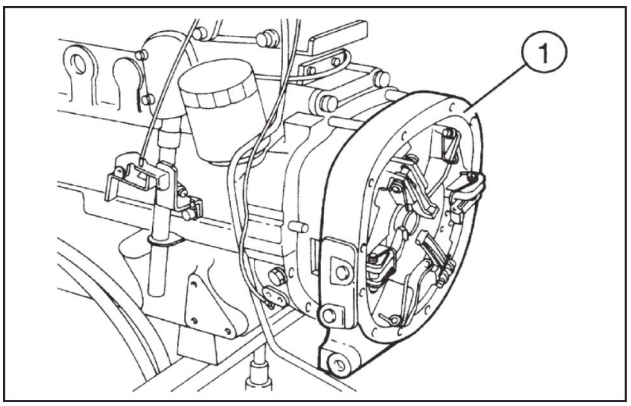
2. Remove the spacer **(1)** installed between the engine and the transmission.



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Clutch - 18

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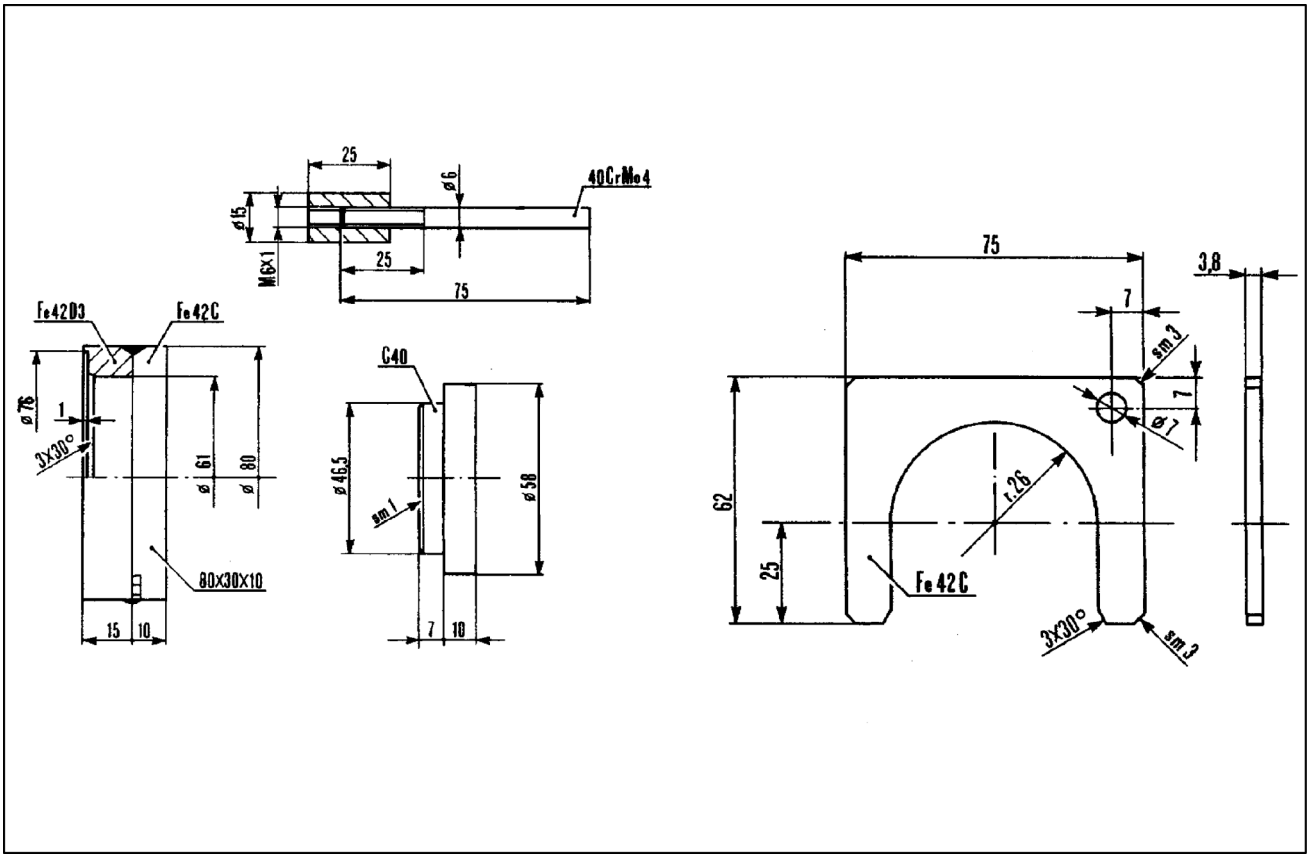
(*) See content for specific models



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Tool to take apart the rear bearing from the controlled reducer shaft and from the controlled medium speed gear - sizes in mm.

Made from UNI C40 material.

NOTE: *Part no. 1 must be made with two examples.*

Mechanical transmission - Torque

TL60E 12x4, 4WD, new cab [HCCZTL60CFC438464 -]	
TL60E Without cab, 12x4, 4WD [ZDCL05524 -]	
TL60E	LA
TL75E 12x12, 20x12, 4WD, new cab [HCCZTL75CFC437744 -]	
TL75E 12x4, 2WD, new cab [HCCZTL75CFC438464 -]	
TL75E Without cab, 2WD, 12x4 [ZDCY12367 -]	
TL75E	LA
TL85E 12x12, 20x12, 4WD, new cab [HCCZTL75CFC438464 -]	
TL85E 12x4, 12x12, 2WD, new cab [HCCZTL85CFC437744 -]	
TL85E Without cab, 2WD [ZEC134399 -]	
TL85E Without cab, 4WD [ZDCL04468 -]	
TL85E	LA
TL95E 12x12, 20x12, 4WD, new cab [HCCZTL95EFC438464 -]	
TL95E Without cab, 4WD [ZDC112512 -]	
TL95E	LA

Reference	Parts	Torque value
(C1)	Bolts or nuts for fastening the clutch box/inverter and supplementary reducer to the engine	**98 N·m** (**72.3 lb ft**)
(C2)	Cover fixing nuts	**17 N·m** (**12.5 lb ft**)
(C3)	Nuts to fasten the cover of the rear transmission box/gearbox	**59 N·m** (**43.5 lb ft**)
(C4)	Bolts that fasten the covers of the bearings for the control and controlled shafts of the gearbox	**28 N·m** (**20.7 lb ft**)
(C5)	Lock nut on the controlled gear shaft	**294 N·m** (**216.8 lb ft**)

Mechanical transmission - Remove - Machines with cab

⚠ WARNING

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Failure to comply could result in death or serious injury.

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⚠ DANGER

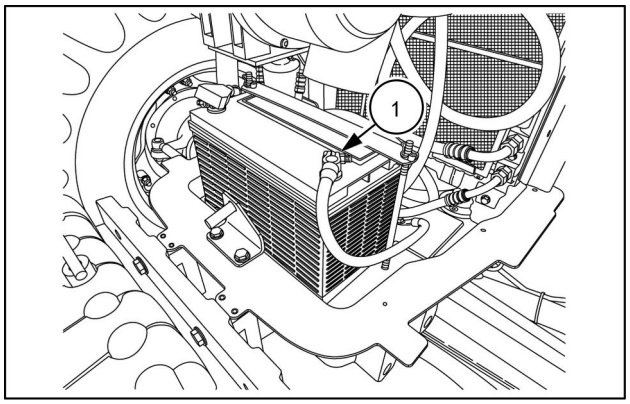
Heavy objects!
Lift and handle all heavy components using lifting equipment with adequate capacity. Always support units or parts with suitable slings or hooks. Make sure the work area is clear of all bystanders.
Failure to comply will result in death or serious injury.

D0076A

Prior operation:
Front wheels - Remove (44.511) .
Prior operation:
Radiator - Drain fluid (10.400) .

To remove the rear transmission box from the tractor, proceed as follows:

1. Disconnect the negative (−) battery cable **(1)** from the battery.
2. Remove engine side shields. Consult the procedures in **Side shield - Remove (90.102)**.
3. Remove the engine hood. Consult the procedures in **Hood - Remove (90.100)**.
4. Remove cab from the tractor. Consult the procedures in **Cab - Remove (90.150)**.
5. Drain the fuel from the fuel tank. Consult the procedures in **Fuel tank - Drain fluid (10.216)** .
6. Drain the fuel from the auxiliary fuel tank. Consult the procedures in **Auxiliary fuel tank - Drain fluid (10.216)**.
7. Drain the oil from the transmission. Consult the procedures in **Transmission housing - Drain fluid (21.114)**.
8. Remove the drive shaft for the Auxiliary Front Wheel Drive (AFWD). Consult the procedures in **Drive shaft - Remove (23.314)**.
9. Disconnect hydraulic pump suction tubes **(1)** and transmission/gearbox tubes **(2)**.



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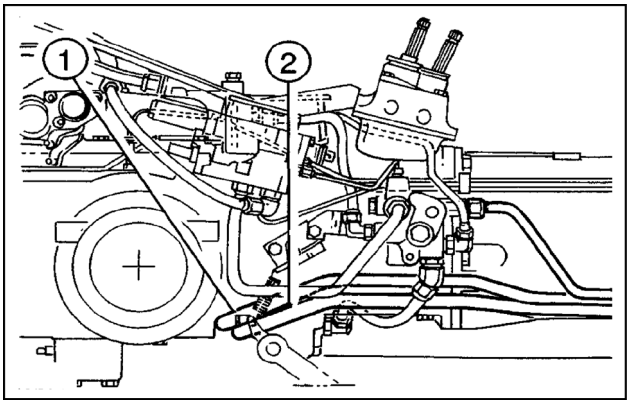

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Mechanical transmission - Disassemble

Prior operation:
Mechanical transmission - Remove – Machines with platform (21.114)

⚠ 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.

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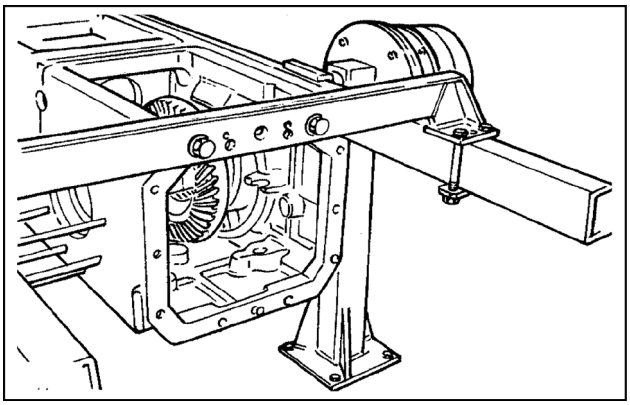
1. Attach the transmission box on the rotating trestle using a support for the rear and another for the front.



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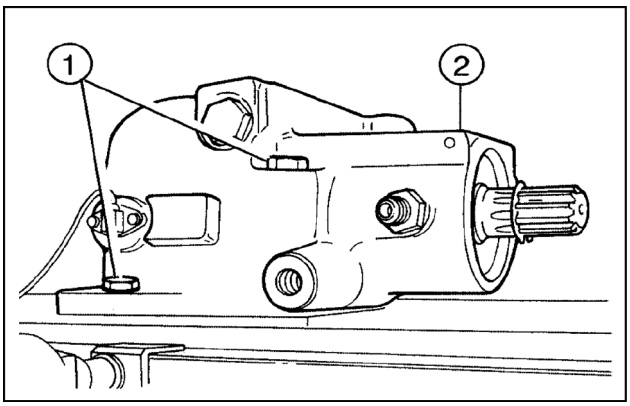
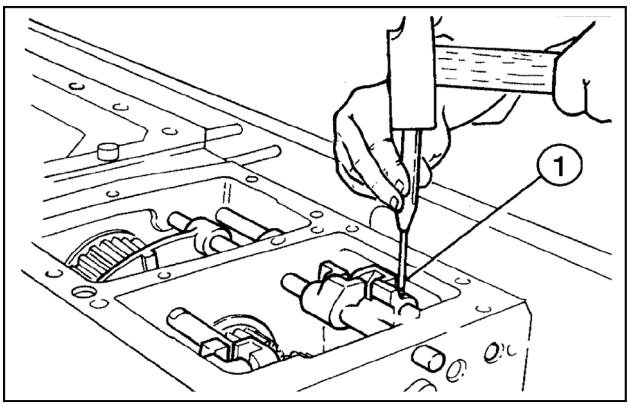
2. Turn the transmission box to **180 °**.
3. Loosen the bolts **(1)** and remove the transfer box **(2)**.



LAIL11TL0648A0A 2

4. Turn the box to **180 °**.
5. Use a punch to remove the spring pins **(1)** and remove the gearbox and selection shafts and forks for the final control.
6. Remove the differential from the transmission housing. Consult the procedures in **Differential - Remove (27.106)**.



LAIL11TL0649A0A 3

25. Install and fasten the complete engine hood with the lifting shock absorbers.
26. Connect the front lights.
27. Bolt in the engine coolant drain plug.
28. Fill the fuel tank, rear transmission box, and cooling circuit with the recommended products and quantities. See the specification and capacity of fluids in **Capacities ()**
29. Connect the negative battery cable.

Creeper - General specification

	TL75E	TL85E	TL95E
Type	Cascade with spur gear placed between the engine clutch and gearbox, in series with the inverter. It allows the use of 20 forward gears and 12 reverse gears.		
Reduction ratio	18x26 / 55x47 = 1:5.524		
Command	By a lever located to the left of the operator		

Creeper - Special tools

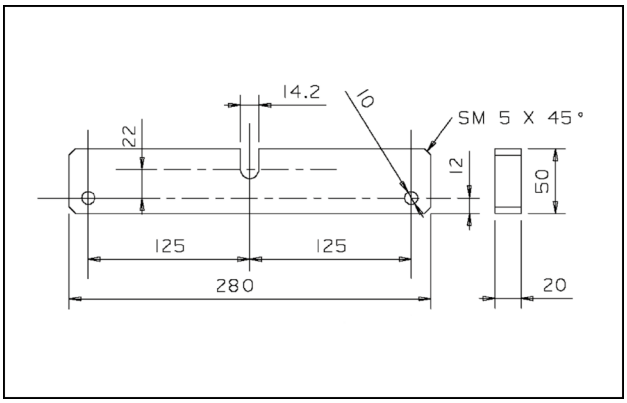
Special tools

NOTICE: *Important - The operations described in this section should only be performed using the ESSENTIAL tools that appear below with the symbol "X". However, for greater safety and to obtain the best results as well as saving time and effort, it is recommended that these essential tools be used together with the specific tools listed below and certain tools that should be made according to the construction designs supplied in this manual.*

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

299000 Tractor splitting kit Consists of **299001**, **299002**, **299003**
Use a lifting hook appropriate for the weight and size of the component
Use a rotating trestle appropriate for the weight and sizes of the component
Front support
Rear support

Compressor for assembling the gearbox-powered shaft retainer (Dimensions in mm).



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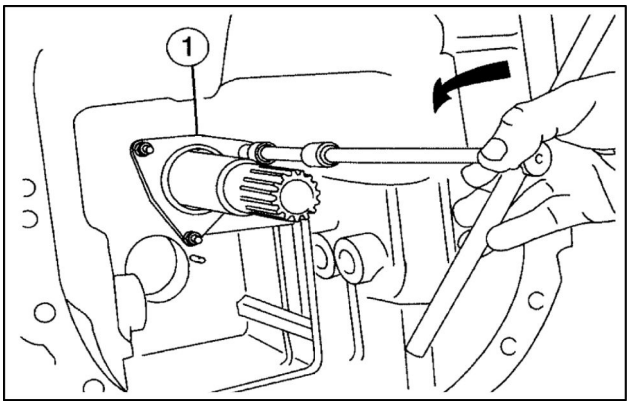
12. Loosen the fastening bolts and remove the cover-support **(1)**.



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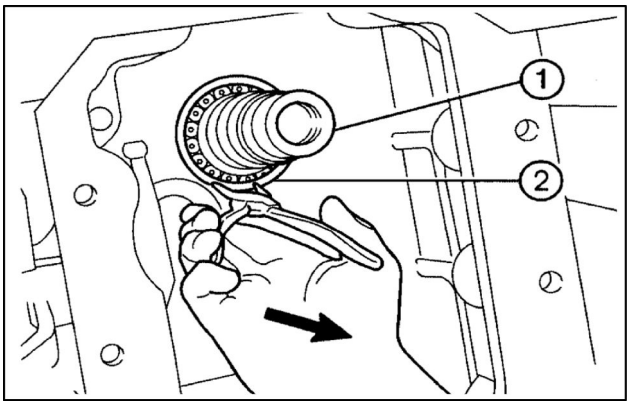
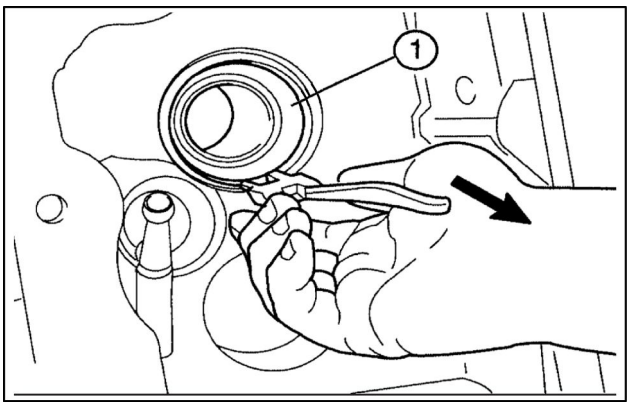
13. Remove the lock ring **(2)**, then remove the whole shaft **(1)** with the bearing.



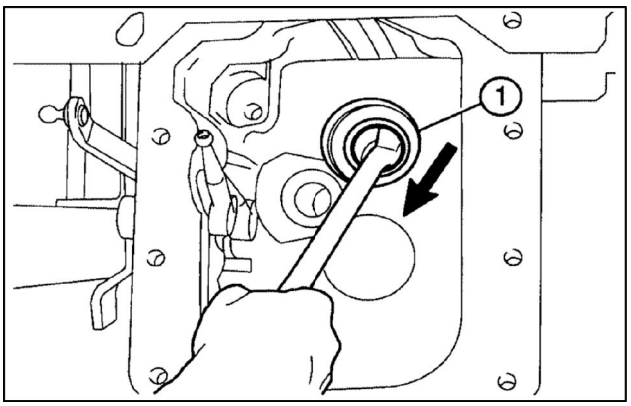
LAIL11TL0441A0A 13

14. Remove the lock ring **(1)**.



LAIL11TL0442A0A 14

15. Remove the retainer **(1)** using a suitable tool.



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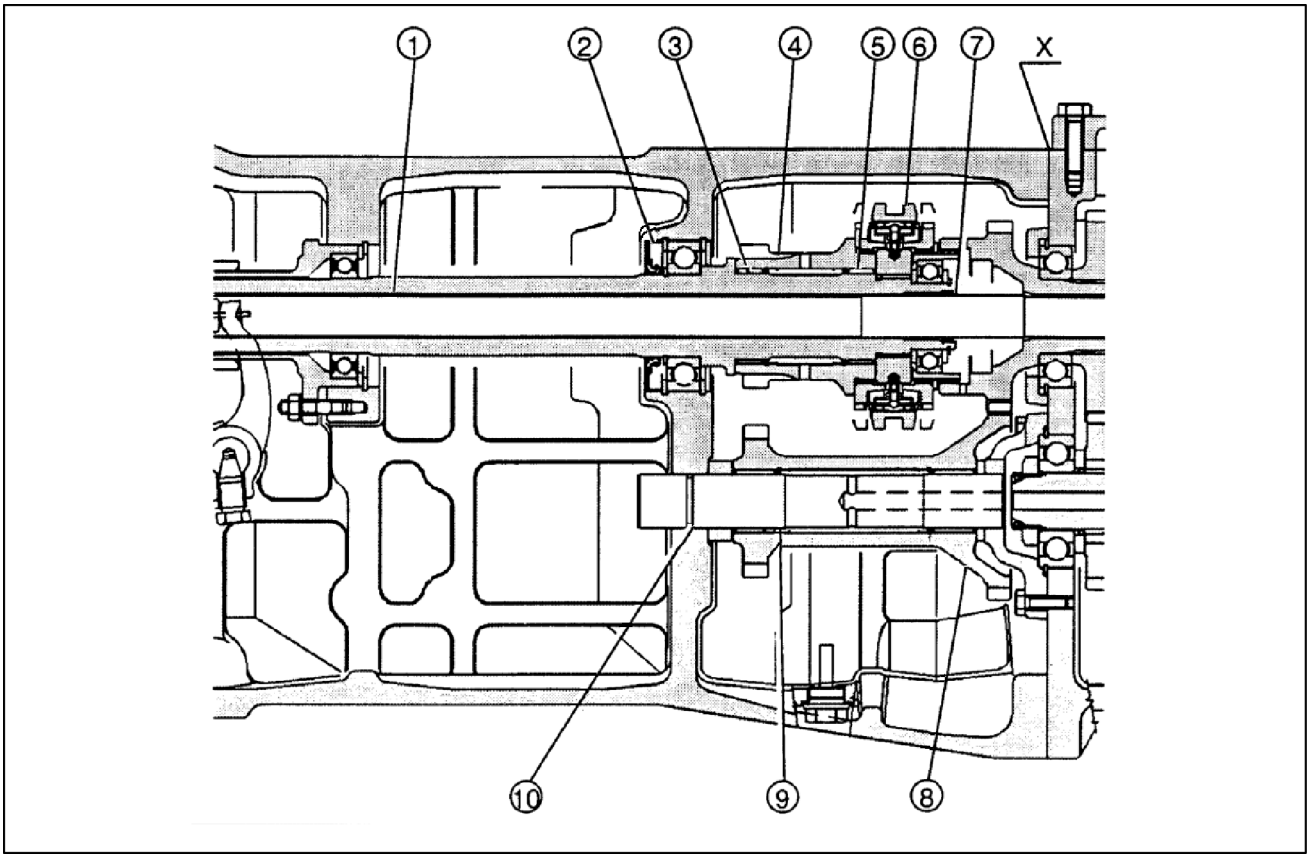
Next operation:
Creeper - Assemble (21.160) .

Reverser - Sectional view

TL60E 12x4, 4WD, new cab [HCCZTL60CFC438464 -]	
TL60E Without cab, 12x4, 4WD [ZDCL05524 -]	
TL75E 12x12, 20x12, 4WD, new cab [HCCZTL75CFC437744 -]	
TL75E 12x4, 2WD, new cab [HCCZTL75CFC438464 -]	
TL75E Without cab, 2WD, 12x4 [ZDCY12367 -]	
TL85E 12x12, 20x12, 4WD, new cab [HCCZTL75CFC438464 -]	
TL85E 12x4, 12x12, 2WD, new cab [HCCZTL85CFC437744 -]	
TL85E Without cab, 2WD [ZEC134399 -]	
TL85E Without cab, 4WD [ZDCL04468 -]	
TL85E	LA
TL95E 12x12, 20x12, 4WD, new cab [HCCZTL95EFC438464 -]	
TL95E Without cab, 4WD [ZDC112512 -]	
TL95E	LA

Longitudinal section of the inverter

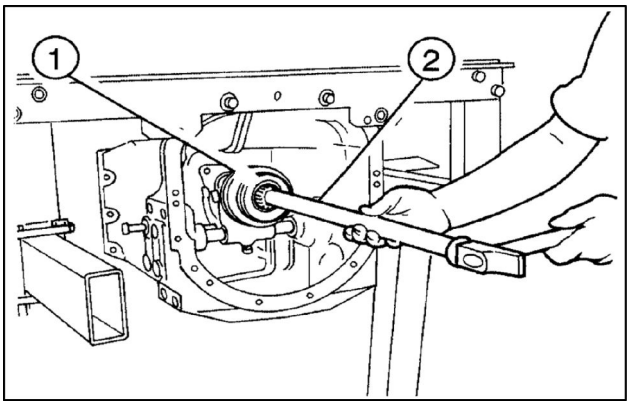


LAIL11TL0973F0A 1

Reference	Component	Reference	Component
(1)	Inverter control shaft	**(6)**	Inverter control synchronizer
(2)	Retainer	**(7)**	Retainer
(3)	Roller bearings	**(8)**	Inverter control gear
(4)	Inverter controlled gear	**(9)**	Controlled gear shaft **(8)**
(5)	Roller bearings	**(10)**	Seal

NOTE: *During assembly, apply* ***LOCTITE® 515™*** *to the surface* ***(X)****.*

8. Mount the inverter control shaft on the rear side and attach it to the clutch box/inverter with its respective lock ring.



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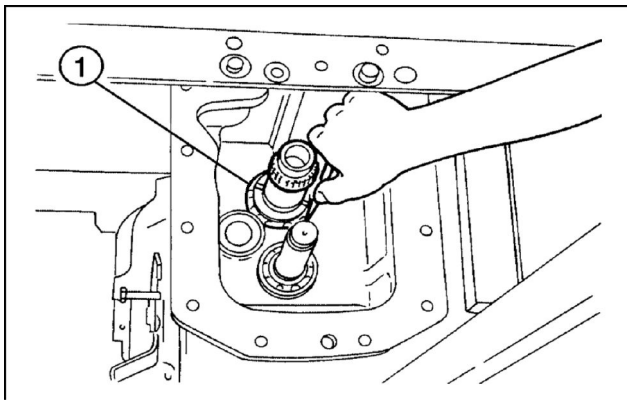
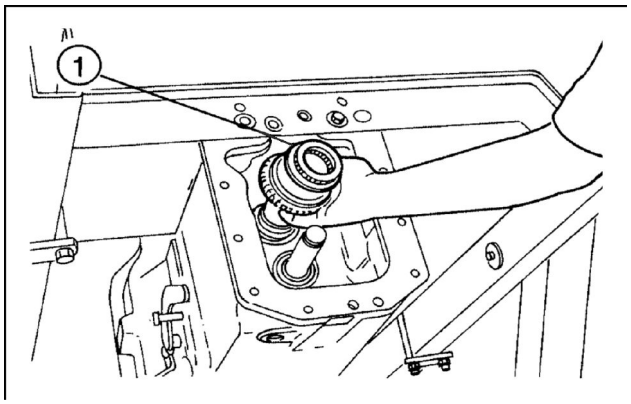
9. Attach the shaft to the clutch box/inverter with the respective lock ring **(1)**.



LAIL11TL0435A0A 3

10. Place the inverter control gear **(1)** with its bearings on the control shaft.
11. Assemble the inverter's driven gear with its bearings and spacers.
12. Assemble the synchronizer group with its control forks, rod, thrust washer and bearing, and lock it with its respective lock ring.
13. Assemble the ball, spring and fastening bolt with **LOCTITE® 515™**.
14. Set the internal lever in place and assemble the transmission lever and secure it with its roll pin.



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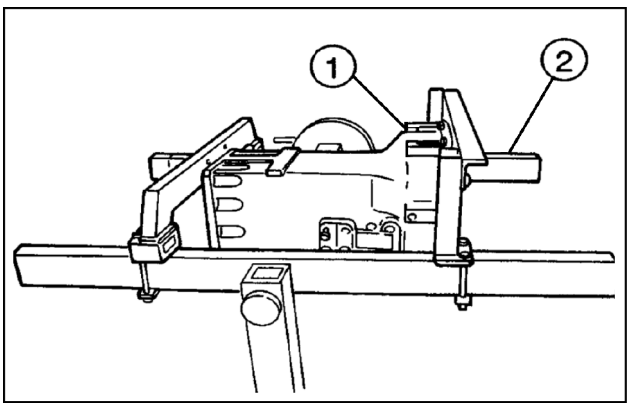
15. Take the inverter/clutch box off the rotating trestle **(2)**.



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Next operation:
Mechanical transmission - Install – Machines with platform (21.114)

Front-Wheel Drive (FWD) control valve - Pressure test

⚠ CAUTION

Escaping fluid!
Hydraulic fluid or diesel fuel leaking under pressure can penetrate the skin and cause infection or other injury. To prevent personal injury: Relieve all pressure before disconnecting fluid lines or performing work on the hydraulic system. Before applying pressure, make sure all connections are tight and all components are in good condition. Never use your hand to check for suspected leaks under pressure. Use a piece of cardboard or wood for this purpose. If injured by leaking fluid, see your doctor immediately.
Failure to comply could result in minor or moderate injury.

C0104A

⚠ CAUTION

Equipment rolling hazard!
1. Disengage all drives.
2. Engage parking brake.
3. Lower all attachments to the ground, or raise and engage all safety locks.
4. Shut off engine.
5. Remove key from key switch.
6. Switch off battery key, if installed.
7. Wait for all machine movement to stop.
Failure to comply could result in minor or moderate injury.

C0096A

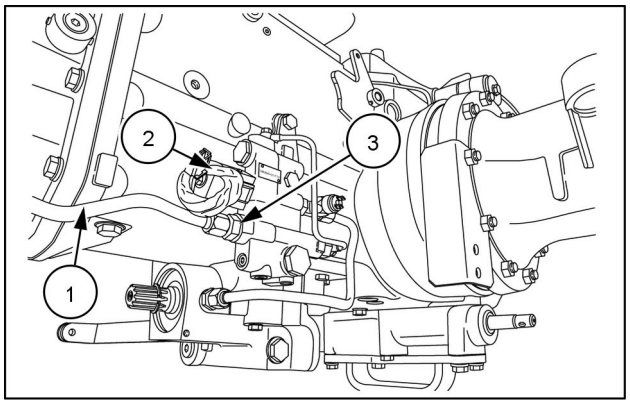
Before performing hydraulic adjustments and tests:

- Analyze and understand the hydraulic flow of the different functions and circuits.
- Make sure that the oil level is correct.
- Make sure of the correct specification of oil used.
- Make sure that the system's oil filter is in good condition. If necessary, replace the filter.

NOTE: *All tests and adjustments must be conducted with an oil temperature of at least* ***50.0 °C (122.0 °F)****.*

Testing the pressure regulating valve

1. Park the machine on a level and hard surface.
2. Install a "T" connection between the tube **(1)** and the port **(3)**.
3. Install the pressure gauge **380000552** with a pressure scale between **0.0 - 40.0 bar** (**0.0 - 580.0 psi**) on the "T" connection.
4. Start the engine. Adjust the engine speed to **1500 RPM**.
5. Make sure that the FWD is engaged. The solenoid **(2)** will be de-energized.
6. The pressure indicated on the pressure gauge should be **16.0 - 17.0 bar** (**232.0 - 246.5 psi**).



CUIL13TR00804AA 1

Four-Wheel Drive (4WD) gearbox - Remove

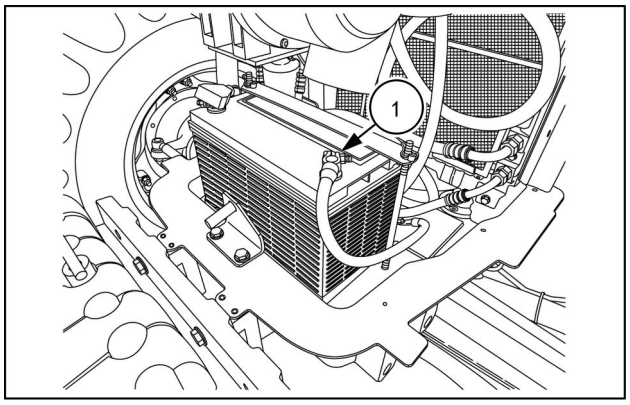
⚠ WARNING

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

W0208A

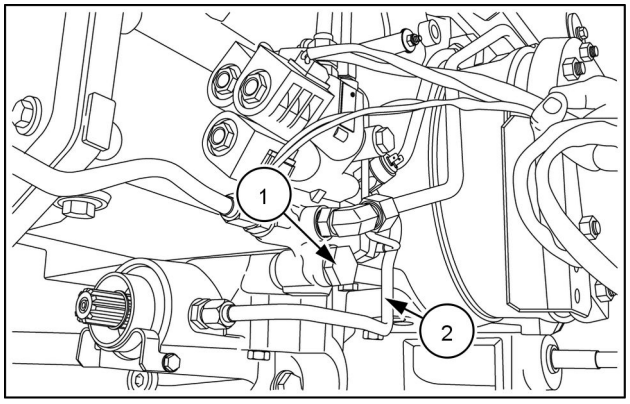
Proceed as follows:

1. Remove the negative (-) cable **(1)** from the battery.
2. Remove the drive shaft for the Auxiliary Front Wheel Drive (FWD). Consult the procedures in **Drive shaft - Remove (23.314)**.
3. Remove the fuel tank. See the procedures in **Fuel tank - Remove (10.216)**.
4. Drain the oil from the transmission. Consult the procedures in **Transmission housing - Drain fluid (21.114)**.



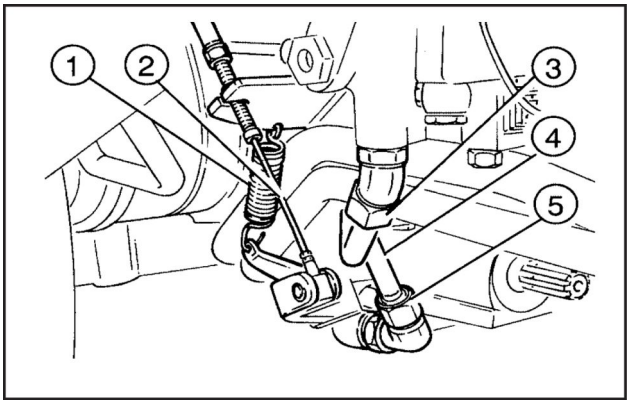
CUIL13TRO0194AA 1

5. Remove the feed tube **(2)** for the FWD transfer box by loosening the respective bolts.
6. Remove the banjo bolt **(1)**.



CUIL13TR00774AA 2

7. Remove the return spring **(1)** for the hand brake.
8. Remove the pin and roller **(2)**.
9. Remove the nuts **(3)** and **(5)**. Remove the lubrication tube **(4)** .



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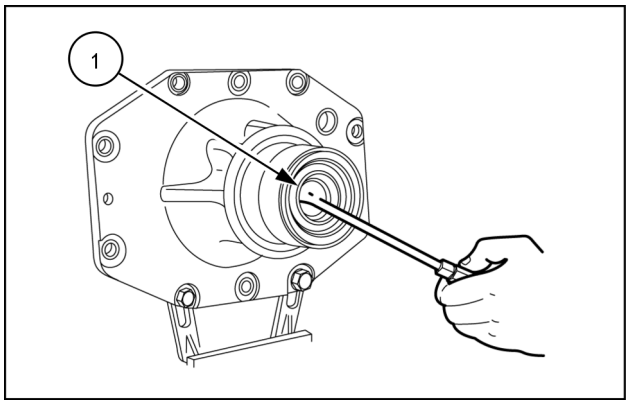
Powered front axle - 100

(*) See content for specific models

23. Remove the dust seal, oil seal **(1)** and the rear bearing.



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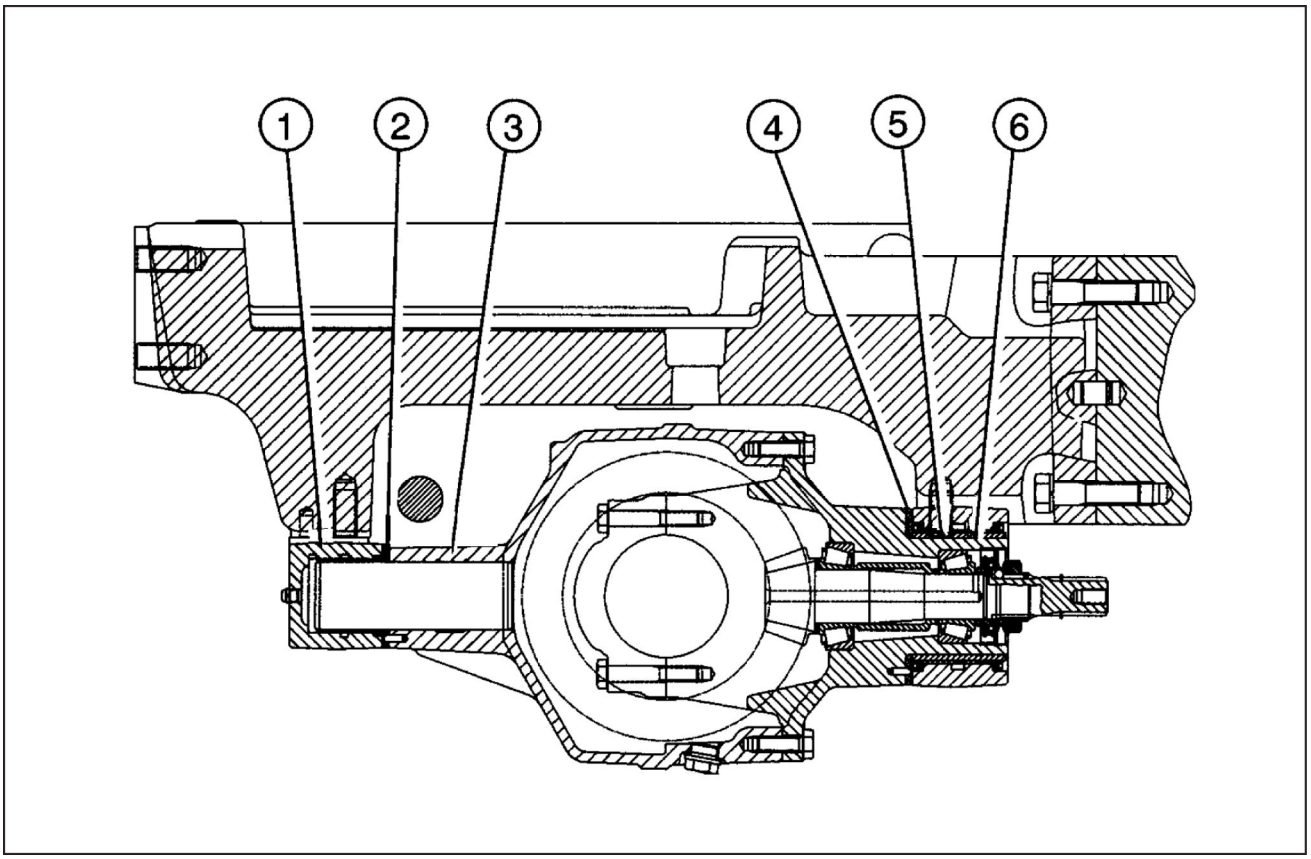
Front bevel gear set and differential - Sectional view

Front wheel drive cross-section



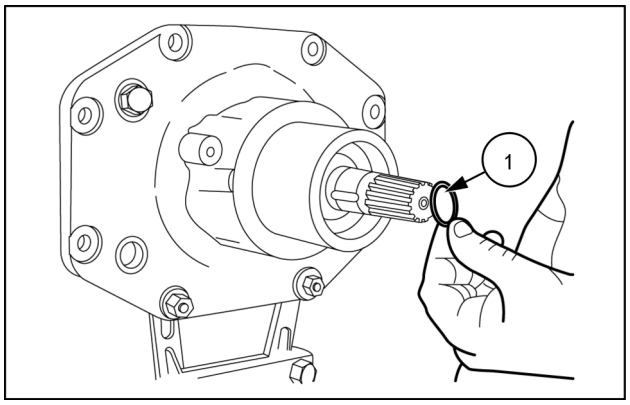
LAIL11TL0978F0A 1

Reference	Component	Reference	Component
(1)	Tractor axle front support bush	**(4)**	Rear backing washer
(2)	Front backing washer	**(5)**	Rear axle support bushing
(3)	Front articulated pin	**(6)**	Rear axle support bushing (seat)

Front bevel gear set and differential - Install

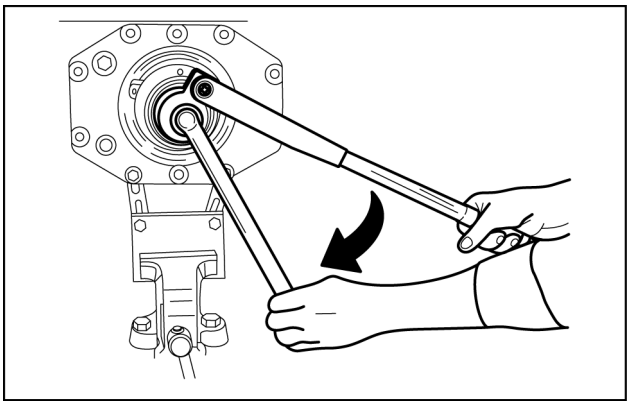
Prior operation:
Front bevel gear set and differential - Preload (25.102).

1. Fit the O-ring sealing **(1)** onto the pinion shaft.
2. Next, insert the retainer race and afterwards the ball, after having carefully lubricated the external surface.



LAIL11TL0071A0A 1

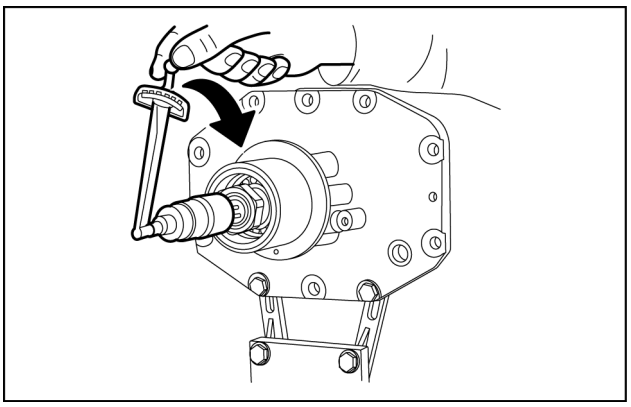
3. Install the pinion lock key **380000257**.
4. Install key **380000268** in the pinion nut.
5. Use a key to lock the pinion. Use a torque meter positioned as shown in Figure **3** to tighten the nut to a torque of **294 N·m** (**217 lb ft**). Simultaneously turn the pinion to ensure that the bearings are correctly seated.



LAIL11TL0072A0A 2

6. Use a torque wrench and pinion lock **380000257** to check the pinion turning torque. If the turning torque is lower than the recommended value, install a thinner adjustment shim; if the torque value is higher, install a thicker adjustment shim in order to adjust it.

NOTE: *The pinion turning force measured with a balance must be* ***2,17 kgf****, for both CNH class I HD and CNH class II axles*



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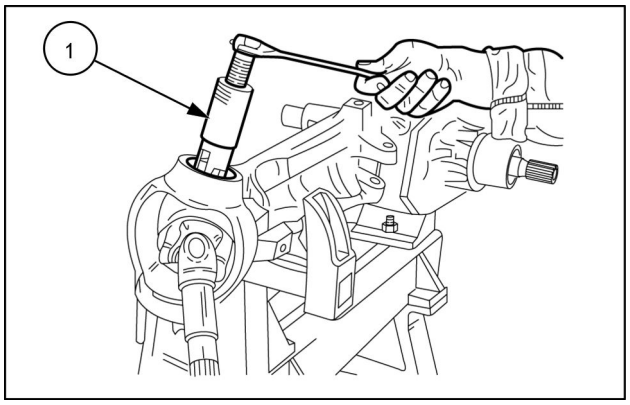
Adjustment of the preload of the pinion shaft bearings

The values described are obtained with a low load torque meter **(1)**, installed on the pinion shaft, with the bearings previously lubricated with transmission oil **NEW HOLLAND AMBRA MULTI G™ HYDRAULIC TRANSMISSION OIL**.

Turning torque	
Pinion	**Pinion + differential**
0.5 N·m	**1.0 - 1.3 N·m**

6. Using the extraction tool **380000234 (1)** remove the spherical bushing.
7. Install the spherical bushings using a suitable mandrel.



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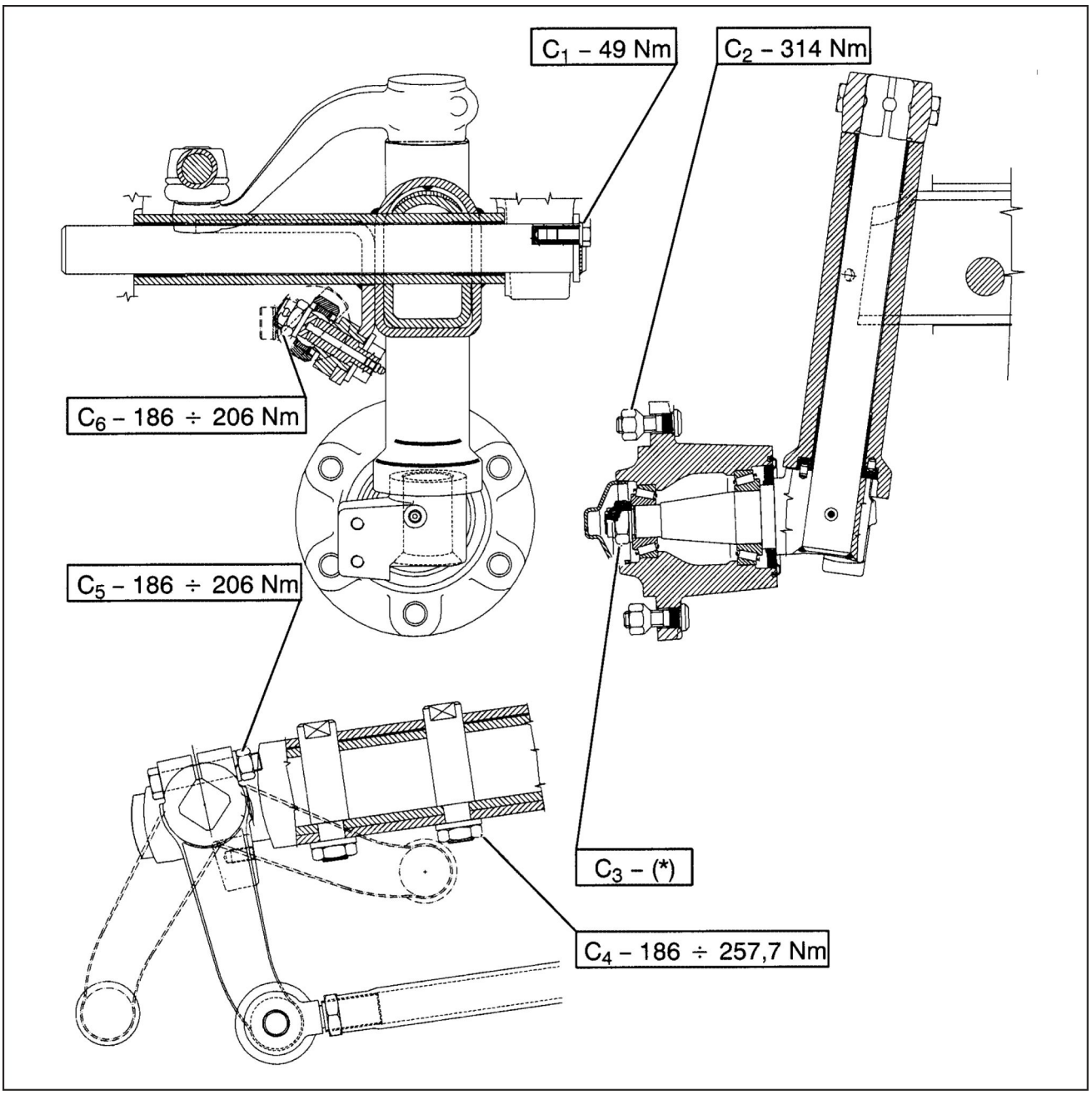
Non-powered front axle - Torque



LAIL11TL1046G0A 1

(C3) Bearing adjusting nut
(C5) Stub axle control lever bolt fixing nut
(C6) Nut fixing the cylinder to the axle

Reference	Part	Turnbuckle	Torque
-	Front axle Shaft to engine fixing bolt	M18 x 1.5	**353 N·m** (**260 lb ft**)
(C1)	Articulation pin fixing bolt	M10 X 1.25	**49 N·m** (**36 lb ft**)
(C4)	Fixing nut for the axle end bolt	M16 X 1.5	**211 N·m** (**156 lb ft**)
-	Stub bolt lever fixing nut	M16 X 1.5	**294 N·m** (**217 lb ft**)
-	Fixing nut for the cross bar terminals	M14 x 1.5	**118 N·m** (**87 lb ft**)
(C2)	Wheel to hub fixing bolt	M18 x 1.5	**314 N·m** (**232 lb ft**)

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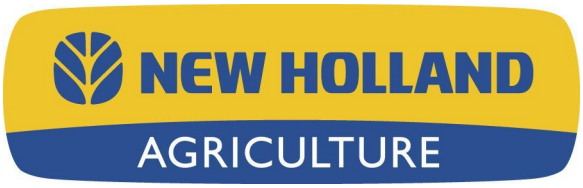

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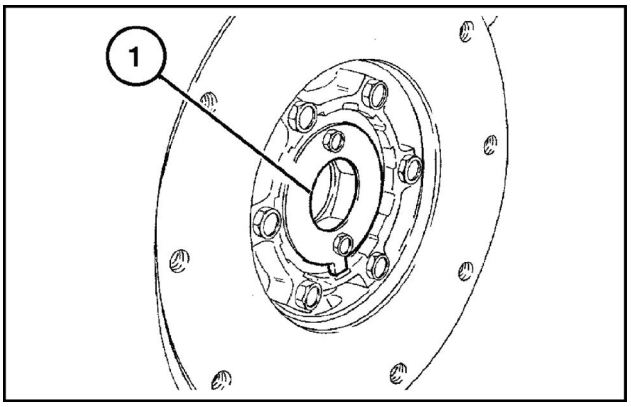
5. Loosen the bolts and remove the lock **(1)** of the differential adjustment nut.

NOTE: *Perform the procedure on the other side of the component.*

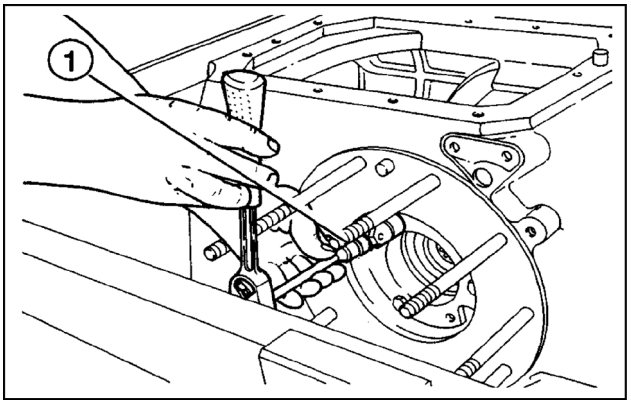


LAIL11TL0653A0A 4

6. Loosen the differential journal bolts **(1)**.

NOTE: *Perform the procedure on the other side of the component.*

7. Remove the differential from the transmission housing.



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Rear axle system - 27

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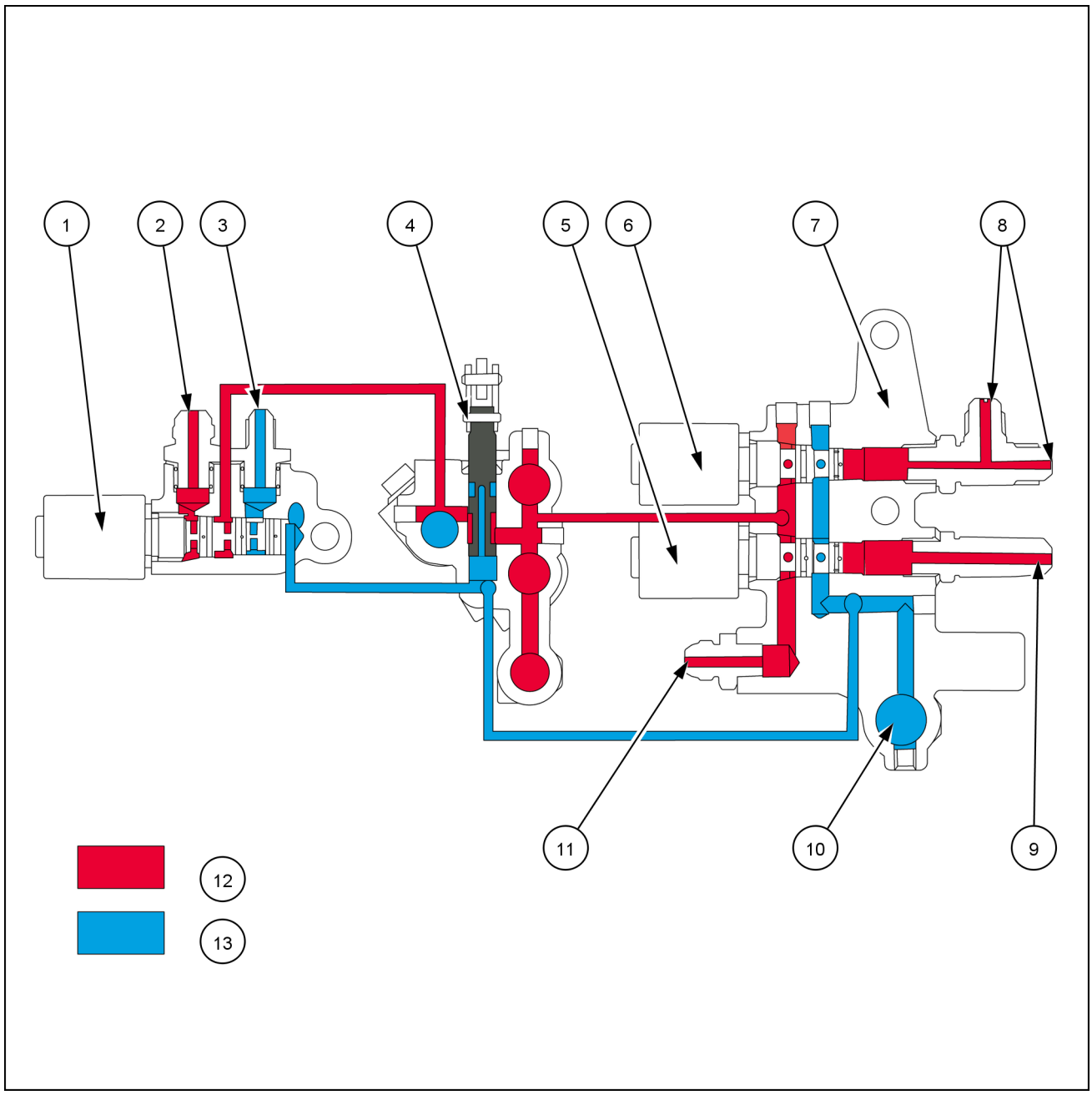

CUIL15TR00110GA 1

1. Solenoid that controls the oil supply to the PTO clutch or to the clutch brake (energized).
2. Supply line (pressurized) to PTO clutch engagement cylinder.
3. Supply line (discharge) to clutch brake.
4. Position assumed by the rod when the PTO selector lever is in neutral.
5. Solenoid that controls the disengagement of the front wheel drive.
6. Solenoid that controls the engagement of the rear differential lock.
7. Control valve block.
8. Pressurized supply line (rear differential lock engaged).
9. Pressurized supply line (front wheel drive disengaged).
10. Return line to transmission box.
11. Supply line from the pump to the hydraulic operation control valve **(7)**.
12. Oil under pressure.
13. Discharge oil.

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Rear electro-hydraulic control - 104

Two-speed rear Power Take-Off (PTO) - General specification

540 RPM/ 540E RPM Power Take-Off (PTO)

	TL60E	TL75E	TL85E	TL95E
Type	Independent of tractor speed or synchronized with gearbox			
Engagement and control	Mechanical using levers located on the left-hand side of the operator's position			
Turning direction viewed from the rear of the tractor	Clock Wise			
Engine speed with the PTO at **540 RPM**	**2199 RPM**			
Engine speed with the PTO at **540E RPM**	**1715 RPM**			
PTO speed with the engine at maximum power at **2500 RPM** - **540 RPM**	**614 RPM**			
Speed with PTO synchronized with the gearbox - **30 km/h** - **540 RPM** transmission	**8.2 RPM**/wheel speed	**8.9 RPM**/wheel speed		
Speed with PTO synchronized with the gearbox - **30 km/h** - **540E RPM** transmission	**10.51 RPM**/ wheel speed	**11.14 RPM**/wheel speed		
Sprocket terminal shaft diameter	**1 3/8 in** (6 teeth)			

Two-speed rear Power Take-Off (PTO) - Special tools

Special tools

NOTICE: *The operations described in this section should only be performed using the essential tools which appear below with the symbol* ***(X)****. However, for greater safety and to obtain the best results as well as saving time and effort, it is recommended that these essential tools be used together with the specific tools listed below and certain tools that should be made according to the construction designs supplied in this manual.*

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

Use a hook with adequate capacity to lift the Power Take-Off (PTO) housing.
Use guide pins suitable for removing/installing the PTO cover.

Two-speed rear Power Take-Off (PTO) - Torque

Reference	Component	Turnbuckle	Torque value
-	Fixing bolts for the bearing support	M12 x 1.25	**98 N·m** (**72 lb ft**)
(1)	Self-locking nuts for securing the terminal	M12 x 1.25	**162 N·m** (**119 lb ft**)
(2)	Fixing bolts for the Power Take-Off (PTO) case	M16 x 1.5	**221 N·m** (**163 lb ft**)
(3)	Fixing nut for the bearing shaft	M32 x 1.5	**294 N·m** (**217 lb ft**)

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Two-speed rear Power Take-Off (PTO) - 114

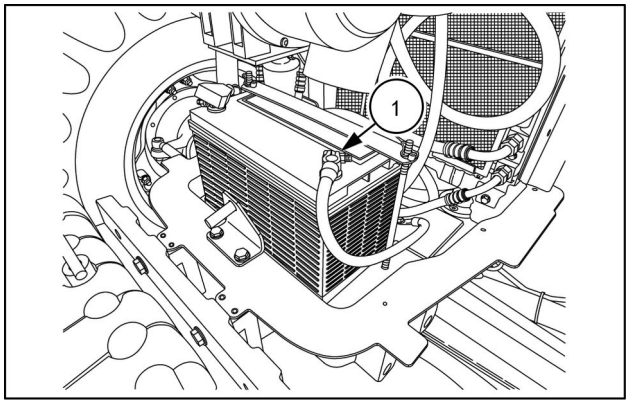
Three-speed rear Power Take-Off (PTO) - Remove – Electrohydraulic version

⚠ DANGER

Heavy objects!
Lift and handle all heavy components using lifting equipment with adequate capacity. Always support units or parts with suitable slings or hooks. Make sure the work area is clear of all bystanders. Failure to comply will result in death or serious injury.

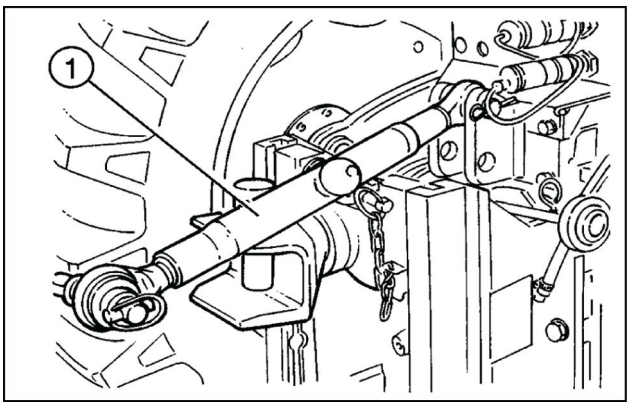
D0076A

1. Disconnect the negative cable **(1)** from the battery.



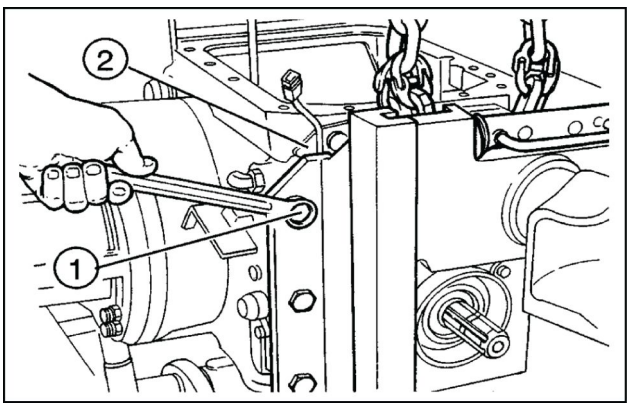
CUIL13TRO0194AA 1

2. Remove the third point hitch bar **(1)**.
3. Drain the oil from the transmission. Consult the procedures in **Transmission housing - Drain fluid (21.114)**.



LAIL11TL0691A0A 2

4. Insert lifting chains for the trailer hitch support **(2)**. Remove the support bolts and remove the support.



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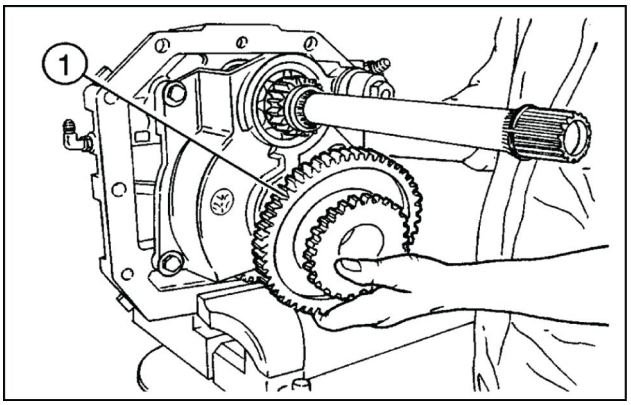
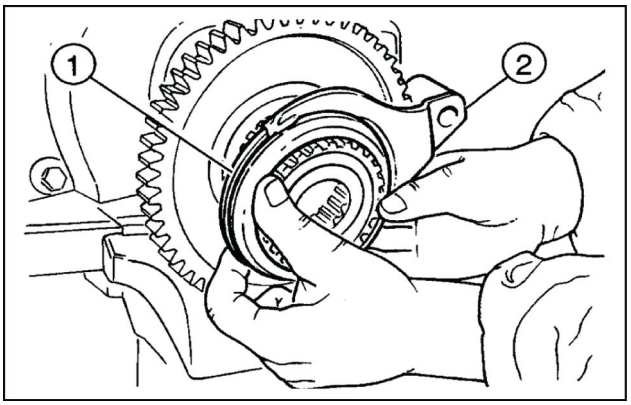
21. Install the **750 RPM (1)** driven gear.



LAIL11TL0706A0A 12

22. Install the selection sleeve **(1)** and the fork **(2)**.

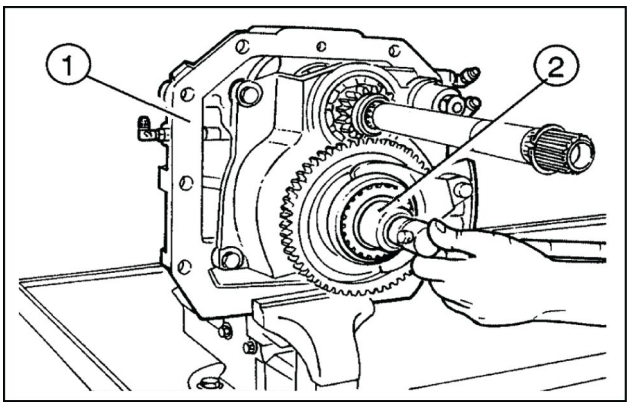


LAIL11TL0705A0A 13

23. Install the nut **(2)**.

NOTE: *Torque the nut to* ***294.0 N·m*** *(****216.8 lb ft****).*

24. Lock the nut on the shaft.



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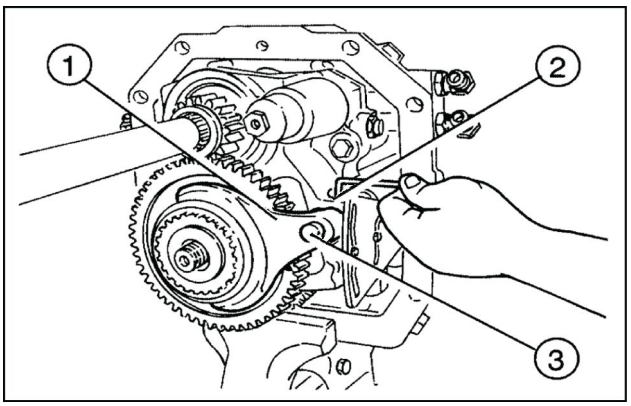
25. Tighten the rod **(3)** of the fork **(1)** to the support **(2)** with the Allen bolt.



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Next operation:
Three-speed rear Power Take-Off (PTO) - Install – Electrohydraulic version (31.116) .

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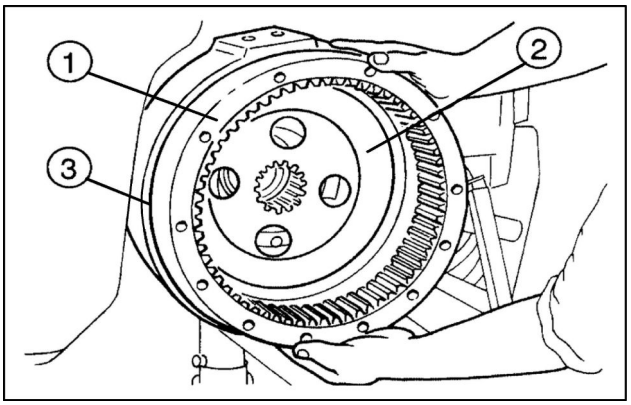
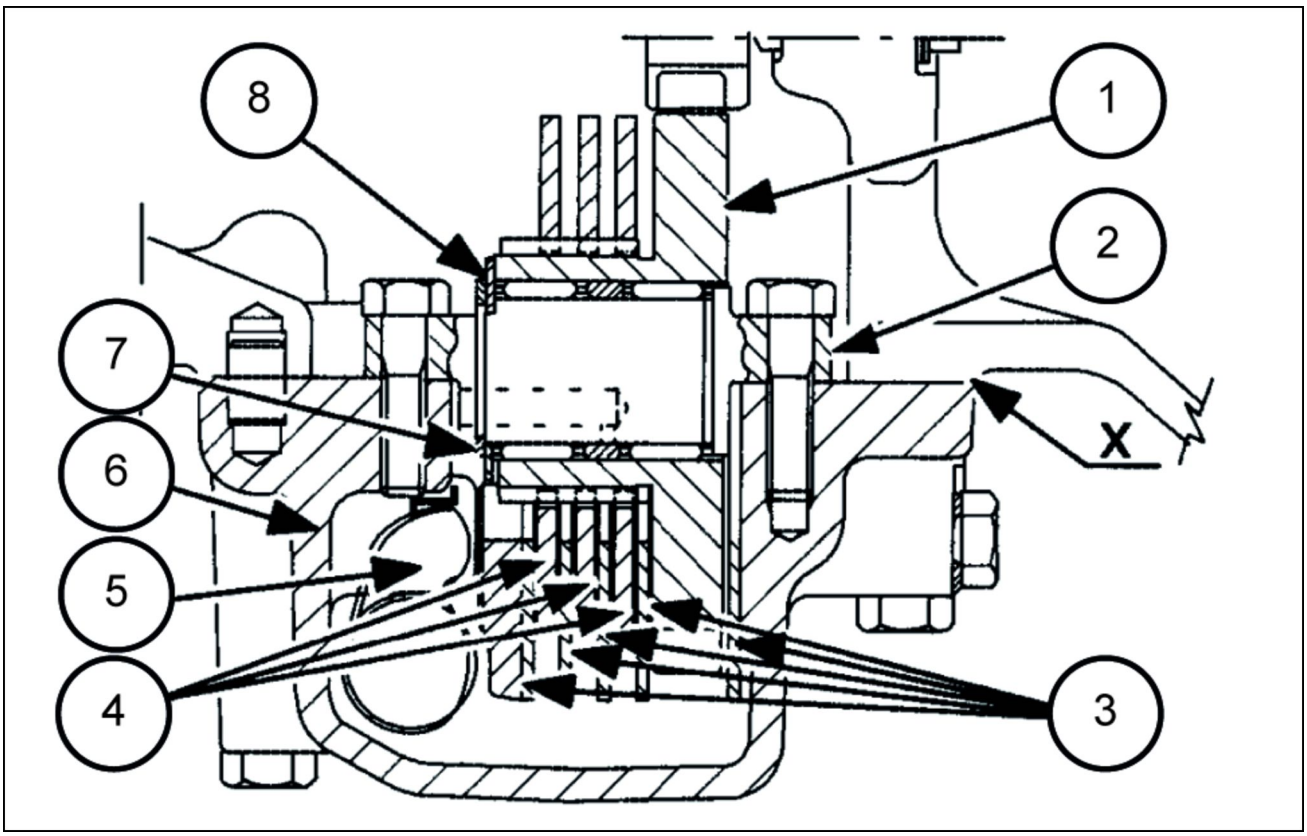
(*) See content for specific models

5. Remove the crown **(1)**, the spacer **(3)** and finally the brake disc **(2)** from the transmission box.
6. Remove the steel wear disc located between the transmission casing and the brake disc.



LAIL11TL0011A0A 3

Parking brake or parking lock - Sectional view



CUIL13TR00623AA 1

Reference	Component	Reference	Component
(1)	Driven Gear	**(5)**	Internal parking brake control lever
(2)	Driven gear pin	**(6)**	Parking brake support
(3)	Parking brake mobile plates	**(7)**	Locking ring
(4)	Parking Brake Discs	**(8)**	Axial bearing housing

NOTE: *During assembly, apply sealant* ***LOCTITE® 515™*** *to the surfaces* ***(X)****.*

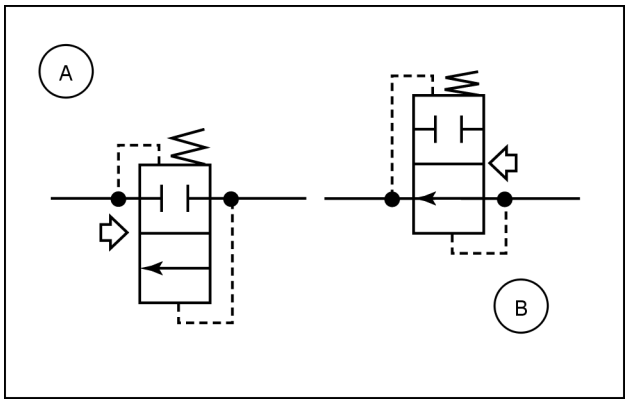
Hydraulic systems - Hydraulic symbol - Composite

One way valve

A more complex one-way valve is shown. This directional control symbol uses multiple envelopes with a separate envelope for each valve position. Within each envelope, arrows show the flow paths when the valve is shifted to that position.

NOTE: *All port connections are made to the envelope which shows the neutral condition of the valve.*

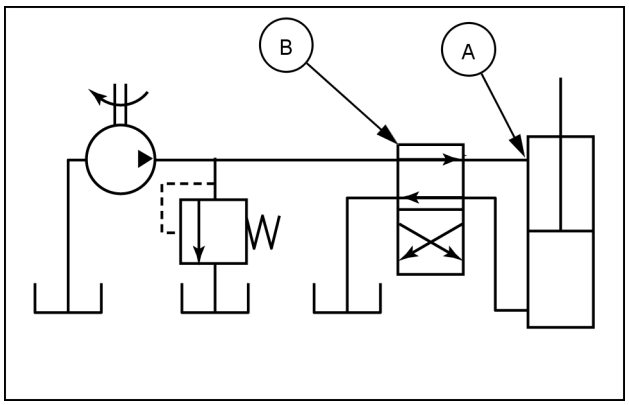
The left symbol **(A)** a one-way valve in the closed position. Mentally visualize a build up of pressure on the right side of the valve symbol **(B)** to enable free flow through the valve.



RCIL07CCH072AAA 1

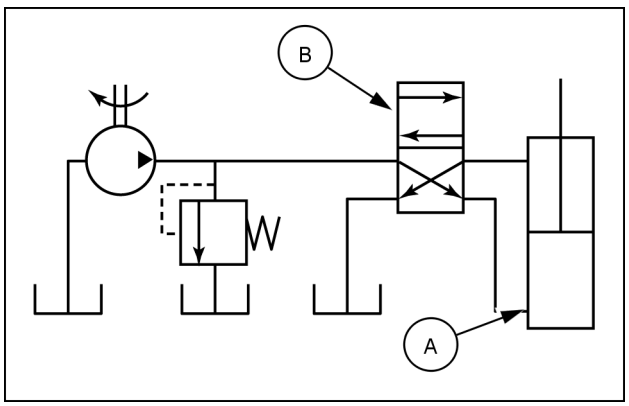
Two position valve

Two envelopes (representing the spool) indicate a two position valve. Each envelopes shows the flow conditions for its position. This simple schematic shows fluid supplied to the rod end of the cylinder **(A)** from the control valve **(B)**. Return flow is from the piston end of the cylinder through the control valve to tank.



RCIL07CCH073AAA 2

Mentally visualize the directional control valve shifted to the other position. Pressurized fluid is supplied to the piston end of the cylinder **(A)** from the control valve **(B)**, and return fluid flows from the rod end of the cylinder through the control valve to tank.



RCIL07CCH074AAA 3

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Hydraulic systems - 35

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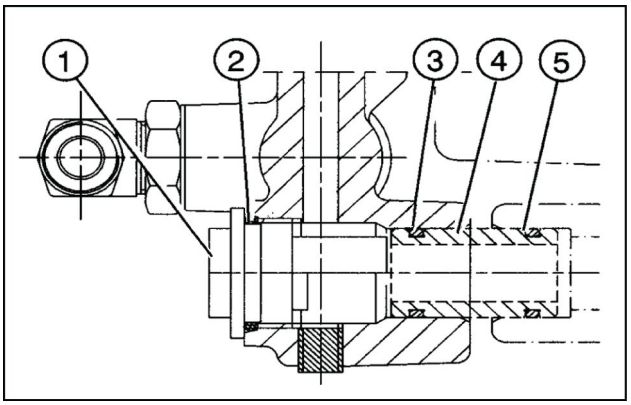
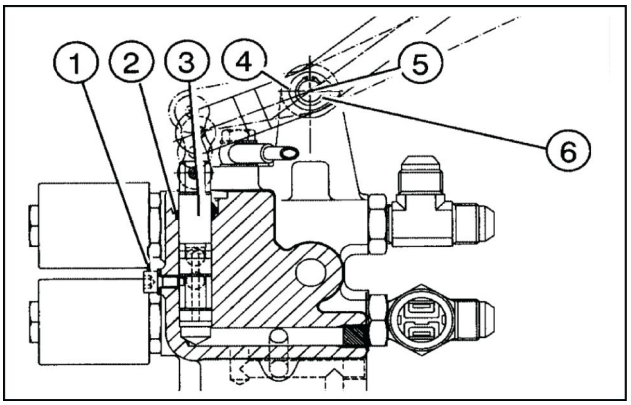
6. Install the cover **(1)**.
7. Install the pressure relief valve parts by following the disassembly procedure in the reverse order.



LAIL11TL0741A0A 4

8. Install the seal ring for the dust cover **(2)**.
9. Assemble the valve **(3)** on the casing and fit bolt **(1)**.
10. Assemble the control lever on the articulated pin **(5)**, mount the washer **(4)** and lock ring **(6)**.
11. Mount the supply line fitting to the rear differential lock.

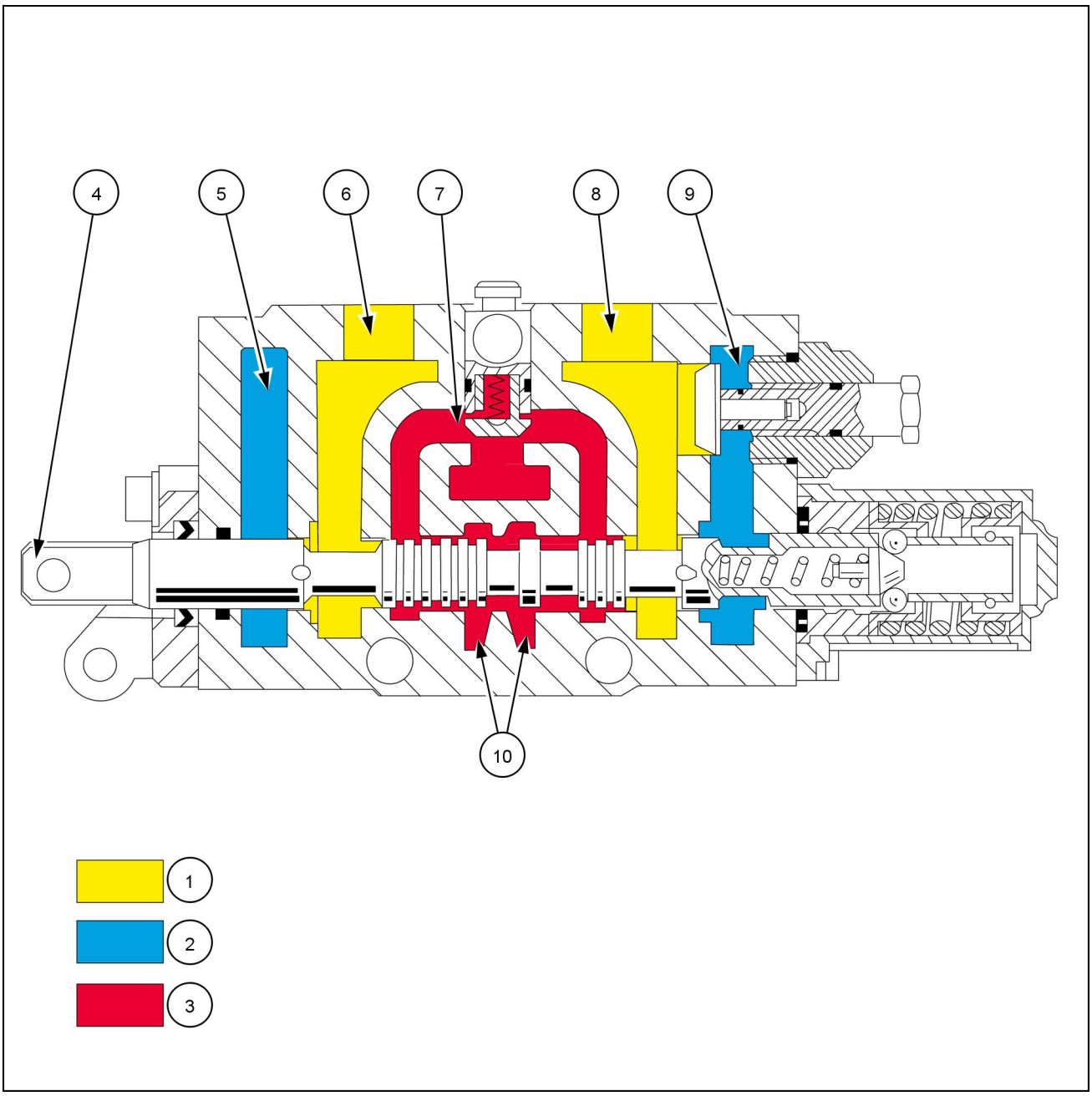


LAIL11TL0746A0A 5

Next operation:
Low pressure valve - Install (35.322).

Remote control valve operational phase to engage the dual action cylinder with rod detent and floating position

Neutral



CUIL15TR00116GA 1

(1). Static oil

(2). Oil being discharged

(3). Pressure Oil

When the control rod **(4)** is in the central position, the galleries **(6)** and **(8)** are not linked to the galleries **(5)**, **(7)** and **(9)**, such that the oil becomes static. In this situation, the full flow of oil from the hydraulic pump runs through gallery **(10)** to the other parts of the remote control (open center system) and, where unused, follows on to feed the hydraulic lift control valve.

Remote control valve - Disassemble

TL60E 12x4, 4WD, new cab [HCCZTL60CFC438464 -]	
TL60E Without cab, 12x4, 4WD [ZDCL05524 -]	
TL60E	LA
TL75E 12x12, 20x12, 4WD, new cab [HCCZTL75CFC437744 -]	
TL75E 12x4, 2WD, new cab [HCCZTL75CFC438464 -]	
TL75E Without cab, 2WD, 12x4 [ZDCY12367 -]	
TL75E	LA
TL85E 12x12, 20x12, 4WD, new cab [HCCZTL75CFC438464 -]	
TL85E 12x4, 12x12, 2WD, new cab [HCCZTL85CFC437744 -]	
TL85E Without cab, 2WD [ZEC134399 -]	
TL85E Without cab, 4WD [ZDCL04468 -]	
TL85E	LA
TL95E 12x12, 20x12, 4WD, new cab [HCCZTL95EFC438464 -]	
TL95E Without cab, 4WD [ZDC112512 -]	
TL95E	LA

Prior operation:
Remote control valve - Remove (35.204) .

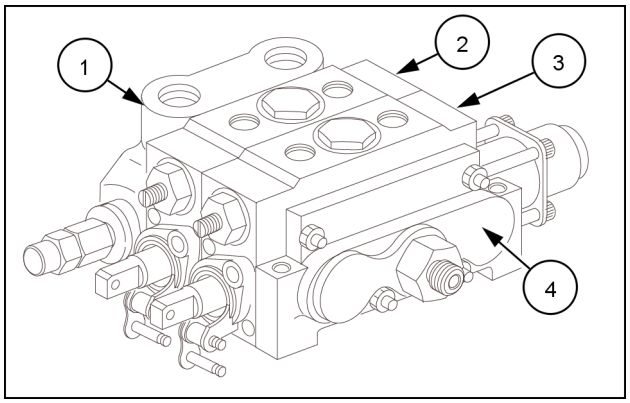
⚠ WARNING

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

W0208A

1. Identify all the bodies **(1)**, **(2)**, **(3)** and **(4)** of the remote control valve.
2. Secure the assembly of the remote control valve in a vise.

NOTICE: *When securing control components in the vise, use appropriate protection, such as aluminum jaws. Scratches and deformations can render the parts useless.*



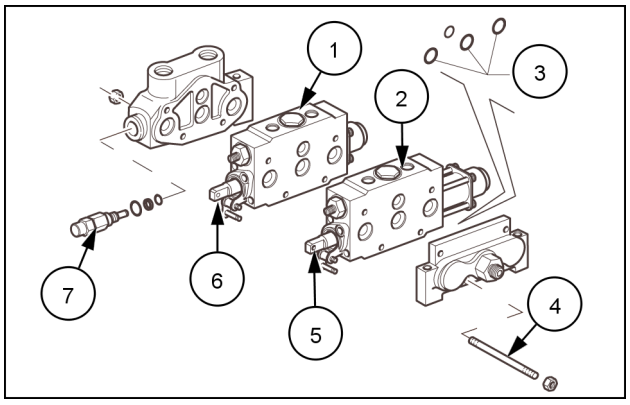
CUIL13TR00721AA 1

3. Remove the four nuts from the tie rods **(4)** of the valve bodies **(1)** and **(2)**.

NOTE: *The valve bodies are manufactured and adjusted together with the spools **(5)** and **(6)** in order to provide the correct clearances for proper sealing and operation. Do not mix the spools **(5)** and **(6)** with the valve bodies **(1)** and **(2)**.*

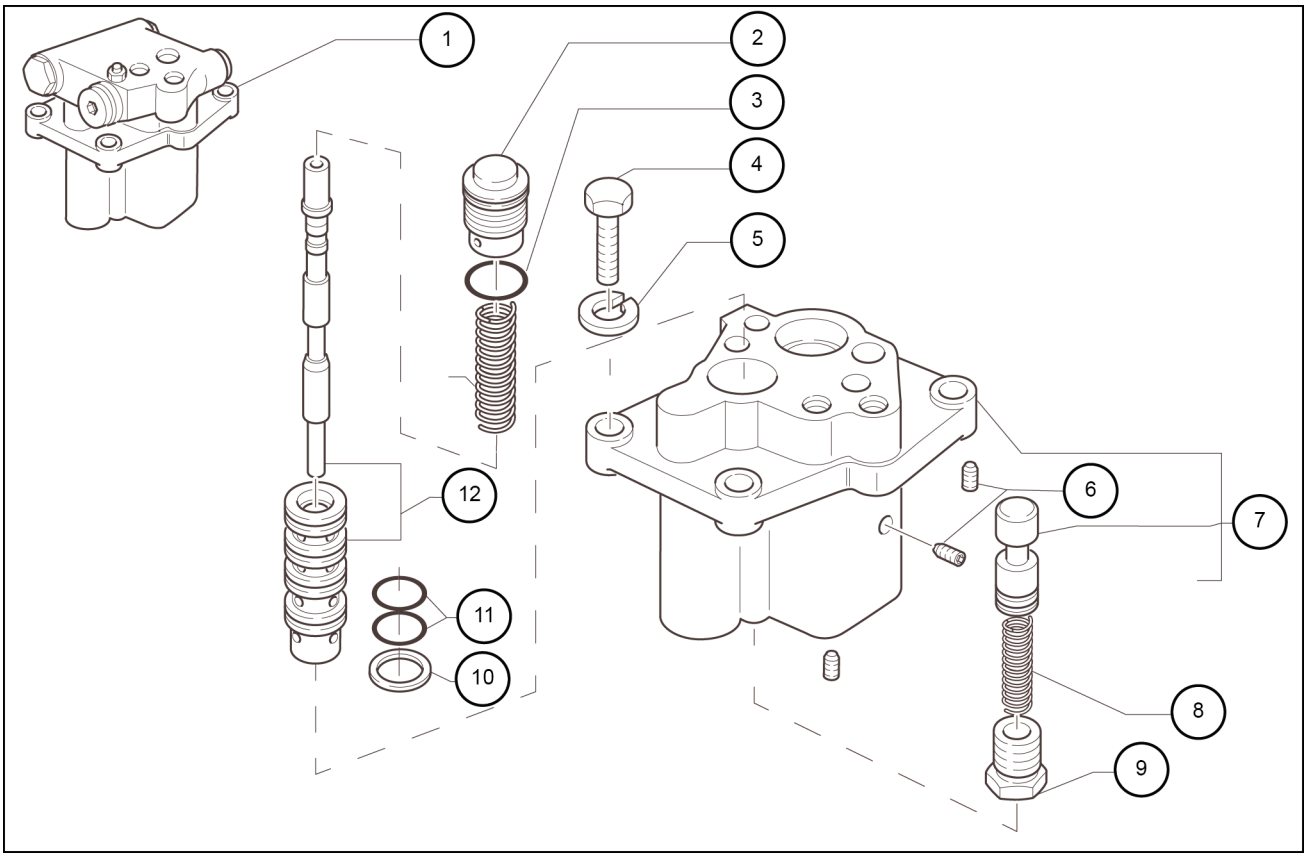
4. Remove the bodies **(1)** and **(2)**.
5. Remove and discard the seal rings **(3)** between the sections.

NOTE: *Replace all the rings **(3)** during assembly.*



CUIL13TR00720AA 2

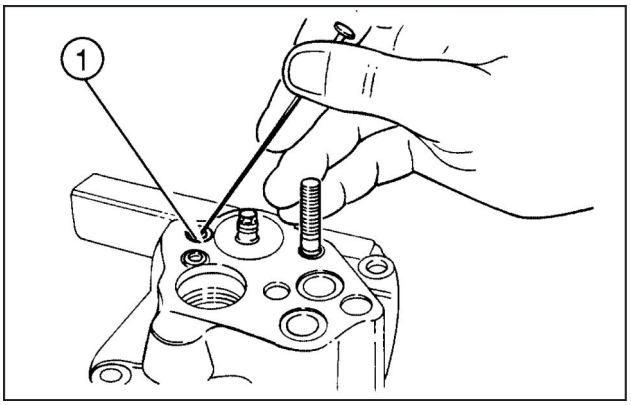
Three-point hitch control valve - Exploded view



CUIL13TR00704AA 1

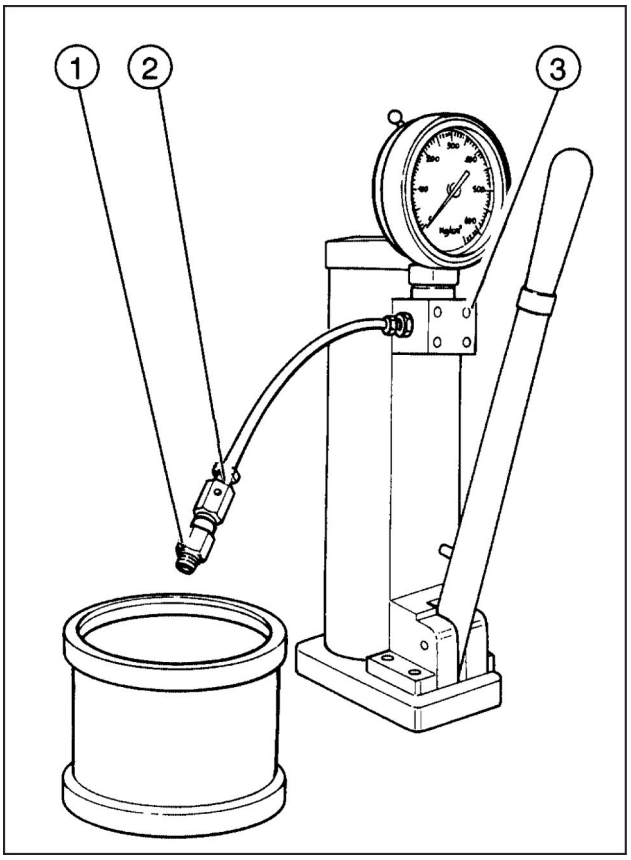
Reference	Component	Reference	Component
(1)	Valve body	**(7)**	Spool and valve body assembly
(2)	Plug	**(8)**	Spring
(3)	seal	**(9)**	Plug
(4)	Screw	**(10)**	Seal
(5)	Washer	**(11)**	Sealing rings
(6)	Plug	**(12)**	Hydraulic Valve

15. Check the valve block sealants **(1)** and replace them if necessary.
16. Check the arm lowering speed control sealant, and replace it if it is damaged. Observe the note described in **Three-point hitch control valve - Sectional view (35.114)**.



LAIL11TL0834A0A 8

17. Check and adjust the safety valve as shown below.
18. Fit the safety valve cylinder **(1)** to connection **380000218 (2)** and install it on the manual pump **380000215 (3)**.
19. Activate the manual pump **(3)** and check that the safety valve opens at a pressure of around **210 - 215 bar** (**3045 - 3118 psi**). If the valve value does not match the specified value, it is better to replace it. However, if necessary, you can adjust it by turning the cover with the thread using the key **380000230**. Tighten to increase the value or loosen to reduce it.



LAIL11TL0833B0A 9

Next operation:
Three-point hitch control valve - Check (35.114).

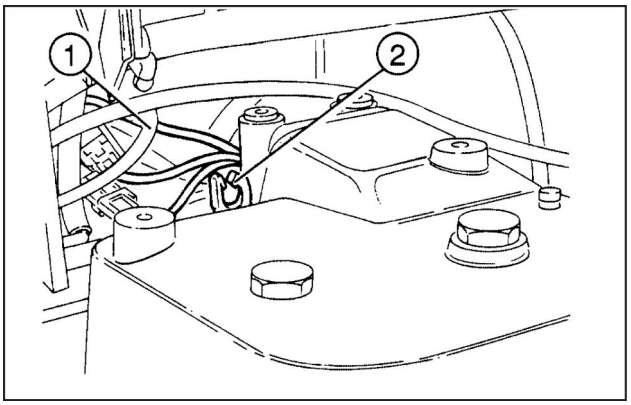
Contents

Hitches, drawbars, and implement couplings - 37

Rear three-point hitch - 110

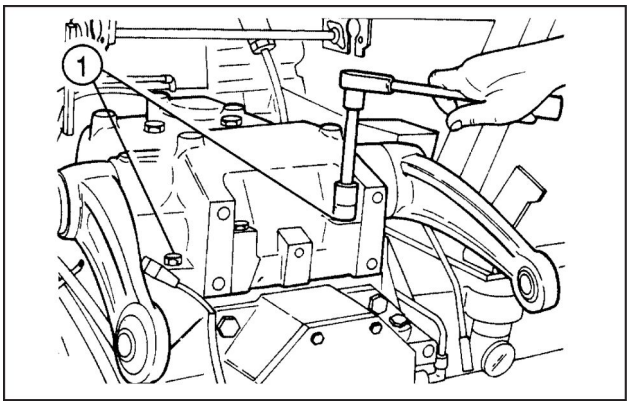
(*) See content for specific models

8. Release the electric wires **(1)** from the latch **(2)** fitted to the lift.



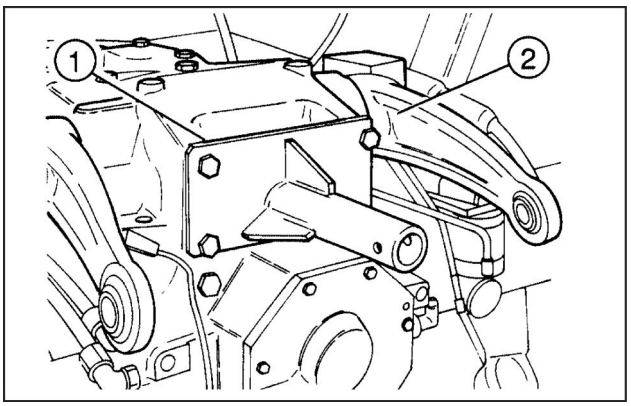
LAIL11TL0768A0A 7

9. Loosen the fixing bolts **(1)** from the hydraulic lift in the gearbox.



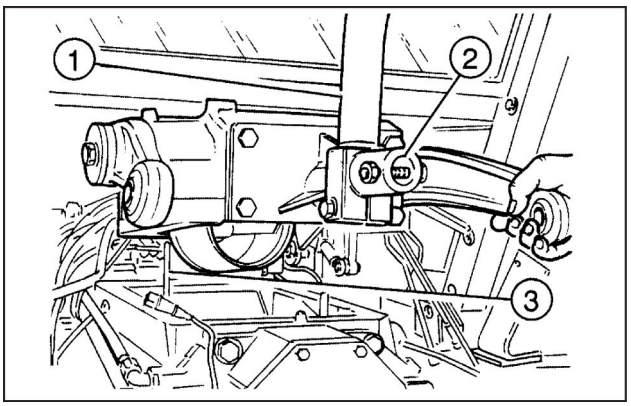
LAIL11TL0769A0A 8

10. Fit the tool **380000237 (1)** to the lift and tighten the four bolts **(2)**.



LAIL11TL0770A0A 9

11. Place the support **(1)** on the tool **380000237 (2)**. Connect the hook to the support. Raise the hydraulic lift a few centimeters and pull the hydraulic lift backward, tilting the hydraulic lift to remove the breather tube **(3)** without damaging it.



LAIL11TL0771A0A 10

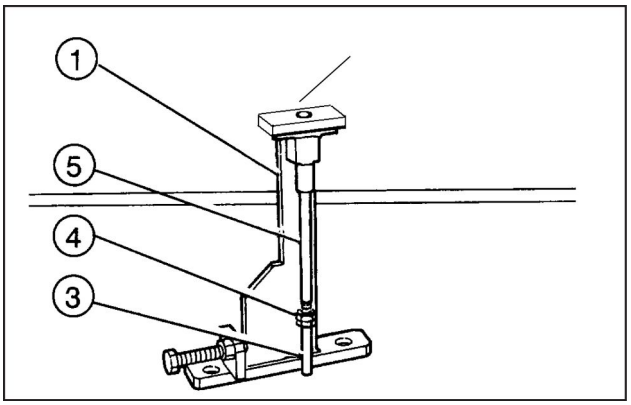
Next operation:
Rear three-point hitch - Disassemble (37.110) .

Rear three-point hitch - Adjust – Constant effort

Prior operation:
Rear three-point hitch - Height adjust (37.110) .

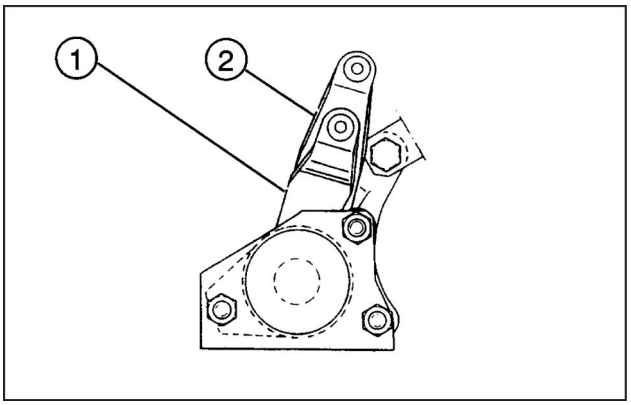
Proceed as follows:

1. Remove the end of the rod of the constant effort control **(3)** and fit it into the rod **(5)** of the tool **380000263 (1)**. Then, on a flat surface, level the top end of the rod with the top of the tool and lock with the jam nut **(4)**.



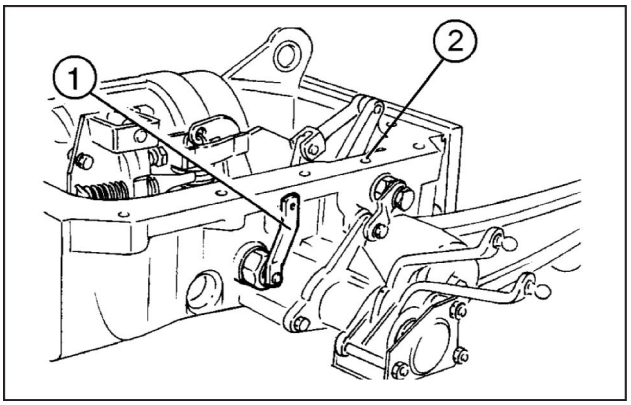
LAIL11TL0797A0A 1

2. With the tool **380000264** fitted to the lift body, move the position lever and constant effort lever **(1)** and **(2)** fully backwards against the spacer.



LAIL11TL0798A0A 2

3. Remove the bolt **(2)** that locks the eccentric shaft.



LAIL11TL0799A0A 3

Rear three-point hitch - Troubleshooting

Problem	Possible Cause	Correction
The lift does not manage to hold the weight lifted (with the engine running, the load moves up and down constantly, and with the engine switched off the load drops)	Inefficient retention valve sealant	Remove, check, clean and replace the corresponding parts if necessary
	Oil leaking through the main control valve rod seat (sleeve) sealants	Replace the sealants
	Seal between the main control valve rod and seat (sleeve) is defective	Remove and clean the main control valve rod and seat (sleeve). Replace the set if damaged
	Oil leaking through the lift piston sealant	Replace the sealants
	Defective sealant or cylinder safety valve adjusted to a very low value	Replace or adjust the valve
Lift fails to operate	Oil filter clogged	Replace the filter. Refer to the Operator's Manual.
	Control valve locked in the discharge position	Release the control valve
	Faulty hydraulic pump	Service or replace the pump
Lift operates suddenly	Oil filter clogged	Replace the filter. Refer to the Operator's Manual.
	Air entering the pump suction line	Check that the connections are tight and the sealants are effective
The lift operates very slowly	Control valve discharge points blocked	Remove the valve, unblock the holes and inspect the filter
	Control valve drive piston stuck	Remove the valve and release it
Low lifting capacity	Pressure relief valve adjusted incorrectly	Replace or adjust the valve
	Cylinder safety valve adjusted incorrectly	Adjust the valve and replace if necessary
	Low pump efficiency (usually combined with a considerable increase in lifting time)	Service or replace the pump
	Oil leaking through the lift piston sealant	Replace the piston sealing ring and check for internal cylinder wear: replace if necessary.
The pressure relief valve opens when the lift arms fully reach the top position	Lift arm travel adjusted incorrectly	Adjust properly
The lift operates very quickly	Foreign material between the ball and seats in the reaction speed control valve	Remove the valve, remove the foreign material and inspect the oil filter
	Reaction speed control valve seats damaged	Replace the seats
	Reaction speed control valve piston jammed	Remove the valve and release it
The lift lowers very quickly	Incorrect adjustment of the arm lowering speed valve	Adjust it correctly
The lift raises very slowly	Oil filter clogged	Replace the filter. Refer to the Operator's Manual.
	Oil leak from the seals with consequent flow loss: piston seals or cylinder line seals	Replace all faulty seals
	Faulty hydraulic pump	Perform tests with the flowmeter, service and/or replace the pump if necessary
The lift lowers very slowly	Incorrect adjustment of the arm lowering speed valve	Adjust it correctly
	Incorrect adjustment of the **Lift-O-Matic™** drive cable	Adjust the drive cable correctly.
	Main control valve jammed or scraping	Replace the valve, sleeve and its respective sealing rings

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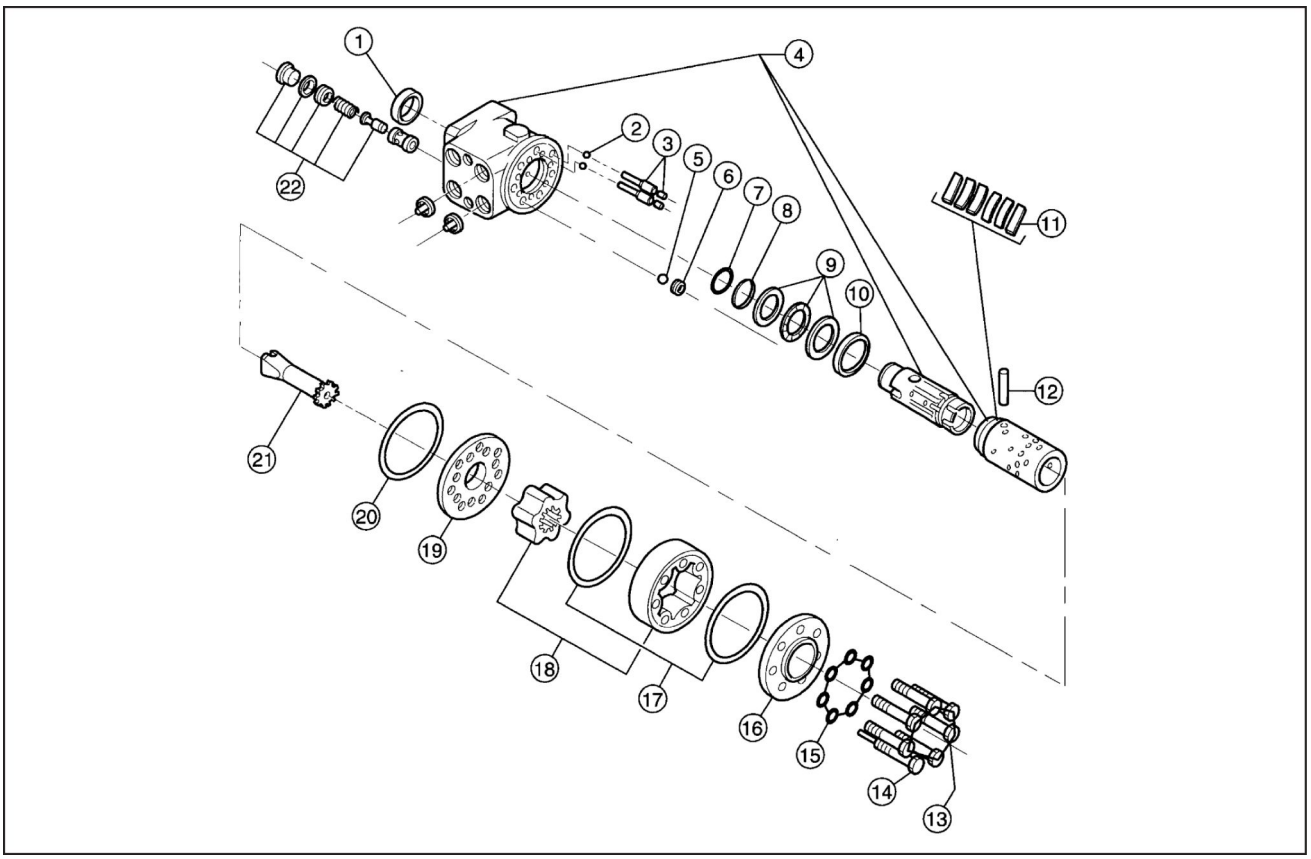
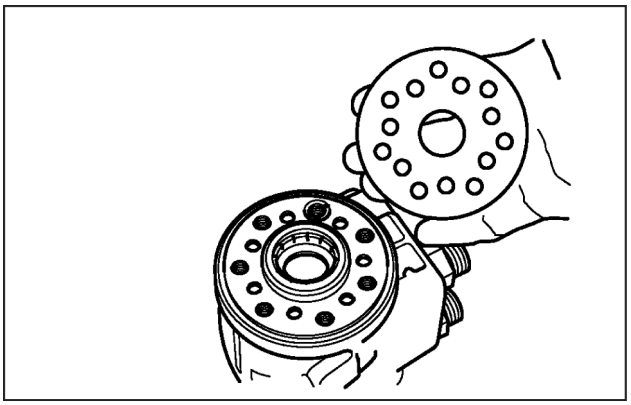
Power steering control valve - Exploded view



LAIL11TL1005F0A 1

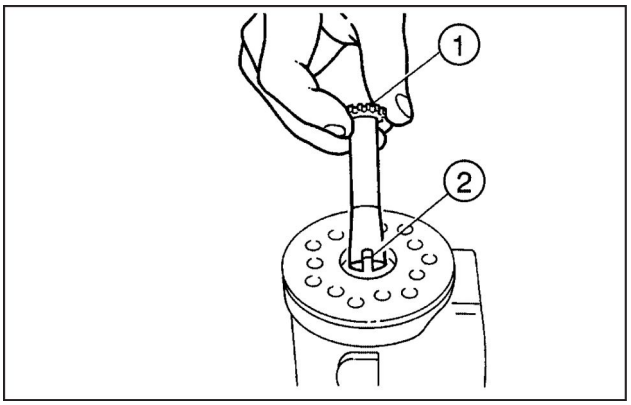
Reference	Component	Reference	Component
(1)	Dust cover ring	**(12)**	Rotor control shaft – sleeve lock pin
(2)	Reflow valve balls	**(13)**	Cover fixing bolts
(3)	Reflow valve pins	**(14)**	Retention valve bushing bolt
(4)	Body, rotary valve and valve sleeve	**(15)**	Washers
(5)	Retention valve ball	**(16)**	Cover
(6)	Retention valve threaded plug	**(17)**	O-ring
(7)	O-ring seal	**(18)**	Rotor and fixed ring for the rotor
(8)	Support ring for the O-ring	**(19)**	Thrust plate
(9)	Thrust bearing components	**(20)**	O-ring
(10)	Retaining ring for springs	**(21)**	Rotor drive shaft
(11)	Springs to return the sleeve to the neutral position	**(22)**	Pressure relief valve complete with spring

10. Reassemble the sealing ring and put on the rear cover.



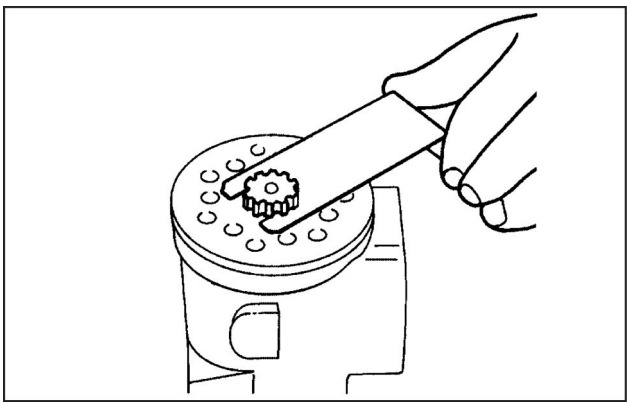
LAIL11TL0874A0A 8

11. Make a reference mark on the top of the tooth **(1)**, near the seat **(2)**, to indicate the exact position of the sleeve pin.



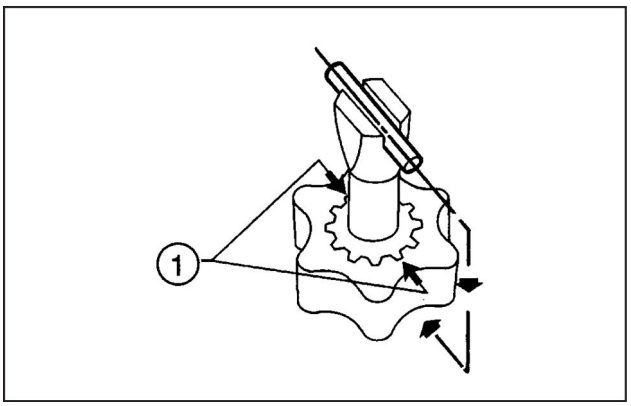
LAIL11TL0875A0A 9

12. Fit the rotor camshaft into the valve body.
13. Insert the tool **380000307** to retain and center the rotor transmission shaft between the rotor and the thrust plate and rotate the shaft to assist in coupling the seat and the lock pin installed on the liner **(2)**.



LAIL11TL0876A0A 10

14. Proceed by installing the rotor, taking care to ensure the following:
    A. Every time the hydrostatic steering is disassembled, invert the rotor to reduce wear on the splined coupling.
    B. In the figure to the side, the rotor ring (stator) has been removed to show the synchronization between the rotor, rotor control shaft, and lock pin.
    C. Fit the rotor on the transmission shaft, bearing in mind that synchronization is achieved from the alignment, on the axis plane of the lock pin, of the teeth **(1)** with the center line of one of the rotor compartments.



LAIL11TL0877A0A 11

Power steering pump - General specification

Tractors with Auxiliary Front Wheel Drive (4WD)

	TL60E	TL75E	TL85E	TL95E
Type	Pump with spur gears, using the oil from the rear transmission box			
Position	Coupled to the right-hand side of the engine, activated simultaneously with the hydraulic system pump			
Manufacturer	NEW HOLLAND			
Drive	With gear, directly from the engine			
Rotation (seen from the drive side)	Anti-clockwise			
Ratio between engine/pump rpm	1:0.931			
Maximum rpm (engine at maximum power)	**2328 RPM**			
Corresponding rated capacity	**34.5 l/min**			
Nominal capacity **1000 RPM**	**14.8 l/min**			
Diameter of drive and driven gear shafts	**17.400 - 17.418 mm**			
Bearing housing bushes on the supports	**17.450 - 17.470 mm**			
Play between the gear shafts and the bushings	**0.032 - 0.070 mm**			
Maximum play from wear	**0.1 mm**			
Radial play of gears in pump housing	**0.020 - 0.064 mm**			
Maximum wear in the pump housing, on the intake side, near the gears	**0.1 mm**			
Gear width **(8)***	**24.000 - 24.015 mm**			
Width of the journals	**24.490 - 24.510 mm**			
Width of pump housing for bushings and supports **(5)***	**73.135 - 73.160 mm**			
End play of gears complete with supports in pump housing (must also be established during servicing)	**0.100 - 0.180 mm**			

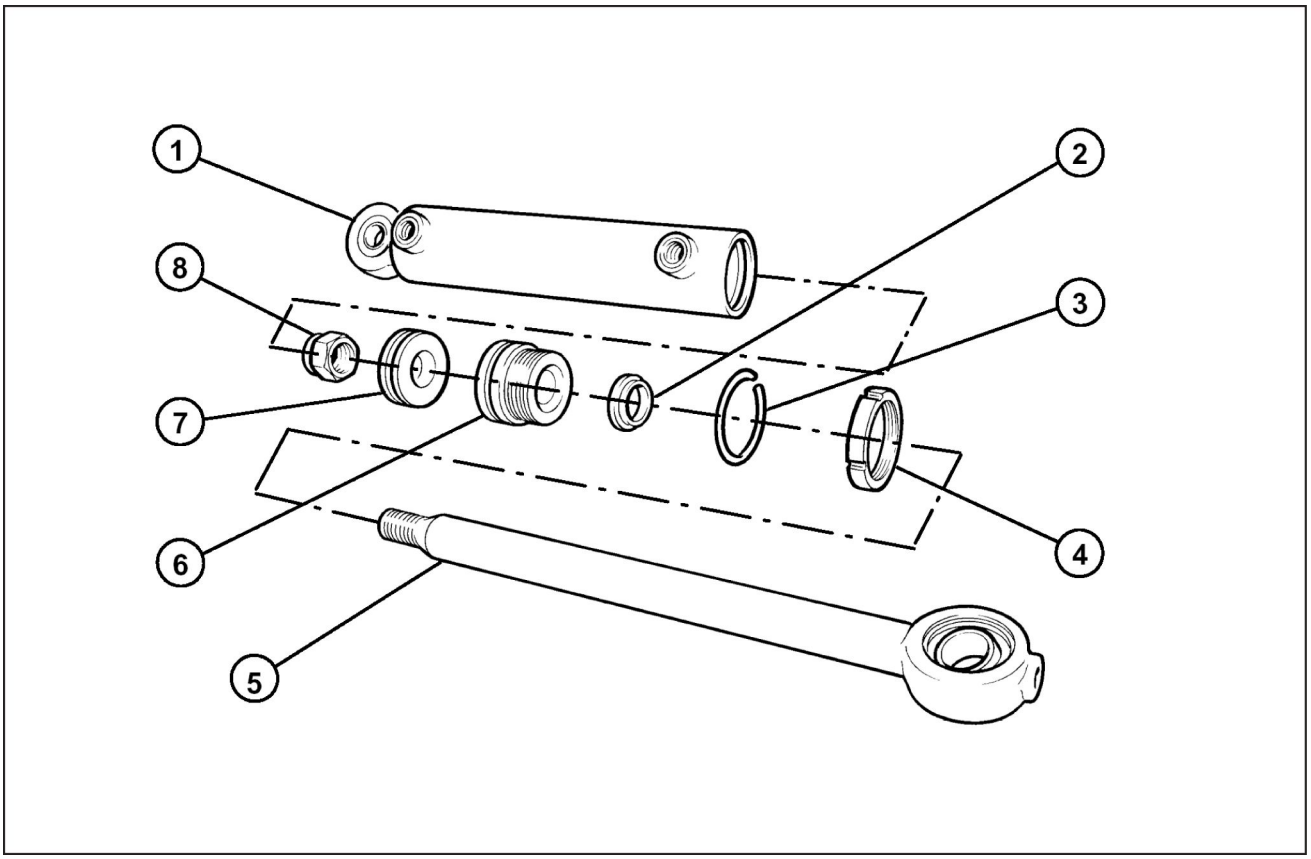
(*) See the references in **Power steering pump - Exploded view (41.206)**.

Power steering pump - General specification

Tractors without Auxiliary Front Wheel Drive (AFWD)

	TL75
Type	Pump with spur gears, using the oil from the reservoir located over the engine
Position	Coupled to the right-hand side of the engine, activated simultaneously with the hydraulic system pump
Manufacturer	NEW HOLLAND
Drive	With gear, directly from the engine
Rotation (seen from the drive side)	Anti-clockwise
Ratio between engine/pump rpm	1:0.931
Maximum rpm (engine at maximum power)	**2328 RPM**
Corresponding rated capacity	**26.5 l/min**
Nominal capacity **1000 RPM**	**11.35 l/min**
Diameter of drive and driven gear shafts	**17.400 - 17.418 mm**
Bearing housing bushes on the supports	**17.450 - 17.470 mm**
Play between the gear shafts and the bushings	**0.032 - 0.070 mm**
Maximum play from wear	**0.1 mm**
Radial play of gears in pump housing	**0.020 - 0.064 mm**
Maximum wear in the pump housing, on the intake side, near the gears	**0.1 mm**
Gear widths	**18.323 - 18.348 mm**
Width of the journals	**19.796 - 19.812 mm**

Steering cylinder - Exploded view – Version with Auxiliary Front Wheel Drive (FWD)



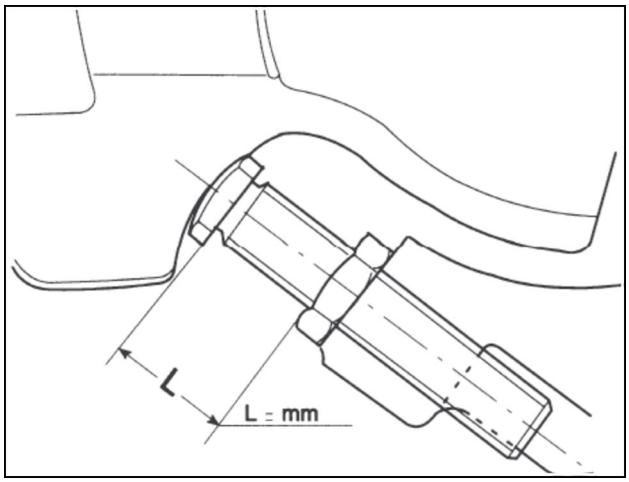
LAIL11TL1008F0A 1

Reference	Component	Reference	Component
(1)	Cylinder	**(5)**	Cylinder connecting rod
(2)	Wiper seal	**(6)**	Bushing and seal set
(3)	Locking ring	**(7)**	Piston
(4)	Seal nut	**(8)**	Nut

Steering cylinder - Clearance – Version with Auxiliary Front Wheel Drive (FWD)

TL60E 12x4, 4WD, new cab [HCCZTL60CFC438464 -]	
TL60E Without cab, 12x4, 4WD [ZDCL05524 -]	
TL60E	LA
TL75E 12x12, 20x12, 4WD, new cab [HCCZTL75CFC437744 -]	
TL75E 12x4, 2WD, new cab [HCCZTL75CFC438464 -]	
TL75E Without cab, 2WD, 12x4 [ZDCY12367 -]	
TL75E	LA
TL85E 12x12, 20x12, 4WD, new cab [HCCZTL75CFC438464 -]	
TL85E 12x4, 12x12, 2WD, new cab [HCCZTL85CFC437744 -]	
TL85E Without cab, 2WD [ZEC134399 -]	
TL85E Without cab, 4WD [ZDCL04468 -]	
TL85E	LA
TL95E 12x12, 20x12, 4WD, new cab [HCCZTL95EFC438464 -]	
TL95E Without cab, 4WD [ZDC112512 -]	
TL95E	LA

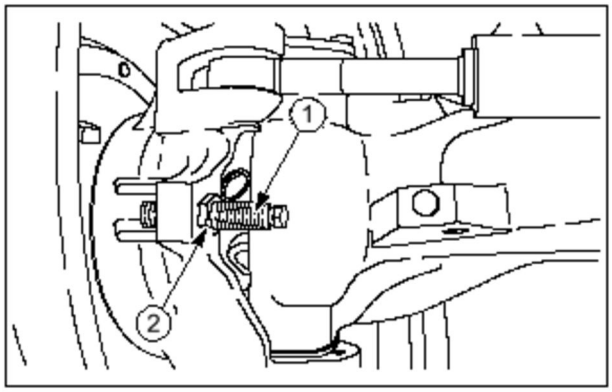
Two steering stops are incorporated in the axle, one at each end. The stops are adjustable and must be adjusted to provide a minimum clearance of **20 mm** (**0.8 in**) between the tires and all parts of the machine whenever the steering wheel is fully turned to the left or fully turned to the right.
To adjust the steering angle, proceed as described below:



BRAG12TRLUE0482 1

1. Turn the wheels fully to the right or fully to the left.
2. Loosen the cotter nut **(2)** and adjust the screw length **(1)**.
3. To obtain the steering angle required, consult the tables below. Having obtained the desired angle, loosen the cotter nut **(2)**.

NOTE: *Whilst making this adjustment, take into consideration the fact that the end of the stop's travel should not reach the end of the hydraulic cylinder's travel.*



BRAG12TRLUE1279 2

Steering angle (TL60E and TL75E models with Auxiliary Front Wheel Drive – AFWD)

Steering angles	Length **(L)**	
	mm	in
25 °	**57 mm**	**2,24 in**
30 °	**47 mm**	**1,85 in**
35 °	**37 mm**	**1,45 in**
40 °	**28 mm**	**1,10 in**
45 °	**19 mm**	**0,74 in**
50 °	**9 mm**	**0,35 in**
55 °	**0 mm**	**0 in**

Table 04: Compatibility table for the front and rear tires for the TL85E and TL95E models with 1.357 transmission ratio

Check the acronyms in Table 01			Mea-sure	12.4x24 R1				14.9x24 R1			14.9x24 R2	
			CAP	6 PR				6 PR			6 PR	
			F.T.	DYT II	CGG	SAT 23	TM 95	DYT II	TM 95	SAT 23	PD 22	S-ARZ
Mea-sure	CAP	R.T.	MANUF	G	F	F	P	G	P	F	P	G
13.6X38 R1	6 PR	DYT II	G		X	X	X					
		TRC-CA	G	X	X	X	X					
		PWT	G	X	X	X	X					
		TM 75	P	X	X	X	X					
16.9X28 R1	10 PR	DYT II	G									
		TFR (8 PR)	F									
		SAT FWD (8 PR)	F									
		TM 95 (8 PR)	P									
		PWT	G									
18.4X30 R1	10 PR	DYT II	G	X	X	X	X					
		TM 95	P	X	X	X	X					
		SAT FWD	F	X	X	X	X					
		TFR	F	X			X					
18.4X30 R2	6 PR	PD 22	P					X				
		CSG II	F									
18.4x34 R1	10 PR	DYT II	G					X	X	X		
		TM 95	P					X	X	X		
		SAT 23	F					X	X	X		
23.1x26 R2	10 PR	S-ARZ	G					X	X	X		
		PD 22	P					X	X	X	X	
		CSG II	F					X	X	X	X	X

Contents

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Cab climate control - 50

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CONSUMABLES INDEX

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R134a	Air conditioning - Dynamic description	50.3 / 11
R134a	Air conditioning - Dynamic description	50.3 / 11
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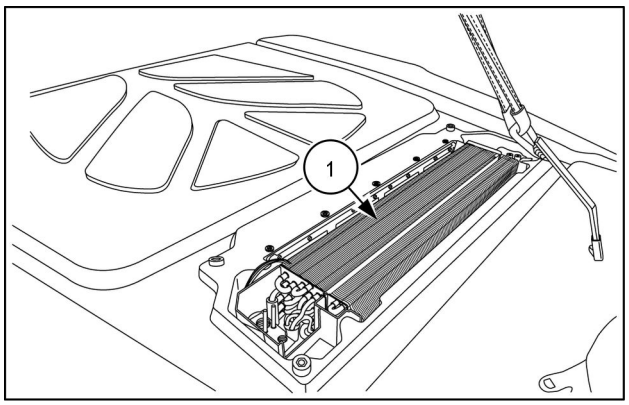
R134a	Air conditioning - Dynamic description	50.3 / 11
R134a	Receiver/Dryer - Dynamic description	50.3 / 14
R134a	Air conditioning - Recover	50.3 / 27
R134a	Air-conditioning condenser - Install	50.3 / 38
R134a	Receiver/Dryer - Install	50.3 / 40
R134a	Expansion valve - Install	50.3 / 42

Air-conditioning evaporator - Dynamic description

The evaporator **(1)** is located on the cab roof and consists of a certain number of spirals with continuous coils mounted on a series of thin cooling fins which ensure maximum heat transfer in the smallest amount of space.

The refrigerant at a low temperature in the evaporator absorbs the heat from the warmer air in the operator's cab and cools it.



CUIL13TR00734AA 1

Air conditioning - Apply vacuum

⚠ DANGER

Avoid injury!
Observe ALL precautions listed below when servicing the air-conditioning system and handling refrigerant.
Failure to comply will result in death or serious injury.

D0043A

⚠ WARNING

Explosion hazard!
Air-conditioning refrigerant boils at -12 °C (10 °F)!
-NEVER expose any part of the air-conditioning system to a direct flame or excessive heat.
-NEVER disconnect or disassemble any part of the air-conditioning system.
Discharging refrigerant gas into the atmosphere is illegal in many countries.
Failure to comply could result in death or serious injury.

W0340A

⚠ WARNING

Avoid chemical burns!
Wear protective goggles and non-permeable gloves when working with the fluorescent dye and leak testing an air-conditioning system.
Failure to comply could result in death or serious injury.

W0918A

⚠ WARNING

Avoid injury!
Avoid breathing air-conditioning refrigerant, lubricant vapor or mist. If accidental system discharge occurs, ventilate the work area before resuming service.
Failure to comply could result in death or serious injury.

W1000B

Prior operation:
Air conditioning - Recover (50.200) .

NOTICE: *A system from which the refrigerant has been recovered to facilitate any repairs must be evacuated before being refilled with new refrigerant.*

A vacuum pump is used to eliminate the air and moisture from the system.

The automatic recycling, recharging and drainage systems, or the draining and charging systems provided by the air conditioning manufacturer, also include a vacuum pump. If this type of equipment is not available, use a vacuum pump and an independent set of gauges.

When a system is being evacuated, the boiling point of any moisture is also lowered. When the vacuum increases, the boiling point ends up falling below the ambient temperature and under these conditions the moisture boils and is eliminated.

The information in table 01 is the ratio between the system vacuum and the boiling temperature at which water steam is eliminated from the system.

Table 01: Ratio between the system vacuum and the boiling temperature

Mercury system vacuum	Engine coolant
710 mm Hg	38 °C
734 mm Hg	27 °C

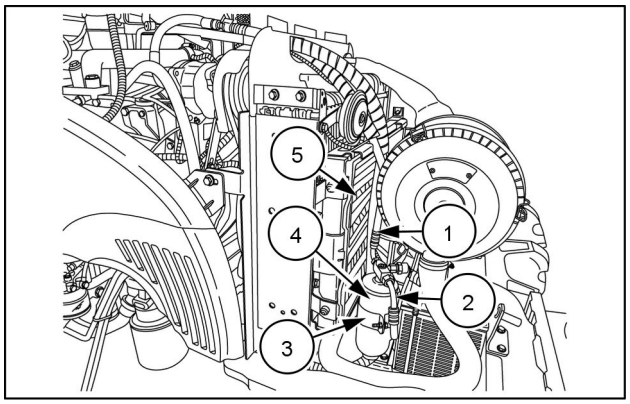
Receiver/Dryer - Install

Carry out the following procedures:

1. Install the filter-drier **(4)** on the clamp **(3)** and tighten the respective bolt.

NOTE: *The pressure sensor should be facing forward.*

2. Remove the guard and install the hose **(2)** that connects the filter-drier **(4)** to the condenser **(5)**.
3. Remove the guard and install the hose **(1)** that connects the filter-drier **(4)** to the evaporator (on the cab roof).
4. Disconnect the electrical connection element **(2)** from the pressure sensor.
5. Apply vacuum to the system. Consult the procedures in **Air conditioning - Apply vacuum (50.200)**.
6. Charge the system with gas **R134A** using a duly approved recovery system. Consult the procedures in **Air conditioning - Charging (50.200)**.
7. Reconnect the negative battery lead.



CUIL13TR00763AA 1

Problem	Possible Cause	Correction
Insufficient or no cooling Gauge reading:- Low Pressure - High High Pressure - High	Poor operation of thermostatic expansion valve (stuck open).	Operate the system at maximum cooling. Check the low side pressure gauge. The pressure should drop slowly. If the test indicates a defect in the expansion valve, perform the following procedures: • Discharge and recover the refrigerant from the system. Consult the procedures in **Air conditioning - Recover (50.200)**. • Replace the expansion valve. Consult the procedures in **Expansion valve - Remove (50.200)**. • Apply vacuum to the system. Consult the procedures in **Air conditioning - Apply vacuum (50.200)**. • Charge the system. Consult the procedures in **Air conditioning - Charging (50.200)**. • Performance test the system. Consult the procedures in **Air conditioning - Startup test (50.200)**.
Insufficient cooling Gauge reading:- Low Pressure - Low High Pressure - Low	Poor operation of thermostatic expansion valve (stuck closed).	Operate the system at maximum cooling. Check the low side pressure gauge. The pressure should drop slowly. If the test indicates a defect in the expansion valve, perform the following procedures: • Discharge and recover the refrigerant from the system. Consult the procedures in **Air conditioning - Recover (50.200)**. • Replace the expansion valve. Consult the procedures in **Expansion valve - Remove (50.200)**. • Apply vacuum to the system. Consult the procedures in **Air conditioning - Apply vacuum (50.200)**. • Charge the system. Consult the procedures in **Air conditioning - Charging (50.200)**. • Performance test the system. Consult the procedures in **Air conditioning - Startup test (50.200)**.
Insufficient cooling Gauge reading:- Low Pressure - Low High Pressure - Low. A normal or high pressure gauge reading on the high pressure side in these conditions indicates that either the system is overcharged or the condenser or the accumulator/filter-drier is too small.	Restriction on the high pressure side of the system.	• Discharge and recover the refrigerant from the system. Consult the procedures in **Air conditioning - Recover (50.200)**. • Replace the refrigerant lines, the accumulator/filter-drier or other blocked components. • Apply vacuum to the system. Consult the procedures in **Air conditioning - Apply vacuum (50.200)**. • Charge the system. Consult the procedures in **Air conditioning - Charging (50.200)**. • Performance test the system. Consult the procedures in **Air conditioning - Startup test (50.200)**.

Wiring harnesses - Electrical schematic sheet 02 SH02 - DIAGRAM LEGEND

TL60E 12x4, 4WD, new cab [HCCZTL60CFC438464 -]	LA
TL75E 12x12, 20x12, 4WD, new cab [HCCZTL75CFC437744 -]	LA
TL75E 12x4, 2WD, new cab [HCCZTL75CFC438464 -]	LA
TL85E 12x12, 20x12, 4WD, new cab [HCCZTL75CFC438464 -]	LA
TL85E 12x4, 12x12, 2WD, new cab [HCCZTL85CFC437744 -]	LA
TL95E 12x12, 20x12, 4WD, new cab [HCCZTL95EFC438464 -]	LA

Wiring harnesses - Electrical schematic sheet 08 SH08 - GROUND

TL60E 12x4, 4WD, new cab [HCCZTL60CFC438464 -]	LA
TL75E 12x12, 20x12, 4WD, new cab [HCCZTL75CFC437744 -]	LA
TL75E 12x4, 2WD, new cab [HCCZTL75CFC438464 -]	LA
TL85E 12x12, 20x12, 4WD, new cab [HCCZTL75CFC438464 -]	LA
TL85E 12x4, 12x12, 2WD, new cab [HCCZTL85CFC437744 -]	LA
TL95E 12x12, 20x12, 4WD, new cab [HCCZTL95EFC438464 -]	LA

Type	Component	Connector / Link	Description
Ground	**GND-001**	GND-001	GROUND
Ground	**GND-003**	GND-003	CAB EARTH
Ground	**GND-004**	GND-004	
Ground	**GND-006**	GND-006	SWITCHS ILLUMINATION
Ground	**GND-007**	GND-007	ROOF GND 1
Ground	**GND-008**	GND-008	ROOF GND 2

Wiring harnesses - Electrical schematic sheet 14 SH14 - WORKLAMPS

TL60E 12x4, 4WD, new cab [HCCZTL60CFC438464 -]	LA
TL75E 12x12, 20x12, 4WD, new cab [HCCZTL75CFC437744 -]	LA
TL75E 12x4, 2WD, new cab [HCCZTL75CFC438464 -]	LA
TL85E 12x12, 20x12, 4WD, new cab [HCCZTL75CFC438464 -]	LA
TL85E 12x4, 12x12, 2WD, new cab [HCCZTL85CFC437744 -]	LA
TL95E 12x12, 20x12, 4WD, new cab [HCCZTL95EFC438464 -]	LA

Type	Component	Connector / Link	Description
ECU	**A-021**	**X-020 X-022**	WORKLAMP SWITCH
Lamp	**LMP-021**	**X-082**	LH FRONT WORKLAMP
Lamp	**LMP-022**	**X-079**	RH REAR WORKLAMP
Lamp	**LMP-023**	**X-080**	LH REAR WORKLAMP
Lamp	**LMP-025**	**X-081**	RH FRONT WORKLAMP
Connector	X-008F	X-008F	ROOF HARNESS INTERFACE
Connector	X-008M	**X-008M**	ROOF HARNESS CONNECTORS
Connector	X-020	**X-020**	WORK LAMPS SWITCH
Connector	X-022	**X-022**	WORK LAMPS SWITCH LAMP
Connector	X-079	**X-079**	RH REAR WORKLAMP
Connector	X-080	**X-080**	LH REAR WORKLAMP
Connector	X-081	**X-081**	RH FRONT WORKLAMP
Connector	X-082	**X-082**	LH FRONT WORKLAMP

Wiring harnesses - Electrical schema – Main wire harness of the header – Relay and fuse compartment – Sheet 01

TL60E Without cab, 12x4, 4WD [ZDCL05524 -]	LA
TL75E Without cab, 2WD, 12x4 [ZDCY12367 -]	
TL85E Without cab, 2WD [ZEC134399 -]	
TL85E Without cab, 4WD [ZDCL04468 -]	LA ---
TL95E Without cab, 4WD [ZDC112512 -]	

Sheet 01

Reference	Component	Connector
(1)	Maxi fuse 1 – **40 A**	-
(2)	Maxi fuse 2 – **40 A**	-
(3)	Fuse 3 – **5 A**	**X-022**
(4)	Fuse 4 – **5 A**	**X-022**
(5)	Fuse 7 – **15 A**	**X-022**
(6)	Fuse 8 – **15 A**	**X-022**
(7)	Fuse 9 / Sidelights – **15 A**	**X-022**
(8)	Fuse 10 – **15 A**	**X-022**
(9)	Fuse 11 – **10 A**	**X-022**
(10)	Battery – **100 A·h**	-
(11)	Fuse 12 – **10 A**	**X-022**
(12)	Fuse 13 – **5 A**	**X-022**
(13)	Fuse 15 – **10 A**	**X-022**
(14)	Fuse 16 – **10 A**	**X-022**
(15)	Fuse 17 – **10 A**	**X-022**
(16)	Fuse 18 – **5 A**	**X-022**
(17)	Fuse 19 – **10 A**	**X-022**
(18)	Fuse 20 – **15 A**	**X-022**
(19)	Fuse 21 – **10 A**	**X-022**
(20)	Fuse 22 – **15 A**	**X-022**
(21)	Fuse 23 – **5 A**	**X-022**
(22)	Fuse 24 – **15 A**	**X-022**

Wiring harnesses - Electrical schema – Switches for the auxiliary front wheel drive and work lights – Sheet 07

TL60E Without cab, 12x4, 4WD [ZDCL05524 -]	LA
TL75E Without cab, 2WD, 12x4 [ZDCY12367 -]	LA ---
TL85E Without cab, 2WD [ZEC134399 -]	
TL85E Without cab, 4WD [ZDCL04468 -]	LA ---
TL95E Without cab, 4WD [ZDC112512 -]	

Sheet 07

Reference	Component	Connector
(1)	Switch for the sidelights	**X-050**, **X-051**
(2)	Switch for the rear work lights	**X-035**, **X-036**
(3)	Switch for the front work lights	**X-037**, **X-100**
(4)	Switch for the auxiliary front wheel drive	**X-043**, **X-045**
(5)	Backup alarm	**X-105A**, **X-105B**
(6)	Front work light – Left-hand side	**X-041**
(7)	Front work light – Right-hand side	**X-042**
(8)	Rear work light – Left-hand side	**X-039**
(9)	Rear work light – Right-hand side	**X-040**

Wiring harnesses - Electrical schema – Ground points – Sheet 13

TL60E Without cab, 12x4, 4WD [ZDCL05524 -]	LA
TL75E Without cab, 2WD, 12x4 [ZDCY12367 -]	LA ---
TL85E Without cab, 2WD [ZEC134399 -]	
TL85E Without cab, 4WD [ZDCL04468 -]	LA ---
TL95E Without cab, 4WD [ZDC112512 -]	

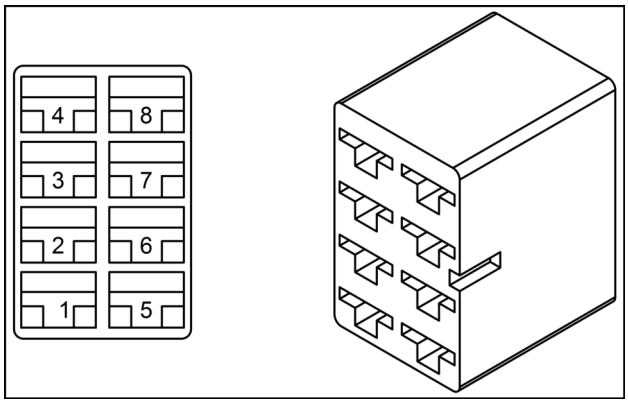
Sheet 13

Reference	Component
(1)	Engine ground
(2)	Ground 1
(3)	Transmission ground
(4)	Ground 2

Wire connectors - Component diagram 02

TL60E 12x4, 4WD, new cab [HCCZTL60CFC438464 -]	LA
TL75E 12x12, 20x12, 4WD, new cab [HCCZTL75CFC437744 -]	LA
TL75E 12x4, 2WD, new cab [HCCZTL75CFC438464 -]	LA
TL85E 12x12, 20x12, 4WD, new cab [HCCZTL75CFC438464 -]	LA
TL85E 12x4, 12x12, 2WD, new cab [HCCZTL85CFC437744 -]	LA
TL95E 12x12, 20x12, 4WD, new cab [HCCZTL95EFC438464 -]	LA

X-020 - WORK LAMPS SWITCH [A-021] (87745329) (Female)

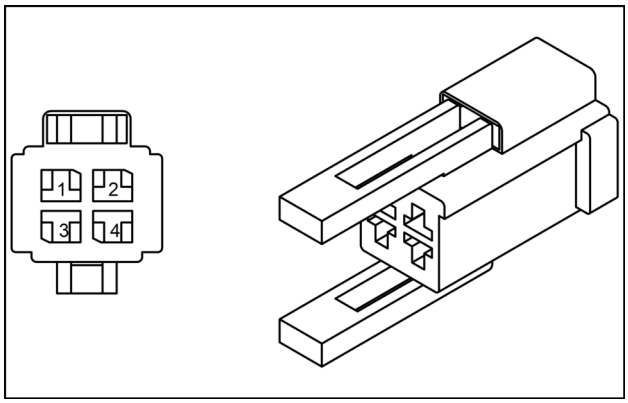


87745329 1

87745329

Pin	From	Wire	Description	Color-Size	Frame
2	SP-1070-P-X	CB-1014H	CB-1014H	RD - 1.0	**SHEET 14**
3	RH-003-P-J1 RELAY MODULE 3	CB-1091	CB-1091	RD - 0.5	
4	SP-1070-P-X	CB-1014K	CB-1014K	RD - 1.0	
7	RH-003-P-G1 RELAY MODULE 3	CB-1090	CB-1090	RD - 0.5	
8	SP-1070-P-X	CB-1014G	CB-1014G	RD - 1.0	

X-021 - HEATER [U-012] (87714267) (Female)



87714267 2

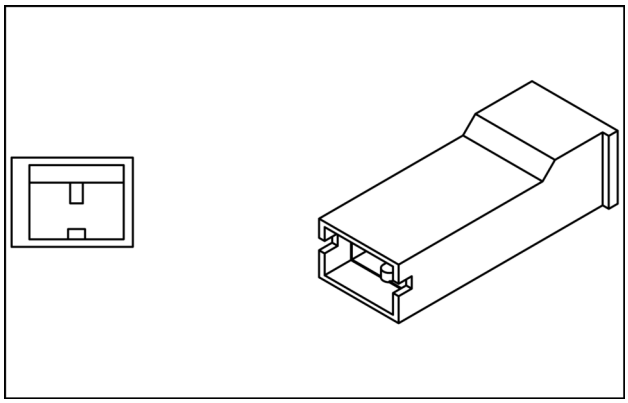
87714267

Pin	From	Wire	Description	Color-Size	Frame
1	**X-008M (Female) pin 1** ROOF HARNESS CONNECTORS	RO-1018B	RO-1018B	GN - 1.5	**SHEET 18**
2	**X-008M (Female) pin 2** ROOF HARNESS CONNECTORS	RO-1017D	RO-1017D	GN - 2.5	
3	SP-057CM-P-X	RO-057CN	RO-057CN	BK - 2.5	

Wire connectors - Component diagram 06

TL60E 12x4, 4WD, new cab [HCCZTL60CFC438464 -]	LA
TL75E 12x12, 20x12, 4WD, new cab [HCCZTL75CFC437744 -]	LA
TL75E 12x4, 2WD, new cab [HCCZTL75CFC438464 -]	LA
TL85E 12x12, 20x12, 4WD, new cab [HCCZTL75CFC438464 -]	LA
TL85E 12x4, 12x12, 2WD, new cab [HCCZTL85CFC437744 -]	LA
TL95E 12x12, 20x12, 4WD, new cab [HCCZTL95EFC438464 -]	LA

X-060 - BRAKE OIL LEVEL SWITCH [S-014] (87675193) (Female)

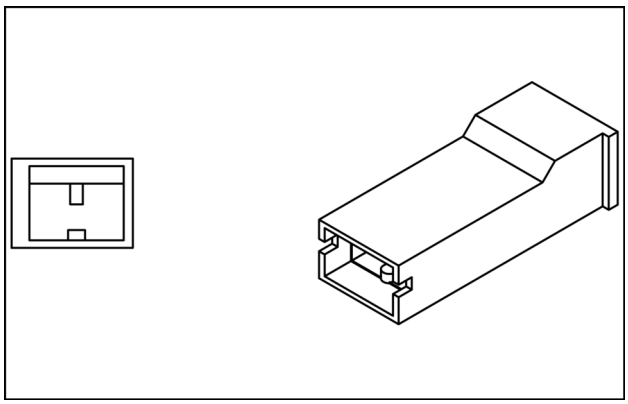


87675193 1

87675193

Pin	From	Wire	Description	Color-Size	Frame
1	SP-57-P-X	EN-057AA	EN-057AA	BK - 1.0	**SHEET 09**

X-060A - BRAKE OIL LEVEL SWITCH [S-014] (87675193) (Female)



87675193 2

87675193

Pin	From	Wire	Description	Color-Size	Frame
1	X-010M-Male-P-LL	EN-3016	EN-3016	GY - 1.0	**SHEET 09**

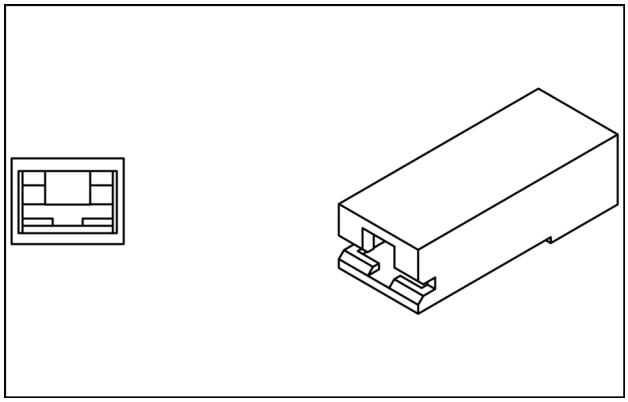
X-061 - (Female)

Pin	From	Wire	Description	Color-Size	Frame
1	SP-057BT-P-X	CB-057CA	CB-057CA	BK - 1.0	**SHEET 08**
2	SP-810-P-X	CB-840B	CB-840B	GN - 1.5	**SHEET 07**
3	SP-1013E-P-X	CB-1013S	CB-1013S	RD - 1.0	**SHEET 05**
4	SP-049-P-X	CB-049B	CB-049B	GN - 1.0	**SHEET 15**

X-094 - (Female)

Pin	From	Wire	Description	Color-Size	Frame
1	SP-666-P-X	RO-666B	RO-666B	RD - 1.0	**SHEET 13**

X-095 - LH INTERIOR LAMP (87691425) (Female)



87691425 6

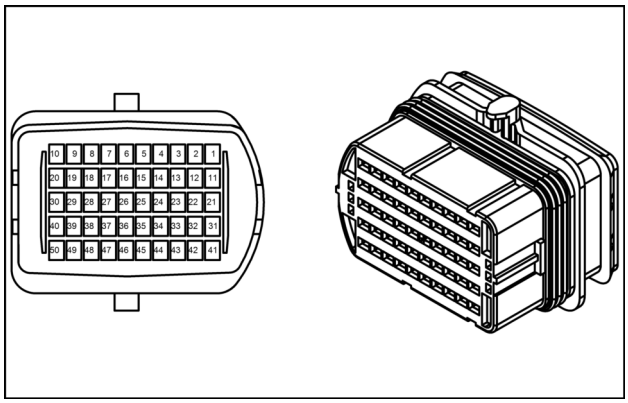
87691425

Pin	From	Wire	Description	Color-Size	Frame
1	SP-3052-P-X	RO-3052C	RO-3052C	VT - 1.0	**SHEET 13**

X-096 - (Female)

Pin	From	Wire	Description	Color-Size	Frame
1	SP-057CM-P-X	RO-057CQ	RO-057CQ	BK - 1.0	**SHEET 08**

X-097M - MAIN HARNESS CONNECTION (87708537) (Female)



87708537 7

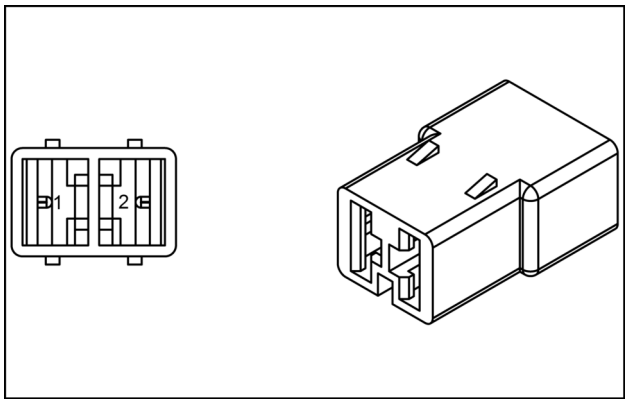
87708537

Pin	From	Wire	Description	Color-Size	Frame
1	**X-112A (Female) pin 1** 4WD PRESSURE SWITCH	TR-3025A	TR-3025A	YE - 1.0	**SHEET 11**
2	SP-3025B-P-X	TR-3025B	TR-3025B	YE - 1.0	
3	X-007-Male-P-4	TR-2045B	TR-2045B	OR - 1.0	
4	X-007-Male-P-3	TR-1000B	TR-1000B	WH - 1.0	
5	X-007-Male-P-2	TR-1000C	TR-1000C	WH - 1.0	
6	X-007-Male-P-1	TR-7080F	TR-7080F	GN - 1.0	

Wire connectors - Component diagram 17

TL60E 12x4, 4WD, new cab [HCCZTL60CFC438464 -]	LA
TL75E 12x12, 20x12, 4WD, new cab [HCCZTL75CFC437744 -]	LA
TL75E 12x4, 2WD, new cab [HCCZTL75CFC438464 -]	LA
TL85E 12x12, 20x12, 4WD, new cab [HCCZTL75CFC438464 -]	LA
TL85E 12x4, 12x12, 2WD, new cab [HCCZTL85CFC437744 -]	LA
TL95E 12x12, 20x12, 4WD, new cab [HCCZTL95EFC438464 -]	LA

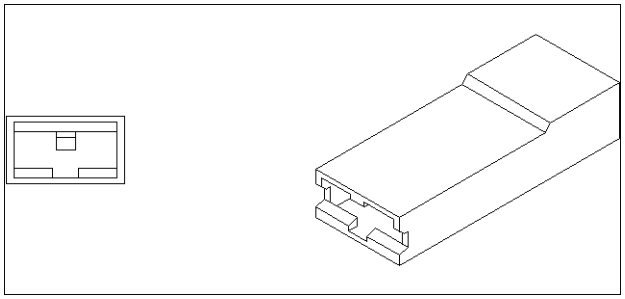
X-177 - FUEL LEVEL SENDER [B-004] (87680259) (Female)



87680259 1

87680259

Pin	From	Wire	Description	Color-Size	Frame
1	**X-097M (Female) pin 15** MAIN HARNESS CONNECTION	TR-029A	TR-029A	GN - 1.0	**SHEET 12**
2	**X-097M (Female) pin 16** MAIN HARNESS CONNECTION	TR-060L	TR-060L	BK - 1.0	



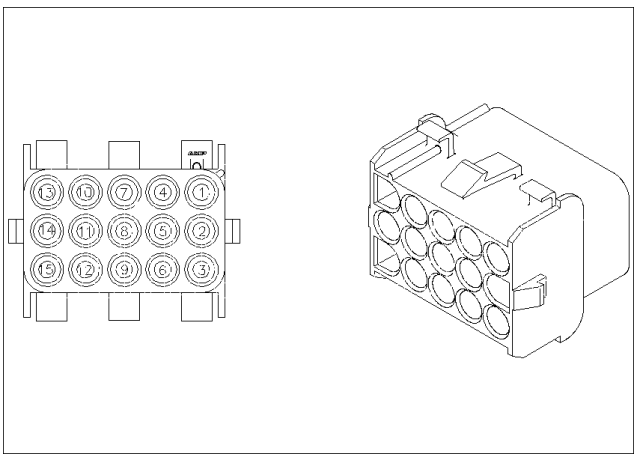
87705140 16

Wire connectors - Component diagram 03

TL60E Without cab, 12x4, 4WD [ZDCL05524 -]	LA
TL75E Without cab, 2WD, 12x4 [ZDCY12367 -]	LA ---
TL85E Without cab, 2WD [ZEC134399 -]	
TL85E Without cab, 4WD [ZDCL04468 -]	
TL95E Without cab, 4WD [ZDC112512 -]	

CONNECTOR X-031 - Lights control

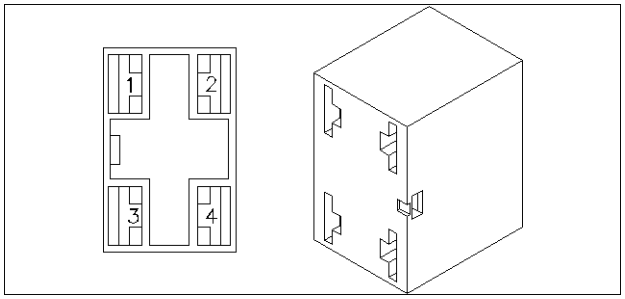
CONNECTOR X-031 - Lights control			
PIN NUMBER	**WIRE NUMBER**	**CIRCUIT REFERENCE**	**ELECTRICAL SCHEMATIC FRAME**
1	CB-376 (VT)	X-031 Lights control X-067 Engine connector	**Wiring harnesses - Electrical schema – Sheet 05 (55.100)**
2	CB-376B (VT)	X-022 FUSES BOX X-031 Lights control	**Wiring harnesses - Electrical schema – Main wire harness of the header – Relay and fuse compartment – Sheet 01 (55.100)**
3	CB-1023C (BR)	SP-155 X-031 Lights control	**Wiring harnesses - Electrical schema Main wire harness of the header – Splices – Sheet 03 (55.100)**
4	CB-1024 (RD)	X-031 Lights control X-022 FUSES BOX	**Wiring harnesses - Electrical schema – Sheet 05 (55.100)**
5	CB-1027 (BL)	X-031 Lights control K-003 HIGH BEAM (III)	**Wiring harnesses - Electrical schema – Sheet 05 (55.100)**
6	CB-1030 (BL)	X-031 Lights control K-005 DIP BEAM (V)	**Wiring harnesses - Electrical schema – Sheet 05 (55.100)**
7	CB-44 (GN)	SP-44 X-031 Lights control	**Wiring harnesses - Electrical schema – Sheet 05 (55.100)**
8	CB-50A (GN)	X-031 Lights control SP-050A	**Wiring harnesses - Electrical schema – Sheet 05 (55.100)**
9	CB-49A (GN)	X-031 Lights control SP-049A	**Wiring harnesses - Electrical schema – Sheet 05 (55.100)**
11	CB-3005A (GN)	SP-3005 X-031 Lights control	**Wiring harnesses - Electrical schema – Sheet 05 (55.100)**
12	CB-3004A (GN)	SP-3004 X-031 Lights control	**Wiring harnesses - Electrical schema – Sheet 05 (55.100)**
13	CB-3001 (GN)	X-032 Hazard switch X-031 Lights control	**Wiring harnesses - Electrical schema – Sheet 05 (55.100)**
14	CB-3002 (GN)	X-032 Hazard switch X-031 Lights control	**Wiring harnesses - Electrical schema – Sheet 05 (55.100)**



87690974 1

CONNECTOR X-057 - Thermostarter switch

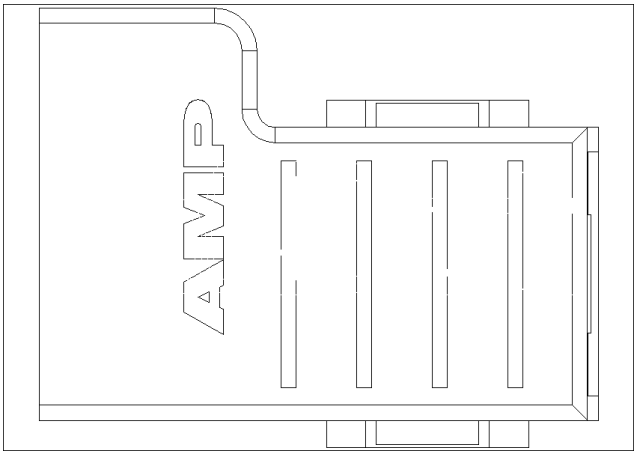
CONNECTOR X-057 - Thermostarter switch			
PIN NUMBER	**WIRE NUMBER**	**CIRCUIT REFERENCE**	**ELECTRICAL SCHEMATIC FRAME**
1	CB-1022A (BR)	X-057 Thermostarter switch SP-1022A	**Wiring harnesses - Electrical schema – Sheet 05 (55.100)**
2	CB-1022D (BR)	X-022 FUSES BOX X-057 Thermostarter switch	**Wiring harnesses - Electrical schema – Main wire harness of the header – Relay and fuse compartment – Sheet 01 (55.100)**



87745322 3

CONNECTOR X-058 - Handbrake switch

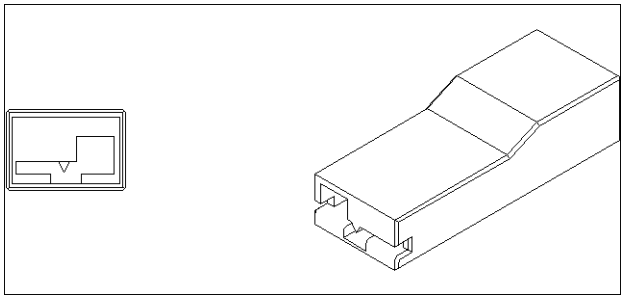
CONNECTOR X-058 - Handbrake switch			
PIN NUMBER	**WIRE NUMBER**	**CIRCUIT REFERENCE**	**ELECTRICAL SCHEMATIC FRAME**
1	CB-3012 (GN)	SP-1003 X-058 Handbrake switch	**Wiring harnesses - Electrical schema Main wire harness of the header – Splices – Sheet 03 (55.100)**



87694682 4

CONNECTOR X-059 - Handbrake switch

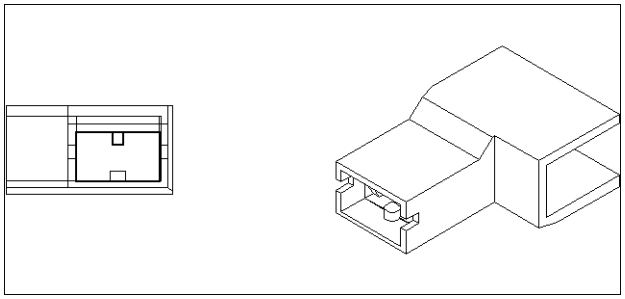
CONNECTOR X-059 - Handbrake switch			
PIN NUMBER	**WIRE NUMBER**	**CIRCUIT REFERENCE**	**ELECTRICAL SCHEMATIC FRAME**
1	CB-3014 (RD)	X-059 Handbrake switch X-046 Instrument cluster	**Wiring harnesses - Electrical schema Main wire harness of the header – Switches – Sheet 04 (55.100)**



87705127 3

CONNECTOR X-085 - Rear PTO Switch

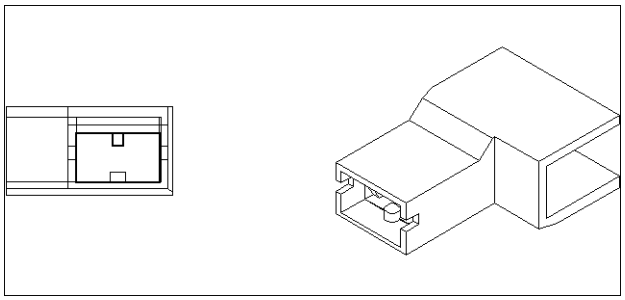
CONNECTOR X-085 - Rear PTO Switch			
PIN NUMBER	**WIRE NUMBER**	**CIRCUIT REFERENCE**	**ELECTRICAL SCHEMATIC FRAME**
T	CB-2042E (OR)	X-085 Rear PTO Switch SP-2042E	**Wiring harnesses - Electrical schema Main wire harness of the header – Switches – Sheet 04 (55.100)**



82944111 4

CONNECTOR X-086 - Rear PTO Switch

CONNECTOR X-086 - Rear PTO Switch			
PIN NUMBER	**WIRE NUMBER**	**CIRCUIT REFERENCE**	**ELECTRICAL SCHEMATIC FRAME**
T	CB-2042F (OR)	X-086 Rear PTO Switch K-017 PTO (F)	**Wiring harnesses - Electrical schema Main wire harness of the header – Switches – Sheet 04 (55.100)**



82944111 5

CONNECTOR X-087 - Rear PTO Switch

CONNECTOR X-087 - Rear PTO Switch			
PIN NUMBER	**WIRE NUMBER**	**CIRCUIT REFERENCE**	**ELECTRICAL SCHEMATIC FRAME**
+	CB-2042D (OR)	X-022 FUSES BOX X-087 Rear PTO Switch	**Wiring harnesses - Electrical schema – Main wire harness of the header – Relay and fuse compartment – Sheet 01 (55.100)**

Electrical components - Lamp description

TL60E 12x4, 4WD, new cab [HCCZTL60CFC438464 -]	LA
TL75E 12x12, 20x12, 4WD, new cab [HCCZTL75CFC437744 -]	LA
TL75E 12x4, 2WD, new cab [HCCZTL75CFC438464 -]	LA
TL85E 12x12, 20x12, 4WD, new cab [HCCZTL75CFC438464 -]	LA
TL85E 12x4, 12x12, 2WD, new cab [HCCZTL85CFC437744 -]	LA
TL95E 12x12, 20x12, 4WD, new cab [HCCZTL95EFC438464 -]	LA

E-001 - DIP/HIGH BEAM RH (Lamp)

Component Type	Lamp
Wiring frames	**SHEET 15**

E-002 - DIP/HIGH BEAM LH (Lamp)

Component Type	Lamp
Wiring frames	**SHEET 15**

E-005 - HOOD WORKLAMP RH (Lamp)

Component Type	Lamp
Wiring frames	**SHEET 15**

E-006 - HOOD WORKLAMP LH (Lamp)

Component Type	Lamp
Wiring frames	**SHEET 15**

E-008 - REVERSE LAMP (Lamp)

Component Type	Lamp
Wiring frames	**SHEET 12**
Connectors	**X-132 (Female)**

E-009 - REAR LAMP LH (Lamp)

Component Type	Lamp
Wiring frames	**SHEET 15**

E-012 - REAR LAMP RH (Lamp)

Component Type	Lamp
Wiring frames	**SHEET 15**

E-015 - FRONT SIGNAL RH (Lamp)

Component Type	Lamp
Wiring frames	**SHEET 15**

E-017 - FRONT SIGNAL LH (Lamp)

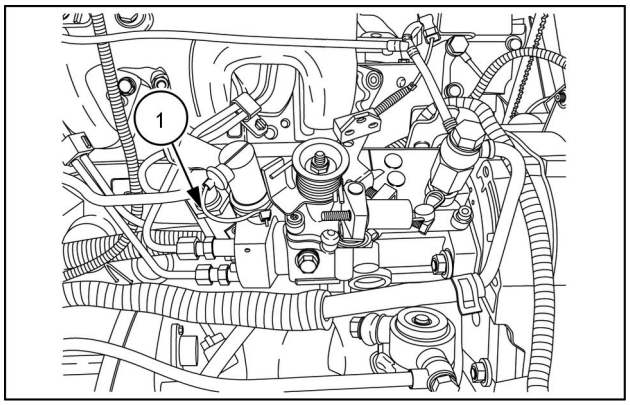
Component Type	Lamp
Wiring frames	**SHEET 15**

E-028 - LICENSE PLATE LAMP (Lamp)

Component Type	Lamp
Wiring frames	**SHEET 15**

Connectors	**X-032 (Female)** **X-049 (Female)**

5. Disconnect the solenoid wire **(1)** from the injection pump.
6. Ask someone to crank the starter motor. Observe the voltmeter and ammeter readings:
   - The voltage on the voltmeter must remain stable at **12 V**.
   - The current on the ammeter must be between **250 - 300 A**.
7. With the values obtained, do the following:
   - If the current demand is within specifications, the starter motor is working correctly.
   - If there is a voltage drop during the test, see the procedures indicated below.
   - If the demand for current is higher than that specified, check the circuit as specified below. If the starter system circuit tests do not prove satisfactory, then the starter motor is damaged and should be disassembled to determine the causes.
   - If the demand for current is lower than that specified, the starter motor is damaged and must be disassembled to determine the causes.

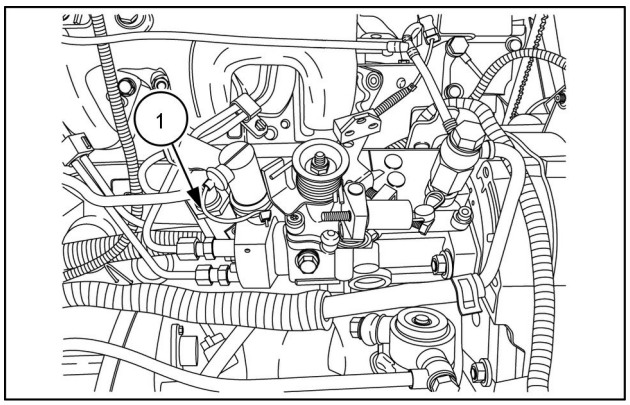


CUIL13TR00807AA 2

Starter system circuit resistance (Voltage drop)

If there is an excessive demand for current, the circuit must be checked noting the voltage drops in each circuit component.

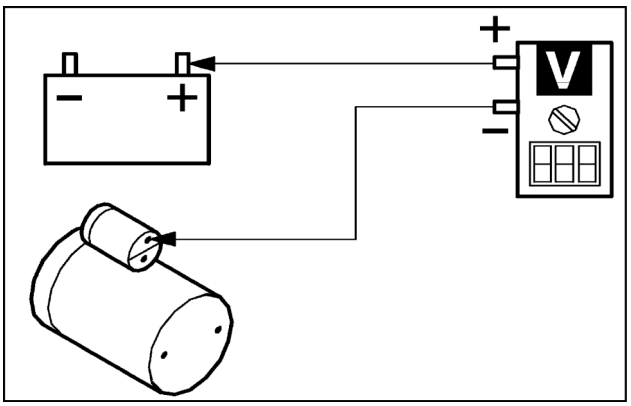
NOTICE: *Disconnect the wire **(1)** of the shut-off solenoid for the fuel injection pump.*



CUIL13TR00807AA 3

Battery positive wire

1. Connect the voltmeter positive wire to the battery positive terminal.
2. Connect the negative wire of the voltmeter to the starter motor solenoid battery terminal.
3. Ask someone to crank the starter motor. Observe the readings on the voltmeter:
   - If it is higher than **0.2 V**, check and tighten the wire connections. Check the voltage again. If it is still excessive, install new cables.



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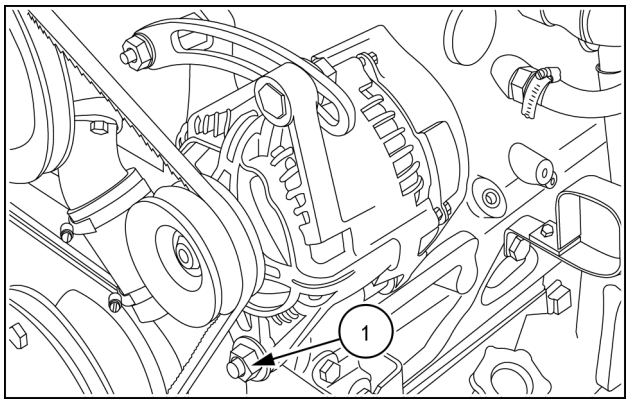
Alternator - 301

(*) See content for specific models

Alternator - Install

TL60E 12x4, 4WD, new cab [HCCZTL60CFC438464 -]	
TL60E Without cab, 12x4, 4WD [ZDCL05524 -]	
TL60E	LA
TL75E 12x12, 20x12, 4WD, new cab [HCCZTL75CFC437744 -]	
TL75E 12x4, 2WD, new cab [HCCZTL75CFC438464 -]	
TL75E Without cab, 2WD, 12x4 [ZDCY12367 -]	
TL75E	LA
TL85E 12x12, 20x12, 4WD, new cab [HCCZTL75CFC438464 -]	
TL85E 12x4, 12x12, 2WD, new cab [HCCZTL85CFC437744 -]	
TL85E Without cab, 2WD [ZEC134399 -]	
TL85E Without cab, 4WD [ZDCL04468 -]	
TL85E	LA
TL95E 12x12, 20x12, 4WD, new cab [HCCZTL95EFC438464 -]	
TL95E Without cab, 4WD [ZDC112512 -]	
TL95E	LA

1. Make sure that the negative cable of the battery is disconnected.
2. Position the alternator in its housing and install the through bolt. Install the nut **(1)** on the bolt.
3. Move the alternator to the side of the engine to enable installation of the belt on the alternator pulley.

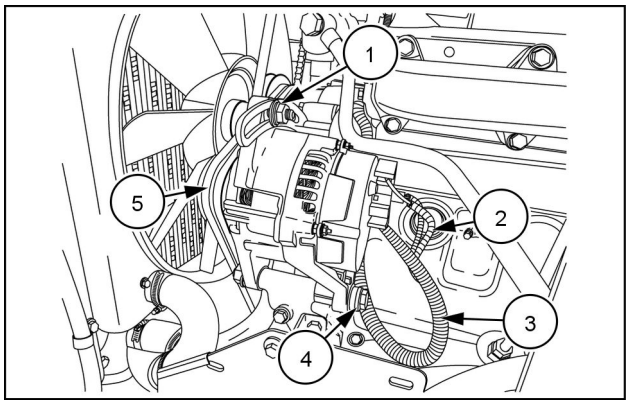


CUIL13TR00772AA 1

4. Install the belt **(5)** on the pulleys of the alternator, of the crankshaft and of the water pump.

NOTE: *If the machine has air conditioning, remove the air conditioning belt to enable installation of the alternator belt.*

5. Position the nut **(1)** in its housing.
6. Install all the electrical connections **(2)** and **(3)** located behind the alternator.
7. Adjust the tension of the alternator belt. See the procedures described in **Alternator drive system Belt - Tension adjust (55.301)**.



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Engine cooling system - 012

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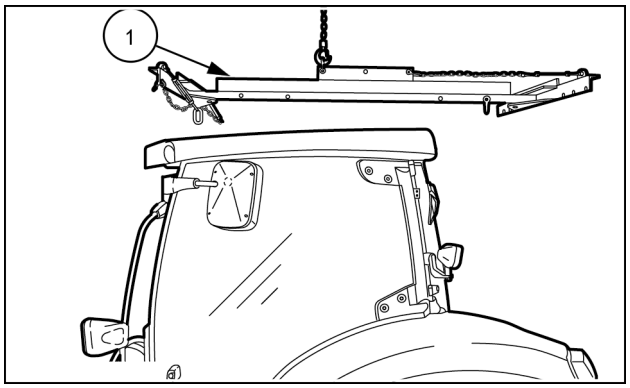
Parking brake electrical system - 031

Cab - Raise

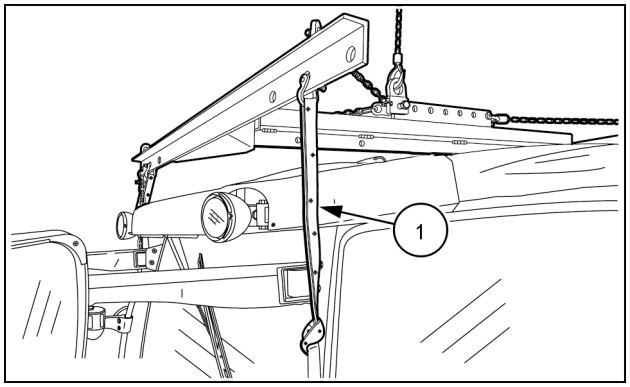
1. With the help of a suitable lifting device, position the lift bracket **380003353 (1)** above the cab.

NOTE: *Place protective material on the cab roof to prevent any damage.*



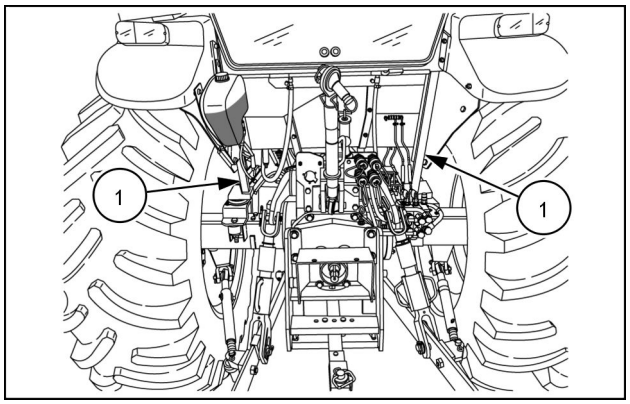
CUIL14TR00507AA 1

2. Attach the front of the lift frame **(1)** to the handrails.



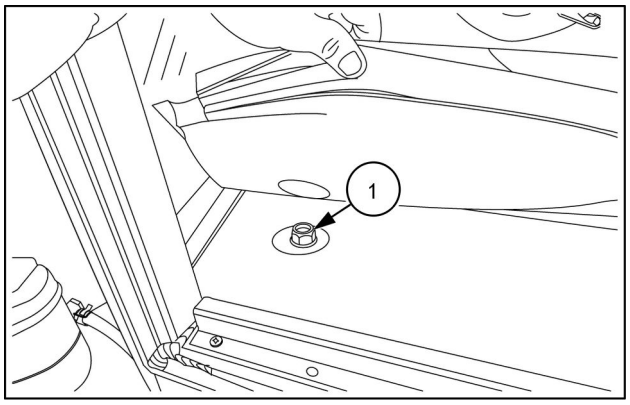
CUIL14TR00508AA 2

3. Attach the rear of the lift frame on the frames **(1)**.



CUIL13TR00499AA 3

4. Lift the carpet on the floor and remove the two bolts **(1)** (one on each side) that secure the cab to its supports.

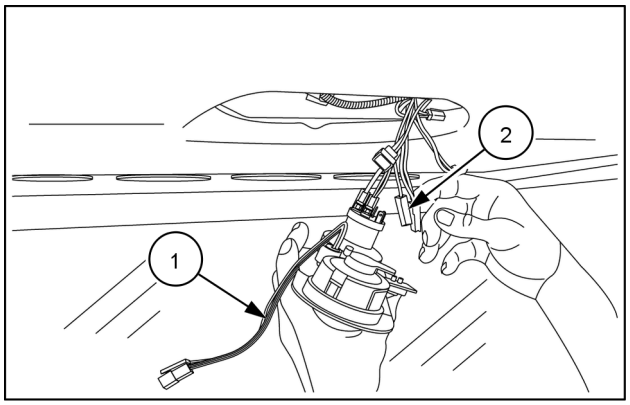


CUIL13TR00741AA 4

5. Remove the fuel tank. See **Fuel tank - Remove (10.216)**.

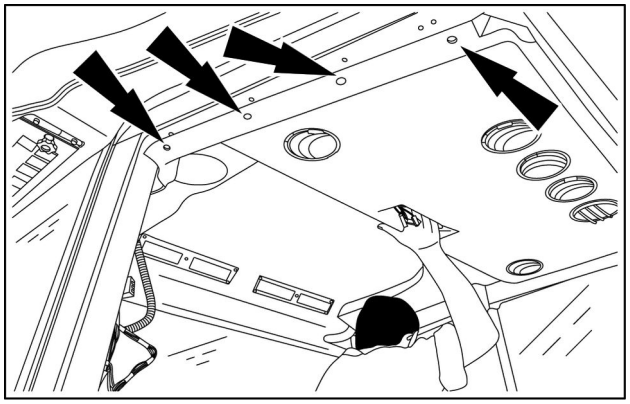
10. Disconnect the cables **(1)** from the thermostat for the air conditioner.
11. Disconnect the fan control cables **(2)**.

NOTE: *Identify the electrical components to facilitate assembly.*



CUIL13TR00756AA 5

12. Remove all the clips on the periphery of the roof indicated by the arrows in the figure to the side. Use a suitable tool to avoid damaging the lining.



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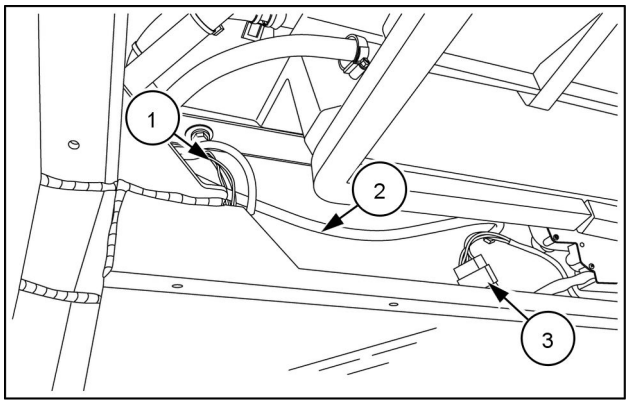
13. Remove the connector **(1)** for the four headlights on the cab roof. There is one connector at each corner of the roof.
14. Remove the connector **(3)** for the front windshield wiper motor.
15. Disconnect the washer hose **(2)** which is located next to the nozzle, to the side of the wiper motor.
16. Identify and remove the remaining electrical connectors on the inside of the roof. If necessary, see the wiring diagrams in **Wiring harnesses - Electrical schematic sheet 18 SH18 - ROOF COMPONENTS (55.100)**.
17. Drain a few liters of engine coolant.
18. Identify and disconnect the hoses **(3)** and **(4)** located on the left-hand side of the evaporator box.
19. Disconnect the two drain hoses from the connections **(1)** and **(2)**.



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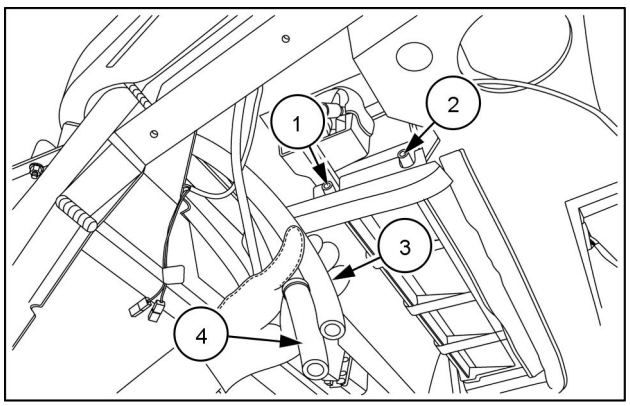
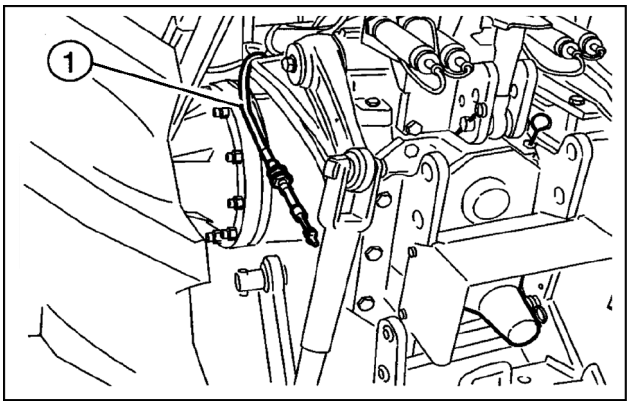


CUIL13TR00740AA 8

9. Remove the PTO speed selection rod **(1)**.



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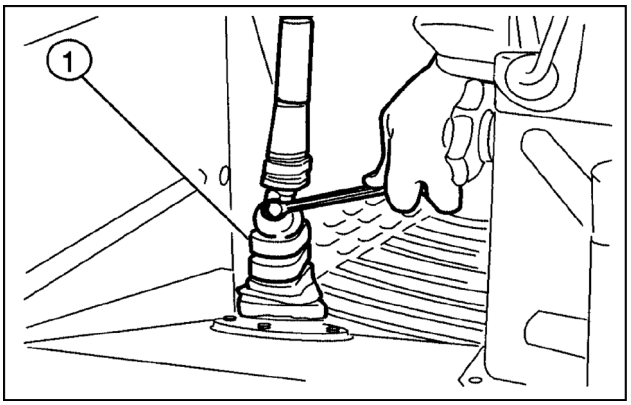
10. Move the cover away, loosen the fixing bolts and remove the reverse control lever **(1)**.



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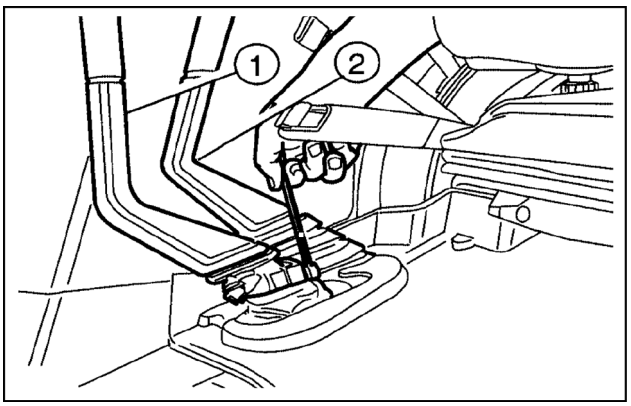
11. Lower the cover, loosen the fixing bolt and remove the gear selection lever **(1)**.
12. Lower the cover, loosen the fixing bolt and remove the range selection lever **(2)**.



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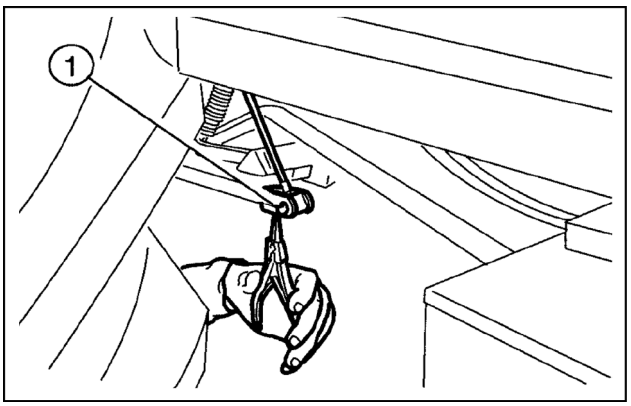
13. Remove the lock ring **(1)**, remove the pin and disconnect the hand brake control cable.



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