SERVICE MANUAL

T9.390 / T9.450 / T9.505 / T9.560 / T9.615 / T9.670
Tier 4
Tractor

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NEW HOLLAND AGRICULTURE

SERVICE MANUAL

T9.390 [ZBF200001 -] , T9.390 [ZCF200001 -] , T9.390 [ZDF200001 -] , T9.450 [ZBF200001 -] , T9.450 [ZCF200001 -] , T9.450 [ZDF200001 -] , T9.505 [ZBF200001 -] , T9.505 [ZCF200001 -] , T9.505 [ZDF200001 -] , T9.560 [ZBF200001 -] , T9.560 [ZCF200001 -] , T9.560 [ZDF200001 -] , T9.615 [ZBF200001 -] , T9.615 [ZCF200001 -] , T9.615 [ZDF200001 -] , T9.670 [ZBF200001 -] , T9.670 [ZCF200001 -] , T9.670 [ZDF200001 -]

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INTRODUCTION

Safety rules

T9.390, T9.450, T9.505, T9.560, T9.615, T9.670

Personal safety

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible death or injury.

Throughout this manual you will find the signal words DANGER, WARNING, and CAUTION followed by special instructions. These precautions are intended for the personal safety of you and those working with you.

Read and understand all the safety messages in this manual before you operate or service the machine.

DANGER indicates a hazardous situation that, if not avoided, will result in death or serious injury.

WARNING indicates a hazardous situation that, if not avoided, could result in death or serious injury.

CAUTION indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

FAILURE TO FOLLOW DANGER, WARNING, AND CAUTION MESSAGES COULD RESULT IN DEATH OR SERIOUS INJURY.

Machine safety

NOTICE: *Notice indicates a situation that, if not avoided, could result in machine or property damage.*

Throughout this manual you will find the signal word Notice followed by special instructions to prevent machine or property damage. The word Notice is used to address practices not related to personal safety.

Information

NOTE: *Note indicates additional information that clarifies steps, procedures, or other information in this manual.*

Throughout this manual you will find the word Note followed by additional information about a step, procedure, or other information in the manual. The word Note is not intended to address personal safety or property damage.

Personal safety - Do not operate tag

T9.390, T9.450, T9.505, T9.560, T9.615, T9.670

⚠ WARNING

Maintenance hazard!
Before you start servicing the machine, attach a DO NOT OPERATE warning tag to the machine in a visible area.
Failure to comply could result in death or serious injury.

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Attach a DO NOT OPERATE (TAG) to the machine in an area that is clearly visible whenever the machine is not operating properly and/or requires service.
Complete the tag information for the "REASON" the tag is attached by describing the malfunction or service required.
Validate the reason for attaching the tag by signing your name in the designated area on the tag.
The tag should only be removed by the person who signed and attached the tag, after validating the repairs or services have been completed.

Tag Components

A. DO NOT REMOVE THIS TAG! - (Warning) The tag should only be removed by the person who signed and attached the tag, after validating the repairs or services have been completed.

B. See Other Side - (Reference to additional information on opposite side of the tag.)

C. CNH Part Number - (Request this part number from you Service Parts Dealer to obtain this DO NOT OPERATE tag.)

D. DO NOT OPERATE - (Warning!)

E. REASON - (Area for describing malfunction or service required before operation.)

F. Signed by - (Signature area - to be signed by the person validating the reason for installation of the tag.)

Safety rules

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⚠ General safety rules ⚠

Use caution when operating the machine on slopes. Raised equipment, full tanks and other loads will change the center of gravity of the machine. The machine can tip or roll over when near ditches and embankments or uneven surfaces.

Never permit anyone other than the operator to ride on the machine.

Never operate the machine under the influence of alcohol, drugs, or while otherwise impaired.

While driving on the road, the seat swivel position must always be straight forward and locked in position with no rotation. The seat swivel should only be rotated for in field operation.

Stay off slopes too steep for safe operation. Shift down before you start up or down a hill with a heavy load. Avoid “free wheeling.”

Do not drive on roads, or at high speed anywhere, with the differential lock engaged. Difficult steering will occur, and can result in an accident. In field operation, use the differential lock for traction improvement, but release for turning at row ends.

Do not exceed implement transport speed or the speed rating on the implement tires. Review the implements Operator’s Manual for specifications. Failure to comply could result in death or serious injury.

For speeds up to **16 km/h** (**10 mph**), make sure that the weight of a trailed vehicle that is not equipped with brakes does NOT EXCEED 1.5 times the Tractor weight. For speeds up to **40 km/h** (**25 mph**), make sure that the weight of the trailed vehicle that is not equipped with brakes, does NOT EXCEED the weight of the Tractor. Stopping distance increases with increasing speed as the weight of the towed load increases, especially on hills and slopes.

Rear upset can result if pulling from wrong location on tractor. Hitch only to the drawbar. Use three point hitch only with the implements designed for its use – not as a drawbar.

Do not look directly into the front or rear HID (high intensity discharge) lamps. Eye damage can occur.

Do not tamper with the ballast on the front or rear high intensity discharge (HID) lamp since it uses high voltage. Personal injury or death can occur.

To avoid possible eye damage from microwave signals emitted by the radar sensor, do not look directly into the sensor face.

When digging or using ground engaging attachments be aware of buried cables. Contact local utilities to determine the locations of services.

Pay attention to overhead power lines and hanging obstacles. High voltage lines may require significant clearance for safety.

Hydraulic oil or diesel fuel leaking under pressure can penetrate the skin, causing serious injury or infection.

- DO NOT use your hand to check for leaks. Use a piece of cardboard or paper.
- Stop engine, remove key and relieve the pressure before connecting or disconnecting fluid lines.
- Make sure all components are in good condition and tighten all connections before starting the engine or pressurizing the system.
- If hydraulic fluid or diesel fuel penetrates the skin, seek medical attention immediately.
- Continuous long term contact with hydraulic fluid may cause skin cancer. Avoid long term contact and wash the skin promptly with soap and water.

Keep clear of moving parts. Loose clothing, jewelry, watches, long hair, and other loose or hanging items can become entangled in moving parts.

Wear protective equipment when appropriate.

DO NOT attempt to remove material from any part of the machine while it is being operated or components are in motion.

Make sure all guards and shields are in good condition and properly installed before operating the machine. Never operate the machine with shields removed. Always close access doors or panels before operating the machine.

Dirty or slippery steps, ladders, walkways, and platforms can cause falls. Make sure these surfaces remain clean and clear of debris.

A person or pet within the operating area of a machine can be struck or crushed by the machine or its equipment. DO NOT allow anyone to enter the work area.

Raised equipment and/or loads can fall unexpectedly and crush persons underneath. Never allow anyone to enter the area underneath raised equipment during operation.

Never operate engine in enclosed spaces as harmful exhaust gases may build up.

Before starting the machine, be sure that all controls are in neutral or park lock position.

Start the engine only from the operator's seat. If the safety start switch is bypassed, the engine can start with the transmission in gear. Do not connect or short across terminals on the starter solenoid. Attach jumper cables as described in the manual. Starting in gear may cause death or serious injury.

Always keep windows, mirrors, all lighting, and Slow Moving Vehicle (SMV) emblem clean to provide the best possible visibility while operating the machine.

Operate controls only when seated in the operator's seat, except for those controls expressly intended for use from other locations.

Before leaving the machine:

1. Park machine on a firm level surface.
2. Put all controls in neutral or park lock position.
3. Engage park brake. Use wheel chocks if required.
4. Lower all hydraulic equipment — Implements, header, etc.
5. Turn off engine and remove key.

When, due to exceptional circumstances, you would decide to keep the engine running after leaving the operator's station, then the following precautions must be followed:

1. Bring the engine to low idle speed.
2. Disengage all drive systems.
3. **⚠ WARNING**

   Some components may continue to run down after disengaging drive systems.
   Make sure all drive systems are fully disengaged.
   Failure to comply could result in death or serious injury.

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   Shift the transmission into neutral.
4. Apply the parking brake.

⚠ General maintenance safety ⚠

Keep area used for servicing the machine clean and dry. Clean up spilled fluids.

Service machine on a firm level surface.

Install guards and shields after servicing the machine.

Close all access doors and install all panels after servicing the machine.

Do not attempt to clean, lubricate, clear obstructions or make adjustments to the machine while it is in motion or while the engine is running.

Always make sure working area is clear of tools, parts, other persons and pets before you start operating the machine.

Unsupported hydraulic cylinders can lose pressure and drop the equipment causing a crushing hazard. Do not leave equipment in a raised position while parked or during service, unless securely supported.

Jack or lift the machine only at jack or lift points indicated in this manual.

Incorrect towing procedures can cause accidents. When towing a disabled machine follow the procedure in this manual. Use only rigid tow bars.

Stop the engine, remove key and relieve pressure before disconnecting or connecting fluid lines.

Stop the engine and remove key before disconnecting or connecting electrical connections.

Scalding can result from incorrect removal of coolant caps. Cooling system operates under pressure. Hot coolant can spray out if a cap is removed while the system is hot. Allow system to cool before removing cap. When removing a cap turn it slowly to allow pressure to escape before completely removing the cap.

Replace damaged or worn tubes, hoses, electrical wiring, etc.

Engine, transmission, exhaust components, and hydraulic lines may become hot during operation. Take care when servicing such components. Allow surfaces to cool before handling or disconnecting hot components. Wear protective equipment when appropriate.

When welding, follow the instructions in the manual. Always disconnect the battery before welding on the machine. Always wash your hands after handling battery components.

⚠ Wheels and tires ⚠

Make sure tires are correctly inflated. Do not exceed recommended load or pressure. Follow instructions in the manual for proper tire inflation.

Tires are heavy. Handling tires without proper equipment could cause death or serious injury.

Never weld on a wheel with a tire installed. Always remove tire completely from wheel prior to welding.

Always have a qualified tire technician service the tires and wheels. If a tire has lost all pressure, take the tire and wheel to a tire shop or your dealer for service. Explosive separation of the tire can cause serious injury.

DO NOT weld on a wheel or rim until the tire is completely removed. Inflated tires can generate a gas mixture with the air that can be ignited by high temperatures from welding procedures performed on the wheel or rim. Removing the air or loosening the tire on the rim (breaking the bead) will NOT eliminate the hazard. This condition can exist whether tires are inflated or deflated. The tire MUST be completely removed from the wheel or rim prior to welding the wheel or rim.

⚠ Driving on public roads and general transportation safety ⚠

Comply with local laws and regulations.

Use appropriate lighting to meet local regulations.

Make sure Slow Moving Vehicle (SMV) emblem is visible.

Make sure brake pedal latch is engaged. Brake pedals must be locked together for road travel.

Use safety chains for trailed equipment when provided with machine or equipment.

Lift implements and attachments high enough above ground to prevent accidental contact with road.

When transporting equipment or machine on a transport trailer, make sure it is properly secured. Be sure the Slow Moving Vehicle (SMV) on the equipment or machine is covered while being transported on a trailer.

Be aware of overhead structures or power lines and make sure the machine and/or attachments can pass safely under.

Travel speed should be such that complete control and machine stability is maintained at all times.

Slow down and signal before turning.

Pull over to allow faster traffic to pass.

Follow correct towing procedure for equipment with or without brakes.

⚠ Fire and explosion prevention ⚠

Fuel or oil leaked or spilled on hot surfaces or electrical components can cause a fire.

Crop materials, trash, debris, bird nests, or flammable material can ignite on hot surfaces.

Always have a fire extinguisher on or near the machine.

Make sure the fire extinguisher(s) is maintained and serviced according to the manufacturer’s instructions.

At least once each day and at the end of the day remove all trash and debris from the machine especially around hot components such as engine, transmission, exhaust, battery, etc. More frequent cleaning of your machine may be necessary depending on the operating environment and conditions.

At least once each day, remove debris accumulation around moving components such as bearings, pulleys, belts, gears, cleaning fan, etc. More frequent cleaning of your machine may be necessary depending on the operating environment and conditions.

Inspect the electrical system for loose connections or frayed insulation. Repair or replace loose or damaged parts.

Do not store oily rags or other flammable material on the machine.

Do not weld or flame cut any items that contain flammable material. Clean items thoroughly with non-flammable solvents before welding or flame-cutting.

Do not expose the machine to flames, burning brush, or explosives.

Promptly investigate any unusual smells or odors that may occur during operation of the machine.

⚠ General battery safety ⚠

Always wear eye protection when working with batteries.

Do not create sparks or have open flame near battery.

Ventilate when charging or using in an enclosed area.

Disconnect negative (-) first and reconnect negative (-) last.

When welding on the machine, disconnect both terminals of the battery.

Do not weld, grind, or smoke near a battery.

When using auxiliary batteries or connecting jumper cables to start the engine, use the procedure shown in the operator's manual. Do not short across terminals.

Follow manufacturer's instructions when storing and handling batteries.

Battery post, terminals, and related accessories contain lead and lead compounds. Wash hands after handling. This is a California Proposition 65 warning.

Battery acid causes burns. Batteries contain sulfuric acid. Avoid contact with skin, eyes, or clothing. Antidote (external): Flush with water. Antidote (eyes): flush with water for 15 minutes and seek medical attention immediately. Antidote (internal): Drink large quantities of water or milk. Do not induce vomiting. Seek medical attention immediately.

Keep out of reach of children and other unauthorized persons.

⚠ Instructional seat safety ⚠

Passengers are not permitted to ride on the machine.

The instructional seat is to be used only when training a new operator or when a service technician is diagnosing a problem.

When required for the purposes of training or diagnostics, only one person may accompany the operator and that person must be seated in the instructional seat.

When the instructional seat is occupied, the following precautions must be followed:

- Machine should be driven only at slow speeds and over level ground.
- Avoid driving on highways or public roads.
- Avoid quick starts or stops.
- Avoid sharp turns.
- Always wear correctly adjusted seat belts.
- Keep door closed at all times.

⚠ Operator presence system ⚠

Your machine is equipped with an operator presence system to prevent the use of some features while the operator is not in the operator's seat.

The operator presence system should never be disconnected or bypassed.

If the system is inoperable, the system must be repaired.

⚠ Power Take-Off (PTO) ⚠

PTO-driven machinery can cause death or serious injury. Before working on or near the PTO shaft or servicing or clearing the driven machine, put the PTO lever in the disengage position, stop the engine, and remove the key.

Whenever a PTO is in operation, a guard must be in place to prevent death or injury to the operator or bystanders.

When doing stationary PTO work, keep clear of all moving parts and make sure appropriate guards are in place.

Where attachments such as pumps are installed on the PTO shaft (especially if the tractor PTO guard is moved upward or removed), extended shielding equivalent to the PTO guard must be installed with the attachment. Return the PTO guard to its original position immediately when the attachment is removed.

High-inertia implements do not become stationary immediately when the PTO is disengaged. Allow sufficient time for the implement to “coast down” to a halt before cleaning or adjusting PTO components.

As soon as the drive shaft is removed, install the guard over PTO shaft.

Whenever doing stationary PTO work always install the articulation cylinder locking blocks to prevent damage or injury.

The use of PTO adapters is not allowed. PTO adapters do not allow proper guarding of the PTO shaft and have operational hazards. Attach only the primary PTO drive shaft coupling to the tractor PTO output shaft.

Never use a spline adapter:

- Match the right tractor PTO spline and speed with the PTO driveshaft provided with an implement. This will assure proper geometry and operating speed.
- Never operate 540 RPM implements at 1000 RPM.
- Never operate 1000 RPM implements at 540 RPM.
- Use of PTO adapters will void the warranty of the drive shaft, and the PTO drive train of the machine and implement.
- For correct hitch geometry, refer to operator’s manual for each implement you connect.

⚠ Reflectors and warning lights ⚠

Flashing amber warning lights must be used when operating on public roads.

⚠ Seat belts ⚠

Seat belts must be worn at all times.

Seat belt inspection and maintenance:

- Keep seat belts in good condition.
- Keep sharp edges and items than can cause damage away from the belts.
- Periodically check belts, buckles, retractors, tethers, slack take-up system, and mounting bolts for damage and wear.
- Replace all parts that have damage or wear.
- Replace belts that have cuts that can make the belt weak.
- Check that bolts are tight on the seat bracket or mounting.
- If belt is attached to seat, make sure seat or seat brackets are mounted securely.
- Keep seat belts clean and dry.
- Clean belts only with soap solution and warm water.
- Do not use bleach or dye on the belts because this can make the belts weak.

⚠ Operator protective structure ⚠

Your machine is equipped with an operator protective structure, such as: a Roll Over Protective Structure (ROPS), Falling Object Protective Structure (FOPS), or a cab with ROPS. A ROPS may be a can frame or a two-posted or four-posted structure used for the protection of the operator to minimize the possibility of serious injury. The mounting structure and fasteners forming the mounting connection with the machine are part of the ROPS.

The protective structure is a special safety component of your machine.

DO NOT attach any device to the protective structure for pulling purposes. DO NOT drill holes to the protective structure.

The protective structure and interconnecting components are a certified system. Any damage, fire, corrosion, or modification will weaken the structure and reduce your protection. If this occurs, THE PROTECTIVE STRUCTURE MUST BE REPLACED so that it will provide the same protection as a new protective structure. Contact your dealer for protective structure inspection and replacement.

After an accident, fire, tip or roll over, the following MUST be performed by a qualified technician before returning the machine to field or job-site operations:

- The protective structure MUST BE REPLACED.
- The mounting or suspension for the protective structure, operator seat and suspension, seat belts and mounting components, and wiring within the operator's protective system MUST be carefully inspected for damage.
- All damaged parts MUST BE REPLACED.

DO NOT WELD, DRILL HOLES, ATTEMPT TO STRAIGHTEN, OR REPAIR THE PROTECTIVE STRUCTURE. MODIFICATION IN ANY WAY CAN REDUCE THE STRUCTURAL INTEGRITY OF THE STRUCTURE, WHICH COULD CAUSE DEATH OR SERIOUS INJURY IN THE EVENT OF FIRE, TIP, ROLL OVER, COLLISION, OR ACCIDENT.

Seat belts are part of your protective system and must be worn at all times. The operator must be held to the seat inside the frame in order for the protective system to work.

⚠ Air-conditioning system ⚠

The air-conditioning system is under high pressure. Do not disconnect any lines. The release of high pressure can cause serious injury.

The air-conditioning system contains gases that are harmful to the environment when released into the atmosphere. Do not attempt to service or repair the system.

Service, repair, or recharging must be performed only by a trained service technician.

⚠ Personal Protective Equipment (PPE) ⚠

Wear Personal Protective Equipment (PPE) such as hard hat, eye protection, heavy gloves, hearing protection, protective clothing, etc.

⚠ Do Not Operate tag ⚠

Before you start servicing the machine, attach a 'Do Not Operate' warning tag to the machine in an area that will be visible.

⚠ Hazardous chemicals ⚠

If you are exposed to or come in contact with hazardous chemicals you can be seriously injured. The fluids, lubricants, paints, adhesives, coolant, etc. required for the function of your machine can be hazardous. They may be attractive and harmful to domestic animals as well as humans.

Material Safety Data Sheets (MSDS) provide information about the chemical substances within a product, safe handling and storage procedures, first aid measures and procedures to be taken in the event of a spill or accidental release. MSDS are available from your dealer.

Before you service your machine check the MSDS for each lubricant, fluid, etc. used in this machine. This information indicates the associated risks and will help you service the machine safely. Follow the information in the MSDS, on manufacturer containers, as well as the information in this manual when servicing the machine.

Dispose of all fluids, filters, and containers in an environmentally safe manner according to local laws and regulations. Check with local environmental and recycling centers or your dealer for correct disposal information.

Store fluids and filters in accordance with local laws and regulations. Use only appropriate containers for the storage of chemicals or petrochemical substances.

Keep out of reach or children or other unauthorized persons.

Additional precautions are required for applied chemicals. Obtain complete information from the manufacturer or distributor of the chemicals before using them.

⚠ Utility safety ⚠

When digging or using ground-engaging equipment, be aware of buried cables and other services. Contact your local utilities or authorities, as appropriate to determine the locations of services.

Make sure the machine has sufficient clearance to pass in all directions. Pay special attention to overhead power lines and hanging obstacles. High voltage lines may require significant clearance for safety. Contact local authorities or utilities to obtain safe clearance distances from high voltage power lines.

Retract raised or extended components, if necessary. Remove or lower radio antennas or other accessories. Should a contact between the machine and an electric power source occur, the following precautions must be taken:

- Stop the machine movement immediately.
- Apply the park brake, stop the engine, and remove the key.
- Check if you can safely leave the cab or your actual position without contact with electrical wires. If not, stay in your position and call for help. If you can leave your position without touching lines, jump clear of the machine to make sure you do not make contact with the ground and the machine at the same time.
- Do not permit anyone to touch the machine until power has been shut off to the power lines.

⚠ Electrical storm safety ⚠

Do not operate machine during an electrical storm.

If you are on the ground during an electrical storm, stay away from machinery and equipment. Seek shelter in a permanent, protected structure.

If an electrical storm should strike during operation, remain in the cab. Do not leave the cab or operator’s platform. Do not make contact with the ground or objects outside the machine.

⚠ Mounting and dismounting ⚠

Mount and dismount the machine only at designated locations that have handholds, steps, or ladders.

Do not jump off the machine.

Make sure steps, ladders, and platforms remain clean and clear of debris and foreign substances. Injury may result from slippery surfaces.

Face the machine when mounting and dismounting.

Maintain a three-point contact with steps, ladders, and handholds.

Never mount or dismount from a moving machine.

Do not use the steering wheel or other controls or accessories as handholds when entering or exiting the cab or operator's platform.

⚠ Working at heights ⚠

When the normal use and maintenance of the machine requires working at heights:

- Correctly use installed steps, ladders, and railings.
- Never use ladders, steps, or railings while the machine is moving.
- Do not stand on surfaces which are not designated as steps or platforms.

Do not use the machine as a lift, ladder, or platform for working at heights.

⚠ Lifting and overhead loads ⚠

Never use loader buckets, forks, etc. or other lifting, handling, or digging equipment to lift persons.

Do not use raised equipment as a work platform.

Know the full area of movement of the machine and equipment and do not enter or permit anyone to enter the area of movement while the machine is in operation.

Never enter or permit anyone to enter the area underneath raised equipment. Equipment and/or loads can fall unexpectedly and crush persons underneath it.

Do not leave equipment in raised position while parked or during service, unless securely supported. Hydraulic cylinders must be mechanically locked or supported if they are left in a raised position for service or access.

Loader buckets, forks, etc. or other lifting, handling, or digging equipment and its load will change the center of gravity of the machine. This can cause the machine to tip on slopes or uneven ground.

Load items can fall off the loader bucket or lifting equipment and crush the operator. Care must be taken when lifting a load. Use proper lifting equipment.

Do not lift load higher than necessary. Lower loads to transport. Remember to leave appropriate clearance to the ground and other obstacles.

Equipment and associated loads can block visibility and cause an accident. Do not operate with insufficient visibility.

⚠ Implements, tools and trailers⚠

Attach trailers, tools and/or implements correctly. The operating, steering and braking behavior of the vehicle are affected by implements, trailers and ballast weights. Therefore ensure adequate steering and braking power.

Stay clear of the area between the vehicle and the trailed implement.

Follow the manufacturer's instructions when connecting or mounting an implement to the vehicle.

Always use the required or recommended drawbar or hitch to connect an implement to the tractor.

Use only recommended hardware for hitch connections. Verify the integrity of the connection.

Always adapt your ground speed to the ground conditions. Avoid making sharp turns when driving up or down slopes or when driving across the slope. Do not attempt to turn the machine with the differential lock engaged. When driving down slopes, never depress the clutch and change gear.

Observe maximum permissible axle loads and total weights.

When making turns with towed or mounted implements, always take into consideration the width and inertia of the implement.

Prevent a trailer or implement from moving when detached from the tractor.

Properly connect the auxiliary brake system.

Properly connect the auxiliary lighting harness to the implement.

Do not exceed implement transport speed or the speed rating on the implement tires. Review the implement's Operators Manual for specifications.

Objects ejected by some implements or tools – for example, a rotary mower – may harm bystanders outside the field. Stones may be thrown further than the discharged crop. Projectiles can be thrown outside the field and strike unprotected individuals – for example, bikers, pedestrians or pets. Wait till the area is clear before proceeding.

⚠ Roll over and tip over ⚠

Travel speed should be such that complete control and machine stability is maintained at all times. Where possible, avoid operating near ditches, embankments and holes. Reduce speed when turning, crossing slopes, and on rough, slick, or muddy surfaces.

Do not operate the tractor on terrain outside its grade and stability limits. Operating the tractor outside its limits may result in a roll over or tip over. Observe the guidelines in this manual when going down steep hills with a load.

Operating the tractor on steep grades may result in a machine overturn. It is the operator's responsibility to make a judgment if weather, road or ground conditions permit safe operation on a hillside, ramp, ditch or rough ground.

Use caution when operating the machine on slopes. Raised equipment, full tanks and other loads can change the center of gravity of the machine. The machine can tip or roll over when near ditches and embankments or uneven surfaces.

Do not operate the tractor near or on the soft shoulders of canals, brooks, other waterways or banks which are undermined by rodents. The tractor may sink sideways and roll over.

Do not operate the tractor on poorly constructed or underrated ramps. The ramps may collapse and cause the tractor to roll over. Always check the condition and rating of ramps before use.

Do not operate the tractor without using the seat restraint. In the event of a roll over or tip over, the ROPS cab or ROPS structure is only fully effective if the driver remains attached to the seat.

Do not operate the tractor beyond its limits of dynamic stability. High speed, abrupt maneuvers or fast and sharp cornering increase the risk of roll over.

Do not use the tractor for pulling where the load may not yield – for example, when pulling tree stumps. The tractor may flip over backwards if the load (stump) does not yield.

Be extremely cautious when operating the tractor on forage silos without lateral concrete walls. Equip the tractor with dual wheels or use a wide track setting to improve the lateral stability of the tractor.

When the load on a front-end loader or three point hitch is raised, the tractor center of gravity may shift. The tractor may roll over more easily under these conditions.

The instructional seat is used only when training a new operator or when a service technician is diagnosing a mechanical problem. In all other circumstances, do not allow anyone to occupy the seat when roading to or from the field or when operating in the field. The operator's view is seriously obstructed to the left. In the event of a roll over, the ROPS cab or structure may not provide adequate protection for the occupant of the instructional seat.

⚠ 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 manufacturer 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.

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.

Periodically check hydraulic system for leaks or damage. Check for:

- Leaks at hose fittings 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.

Foreword - Ecology and the environment

T9.390, T9.450, T9.505, T9.560, T9.615, T9.670

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 NEW HOLLAND 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.

Basic instructions - Important notice regarding equipment servicing

T9.390, T9.450, T9.505, T9.560, T9.615, T9.670

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 information in this manual is up-to-date at the date of the publication. It is the policy of the manufacturer for continuous improvement. Some information could not be updated due to modifications of a technical or commercial type, or changes to the laws and regulations of different countries.

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

Basic instructions - Shop and assembly

T9.390, T9.450, T9.505, T9.560, T9.615, T9.670

Shimming

For each adjustment operation, select adjusting shims and measure individually using a micrometer, then add up the recorded values. Do not rely on measuring the entire shimming set, which may be incorrect, or the rated value indicated on each shim.

Rotating shaft seals

For correct rotating shaft seal installation, proceed as follows:

- Before assembly, allow the seal to soak in the oil it will be sealing for at least thirty minutes.
- Thoroughly clean the shaft and check that the working surface on the shaft is not damaged.
- Position the sealing lip facing the fluid; with hydrodynamic lips, take into consideration the shaft rotation direction and position the grooves so that they will deviate the fluid towards the inner side of the seal.
- Coat the sealing lip with a thin layer of lubricant (use oil rather than grease) and fill the gap between the sealing lip and the dust lip on double lip seals with grease unless instructed otherwise.
- Insert the seal in its seat and press down using a flat punch or seal installation tool. Do not tap the seal with a hammer or mallet.
- While inserting the seal, check that it is perpendicular to the seat; once settled, make sure that it makes contact with the thrust element, if required.
- To prevent damaging the seal lip on the shaft, position a protective guard during installation operations.

O-ring seals

Lubricate the O-ring seals before inserting them in the seats, this will prevent them from overturning and twisting, which would jeopardize sealing efficiency.

Sealing compounds

Apply one of the following sealing compounds on the mating surfaces when specified: SILMATE® RTV1473, or **LOCTITE® RTV 598** or **LOCTITE® INSTANT GASKET 587 BLUE**. Before applying the sealing compound, prepare the surfaces as directed on product container or as follows:

- Remove any incrustations using a metal brush.
- Thoroughly de-grease the surfaces using a locally approved cleaning agent such as safety solvent or brake parts cleaner.

Spare parts

Only use "CNH Original Parts" or " NEW HOLLAND Parts".

Only genuine spare parts guarantee the same quality, duration and safety as original parts, as they are the same parts that are assembled during standard production. Only "CNH Original Parts" or " NEW HOLLAND Parts" can offer this guarantee.
When ordering spare parts, always provide the following information:

- Machine model (commercial name) and serial number
- Part number of the ordered part, which can be found in the "Service Parts Catalogue", used for order processing

Protecting the electrical/electronic systems during charging or welding

⚠ WARNING

Battery acid causes burns. Batteries contain sulfuric acid.
Avoid contact with skin, eyes or clothing. Antidote (external): Flush with water. Antidote (eyes): flush with water for 15 minutes and seek medical attention immediately. Antidote (internal): Drink large quantities of water or milk. Do not induce vomiting. Seek medical attention immediately.
Failure to comply could result in death or serious injury.

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To avoid damage to the electronic/electrical systems, always observe the following:

1. Never make or break any of the charging circuit connections, including the battery connections, when the engine is running.
2. Never short any of the charging components to ground.
3. Always disconnect the ground cable from the battery before arc welding on the machine or on any attachments on the machine.
   - Position the welder ground clamp as close to the welding area as possible
   - If welding in close proximity to a computer module, then the module should be removed from the machine
   - Never allow welding cables to lay on, near or across any electrical wiring or electronic component while welding is in progress
4. Always disconnect the negative cable from the battery when charging the battery in the machine with a battery charger.

NOTICE: *If welding must be performed on the unit, the battery ground cable must be disconnected from the machine battery. The electronic monitoring system and charging system will be damaged if this is not done.*

Remove the battery ground cable. Reconnect the cable when welding is completed.

Tools

The tools that NEW HOLLAND suggests and illustrated in this manual have been:

- Specifically researched and designed for use with NEW HOLLAND machines
- Essential for reliable repair operations
- Accurately built and rigorously tested so as to offer efficient and long-lasting operation

By using these tools, repair personnel will benefit from:

- Operating in optimal technical conditions
- Obtaining the best results
- Saving time and effort
- Working in safe conditions

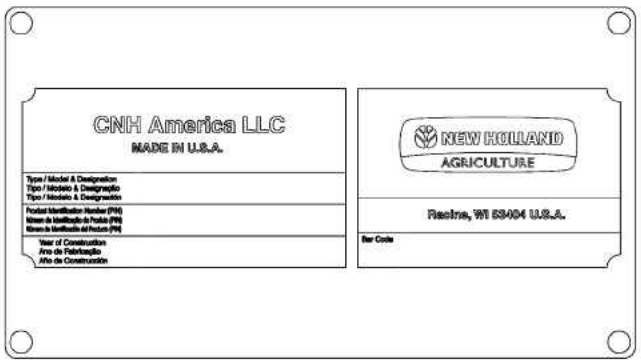
NOTE: *The terms "front", "rear", "right-hand" and "left-hand" (when referred to different parts) are determined from the rear, facing in the direction of travel of the machine during operation.*

Basic instructions - Product identification

T9.390 NA, T9.450 NA, T9.505 NA, T9.560 NA, T9.615 NA, T9.670 NA

Tractor model and product identification number

Write your model number, Product Identification Number (PIN) or serial number of major components on the lines provided. If needed, give these numbers to your dealer when you need parts or information for your machine.



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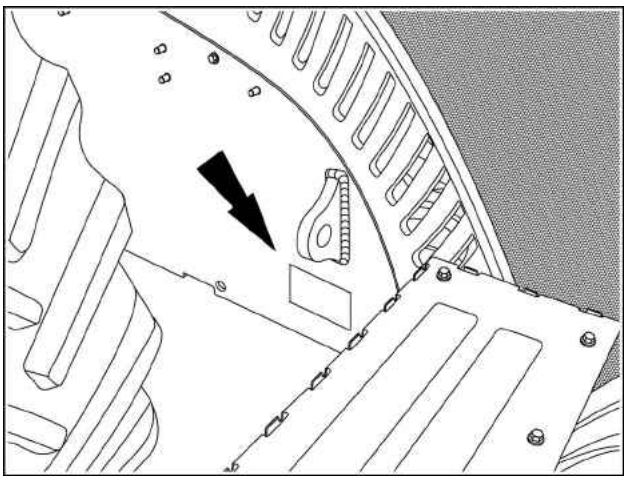
Model :

PIN:

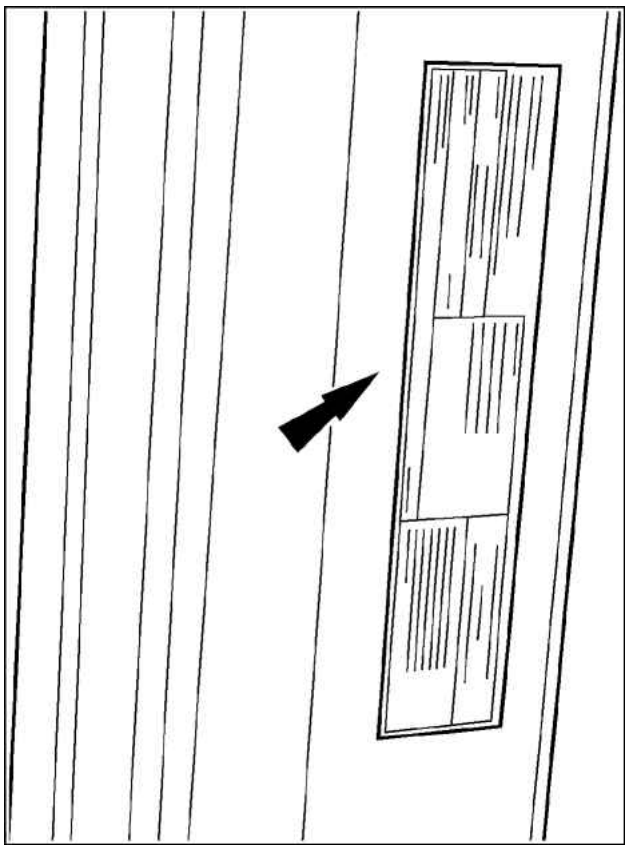
NOTE: *Located on the front right side plate in front of front axle.*



RCPH11FWD114BAM 2

Roll Over Protection System (ROPS) serial number

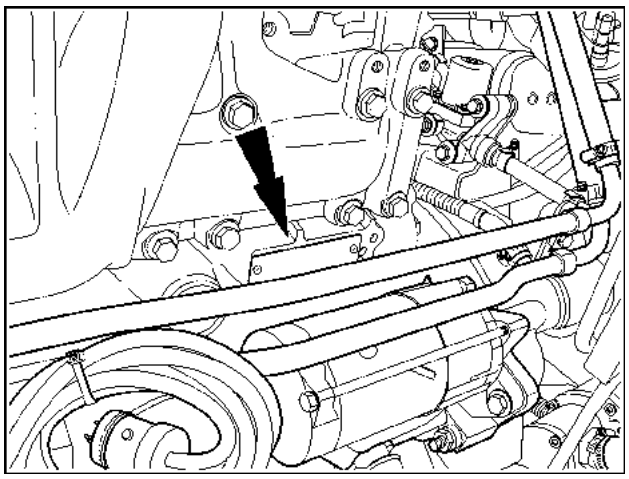
NOTE: *Located under the cover of the left hand front ROPS post.*



RCPH09FWD003BAM 3

Engine serial number (T9.390)

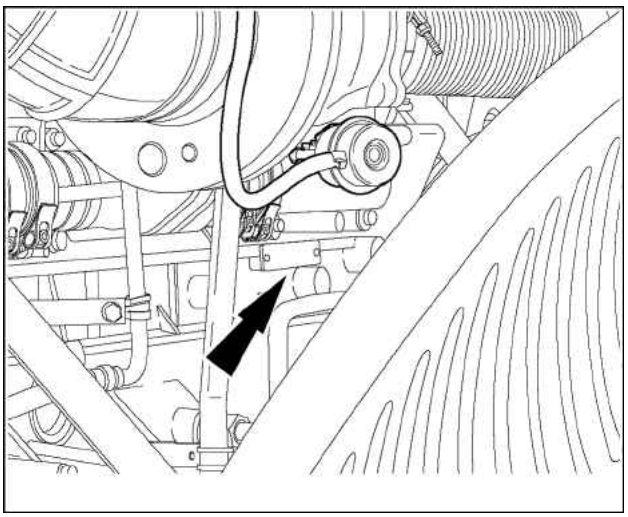
NOTE: *Located on the rear left hand side of the engine.*



RCPH10FWD681BAM 4

Engine serial number (T9.450, T9.505, and T9.560)

NOTE: *Located on the rear left hand side of the engine.*



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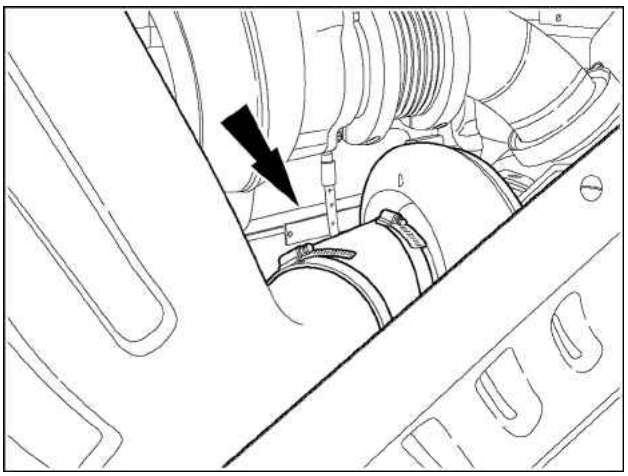
Engine serial number (T9.615, and T9.670)

NOTE: *Located on the rear left hand side of the engine.*



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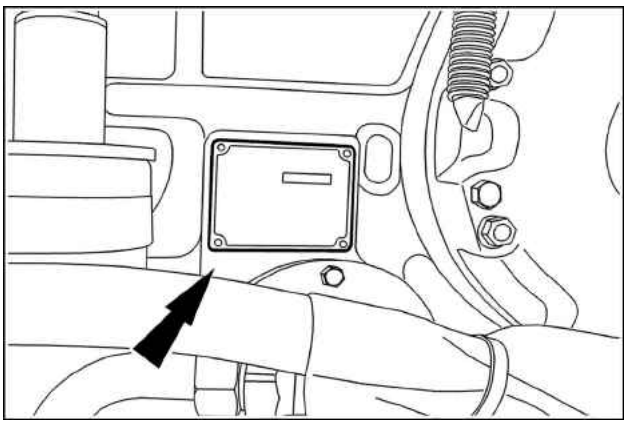
Transmission serial number

NOTE: *Located on the rear left hand side of the transmission.*



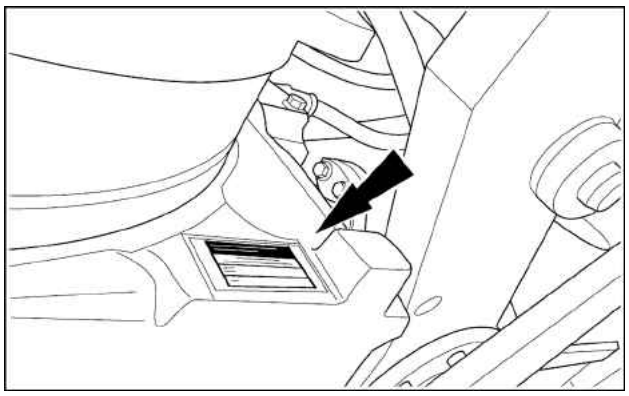
RCPH09FWD006GAM 7

Axle serial number (T9.390, T9.450, T9.505, T9.560)

Front

Rear

NOTE: *Located on the side of the axle center housing.*



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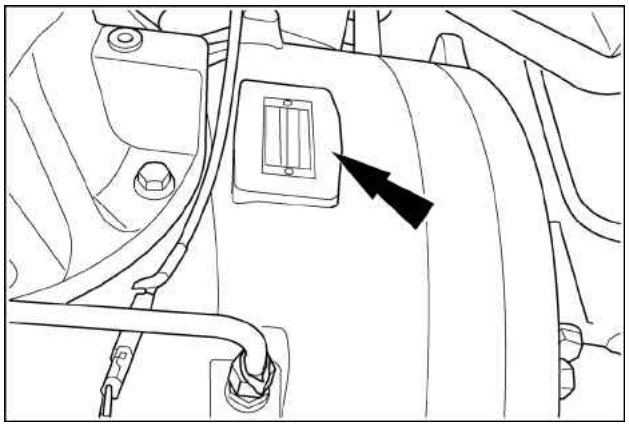
Axle serial number (T9.615 and T9.670)

Front

Rear

NOTE: *Located on the side of the axle center housing.*



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Torque - Minimum tightening torques for normal assembly

T9.390, T9.450, T9.505, T9.560, T9.615, T9.670

Decimal hardware

Grade 5 bolts, nuts and studs

Size	Nm	lb in/lb ft
1/4 in	12 - 15 Nm	108 - 132 lb in
5/16 in	23 - 28 Nm	204 - 252 lb in
3/8 in	48 - 57 Nm	420 - 504 lb in
7/16 in	73 - 87 Nm	54 - 64 lb ft
1/2 in	109 - 130 Nm	80 - 96 lb ft
9/16 in	149 - 179 Nm	110 - 132 lb ft
5/8 in	203 - 244 Nm	150 - 180 lb ft
3/4 in	366 - 439 Nm	270 - 324 lb ft
7/8 in	542 - 651 Nm	400 - 480 lb ft
1 in	787 - 944 Nm	580 - 696 lb ft
1-1/8 in	1085 - 1193 Nm	800 - 880 lb ft
1-1/4 in	1519 - 1681 Nm	1120 - 1240 lb ft
1-3/8 in	1980 - 2278 Nm	1460 - 1680 lb ft
1-1/2 in	2631 - 2983 Nm	1940 - 2200 lb ft

Grade 8 bolts, nuts and studs

Size	Nm	lb in/lb ft
1/4 in	16 - 20 Nm	144 - 180 lb in
5/16 in	33 - 39 Nm	288 - 348 lb in
3/8 in	61 - 73 Nm	540 - 648 lb in
7/16 in	95 - 114 Nm	70 - 84 lb ft
1/2 in	149 - 179 Nm	110 - 132 lb ft
9/16 in	217 - 260 Nm	160 - 192 lb ft
5/8 in	298 - 358 Nm	220 - 264 lb ft
3/4 in	515 - 618 Nm	380 - 456 lb ft
7/8 in	814 - 976 Nm	600 - 720 lb ft
1 in	1220 - 1465 Nm	900 - 1080 lb ft
1-1/8 in	1736 - 1953 Nm	1280 - 1440 lb ft
1-1/4 in	2468 - 2712 Nm	1820 - 2000 lb ft
1-3/8 in	3227 - 3688 Nm	2380 - 2720 lb ft
1-1/2 in	4285 - 4827 Nm	3160 - 3560 lb ft

NOTE: *Use thick nuts with Grade 8 bolts.*

Metric hardware

Grade 8.8 bolts, nuts and studs

Size	Nm	lb in/lb ft
4 mm	3 - 4 Nm	24 - 36 lb in
5 mm	7 - 8 Nm	60 - 72 lb in
6 mm	11 - 12 Nm	96 - 108 lb in
8 mm	26 - 31 Nm	228 - 276 lb in
10 mm	52 - 61 Nm	456 - 540 lb in
12 mm	90 - 107 Nm	66 - 79 lb ft
14 mm	144 - 172 Nm	106 - 127 lb ft
16 mm	217 - 271 Nm	160 - 200 lb ft
20 mm	434 - 515 Nm	320 - 380 lb ft
24 mm	675 - 815 Nm	500 - 600 lb ft
30 mm	1250 - 1500 Nm	920 - 1100 lb ft
36 mm	2175 - 2600 Nm	1600 - 1950 lb ft

Grade 10.9 bolts, nuts and studs

Size	Nm	lb in/lb ft
4 mm	4 - 5 Nm	36 - 48 lb in
5 mm	9 - 11 Nm	84 - 96 lb in
6 mm	15 - 18 Nm	132 - 156 lb in
8 mm	37 - 43 Nm	324 - 384 lb in
10 mm	73 - 87 Nm	54 - 64 lb ft
12 mm	125 - 150 Nm	93 - 112 lb ft
14 mm	200 - 245 Nm	149 - 179 lb ft
16 mm	310 - 380 Nm	230 - 280 lb ft
20 mm	610 - 730 Nm	450 - 540 lb ft
24 mm	1050 - 1275 Nm	780 - 940 lb ft
30 mm	2000 - 2400 Nm	1470 - 1770 lb ft
36 mm	3500 - 4200 Nm	2580 - 3090 lb ft

Grade 12.9 bolts, nuts and studs

Size	Nm	lb in/lb ft
Typically the torque values specified for grade 10.9 hardware can be used satisfactorily on grade 12.9 hardware.		

Steel hydraulic fittings

37° flare fitting

Tube outside diameter/Hose inside diameter		Thread size	Nm	lb in/lb ft
mm	inch			
6.4 mm	1/4 in	7/16-20 in	8 - 16 Nm	72 - 144 lb in
7.9 mm	5/16 in	1/2-20 in	11 - 22 Nm	96 - 192 lb in
9.5 mm	3/8 in	9/16-18 in	14 - 34 Nm	120 - 300 lb in
12.7 mm	1/2 in	3/4-16 in	20 - 57 Nm	180 - 504 lb in
15.9 mm	5/6 in	7/8-14 in	34 - 79 Nm	300 - 696 lb in
19.0 mm	3/4 in	1-1/16-12 in	54 - 108 Nm	40 - 80 lb ft
22.2 mm	7/8 in	1-3/16-12 in	81 - 135 Nm	60 - 100 lb ft
25.4 mm	1 in	1-5/16-12 in	102 - 158 Nm	75 - 117 lb ft
31.8 mm	1-1/4 in	1-5/8-12 in	169 - 223 Nm	125 - 165 lb ft
38.1 mm	1-1/2 in	1-7/8-12 in	285 - 338 Nm	210 - 250 lb ft

Straight threads with O-ring

Tube outside diameter/Hose inside diameter		Thread size	Nm	lb in/lb ft
mm	inch			
6.4 mm	1/4 in	7/16-20 in	16 - 26 Nm	144 - 228 lb in
7.9 mm	5/16 in	1/2-20 in	22 - 34 Nm	192 - 300 lb in
9.5 mm	3/8 in	9/16-18 in	34 - 54 Nm	300 - 480 lb in
12.7 mm	1/2 in	3/4-16 in	57 - 91 Nm	540 - 804 lb in
15.9 mm	5/6 in	7/8-14 in	79 - 124 Nm	58 - 92 lb ft
19.0 mm	3/4 in	1-1/16-12 in	108 - 174 Nm	80 - 128 lb ft
22.2 mm	7/8 in	1-3/16-12 in	136 - 216 Nm	100 - 160 lb ft
25.4 mm	1 in	1-5/16-12 in	159 - 253 Nm	117 - 187 lb ft
31.8 mm	1-1/4 in	1-5/8-12 in	224 - 357 Nm	165 - 264 lb ft
38.1 mm	1-1/2 in	1-7/8-12 in	339 - 542 Nm	250 - 400 lb ft

Split flange mounting bolts

Size	Nm	lb in/lb ft
5/16-18 in	20 - 27 Nm	180 - 240 lb in
3/8-16 in	27 - 34 Nm	240 - 300 lb in
7/16-14 in	47 - 61 Nm	420 - 540 lb in
1/2-13 in	74 - 88 Nm	55 - 65 lb ft

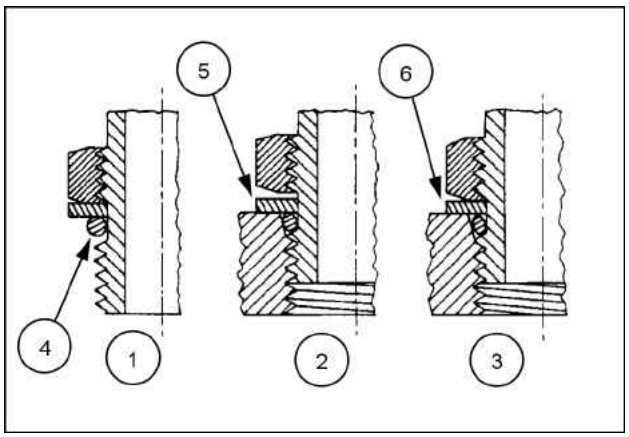
Size	Nm	lb in/lb ft
5/8-11 in	**190 - 203 Nm**	**140 - 150 lb ft**

O-ring face seal end						O-ring boss end fitting or lock nut		
Nominal SAE dash size	Tube outside diameter		Thread size	Nm	lb in/lb ft	Thread size	Nm	lb in/lb ft
	mm	in						
-4	**6.4 mm**	**1/4 in**	**9/16-18 in**	**14 - 16 Nm**	**120 - 144 lb in**	**7/16-20 in**	**23 - 27 Nm**	**204 - 240 lb in**
-6	**9.5 mm**	**3/8 in**	**11/16-16 in**	**24 - 27 Nm**	**216 - 240 lb in**	**9/16-18 in**	**34 - 41 Nm**	**300 - 360 lb in**
-8	**12.7 mm**	**1/2 in**	**13/16-16 in**	**43 - 54 Nm**	**384 - 480 lb in**	**3/4-16 in**	**61 - 68 Nm**	**540 - 600 lb in**
-10	**15.9 mm**	**5/8 in**	**1-14 in**	**62 - 76 Nm**	**552 - 672 lb in**	**7/8-14 in**	**81 - 88 Nm**	**60 - 65 lb ft**
-12	**19.0 mm**	**3/4 in**	**1-3/16-12 in**	**90 - 110 Nm**	**65 - 80 lb ft**	**1-1/16-12 in**	**115 - 122 Nm**	**85 - 90 lb ft**
-14	**22.2 mm**	**7/8 in**	**1-3/16-12 in**	**90 - 110 Nm**	**65 - 80 lb ft**	**1-13/16-12 in**	**129 - 136 Nm**	**95 - 100 lb ft**
-16	**25.41 mm**	**1.0 in**	**1-7/16-12 in**	**125 - 140 Nm**	**92 - 105 lb ft**	**1-5/16-12 in**	**156 - 169 Nm**	**115 - 125 lb ft**
-20	**31.8 mm**	**1-1/4 in**	**1-11/16-12 in**	**170 - 190 Nm**	**125 - 140 lb ft**	**1`-5/6-12 in**	**201 - 217 Nm**	**150 - 160 lb ft**
-24	**38.1 mm**	**1-1/2 in**	**2-12 in**	**200 - 254 Nm**	**150 - 180 lb ft**	**1-7/8-12 in**	**258 - 271 Nm**	**190 - 200 lb ft**

Torque - Standard torque data for hydraulics

T9.390, T9.450, T9.505, T9.560, T9.615, T9.670

Installation of adjustable fittings in straight thread O-ring bosses



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1. Lubricate the O-ring by coating it with a light oil or petroleum. Install the O-ring in the groove adjacent to the metal backup washer which is assembled at the extreme end of the groove **(4)**.
2. Install the fitting into the SAE straight thread boss until the metal backup washer contacts the face of the boss **(5)**.

   NOTE: *Do not over tighten and distort the metal backup washer.*
3. Position the fitting by turning out (counterclockwise) up to a maximum of one turn. Holding the pad of the fitting with a wrench, tighten the locknut and washer against the face of the boss **(6)**.

Standard torque data for hydraulic tubes and fittings

Tube nuts for 37° flared fittings				O-ring boss plugs adjustable fitting locknuts, swivel JIC-37° seats
Size	**Tubing OD**	**Thread size**	**Torque**	**Torque**
4	**6.4 mm** (**1/4 in**)	7/16-20	**12 - 16 N·m** (**9 - 12 lb ft**)	**8 - 14 N·m** (**6 - 10 lb ft**)
5	**7.9 mm** (**5/16 in**)	1/2-20	**16 - 20 N·m** (**12 - 15 lb ft**)	**14 - 20 N·m** (**10 - 15 lb ft**)
6	**9.5 mm** (**3/8 in**)	9/16-18	**29 - 33 N·m** (**21 - 24 lb ft**)	**20 - 27 N·m** (**15 - 20 lb ft**)
8	**12.7 mm** (**1/2 in**)	3/4-16	**47 - 54 N·m** (**35 - 40 lb ft**)	**34 - 41 N·m** (**25 - 30 lb ft**)
10	**15.9 mm** (**5/8 in**)	7/8-14	**72 - 79 N·m** (**53 - 58 lb ft**)	**47 - 54 N·m** (**35 - 40 lb ft**)
12	**19.1 mm** (**3/4 in**)	1-1/16-12	**104 - 111 N·m** (**77 - 82 lb ft**)	**81 - 95 N·m** (**60 - 70 lb ft**)
14	**22.2 mm** (**7/8 in**)	1-3/16-12	**122 - 136 N·m** (**90 - 100 lb ft**)	**95 - 109 N·m** (**70 - 80 lb ft**)
16	**25.4 mm** (**1 in**)	1-5/16-12	**149 - 163 N·m** (**110 - 120 lb ft**)	**108 - 122 N·m** (**80 - 90 lb ft**)
20	**31.8 mm** (**1-1/4 in**)	1-5/8-12	**190 - 204 N·m** (**140 - 150 lb ft**)	**129 - 158 N·m** (**95 - 115 lb ft**)
24	**38.1 mm** (**1-1/2 in**)	1-7/8-12	**217 - 237 N·m** (**160 - 175 lb ft**)	**163 - 190 N·m** (**120 - 140 lb ft**)
32	**50.8 mm** (**2 in**)	2-1/2-12	**305 - 325 N·m** (**225 - 240 lb ft**)	**339 - 407 N·m** (**250 - 300 lb ft**)

These torques are not recommended for tubes of **12.7 mm** (**1/2 in**) OD and larger with wall thickness of **0.889 mm** (**0.035 in**) or less. The torque is specified for **0.889 mm** (**0.035 in**) wall tubes on each application individually.

Before installing and torquing **37 °** flared fittings, clean the face of the flare and threads with a clean solvent or Loctite cleaner and apply hydraulic sealant **LOCTITE® 569** to the **37 °** flare and the threads.

Install fitting and torque to specified torque, loosen fitting and retorque to specifications.

Pipe thread fitting torque

Before installing and tightening pipe fittings, clean the threads with a clean solvent or Loctite cleaner and apply sealant **LOCTITE® 567 PST PIPE SEALANT** for all fittings including stainless steel or **LOCTITE® 565 PST** for most metal fittings. For high filtration/zero contamination systems use **LOCTITE® 545**.

Thread size	Torque (maximum)
1/8-27	**13 N·m** (**10 lb ft**)
1/4-18	**16 N·m** (**12 lb ft**)
3/8-18	**22 N·m** (**16 lb ft**)
1/2-14	**41 N·m** (**30 lb ft**)
3/4-14	**54 N·m** (**40 lb ft**)

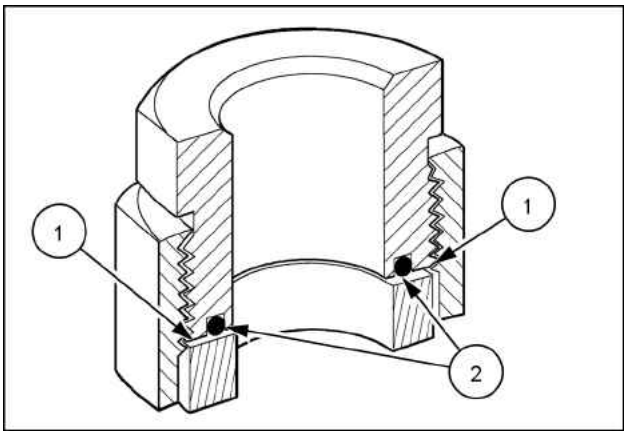
Installation of ORFS (O-Ring Flat Seal fittings)

When installing ORFS fittings thoroughly clean both flat surfaces of the fittings **(1)** and lubricate the O-ring **(2)** with light oil. Make sure both surfaces are aligned properly. Torque the fitting to specified torque listed throughout the repair manual.

NOTICE: *If the fitting surfaces are not properly cleaned, the O-ring will not seal properly. If the fitting surfaces are not properly aligned, the fittings may be damaged and will not seal properly.*

NOTICE: *Always use genuine factory replacement oils and filters to ensure proper lubrication and filtration of engine and hydraulic system oils.*

The use of proper oils, grease, and keeping the hydraulic system clean will extend machine and component life.



50011183 2

Capacities - Product identification numbers ZCF and before

T9.390 [ZBF200001 -], T9.390 [ZCF200001 -], T9.450 [ZBF200001 -], T9.450 [ZCF200001 -], T9.505 [ZBF200001 -], T9.505 [ZCF200001 -], T9.560 [ZBF200001 -], T9.560 [ZCF200001 -], T9.615 [ZBF200001 -], T9.615 [ZCF200001 -], T9.670 [ZBF200001 -], T9.670 [ZCF200001 -]

Engine	
Oil type	**NEW HOLLAND AMBRA MASTERGOLD™ HSP ENGINE OIL SAE 15W-40**
Oil exchange capacity with filter (approx.)	
T9.390	**41 l** (**10 US gal**)
T9.450, T9.505, and T9.560	**23 l** (**6 US gal**)
T9.615 and T9.670	**26 l** (**7 US gal**)
Cooling system	
Coolant type	50-50 water and ethylene glycol mix
Coolant capacity	
T9.390, T9.450, T9.505, T9.560	**49 l** (**13 US gal**)
T9.615 and T9.670	**70 l** (**18.4 US gal**)
Transmission	
Oil type	**NEW HOLLAND AMBRA MASTERTRAN™ HYDRAULIC TRANSMISSION OIL**
T9.390, T9.450, T9.505, T9.560 and T9.615 Standard	**57 l** (**15.1 US gal**)
T9.615 Scraper and T9.670	**72 l** (**19 US gal**)
Axle/hydraulic system	
Oil type	**NEW HOLLAND AMBRA MULTI G 134™ HYDRAULIC TRANSMISSION OIL**
Approx. total system capacity (See Note)	
T9.390	**227 l** (**60 US gal**)
T9.450, T9.505, T9.560, T9.615 and T9.670	**250 l** (**66 US gal**)

NOTE: *Total system capacity includes filters, front and rear axle and reservoir. If Three Point Hitch equipped, add* ***19 l*** *(****5 US gal****).*

Definition - Important notice regarding equipment servicing

T9.390, T9.450, T9.505, T9.560, T9.615, T9.670

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 information in this manual is up-to-date at the date of the publication. It is the policy of the manufacturer for continuous improvement. Some information could not be updated due to modifications of a technical or commercial type, or changes to the laws and regulations of different countries.

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

Capacities - Product identification numbers ZDF and after

T9.390 [ZDF200001 -] NA, T9.450 [ZDF200001 -] NA, T9.505 [ZDF200001 -] NA, T9.560 [ZDF200001 -] NA, T9.615 [ZDF200001 -] NA, T9.670 [ZDF200001 -] NA

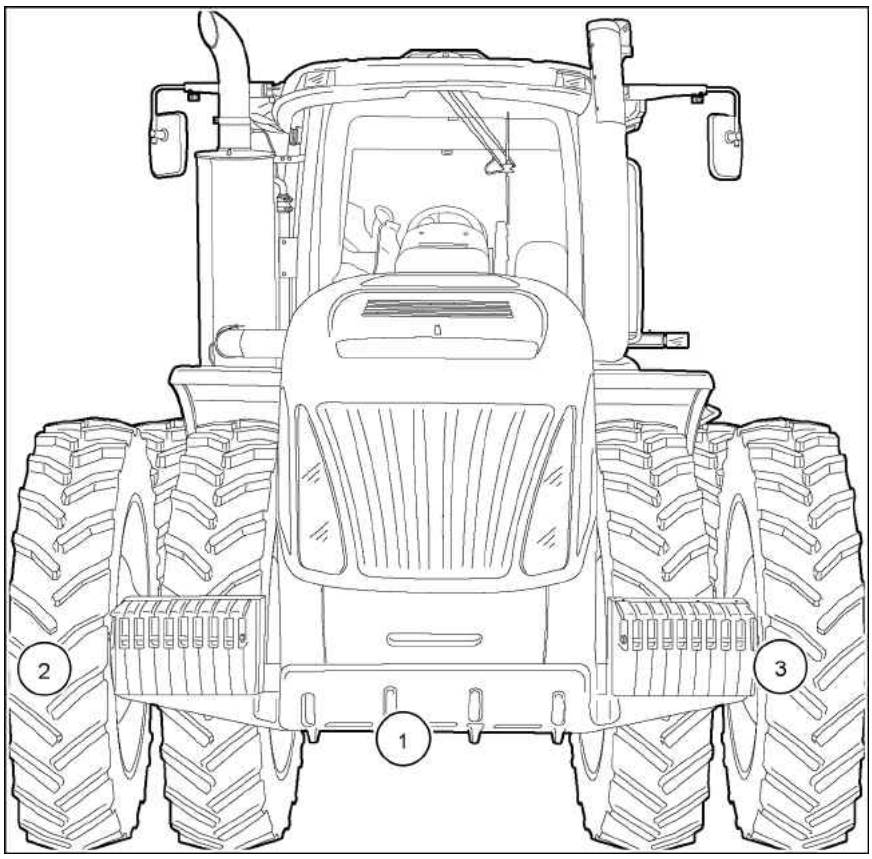
Engine	
Oil exchange capacity with filter (approx.)	**TUTELA UNITEK CJ-4 ENGINE OIL**
T9.390 Only	**25 l** (**6.6 US gal**)
All other models	**28 l** (**7.5 US gal**)
Cooling system	
Coolant type	**NEW HOLLAND AMBRA AGRIFLU**
Coolant mix	50-50 water and ethylene glycol mix
Coolant capacity	
T9.390, T9.450, T9.505, T9.560	**49 l** (**13 US gal**)
T9.615 and T9.670	**70 l** (**18.4 US gal**)
Transmission	
Oil type	**NEW HOLLAND AMBRA MASTERTRAN® ULTRACTION**
T9.390, T9.450, T9.505, T9.560 and T9.615 Standard	**57 l** (**15.1 US gal**)
T9.615 Scraper and T9.670	**72 l** (**19 US gal**)
Axle/hydraulic system	
Oil type	**NEW HOLLAND AMBRA MASTERTRAN® ULTRACTION**
Approx. total system capacity (See Note)	
T9.390	**227 l** (**60 US gal**)
T9.450, T9.505, T9.560, T9.615 and T9.670	**250 l** (**66 US gal**)

NOTE: *Total system capacity includes filters, front and rear axle and reservoir. If Three Point Hitch equipped, add* ***19 l*** *(****5 US gal****).*

Definition - Machine orientation

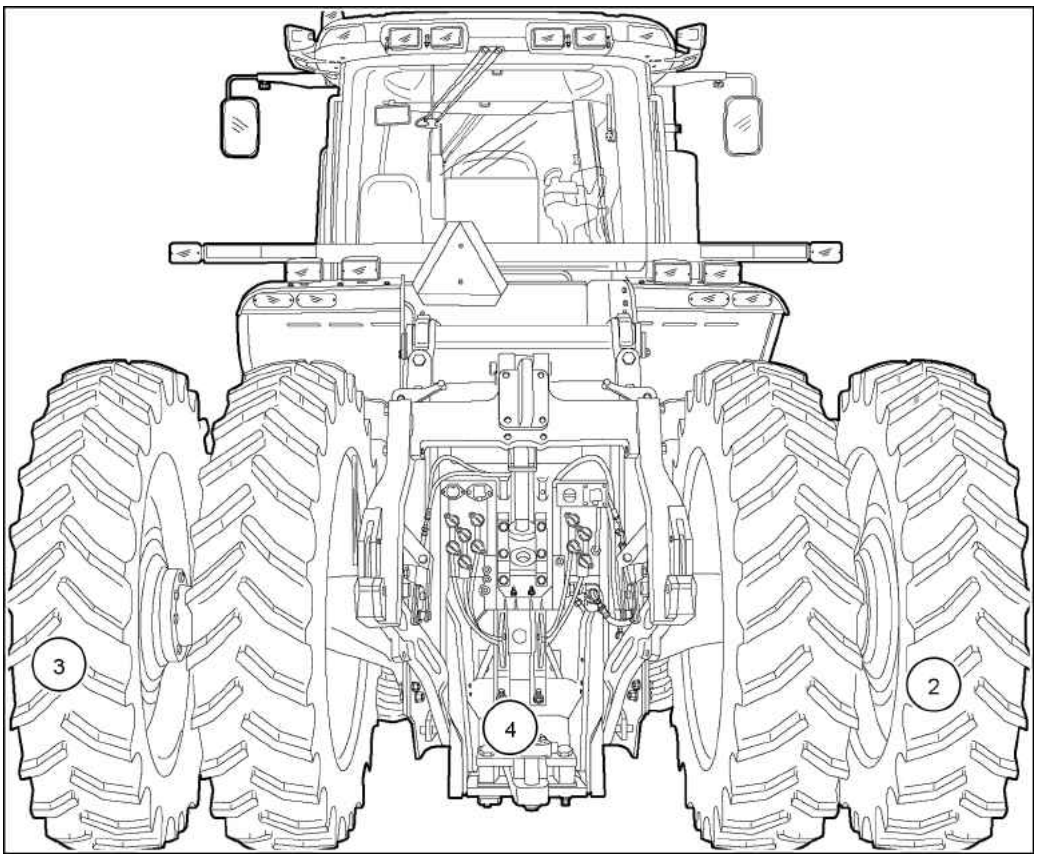
T9.390 NA, T9.450 NA, T9.505 NA, T9.560 NA, T9.615 NA, T9.670 NA

The right hand and left hand sides of the machine as used in this manual are the same as your right and left hand when sitting in the operators seat looking forward.



RCPH10FWD652GAM 1

1. Front of unit	2. Right hand side	3. Left hand side



RCPH10FWD653GAM 2

2. Right hand side	3. Left hand side	4. Rear of unit

SERVICE MANUAL

Engine

T9.390 [ZBF200001 -] , T9.390 [ZCF200001 -] , T9.390 [ZDF200001 -] , T9.450 [ZBF200001 -] , T9.450 [ZCF200001 -] , T9.450 [ZDF200001 -] , T9.505 [ZBF200001 -] , T9.505 [ZCF200001 -] , T9.505 [ZDF200001 -] , T9.560 [ZBF200001 -] , T9.560 [ZCF200001 -] , T9.560 [ZDF200001 -] , T9.615 [ZBF200001 -] , T9.615 [ZCF200001 -] , T9.615 [ZDF200001 -] , T9.670 [ZBF200001 -] , T9.670 [ZCF200001 -] , T9.670 [ZDF200001 -]

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Engine and crankcase - 001

T9.390 [ZBF200001 -] , T9.390 [ZCF200001 -] , T9.390 [ZDF200001 -] , T9.450 [ZBF200001 -] , T9.450 [ZCF200001 -] , T9.450 [ZDF200001 -] , T9.505 [ZBF200001 -] , T9.505 [ZCF200001 -] , T9.505 [ZDF200001 -] , T9.560 [ZBF200001 -] , T9.560 [ZCF200001 -] , T9.560 [ZDF200001 -] , T9.615 [ZBF200001 -] , T9.615 [ZCF200001 -] , T9.615 [ZDF200001 -] , T9.670 [ZBF200001 -] , T9.670 [ZCF200001 -] , T9.670 [ZDF200001 -]

Contents

Engine - 10

Engine and crankcase - 001

SERVICE

Engine

Engine - Remove - 9 Liter tractors

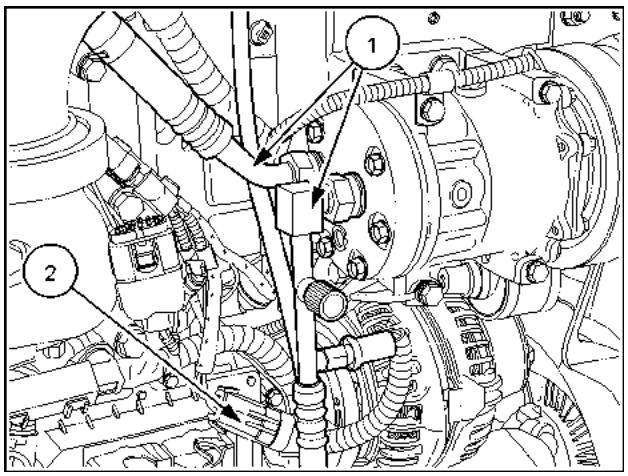
T9.390

Air conditioning - Evacuate - Air conditioning system (50.200)

Prior operation:
Hood - Remove - Hood support frame on row crop unit (90.100)

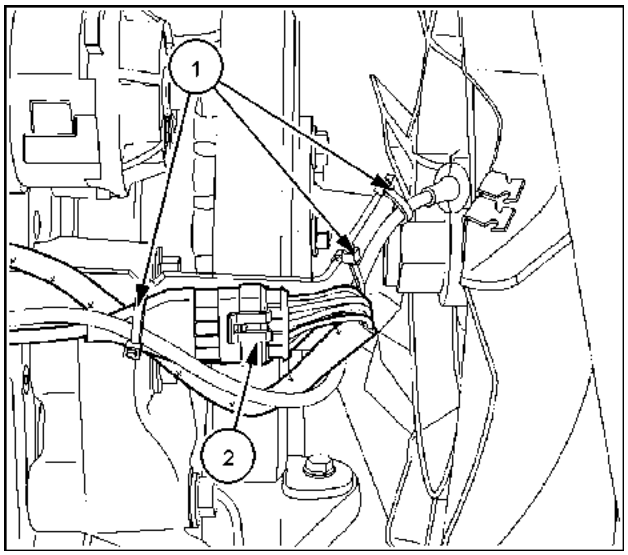
1. Disconnect air conditioning high and low pressure hoses **(1)** from compressor. Unplug high pressure sending unit **(2)**.

NOTE: *Cap and plug disconnected hoses and ports.*



RCPH10FWD998BAC 1

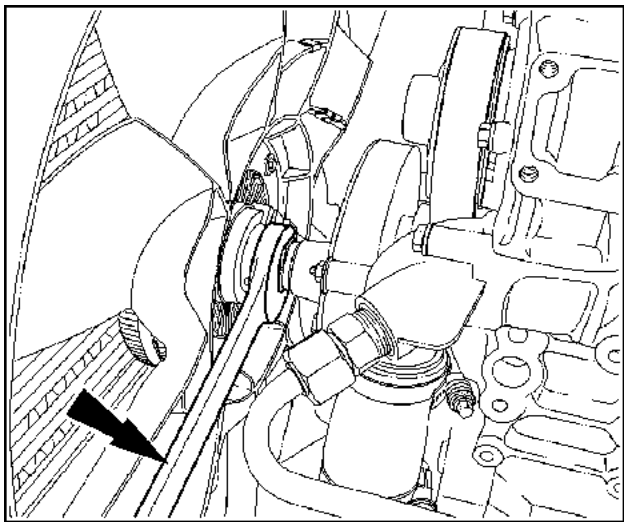
2. Cut ties **(1)** and unplug harness **(2)**.



RCPH10FWD009BBC 2

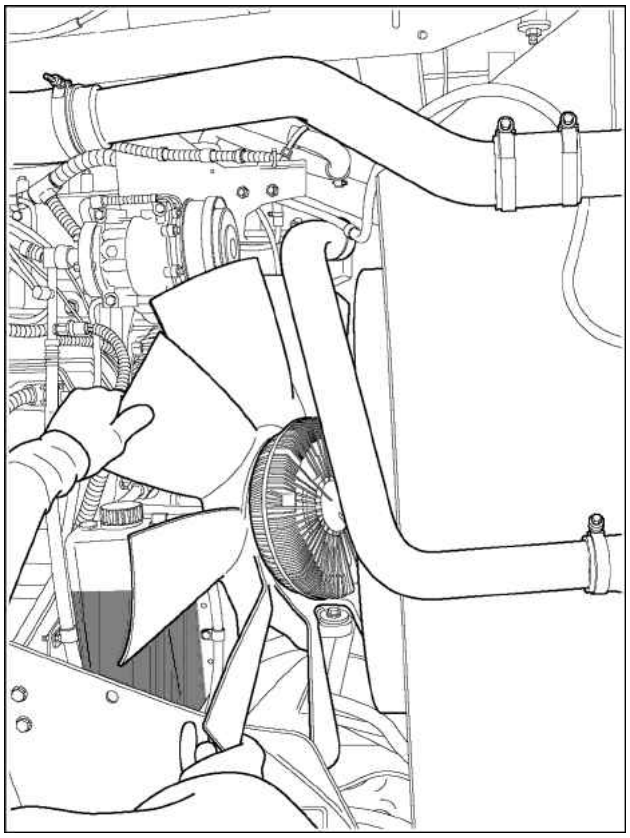
3. Loosen fan from hub.

NOTE: *Hub has left hand threads.*



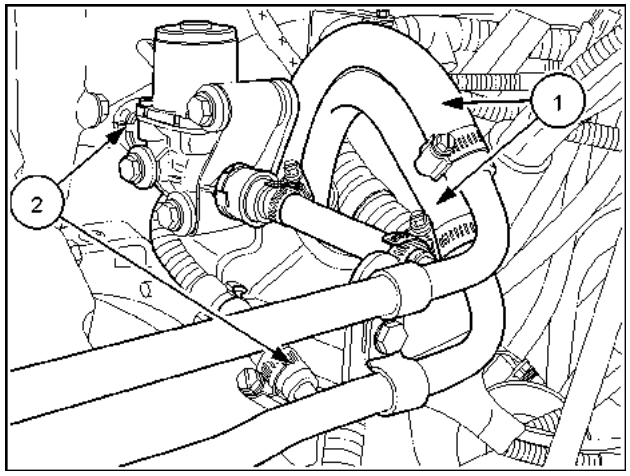
RCPH10FWD010BBC 3

4. With the help of an assistant turn fan off hub. Remove out the right hand side.



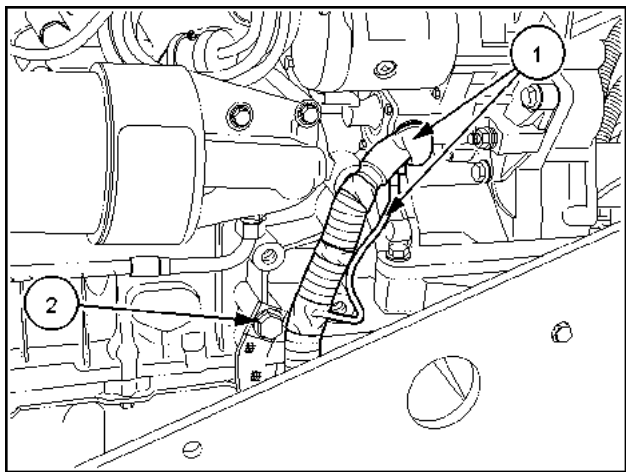
RCPH10FWD011BBC 4

5. Label and disconnect heater hoses **(1)** and DEF/Ad-Blue® solenoid hoses **(2)**.



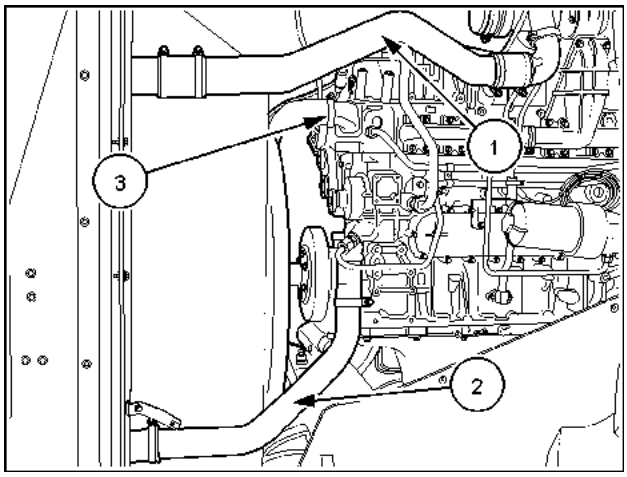
RCPH10FWD012BBC 5

6. Disconnect starter connections **(1)**. Remove ground strap from engine block **(2)**.



RCPH10FWD013BBC 6

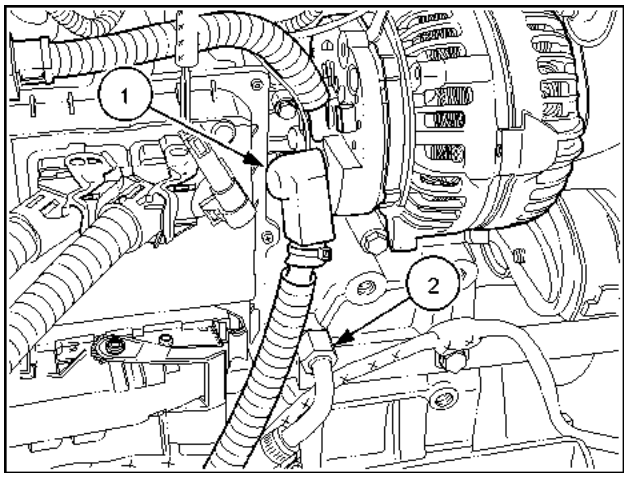
7. Remove left hand air to air tube **(1)** and lower radiator hose **(2)**. Loosen upper radiator hose clamp **(3)**.



RCPH10FWD014BBC 7

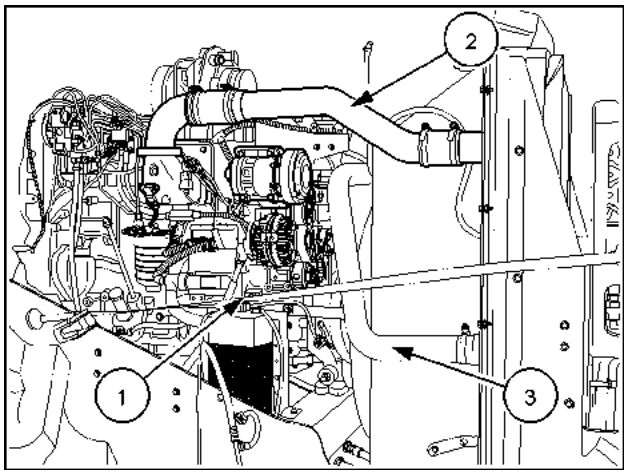
8. Disconnect alternator cable **(1)**. Disconnect fuel line **(2)**.

NOTE: *Plug and cap disconnected fuel line and fitting.*



RCPH10FWD015BBC 8

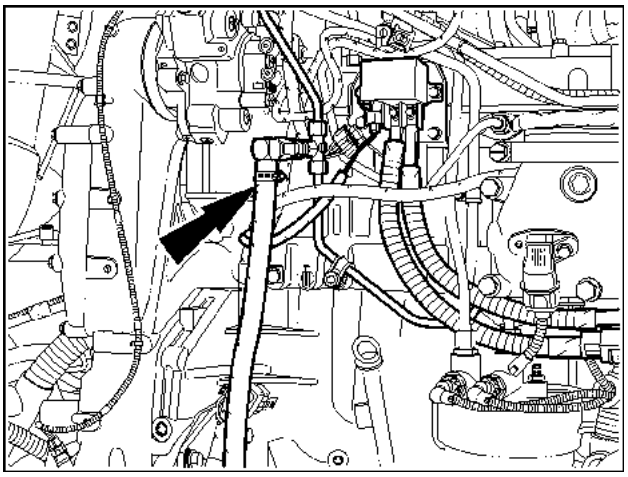
9. Secure cooling package with support strap **(1)**. Remove right hand air to air tube **(2)** and upper radiator hose **(3)**.



RCPH10FWD016BBC 9

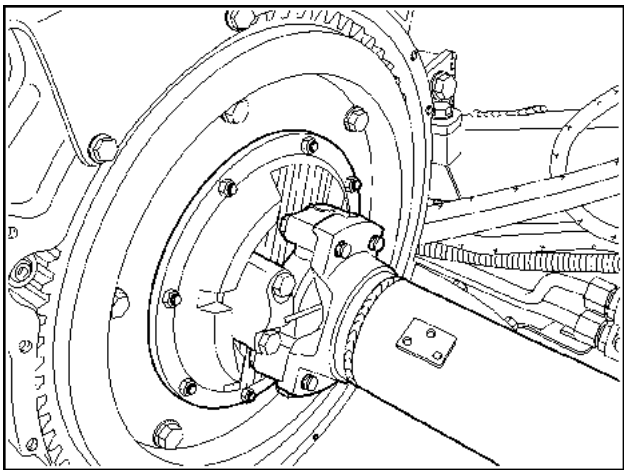
10. Disconnect fuel return line.

NOTE: *Plug and cap disconnected hoses and fittings.*



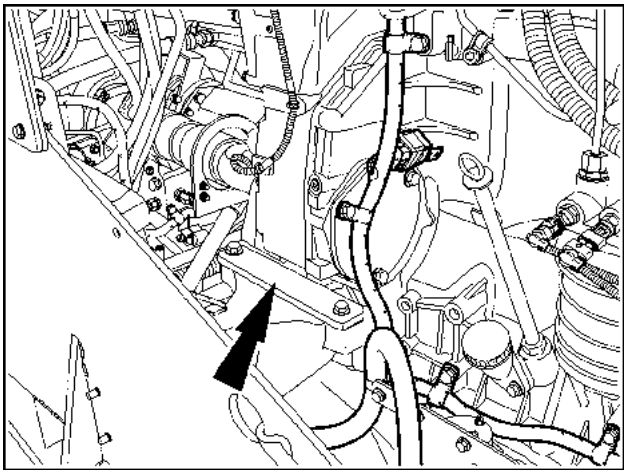
RCPH10FWD017BBC 10

11. Disconnect drive shaft from engine.



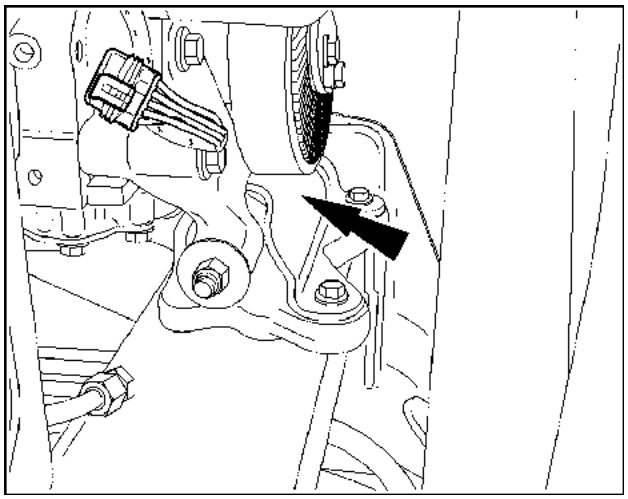
RCPH10FWD018BBC 11

12. Remove bracket on both sides over rear engine mounts.



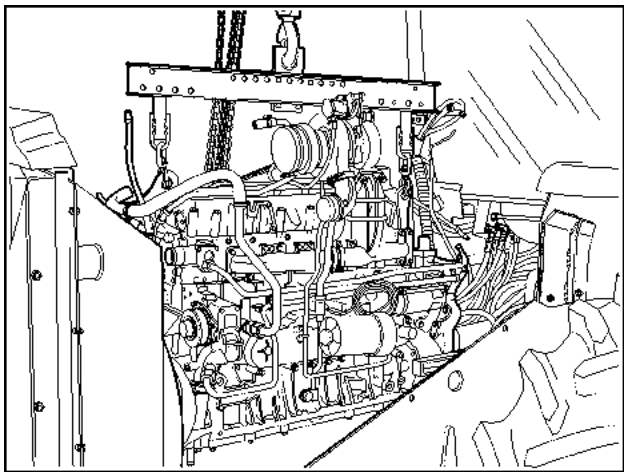
RCPH10FWD019BBC 12

13. Remove front engine mount bracket.



RCPH10FWD021BBC 13

14. Attach 4130 load rotor lifting bale or equivalent. Remove engine from tractor over left hand side rail.



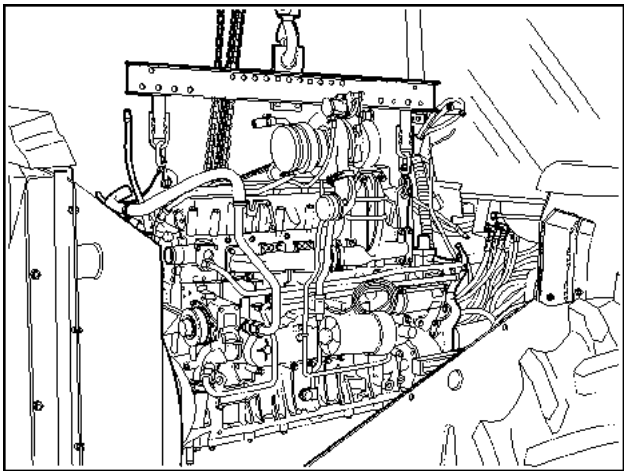
RCPH10FWD022BBC 14

Engine - Install - 9 Liter tractors

T9.390

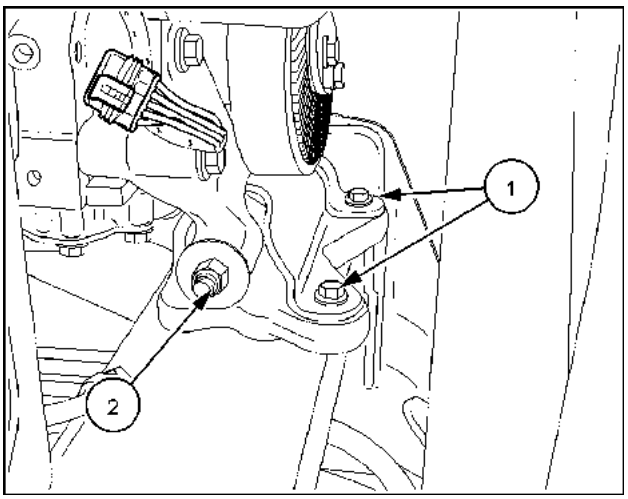
1. Attach load rotor 4130 lifting bale or equivalent to an overhead hoist and the two engine lifting brackets. Install isomounts, lift engine and set into tractor frame.

NOTICE: *The engine lifting brackets are for vertical lifting only. Any lifting device that is not vertically in line with the lifting brackets can damage the engine rocker arm cover or cause bracket failure*



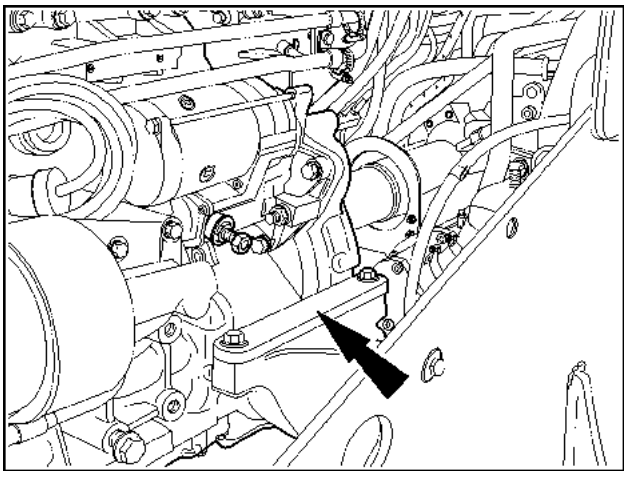
RCPH10FWD022BBC 1

2. Install front engine mount bracket. Torque the lower engine mount to frame bolts **(1)** to **90 - 107 N·m** (**66 - 79 lb ft**). Torque the ISO mount nut **(2)** to **160 - 220 N·m** (**118 - 162 lb ft**).



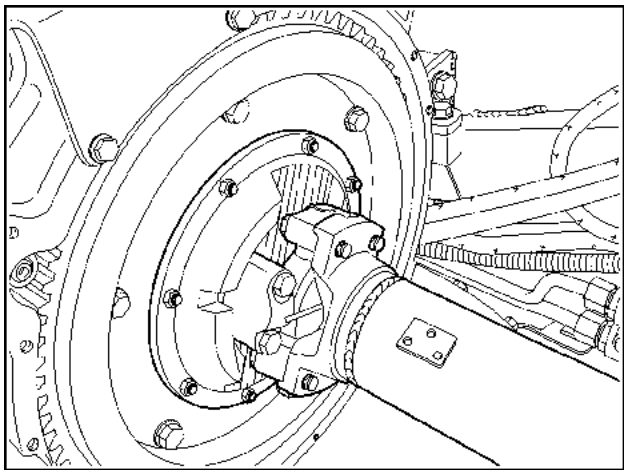
RCPH10FWD021BBC 2

3. Install rear retaining straps to both sides. Torque bolts to **125 - 150 N·m** (**92 - 111 lb ft**). .



RCPH10FWD020BBC 3

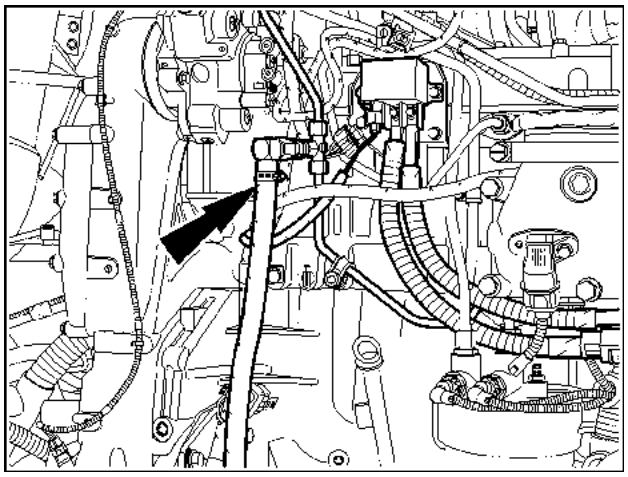
4. Connect drive shaft to drive coupler. Torque the bolts to **95 - 108 N·m** (**70 - 80 lb ft**).



RCPH10FWD018BBC 4

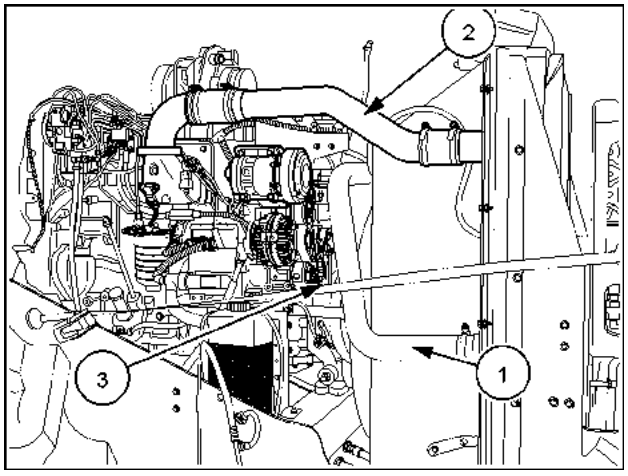
5. Connect fuel return line.

NOTE: *Remove plug and cap from hose and fitting.*



RCPH10FWD017BBC 5

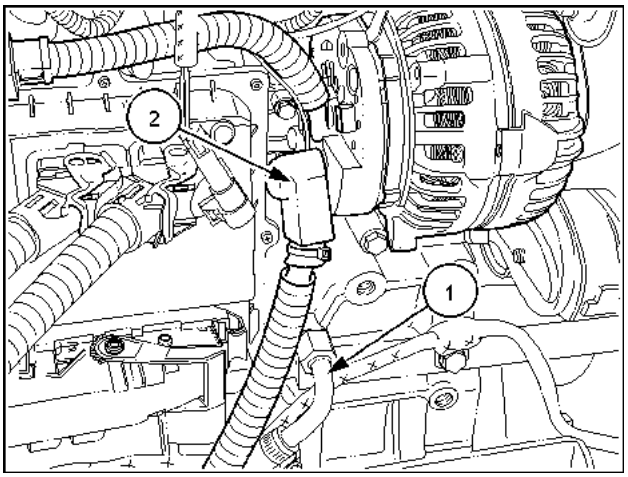
6. Install upper radiator hose **(1)** and right hand air to air tube **(2)**. Remove support strap **(3)**.



RCPH10FWD016BBC 6

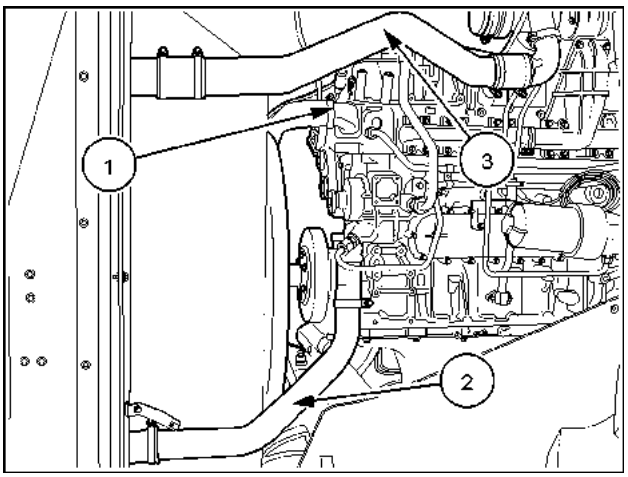
7. Connect fuel line **(1)**and alternator cable **(2)**.

NOTE: *Remove plug and cap from hose and fitting.*



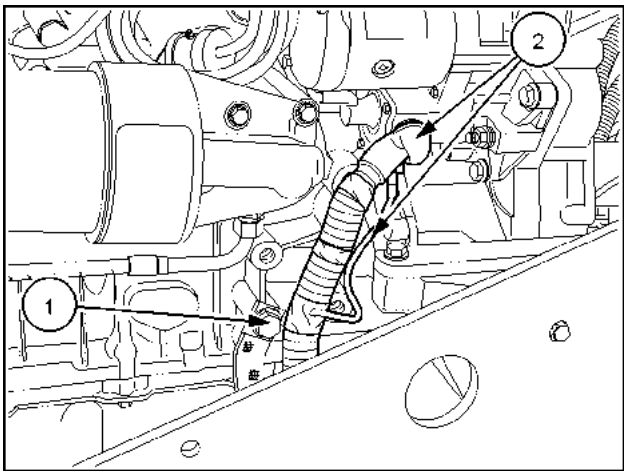
RCPH10FWD015BBC 7

8. Tighten upper radiator hose **(1)**. Install lower radiator hose **(2)**, and left hand air to air tube **(3)**.



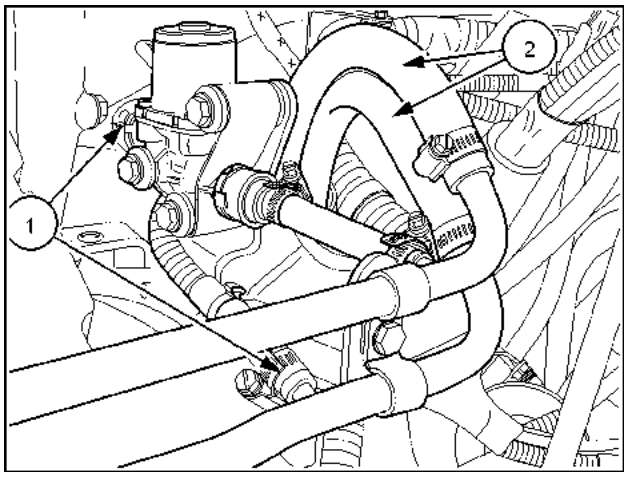
RCPH10FWD014BBC 8

9. Secure ground strap to engine block. **(1)**. Connect starter cable and wire **(2)** to starter.



RCPH10FWD013BBC 9

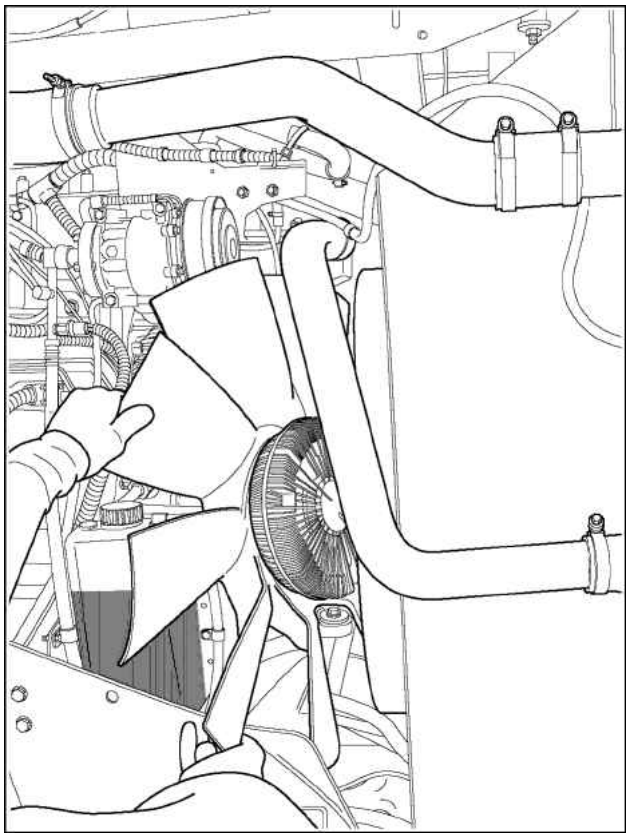
10. Connect Diesel Emission Fluid/AdBlue® (DEF/AdBlue®) hoses **(1)** to solenoid and engine tubing. Connect heater hoses **(2)** as marked during disassembly.



RCPH10FWD012BBC 10

11. Install fan from right hand side of engine with the help of an assistant.

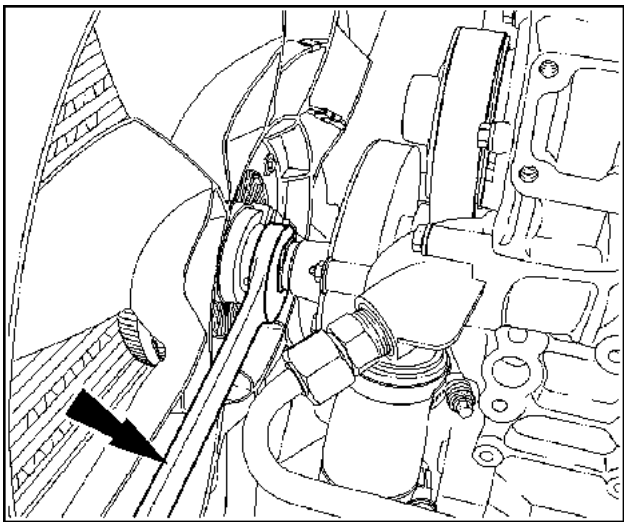
NOTE: *Hub has left handed thread.*



RCPH10FWD011BBC 11

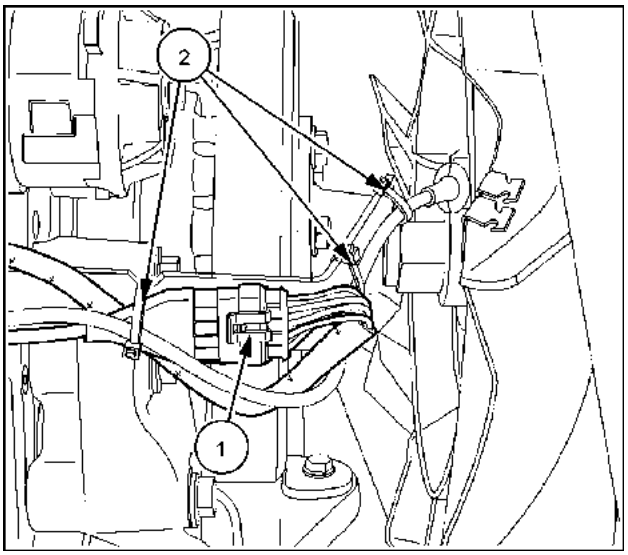
12. Tighten fan assembly to hub .

NOTE: *Hub has left handed thread.*



RCPH10FWD010BBC 12

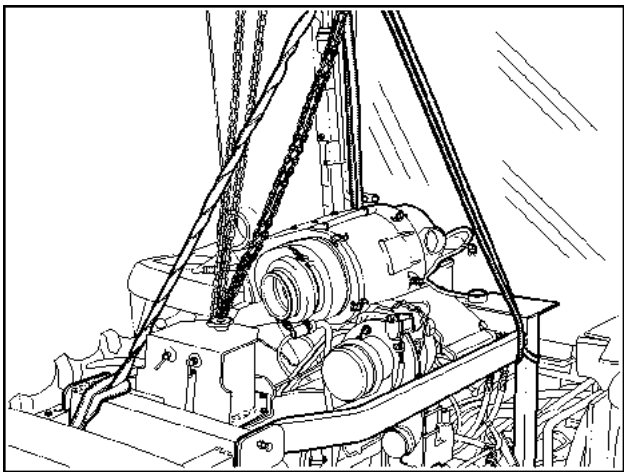
13. Plug in harness connector **(1)** and tie harness lead **(2)** to bracket.



RCPH10FWD009BBC 13

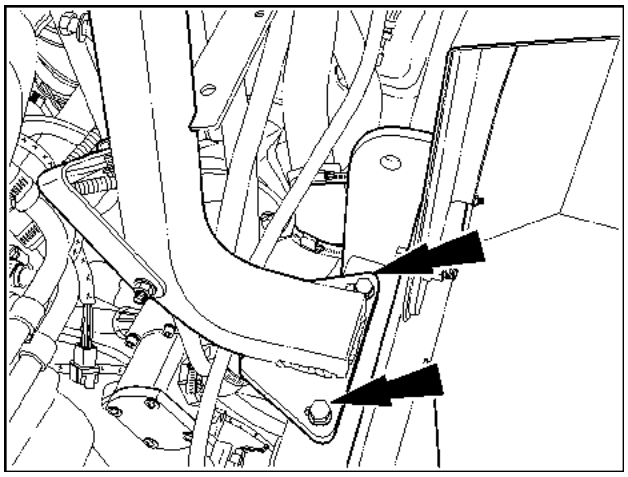
14. Attach lifting straps as shown. Use overhead crane to set hood support frame into position.

NOTE: *Be sure right hand side air conditioner line is in place while lowering hood support frame into position.*



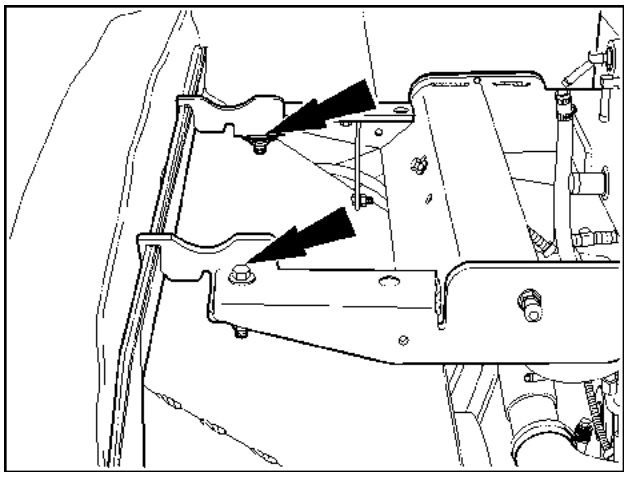
RCPH10FWD008BBC 14

15. Install and tighten bolts securing hood support frame to tractor frame on both sides.



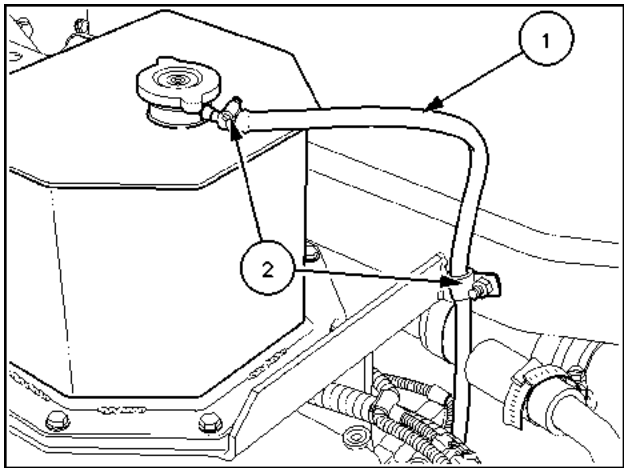
RCPH10FWD007BBC 15

16. Secure hood support frame to cooling package frame with removed hardware.



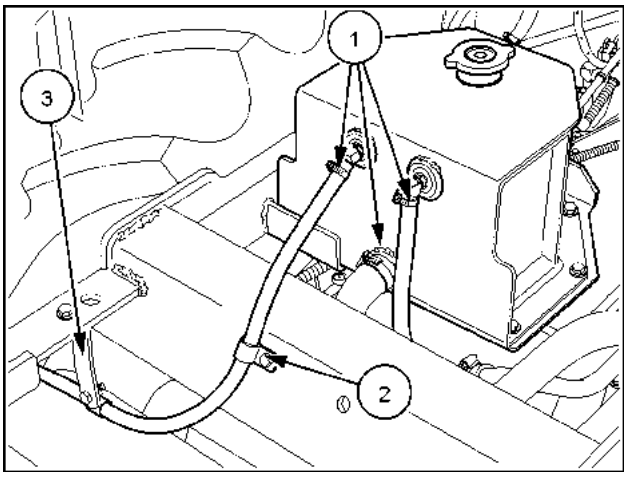
RCPH10FWD005BBC 16

17. Connect hose **(1)**. Install clamps **(2)**.



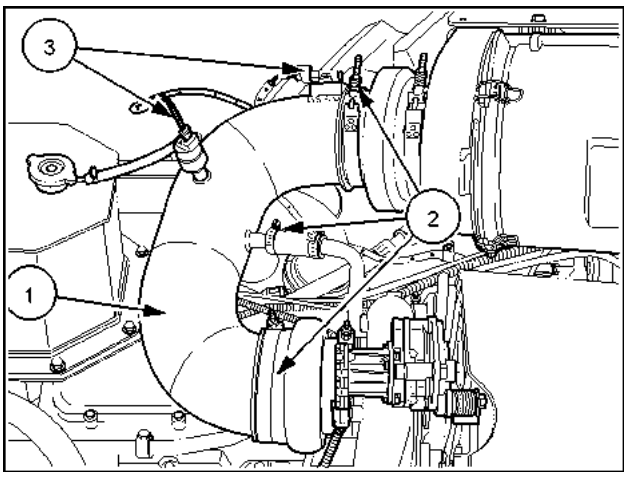
RCPH10FWD004BBC 17

18. Connect hoses **(1)** and tighten clamps. Install clamp **(2)** and bracket **(3)** to hood support frame.



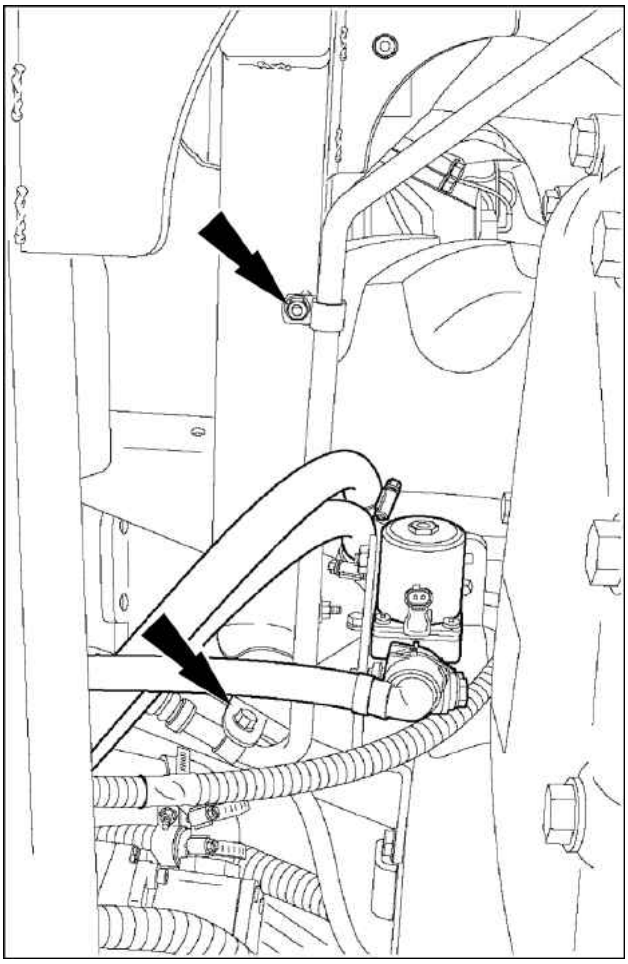
RCPH10FWD003BBC 18

19. Assemble intake tube **(1)** to turbo and air filter housing. Install clamps **(2)**. Plug in harness to sensors **(3)**.



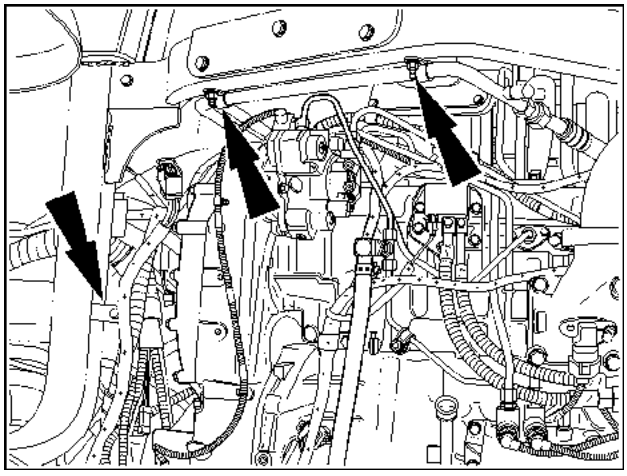
RCPH10FWD002BBC 19

20. Install clamps to hood support frame.



RCPH10FWD001CBC 20

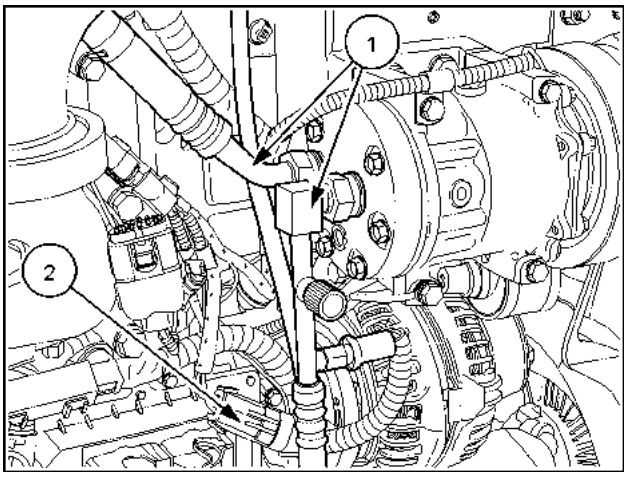
21. Install clamps to hood support frame.



RCPH10FWD999BAC 21

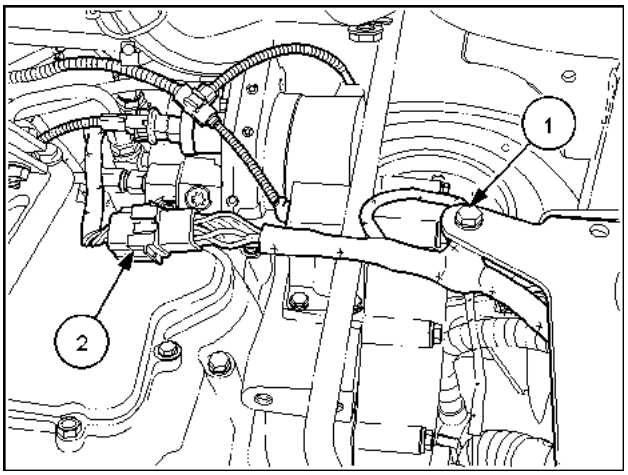
22. Connect high and low pressure hoses to compressor **(1)**. Plug in high pressure sensor **(2)** to harness.

NOTE: *Install new O-rings and lubricate with clean compressor oil.*



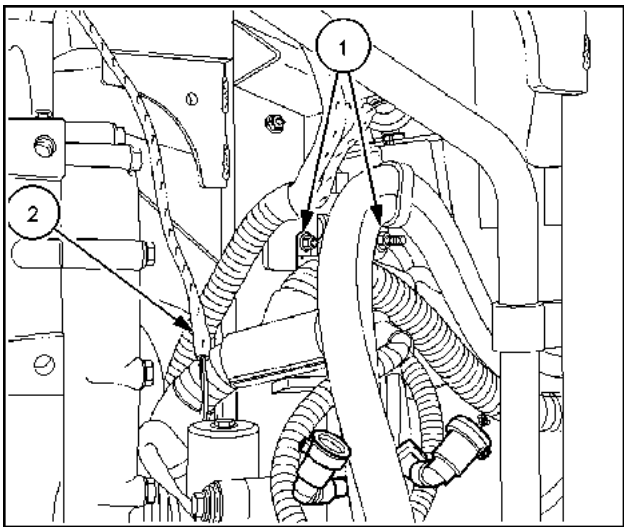
RCPH10FWD998BAC 22

23. Secure clamp **(1)**. Plug in harness connector **(2)**.



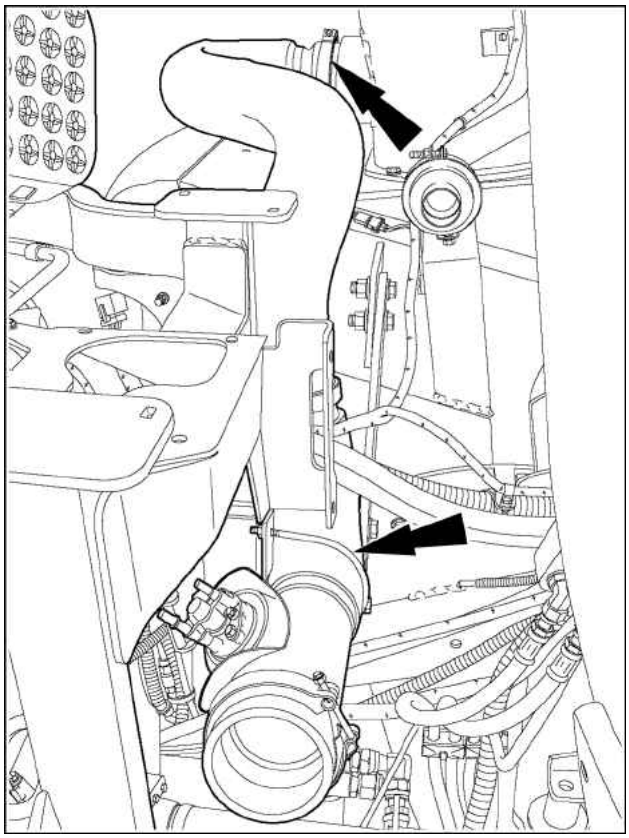
RCPH10FWD996BAC 23

24. Secure heater hoses and harness with clamps **(1)**. Plug in connector to DEF/AdBlue® heater solenoid **(2)**.



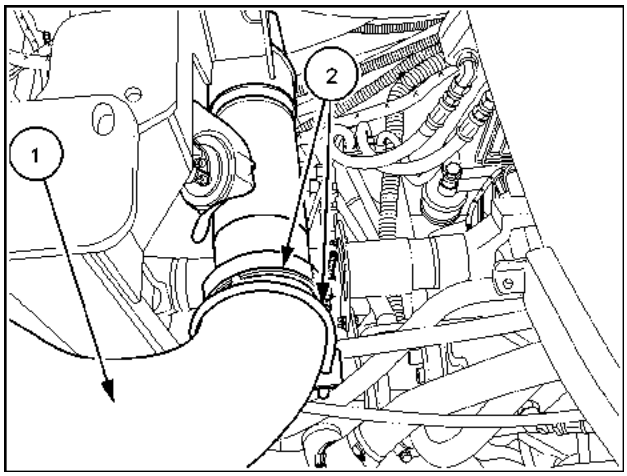
RCPH10FWD995BAC 24

25. Loose assemble section of exhaust from muffler/canister with clamps removed during disassembly.



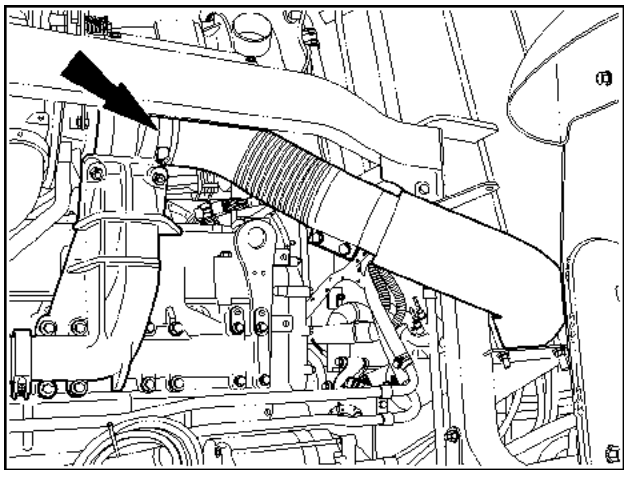
RCPH10FWD994BAC 25

26. Install exhaust section **(1)** from turbo to newly installed section. Loose assemble clamps **(2)**.



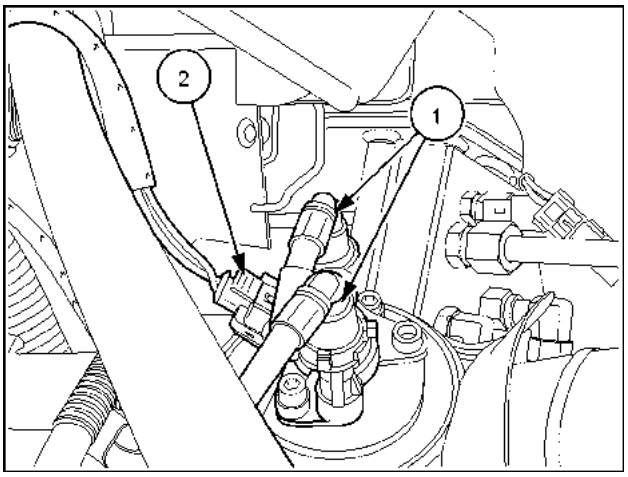
RCPH10FWD993BAC 26

27. Assemble clamp at turbo. Adjust sections of exhaust and tighten all clamps.



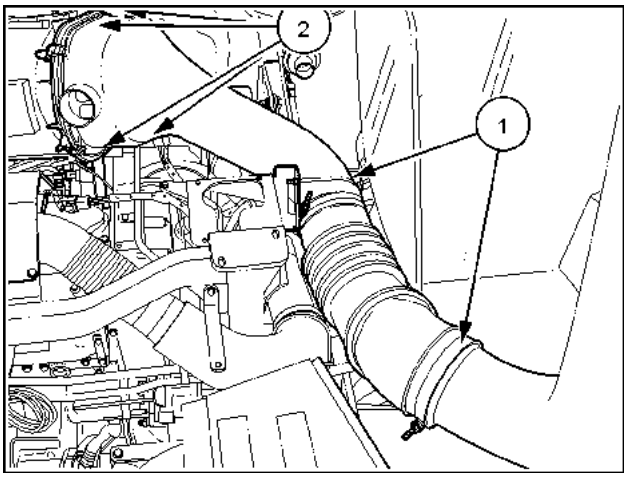
RCPH10FWD992BAC 27

28. Connect lines for DEF/AdBlue® **(1)** and connect harness to sensor **(2)**.



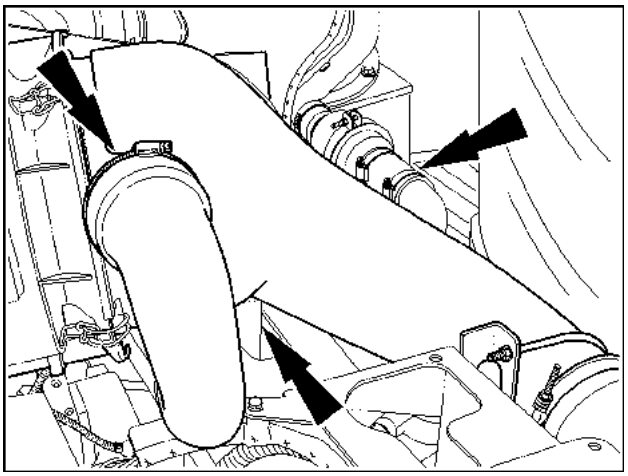
RCPH10FWD991BAC 28

29. Set air intake duct in position. Loose assemble clamps **(1)**and bolts **(2)**. Adjust and tighten.



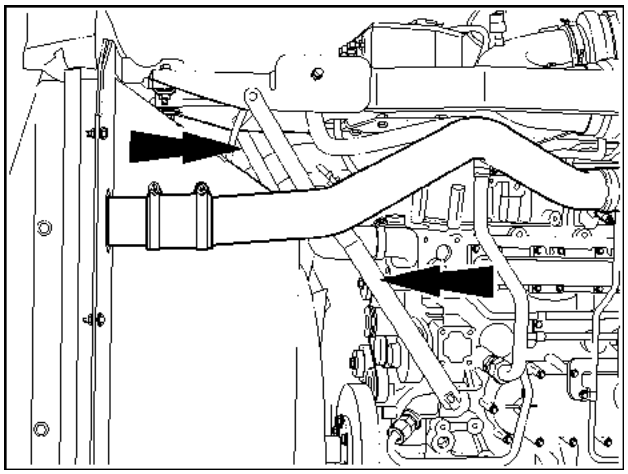
RCPH10FWD990BAC 29

30. Assemble aspirator tube. Tighten clamps.



RCPH10FWD989BAC 30

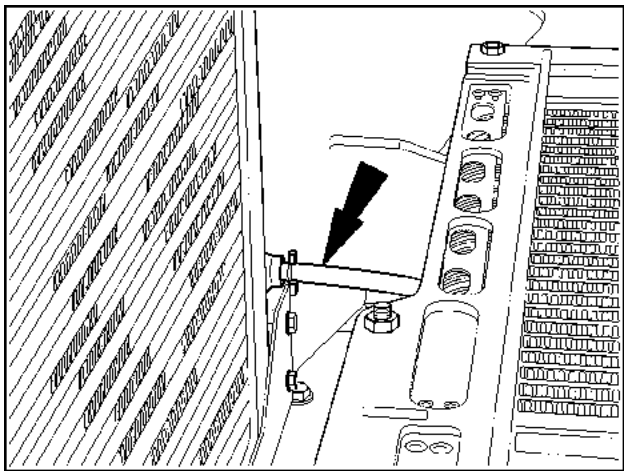
31. Assemble engine side shield support brackets.



RCPH10FWD988BAC 31

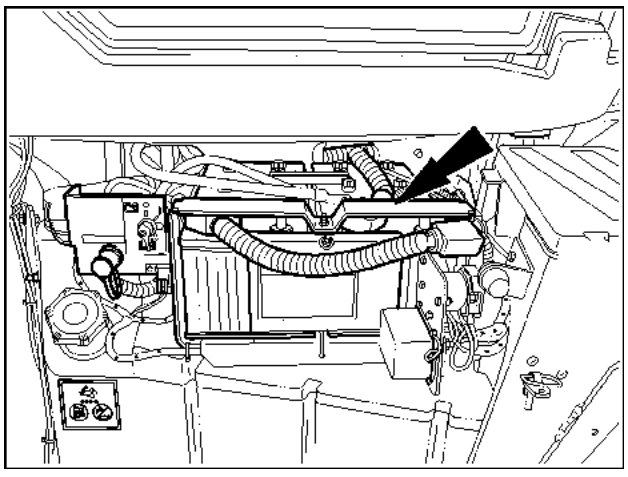
32. Fill engine with specified engine oil.

33. Remove drain hose, close petcock and fill cooling system with proper coolant.



RCPH10FWD987BAC 32

34. Connect cables to batteries and install hold down bracket.



RCPH10FWD934BAC 33

35. Start engine. Check for function and leaks.

Next operation:
Air conditioning - Charging - Air conditioning system (50.200)
Next operation:
Hood - Install - Hood support frame on row crop unit (90.100)

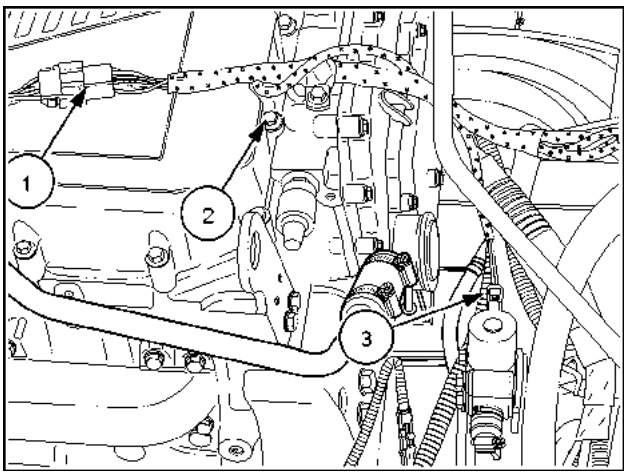
Engine - Remove - 13L single turbo tractors

T9.450, T9.505, T9.560

Air conditioning - Evacuate - Air conditioning system (50.200)

Prior operation:
Hood - Remove - Hood support frame on row crop unit (90.100)
Prior operation:
Hood - Remove - Hood support frame on high power frame (90.100)

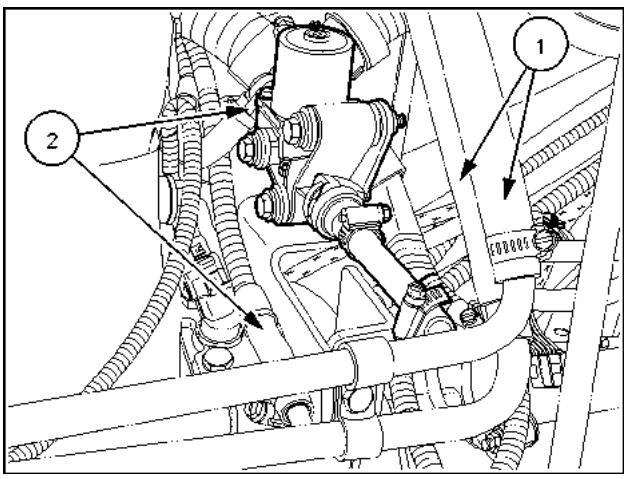
1. Disconnect harness connector **(1)**, remove bolt **(2)** securing harness to engine and unplug connector **(3)** at valve.



RCPH10FWD905BAC 1

2. Label and disconnect heater hoses **(1)** from tubes on engine. Disconnect two hoses **(2)** for DEF/AdBlue system heater.

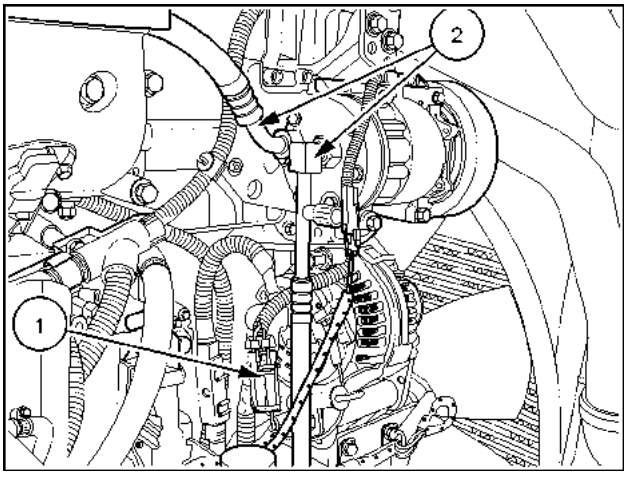
NOTE: *Plug and cap all disconnected hoses and tubing.*



RCPH10FWD906BAC 2

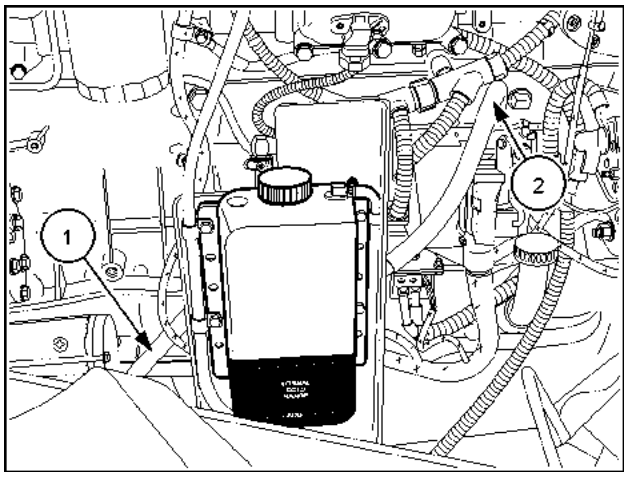
3. Unplug high pressure sending unit **(1)**. Disconnect air conditioning lines **(2)** from compressor.

NOTE: *Plug and cap disconnected lines and fittings.*



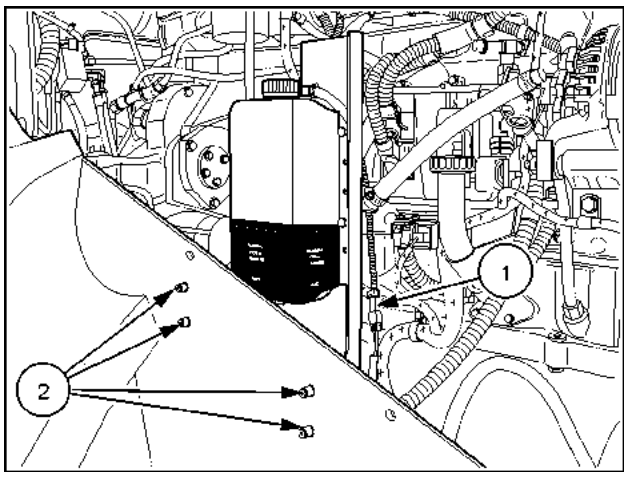
RCPH10FWD907BAC 3

4. Disconnect and plug fuel line **(1)** to pump (behind coolant recovery bottle) and to engine controller **(2)**.



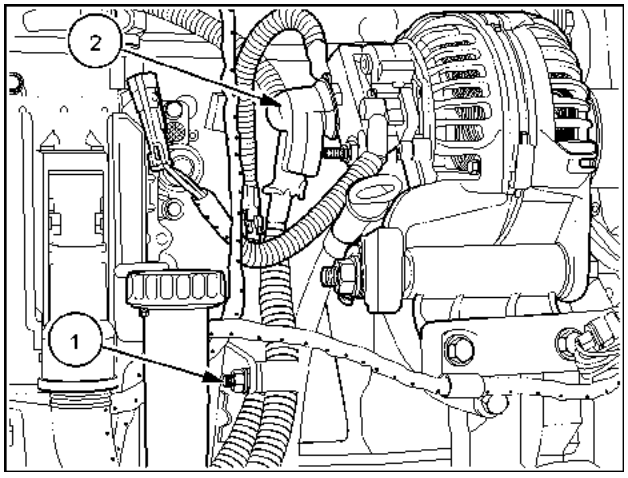
RCPH10FWD908BAC 4

5. Disconnect connector **(1)** to fuel pump, remove four nuts (on inside of frame) **(2)** remove bracket with recovery bottle and fuel pump from frame.



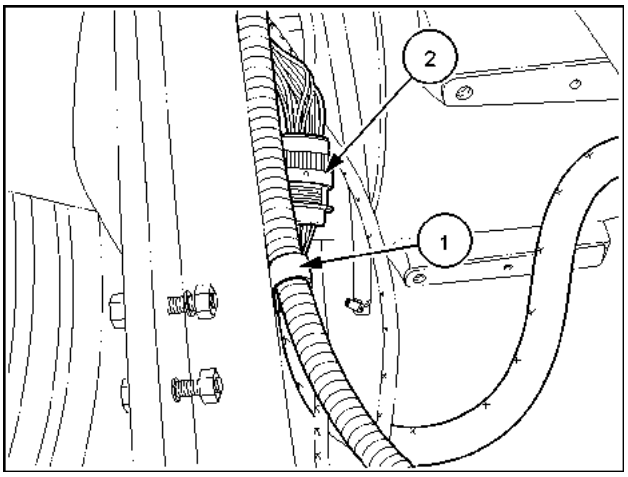
RCPH10FWD909BAC 5

6. Remove clamp **(1)** and disconnect battery cable **(2)** from alternator.



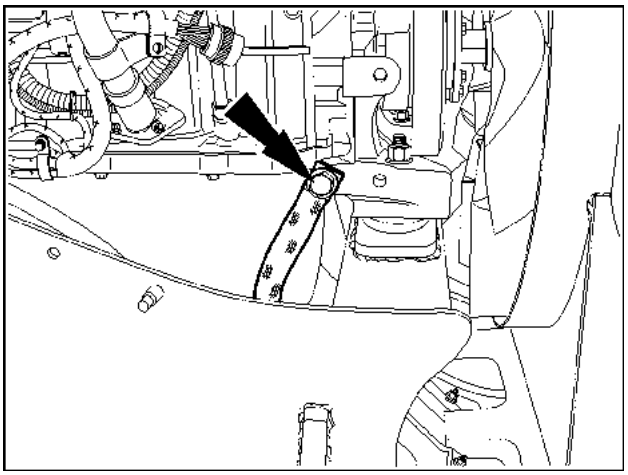
RCPH10FWD910BAC 6

7. Remove clamps **(1)** from stud on inside of frame and disconnect large harness connector **(2)**.



RCPH10FWD911BAC 7

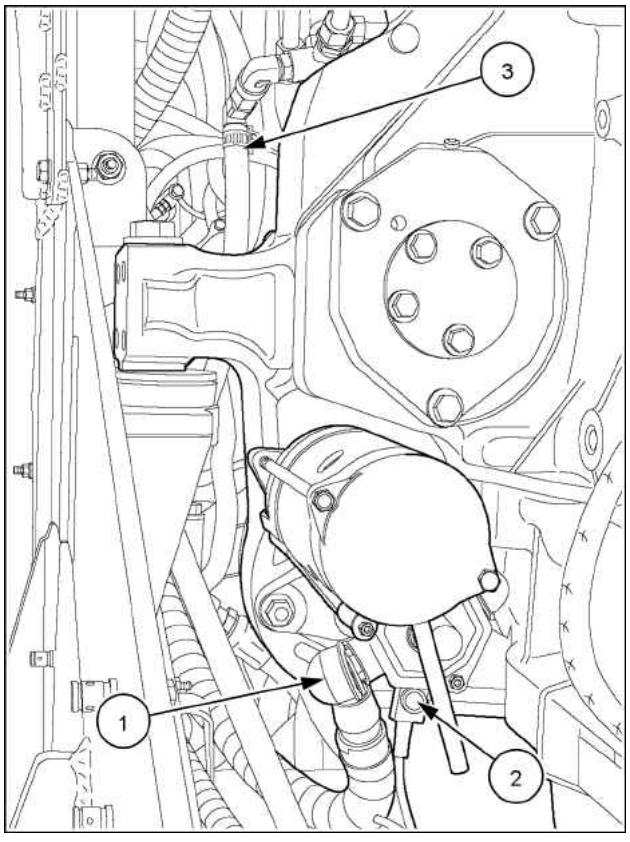
8. Remove ground strap from engine.



RCPH10FWD912BAC 8

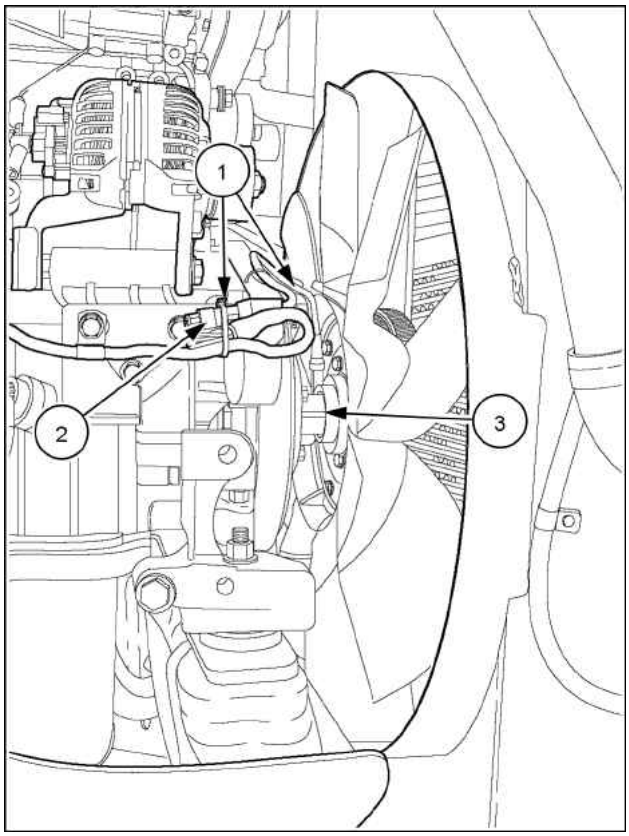
9. Disconnect cable **(1)** and solenoid wire **(2)** to starter. Disconnect fuel return line **(3)**.

NOTE: *Plug and cap fuel tube and hose.*



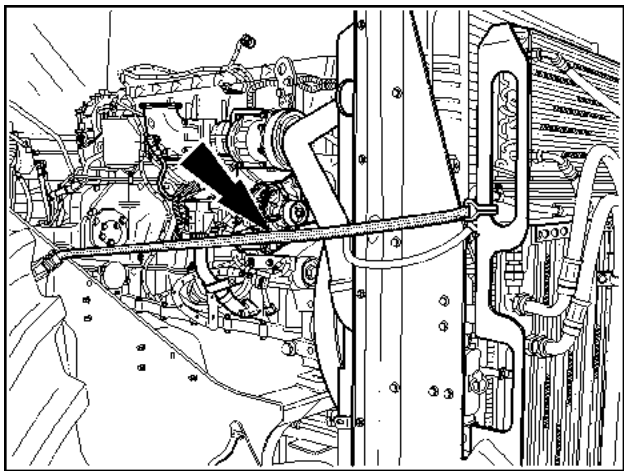
RCPH10FWD913BAC 9

10. Remove ties **(1)**, unplug connector **(2)**, and loosen fan hub **(3)** (left hand thread).
With the help of an assistant turn fan off of hub and remove out right hand side past shroud.



RCPH10FWD914BAC 10

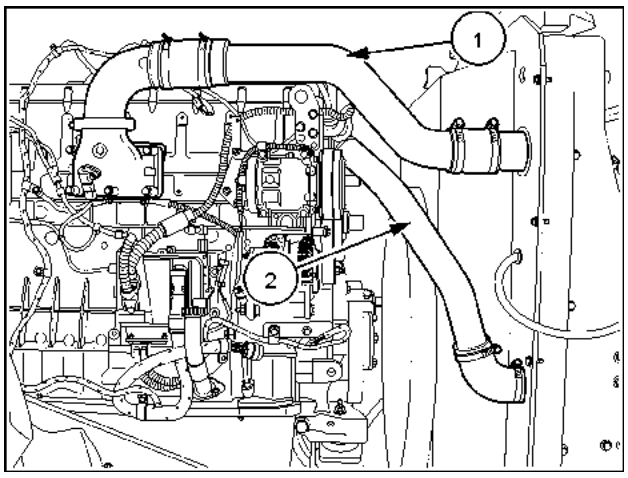
11. Install support strap as shown to support cooling package when air to air and radiator tubes are removed.



RCPH10FWD915BAC 11

12. Loosen clamps and remove right hand air to air cooler tube **(1)** and upper radiator tube **(2)**.

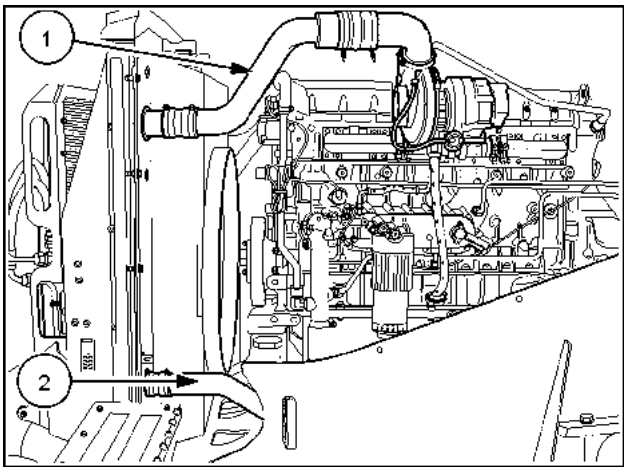
NOTE: *Plug and cap inlets and outlets on engine and cooling package.*



RCPH10FWD916BAC 12

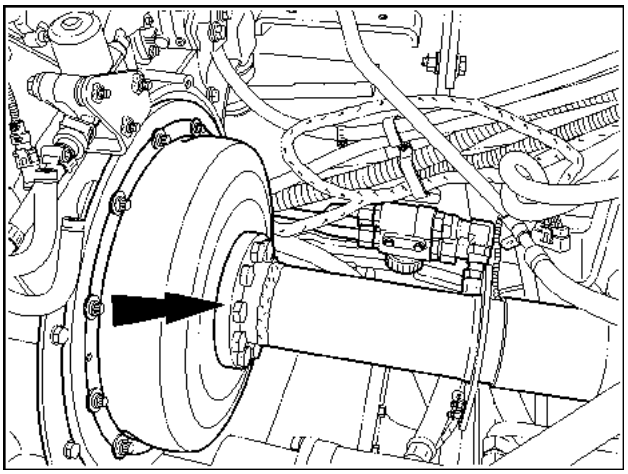
13. Loosen clamps and remove left hand air to air cooler tube **(1)** and lower radiator tube **(2)**.

NOTE: *Plug and cap inlets and outlets on engine and cooling package.*



RCPH10FWD917BAC 13

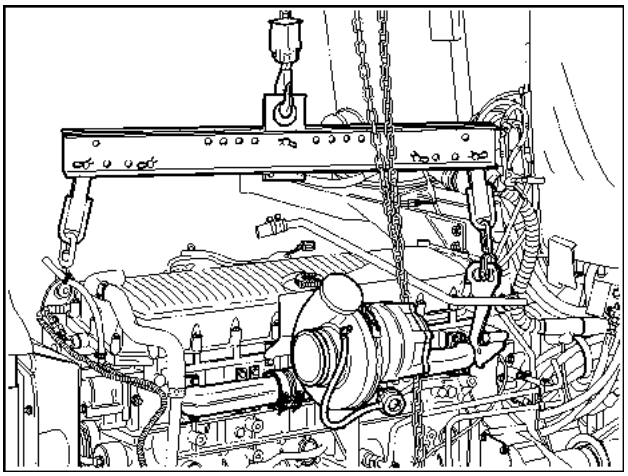
14. Remove the driveshaft to drive coupler mounting bolts. Move driveshaft back, away from coupler.



RCPH10FWD918BAC 14

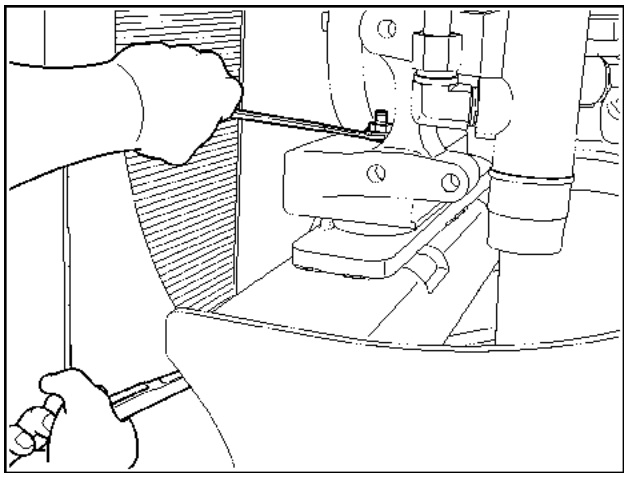
15. Attach the 4130 load rotor lifting bale or equivalent to overhead crane and engine lift brackets.

NOTICE: *The engine lifting brackets are for vertical lifting only. Any lifting device that is not vertically in line with the lifting brackets can damage the engine rocker arm cover or cause bracket failure.*



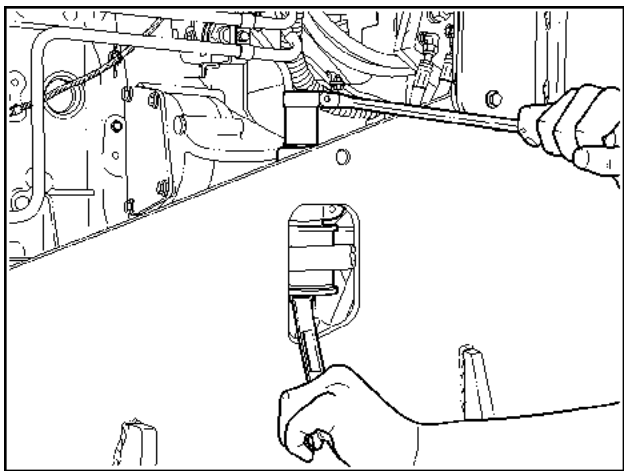
RCPH10FWD919BAC 15

16. Remove front left and right hand mounting bolts. (Left hand shown.)



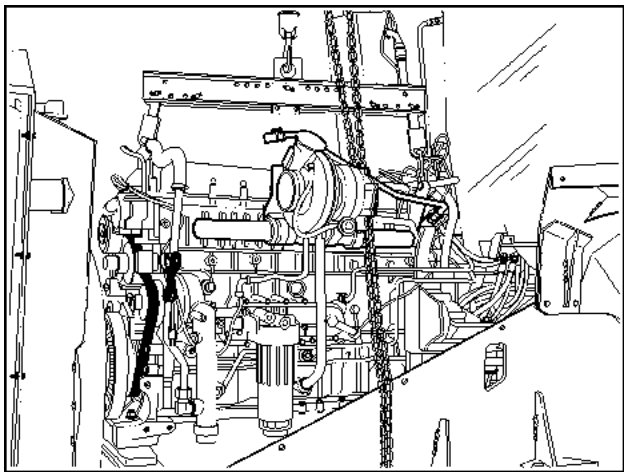
RCPH10FWD920BAC 16

17. Remove rear left and right hand mounting bolt. (Left hand shown.)



RCPH10FWD922BAC 17

18. Remove the engine from tractor by lifting over the left hand side rail.



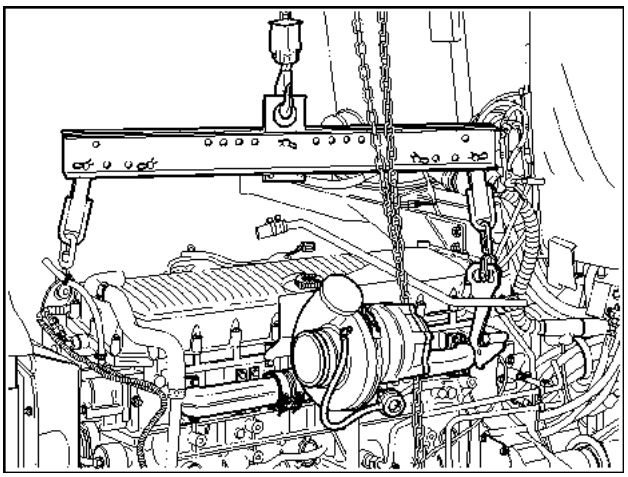
RCPH10FWD924BAC 18

Engine - Install - 13L single turbo tractors

T9.450, T9.505, T9.560

1. Attach load rotor 4130 lifting bale or equivalent to an overhead hoist and the two engine lifting brackets.

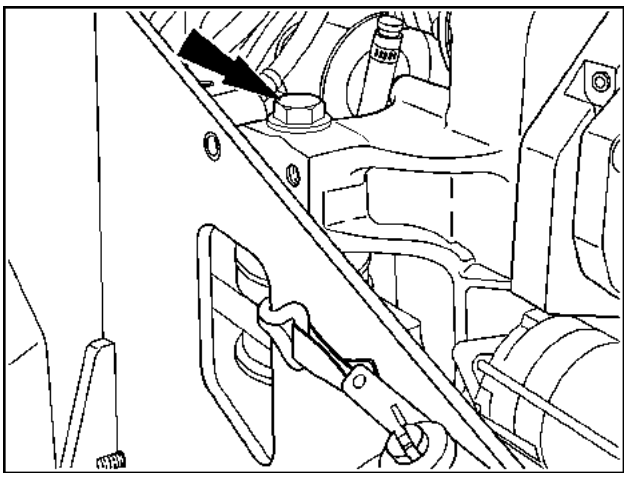
NOTICE: *The engine lifting brackets are for vertical lifting only. Any lifting device that is not vertically in line with the lifting brackets can damage the engine rocker arm cover or cause bracket failure*



RCPH10FWD919BAC 1

2. Install large flat washers on front and rear engine mount isolators. Install rear engine mount bolts in the engine mount brackets. Lift engine until oil pan will clear front frame. Move the engine rearward and use the rear engine mount bolts as guides to lower the engine on the mounts.

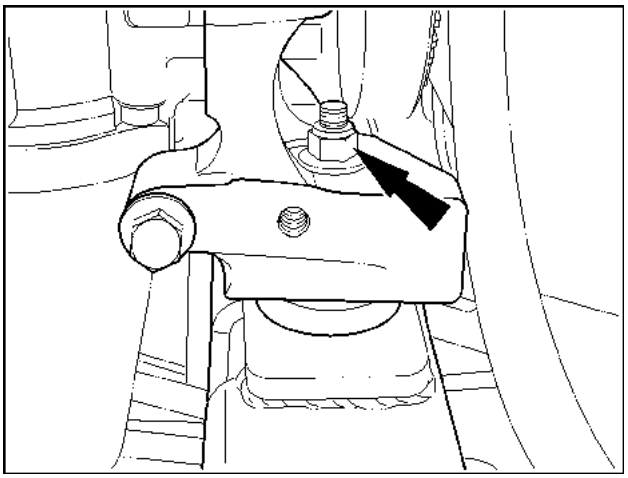
NOTE: *Right hand rear mount shown.*



RCPH10FWD923BAC 2

3. Install front engine mount bolts, large flat washers, flat washers and lock nuts Tighten the nuts to **286 - 320 N·m** (**211 - 236 lb ft**). Repeat for opposite side.

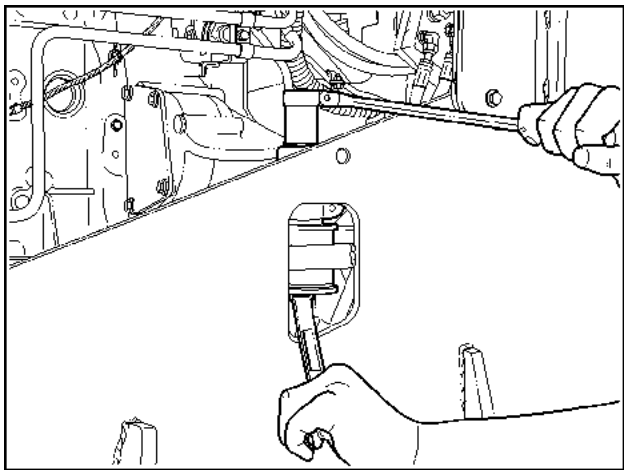
NOTE: *Right hand front mount shown.*



RCPH10FWD921BAC 3

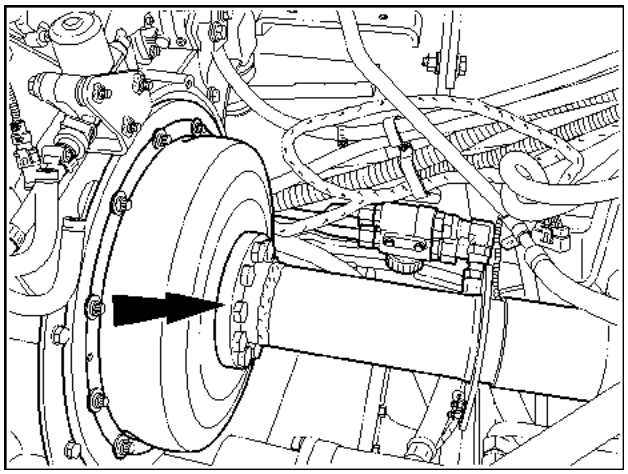
4. Install large flat washer and lock nut on rear engine mounts. Tighten the engine mount nuts to **252 - 278 N·m** (**186 - 205 lb ft**).

NOTE: *Left hand rear mount shown.*



RCPH10FWD922BAC 4

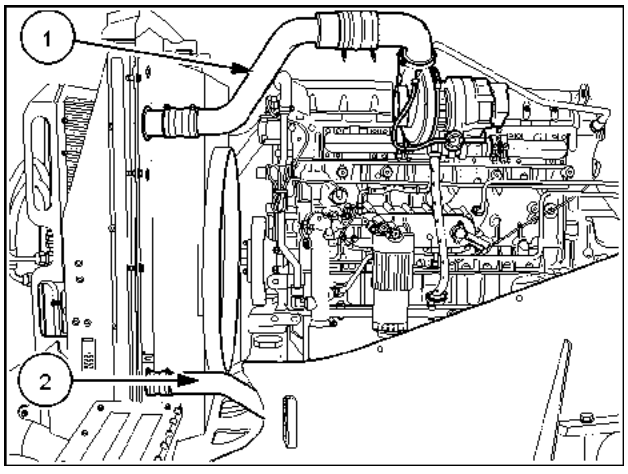
5. Use **LOCTITE® 242** on the driveshaft to coupler bolts. Move driveshaft forward and install driveshaft bolts to drive coupler. Tighten the bolts to **163 - 176 N·m** (**120 - 130 lb ft**).



RCPH10FWD918BAC 5

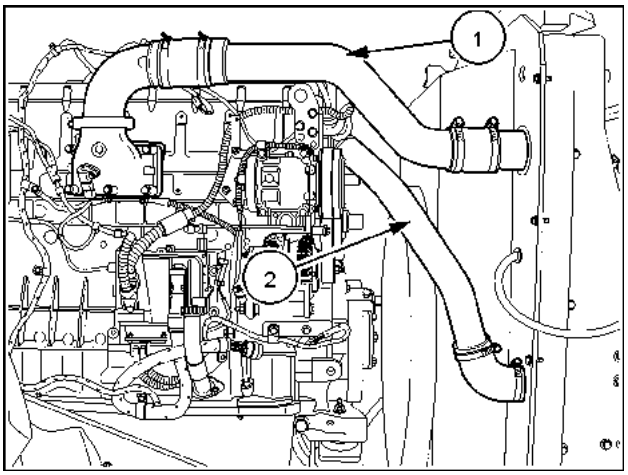
6. Install and adjust left hand air to air cooler tube **(1)** and lower radiator tube **(2)**. Tighten hose clamps.

NOTE: *Remove all caps and plugs from the engine and cooling package.*



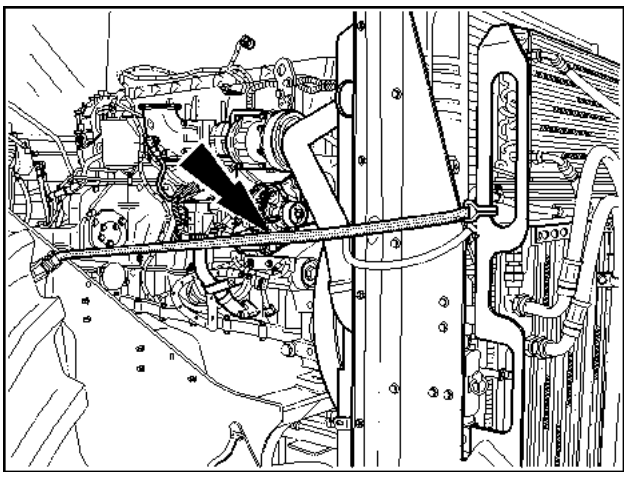
RCPH10FWD917BAC 6

7. Install and adjust right hand air to air cooler tube **(1)** and upper radiator tube **(2)**. Tighten hose clamps.



RCPH10FWD916BAC 7

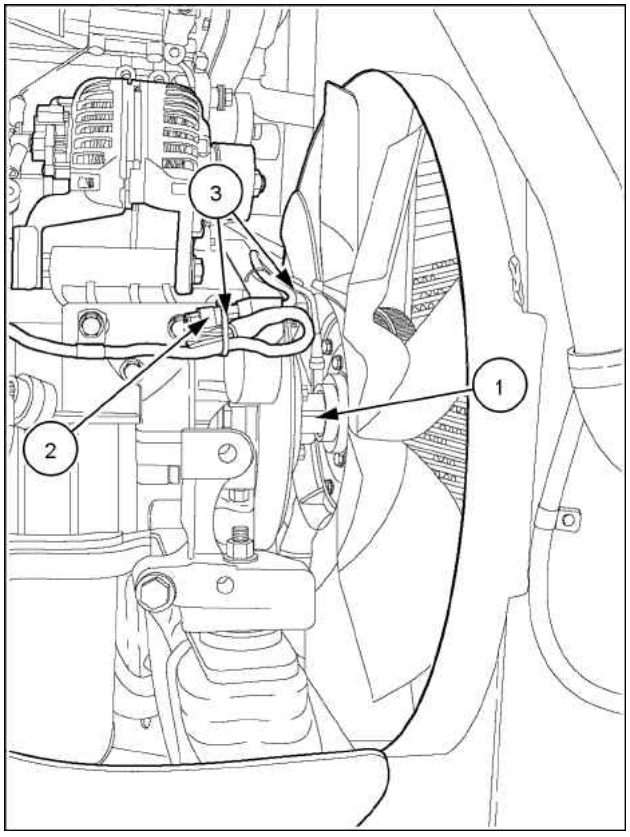
8. Remove cooling package support strap.



RCPH10FWD915BAC 8

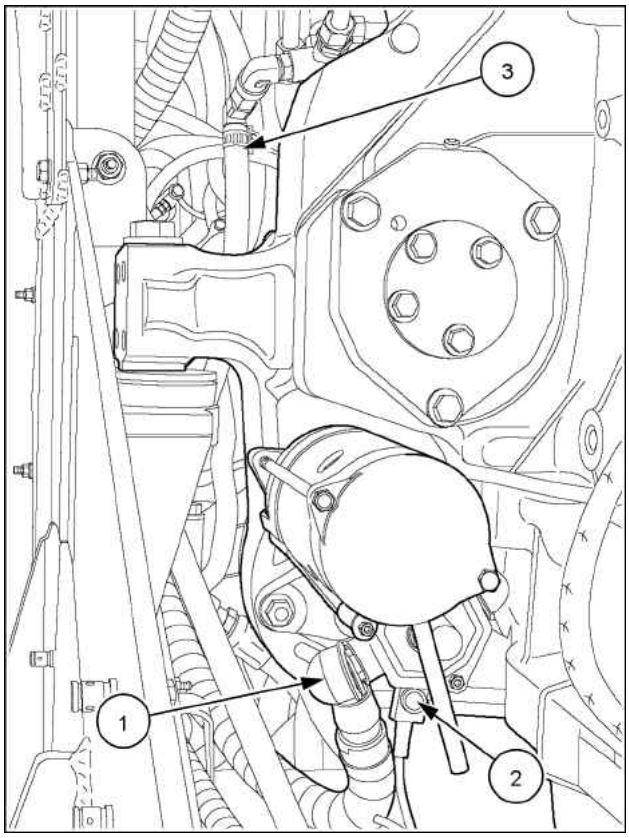
9. With the help of an assistant install and tighten fan to hub **(1)** from right hand side of shroud. Plug in harness connector **(2)** and tie harness lead **(3)** to bracket.

NOTE: *Hub has left handed thread.*



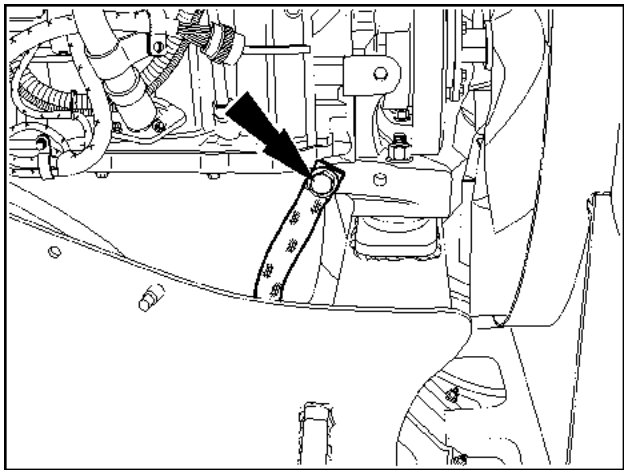
RCPH10FWD914BAC 9

10. Connect cable **(1)** and solenoid wire **(2)** to starter. Remove plug and cap, connect fuel return hose to fitting **(3)**. Tighten hose clamp.



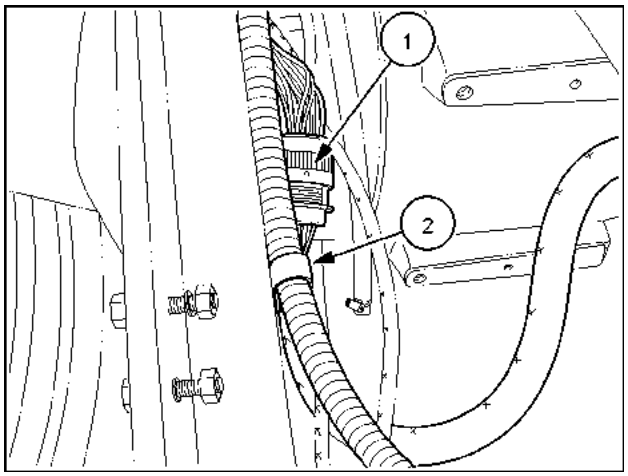
RCPH10FWD913BAC 10

11. Install ground strap to right hand side of engine.



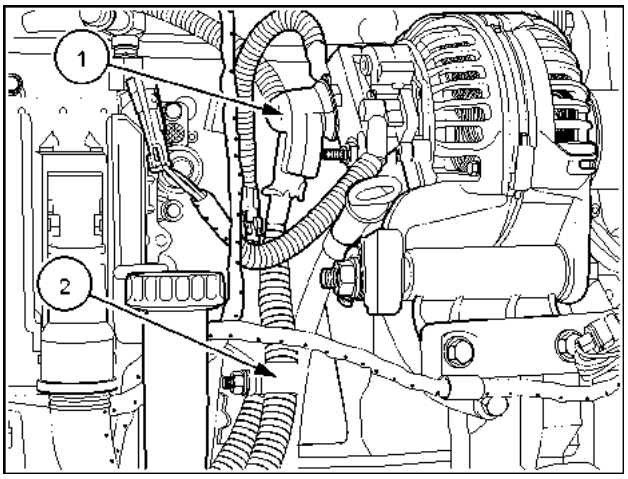
RCPH10FWD912BAC 11

12. On inside of right hand frame, connect cannon plug **(1)** and install two strap clamps **(2)** on stud.



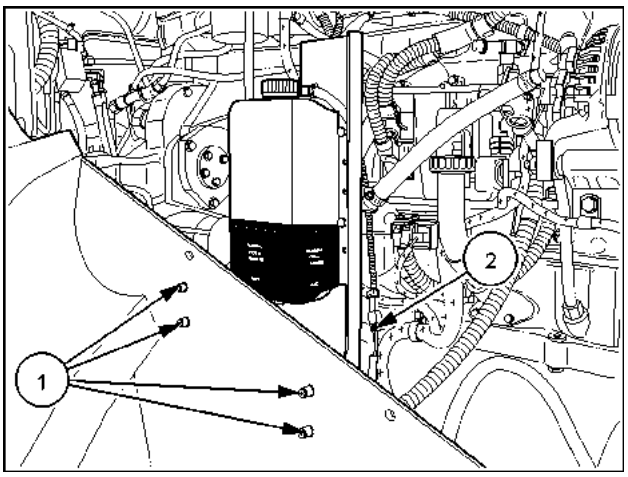
RCPH10FWD911BAC 12

13. Install battery cable **(1)** on alternator and strap clamp **(2)** to secure cable.



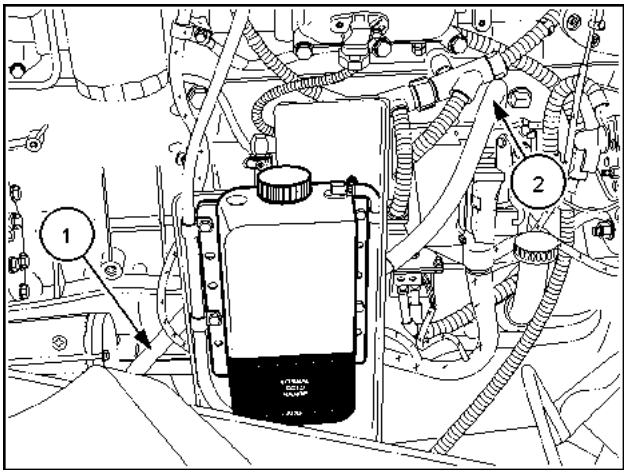
RCPH10FWD910BAC 13

14. Install bracket with coolant recovery bottle and fuel pump to inside of right hand frame with four nuts **(1)**. Connect fuel pump to harness connector **(2)**.



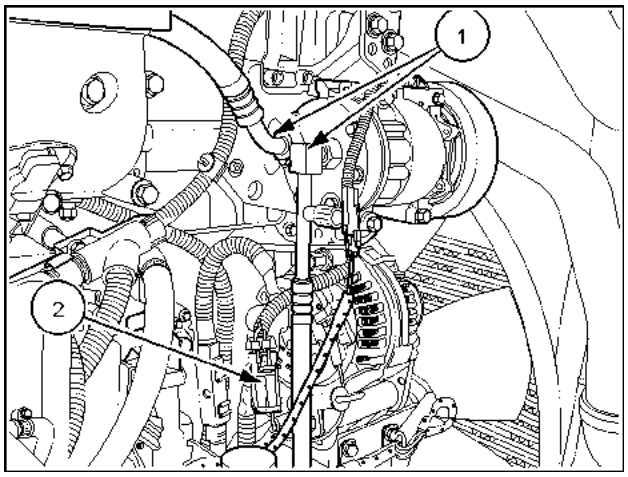
RCPH10FWD909BAC 14

15. Remove plugs and caps, connect fuel line **(1)** to pump (behind coolant recovery bottle) and engine controller **(2)**. Tighten clamps.



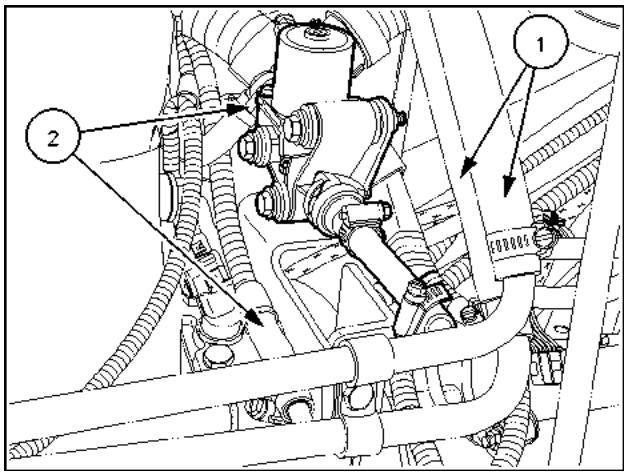
RCPH10FWD908BAC 15

16. Remove plugs and caps from air condition hoses and compressor. Lubricate new O-rings with clean compressor oil and install on hose ends. Install both hoses **(1)** on compressor as shown. Plug in high pressure sending unit to harness lead **(2)**.



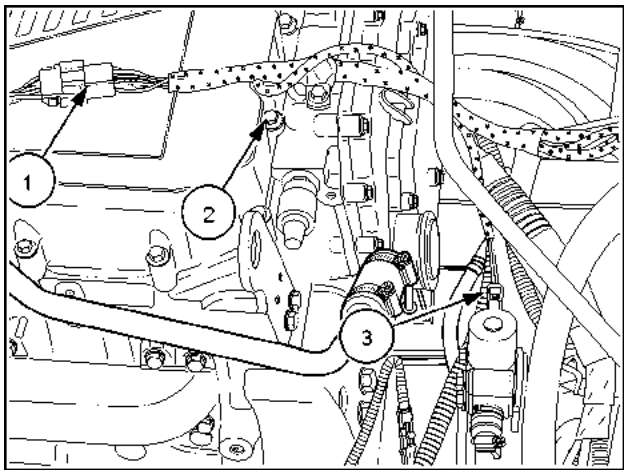
RCPH10FWD907BAC 16

17. Remove all caps and plugs from hoses and tubing. Connect the heater hoses to tubes **(1)** as labeled during disassembly. Connect two hoses to engine coolant solenoid. **(2)**.



RCPH10FWD906BAC 17

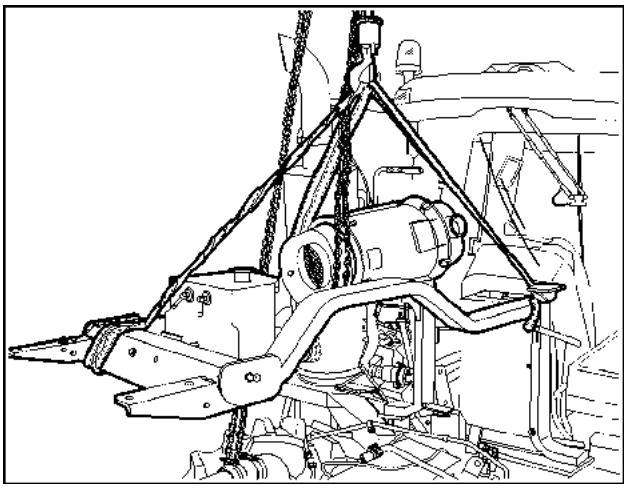
18. Connect harness connector **(1)**, install bolt **(2)** securing harness to engine and plug in connector **(3)** at engine coolant solenoid valve.



RCPH10FWD905BAC 18

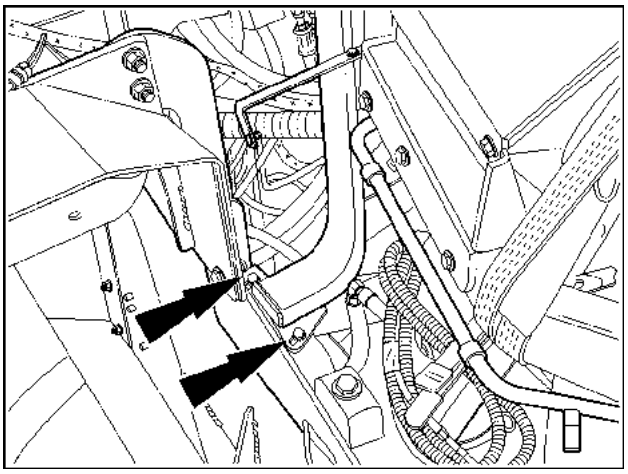
19. With overhead hoist and lifting straps, install the hood support frame to the tractor.

NOTE: *Be sure right hand side air conditioner line is in place while lowering hood support frame into place.*



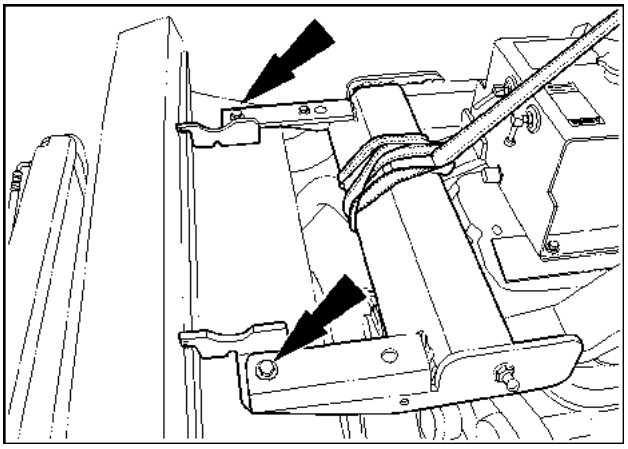
RCPH10FWD904BAC 19

20. Install four mounting bolts to the right and left hand support. (Right side shown.)



RCPH10FWD903BAC 20

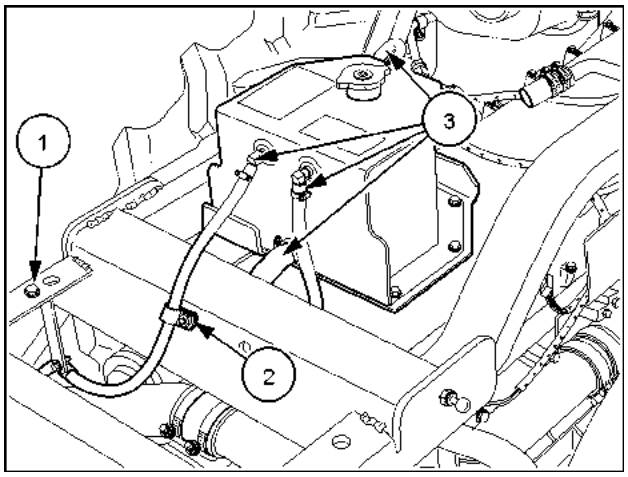
21. Install the two front mounting nuts and bolts.



RCPH10FWD901BAC 21

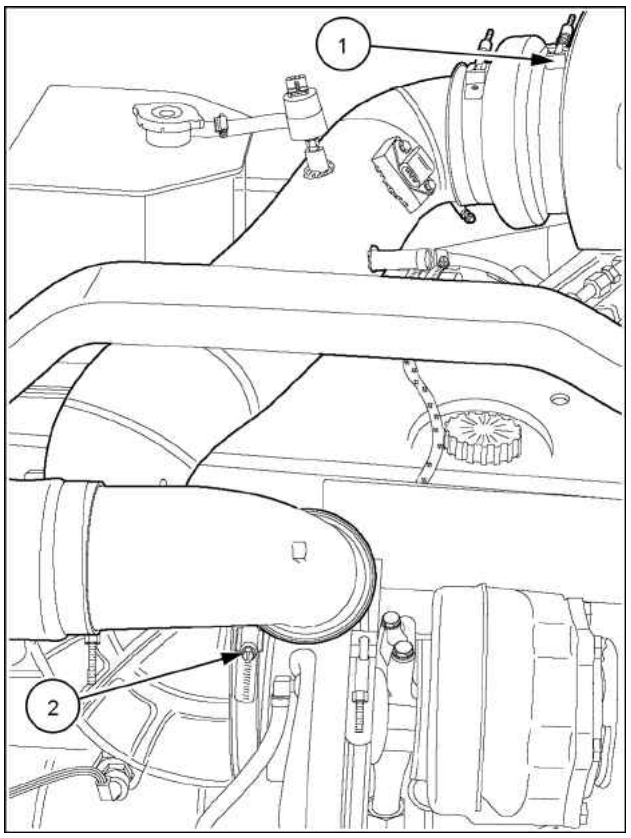
22. Tighten the two front mounting bolts and four rear mounting bolts.

23. Install nut and bolt **(1)** securing bracket to frame, secure strap clamp **(2)** to frame, and assemble four hoses **(3)** , as labeled during disassembly to deaeration tank.



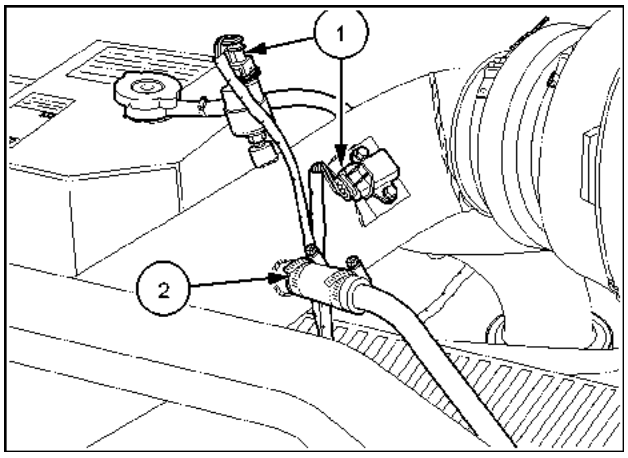
RCPH10FWD899BAC 22

24. Remove caps from air filter housing and turbo. Install air intake tube, adjust and tighten clamp at air filter housing **(1)** and at turbo **(2)**.



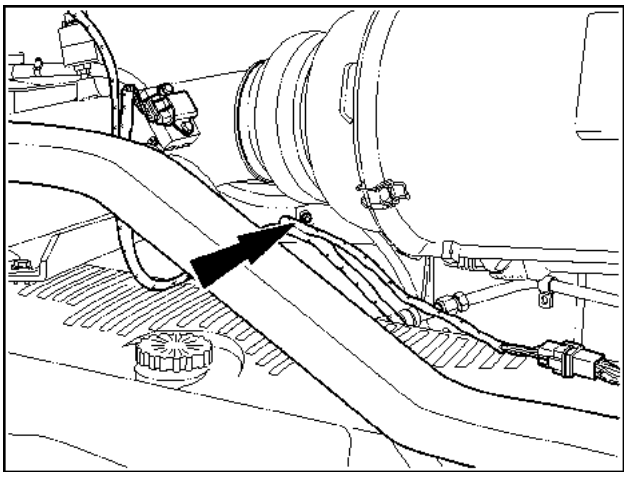
RCPH10FWD898BAC 23

25. Connect two harness connectors **(1)** adjust hose and tighten hose clamp **(2)**.



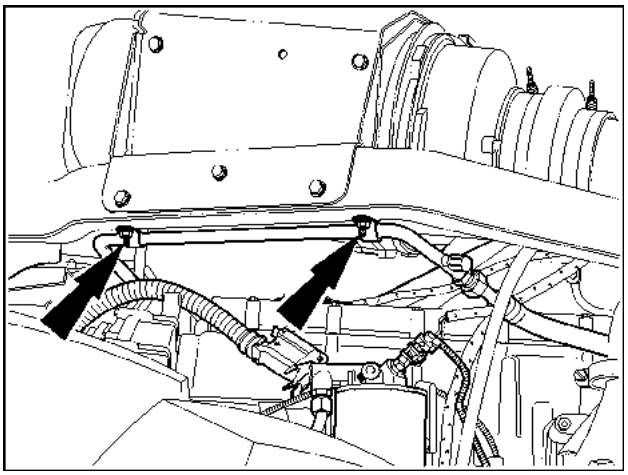
RCPH10FWD897BAC 24

26. Install strap clamp securing harness to frame.



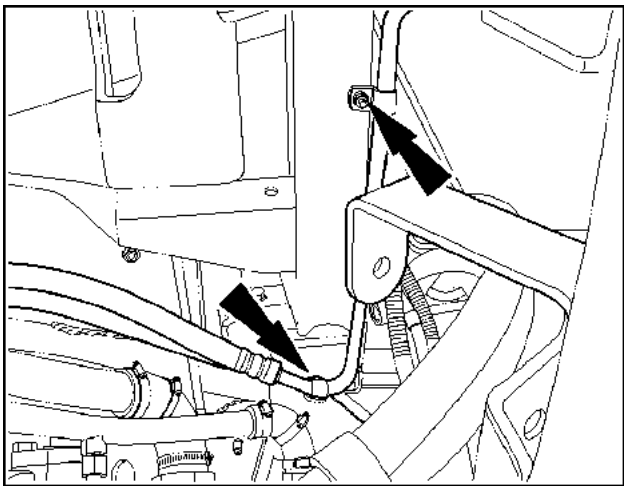
RCPH10FWD896BAC 25

27. Install two strap clamps securing air conditioning line to hood support frame as shown.



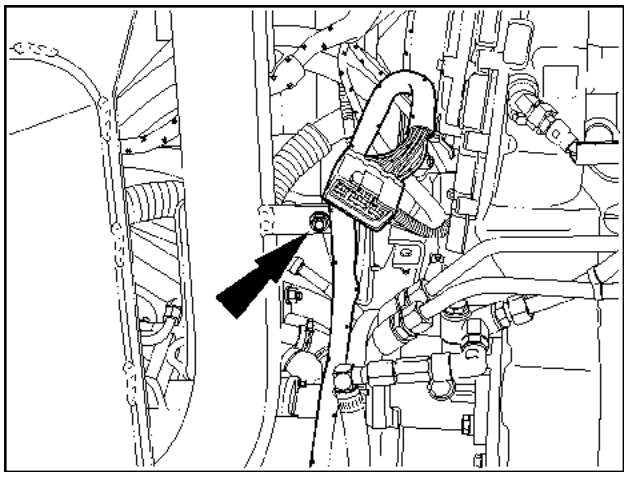
RCPH10FWD895BAC 26

28. Install two strap clamps securing air conditioning line to hood support frame as shown.



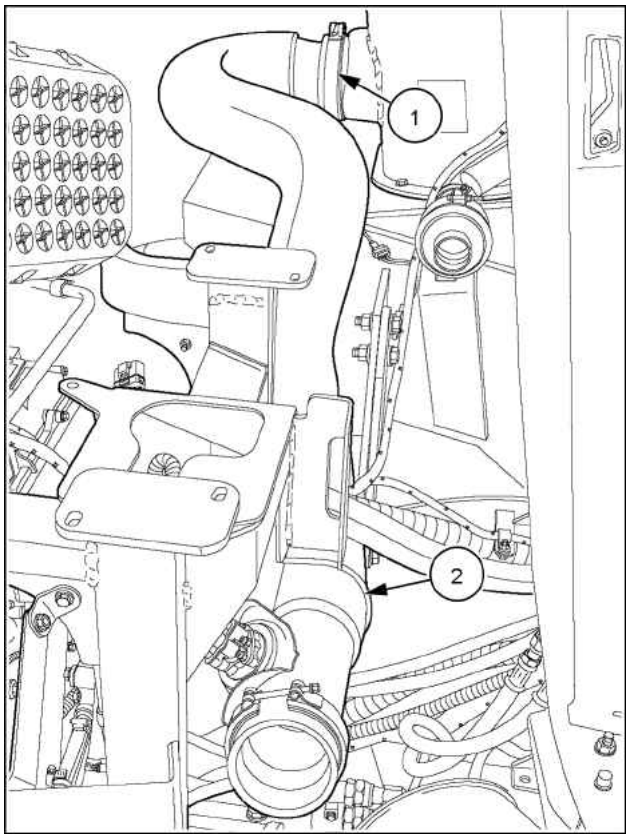
RCPH10FWD894BAC 27

29. Install strap clamp securing hood harness to hood support frame.



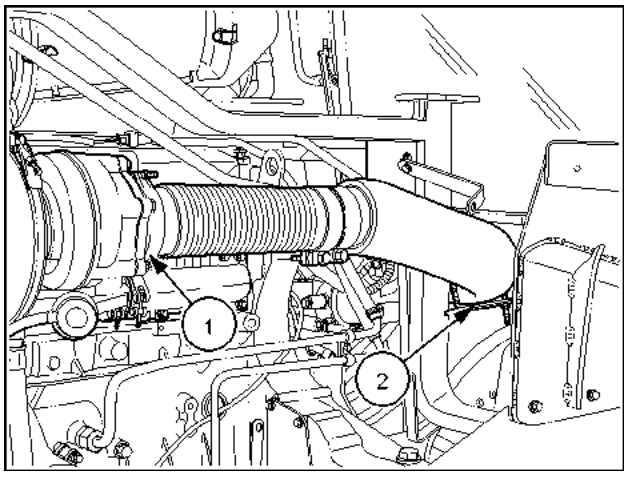
RCPH10FWD893BAC 28

30. Set section of exhaust pipe in place. Loose assemble the clamp **(1)** at muffler/canister, and U-bolt clamp **(2)** securing the exhaust pipe to bracket.



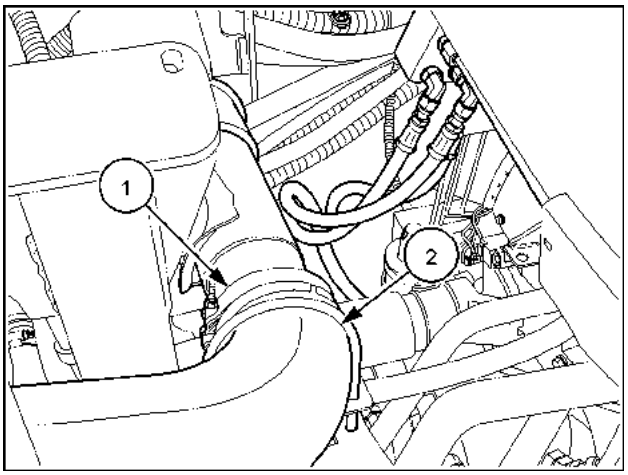
RCPH10FWD892BAC 29

31. Set exhaust pipe section in place and loose assemble clamp at turbo **(1)** and U-bolt clamp securing pipe to bracket on hood support frame **(2)**.



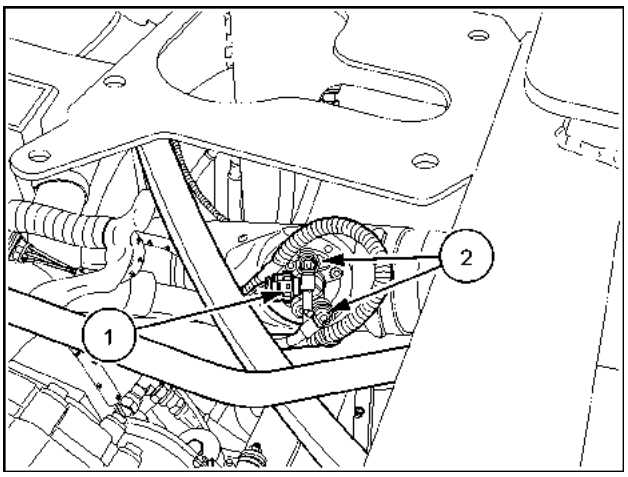
RCPH10FWD889BAC 30

32. Loose assemble and adjust clamp **(1)** between the two sections of exhaust pipe. Tighten the U-bolt clamp to bracket **(2)**, clamp between sections **(1)**,clamp at muffler/canister, at turbo and U-bolt from previous step.



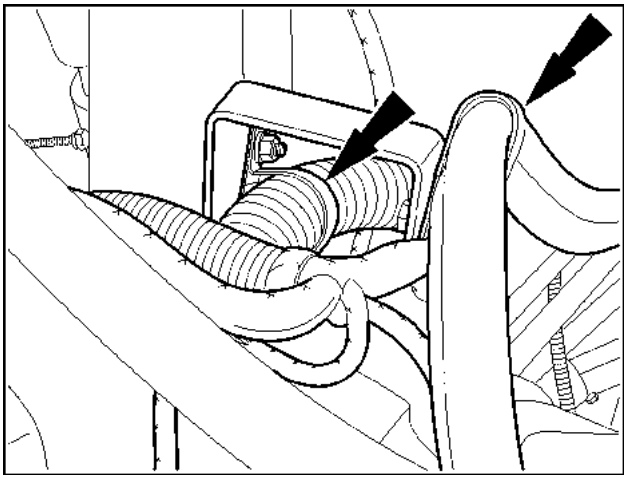
RCPH10FWD890BAC 31

33. Connect electrical connector **(1)** and DEF/AdBlue lines **(2)** on exhaust pipe as shown.



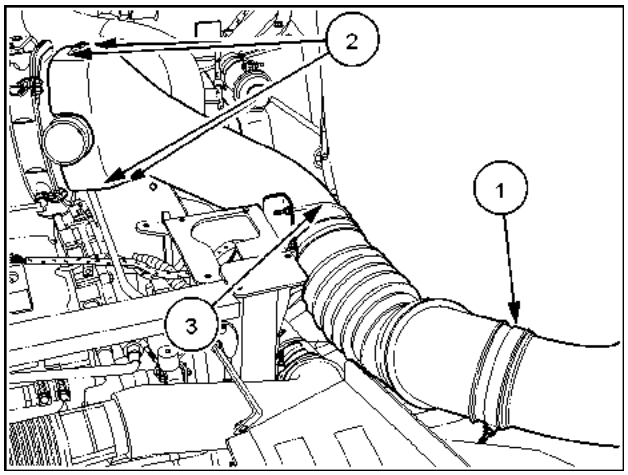
RCPH10FWD888BAC 32

34. Install and secure two strap clamps for harness and heater hoses to right hand upright of the hood support frame.



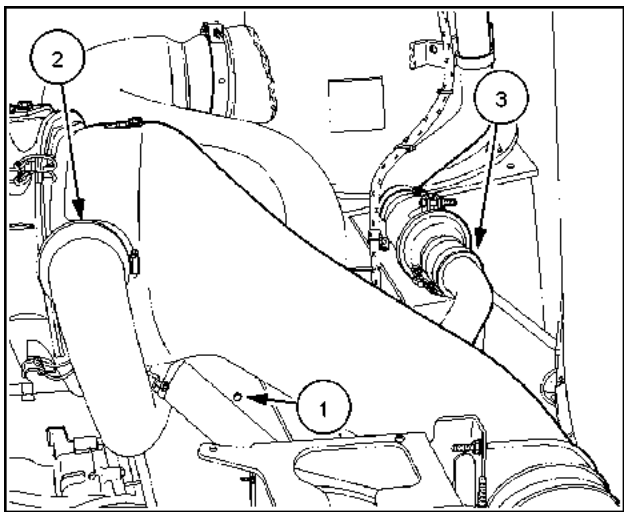
RCPH10FWD891BAC 33

35. Assemble air inlet assembly to intake stack and filter housing. Install clamp **(1)**, four bolts **(2)** and U-bolt clamp **(3)**. Adjust and tighten.



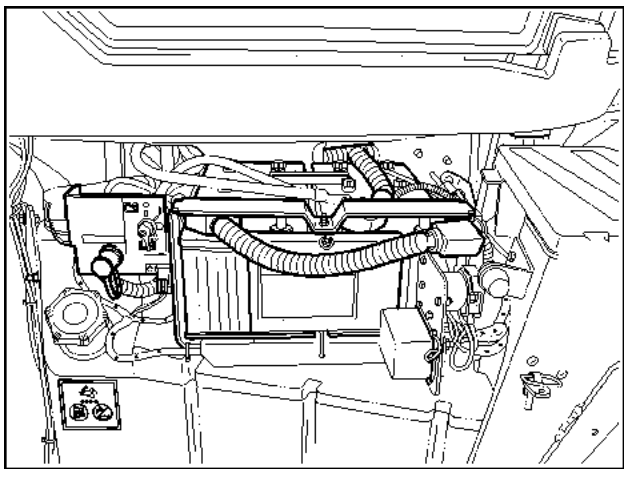
RCPH10FWD887BAC 34

36. Install aspirator tube. Install strap clamp, secure with nut **(1)**, tighten clamp at aspirator hose to air inlet **(2)** on filter housing and aspirator valve **(3)**.



RCPH10FWD886BAC 35

37. Reconnect batteries.



RCPH10FWD934BAC 36

38. Fill engine crankcase to correct level with specified oil.
39. Fill engine cooling system to correct level with specified coolant.
40. Run engine to check for function and leaks.
41. Reinstall left front tire.

Next operation:
Next operation:
Air conditioning - Charging - Air conditioning system (50.200)