

Farmall® I 10A
Farmall® I 20A
Farmall® I 25A
Farmall® I 40A
Tractor

SERVICE MANUAL

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INTRODUCTION

Foreword - Ecology and the environment

Soil, air, and water are vital factors of agriculture and life in general. When legislation does not yet rule the treatment of some of the substances required by advanced technology, sound judgment should govern the use and disposal of products of a chemical and petrochemical nature.

NOTE: *The following are recommendations that may be of assistance:*

- Become acquainted with and ensure that you understand the relative legislation applicable to your country.
- Where no legislation exists, obtain information from suppliers of oils, filters, batteries, fuels, antifreeze, cleaning agents, etc., with regard to their effect on man and nature and how to safely store, use, and dispose of these substances.
- Agricultural consultants will, in many cases, be able to help you as well.

Helpful hints

- Avoid filling tanks using cans or inappropriate pressurized fuel delivery systems that may cause considerable spillage.
- In general, avoid skin contact with all fuels, oils, acids, solvents, etc. Most of them 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 draining off used engine coolant mixtures, engine, gearbox and hydraulic oils, brake fluids, etc. Do not mix drained brake fluids or fuels with lubricants. Store them safely until they can be disposed of in a proper way to comply with local legislation and available resources.
- Modern coolant mixtures, i.e. antifreeze and other additives, should be replaced every two years. They should not be allowed to get into the soil, but should be collected and disposed of properly.
- Do not open the air-conditioning system yourself. It contains gases that should not be released into the atmosphere. Your CASE IH AGRICULTURE dealer or air conditioning specialist has a special extractor for this purpose and will have to recharge the system properly.
- Repair any leaks or defects in the engine cooling 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 as penetrating weld splatter may burn a hole or weaken them, allowing the loss of oils, coolant, etc.

Safety rules

Important notice to operators

Your machine may be equipped with special guarding or other devices in compliance with local legislation. Some of the guarding or safety devices require active use by the operator.

Check local legislation on the usage of this machine.

Accident prevention

Farm accidents can be prevented with your help.

No accident prevention program can be successful without the wholehearted cooperation of the person who is directly responsible for the operation of the equipment.

To read accident reports from all over the country is to be convinced that a large number of accidents can be prevented only by the operator anticipating the result before the accident is caused and doing something about it.

It is said that "The best kind of safety device is a careful operator who with care and mature consideration can save more lives and limbs than any accident prevention program which is not adhered to".

Further in this chapter you will find a list of the most important safety precautions.

Take time to read and follow the instructions and furthermore, be careful!

Some pictures in this manual may show the safety guarding open or removed to better illustrate a particular feature or adjustment.

Ensure to close or replace all guards before operating the machine.

General and operating safety

Most farm machinery accidents can be avoided by the observance of a few simple safety precautions.

1. The machine must only be used by a skilled operator familiar with all the controls and harvesting techniques on cultivated land with slopes up to maximum **26 % (15 °)** uphill and downhill.
2. Do not permit anyone other than the operator to ride on the machine.
3. Before starting the engine, ensure everyone is clear of the machine.
4. Warn bystanders by sounding the horn several times.
5. Keep children away from and off the machine at all times.
6. No-one should be standing on the ladders when the machine is moving.
7. When driving on public roads, observe traffic regulations, adapt your speed to road and traffic conditions and ensure that all lights and other safety mechanisms on the machine (if they are required) are fitted and work properly. The grain tank must be empty when driving on the road. Ensure that the unloading tube is locked in its closed position.
8. Ensure that both brake pedals are locked together when travelling on public roads.
9. Ensure the hazard warning signs provided are installed at the front and the rear of the machine and use the rotating amber traffic warning beacon(s) (if equipped) when driving on public roads to indicate the vehicle is of abnormal size and is slow-moving.
10. Do not brake abruptly to avoid tipping of the machine.
11. Do not exceed **20 km/h (12.5 mph)** when driving downhill. If necessary, change into a lower gear before starting the descent.
12. Never travel at high speed in crowded areas.
13. Avoid making turns at high speed.
14. When driving on public roads, either with the grain header loaded on a trailer and attached to the rear of the machine, or with the grain header still attached to the machine (provided local legislation allows), always be aware and conscious of its size.

15. Before operating the machine ensure that all safety guards are installed.
16. Check the wheel nuts torque as described in MAINTENANCE.
17. Do not enter the grain tank while the machine engine is running. With engine stopped, use a wooden clearing club should the grain tank unloading auger become bridged. Take utmost care not to be pulled into the grain tank in case un-bridging is required.
18. Do not attempt to clean, lubricate or carry out any adjustments on the machine while it is in motion or while the engine is running.
19. Never leave the operator's platform without first disengaging the machine drive mechanism, lowering the header, stopping the engine, applying the park brake and removing the ignition key.
20. Do not work under the machine header unless it is securely blocked and/or the header safety latch is engaged.
21. Do not work around the machine in loose clothing that might catch in any of the moving parts.
22. Keep hands away from moving parts of the machine.
23. Keep the fire extinguisher within easy reach of the operator. Ensure to replace it by a similar type of extinguisher or have it checked or refilled after every usage and/or date of expiry.
24. Do not step on the grain tank extensions, covers, or the cab roof.
25. Machine dust can cause "farmer's lung" disease. It may also contain harmful spraying residues. Keep the cab door and window closed during operation. Wear a dust mask when cleaning the accumulated dust and debris on the machine.

Hydraulic system safety

- Hydraulic oil leaking under pressure can penetrate the skin and cause infection or other injury. To prevent personal injury:
 - Relieve all pressure before disconnecting fluid lines.
 - Before applying pressure, make sure all connections are tight and 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, seek medical attention immediately.
- The hydraulic hoses and fittings on your machine meet engineering specifications for the particular function. When replacing damaged, blown or worn hoses or fittings, use only manufacture authorized service parts.
- Care in hydraulic hose installation is a must:
 - Make sure pressure is relieved before starting installation procedure.
 - DO NOT kink or twist a hose, failure may occur.
 - Properly route the hose.
 - Have a certified hydraulic technician install the hose.
 - Remove air from the hydraulic system after installing any hydraulic component.
- Periodically check hydraulic system for leaks or damage. check for:
 - Leaks at hose fitting or in hose.
 - Damaged hoses and/or fittings.
 - Kinked, crushed, flattened, hard blistered, heat cracked, charred, twisted, soft or loose covered hoses.
 - Corroded or damaged fittings.
 - Leaking ports.
 - Excessive dirt and debris around hoses and/or fittings.
 - Damaged or missing hose retaining clamps, guards, shields, etc.
- DO NOT stand on or use a hose as a step. DO NOT pull or apply external forces to the hose. The hose may fail and cause injury.
- Keep all persons away from the working area. Mechanisms controlled by fluid power can become hazardous if a hose fails. Lifted mechanisms can fall to the ground, machine steering may fail, etc.

- Stay clear of a pressurized hose assembly that has blown apart. Hose fittings can be thrown off at high speed and a loose hose can whip around with great force.
- Hydraulic fluid can reach high temperatures. Allow fluid to cool before servicing the system.
- Escaping fluid under pressure may form a mist or fine spray which can flash or explode upon contact with an ignition source.
- Vibration can reduce hose service life. Make sure all retaining clamps and/or devices are secured.
- Environmental conditions can cause hose and fittings to deteriorate. Inspect hydraulic hoses periodically. Replace worn or damaged hoses and fittings.

Safety requirements for fluid power systems and components - Hydraulics (European standard PR EN 982)

Flexible hose assemblies must not be constructed from hoses which have been previously used as part of a hose assembly.

Do not weld hydraulic piping.

When flexible hoses or piping are damaged, replace them immediately.

It is forbidden to modify a hydraulic accumulator by machining, welding or any other means.

Before removing hydraulic accumulators for servicing, the liquid pressure in the accumulator must be reduced to zero.

Pressure check on hydraulic accumulators shall be carried out by method recommended by the accumulator manufacturer.

Care must be taken not to exceed the maximum allowable pressure of the accumulator. After any check of adjustment there must be no leakage of gas.

Danger of death by electrocution!

Pay special attention to the overhead power lines. Make sure the machine has sufficient clearance to pass in all directions (also with raised or opened machine components). Also think of the radio aerial(s) or any other factory-fitted accessory or parts which may have been added afterwards.

Should a contact between the machine and an electric power line occur, then the following precautions must be taken: Stop the machine movement immediately, stop the engine and apply the hand-brake or parking brake.

Check if you can safely leave the cab or your actual position without direct contact with electric wires. If not, stay in your position and call for help. If you can leave your position without touching the lines, jump off the last step or support position to ensure that there is no contact between any part of your body and the ground at any time. Do not touch the machine afterwards until power to the lines has been shut off. When people approach the machine, warn them not to touch the machine but to ask the electric power supply company to shut off the power to the lines.

Engine safety

1. Keep the engine area clean of dust, chaff and straw to prevent the possibility of fires.
2. Never idle the engine in an enclosed area as harmful exhaust gases may build up.
3. Wear a suitable hearing protective device, such as ear muffs or ear plugs, if you are exposed to noise which you feel is uncomfortable.
4. The cooling system operates under pressure which is controlled by the radiator cap. It is dangerous to remove the cap while the engine is hot.
5. Switch off the engine and wait until it has cooled. Even then use extreme care when removing the cap. Cover the cap with a rag and turn it slowly to the first stop to allow the pressure to escape before removing the cap completely. Stand clear of the radiator opening as hot coolant may splash out.
6. Never add cold water to a hot radiator. Failure to follow these instructions may result in serious personal injury from hot coolant or steam blowout and/or damage to the cooling system or engine.

7. Antifreeze contains monoethylene glycol and other chemicals which are toxic if taken internally and can be absorbed in toxic amounts through repeated or prolonged skin contact. Follow these precautions when working with antifreeze:
8. Do not take antifreeze internally. If antifreeze is swallowed accidentally, obtain medical attention immediately.
9. Keep antifreeze in sealed containers out of reach of children, livestock or pets.
10. Periodically check the engine coolant and heater hoses for signs of wear, deterioration, weak sections and leaks to avoid hazardous situations and possible injury caused by hot coolant.
11. The fuel oil in the injection system is under high pressure and can penetrate the skin. Unqualified persons should not remove or attempt to adjust a fuel injection pump, injector, nozzle or any other part of the fuel injection system. Failure to follow these instructions may result in serious injury. If fuel is injected through the skin, medical assistance should be obtained.
12. Be very careful to avoid contact with hot engine oil. If the engine oil is extremely hot, allow the oil to cool to a moderately warm temperature for safe removal.
13. Do not handle a hot oil filter with bare hands.
14. Continuous and prolonged contact with used engine oil may cause skin cancer. Protect your skin by wearing heavy plastic gloves. If oil gets onto the skin, wash promptly with soap and water.

Diesel fuel safety

1. Under no circumstances should gasoline, alcohol or blended fuels be added to diesel fuel. These combinations can create an increased fire or explosive hazard. In a closed container, such as a fuel tank, such blends are more explosive than pure gasoline. Do not use these blends.
2. Never remove the fuel tank cap or refuel with the engine running or hot. Refuel the machine only when the engine has been turned off. Do not smoke or use a naked flame when refuelling or when standing near fuel tanks.
3. Maintain control of the fuel filler pipe nozzle when filling the tank.
4. Do not fill the fuel tank to capacity. Allow room for expansion.
5. Wipe up spilled fuel immediately.
6. Always tighten the fuel tank cap securely.
7. If the original fuel tank cap is lost, replace it with an CASE IH AGRICULTURE cap. A non-approved, proprietary cap may not be safe.
8. Keep equipment clean and properly maintained.
9. Do not drive equipment near open fires.
10. Never use fuel for cleaning purposes.

Battery safety

WARNING

Explosion hazard!

Batteries emit explosive gases. Always ventilate when using in an enclosed area or when charging.

Keep the battery away from sparks, open flames, and other ignition sources.

Failure to comply could result in death or serious injury.

W0369A

WARNING

Battery acid causes burns. Batteries contain sulfuric acid.

Battery electrolyte contains sulfuric acid. Contact with skin and eyes could result in severe irritation and burns. Always wear splash-proof goggles and protective clothing (gloves and aprons). Wash hands after handling.

Failure to comply could result in death or serious injury.

W0120A

The essential precautions listed below must be observed:

- Do not use an open flame to check the electrolyte level. Keep sparks, flames and lighted tobacco away.
- Do not produce sparks with cable clamps when charging the battery or starting the engine with a slave battery.

- Wear eye protection when working near batteries.
- Wear eye protection and gloves if removing the battery cover plugs.
- Provide ventilation when charging or using in an enclosed space.
- Ensure the vent plugs are correctly installed and tight.

If the electrolyte comes into contact with the skin, eyes or is taken internally, treat as follows:

- Skin: Flush with cold water.
- Eyes: Flush with cold water for 10 minutes and get prompt medical attention.
- Internal: Call a doctor immediately.

Fire and explosion prevention

- Due to the flammable nature of the crop materials encountered, fire risks are high. This risk can be minimized by frequent removal of accumulated crop material from the machine and checking for overheated machine components. If oil leaks appear, re-torque bolts or replace gaskets as necessary.
- Remove all trash or debris from the machine each day. Especially check the engine area and exhaust system.
- Sparks or flame can cause the hydrogen gas in a battery to explode. To prevent an explosion do the following:
 - When disconnecting the battery cables, disconnect the negative (—) cable first; when connecting the battery cables, connect the negative (—) cable last.
 - When connecting jumper cables to start the engine, use the procedure shown in this manual (see Auxiliary Battery connections in this manual).
 - Do not short circuit the battery posts with metal items.
 - Do not weld, grind or smoke near a battery.
- Sparks from the electrical system or engine exhaust can cause an explosion and fire. Before you operate this machine in an area with flammable dust or vapors, use good ventilation to remove the flammable dust or vapors.
- Use nonflammable cleaning solvent to clean parts.
- A fire can cause death or injury. Always have fire extinguisher near or on the machine. Make sure the fire extinguishers are serviced according to the manufacturers instructions.
- If a fire extinguisher has been used, always recharge or replace the fire extinguisher before operating the machine.
- Keep the cooling system clean and maintain the correct coolant level.
- Make sure that you DO NOT store oily rags or other flammable materials on the machine.
- Engine fuel can cause an explosion or fire. Do not fill the fuel tank with the engine running; if you are near an open fire; or if you are welding, smoking, etc.
- If the machine has an oil, fuel or hydraulic leak, always repair the leak and clean the area before operating.
- Check the electrical system for loose connections or frayed insulation. Repair or replace the loose or damaged parts.
- Before welding or using a torch on the machine, clean the area to be repaired.

Wheels and tires

The life and performance of the tires depends largely upon maintaining the correct pressure. Keep the tires inflated to the pressures given in SPECIFICATIONS.

Check the wheel nuts torque daily during the first week of operation and thereafter on a weekly basis.

The wheel nut torque is given in SPECIFICATIONS.

Whenever preparing to jack-up the machine, park on a level, firm surface and securely block the drive tire opposite the side to be lifted, both in front and rear.



SERVICE MANUAL

Engine

**Farmall 110A
Farmall 120A
Farmall 125A
Farmall 140A**

Engine - Remove

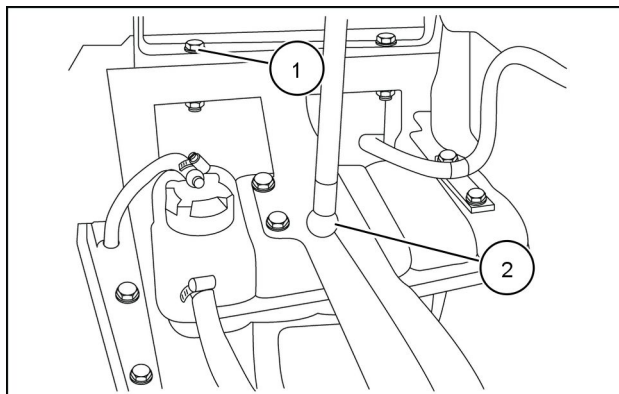
Prior operation:

Gearbox - Remove (23.304)

Prior operation:

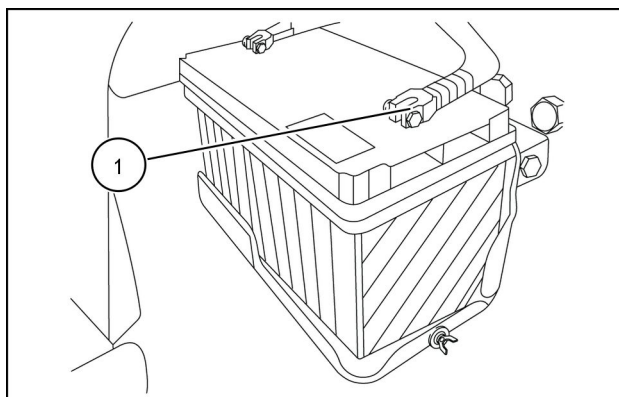
Cab and platform - Remove (90.150)

1. Disconnect the wiring connector from the hood harness then remove the two bolts (1) and the hood stabilizer cylinder (2).



83113061 1

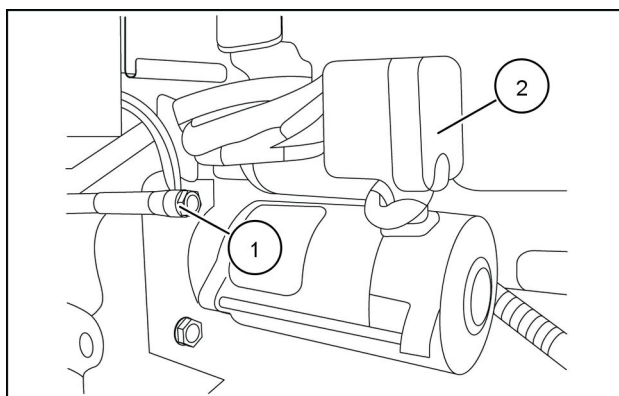
2. Disconnect the (negative) battery cable (1).



83113062 2

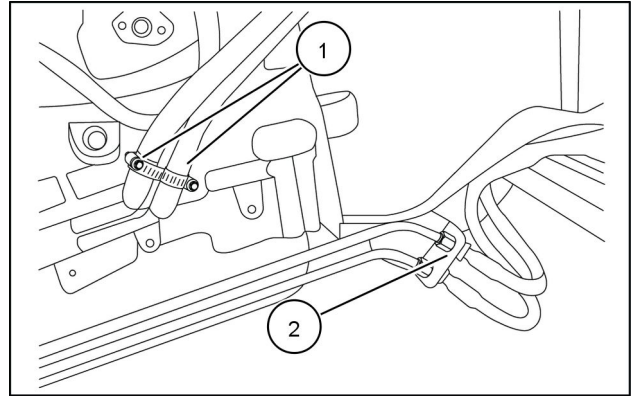
3. Disconnect the main ground wire (1) from the chassis and positive cable (2) from the starter solenoid.

NOTE: Remove front ballast weights if equipped.



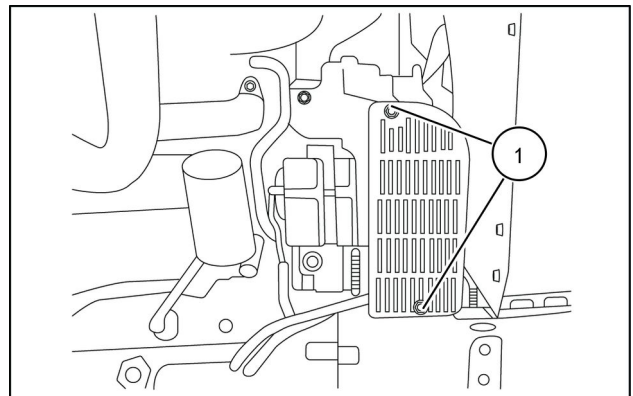
83113063 3

4. Disconnect the steering cylinder lines **(2)** and transmission cooler lines **(1)**.



83113064 4

5. Disconnect the two bolts that secure the right-hand side shield **(1)**.

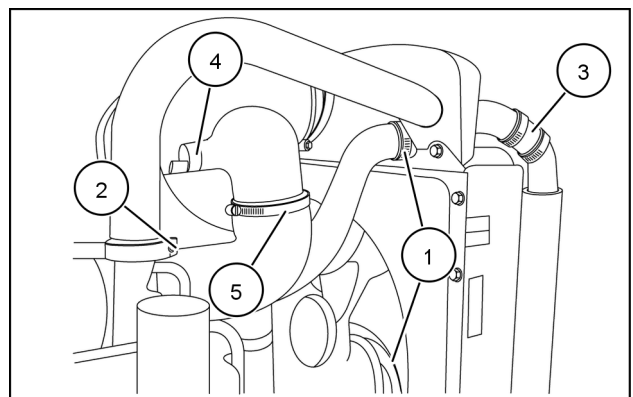


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6. **⚠ WARNING**

Hazardous chemicals!
Coolant can be toxic. Avoid contact with skin, eyes, and clothing. Antidotes:
EXTERNAL - Rinse thoroughly with water. Remove soiled clothing.
INTERNAL - Rinse the mouth with water. **DO NOT** induce vomiting. Seek immediate medical attention.
EYES - Flush with water. Seek immediate medical attention.
Failure to comply could result in death or serious injury.

W0282A

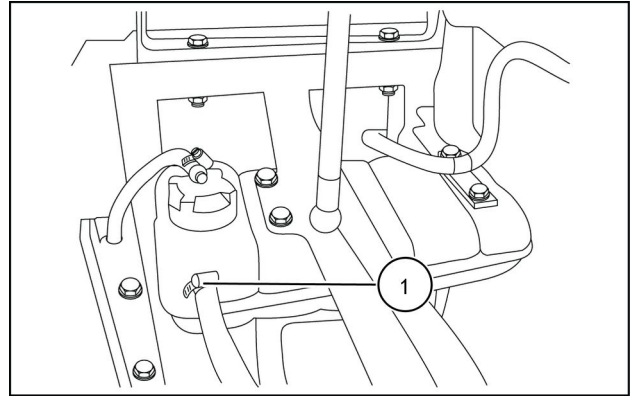


83113066 6

Drain the coolant from the cooling system/radiator **(1)**.

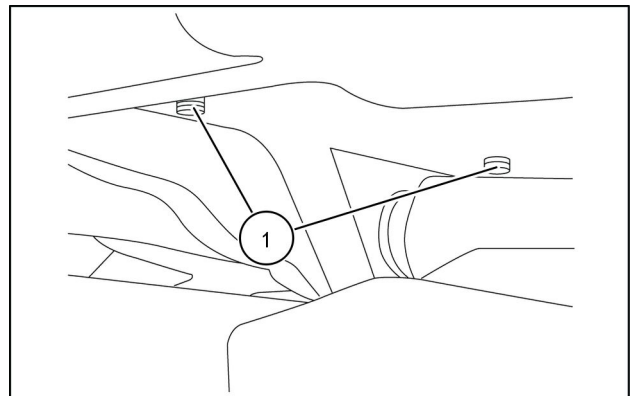
7. Remove the radiator hose.
8. Remove the turbo intercooler tubes, **(2)** and **(3)**, then disconnect the air cleaner restriction switch **(4)**.
9. Remove the air intake hose **(5)**.

10. Disconnect the coolant reservoir to radiator line **(1)**.



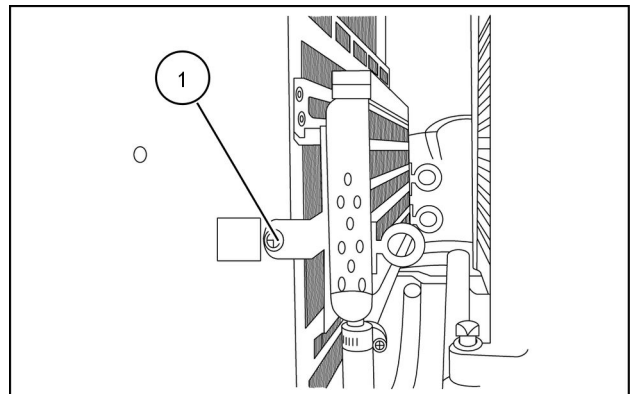
83113061 7

11. Remove the radiator support to bolster mounting bolts **(1)**.



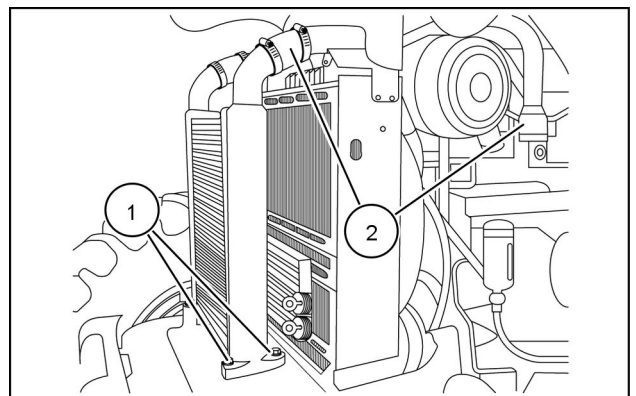
83113067 8

12. Loosen the screw **(1)** and slide the oil cooler out as far as possible.



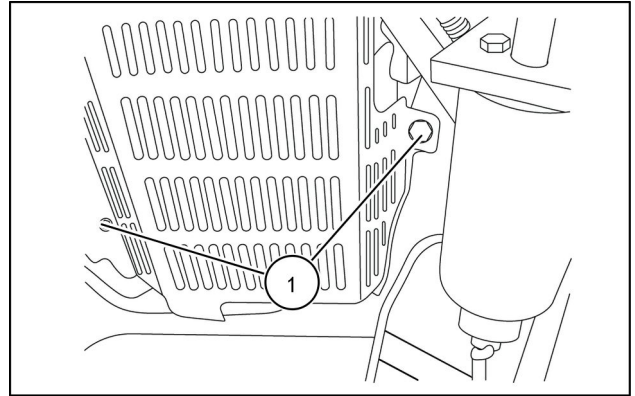
83113068 9

13. Remove the mounting bolts **(1)** from the intercooler.
14. Remove the intercooler to intake manifold tube **(2)**.



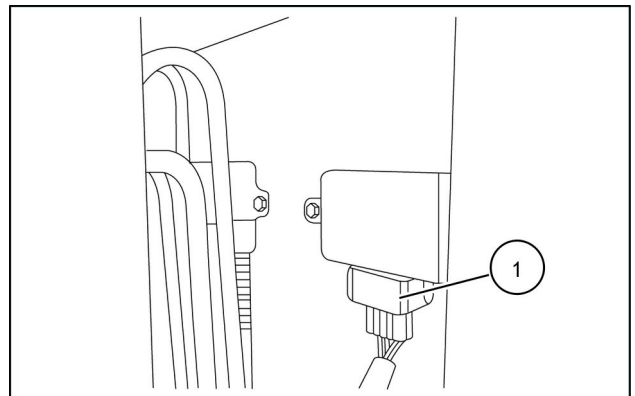
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15. Remove the left-hand shield by removing the two bolts (1).



83113078 11

16. Disconnect the relay electrical connector (1).



83113070 12

17. **⚠ WARNING**

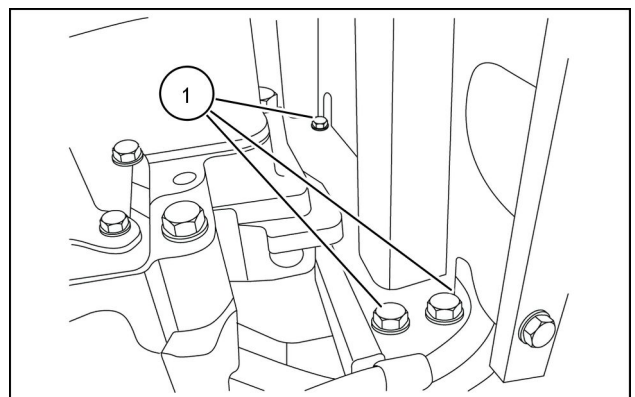
Uncontrolled equipment movement!
Put adequate wheel chocks against the front and rear of both traction and steering wheels to avoid machine movement. Failure to comply could result in death or serious injury.

W0981A

- ⚠ WARNING**

Unexpected machine movement!
If you are supporting any wheel(s) of a four-wheel drive machine on a stand, NEVER attempt to start the engine or rotate a wheel. The wheels could move, causing the machine to fall from the stand. Instead, support all wheels so they are just clear of the ground. Failure to comply could result in death or serious injury.

W0429A

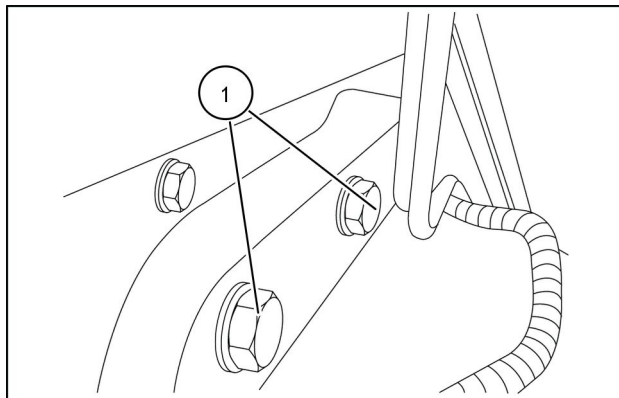


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Install an engine stand to support the engine while it is separated from the tractor transmission.

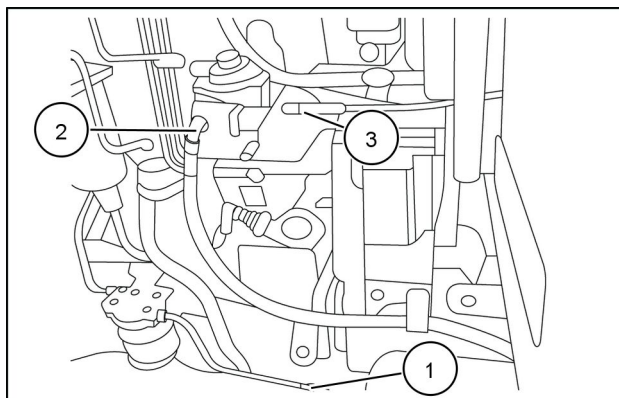
18. Remove the bolts (1) that secure the engine hood support to the engine.

19. Remove the two upper engine to transmission mounting bolts (1).



83113072 14

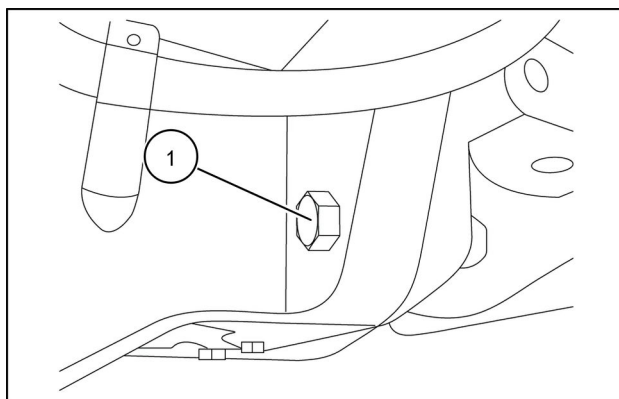
20. Disconnect the fuel delivery and return lines, (1) and (2).
21. Remove the throttle linkage from the fuel injection pump (3).



83113073 15

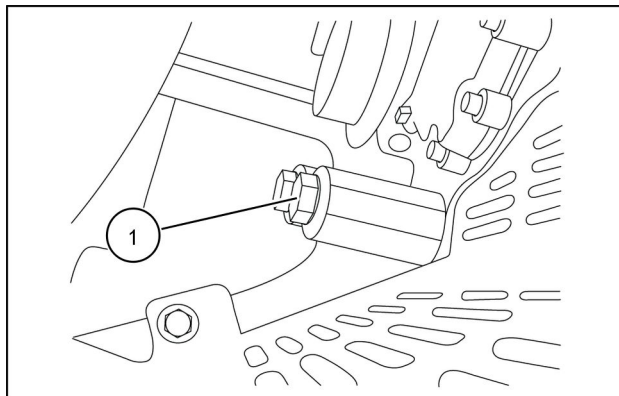
22. Remove the lower engine to transmission mounting bolts (1).

NOTE: Insure that no harness, tubes or lines of any sort will prevent engine separation.



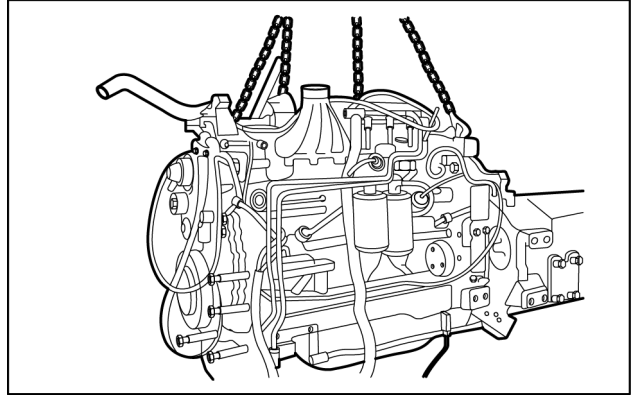
83113074 16

23. Using an appropriate tool to support the front bolster, remove the engine to bolster mounting bolts (1).



83113075 17

24. Using an appropriate lifting device, separate the engine from the transmission as shown.



LAIL11TS0008A0A 18

Next operation:
Engine - Install (10.001)

Engine - Install

1. **⚠ DANGER**

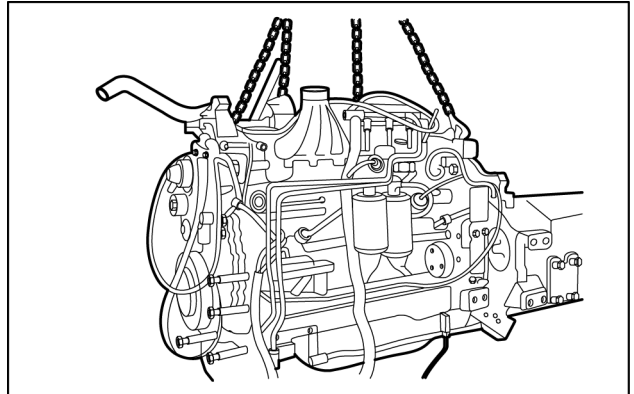
Heavy parts!
Support designated component(s) with adequate lifting equipment.
Failure to comply will result in death or serious injury.

D0018A

⚠ 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.

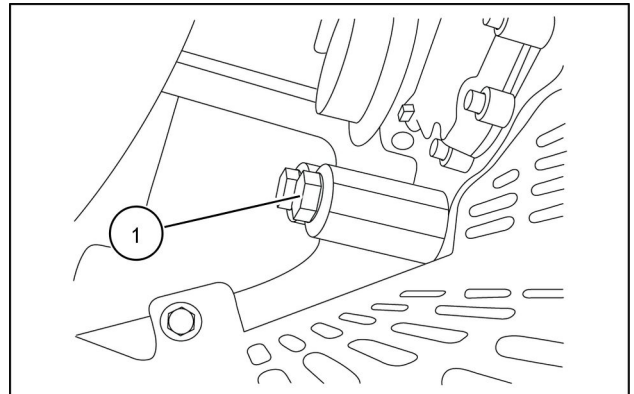
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Using an appropriate lifting device, align the engine to the transmission as shown.

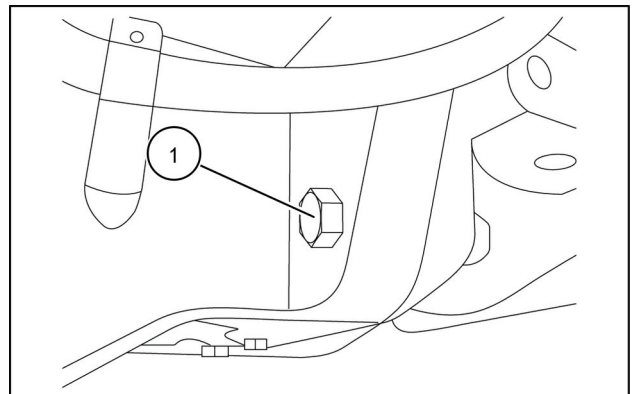
2. Using an appropriate tool to support the front bolster, install the engine to bolster mounting bolts (1).



83113075 2

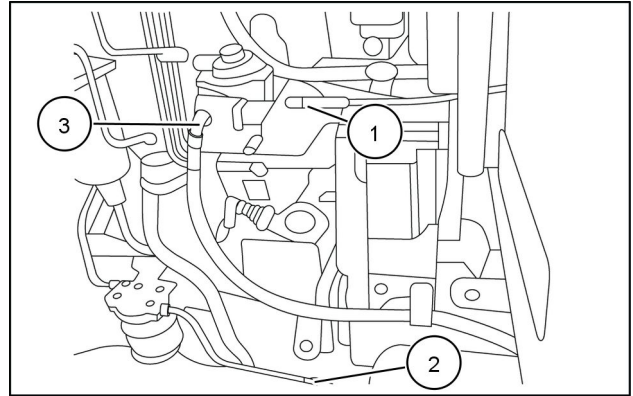
3. Install the lower engine to transmission mounting bolts (1).

NOTE: Insure that no harness, tubes or lines of any sort are in between mated parts.



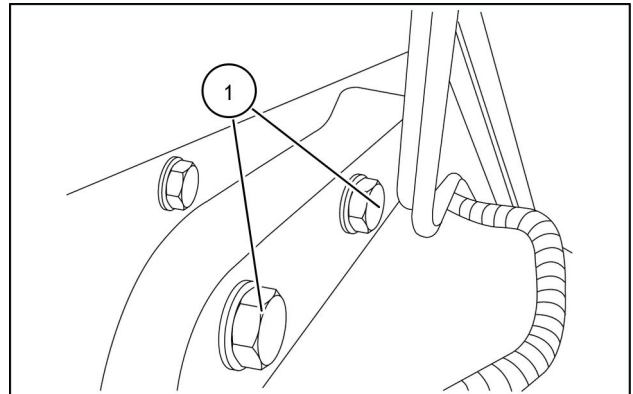
83113074 3

4. Install the throttle linkage to the fuel injection pump **(1)**.
5. Connect the fuel delivery and return lines, **(2)** and **(3)**.



83113073 4

6. Install the two upper engine to transmission mounting bolts **(1)**.



83113072 5

7. Install the bolts **(1)** that secure the engine hood support to the engine.

8. **⚠ WARNING**

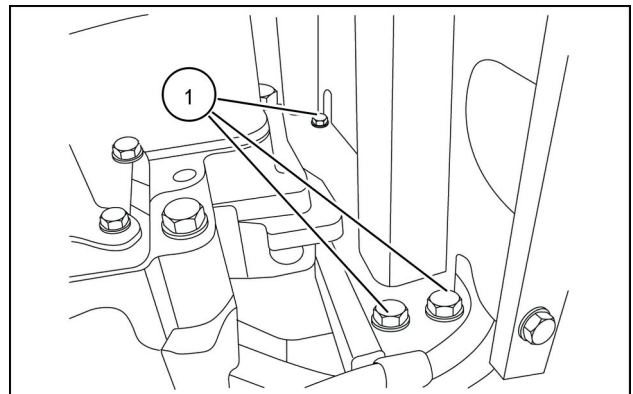
Uncontrolled equipment movement!
Put adequate wheel chocks against the front and rear of both traction and steering wheels to avoid machine movement. Failure to comply could result in death or serious injury.

W0981A

⚠ WARNING

Unexpected machine movement!
If you are supporting any wheel(s) of a four-wheel drive machine on a stand, **NEVER** attempt to start the engine or rotate a wheel. The wheels could move, causing the machine to fall from the stand. Instead, support all wheels so they are just clear of the ground. Failure to comply could result in death or serious injury.

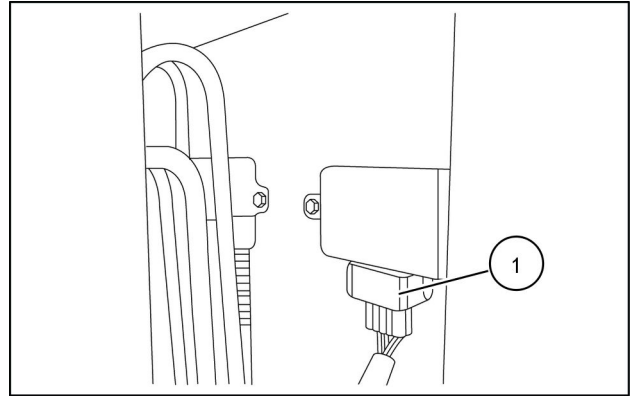
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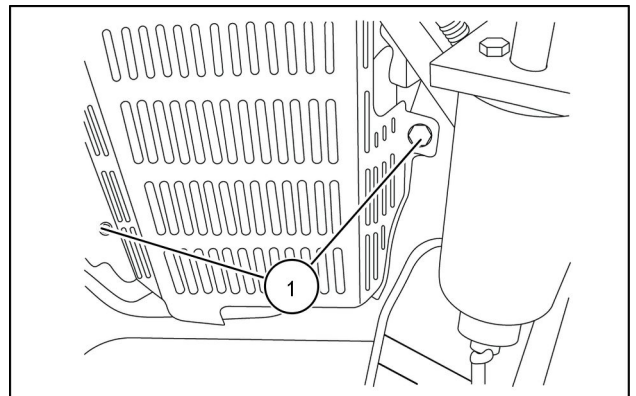
Install an engine stand to support the engine while it is being attached to the tractor transmission.

9. Connect the relay electrical connector **(1)**.



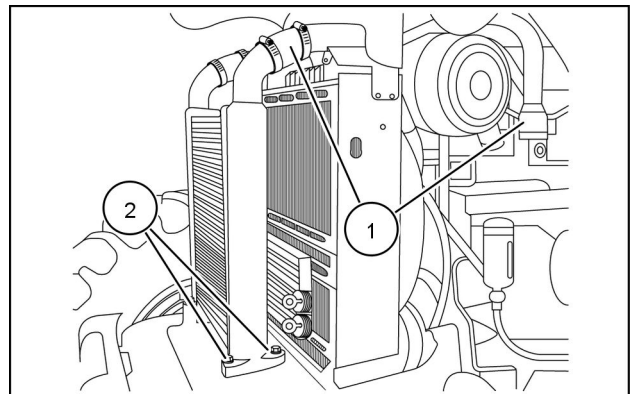
83113070 7

10. Secure the left-hand shield by installing the two bolts **(1)**.



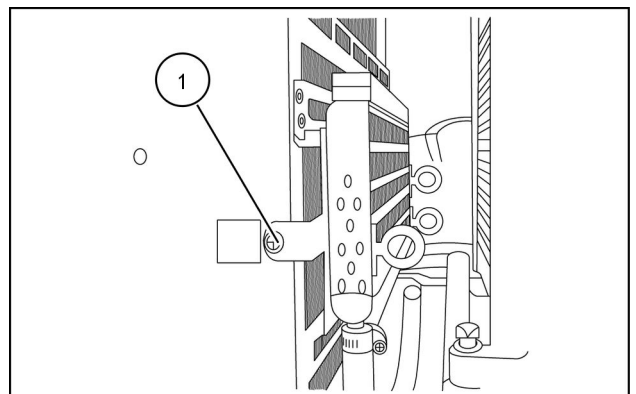
83113078 8

11. Install the intercooler to intake manifold tube **(1)**.
12. Remove the mounting bolts **(2)** from the intercooler.



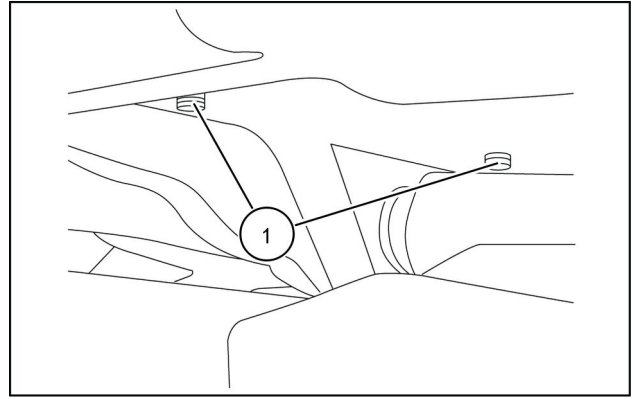
83113069 9

13. Slide the oil cooler in as far as possible and then tighten the screw **(1)**.



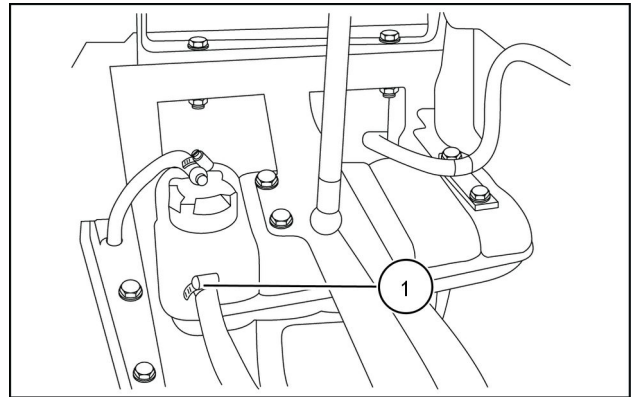
83113068 10

14. Install the radiator support to bolster mounting bolts **(1)**.



83113067 11

15. Connect the coolant reservoir to radiator line **(1)**.

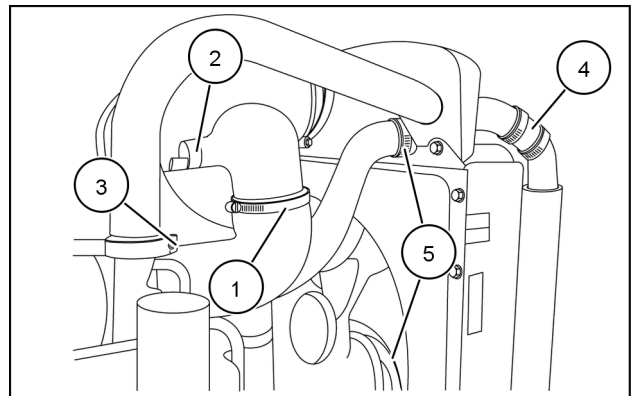


83113061 12

16. Install the air intake hose **(1)**.
17. Connect the air cleaner restriction switch **(2)** and the install the turbo intercooler tubes, **(3)** and **(4)**.
18. Install the radiator hose.
19. **⚠ WARNING**

Hazardous chemicals!
Coolant can be toxic. Avoid contact with skin, eyes, and clothing. Antidotes:
EXTERNAL - Rinse thoroughly with water. Remove soiled clothing.
INTERNAL - Rinse the mouth with water. DO NOT induce vomiting. Seek immediate medical attention.
EYES - Flush with water. Seek immediate medical attention.
Failure to comply could result in death or serious injury.

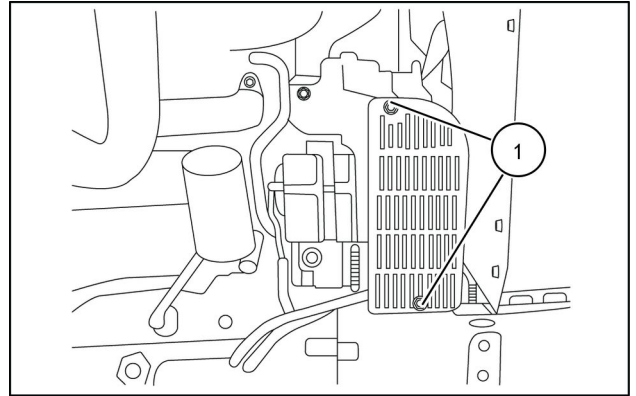
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83113066 13

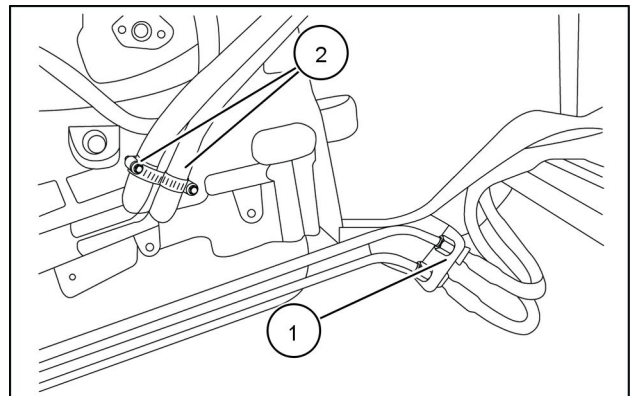
Fill the cooling system/radiator **(5)** with coolant.

20. Connect the two bolts that secure the right-hand side shield (1).



83113065 14

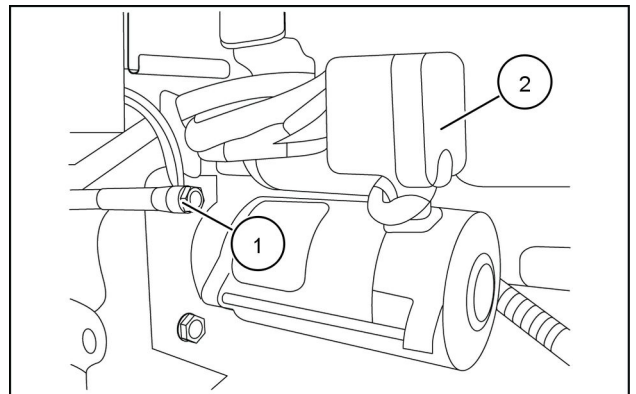
21. Connect the steering cylinder lines (1) and transmission cooler lines (2).



83113064 15

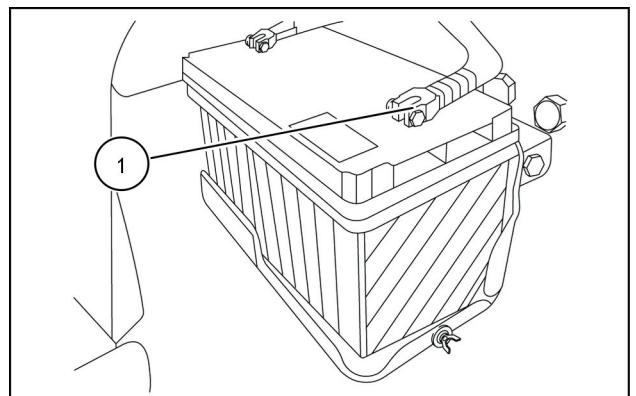
22. Connect the main ground wire (1) from the chassis and positive cable (2) from the starter solenoid.

NOTE: Install front ballast weights if equipped.



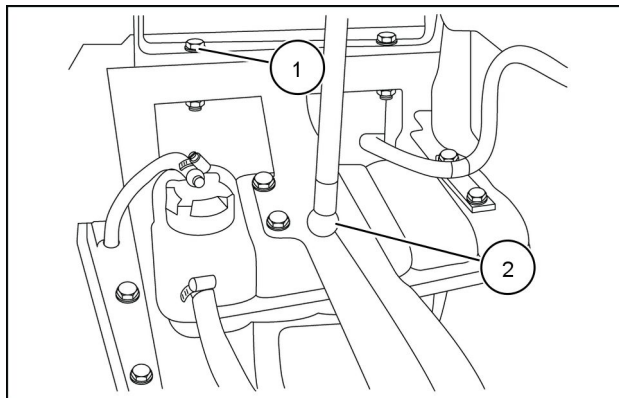
83113063 16

23. Connect the (negative) battery cable (1).



83113062 17

24. Install the two bolts **(1)** and the hood stabilizer cylinder **(2)** then connect the wiring connector to the hood harness.



83113061 18

Next operation:
Cab and platform - Install (90.150)

Clutch - Overview

Description

The units with 8x8 mechanical shuttle transmissions use a conventional clutch to connect engine power to the transmission. The clutch is conventionally located at the front of the transmission, connecting the engine to the transmission input shaft.

The clutch system is comprised of the following components:

- Clutch disc
- Pressure plate
- Pilot bearing
- Release bearing

The clutch system is a cable operated single plate clutch with a **330.2 mm (13 in)** non-asbestos dry friction disc, designed for high durability and low-effort operation. The pressure plate is a diaphragm spring type, which is self-adjusting and requires no maintenance.

Operation

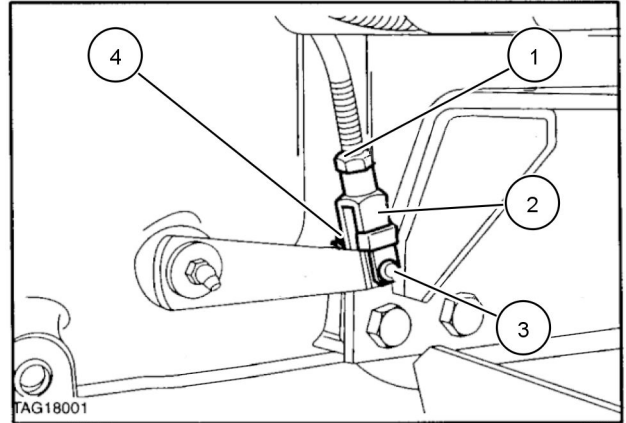
With the clutch engaged, the spring loaded pressure plate forces the clutch disc into contact with the engine flywheel. The frictional contact between the clutch disc material and the surfaces of the flywheel and pressure plate transmits drive from the flywheel, via the clutch disc, to the input shaft of the transmission. A cable connects the clutch pedal to the release bearing. The release bearing contacts the operating fingers of the pressure plate.

Depression of the clutch pedal causes the release bearing to move forward and depress the pressure plate diaphragm, thus drawing the pressure plate away from the clutch disc and releasing the disc from contact with the flywheel. The frictional drive from the engine to the transmission is thereby disconnected. When the clutch pedal is released, a spring returns the pedal to its free position and the release bearing is drawn away from the release levers of the pressure plate assembly. The main springs of the pressure plate assembly then re-assert pressure on the pressure plate moving it towards the friction disc and into contact with the flywheel, which re-establishes the drive between engine and transmission.

Clutch - Adjust

The only adjustment the clutch requires is a periodic adjusting of the free travel of the pedal. This is the movement in which the pedal goes from being totally loose to the point when it encounters resistance. This is the only adjustment required for the mechanical clutch.

1. Measure the free travel of the clutch pedal. Specification is **28 - 41 mm (1.102 - 1.614 in)**.



20087234 1

2. If free travel is not within specifications:
 - A. Loosen the locknut **(1)** on the clutch rod assembly **(2)**.
 - B. Remove the split (cotter) pin **(4)** and the clevis pin **(3)** securing the clutch rod assembly to the clutch release shaft assembly.
 - C. Make the necessary adjustments.
 - D. Install a new split pin and the clevis pin. Make sure the clevis pin is installed with the cotter pin side **AWAY** from the fuel tank.
 - E. Tighten the locknut to a torque of **34 N·m (25 lb ft)**.

Next operation:

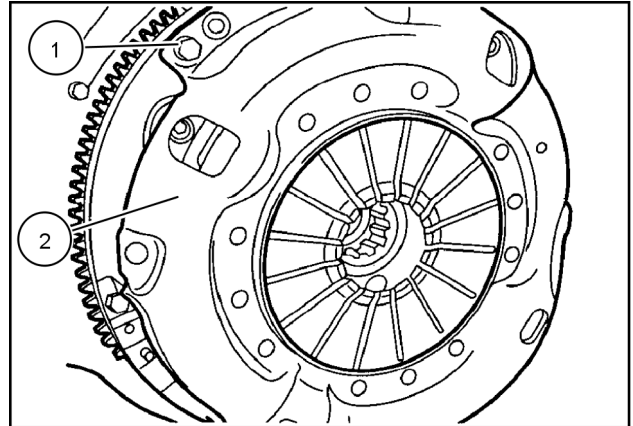
Clutch - Remove (18.110)

Clutch - Remove

1. Separate the engine and the transmission.
2. Remove the bolts (1) that affix the pressure plate and cover (2) to the flywheel.

NOTE: Loosen the bolts equally and diagonally to avoid distortion of the cover.

3. Remove the pressure plate and the clutch disc.



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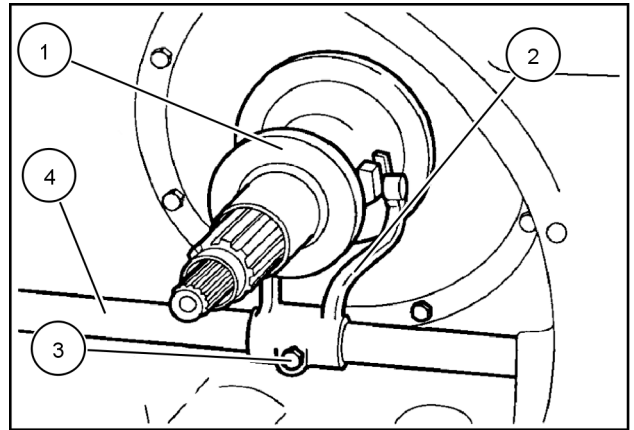
Next operation:
Clutch - Disassemble (18.110)

Clutch - Disassemble

Prior operation:

Clutch - Remove (18.110)

1. Remove the clutch release fork setscrew **(3)**.
2. Remove the clutch release shaft **(4)** from the box.
3. Remove the fork **(2)** from the transmission.
4. Push out the thrust bearing **(1)** and hub assembly from the clutch hub support.



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Next operation:

Clutch - Inspect (18.110)

Clutch - Inspect

Prior operation:

Clutch - Disassemble (18.110)

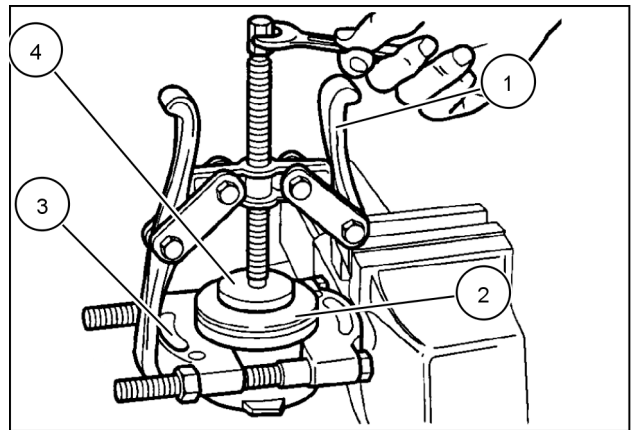
1. Inspect the friction disc. Make sure the linings are not loose, cracked, worn out or dirtied by oil. Check the rivets. If there are signs of overheating due to clutch slippage, replace the disc with a new one.

NOTE: Investigate reason for any oil or grease on surfaces. Repair before mounting new disc.

2. Inspect pressure plate. Check that all pins are the same height, that there is no discoloration due to overheating, and that the entire assembly works properly. Check for cracks, scratches or distortion on the surface of the pressure plate. Dispose of pressure plate if any of the above failures are found.

NOTE: The diaphragm clutch has no replacement parts. Replace the whole assembly if any problem is found during inspection.

3. Make sure the thrust bearing and hub move freely inside the hub support. Ensure the bearing rotates smoothly and that external side is not damaged or worn out. Look for cracks or distortion on clutch release fork. For example, make sure that all the pins are aligned and not worn out. Remove and replace any broken or defective parts.
4. If needed, check the thrust bearing. Use a puller (1) with a suitable attachment (3) and a stack plate (4) to separate the thrust bearing (2) from the hub.



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Next operation:

Clutch - Assemble (18.110)



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Clutch - Assemble

Prior operation:

Clutch - Inspect (18.110)

1. Lubricate hub housing with high melting point grease and install the thrust bearing and hub.
2. Reattach the fork and the clutch release shaft.
3. Tighten the fork setscrew to a torque of **47 N·m (35 lb ft)**.

Next operation:

Clutch - Install (18.110)

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