5085E, 5095E and 5100E Tractors Repair Technical Manual

REPAIR TECHNICAL MANUAL 5085E, 5095E and 5100E Tractors

TM128319 28OCT13 (ENGLISH)

For complete service information also see:

5085E, 5095E and 5100E Tractors Diagnostic Technical Manual	TM128219
4045 PowerTech OEM Diesel Engines Below 130kW (174 hp) (Interim Tier 4/Stage III B platform)	CTM114619
Alternators and Starting Motors	CTM77
Front-Wheel Drive Axles 725, 730, 733, 740, 745, 750 and 755	CTM4820
Service ADVISOR Machine Connection Information	CTM441
PowrReverser Transmission - John Deere Pune Works	CTM900519

Introduction

Foreword

This manual is written for an experienced technician. Essential tools required in performing certain service work are identified in this manual and are recommended for use.

Live with safety: Read the safety messages in the introduction of this manual and the cautions presented throughout the text of the manual.

This is the safety-alert symbol. When you see this symbol on the machine or in this manual, be alert to the potential for personal injury.

Technical manuals are divided in two parts: repair and operation and tests. Repair sections tell how to repair the components. Operation and tests sections help you identify the majority of routine failures quickly.

Information is organized in groups for the various components requiring service instruction. At the beginning of each group are summary listings of all applicable essential tools, service equipment and tools, other materials needed to do the job, service parts kits, specifications, wear tolerances, and torque values.

Technical Manuals are concise guides for specific machines. They are on-the-job guides containing only the vital information needed for diagnosis, analysis, testing, and repair.

Fundamental service information is available from other sources covering basic theory of operation, fundamentals of troubleshooting, general maintenance, and basic type of failures and their causes.

DX,TMIFC -19-29SEP98-1/1

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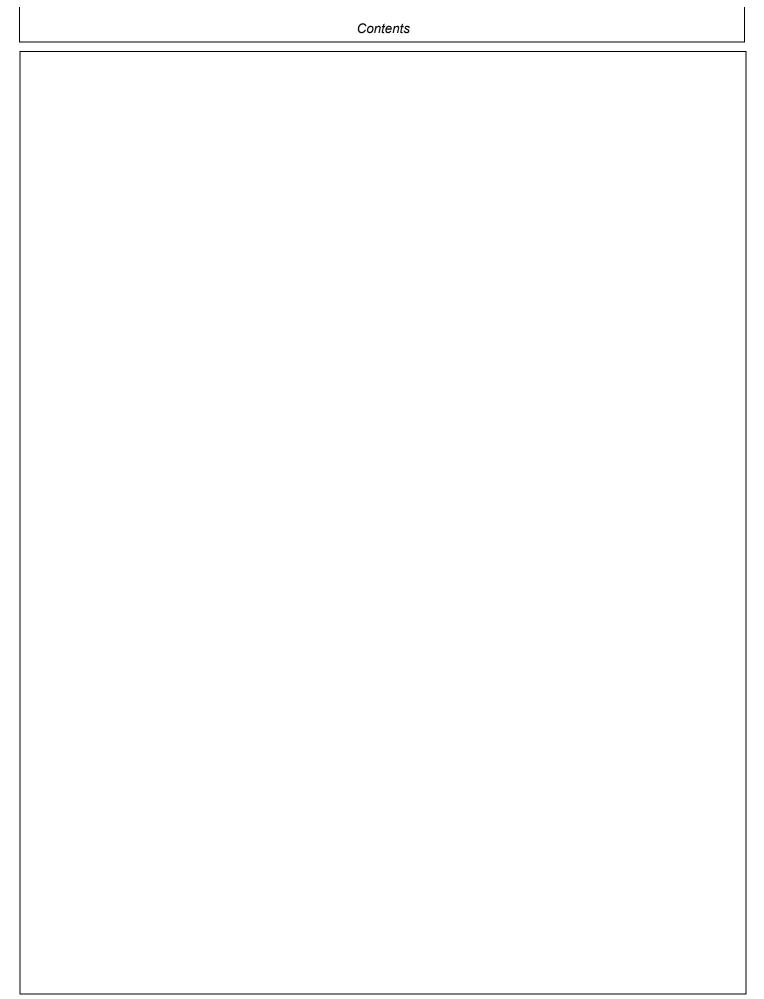
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Original Instructions. All information, illustrations and specifications in this manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

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Prevent Battery Explosions

Keep sparks, lighted matches, and open flame away from the top of battery. Battery gas can explode.

Never check battery charge by placing a metal object across the posts. Use a volt-meter or hydrometer.

Do not charge a frozen battery; it may explode. Warm battery to 16°C (60°F).



DX,SPARKS -19-03MAR93-1/1

Prevent Acid Burns

Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, eat holes in clothing, and cause blindness if splashed into eyes.

Avoid the hazard by:

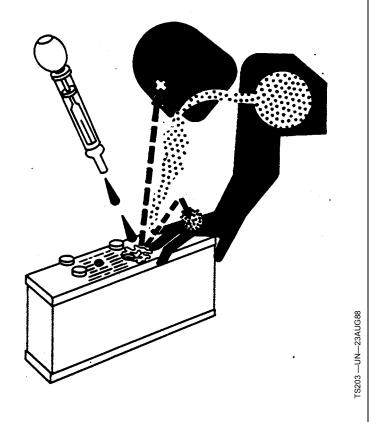
- 1. Filling batteries in a well-ventilated area.
- 2. Wearing eye protection and rubber gloves.
- 3. Avoiding breathing fumes when electrolyte is added.
- 4. Avoiding spilling or dripping electrolyte.
- 5. Use proper jump start procedure.

If you spill acid on yourself:

- 1. Flush your skin with water.
- 2. Apply baking soda or lime to help neutralize the acid.
- 3. Flush your eyes with water for 15—30 minutes. Get medical attention immediately.

If acid is swallowed:

- 1. Do not induce vomiting.
- 2. Drink large amounts of water or milk, but do not exceed 2 L (2 quarts).
- 3. Get medical attention immediately.



DX,POISON -19-21APR93-1/1

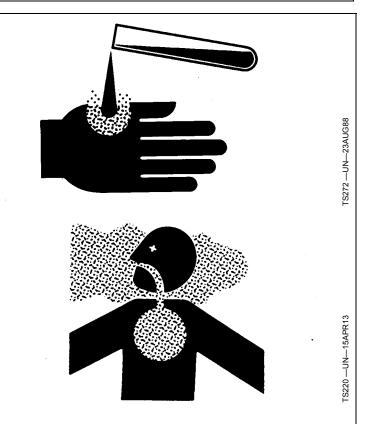
Service and Operate Chemical Sprayers Safely

Chemicals used in agricultural sprayers can be harmful to your health or the environment if not used carefully.

Always follow all label directions for effective, safe, and legal use of agricultural chemicals.

Reduce risk of exposure and injury:

- Wear appropriate personal protective equipment as recommended by the manufacturer. (See 'Handle agricultural chemicals safely' found in the Safety Section.)
- Fill, flush, calibrate, and decontaminate sprayer in an area where runoff will not reach ponds, lakes or streams, livestock areas, or gardens, or near other people.
- Keep children away from the chemicals, chemical solutions, and rinsates.
- If spray or chemical concentrate contacts skin, hands, or face, wash immediately with soap and water.
 If spray or chemical concentrate gets into eyes, flush immediately with water.
- If nozzle clogs or system malfunctions, stop engine and relieve spray pressure from system.
- Do not place nozzle tips or other components to the mouth to clear obstructions. Keep spare tips on hand for replacement.
- Minimize risk of spray drift.
 - Use large nozzle tips operated at lower pressures
 - Do not operate solution delivery system at pressures exceeding 345kPa (3.5 bar) (50 psi).
 - Do not spray when winds exceed 16 km/h (10 mph).
 - Do not spray when wind is blowing towards a nearby sensitive crop, garden, or populated area.



- Properly dispose of unused chemicals, flushing solution, and empty chemical containers.
- Decontaminate equipment used in mixing, transferring, and applying chemicals after use.

DX,WW,CHEM02 -19-05APR04-1/1

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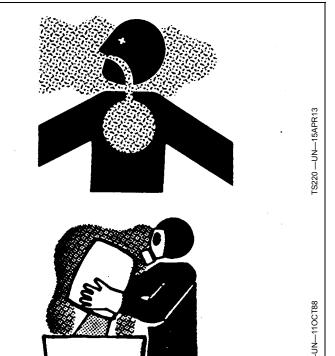
Handle Agricultural Chemicals Safely

Chemicals used in agricultural applications such as fungicides, herbicides, insecticides, pesticides, rodenticides, and fertilizers can be harmful to your health or the environment if not used carefully.

Always follow all label directions for effective, safe, and legal use of agricultural chemicals.

Reduce risk of exposure and injury:

- Wear appropriate personal protective equipment as recommended by the manufacturer. In the absence of manufacturer's instructions, follow these general quidelines:
 - Chemicals labeled 'Danger': Most toxic. Generally require use of goggles, respirator, gloves, and skin protection.
 - Chemicals labeled 'Warning': Less toxic. Generally require use of goggles, gloves, and skin protections.
 - Chemicals labeled **'Caution'**: Least toxic. Generally require use of gloves and skin protection.
- Avoid inhaling vapor, aerosol or dust.
- Always have soap, water, and towel available when working with chemicals. If chemical contacts skin, hands, or face, wash immediately with soap and water. If chemical gets into eyes, flush immediately with water.
- Wash hands and face after using chemicals and before eating, drinking, smoking, or urination.
- Do not smoke or eat while applying chemicals.
- After handling chemicals, always bathe or shower and change clothes. Wash clothing before wearing again.
- Seek medical attention immediately if illness occurs during or shortly after use of chemicals.
- Keep chemicals in original containers. Do not transfer chemicals to unmarked containers or to containers used for food or drink.



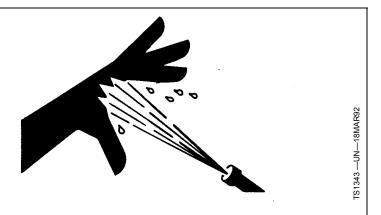
- Store chemicals in a secure, locked area away from human or livestock food. Keep children away.
- Always dispose of containers properly. Triple rinse empty containers and puncture or crush containers and dispose of properly.

DX.WW.CHEM01 -19-24AUG10-1/1

Protect Against High Pressure Spray

Spray from high pressure nozzles can penetrate the skin and cause serious injury. Keep spray from contacting hands or body.

If an accident occurs, see a doctor immediately. Any high pressure spray injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.

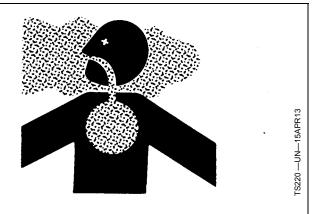


DX,SPRAY -19-16APR92-1/1

Work In Ventilated Area

Engine exhaust fumes can cause sickness or death. If it is necessary to run an engine in an enclosed area, remove the exhaust fumes from the area with an exhaust pipe extension.

If you do not have an exhaust pipe extension, open the doors and get outside air into the area.

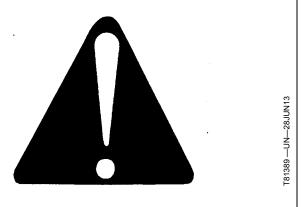


DX,AIR -19-17FEB99-1/1

Recognize Safety Information

This is a safety-alert symbol. When you see this symbol on your machine or in this manual, be alert to the potential for personal injury.

Follow recommended precautions and safe operating practices.



DX,ALERT -19-29SEP98-1/1

Avoid Backover Accidents

Before moving machine, be sure that all persons are clear of machine path. Turn around and look directly for best visibility. Use a signal person when backing if view is obstructed or when in close quarters.

Do not rely on a camera to determine if personnel or obstacles are behind the machine. The system can be limited by many factors including maintenance practices, environmental conditions, and operating range.



Prevent Machine Runaway

Avoid possible injury or death from machinery runaway.

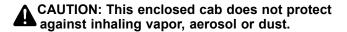
Do not start engine by shorting across starter terminals. Machine will start in gear if normal circuitry is bypassed.

NEVER start engine while standing on ground. Start engine only from operator's seat, with transmission in neutral or park.

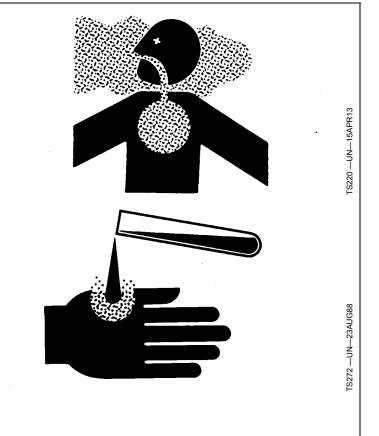


DX,BYPAS1 -19-29SEP98-1/1

Avoid Contact with Agricultural Chemicals



- 1. When operating in an environment where pesticides are present, wear a long-sleeved shirt, long-legged pants, shoes, and socks.
- If pesticide use instructions require respiratory protection, wear an appropriate respirator inside the cab.
- Wear personal protective equipment as required by the pesticide use instructions when leaving the enclosed cab:
 - into a treated area
 - to work with contaminated application equipment such as nozzles which must be cleaned, changed or redirected
 - to become involved with mixing and loading activities
- 4. Before re-entering the cab, remove protective equipment and store either outside the cab in a closed box or some other type of sealable container or inside the cab in a pesticide resistant container, such as a plastic bag.
- 5. Clean your shoes or boots to remove soil or other contaminated particles prior to entering the cab.



DX,CABS1 -19-25MAR09-1/1

Clean Vehicle of Hazardous Pesticides

 $oldsymbol{\Lambda}$

CAUTION: During application of hazardous pesticides, pesticide residue can build up on the inside or outside of the vehicle. Clean vehicle according to use instructions of hazardous pesticides.

When exposed to hazardous pesticides, clean exterior and interior of vehicle daily to keep free of the accumulation of visible dirt and contamination.

- 1. Sweep or vacuum the floor of cab.
- 2. Clean headliners and inside cowlings of cab.
- 3. Wash entire exterior of vehicle.
- 4. Dispose of any wash water with hazardous concentrations of active or non-active ingredients according to published regulations or directives.

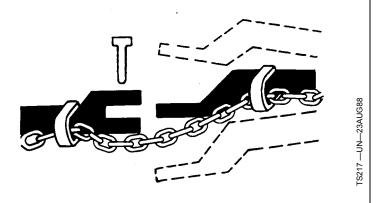
DX,CABS2 -19-24JUL01-1/1

Use a Safety Chain

A safety chain will help control drawn equipment should it accidentally separate from the drawbar.

Using the appropriate adapter parts, attach the chain to the tractor drawbar support or other specified anchor location. Provide only enough slack in the chain to permit turning.

See your John Deere dealer for a chain with a strength rating equal to or greater than the gross weight of the towed machine. Do not use safety chain for towing.

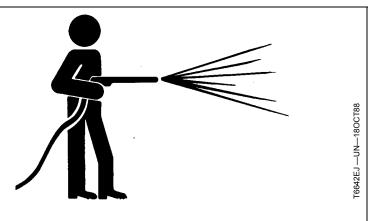


DX,CHAIN -19-03MAR93-1/1

Work in Clean Area

Before starting a job:

- Clean work area and machine.
- Make sure you have all necessary tools to do your job.
- Have the right parts on hand.
- Read all instructions thoroughly; do not attempt shortcuts.



DX,CLEAN -19-04JUN90-1/1

Dispose of Waste Properly

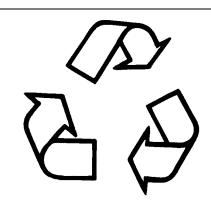
Improperly disposing of waste can threaten the environment and ecology. Potentially harmful waste used with John Deere equipment include such items as oil, fuel, coolant, brake fluid, filters, and batteries.

Use leakproof containers when draining fluids. Do not use food or beverage containers that may mislead someone into drinking from them.

Do not pour waste onto the ground, down a drain, or into any water source.

Air conditioning refrigerants escaping into the air can damage the Earth's atmosphere. Government regulations may require a certified air conditioning service center to recover and recycle used air conditioning refrigerants.

Inquire on the proper way to recycle or dispose of waste from your local environmental or recycling center, or from your John Deere dealer.



DX,DRAIN -19-03MAR93-1/1

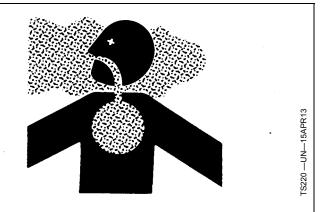
FS1133 —UN—15APR13

Avoid Harmful Asbestos Dust

Avoid breathing dust that may be generated when handling components containing asbestos fibers. Inhaled asbestos fibers may cause lung cancer.

Components in products that may contain asbestos fibers are brake pads, brake band and lining assemblies, clutch plates, and some gaskets. The asbestos used in these components is usually found in a resin or sealed in some way. Normal handling is not hazardous as long as airborne dust containing asbestos is not generated.

Avoid creating dust. Never use compressed air for cleaning. Avoid brushing or grinding material containing asbestos. When servicing, wear an approved respirator. A special vacuum cleaner is recommended to clean asbestos. If not available, apply a mist of oil or water on the material containing asbestos.



Keep bystanders away from the area.

DX,DUST -19-15MAR91-1/1

Avoid Hot Exhaust

Servicing machine or attachments with engine running can result in serious personal injury. Avoid exposure and skin contact with hot exhaust gases and components.

Exhaust parts and streams become very hot during operation. Exhaust gases and components reach temperatures hot enough to burn people, ignite, or melt common materials.





DX,EXHAUST -19-20AUG09-1/1

Clean Exhaust Filter Safely

During exhaust filter cleaning operations, the engine may run at elevated idle and hot temperatures for an extended period of time. Exhaust gases and exhaust filter components reach temperatures hot enough to burn people, or ignite or melt common materials.

Keep machine away from people, animals, or structures which may be susceptible to harm or damage from hot exhaust gases or components. Avoid potential fire or explosion hazards from flammable materials and vapors near the exhaust. Keep exhaust outlet away from people and anything that can melt, burn, or explode.

Closely monitor machine and surrounding area for smoldering debris during and after exhaust filter cleaning.

Adding fuel while an engine is running can create a fire or explosion hazard. Always stop engine before refueling machine and clean up any spilled fuel.

Always make sure that engine is stopped while hauling machine on a truck or trailer.

Contact with exhaust components while still hot can result in serious personal injury.

Avoid contact with these components until cooled to safe temperatures.

If service procedure requires engine to be running:

- Only engage power-driven parts required by service procedure
- Ensure that other people are clear of operator station and machine

Keep hands, feet, and clothing away from power-driven parts.

Always disable movement (neutral), set the parking brake or mechanism and disconnect power to attachments or tools before leaving the operator's station.

Shut off engine and remove key (if equipped) before leaving the machine unattended.





DX,EXHAUST,FILTER -19-12JAN11-1/1

FS227 —UN—15APR13

FS1693 —UN—09DEC09

IS1695 —UN—07DEC09

Handle Fuel Safely—Avoid Fires

Handle fuel with care: it is highly flammable. Do not refuel the machine while smoking or when near open flame or sparks.

Always stop engine before refueling machine. Fill fuel tank outdoors.

Prevent fires by keeping machine clean of accumulated trash, grease, and debris. Always clean up spilled fuel.

Use only an approved fuel container for transporting flammable liquids.

Never fill fuel container in pickup truck with plastic bed liner. Always place fuel container on ground before refueling. Touch fuel container with fuel dispenser nozzle before removing can lid. Keep fuel dispenser nozzle in contact with fuel container inlet when filling.



Do not store fuel container where there is an open flame, spark, or pilot light such as within a water heater or other appliance.

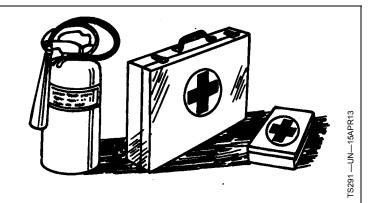
DX,FIRE1 -19-12OCT11-1/1

Prepare for Emergencies

Be prepared if a fire starts.

Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.



DX,FIRE2 -19-03MAR93-1/1

Handle Fluids Safely—Avoid Fires

When you work around fuel, do not smoke or work near heaters or other fire hazards.

Store flammable fluids away from fire hazards. Do not incinerate or puncture pressurized containers.

Make sure machine is clean of trash, grease, and debris.

Do not store oily rags; they can ignite and burn spontaneously.



TS227 —UN—15APR13

DX,FLAME -19-29SEP98-1/1

Avoid High-Pressure Fluids

Inspect hydraulic hoses periodically – at least once per year – for leakage, kinking, cuts, cracks, abrasion, blisters, corrosion, exposed wire braid or any other signs of wear or damage.

Replace worn or damaged hose assemblies immediately with John Deere approved replacement parts.

Escaping fluid under pressure can penetrate the skin causing serious injury.

Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure.

Search for leaks with a piece of cardboard. Protect hands and body from high-pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar



with this type of injury should reference a knowledgeable medical source. Such information is available in English from Deere & Company Medical Department in Moline, Illinois, U.S.A., by calling 1-800-822-8262 or +1 309-748-5636.

DX,FLUID -19-12OCT11-1/1

Install All Guards

Rotating cooling system fans, belts, pulleys, and drives can cause serious injury.

Keep all guards in place at all times during engine operation.

Wear close-fitting clothes. Stop the engine and be sure fans, belts, pulleys, and drives are stopped before making adjustments, connections, or cleaning near fans and their drive components.

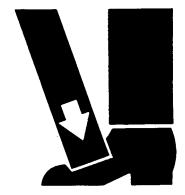


DX,GUARDS -19-18AUG09-1/1

Use Proper Lifting Equipment

Lifting heavy components incorrectly can cause severe injury or machine damage.

Follow recommended procedure for removal and installation of components in the manual.



'S226 —UN—23AUG88

'S677 —UN—21SEP89

DX,LIFT -19-04JUN90-1/1

Illuminate Work Area Safely

Illuminate your work area adequately but safely. Use a portable safety light for working inside or under the machine. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.



23 — IN

DX,LIGHT -19-04JUN90-1/1

Live With Safety

Before returning machine to customer, make sure machine is functioning properly, especially the safety systems. Install all guards and shields.



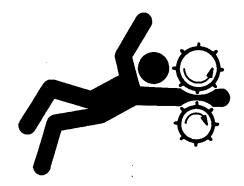
FS231 —19—070CT88

DX,LIVE -19-25SEP92-1/1

Service Machines Safely

Tie long hair behind your head. Do not wear a necktie, scarf, loose clothing, or necklace when you work near machine tools or moving parts. If these items were to get caught, severe injury could result.

Remove rings and other jewelry to prevent electrical shorts and entanglement in moving parts.



TS228 —UN—23AUG88

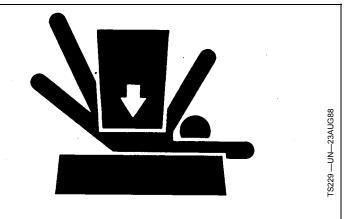
DX,LOOSE -19-04JUN90-1/1

Support Machine Properly

Always lower the attachment or implement to the ground before you work on the machine. If the work requires that the machine or attachment be lifted, provide secure support for them. If left in a raised position, hydraulically supported devices can settle or leak down.

Do not support the machine on cinder blocks, hollow tiles, or props that may crumble under continuous load. Do not work under a machine that is supported solely by a jack. Follow recommended procedures in this manual.

When implements or attachments are used with a machine, always follow safety precautions listed in the implement or attachment operator's manual.



DX,LOWER -19-24FEB00-1/1

Remove Paint Before Welding or Heating

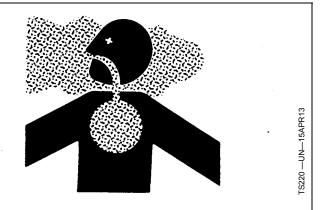
Avoid potentially toxic fumes and dust.

Hazardous fumes can be generated when paint is heated by welding, soldering, or using a torch.

Remove paint before heating:

- Remove paint a minimum of 100 mm (4 in.) from area to be affected by heating. If paint cannot be removed, wear an approved respirator before heating or welding.
- If you sand or grind paint, avoid breathing the dust. Wear an approved respirator.
- If you use solvent or paint stripper, remove stripper with soap and water before welding. Remove solvent or paint stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating.

Do not use a chlorinated solvent in areas where welding will take place.



Do all work in an area that is well ventilated to carry toxic fumes and dust away.

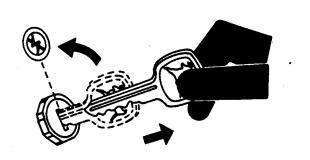
Dispose of paint and solvent properly.

DX,PAINT -19-24JUL02-1/1

Park Machine Safely

Before working on the machine:

- Lower all equipment to the ground.
- Stop the engine and remove the key.
- Disconnect the battery ground strap.
- Hang a "DO NOT OPERATE" tag in operator station.



DX.PARK -19-04JUN90-1/1

-S230 —UN—24MAY89

Stay Clear of Rotating Drivelines

Entanglement in rotating driveline can cause serious injury or death.

Keep tractor master shield and driveline shields in place at all times. Make sure rotating shields turn freely.

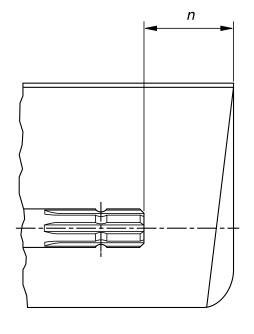
Wear close fitting clothing. Stop the engine and be sure that PTO driveline is stopped before making adjustments, connections, or cleaning out PTO driven equipment.

Do not install any adapter device between the tractor and the primary implement PTO drive shaft that will allow a 1000 rpm tractor shaft to power a 540 rpm implement at speeds higher than 540 rpm.

Do not install any adapter device that results in a portion of the rotating implement shaft, tractor shaft, or the adapter to be unguarded. The tractor master shield shall overlap the end of the splined shaft and the added adaptor device as outlined in the table.

PTO Type	Diameter	Splines	n ± 5 mm (0.20 in.)
1	35 mm (1.378 in.)	6	85 mm (3.35 in.)
2	35 mm (1.378 in.)	21	85 mm (3.35 in.)
3	45 mm (1.772 in.)	20	100 mm (4.00 in.)





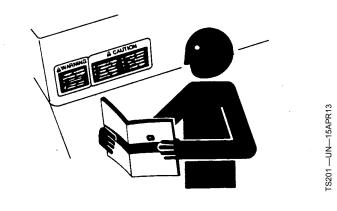
H96219 —UN—29APR10

FS1644 —UN—22AUG95

DX,PTO -19-30JUN10-1/1

Follow Safety Instructions

Carefully read all safety messages in this instruction. Read the product operators manual for operating instructions and safety messages. Do not let anyone operate without instruction. (A copy of the operators manual may also be available from the Service ADVISOR™ application.)



Service ADVISOR is a trademark of Deere & Company

DX,READ,INS -19-23JUN09-1/1

Use Proper Tools

Use tools appropriate to the work. Makeshift tools and procedures can create safety hazards.

Use power tools only to loosen threaded parts and fasteners.

For loosening and tightening hardware, use the correct size tools. DO NOT use U.S. measurement tools on metric fasteners. Avoid bodily injury caused by slipping wrenches.

Use only service parts meeting John Deere specifications.



DX,REPAIR -19-17FEB99-1/1

Service Tires Safely



CAUTION: Explosive separation of a tire and rim parts can cause serious injury or death.

Do not attempt to mount a tire unless you have the proper equipment and experience to perform the job.

Always maintain the correct tire pressure. Do not inflate the tires above the recommended pressure.

Never weld or heat a wheel and tire assembly. The heat can cause an increase in air pressure resulting in a tire explosion. Welding can structurally weaken or deform the wheel.

When inflating tires, use a clip-on chuck and extension hose long enough to allow you to stand to one side and NOT in front of or over the tire assembly. Use a safety cage if available.

Check wheels for low pressure, cuts, bubbles, damaged rims or missing lug bolts and nuts.



DX,RIM1 -19-27OCT08-1/1

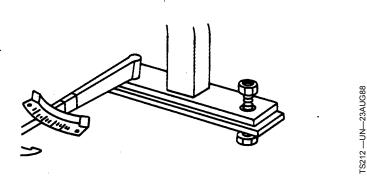
Keep ROPS Installed Properly

Make certain all parts are reinstalled correctly if the roll-over protective structure (ROPS) is loosened or removed for any reason. Tighten mounting bolts to proper torque.

The protection offered by ROPS will be impaired if ROPS is subjected to structural damage, is involved in an overturn incident, or is in any way altered by welding, bending, drilling, or cutting. A damaged ROPS should be replaced, not reused.

The seat is part of the ROPS safety zone. Replace only with John Deere seat approved for your tractor.

Any alteration of the ROPS must be approved by the manufacturer.

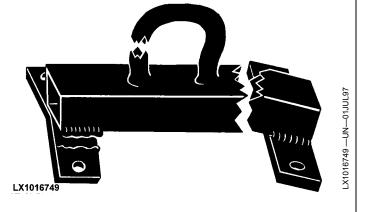


DX,ROPS3 -19-12OCT11-1/1

Construct Dealer-Made Tools Safely

Faulty or broken tools can result in serious injury. When constructing tools, use proper, quality materials, and good workmanship.

Do not weld tools unless you have the proper equipment and experience to perform the job.



DX,SAFE,TOOLS -19-10OCT97-1/1

Practice Safe Maintenance

Understand service procedure before doing work. Keep area clean and dry.

Never lubricate, service, or adjust machine while it is moving. Keep hands, feet, and clothing from power-driven parts. Disengage all power and operate controls to relieve pressure. Lower equipment to the ground. Stop the engine. Remove the key. Allow machine to cool.

Securely support any machine elements that must be raised for service work.

Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts. Remove any buildup of grease, oil, or debris.

On self-propelled equipment, disconnect battery ground cable (-) before making adjustments on electrical systems or welding on machine.

On towed implements, disconnect wiring harnesses from tractor before servicing electrical system components or welding on machine.



DX,SERV -19-17FEB99-1/1

Understand Signal Words

A signal word—DANGER, WARNING, or CAUTION—is used with the safety-alert symbol. DANGER identifies the most serious hazards.

DANGER or WARNING safety signs are located near specific hazards. General precautions are listed on CAUTION safety signs. CAUTION also calls attention to safety messages in this manual.

A DANGER

A WARNING

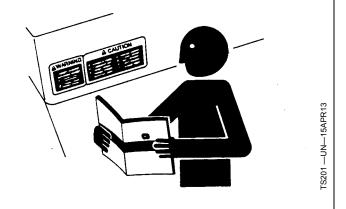
ACAUTION

TS187 —19—30SEP88

DX,SIGNAL -19-03MAR93-1/1

Replace Safety Signs

Replace missing or damaged safety signs. See the machine operator's manual for correct safety sign placement.



DX,SIGNS1 -19-04JUN90-1/1

Avoid Heating Near Pressurized Fluid Lines

Flammable spray can be generated by heating near pressurized fluid lines, resulting in severe burns to yourself and bystanders. Do not heat by welding, soldering, or using a torch near pressurized fluid lines or other flammable materials. Pressurized lines can accidentally burst when heat goes beyond the immediate flame area.



DX,TORCH -19-10DEC04-1/1

Wear Protective Clothing

Wear close fitting clothing and safety equipment appropriate to the job.

Prolonged exposure to loud noise can cause impairment or loss of hearing.

Wear a suitable hearing protective device such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.

Operating equipment safely requires the full attention of the operator. Do not wear radio or music headphones while operating machine.



Handling Batteries Safely

Battery gas can explode. Keep sparks and flames away from batteries. Use a flashlight to check battery electrolyte level.

Never check battery charge by placing a metal object across the posts. Use a voltmeter or hydrometer.

Always remove grounded (-) battery clamp first and replace grounded clamp last.

Sulfuric acid in battery electrolyte is poisonous and strong enough to burn skin, eat holes in clothing, and cause blindness if splashed into eyes.

Avoid hazards by:

- Filling batteries in a well-ventilated area
- Wearing eye protection and rubber gloves
- Avoiding use of air pressure to clean batteries
- Avoiding breathing fumes when electrolyte is added
- · Avoiding spilling or dripping electrolyte
- Using correct battery booster or charger procedure.

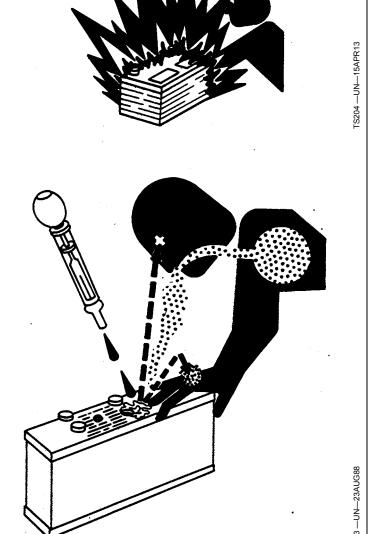
If acid is spilled on skin or in eyes:

- 1. Flush skin with water.
- 2. Apply baking soda or lime to help neutralize the acid.
- 3. Flush eyes with water for 15—30 minutes. Get medical attention immediately.

If acid is swallowed:

- 1. Do not induce vomiting.
- 2. Drink large amounts of water or milk, but do not exceed 2 L (2 qt.).
- 3. Get medical attention immediately.

WARNING: Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. **Wash hands after handling.**



DX,WW,BATTERIES -19-02DEC10-1/1

A34471

Handle Agricultural Chemicals Safely

Chemicals used in agricultural applications such as fungicides, herbicides, insecticides, pesticides, rodenticides, and fertilizers can be harmful to your health or the environment if not used carefully.

Always follow all label directions for effective, safe, and legal use of agricultural chemicals.

Reduce risk of exposure and injury:

- Wear appropriate personal protective equipment as recommended by the manufacturer. In the absence of manufacturer's instructions, follow these general quidelines:
 - Chemicals labeled 'Danger': Most toxic. Generally require use of goggles, respirator, gloves, and skin protection.
 - Chemicals labeled 'Warning': Less toxic. Generally require use of goggles, gloves, and skin protections.
 - Chemicals labeled **'Caution'**: Least toxic. Generally require use of gloves and skin protection.
- Avoid inhaling vapor, aerosol or dust.
- Always have soap, water, and towel available when working with chemicals. If chemical contacts skin, hands, or face, wash immediately with soap and water. If chemical gets into eyes, flush immediately with water.
- Wash hands and face after using chemicals and before eating, drinking, smoking, or urination.
- Do not smoke or eat while applying chemicals.
- After handling chemicals, always bathe or shower and change clothes. Wash clothing before wearing again.
- Seek medical attention immediately if illness occurs during or shortly after use of chemicals.
- Keep chemicals in original containers. Do not transfer chemicals to unmarked containers or to containers used for food or drink.



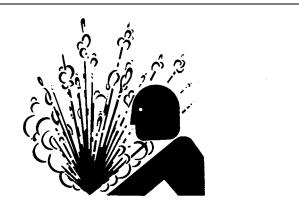
- Store chemicals in a secure, locked area away from human or livestock food. Keep children away.
- Always dispose of containers properly. Triple rinse empty containers and puncture or crush containers and dispose of properly.

DX.WW.CHEM01 -19-24AUG10-1/1

Service Cooling System Safely

Explosive release of fluids from pressurized cooling system can cause serious burns.

Shut off engine. Only remove filler cap when cool enough to touch with bare hands. Slowly loosen cap to first stop to relieve pressure before removing completely.



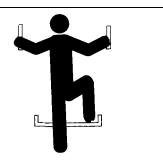
DX,WW,COOLING -19-19AUG09-1/1

TS281

Use Steps and Handholds Correctly

Prevent falls by facing the machine when getting on and off. Maintain 3-point contact with steps, handholds, and handrails.

Use extra care when mud, snow, or moisture present slippery conditions. Keep steps clean and free of grease or oil. Never jump when exiting machine. Never mount or dismount a moving machine.



DX,WW,MOUNT -19-12OCT11-1/1

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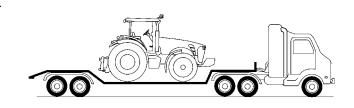
RG16946 -- UN-31MAR09

Transport Tractor Safely

A disabled tractor is best transported on a flatbed carrier. Use chains to secure the tractor to the carrier. The axles and tractor frame are suitable attachment points.

Before transporting the tractor on a low-loader truck or flatbed rail wagon, make sure that the hood is secured over the tractor engine and that doors, roof hatch (if equipped) and windows are properly closed.

Never tow a tractor at a speed greater than 10 km/h (6 mph). An operator must steer and brake the tractor under tow.



DX,WW,TRANSPORT -19-19AUG09-1/1

Servicing Electronic Control Units

IMPORTANT: Do not open control unit and do not clean with a high pressure spray.

Moisture, dirt and other contaminants may cause permanent damage.

- 1. Control units are not repairable; replace only if indicated in the diagnostic procedure.
- 2. Since control units are the components LEAST likely to fail, isolate failure before replacing by completing the diagnostic procedure.
- 3. The wiring harness terminals and connectors for electronic control units are repairable.

IMPORTANT: Misleading diagnostic messages and poor performance may occur if an electronic control unit is not programmed identical to the original controller.



4. Before putting back into service, verify the control unit is programmed identical to the original controller.

DX,WW,ECU01 -19-11JUN09-1/1

Welding Near Electronic Control Units

IMPORTANT: Do not jump-start engines with arc welding equipment. Currents and voltages are too high and may cause permanent damage.

- 1. Disconnect the negative (-) battery cable(s).
- 2. Disconnect the positive (+) battery cable(s).
- 3. Connect the positive and negative cables together. Do not attach to vehicle frame.
- 4. Clear or move any wiring harness sections away from welding area.
- 5. Connect welder ground close to welding point and away from control units.



6. After welding, reverse Steps 1—5.

DX,WW,ECU02 -19-14AUG09-1/1

Keep Electronic Control Unit Connectors Clean

- IMPORTANT: Keep terminals clean and free of foreign debris. Moisture, dirt and other contaminants may cause the terminals to erode over time and not make a good electrical connection.
- 1. If a connector is not in use, put on the proper dust cap or an appropriate seal to protect it from foreign debris and moisture.
- IMPORTANT: Do not probe through the wire insulation or through the back of the connector. Do not insert items such as paper clips or wires into connector terminals.
- 2. Make measurements on a connector terminal using JDG10466 Flex Probe Kit in SERVICEGARD.

- 3. Observe the locking mechanism of the connector when disconnecting and reconnecting.
- 4. Do not pull on wires to disconnect.
- 5. Before reconnecting:
 - Look for bent terminals; do not force connectors into each other.
 - Replace any terminal where corrosion exists.
 - Clean the connector of any foreign debris.
 - Dry the connector of any moisture.
- 6. When reconnecting, make sure seals around the connector pairs are functional.

DX,WW,ECU03 -19-11JUN09-1/1

Safety

Features and Accessories

The information in this block pertains to the features of the machines covered in this technical manual. It can be used in addition to the normal advertising literature or may help in determining which specific feature requires service.

NOTE: Design, features, accessories, and specifications are subject to change without notice.

Features marked "X" are available for that particular model number machine. Features marked "—" are not available for that model number machine.

Features and Accessories				
	5085E	5095E	5100E	
Europe	Х	X	_	
North America	Х	_	Х	
Cab	Х	X	Х	
Open Operator Station (OOS)	X	_	Х	
Air Conditioning and Heater (Cab)	X	X	Х	
Mechanical Suspension Seat	X	X	X	
Air Suspension Seat	X	X	X	
4-Cylinder Interim Tier 4 Engine	X	X	X	
Electronic Fuel Injection System with HPCR	X	X	X	
Electronic Throttle Control	X	X	X	
	X	X	X	
Turbocharged Charge Air Cooler (CAC)				
Charge Air Cooler (CAC)	X	X	X	
Fan Drive (Viscous)	X	X	X	
Water Separator	X	X	X	
Fuel Filter (Dual)	X	X	X	
Fuel Cooler	X	X	X	
Air Cleaner (Radial)	X	X	X	
Air Conditioner Condenser (Cab)	X	X	X	
Hydraulic/Transmission Oil Cooler	X	X	X	
Cold Weather Start Aid (Glow Plug)	X	X	Х	
Engine Coolant Heater	Χ	X		
Wet Traction Clutch	Χ	X	X	
12x12 PowrReverser™ Transmission	Х	X	Х	
24x12 PowrReverser Plus™ Transmission	Х	X	_	
Creeper	Х	X	X	
Open Center Hydraulics	Х	X	X	
Tandem Hydraulic Pump [Steering—24.9 lpm (6.6 gpm); Implement—60.1 lpm (15.9 gpm)]	X	Х	Х	
Greased Rear Axle (Standard)	Х	X	Х	
Greased MFWD Front Axle (Standard)	Χ	X	Х	
Mechanical Differential Lock	Χ	_	Х	
Mechanical MFWD	Χ	X	Х	
Electrohydraulic Rear Power Take-Off (PTO)	X	X	Х	
Wet PTO Clutch	X	X	Х	
Dual (540/540E) Speed PTO	X	X	Х	
Reversible PTO Output Shaft	X	X	X	
Mechanical Rear 3-Point Hitch	X	X	X	
Wagon Hitch	X	X		
Standard 3-Point Hitch	X	X	X	
Telescopic Draft Links with Category II Balls	X	X	X	
Adjustable Straight Drawbar	X	X	X	
Dual Mid-Mount SCV	X	X	X	
Triple Mid-Mount SCV	X	X	X	
Dual Rear SCV Triple Deluxe Rear SCV	X	X	X	

Continued on next page

SW03989,0001D04 -19-09SEP13-1/2

General Specifications

Hydraulic Trailer Brake	X	X	_
Power Beyond	X	X	X
Secondary Brake	X	X	_

SW03989,0001D04 -19-09SEP13-2/2

Machine General Specifications

NOTE: Specifications and design are subject to change without notice.

	5085E	5095E	5100E	
ENGINE				
Туре	4045H	4045H	4045H	
Aspiration	Turbocharged	Turbocharged	Turbocharged	
Engine Power at 2400 rpm	63.6 kW (85 hp.)	70.9 kW (95 hp.)	74.5 kW (100 hp.)	
PTO Power at 2400 rpm ^a	52.2 kW (70 hp.)	59.7 kW (80 hp.)	63.3 kW (85 hp.)	
Maximum Torque	245 N·m	280 N·m	298 N·m	
Cylinders	4	4	4	
Bore	106 mm (4.19 in.)	106 mm (4.19 in.)	106 mm (4.19 in.)	
Stroke	127 mm (5.00 in.)	127 mm (5.00 in.)	127 mm (5.00 in.)	
Displacement	4.5 L (278 cu. in.)	4.5 L (278 cu. in.)	4.5 L (278 cu. in.)	
Compression Ratio	19:1	19:1	19:1	
Firing Order (#1 cylinder in front)	1-3-4-2	1-3-4-2	1-3-4-2	
Intake Valve Clearance	0.35 mm (0.014 in.)	0.35 mm (0.014 in.)	0.35 mm (0.014 in.)	
Exhaust Valve Clearance	0.45 mm (0.018 in.)	0.45 mm (0.018 in.)	0.45 mm (0.018 in.)	
Slow Idle	900 rpm	900 rpm	900 rpm	
Fast Idle	2500 rpm	2500 rpm	2500 rpm	
Operating Speed Range	1600—2400 rpm	1600—2400 rpm	1600—2400 rpm	
FUEL SYSTEM				
Туре	Electronically Controlled High Pressure Common Rail Fuel System	Electronically Controlled High Pressure Common Rail Fuel System	Electronically Controlled High Pressure Common Rail Fuel System	
Fuel Filter	FuelGard (2 used)	FuelGard (2 used)	FuelGard (2 used)	
ELECTRICAL SYSTEM				
Туре	12 V	12 V	12 V	
	Negative Ground	Negative Ground	Negative Ground	
Battery	12 V 925 CCA Cold Cranking Amps	12 V 925 CCA Cold Cranking Amps	12 V 925 CCA Cold Cranking Amps	
Specifications		T.		
BCI Group	31	31	31	
Alternator (OOS)	90 A	90 A	90 A	
Alternator (Cab)	120 A	120 A	120 A	
Starting Motor	12 V, 2.5 kW	12 V, 2.5 kW	12 V, 2.5 kW	
TRANSMISSION				
Standard	12/12 PowrReverser™ with Mechanical Hitch, Electrohydraulic PTO (1 speed or shiftable 540/540E)	12/12 PowrReverser™ with Mechanical Hitch, Electrohydraulic PTO (1 speed or shiftable 540/540E)	12/12 PowrReverser™ with Mechanical Hitch, Electrohydraulic PTO (1 speed or shiftable 540/540E)	
Optional (Cab Only)	24/12 PowrReverser™ with Mechanical Hitch, Electro-Hydraulic PTO (1 speed or shiftable 540/540E)	24/12 PowrReverser™ with Mechanical Hitch, Electro-Hydraulic PTO (1 speed or shiftable 540/540E)	24/12 PowrReverser™ with Mechanical Hitch, Electro-Hydraulic PTO (1 speed or shiftable 540/540E)	
Gear Selections	Lever	Lever	Lever	
Shifting	Manual	Manual	Manual	
BRAKES			·	
Туре	Hydraulically Operated Wet Disk	Hydraulically Operated Wet Disk	Hydraulically Operated Wet Disk	
POWER TAKE-OFF				
Type (Standard)	540/540E, Fully Independent	540/540E, Fully Independent	540/540E, Fully Independent	
Engine Speed (540 rpm) PTO	2400 rpm	2400 rpm	2400 rpm	
Engine Speed (540E rpm) PTO	1700 rpm	1700 rpm	1700 rpm	
Size: Type 1 (1-3/8 in. 6T)	280 mm (11 in.)	280 mm (11 in.)	280 mm (11 in.)	

Continued on next page

SW03989,0001D07 -19-09SEP13-1/2

General Specifications

Clutch (Wet)	Electrohydraulic	Electrohydraulic	Electrohydraulic
HYDRAULIC SYSTEM			
Туре	Open Center	Open Center	Open Center
Pump	Tandem Gear	Tandem Gear	Tandem Gear
Pump Displacement			
Steering	11.9 cc	11.9 cc	11.9 cc
	(0.73 cu. in.)	(0.73 cu. in.)	(0.73 cu. in.)
Implement	28.8 cc	28.8 cc	28.8 cc
	(1.76 cu. in.)	(1.76 cu. in.)	(1.76 cu. in.)
Flow Rate			
Steering	24.9 L/min. ^b	24.9 L/min. ^b	24.9 L/min. ^b
	(6.6 gpm)	(6.6 gpm)	(6.6 gpm)
Implement	60.1 L/min. ^b	60.1 L/min. ^b	60.1 L/min. ^b
	(15.9 gpm)	(15.9 gpm)	(15.9 gpm)
Maximum Pressure			
Steering (OOS)	13 000—13 700 kPa	13 000—13 700 kPa	13 000—13 700 kPa
	(130—137 bar)	(130—137 bar)	(130—137 bar)
	(1885—1987 psi)	(1885—1987 psi)	(1885—1987 psi)
Steering (Cab with anticavitation valve)	13 000—13 700 kPa	13 000—13 700 kPa	13 000—13 700 kPa
	(130—137 bar)	(130—137 bar)	(130—137 bar)
	(1885—1987 psi)	(1885—1987 psi)	(1885—1987 psi)
Steering (Cab without anticavitation valve)	14 000—14 700 kPa	14 000—14 700 kPa	14 000—14 700 kPa
	(140—147 bar)	(140—147 bar)	(140—147 bar)
	(2031—2132 psi)	(2031—2132 psi)	(2031—2132 psi)
Implement	19 000—20 000 kPa	19 000—20 000 kPa	19 000—20 000 kPa
	(190—200 bar)	(190—200 bar)	(190—200 bar)
	(2755—2900 psi)	(2755—2900 psi)	(2755—2900 psi)
Steering System	Hydrostatic Power	Hydrostatic Power	Hydrostatic Power
SCV Flow Rate	60.2 l/min.	60.2 l/min.	60.2 l/min.
	(15.9 gpm)	(15.9 gpm)	(15.9 gpm)
THREE-POINT HITCH			
Category	I and II	I and II	I and II
Sensing	Top Link	Top Link	Top Link
Standard	Fixed Draft Links with	Fixed Draft Links with	Fixed Draft Links with
	Interchangeable Balls	Interchangeable Balls	Interchangeable Balls
Optional	Telescopic Draft Links with	Telescopic Draft Links with	Telescopic Draft Links with
	Interchangeable Balls	Interchangeable Balls	Interchangeable Balls
Lift Capacity ^c	1530 kg	1530 kg	1530 kg
	(3374 lb.)	(3374 lb.)	(3374 lb.)

SW03989,0001D07 -19-09SEP13-2/2

^aObserved in factory.
^bFlow rate at 90% pump efficiency and engine at rated speed.
^cAt 610 mm (24 in.) behind hitch balls.

Drain and Refill Capacities

NOTE: Specifications and design are subject to change without notice.

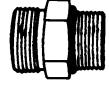
	5085E	5095E	5100E
CAPACITIES			
Fuel Tank (OOS)	96 L (25 U.S. gal)	_	96 L (25 U.S. gal)
Fuel Tank (Cab)	115L (30 U.S. gal)	115 L (30 U.S. gal)	115 L (30 U.S. gal)
Cooling System	11.4 L (12 U.S. qt.)	11.4 L (12 U.S. qt.)	11.4 L (12 U.S. qt.)
Crankcase (including filter)	11 L (11.6 U.S. qt.)	11 L (11.6 U.S. qt.)	11 L (11.6 U.S. qt.)
Transmission/Hydraulic System			1
Transmission/Hydraulic System 43.5 L (11.5 ga		43.5 L (11.5 gal)	43.5 L (11.5 gal)
Mechanical Front Wheel Drive (MFW	D)		1
Wheel Hubs	0.7 L (0.74 U.S. qt.)	0.7 L (0.74 U.S. qt.)	0.7 L (0.74 U.S. qt.)
Axle Housing	5 L (5.8 U.S. qt.)	5 L (5.8 U.S. qt.)	5 L (5.8 U.S. qt.)

SW03989,0001D08 -19-09SEP13-1/1

Service Recommendations for O-Ring Boss Fittings

Straight Fitting

- 1. Inspect O-ring boss seat for dirt or defects.
- 2. Lubricate O-ring with petroleum jelly. Place electrical tape over threads to protect O-ring. Slide O-ring over tape and into O-ring groove of fitting. Remove tape.
- 3. Tighten fitting to torque value shown on chart.



OUO1023,0003147 -19-14NOV11-1/2

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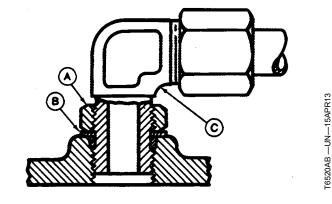
Angle Fitting

- 1. Back-off lock nut (A) and back-up washer (B) completely to head-end (C) of fitting.
- 2. Turn fitting into threaded boss until back-up washer contacts face of boss.
- 3. Turn fitting head-end counterclockwise to proper index (maximum of one turn).

NOTE: Do not allow hoses to twist when tightening fittings.

4. Hold fitting head-end with a wrench and tighten locknut and back-up washer to proper torque value.

STRAIGHT FITTING OR SPECIAL NUT TORQUE CHART				
Thread Size	N·m	lb-ft		
3/8-24 UNF	8	6		
7/16-20 UNF	12	9		
1/2-20 UNF	16	12		
9/16-18 UNF	24	18		
3/4-16 UNF	46	34		
7/8-14 UNF	62	46		
1-1/16-12 UN	102	75		
1-3/16-12 UN	122	90		
1-5/16-12 UN	142	105		
1-5/8-12 UN	190	140		
1-7/8-12 UN	217	160		



NOTE: Torque tolerance is \pm 10%.

OUO1023,0003147 -19-14NOV11-2/2

Service Recommendations For Flat Face O-Ring Seal Fittings

- Inspect the fitting sealing surfaces and O-ring. They must be free of dirt or defects.
- 2. Lubricate O-rings and install into grove using petroleum jelly to hold in place.
- 3. Index angle fittings and tighten by hand pressing joint together to insure O-ring remains in place.
- 4. Tighten fitting or nut to torque value shown on the chart. Do not allow hoses to twist when tightening fittings, use backup wrench on straight hose couplings.

IMPORTANT: Tighten fittings to 150% of listed torque value if indexing is necessary or if fitting is attached to an actuating devise.

Tighten fittings to 50% of listed torque value if used in aluminum housing.

FLAT FACE O-RING SEAL FITTING TORQUE*						
Nomial 1	ube O.D.	Thread Size	Swiv	el Nut	Bulkhea	d Nut
mm	in.	in.	N⋅m	lb-ft	N·m	lb-ft
6.35	0.250	9/16-18	16	12	12	9
9.52	0.375	11/16-16	24	18	24	18
12.70	0.500	13/16-16	50	37	46	34
15.88	0.625	1-14	69	51	62	46
19.05	0.750	1 3/16-12	102	75	102	75
22.22	0.875	1 3/16-12	102	75	102	75
25.40	1.000	1 7/16-12	142	105	142	105
31.75	1.250	1 11/16-12	190	140	190	140
38.10	1.500	2-12	217	160	217	160

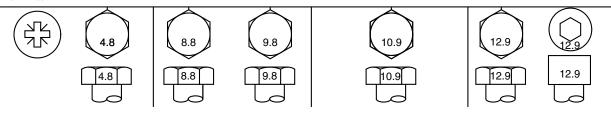
^{*}Torque tolerance is +15 -20% unless otherwise specified.

Thread Size	Straight Hex Size	Locknut Hex Size	Straight Fitting of	or Locknut Toque
Inch	Inch	Inch	N·m	lb-ft
3/8-24	5/8	9/16	12	9
7/16-20	5/8	5/8	21	15
1/2-20	3/4	11/16	26	19
9/16-18	3/4	3/4	34	25
3/4-16	7/8	15/16	73	55
7/8-14	1 1/16	1 1/16	104	76
1 1/16-12	1 1/4	1 3/8	176	130
1 3/16-12	1 3/8	1 1/2	230	170
1 5/16-12	1 1/2	1 5/8	285	210

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Metric Bolt and Screw Torque Values

TS1670 -UN-01MAY03



Bolt or Screw Size	Class 4.8				Class 8.8 or 9.8				Class 10.9				Class 12.9			
	Lubricateda		Dry ^b		Lubricateda		Dry ^b		Lubricateda		Dry ^b		Lubricated ^a		Dry ^b	
	N·m	lbin.	N·m	lbin.	N·m	lbin.	N·m	lbin.	N·m	lbin.	N·m	lbin.	N·m	lbin.	N⋅m	lbin.
M6	4.7	42	6	53	8.9	79	11.3	100	13	115	16.5	146	15.5	137	19.5	172
									N·m	lbft.	N·m	lbft.	N·m	lbft.	N·m	lbft.
M8	11.5	102	14.5	128	22	194	27.5	243	32	23.5	40	29.5	37	27.5	47	35
			N·m	lbft.	N·m	lbft.	N·m	lbft.								
M10	23	204	29	21	43	32	55	40	63	46	80	59	75	55	95	70
	N·m	lbft.							•							
M12	40	29.5	50	37	75	55	95	70	110	80	140	105	130	95	165	120
M14	63	46	80	59	120	88	150	110	175	130	220	165	205	150	260	190
M16	100	74	125	92	190	140	240	175	275	200	350	255	320	235	400	300
M18	135	100	170	125	265	195	330	245	375	275	475	350	440	325	560	410
M20	190	140	245	180	375	275	475	350	530	390	675	500	625	460	790	580
M22	265	195	330	245	510	375	650	480	725	535	920	680	850	625	1080	800
M24	330	245	425	315	650	480	820	600	920	680	1150	850	1080	800	1350	1000
M27	490	360	625	460	950	700	1200	885	1350	1000	1700	1250	1580	1160	2000	1475
M30	660	490	850	625	1290	950	1630	1200	1850	1350	2300	1700	2140	1580	2700	2000
M33	900	665	1150	850	1750	1300	2200	1625	2500	1850	3150	2325	2900	2150	3700	2730
M36	1150	850	1450	1075	2250	1650	2850	2100	3200	2350	4050	3000	3750	2770	4750	3500

Torque values listed are for general use only, based on the strength of the bolt or screw. DO NOT use these values if a different torque value or tightening procedure is given for a specific application. For stainless steel fasteners or for nuts on U-bolts, see the tightening instructions for the specific application. Tighten plastic insert or crimped steel type lock nuts by turning the nut to the dry torque shown in the chart, unless different instructions are given for the specific application.

Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical property class. Replace fasteners with the same or higher property class. If higher property class fasteners are used, tighten these to the strength of the original. Make sure fastener threads are clean and that you properly start thread engagement. When possible, lubricate plain or zinc plated fasteners other than lock nuts, wheel bolts or wheel nuts, unless different instructions are given for the specific application.

DX,TORQ2 -19-12JAN11-1/1

^a"Lubricated" means coated with a lubricant such as engine oil, fasteners with phosphate and oil coatings, or M20

and larger fasteners with JDM F13C, F13F or F13J zinc flake coating.

b"Dry" means plain or zinc plated without any lubrication, or M6 to M18 fasteners with JDM F13B, F13E or F13H zinc flake coating.

Unified Inch Bolt and Screw Torque Values

TS1671 —UN—01MAY03











Bolt or Screw	SAE Grade 1			SAE Grade 2 ^a		SAE Grade 5, 5.1 or 5.2			SAE Grade 8 or 8.2							
Size	Lubricated ^b		Dry ^c		Lubricatedb	Dry ^c	Lubricated ^b	Dry ^c		Lubricated ^b		Dry ^c				
	N·m	lbin.	N·m	lbin.	N·m	lbin.	N·m	lbin.	N·m	lbin.	N·m	lbin.	N·m	lbin.	N·m	lbin.
1/4	3.7	33	4.7	42	6	53	7.5	66	9.5	84	12	106	13.5	120	17	150
			Į.						ļ				N·m	lbft.	N·m	lbft.
5/16	7.7	68	9.8	86	12	106	15.5	137	19.5	172	25	221	28	20.5	35	26
			Į.						N·m	lbft.	N·m	lbft.			ļ	
3/8	13.5	120	17.5	155	22	194	27	240	35	26	44	32.5	49	36	63	46
			N·m	lbft.	N·m	lbft.	N·m	lbft.					Į.		ļ	
7/16	22	194	28	20.5	35	26	44	32.5	56	41	70	52	80	59	100	74
	N·m	lbft.							ļ				Į.		ļ	
1/2	34	25	42	31	53	39	67	49	85	63	110	80	120	88	155	115
9/16	48	35.5	60	45	76	56	95	70	125	92	155	115	175	130	220	165
5/8	67	49	85	63	105	77	135	100	170	125	215	160	240	175	305	225
3/4	120	88	150	110	190	140	240	175	300	220	380	280	425	315	540	400
7/8	190	140	240	175	190	140	240	175	490	360	615	455	690	510	870	640
1	285	210	360	265	285	210	360	265	730	540	920	680	1030	760	1300	960
1-1/8	400	300	510	375	400	300	510	375	910	670	1150	850	1450	1075	1850	1350
1-1/4	570	420	725	535	570	420	725	535	1280	945	1630	1200	2050	1500	2600	1920
1-3/8	750	550	950	700	750	550	950	700	1700	1250	2140	1580	2700	2000	3400	2500
1-1/2	990	730	1250	930	990	730	1250	930	2250	1650	2850	2100	3600	2650	4550	3350

Torque values listed are for general use only, based on the strength of the bolt or screw. DO NOT use these values if a different torque value or tightening procedure is given for a specific application. For plastic insert or crimped steel type lock nuts, for stainless steel fasteners, or for nuts on U-bolts, see the tightening instructions for the specific application. Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical grade.

Replace fasteners with the same or higher grade. If higher grade fasteners are used, tighten these to the strength of the original. Make sure fastener threads are clean and that you properly start thread engagement. When possible, lubricate plain or zinc plated fasteners other than lock nuts, wheel bolts or wheel nuts, unless different instructions are given for the specific application.

DX,TORQ1 -19-12JAN11-1/1

^aGrade 2 applies for hex cap screws (not hex bolts) up to 6 in. (152 mm) long. Grade 1 applies for hex cap screws over 6 in. (152 mm) long, and for all other types of bolts and screws of any length.

b"Lubricated" means coated with a lubricant such as engine oil, fasteners with phosphate and oil coatings, or 7/8 in.

and larger fasteners with JDM F13C, F13F or F13J zinc flake coating.

c"Dry" means plain or zinc plated without any lubrication, or 1/4 to 3/4 in. fasteners with JDM F13B, F13E or F13H zinc flake coating.

Glossary of Terms

ITEM	ABBREVIATION	DESCRIPTION
Accessory	ACC	Secondary electrical system
Air Conditioning	A/C	System used for cooling the air in the cab
Alternating Current	AC	Electrical current that reverses its direction at regularly recurring intervals
Battery	Bat	A device used to furnish electrical current
Brakes	BR	Abbreviation
Charge Air Cooler	CAC	A device used for cooling compressed intake air
Controller Area Network	CAN	A communication system linking on-board electronics
Chassis Control Unit	CCU	Computerized system for tractor monitoring
Circuit	CCT	A complete path of an electrical current
Clockwise	CW	Direction in which the hands of a clock rotate
Cold Cranking Amperes	CCA	Battery's measured capability to perform during cold-weather operation
Component Technical Manual	CTM	Technical manual developed for the servicing of major components
Counterclockwise	CCW	Direction opposite the rotation of the hands of a clock
Diagnostic Receptacle	DR	A connection where hydraulic pressure can be measured
Digital Multimeter	DMM	An electrical multi-functional measuring device
Direct Current	DC	Electrical current flowing in one direction only
Diesel Oxidation Catalyst	DOC	Portion of the exhaust filter
Diesel Particulate Filter	DPF	Portion of the exhaust filter
Electro-Hydraulic	EH	Hydraulic valve function that is controlled electrically
Electro-Hydraulic Control Unit	EHC	Electronic device used to house various computerized system functions (CCL HCU, and PTR)
Electronic Components Relay	ELX	Relay powering most of the electronic components
Engagement Override Valve	EOV	Abbreviation
Lingagement Override valve	LOV	
Engine Control Unit	ECU	Electronic device used to house computerized system that controls engine functions
Engine Interface Control	EIC	Communicates between ECU, display and exhaust filter cleaning mode selector switch
Excess Flow (SCV/Hitch Flow)	EF	Abbreviation
Excess Flow Load Sense (SCV/Hitch Flow)	EFL	Abbreviation
Fixed Open Operator Station	FOOS	Abbreviation
Forward	FWD	Direction of movement
Forward-Neutral-Reverse	FNR	Abbreviation
Gallons per Minute	gpm	Amount of fluid displaced over a period of one minute
Ground Drive Power Take-Off	GD PTO	Abbreviation
Heating, Ventilating and Air Conditioning	HVAC	Abbreviation
High-Intensity Discharge Light	HID	Abbreviation
High Pressure Common Rail	HPCR	Abbreviation
Hitch Control Unit	HCU	Computerized system used to control hitch functions
Housing	Hsg	Abbreviation
Hydraulic Trailer Brake	HTB	Abbreviation
Ignition	IGN	Control for starting and stopping the tractor
Inside Diameter	ID	Abbreviation
Instrument Cluster Control Unit	ICC	Computerized system used to control instrument cluster functions
Isolated Open Operator Station	IOOS	Abbreviation
International Standards Organization	ISO	Standards organization
Joint Industry Council Organization	JIC	Standards organization
Left-Hand	LH or L-H	Abbreviation
Liquid Crystal Display	LCD	A technology used for displaying information
Manifold Air Pressure	MAP	Air Pressure measured at engine air intake

Continued on next page

JR13030,0000050 -19-31JAN12-1/2

General Specifications

ITEM	ABBREVIATION	DESCRIPTION
Mechanical	Mech or MECH	Abbreviation
Mechanical Front Wheel Drive	MFWD	A mechanically powered front axle
Negative	Neg (—)	Electrical Ground Circuit
Number	No.	Abbreviation
O-Ring Face Seal	ORFS or ORS	A type of seal used in hydraulic connections
Outside Diameter	OD	Abbreviation
Open Operator Station	oos	Abbreviation
Performance Monitor	Perf Mon or PrF	Abbreviation
Positive	Pos (+)	Charged part of an electrical circuit
Potentiometer	POT	A device used to vary electrical voltage
PowrReverser™	PR	16 forward and 16 reverse mechanically shifted transmission; 4-speed gearbox, 4-speed range box, and 2 directional clutch pack option box with electro-hydraulic shuttle shift = 16x16 PR
PowrReverser™ Plus	PR Plus	16 forward and 16 reverse mechanically shifted transmission; 4-speed gearbox 4-speed range box, 1 directional clutch pack and 2-speed clutch pack option box with electro-hydraulic shuttle shift = 32x16 High and Low PR
Power Take-Off	PTO	Abbreviation
PowerTech™ E	PTE	Electronically controlled fuel injection
Power Train Reverser	PTR	Computerized system used to control power reverse transmission functions
Pressure Control Valve	PCV	Valve used to control pressure within a system
Pressure Regulating Valve	PRV	A device used to regulate pressure in a system
Product Identification Number	PIN	Serial number relating to tractor identification
Pulse-Width-Modulation	PWM	Method of controlling electrical signals
Reverse	Rev	Direction of movement
Revolutions per Minute	rpm	Abbreviation
Right-Hand	RH or R-H	Abbreviation
Rockshaft	RS	Abbreviation
Roll-Over Protective Structure	ROPS	Abbreviation
Selective Control Valve	SCV	Device used to control remote hydraulic functions
Slow Moving Vehicle	SMV	Warning sign on the rear of the tractor
Society of Automotive Engineers	SAE	Engineering Standards Organization
Specification	Spec	Abbreviation
Switch	SW	Abbreviation
SyncReverser™	SR	16 forward and 16 reverse mechanically shifted transmission; 4-speed gearbox, 4-speed range box, and 2 directional clutch pack option box with electro-hydraulic shuttle shift = 16x16 SR
SyncShuttle™ Plus	SS	12 forward and 4 reverse mechanically shifted transmission; 3-speed forward and 1-speed reverse gearbox, and 4-speed range box, with mechanically synchronized reverse shuttle shift = 12x4 SS
Tachometer	Tach	Abbreviation
Tail Light	TL	Abbreviation
Temperature	Temp	Abbreviation
Three-Point Hitch	3PT	Abbreviation
Transmission	Trans	Abbreviation
Transient Voltage Protection	TVP	An electrical device used to protect a circuit from voltage surge
Voltage (Volts)	V	Abbreviation
Voltage Detector	V Det	Abbreviation
Warning Lamp	WL	Abbreviation
Without	W/O	Abbreviation
Wide-Open Throttle	WOT	Full throttle
Two Wheel Drive	2WD	Vehicle where only one pair of wheels is powered

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General Specifications

Diesel Fuel

Consult your local fuel distributor for properties of the diesel fuel available in your area.

In general, diesel fuels are blended to satisfy the low temperature requirements of the geographical area in which they are marketed.

Diesel fuels specified to EN 590 or ASTM D975 are recommended. Renewable diesel fuel produced by hydrotreating animal fats and vegetable oils is basically identical to petroleum diesel fuel. Renewable diesel that meets EN 590 or ASTM D975 is acceptable for use at all percentage mixture levels.

Required Fuel Properties

In all cases, the fuel shall meet the following properties:

Cetane number of 43 minimum. Cetane number greater than 47 is preferred, especially for temperatures below –20 °C (–4 °F) or elevations above 1500 m (5000 ft.).

Cold Filter Plugging Point (CFPP) should be at least 5 °C (9 °F) below the expected lowest temperature or **Cloud Point** below the expected lowest ambient temperature.

Fuel lubricity should pass a maximum scar diameter of 0.52 mm as measured by ASTM D6079 or ISO 12156-1. A maximum scar diameter of 0.45 mm is preferred.

Diesel fuel quality and sulfur content must comply with all existing emissions regulations for the area in which the engine operates. DO NOT use diesel fuel with sulfur content greater than 10000 mg/kg (10000 ppm).

Sulfur content for Interim Tier 4, Final Tier 4, Stage III B, and Stage IV Engines

 Use ONLY ultra low sulfur diesel (ULSD) fuel with a maximum of 15 mg/kg (15 ppm) sulfur content.

Sulfur Content for Tier 3 and Stage III A Engines

- Use of diesel fuel with sulfur content less than 1000 mg/kg (1000 ppm) is RECOMMENDED.
- Use of diesel fuel with sulfur content 1000—2000 mg/kg (1000—2000 ppm) REDUCES the oil and filter change interval.
- BEFORE using diesel fuel with sulfur content greater than 2000 mg/kg (2000 ppm), contact your John Deere dealer.

Sulfur Content for Tier 2 and Stage II Engines

- Use of diesel fuel with sulfur content less than 2000 mg/kg (2000 ppm) is RECOMMENDED.
- Use of diesel fuel with sulfur content 2000—5000 mg/kg (2000—5000 ppm) REDUCES the oil and filter change interval.
- BEFORE using diesel fuel with sulfur content greater than 5000 mg/kg (5000 ppm), contact your John Deere dealer.

Sulfur Content for Other Engines

- Use of diesel fuel with sulfur content less than 5000 mg/kg (5000 ppm) is RECOMMENDED.
- Use of diesel fuel with sulfur content greater than 5000 mg/kg (5000 ppm) REDUCES the oil and filter change interval.

IMPORTANT: Do not mix used diesel engine oil or any other type of lubricating oil with diesel fuel.

Improper fuel additive usage may cause damage on fuel injection equipment of diesel engines.

DX.FUEL1 -19-17JUN13-1/1

Handling and Storing Diesel Fuel



CAUTION: Reduce the risk of fire. Handle fuel carefully. DO NOT fill the fuel tank when engine is running. DO NOT smoke while you fill the fuel tank or service the fuel system.

Fill the fuel tank at the end of each day's operation to prevent water condensation and freezing during cold weather.

Keep all storage tanks as full as practicable to minimize condensation.

Ensure that all fuel tank caps and covers are installed properly to prevent moisture from entering. Monitor water content of the fuel regularly.

When using BioDiesel fuel, the fuel filter may require more frequent replacement due to premature plugging.

Check engine oil level daily prior to starting engine. A rising oil level may indicate fuel dilution of the engine oil.

IMPORTANT: The fuel tank is vented through the filler cap. If a new filler cap is required, always replace it with an original vented cap.

When fuel is stored for an extended period or if there is a slow turnover of fuel, add a fuel conditioner to stabilize the fuel and prevent water condensation. Contact your fuel supplier or John Deere dealer for recommendations.

DX,FUEL4 -19-15FEB13-1/1

Lubricity of Diesel Fuel

Most diesel fuels manufactured in the United States, Canada, and the European Union have adequate lubricity to ensure proper operation and durability of fuel injection system components. However, diesel fuels manufactured in some areas of the world may lack the necessary lubricity.

IMPORTANT: Make sure the diesel fuel used in your machine demonstrates good lubricity characteristics.

Fuel lubricity should pass a maximum scar diameter of 0.45 mm as measured by ASTM D6079 or ISO 12156-1.

If fuel of low or unknown lubricity is used, add John Deere Fuel-Protect Diesel Fuel Conditioner (or equivalent) at the specified concentration.

Lubricity of Biodiesel Fuel

Fuel lubricity can improve significantly with biodiesel blends up to B20 (20% biodiesel). Further increase in lubricity is limited for biodiesel blends greater than B20.

DX,FUEL5 -19-14APR11-1/1

Testing Diesel Fuel

A fuel analysis program can help to monitor the quality of diesel fuel. The fuel analysis can provide critical data such as cetane number, fuel type, sulfur content, water content, appearance, suitability for cold weather operations, bacteria, cloud point, acid number, particulate contamination, and whether the fuel meets specification.

Contact your John Deere dealer for more information on diesel fuel analysis.

DX,FUEL6 -19-14APR11-1/1

BioDiesel Fuel

BioDiesel fuel is comprised of mono-alkyl esters of long chain fatty acids derived from vegetable oils or animal fats. BioDiesel blends are BioDiesel mixed with petroleum diesel fuel on a volume basis.

Before using fuel containing BioDiesel, review the BioDiesel Use Requirements and Recommendations in this Operator's Manual.

Environmental laws and regulations can encourage or prohibit the use of biofuels. Operators should consult with appropriate governmental authorities prior to using biofuels.

All John Deere Engines with Exhaust Filter (Released 2011 and After)

While 5% blends (B5) are preferred, BioDiesel concentrations up to a 20% blend (B20) in petroleum diesel fuel can be used. BioDiesel blends up to B20 can be used ONLY if the BioDiesel (100% BioDiesel or B100) meets ASTM D6751, EN 14214, or equivalent specification. Expect a 2% reduction in power and a 3% reduction in fuel economy when using B20.

BioDiesel concentrations above B20 can harm the engine's emission control systems and should not be used. Risks include, but are not limited to, more frequent stationary regeneration, soot accumulation, and increased intervals for ash removal.

John Deere approved fuel conditioners, which contain detergent and dispersant additives, are required when using BioDiesel blends from B10—B20, and are recommended when using lower BioDiesel blends.

All John Deere Engines Excluding Exhaust Filter (Primarily Released Prior to 2012)

While 5% blends (B5) are preferred, BioDiesel concentrations up to a 20% blend (B20) in petroleum diesel fuel can be used. BioDiesel blends up to B20 can be used ONLY if the BioDiesel (100% BioDiesel or B100) meets ASTM D6751, EN 14214, or equivalent specification. Expect a 2% reduction in power and a 3% reduction in fuel economy when using B20.

These John Deere engines can operate on BioDiesel blends above B20 (up to 100% BioDiesel). Operate at levels above B20 ONLY if the BioDiesel is permitted by law and meets the EN 14214 specification (primarily available in Europe). Engines operating on BioDiesel blends above B20 might not fully comply with or be permitted by all applicable emissions regulations. Expect up to a 12% reduction in power and an 18% reduction in fuel economy when using 100% BioDiesel.

John Deere approved fuel conditioners, which contain detergent and dispersant additives, are required when using BioDiesel blends from B10—B20, and are recommended when using lower BioDiesel blends.

BioDiesel Use Requirements and Recommendations

The petroleum diesel portion of all BioDiesel blends must meet the requirements of ASTM D975 (US) or EN 590 (EU) commercial standard.

BioDiesel users in the U.S. are strongly encouraged to purchase BioDiesel blends from a BQ-9000 Certified Marketer and sourced from a BQ-9000 Accredited Producer (as certified by the National BioDiesel Board). Certified Marketers and Accredited Producers can be found at the following website: http://www.bq9000.org.

BioDiesel contains residual ash. Ash levels exceeding the maximums allowed in either ASTM D6751 or EN14214 can result in more rapid ash loading and require more frequent cleaning of the Exhaust Filter (if present).

The fuel filter can require more frequent replacement, when using BioDiesel fuel, particularly if switching from diesel. Check engine oil level daily prior to starting engine. A rising oil level can indicate fuel dilution of the engine oil. BioDiesel blends up to B20 must be used within 90 days of the date of BioDiesel manufacture. BioDiesel blends above B20 must be used within 45 days from the date of BioDiesel manufacture.

When using BioDiesel blends up to B20, the following must be considered:

- Cold-weather flow degradation
- Stability and storage issues (moisture absorption, microbial growth)
- Possible filter restriction and plugging (usually a problem when first switching to BioDiesel on used engines)
- Possible fuel leakage through seals and hoses (primarily an issue with older engines)
- Possible reduction of service life of engine components

Request a certificate of analysis from your fuel distributor to ensure that the fuel is compliant with the specifications provided in this Operator's Manual.

Consult your John Deere dealer for approved fuel conditioners to improve storage and performance with BioDiesel fuels.

The following must also be considered if using BioDiesel blends above B20:

- Possible coking or blocked injector nozzles, resulting in power loss and engine misfire if John Deere approved fuel conditioners are not used
- Possible crankcase oil dilution (requiring more frequent oil changes)
- Possible lacquering or seizure of internal components
- Possible formation of sludge and sediments
- Possible thermal oxidation of fuel at elevated temperatures
- Possible compatibility issues with other materials (including copper, lead, zinc, tin, brass, and bronze) used in fuel handling equipment

Continued on next page

DX,FUEL7 -19-15MAY13-1/2

Fuel and Lubricants

- Possible reduction in water separator efficiency
- Possible damage to paint if exposed to BioDiesel
- Possible corrosion of fuel injection equipment
- Possible elastomeric seal and gasket material degradation (primarily an issue with older engines)
- Possible high acid levels within fuel system
- Because BioDiesel blends above B20 contain more ash, using blends above B20 can result in more rapid

ash loading and require more frequent cleaning of the Exhaust Filter (if present)

IMPORTANT: Raw pressed vegetable oils are NOT acceptable for use as fuel in any concentration in John Deere engines. Their use could cause engine failure.

DX,FUEL7 -19-15MAY13-2/2

Do Not Use Galvanized Containers

IMPORTANT: Diesel fuel stored in galvanized containers reacts with zinc coating on the container to form zinc flakes. If fuel contains water, a zinc gel will also form. The gel and flakes will quickly plug fuel filters and damage fuel injectors and fuel pumps.

DO NOT use a galvanized container to store diesel fuel.

Store fuel in:

- plastic containers.
- aluminum containers.
- specially coated steel containers made for diesel fuel.

DO NOT use brass-coated containers: brass is an alloy of copper and zinc.

OUO1023,000314F -19-14NOV11-1/1

Fill Fuel Tank

A

CAUTION: Handle fuel with care: It is highly flammable. DO NOT refuel the machine while smoking or when near open flame or sparks.

Always stop engine before refueling machine. Fill fuel tank outdoors.

Prevent fires by keeping machine clean of accumulated trash, grease and debris. Always clean up spilled fuel.

Fill fuel tank at end of each day's operation. This prevents condensation in tank as moist air cools.

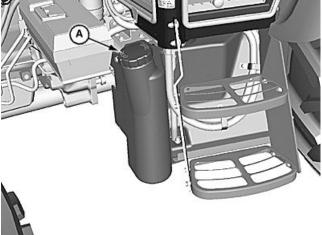
Specification

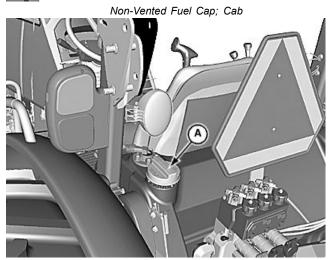
Cab—Capacity	. 115 L (30 gal.)
Open Operator	
Station—Capacity	96 L (25 gal.)

NOTE: To reduce fuel gelling and control wax separation during cold weather, John Deere Fuel Flow Improver, or equivalent, may be added to fuel or bulk storage tank.

A-Fuel Cap







Vented Fuel Cap; OOS

SW03989,0001D65 -19-25SEP13-1/1

LV16364 —UN-29NOV12

TS202 —UN—23AUG88

LV16365 —UN—29NOV12

Diesel Engine Break-In Oil — Non-Emissions Certified and Certified Tier 1, Tier 2, Tier 3, Stage I, Stage II, and Stage III

New engines are filled at the factory with either John Deere Break-In™ or John Deere Break-In Plus™ Engine Oil. During the break-in period, add John Deere Break-In™ or Break-In Plus™ Engine Oil, respectively, as needed to maintain the specified oil level.

Operate the engine under various conditions, particularly heavy loads with minimal idling, to help seat engine components properly.

If John Deere Break-In™ Engine Oil is used during the initial operation of a new or rebuilt engine, change the oil and filter at a maximum of 100 hours.

If John Deere Break-In Plus™ Engine Oil is used, change the oil and filter at a minimum of 100 hours and a maximum equal to the interval specified for John Deere Plus-50™ II or Plus-50™ oil.

After engine overhaul, fill the engine with either John Deere Break-In™ or Break-In Plus™ Engine Oil.

If John Deere Break-In[™] or Break-In Plus[™] Engine Oil is not available, use an SAE 10W-30 viscosity grade diesel engine oil meeting one of the following and change the oil and filter at a maximum of 100 hours of operation:

- API Service Classification CE
- API Service Classification CD

Break-In is a trademark of Deere & Company. Break-In Plus is a trademark of Deere & Company Plus-50 is a trademark of Deere & Company.

- API Service Classification CC
- ACEA Oil Sequence E2
- ACEA Oil Sequence E1

IMPORTANT: Do not use Plus-50™ II, Plus-50™, or engine oils meeting any of the following for the initial break-in of a new or rebuilt engine:

API CJ-4	ACEA E9
API CI-4 PLUS	ACEA E7
API CI-4	ACEA E6
API CH-4	ACEA E5
API CG-4	ACEA E4
API CF-4	ACEA E3
API CF-2	
API CF	

These oils do not allow the engine to break in properly.

John Deere Break-In Plus™ Engine Oil can be used for all John Deere diesel engines at all emission certification levels.

After the break-in period, use John Deere Plus-50™ II, John Deere Plus-50™, or other diesel engine oil as recommended in this manual.

DX.ENOIL4 -19-15MAY13-1/1

Diesel Engine Oil — Interim Tier 4, Final Tier 4, Stage IIIB, and Stage IV

Use oil viscosity based on the expected air temperature range during the period between oil changes.

John Deere Plus-50™ II is the recommended engine oil.

Extended service intervals may apply when John Deere Plus-50™ II engine oil is used. Refer to the engine oil drain interval table and consult your John Deere dealer for more information.

If John Deere Plus-50™ II engine oil is not available, engine oil meeting one or more of the following may be used:

- API Service Category CJ-4
- ACEA Oil Sequence E9
- ACEA Oil Sequence E6

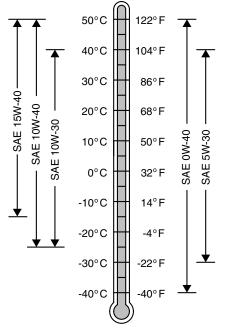
DO NOT use engine oil containing more than 1.0% sulfated ash, 0.12% phosphorus, or 0.4% sulfur.

Multi-viscosity diesel engine oils are preferred.

Diesel fuel quality and fuel sulfur content must comply with all existing emissions regulations for the area in which the engine operates.

IMPORTANT: Use only ultra low sulfur diesel (ULSD) fuel with a maximum sulfur content of 15 mg/kg (15 ppm).

Plus-50 is a trademark of Deere & Company



Oil Viscosities for Air Temperature Ranges

DX.ENOIL14 -19-15JUN10-1/1

TS1691 —UN—18JUL07

Oil Filters

Filtration of oils is critical to proper operation and lubrication.

Always change filters regularly as specified in this manual.

Use filters meeting John Deere performance specifications.

DX,FILT -19-18MAR96-1/1

Diesel Engine Coolant (engine with wet sleeve cylinder liners)

Preferred Coolants

The following pre-mix engine coolants are preferred:

- John Deere COOL-GARD™II
- John Deere COOL-GARD II PG

COOL-GARD II pre-mix coolant is available in several concentrations with different freeze protection limits as shown in the following table.

COOL-GARD II pre-mix	Freeze Protection Limit
COOL-GARD II 20/80	-9 °C (16 °F)
COOL-GARD II 30/70	-16 °C (3 °F)
COOL-GARD II 50/50	-37 °C (-34 °F)
COOL-GARD II 55/45	-45 °C (-49 °F)
COOL-GARD II PG 60/40	-49 °C (-56 °F)
COOL-GARD II 60/40	-52 °C (-62 °F)

Not all COOL-GARD II pre-mix products are available in all countries.

Use COOL-GARD II PG when a non-toxic coolant formulation is required.

Additional Recommended Coolants

The following engine coolant is also recommended:

 John Deere COOL-GARD II Concentrate in a 40—60% mixture of concentrate with quality water.

IMPORTANT: When mixing coolant concentrate with water, do not use less than 40% or greater than 60% concentration of coolant. Less than 40% gives inadequate additives for corrosion protection. Greater than 60% can result in coolant gelation and cooling system problems.

Other Coolants

Other ethylene glycol or propylene glycol base coolants may be used if they meet the following specification:

Pre-mix coolant meeting ASTM D6210 requirements

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 Coolant concentrate meeting ASTM D6210 requirements in a 40—60% mixture of concentrate with quality water

If coolant meeting one of these specifications is unavailable, use a coolant concentrate or pre-mix coolant that has a minimum of the following chemical and physical properties:

- Provides cylinder liner cavitation protection according to either the John Deere Cavitation Test Method or a fleet study run at or above 60% load capacity
- Is formulated with a nitrite-free additive package
- Protects the cooling system metals (cast iron, aluminum alloys, and copper alloys such as brass) from corrosion

Water Quality

Water quality is important to the performance of the cooling system. Distilled, deionized, or demineralized water is recommended for mixing with ethylene glycol and propylene glycol base engine coolant concentrate.

Coolant Drain Intervals

Drain and flush the cooling system and refill with fresh coolant at the indicated interval, which varies with the coolant used.

When COOL-GARD II or COOL-GARD II PG is used, the drain interval is 6 years or 6000 hours of operation.

If a coolant other than COOL-GARD II or COOL-GARD II PG is used, reduce the drain interval to 2 years or 2000 hours of operation.

IMPORTANT: Do not use cooling system sealing additives or antifreeze that contains sealing additives.

Do not mix ethylene glycol and propylene glycol base coolants.

Do not use coolants that contain nitrites.

DX,COOL3 -19-15MAY13-1/1

Operating in Warm Temperature Climates

John Deere engines are designed to operate using recommended engine coolants.

Always use a recommended engine coolant, even when operating in geographical areas where freeze protection is not required.

IMPORTANT: Water may be used as coolant in emergency situations only.

Foaming, hot surface aluminum and iron corrosion, scaling, and cavitation occur when water is used as the coolant, even when coolant conditioners are added.

Drain cooling system and refill with recommended engine coolant as soon as possible.

DX,COOL6 -19-15MAY13-1/1

Testing Diesel Engine Coolant

Maintaining adequate concentrations of glycol and inhibiting additives in the coolant is critical to protect the engine and cooling system against freezing, corrosion, and cylinder liner erosion and pitting.

Test the coolant solution at intervals of 12 months or less and whenever excessive coolant is lost through leaks or overheating.

Coolant Test Strips

Coolant test strips are available from your John Deere dealer. These test strips provide a simple, effective method to check the freeze point and additive levels of your engine coolant.

When Using John Deere COOL-GARD II

John Deere COOL-GARD II Premix™, COOL-GARD II PG Premix and COOL-GARD II Concentrate are maintenance free coolants for up to six years or 6000 hours of operation, provided that the cooling system is topped off using only John Deere COOL-GARD II Premix or COOL-GARD II PG premix. Test the coolant condition annually with coolant test strips designed for use with John Deere COOL-GARD II coolants. If the test strip chart indicates that additive is required, add John Deere COOL-GARD II Coolant Extender as directed.

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Add only the recommended concentration of John Deere COOL-GARD II Coolant Extender. DO NOT add more than the recommended amount.

When Using Nitrite-Containing Coolants

Compare the test strip results to the supplemental coolant additive (SCA) chart to determine the amount of inhibiting additives in your coolant and whether more John Deere Liquid Coolant Conditioner should be added.

Add only the recommended concentration of John Deere Liquid Coolant Conditioner. DO NOT add more than the recommended amount.

Coolant Analysis

For a more thorough evaluation of your coolant, perform a coolant analysis. The coolant analysis can provide critical data such as freezing point, antifreeze level, pH, alkalinity, nitrite content (cavitation control additive), molybdate content (rust inhibitor additive), silicate content, corrosion metals, and visual assessment.

Contact your John Deere dealer for more information on coolant analysis.

DX,COOL9 -19-11APR11-1/1

Transmission and Hydraulic Oil

Use oil viscosity based on the expected air temperature range during the period between oil changes.

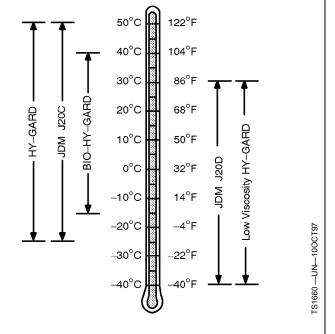
The following oils are preferred:

- John Deere HY-GARD™
- John Deere Low Viscosity HY-GARD™

Other oils may be used if they meet one of the following:

- John Deere Standard JDM J20C
- John Deere Standard JDM J20D

Use John Deere BIO-HY-GARD™ oil when a biodegradable fluid is required.¹



HY-GARD is a trademark of Deere & Company BIO-HY-GARD is a trademark of Deere & Company

DX,ANTI -19-07NOV03-1/1

¹ BIO-HY-GARD meets or exceeds the minimum biodegradability of 80% within 21 days according to CEC-L-33-T-82 test method. BIO-HY-GARD should not be mixed with mineral oils, because this reduces the biodegradability and makes proper oil recycling impossible.

Additional Information About Diesel Engine Coolants and John Deere LIQUID COOLANT CONDITIONER

Engine coolants are a combination of three chemical components: ethylene glycol or propylene glycol antifreeze, inhibiting coolant additives, and quality water.

Coolant Specifications

Some products, including John Deere COOL-GARD™ Premix coolant, are fully formulated coolants that contain all three components in their correct concentrations. Do not add an initial charge of supplemental coolant additives or water to John Deere COOL-GARD Premix.

John Deere COOL-GARD Concentrate contains both ethylene glycol and inhibiting coolant additives. Mix COOL-GARD Concentrate with quality water, but do not add an initial charge of supplemental coolant additives.

Replenish Coolant Additives

Some coolant additives will gradually deplete during engine operation. Periodic replenishment of inhibitors is required, even when John Deere COOL-GARD Premix, COOL-GARD Concentrate, or COOL-GARD PG Premix is used. Follow the recommendations in this manual for the use of supplemental coolant additives.

Why use John Deere LIQUID COOLANT CONDITIONER?

Operating without proper coolant additives will result in increased corrosion, cylinder liner erosion and pitting, and other damage to the engine and cooling system. A simple mixture of ethylene glycol or propylene glycol and water will not give adequate protection.

John Deere LIQUID COOLANT CONDITIONER is an additive system designed to reduce corrosion, erosion, and pitting when used with nitrite-containing diesel engine coolants such as John Deere COOL-GARD Premix, COOL-GARD Concentrate, and COOL-GARD PG Premix. Maintaining John Deere COOL-GARD coolants with John Deere LIQUID COOLANT CONDITIONER provides optimum protection for up to 5 years or 5000 hours of operation.

COOL-GARD is a trademark of Deere & Company

Avoid Automotive-type Coolants

Never use automotive-type coolants (such as those meeting ASTM D3306). These coolants do not contain the correct additives to protect heavy-duty diesel engines. They often contain a high concentration of silicates and may damage the engine or cooling system. Do not treat an automotive engine coolant with a supplemental coolant additive because the high concentration of additives can result in additive fallout.

Water Quality

Water quality is important to the performance of the cooling system. Distilled, deionized, or demineralized water is recommended for mixing with ethylene glycol and propylene glycol base engine coolant concentrate. All water used in the cooling system should meet the following minimum specifications for quality:

Chlorides	<40 mg/L
Sulfates	<100 mg/L
Total dissolved solids	<340 mg/L
Total hardness	<170 mg/L
pH	5.5 to 9.0

Freeze Protection

The relative concentrations of glycol and water in the engine coolant determine its freeze protection limit.

Ethylene Glycol	Freeze Protection Limit
40%	-24°C (-12°F)
50%	-37°C (-34°F)
60%	-52°C (-62°F)
Propylene Glycol	Freeze Protection Limit
40%	-21°C (-6°F)
50%	-33°C (-27°F)
60%	-49°C (-56°F)

DO NOT use a coolant-water mixture greater than 60% ethylene glycol or 60% propylene glycol.

DX,COOL7 -19-03NOV08-1/1

Use Correct Transmission/Hydraulic Filter Element

To protect systems, replace transmission-hydraulic oil filter with a John Deere service filter element.

OUO1023,000315E -19-14NOV11-1/1

MFWD Axle Housing and Wheel Hub Oil

Use oil viscosity based on the expected air temperature range during the period between oil changes.

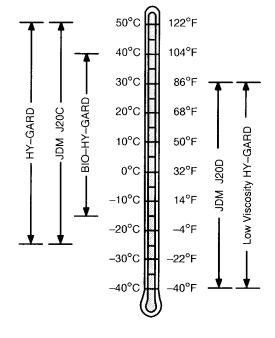
The following oils are preferred:

- John Deere HY-GARD™
- John Deere Low Viscosity HY-GARD™

Other oils may be used if they meet one of the following:

- John Deere Standard JDM J20C
- John Deere Standard JDM J20D

Use John Deere BIO-HY-GARD $^{\rm TM}$ oil when a biodegradable fluid is required. $^{\rm 1}$



1651 —UN—14N

HY-GARD is a trademark of Deere & Company BIO-HY-GARD is a trademark of Deere & Company

¹BIO-HY-GARD meets or exceeds the minimum biodegradability of 80% within 21 days according to CEC-L-33-T-82 test method. BIO-HY-GARD should not be mixed with mineral oils, because this reduces the biodegradability and makes proper oil recycling impossible.

OUO1023,000315F -19-14NOV11-1/1

Grease

Use grease based on NLGI consistency numbers and the expected air temperature range during the service interval.

John Deere SD Polyurea Grease is preferred.

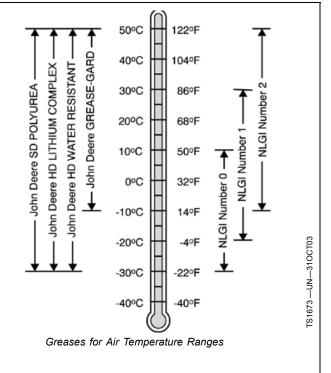
The following greases are also recommended:

- John Deere HD Lithium Complex Grease
- John Deere HD Water Resistant Grease
- John DeereGREASE-GARD™

Other greases may be used if they meet the following:

NLGI Performance Classification GC-LB

IMPORTANT: Some types of grease thickeners are not compatible with others. Consult your grease supplier before mixing different types of grease.



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DX,GREA1 -19-14APR11-1/1

Mixing of Lubricants

In general, avoid mixing different brands or types of oil. Oil manufacturers blend additives in their oils to meet certain specifications and performance requirements.

Mixing different oils can interfere with the proper functioning of these additives and degrade lubricant performance.

Consult your John Deere dealer to obtain specific information and recommendations.

DX,LUBMIX -19-18MAR96-1/1

Alternative and Synthetic Lubricants

Conditions in certain geographical areas may require lubricant recommendations different from those printed in this manual.

Some John Deere brand coolants and lubricants may not be available in your location.

Consult your John Deere dealer to obtain information and recommendations.

Synthetic lubricants may be used if they meet the performance requirements as shown in this manual.

The temperature limits and service intervals shown in this manual apply to both conventional and synthetic lubricants.

Re-refined base stock products may be used if the finished lubricant meets the performance requirements.

DX,ALTER -19-11APR11-1/1

Fuel and Lubricants

Lubricant Storage

Your equipment can operate at top efficiency only when clean lubricants are used.

Use clean containers to handle all lubricants.

Store lubricants and containers in an area protected from dust, moisture, and other contamination. Store containers on their side to avoid water and dirt accumulation.

Make certain that all containers are properly marked to identify their contents.

Properly dispose of all old containers and any residual lubricant they may contain.

DX,LUBST -19-11APR11-1/1

Serial Numbers

When working on machines or components that are covered by warranty, it is IMPORTANT that you include the machine's Product Identification Number and the component serial number on the warranty claim form.

The location of component serial number plates are shown below.

OUO1023,0003164 -19-14NOV11-1/1

Product Identification Number

Identification number plate is located on right front support member of the tractor.

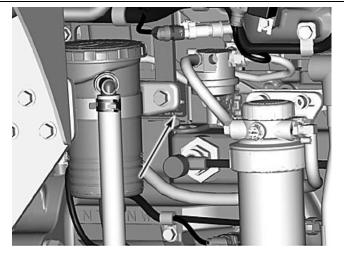


LV14646 —UN—12AUG11

OUO1023,0003383 -19-23JAN12-1/1

Engine Serial Number

Serial number plate is located on right side of engine block, behind OCV filter bracket.



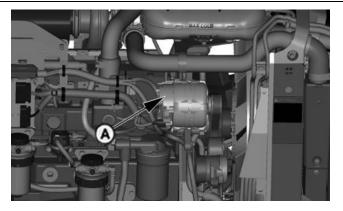
LV14644 —UN—12AUG11

OUO1023,0003384 -19-23JAN12-1/1

Alternator Identification Number Location

The alternator identification number is located at the rear of the housing.

A—Alternator Identification Number



OUO1023,0003168 -19-14NOV11-1/1

PULV000910 —UN—11JUL08

Power Steering Valve Serial Number Location

The power steering valve serial number plate (A) is located on the bottom of the valve.

A—Power Steering Valve Serial Number Plate



LV10259 —UN—09SEP04

OUO1023,0003169 -19-14NOV11-1/1

Starter Serial Number Location

Starter serial number plate (A) is located on the side of the starter housing.

A-Starter Serial Number Plate



PULV000905 —UN-07JUL08

OUO1023,000316A -19-14NOV11-1/1

Transmission Serial Number

Serial number is stamped on top left side of front housing.



LV15796 —UN-23MAY12

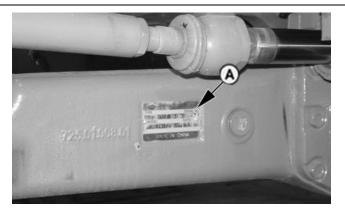
Transmission Serial Number

OUO1023,0003836 -19-15FEB13-1/1

Mechanical Front Wheel Drive (MFWD) Serial Number Location

The MFWD serial number plate (A) is located on the rear left side of the axle housing.

A-MFWD Serial Number Plate



PULV000909 —UN-07JUL08

OUO1023,000316E -19-14NOV11-1/1

Air Conditioner Compressor Serial Number Location

The air conditioner compressor serial number plate (A) is located on the rear of the housing.

A—Air Conditioning Compressor Serial Number Plate



PULV000907 —UN—07JUL08

OUO1023,000316F -19-14NOV11-1/1

Cab Serial Number

Serial number label is located on inside of rear left post.



PULV000137 —UN-22OCT07

OUO1023,0003386 -19-23JAN12-1/1

Section 20 Engine

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Service Equipment and Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the

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European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

OUO1023.0003837 -19-25MAR13-1/5

Engine Lifting Sling..................................JDG23 Lift engine.

OUO1023,0003837 -19-25MAR13-2/5

Used to remove and install engine.

OUO1023,0003837 -19-25MAR13-3/5

Lifting Bracket......JT01748

Used to remove and install engine.

OUO1023,0003837 -19-25MAR13-4/5

Flywheel Turning Tool......JDE83

Used to rotate flywheel in aligning transmission drive shaft with engine damper.

OUO1023,0003837 -19-25MAR13-5/5

Specifications		
Item	Measurement	Specification
Engine Lifting Strap Cap Screw	Torque	125 N·m (92 lbft.)
Transmission-to-Engine M16 Cap Screw	Torque	260 N·m (192 lbft.)
Transmission-to-Engine M20 Cap Screw	Torque	430 N·m (317 lbft.)
Front Support-to-Engine Cap Screw, M16	Torque	350 N·m (255 lbft.)
Front Support-to-Engine Cap Screw, M14	Torque	220 N·m (165 lbft.)
Engine-to-Front Support Nut	Torque	350 N·m (255 lbft.)
		OUO1023,0003838 -19-25MAR13-1/1

Other Material		
Number	Name	Use
TY6333 (U.S.)	Grease, SAE Multi-Purpose	To grease both ends of the transmission drive shaft
		OUO1023,0003839 -19-18FEB13-1/1

John Deere Engine Repair—Use Component Technical Manual

For complete repair information, use the relevant component technical manual (CTM) in conjunction with this machine manual.

• 4045 PowerTech™ OEM Diesel Engines Below 130kW (174 hp) (Interim Tier 4/Stage III B platform) CTM114619.



TS225 —UN—17JAN89

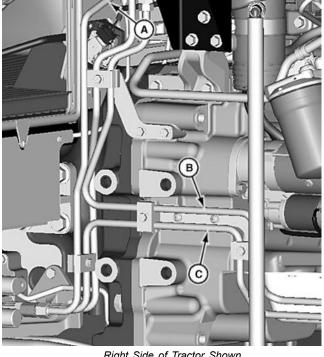
PowerTech is a trademark of Deere & Company

SW03989,0001795 -19-01APR13-1/1

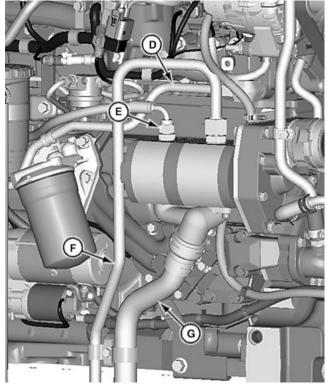
Remove Engine

- 1. Remove battery. (See Remove and Install Battery in Section 40, Group 05.)
- 2. Remove hood. (See Remove and Install Hood in Section 80, Group 25.)
- 3. Remove toolbox and fan guards.
- 4. Remove front weights and support, if equipped.
- 5. Drain coolant from engine. (See Drain Coolant in Section 20, Group 10.)
- 6. Remove radiator. (See Remove and Inspect Radiator in Section 20, Group 10.)
- 7. Remove exhaust pipe. (See Remove and Install Exhaust Pipe in Section 30, Group 20.)
- 8. Remove MFWD drive shaft, if equipped. (See Remove, Inspect and Install MFWD Drive Shaft in Section 50, Group 20.)
- NOTE: Close all openings with caps or plugs. Tag or label hydraulic hoses/lines to aid during installation.
- 9. Disconnect and remove hydraulic lines (A—G). Close all openings with caps or plugs.
- 10. Remove line-retaining clamps and hardware from engine.

A—Brake Supply Line -Oil Cooler Supply Line C-Oil Cooler Return Line D—Heater Line (if equipped) E—Steering Supply Line F—Rockshaft Supply Line **G—Pump Supply Line**



Right Side of Tractor Shown



Right Side of Tractor Shown

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OUO1023.000383B -19-25MAR13-1/9

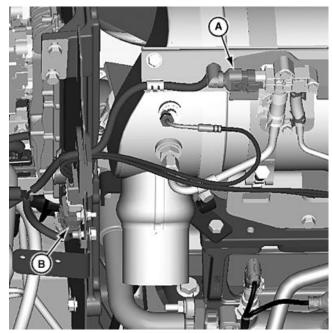
LV16685 —UN-28FEB13

LV16687 —UN—28FEB13

11. Disconnect harness connectors (A and B). Remove harnesses from rubber grommet.

A—Harness Connector

B—Harness Connector



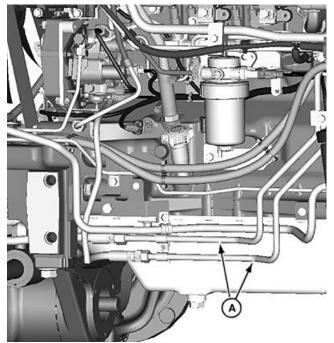
LV16691 —UN—28FEB13

Right Side of Tractor Shown

OUO1023,000383B -19-25MAR13-2/9

12. Disconnect and remove steering lines (A). Close all openings with caps or plugs.

A—Steering Line (2 used)



Left Side of Tractor Shown

Continued on next page

OUO1023,000383B -19-25MAR13-3/9

LV16692 —UN—28FEB13

13. Disconnect and remove lines (A-F). Close all openings with caps or plugs.

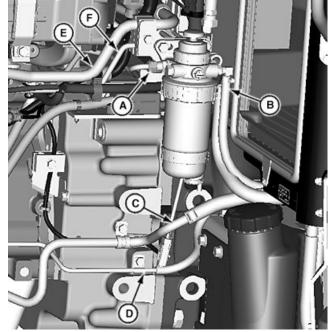
A—Fuel Line

B—Fuel Hose

D—Fuel Line E—Air Conditioning Line (if equipped)

C—Heater Line (if equipped)

-Receiver-Dryer Line (if equipped)



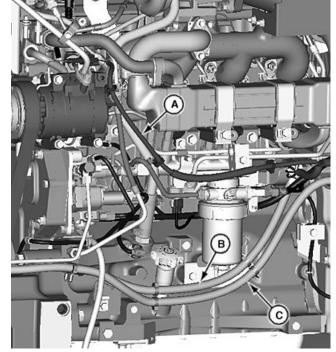
LV16693 —UN—28FEB13

Left Side of Tractor Shown

OUO1023,000383B -19-25MAR13-4/9

- 14. Disconnect wire harness (A) and move away from engine. Cut all tie straps as necessary.
- 15. Disconnect and remove cables (B and C).

A-Wire Harness **B—Battery Cable** C—Battery Cable



LV16696 —UN—28FEB13

Left Side of Tractor Shown

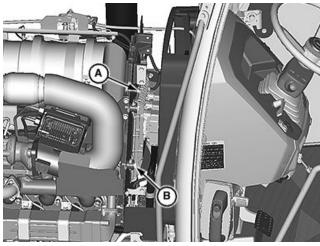
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OUO1023,000383B -19-25MAR13-5/9

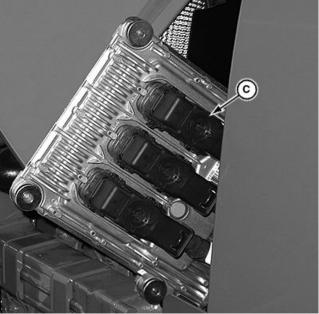
- 16. Remove four cap screws (A) from engine control unit (B).
- 17. Disconnect wiring harness connectors (C).
- NOTE: Tag or label harness terminals to aid during installation.
- 18. Remove aftertreatment device canister and cradle assembly from top of the engine. See relevant component technical manual (CTM).
- 19. Install a floor jack under front support and mid-frame.
- 20. Install wooden blocks between front axle pivot stops and front support.
- 21. Attach proper lifting device to engine. (See Lifting Procedure in this section.)

A—Cap Screw (4 used)
B—Engine Control Unit (ECU)

C—Wiring Harness Connector (Chassis)



Remove Engine Control Unit (ECU) Cap Screws



Disconnect Wiring Harness Connector (Chassis)

Continued on next page

OUO1023,000383B -19-25MAR13-6/9

LV16776 —UN—01MAR13

LV16775 —UN—01MAR13

IMPORTANT: Before removing screws (A) and nuts (B), verify the following:

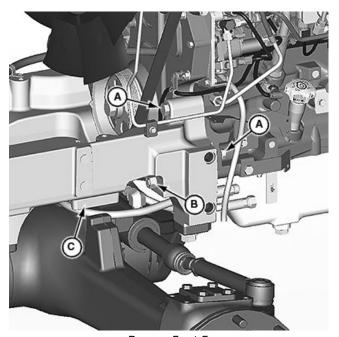
- There is no slack in the lifting device attached to the engine.
- The front support stand and the mid-frame support stand are in place and secured.
- 22. Remove cap screws (A) and nuts (B) and move the front support (C) with front axle away from engine using a hydraulic jack.
- NOTE: Ensure that disconnected hydraulic hoses/lines do not entangle with engine components or electrical wiring during front support-to-engine separation.

Close all openings with caps or plugs. Tag or label hydraulic hoses/lines to aid during installation.

A—Cap Screw (4 used)

C—Front Support

B-Nut (2 used)



Remove Front Frame

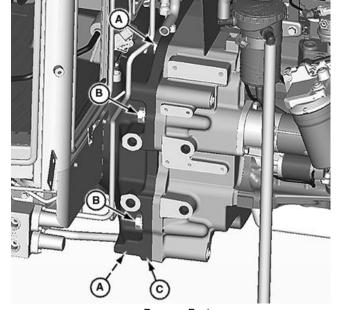
OUO1023,000383B -19-25MAR13-7/9

LV16784 —UN-01MAR13

- 23. Remove eight cap screws (A and B) from transmission
- 24. Move engine away from tractor and place on a suitable stand.
- NOTE: Ensure that transmission drive shaft is released from engine crankshaft damper and stays splined with transmission input shaft.
- 25. Remove engine components and make engine repair as necessary. See relevant component technical manual (CTM).

A—Cap Screw, M16 (4 used) B—Cap Screw, M20 (4 used)

C—Transmission



Remove Engine

Continued on next page

OUO1023,000383B -19-25MAR13-8/9

-V16785 -- UN-01MAR13

Lifting Procedure

A

CAUTION: The only recommended method for lifting the engine is with JDG23 Engine Lifting Sling and safety approved lifting straps that come with engine. Use extreme caution when lifting and NEVER permit any part of the body to be positioned under an engine being lifted or suspended.

NOTE: If engine lifting straps are misplaced, they can be procured through service parts.

1. Install lifting straps and tighten cap screws to the following specifications.

Specification

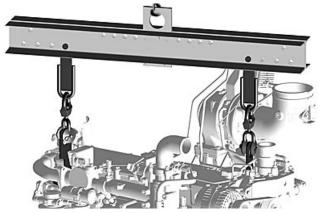
IMPORTANT: Lift engine with longitudinal loading on lifting sling and lifting brackets only.

Angular loading greatly reduces lifting capacity of sling and brackets.

Lift spacing on sling is adjustable. Position each lifting point so that engine hangs level when lifted.

2. Attach the JDG23 Engine Lifting Sling to engine lifting straps and overhead hoist or floor crane.

Lifting straps are designed to lift the engine and small accessories, such as hydraulic pumps and



Lifting Engine with Lifting Sling

air compressors mounted to the engine auxiliary gear drive, or belt-driven components, such as air conditioning compressors and alternators. If larger components, such as PTOs, transmissions, generators, structural oil pan, or air compressors, are attached to other locations on the engine, the lifting straps provided with the engine are not intended for this purpose. Technician is responsible for providing adequate lifting devices under these situations. See machine technical manual for additional information on removing engine from machine.

NOTE: Use of an engine lifting sling (as shown) is the ONLY APPROVED method for lifting engine.

Carefully lift engine and slowly lower to desired location.

OUO1023,000383B -19-25MAR13-9/9

RG20087 —UN—28FEB11

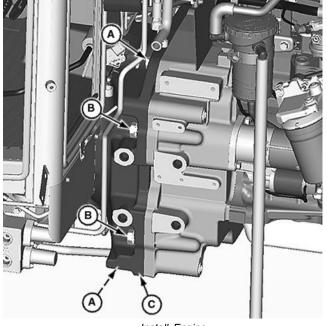
Install Engine

- 1. Install engine components as necessary. See relevant component technical manual (CTM).
- Apply multi-purpose grease TY6333 to splines on both ends of transmission drive shaft. Use JDE83 flywheel turning tool to align transmission drive shaft with engine damper.
- 3. Attach proper lifting device to engine. (See Remove Engine in Section 20, Group 05.)
- 4. Position engine to transmission (C).

NOTE: Be careful not to pinch a hose, line or electrical connection between the mating surfaces.

Install transmission-to-engine cap screws (A and B). Tighten to specification.

Specification



Install Engine

A—Cap Screw, M16 (4 used) B—Cap Screw, M20 (4 used) C—Transmission

SW03989,0001D22 -19-12SEP13-1/8

-V16785 -- UN-01MAR13

6. With hydraulic jack, position front support (D) with front axle to engine.

NOTE: Be careful not to pinch a hose, line or electrical connection between the mating surfaces.

7. Install front support-to-engine cap screws (A and B). Tighten to specification.

Specification

Front Support-to-Engine

Cap Screw,

Front Support-to-Engine

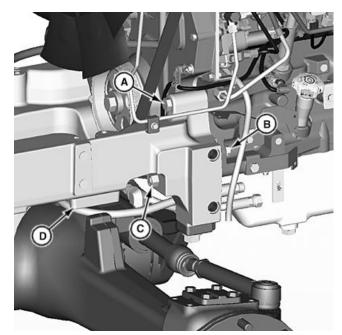
Cap Screw.

8. Install nuts (C) and tighten to specification.

Specification

Engine-to-Front Support

- 9. Remove lifting device from engine.
- Remove wooden block from front axle pivot stops and front support.
- 11. Remove floor jack from front support and mid-frame.
- 12. Install aftertreatment device canister and cradle assembly to top of engine. See relevant component technical manual (CTM).



Install Front Support

A—Cap Screw, M16 (2 used) B—Cap Screw, M14 (2 used) C—Nut (2 used) D—Front Support

Continued on next page

SW03989,0001D22 -19-12SEP13-2/8

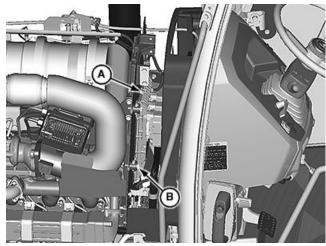
LV16793 —UN—05MAR13

13. Connect wiring harness connector (C).

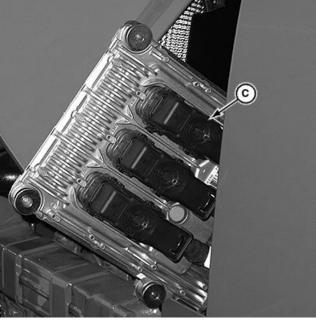
NOTE: Remove tag or label, if any.

14. Mount engine control unit (A) to firewall using four cap screws (B).

A—Engine Control Unit (ECU) C—Wiring Harness Connector B—Cap Screw (4 used) (Chassis)



Install Engine Control Unit (ECU)



Connect Wiring Harness Connector (Chassis)

Continued on next page

SW03989,0001D22 -19-12SEP13-3/8

LV16775 —UN—01MAR13

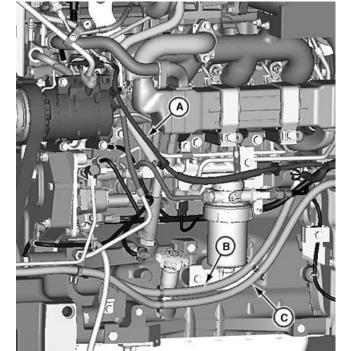
LV16776 —UN—01MAR13

15. **For cab tractor only:** Connect air conditioner compressor wiring harness connector (A).

NOTE: Install tie straps as needed.

16. Connect battery cables (B and C).

A—Wire Harness B—Battery Cable C—Battery Cable



Left Side of Tractor Shown

SW03989,0001D22 -19-12SEP13-4/8

LV16696 —UN—28FEB13

CAUTION: Make sure that heater inlet and outlet hoses are connected to respective openings.

17. Route and connect lines (A—F).

A—Fuel Line

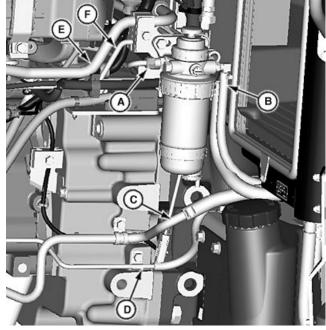
B—Fuel Hose

C—Heater Line (if equipped)

D—Fuel Line

E—Air Conditioning Line (if equipped)

F—Receiver-Dryer Line (if equipped)



Left Side of Tractor Shown

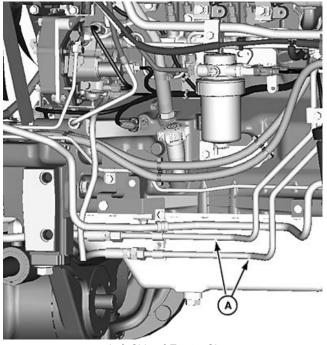
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SW03989,0001D22 -19-12SEP13-5/8

LV16693 —UN—28FEB13

18. Route and connect steering lines (A).

A—Steering Line (2 used)

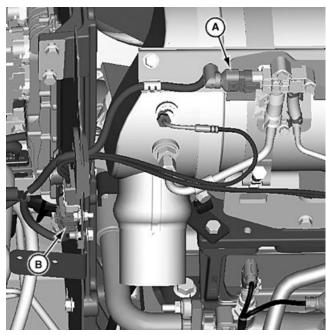


Left Side of Tractor Shown

SW03989,0001D22 -19-12SEP13-6/8

LV16692 —UN—28FEB13

19. Install rubber grommet over harnesses. Connect harness connectors (A and B).



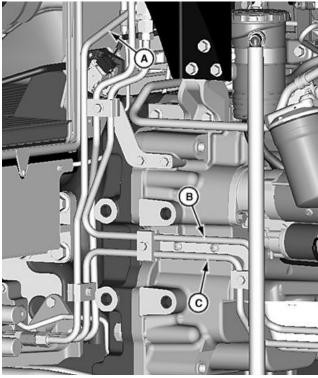
Right Side of Tractor Shown

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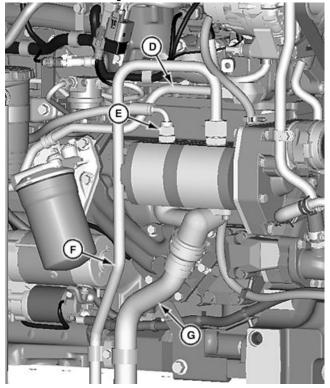
SW03989,0001D22 -19-12SEP13-7/8

LV16691 —UN—28FEB13

- 20. Route and connect hydraulic lines. Install new line-retaining clamps and hardware to engine.
- 21. If equipped, install MFWD drive shaft. (See Remove, Inspect and Install MFWD Drive Shaft in Section 50, Group 20.)
- 22. Install exhaust pipe. (See Remove and Install Exhaust Pipe in Section 30, Group 20.)
- 23. Install radiator. (See Remove and Inspect Radiator in Section 20, Group 10.)
- 24. Fill with coolant. (See Heavy Duty Diesel Engine Coolant in Section 10, Group 15.)
- 25. Install toolbox and fan guards.
- 26. Install hood. (See Remove and Install Hood in Section 80, Group 25.)
- 27. Install battery. (See Remove and Install Battery in Section 40, Group 05.)
- 28. Make sure all lines, hoses and electrical connectors are tight and clear of all moving parts prior to engine start-up.
- 29. Check and service engine oil as needed.
- 30. Check and service hydraulic oil as needed.
- 31. Perform Engine Performance Testing in relevant diagnostic technical manual.
 - A—Brake Supply Line
 - -Oil Cooler Supply Line
 - -Oil Cooler Return Line D—Heater Line (if equipped)
- E—Steering Supply Line Rockshaft Supply Line
- G—Pump Supply Line



Right Side of Tractor Shown



Right Side of Tractor Shown

SW03989,0001D22 -19-12SEP13-8/8

LV16685 —UN—28FEB13

LV16687 —UN—28FEB13

Engine

Engine Water Pump Repair—Use Component Technical Manual

For complete repair information, use the relevant component technical manual (CTM) in conjunction with this machine manual:

 4045 PowerTech™ OEM Diesel Engines Below 130kW (174 hp) (Interim Tier 4/Stage III B platform) CTM114619.



TS225 —UN—17JAN89

PowerTech is a trademark of Deere & Company

OUO1023,000387A -19-01APR13-1/1

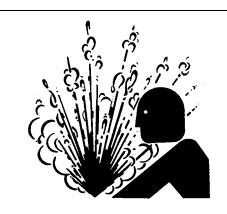
Drain Coolant



CAUTION: Explosive release of fluids from pressurized cooling system can cause serious burns.

Shut off engine. Remove filler cap when cool enough to touch with bare hands. Slowly loosen cap to first stop to relieve pressure before removing completely.

1. Raise hood.



FS281 -- UN-15APR13

LV16202 —UN—190CT12

OUO1023,000387B -19-25MAR13-1/2

NOTE: Approximate engine coolant capacity is:

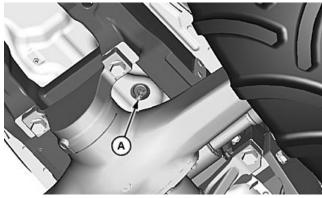
Engine	Coolant Capacity
4-Cylinder	11.4 L (3.0 gal)

2. Open radiator drain valve (A) and drain coolant from radiator.

NOTE: Place suitably sized container below drain plug.

3. Close all drain valve after coolant is drained.

A-Radiator Drain Valve



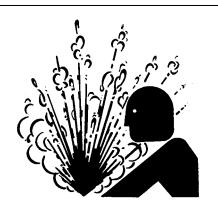
Radiator Drain Valve

OUO1023,000387B -19-25MAR13-2/2

Remove and Install Coolant Recovery Tank

CAUTION: Explosive release of fluids from pressurized cooling system can cause serious burns.

Shut off engine. Remove filler cap only when cool enough to touch with bare hands. Slowly loosen cap to relieve pressure before removing completely.



TS281 -- UN-15APR13

OUO1023,000387C -19-25MAR13-1/3

- 1. Drain coolant. (See Drain Coolant in Section 20, Group 10.)
- 2. Move hose clamps (B) from pinch point and disconnect air bleed hoses (A) from coolant recovery tank (E).
- 3. Move hose clamp (C) from pinch point and disconnect overflow hose (D).
- 4. Remove air filter hose (F) assembly.

A—Air Bleed Hose (2 used)

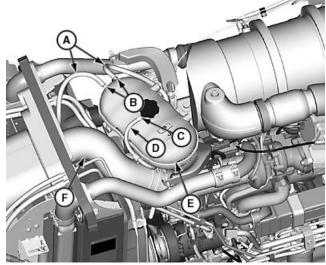
B—Hose Clamp (2 used)

C—Hose Clamp

D—Overflow Hose

E—Coolant Recovery Tank

F-Air Filter Hose



LV15113 —UN—30NOV11

Coolant Recovery Tank Lines

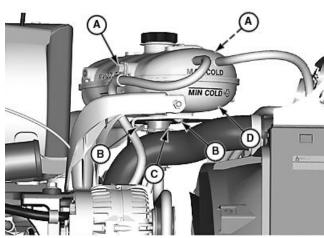
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OUO1023,000387C -19-25MAR13-2/3

- 5. Remove clamp with screw (A) on both sides of the coolant recovery tank (D).
- 6. Remove two round socket head cap screws (B) from the base of the tank.
- 7. Loosen hose clamp (C).
- 8. Remove coolant recovery tank (D).
- 9. Make necessary repairs.

IMPORTANT: Always use new O-rings. Damaged or used O-rings will leak.

- Install coolant recovery tank (D) in reverse order of removal. Replace hose clamps as needed.
- 11. Fill with coolant. (See Heavy Duty Diesel Engine Coolant in Section 10, Group 15.)
 - A—Clamp with Screw (2 used)
- C—Hose Clamp
- B—Round Socket Head Cap Screw (4 used)
- D—Coolant Recovery Tank



Coolant Recovery Tank

OUO1023,000387C -19-25MAR13-3/3

Remove and Inspect Radiator

₩c

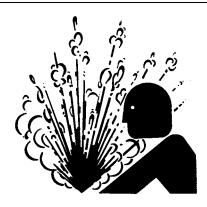
CAUTION: Explosive release of fluids from pressurized cooling system can cause serious burns.

Shut off engine. Remove filler cap only when cool enough to touch with bare hands. Slowly loosen cap to relieve pressure before removing completely.

NOTE: Approximate engine coolant capacity is:

Engine	Coolant Capacity
4 Cylinder	11.4 L (3.0 gal)

- 1. Remove hood. (See Remove and Install Hood in Section 30, group 15.)
- 2. Drain coolant. (See Drain Coolant in Section 20, Group 10.)
- 3. Remove air cleaner. (See Remove and Install Air Cleaner—Axial Type in Section 30, Group 15.)
- 4. Remove fuel cooler, if equipped. (See Remove, Inspect and Install Fuel Cooler in Section 30, Group 05.)



FS281 —UN—15APR13

-V15114 —UN-30NOV11

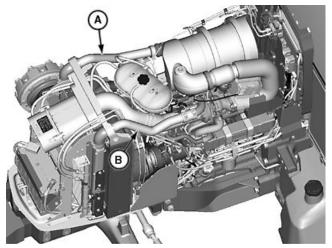
- 5. **For cab tractor**: Remove air conditioning condenser. (See Remove, Inspect, and Install Air Conditioning Condenser in Section 90, Group 30.)
- 6. Remove hydraulic oil cooler. (See Remove, Inspect and Install Hydraulic Oil Cooler in Section 70, Group 10.)

Continued on next page

OUO1023,000387D -19-25MAR13-1/8

7. Remove Charge Air Cooler (CAC) return and supply tubes (A and B).

A—Charge Air Cooler (CAC) Return Tubes B—Charge Air Cooler (CAC) Supply Tubes



Charge Air Cooler (CAC) Tubes

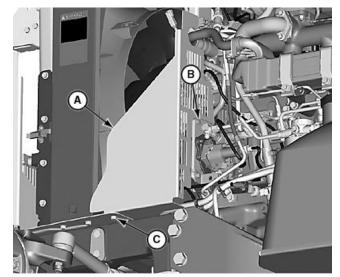
OUO1023,000387D -19-25MAR13-2/8

LV15152 —UN—01DEC11

LV15143 —UN-01DEC11

8. Remove cap screws (B and C). Remove left fan guard (A).

A—Left Fan Guard B—Cap Screw C—Cap Screw



Engine Left Fan Guard

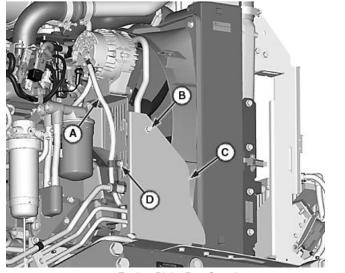
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OUO1023,000387D -19-25MAR13-3/8

- 9. Remove cap screws (B and D).
- 10. Remove nut (A) from alternator mounting bolt. Remove right fan guard (C).

B—Cap Screw

C-Right Fan Guard D—Cap Screw



Engine Right Fan Guard

OUO1023,000387D -19-25MAR13-4/8

LV15198 —UN—08DEC11

LV15164 —UN-05DEC11

- 11. Remove cap screw (A) along with line clamp (B).
- 12. Remove cap screw and nut (D) from both sides of air filter mounting bracket (C).
- 13. Remove cap screws and washers (E) from both sides of the air filter mounting bracket (C).
- 14. Lift clear air filter mounting bracket.

A—Cap Screw

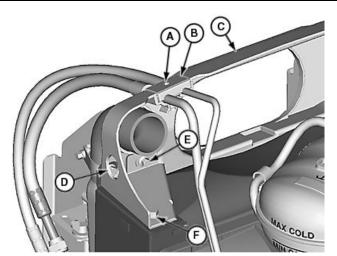
B—Line Clamp

C—Air Filter Mounting Bracket

D—Cap Screw and Nut (2 used) E—Cap Screw and Washer (2

used)

F—Cap Screw (2 used)



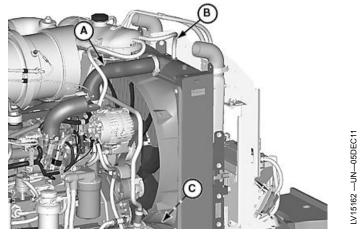
Air Filter Bracket

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OUO1023,000387D -19-25MAR13-5/8

- 15. Disconnect coolant recovery tank hose (B) from radiator.
- 16. Remove upper (A) and lower (C) radiator hoses.

A—Upper Radiator Hose B—Coolant Recovery Tank Hose **C—Lower Radiator Hose**



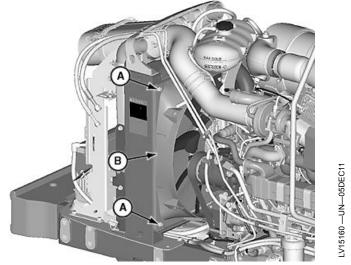
Radiator Hoses

OUO1023,000387D -19-25MAR13-6/8

NOTE: Move fan shroud back over fan to aid during removal of radiator.

17. Remove cap screws (A) and separate fan shroud (B) from radiator.

A—Cap Screw (4 used) B—Fan Shroud



Fan Shroud

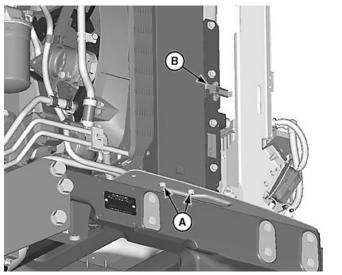
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OUO1023,000387D -19-25MAR13-7/8

- 18. Remove bottom cap screws (A).
- 19. Undo the charge air cooler (CAC) clasp (if equipped)(B) or any additional mounting hardware.
- 20. Remove radiator and check for debris lodged in fins. Carefully clean radiator using compressed air or pressure washer.
- 21. Inspect radiator for bent fins, cracks and damaged seams. Repair or replace as necessary.

A—Cap Screw (4 used)

B—Charge Air Cooler (CAC) Clasp (if equipped)



Charge Air Cooler (CAC) Clasp

OUO1023,000387D -19-25MAR13-8/8

-V15163 —UN—05DEC11

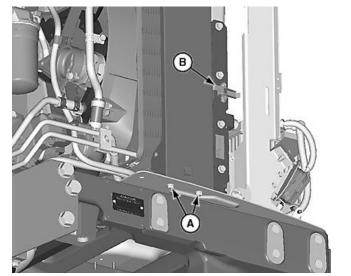
-V15163 —UN—05DEC11

Install Radiator

- 1. Inspect all parts associated with the radiator assembly and replace as necessary prior to installation.
- 2. Position radiator onto frame and install cap screws (A).
- 3. Attach charge air cooler (CAC) clasp (if equipped) (B) to radiator and tighten.

A—Cap Screw (4 used)

B—Charge Air Cooler (CAC)
Clasp (if equipped)



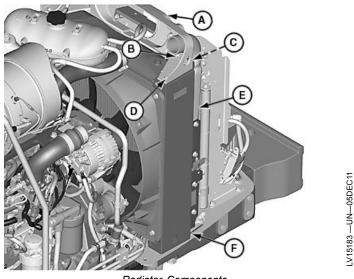
Charge Air Cooler (CAC) Clasp

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OUO1023,000387E -19-25MAR13-1/5

- 4. Install mounting bracket for air cleaner and charge air cooler (CAC) (A) on top of radiator (F). Install cap screws (D) on both sides.
- 5. Position charge air cooler (CAC) (E) to mounting bracket (A). Install cap screw and nut (C) and cap screw and washer (B) on both sides of the assembly.
 - A-Mounting Bracket for Air Cleaner and Charge Air Cooler (CAC)
 - -Cap Screw and Washer (2
 - used) C—Cap and Nut (2 used)

D—Cap Screw (2 used) E—Charge Air Cooler (CAC) F-Radiator



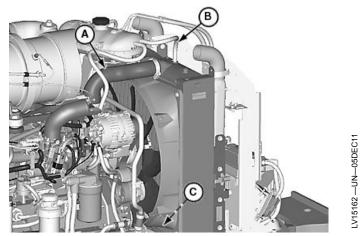
Radiator Components

OUO1023,000387E -19-25MAR13-2/5

- 6. Install and connect upper (A) and lower (B) radiator
- 7. Connect coolant recovery tank hose (B) to radiator

A—Upper Radiator Hose -Coolant Recovery Tank Hose

C-Lower Radiator Hose



Radiator Hoses

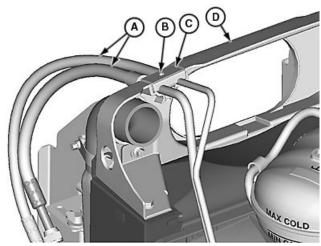
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OUO1023,000387E -19-25MAR13-3/5

- 8. Route air conditioning lines (A) through mounting bracket for air cleaner and charge air cooler (D).
- 9. Install line clamp (C) and tighten with cap screw (B).

A—Air Conditioning Line (2 used)
B—Cap Screw

C—Line Clamp
D—Mounting Bracket for Air
Cleaner and Charge Air
Cooler



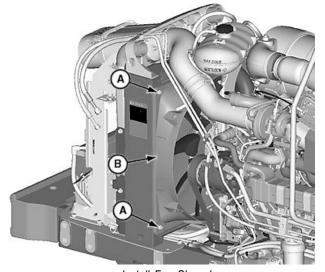
Air Filter Bracket

OUO1023,000387E -19-25MAR13-4/5

LV16203 —UN—190CT12

LV15160 —UN—05DEC11

- 10. Install fan shroud (B) using four cap screws (A). Check fan shroud (B) for clearance around engine cooling fan.
- 11. Install hydraulic oil cooler. (See Remove, Inspect and Install Hydraulic Oil Cooler in Section 70, Group 10.)
- 12. Install charge air cooler (CAC), if equipped. (See Remove, Inspect and Install Charge Air Cooler (CAC) in Section 30, Group 15.)
- For Cab Tractor: Install air conditioning condenser. (See Remove, Inspect, and Install Air Conditioning Condenser in Section 90, Group 30.)
- 14. Install fuel cooler, if equipped. (See Remove, Inspect and Install Fuel Cooler in Section 30, Group 05.)
- 15. Install air cleaner. (See Remove and Install Air Cleaner—Axial Type in Section 30, Group 15.)
- 16. Fill coolant. (See Heavy Duty Diesel Engine Coolant in Section 10, Group 15.)
- 17. Install hood. (See Remove and Install Hood in Section 80, Group 25.)



Install Fan Shroud

A—Cap Screw (4 used)

B—Fan Shroud

OUO1023,000387E -19-25MAR13-5/5

Remove and Install Thermostat

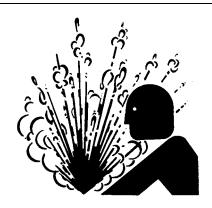
A

CAUTION: Explosive release of fluids from pressurized cooling system can cause serious burns.

Shut off engine. Remove filler cap only when cool enough to touch with bare hands. Slowly loosen cap to relieve pressure before removing completely.

- 1. Drain coolant below level of thermostat housing.
- 2. Remove upper radiator hose.
- In conjunction with this machine manual for removal and installation of thermostat see relevant component technical manual (CTM). (See Engine Water Pump Repair—Use Component Technical Manual in this group.)
- 4. Install upper radiator hose.

IMPORTANT: Air must be expelled from cooling system when filling. Loosen temperature



TS281 -- UN-- 15APR13

sending unit at rear of cylinder head or plug in thermostat housing to allow air to escape when filling system. Tighten fitting or plug when all air has been expelled.

5. Fill radiator with proper coolant. (See Heavy Duty Diesel Engine Coolant in Section 10, Group 15.)

OUO1023,000387F -19-05MAR13-1/1

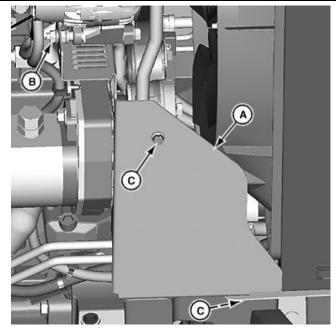
Replace Belt Tensioner

NOTE: Pulley and spring tensioner are not serviceable.

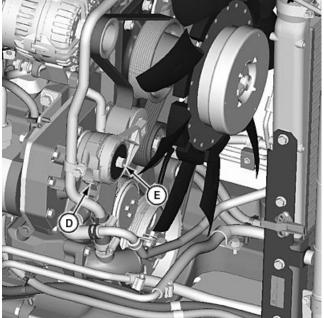
- 1. Remove cap screws (C).
- 2. Remove nut (B) and remove right side fan guard (A).
- 3. Rotate belt tensioner (D) counterclockwise and remove belt from alternator/regulator pulley.
- 4. Rotate belt tensioner clockwise to relaxed position.
- 5. Remove cap screw (E) and exchange belt tensioner.

A—Right Side Fan Guard B—Nut D—Belt Tensioner E—Cap Screw

C—Cap Screw (2 used)



Right Engine Guard



Belt Tensioner Cap Screw

Continued on next page

OUO1023,0003880 -19-25MAR13-1/2

LV16777 —UN—06MAR13

LV16842 -- UN--05MAR13

NOTE: See CTM also for checking belt wear and spring tension check.

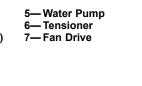
- 6. Install belt following component configuration.
- 7. Check belt routing before releasing tensioner.
- 8. Install right-side fan guard.

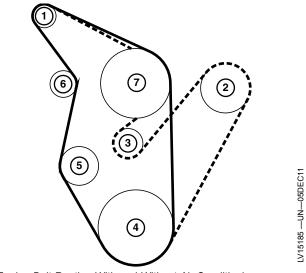
1— Alternator

2—Air Conditioning

Compressor (if equipped)
3—Idler

4— Crankshaft Pulley





Engine Belt Routing With and Without Air Conditioning

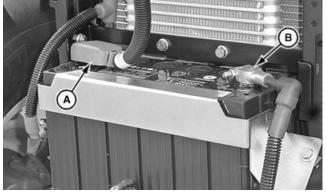
OUO1023,0003880 -19-25MAR13-2/2

Remove and Install Viscous Clutch

- 1. Open the hood and disconnect negative (—) terminal (B) connector from battery negative (—) terminal.
- 2. Remove radiator. (See Remove and Inspect Radiator in Section 20, Group 10.)
- 3. See relevant component technical manual (CTM) for viscous clutch removal and installation.
- 4. Connect negative (—) terminal (B) connector to battery negative (—) terminal.

A-Positive (+) Terminal

B—Negative (—) Terminal



Battery

OUO1023,0003881 -19-25MAR13-1/1

-V16111 -- UN-24SEP12

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Contents

Specifications

Item Measurement Specification

Fuel Tank—Cab Capacity 115 L (30 gal.)

Fuel Tank Rear Bracket Lock Torque 350 N·m (255 lb.-ft.)

Nut-Cab

Fuel Tank Front Bracket Cap Torque 80 N·m (60 lb.-ft.)

Screw—Cab

Fuel Tank—OOS Capacity 96 L (25 gal.)

Fuel Cooler—Cap Screw Torque 30 N·m (22.1 lb.-ft.)

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Injection Pump, Nozzle and Governor Repair

For complete repair information, use the relevant component technical manual (CTM) in conjunction with this machine manual.

 4045 PowerTech™ OEM Diesel Engines Below 130kW (174 hp) (Interim Tier 4/Stage III B Platform) CTM114619.

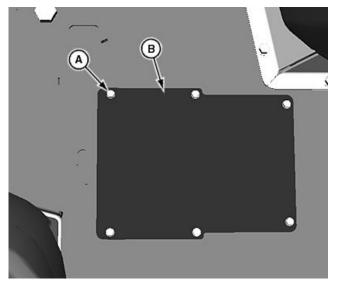


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Replace Fuel Level Sender—Cab



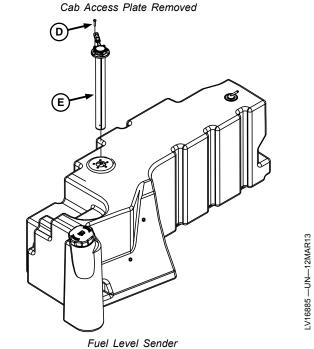
LV16883 — UN — 12MAR13

Cab Access Plate

- 1. Open hood.
- 2. Disconnect negative (—) terminal of battery.
- 3. Remove floor mat.
- 4. Remove six cap screws (A) and cover plate (B).
- 5. Disconnect harness connector (C).
- 6. Remove cap screws (D) and pull out fuel level sender (E).
- 7. Install new fuel level sender in reverse order of removal.
- 8. Connect negative (—) terminal of battery.
- 9. Lower hood.

A—Cap Screw (6 used) B—Cover Plate

B—Cover Plate C—Harness Connector D—Cap Screw E—Fuel Level Sender

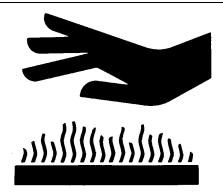


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LV16884 —UN—12MAR13

Remove, Inspect and Install Fuel Tank—Cab

1. Park machine on a flat, level surface.



TS271 —UN—23AUG

SW03989,0001D66 -19-25SEP13-1/9

2. Disconnect battery, negative (—) cable first.

CAUTION: Exhaust may be hot. Allow exhaust to cool before removing. Hot exhaust can cause serious burns or fire.

3. Remove horizontal rear exhaust, if equipped.

A—Positive (+) Terminal

B—Negative (—) Terminal

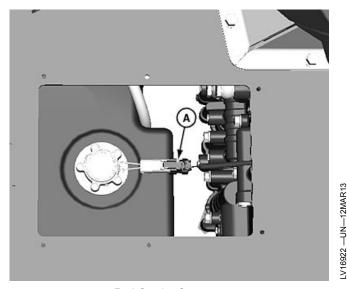


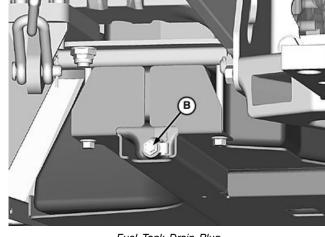
LV16111 —UN—24SEP12

Battery Terminals

Continued on next page

SW03989,0001D66 -19-25SEP13-2/9





Fuel Tank Drain Plug

Fuel Sender Connector

 Remove access cover or plate located under floor mat. Disconnect fuel level sender connector (A).

NOTE: Fuel tank capacity is approximately 115 L (302 gal.).

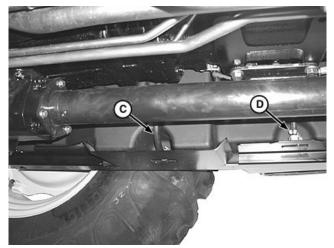
5. Remove fuel tank drain plug (B) and drain fuel into a proper container. (See Do Not Use Galvanized Containers in Section 10, Group 15.)

Install drain plug when fuel tank is empty.

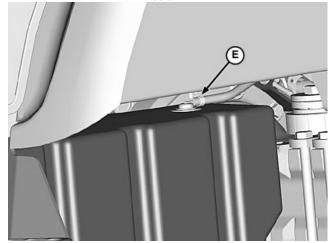
Specification

NOTE: Close all openings using caps and plugs to prevent contamination of fuel system.

- 6. Disconnect fuel supply hose (C), fuel return hose (D), and fuel tank breather hose (E). Close all openings using caps and plugs.
 - A—Fuel Level Sender Connector
 - B—Fuel Tank Drain Plug C—Fuel Supply Hose
- D—Fuel Return Hose E—Fuel Tank Breather Hose



Fuel Tank Supply and Return Hoses



Fuel Tank Breather Hose

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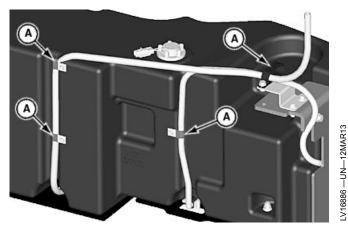
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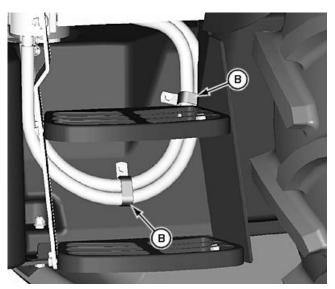
-UN-18FEB10

LV13952

LV13955 —UN—18FEB10



Fuel Hose Retainers



Heater Hose Retainers

NOTE: Fuel tank shown removed for clarity of photograph.

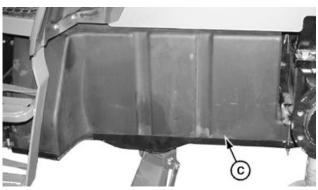
Close all openings using caps and plugs to prevent contamination of fuel system.

- 7. Remove hoses from fuel hose retainers (A) prior to removing tank from tractor.
- 8. Remove hoses from heater hose retainers (B) prior to removing tank from tractor.

NOTE: Left rear wheel removed only for illustration purposes.

Use a floor jack, positioned under the fuel tank, to aid during removal.

9. Use a floor jack to support fuel tank (C).



Fuel Tank Support

A—Fuel Hose Retainer (4 used) C—Fuel Tank B—Heater Hose Retainer (2 used)

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SW03989,0001D66 -19-25SEP13-4/9

LV16956 —UN—12MAR13

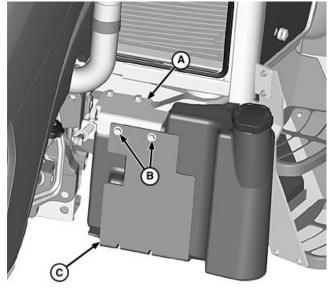
LV16887 —UN—12MAR13

NOTE: Left rear wheel removed only for illustration purposes.

Use a floor jack, positioned under the fuel tank, to aid during removal.

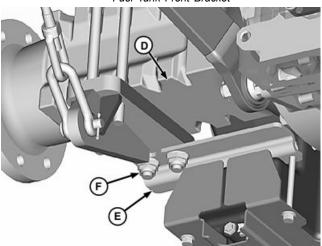
- 10. Remove two cap screws (B) retaining front bracket (C) to upper bracket (A).
- 11. Remove two lock nuts (F) retaining rear bracket (E) to left rear axle (D).
- 12. Lower fuel tank and remove from machine.

A—Upper Bracket B—Cap Screw (2 used) C—Front Bracket D—Left Rear Axle E—Rear Bracket F—Lock Nut (2 used)



LV13954 —UN—18FEB10

Fuel Tank Front Bracket



LV13957 —UN—19FEB10

Fuel Tank Rear Bracket

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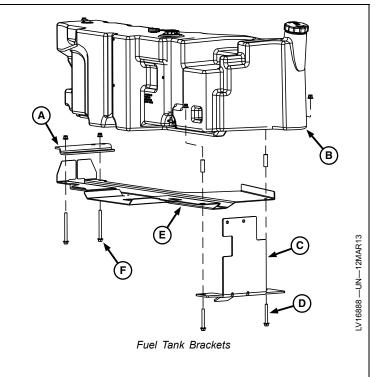
SW03989,0001D66 -19-25SEP13-5/9

- 13. Remove two cap screws and lock nuts (D) and remove front bracket (C) from fuel tank (B) and support (E).
- 14. Remove two cap screws and lock nuts (F) and remove rear bracket (A).
- 15. Remove fuel tank (B) from support (E). Inspect fuel tank for damage. Replace if necessary.
- 16. Clean fuel tank support. Wash out fuel tank with a small amount of fuel to remove any debris. Pour fuel into a proper container for disposal.
- 17. Install fuel tank on support.
- 18. Install rear bracket (A) using two cap screws and lock nuts (F).
- 19. Install front bracket (C) using two cap screws and lock nuts (D).

A—Rear Bracket B—Fuel Tank C—Front Bracket D—Cap Screw and Lock Nut (2 used)

E—Fuel Tank Support

F—Cap Screw and Lock Nut (2 used)



Continued on next page

SW03989,0001D66 -19-25SEP13-6/9

NOTE: Use a floor jack, positioned under center of fuel tank, to aid during installation.

20. Raise fuel tank into position. Attach rear bracket (E) to left rear axle (D) using two lock nuts (F). Tighten lock nuts (F) to specification.

Specification

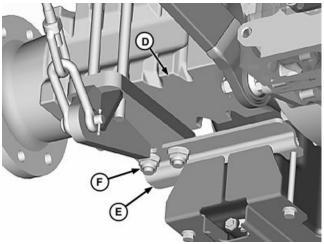
Fuel Tank Rear Bracket Lock

21. Attach front bracket (C) to upper bracket (A) using two cap screws (B). Tighten cap screws to specification.

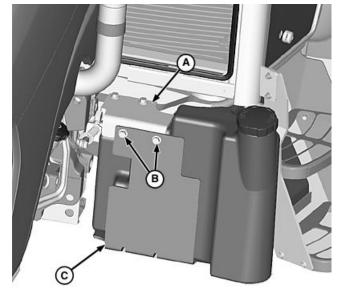
Specification

Fuel Tank Front Bracket Cap

A—Upper Bracket B—Cap Screw (2 used) C—Front Bracket D—Left Rear Axle E—Rear Bracket F—Lock Nut (2 used)



Fuel Tank Bracket Rear



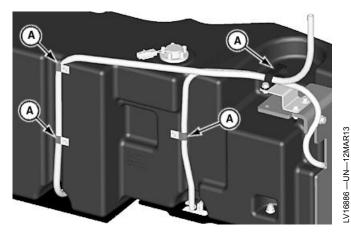
Fuel Tank Bracket Front

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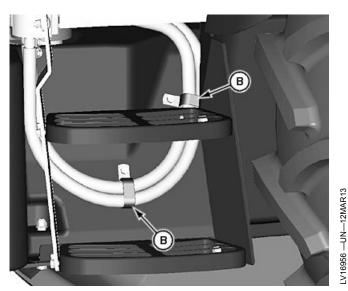
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LV13954 —UN—18FEB10



Fuel Hose Retainers



Heater Hose Retainers

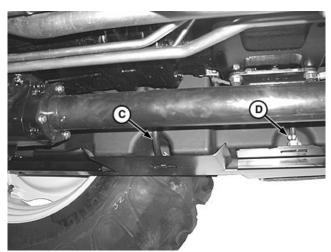
NOTE: Fuel tank shown removed for clarity of photograph.

- 22. Route fuel hoses through retainers (A) as tank is installed.
- 23. Route heater hoses through retainers (B).
- 24. Connect fuel return hose (D), fuel supply hose (C), and fuel tank breather hose (E) to fuel tank.
- 25. Make sure fuel tank drain plug is installed and tightened.

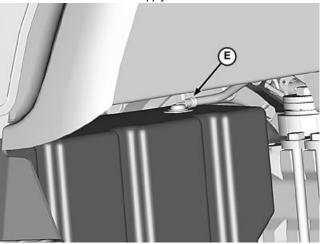
-Fuel Hose Retainer (4 used) D-Fuel Return Hose -Heater Hose Retainer (2

E-Fuel Breather Hose

used) C—Fuel Supply Hose



Fuel Tank Supply and Return Hoses



Fuel Tank Breather Hose

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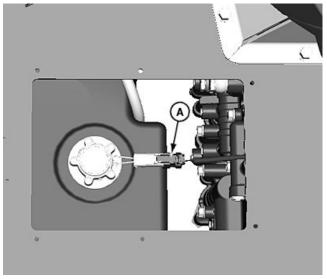
SW03989,0001D66 -19-25SEP13-8/9

LV9890 —UN—10AUG04

LV13955 —UN—18FEB10

- 26. Connect fuel level sender connector (A).
- 27. Install floor access cover plate and secure with cap screws removed earlier.
- 28. Install rubber floor mat.
- 29. Install horizontal rear exhaust, if equipped.
- 30. Fill fuel tank with proper fuel. (See Diesel Fuel in Section 10, Group 15.)
- 31. Connect battery cables, positive (+) terminal first.
- 32. Bleed the fuel system. Use the relevant component technical manual (CTM) in conjunction with this machine manual.

A—Fuel Level Sender Connector



Fuel Level Sender Connector

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LV16922 —UN—12MAR13

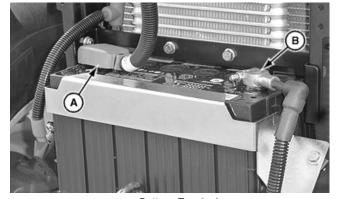
LV16111 —UN—24SEP12

Replace Fuel Level Sender—Open Operator Station

- 1. Open hood.
- 2. Disconnect battery cable from negative (—) terminal (B) first.

A—Positive (+) Terminals

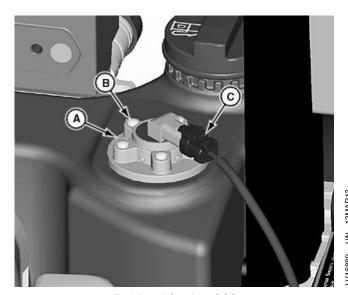
B—Negative (—) Terminals



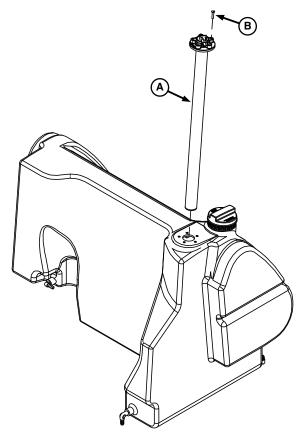
Battery Terminals

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Fuel Level Sender—OOS



Fuel Level Sender Removed—OOS

A—Fuel Level Sender

B—Cap Screw C—Harness Connector

- 3. Locate fuel level sender (A) behind operator's seat.
- 4. Disconnect harness connector (C).
- 5. Remove cap screws (B) and pull out fuel level sender (A).
- 6. Install new fuel level sender in reverse order of removal.
- 7. Connect battery cable to negative (—) terminal.
- 8. Lower hood.

MS30225,0000012 -19-26MAR13-2/2

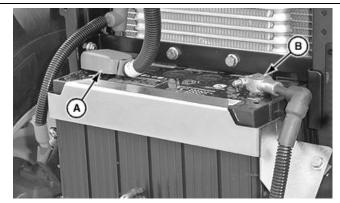
LV16890 -- UN-12MAR13

Remove, Inspect and Install Fuel Tank—Open Operator Station

 Disconnect battery cable from negative (—) terminal (B) first.

A—Positive (+) Terminals

B—Negative (—) Terminals



Battery Terminals

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OUO1023,0003888 -19-26MAR13-1/6

-V16111 -- UN-24SEP12

NOTE: Fuel tank capacity is approximately 96 L (25 gal.).

2. Remove fuel tank drain plug (A) and drain fuel into a proper container. (See Do Not Use Galvanized Containers in Section 10, Group 15.) Install drain plug when fuel tank is empty.

Specification

Fuel Tank

—OOS—Capacity.......96 L (25 gal.)

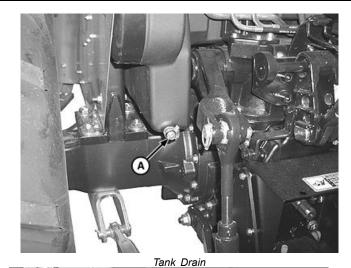
NOTE: Fuel supply hose (B) can be accessed from under the tractor and is located at the front of fuel tank.

Left rear wheel removed only for illustration purposes.

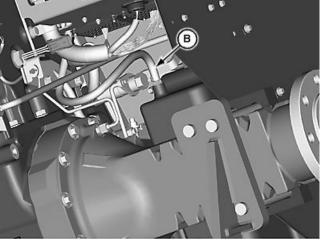
Close all openings using caps and plugs to prevent contamination of fuel system.

3. Disconnect fuel supply hose (B). Close all openings using caps and plugs.

A—Fuel Tank Drain Plug B—Fuel Supply Hose



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LV15523 —UN—05MAR12

Fuel Supply Hose

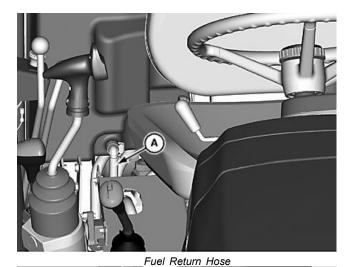
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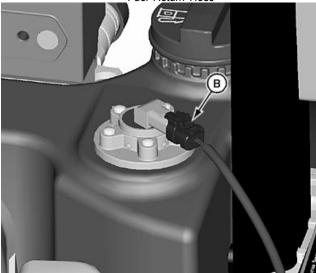
- 4. Disconnect fuel return hose (A) located behind operator's seat.
- 5. Disconnect fuel level sender connector (B).

A-Fuel Return Hose

B—Fuel Level Sender Connector



LV15524 —UN—05MAR12



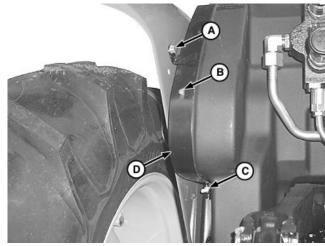
LV16923 —UN—12MAR13

Fuel Level Sender Connector

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OUO1023,0003888 -19-26MAR13-3/6

- 6. Remove cap screw, washer, and nut (A) from left fuel tank strap (D).
- 7. Remove cap screw (B) and nut (C) from left fuel tank strap (D).
- 8. Repeat steps for right fuel tank strap.
- Lift retaining straps (D) away from tank and remove fuel tank.
- 10. Inspect fuel tank for damage. Replace if necessary.
- 11. Wash out fuel tank with a small amount of fuel to remove any debris. Pour fuel into a proper container.
- 12. Inspect rubber isolator, located between bottom of tank and rockshaft case, for excessive wear or damage. Replace if necessary.
- 13. Install fuel tank using cap screw, washer, and nut (A) on left fuel tank strap (D).
- 14. Install cap screw (B) and nut (C) on left fuel tank strap (D).
- 15. Repeat steps for right fuel tank strap.



Left Fuel Tank Strap

A—Cap Screw, Washer, and Nut B—Cap Screw

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C—Nut D—Strap

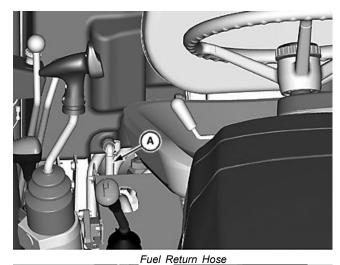
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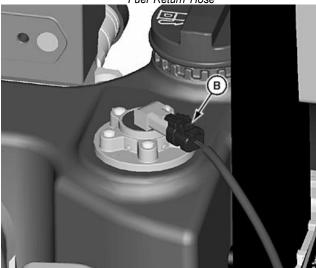
- 16. Connect fuel return hose (A).
- 17. Connect fuel level sender connector (B).

A—Fuel Return Hose

B—Fuel Level Sender Connector



LV15524 —UN-05MAR12



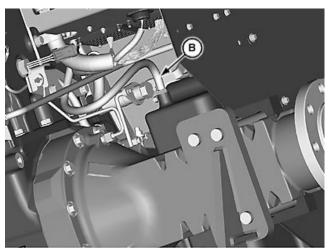
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Fuel Level Sender Connector

OUO1023,0003888 -19-26MAR13-5/6

- 18. Connect fuel supply hose (B).
- 19. Fill fuel tank with proper fuel. (See Diesel Fuel in Section 10, Group 15.)
- 20. Connect battery cables, positive (+) terminal first.
- 21. Bleed the fuel system. Use the relevant component technical manual (CTM) in conjunction with this machine manual.

B—Fuel Supply Hose



LV15523 —UN—05MAR12

Fuel Supply Hose

OUO1023,0003888 -19-26MAR13-6/6

Replace Fuel Filters

1. Raise hood.

NOTE: Place a suitable container under fuel drain. Properly dispose of waste fuel.

- 2. Open drain plug (C) and drain fuel.
- 3. Lift up and rotate retaining ring (A) counterclockwise. Remove dust seal with fuel filter (B).
- 4. Remove water separator bowl (D) from pre-filter.
- 5. Clean separator and dry with compressed air.
- 6. Install water separator bowl (D) on new filter.

IMPORTANT: Ensure correct replacement filter is used.

NOTE: The two fuel filters (B) are different; do not interchange them. Replace one after another to avoid interchange.

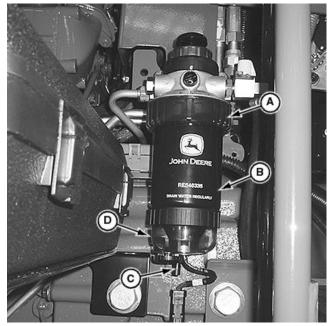
- 7. Fill with clean fuel.
- 8. Install a new filter assembly. Tighten retaining ring hand-tight.
- 9. Bleed fuel system. (See Do Not Use Galvanized Containers in Section 10, Group 15.)
- 10. Start engine and run for 5 minutes.
- 11. Shut off engine.
- 12. Inspect drain plug (C) and filter (B) for leaks.
- 13. Lower hood.

A—Retaining Ring

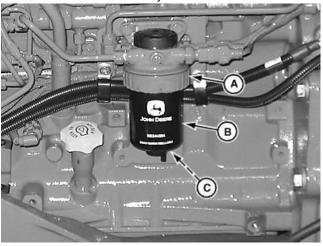
C-Drain Plug

B—Fuel Filter

D—Water Separator Bowl



Primary Fuel Filter



Secondary Fuel Filter

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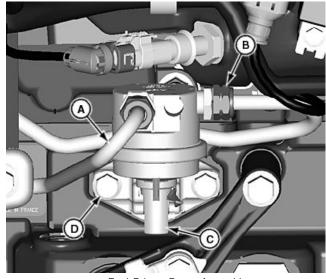
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Remove and Install Fuel Primer Pump Assembly

- 1. Disconnect fuel line (A). Close all openings using caps and plugs.
- 2. Loosen nut (B) and remove fuel line.
- 3. Remove cap screws (D), lock washers, and flat washers. Remove fuel primer pump assembly (C).
- 4. Install new fuel primer pump assembly (C).
- 5. Connect fuel line and tighten nut (B).
- 6. Connect fuel line (A).
- 7. Bleed fuel system. (See Do Not Use Galvanized Containers, in Section 10 Group 15.)

A—Fuel Line B—Nut

C—Primer Pump Assembly D—Cap Screw (2 used)



Fuel Primer Pump Assembly

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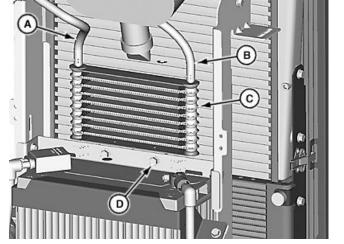
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Remove, Inspect and Install Fuel Cooler

- 1. Raise hood.
- 2. Disconnect battery negative (—) terminal.
- 3. Remove fuel supply hose (A) and fuel return hose (B).
- Remove cap screws (D) from both sides of fuel cooler (C).
- 5. Remove fuel cooler (C).
- 6. Inspect fuel cooler. Replace if necessary.
- 7. Install fuel cooler (C).
- 8. Install cap screws (D) on both sides of fuel cooler (C).

Specification

- 9. Install fuel supply hose (A) and fuel return hose (B).
- 10. Connect battery negative (—) terminal.
- 11. Lower hood.



Fuel Cooler

A—Fuel Supply Hose B—Fuel Return Hose

C—Fuel Cooler D—Cap Screw (2 used)

OUO1023,000388B -19-26MAR13-1/1

Replace Fuel Strainer and In-Line Check Valve

1. Disconnect battery negative (—) terminal.

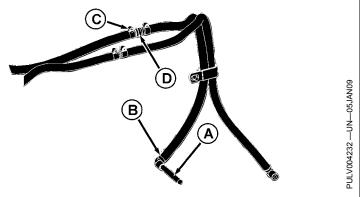
IMPORTANT: Place a suitable container below drain plug (A). (See Do Not Use Galvanized Containers, in Section 10 Group 15.)

NOTE: Depending on the model of tractor, fuel capacity can vary and would require a container to displace up to 177 L (46.8 gal.) of fuel.

- 2. Remove drain plug and drain fuel.
- 3. Install drain plug when fuel tank is empty.
- Remove clamp (B) and pull out fuel strainer (A) from fuel hose.
- 5. Replace fuel strainer (A).
- 6. Remove clamp (C) and pull out fuel hose from in-line check valve (D).

NOTE: Make sure direction of check valve is correct.

- 7. Replace in-line check valve (D).
- 8. Reassemble all parts in reverse order.
- 9. Connect battery negative (—) terminal.



Fuel Strainer and Check Valve

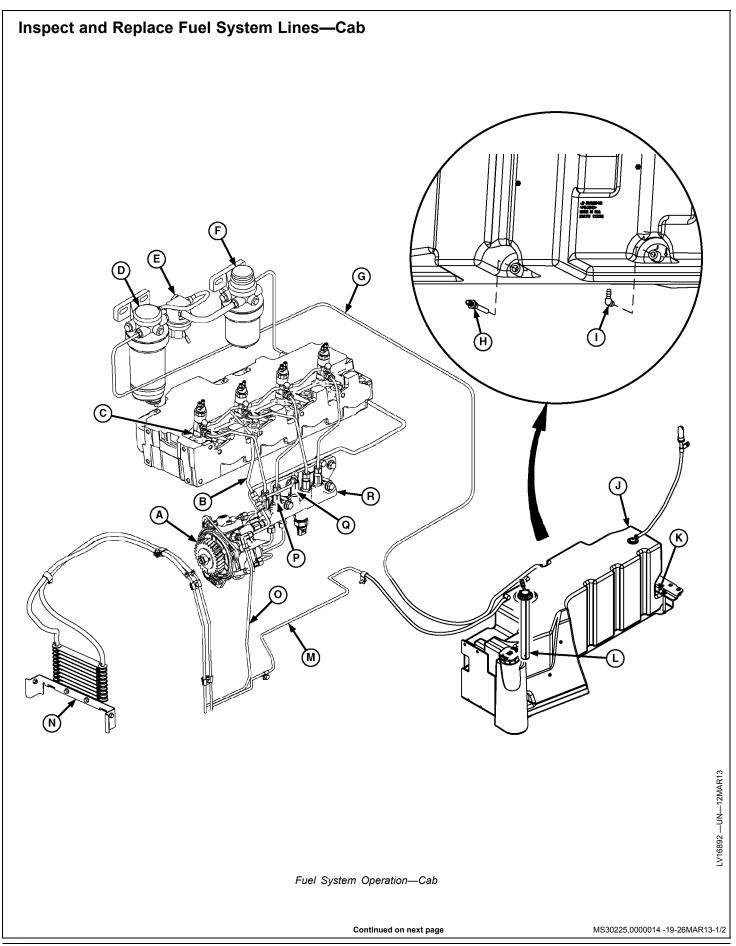
A—Fuel Strainer B—Clamp

C—Clamp (2 used) D—In-Line Check Valve

- 10. Fill tank with proper fuel. (See Diesel Fuel, in Section 10, Group 15.)
- 11. Check for leaks.
- 12. Bleed fuel system. Use the relevant component technical manual (CTM) in conjunction with this machine manual.

OUO1023,000388C -19-13MAR13-1/1

Fuel System



Fuel System

A—Fuel Injection Pump B—Low Pressure Fuel Line

C—Fuel Injection Nozzles D—Primary Fuel Filter/Water Separator

E—Fuel Supply Pump F—Final Fuel Filter

G—Fuel Supply Line

H—Return Port I— Fuel Strainer J— Fuel Tank

K-Drain Port

L—Fuel Level Sender M—Fuel Return Line

N—Fuel Cooler O—Fuel Cooler Supply Line

P—Flow Damper

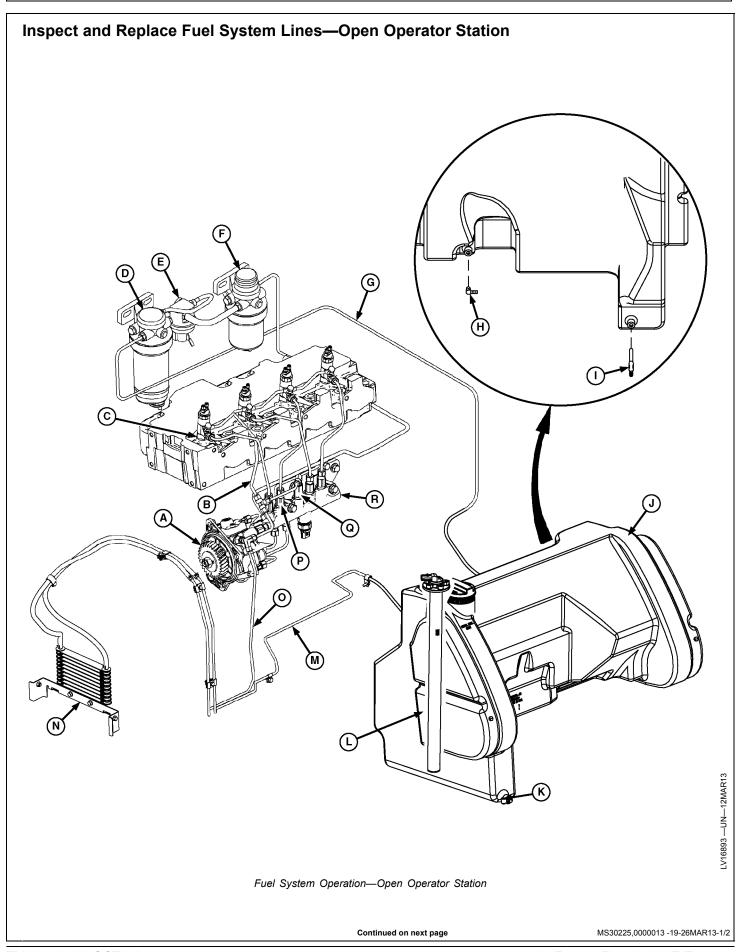
Q—Pressure Limiting Valve R—Common Rail

1. Open hood.

2. Inspect fuel system lines and hoses for wear or damage. Replace as necessary.

NOTE: Damaged lines and hoses may leak.

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Fuel System

A—Fuel Injection Pump B—Low Pressure Fuel Line

C—Fuel Injection Nozzles D—Primary Fuel Filter/Water Separator

E—Fuel Supply Pump F—Final Fuel Filter

G—Fuel Supply Line H—Fuel Strainer I— Return Port

J— Fuel Tank

K-Drain Port

L—Fuel Level Sender M—Fuel Return Line

N—Fuel Cooler O—Fuel Cooler Supply Line

P—Flow Damper

Q—Pressure Limiting Valve R—Common Rail

1. Open hood.

2. Inspect fuel system lines and hoses for wear or

damage. Replace as necessary.

NOTE: Damaged lines and hoses may leak.

MS30225,0000013 -19-26MAR13-2/2

Fuel System

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Item	Measurement	Specification
Support Bracket—Cap Screw	Torque	30 N·m (22.1 lb-ft)
Turbocharger Mounting Flange Nut	Torque	80 N·m (59 lbft.)
Manual Hydraulic Valve—Cap Screw	Torque	43 N·m (32 lbft.)
Turbocharger Oil Drain Line—Cap Screw	Torque	40 N·m (29.5 lbft.)
Turbocharger Oil Inlet Line	Torque	24 N·m (18 lbft.)
Charge Air Cooler (CAC)—Cap Screw	Torque	40 N·m (29.5 lb-ft)

SW03989,0001746 -19-26MAR13-1/1

Other Material

Number Name Use

TY24811 (U.S.) Anti-Seize Lubricant Applied to cap screws to ease

in disassembly.

SW03989,0001745 -19-26MAR13-1/1

Turbocharger Repair

For complete repair information, use the relevant component technical manual (CTM) in conjunction with this machine manual.

 4045 PowerTech™ OEM Diesel Engines Below 130kW (174 hp) (Interim Tier 4/Stage III B Platform) CTM114619.



TS225 —UN—17JAN89

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OUO1023,000388F -19-04APR13-1/1

Remove, Inspect and Install Air Cleaner Elements—Axial Type

1. Open hood.

NOTE: Tap evacuator to exhaust dust from canister.

2. Remove latch (A) and cover (B), and pull out primary air cleaner element (C).

IMPORTANT: If primary element does not pull out with ease, move side-to-side to remove safely. Do not remove secondary element of air cleaner, unless you are replacing it.

3. Pull out secondary air cleaner element (D).

IMPORTANT: If secondary element does not pull out with ease, move side-to-side to remove safely.

4. When primary air cleaner element (C) must be serviced in the field, tap it on the palm of your hand as a temporary measure.

CAUTION: High pressure compressed air or vibration may damage primary air cleaner element (D).

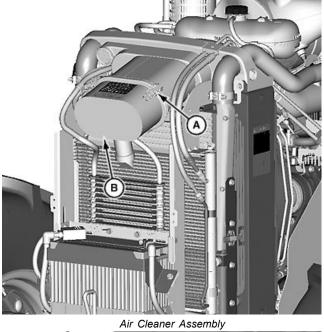
- 5. If tapping primary (C) and secondary (D) air cleaner element does not remove dust, blow out dust with low pressure compressed air. Do not exceed 600 kPa (6 bar) (90 psi). Blow air from engine end of element to outside end. Do not insert nozzle into element material.
- Replace both filter elements (primary and secondary)
 after the primary filter has been cleaned five times.
 Clean out and inspect canister interior before installing
 new elements.

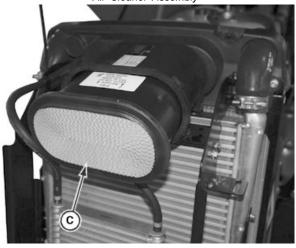
IMPORTANT: Before installation, review decals on canister and primary air cleaner.

- 7. Install elements, as necessary, and latch cover.
- 8. Close hood.

A—Latch B—Cover C—Primary Air Cleaner Element D—Secondary Air Cleaner

Element





Primary Air Filter



Secondary Air Filter

OUO1023,0003890 -19-26MAR13-1/1

V15314 — UN—17 JAN12

-V15313 —UN—17JAN12

LV15315 —UN—17JAN12

Remove and Install Air Cleaner—Axial Type

- 1. Open hood.
- 2. Remove clamps (A) from both ends of air duct (B).
- 3. Remove cap screws (C) from both ends of air cleaner support bracket (E).
- 4. Remove air cleaner support bracket (E).
- 5. Remove air cleaner canister (D) with bracket.
- 6. Remove, inspect and install air cleaner elements. (See Remove, Inspect and Install Air Cleaner Elements—Axial Type, in this group.)
- 7. Inspect air duct (B) for wear or damage. Replace if necessary.
- 8. Install air cleaner in reverse order of removal.
- 9. Fully seat air cleaner canister (D).
- 10. Install cap screws (C) and clamps (A). Tighten to specification.

Specification

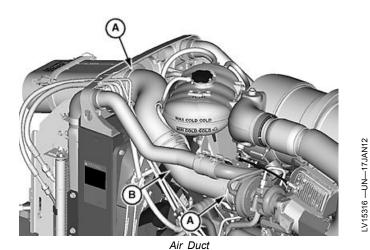
Support Bracket—Cap

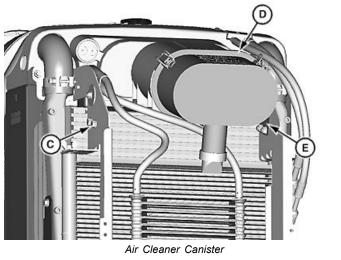
11. Close hood.

A—Clamp (2 used)

B—Air Duct C—Cap Screw (4 used)

D—Air Cleaner Canister E—Air Cleaner Support **Bracket**





OUO1023,0003891 -19-26MAR13-1/1

LV15317 —UN—17JAN12

Remove Turbocharger

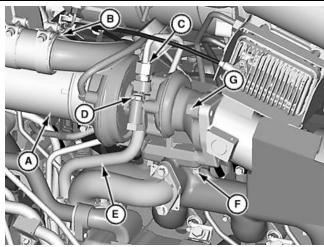
CAUTION: Turbocharger may be hot. Allow turbocharger to cool before removal. Hot turbocharger can cause serious burns.

IMPORTANT: Do not clean exterior of turbocharger if inspection is required. Cleaning can remove evidence for failure analysis.

1. Remove hood. (See Remove and Install Hood, in Section 80, Group 25.)

NOTE: Close all openings using caps and plugs to prevent system contamination.

- 2. Disconnect charge air cooler supply tube (B).
- 3. Disconnect air intake tube (A).
- 4. Disconnect oil inlet line (C).
- 5. Remove two cap screws (D) and oil drain line (E).
- 6. Remove four flange nuts (F).
- 7. Remove three cap screws (G).
- 8. Remove turbocharger and gasket. Close all openings using caps and plugs.



Turbocharge

A—Air Intake Tube

B—Charge Air Cooler Supply Tube

C-Oil Inlet Line

D—Cap Screw (2 used)

E—Oil Drain Line

F—Flange Nut (4 used)

G—Cap Screw (3)

9. Make repairs as necessary. Use the relevant component technical manual (CTM) in conjunction with this machine manual.

SW03989,0001747 -19-26MAR13-1/1

LV15318 —UN—17JAN12

Install Turbocharger

- Install new gasket and turbocharger on exhaust manifold.
- 2. Install four flange nuts (F). Tighten to specification.

Specification

Turbocharger Mounting

Flange Nut—Torque...... 80 N·m (59 lb.-ft.)

NOTE: Apply anti-seize lubricant to flange cap screws.

 Align manual hydraulic valve and install new gasket. Apply Anti-Seize Lubricant to cap screws (G) and install. Tighten cap screws to specification.

Specification

Manual Hydraulic Valve—Cap

4. Align oil drain line (E) with new gasket and install cap screws (D). Tighten cap screws to specification.

Specification

Turbocharger Oil Drain Line—Cap

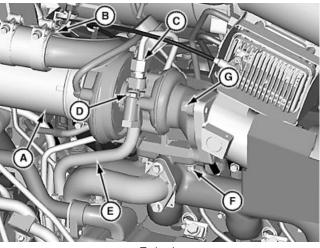
- 5. Fill oil line inlet port with clean engine oil. Rotate turbine wheel by hand to lubricate bearings.
- 6. Connect oil inlet line (C). Tighten to specification

Specification

Turbocharger Oil Inlet

7. Connect air intake tube (A).

IMPORTANT: With the greatest suction force occurring between air cleaner and turbocharger,



Turbocharger

A—Air Intake Tube

B—Charge Air Cooler Supply Tube

C—Oil Inlet Line

D—Cap Screw (2 used)

E—Oil Drain Line

F—Flange Nut (4 used) G—Cap Screw (3 used)

ensure that tube connections are tight to prevent entry of dirt into the system.

- 8. Connect charge air cooler supply tube (B).
- 9. Perform turbocharger break-in. Use the relevant component technical manual (CTM) in conjunction with this machine manual.
- 10. Install hood. (See Remove and Install Hood, in Section 80, Group 25.)

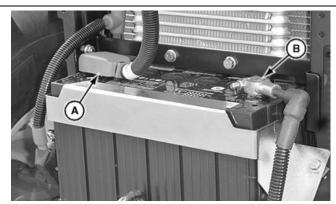
OUO1023,0003893 -19-26MAR13-1/1

Remove, Inspect and Install Charge Air Cooler (CAC)

- 1. Raise hood.
- Disconnect battery cable from negative (—) terminal (B) first.

A—Positive (+) Terminals

B—Negative (—) Terminals



Battery Terminals

Continued on next page

OUO1023,0003894 -19-26MAR13-1/2

-V16111 —UN—24SEP12

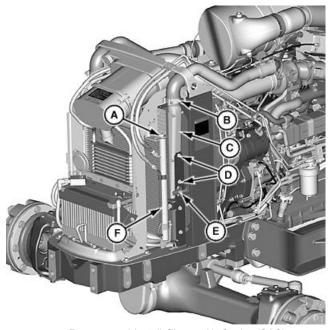
-V15318 —UN—17JAN12

- 3. Remove hose clamps (B) from both sides of charge air cooler (CAC) (C).
- 4. Loosen wing nuts (A) on both sides of air conditioner condenser (F).
- 5. Remove cap screws (D) from both sides of CAC.
- 6. Unfasten the latch (E) on both sides.
- 7. Move the condenser (F) and bracket assembly for clearance and remove charge air cooler (CAC) (C).
- 8. Inspect CAC for damage. Replace as necessary.
- 9. Install charge air cooler (C).
- Move the condenser (F) and bracket assembly into position and install cap screws (D) on both sides of CAC. Tighten to specification.

Specification

Charge Air Cooler (CAC)—Cap

- 11. Fasten the latch (E).
- 12. Install hose clamps (B) on both sides of CAC.
- 13. Position condenser (F) and tighten wing nuts (A).
- 14. Connect battery cables, positive (+) terminal first.
- 15. Lower hood.



Remove and Install Charge Air Cooler (CAC)

A—Wing Nut (2 used) B—Hose Clamp (2 used)

C—Charge Air Cooler (CAC)

D—Cap Screw (4 used)

E—Latch

— Air Conditioner Condenser

OUO1023,0003894 -19-26MAR13-2/2

LV15322 —UN—17JAN12

Group 20 Air Exhaust System

Specifications

Measurement Specification

Bracket Cap Screw Torque 80 N·m (59 lb.-ft.)

OUO1023,0003895 -19-14MAR13-1/1

Remove and Install Exhaust Pipe

- 1. Remove parts (A—I). Inspect and replace as necessary.
- 2. Install lower outlet pipe assembly (E) using three cap screws (H).

Specification

Bracket Cap

- 3. Connect flex pipe (D) to exhaust filter and tighten
- 4. Install heat shield (C) using three button head screws
- 5. Install outlet pipe (A) and clamp (B) onto lower assembly (E).
- 6. Orient outlet pipe (A) pointing forward and outward 45 ± 5° and tighten clamp (B).

A—Outlet Pipe

F-Bracket

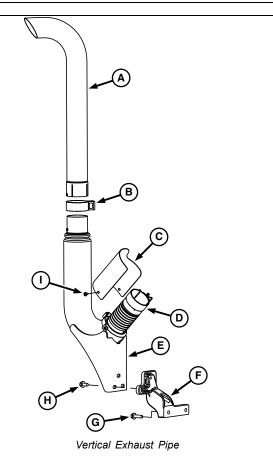
B—Clamp C—Heat Shield

G—Cap Screw (2 used) H—Cap Screw (3 used)

D—Flex Pipe

-Lower Outlet Pipe Assembly

I— Button Head Screw (3 used)

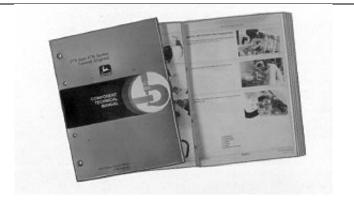


SW03989,0001748 -19-26MAR13-1/1

Remove and Install Aftertreatment Device

For complete service information, the component technical manual (CTM) is also required. Use the relevant component technical manual in conjunction with this machine manual:

 4045 PowerTech OEM Diesel Engines Below 130kW (174 hp) (Interim Tier 4/Stage III B platform) CTM114619.



LV16894 —UN—12MAR13

SW03989,0001749 -19-01APR13-1/1

Air Exhaust System

30-20-2

Section 40 Electrical Repair

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Contents

Starter Repair—Use Component Technical Manual

This vehicle specific technical manual has only engine information which is specific to the vehicle. Most of the engine information is found in the relevant engine technical manual. Use this manual in conjunction with relevant component technical manual (CTM) to diagnose engine problems.

 4045 PowerTech™ OEM Diesel Engines Below 130kW (174 hp) (Interim Tier 4/Stage III B Platform) CTM114619.

For complete repair information the component technical manual (CTM) is also required. Use the Alternators and Starting Motors, CTM77 in conjunction with this machine manual.

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Component Technical Manual

MS30225,0000015 -19-01APR13-1/1

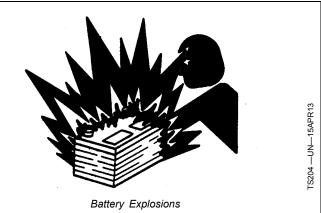
TS225 —UN—17JAN89

Prevent Battery Explosions

Keep sparks, lighted matches, and open flame away from the top of battery. Battery gas can explode.

Never check battery charge by placing a metal object across the posts. Use a volt meter or hydrometer.

Do not charge a frozen battery; it may explode. Warm battery to 16°C (60°F).



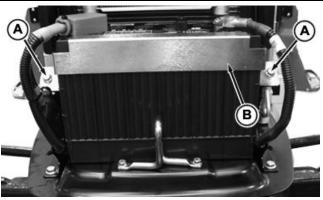
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Remove and Install Battery

CAUTION: Keep all sparks and flames away from batteries, as gas given off by electrolyte is explosive. To avoid sparks, connect ground cable last and disconnect it first.

To avoid shocks and burns, disconnect battery ground cable before servicing any part of electrical system.

- 1. Disconnect negative (—) battery cable first, then positive (+) battery cable.
- 2. Remove screws (A) and hold-down bracket (B) away from battery.
- 3. Remove battery. Clean and service as necessary.
- 4. Install battery.
- 5. Install hold-down bracket (B) and tighten screws (A).
- 6. Connect positive (+) battery cable first, then negative (—) battery cable.



Battery Safety

A-Screw (2 used)

B—Hold-Down Bracket

7. Apply petroleum jelly to battery terminals to prevent corrosion.

MS30225,0000016 -19-27MAR13-1/1

PULV005030 -- UN-28JAN10

Remove and Install Starter

Use the relevant component technical manual (CTM).

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MS30225,0000017 -19-01APR13-1/1

Remove and Install Alternator

Use the relevant component technical manual (CTM).

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 4045 PowerTech™ OEM Diesel Engines Below 130kW (174 hp) (Interim Tier 4/Stage III B Platform) CTM114619.

MS30225,0000018 -19-01APR13-1/1

Group 10 Electrical System Components

Other Material

NumberNameUseT43512 (U.S.)Thread Lock and Sealer (MediumApply to threads of mounting screws.

TY9473 (Canadian) Strength) 242 (LOCTITE®)

Loctite is a trademark of Henkel Corporation

SW03989,0001882 -19-04APR13-1/1

Specifications		
Item	Measurement	Specification
Top Shaft Speed Sensor	Torque	14.2 N·m (125 lbin.)
Wheel Speed Sensor	Torque	14.2 N·m (125 lbin.)
Park Switch	Torque	13—17 N·m (115—150 lbin.)
Enable Pressure Sensor	Torque	13—17 N·m (115—150 lbin.)
Hydraulic Oil Temperature Sensor	Torque	13—17 N·m (115—150 lbin.)
Rear PTO Speed Sensor	Torque	14.2 N·m (125 lbin.)
Transmission Forward (Low) Solenoid	Torque	14.2 N·m (125 lbin.)
Transmission Forward (High) Solenoid Valve	Torque	14.2 N·m (125 lbin.)
Transmission Reverse Solenoid Valve	Torque	14.2 N·m (125 lbin.)
Clutch Enable Solenoid Cap Screw	Torque	22—28 N·m (16—21 lbft.)
PTO Solenoid Valve Cap Screw	Torque	22—28 N·m (16—21 lbft.)
EH MFWD Solenoid Cap Screw	Torque	9—11 N·m (80—97 lbin.)
		SW03989,0001883 -19-04APR13-1/1

Remove and Install Electrical Shifter Pod





Lock Nut and Spacer

LV17209 —UN—28MAR13

Cover

NOTE: Cab tractor is shown; open operator station is similar.

- 1. Disconnect battery negative (—) cable.
- 2. Remove cover (A).
- 3. Remove lock nut (B) and spacer (C).
- 4. Remove nut (D) and steering wheel (E).

A—Cover B—Lock Nut C—Spacer D—Nut E—Steering Wheel

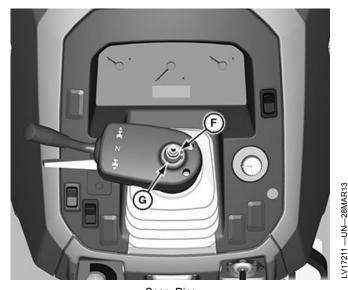


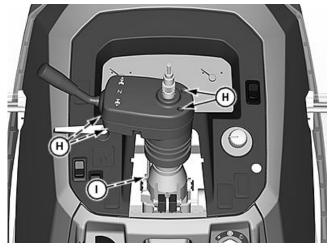
Nut

LV17210 —UN—28MAR13

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SW03989,0001931 -19-04APR13-1/2





Screws

Snap Ring

- 5. Remove snap ring (F), washer (G) and cover.
- 6. Remove screws (H) and disconnect wire connector (I).
- Remove spacer (J) and snap rings (K).
- 8. Remove housing (L) and support (M).
- 9. Remove and replace electrical shifter pod.
- 10. Install in the reverse order of removal.
- 11. Connect battery negative (—) cable.

F—Snap Ring

G-Washer

H—Screws (4 used)

I— Wire Connector

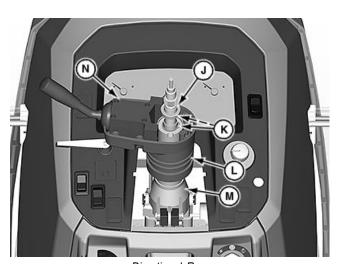
J—Spacer

K—Snap Rings (2 used)

L—Housing

M—Support

N—Forward Neutral Reverse (FNR) Switch



Directional Reverser

SW03989,0001931 -19-04APR13-2/2

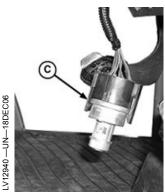
Replace Key Switch

- 1. Disconnect battery negative (—) cable.
- 2. Remove key (A) and nut (B).
- 3. Disconnect key switch from wire connector (C) and replace key switch.
- 4. Install new key switch in switch panel and secure using nut (B).
- 5. Connect wire connector (C).
- 6. Connect battery negative (—) cable.

A—Key B—Nut C—Wire Connector







Wire Connector

SW03989,00018E1 -19-01APR13-1/1

LV12941 —UN—18[

LV17213 —UN—28MAR13

LV17212 —UN—28MAR13

TM128319 (28OCT13)

40-10-3

Replace Light Switch

- 1. Disconnect battery negative (—) cable.
- 2. Remove knob (A) and retainer nut (B).
- 3. Disconnect harness connector and replace light switch.
- 4. Install retainer nut (B) and knob (A).
- 5. Connect battery negative (—) cable.

A—Knob

B—Retainer Nut



Light Switch Knob



Retainer Nut

SW03989,00018E2 -19-01APR13-1/1

LV17270 —UN—28MAR13

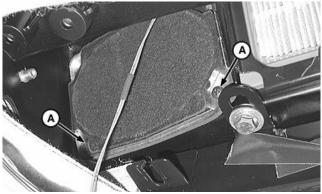
LV17214 —UN—28MAR13

Replace Speakers

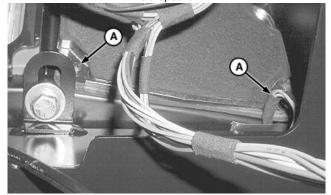
NOTE: Speakers are located in cab roof, behind right-side radio housing and left-side dome light assembly.

- 1. Remove right-side radio housing and left-side dome light assembly.
- 2. Remove two screws (A) securing speaker to cab panel.
- 3. Disconnect wire connector from speaker.
- 4. Connect wire connector to new speaker.
- 5. Install speaker with two screws (A).
- 6. Install right-side radio housing and left-side dome light assembly.

A-Screw (2 used)



Left Speaker



Right Speaker

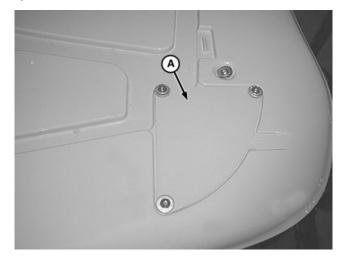
SW03989,00018E3 -19-03APR13-1/1

LV8713 —UN—28AUG03

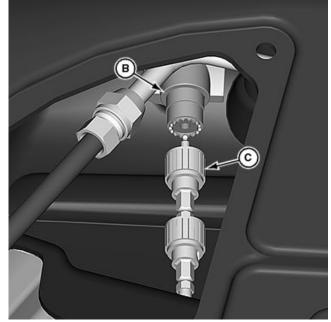
-V8759 —UN—28AUG03

-V8751 —UN—25AUG03

Replace Antenna



Access Panel



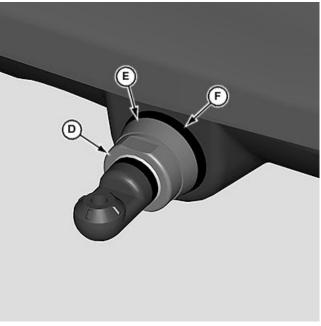
Antenna Base

- 1. Remove antenna whip from base.
- Remove right-front corner access panel (A) from cab roof
- 3. Disconnect antenna cable (C) from antenna base (B).
- 4. Install new antenna from access point in cab roof.
- 5. Install seal (F), collar (E), and nut (D).
- 6. Attach antenna cable (C) to antenna base (B) and tighten securely.
- 7. Install right-front corner access panel (A) onto cab roof.
- 8. Install antenna whip.

 A—Access Panel
 D—Nut

 B—Antenna Base
 E—Collar

 C—Antenna Cable
 F—Seal



Antenna

SW03989,0001915 -19-04APR13-1/1

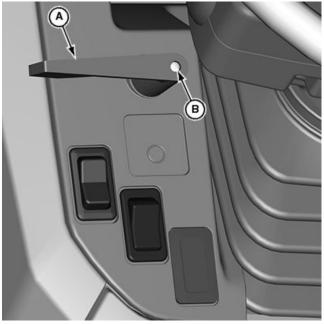
LV17205 —UN—28MAR13

LV17204 —UN—28MAR13

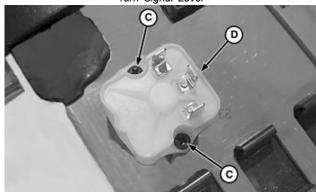
Replace Turn Signal Switch

- 1. Disconnect battery negative (—) cable.
- 2. Remove center control console. (See Remove and Install Center Control Console in Section 90, Group 10.)
- 3. Remove screw (A) and turn signal lever (B).
- 4. Remove two screws (C) and turn signal switch (D).
- 5. Install new turn signal switch (B) with screws (C).
- 6. Install lever (B) and screw (A).
- 7. Install center control console. (See Remove and Install Center Control Console in Section 90, Group 10.)

A—Screw B—Turn Signal Lever C—Screw (2 used) D—Turn Signal Switch



Turn Signal Lever



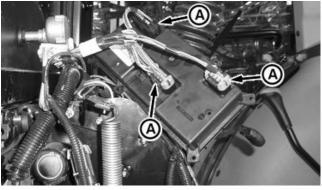
Turn Signal Switch

SW03989,00018E5 -19-01APR13-1/1

Replace Instrument Cluster

- 1. Disconnect battery, negative (—) cable.
- Remove cowl cover. (See Remove and Install Center Control Console in Section 90, Group 10.)
- 3. Lift instrument panel toward driver's seat and disconnect wire harness connectors (A).

A—Harness Connectors (3 or 4 used)



Instrument Cluster Harness Connectors

Continued on next page

SW03989,0001D64 -19-24SEP13-1/2

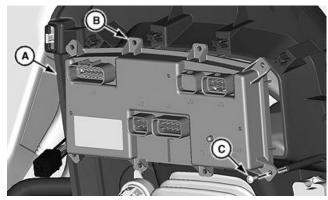
-V17224 —UN—28MAR13

LV12935 —UN—14DEC06

- 4. Remove screws (C) and instrument cluster (B) from instrument panel (A). Retain screws (C).
- 5. Install new instrument cluster and secure with retained screws (C).
- Connect wire harness connectors removed earlier to new instrument cluster.
- 7. Install cowl cover. (See Remove and Install Center Control Console in Section 90, Group 10.)
- 8. Connect battery negative (—) cable.

NOTE: The current engine hours cannot be programmed into the new instrument cluster. Record the current engine hours in the service records for the tractor at the dealership and the Lubrication Maintenance Charts in the customers operator manual, if available. Also note the current engine hours on the back of new instrument cluster using a permanent marker.

9. Program instrument cluster. (See Program Instrument Cluster in Section 40, Group 10.)



Instrument Cluster

A—Instrument Panel B—Instrument Cluster

C-Screw (8 used)

SW03989,0001D64 -19-24SEP13-2/2

LV19165 —UN—25SEP13

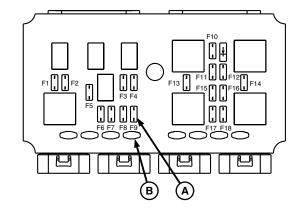
Program Instrument Cluster

When installing a new instrument panel, the ground speed display must be configured to match the desired units (MPH or km/h) and the tire circumference in order to display the correct ground speed.

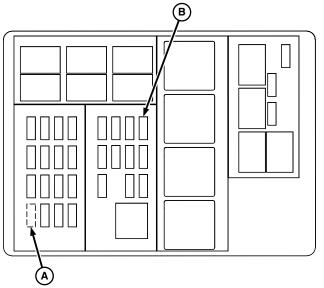
- 1. Place key switch in OFF position.
- 2. Remove primary and secondary VEC or load center access panels.
- 3. Move 10-amp fuse from storage position (B) to F9 position (A).

A-F9 Position

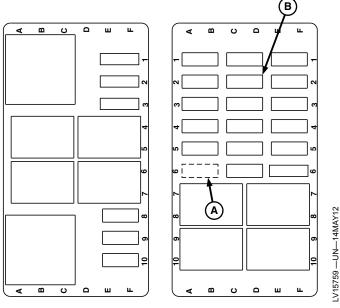
B—Storage Position



Place Fuse in Diagnostic Position—VEC



Place Fuse in Diagnostic Position—Load Center—Cab



Place Fuse in Diagnostic Position—Load Center—Open Operator Station

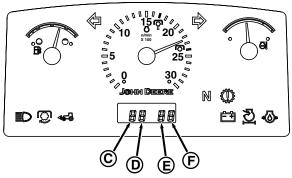
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SW03989,0001914 -19-04APR13-1/4

LV11840 —UN—09DEC04

LV14596 —UN—05AUG11

- 4. Place key switch in RUN position. The LCD display should read "00 00". This is the "Access Level One" location. To gain access to the read/write memory, the "Access Level One" code ("11") must be entered into the two data fields (E and F). The address fields (C and D) should be flashing.
 - a. Move turn signal switch to the right turn position, and then back to center. The "Ones" digit field (F) should be flashing.
 - b. Move turn signal switch to the left turn position, and then back to center one time to increment the "Ones" digit field to the value of "1". If the value of "1" is passed, repeat cycling the turn signal switch to the left turn position and center until the display cycles back to "1".
 - c. Move turn signal switch to the right turn position, and back to center. The "Tens" digit field (E) should be flashing.
 - d. Move turn signal switch to the left turn position, and then back to center one time to increment the "Ones" digit field to the value of "1".
 - e. Move turn signal switch to the right turn position. The address fields (C and D) should be flashing.
 - f. Move turn signal switch to the left turn position, and then back to center. If the "Access Level One" value was not correct, the address field will default back to the "00" address. If the value was correct, the address will increment to the "Ground Speed Units" level ("01").
- NOTE: When the The "Ones" digit field (F) displays an even number value the instrument cluster will display MPH. When the The "Ones" digit field (F) displays an odd number value the instrument cluster will display Km/h. If installing a new instrument cluster the factory default is set to MPH.
- 5. To change the ground speed units from the default MPH to km/h:



Instrument Panel Display

C—"Tens" Address Field D—"Ones" Address Field

E—"Tens" Digit Field F—"Ones" Digit Field

PULV005088 -- UN-09APR10

- a. Move turn signal switch to the right turn position, and then back to center. The "Ones" digit field (F) should be flashing.
- b. Move turn signal switch to the left turn position, and then back to center one time to increment the "Ones" digit field to the value of "1". The km/h ground speed symbol will be displayed.
- c. Move turn signal switch to the right turn position, and then back to center. The "Tens" digit field (E) should be flashing.
- d. Move turn signal switch to the right turn positions, and then back to center. The address fields (C and D) should be flashing.
- 6. To change the tire circumference setting from the default circumference setting (4369 mm):
 - a. Move the turn signal switch to the left turn position, and then back to center. The address fields (C and D) should read "02". The data fields (E and F) should read "43".
 - b. Determine the tire circumference from the tire chart.

		Values To Be Entered in Address Fields			
Tire Size	Tire Rolling Circumference in Millimeters	02		03	
		Tens	Ones	Tens	Ones
16.9-24 R4	3861	3	8	6	1
16.9-30 R1	4369	4	3	6	9
18.4R30	4547	4	5	4	7

Instrument Tire Chart

- c. Move turn signal switch to the right turn position, and then back to center. The "Ones" digit field (F) should be flashing.
- d. Move turn signal switch to the left turn position, and then back to center until the "Ones" digit field equals the number shown in the Tire Circumference Chart—Address Field "02", "Ones".
- e. Move turn signal switch to the right turn position, and then back to center. The "Tens" digit field (E) should be flashing.
- f. Move turn signal switch to the left turn position, and then back to center and repeat until the "Tens" digit field equals the number shown in the Tire Circumference Chart—Address Field "02", "Tens".

Continued on next page

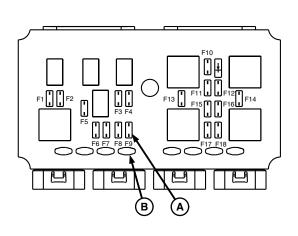
SW03989,0001914 -19-04APR13-2/4

- g. Move turn signal switch to the right turn position, and then back to center. The address fields (C and D) should be flashing.
- h. Move turn signal switch to the left turn position, and then back to center. The address fields should read "03".
- Move turn signal switch to the right turn position, and then back to center. The "Ones" digit field should be flashing.
- j. Move turn signal switch to the left turn position, and then back to center until the "Ones" data field equals the number shown in the Tire Circumference Chart—Address Field "03", "Ones".

- k. Move turn signal switch to the right turn position, and then back to center. The "Tens" digit field should be flashing.
- I. Move turn signal switch to the left turn position, and then back to center until the "Tens" digit field equals the number shown in the Tire Circumference Chart—Address Field "03", "Tens".
- m. Move turn signal switch to the right turn position, and then back to center. The address fields (C and D) should be flashing.
- 7. Place key switch in OFF position.

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SW03989,0001914 -19-04APR13-3/4

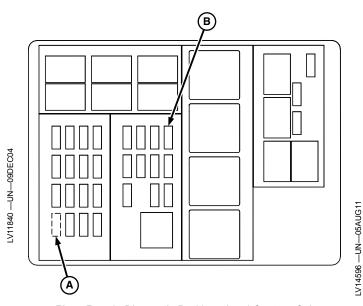


Place Fuse in Diagnostic Position—VEC

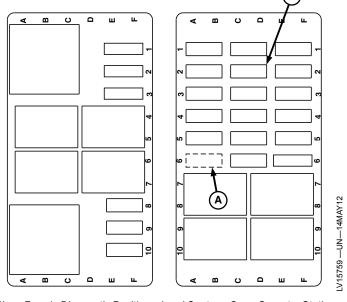
- 8. Remove 10-amp fuse from F9 position (A) and place it in the storage position (B).
- 9. Install secondary and primary VEC or load center access panels.

A-F9 Position

B—Storage Position



Place Fuse in Diagnostic Position—Load Center—Cab



Place Fuse in Diagnostic Position—Load Center—Open Operator Station

SW03989,0001914 -19-04APR13-4/4

Replace Rear PTO Switch—Open Operator Station

- 1. Disconnect battery negative (—) cable.
- Remove rear PTO switch (A) from the panel by pressing in the spring-loaded tabs on both sides of the switch.
- 3. Disconnect wire connector.
- 4. Replace rear PTO switch.
- 5. Connect wire connector.
- 6. Connect battery negative (—) cable.

A-Rear PTO Switch

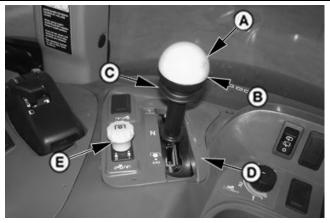


Rear PTO Switch

SW03989,00018E8 -19-01APR13-1/1

Replace Rear PTO Switch—Cab

- 1. Disconnect battery negative (—) cable.
- 2. Remove knob (A), nut (B), and handle (C).
- 3. Remove panel (D).
- 4. Disconnect wire connector.
- Remove rear PTO switch (E) from the panel by pressing in the spring-loaded tabs on both sides of the switch.
- 6. Replace rear PTO switch.
- 7. Install panel (D).
- 8. Install handle (C), nut (B), and knob (A).
- 9. Connect wire conector.
- 10. Connect battery negative (—) cable.



Rear PTO Switch

A—Knob B—Nut C—Handle D—Panel E—Rear PTO Switch

SW03989,00018E9 -19-01APR13-1/1

PULV003481 —UN—17JUL08

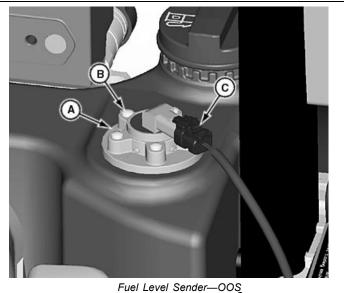
PUPX001137 —UN—05MAR09

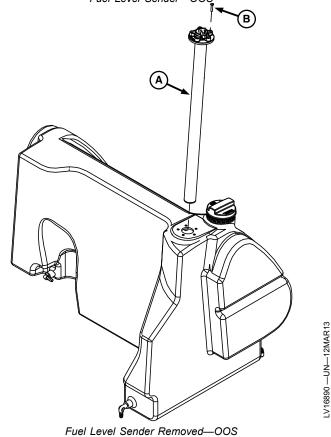
Replace Fuel Level Sender—Open Operator Station

- 1. Open hood.
- 2. Disconnect negative (—) terminal of battery.
- 3. Locate fuel level sender (A) behind operator's seat.
- 4. Disconnect harness connector (C).
- 5. Remove cap screws (B) and pull out fuel level sender (A).
- Install new fuel level sender in reverse order of removal.
- 7. Connect negative (—) terminal of battery.
- 8. Lower hood.

A—Fuel Level Sender B—Cap Screw

C—Harness Connector

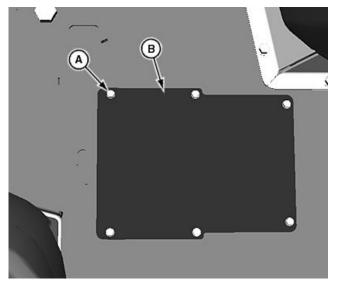




SW03989,00018EA -19-01APR13-1/1

LV16889 —UN—12MAR13

Replace Fuel Level Sender—Cab



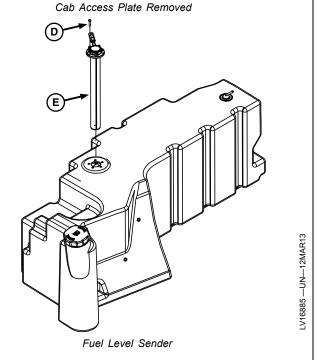
LV16883 — UN—12MAR13

Cab Access Plate

- 1. Open hood.
- 2. Disconnect negative (—) terminal of battery.
- 3. Remove floor mat.
- 4. Remove six cap screws (A) and cover plate (B).
- 5. Disconnect harness connector (C).
- 6. Remove cap screws (D) and pull out fuel level sender (E).
- 7. Install new fuel level sender in reverse order of removal.
- 8. Connect negative (—) terminal of battery.
- 9. Lower hood.

A—Cap Screw
B—Cover Plate
C—Harness Connector

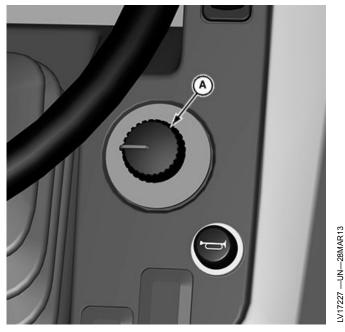
D—Cap Screw E—Fuel Level Sender



SW03989,00018EB -19-01APR13-1/1

LV16884 —UN—12MAR13

Replace Wiper Control Switch



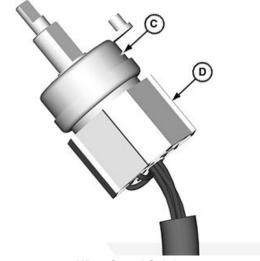


Nut

Wiper Switch Knob

- 1. Disconnect battery negative (—) cable.
- 2. Remove wiper switch knob (A) and nut (B).
- 3. Disconnect wiper control switch (C) from electrical connector (D).
- 4. Replace wiper control switch.
- 5. Connect electrical connector and install new switch into dash.
- 6. Install nut (B) and wiper switch knob (A).

A—Wiper Switch Knob B—Nut C—Wiper Control Switch D—Electrical Connector



Wiper Control Switch

SW03989,00018EC -19-01APR13-1/1

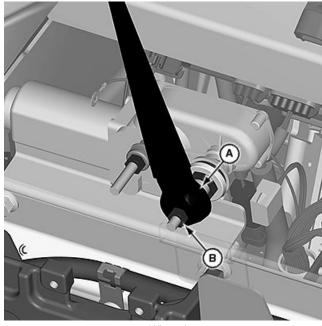
LV17228 —UN—28MAR13

LV17229 —UN—28MAR13

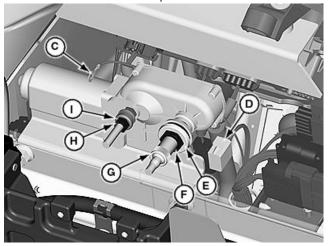
- 1. Disconnect battery negative (—) cable.
- 2. Remove hood. (See Remove and Install Hood in Section 80, Group 25.)
- 3. Remove cowl cover. (See Remove and Install Center Control Console in Section 90, Group 10.)
- 4. Remove nut and washer (B), and wiper arm (A).
- 5. Disconnect ground wire (C) and electrical connector (D) from motor.
- 6. Remove bushing (G).
- 7. Remove motor shaft nut (F), cupped washer and rubber washer (E).
- 8. Remove nut (H), cupped washer and rubber washer (I), then remove wiper motor.

NOTE: Wiper motor is not repairable.

- 9. Replace front wiper motor.
- 10. Install cupped washer and rubber washer (E), and motor shaft nut (F) onto motor shaft.
- 11. Install cupped washer and rubber washer (I) and nut (H) onto mounting stud.
- 12. Install bushing (G).
- 13. Install wiper arm (A), nut and washer (B).
- Connect ground wire (C) and electrical connector (D) to motor.
- 15. Install cowl cover. (See Remove and Install Center Control Console in Section 90, Group 10.)
- Install hood. (See Remove and Install Hood in Section 80, Group 25.)
- 17. Connect battery negative (—) cable.



Wiper Arm



Wiper Motor

- A—Wiper Arm
- B-Nut and Washer
- C—Ground Wire
- D—Electrical Connector
- E—Cupped Washer and Rubber Washer
- F-Motor Shaft Nut
- G—Bushing
- H—Nut
- I— Cupped Washer and Rubber Washer

SW03989,00018ED -19-03APR13-1/1

LV17225 —UN—28MAR13

-V17226 —UN—28MAR13

Replace Hand Throttle Position Sensor (OOS)

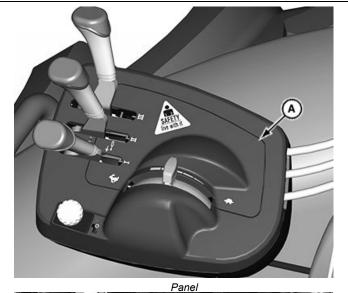
NOTE: Tractor with electrohydraulic hitch is shown. The following procedure is similar for tractor with mechanical hitch.

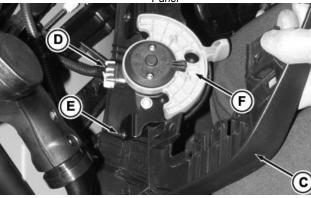
1. Remove panel (A).

NOTE: Panel (A) is snap fit with tabs into top panel (C).

- 2. Remove screw (B).
- 3. Remove top panel (C).
- 4. Disconnect wire connector (D).
- 5. Remove screws (E).
- 6. Remove hand throttle control assembly (F).

A—Panel B—Screw C—Top Panel D—Wire Connector
E—Screw (2 used)
F—Hand Throttle Control
Assembly





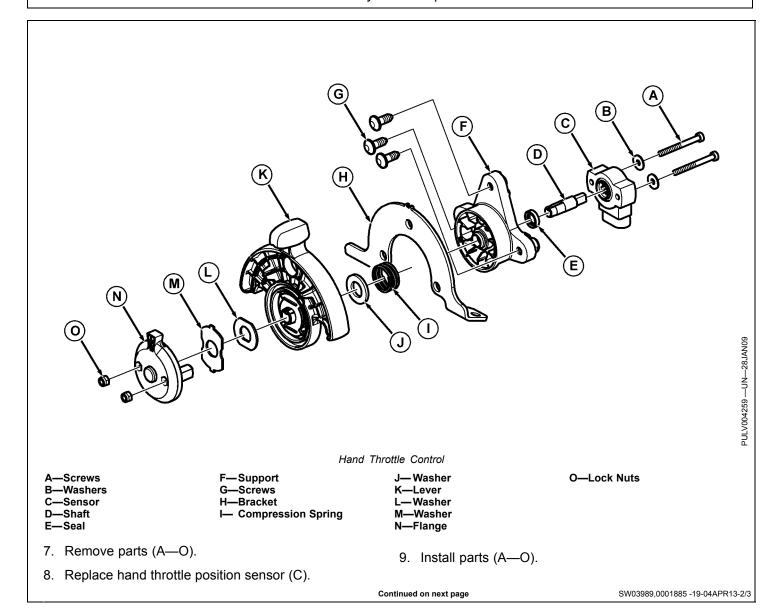
Hand Throttle Control Assembly

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SW03989,0001885 -19-04APR13-1/3

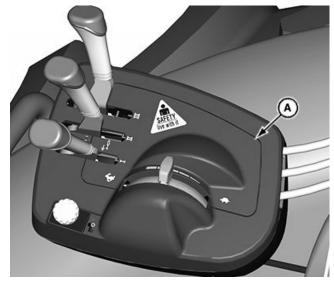
LV17344 —UN—04APR13

PULV004258 —UN—07JAN09



- Install hand throttle control assembly (F) and screws (E).
- 11. Connect wire connector (D).
- 12. Install top panel (C) and screw (B).
- 13. Install panel (A).

A—Panel B—Screw C—Top Panel D—Wire Connector
E—Screw (2 used)
F—Hand Throttle Control
Assembly



Panel

Hand Throttle Control Assembly

SW03989,0001885 -19-04APR13-3/3

LV17344 —UN—04APR13

PULV004258 —UN—07JAN09

Replace Hand Throttle Position Sensor (Cab)

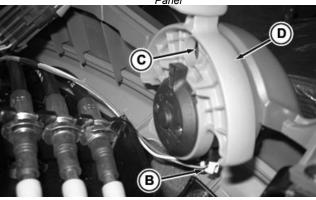
1. Remove panel (A).

NOTE: Panel (A) is snap fit with tabs into top panel.

- 2. Disconnect wire connector (B).
- 3. Remove screws (C).
- 4. Remove hand throttle control assembly (D).

A—Panel B—Wire Connector C—Screw (3 used) D—Hand Throttle Control Assembly





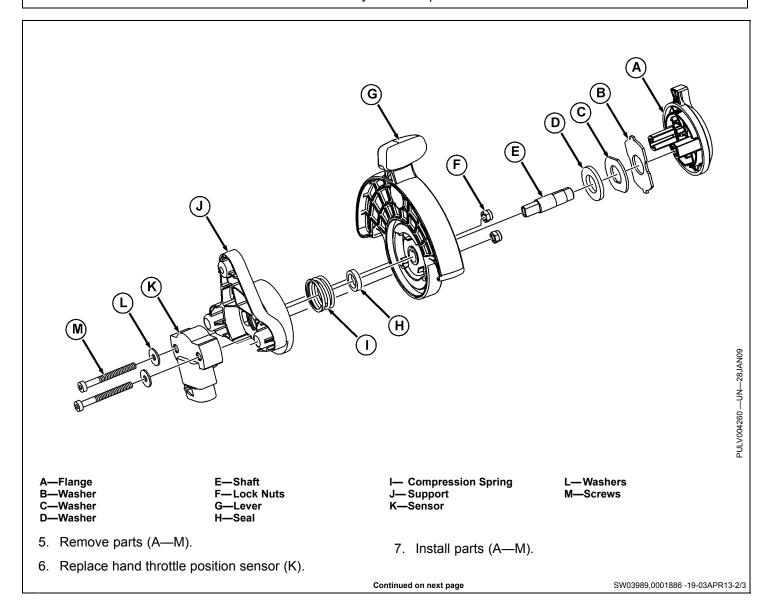
Hand Throttle Control Assembly

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SW03989,0001886 -19-03APR13-1/3

LV17346 —UN-04APR13

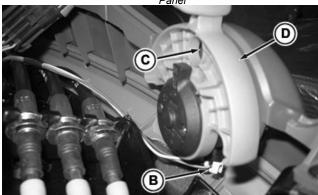
PULV004261 —UN-07JAN09



- 8. Install hand throttle control assembly (D) and screws (C).
- 9. Connect wire connector (B).
- 10. Install panel (A).

A—Panel B—Wire Connector C—Screw (3 used) D—Hand Throttle Control Assembly





Hand Throttle Control Assembly

SW03989,0001886 -19-03APR13-3/3

LV17346 —UN—04APR13

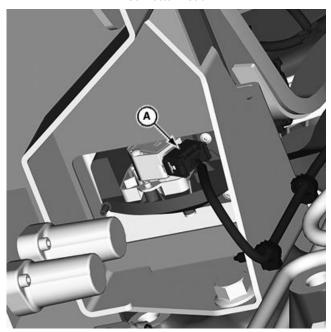
PULV004261 —UN-07JAN09

Replace Foot Throttle Position Sensor



Foot Throttle Position Sensor—Cab

Connector—Cab



Foot Throttle Position Sensor—OOS

Connector—OOS

A-Wire Connector

B— Cap Screw C—Foot Throttle Control Assembly

- 1. Disconnect battery negative (—) cable.
- 2. Disconnect wire connector (A).
- 3. Remove cap screws (B).

4. Remove foot throttle control assembly (C).

Continued on next page SW03989,0001887 -19-04APR13-1/7

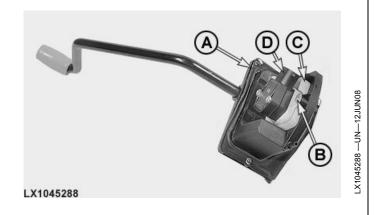
LV17348 —UN—04APR13

NOTE: Replace the potentiometers as complete assemblies (together with the toothed segment) only.

- 5. Remove seal (A) and screws (B).
- 6. Remove potentiometer (D) with toothed segment (C).

-Seal **B—Screws** **C—Toothed Segment**

D—Potentiometer

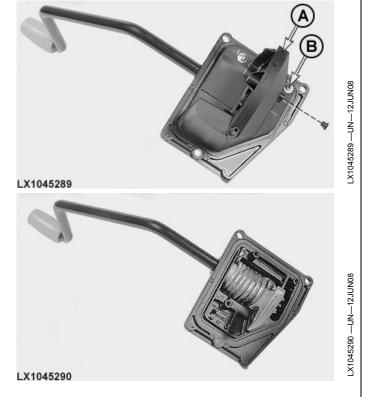


SW03989,0001887 -19-04APR13-2/7

- 7. Remove screws (B) and housing (A).
- 8. Check all the parts for signs of damage and replace as necessary.

A-Housing

B—Screws



SW03989,0001887 -19-04APR13-3/7

- 9. Install housing (A) and tighten screws (B).
- 10. Remove plug (C) from the housing.

A—Housing B—Screws

C-Plug



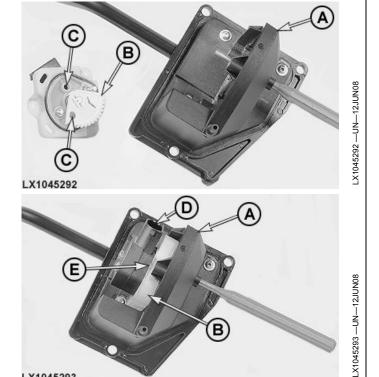
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SW03989,0001887 -19-04APR13-4/7

- 11. Move the accelerator pedal far enough to allow a punch with a diameter of 5 mm (0.2 in.) to pass through the holes in housing (A) and toothed segment of accelerator pedal.
- 12. Move toothed segment (B) until holes (C) are aligned. Then install potentiometer (D) with pretensioned toothed segment (B) in housing (D) using the punch. Tighten screws (E).

A—Housing **B—Toothed Segment** C—Holes

D—Potentiometer E-Screws

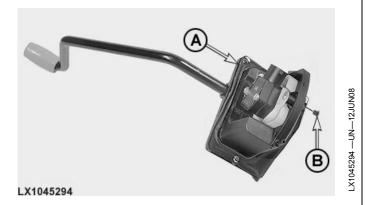


SW03989,0001887 -19-04APR13-5/7

13. Install seal (A) and plug (B).

A—Seal

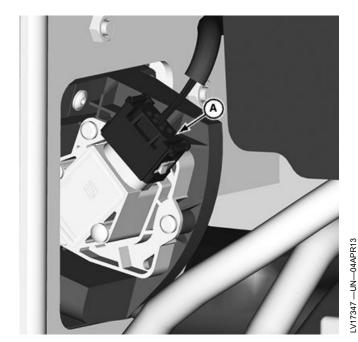
B—Plug



Continued on next page

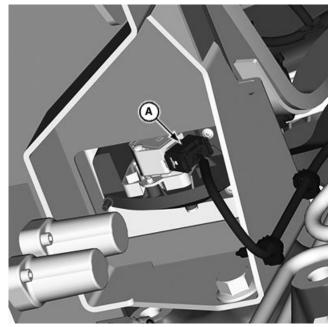
LX1045293

SW03989,0001887 -19-04APR13-6/7



Foot Throttle Position Sensor—Cab

Connector—Cab



Foot Throttle Position Sensor—OOS

Connector—OOS

A-Wire Connector

B— Cap Screw C—Foot Throttle Control Assembly

14. Install foot throttle pedal assembly (C) and tighten screws (B).

NOTE: After replacement, a calibration is not required.

- 15. Connect wire connector (A).
- 16. Connect battery negative (—) cable.

SW03989,0001887 -19-04APR13-7/7

LV17348 —UN—04APR13

-V17350 --- UN--- 04APR13

Replace Park Switch

NOTE: The park switch is located just to the left of the gear and range shift tower.

- 1. Disconnect battery negative (—) cable.
- 2. Disconnect connector (A).
- 3. Remove park switch (B).
- 4. Install new park switch (B) and tighten to specification.

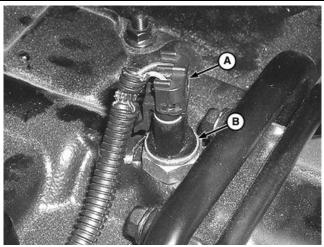
Specification

Park Switch—Torque......13—17 N·m (115—150 lb.-in.)

- 5. Connect wire connector (A).
- 6. Connect battery negative (—) cable.

A-Connector

B—Park Switch



Park Switch

SW03989,0001916 -19-04APR13-1/1

-V10868 —UN-070CT04

Replace Speed Lever Neutral Switch—PR Transmission with Creeper

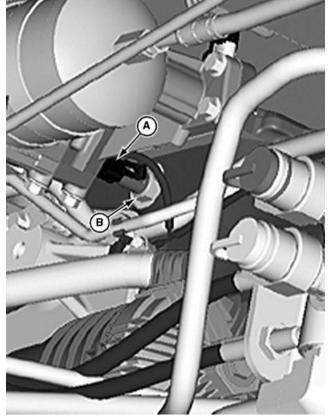
1. Disconnect battery negative (—) cable.

NOTE: Cab is shown, OOS is similar.

- 2. Disconnect wire connector (A).
- 3. Replace speed lever neutral switch (B).
- 4. Connect wire connector (A).
- 5. Connect battery negative (—) cable.

A—Wire Connector

B—Speed Lever Neutral Switch



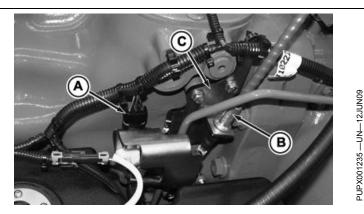
Speed Lever Neutral Switch

SW03989,0001D56 -19-23SEP13-1/1

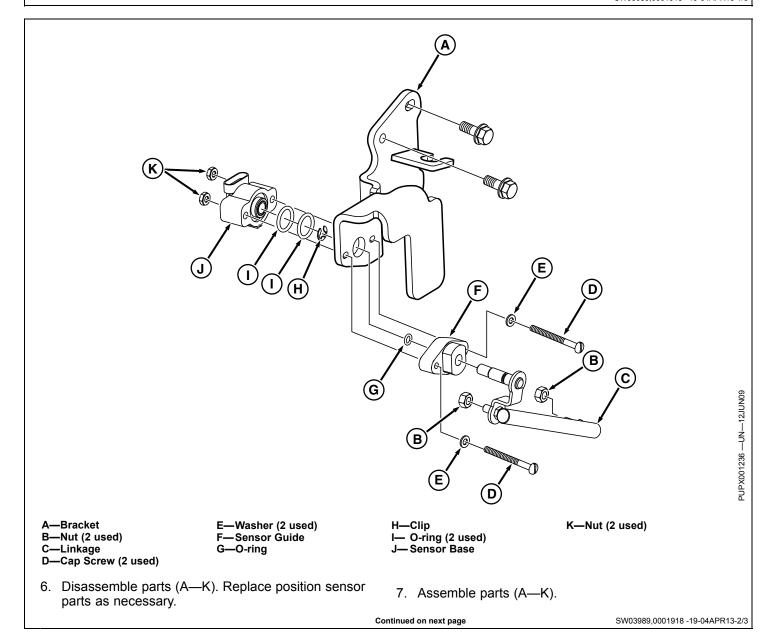
Replace Creeper Lever Position Sensor

- 1. Disconnect battery negative (—) cable.
- 2. Remove fuel tank. (See Remove, Inspect and Install Fuel Tank in Section 30, Group 05.)
- 3. Disconnect wire connector (A).
- 4. Disconnect creeper control cable (B).
- Remove bracket (C) along with creeper lever position sensor assembly.

A—Wire Connector B—Creeper Control Cable **C—Sensor Mounting Bracket**



SW03989,0001918 -19-04APR13-1/3

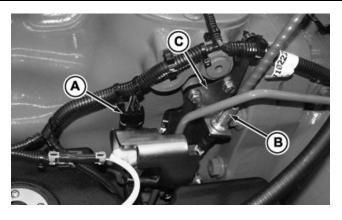


- 8. Install bracket (C) along with creeper lever position sensor assembly.
- 9. Connect creeper control cable (B).
- 10. Connect wire connector (A).
- 11. Install fuel tank. (See Remove, Inspect and Install Fuel Tank in Section 30, Group 05.)
- 12. Connect battery negative (—) cable.

A—Wire Connector

C—Sensor Mounting Bracket

B—Creeper Control Cable



SW03989,0001918 -19-04APR13-3/3

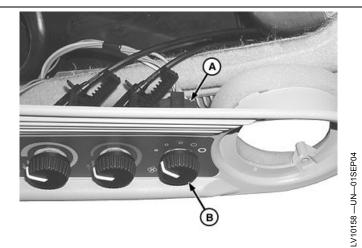
PUPX001235 —UN—12JUN09

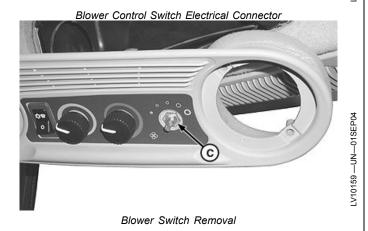
Replace Blower Control Switch

- 1. Remove cab control panel from cab liner.
- 2. Disconnect electrical connector (A).
- 3. Remove blower control knob (B) and nut (C).
- 4. Replace blower switch.
- 5. Install nut (C) and blower control knob (B).
- Connect electrical connector (A).
- 7. Install cab control panel.

-Electrical Connector **B—Blower Switch Knob**

C-Nut





SW03989.00018EE -19-03APR13-1/1

Replace A/C Deicing Switch

- 1. Remove HVAC housing cover from top of cab to access temperature control switch.
- 2. Remove blower motor resistor connector (D).
- 3. Remove clamp (F).
- 4. Loosen screw (G) and remove cable from temperature control switch.
- 5. Pull capillary sensing tube (E) out of evaporator core.
- 6. Disconnect wire leads (A).
- 7. Remove mounting bracket cap screws (C) and mounting bracket with A/C temperature control switch (B).
- 8. Remove rivets (H).
- 9. Replace A/C deicing switch (B) and secure with new rivets.
- 10. Install mounting bracket and cap screws (C).
- 11. Install capillary sensing tube (E) into the center of the evaporator core.
- 12. Install cable and clamp (F).

A—Wire Lead (2 used)

B—A/C Deicing Switch

-Cap Screw (3 used) -Blower Motor Resistor

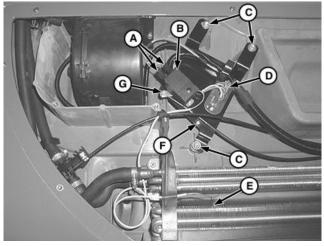
Connector

E-Capillary Sensing Tube

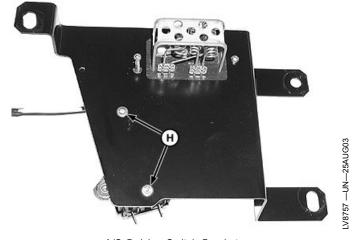
F-Clamp

-Screw

H-Rivet (2 used)



A/C Deicing Switch



A/C Deicing Switch Bracket

SW03989,00018EF -19-01APR13-1/2

LV8754 —UN—25AUG03

- 13. Attach cable to temperature control switch and adjust deicing switch. (See Adjust Deicing Switch in Section 90, Group 30.)
- 14. Connect wire leads (A).
- 15. Install blower motor resistor connector (D).
- 16. Place HVAC housing cover on cab roof and secure with screws.

A—Wire Lead (2 used) B—A/C Deicing Switch **E—Capillary Sensing Tube**

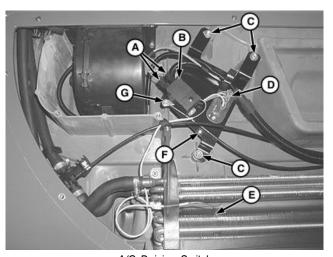
-Cap Screw (3 used)

F-Clamp

G—Screw

D—Blower Motor Resistor

Connector



A/C Deicing Switch

SW03989,00018EF -19-01APR13-2/2

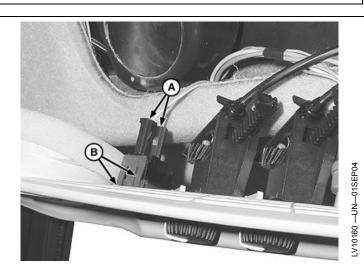
-V8754 —UN—25AUG03

Replace A/C On/Off Switch

- 1. Disconnect battery negative (—) cable.
- 2. Remove cab control panel from cab liner.
- 3. Disconnect wire leads (A).
- Remove A/C ON/OFF switch from cab control panel by pressing in on spring-loaded tabs (B) on both sides of switch.
- 5. Install new A/C ON/OFF switch into panel.
- 6. Connect wire leads (A).
- 7. Install cab control panel.
- 8. Connect battery negative (—) cable.

A-Wire Leads

B—Tabs

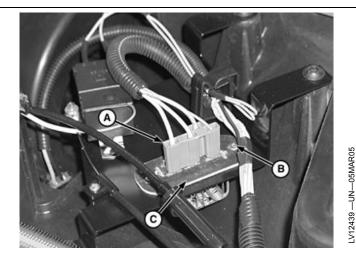


SW03989,000188B -19-01APR13-1/1

Replace HVAC Resistor

- Disconnect battery, negative (—) cable first.
- 2. Remove HVAC housing cover. (See Remove and Install HVAC Housing Cover in Section 90, Group 30.)
- 3. Disconnect wire connector (A).
- 4. Remove rivets (B) and HVAC resistor assembly (C).
- 5. Install new HVAC resistor assembly (C) and rivets (B).
- 6. Connect wire connector (A).
- 7. Install HVAC housing cover. (See Remove and Install HVAC Housing Cover in Section 90, Group 30.)
- 8. Connect battery, negative (—) cable last.

A—Wire Connector B—Rivet (2 used) C—HVAC Resistor Assembly



SW03989,000188C -19-01APR13-1/1

Replace A/C High/Low Pressure Switch

- 1. Disconnect battery negative (—) cable.
- 2. Remove HVAC housing cover. (See Remove and Install HVAC Housing Cover in Section 90, Group 30.)
- 3. Disconnect wire connector and remove A/C high/low pressure switch (A).
- 4. Install new A/C high/low pressure switch (A) and connect wire connector.
- 5. Install HVAC housing cover. (See Remove and Install HVAC Housing Cover in Section 90, Group 30.)
- 6. Connect battery negative (—) cable.

A—A/C High/Low Pressure Switch



SW03989,0001919 -19-04APR13-1/1

Replace Dome Light

- 1. Disconnect battery negative (—) cable.
- 2. Push in at the switch end of dome light lens (A), and remove lens (B).
- 3. Remove screws (C).
- 4. Pull on switch end of dome light (D) to release from dome light panel.
- 5. Disconnect electrical connector (E).
- Connect new dome light electrical connector (E).
- 7. Position new dome light and snap into place.
- 8. Install screws (C).
- 9. Install dome light lens (B).
- 10. Connect battery negative (—) cable.

-Switch End of Dome Light D—Switch End of Dome Light Lens

E—Electrical Connector

-Lens

C-Screws





LV10129 —UN—01SEP04

LV10128 —UN—01SEP04



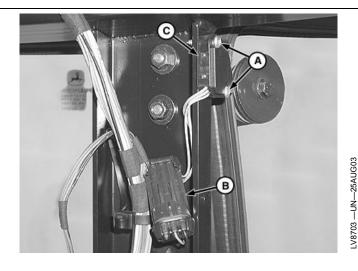
SW03989,000188E -19-01APR13-1/1

Replace Left Door Switch

1. Disconnect battery negative (—) cable

NOTE: The door switch is located at the upper end of the center cab post on left side of cab.

- 2. Remove center cab post cover.
- 3. Disconnect wire connector (B).
- 4. Remove screws (A) and switch (C).
- 5. Install new switch (C) and screws (A).
- 6. Connect wire connector (B).
- 7. Install center cab post cover.
- 8. Connect battery negative (—) cable.



A—Screw (2 used) B—Wire Connector C—Switch

SW03989,000188F -19-01APR13-1/1

Replace Seat Switch—Open Operator Station

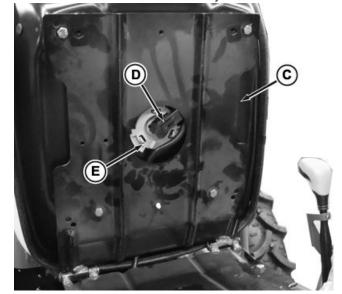
- 1. Disconnect battery negative (—) cable.
- 2. Disconnect wire connector.
- 3. Lower seat (A) and tilt forward on hinge (B).
- 4. Raise cover (C).
- 5. Disconnect wire connector (D).
- 6. Replace seat switch (D).
- 7. Connect wire connector (D).
- 8. Lower cover (C).
- 9. Return seat (A) to original position.
- 10. Connect wire connector.
- 11. Connect battery negative (—) cable.

A—Seat B—Hinge C—Cover

D—Wire Connector E—Seat Switch



Seat Assembly



Seat Switch

SW03989,00018F0 -19-01APR13-1/1

PULV004147 —UN—26DEC08

Replace Seat Switch—Cab

Air Suspension

- 1. Disconnect battery negative (—) cable.
- 2. Disconnect wire connector (A).
- 3. Remove screws (C) and seat cushion (B).
- 4. Disconnect wiring harness (E) and replace seat switch (D).
- 5. Connect wiring harness (E), install seat cushion (B), and screws(C). Connect wire connector (A).
- 6. Connect battery negative (—) cable.

A—Wire Connector B—Seat Cushion C—Screws D—Seat Switch E—Wiring Harness

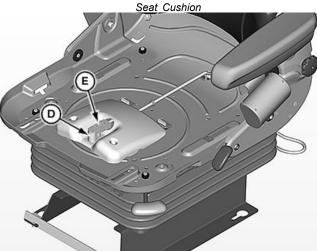


Disconnect Wire Connector



LV17219 —UN—28MAR13

LV11084 —UN—140CT04



Seat Switch

LV17220 —UN—28MAR13

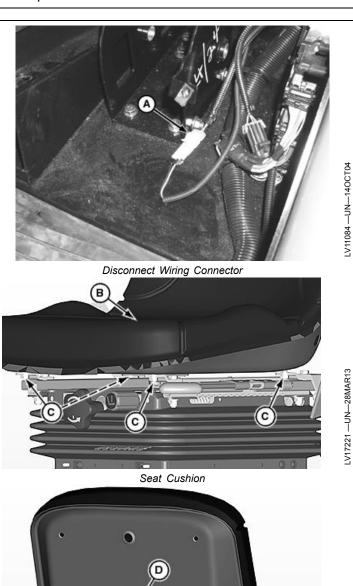
Continued on next page

SW03989,00018F1 -19-03APR13-1/2

Non-Air Suspension

- 1. Disconnect battery negative (—) cable.
- 2. Disconnect wire connector (A).
- 3. Remove screws (C) and lift seat assembly (B) to disconnect wiring harness from seat switch (D).
- Replace seat switch, connect wiring harness, and install seat assembly (B) to seat base with screws (C) removed earlier.
- 5. Connect battery negative (—) cable.

A—Wire Connector B—Seat Assembly C—Screws
D—Seat Switch





Seat Switch

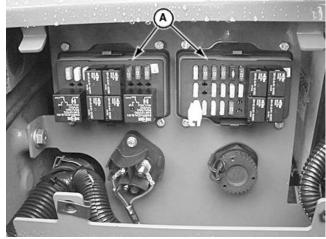
SW03989,00018F1 -19-03APR13-2/2

LV17222 —UN—28MAR13

Replace Load Center—Open Operator Station

Load center panels are integrated into the open operator station chassis harness. If replacement is necessary: (See Replace W308 Chassis Harness (OOS, PR) in Section 40, Group 15.)

A-Load Center



Load Center

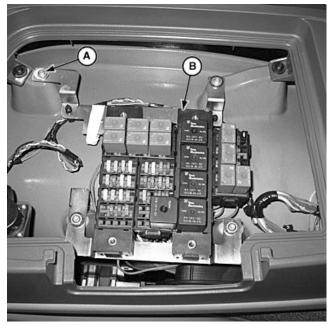
SW03989,000191A -19-04APR13-1/1

Replace Load Center—Cab

- 1. Disconnect battery negative (—) cable.
- 2. Remove left-side control console. (See Remove and Install Left-Side Control Console—Cab in Section 90, Group 10.)
- 3. Remove screws (A) and load center (B) with brackets.

NOTE: Individual blocks of load center can be replaced.

- 4. Disconnect wires from load center block to be replaced.
- 5. Replace damaged load center block.
- 6. Install wires.
- 7. Position load center (B) with brackets into left control console housing.
- 8. Install screws (A).
- 9. Install left-side control console. (See Remove and Install Left-Side Control Console—Cab in Section 90, Group 10.)
- 10. Connect battery negative (—) cable.



Remove Load Center

SW03989,00018F3 -19-01APR13-1/1

LV14600 —UN—11AUG11

Replace Electrohydraulic Control Unit (EHC)—OOS

- 1. Disconnect battery negative (—) cable.
- 2. If equipped, pull floor mat back to access lower cap screws of access panel.
- 3. Remove wing screws (A).
- 4. Remove access panel (B).
- 5. Disconnect wire connectors (D—F).
- 6. Remove upper and lower cap screws.
- 7. Remove electrohydraulic control unit (EHC) (C).
- 8. As necessary, install new electrohydraulic control unit (EHC) (C) with cap screws.
- 9. Connect wire connectors (D-F).
- 10. Install access panel (B) and wing screws (A).
- 11. If equipped, place floor mat back to original position.
- 12. Connect battery negative (—) cable.

NOTE: For replaced control unit, perform Programming Control Units in Section 245, Group 05B.

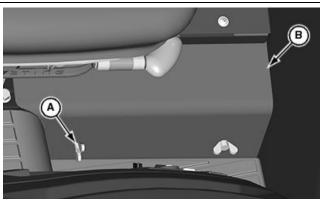
13. Calibrate control unit using following resources:

For EHC calibration, see:

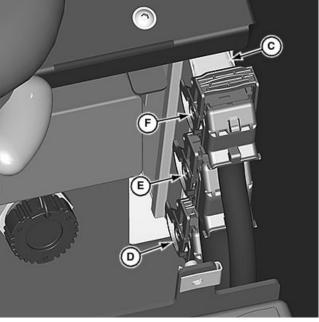
- Chassis Control Unit (CCU) Configuration and Calibration in Section 245, Group CCU
- Power Train Reverser (PTR) Control Unit Configuration and Calibration in Section 245, Group PTR

A—Wing Screws (2 used)
B—Access Panel
C—EHC Control Unit

D—A06X3 Connector E—A06X2 Connector F—A06X1 Connector



Access Panel



Electrohydraulic Control Unit (EHC)—OOS

SW03989,000191B -19-04APR13-1/1

-V17207 —UN—28MAR13

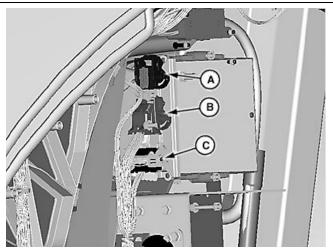
LV17206 —UN—28MAR13

Replace Electrohydraulic Control Unit (EHC)—Cab

- 1. Disconnect battery negative (—) cable.
- Remove left-side control console. (See Remove and Install Left-Side Control Console—Cab in Section 90, Group 10.)
- 3. Disconnect wire connectors (A, B, and C).
- Remove upper and lower cap screws and plastic washers.
- 5. Remove electrohydraulic control unit (EHC).
- As necessary, install new electrohydraulic control unit (EHC) with cap screws and plastic washers. Place one plastic washer between the EHC and the inner mounting nut, and one under the head of each cap screw.
- 7. Connect wire connectors (A, B, and C).
- 8. Install left-side control console. (See Remove and Install Left-Side Control Console—Cab in Section 90, Group 10.)
- 9. Connect battery negative (—) cable.

NOTE: For replaced control unit, perform Programming Control Units in Section 245, Group 05B.

10. Calibrate control unit using following resources:



Electrohydraulic Control Unit (EHC)—Cab

A—A06X1 Connector B—A06X2 Connector C-A06X3 Connector

For EHC calibration, see:

- Chassis Control Unit (CCU) Configuration and Calibration in Section 245, Group CCU
- Power Train Reverser (PTR) Control Unit Configuration and Calibration in Section 245, Group PTR

SW03989,000191C -19-04APR13-1/1

LV15370 —UN-24JAN12

Replace Engine Control Unit (ECU)

NOTE: OOS procedure shown, Cab is similar.

- 1. Raise hood.
- 2. Disconnect battery negative (—) cable.
- 3. Remove cap screws (A) and tilt engine control unit (ECU) (B) out of side of engine compartment.

NOTE: ECU connector retaining screws are held in place with captive washers.

- 4. Remove ECU connector retaining screw caps and loosen ECU connector retaining screws (C).
- 5. Disconnect wire connectors (D, E and F).
- 6. Remove ECU (B).
- 7. Connect wire connectors (D, E and F).
- 8. Tighten ECU connector retaining screws (C) and install ECU connector retaining screw caps.
- 9. Tilt ECU (B) into side of engine compartment and install cap screws (A).
- 10. Connect battery negative (—) cable.
- 11. Lower hood.

NOTE: For replaced control unit, perform Programming Control Units in Section 245, Group 05B.

12. Calibrate control unit using following resources:

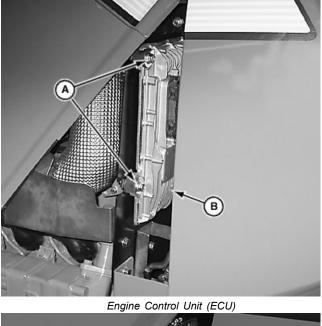
For ECU calibration:

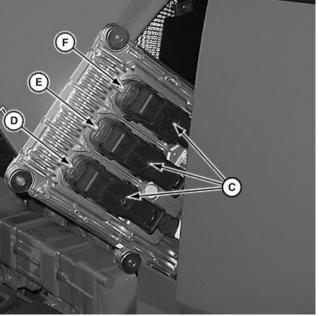
 See 4045 PowerTech OEM Diesel Engines Below 130kW (174 hp) (Interim Tier 4/Stage III B platform) CTM114619 or relevant CTM.

A—Cap Screws
B—Engine Control Unit (ECU)
C—ECU Connector Retaining

D—A09X1 Connector E—A09X2 Connector F—A09X3 Connector

Screws





ECU Connector Retaining Screws

SW03989,000191D -19-04APR13-1/1

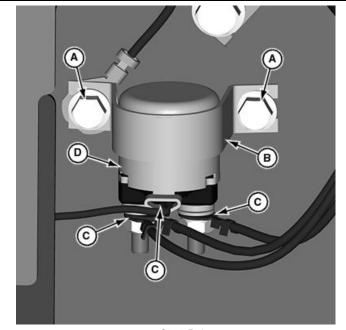
LV15378 —UN—24JAN12

-V15377 —UN—24JAN12

Replace Start Relay

NOTE: OOS is shown; Cab is similar.

- 1. Disconnect battery negative (—) cable.
- 2. Remove center control console cover. (See Remove and Install Center Control Console in Section 90, Group 10.)
- 3. Remove screws (A) and clamp (B).
- 4. Remove wire terminals (C).
- 5. Remove start relay (D).
- 6. Install new start relay (D).
- 7. Connect wire terminals (C).
- 8. Install clamp (B) and screws (A).
- Install center control console cover. (See Remove and Install Center Control Console in Section 90, Group 10.)
- 10. Connect battery negative (—) cable.



Start Relay

A—Screws B—Clamp C—Wire Terminals D—Start Relay

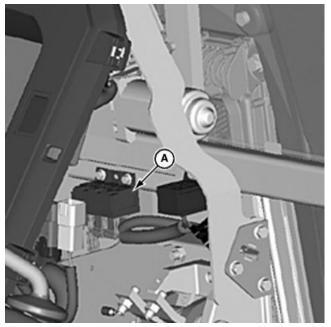
SW03989,000191F -19-04APR13-1/1

-V17223 -- UN-28MAR13

Replace Neutral Relay

- 1. Disconnect battery negative (—) cable.
- Remove center control console cover. (See Remove and Install Center Control Console in Section 90, Group 10.)
- 3. Replace relay at location (A).
- Install center control console cover. (See Remove and Install Center Control Console in Section 90, Group 10.)
- 5. Connect battery negative (—) cable.

A-Neutral Relay Location



Neutral Relay Location

SW03989,000191E -19-04APR13-1/1

LV17354 —UN-04APR13

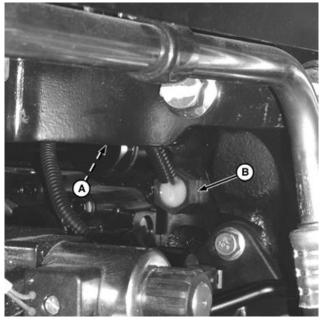
Replace Top Shaft Speed Sensor

NOTE: Top shaft speed sensor is located on the right side of the transmission.

- Disconnect negative (—) battery cable.
- 2. Drain approximately 1—2 gallons of oil from the transmission/hydraulic system.
- 3. Disconnect wire connector (A) and remove top shaft speed sensor (B).
- 4. Install a new top shaft speed sensor (B) and O-ring. Tighten to specification.

Specification

- 5. Connect wire connector (A).
- Fill transmission/hydraulic fluid to correct level. (See Transmission and Hydraulic Oil in Section 10, Group 15.)
- 7. Connect battery negative (—) cable.



Top Shaft Speed Sensor

A-Wire Connector

B—Top Shaft Speed Sensor

SW03989,0001920 -19-04APR13-1/1

-UN-040CT04

Replace Wheel Speed Sensor

NOTE: The wheel speed sensor is located on the left-side of the transmission, in front of the axle housing.

- Disconnect battery negative (—) cable.
- 2. Drain transmission/hydraulic fluid.
- 3. Disconnect wire connector (A).
- 4. Replace wheel speed sensor (B) and O-ring. Tighten to specification.

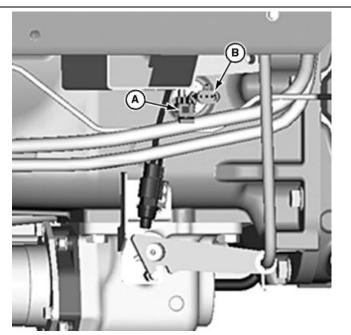
Specification

Wheel Speed

- 5. Connect wire connector (A).
- 6. Connect battery negative (—) cable.
- Fill transmission/hydraulic fluid to correct level. (See Transmission and Hydraulic Oil in Section 10, Group 15.)

A-Wire Connector

B—Wheel Speed Sensor



Wheel Speed Sensor

SW03989,0001921 -19-04APR13-1/1

LV17355 -- UN--04APR13

Replace Enable Pressure Sensor

- 1. Disconnect battery negative (—) cable.
- 2. Remove two cap screws (A) and shield (B).
- 3. Disconnect wire connector (C).
- 4. Replace sensor (D) and O-ring. Tighten to specification.

Specification

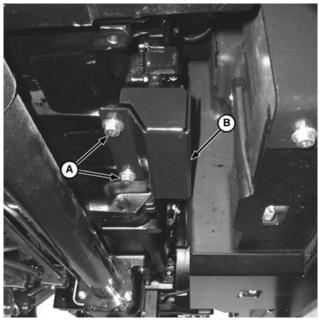
Enable Pressure

Sensor—Torque......13—17 N·m (115—150 lb.-in.)

- 5. Connect wire connector (C).
- 6. Install shield (B) with two cap screws (A).

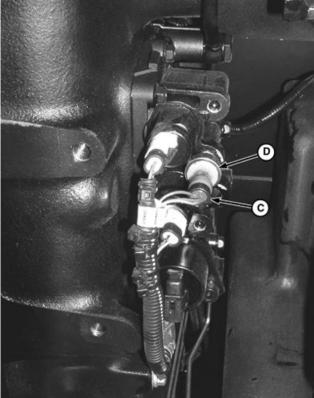
A—Cap Screw (2 used) B—Shield **C—Wire Connector**

D—Sensor



LV10689 —UN-040CT04





LV10711 —UN-040CT04

Enable Pressure Sensor

SW03989,0001923 -19-04APR13-1/1

Replace Hydraulic Oil Temperature Sensor

- 1. Disconnect battery negative (—) cable.
- 2. Disconnect wire connector (A).
- 3. Remove hydraulic oil temperature sensor (B) and install a new one. Tighten to specification.

Specification

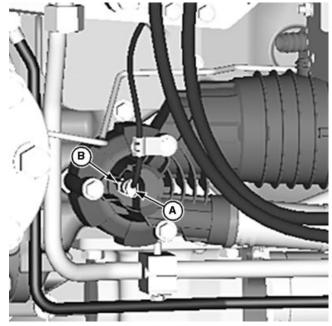
Hydraulic Oil Temperature

Sensor—Torque......13—17 N·m (115—150 lb.-in.)

- 4. Connect wire connector (A).
- Connect battery negative (—) cable.

A-Wire Connector

B—Hydraulic Oil Temperature Sensor



Hydraulic Oil Temperature Sensor

SW03989,0001922 -19-04APR13-1/1

LV17356 —UN-04APR13

LV10646 —UN—22SEP04

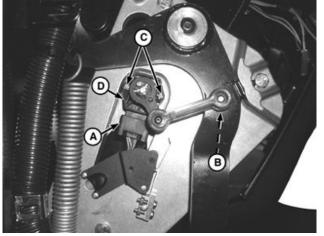
Replace Clutch Pedal Position Sensor

- 1. Disconnect battery negative (—) cable.
- 2. Remove center control console cover. (See Remove and Install Center Control Console in Section 90, Group 10.)
- 3. Disconnect wire connector (A).
- 4. Remove ball stud (B) from the pedal.
- 5. Remove two screws (C) and clutch pedal position sensor (D).

A—Wire Connector B—Ball Stud

C—Screw (2 used) D—Clutch Pedal Position

Sensor



Clutch Pedal Position Sensor

Continued on next page

SW03989,0001924 -19-04APR13-1/3

- 6. Remove screw (E), lever (G) and torsion spring (F).
- 7. Remove stop (H) from clutch pedal position sensor (I).

NOTE: Position sensor linkage needs to be disassembled only if it is damaged.

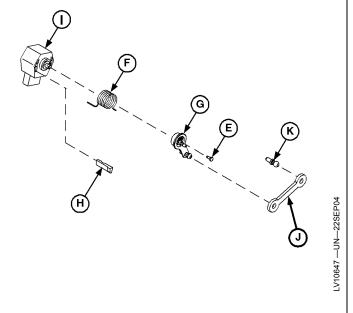
- 8. Remove link arm (J) and ball stud (K).
- 9. Install stop (H) in clutch position sensor (I).
- 10. Press ball stud (K) into link arm (J).
- 11. Press link arm (J) onto ball stud on lever (G).
- 12. Install torsion spring (F) and lever (G) on clutch pedal position sensor (I) with screw (E).

E—Screw
F—Torsion Spring
G—Lever

H-Stop

I— Clutch Pedal Position

Sensor J—Link Arm K—Ball Stud

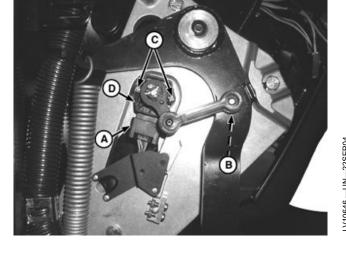


SW03989,0001924 -19-04APR13-2/3

- 13. Install clutch pedal position sensor assembly (D) with two screws (C).
- 14. Connect wire connector (A).
- 15. Install ball stud (B) on clutch pedal.
- Install center control console cover. (See Remove and Install Center Control Console in Section 90, Group 10.)
- 17. Connect battery negative (—) cable.

A—Wire Connector B—Ball Stud

C—Screw (2 used)
D—Clutch Pedal Position
Sensor

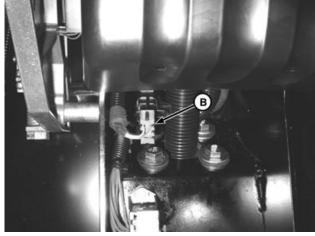


SW03989,0001924 -19-04APR13-3/3

Replace Clutch Disengage Switch

- 1. Disconnect battery negative (—) cable
- Remove center control console cover. (See Remove and Install Center Control Console in Section 90, Group 10.)
- 3. Disconnect wire connector (B).

B—Wire Connector



Wiring Connector

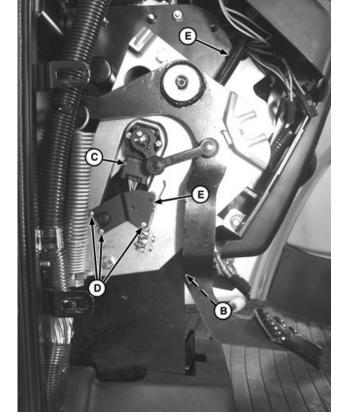
SW03989,0001925 -19-04APR13-1/3

LV10651 —UN—22SEP04

- 4. Disconnect wire connector (C) from clutch position sensor.
- 5. Remove three screws (D).
- 6. Remove clutch disengage switch and harness (E) from the console.
- 7. Route the new clutch disengage switch and harness (E) between the bracket and console and route the wire connector (B) to the bottom of the console.
- 8. Connect wire connector (C) to the clutch position sensor.
- 9. Install the clutch disengage switch and harness (E) with three screws (D).

B—Wire Connector C—Wire Connector

D—Screw (3 used)
E—Clutch Disengage Switch
and Harness



Clutch Disengage Switch

Continued on next page

SW03989,0001925 -19-04APR13-2/3

LV10652 —UN—02NOV04

- 10. Connect wire connector (B).
- Install center control console cover. (See Remove and Install Center Control Console in Section 90, Group 10.)
- 12. Connect battery negative (—) cable.

B—Wire Connector



Clutch Disengage Switch Wiring Connector

SW03989,0001925 -19-04APR13-3/3

LV10651 —UN—22SEP04

Replace Rear PTO Speed Sensor

- 1. Disconnect battery negative (—) cable.
- 2. Disconnect wire connector (A) and remove rear PTO speed sensor (B).
- 3. Install new rear PTO speed sensor (B). Tighten to specification.

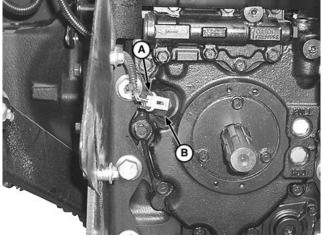
Specification

Rear PTO Speed

- 4. Connect wire connector (A).
- 5. Connect negative (—) battery cable.

A—Wire Connector

B—Rear PTO Sensor

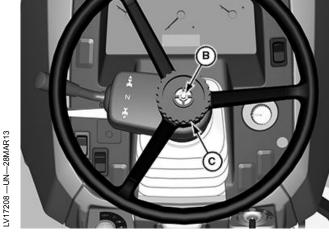


Rear PTO Speed Sensor

SW03989,0001926 -19-04APR13-1/1

Replace Forward Neutral Reverse (FNR) Switch





Lock Nut and Spacer

Cover

NOTE: Cab tractor is shown; open operator station is similar.

- 1. Disconnect battery negative (—) cable.
- 2. Remove cover (A).
- 3. Remove lock nut (B) and spacer (C).
- 4. Remove nut (D) and steering wheel (E).

A—Cover B—Lock Nut C—Spacer D—Nut

E—Steering Wheel



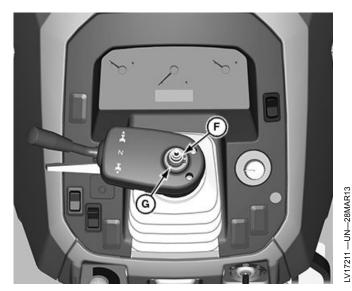
Nut and Steering Wheel

Continued on next page

SW03989,0001927 -19-04APR13-1/2

LV17210 —UN—28MAR13

LV17209 —UN—28MAR13



LV17379 —UN—04APR13

Snap Ring

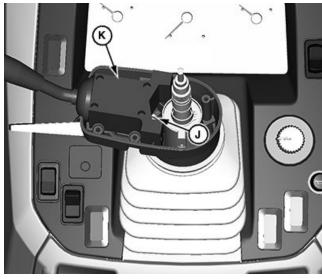
- 5. Remove snap ring (F), washer (G).
- 6. Remove screws (H) and cover (I).
- 7. Disconnect wire connector (J)
- 8. Remove forward neutral reverse (FNR) switch (K).
- 9. Replace FNR switch (K).
- 10. Install in reverse order.
- 11. Connect battery negative (—) cable.

F—Snap Ring G—Washer H—Screws (6 used) I— Cover

J-Wire Harness

K—Forward Neutral Reverse (FNR) Switch





LV17380 —UN—04APR13

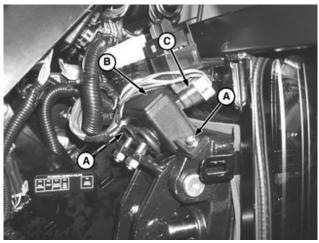
Forward Neutral Reverse (FNR) Switch

SW03989,0001927 -19-04APR13-2/2

Replace Brake Pedal Switch

- 1. Disconnect battery negative (—) cable.
- 2. Remove cowl cover. (See Remove and Install Center Control Console in Section 90, Group 10.)
- 3. Remove socket head screws (A).
- 4. Remove brake pedal switch (B) from bracket, and disconnect wire connector (C).
- 5. Connect wire connector (C) to new brake pedal switch (B) and install switch with socket head screws (A).
- 6. Install cowl cover. (See Remove and Install Center Control Console in Section 90, Group 10.))
- 7. Connect battery negative (—) cable.

A—Socket Head Screw (2 used) C—Wire Connector B—Brake Pedal Switch



Brake Pedal Switch

SW03989,00018FE -19-01APR13-1/1

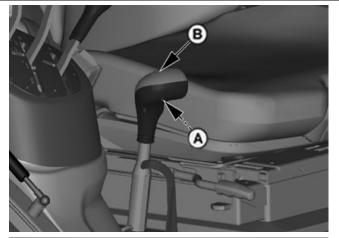
LV10688 —UN—04OCT04

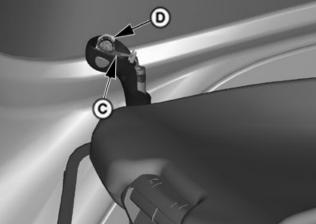
PULV003440 —UN—25SEP08

Replace High/Low Shifter Switch—PowrReverser Transmission

- 1. Disconnect battery negative (—) cable.
- 2. Remove three screws (A) and cover (B).
- 3. Disconnect wire connector (C).
- 4. Replace High/Low shifter switch (D).
- 5. Connect wire connector (C).
- 6. Install cover (B) and screws (A).
- 7. Connect battery negative (—) cable.

A—Screws (3 used) B—Cover C—Wire Connector D—High/Low Shifter Switch

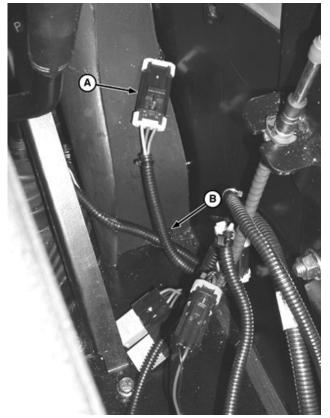




PULV003441 —UN—25SEP08

SW03989,0001898 -19-01APR13-1/1

Replace Mid-Mount SCV 3rd Function Switch



Remove Cover

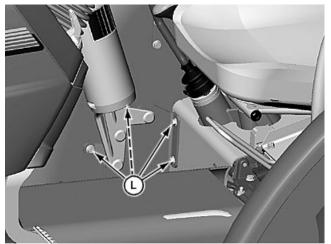
Disconnect Wiring Connector

- 1. Disconnect battery negative (—) cable.
- 2. **Cab Tractors:** remove right-side upholstery. (See Remove and Install Right-Side Upholstery in Section 90, Group 20)
- 3. Disconnect wire connector (A).
- 4. Remove screw (B) at the base of the joystick cover.
- 5. **Cab Tractors:** pull floor mat away from the base of the joystick housing.
- 6. Cab Tractors: remove screws (D).

Open Operator Station: remove screws (L).

7. Remove screws (C) and cover (E).

A—Wire Connector D—Screw (3 used)
B—Screw E—Cover
C—Screw (4 used) L—Screw (4 used)



Mounting Bolts OOS

Continued on next page

SW03989,00018FF -19-01APR13-1/5

LV15767 —UN—21MAY12

LV17218 —UN—28MAR13

- 8. Remove two screws and nuts (F).
- 9. Remove switch housing assembly (G).
- 10. Remove screws (H and I) and cover (J).

J—Cover

F—Screw and Nut (2 used) I— Screw **G—Switch Housing Assembly** H—Screw (2 used)



Remove Switch Housing Assembly



Remove Housing Cover

Continued on next page

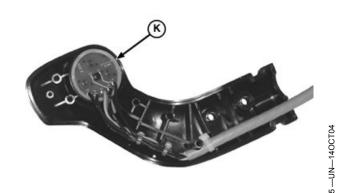
SW03989,00018FF -19-01APR13-2/5

LV11094 —UN—14OCT04

LV11093 —UN—14OCT04

11. Replace mid-mount solenoid switch (K).

K-Mid-Mount Solenoid Switch



Replace Mid-Mount Solenoid Switch

Continued on next page

SW03989,00018FF -19-01APR13-3/5

- 12. Install cover (J) with three screws (H and I).
- 13. Align holes in switch housing assembly (G) with holes in joystick shaft, and install switch housing using two screws and nuts (F).

F—Screw and Nut (2 used)
G—Switch Housing Assembly I- Screw J—Cover

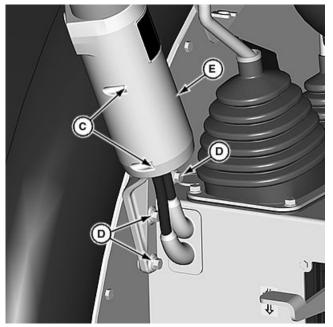
H—Screw (2 used)

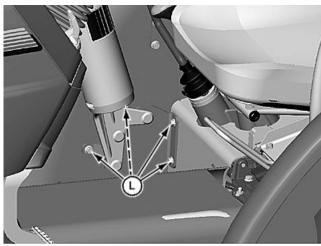


Install Switch Housing Assembly

Continued on next page

SW03989,00018FF -19-01APR13-4/5





Mounting Bolts OOS

Install Joystick Cover

- 14. Install cover (E) over joystick and secure using screws (C).
- 15. Cab Tractors: install screws (D).

Open Operator Station: install screws (L).

- 16. **Cab Tractors:** install floor mat around base of the joystick housing.
- 17. Install screw (B) at the base of the joystick cover.
- 18. Connect wire connector (A).
- 19. **Cab Tractors:** install right-side upholstery. (See Remove and Install Right-Side Upholstery in Section 90, Group 20)
- 20. Connect battery negative (—) cable.

 A—Wire Connector
 D—Screw (3 used)

 B—Screw
 E—Cover

 C—Screw (4 used)
 L—Screw (4 used)



Connect Wiring Connector

SW03989,00018FF -19-01APR13-5/5

LV11091 —UN—140CT04

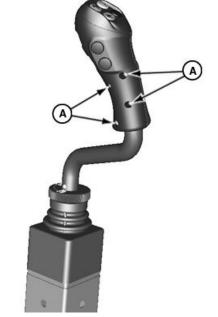
LV15767 —UN-21MAY12

Replace Multi-Function Control Lever Switch

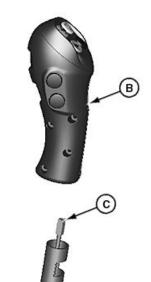
- 1. Disconnect battery negative (—) cable.
- 2. Remove screws (A).
- 3. Remove multi-function control lever switch (B) and disconnect wire connector (C).
- 4. Connect wire connector (C) and install multi-function control lever switch (B) using screws (A).

A—Screw (4 used)
B—Multi-Function Control
Lever Switch

C—Wire Connector



S48 Multi-Function Control Lever Switch



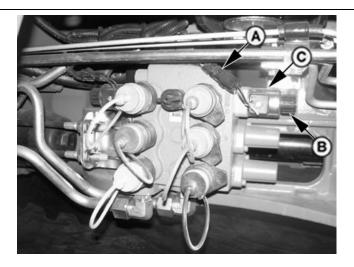
SW03989,0001900 -19-01APR13-1/1

LV16222 —UN—260CT12

Replace Mid-Mount SCV Solenoid—If Equipped

NOTE: Always replace O-rings. Damaged or used O-rings will leak.

- 1. Disconnect battery negative (—) cable.
- 2. Disconnect wire connector (A).
- 3. Remove retaining nut and O-ring (B) and solenoid coil (C).
- 4. Install new solenoid coil (C) and retaining nut (B) with O-ring.
- 5. Connect wire connector (A).
- 6. Connect battery negative (—) cable.



PULV003443 —UN-25SEP08

A—Wire Connector B—Retaining Nut with O-Ring C—Solenoid Coil

SW03989,0001929 -19-04APR13-1/1

Replace Clutch Enable Solenoid

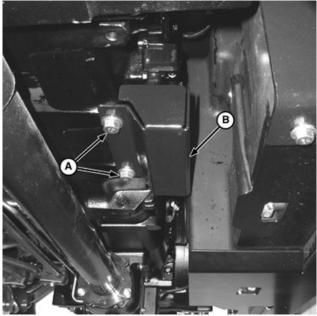
NOTE: The clutch enable solenoid is located on the left side of the transmission.

- 1. Disconnect battery negative (—) cable.
- 2. Remove two cap screws (A) and shield (B).
- 3. Disconnect wire connector (C).
- 4. Remove cap screws (D), retainer (E), solenoid (F) and O-ring.
- Install new solenoid (F) and O-ring using retainer (E) and cap screws (D). Tighten cap screws to specification.

Specification

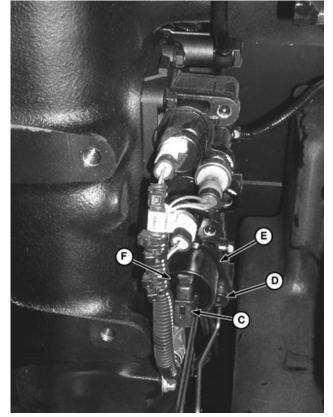
- 6. Connect wire connector (C).
- 7. Install shield (B) using two cap screws (A).
- 8. Connect battery negative (—) cable.

A—Cap Screw (2 used) D—Cap Screw B—Shield E—Retainer C—Wire Connector F—Solenoid



LV10689 —UN-040CT04





LV10702 —UN-04OCT04

Clutch Enable Solenoid

SW03989,0001901 -19-04APR13-1/1

Replace Transmission Forward (Low) Solenoid Valve

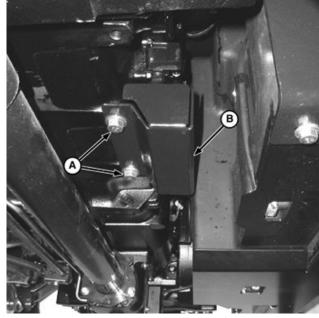
NOTE: The transmission forward (low) solenoid valve is located on the left side of the transmission.

- 1. Disconnect battery negative (—) cable.
- 2. Remove cap screws (A) and shield (B).
- 3. Disconnect wire connector.
- 4. Remove solenoid, valve spool and spring.
- 5. Install solenoid, valve spool, and spring. Tighten to specification.

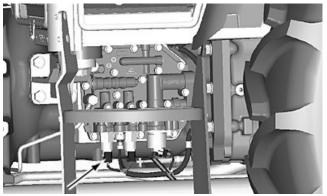
Specification

Transmission Forward

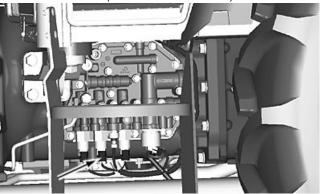
- 6. Connect wire connector.
- 7. Install shield (B) and cap screws (A).
- 8. Connect battery negative (—) cable.



Shield



Transmission Forward (Low) Solenoid Valve (Cab and OOS) (Located behind fuel tank)



Transmission Forward (Low) Solenoid Valve (Cab) (with License and Clearance Lights) (Located behind fuel tank)

SW03989,000192A -19-04APR13-1/1

LV16897 —UN—08MAR13

LV10689 —UN-040CT04

LV16900 —UN—08MAR13

Replace Transmission Forward (High) Solenoid Valve (with License and Clearance Lights)

NOTE: Transmission forward (high) solenoid valve is located on the left side of the transmission.

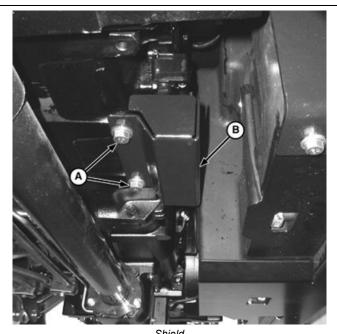
- 1. Disconnect battery negative (—) cable.
- 2. Remove cap screws (A) and shield (B).
- 3. Disconnect wire connector.
- 4. Remove transmission forward solenoid valve (high), valve spring and spool.
- Install valve spring, spool and new transmission forward (high) solenoid valve. Tighten to specification.

Specification

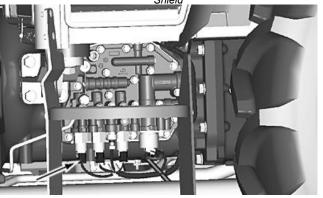
Transmission Forward (High) Solenoid

- 6. Connect wire connector.
- 7. Install shield (B) and cap screws (A).
- 8. Connect battery negative (—) cable.

A—Cap Screw (2 used) B—Shield



LV10689 —UN—04OCT04



LV16903 -- UN--08MAR13

Transmission Forward (High) Solenoid Valve (with License and Clearance Lights)

SW03989,000192B -19-04APR13-1/1

Replace Transmission Reverse Solenoid Valve

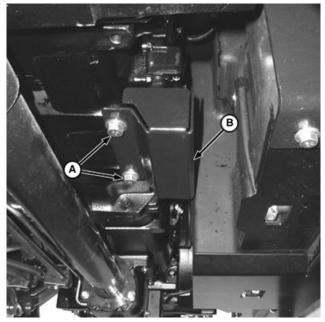
NOTE: The transmission reverse solenoid is located on the left side of the transmission.

- 1. Disconnect battery negative (—) cable.
- 2. Remove cap screws (A) and shield (B).
- 3. Disconnect wire connector.
- 4. Remove solenoid, valve spool and spring.
- 5. Install solenoid, valve spool, and spring. Tighten to specification.

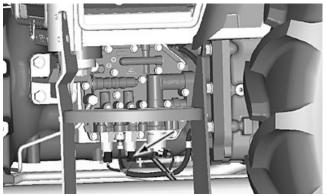
Specification

Transmission Reverse

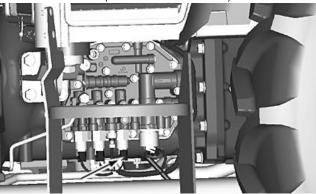
- 6. Connect wire connector.
- 7. Install shield (B) and cap screws (A).



Remove Shield



Transmission Reverse Solenoid Valve (Cab and OOS) (Located behind fuel tank)



Transmission Reverse Solenoid Valve (Cab) (with License and Clearance Lights) (Located behind fuel tank)

SW03989,000192C -19-04APR13-1/1

LV16898 —UN—08MAR13

LV10689 —UN-040CT04

LV16901 —UN—08MAR13

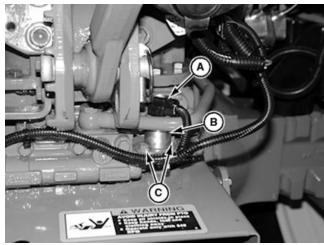
Replace PTO Solenoid Valve

- 1. Disconnect battery negative (—) cable.
- 2. Disconnect wire connector (A).
- 3. Remove cap screws (C)
- 4. Remove PTO solenoid valve (B).
- 5. Install new PTO solenoid valve (B).
- 6. Install cap screws (C). Tighten to specification.

Specification

PTO Solenoid Valve Cap

- 7. Connect wire connector (A).
- 8. Connect battery negative (—) cable.



PTO Solenoid Valve

A—Wire Connector B—PTO Solenoid Valve C—Cap Screw (2 used)

SW03989,000192D -19-04APR13-1/1

Replace EH MFWD Solenoid

- 1. Disconnect battery negative (—) cable.
- 2. Disconnect wire connector (A).
- 3. Remove cap screws (B) and EH MFWD solenoid (C).
- 4. Replace EH MFWD solenoid
- 5. Install EH MFWD solenoid (C) with cap screws (B). Tighten cap screws to specification.

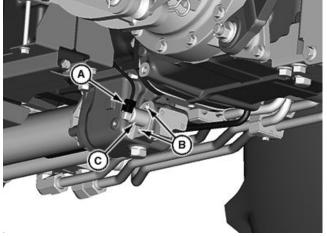
Specification

EH MFWD Solenoid Cap

Screw—Torque.....9—11 N·m (80—97 lb.-in.)

- 6. Connect wire connector (A).
- 7. Connect battery negative (—) cable.

A—Wire Connector B—Cap Screw (2 used) C—EH MFWD Solenoid



EH MFWD Solenoid

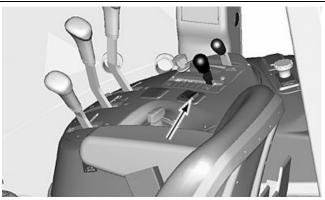
SW03989,000192E -19-04APR13-1/1

LV17341 —UN—03APR13

LV17342 —UN—04APR13

Replace EH MFWD Switch

- 1. Disconnect battery negative (—) cable.
- Remove right-side control console. (See Remove and Install Right-Side Control—Cab in Section 90, Group 10.)
- 3. Remove EH MFWD switch and disconnect wire harness connector.
- Connect wire harness connector and install EH MFWD switch.
- Install right-side control console. (See Remove and Install Right-Side Control—Cab in Section 90, Group 10.)
- 6. Connect battery negative (—) cable.



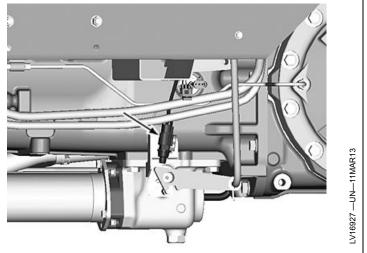
EH MFWD Switch Location

SW03989,000192F -19-04APR13-1/1

-V16918 -- UN--11MAR13

Replace MFWD (Mechanical) Lever Position Switch

- 1. Disconnect battery negative (—) cable.
- Remove MFWD lever position switch and disconnect connector.
- 3. Connect wire connector and install MFWD lever position switch.
- 4. Perform lever position switch adjustment procedure. (See MFWD (Mechanical) Engaged Indicator Switch Adjustment in Diagnostic Technical manual, Section 250, Group 50AA.)
- 5. Connect battery negative (—) cable.



MFWD (Mechanical) Lever Position Switch

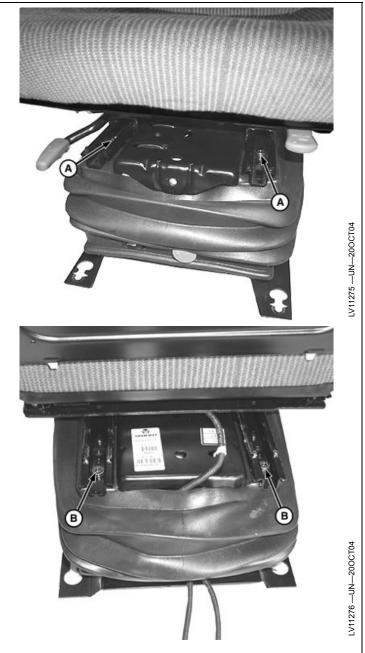
SW03989,0001930 -19-04APR13-1/1

Replace Seat Height Control Switch

- 1. Disconnect battery negative (—) cable.
- 2. Remove seat assembly. (See Remove and Install Seat and Support—Open Operator's Station and Remove and Install Seat and Support—Cab in Section 90, Group 05.)
- 3. Move the seat to the rear-most adjustment and remove screws (A).
- 4. Move the seat forward and remove screws (B).
- 5. Remove the seat from the seat base.

A-Screw (2 used)

B-Screw (2 used)



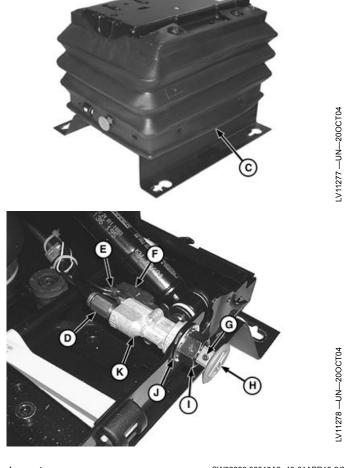
Continued on next page

SW03989,00018A3 -19-01APR13-1/3

- 6. Remove cover (C) from the seat base.
- 7. Disconnect air line (D).
- 8. Disconnect wires (E and F).
- 9. Loosen set screw (G) and remove knob (H).
- 10. Remove nut (I), lock washer (J) and switch (K).
- 11. Install new switch (K) using lock washer (J) and nut (I).
- 12. Install knob (H) and tighten set screw (G).
- 13. Connect air line (D) and wires (E and F).
- 14. Install cover (C) on seat base.

C—Cover
D—Air Line
E—Wire
F—Wire
G—Set Screw

H—Knob I— Nut J—Lock Washer K—Switch



Continued on next page

SW03989,00018A3 -19-01APR13-2/3

- 15. Install seat on seat base and install rear mounting screws (B).
- 16. Move seat to rear-most adjustment and install front mounting screws (A).
- 17. Install seat assembly. (See Remove and Install Seat and Support—Open Operator's Station and Remove and Install Seat and Support—Cab in Section 90, Group 05.)
- 18. Connect battery negative (—) cable.

A—Screw (2 used)

B-Screw (2 used)





SW03989,00018A3 -19-01APR13-3/3

LV11275 —UN-200CT04

LV11276 —UN-20OCT04

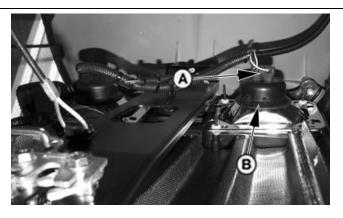
Replace Headlight Bulb

CAUTION: Halogen bulbs contain gas under pressure. Handling a bulb improperly could cause it to shatter into flying fragments. (See Handle Halogen Light Bulbs Safely, in this section.)

- 1. Raise hood.
- 2. Disconnect wiring harness plug (A).
- 3. Remove dust boot (B).
- 4. Unlatch retaining spring (C) and remove light bulb (D).
- 5. Install new bulb in reverse order of removal.
- 6. Adjust headlights, if necessary.

A—Wiring Harness Plug B—Dust Boot

C—Retaining Spring D—Light Bulb



PULV000162 —UN-300CT07



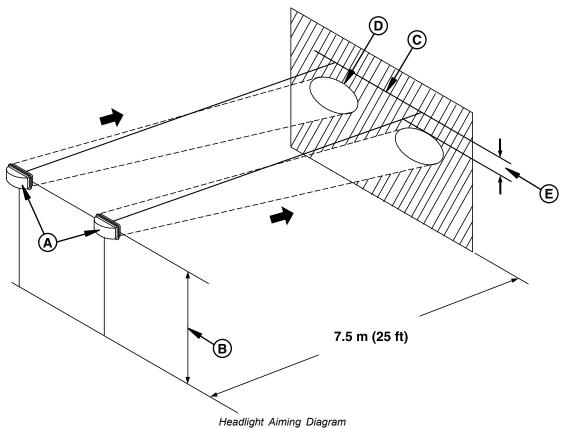


)—NO— 7166.

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SW03989,00018A4 -19-01APR13-1/2

Adjust headlights



A—Headlights B—Distance from Center of Headlight to Ground C—Horizontal Line on Wall D—Border of Bright Area E-10% of Distance (B)

- 1. Park tractor on a level surface with headlights (A) 7.5 m (25 ft) from a vertical wall.
- 2. Measure distance (B) from the center of a headlight to the ground.
- 3. Mark a horizontal line (C) on the wall, at the same distance from the ground as (B).
- 4. Set headlights on low beam and observe bright areas on the wall.
- 5. Use screws at the back of lights for adjustment.

SW03989,00018A4 -19-01APR13-2/2

PULV000659 —UN—05MAY08

Replace Warning Light Bulb—Cab

NOTE: Bulb replacement procedures for front and rear warning lights are the same. Rear left side shown.

- Remove mounting screws (A) securing housing (B) to cab roof.
- 2. Remove bulb and socket (C) from housing.
- 3. Pull bulb from socket.
- 4. Install new bulb and socket into housing.

NOTE: If equipped with auxiliary work light kit: Apply thread lock and sealer (medium strength) to threads of mounting screws (A).

5. Install housing and screws to cab roof.

A—Mounting Screw (2 used) C—Bulb and Socket B—Housing



LV5559 —UN—29NOV00



LV5560 —UN—29NOV00

SW03989,00018A5 -19-01APR13-1/1

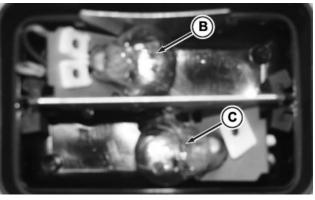
Replace Turn/Warning Light and/or Clearance Light Bulb—Cab

NOTE: Bulb replacement is the same for turn/warning light and/or clearance light.

- 1. Remove screws and lens housing (A).
- 2. Push and twist bulb (B or C) to remove from socket.
- 3. Install new bulb, lens housing and screws.

A—Lens Housing B—Turn/Warning Light Bulb C—Clearance Light Bulb





SW03989,00018A6 -19-01APR13-1/1

PULV004550 -- UN-13JUN09

PULV004549 —UN—13JUN09

LV14850 —UN—040CT11

Replace Tail/Brake Light and/or Turn/Warning Light Bulb—Cab

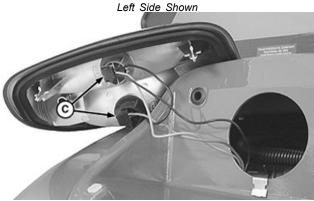
NOTE: Bulb replacement is the same for tail/brake light and/or turn/warning light.

- 1. Remove screws (A).
- Pull housing (B) away from fender.
- Rotate socket (C) and remove from housing.
- Pull bulb to remove from socket.
- 5. Install new bulb and socket in housing.
- 6. Install housing and screws to fender.

A—Screw (2 used) **B**—Housing

C-Socket (2 used)





-V12532 —UN—13APR05

SW03989,00018A7 -19-01APR13-1/1

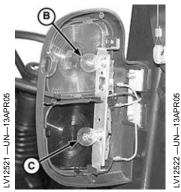
Replace Tail Light and/or Warning Light Bulb—Open Operator Station

NOTE: Bulb replacement is the same for tail light and warning light. Left side shown.

- 1. Remove screws and lens housing (A).
- 2. Push and twist bulb (B or C) to remove from socket.
- 3. Install new bulb, lens housing and screws.

A—Lens Housing B—Warning Light Bulb C-Tail Light Bulb





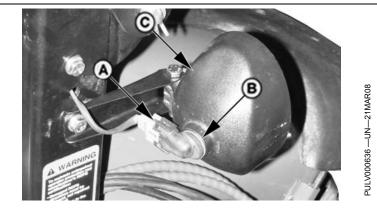
SW03989,00018A8 -19-01APR13-1/1

Replace Work Light Bulb—OOS

- 1. Disconnect wiring harness connector (A).
- 2. Rotate bulb (B) counterclockwise and remove from housing (C).
- 3. Install new bulb into housing and rotate clockwise.
- 4. Connect wiring harness connector.

NOTE: Deluxe OOS will have two work lights.

A—Wiring Harness Connector C—Housing B—Bulb



SW03989,00018A9 -19-01APR13-1/1

Replace Work Light Bulb—Cab

CAUTION: Halogen bulbs contain gas under pressure. Handling a bulb improperly could cause it to shatter into flying fragments. (See Handle Halogen Light Bulbs Safely, in this section.)

NOTE: Bulb replacement procedures for front and rear work lights and optional auxiliary work lights are the same. Rear left side shown.

- Remove screw cover by prying in screw cover slot (A) with a screwdriver.
- 2. Remove retaining ring screws (B), retaining ring (C) and lens (E).
- 3. Disconnect wiring connectors (D).
- 4. Install new bulb and connect wiring connectors.
- 5. Install lens, retaining ring and screws.
- 6. Install cover.

A—Screw Cover Slot B—Retaining Ring Screw (4 D—Wiring Connector (2 used) E—Lens

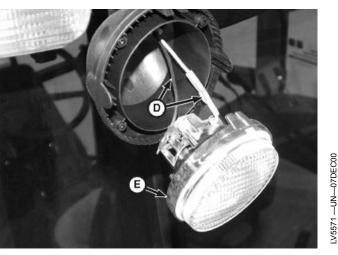
-Retaining Ring Screw (4 E—Le

used)

C—Retaining Ring







SW03989,00018AA -19-02APR13-1/1

Replace Fender Light Bulb—OOS

- 1. Disconnect wiring harness connector (B) from bulb (A).
- 2. Rotate bulb counterclockwise and remove from housing (C).
- 3. Install new bulb into housing and rotate clockwise.
- 4. Connect wiring harness connector.

A—Bulb C—Housing B—Wiring Harness Connector



Left Side Shown

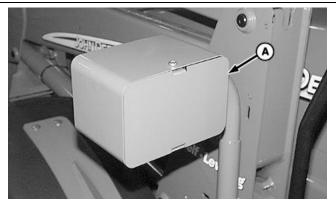
SW03989,00018AB -19-01APR13-1/1

Replace Loader Light Bulb—If Equipped

CAUTION: Halogen bulbs contain gas under pressure. Handling a bulb improperly could cause it to shatter into flying fragments. (See Handle Halogen Light Bulbs Safely, in this section.)

1. Remove two screws and cover (A).

A-Cover



SW03989,00018AC -19-02APR13-1/2

- 2. Disconnect wiring harness plug (B).
- 3. Remove dust boot (A).
- 4. Unlatch retaining spring (C) and remove light bulb (D).
- 5. Install new bulb in reverse order of removal.
- 6. Adjust, if necessary.

A—Dust Boot B—Wiring Harness Plug

C—Retaining Spring D—Light Bulb



LV9549 —UN—03AUG04

LV9548 —UN—03AUG04





SW03989,00018AC -19-02APR13-2/2

Replace Loader Light Bulb (with License and Clearance Lights)—If Equipped

CAUTION: Halogen bulbs contain gas under pressure. Handling a bulb improperly could cause it to shatter into flying fragments. (See Handle Halogen Light Bulbs Safely, in this section.)

- 1. Disconnect battery negative (—) cable.
- 2. Remove two screws (A) and back cover (B).
- 3. Disconnect wiring harness plug.
- 4. Remove dust boot.
- 5. Carefully remove light bulb (C).
- 6. Install new bulb in reverse order of removal.
- 7. Adjust, if necessary.
- 8. Connect battery negative (—) cable.

A-Screw (2 used) **B**—Back Cover

C-Bulb



-V17337 -- UN--02APR13

SW03989,00018AD -19-02APR13-1/1

Replace Dome Light Bulb—Cab

- 1. Remove cover (B) from housing (A) using a screwdriver.
- 2. Pull bulb (C) from socket.
- 3. Install new bulb and cover.

A-Housing **B**—Cover

C-Bulb





LV12534 —UN—13APR05

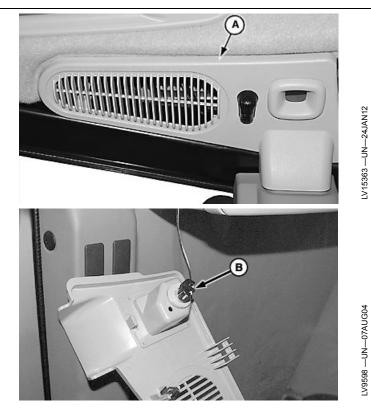
SW03989,00018AE -19-01APR13-1/1

Replace Controls Illumination Light Bulb—Cab

- 1. Pry off panel (A).
- 2. Rotate light bulb retainer (B) counterclockwise approximately 1/4 turn and remove.
- 3. Pull out light bulb.
- 4. Install new bulb in reverse order of removal.

A—Panel

B—Light Bulb Retainer



SW03989,00018AF -19-01APR13-1/1

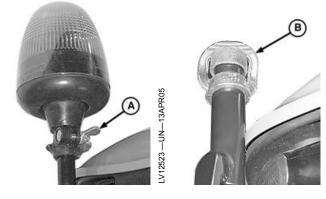
Replace Rotary Beacon Light Bulb—If Equipped

CAUTION: Halogen bulbs contain gas under pressure. Handling a bulb improperly could cause it to shatter into flying fragments. (See Handle Halogen Light Bulbs Safely, in this section.)

- 1. Loosen wing nut (A) and remove rotary beacon light assembly.
- 2. Install rubber cap (B).

A-Wing Nut

B—Rubber Cap



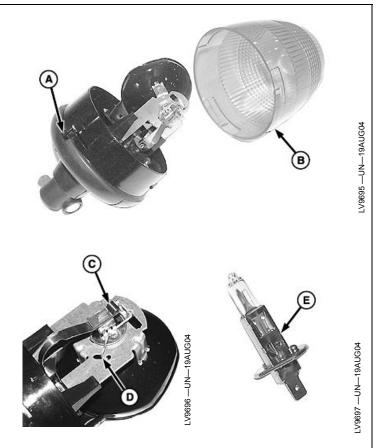
SW03989,00018B0 -19-01APR13-1/2

Continued on next page

- 3. Depress tab (A) and rotate lens (B) counterclockwise to remove.
- 4. Pull tab (C) away from bulb.
- 5. Unlatch retaining spring (D) and remove light bulb (E).
- 6. Install new bulb in reverse order of removal.

A—Tab B—Lens C—Tab D—Retaining Spring

E-Bulb



SW03989,00018B0 -19-01APR13-2/2

Electrical System Components

Group 15 Wiring Harnesses

Service Equipment and Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the

SERVICEGARD is a trademark of Deere & Company

European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

SW03989.00018B1 -19-01APR13-1/4

Pulls wire from connector body.

SW03989,00018B1 -19-01APR13-2/4

Terminal Applicator......JDG783

Applies contact to terminal wire.

SW03989,00018B1 -19-01APR13-3/4

Terminal Extraction ToolJDG1177

Used to repair transmission control unit connector.

SW03989,00018B1 -19-01APR13-4/4

Essential Tools

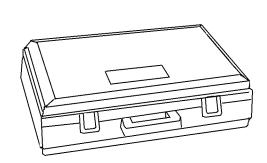
NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC).

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SW03989,00018B2 -19-01APR13-1/5

Technician's Electrical Repair Kit......JT07195B

Repair wire connectors

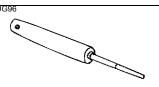


SW03989,00018B2 -19-01APR13-2/5

RW25558 —UN—29AUG96

WEATHER PACK™Extractor (Wide)...............................JDG776

Remove terminals from METRI-PACK™ connectors



WEATHER PACK is a trademark of Packard Electric METRI-PACK is a trademark of AMP Incorporated

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SW03989,00018B2 -19-01APR13-3/5

WEATHER PACK™ Extractor (Narrow) JDG777

Remove terminals from METRI-PACK™ connectors

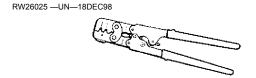


WEATHER PACK is a trademark of Packard Electric METRI-PACK is a trademark of AMP Incorporated

SW03989,00018B2 -19-01APR13-4/5

Crimping Tool......JDG865

Crimp contacts to wires



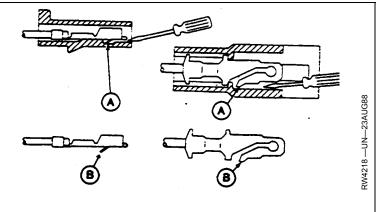
SW03989,00018B2 -19-01APR13-5/5

Replace Connector Body—Blade Terminals

- Use a small screwdriver to depress locking tang (A) on terminal. Slide connector body off.
- 2. Be sure to bend locking tang back to its original position (B) before installing connector body.

A—Locking Tang

B—Locking Tang—Original Position



SW03989,00018B3 -19-01APR13-1/1

Replace WEATHER PACK™ Connector

IMPORTANT: Identify wire color locations with connector terminal letters.

- 1. Open connector body.
- 2. Insert JDG364 Extraction Tool over terminal contact in connector body.
- 3. Hold extractor tool fully seated and pull wire from connector body.

NOTE: If terminal cannot be removed, insert wire or nail through extractor tool handle and push terminal contact from connector.



SW03989.00018B4 -19-01APR13-1/2

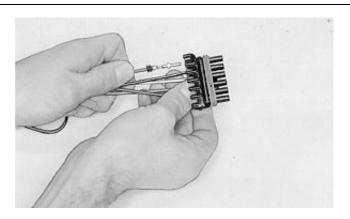
FS0128 —UN—23AUG88

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IMPORTANT: Carefully spread contact lances to make sure good seating on connector body.

NOTE: Connector bodies are "keyed" for proper contact mating. Be sure contacts are in proper alignment.

- 4. Push contact into new connector body until fully seated.
- 5. Pull on wire slightly to be certain contact is locked in place.
- Transfer remaining wires to correct terminal in new connector.
- 7. Close connector body.



SW03989,00018B4 -19-01APR13-2/2

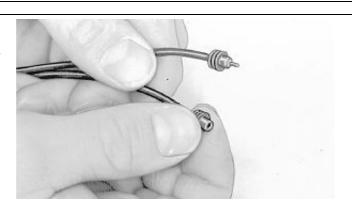
TS0130 -- UN-23AUG88

TS0136 —UN—23AUG88

Install WEATHER PACK™ Contact

NOTE: Cable seals are color coded for three sizes of wire:

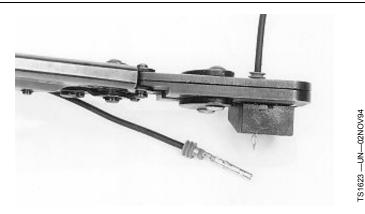
- Green 18 to 20 gauge wire
- Gray 14 to 16 gauge wire
- Blue 10 to 12 gauge wire
- 1. Slip correct size cable seal on wire.
- 2. Strip insulation from wire to expose 6 mm (1/4 in.) and align cable seal with edge of insulation.



SW03989,00018B5 -19-01APR13-1/3

NOTE: Contacts have numbered identification for two sizes of wire:

- #15 for 14 to 16 gauge wire
- #19 for 18 to 20 gauge wire
- 3. Put proper size contact on wire and crimp in place with a "W" type crimp, using JDG783 Terminal Applicator.



SW03989,00018B5 -19-01APR13-2/3

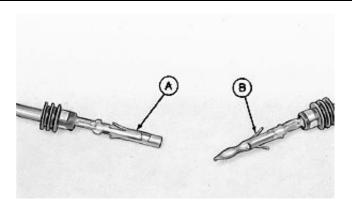
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4. Secure cable seal to contact as shown, using JDG783 Terminal Applicator.

IMPORTANT: Proper contact installation for "sleeve" (A) and "pin" (B) is shown.

A-Sleeve

B-Pin



SW03989,00018B5 -19-01APR13-3/3

TS0139 —UN—02DEC88

RW16933A —UN—05AUG98

RW77096 —UN—30JUL98

Repair (Pull Type) METRI-PACK™ Connectors

1. Disconnect METRI-PACK connector (A). Remove tie bands and tape.

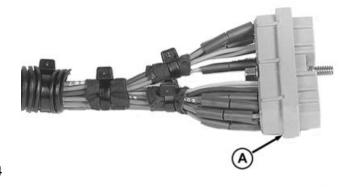
NOTE: Use JDG777 Terminal Extraction Tool ¹ to remove terminals.

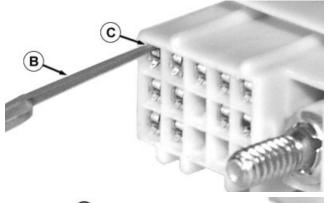
- 2. Angle tip so tip slides close to plastic socket edge pushing inward on terminal locking tab (D).
- 3. Insert JDG777 Terminal Extraction Tool (B) 6 mm (1/4 in.) into connector body socket (C).
- 4. Remove JDG777 Terminal Extraction Tool and push terminal (E) from socket.
- 5. Remove terminal and strip wire using JDG145 Electrician's Pliers².

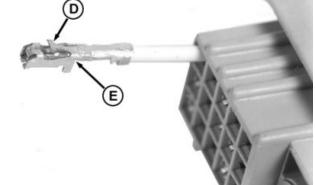
A—Connector D—Locking Tab
B—JDG777 Terminal Extraction E—Terminal

Tool

C—Body Socket







RW16935A —UN—05AUG98

¹Included JT07195B Electrical Repair Kit ²Included in JDG155 Electrical Repair Tool Kit

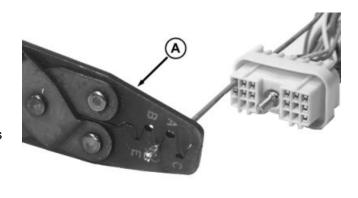
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SW03989,00018B6 -19-01APR13-1/2

- 6. Crimp new terminal on wire through connector using JDG144 Crimping Pliers¹ (A).
- NOTE: Terminal will seat only one way. If terminal does not pull into connector body socket, check for correct terminal alignment.
- Check to make sure locking tab on new terminal is in outward position, then pull on wire until terminal locks in connector body socket.

A—Crimping Pliers

¹Included in JDG155 Electrical Repair Tool Kit



SW03989.00018B6 -19-01APR13-2/2

RW77143 —UN—07DEC98

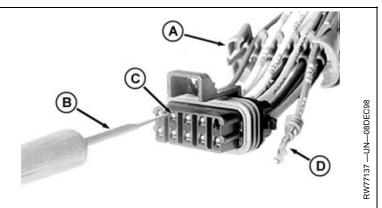
Repair (Push Type) METRI-PACK™ Connectors

- 1. Disconnect METRI-PACK connector. Remove tie bands and tape.
- Remove connector lock (A), and mark wire colors for identification.
- 3. Identify wire color locations with connector terminal letters.

NOTE: Use JDG776 Extraction Tool with 56, 280, and 630 Series METRI-PACK terminals. Use JDG777 Extraction Tool with 150 Series METRI-PACK terminals.

- Insert JDG776 or JDG777 Terminal Extraction Tool¹
 (B) into connector body socket (C) pushing terminal locking tab inward.
- Remove extraction tool and pull terminal (D) out of socket.

¹Included in JT07195B Electrical Repair Kit

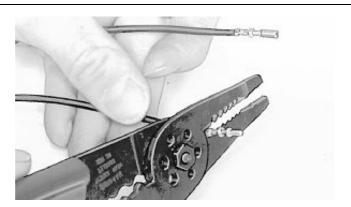


A—Connector Lock B—Extraction Tool

C—Connector Body Socket D—Terminal

SW03989,00018B7 -19-01APR13-1/6

6. Remove old contact from wire using JDG145 Universal Electrical Pliers¹.



-S0132 —UN—23AUG88

¹Included in JDG155 Electrical Repair Tool Kit

Continued on next page

SW03989,00018B7 -19-01APR13-2/6

NOTE: Cable seals are color coded for three sizes of wire:

- Green 18—20 Gauge Wire
- Gray 14—16 Gauge Wire
- Blue 10—12 Gauge Wire

IMPORTANT: Seal must fit snug over cable insulation, without a gap between cable seal and insulation.

- 7. Push correct size cable seal on wire.
- 8. Strip insulation from wire to expose 6 mm (1/4 in.) and align cable seal with edge of insulation.



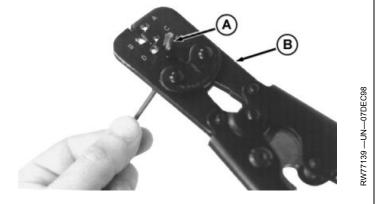
SW03989,00018B7 -19-01APR13-3/6

TS0136 —UN—23AUG88

- 9. Install correct size contact on wire.
- 10. Crimp contact (A) in position with a "W" type crimp using JDG865 Crimping Tool (B).

A—Contact

B—Crimping Tool

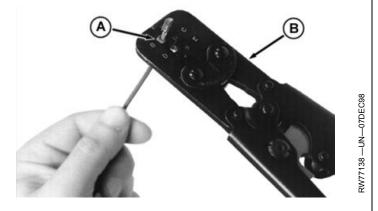


SW03989,00018B7 -19-01APR13-4/6

11. Crimp cable seal (A) on contact using JDG865 Crimping Tool (B).

A—Cable Seal

B—Crimping Tool



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SW03989,00018B7 -19-01APR13-5/6

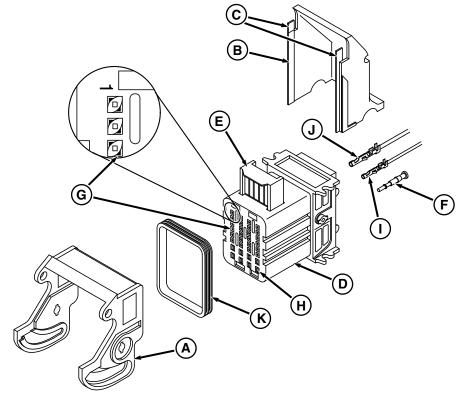
- 12. Make sure locking tab (A) on new terminal is in outward position.
- 13. Push terminal into connector body socket until terminal locks.

A-Locking Tab



SW03989,00018B7 -19-01APR13-6/6





A—Connnector Locking Cam

B—Cover

C—Cover Locks

D—Connector Body

E—Terminal Lock F—Cavity Seal Plug

-Terminal Removal Tool

Opening

H—Terminal Opening I— 0.6 mm (0.02 in.) Terminal J—1.5 mm (0.06 in.) Terminal

K-Seal

SW03989,00018B8 -19-01APR13-1/1

RXA0063965 -- UN-15JAN03

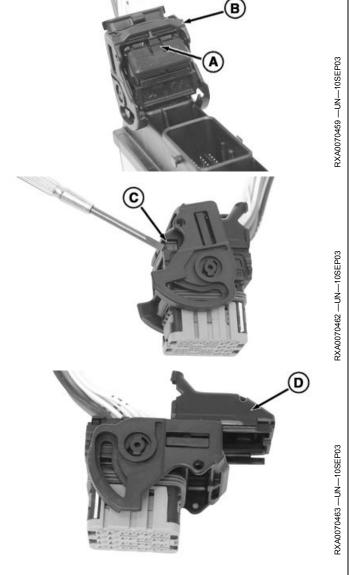
CINCH™ Flexbox Connectors

- 1. Press tab (A) and rotate locking cam (B) 90° to disconnect connector from flexbox.
- 2. Move cover locks (C) slightly outward with a small screwdriver.
- 3. Remove cover (D) away from wires.

B—Locking Cam

C—Cover Locks

D—Cover



SW03989,00018B9 -19-01APR13-1/4

4. Pull terminal lock (A) out as far as it will go, but do not force its removal.

A—Terminal Lock



RXA0070464 —UN—10SEP03

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SW03989,00018B9 -19-01APR13-2/4

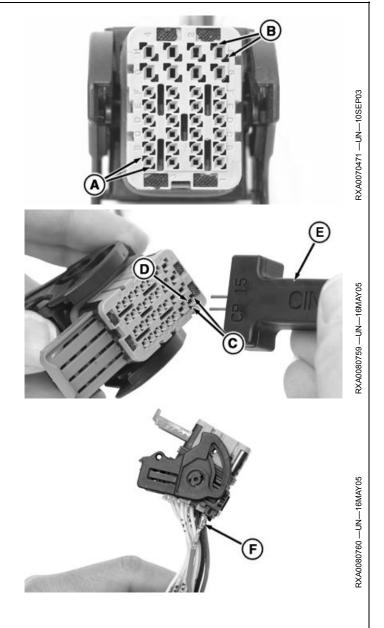
NOTE: JDG1725 Terminal Extractor Tool has two different sizes of pins, 0.6 for smaller 20 gauge holes (A), and 1.5 for larger 16 and 18 gauge holes (B).

NOTE: JDG1725 Terminal Extractor Tool and JDG1727 Terminal Crimping Tool are part of JDG1744 Master Repair Kit.

- 5. Insert JDG1725 Terminal Extractor Tool (E) into holes (C) next to terminal opening (D) to unlock terminal.
- 6. Pull wire and terminal (F) from connector body.

A—20 Gauge Holes B—16 & 18 Gauge Holes C—Holes

D—Terminal Opening
E—JDG1725 Terminal
Extractor Tool¹
F—Terminal



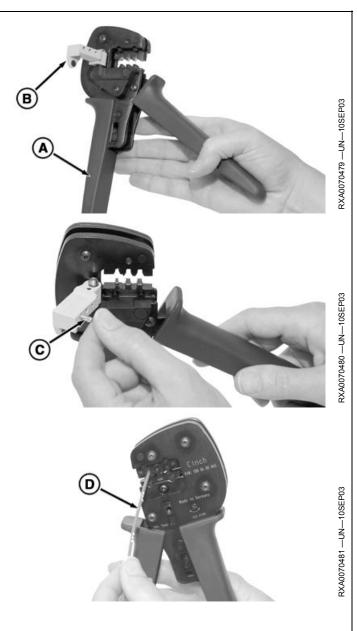
¹Included in JDG1744 Master Kit

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SW03989,00018B9 -19-01APR13-3/4

- 7. Remove old terminal and strip 4.85 mm (0.191 in.) of insulation from wire.
- 8. Grip JDG1727 Terminal Crimping Tool (A) securely, and squeeze ratcheting mechanism completely. Then allow it to open completely.
- 9. With tool in ready position (open handle), open terminal receptacle (B).
- 10. Insert terminal (C) into proper wire gauge window, crimp wings facing up.
- 11. Close terminal receptacle (B).
- 12. Squeeze handle until two clicks are heard.
- 13. Insert stripped wire (D) into terminal.
- 14. Hold wire stationary and squeeze tool together until ratchet releases.
- 15. Remove terminated wire from tool.
- Push terminal into connector body until fully seated.
 Pull on wire slightly to ensure terminal is locked in position.
- 17. Push terminal lock closed.
- 18. Install cover.
- Install connector to control unit and close connector body locking cam.

A—JDG1727 Terminal Crimping Tool¹ B—Terminal Receptacle C—Terminal D—Wire



¹Included in JDG1744 Master Kit

SW03989,00018B9 -19-01APR13-4/4

Repair DEUTSCH™ Connectors

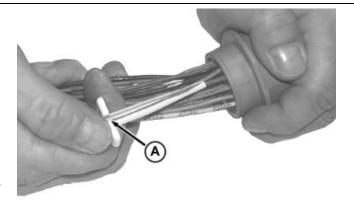
 Select correct size extractor tool for size of wire to be removed:

NOTE: JDG361, JDG362, and JDG363 are part of JDG359 DEUTSCH Electrical Repair Tool Kit.

- JDG361 Extractor Tool 12—14 Gauge Wire
- JDG362 Extractor Tool 16—18 Gauge Wire
- JDG363 Extractor Tool 20 Gauge Wire
- 2. Start correct size extractor tool over wire at handle (A).
- 3. Slide extractor tool rearward along wire until tool tip snaps onto wire.

IMPORTANT: DO NOT twist tool when inserting in connector.

4. Slide extractor tool along wire into connector body until tool is positioned over terminal contact.



A—Handle

SW03989,00018BA -19-01APR13-1/6

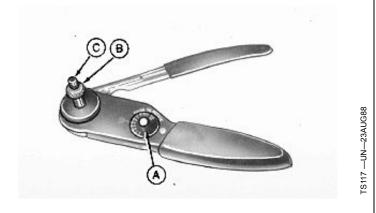
RW77142 —UN—07DEC98

- 5. Pull wire from connector body using extractor tool.
- 6. Strip 6 mm (1/4 in.) insulation from wire.

NOTE: JDG360 Crimping Tool is part of JDG359 DEUTSCH Electrical Repair Tool Kit.

Adjust selector (A) on JDG360 Crimping Tool for correct wire size.

A—Selector B—Lock Nut C—Adjusting Screw



SW03989,00018BA -19-01APR13-2/6

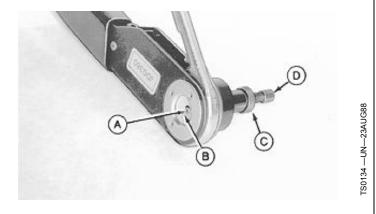
8. Loosen lock nut (B) and turn adjusting screw (C) in until screw stops.

IMPORTANT: Select correct size contact sleeve or pin to fit connector body.

9. Insert contact (A) and turn adjusting screw (D) until contact is flush with cover (B).

A—Contact B—Cover

C—Lock Nut D—Adjusting Screw



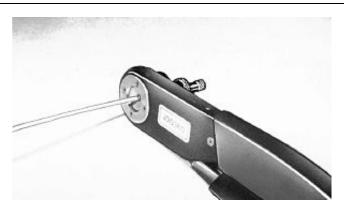
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SW03989,00018BA -19-01APR13-3/6

10. Tighten lock nut (C).

IMPORTANT: Contact must remain centered between indenters while crimping.

11. Insert wire in contact and crimp until handle contacts stop.

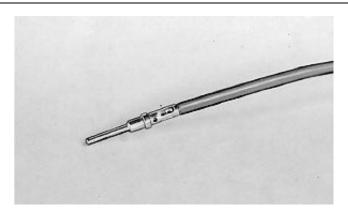


SW03989,00018BA -19-01APR13-4/6

12. Release handle and remove contact.

IMPORTANT: If all wire strands are not crimped into contact, cut off wire at contact and repeat contact installation procedures.

NOTE: Readjust crimping tool for each crimping procedure.



TS0135 —UN—23AUG88

FS118 —UN—23AUG88

SW03989,00018BA -19-01APR13-5/6

13. Inspect contact to ensure all wires are in crimped barrel.

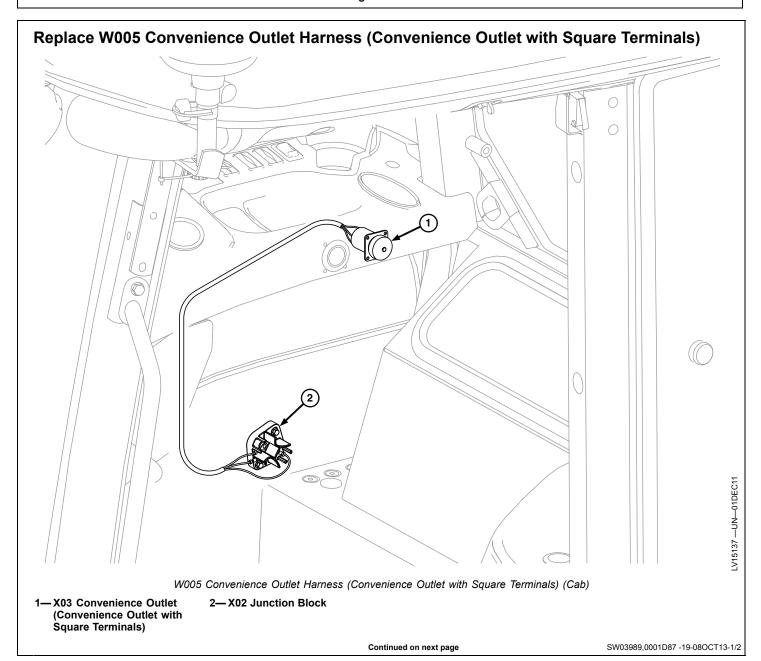
IMPORTANT: Install contact in correct location using correct size grommet.

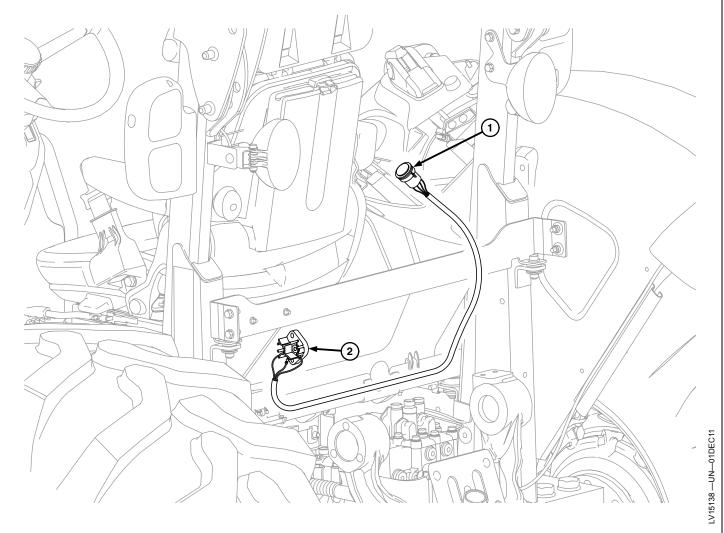
- 14. Push contact straight into connector body until positive stop is felt.
- 15. Pull on wire slightly to ensure contact is locked in position.
- Transfer remaining wires to correct terminal in new connector.



RW77141 —UN—07DEC98

SW03989,00018BA -19-01APR13-6/6



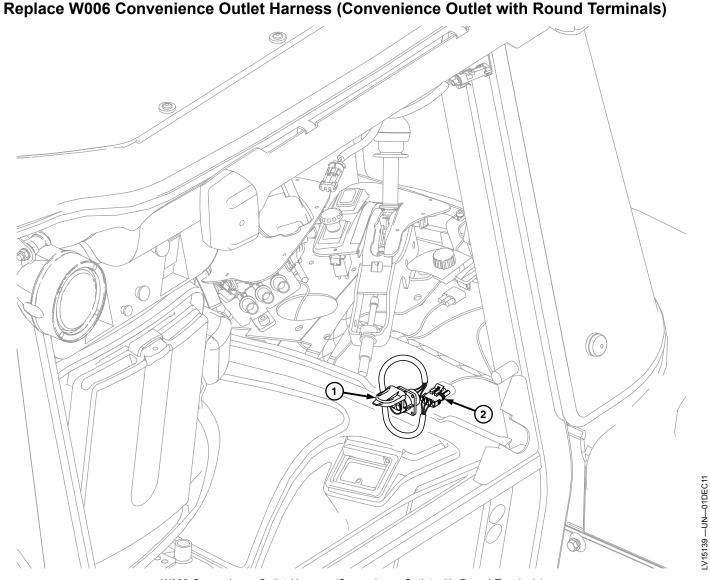


W005 Convenience Outlet Harness (Convenience Outlet with Square Terminals) (OOS)

- 1—X03 Convenience Outlet (Convenience Outlet with Square Terminals)
- 2-X02 Junction Block
- 1. Disconnect battery negative (—) cable.
- 2. **Cab tractor:** Remove right-side control console. (See Remove and Install Right-Side Control Console—Cab in Section 90, Group 10.)
- 3. **Cab tractor:** Remove right-side upholstery. (See Remove and Install Right-Side Upholstery in Section 90, Group 20.)
- 4. **OOS tractor:** Remove convenience outlet mounting screws.
- 5. **Cab tractor:** Remove convenience outlet mounting screws.
- 6. Cut all tie straps and remove all hold-down clamps. Note locations of tie straps and clamps.
- 7. Disconnect wire leads from junction block (2).
- 8. Replace wire harness.

- 9. Connect wire leads to junction block (2).
- 10. Install hold-down clamps and tie straps at previous locations.
- 11. **Cab tractor:** Install convenience outlet (1) with mounting screws.
- 12. **Cab tractor:** Install right-side upholstery. (See Remove and Install Right-Side Upholstery in Section 90, Group 20.)
- Cab tractor: Install right-side control console. (See Remove and Install Right-Side Control Console—Cab in Section 90, Group 10.)
- 14. OOS tractor: Install convenience outlet.
- 15. Connect battery negative (—) cable.

SW03989,0001D87 -19-08OCT13-2/2

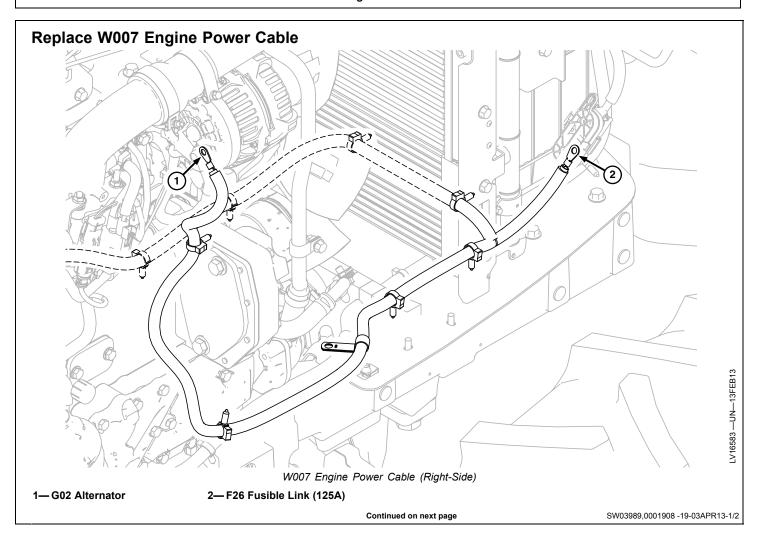


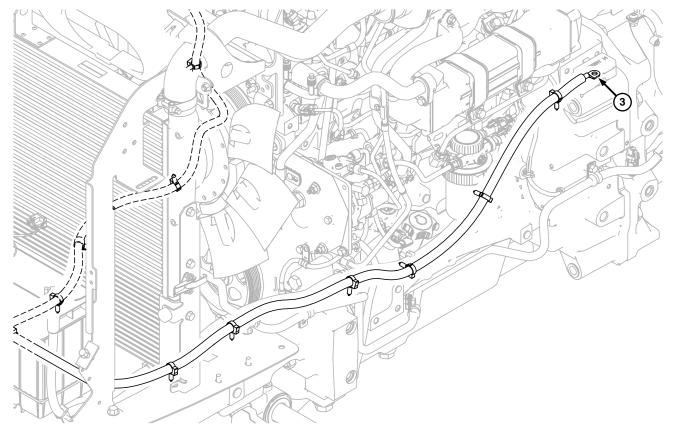
W006 Convenience Outlet Harness (Convenience Outlet with Round Terminals)

- 1—X04 Convenience Outlet (Convenience Outlet with Round Terminals)
- 2—X17 Cab/Chassis Harness to Convenience Outlet
- 1. Disconnect battery negative (—) cable.
- Remove right-side control console. (See Remove and Install Right-Side Control Console—Cab in Section 90, Group 10.)
- 3. Cut all tie straps and remove all hold-down clamps. Note locations of tie straps and clamps.
- 4. Disconnect X17 cab/chassis harness to convenience outlet (2).
- 5. Remove X04 convenience outlet (convenience outlet with round terminals) (1).
- 6. Replace wire harness.

- 7. Install X04 convenience outlet (convenience outlet with round terminals) (1).
- 8. Connect X17 cab/chassis harness to convenience outlet (2).
- 9. Install hold-down clamps and tie straps at previous locations.
- Cab tractor: Install right-side control console. (See Remove and Install Right-Side Control Console—Cab in Section 90, Group 10.)
- 11. Connect battery negative (—) cable.

SW03989,0001D88 -19-08OCT13-1/1





W007 Engine Power Cable (Left-Side)

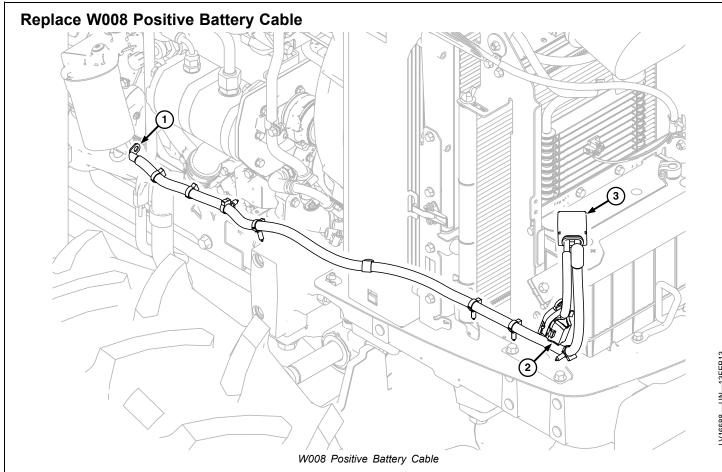
3—X09 Engine Power Harness to Left Front Junction Block

- 1. Disconnect battery negative (—) cable.
- 2. Remove left-side hood support.
- 3. Remove left-side and right-side fan guards.
- 4. Cut all tie straps and remove all hold-down clamps. Note locations of tie straps and clamps.
- 5. Disconnect cable leads (2, 1, and 3), respectively.
- 6. Replace engine power cable.

- 7. Connect cable leads (3, 1, and 2), respectively.
- 8. Install hold-down clamps and tie straps at previous locations.
- 9. Install left-side and right-side fan guards.
- 10. Install left-side hood support.
- 11. Connect battery negative (—) cable.

SW03989,0001908 -19-03APR13-2/2

LV16582 —UN—13FEB13



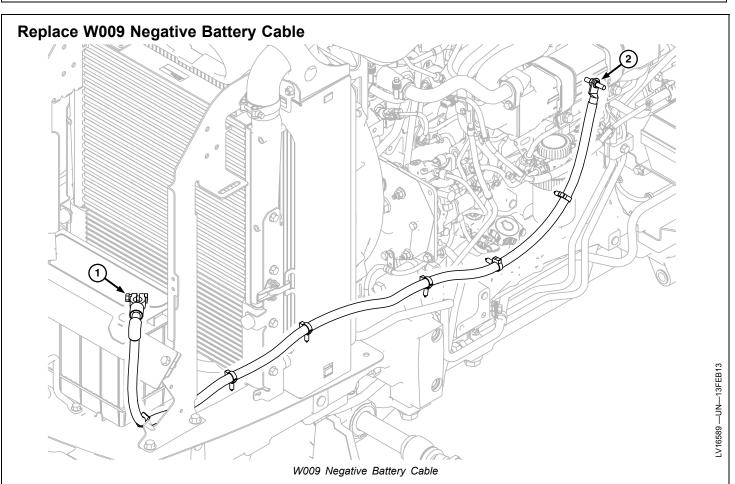
1-M01 Starter Motor/Solenoid 2-F26 Fusible Link (125A)

- 1. Disconnect battery negative (—) cable.
- 2. Cut all tie straps and remove all hold-down clamps. Note locations of tie straps and clamps.
- 3. Disconnect positive battery cable leads (1—3).
- 4. Replace positive battery cable.

3-G01 Battery

- 5. Connect positive battery cable leads (1—3).
- 6. Install hold-down clamps and tie straps at previous locations.
- 7. Connect battery negative (—) cable.

SW03989,00018BD -19-03APR13-1/1



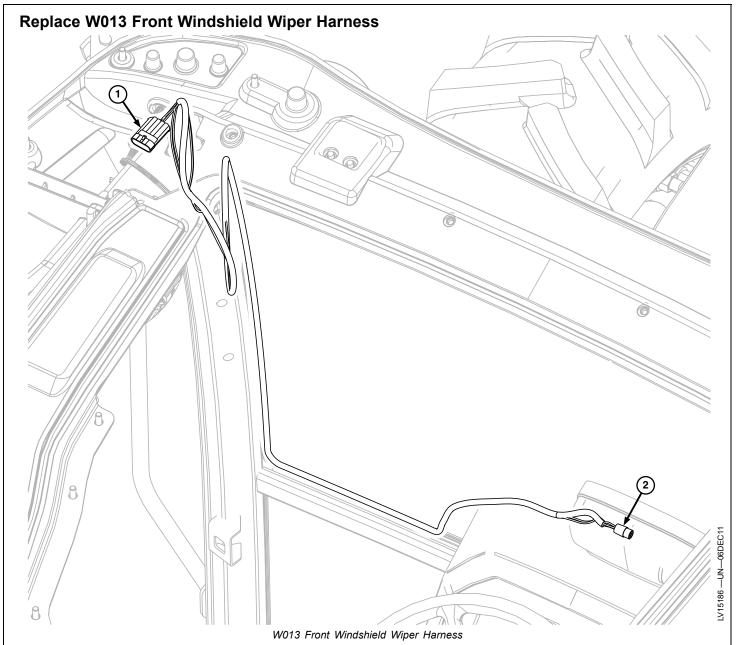
1-G01 Battery

2-XGND1 Single Point Ground

- 1. Remove left-side fan guard.
- 2. Disconnect negative (—) battery cable leads (1 and 2), respectively.
- 3. Cut all tie straps and remove all hold-down clamps. Note locations of tie straps and clamps.
- 4. Replace battery negative (—) cable.

- 5. Install hold-down clamps and tie straps at previous locations.
- 6. Connect negative (—) battery cable leads (2 and 1) respectively.
- 7. Install left-side fan guard.

SW03989,00018BE -19-03APR13-1/1



1-X921 Roof Harness to Front 2-M05 1 Front Wiper Motor Windshield Wiper Harness

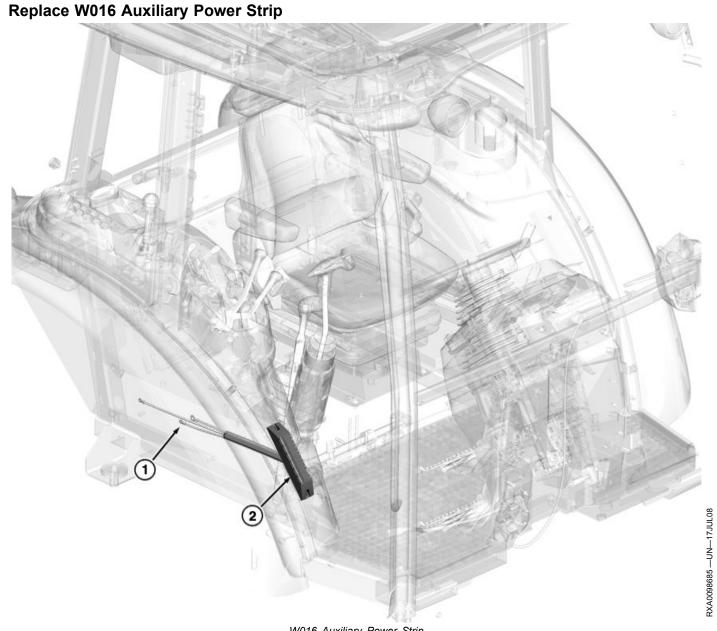
(Single Speed)

NOTE: W013 harness used on tractors equipped with tilting windshield.

- 1. Disconnect negative (—) battery cable.
- 2. Remove left-side access cover.
- 3. Cut all tie straps and remove all hold-down clamps. Note locations of tie straps and clamps.
- 4. Disconnect front windshield wiper harness connectors (1 and 2).

- 5. Replace wire harness.
- 6. Install hold-down clamps and tie straps at previous locations.
- 7. Connect front windshield wiper harness connectors (1 and 2).
- 8. Install left-hand access cover.
- 9. Connect negative (—) battery cable.

SW03989,00018C0 -19-03APR13-1/1



W016 Auxiliary Power Strip

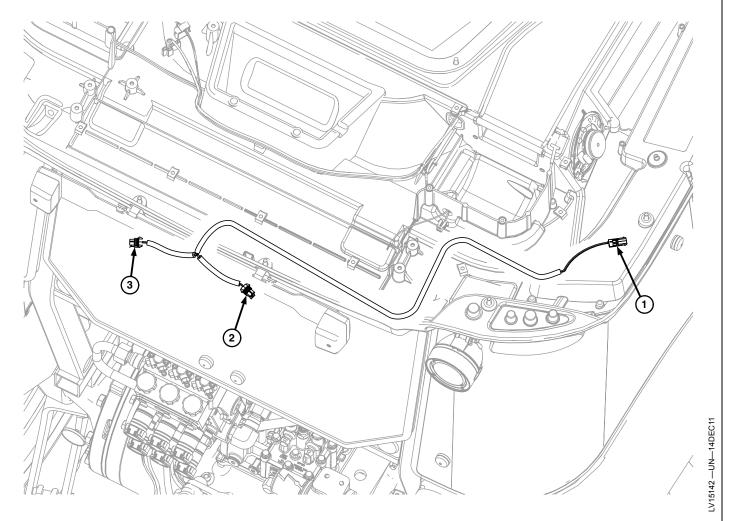
- 1-X02 Junction Block -X05 Auxiliary Power Strip (Convenience Outlet with Square Terminals) or X05
 - Auxiliary Power Strip (Convenience Outlet with **Round Terminals**)
- 1. Disconnect battery negative (—) cable.
- 2. Remove right-side control console. (See Remove and Install Right-Side Control Console—Cab in Section 90, Group 10.)
- 3. Remove right-side upholstery. (See Remove and Install Right-Side Upholstery in Section 90, Group 20.)
- 4. Remove mounting screws and auxiliary power strip (2).
- Cut all tie straps and remove all hold-down clamps. Note locations of tie straps and clamps.

- 6. Disconnect wire leads from junction block (1).
- 7. Replace wire harness.
- 8. Connect wire leads to junction block (1).
- 9. Install hold-down clamps and tie straps at previous locations.
- 10. Install auxiliary power strip (2) with mounting screws.
- 11. Install right-side upholstery. (See Remove and Install Right-Side Upholstery, in Section 90, Group 20.) SW03989,0001D6C -19-04OCT13-1/2 Continued on next page

- 12. Install right-side control console. (See Remove and Install Right-Side Control Console—Cab in Section 90, Group 10.)
- 13. Connect battery negative (—) cable.

SW03989,0001D6C -19-04OCT13-2/2

Replace W017 Roof License Plate Lighting Harness



W017 Roof License Plate Lighting Harness

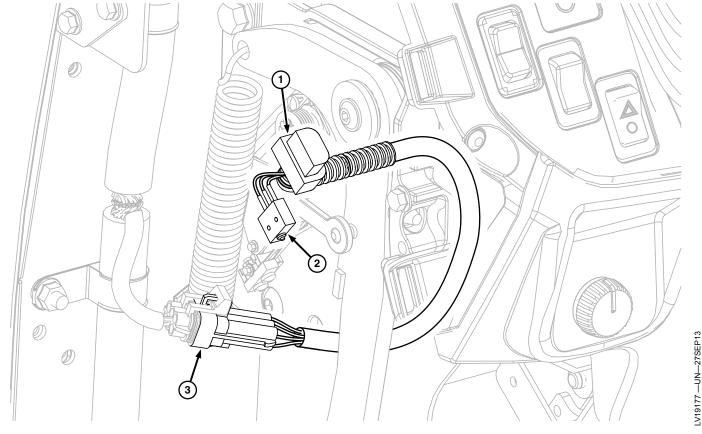
- X922 Roof Harness to Roof License Plate Lighting Harness
- (with License and Clearance Lights)
- 2-E20 Right License Plate Light 3-E19 Left License Plate Light (with License and Clearance Lights)
- 1. Disconnect battery negative (—) cable.
- 2. Remove right-side air intake louver.
- 3. Cut all tie straps and remove all hold-down clamps. Note locations of tie straps and clamps
- 4. Disconnect wire connectors (1-3).
- 5. Remove wire connector (1) from wire harness with pin extractor and retain for new harness.

NOTE: To aid in installation of new wire harness. use mechanic's fish tape.

- Replace wire harness.
- 7. Install wire connector (1) onto end of wire harness.
- 8. Connect wire connectors (1—3).
- 9. Install hold-down clamps and tie straps at previous locations.
- 10. Install right-side air intake louver.
- 11. Connect battery negative (—) cable.

SW03989,0001D6D -19-04OCT13-1/1

Replace W022 Clutch Assembly Harness

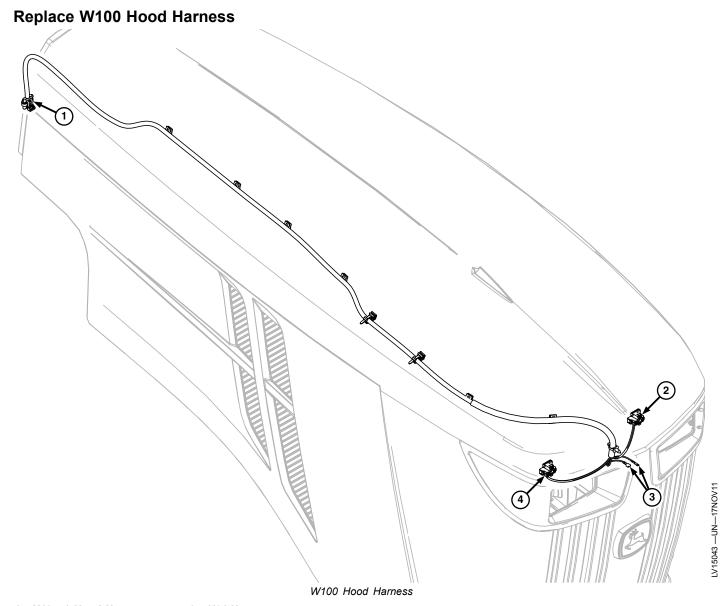


W022 Clutch Assembly Harness

- 1—B13 Clutch Pedal Position Sensor
- 2—S15 Clutch Pedal Disengage Switch
- 1. Disconnect battery negative (—) cable.
- Remove center control console cover. (See Remove and Install Center Control Console in Section 90, Group 10.)
- 3. Note locations and remove tie straps and/or clamps.
- 4. Disconnect clutch assembly harness connector (3) and remove connector from wire harness with pin extractor and retain for new harness.
- 5. Remove cap screws and guard.
- 6. Disconnect clutch pedal position sensor connector and remove clutch pedal disengage switch (1 and 2).
- 7. Replace clutch assembly harness.
- 8. Connect clutch pedal position sensor connector and install clutch pedal disengage switch (1 and 2).

- 3—X26 Cab/Chassis Harness to Clutch Assembly Harness
- 9. Install end of wire harness onto clutch assembly harness connector (3).
- Connect clutch assembly harness connector (3) to cab/chassis harness.
- 11. Install hold-down clamps and/or tie straps at previous locations.
- 12. Install guard with cap screws.
- Install center control console cover. (See Remove and Install Center Control Console in Section 90, Group 10.)
- 14. Connect battery negative (—) cable.

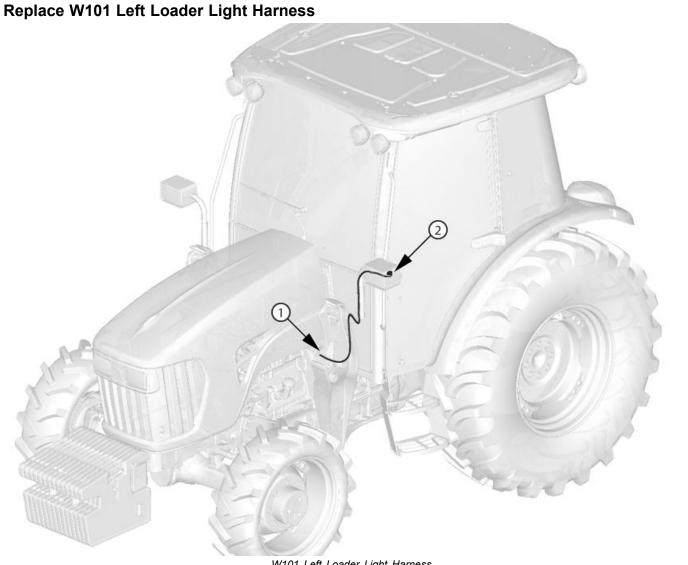
SW03989,0001D62 -19-01OCT13-1/1



- 1—X104_1 Hood Harness Connector
- 2—E02 Left Front High/Low Beam Headlight or E02 Left Front High/Low Beam Headlight (with License and Clearance Lights)
- 3— H01 Horn
- E01 Right Front High/Low Beam Headlight or E01 Left Front High/Low Beam Headlight (with License and Clearance Lights)
- 1. Disconnect battery negative (—) cable.
- 2. Disconnect hood harness connectors (1—4).
- 3. Cut all tie straps and remove all hold-down clamps. Note locations of tie straps and clamps.
- 4. Replace wire harness.

- 5. Connect hood harness connectors (1—4).
- 6. Install hold-down clamps and tie straps at previous locations.
- 7. Connect battery negative (—) cable.

SW03989,00018C2 -19-03APR13-1/1



W101 Left Loader Light Harness

- X105 Loader Light Switch to 2— E15 Left Front Loader Light Left Loader Light Harness

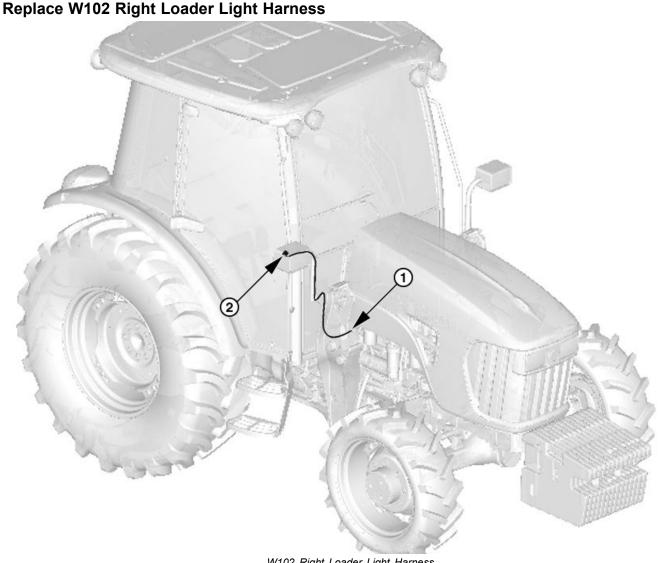
- Disconnect battery negative (—) cable.
- 2. Remove left front loader light (2) back cover.
- 3. Disconnect left front loader light connector (2).
- 4. Disconnect loader light switch to left loader light harness connector (1) and remove connector from wire harness with pin extractor and retain for new harness.
- 5. Cut all tie straps and remove all hold-down clamps. Note locations of tie straps and clamps.
- 6. Remove wire harness from left bracket and support tube.

NOTE: To aid in installation of wire harness, route mechanic's fish tape through bracket and support and tape it to loose wire ends of wire harness.

- 7. Route wire harness through left bracket and support tube.
- 8. Install loader light switch to left loader light harness connector (1) onto end of wire harness.
- 9. Install hold-down clamps and tie straps at previous locations.
- 10. Connect left loader light harness connectors (1 and 2).
- 11. Install left front loader light (2) back cover.
- 12. Connect battery negative (—) cable.

SW03989,00018C3 -19-03APR13-1/1

PULV003308 —UN—06JUN08



W102 Right Loader Light Harness

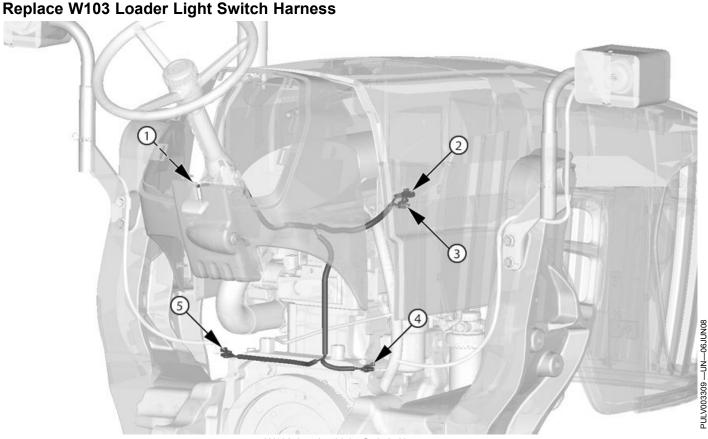
- X106 Loader Light Switch to 2—E16 Right Front Loader Light Right Loader Light Harness
- Disconnect battery negative (—) cable.
- 2. Remove right loader light (2) back cover.
- 3. Disconnect right front loader light (2) connector.
- 4. Disconnect loader light switch to right loader light harness connector (1) and remove connector from wire harness with pin extractor and retain for new harness.
- 5. Cut all tie straps and remove all hold-down clamps. Note locations of tie straps and clamps.
- 6. Remove wire harness from right bracket and support tube.

NOTE: To aid in installation of wire harness, route mechanic's fish tape through bracket and support and tape it to loose wire ends of wire harness.

- 7. Route wire harness through right bracket and support tube.
- 8. Install loader light switch to right loader light harness connector (1) onto end of wire harness.
- 9. Install hold-down clamps and tie straps at previous locations.
- 10. Connect right loader light harness connectors (1 and 2).
- 11. Install right front loader light (2) back cover.
- 12. Connect battery negative (—) cable.

SW03989.00018C4 -19-03APR13-1/1

PULV003307 —UN—16JUN08

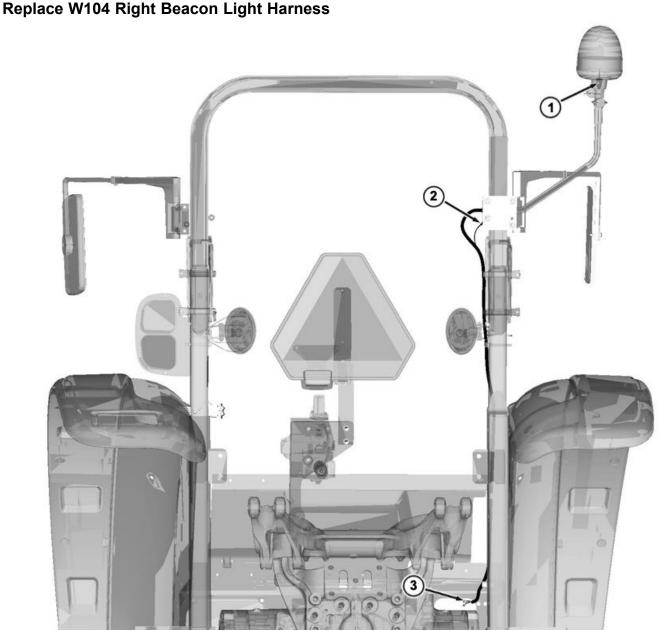


W103 Loader Light Switch Harness

- S26 Loader Light Switch -X103 Loader Light Switch to **Hood Harness**
- **Light Switch Harness**
- X106 Loader Light Switch to Right Loader Light Harness
- X102 Cab Harness to Loader 5-X105 Loader Light Switch to Left Loader Light Harness
- 1. Disconnect battery negative (—) cable.
- 2. Remove cowl cover. (See Remove and Install Center Control Console in Section 90, Group 10.)
- 3. Disconnect loader light switch connector (1) and remove connector from wire harness with pin extractor and retain for new harness.
- 4. Raise the hood and disconnect loader light switch to hood harness (2) and cab harness to loader light switch harness (3) connectors.
- 5. Disconnect loader light switch to right loader light harness (4) and loader light switch to left loader light harness (5) connectors.
- 6. Cut all tie straps and remove all hold-down clamps. Note locations of tie straps and clamps.

- 7. Replace loader light switch harness.
- 8. Connect loader light switch harness connectors (2—5).
- 9. Install loader light switch connector (1) onto end of wire harness.
- 10. Connect loader light switch connector (1).
- 11. Install hold-down clamps and tie straps at previous locations.
- 12. Lower the hood.
- 13. Install cowl cover. (See Remove and Install Center Control Console in Section 90, Group 10.)
- 14. Connect battery negative (—) cable.

SW03989,00018C5 -19-03APR13-1/1



W104 Right Beacon Light Harness

- 1— H07 Beacon Light 2— XGND5 Right Beacon Light Harness Ground (OOS)
- 3—X110 Chassis to Right Beacon Light Harness (OOS)
- 1. Disconnect battery negative (—) cable.
- 2. Cut all tie straps. Note locations of tie straps.
- Remove all hold-down clamps. Note locations of clamps.
- 4. Loosen thumb screw and remove beacon light (1).
- 5. Unscrew socket outlet from beacon light support tube.
- 6. Disconnect right beacon light harness connectors and leads (1—3).
- 7. Remove right beacon light harness from beacon light support tube.

- 8. Replace right beacon light harness.
- NOTE: Use mechanic's fish tape to aid in routing of new harness through beacon light support tube.
- 9. Route right beacon light harness through beacon light support tube.
- 10. Connect beacon light (1) lead to socket outlet.
- 11. Make 12 complete counterclockwise revolutions to socket outlet with wire attached. This is necessary to minimize the wire twist after the socket outlet is installed into the beacon light support tube.

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SW03989,00018C6 -19-03APR13-1/2

PUPX001166 —UN—02APR09

Wiring Harnesses

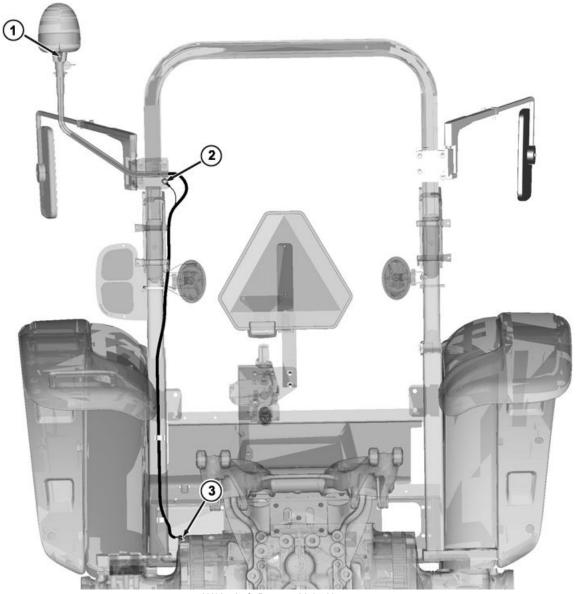
- 12. Screw socket outlet into beacon light support tube and tighten securely.
- 13. Install beacon light (1) until fully seated and tighten thumb screw securely.
- 14. Connect right beacon light harness ground wire (2) to support plate. Tighten to specification.

Specification

- 15. Connect chassis to right beacon light harness connectors (3).
- 16. Install hold-down clamps and tie straps at previous locations.
- 17. Connect battery negative (—) cable.

SW03989,00018C6 -19-03APR13-2/2

Replace W105 Left Beacon Light Harness



W105 Left Beacon Light Harness

1—H07 Beacon Light 2—XGND6 Left Beacon Light Harness Ground (OOS) 3—X111 Chassis to Left Beacon Light Harness (OOS)

- 1. Disconnect battery negative (—) cable.
- 2. Cut all tie straps. Note locations of tie straps.
- Remove all hold-down clamps. Note locations of clamps.
- 4. Loosen thumb screw and remove beacon light.
- 5. Unscrew socket outlet from beacon light support tube.
- 6. Disconnect left beacon light harness connectors and leads connectors and leads (1—3).
- 7. Remove left beacon light harness from beacon light support tube.
- 8. Replace left beacon light harness.

NOTE: Use mechanic's fish tape to aid in routing of new harness through beacon light support tube.

- 9. Route left beacon light harness through beacon light support tube.
- 10. Connect beacon light (1) lead to socket outlet.
- 11. Make 12 complete counterclockwise revolutions to socket outlet with wire attached. This is necessary to minimize the wire twist after the socket outlet is installed into the beacon light support tube.
- 12. Screw socket outlet into beacon light support tube and tighten securely.

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SW03989,00018C7 -19-03APR13-1/2

PUPX001165 —UN—02APR09

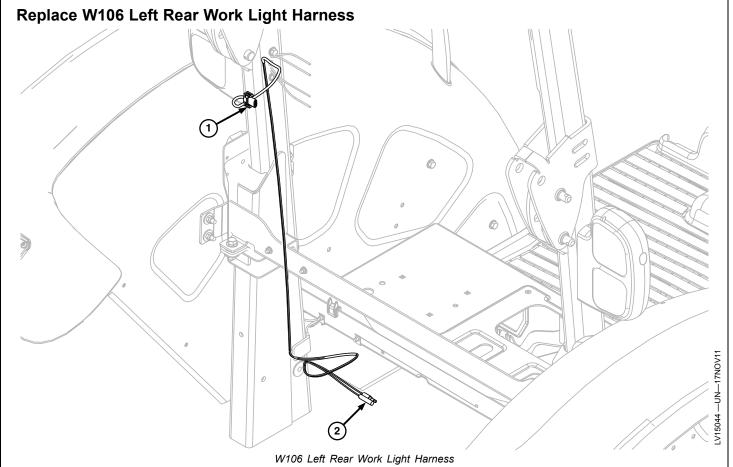
- 13. Install beacon light (1) until fully seated and tighten thumb screw securely.
- 14. Connect left beacon light harness ground wire (2) to support plate. Tighten to specification.

Specification

M8 Flange Nut—Torque...... 40 N·m (30 lb.-ft.)

- 15. Connect chassis to left beacon light harness connectors (3).
- 16. Install hold-down clamps and tie straps at previous locations.
- 17. Connect battery negative (—) cable.

SW03989.00018C7 -19-03APR13-2/2



1-E11 Left Rear Work Light

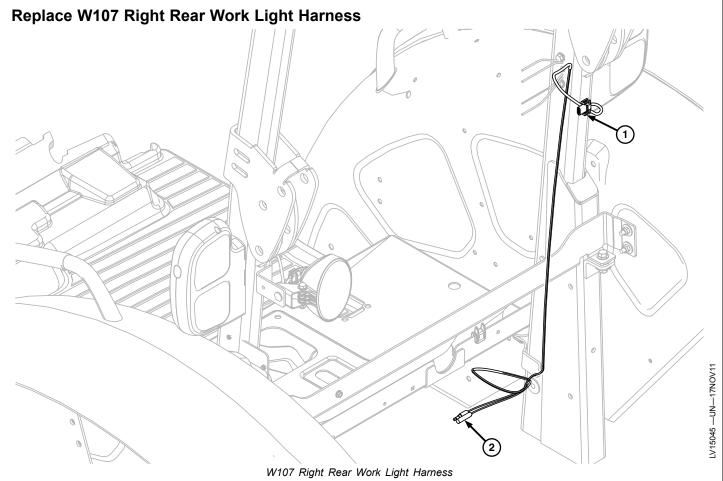
2—X113 Chassis to Left Rear Work Light (OOS)

- 1. Disconnect battery negative (—) cable.
- 2. Cut all tie straps and remove all hold-down clamps. Note locations of tie straps and clamps.
- 3. Disconnect left rear work light harness connectors (1 and 2).
- Remove left rear work light harness from inside of left ROPS post.
- 5. Replace left rear work light harness.

NOTE: To aid in installation of wire harness, route mechanic's fish tape through left ROPS post and tape it to loose wire ends of wire harness.

- 6. Route left rear work light harness through inside of left ROPS post.
- 7. Connect left rear work light harness connectors (1 and 2).
- 8. Install hold-down clamps and tie straps at previous locations.
- 9. Connect battery negative (—) cable.

SW03989,00018C8 -19-03APR13-1/1



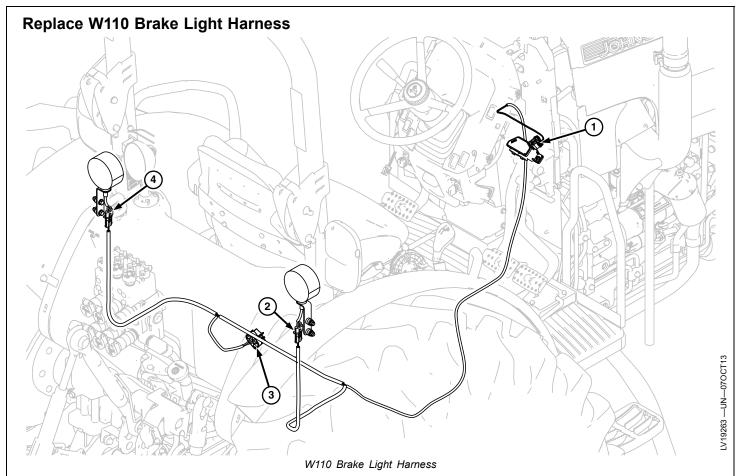
1—E12 Right Rear Work Light 2—X114 Chassis to Right Rear Work Light (OOS)

- 1. Disconnect battery negative (—) cable.
- 2. Cut all tie straps and remove all hold-down clamps. Note locations of tie straps and clamps.
- 3. Disconnect right rear work light harness connectors (1 and 2).
- 4. Remove right rear work light harness from inside of left ROPS post.
- 5. Replace right rear work light harness.

NOTE: To aid in installation of wire harness, route mechanic's fish tape through left ROPS post and tape it to loose wire ends of wire harness.

- 6. Route right rear work light harness through inside of left ROPS post.
- 7. Connect right rear work light harness connectors (1 and 2).
- 8. Install hold-down clamps and tie straps at previous locations.
- 9. Connect battery negative (—) cable.

SW03989,00018C9 -19-03APR13-1/1



1-S17 Brake Pedal Switch

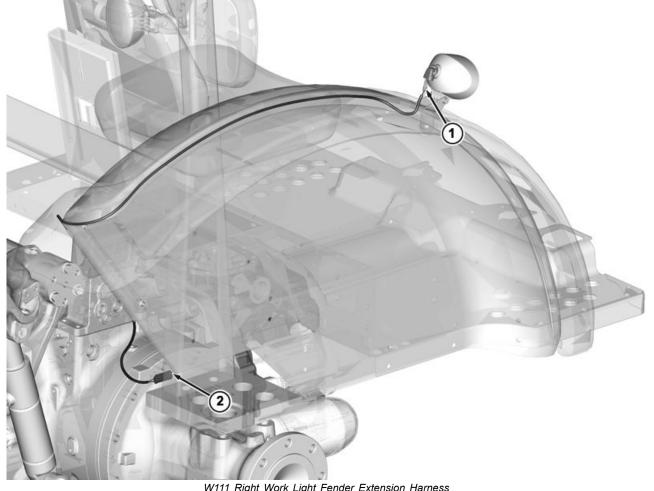
2-H09 Right Brake Light

- 3— X02 Junction Block 4— H08 Left Brake Light
- 1. Disconnect battery negative (—) cable.
- 2. Cut all tie straps and remove all hold-down clamps. Note locations of tie straps and clamps.
- 3. Remove center control console cover. (See Remove and Install Center Control Console in Section 90, Group 10.)
- 4. Disconnect brake light harness connectors (1 and 4).
- 5. Replace brake light harness.

- 6. Connect brake light harness connectors (1 and 4).
- 7. Install tie straps and all hold-down clamps.
- Install center control console cover. (See Remove and Install Center Control Console in Section 90, Group 10.)
- 9. Connect battery negative (—) cable.

SW03989,0001D6E -19-04OCT13-1/1

Replace W111 Right Work Light Fender Extension Harness



W111 Right Work Light Fender Extension Harness

1-E13 Right Front Work Light 2-X107 Chassis to Right Fender Work Light Harness (OOS)

- 1. Disconnect battery negative (—) cable.
- 2. Cut all tie straps. Note locations of tie straps.
- 3. Remove all hold-down clamps. Note locations of clamps.
- 4. Disconnect right work light fender extension harness connectors (1 and 2).
- 5. Remove right work light fender extension harness from right fender extension.
- 6. Replace right work light fender extension harness.

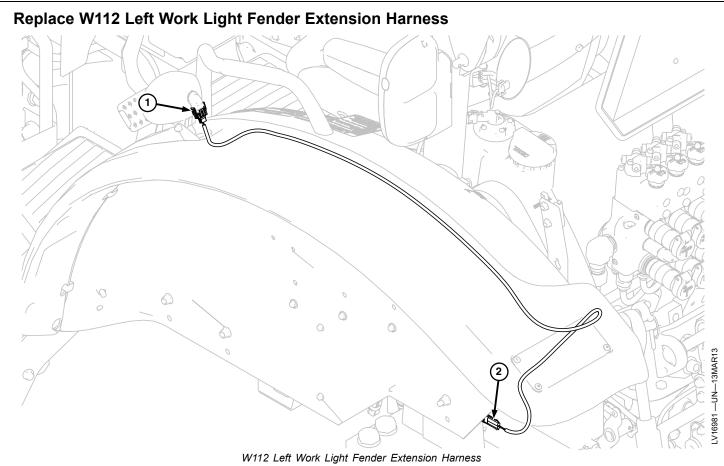
NOTE: To aid in installation of right work light fender extension harness, route mechanic's fish tape

through right fender extension and tape it to loose wire ends of wire harness.

- 7. Route right work light fender extension harness through right fender extension.
- 8. Connect right work light fender extension harness connectors (1 and 2).
- 9. Install hold-down clamps and tie straps at previous locations.
- 10. Connect battery negative (—) cable.

SW03989,00018CC -19-03APR13-1/1

PUPX001203 —UN—19MAY09



1—E14 Left Front Work Light 2—X108 Chassis to Left Fender Work Light Harness (OOS)

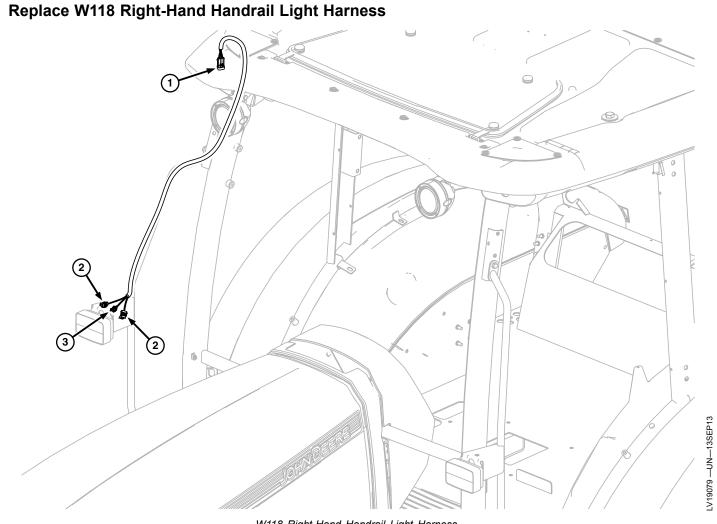
- 1. Disconnect battery negative (—) cable.
- 2. Cut all tie straps. Note locations of tie straps.
- Remove all hold-down clamps. Note locations of clamps.
- 4. Disconnect left work light fender extension harness connectors (1 and 2).
- 5. Remove left work light fender extension harness from left fender extension.
- 6. Replace left work light fender extension harness.

NOTE: To aid in installation of left work light fender extension harness, route mechanic's fish tape

through right fender extension and tape it to loose wire ends of wire harness.

- 7. Route left work light fender extension harness through left fender extension.
- 8. Connect left work light fender extension harness connectors (1 and 2).
- 9. Install hold-down clamps and tie straps at previous locations.
- 10. Connect battery negative (—) cable.

SW03989,00018CD -19-03APR13-1/1



W118 Right-Hand Handrail Light Harness

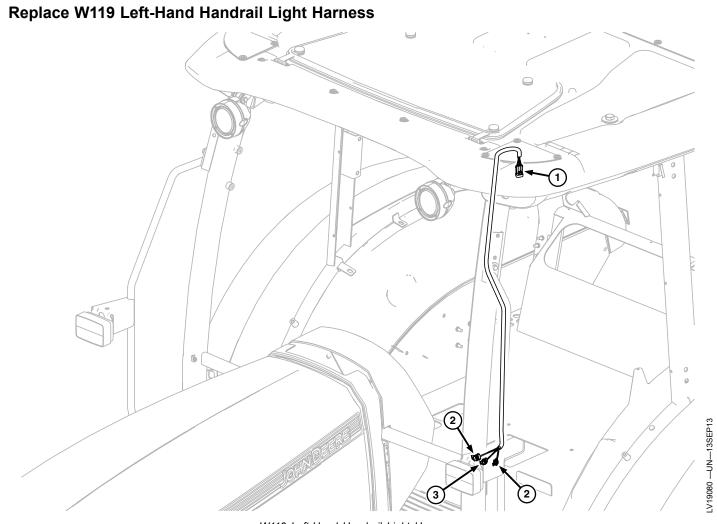
- 1-X126 Roof to Right-Hand **Handrail Light Harness**
- 2—E21 Right Front High/Low Beam/Clearance Light
- Disconnect battery negative (—) cable.
- 2. Remove right-side access cover in cab outer roof.
- 3. Disconnect and cut-off roof to right front grab handle light harness connector (1).
- 4. Disconnect front right grab handle light harness connectors (3) and remove front right grab handle light harness.
- 5. Remove roof to right front grab handle light harness connector (1) from replacement harness. (See Replace WEATHER PACK™ Connector in this group.)

NOTE: To aid in installation of wire harness, route mechanic's fish tape through cab access hole 3-H23 Right Front Clearance/Turn/Warning Light (with License and Clearance Lights)

> in cab roof and down front right cab post and tape it to end of wire harness.

- 6. Route front right grab handle light harness and connect right front grab handle light harness connector (3).
- 7. Install roof to right front grab handle light harness connector (1) to front right grab handle light harness. (See Replace WEATHER PACK™ Connector in this
- 8. Connect roof to right front grab handle light harness connector (1) and install right-side access cover in cab outer roof.
- 9. Connect battery negative (—) cable.

SW03989,0001D89 -19-08OCT13-1/1



W119 Left-Hand Handrail Light Harness

- 1—X127 Roof to Left-Hand Handrail Light Harness
- 2—E22 Left Front High/Low Beam/Clearance Light
- 1. Disconnect battery negative (—) cable.
- 2. Remove left-side access cover in cab outer roof.
- 3. Disconnect and cut-off roof to left front grab handle light harness connector (1).
- 4. Disconnect front left grab handle light harness connector (3) and remove front left grab handle light harness.
- Remove roof to left front grab handle light harness connector (1) from replacement harness. (See Replace WEATHER PACK™ Connector in this group.)

NOTE: To aid in installation of wire harness, route mechanic's fish tape through cab access hole

3—H24 Left Front Clearance/Turn/Warning Light (with License and Clearance Lights)

in cab roof and down front left cab post and tape it to end of wire harness.

- 6. Route front left grab handle light harness and connect left front grab handle light harness connector (3).
- 7. Install roof to left front grab handle light harness connector (1) to front left grab handle light harness. (See Replace WEATHER PACK™ Connector in this group.)
- 8. Connect roof to left front grab handle light harness connector (1) and install left-side access cover in cab outer roof.
- 9. Connect battery negative (—) cable.

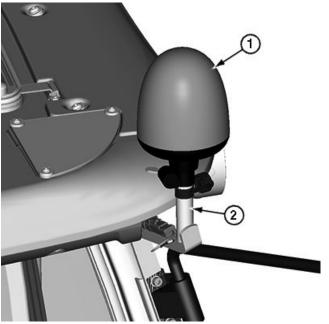
SW03989,0001D8A -19-08OCT13-1/1

Replace W120 Right Beacon Light Harness

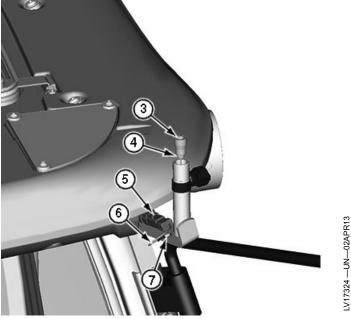
- 1. Disconnect battery negative (—) cable.
- 2. Remove beacon light (1) from post (2).
- 3. Remove beacon light socket (3) by turning counterclockwise and disconnect wire lead (4).
- 4. Remove screw (7) and disconnect right beacon light harness ground (6).
- 5. Disconnect roof to right front beacon light harness connector (5) and replace harness.
- 6. Install wire lead (4), and connect ground (6) and connector (5).
- 7. Loosen screw on bottom of beacon light socket (3) and connect stripped wire lead (4). Tighten screw securely.

NOTE: This is necessary to minimize the wire twist after socket is installed into post (2).

- 8. Make 12 complete counterclockwise revolutions to beacon light socket (3) with wire lead (4) attached.
- 9. Install socket (3) onto post (2) and tighten securely.
- Install beacon light and connect battery negative (—) cable.
 - 1-H07 Beacon Light
 - 2—Post
 - 3— Beacon Light Socket
 - 4-Wire Lead
- 5—X125 Roof to Right Front Beacon Light Harness (Cab)
- 6— XGND7 Right Beacon Light Harness Ground
- 7—Screw



W120 Right Beacon Light Harness with Beacon



W120 Right Beacon Light Harness

SW03989,00018D0 -19-03APR13-1/1

LV17323 —UN-02APR13

Replace W121 Left Beacon Light Harness

- 1. Disconnect battery negative (—) cable.
- 2. Remove beacon light (1) from post (2).
- 3. Remove beacon light socket (3) by turning counterclockwise and disconnect wire lead (4).
- 4. Remove screw (7) and disconnect left beacon light harness ground (6).
- 5. Disconnect roof to left front beacon light harness connector (5) and replace harness.
- 6. Install wire lead (4), and connect ground (6) and connector (5).
- 7. Loosen screw on bottom of beacon light socket (3) and connect stripped wire lead (4). Tighten screw securely.

NOTE: This is necessary to minimize the wire twist after socket is installed into post (2).

- 8. Make 12 complete counterclockwise revolutions to beacon light socket (3) with wire lead (4) attached.
- 9. Install socket (3) onto post (2) and tighten securely.
- Install beacon light and connect battery negative (—) cable.

1-H07 Beacon Light

2-Post

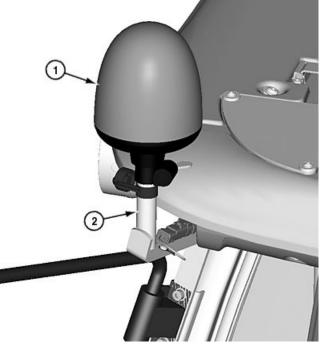
3-Beacon Light Socket

4— Wire Lead

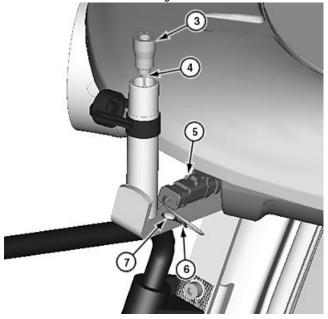
5—X124 Roof to Left Front Beacon Light Harness

6—XGND15 Left Beacon Light Harness Ground

7—Screw



W121 Left Beacon Light Harness with Beacon



W121 Left Beacon Light Harness

SW03989,00018D1 -19-03APR13-1/1

Replace W307 Engine Harness

NOTE: For more information on W307, refer to the Engine Component Technical Manual (CTM).

SW03989,0001D71 -19-04OCT13-1/1

-V16220 —UN—26OCT12

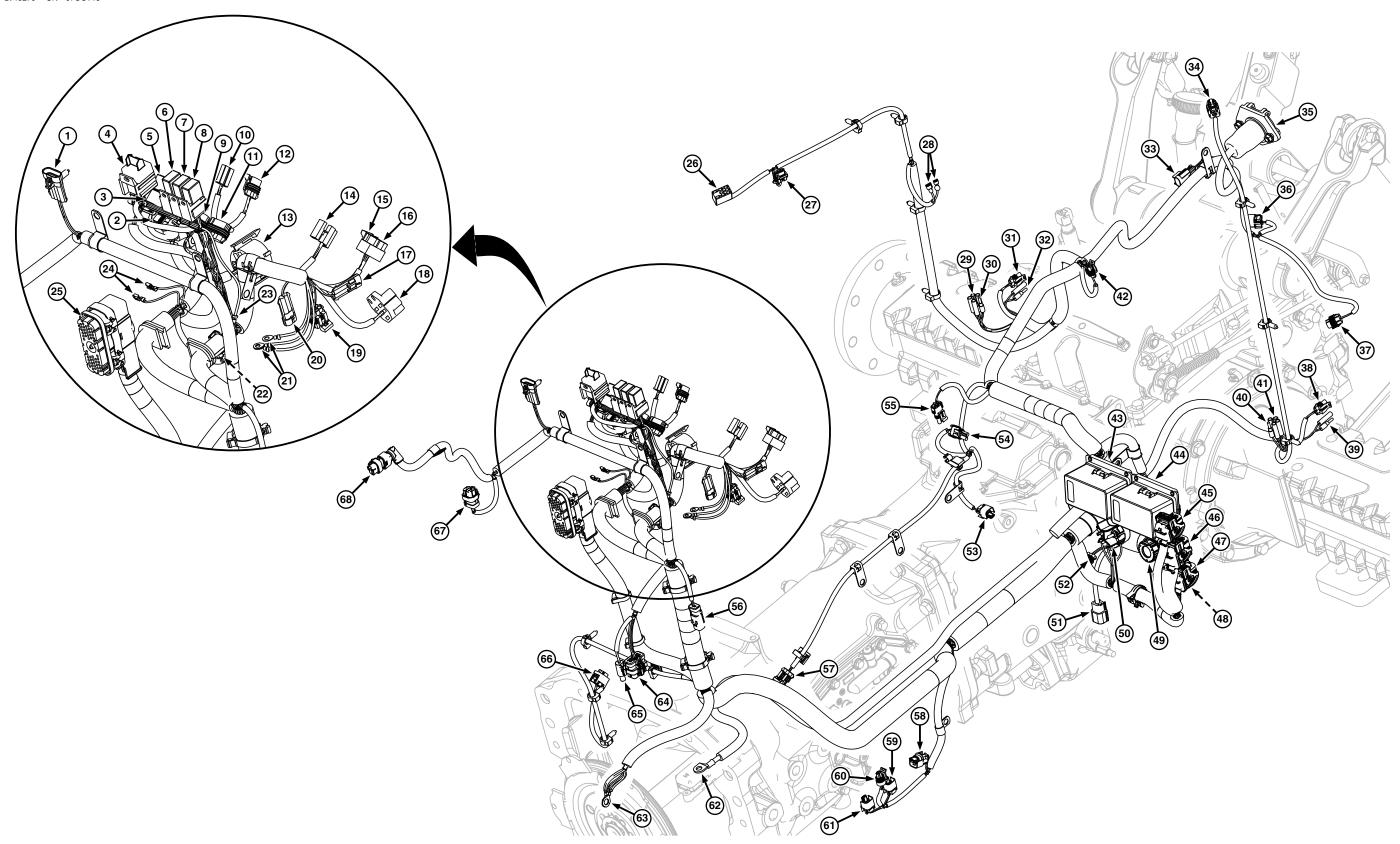
LV16213 —UN—260CT12

0400742 4/4

Wiring Harnesses

Replace W308 Chassis Harness (OOS, PR) LV19270 —UN—070CT13





LV19270

W308 Chassis Harness (OOS, PR) Continued on next page

SW03989,0001D8B -19-08OCT13-1/2

Wiring Harnesses

TM128319 (28OCT13)

40-15-42

- 1—X104 Chassis/Cab to Hood Harness
- 2-S17 Brake Pedal Switch
- 3—A01X4 Instrument Control Cluster (ICC) Connector
- 4-V01 Diode Block
- 5— S35 Exhaust Filter Cleaning Switch
- 6-K11 Neutral Relay
- 7—K07 Accessory Relay
- 8-K27 Headlight Relay
- 9—A01X2 Instrument Control Cluster (ICC) Connector
- 10— S05 Horn Switch
- 11— A01X1 Instrument Control Cluster (ICC) Connector
- 12— S25 Beacon Light Switch
- 13-S01 Key Switch
- 14— S43 Turn Signal Switch
- 15— B21 Power Shuttle Control
- 16— S45 HI/LO Headlight Switch 17— S36 Roll Mode Switch
- 17— 536 Roll Mode Sw
- 18— S06 Light Switch 19— X26 Cab/Chassis Harness to
- Clutch Assembly Harness
- 20— K18 Neutral Start Relay
- 21— K18 Neutral Start Relay

- 22— S14 Forward Neutral Reverse (FNR) Switch
- 23— XGND2 Operator Station Chassis Ground
- 24— H18 Instrument Cluster Alarm
- 25— A09X3 Engine Control Unit (ECU) Connector
- 26— S02 Rear PTO ON/OFF Switch
- 27— B23 Hand Throttle Position Sensor
- 28— X06 Power Outlet (Convenience Outlet with Square Terminals)
- 29— H14 Right Rear Tail/Turn/Warning Light
- 30— X114 Chassis to Right Rear Work Light (OOS)
- 31— X107 Chassis to Right Fender Work Light Harness (OOS)
- 32— X110 Chassis to Right Beacon Light Harness (OOS)
- 33— H06 Back-Up Alarm
- 34— B01 Fuel Level Sensor (PR Transmission)
- 35— X01 Trailer Connector
- 36— Y01 PTO Solenoid Valve (PR Transmission)
- 37— B05 PTO Speed Sensor (PR Transmission)

- 38— X108 Chassis to Left Fender 54– Work Light Harness (OOS)
- 39— X111 Chassis to Left Beacon 55– Light Harness (OOS) 56–
- 40— X113 Chassis to Left Rear Work Light (OOS)
- 41— H15 Left Rear Tail/Turn/Warning Light
- 42— S04 Seat Switch 43— Load Center Fuses and
- Relays 44— Load Center Fuses and
- Relays 45— A06X1 Electrohydraulic
- Control Unit (EHC)
 Connector
- 46— A06X2 Electrohydraulic Control Unit (EHC) Connector
- 47— A06X3 Electrohydraulic Control Unit (EHC) Connector
- 48— A912 CAN Terminator (Chassis)
- 49— X10 Service ADVISOR™ Connector
- 50-X02 Junction Block
- 51— S39 MFWD Lever Position Switch
- 52— B10 Wheel Speed Sensor
- 53— B11 Hydraulic Oil Temperature Sensor (PR Transmission)

- 54— S34 Speed Lever Neutral Switch
- 55— S18 Park Switch
- 56— A911 CAN Terminator (Cab/Operator Station)
- 57— B24 Top Shaft Speed Sensor
- 58— Y07 Clutch Enable Solenoid Valve
- 59— Y06 Transmission Reverse Solenoid Valve
- 60— B12 Enable Pressure Sensor
- 61— Y05 Transmission Forward (Low) Solenoid Valve
- 62— X09 Engine/Cab Power/Chassis Harness
- to Left Front Junction Block
- 63— XGND1 Single Point Ground 64— X11 Engine/After Treatment
- Interface Connector 65— X14 Single Pin Deutsch Engine Harness Connector
- to Chassis 66— B32 Foot Throttle Position Sensor
- 67— B63 After Treatment Air Temperature Sensor
- 68— B62 DPF Delta Pressure Sensor

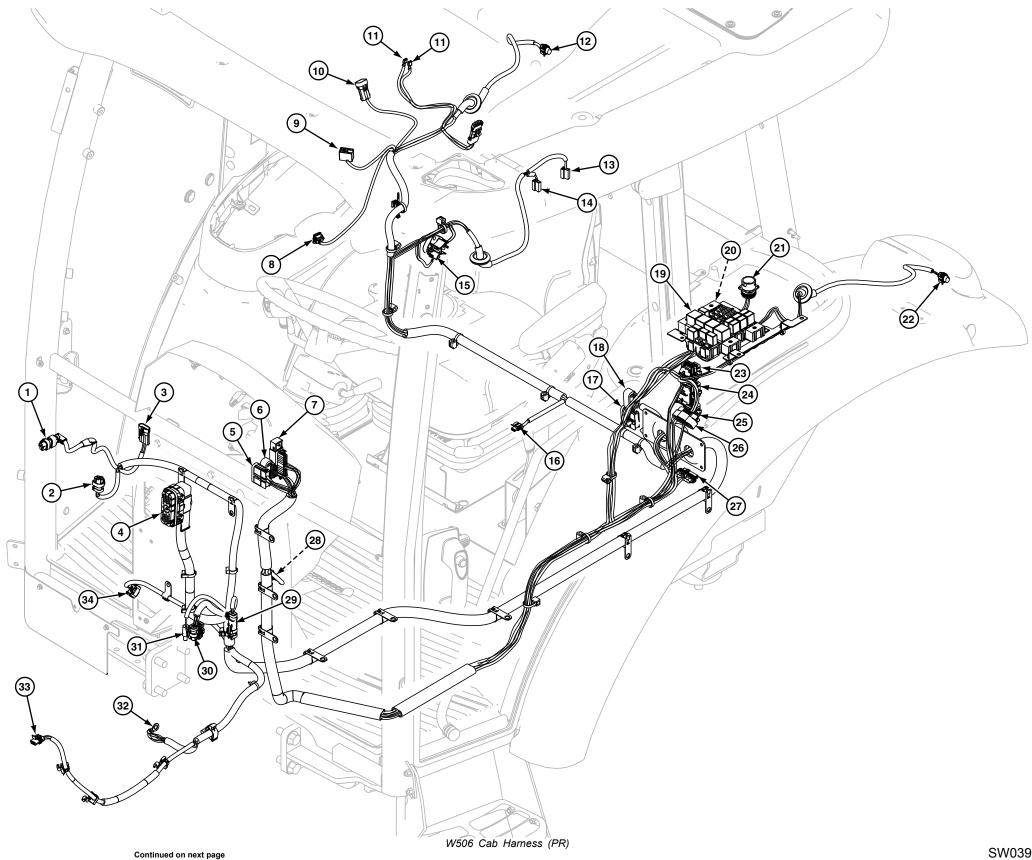
- 1. Open hood and disconnect battery negative (—) cable.
- 2. Remove control console. (See Remove and Install Control Console in Section 90, Group 10.)
- 3. Remove right-side control console. (See Remove and Install Right-Side Control Console—Open Operator Station in Section 90, Group 10.)
- 4. Remove left-side control console. (See Remove and Install Left-Side Control Console—Open Operator Station in Section 90, Group 10.)
- 5. Remove left-side fender. (See Remove and Install Fenders—Open Operator Station in Section 80, Group 20.)
- 6. Cut all tie straps and remove all hold-down clamps. Note locations of tie straps and clamps.
- Disconnect chassis harness connectors and leads (1—68).
- Replace chassis harness.

- Connect chassis harness connectors and leads (1—68).
- 10. Install hold-down clamps and tie straps at previous locations.
- 11. Install control console. (See Remove and Install Control Console in Section 90, Group 10.)
- 12. Install right-side control console. (See Remove and Install Right-Side Control Console—Open Operator Station in Section 90, Group 10.)
- Install left-side control console. (See Remove and Install Left-Side Control Console—Open Operator Station in Section 90, Group 10.)
- 14. Install left-side fender. (See Remove and Install Fenders—Open Operator Station in Section 80, Group 20.)
- 15. Connect battery negative (—) cable and close hood.

SW03989,0001D8B -19-08OCT13-2/2

Wiring Harnesses

Replace W506 Cab Harness (PR) LV16599 —UN—14MAR13



SW03989,0001D5F -19-24SEP13-1/2

Wiring Harnesses

40-15-46

TM128319 (28OCT13)

Wiring Harnesses

- -B62 DPF Delta Pressure Sensor
- 2-B63 After Treatment Air **Temperature Sensor**
- -X104 Chassis/Cab to Hood **Harness**
- A09X3 Engine Control Unit (ECU) Connector
- -X141 Cab to Front Console Harness
- -X140 Cab to Front Console **Harness**
- 7-X142 Cab to Front Console Harness
- B23 Hand Throttle Position
- 10— S11 Rear Wiper Switch

- 11- X06 Power Outlet (Convenience Outlet with **Square Terminals)**
- 12— H02 Right Tail/Turn Light
- 13— M06 Front Washer Pump (Two Speed)
- 14— M08 Rear Washer Pump
- 15— X02 Junction Block 16-S04 Seat Switch
- 17— X130 Cab/OOS Chassis to Transmission Harness
- 18-X132 Cab/Chassis to Transmission Harness (PR Transmission)
- 19— Load Center Fuses and Relays
- 9—S02 Rear PTO ON/OFF Switch 20—X16 Left Rear Junction **Block to Cab Power Harness**

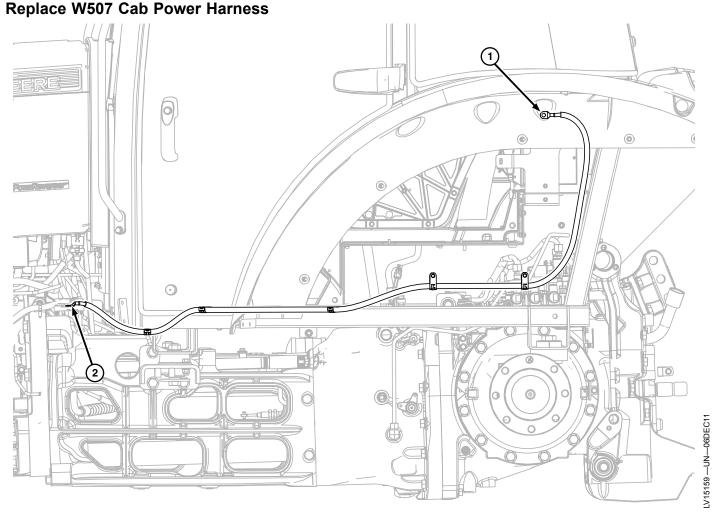
- X10 Service ADVISOR™ Connector
- 22— H03 Left Tail/Turn Light
- A06X1 Electrohydraulic Control Unit (EHC) Connector
- A06X2 Electrohydraulic Control Unit (EHC) Connector
- 25— A06X3 Electrohydraulic Control Unit (EHC) Connector
- 26— X919 Cab to Roof Harness **Connector without License** Plate Light
- 27— XSP1 Circuit 050 Splice Pack 28-X26 Cab/Chassis Harness to
- **Clutch Assembly Harness**

- A911 CAN Terminator (Cab/Operator Station)
- X11 Engine/After Treatment **Interface Connector**
- 31-X14 Single Pin Deutsch **Engine Harness Connector** to Chassis
- 32— XGND1 Single Point Ground 33-M04 A/C Compressor Clutch
- 34— B32 Foot Throttle Position Sensor

- Open hood and disconnect battery negative (—) cable.
- 2. Remove control console. (See Remove and Install Control Console in Section 90, Group 10.)
- 3. Remove right-side control console. (See Remove and Install Right-Side Control Console—Cab in Section 90, Group 10.)
- 4. Remove left-side control console. (See Remove and Install Left-Side Control Console—Cab in Section 90. Group 10.)
- 5. Remove left and right fender shields from underside of rear fenders.
- 6. Remove floor mat.
- 7. Cut all tie straps and remove all hold-down clamps. Note locations of tie straps and clamps.
- 8. Disconnect cab harness connectors and leads (1—34).
- 9. Replace cab harness.

- 10. Connect cab harness connectors and leads (1—34).
- 11. Install hold-down clamps and tie straps at previous locations.
- 12. Install floor mat.
- 13. Install control console. (See Remove and Install Control Console in Section 90, Group 10.)
- 14. Install right-side control console. (See Remove and Install Right-Side Control Console—Cab in Section 90, Group 10.)
- 15. Install left-side control console. (See Remove and Install Left-Side Control Console—Cab in Section 90, Group 10.)
- 16. Install left and right fender shields from underside of rear fenders.
- 17. Connect battery negative (—) cable and close hood.

SW03989,0001D5F -19-24SEP13-2/2



W507 Cab Power Harness

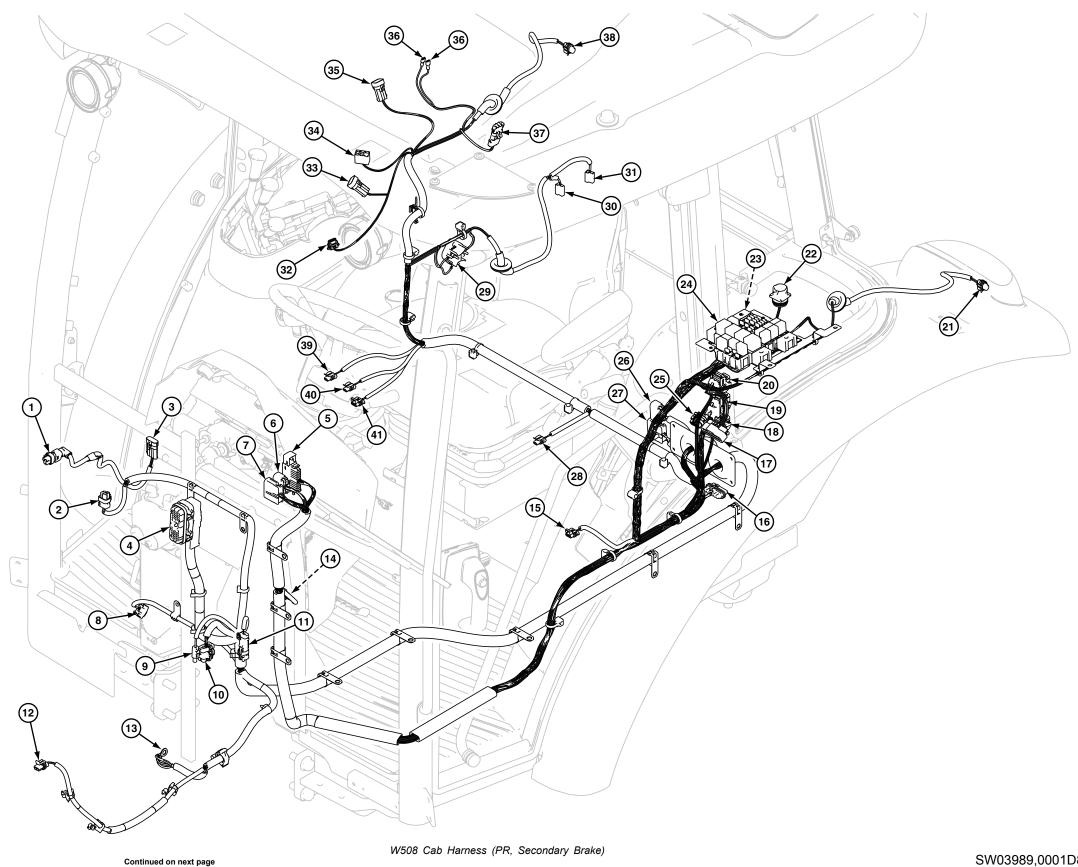
- 1—X16 Left Rear Junction Block 2—X09 Engine/Cab to Cab Power Harness Power/Chassis Harness to Left Front Junction Block
- 1. Disconnect battery negative (—) cable.
- 2. Remove left-side control console. (See Remove and Install Left-Side Control Console—Cab in Section 90, Group 10.)
- 3. Cut all tie straps and remove all hold-down clamps. Note locations of tie straps and clamps.
- 4. Disconnect cab power harness leads (1 and 2).

NOTE: Use mechanic's fish tape to aid in routing of new power harness.

- 5. Replace cab power harness.
- 6. Connect cab power harness leads (1 and 2).
- 7. Install hold-down clamps and tie straps at previous locations.
- 8. Install left-side control console. (See Remove and Install Left-Side Control Console—Cab in Section 90, Group 10.)
- 9. Connect battery negative (—) cable.

SW03989,0001D73 -19-04OCT13-1/1

Replace W508 Cab Harness (PR, Secondary Brake) LV19293 —UN—040CT13



SW03989,0001D8C -19-08OCT13-1/2

Wiring Harnesses

40-15-50 TM128319 (28OCT13)

Wiring Harnesses

- -B62 DPF Delta Pressure Sensor
- 2-B63 After Treatment Air **Temperature Sensor**
- -X104 Chassis/Cab to Hood **Harness**
- A09X3 Engine Control Unit (ECU) Connector
- -X141 Cab to Front Console Harness
- -X140 Cab to Front Console **Harness**
- 7-X142 Cab to Front Console Harness
- -B32 Foot Throttle Position Sensor
- -X14 Single Pin Deutsch **Engine Harness Connector to** Chassis
- 10— X11 Engine/After Treatment **Interface Connector**
- 11— A911 CAN Active Terminator

- 12- M04 A/C Compressor Clutch 21- H03 Left Tail/Turn Light
- 13- XGND1 Single Point Ground 22-
- 14-X26 Cab/Chassis Harness to Clutch Assembly Harness
- S33 Secondary Brake Switch (PR Transmission)
- 16— XSP1 Circuit 050 Splice Pack
- 17— X918 Cab to Roof Harness Connector with License Plate Light
- 18— A06X3 Electrohydraulic Control Unit (EHC) Connector
- 19— A06X2 Electrohydraulic Control Unit (EHC) Connector
- 20— A06X1 Electrohydraulic Control Unit (EHC) Connector

- X10 Service ADVISOR™ Connector
- X16 Left Rear Junction **Block to Cab Power Harness**
- Load Center Fuses and Relays
- X920 Cab to Roof Harness Connector with License Plate Light
- 26-X130 Cab/OOS Chassis to **Transmission Harness**
- 27— X132 Cab/Chassis to Transmission Harness (PR Transmission)
- 28— S04 Seat Switch
- 29-X02 Junction Block
- 30-M08 Rear Washer Pump
- 31-M06 Front Washer Pump (Two Speed)

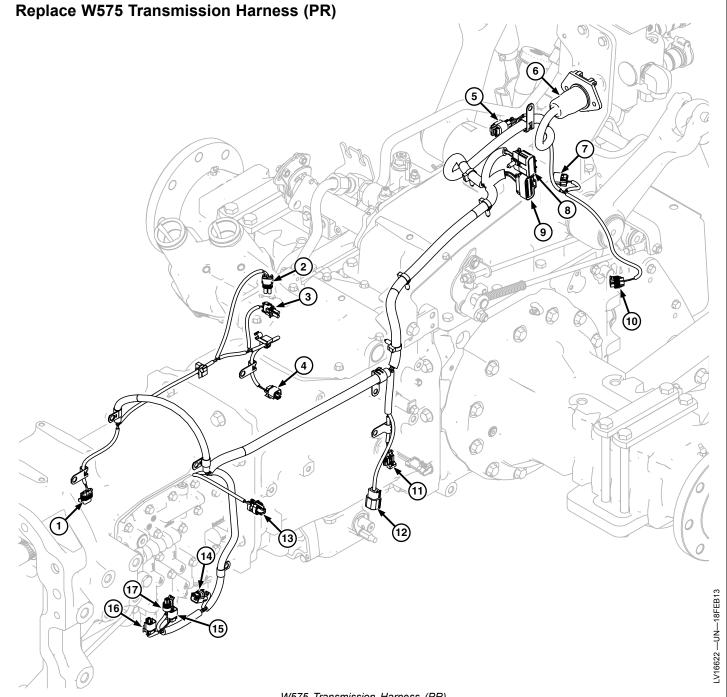
- 32— B23 Hand Throttle Position Sensor
- S16_2 MFWD Switch
- S02 Rear PTO ON/OFF Switch
- S11 Rear Wiper Switch
- X06 Power Outlet
- X17 Cab/Chassis Harness to **Convenience Outlet**
- H02 Right Tail/Turn Light
- 39— S23 High/Low Shifter Switch
- 40-X18 Cab Harness to Multi-Function Control **Lever Harness**
- X21 Cab Harness to **Multi-Function Control Lever Harness**

- Open hood and disconnect battery negative (—) cable.
- Remove control console. (See Remove and Install) Control Console in Section 90, Group 10.)
- Remove right-side control console. (See Remove and Install Right-Side Control Console—Cab in Section 90, Group 10.)
- 4. Remove left-side control console. (See Remove and Install Left-Side Control Console—Cab in Section 90, Group 10.)
- 5. Remove left and right fender shields from underside of rear fenders.
- Remove floor mat.
- 7. Cut all tie straps and remove all hold-down clamps. Note locations of tie straps and clamps.
- 8. Disconnect cab harness connectors and leads (1—41).
- Replace cab harness.

10. Connect cab harness connectors and leads (1—41).

- 11. Install hold-down clamps and tie straps at previous locations.
- 12. Install floor mat.
- 13. Install control console. (See Remove and Install Control Console in Section 90, Group 10.)
- 14. Install right-side control console. (See Remove and Install Right-Side Control Console—Cab in Section 90, Group 10.)
- 15. Install left-side control console. (See Remove and Install Left-Side Control Console—Cab in Section 90,
- 16. Install left and right fender shields from underside of rear fenders.
- 17. Connect battery negative (—) cable and close hood.

SW03989,0001D8C -19-08OCT13-2/2



W575 Transmission Harness (PR)

- 1—B24 Top Shaft Speed Sensor
- 2-S18 Park Switch
- -S34 Speed Lever Neutral Switch
- -B11 Hydraulic Oil Temperature Sensor (PR Transmission)
- H06 Back-Up Alarm
- 6—X01 Trailer Connector
- 7—Y01 PTO Solenoid Valve (PR Transmission)
- -X130 Cab/OOS Chassis to **Transmission Harness**
- -X132 Cab/Chassis to Transmission Harness (PR Transmission)
- 10-B05 PTO Speed Sensor (PR 15-Transmission)
- 11— B10 Wheel Speed Sensor
- 12— S39 MFWD Lever Position Switch
- B01 Fuel Level Sensor (PR Transmission)
- Y07 Clutch Enable Solenoid Valve
- Y06 Transmission Reverse Solenoid Valve
 - 2. Remove seat. (See Remove and Install Seat and Support—Open Operator Station or Remove and Install Seat and Support—Cab in Section 90, Group 05.)

1. Disconnect battery negative (—) cable.

NOTE: To aid in the removal and routing of wire harness, remove seat.

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SW03989,0001D75 -19-04OCT13-1/2

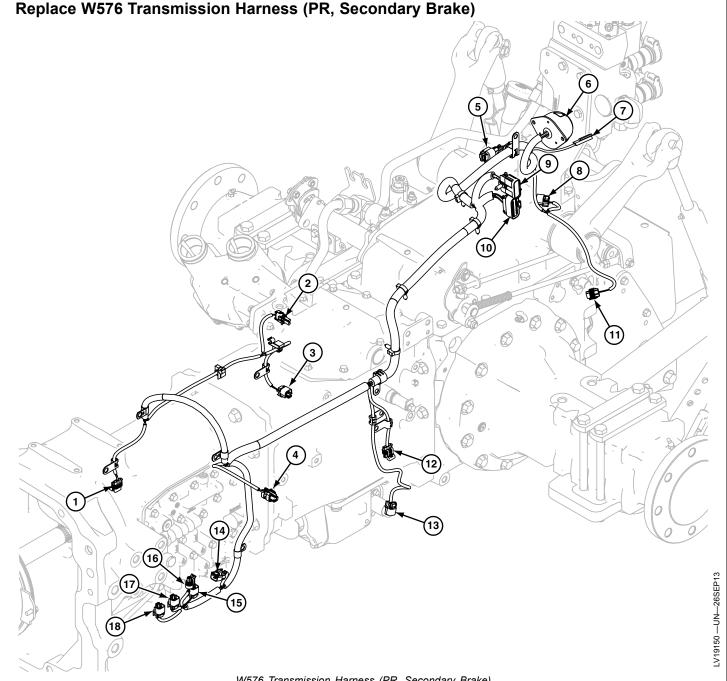
- Y05 Transmission Forward

(Low) Solenoid Valve 17— B12 Enable Pressure Sensor

Wiring Harnesses

- 3. Cut all tie straps and remove all hold-down clamps.
- 4. Disconnect transmission harness connectors and leads (1—17).
- 5. Replace transmission harness.
- 6. Connect transmission harness connectors and leads (1—17).
- 7. Install hold-down clamps and tie straps at previous locations.
- 8. Install seat. (See Remove and Install Seat and Support—Open Operator Station or Remove and Install Seat and Support—Cab in Section 90, Group 05.)
- 9. Connect battery negative (—) cable.

SW03989,0001D75 -19-04OCT13-2/2



W576 Transmission Harness (PR, Secondary Brake)

- B24 Top Shaft Speed Sensor
- -S34 Speed Lever Neutral Switch
- -B11 Hydraulic Oil Temperature Sensor (PR Transmission)
- -B01 Fuel Level Sensor (PR Transmission)
- 5— H06 Back-Up Alarm
- 6-X01 1 Trailer Connector (with Implement Flood Light Connector)

1. Disconnect battery negative (—) cable.

harness, remove seat.

NOTE: To aid in the removal and routing of wire

- Connector
- Y01 PTO Solenoid Valve (PR Transmission)
- X132 Cab/Chassis to Transmission Harness (PR Transmission)
- 10-X130 Cab/OOS Chassis to **Transmission Harness**
- 7-X01_2 Implement Flood Light 11-B05 PTO Speed Sensor (PR 17-Transmission)
 - B10 Wheel Speed Sensor
 - Y02 MFWD Solenoid (PR Transmission)
 - Y07 Clutch Enable Solenoid Valve
 - Y06 Transmission Reverse Solenoid Valve
 - 16-B12 Enable Pressure Sensor
- Y05 Transmission Forward (Low) Solenoid Valve
 - **Y10 Transmission Forward** (High) Solenoid Valve
- 2. Remove seat. (See Remove and Install Seat and Support—Cab in Section 90, Group 05.)
- 3. Cut all tie straps and remove all hold-down clamps.

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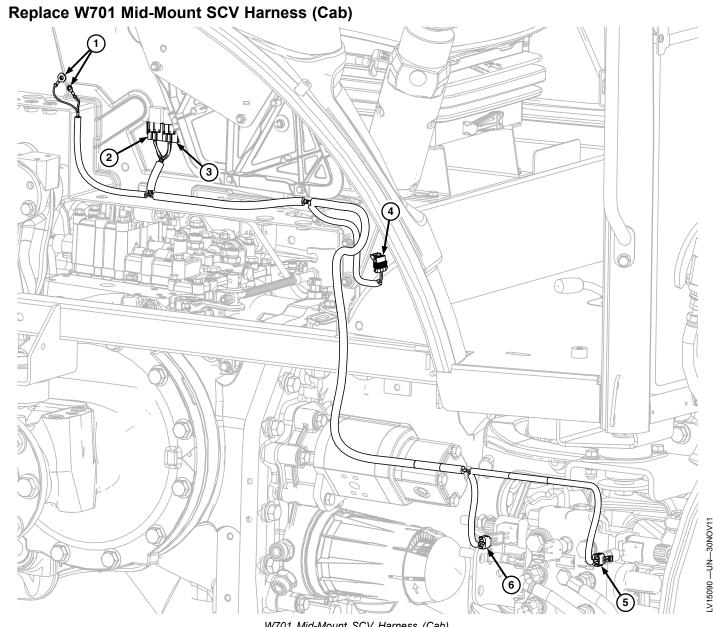
TM128319 (28OCT13)

SW03989,0001D8D -19-08OCT13-1/2

Wiring Harnesses

- 4. Disconnect transmission harness connectors and leads (1—18).
- 5. Replace transmission harness.
- 6. Connect transmission harness connectors and leads (1—18).
- 7. Install hold-down clamps and tie straps at previous locations.
- 8. Install seat. (See Remove and Install Seat and Support—Cab in Section 90, Group 05.)
- 9. Connect battery negative (—) cable.

SW03989,0001D8D -19-08OCT13-2/2



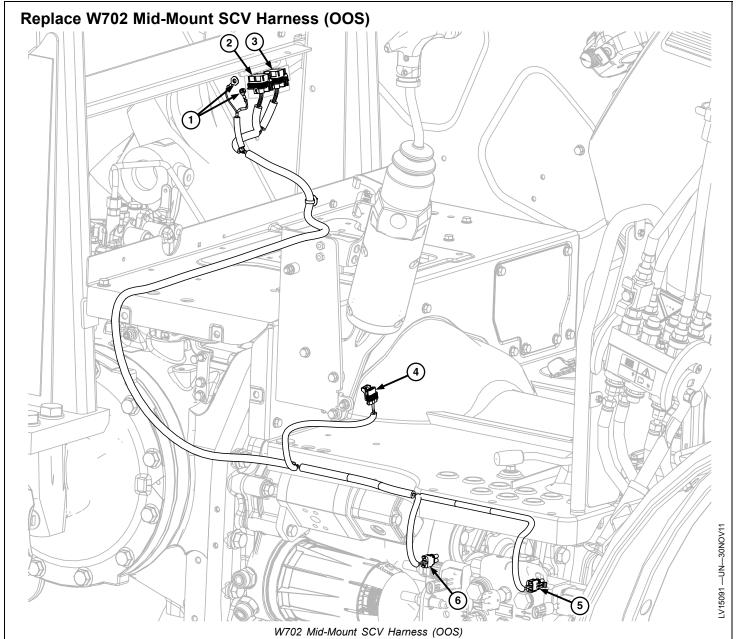
W701 Mid-Mount SCV Harness (Cab)

- -X02 Junction Block - K25 Mid-Mount SCV Retract (Black) 3rd Function Relay
- K26 Mid-Mount SCV Extend (Gray) 3rd Function Relay
- S19 Mid-Mount SCV 3rd **Function Switch**
- 1. Disconnect battery negative (—) cable.
- 2. Remove right-side control console. (See Remove and Install Right-Side Control Console—Cab in Section 90, Group 10.)
- 3. Remove right-side upholstery. (See Remove and Install Right-Side Upholstery in Section 90, Group 20.)
- 4. Disconnect mid-mount SCV harness connectors and leads (1-6).
- 5. Cut all tie straps and remove all hold-down clamps. Note locations of tie straps and clamps.

- 5-Y03 Mid-Mount SCV Retract (Black) 3rd Function Solenoid
- Y04 Mid-Mount SCV Extend (Gray) 3rd Function Solenoid
- 6. Replace mid-mount SCV harness and connect harness connectors and leads (1—6).
- 7. Install hold-down clamps and tie straps at previous locations.
- 8. Install right-side upholstery. (See Remove and Install Right-Side Upholstery in Section 90, Group 20.)
- 9. Install right-side control console. (See Remove and Install Right-Side Control Console—Cab in Section 90, Group 10.)
- 10. Connect battery negative (—) cable.

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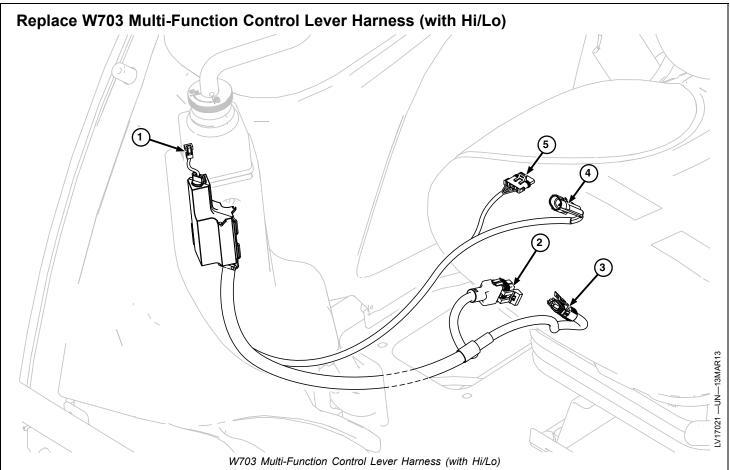
SW03989,00018D8 -19-04APR13-1/2



- 1—X02 Junction Block
- 2— K26 Mid-Mount SCV Extend (Gray) 3rd Function Relay
- 3— K25 Mid-Mount SCV Retract (Black) 3rd Function Relay
- 4—S19 Mid-Mount SCV 3rd Function Switch
- 1. Disconnect battery negative (—) cable.
- 2. Remove load center bracket.
- 3. Cut all tie straps and remove all hold-down clamps. Note locations of tie straps and clamps.
- Disconnect wire connectors and leads (1—6).
- 5. Replace wire harness.

- 5—Y03 Mid-Mount SCV Retract (Black) 3rd Function Solenoid
- Y04 Mid-Mount SCV Extend (Gray) 3rd Function Solenoid
- 6. Connect wire connectors and leads (1—6).
- Install hold-down clamps and tie straps at previous locations.
- 8. Install load center bracket.
- 9. Connect battery negative (—) cable.

SW03989,00018D9 -19-01APR13-1/1



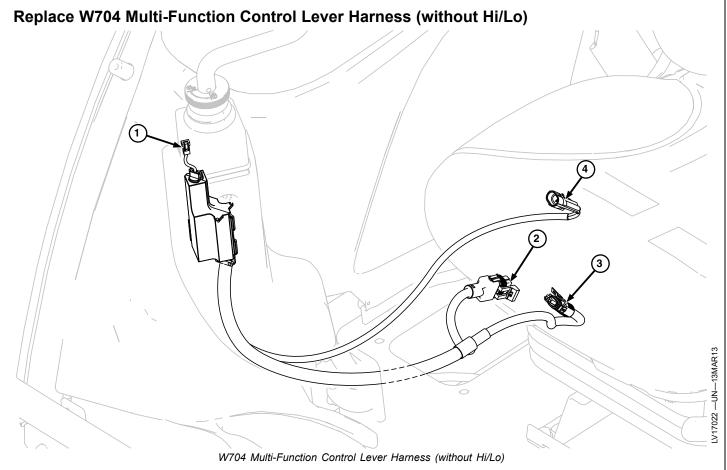
- 1—X24 Multi-Function
 Control Lever Harness to
 Multi-Function Control Lever
 Switch Harness
- 2—X19 Multi-Function Control Lever Harness to Multi-Coupler Harness
- 3—X20 Multi-Function Control Lever Harness to Multi-Coupler Harness
- arness to Multi-Function Control Lever
 Harness Harness
 - 5—X21 Cab Harness to Multi-Function Control Lever Harness

-X18 Cab Harness to

- 1. Disconnect battery negative (—) cable.
- Remove multi-function control lever cover. (See Inspect and Repair Multi-Functional Control Lever and Linkage (with Secondary Brake) in Section 70, Group 25).
- Disassemble multi-function control lever grip. (See Replace Multi-Function Control Lever Switch in Section 40, Group 10.)
- 4. Disconnect multi-function control lever harness connectors and leads (1—5).
- 5. Replace multi-function control lever harness.

- 6. Connect multi-function control lever harness connectors and leads (1—5).
- 7. Assemble multi-function control lever grip. (See Replace Multi-Function Control Lever Switch in Section 40, Group 10.)
- 8. Install multi-function control lever cover. (See Inspect and Repair Multi-Functional Control Lever and Linkage (with Secondary Brake) in Section 70, Group 25).
- 9. Connect battery negative (—) cable.

SW03989,0001D8E -19-08OCT13-1/1

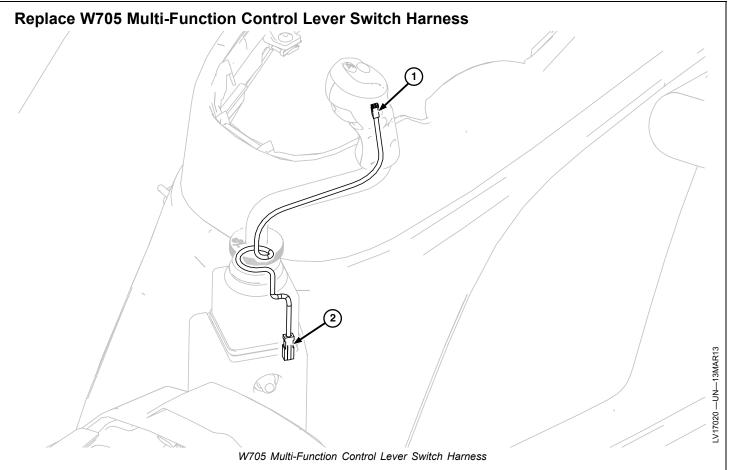


- 1—X24 Multi-Function
 Control Lever Harness to
 Multi-Function Control Lever
 Switch Harness
- 2—X19 Multi-Function Control Lever Harness to Multi-Coupler Harness
- 3—X20 Multi-Function
 Control Lever Harness to
 Multi-Coupler Harness
- 4—X18 Cab Harness to Multi-Function Control Lever Harness

- 1. Disconnect battery negative (—) cable.
- Remove multi-function control lever cover. (See Inspect and Repair Multi-Functional Control Lever and Linkage (with Secondary Brake) in Section 70, Group 25).
- Disassemble multi-function control lever grip. (See Replace Multi-Function Control Lever Switch in Section 40, Group 10.)
- 4. Disconnect multi-function control lever harness connectors and leads (1—4).
- 5. Replace multi-function control lever harness.

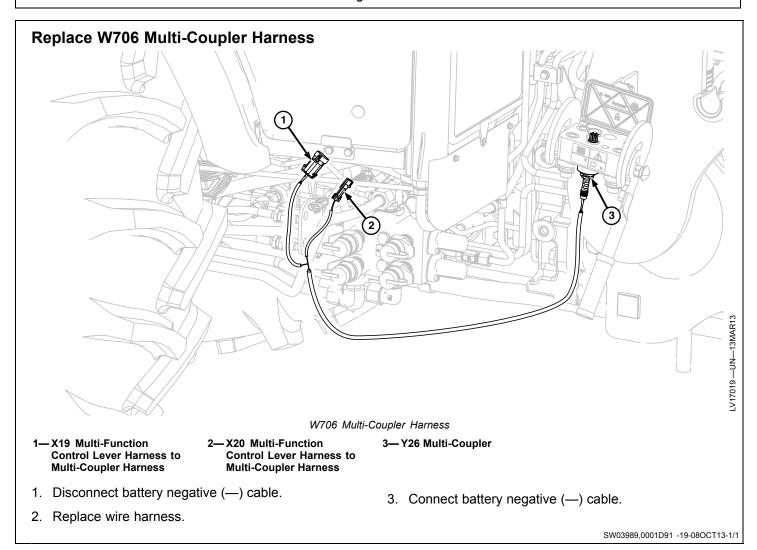
- 6. Connect multi-function control lever harness connectors and leads (1—4).
- 7. Assemble multi-function control lever grip. (See Replace Multi-Function Control Lever Switch in Section 40, Group 10.)
- 8. Install multi-function control lever cover. (See Inspect and Repair Multi-Functional Control Lever and Linkage (with Secondary Brake) in Section 70, Group 25).
- 9. Connect battery negative (—) cable.

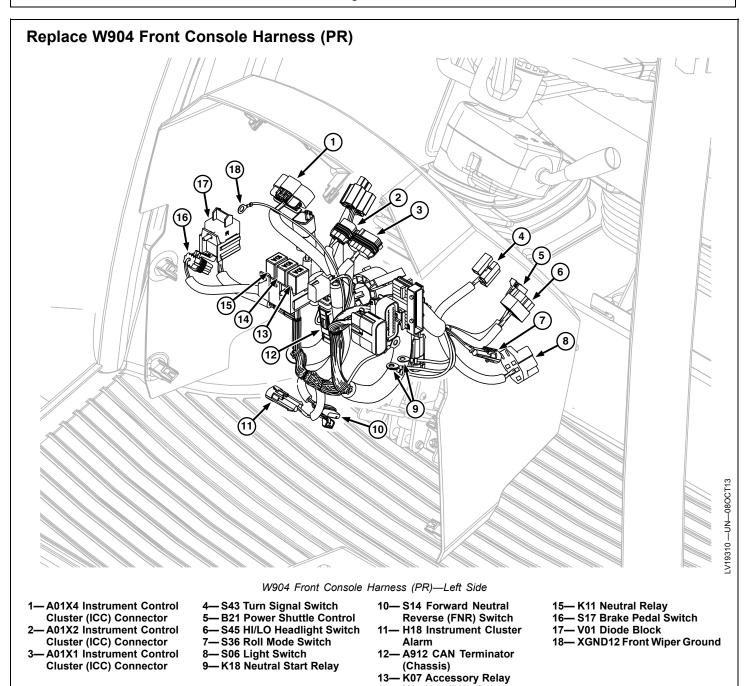
SW03989,0001D8F -19-08OCT13-1/1



- 1—S48 Multi-Function Control Lever Switch
- 2—X24 Multi-Function
 Control Lever Harness to
 Multi-Function Control Lever
 Switch Harness
- 1. Disconnect battery negative (—) cable.
- 2. Disassemble multi-function control lever grip. (See Replace Multi-Function Control Lever Switch in Section 40, Group 10.)
- 3. Replace multi-function control lever switch harness.
- 4. Asseemble multi-function control lever grip. (See Replace Multi-Function Control Lever Switch in Section 40, Group 10.)
- 5. Connect battery negative (—) cable.

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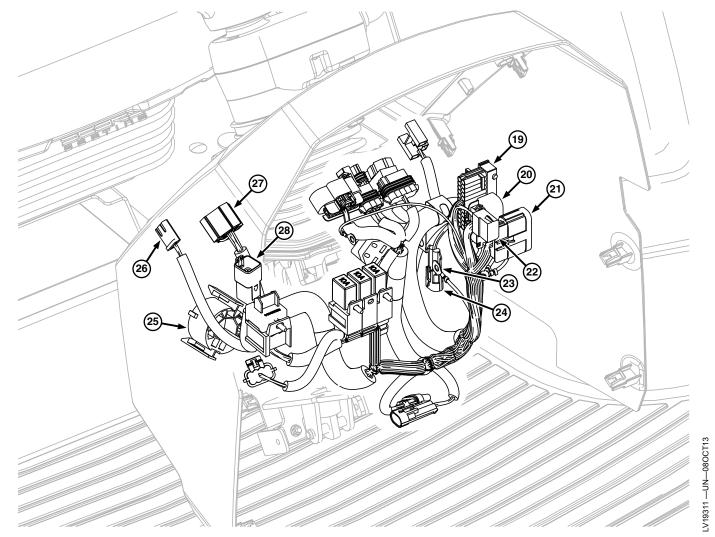




14— K27 Headlight Relay

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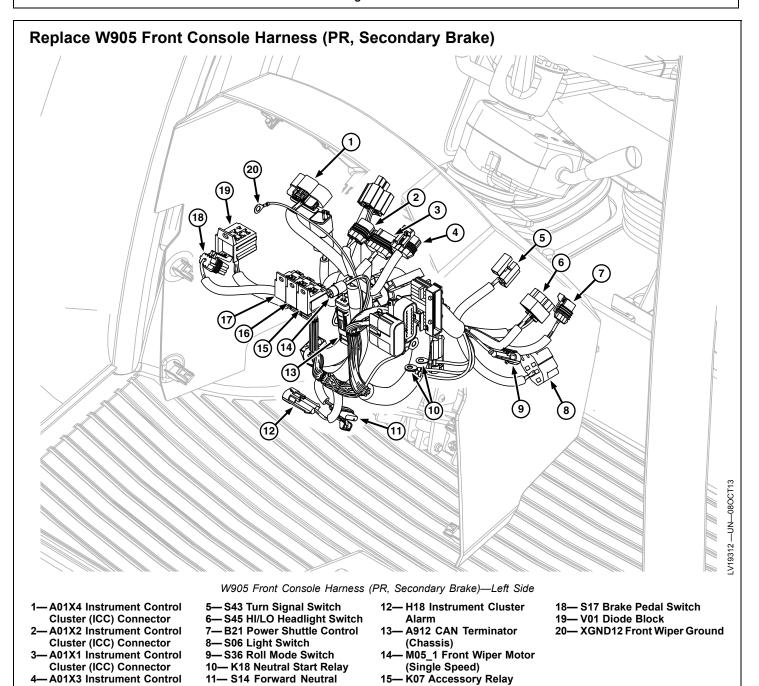


W904 Front Console Harness (PR)—Right Side

- 19— X142 Cab to Front Console
- 22— M05 Front Wiper Mo Speed)
- 20— X141 Cab to Front Console Harness
- 3— XGND3 Vehicle Chassis
- 21— X140 Cab to Front Console Harness
- Ground 24— K18 Neutral Start Relay
- 1. Disconnect battery negative (—) cable.
- Remove center control console cover. (See Remove and Install Center Control Console in Section 90, Group 10.)
- 3. Cut all tie straps and remove all hold-down clamps. Note locations of tie straps and clamps.
- 4. Disconnect front console harness connectors and leads (1—28).
- 5. Replace front console harness.

- 22- M05 Front Wiper Motor (Two 25- S01 Key Switch
 - 26— S05 Horn Switch
 - 27— S30 Front Wiper Switch (Two Speed)
 - 28— S35 Exhaust Filter Cleaning Switch
 - 6. Connect front console harness connectors and leads (1—28).
 - 7. Install hold-down clamps and tie straps at previous locations.
 - 8. Install center control console cover. (See Remove and Install Center Control Console in Section 90, Group 10.)
 - 9. Connect battery negative (—) cable.

SW03989,0001D85 -19-08OCT13-2/2



16— K27 Headlight Relay 17— K11 Neutral Relay

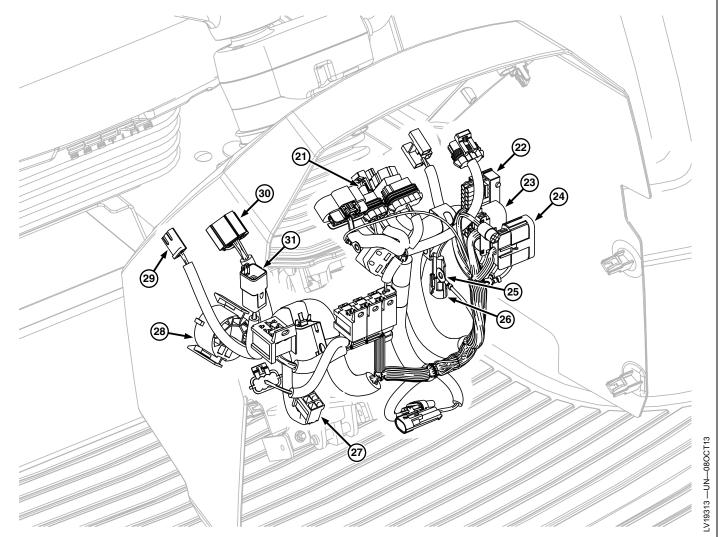
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TM128319 (28OCT13)

Cluster (ICC) Connector

Reverse (FNR) Switch

SW03989,0001D86 -19-08OCT13-1/2



W905 Front Console Harness (PR, Secondary Brake)—Right Side

21— K18 Neutral Start Relay 22— X142 Cab to Front Console

Harness 23— X141 Cab to Front Console Harness 24— X140 Cab to Front Console Harness

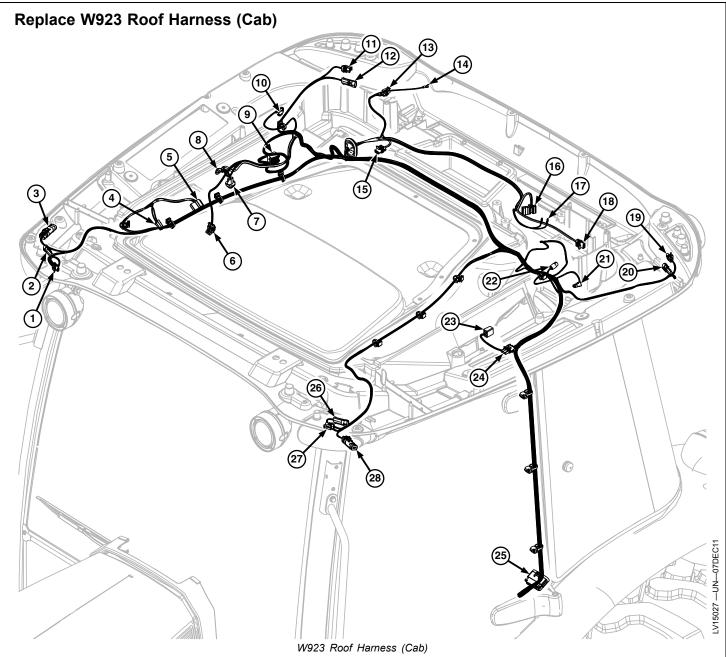
25— XGND3 Vehicle Chassis Ground

26— K18 Neutral Start Relay

- 1. Disconnect battery negative (—) cable.
- Remove center control console cover. (See Remove and Install Center Control Console in Section 90, Group 10.)
- 3. Cut all tie straps and remove all hold-down clamps. Note locations of tie straps and clamps.
- 4. Disconnect wire connectors and leads (1—31).
- 5. Replace front console harness.

- 27— K30 Flasher Logic Relay (with License and Clearance Lights) 28— S01 Kov Switch
- 28— S01 Key Switch 29— S05 Horn Switch
- 30— S30_1 Front Wiper Switch (Single Speed)
- 31— S35 Exhaust Filter Cleaning Switch
- 6. Connect front console harness connectors and leads (1—31).
- 7. Install hold-down clamps and tie straps at previous locations.
- 8. Install center control console cover. (See Remove and Install Center Control Console in Section 90, Group 10.)
- 9. Connect battery negative (—) cable.

SW03989,0001D86 -19-08OCT13-2/2



- E04 Right Front Work Light 2-H04 Right Front Warning Light 9-X08 Radio Connector
- -X125 Roof to Right Front Beacon Light Harness (Cab)
- -S09 A/C ON/OFF Switch
- -S08 HVAC Blower Switch
- S25 Beacon Light Switch
- 7—E18 Right-Hand Console Light
- 8-XGND9 Cab Roof Ground
- 10— B240 Right Speaker
- 11— E06 Right Rear Work Light
- 12— H10 Right Rear Warning Light
- B08 A/C High/Low Pressure Switch
- XGND11 Evaporator Ground
- M03 Right HVAC Blower Motor
- 16-R03 HVAC Resistor
- 17— B07 A/C Deicing Switch
- M02 Left HVAC Blower Motor
- E05 Left Rear Work Light
- 20- H11 Left Rear Warning Light 26-
- 21-B241 Left Speaker
- 22- M07 Rear Wiper Motor
- A03 Dome Light and Switch Assembly
- S13 Left Door Switch
- X919 Cab to Roof Harness **Connector without License**
 - **Plate Light**
- H05 Left Front Warning Light
- E03 Left Front Work Light
- X124 Roof to Left Front **Beacon Light Harness (Cab)**

- 1. Disconnect battery negative (—) cable.
- 2. Remove HVAC housing cover plate.
- 3. Remove left-side control console. (See Remove and Install Left-Side Control Console—Cab in Section 90, Group 10.)
- 4. Cut all tie straps and remove all hold-down clamps. Note locations of tie straps and clamps.
- 5. Disconnect roof harness connectors and leads (1—28).
- Replace roof harness.
- 7. Connect roof harness connectors and leads (1—28).

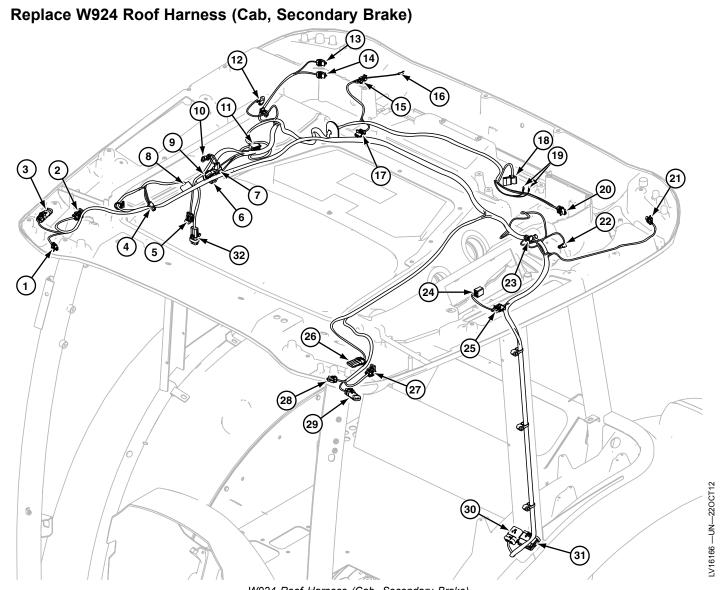
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SW03989,0001D92 -19-08OCT13-1/2

Wiring Harnesses

- 8. Install hold-down clamps and tie straps at previous locations.
- 9. Install left-side control console. (See Remove and Install Left-Side Control Console—Cab in Section 90, Group 10.)
- 10. Install HVAC housing cover plate.
- 11. Connect battery negative (—) cable.

SW03989,0001D92 -19-08OCT13-2/2



W924 Roof Harness (Cab, Secondary Brake)

- 1—E34 Right Front Work Light (with License and Clearance Lights)
- 2-X126 Roof to Right-Hand **Handrail Light Harness**
- -X125 Roof to Right Front Beacon Light Harness (Cab)
- -S09 A/C ON/OFF Switch
- S25 Beacon Light Switch
- S24 Rear Work Light Switch (with License and Clearance Lights)
- E18 Right-Hand Console Light 15-
- 8-S08 HVAC Blower Switch

- 9—S22 Front Work Light Switch (with License and Clearance Liahts)
- 10-XGND9 Cab Roof Ground
- 11-X08 Radio Connector
- 12-B240 Right Speaker
- 13— E36 Right Rear Work Light (with License and Clearance Lights)
- X922 Roof Harness to Roof License Plate Lighting **Harness**
- B08 A/C High/Low Pressure Switch
- XGND11 Evaporator Ground 17-M03 Right HVAC Blower

Motor

- 18-R03 HVAC Resistor
- 19-B07 A/C Deicing Switch
- 20- M02 Left HVAC Blower Motor
- 21—E35 Left Rear Work Light (with License and Clearance Lights)
- 22— B241 Left Speaker
- M07 Rear Wiper Motor
- 24— A03 Dome Light and Switch 31-**Assembly**
- S13 Left Door Switch
- X921 Roof Harness to Front 32— S26 Loader Light Switch Windshield Wiper Harness
- X127 Roof to Left-Hand **Handrail Light Harness**

- 28—E33 Left Front Work Light (with License and Clearance Lights)
- X124 Roof to Left Front **Beacon Light Harness (Cab)**
- X920 Cab to Roof Harness Connector with License Plate Light
- X918 Cab to Roof Harness Connector with License Plate Light

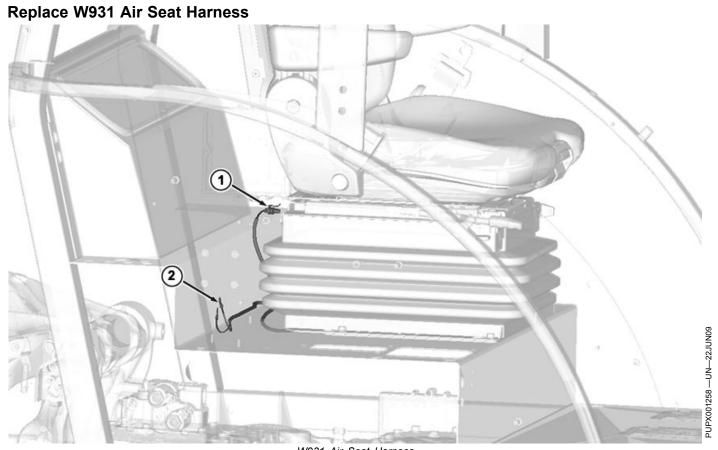
- 1. Disconnect battery negative (—) cable.
- 2. Remove HVAC housing cover plate and cab headliner. (See Remove and Install Headliner in Section 90, Group 20.)
- 3. Remove left-side control console. (See Remove and Install Left-Side Control Console—Cab in Section 90, Group 10.)
- 4. Cut all tie straps and remove all hold-down clamps. Note locations of tie straps and clamps.

Continued on next page

SW03989,0001D93 -19-08OCT13-1/2

- 5. Disconnect roof harness connectors and leads (1—32).
- 6. Replace roof harness and connect harness connectors and leads (1-32).
- 7. Install hold-down clamps and tie straps at previous locations.
- 8. Install left-side control console. (See Remove and Install Left-Side Control Console—Cab in Section 90, Group 10.)
- 9. Install HVAC housing cover plate and cab headliner. (See Remove and Install Headliner in Section 90, Group 20.)
- 10. Connect battery negative (—) cable.

SW03989,0001D93 -19-08OCT13-2/2



W931 Air Seat Harness

1-A05 Air Seat Assembly

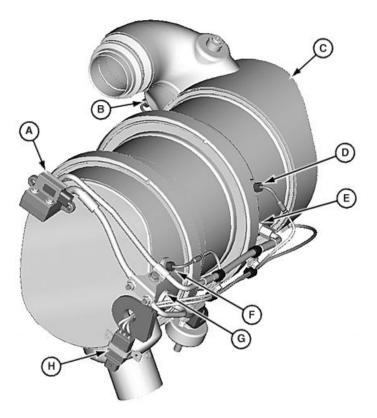
2-X02 Junction Block

- Disconnect battery negative (—) cable.
- Remove right-side control console. (See Remove and Install Right-Side Control Console—Cab or Remove and Install Right-Side Control Console—Open Operator Station in Section 90, Group 10.)
- 3. Remove right-side upholstery, if cab. (See Remove and Install Right-Side Upholstery in Section 90, Group
- 4. Disconnect air seat harness connector and leads (1 and 2).
- 5. Cut all tie straps and remove all hold-down clamps. Note locations of tie straps and clamps.

- 6. Replace air seat harness.
- 7. Connect air seat harness connector and leads (1 and
- 8. Install hold-down clamps and tie straps at previous locations.
- 9. Install right-side upholstery, if cab. (See Remove and Install Right-Side Upholstery in Section 90, Group 20.)
- 10. Install right-side control console. (See Remove and Install Right-Side Control Console—Cab or Remove and Install Right-Side Control Console—Open Operator Station in Section 90, Group 10.)
- 11. Connect battery negative (—) cable.

SW03989,00018DE -19-04APR13-1/1

Replace Exhaust Filter Harness



-V15814 -- UN-19JUN12

Exhaust Filter Harness

A—DPF Differential Pressure Sensor

B—DOC Inlet Temperature Sensor

C—Exhaust Filter

D—DOC Outlet Temperature Sensor

E—DPF Inlet Pressure Sensor

F—DPF Outlet Temperature Sensor

G—DPF Outlet Pressure Sensor

H—Exhaust Filter Temperature Module

CAUTION: Exhaust filter may be hot. Allow exhaust filter to cool before removal. Hot exhaust filter can cause serious burns.

- 1. Disconnect battery negative (—) cable.
- 2. Remove hood. (See Remove and Install Hood in Section 80, Group 20.)
- 3. Cut all tie straps and remove all hold-down clamps. Note locations of tie straps and clamps.
- 4. Disconnect wire connectors and leads (B, D, F and H).

- 5. Remove and replace wire harness.
- 6. Connect wire connectors and leads (B, D, F and H).
- Install hold-down clamps and tie straps at previous locations.
- 8. Install hood. (See Remove and Install Hood in Section 80, Group 20.)
- 9. Connect battery negative (—) cable.

SW03989,00018DF -19-04APR13-1/1

Replace Injector Harness

NOTE: For more information on injector harness replacement, refer to the relevant engine Component Technical Manual (CTM).

SW03989,0001D94 -19-08OCT13-1/1

Section 50 Power Train Repair

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Contents

Group 05 Clutch Housing

Service Equipment and Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the

SERVICEGARD is a trademark of Deere & Company

European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

OUO1023.0003840 -19-19FEB13-1/4

Lifting Brackets......JT01748

Used to remove and install engine. Used to remove and install engine.

OUO1023,0003840 -19-19FEB13-2/4

Flywheel Turning ToolJDE83 Used to rotate flywheel

OUO1023.0003840 -19-19FEB13-3/4

Bushing, Bearing, and Seal Driver Set Used to install bushings in clutch pedal.

OUO1023.0003840 -19-19FEB13-4/4

Other Material

Number Name

TY6333 (U.S.) Moly High Temperature EP Grease Apply to splined ends of traction CXTY6333 (Canadian) and PTO clutch shafts. Apply to ID

of clucth pedal bushings.

OUO1023.0003841 -19-19FEB13-1/1

Specifications

Measurement Specification Item

Clutch Housing-to-Engine Cap Torque 430 N·m (317 lb.-ft.)

Screw M20

Engine/Flywheel Housing-to-Clutch Torque 260 N·m (192 lb.-ft.)

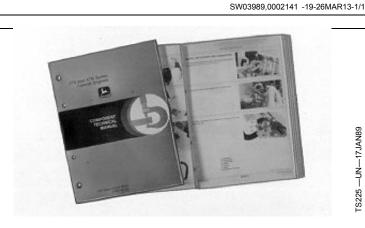
Housing Cap Screw M16

John Deere Transmission Repair—Use **Component Technical Manual**

For complete repair information, use the relevant component technical manual (CTM) in conjunction with this machine manual.

 PowrReverser[™] Transmission -John Deere[™] Pune Works

(Sr. No.PY1068XXXXXXX, LV12363, LV12364, PY10953, LV12781 and PY10952) CTM900519



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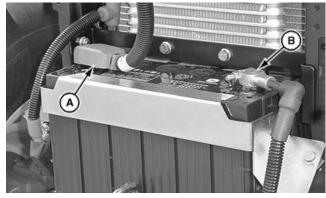
OUO1023.0003846 -19-01APR13-1/1

Separate Engine from Clutch Housing

- Recover/recycle air conditioning refrigerant. (See Recover/Recycle Air Conditioning Refrigerant in Section 90, Group 30.)
- 2. Disconnect battery, negative (—) cable first and then positive (+) battery cable.

A—Positive (+) Terminal

B—Negative (—) Terminal



Battery

SW03989,0002142 -19-26MAR13-1/18

LV16111 —UN—24SEP12

FS281 -- UN-15APR13

Λ

CAUTION: Explosive release of fluids from pressurized cooling system can cause serious burns.

Shut off engine. Remove filler cap only when cool enough to touch with bare hands. Slowly loosen cap to relieve pressure before removing completely.

- 3. Drain coolant from engine.
- 4. Remove hood. (See Remove and Install Hood in Section 80, Group 25.)
- 5. Remove MFWD drive shaft, if equipped. (See Remove, Inspect and Install MFWD Drive Shaft in Section 56, Group 20.)



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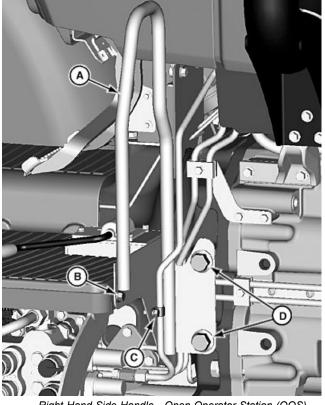
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6. For Open Operator Station (OOS):

Remove cap screws (B-D) and right-hand side handle (A).

A—Right-Hand Side Handle B—Cap Screw (2 used)

C—Cap Screw (2 used) D—Cap Screw (2 used)



Right-Hand Side Handle—Open Operator Station (OOS)

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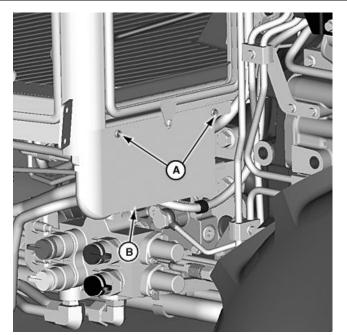
LV16760 —UN-06MAR13

7. For Cab:

Remove cap screws (A) and right-hand side crop guard (B).

A—Cap Screw (2 used)

B—Right-Hand Side Crop Guard



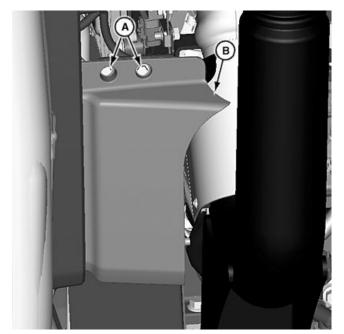
Right-Hand Side Crop Guard—Cab

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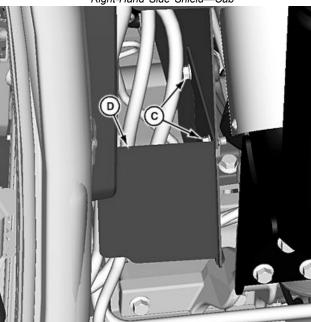
SW03989,0002142 -19-26MAR13-4/18

- 8. Remove cap screws (A) and right-hand side shield (B).
- 9. Remove cap screws (C) and right-hand side lower shield (D)

A—Cap Screw (2 used) B—Right-Hand Side Shield C—Cap Screw (2 used)
D—Right-Hand Side Lower
Shield



Right-Hand Side Shield—Cab



Right-Hand Side Lower Shield—Cab

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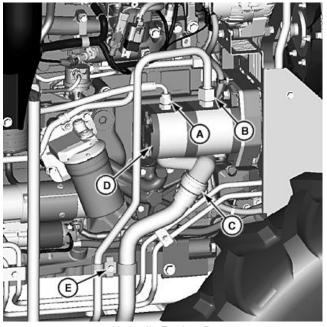
LV16758 —UN—06MAR13

LV16759 —UN—06MAR13

NOTE: Close all openings using caps and plugs.

- Disconnect steering supply hose (A) and implement supply line (B) from hydraulic tandem pumps (D). Close all openings using caps and plugs.
- NOTE: Support hydraulic tandem pumps suction line (C). Transmission/hydraulic oil will spill out of transmission filter assembly if line drops below transmission/reservoir oil level.
- Disconnect tandem pumps suction line (C) from hydraulic tandem pumps (D). Close all openings using caps and plugs.

A—Steering Supply Hose B—Implement Supply Line C—Hydraulic Tandem Pumps Suction Line D—Hydraulic Tandem Pumps E—Cap Screw and Clamp



Hydraulic Tandem Pumps

SW03989,0002142 -19-26MAR13-6/18

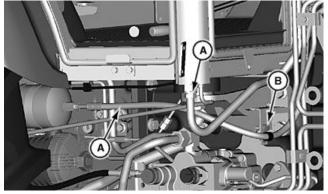
-V16762 -- UN--06MAR13

LV16761 —UN—06MAR13

NOTE: Close all openings using caps and plugs.

12. Disconnect air conditioning lines (A) (if equipped). Remove cap screw and clamp (B). Move air conditioning lines away from tractor cab, toward engine. Close all openings using caps and plugs.

A—Air Conditioning Line (2 B—Cap Screw and Clamp used)



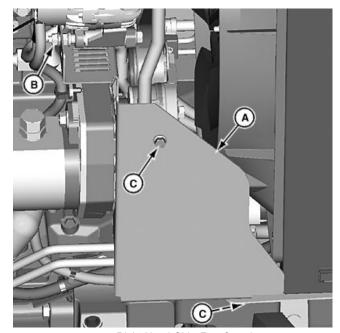
Air Conditioning Lines

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SW03989,0002142 -19-26MAR13-7/18

13. Remove nut (B) and cap screws (C) to remove right-hand side fan guard (A).

A—Right-Hand Side Fan Guard C—Cap Screw (2 used) B—Nut

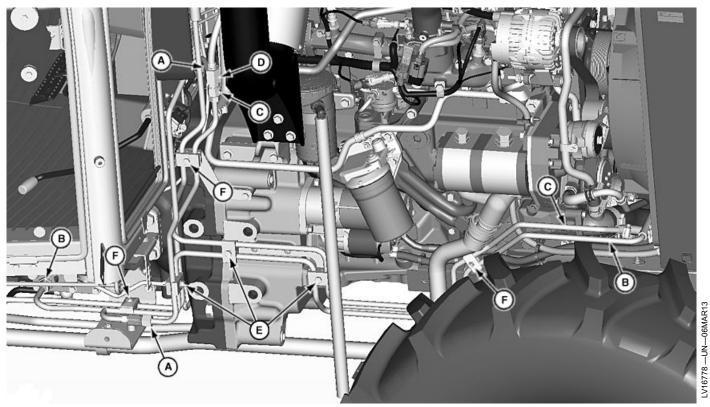


Right-Hand Side Fan Guard

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SW03989,0002142 -19-26MAR13-8/18

LV16777 —UN—06MAR13



Hydraulic Oil Cooler Lines

A—Cooler Relief Valve-to-Tee Fitting Line

B—Hydraulic Oil Cooler-to-Transmission Line C—Tee Fitting-to-Hydraulic Oil D—Tee Fitting Cooler Line D—Tee Fitting E—Clamps

NOTE: Close all openings using caps and plugs to prevent contamination.

- 14. Loosen or remove clamps (E) as needed.
- 15. Remove cooler relief valve-to-tee fitting line (A). Close all openings using caps and plugs.
- 16. Remove hydraulic oil cooler-to-transmission line (B). Close all openings using caps and plugs.
- 17. Remove tee fitting-to-hydraulic oil cooler line (C). Close all openings using caps and plugs.

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SW03989,0002142 -19-26MAR13-9/18

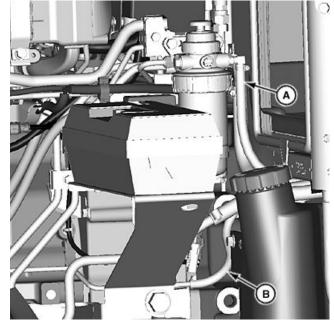
NOTE: Close all openings using caps and plugs to prevent contamination.

NOTE: Similar for Open Operator Station (OOS):

18. Disconnect fuel supply and return hoses (A and B). Close all openings using caps and plugs.

A-Fuel Supply Hose

B—Fuel Return Hose



Fuel Hoses

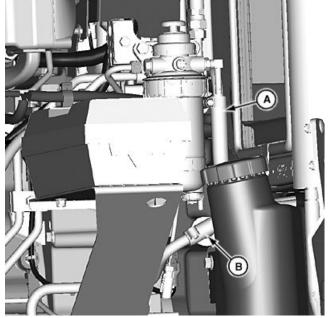
SW03989,0002142 -19-26MAR13-10/18

LV16763 —UN—08MAR13

19. Disconnect heater supply and return hoses (A and B). Close all openings using caps and plugs.

A—Heater Supply Hose

B—Heater Return Hose



Heater Hoses

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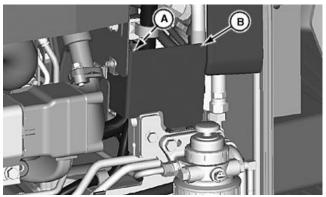
SW03989,0002142 -19-26MAR13-11/18

LV16765 —UN—06MAR13

20. Remove cap screw (A) to remove left-hand side shield (B).

A—Cap Screw

B—Left-Hand Side Shield



Left-Hand Side Shield

SW03989,0002142 -19-26MAR13-12/18

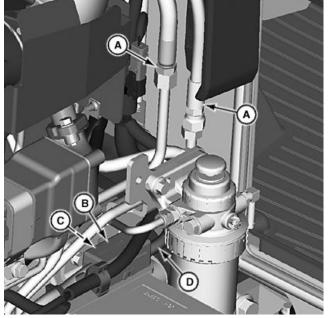
LV16766 —UN—06MAR13

LV16767 —UN—06MAR13

NOTE: Close all openings using caps and plugs.

- 21. Disconnect hydraulic steering hoses (A). Close all openings using caps and plugs.
- 22. Open junction block (B) and remove nut and washer (C) to disconnect battery cable (D) to operator platform.

A—Steering Hose (2 used) B—Junction Block C—Nut and Washer D—Battery Cable

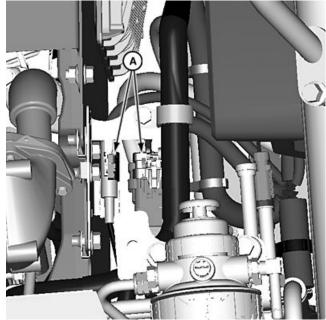


Steering Hoses and Junction Block

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SW03989,0002142 -19-26MAR13-13/18

- 23. Disconnect wiring harness connectors (A).
 - A—Wiring Harness Connector D—Harness Connector (2 used)



Left-Hand Side Wiring Connectors

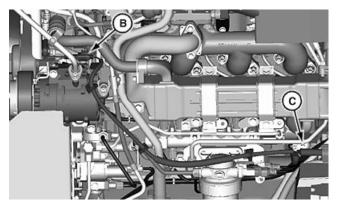
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LV16768 —UN-06MAR13

LV16769 —UN—06MAR13

24. Disconnect air conditioning compressor wire connector (B) (if equipped) and wires from ground terminal (C).

B—Air Conditioning Compressor Wire Connector (if equipped) **C**—Ground Terminal

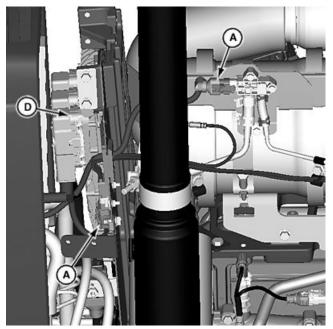


Air Conditioning Compressor Wiring Connector and Ground Terminal

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SW03989,0002142 -19-26MAR13-15/18

- 25. Disconnect harness connector (D) from engine control unit (ECU). Move harness away from engine, toward cab or platform.
 - A—Wiring Harness Connector (2 used)



Right-Hand Side Wiring and Harness Connectors

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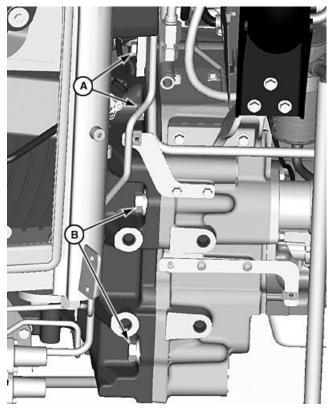
LV16764 —UN—06MAR13

A

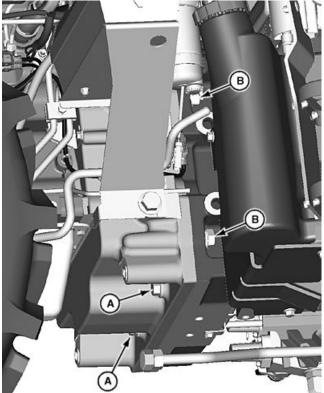
CAUTION: Avoid tipping of tractor and possible crushing injury. If tractor is equipped with optional front weights, remove weights and weight support before removing any engine to clutch housing mounting hardware.

NOTE: Cab shown, OOS is similar.

- 26. Remove front weights and weight support, if equipped.
- NOTE: If necessary, remove exhaust pipe to attach lifting brackets. See Remove and Install Exhaust Pipe in Section 30, Group 20.
- 27. Attach appropriate lifting device, such as JDG19 or JT01748 lifting brackets, to engine.
- 28. Install a support stand under clutch housing.
- 29. Install wood blocks between front axle pivot stops and frame.
- NOTE: Ensure disconnected hydraulic lines do not entangle with engine components or electrical wiring during engine/clutch housing separation.
- 30. Remove cap screws (A and B). Roll front section (engine/front axle assembly) away from tractor rear section.
 - A—Engine/Flywheel Housing-to-Clutch Housing Cap Screw M16 (4 used)
- B—Clutch Housing-to-Engine Cap Screw M20 (4 used)



Engine-to-Clutch Housing Hardware—Rigth-Hand Side



Engine-to-Clutch Housing Hardware—Left-Hand Side

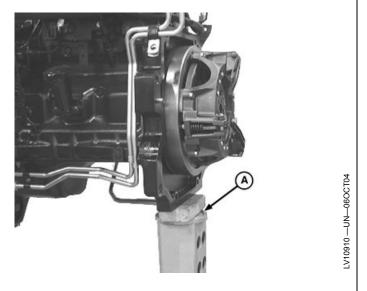
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SW03989,0002142 -19-26MAR13-17/18

LV16773 —UN—06MAR13

31. Block wheels and install a support stand (A) under engine flywheel housing.

A—Support Stand



SW03989,0002142 -19-26MAR13-18/18

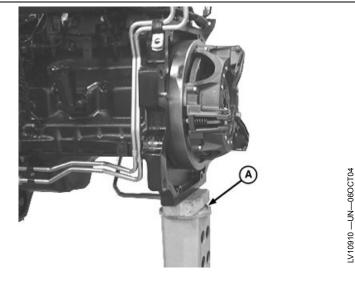
Install Engine to Clutch Housing

- Attach appropriate lifting device, such as JDG19 or JT01748 lifting brackets, to engine, if removed. Remove support stand (A) from flywheel housing.
- 2. Clean mating surfaces of clutch housing and engine.
- 3. Put transmission shift levers in neutral to ease clutch shaft alignment with engine.
- 4. Apply Moly High Temperature EP Grease to traction and PTO clutch shafts.

NOTE: Turning PTO shaft at rear of tractor during engine installation will aid in alignment of PTO clutch and shaft.

5. Use flywheel turning tool JDE83 to help align traction clutch and shaft.

A—Support Stand



SW03989,0002143 -19-26MAR13-1/17

IMPORTANT: Make sure tractor is level before installation of engine to prevent damage to PTO shaft.

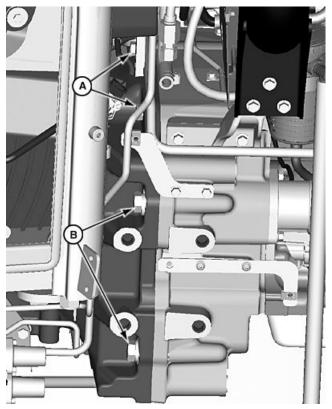
Do not draw engine against clutch housing using cap screws, or damage will result. Make sure engine and clutch housing mating surfaces are completely together before tightening cap screws.

- 6. Install engine to clutch housing.
- 7. Install cap screws (A and B). Tighten to specification.

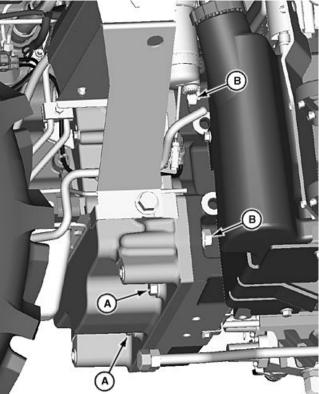
Specification

- 8. Install exhaust pipe, if removed See Remove and Install Exhaust Pipe in Section 30, Group 20.
- 9. Install front weight support and weights, if equipped.
 - A—Engine/Flywheel Housing-to-Clutch Housing Cap Screw M16 (4 used)

B—Clutch Housing-to-Engine Cap Screw M20 (4 used)



Engine-to-Clutch Housing Hardware—Rigth-Side



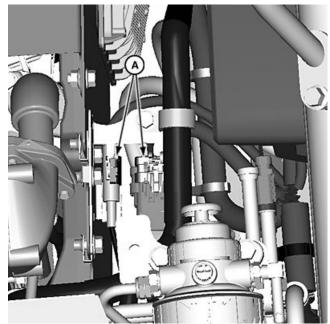
Engine-to-Clutch Housing Hardware—Left-Side

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LV16773 —UN-06MAR13

10. Connect wiring harness connectors (A).

A—Wiring Harness Connector (2 used)



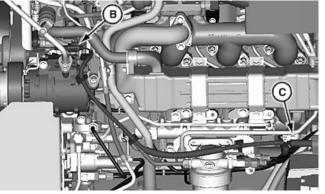
Left-Hand Side Wiring Connectors

SW03989,0002143 -19-26MAR13-3/17

LV16768 —UN—06MAR13

LV16769 —UN—06MAR13

11. Connect air conditioning compressor wire connector (B) (if equipped) and wires from ground terminal (C).

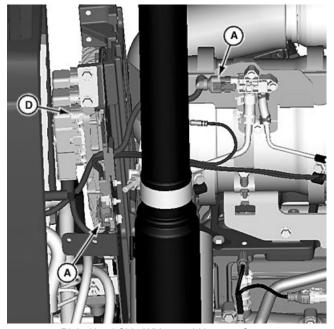


Air Conditioning Compressor Wiring Connector and Ground Terminal

Continued on next page

SW03989,0002143 -19-26MAR13-4/17

- 12. Connect wiring harness connectors (A). Connect harness connector (D) to engine control unit (ECU).
 - A—Wiring Harness Connector D—Harness Connector (2 used)



Right-Hand Side Wiring and Harness Connectors

SW03989,0002143 -19-26MAR13-5/17

LV16764 —UN-06MAR13

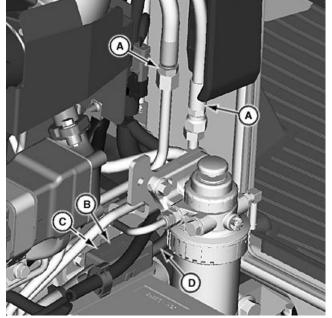
NOTE: Replace all O-rings and seals. Used or damaged O-rings and seals will leak.

- 13. Connect hydraulic steering hoses (A).
- 14. Open junction block (B) and connect battery cable (D) using nut and washer (C).

A—Steering Hose (2 used)

B—Junction Block

C—Nut and Washer D—Battery Cable



Steering Hoses and Junction Block

Continued on next page

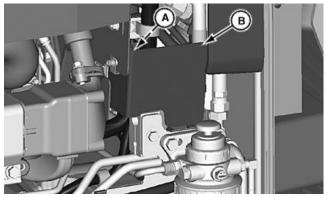
SW03989,0002143 -19-26MAR13-6/17

LV16767 —UN—06MAR13

15. Install left-hand side shield (B) using cap screw (A).

A—Cap Screw

B—Left-Hand Side Shield



LV16766 —UN—06MAR13

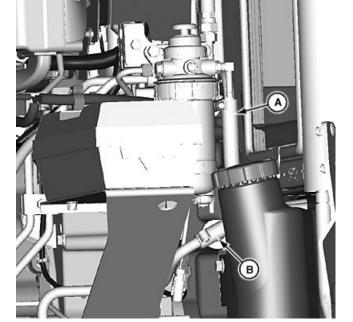
Left-Hand Side Shield

SW03989,0002143 -19-26MAR13-7/17

16. Connect heater supply and return hoses (A and B).

A—Heater Supply Hose

B—Heater Return Hose



LV16765 —UN-06MAR13

Heater Hoses

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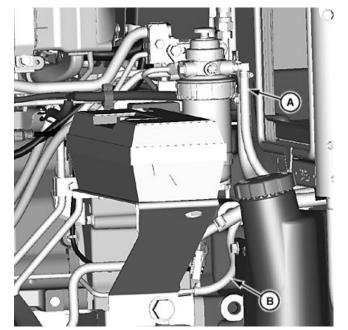
SW03989,0002143 -19-26MAR13-8/17

NOTE: Similar for Open Operator Station:

17. Connect fuel supply and return hoses (A and B).

A-Fuel Supply Hose

B—Fuel Return Hose

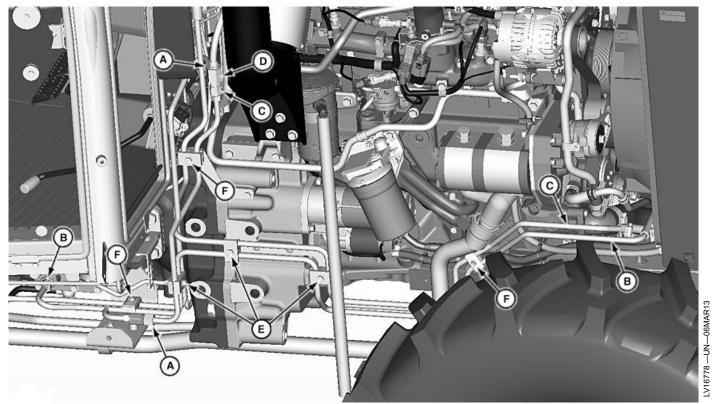


Fuel Hoses

Continued on next page

SW03989,0002143 -19-26MAR13-9/17

LV16763 —UN—08MAR13



Hydraulic Oil Cooler Lines

A—Cooler Relief Valve-to-Tee Fitting Line B—Hydraulic Oil Cooler-to-Transmission Line C—Tee Fitting-to-Hydraulic Oil D—Tee Fitting Cooler Line D—Tee Fitting E—Clamp

NOTE: Replace all O-rings and seals. Used or damaged

- O-rings and seals will leak.
- 18. Install tee fitting-to-hydraulic oil cooler line (C).
- 19. Install hydraulic oil cooler-to-transmission line (B).

20. Install cooler relief valve-to-tee fitting line (A).

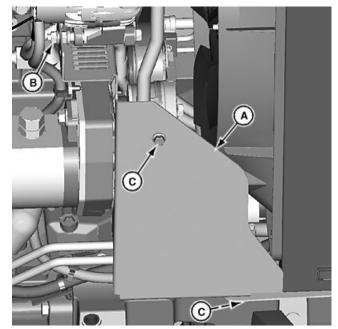
21. Install clamps (E) and tighten securely.

Continued on next page

SW03989,0002143 -19-26MAR13-10/17

22. Install right-hand side fan guard (A) using cap screws (C) and nut (B).

A—Right-Hand Side Fan Guard C—Cap Screw (2 used) B—Nut



Right-Hand Side Fan Guard

SW03989,0002143 -19-26MAR13-11/17

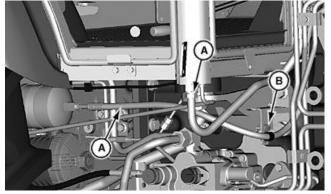
LV16777 —UN—06MAR13

LV16761 —UN—06MAR13

NOTE: Replace all air conditioning O-rings and seals. Used or damaged O-rings and seals will leak.

23. Connect air Cconditioning lines (A) (if equipped). Install cap screw and clamp (B).

A—Air Conditioning Lines B—Cap Screw and Clamp



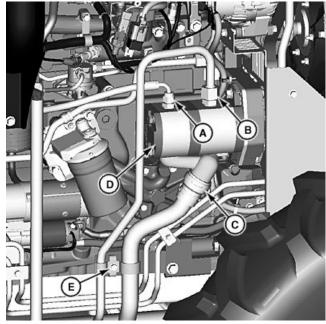
Air Conditioning Lines

Continued on next page

SW03989,0002143 -19-26MAR13-12/17

- NOTE: Replace all O-rings and seals. Used or damaged O-rings and seals will leak.
- 24. Connect steering supply hose (A) and to hydraulic tandem pumps (D).
- 25. Install and connect implement supply line (B) to hydraulic tandem pumps (D).
- 26. Connect tandem pumps suction line (C) from hydraulic tandem pumps (D). Install clamps.
 - A—Steering Supply Hose B—Implement Supply Line

 - -Hydraulic Tandem Pumps **Suction Line**
- **D—Hydraulic Tandem Pumps** E—Cap Screw and Clamp



LV16762 —UN-06MAR13

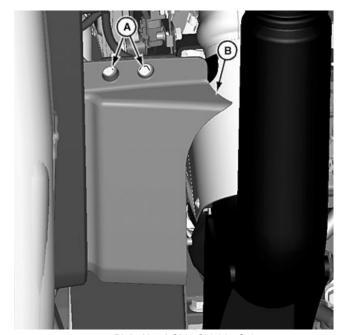
Hydraulic Tandem Pumps

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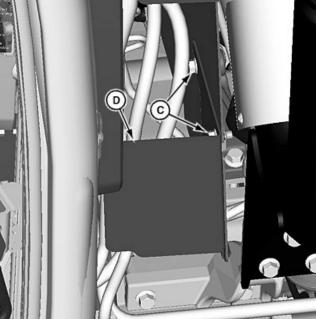
SW03989,0002143 -19-26MAR13-13/17

27. Install right-hand side lower shield (D) using cap screws (C).

A—Cap Screw (2 used) B—Right-Hand Side Shield C—Cap Screw (2 used)
D—Right-Hand Side Lower
Shield



Right-Hand Side Shield—Cab



Right-Hand Side Lower Shield—Cab

Continued on next page

SW03989,0002143 -19-26MAR13-14/17

LV16758 —UN—06MAR13

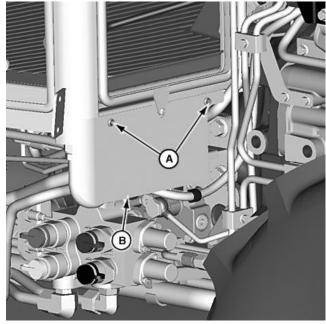
LV16759 —UN—06MAR13

28. For Cab:

Install right-hand side crop guard (B) with cap screws (A).

A—Cap Screw (2 used)

B—Right-Hand Side Crop Guard



LV16757 —UN—06MAR13

Right-Hand Side Crop Guard—Cab

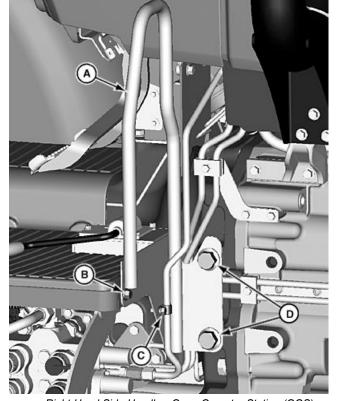
SW03989,0002143 -19-26MAR13-15/17

29. For Open Operator Station (OOS):

Install right-hand side handle (A) using cap screws (B—D).

- 30. Install MFWD drive shaft, if equipped. (See Remove, Inspect and Install MFWD Drive Shaft in Section 56, Group 20.)
- 31. Fill radiator with coolant.

A—Right-Hand Side Handle B—Cap Screw (2 used) C—Cap Screw (2 used) D—Cap Screw (2 used)



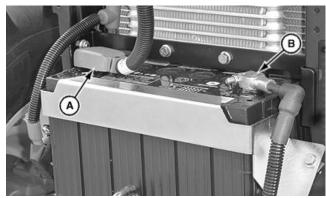
LV16760 —UN—06MAR13

Right-Hand Side Handle—Open Operator Station (OOS)

Continued on next page

SW03989,0002143 -19-26MAR13-16/17

- 32. Connect battery, positive (+) battery cable first and then negative (—) cable last.
- 33. Flush, evacuate and charge air conditioning system. (See Flush Air Conditioning System, Evacuate Air Conditioning System, and Charge Air Conditioning System in Section 90, Group 30.)
- 34. Prime hydraulic pump. (See Prime Hydraulic Pump in Section 70, Group 05.)
- 35. Run engine to circulate coolant. Check coolant level and replenish as necessary.
- 36. Check for hydraulic leaks. Tighten connections as necessary.
- 37. Install hood, (see Remove and Install Hood in Section 80, Group 25.).



Battery

A—Positive (+) Terminal

B-Negative (-) Terminal

SW03989,0002143 -19-26MAR13-17/17

-V16111 —UN-24SEP12

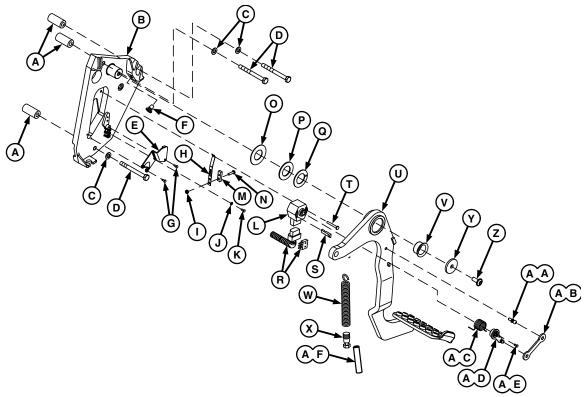
Clutch Housing Repair

Refer to the relevant component technical manual (CTM) for theory of operation information on the following.

- Remove, Inspect, and Repair Transmission Pump
- Remove and Install PR Control Valve
- Disassemble, Inspect, and Repair PR Control Valve (Without EH Hi/Lo)
- Disassemble, Inspect, and Repair PR Control Valve (With EH Hi/Lo)
- Disassemble, Inspect, and Repair Junction Block
- PR Main Pressure Relief Valve Adjustment
- Install and Adjust Park Pawl

SW03989,00021FE -19-04MAR13-1/1

Inspect and Repair Clutch Pedal and Linkage—(PowrReverser™ Transmissions)



Clutch Pedal Assembly

A—Spacers
B—Mounting Bracket
C—Washers
D—Cap Screws
E—Bracket
F—Stop
G—Cap Screw (3 used)
H—Leaf Spring
I— Nut (2 used)

J— Washer K—Cap Screw L—Potentiometer M—Block N—Cap Screw (2 used) O—Spring Washer

P—Washer Q—Washer R—Wiring Harness and Connector S—Stop AB—Link
T—Cap Screw (2 used) AC—Spring
U—Pedal AD—Linkage
V—Bushing AE—Screw
W—Spring AF—Rubber Hose
X—Spring Mount
Y—Washer
Z—Socket-Head Cap Screw
AA—Ball Stud

- Remove cowl cover. (See Remove and Install Center Control Console—Cab in Section 90, Group 10 or Remove and Install Cowl Cover—Open Operator Station in Section 90, Group 10.)
- 2. Inspect all parts for wear or damage. Replace as necessary.

NOTE: Remove bushing (V) only if replacement is necessary.

3. Inspect bushing (V) for wear or damage. Replace if necessary.

Replace bushings using a bearing, bushing, and seal driver set. Install bushings flush with pedal surface.

- 4. Apply Moly High Temperature EP Grease to ID of bushings.
- Install cowl cover. (See Remove and Install Center Control Console—Cab in Section 90, Group 10 or Remove and Install Cowl Cover—Open Operator Station in Section 90, Group 10.)

SW03989,0002144 -19-01MAR13-1/1

PULV008138 -- UN-15MAR10

Clutch Housing

Group 11 Clutch Assembly

Specifications

Item Measurement Specification

Clutch-to-Flywheel Cap Screw Torque 36 N·m (27 lb-ft)

SW03989,00021F2 -19-26MAR13-1/1

John Deere PR Clutch Repair—Use Component Technical Manual

For complete repair information, use the relevant component technical manual (CTM) in conjunction with this machine manual.

 PowrReverser[™] Transmission -John Deere[™] Pune Works

(Sr. No.PY1068XXXXXXX, LV12363, LV12364, PY10953, LV12781 and PY10952) CTM900519



SW03989,00021F4 -19-01APR13-1/1

Remove and Install Clutch Assembly

NOTE: PowrReverser™ transmissions with ElectroHydraulic PTO, use a torsional damper as a clutch.

- 1. Separate engine from clutch housing. (See Separate Engine from Clutch Housing in Section 50, Group 05.)
- 2. Remove six cap screws (A) and clutch (B).

NOTE: Clutch is non-servicable; replace clutch if repairs are necessary. No adjustments are needed to installed clutch.

- 3. Make repairs as necessary.
- 4. Install clutch (B) and cap screws (A). Evenly tighten cap screws in a criss-cross pattern to specification.

Specification

5. Install engine to clutch housing. (See Install Engine to Clutch Housing in Section 50, Group 05.)

A—Cap Screw (6 used)

B-Clutch

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SW03989,00021F3 -19-07MAR13-1/1

PowrReverser™ Clutch Assembly Repair

Refer to the relevant component technical manual (CTM) for theory of operation information on the following.

- Remove and Install PR Clutch
- Disassemble, Inspect, and Repair Reverse Idle Gear (Without EH Hi/Lo)
- Disassemble, Inspect, and Repair Reverse Idle Gear (With EH Hi/Lo)
- Disassemble, Inspect, and Repair PR Clutch Pack Gear
- Disassemble, Inspect, and Repair Driven Shaft (Without EH Hi/Lo)
- Disassemble, Inspect, and Repair Driven Shaft (With EH Hi/Lo)
- Disassemble, Inspect, and Repair PR Clutch (Without EH Hi/Lo)
- Disassemble, Inspect, and Repair PR Clutch (With EH Hi/Lo)

SW03989,0002200 -19-04MAR13-1/1

John Deere PowrReverser™ Transmission Repair—Use Component Technical Manual

For complete repair information, use the relevant component technical manual (CTM) in conjunction with this machine manual.

 PowrReverser[™] Transmission -John Deere[™] Pune Works

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FS225 —UN—17JAN89

SW03989 00021F5 -19-01APR13-1/1

PowrReverser[™] Transmission Repair

Refer to the relevant component technical manual (CTM) for theory of operation information on the following.

- Separate Clutch Housing from Transmission
- Install Clutch Housing to Transmission
- Remove Transmission (With Park Pawl) or (With Hand Brake)
- Disassemble and Inspect Transmission
- Assemble Transmission (With Park Pawl) or (With Hand Brake)
- Install Transmission (With Park Pawl) or (With Hand Brake)

- Install and Adjust Park Pawl
- Disassemble, Inspect, and Assemble Gearshift Shaft Assemblies
- Disassemble, Inspect, and Assemble Transmission Bottom Shaft
- Disassemble, Inspect, and Assemble Range Reduction Shaft
- Disassemble, Inspect, and Assemble Top Shaft
- Remove, Inspect, and Install MFWD and Range Gears (With Park Pawl)
- Remove, Inspect, and Install MFWD and Range Gears (With Hand Brake)

SW03989,0001D2D -19-18SEP13-1/1

PowrReverser™ Transmission

Section 56 Drive System

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John Deere Transmission Repair—Use Component Technical Manual

For complete repair information, use the relevant component technical manual (CTM) in conjunction with this machine manual.

 PowrReverser[™] Transmission -John Deere[™] Pune Works

(Sr. No.PY1068XXXXXXX, LV12363, LV12364, PY10953, LV12781 and PY10952) CTM900519



TS225 —UN—17JAN89

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Differential Repair

For complete service information on differential, the component technical manual (CTM) is required. See the relevant component technical manual in conjunction with this machine manual:

- Remove and Install Differential Assembly
- Disassemble, Inspect, and Assemble Differential Assembly
- Remove and Inspect Differential Drive Shaft
- Install Differential Drive Shaft
- Remove, Inspect, and Install Differential Lock Assembly
- Differential Cone Point Adjustment
- Differential Backlash Adjustment
- Remove, Inspect, and Install Hydraulic Oil Pick-Up Screen
- PowrReverser[™] Transmission -John Deere[™] Pune Works



TS225 —UN—17JAN89

(Sr. No.PY1068XXXXXXX, LV12363, LV12364, PY10953, LV12781 and PY10952) CTM900519

SW03989,000174A -19-01APR13-1/1

Differential

56-05-2

John Deere Transmission Repair—Use Component Technical Manual

For complete repair information, use the relevant component technical manual (CTM) in conjunction with this machine manual.

 PowrReverser[™] Transmission -John Deere[™] Pune Works

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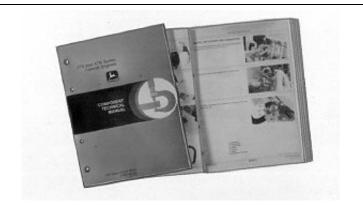
OUO1023.0003866 -19-01APR13-1/1

Final Drives Repair

For complete service information on final drives, the component technical manual (CTM) is required. See the relevant component technical manual in conjunction with this machine manual for:

- Remove and Install Final Drive Assembly
- Remove and Inspect Planetary Drive Assembly
- Install Planetary Drive Assembly
- Remove, Inspect, and Install Axle Shaft Assembly
- PowrReverser[™] Transmission -John Deere[™] Pune Works

(Sr. No.PY1068XXXXXXX, LV12363, LV12364, PY10953, LV12781 and PY10952) CTM900519



TS225 —UN—17JAN89

SW03989,000174B -19-01APR13-1/1

Final Drives

Group 15 Rear PTO Drive Shaft

John Deere Transmission Repair—Use Component Technical Manual

For complete repair information, use the relevant component technical manual (CTM) in conjunction with this machine manual.

 PowrReverser[™] Transmission -John Deere[™] Pune Works

(Sr. No.PY1068XXXXXXX, LV12363, LV12364, PY10953, LV12781 and PY10952) CTM900519



TS225 —UN—17JAN89

SW03989.0001755 -19-01APR13-1/1

Rear PTO Drive Shaft Repair

For complete service information on rear PTO drive shaft, the component technical manual (CTM) is required. See the relevant component technical manual in conjunction with this machine manual for:

- Remove and Install 540/540E Electro-Hydraulic Rear PTO Shaft Assembly
- Disassemble, Inspect, and Assemble Rear 540/540E Electro-Hydraulic Pinion Shaft
- Disassemble, Inspect, and Assemble Rear 540/540E Electro-Hydraulic PTO Output Shaft Assembly
- Remove, Inspect and Install Electro-Hydraulic PTO Valve
- PowrReverser[™] Transmission -John Deere[™] Pune Works

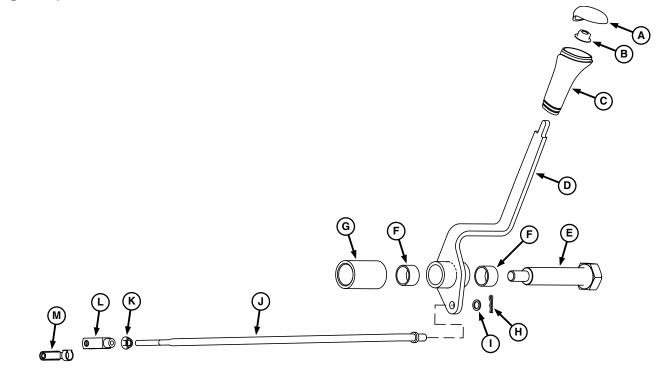


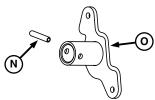
TS225 —UN—17JAN89

(Sr. No.PY1068XXXXXXX, LV12363, LV12364, PY10953, LV12781 and PY10952) CTM900519

SW03989,0001754 -19-01APR13-1/1

Inspect and Repair PTO Shift Lever and Linkage—Open Station





Open Station

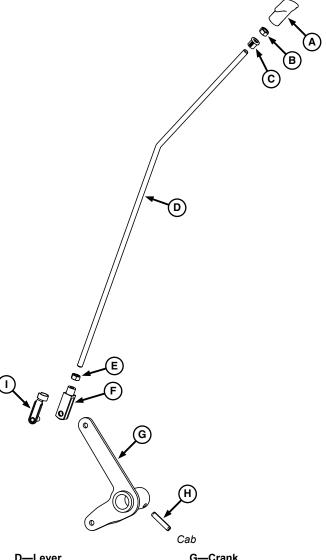
A—Knob Insert B—Nut C—Knob D—Lever E—Pivot Bolt F—Bushing (2 used) G—Spacer H—Locking Clip I— Washer J— Linkage K—Jam Nut L—Yoke M—Spring Locking Pin

N—Spring Pin O—Crank

- Remove left-side control console. (See Remove and Install Left-Side Control Console in Section 90, Group 06.)
- 2. Inspect all parts (A—O) for wear or damage. Replace as necessary.
- Install left-side control console. (See Remove and Install Left-Side Control Console in Section 90, Group 06.)

4. Adjust PTO shift lever and linkage. (See PTO Lever and Linkage Adjustment in Diagnostic Technical manual, Section 250.)

OUO1023,0003855 -19-19FEB13-1/1



LV16721 —UN—28FEB13

A—Knob B—Jam Nut C—Bushing D—Lever E—Jam Nut F—Yoke G—Crank H—Spring Pin I— Spring Locking Pin

- 1. Inspect all parts (A—I) for wear or damage. Replace as necessary.
- 2. Adjust PTO shift lever and linkage. (See PTO Lever and Linkage Adjustment in Diagnostic Technical manual, Section 250.)

OUO1023,0003878 -19-22FEB13-1/1

Rear PTO Drive Shaft

Mechanical Front Wheel Drive

John Deere Transmission Repair—Use Component Technical Manual

For complete repair information, use the relevant component technical manual (CTM) in conjunction with this machine manual.

 PowrReverser[™] Transmission -John Deere[™] Pune Works

(Sr. No.PY1068XXXXXXX, LV12363, LV12364, PY10953, LV12781 and PY10952) CTM900519



S225 —UN—17JAN89

SW03989 0001756 -19-01APR13-1/1

Specifications

ItemMeasurementSpecificationMFWD Drive Shaft Guard Cap ScrewTorque15 N·m (11 lb.-ft.)MFWD Axle-to-Frame Cap ScrewTorque650 N·m (479 lb.-ft.)MFWD Front Wheel Cap ScrewTorque300 N·m (220 lb.-ft.)

Other Material

NumberNameUseTY6333 (U.S.)Moly High Temperature EP Grease
CXTY6333 (Canadian)Apply to ID of MFWD drive
shaft couplers.

SW03989,000174E -19-26MAR13-1/1

Electrohydraulic Front Wheel Drive Repair

For complete service information on electrohydraulic front wheel drive, the component technical manual (CTM) is required. See the relevant component technical manual in conjunction with this machine manual for:

- Remove and Install MFWD Drop Gearbox—Electrohydraulic
- Disassemble and Inspect MFWD Drop Gearbox—Electrohydraulic
- MFWD Drop Gearbox Cross Section—Electrohydraulic
- Assemble MFWD Drop Gearbox—Electrohydraulic
- PowrReverser[™] Transmission -John Deere[™] Pune Works



TS225 —UN—17JAN89

(Sr. No.PY1068XXXXXXX, LV12363, LV12364, PY10953, LV12781 and PY10952) CTM900519

SW03989,0001758 -19-01APR13-1/1

Mechanical Front Wheel Drive Repair

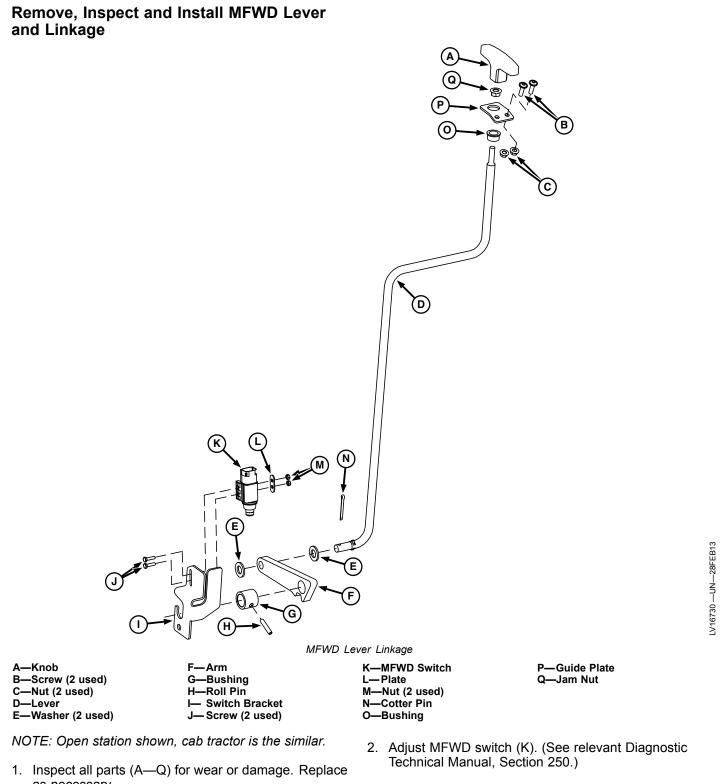
For complete service information on mechanical front wheel drive, the component technical manual (CTM) is required. See the relevant component technical manual in conjunction with this machine manual for:

- Remove and Install MFWD Drop Gearbox—Mechanical
- Disassemble and Inspect MFWD Drop Gearbox—Mechanical
- MFWD Drop Gearbox Cross Section—Mechanical
- Assemble MFWD Drop Gearbox—Mechanical
- PowrReverser[™] Transmission -John Deere[™] Pune Works
 (Sr. No.PY1068XXXXXXXX, LV12363, LV12364, PY10953, LV12781 and PY10952) CTM900519



TS225 —UN—17JAN89

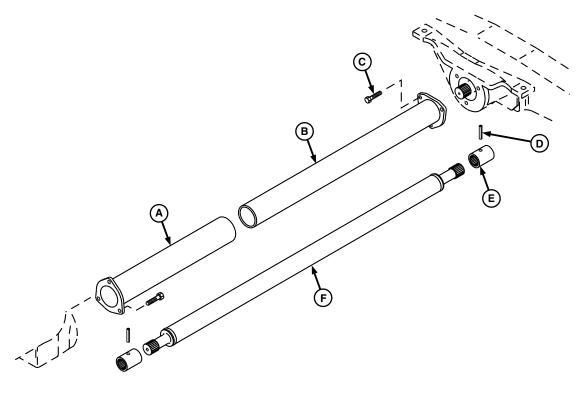
SW03989,0001757 -19-01APR13-1/1



as necessary.

SW03989,0001D23 -19-12SEP13-1/1

Remove, Inspect and Install MFWD Drive Shaft



MFWD Drive Shaft

A—Drive Shaft Guard (Inner) B—Drive Shaft Guard (Outer) C—Cap Screw (6 used) D—Spring Pin (2 used) E—Coupler (2 used)
F—Drive Shaft

- 1. Remove cap screws (C).
- 2. Slide guards (A and B) together.
- 3. Remove spring pins (D) using a hammer and punch.
- 4. Slide couplers (E) toward drive shaft (F) and remove drive shaft assembly.
- 5. Inspect parts for wear or damage. Check drive shaft for straightness. Replace parts as necessary.
- 6. Apply Moly High Temperature EP Grease to ID of couplers (E).

- 7. Install drive shaft assembly.
- 8. Install cap screws (C). Tighten cap screws to specification.

Specification

MFWD Drive Shaft Guard Cap Screw—Torque......15 N·m (11 lb.-ft.)

SW03989,000174D -19-26MAR13-1/1

LV10260 —UN—01SEP04

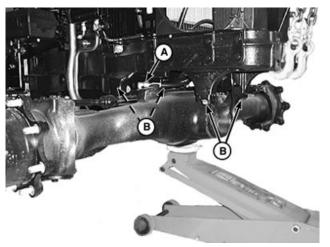
Remove and Install MFWD Axle Housing Assembly

- Remove drive shaft. (See Remove, Inspect and Install MFWD Drive Shaft in relevant Diagnostic Technical Manual, Section 250.)
- 2. Raise front of tractor. Securely support tractor below the engine/transmission junction.

CAUTION: Axle will pivot to one side when one wheel is removed. Install wooden blocks between the axle stops and frame to prevent axle from tipping.

- 3. Install wooden blocks between axle and frame.
- 4. Remove front wheels.
- 5. Position a transmission jack or floor jack under center of axle as shown. Ensure axle will be stable on the floor jack when cap screws (B) are removed.
- 6. Disconnect hydraulic hoses (A). Close all openings using caps and plugs.
- 7. Remove cap screws (B) and lower axle.
- 8. Make repairs as necessary. (See service procedures for MFWD AXLE 00.16 in relevant component technical manual (CTM).)
- 9. Raise axle into position and install cap screws. Tighten cap screws to specification.

Specification



MFWD Axle Housing Assembly

A-Hydraulic Hose (2 used)

B—Cap Screw (4 used)

LV10631 —UN—21SEP04

- 10. Connect hydraulic hoses.
- 11. Install front wheels. Tighten wheel cap screws to specification.

Specification

- 12. Remove all supports and lower tractor.
- 13. Install drive shaft.

SW03989,000174F -19-26MAR13-1/1

Mechanical Front Wheel Drive

Section 60 Steering and Brake Repair

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חובבת הומעבפ	00-10-17

Contents

Group 05 Steering Repair

Other Material

Number Name Use

PM37477 (U.S.) Thread Lock and Sealer (Medium Apply to steering cylinder mounting

Strength) clamp—MFWD axle.

OUO1023,0003641 -19-26MAR13-1/1

Specifications		
Item	Measurement	Specification
Tilt/Telescoping Steering Column Mounting—Cap Screw	Torque	50 N·m (37 lbft.)
Tilt/Telescoping Steering Column Wheel—Nut	Torque	30 N·m (22 lbft.)
Steering Valve Mounting—Cap Screw	Torque	30 N·m (22 lbft.)
Steering Valve Cover Cap Screw	Torque	30 N·m (22 lbft.)
Steering Cylinder Mounting Clamp—MFWD Axle	Torque	70 N·m (52 lbft.)
Ball Joint to Piston Rod—MFWD Axle	Torque	300 N·m (221 lbft.)
Ball Joint Nut—MFWD Axle	Torque	120 N·m (89 lbft.)
Tie Rod End Lock Nut—MFWD Axle	Torque	165 N·m (122 lbft.)
		OUO1023,0003642 -19-26MAR13-1/1

Service Parts Kits

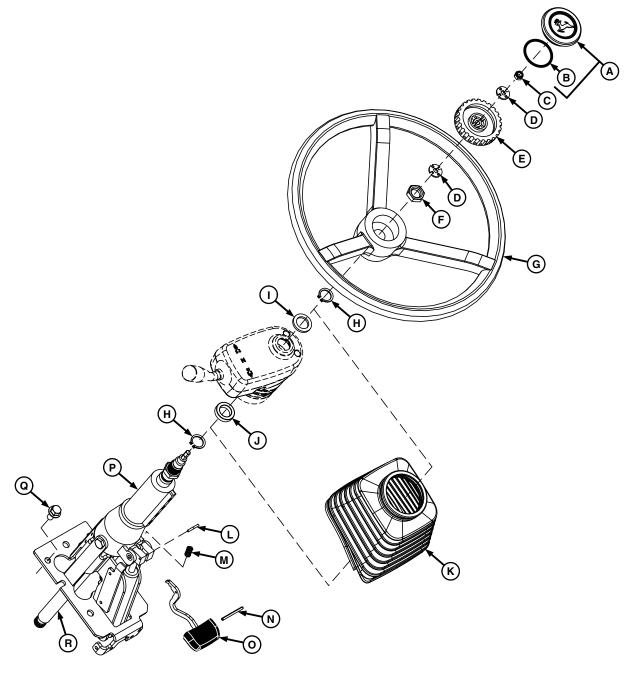
Steering Cylinder Seal Kit

The following kits are available through your parts catalog:

Steering Valve Seal Kit

OUO1023,0003643 -19-20DEC12-1/1

Remove and Install Tilt/Telescoping Steering Column



Tilt/Telescoping Steering Column

A—Cover B-O-Ring

–Lock Nut D-Washer (2 used)

E-Knob

F-Nut

1. Remove items (A—G).

2. Remove cowl. (See Remove and Install Center Control Console in Section 90, Group 10.)

G—Steering Wheel

- Washer

J— Bushing

-Snap Ring (2 used)

3. Remove top snap ring (H) and washer (I).

K-Boot -Roll Pin

M—Spring N—Roll Pin

O-Tilt Lever P—Steering Column

4. Remove boot (K) and bushing (J).

5. Remove bottom snap ring (H).

6. Remove roll pins (L and N), spring (M), and tilt lever (O).

Continued on next page

OUO1023,0003645 -19-26MAR13-1/2

Q—Cap Screw (4 used)

R—Conduit

LV16928 —UN—08MAR13

7. Remove cap screws (Q), steering column (P), and conduit (R).

NOTE: Steering column is non-serviceable.

- 8. Inspect all components for wear or damage. Replace as necessary.
- 9. Install conduit (R), steering column (P), and cap screws (Q). Tighten to specification.

Specification

Tilt/Telescoping Steering Column Mounting—Cap

10. Install tilt lever (O), spring (M), and roll pins (N and L).

- 11. Install bottom snap ring (H).
- 12. Install bushing (J) and boot (K).
- 13. Install washer (I) and top snap ring (H).
- 14. Install cowl. (See Remove and Install Center Control Console in Section 90, Group 10.)
- 15. Install items (G—A). Tighten nut (F) to specification.

Specification

Tilt/Telescoping
Steering Column

OUO1023,0003645 -19-26MAR13-2/2

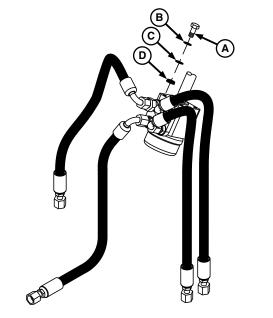
Remove and Install Steering Valve—Tilt/Telescoping Steering Column

NOTE: Mark hydraulic hoses to aid in installation. Close all openings with caps and plugs.

- Disconnect hydraulic hoses from steering valve. Close all openings with caps and plugs.
- 2. Remove cowl cover. (See Remove and Install Center Control Console in Section 90, Group 10.)
- NOTE: Some models may require removal of exhaust pipe. (See Remove and Install Exhaust Pipe in Section 30, Group 20.)
- 3. Remove four cap screws (A) and washers (B and C). Remove steering valve through left side of tractor.
- 4. Remove four rubber isolators (D) from engine side of mounting surface.
- Repair or replace steering valve as required. (See Disassemble and Inspect Steering Valve in Section 60, Group 05.)
- Install isolators (D) from engine side of mounting surface. Place one large washer (C) over each isolator from operator's side.
- Install valve using cap screws (A) and small washers
 Tighten cap screws to specification.

Specification

8. Install cowl cover. (See Remove and Install Center Control Console in Section 90, Group 10.)



Steering Valve Mounting Hardware

A—Cap Screw (4 used) B—Small Washer (4 used) C—Large Washer (4 used)
D—Rubber Isolator (4 used)

IMPORTANT: Always use new seals and O-rings. Damaged or used seals and O-rings will leak.

9. Connect hydraulic hoses to steering valve.

Continued on next page

OUO1023,0003646 -19-26MAR13-1/2

LV10546 —UN—20SEP04

A^kC

CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available in English from Deere & Company Medical Department in Moline, Illinois, U.S.A., by calling 1-800-822-8262 or +1 309-748-5636.



Start engine. Operate steering and check for hydraulic leaks.

OUO1023.0003646 -19-26MAR13-2/2

Disassemble and Inspect Steering Valve

NOTE: Mark location of spacer cap screw (B) to aid in assembly.

1. Remove six cap screws (A) and remove spacer cap screw (B).

A—Cap Screw (6 used)

B—Spacer Cap Screw



LV10511 —UN—14SEP04

Steering Valve Cover

OUO1023,0003647 -19-26MAR13-1/8

2. Remove parts (A—F).

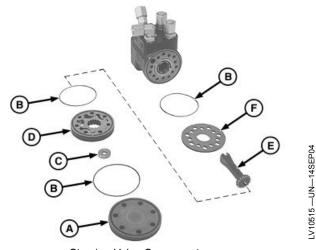
A—Cover

B—O-Ring (3 used)

C—Spacer

D—Rotor Gear Set E—Drive Shaft

F-Stop Disk



Steering Valve Components

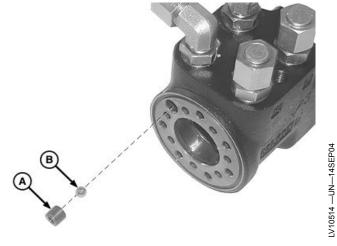
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OUO1023,0003647 -19-26MAR13-2/8

3. Remove ring nut (A) and ball (B).

A-Ring Nut

B-Ball



Check Valve Ring Nut and Ball

OUO1023,0003647 -19-26MAR13-3/8

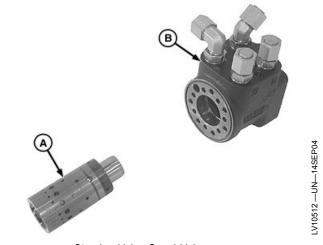
IMPORTANT: If spool and sleeve assembly must be removed from valve body for cleaning, handle parts with care. Tolerances on these parts are very close.

Use care so as not to drop or lose parts when removing sleeve and spool assembly.

4. Remove spool valve (A) from steering valve housing (B).

A-Spool Valve

B—Steering Valve Housing



Steering Valve Spool Valve

OUO1023,0003647 -19-26MAR13-4/8

NOTE: Needle bearing (D) and bearing races (C) may remain in housing after removal of spool valve.

- 5. Remove needle roller (F).
- 6. Carefully slide control spool (E) from spool sleeve (A).

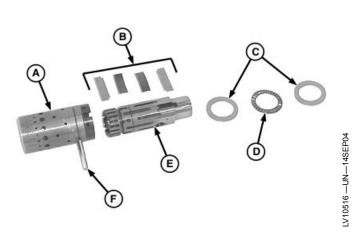
NOTE: Spring set consists of two flat and two curved leaves.

7. Push spring set (B) from control spool (E).

A—Spool Sleeve B—Spring Set D—Needle Bearing

C—Bearing Race (2 used)

E—Control Spool F—Needle Roller



Spool Valve Components

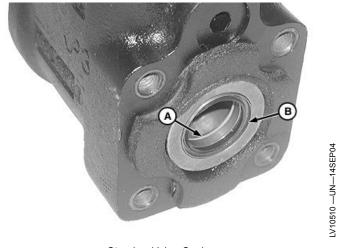
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OUO1023,0003647 -19-26MAR13-5/8

8. Remove seal (A) and dust seal (B).

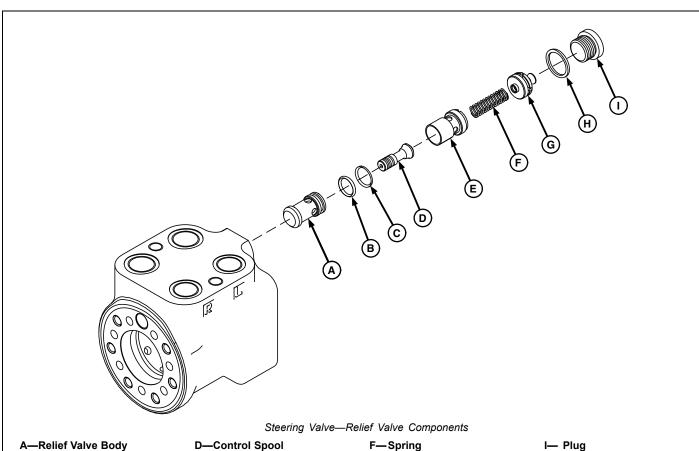
A-Seal

B—Dust Seal



Steering Valve Seals

OUO1023,0003647 -19-26MAR13-6/8



A-Relief Valve Body

B-O-Ring

C—Backing Ring

D—Control Spool

IMPORTANT: Relief valve seat in valve body is

valve seat is damaged.

not serviceable. Valve body, spool, and

sleeve must be replaced as a set if relief

E—Spacer Sleeve

F—Spring G—Locking Screw

H—Seal Ring

9. Remove parts (A—I) to inspect relief valve components.

Continued on next page

OUO1023,0003647 -19-26MAR13-7/8

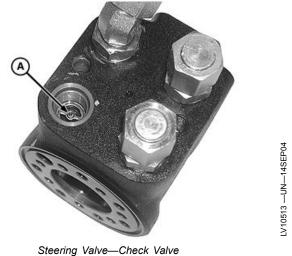
LV10547 —UN—11MAR13

10. Remove fitting from inlet port to inspect check valve (A). Remove any obstructions from check valve.

IMPORTANT: Always use new seals and O-rings. Damaged or used seals and O-rings will leak.

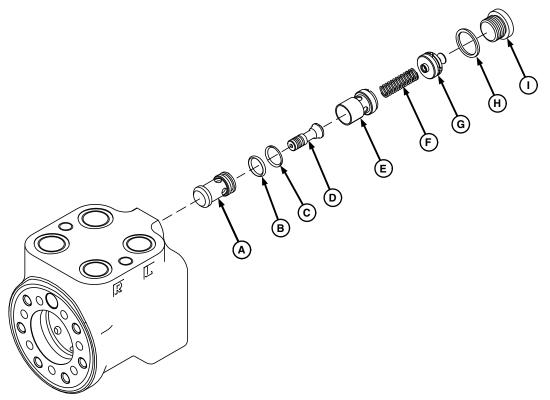
- 11. Install and tighten fitting.
- 12. Inspect all parts for scoring, wear, or damage. Replace as necessary.

A—Check Valve



OUO1023,0003647 -19-26MAR13-8/8

Assemble Steering Valve



Steering Valve—Relief Valve Components

A-Valve Body B-O-Ring C—Backing Ring

-Control Spool E—Spacer Sleeve

F-Spring G—Locking Screw H—Seal Ring

I- Plug

IMPORTANT: Always replace all O-rings and seals. Damaged or used parts will leak.

1. Install parts (A—I). Turn locking screw (G) the same number of turns in, as needed to remove.

NOTE: Apply clean transmission/hydraulic oil to all internal parts.

Continued on next page

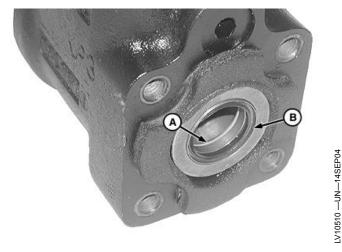
OUO1023,0003648 -19-26MAR13-1/7

LV10547 —UN—11MAR13

2. Install seal (A) and dust seal (B) in steering valve housing.

A-Seal

B—Dust Seal

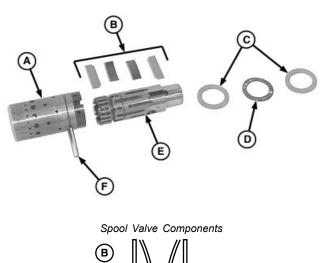


Steering Valve Seals

OUO1023,0003648 -19-26MAR13-2/7

- 3. Install two flat leaves of spring set (B) in slot of control spool (E). Install curved leaves so their centers touch, between the flat leaves.
- 4. Slide spool and springs into sleeve (A). Squeeze spring ends together so springs fit into slot of sleeve. Make sure leaf ends are aligned and centered.
- 5. Install needle roller (F).
- 6. Install bearing races (C) and needle bearing (D).

A—Spool Sleeve D—Needle Bearing
B—Spring Set E—Control Spool
C—Bearing Race (2 used) F—Needle Roller



Spool Valve Compone

B

Spring Set

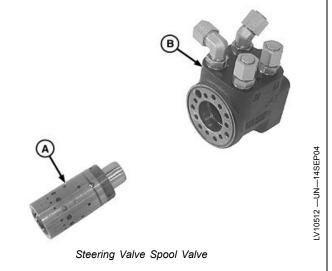
OUO1023,0003648 -19-26MAR13-3/7

LV10549 —UN—050CT04

7. Slide spool valve (A) into steering valve housing (B).

A—Spool Valve

B—Steering Valve Housing

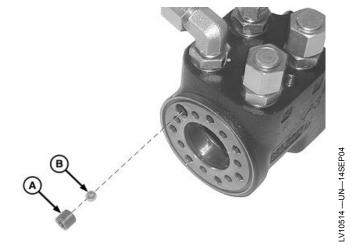


OUO1023,0003648 -19-26MAR13-4/7

8. Install ball (B) and ring nut (A).

A—Ring Nut

B—Ball



Check Valve Ring Nut and Ball

Continued on next page

OUO1023,0003648 -19-26MAR13-5/7

9. Install parts (B—F).

IMPORTANT: Violent steering wheel oscillation can occur if rotor gear and drive shaft are not timed correctly.

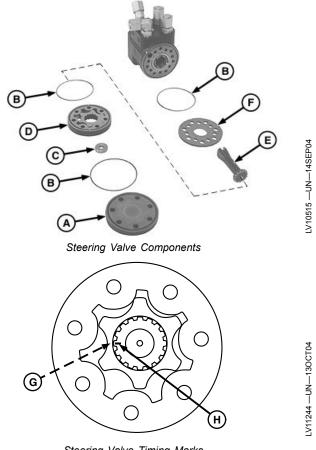
- 10. Align timing mark (H) on face of drive shaft with timing notch (G) inside splines of rotor gear.
- 11. Install cover (A).

 A—Cover
 E—Drive Shaft

 B—O-Ring
 F—Stop Disk

 C—Spacer
 G—Timing Notch

 D—Rotor Gear Set
 H—Timing Mark



Steering Valve Timing Marks

Continued on next page

OUO1023,0003648 -19-26MAR13-6/7

12. Install cap screws (A) and spacer cap screw (B). Tighten all cap screws to specification in sequence shown.

Specification

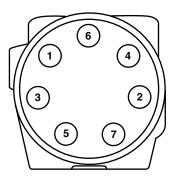
Steering Valve Cover

A—Cap Screw (6 used)

B—Spacer Cap Screw



Steering Valve Cover



Cap Screw Tightening Sequence

OUO1023,0003648 -19-26MAR13-7/7

LV10511 —UN—14SEP04

Remove and Install Steering Cylinder—MFWD Axle

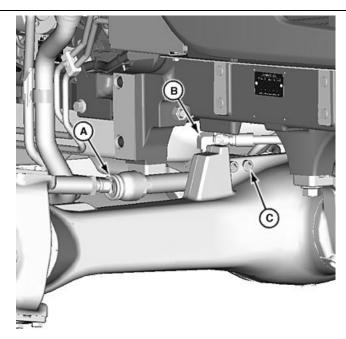
- Remove tie rod ends (A). (See Remove, Inspect, and Install Tie Rod Assembly—MFWD Axle in Section 60, Group 05.)
- 2. Disconnect hydraulic hose (B) from both sides. Close all openings using caps and plugs.
- 3. Remove clamp (C) from both sides.
- 4. Remove steering cylinder assembly.
- Make repairs as necessary. (See Disassemble, Inspect, and Assemble Steering Cylinder—MFWD Axle in Section 60, Group 05.)
- 6. Install the steering cylinder assembly.
- Apply Thread Lock and Sealer (Medium Strength) to threads of mounting clamp. Tighten to specification.

Specification

Steering Cylinder Mounting Clamp—MFWD

8. Install new tie rod ends (A).

IMPORTANT: Always replace all O-rings. Damaged or used O-rings will leak.



Steering Cylinder—MFWD Axle

A—Tie Rod End B—Hydraulic Hose C—Clamp

9. Install new O-rings and connect hydraulic hoses.

OUO1023,0003649 -19-26MAR13-1/2

-V16937 -- UN--08MAR13

CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high-pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available in English from Deere & Company Medical Department in Moline, Illinois, U.S.A., by calling 1-800-822-8262 or +1 309-748-5636.



Start engine. Operate steering and check for hydraulic leaks.

OUO1023,0003649 -19-26MAR13-2/2

Disassemble, Inspect, and Assemble Steering Cylinder—MFWD Axle

For complete steering cylinder—MFWD axle repair information, use the component technical manual (CTM) is required. Use the component technical manual in conjunction with this machine manual.

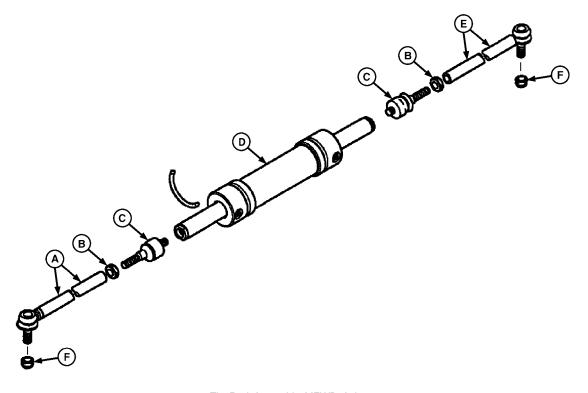
• Front-Wheel Drive Axles 725, 730, 733, 740, 745, 750 and 755—CTM4820



TS225 —UN—17JAN89

OUO1023,000364A -19-01APR13-1/1

Remove, Inspect, and Install Tie Rod Assembly—MFWD Axle



Tie Rod Assembly MFWD Axle

A—Left Tie Rod End B—Nut (2 used) C—Ball Joint (2 used) D—Steering Cylinder E—Right Tie Rod End F—Lock Nut (2 used)

NOTE: Tie rod is a tapered bore fit. Use a ball joint fork or puller to ease removal.

- 1. Remove lock nut (F). Remove tie rod from spindle arm.
- 2. Inspect all parts for wear or damage.

NOTE: To remove ball joint (C), place wrench on flats of both ball joints. Turn one side while holding the other.

- Remove parts (A—C) and right tie rod end (E) as necessary for replacement.
- 4. Install parts (A—C) and right tie rod end (E). Tighten ball joints (C) to specification.

Specification

Ball Joint to Piston Rod—MFWD

 Adjust length of tie rod assembly by turning tie rod end (A or E) so wheel is approximately straight forward when steering cylinder (D) is centered and tie rod end fits into arm spindle. Tighten nut (B) to specification.

Specification

Ball Joint Nut—MFWD

6. Install and tighten lock nut (F) to specification.

Specification

Tie Rod End Lock Nut—MFWD

7. Adjust front axle toe-in. See relevant front axle component technical manual (CTM).

OUO1023,000364B -19-26MAR13-1/1

LV10600 —UN—07OCT04

Inspect and Replace Steering Hydraulic Lines

A

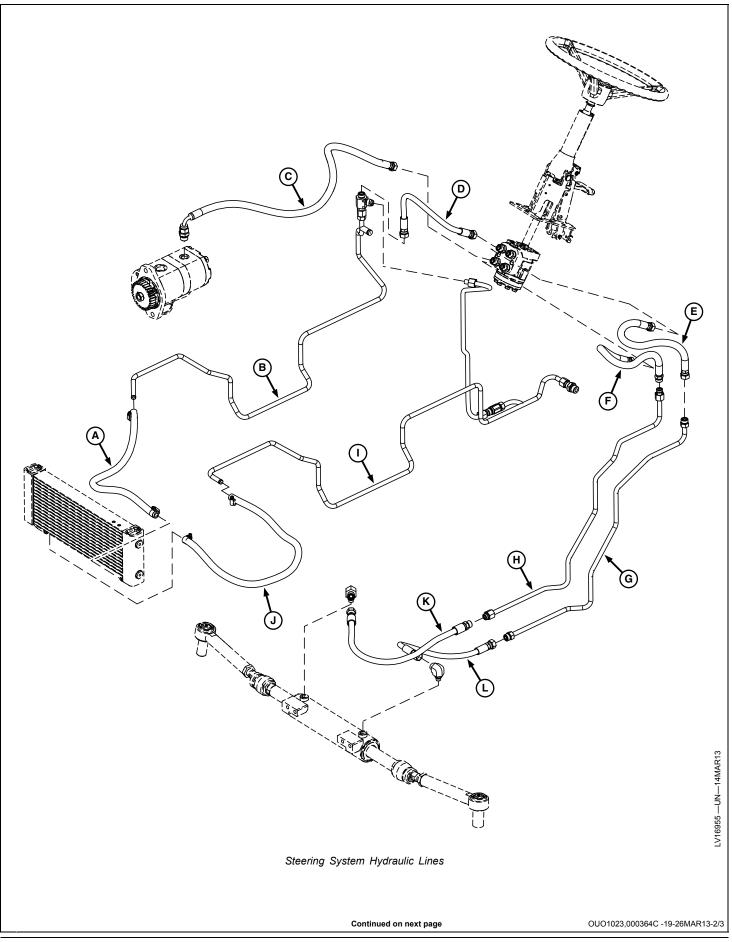
CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high-pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available in English from Deere & Company Medical Department in Moline, Illinois, U.S.A., by calling 1-800-822-8262 or +1 309-748-5636.



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OUO1023,000364C -19-26MAR13-1/3



Steering Repair

A—Oil Cooler Hose

B—Oil Cooler Line

C—Hydraulic Pump-to-Steering Valve Supply Hose D—Steering Valve-to-Oil Cooler

Hose

E—Left Steering Hose F—Right Steering Hose G—Left Steering Line H—Right Steering Line I— Oil Cooler Line

J—Oil Cooler Hose
K—Right Steering

Hose-to-Steering Cylinder

L—Left Steering Hose-to-Steering Cylinder

IMPORTANT: Replace all O-rings. Damaged or used O-rings will leak.

- 1. Inspect hydraulic lines and hoses for wear or damage. Replace as necessary.
- 2. Start engine. Operate steering and check for oil leaks. Note any leaks and make repairs as necessary.

3. Stop engine and check hydraulic oil level. Fill to full mark with specified oil. (See Transmission and Hydraulic Oil in Section 10, Group 15.)

OUO1023,000364C -19-26MAR13-3/3

Steering Repair

Group 10 Brake Repair

Service Equipment and Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the

SERVICEGARD is a trademark of Deere & Company

European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

OUO1023,000364D -19-27MAR13-1/4

Bushing, Bearing, and Seal Driver Set

Used to remove and install brake valve seals.

OUO1023.000364D -19-27MAR13-2/4

Bushing, Bearing, and Seal Driver Set

Used to drive retractors and piston into final drive housing.

OUO1023,000364D -19-27MAR13-3/4

Filling Reservoir.....KJD10580

Brake bleeding, connects filling reservoir to brake valve in order to prevent dry running of the reservoir during bleeding of the brake system.

OUO1023,000364D -19-27MAR13-4/4

Other Material

271 (LOCTITE®)

Number Name Use

PM38654 (U.S.) Thread Lock and Sealer (High PM38624 (Canadian) Strength)

Apply to threads of brake return compression spring assemblies.

Number Name Use

TY6333 (U.S.) Grease, SAE Multi-Purpose Apply to O-rings and seals to

ease installation.

Loctite is a trademark of Henkel Corporation

OUO1023,000364E -19-27MAR13-1/1

Specifications

Item	Measurement	Specification
Brake Valve Mounting Cap Screw	Torque	70 N·m (52 lbft.)
Inlet Check Valve Assembly	Torque	73 N·m (54 lbft.)
Pressure Equalizing Valve—Plug	Torque	37 N·m (27 lbft.)
Check Valve Spring Seat Fitting	Torque	92 N·m (68 lbft.)
Retractor Spring-to-Piston	Torque	15 N·m (133 lb-in.)
Piston-to-Final Drive Housing	Distance	12.4—12.8 mm (0.48—0.50 in.)

OUO1023,000364F -19-27MAR13-1/1

Surface

Remove and Install Brake Valve and Pedals

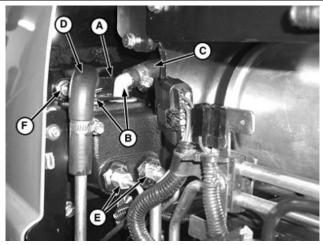
- Remove cowl cover. (See Remove and Install Center Control Console in Section 90, Group 10.)
- 2. Disconnect hoses (C and D). Close all openings with caps and plugs.
- 3. Disconnect lines (E). Close all openings with caps and plugs.
- 4. Remove two upper brake valve mounting cap screws (F).
- 5. Remove retainer (A) and hose fittings (B).
- Remove two lower mounting cap screws (F) and brake valve.
- Make repairs as necessary. (See Disassemble and Inspect Brake Pedals and Valve in Section 60, Group 10.)
- 8. Install brake valve, installing two lower mounting cap screws finger tight only.

IMPORTANT: Replace O-rings. Damaged or used O-rings will leak.

9. Install hose fittings (B) with new O-rings. Install retainer (A) and upper mounting cap screws. Tighten all brake valve mounting cap screws to specification.

Specification

- 10. Connect hoses (C and D) and lines (E).
- 11. Install cowl cover. (See Remove and Install Center Control Console in Section 90, Group 10.)



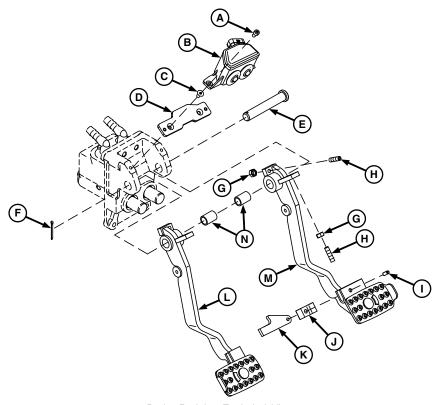
Brake Cylinder

A—Retainer B—Hose Fitting (2 used) C—Supply Hose D—Return Hose E—Brake Line (2 used) F—Mounting Cap Screw (4 used) -V10870 —UN-070CT04

- Start engine. Run at idle speed for several minutes to fill brake valve with transmission/hydraulic oil. Shut off engine.
- 13. Bleed brake. (See Bleed Brakes in this group.)
- 14. Repeat as necessary.
- Check and adjust transmission/hydraulic oil level. (See Transmission and Hydraulic Oil in Section 10, Group 15.)

OUO1023,0003650 -19-26MAR13-1/1

Disassemble and Inspect Brake Pedals and Valve



Brake Pedals—Exploded View

A—Screw (2 used) B—Switch

C—Screw (2 used)

D—Plate E—Pivot Shaft F—Cotter Pin G—Jam Nut (4 used) H—Set Screw (4 used)

I— Spring Pin

J— Leaf Spring K—Lock Plate

L—Left Brake Pedal M—Right Brake Pedal N—Bushing (2 used)

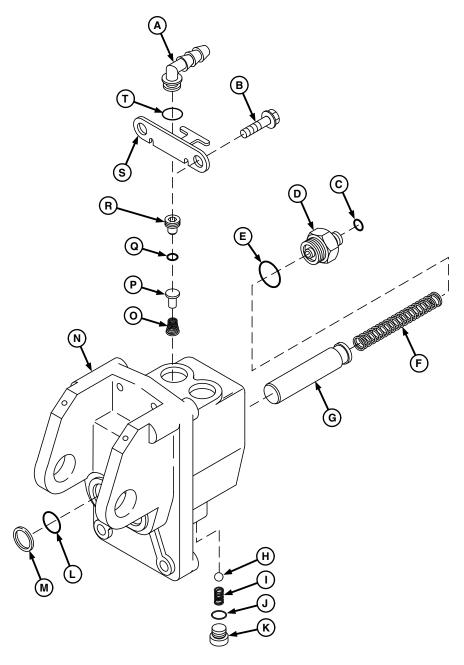
- Remove brake valve and pedals. (See Remove and Install Brake Valve and Pedals in Section 60, Group 10.)
- 2. Disengage lock plate (K).
- 3. Remove cotter pin (F) to remove pivot shaft (E) and pedals (L and M).

NOTE: Bushings (N) are press fit in pedals. Remove bushings only if replacement is necessary.

 Inspect parts for wear or damage. Replace as necessary.

Continued on next page

OUO1023,0003651 -19-26MAR13-1/3



Brake Valve

A-Elbow Fitting

B—Cap Screw (4 used)

-O-Ring (2 used)

D—Spring Seat and Outlet Fitting (2 used)

E—O-Ring (2 used)

F—Spring (2 used)

G—Brake Piston (2 used)

H—Pressure Equalizing Ball (2

used)

I— Spring (2 used)

J— O-Ring (2 used)

K—Plug (2 used)

L—O-Ring (2 used)

M—Seal (2 used)

N—Valve Body

O—Spring (2 used)

P-Inlet Check Valve (2 used)

Q—O-Ring (2 used) R—Inlet Check Valve Seat (2

used) -Retainer

T-O-Ring (2 used)

NOTE: Parts (A, B, S, and T) were removed during brake valve removal.

5. Remove parts (O—R).

6. Remove parts (H-K).

CAUTION: Avoid injury from flying objects. Spring seats (D) are under spring pressure. Hold seat firmly while removing.

IMPORTANT: Do not remove ball and spring valve inside of spring seat (D).

Continued on next page

OUO1023,0003651 -19-26MAR13-2/3

LV10597 —UN—130CT04

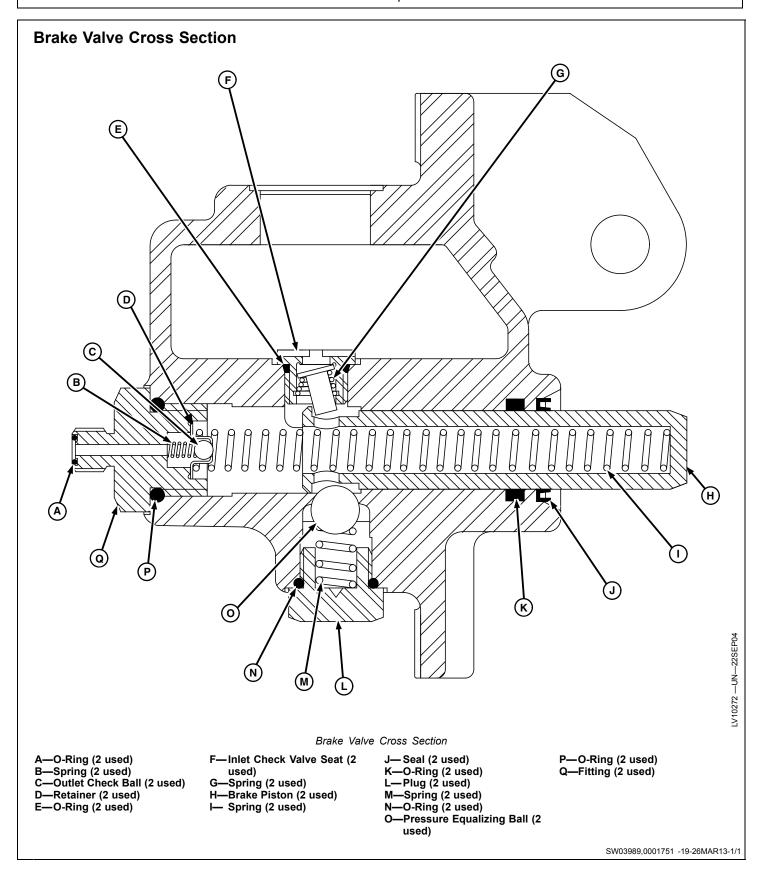
Brake Repair

7. Remove parts (C—G).

IMPORTANT: Replace all seals and O-rings. Damaged or used seals and O-rings will leak.

- 8. Pry out seals (M) and remove O-rings (L). Install new seals with lips facing away from valve using a bushing, bearing, and seal driver set.
- 9. Inspect all parts for wear or damage. Replace as necessary.

OUO1023,0003651 -19-26MAR13-3/3



Assemble Brake Valve

IMPORTANT: Replace all O-rings. Damaged or used O-rings will leak.

> Inlet check valves must be installed before brake pistons to ensure proper position of check valve in relation to piston.

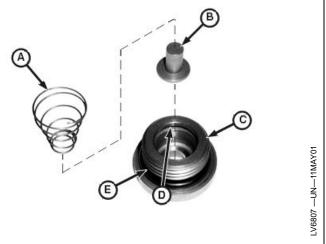
NOTE: Lubricate all internal parts with clean transmission/hydraulic oil during assembly.

- 1. Install check valve (B) and spring (A) into seat (C). Ensure spring is seated in groove (D).
- 2. Install new O-ring (E) on check valve seat.

-Spring -Check Valve C—Seat

D—Groove

E-O-Ring



Inlet Check Valve Components

SW03989,0001752 -19-26MAR13-1/5

3. Install inlet check valve assembly (A) and tighten to specification.

Specification

Inlet Check Valve

A-Inlet Check Valve Assembly



Inlet Check Valve

Continued on next page

SW03989,0001752 -19-26MAR13-2/5

LV6849 —UN—11MAY01

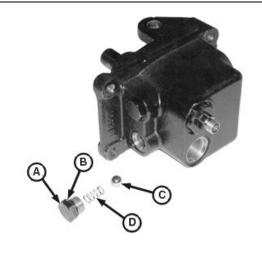
- 4. Install new O-ring (B).
- 5. Install ball (C), spring (D), and plug (A). Tighten plug to specification.

Specification

Pressure Equalizing

A—Plug (2 used) B—O-Ring (2 used) C—Pressure Equalizing Ball (2 used)

D—Spring (2 used)



Pressure Equalizing Valve

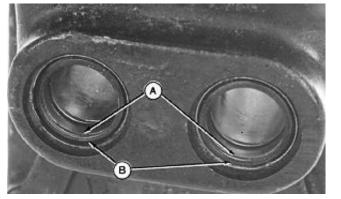
SW03989,0001752 -19-26MAR13-3/5

LV6850 —UN—11MAY01

LV022

- Apply multipurpose grease to new O-rings (A) and install.
- 7. Apply multipurpose grease to lips of seals (B).

A—O-Ring (2 used) B—Seal (2 used)



O-Rings and Seals

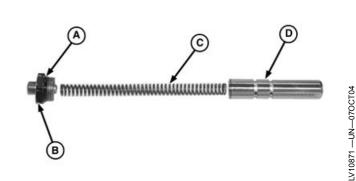
SW03989,0001752 -19-26MAR13-4/5

- 8. Apply multipurpose grease to new O-rings (A) and install.
- 9. Install parts (B—D). Tighten check valve spring seat fitting (B) to specification.

Specification

Check Valve Spring Seat

- 10. Install brake pedals, pivot shaft, and cotter pin on brake valve.
- 11. Install brake valve and pedals. (See Remove and Install Brake Valve and Pedals in Section 60, Group 10.)
- 12. Adjust brake pedals. (See Brake Pedal Adjustment in Diagnostic Technical Manual, Section 260, Group 15.)



Brake Valve Piston

A—O-Ring (2 used)
B—Check Valve Spring Seat
Fitting (2 used)

C—Spring (2 used) D—Brake Piston

SW03989,0001752 -19-26MAR13-5/5

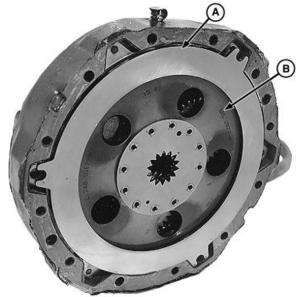
Remove and Inspect Brakes

- 1. Remove final drive assembly. (See Remove and Install Final Drives Repair in Section 56, Group 10.)
- 2. Remove back plate (A) and friction disk (B).

NOTE: Piston assembly is press fit into axle housing. Remove only if necessary.

- 3. Remove piston assembly (C) using a pry bar. Pry at three retractor locations (D) evenly until piston assembly is removed.
- 4. Inspect piston ring and piston ring bore in axle housing for scoring or damage.

A—Back Plate B—Friction Disk C—Piston Assembly D—Retractor (3 used)



Left Side Shown

LV10283 —UN—08SEP04

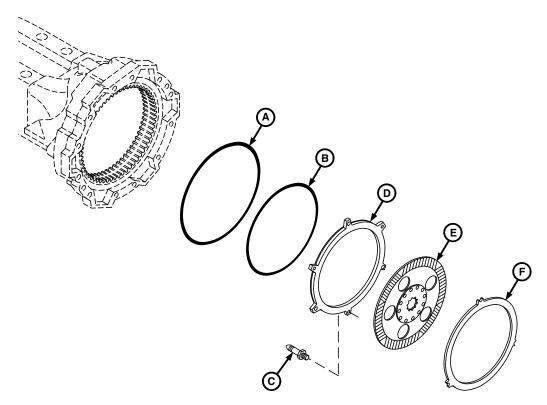
LV10284 —UN—08SEP04



Brake Piston Assembly

Continued on next page

SW03989,0001753 -19-27MAR13-1/2



Brakes-Exploded View

A—Outer O-Ring B—Inner O-Ring C—Retractor Spring (3 used)

D—Piston E—Friction Disk F-Back Plate

IMPORTANT: Always use new O-rings. Damaged or used O-rings will leak.

5. Replace O-rings (A and B).

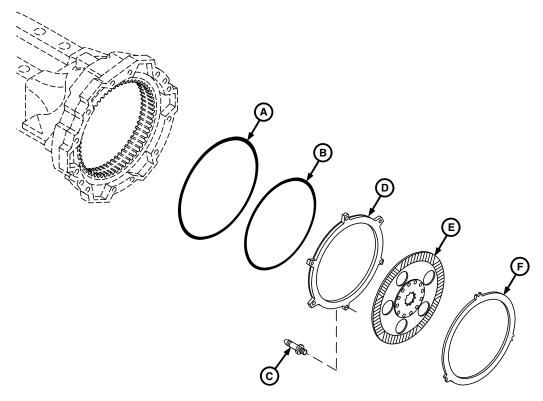
NOTE: Retractor springs (C) are threaded into piston (D).

- 6. Remove retractor springs (C).
- 7. Inspect parts (A—F) for wear or damage. Check piston (D) and back plate (F) for warping. Replace parts as necessary.

SW03989,0001753 -19-27MAR13-2/2

LV10282 —UN—15SEP04

Install Brakes



Brakes-Exploded View

A—Outer O-Ring B—Inner O-Ring

C—Retractor Spring (3 used)

D—Piston E—Friction Disc F-Back Plate

- 1. Apply Thread Lock And Sealer (High Strength) to threads on each retractor spring (C).
- 2. Install retractor springs (C) into piston (D). Tighten to specification.
- 3. Install new O-rings (A and B). Apply hydraulic oil to inside and outside diameter of piston (D).

Specification

Retractor Spring-to-

Continued on next page

OUO1023,0003655 -19-27MAR13-1/3

LV10282 —UN—15SEP04

- 4. Install piston (A) and retractors into final drive housing using a cross beam (B) from a bushing, bearing, and seal driver set or equivalent type set-up.
- 5. Remove cross beam (B).

IMPORTANT: Seat retractors and piston to specification (E) as shown. If not seated to specification, brake drag may result.

- 6. Place a C-clamp over each retractor and turn clamps evenly until retractors and piston are seated in axle housing.
- 7. Using a depth gauge, measure the distance (E) from the mating surface of axle housing (C) to piston face (D) as shown. Compare to specification for properly seated piston.

Specification

Piston-to-Final Drive Housing

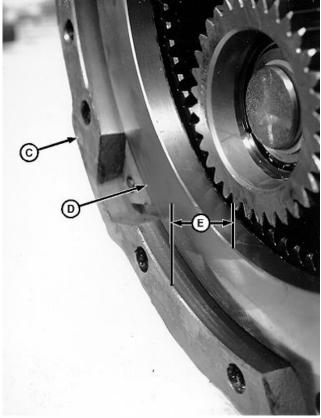
A—Piston B—Cross Beam D—Piston Face E—Distance

C—Mating Surface of Axle
Housing



Piston and Cross Beam

.V10276 —UN—08



LV2405 —UN—16DEC97

Seated Piston and Cross Beam

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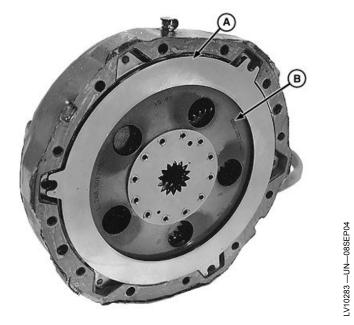
OUO1023,0003655 -19-27MAR13-2/3

IMPORTANT: Back plate (A) is machine-finished on one side only. Plates must be installed so that machine-finished side of plate (A) is facing friction disc (B).

- 8. Install friction disc (B) and back plate (A).
- 9. Install final drive assembly. (See Remove and Install Final Drives Repair in Section 56, Group 10.)
- 10. Adjust brake. (See Adjust Brake Retractors in Diagnostic Technical Manual, Section 260, Group 15.)

A-Back Plate

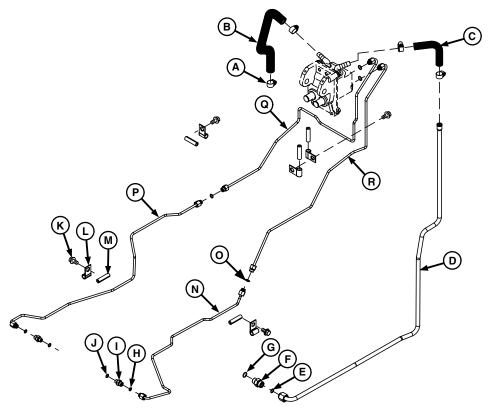
B—Friction Disc



Back Plate

OUO1023,0003655 -19-27MAR13-3/3

Inspect and Replace Brake Hydraulic Lines



Brake Hydraulic Lines

A—Clamp (4 used)	F—Adapter
B—Return Hose	G—O-Ring
C—Supply Hose	H—O-Ring (2 used)
D—Brake Valve-to-Transmission	I— Adapter (2 used)
Return Line	J— O-Ring (2 used)
E—O-Ring	K—Screw (3 used)

L—Clamp (5 used)

M—Isolator (5 used)

N—Pressure Line to Right Brake

O—O-Ring

Q—Pressure

Valve (Le

P-Pressure Line to Left Brake

Q—Pressure Line from Brake Valve (Left) R—Pressure Line from Brake Valve (Right)

 Inspect hydraulic lines and hoses for wear or damage. Replace as necessary.

IMPORTANT: Replace all O-rings. Damaged or used O-rings will leak.

- 2. Bleed brakes. (See Bleed Brakes in this group.)
- 3. Check transmission/hydraulic oil level. Add fluid if necessary. (See Transmission and Hydraulic Oil in Section 10, Group 15.)

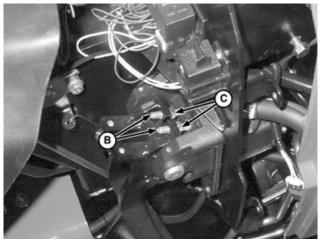
OUO1023,0003656 -19-27MAR13-1/1

LV10274 —UN—130CT04

Brake Pedal Adjustment

NOTE: Adjustment can be done with brake valve assembly in or out of machine. This procedure is for brake valve assembly mounted in machine.

- Remove center control console. (See Remove and Install Center Control Console in Section 90, Group 10.)
- 2. Disengage brake pedal locking lever from slot.
- 3. Loosen both jam nuts (C).
- 4. Turn adjusting screws (B) clockwise until both adjusting screws contact brake valve housing.
- 5. Turn adjusting screws (B) clockwise an additional 1/2 turn and tighten jam nuts (C).
- 6. Check distance between brake pedals for misalignment of locking lever slots. If distance is greater than 8 mm (0.312 in.), replace brake pedal.
- Adjust higher pedal by turning adjusting screw clockwise until pedal locking lever aligns into both slots. Tighten jam nut.
- 8. Install center control console. (See Remove and Install Center Control Console in Section 90, Group 10.)



Brake Pedal Adjustment

B—Adjusting Screw

C-Jam Nut

SW03989,0001741 -19-27MAR13-1/1

Secondary Brake Repair

- Remove Cab. (See Remove Cab, in Section 90, Group 20.)
- 2. Remove and repair secondary brake.

Refer to the relevant component technical manual (CTM). (See John Deere PowrReverser™ Transmission Repair—Use Component Technical Manual, in Section 50, Group 15.)

- PowrReverser[™] Transmission -John Deere[™] Pune Works (Sr. No.PY1068XXXXXXX, LV12363, LV12364, PY10953, LV12781 and PY10952) CTM900519
- Separate Clutch Housing from Transmission
- Remove Transmission (With Hand Brake)
- Disassemble and Inspect Transmission
- Assemble Transmission (With Hand Brake)



FS225 —UN—17JAN89

-V12288 —UN—15FEB05

- Install Transmission (With Hand Brake)
- Install Clutch Housing to Transmission
- 3. Install Cab. (See Install Cab, in Section 90, Group 20.)

SW03989,0001D2E -19-18SEP13-1/1

Adjust Secondary Brake

NOTE: Before performing diagnostics on secondary brake, fix all problems related to service brakes. (Refer to Brakes - Operational Test in relevant Diagnostic Technical Manual, Section 260.)

- 1. Disengage secondary brake lever (A) completely.
- 2. Remove cap screws and washers (C) to remove access cover (B).
- 3. Loosen nut (F) and remove locking pin (E).

NOTE: Do not depress brake release button on end of secondary brake lever (A) during steps.

- 4. Pull up on secondary brake lever (A) three notches.
- 5. Rotate adjustment yoke (D) until locking pin hole aligns to hole in lever (G).
- 6. Install locking pin (E) and tighten nut (F).
- 7. Check operation of secondary brake. (See Brakes Operational Test in relevant Diagnostic Technical Manual, Section 260.)

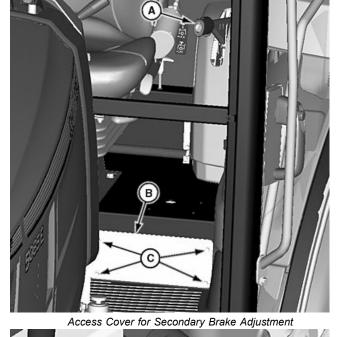
A—Secondary Brake Lever

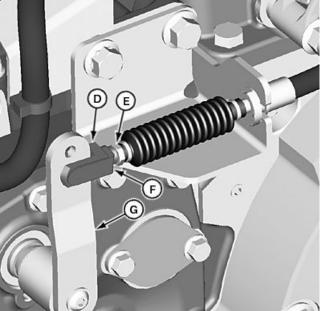
E—Locking Pin

B—Access Cover C—Cap Screw and Washer (4 F—Nut G—Lever

used)

D-Adjustment Yoke





Secondary Brake Linkage Adjustment

SW03989,0001D2F -19-18SEP13-1/1

LV16680 —UN—18FEB13

LV16679 —UN—18FEB13

Bleed Brakes

The procedure for bleeding the brakes comprises the following steps:

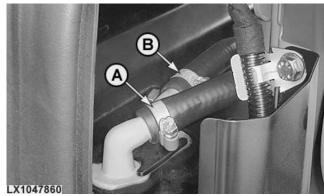
- Preliminary work
- Bleed equalizing bore
- Bleed brake system

Preliminary work:

- 1. Make sure that brake pedals are adjusted correctly. (See Brake Pedal Adjustment in this group.)
- 2. Open hood.
- 3. Remove heat shield, if equipped.

NOTE: A connecting piece for hoses are supplied with KJD10580 special tool. This allows both hoses to be connected together to avoid oil leakage.

4. Identify intake and return hoses (A and B). Loosen clamps and remove hoses from hose fittings.



Disconnect Hoses

A-Intake Hose

B—Return Hose

Continued on next page

SW03989,0001742 -19-27MAR13-1/3

-X1047860 —UN—23SEP09

Connect KJD10580 filling reservoir to brake valve as shown.

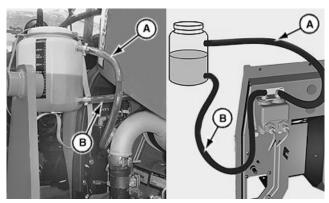
NOTE: Filling reservoir should be kept at a lower level than brake valve when connecting the hoses. This prevents oil leakage.

Keep filling reservoir filled with at least 2.5 L (0.66 gal.) of transmission/hydraulic oil. There must always be a sufficient amount of oil in filling reservoir during bleeding procedure.

Bleed the Equalizing Bore

NOTE: A second person is required to perform bleeding procedure.

 Connect a transparent hose (A) to bleed screw of the left rear-wheel brake. Insert hose into oil filler neck (B) and open bleed screw by approximately one turn. Unlock brake pedals.



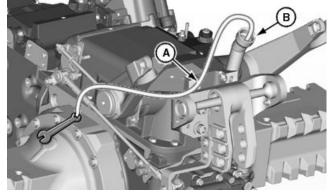
Install KJD10580 Filling Reservoir

A-Return Hose

B—Supply Hose

LV16144 —UN—030CT12

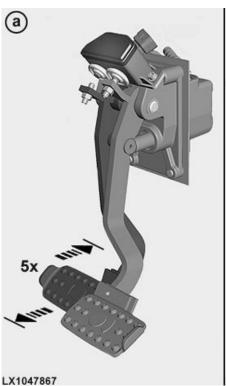
LV17241 —UN—26MAR13

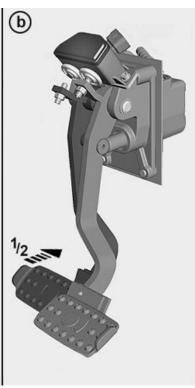


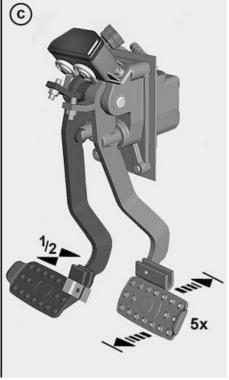
Open Bleed Screw

A—Transparent Hose

B—Filler Neck







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SW03989,0001742 -19-27MAR13-2/3

LX1047867 —UN—06OCT09

Bleed the Equalizing Bore

2. Do NOT start the engine while bleeding.

- a. Actuate left brake pedal at least 5 times.
- b. Depress left brake pedal halfway and hold it in this position.
- c. Depress right brake pedal until it reaches its stop and slowly release it; do this 5 times. When finished, hold brake pedal depressed and close bleed screw. Slowly release the brake pedal.

IMPORTANT: Do not allow brake pedal rebound to upper stop.

Bleed the Brake System

1. Bleeding procedure:

NOTE: A second person is required to perform bleeding procedure.

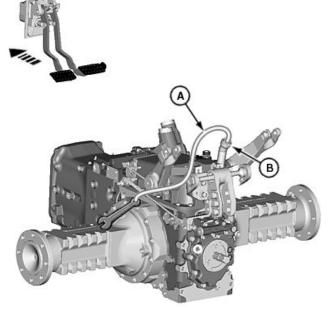
- a. Always bleed equalizing bore first.
- b. Connect a transparent hose (A) to relevant bleed screw. Insert other end of hose into oil filler neck (B).
- c. Open bleed screw by approximately one turn. Slowly depress brake pedal until it reaches its stop and slowly release it. Repeat this procedure until the emerging oil is free of air bubbles.
- d. When finished, hold brake pedal depressed and close bleed screw. For correct bleeding sequence of various components, see Bleeding Sequence in next step.

IMPORTANT: Do not allow brake pedal rebound to upper stop.

2. Bleeding Sequence: For correct bleeding sequence of the various components, see table.

Determine the correct bleeding sequence by using this table and the illustration
Tractor without trailer brake
Step 1—open A3, depress left brake pedal A
Step 2—open B2, depress right brake pedal B
Tractor with hydraulic trailer brake
Step 1—open A1, depress left brake pedal A
Step 2—open A3, depress left brake pedal A
Step 3—open B2, depress right brake pedal B

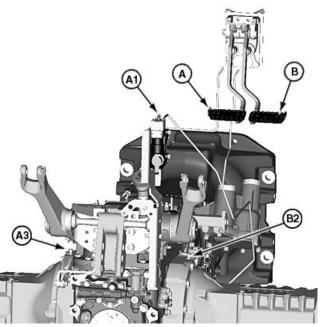
Bleeding Sequence



Bleeding Procedure

A—Transparent Hose

B—Filler Neck



Bleeding Sequence

A—Left Brake Pedal B—Right Brake Pedal A1—Bleed Screw on Hydraulic B2—Bleed Screw of Right **Trailer Brake Valve**

A3—Bleed Screw of Left Rear-Wheel Brake Rear-Wheel Brake

SW03989,0001742 -19-27MAR13-3/3

LV17242 —UN—26MAR13

LV17243 —UN—26MAR13

Brake Repair

Section 70 Hydraulic Repair

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Service Equipment and Tools

NOTE: Order tools according to information given in the SERVICEGARD™ Catalog. Some tools may be available from a local supplier.

SERVICEGARD is a trademark of Deere & Company

BB87125,000083E -19-25MAR13-1/2

Bushing, Bearing, and Seal Driver Set

Used to remove and install hydraulic pump seals.

BB87125,000083E -19-25MAR13-2/2

Specifications		
Item	Measurement	Specification
Hydraulic Line Fittings	Torque	50 N·m (37 lbft.)
Pick-Up Screen Cover Cap Screw	Torque	23 N·m (17 lbft.)
Hydraulic Pump Mounting Cap Screw	Torque	90 N·m (66 lbft.)
Hydraulic Pump Body Cap Screw	Torque	68 N·m (50 lbft.)
Hydraulic Pump Rear Outlet Fitting	Torque	33 N·m (24 lbft.)
Hydraulic Pump Front Outlet Fitting	Torque	67 N·m (50 lbft.)
Hydraulic Pump Gear Nut	Torque	90 N·m (66 lbft.)
Hydraulic Pump Inlet Manifold Cap Screws	Torque	35 N·m (26 lbft.)
Hydraulic Oil Filter/Manifold Cap Screw	Torque	55 N·m (41 lbft.)
Wheel Cap Screw M20	Torque	600 N·m (442 lbft.)
		BR87125 000083C -10-25MAR13-1/1

Prime Hydraulic Pump

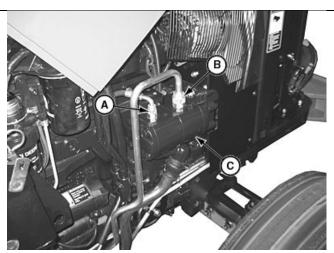
- 1. Loosen steering line fitting (A) and implement line fitting (B).
- 2. Remove hydraulic oil fill cap.
- Apply approximately 34 kPa (5 psi) to hydraulic oil fill tube.

NOTE: Oil will take approximately 1 minute to reach hydraulic pump.

- 4. Watch for oil leaking from steering line fitting (A) or implement line fitting (B).
- 5. Tighten hydraulic line fittings to specification.

Specification

6. Start tractor within 30 minutes of priming hydraulic pump.



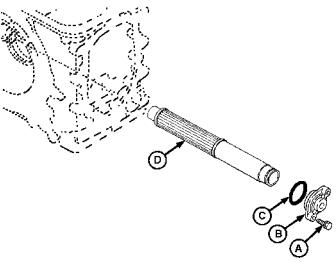
Prime Hydraulic Pump

A—Steering Line Fitting B—Implement Line Fitting

C—Hydraulic Pump

BB87125,00007EF -19-12MAR13-1/1

Remove, Inspect, and Install Hydraulic Oil Pick-Up Screen



Pick-Up Screen Assembly

A—Cap Screw (2 used)

B—Cover C—O-Ring

D-Pick-Up Screen

- 1. Drain transmission/hydraulic oil.
- 2. Remove cap screws (A), cover (B), and O-ring (C).
- 3. Remove pick-up screen (D) and inspect for damage. Replace if necessary.
- 4. Clean undamaged pick-up screen in solvent and blow dry with compressed air.
- 5. Install pick-up screen (D) into differential case.

IMPORTANT: Replace O-ring. Damaged or used O-rings will leak.

6. Install new O-ring (C), cover (B), and cap screws (A). Tighten cap screws to specification.

Specification

Pick-Up Screen Cover

LV2268 —UN—28JAN98

7. Fill transmission with proper oil. (See Transmission and Hydraulic Oil in Section 10, Group 15.)

BB87125,00007F0 -19-25MAR13-1/1

Remove and Install Hydraulic Pump

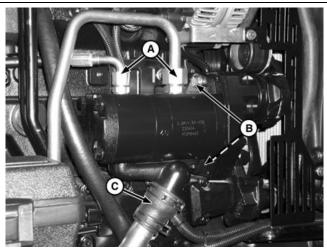
IMPORTANT: When removing / installing hydraulic lines, always support line adapter and fittings with a backup wrench to keep fittings stationary and prevent damage to line, valve and pump housings.

NOTE: Close all openings using caps and plugs. Tag or label hydraulic lines before disconnecting to aid during installation.

The hydraulic lines may leak oil when being disconnected. Catch leaking oil and dispose of properly.

- Disconnect hydraulic outlet lines (A) and suction line (C).
- 2. Remove two cap screws (B).
- 3. Remove hydraulic pump and gasket.
- 4. Make repairs as necessary. (See Disassemble and Inspect Hydraulic Pump in Section 70, Group 05.)
- 5. Place new gasket on pump flange. Install pump on engine.
- 6. Install cap screws (B) and tighten to specification.

Specification



Hydraulic Oil Pump

A—Outlet Lines B—Cap Screw (2 used) **C—Suction Line**

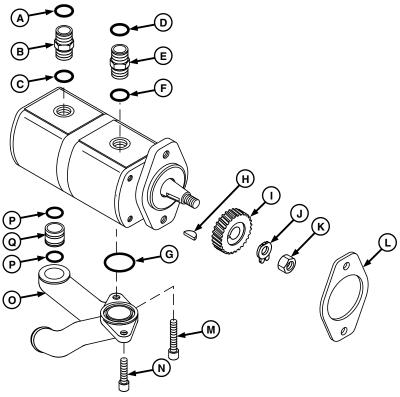
IMPORTANT: Always use new O-rings. Damaged or used O-rings may leak.

- 7. Connect outlet lines (A) and suction line (C).
- 8. Prime hydraulic pump. (See Prime Hydraulic Pump in Section 70, Group 05.)
- 9. Start engine and operate machine hydraulics. Check for leaks and adjust transmission/hydraulic oil level.

BB87125,00007F1 -19-12MAR13-1/1

LV10186 —UN—31AUG04

Remove Hydraulic Pump External Components



Hydraulic Pump External Components

A—O-Ring
B—Rear Fitting
C—O-Ring
D—O-Ring
E—Front Fitting

F—O-Ring G—O-Ring H—Woodruff Key I— Gear J—Tab Washer

K—Nut L—Gasket M—Cap Screw N—Cap Screw O—Manifold P—O-Ring (2 used) Q—Tube

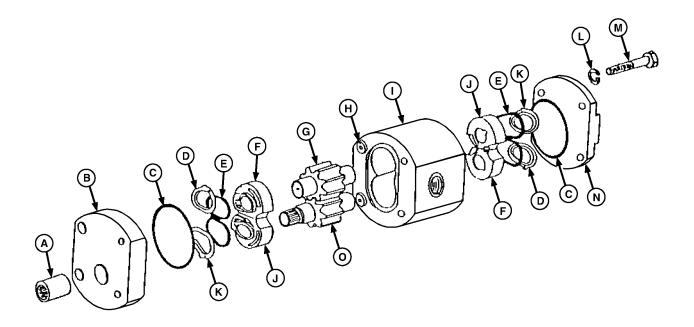
- 1. Remove manifold (O) and tube (Q). Remove O-rings (G and P).
- 2. Flatten tabs of tab washer (J) with hammer and punch.
- 3. Remove nut (K) and tab washer (J).
- 4. Remove gear (I) using a two-jaw puller.

- 5. Remove Woodruff key (H).
- 6. Remove fittings (B and E) and O-rings (A, C, D, and F).
- 7. Remove gasket (L).

BB87125,00007F2 -19-12MAR13-1/1

LV10226 —UN—31AUG04

Disassemble and Inspect Hydraulic Pump



-V10225 —UN—31AUG04

Rear Pump

A—Coupling F—Bushing (2 used)
B—Plate G—Driven Gear
C—Body Seal (2 used) H—Dowel (2 used)
D—Packing Ring (2 used) I— Housing
E—O-Ring Seal (2 used) J—Bushing (2 used)

K—Packing Ring (2 used)
L—Lock Washer (4 used)
M—Cap Screw (4 used)

N—End Plate
O—Drive Gear

NOTE: Hydraulic pump components are not serviceable. Replace complete pump if any part, other than seals, are worn or damaged.

- 1. Thoroughly clean and dry outside of pump.
- 2. Mark or number pump sections to aid assembly.

IMPORTANT: Separate pump sections carefully. Do not allow parts to fall out. Keep individual pump components together as matched sets.

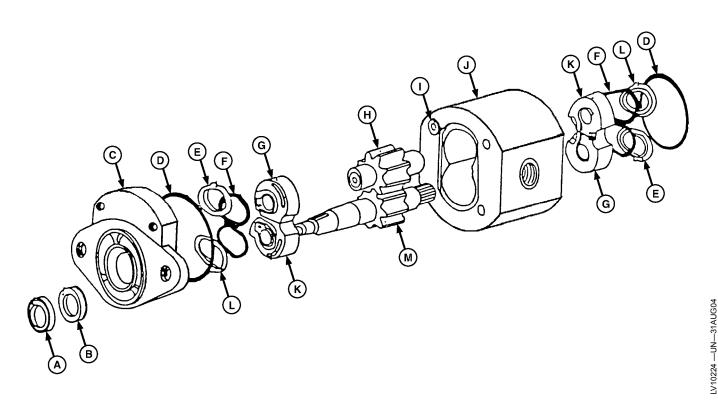
3. Mount pump in a vise and remove cap screws (M).

4. Remove end plate (N) and parts (C, D, E, and K).

- 5. Mark teeth of pump gears (G and O) to aid reassembly.
- Remove remaining parts of rear pump. If bushings (F and J) do not come out easily, push on shaft of drive gear (O).
- 7. Clean and dry parts. Inspect parts for wear or damage. Replace complete pump if necessary.

Continued on next page

BB87125,00007F3 -19-12MAR13-1/2



Front Pump

A—Oil Seal B—Oil Seal C—Mounting Flange D—Body Seal (2 used)

E—Packing Ring (2 used)
F—O-Ring Seal (2 used)
G—Bushing (2 used)

H—Driven Gear I— Dowel (2 used) J—Housing K—Bushing (2 used) L—Packing Ring (2 used) M—Drive Gear

8. Separate mounting flange (C) from housing (J).

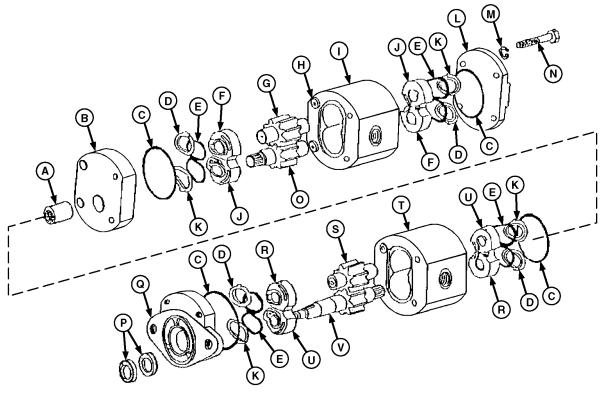
- 9. Remove parts (D, E, F, and L).
- 10. Mark teeth of pump gears (H and M) to aid reassembly.
- 11. Remove remaining parts of front pump. If bushings (G and K) do not come out easily, push on shaft of drive gear (M).

IMPORTANT: Always replace seals. Damaged or used seals will leak.

- 12. Pry out seals (A and B).
- 13. Clean and dry parts. Inspect parts for wear or damage. Replace complete pump if necessary.

BB87125,00007F3 -19-12MAR13-2/2

Assemble Hydraulic Pump



Assemble Hydraulic Pump

A—Coupling B-Plate -Body Seal (4 used)

D—Packing Ring (4 used)

E—O-Ring Seal (4 used) F—Bushing (2 used)

G—Driven Gear -Dowel (4 used)

- Housing - Bushing (2 used)

K—Packing Ring (4 used) L-End Plate

M—Lock Washer (4 used) N—Cap Screw (4 used) O-Drive Gear P-Oil Seals

Q-Mounting Flange R—Bushing (2 used) S-Driven Gear -Housing

U—Bushing (2 used) V—Drive Gear

IMPORTANT: Always use new seals and O-rings. Damaged or used seals and O-rings will leak.

> Apply clean hydraulic oil to all internal parts before assembly. Premature pump failure can result if pump is assembled dry.

- 1. Apply multipurpose grease to inside lips of seals (P). Install seals using a bushing, bearing, and seal driver set.
- 2. Assemble pump sections with new seals and O-rings, aligning all marks made during disassembly.

IMPORTANT: Make sure that pump shaft can be turned with a pair of 6-in. pliers when tightening bolts. A seized shaft indicates misaligned components. Disassemble pump to determine cause.

3. Tighten cap screws (N) to specification.

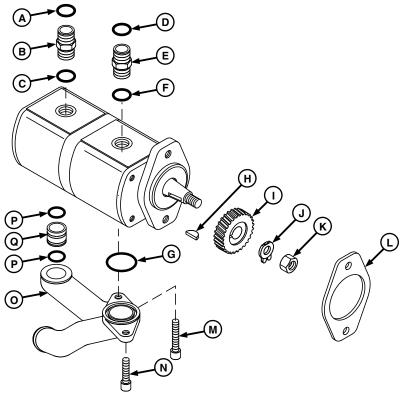
Specification

Hydraulic Pump Body

BB87125,00007F4 -19-20MAR13-1/1

LV10223 —UN—31AUG04

Install Hydraulic Pump External Components



Install Hydraulic Pump External Components

O-Manifold

A—O-Ring B—Rear Fitting C—O-Ring D—O-Ring E—Front Fitting F—O-Ring G—O-Ring H—Woodruff Key I— Gear J—Tab Washer K—Nut L—Gasket M—Cap Screw N—Cap Screw

P—O-Ring (2 used) Q—Tube

IMPORTANT: Always use new O-rings. Damaged or used O-rings will leak.

- 1. Install new O-rings (A, C, D, and F).
- 2. Install fittings (B and E). Tighten fittings to specification.

Specification

3. Install parts (H—K). Tighten nut (K) to specification then bend tabs of washer (J) up against nut.

Specification

- 4. Install new O-rings (P) and tube (Q).
- 5. Install new O-ring (G) and manifold (O).
- 6. Install cap screws (M and N). Tighten cap screws to specifications.

Specification

Hydraulic Pump Inlet Manifold Cap

BB87125,00007F5 -19-20MAR13-1/1

LV10226 —UN-31AUG04

Remove and Install Hydraulic Oil Filter/Manifold

1. Drain transmission/hydraulic oil.

IMPORTANT: When removing / installing hydraulic lines, always support line adapter and fittings with a backup wrench to keep fittings stationary and prevent damage to line, valve and pump housings.

NOTE: Close all openings using caps and plugs. Tag or label hydraulic lines before disconnecting to aid during installation.

The hydraulic lines may leak oil when being disconnected. Catch leaking oil and dispose of properly.

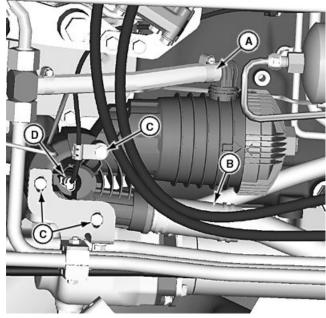
- 2. Disconnect wire connector (D).
- 3. Disconnect hose (A).
- 4. Remove cap screws (C).
- 5. Slide filter/manifold to rear and remove from suction tube (B).

IMPORTANT: Replace all O-rings. Damaged or used O-rings will leak.

- 6. Install filter/manifold assembly.
- 7. Tighten cap screws (C) to specification.

Specification

Hydraulic Oil Filter/Manifold Cap



Hydraulic Oil Filter

A—Hose B—Suction Tube C—Cap Screw D—Wire Connector

- 8. Connect hose (A) and wire connector (D).
- 9. Fill transmission with proper oil. (See Transmission and Hydraulic Oil in Section 10, Group 15.)

BB87125,00007F6 -19-20MAR13-1/1

-V17032 -- UN--14MAR13

Hydraulic Pump and Filter

Remove, Inspect, and Install Hydraulic Oil Cooler

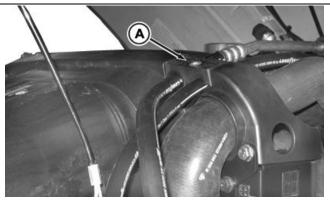
1. Disconnect negative (—) battery cable first and then positive (+) battery cable.

NOTE: Air conditioner condenser is not part of open operator station tractors (OOS). Skip steps 2 and 3 for OOS tractors.

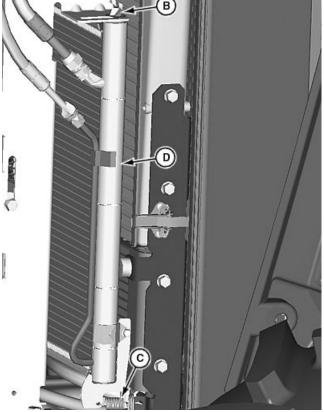
NOTE: Do not disconnect condenser hoses.

- 2. Remove clamp (A), wing screws (B) and unhook springs (C).
- Move condenser assembly (D) out of way for oil cooler removal clearance.

A—Clamp B—Wing Screw (2 used) C—Spring (2 used) D—Condenser



Condenser Lines Holding Clamp—Cab Only



LV17034 —UN—14MAR13

PULV003943 —UN—13JAN09

Condenser—Cab Only

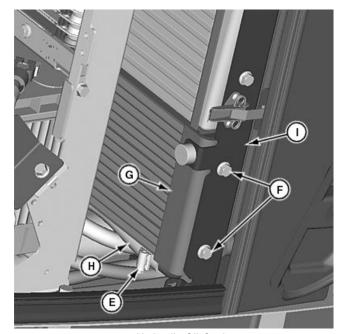
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BB87125,00007FA -19-27MAR13-1/3

- 4. Remove clamp (E) and disconnect oil cooler hose (H) from each side of oil cooler (G).
- NOTE: Close all openings using caps and plugs to prevent contamination. Tag or label hydraulic oil cooler lines / hoses before disconnecting to aid during installation.
- 5. Remove oil cooler mounting cap screws (F).
- 6. Carefully remove oil cooler (G) from bracket (I).
- 7. Inspect hydraulic oil cooler for bent fins, cracks, and damaged seams. Repair or replace as necessary.

CAUTION: Reduce compressed air to less than 210 kPa (2 bar) (30 psi) when using for cleaning purposes. Clear area of bystanders, guard against flying chips or debris and wear personal protective equipment including eye protection.

- 8. Carefully position oil cooler (G) properly on tractor.
- 9. Install and tighten screws (F).
- 10. Connect oil cooler hoses (H) and tighten clamps (E) securely.



Hydraulic Oil Cooler

E—Clamp (2 used)

F—Screw (4 used)
G—Oil Cooler

H—Oil Cooler Hose (2 used)

I- Bracket

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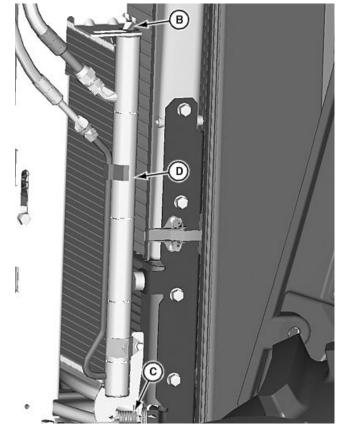
BB87125,00007FA -19-27MAR13-2/3

-V17044 --- UN--- 14MAR13

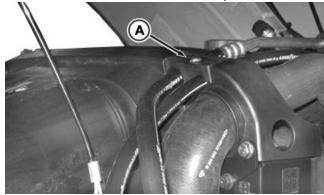
NOTE: Air conditioner condenser is not part of open operator station tractors (OOS). Skip steps 10 to 12 for OOS tractors.

- 11. Install condenser assembly (D) properly on tractor.
- 12. Install wing screws (B) and hook springs (C).
- 13. Secure condenser hoses with clamp (A) as shown.
- 14. Connect positive (+) then negative (—) battery cables.
- Start engine and operate tractor hydraulics. Check for leaks. Check and adjust transmission/hydraulic oil level.

A—Clamp B—Wing Screw (2 used) C—Spring (2 used) D—Condenser



Condenser—Cab Only



Condenser Lines Holding Clamp—Cab Only

BB87125,00007FA -19-27MAR13-3/3

LV17034 —UN—14MAR13

PULV003943 -- UN--13JAN09

Hydraulic Oil Cooler

Other Material		
Number	Name	Use
TY6333 (U.S.)	Grease, SAE Multi-Purpose	Lubricate O-rings for installation.
110000 (0.0.)	Grouse, OAL Multi-1 dipose	Edonicate O-migo for motaliation.
Number	Name	Use
PM37418 (U.S.)	Thread Lock and Sealer (Medium	Apply to the following: rockshaft
PM38621 (Canadian) 242 (LOCTITE®)	Strength)	control valve-to-inlet housing socket head cap screws, inlet
2-12 (100111120)		housing-to-rockshaft case cap screws
		and threads of hitch relief valve.
PM37509 (U.S.)	Cure Primer	Cleans mating surfaces and reduces
PM37509 (Canadian)		sealant curing time.
7649 (LOCTITE®)		-
PM38655 (U.S.)	Flexible Form-In-Place Gasket	Seals the following: Rockshaft control
PM38625 (Canadian)		valve to rockshaft case, rockshaft
515 (LOCTITE®)		case to differential housing.
PM37421 (U.S.)	Thread Lock and Sealer (High	Apply to threads of SCV cable before
PM38623 (Canadian)	Strength)	tightening retaining nut.
271 (LOCTITE®)		
PM37418 (U.S.)	Thread Lock and Sealer (Medium	Apply to the following: rockshaft
PM38621 (Canadian)	Strength)	control valve-to-inlet housing
242 (LOCTITE®)		socket head cap screws, inlet housing-to-rockshaft case cap screws.
		riodollig to rockshall dase cap screws.
PM37509 (U.S.)	Cure Primer	Cleans mating surfaces and reduces
PM37509 (Canadian) 7649 (LOCTITE®)		sealant curing time.
,		
PM38655 (U.S.)	Flexible Form-In-Place Gasket	Seals the following: inlet housing
PM38625 (Canadian) 515 (LOCTITE®)		to rockshaft case, rockshaft case to differential housing.
,		Ğ
PM38655 (U.S.)	Flexible Form-In-Place Gasket	Seals the following: valve housing
PM38625 (Canadian) 515 (LOCTITE®)		to rockshaft case, rockshaft case to differential housing.
,		Ğ
PM37418 (U.S.)	Thread Lock and Sealer (Medium	Apply to threads of valve housing
PM38621 (Canadian) 242 (LOCTITE®)	Strength)	cap screws.
,		
Loctite is a trademark of Henkel Corporation		
<u> </u>		BB87125,0000844 -19-27MAR13-1/1

Rockshaft

Specifications		
Item	Measurement	Specification
Main Relief Valve—RCV	Torque	51 N·m (38 lbft.)
Surge Relief Valve—RCV	Torque	34 N·m (25 lbft.)
Rate-of-Drop Valve	Torque	50 N·m (37 lbft.)
Rockshaft Control Valve-to-Inlet Housing Cap Screw	Torque	28 N·m (21 lbft.)
RCV Inlet Housing Hydraulic Line Fitting	Torque	102 N·m (75 lbft.)
RCV Inlet Housing Hydraulic Line Nut	Torque	69 N·m (51 lbft.)
SCV Control Cable Steel Nut	Torque	25 N·m (221 lbin.)
SCV Hydraulic Line Nut	Torque	69 N·m (51 lbft.)
Rockshaft Control Valve Inlet Housing Cap Screws	Torque	30 N·m (22 lbft.)
Rockshaft Case-to-Differential Housing Cap Screws	Torque	125 N·m (92 lbft.)
Hydraulic Hoses Nut at SCV End	Torque	50 N·m (37 lbft.)
Hydraulic Hoses Nut at Coupler End	Torque	69 N·m (51 lbft.)
Rockshaft Bushing Outer Edge-to-Edge of Bore	Distance	7 mm (0.283 in.)
Draft Sensing Support Mounting Cap Screw	Torque	375 N·m (277 lbft.)
Rockshaft Control Valve Socket Head Cap Screw	Torque	28 N·m (21 lbft.)
Hydraulic Line Nut	Torque	69 N·m (51 lbft.)
Hydraulic Line Fitting	Torque	102 N·m (75 lbft.)
Main Relief Valve (Later Version)	Torque	62 N·m (46 lbft.)
Surge Relief Valve	Torque	34 N·m (25 lbft.)
Plug	Torque	35—45 N·m (26—33 lbft.)
Valve Housing Cap Screws	Torque	30 N·m (22 lbft.) BB87125,0000843 -19-25MAR13-1/1

Service Parts Kits

Rockshaft Cylinder Seal Kit

The following kits are available through your parts catalog:

Mechanical Rockshaft Control Valve Inlet Housing Seal Kit

BB87125,00007FB -19-12MAR13-1/1

Inspect and Repair Rockshaft Control Assembly

- 1. Remove rockshaft case. (See Remove and Install Rockshaft Case, in Section 70, Group 15.)
- 2. Loosen jam nuts (B).
- 3. Remove parts (A—I).

A—Alignment Plate (2 used)

B—Jam Nut (2 used)

C—Draft Sensing Lever

D—Position Control Lever

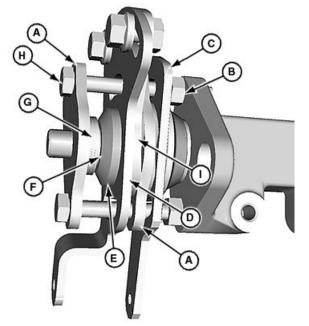
E—Spacer (2 used)

F-Washer (5 used)

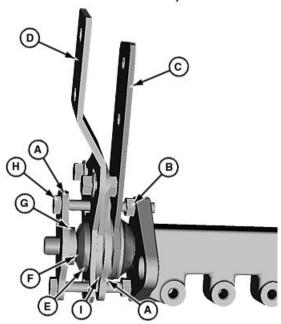
G—Spring Washer (4 used)

H—Cap Screw (2 used)

I— Position Control Shaft



Rockshaft Control Assembly—Cab



Rockshaft Control Assembly—OOS

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BB87125,00007FF -19-27MAR13-1/5

LV17059 —UN—14MAR13

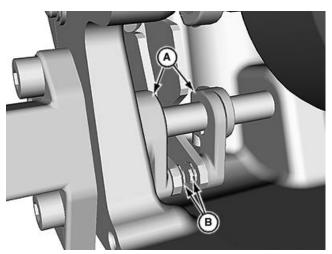
LV17071 —UN—18MAR13

4. Remove inlet housing. (See Remove and Install Rockshaft Control Valve, in Section 70, Group 15.)

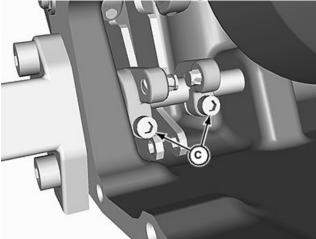
NOTE: To access links inside rockshaft case, rockshaft case must be placed upside down.

- 5. Turn rockshaft case upside down.
- 6. Remove E-clips (B). Disconnect links from levers (A).
- 7. Rotate levers and remove cap screws (C).

A—Lever B—E-Clip (2 used) C—Cap Screw (2 used)



E-Clips and Levers

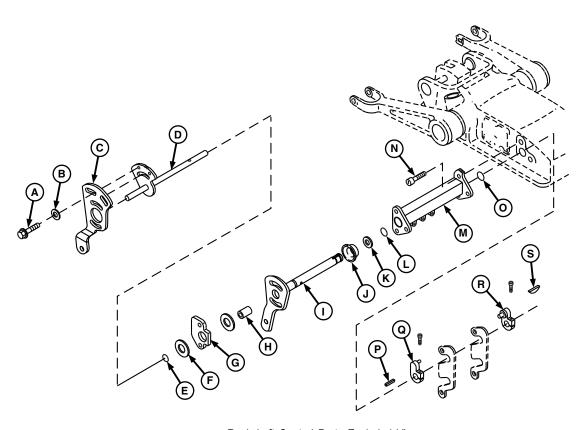


Rockshaft Control Lever Cap Screws

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BB87125,00007FF -19-27MAR13-2/5

LV17067 —UN—14MAR13



Rockshaft Control Parts Exploded View

A—Cap Screw (2 used) B—Washer (2 used)

C—Position Control Lever

D—Position Control Shaft

E-O-Ring

F—Friction Disk (2 used)

-Alignment Plate

-Bushing

- Draft Sensing Shaft

J— Spacer K—Washer

-O-Ring

-Support

-Cap Screw (2 used)

necessary.

O-O-Ring

P-Key

Q-Draft Sensing Actuating Lever

NOTE: Levers (Q and R) are keyed to shafts (I and D), respectively, inside rockshaft case. Levers and keys (P and S) will drop into case when lever assembly is removed.

8. Remove parts (A—S).

IMPORTANT: Always use new O-rings during assembly. Damaged or used O-rings will leak.

NOTE: Bushing (H) is press fit inside shaft (I).

9. Inspect all parts for wear or damage. Replace as

- 10. Lubricate wirth multipurpose grease and install new O-rings (E, L, and O).
- 11. Apply multipurpose grease to shafts (D and I).
- 12. Install all parts.

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BB87125,00007FF -19-27MAR13-3/5

R—Position Control Actuating

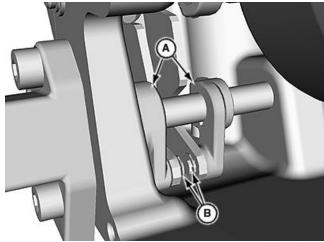
Lever

-Woodruff Key

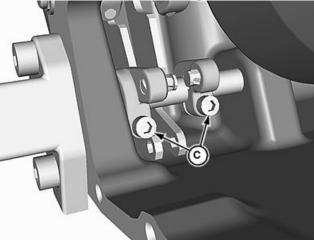
LV6666 — UN — 12APR01

- 13. Install and tighten cap screws (C).
- 14. Connect links to levers (A) and install E-clips (B).
- 15. Install inlet housing. (See Remove and Install Rockshaft Control Valve, in Section 70, Group 15.)

A—Lever B—E-Clip C—Cap Screw



E-Clips and Levers



Rockshaft Control Lever Cap Screws

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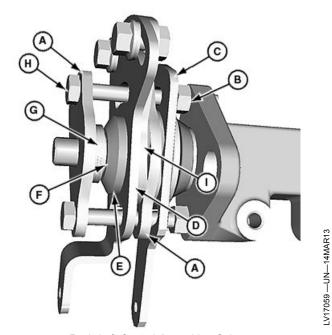
BB87125,00007FF -19-27MAR13-4/5

LV17067 —UN—14MAR13

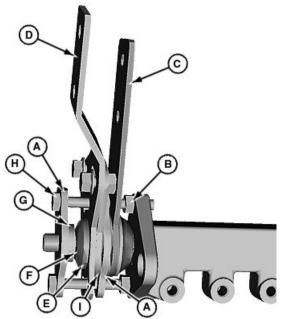
LV17068 —UN—14MAR13

IMPORTANT: Each pair of spring washers (C) must be installed with concave sides facing each other.

- 16. Install parts (A—I).
- 17. Install rockshaft case. (See Remove and Install Rockshaft Case, in Section 70, Group 15.)
- 18. Adjust rockshaft control lever friction. (See Rockshaft Control Lever Friction Adjustment, in Section 70, Group 15.)
 - A—Alignment Plate (2 used)
 - B—Jam Nut (2 used)
- C—Draft Sensing Lever
- **D—Position Control Lever**
- E—Spacer (2 used)
- F—Washer (5 used) G—Spring Washer (4 used)
- H—Cap Screw (2 used)
- I— Position Control Shaft



Rockshaft Control Assembly—Cab

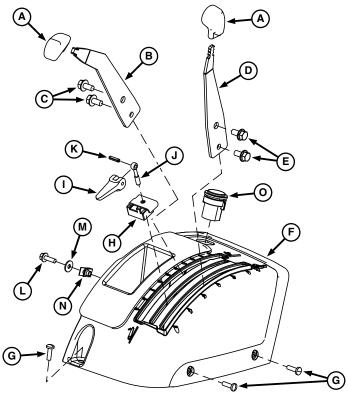


Rockshaft Control Assembly—OOS

BB87125,00007FF -19-27MAR13-5/5

LV17071 —UN—18MAR13

Inspect and Repair Control Lever—OOS



Rockshaft Control Lever Console—OOS

A—Knob (2 used)

B—Control Lever

C—Control Lever Cap Screw (2 used)

D—Draft Sensing Lever E—Draft Sensing Lever Cap Screw (2 used)

F—Console Cover G—Screw (3 used) H—Stop

I— Cam J— Eyebolt K—Pin L—Cap Screw M—Washer

N—Clip

3. Remove cam (I) and parts (H), (J), and (K).

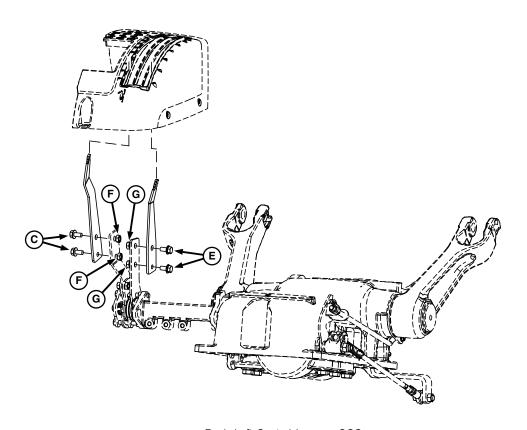
O—Socket Outlet

- 1. Remove knobs (A), screws (G), and cap screw (L). Retain clips and washers for assembly.
- 2. Remove console cover (F).

Continued on next page

BB87125,0000800 -19-27MAR13-1/2

LV17081 —UN—26MAR13



Rockshaft Control Levers—OOS

C—Control Lever Cap Screw (2 F—Control used) F—Control G—Draft

F—Control Lever Nut (2 used) G—Draft Sensing Lever Nut (2 used)

E—Draft Sensing Lever Cap Screw (2 used)

4. Remove control lever cap screws (C) and nuts (F).

- 5. Remove draft sensing lever cap screws (E) and nuts (G).
- 6. Inspect all parts (A—O) for wear or damage. Replace as necessary.

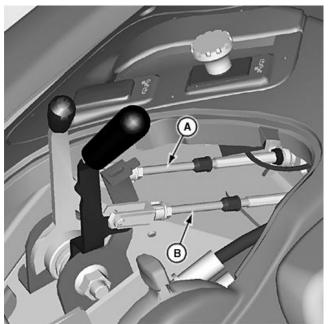
7. Install all parts (A—O) and tighten securely.

BB87125,0000800 -19-27MAR13-2/2

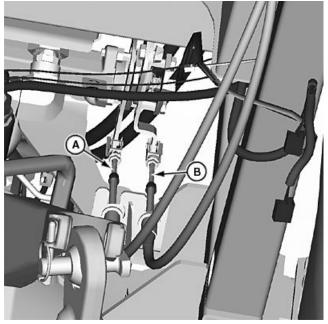
LV17113 —UN—26MAR13

Inspect and Repair Control Lever and Cables—Mechanical Hitch (Cab)

- Remove right-side control console. (See Remove and Install Right-Side Control Console—Cab, in Section 90, Group 10.)
- 2. Place hitch in fully lowered position and place marks on cables and levers to facilitate installation.
- 3. Disconnect control cables (A) and (B).
 - A—Draft-Sensing Control Cable and Linkage
- B—Position Control Cable and Linkage



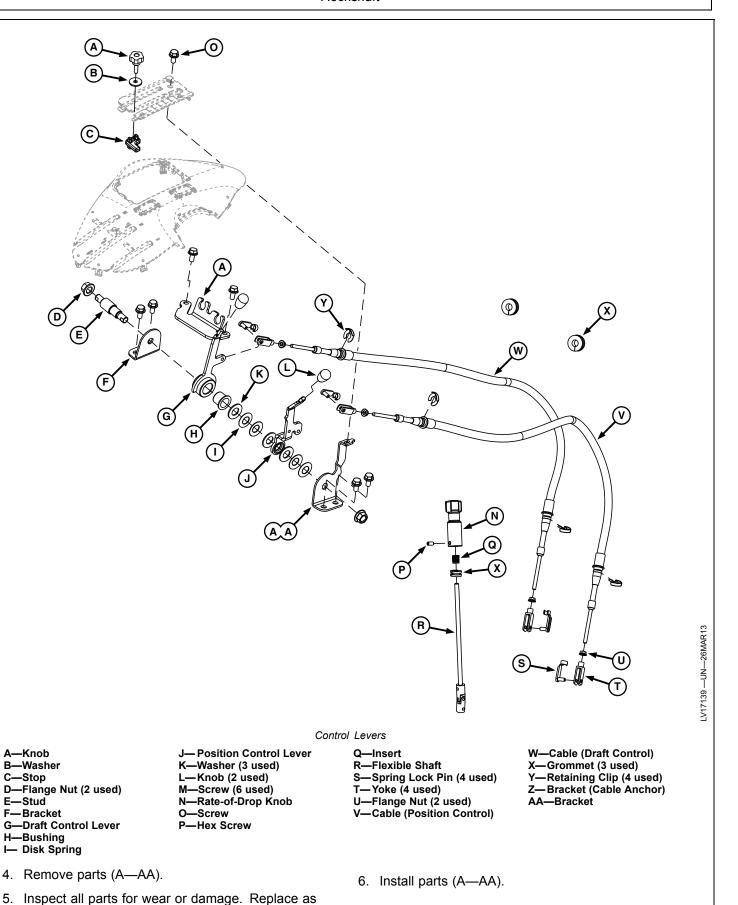
Control Lever End of Cable



Hitch Valve End of Cable

Continued on next pageBB87125,0000801 -19-27MAR13-1/3

LV17131 —UN—26MAR13

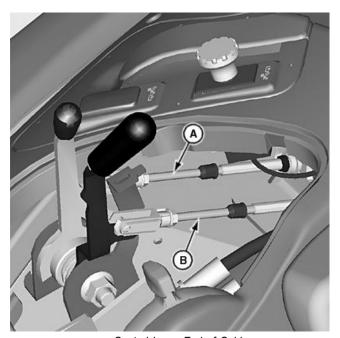


necessary.

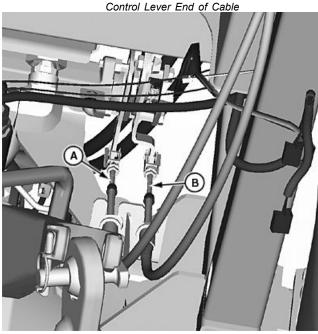
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BB87125,0000801 -19-27MAR13-2/3

- 7. Adjust cables and linkage as necessary. (See Draft Control and Position Control Cable Adjustment, in Section 70 Group 15.)
- 8. Connect control cables (A) and (B).
- 9. Install right-side control console. (See Remove and Install Right-Side Control Console—Cab, in Section 90, Group 10.)
 - A—Draft-Sensing Control Cable and Linkage
- B—Position Control Cable and Linkage



LV17131 —UN—26MAR13



LV17130 —UN—26MAR13

Hitch Valve End of Cable

BB87125,0000801 -19-27MAR13-3/3

Inspect and Repair Rockshaft Control Linkage

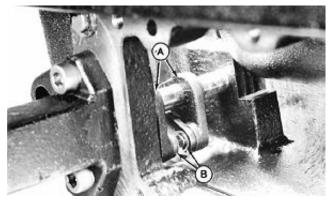
1. Remove rockshaft case. (See Remove and Install Rockshaft Case, in Section 70, Group 15.)

NOTE: To access links inside rockshaft case, rockshaft case must be placed upside down.

- 2. Turn rockshaft case upside down.
- 3. Remove E-clips (B). Disconnect links from levers (A).

A-Lever

B-E-Clip

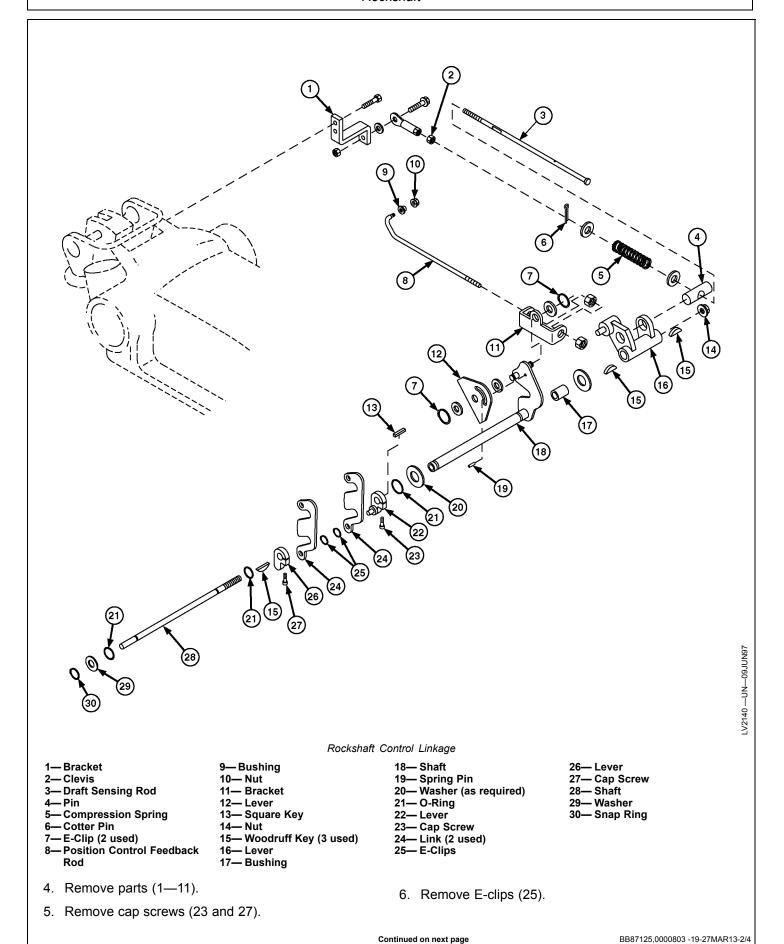


E-Clips and Levers

Continued on next page

BB87125,0000803 -19-27MAR13-1/4

LV209 —UN—28FEB92



7. Remove and inspect parts for wear or damage. Replace as necessary.

IMPORTANT: Always use new O-rings during assembly. Damaged or used O-rings will leak.

NOTE: Bushing (17) is press fit inside lever (16).

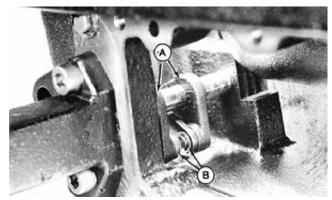
- 8. Apply multipurpose grease to shafts (18 and 28) and bushing (17).
- 9. Install all parts.
- 10. Tighten nut (14) until shaft stops. Then back off 1/2 turn.

BB87125,0000803 -19-27MAR13-3/4

- 11. Connect links to levers (A).
- 12. Install E-clips (B).
- 13. Install rockshaft case. (See Remove and Install Rockshaft Case, in Section 70, Group 15.)
- 14. Adjust rockshaft position and draft sensing feedback linkages. (See Rockshaft Position-Sensing Feedback Linkage Adjustment (Mechanical Hitch) and Rockshaft Draft-Sensing Feedback Linkage Adjustment (Mechanical Hitch), in Diagnostic Manual, Section 270, Group 15.)

A—Lever

B-E-Clip



E-Clips and Levers

BB87125,0000803 -19-27MAR13-4/4

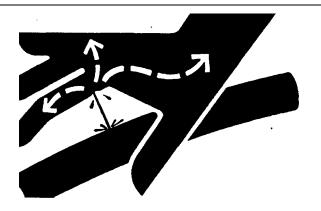
-V209 —UN—28FEB92

Remove and Install Rockshaft Control Valve

CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury.

Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available in English from Deere & Company Medical Department in Moline, Illinois, U.S.A., by calling 1-800-822-8262 or +1 309-748-5636.



1. Open rate-of-drop valve and lower rockshaft arms completely.

2. Move rear and/or Mid-Mount SCV levers, if equipped, through all positions.

Continued on next page

BB87125,0000805 -19-27MAR13-1/4

NOTE: All hydraulic lines to inlet housing must be disconnected. When disconnecting lines from inlet housing, loosen or disconnect fittings on opposite ends of the lines. Close all openings using caps and plugs. Tag lines for proper installation.

NOTE: The hydraulic lines may leak oil when being disconnected. Catch leaking oil and dispose of properly.

NOTE: Open operator station (OOS) tractor shown.

Procedure for cab tractors is similar.

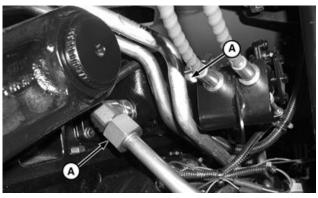
3. Tag and disconnect all hydraulic lines (A), from inlet housing.

NOTE: Depending upon SCV options, if equipped, it may be necessary to loosen SCV hydraulic lines at both ends to provide clearance for inlet housing removal.

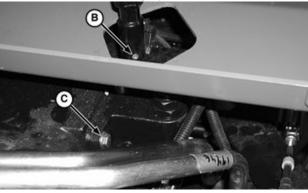
- 4. Loosen or disconnect rear SCV lines, if equipped, as necessary.
- 5. Loosen set screw (B) and remove rate of drop knob.
- 6. Remove six cap screws (C) from inlet housing.

NOTE: It may be necessary to loosen inlet housing by tapping on it with a soft-face mallet or hammer.

7. Remove inlet housing from rockshaft case.



Inlet Housing Hydraulic Lines



RCV Inlet Housing

A—Hydraulic Line B—Set Screw C—Cap Screw (6 used)

Continued on next page

BB87125,0000805 -19-27MAR13-2/4

LV10592 —UN—17SEP04

LV10593 —UN—17SEP04

- 8. Remove cap screws (A) and separate control valve (B) from inlet housing (C).
- 9. Repair as necessary. (See Remove, Inspect, and Install Rate-of-Drop Valve, in Section 70, Group 15.)

IMPORTANT: Use new O-rings during assembly. Damaged or used O-rings will leak.

- 10. Lubricate with hydraulic oil and install new O-rings (D and E).
- 11. Apply Thread Lock and Sealer (Medium Strength) to threads of socket head cap screws (A).
- 12. Install rockshaft control valve (B) and socket head cap screws (A) on inlet housing (C). Tighten cap screws to specification.

Specification

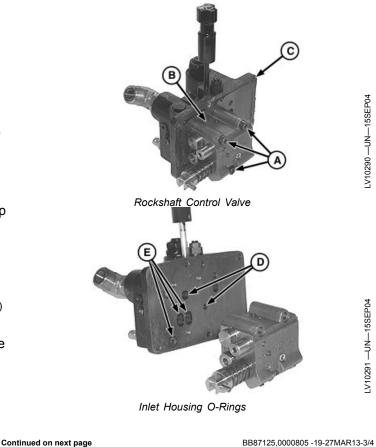
Rockshaft Control Valve Socket Head Cap

13. Clean mating surfaces of inlet housing and rockshaft case using Cure Primer. Apply Flexible Form-In-Place Gasket to mating surfaces.

A—Socket Head Cap Screws B—Rockshaft Control Valve

D—O-Rings E—O-Rings

C-Inlet Housing



BB87125,0000805 -19-27MAR13-3/4

- 14. Apply Thread Lock and Sealer (Medium Strength) to threads of cap screws (C).
- NOTE: Rockshaft position control lever must be in forward position to install inlet housing.
- 15. Install inlet housing using six cap screws (C). Tighten to specification.

Specification

Rockshaft Control Valve Inlet Housing Cap

- 16. If tractor is equipped with rear SCV, connect rear SCV lines.
- 17. Connect all hydraulic lines (A) to inlet housing. Tighten fittings to specification.

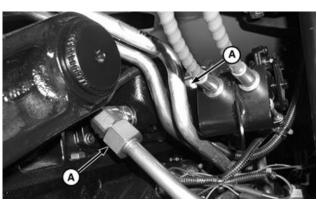
Specification

Hydraulic Line	
Nut—Torque	69 N·m (51 lbft.)
Hydraulic Line	
Fitting—Torque	102 N·m (75 lbft.)

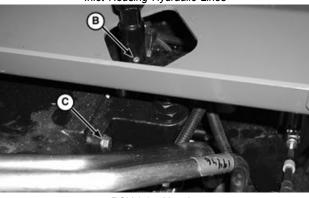
18. Install rate-of-drop knob and tighten set screw (B).

A-Hydraulic Line **B**—Set Screw

C—Cap Screw (6 used)



Inlet Housing Hydraulic Lines



RCV Inlet Housing

BB87125,0000805 -19-27MAR13-4/4

LV10592 —UN—17SEP04

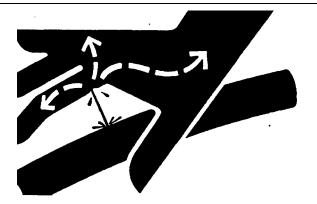
LV10593 —UN—17SEP04

X9811 —UN—23AUG88

Replace Main Relief Valve

CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available in English from Deere & Company Medical Department in Moline, Illinois, U.S.A., by calling 1-800-822-8262 or +1 309-748-5636.



1. Open rate-of-drop valve and lower rockshaft arms completely.

2. Operate all SCV levers, if equipped, to relieve hydraulic system pressure.

Continued on next page

SW03989,0001D25 -19-12SEP13-1/2

3. Remove main relief valve (A).

IMPORTANT: Always use new O-rings. Damaged or used O-rings will leak.

- 4. Lubricate and install O-rings (B and D), and back-up ring (C).
- 5. Apply Loctite® 242 Thread Lock and Sealer (Medium Strength) to threads of main relief valve (A).
- 6. Install main relief valve and tighten to specification.

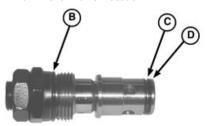
Specification

7. Operate machine hydraulics. Check and adjust transmission/hydraulic oil level.

A—Main Relief Valve C—Back-Up Ring B—O-Ring D—O-Ring



Main Relief Valve Location



LV10571 —UN—15SEP04

LV10578 —UN—16SEP04

Main Relief Valve

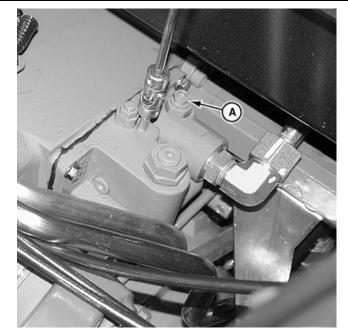
Loctite is a trademark of Henkel Corporation

SW03989,0001D25 -19-12SEP13-2/2

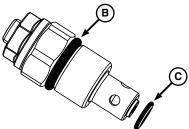
Replace Rockshaft Hitch Surge Relief Valve

A—Surge Relief Valve B—O-Ring

C—O-Ring



Rockshaft Hitch Surge Relief Valve



Hitch Surge Relief Valve

Continued on next page

SW03989,0001D24 -19-12SEP13-1/2

LV19082 —UN—18SEP13

LV19083 —UN—18SEP13

Δ

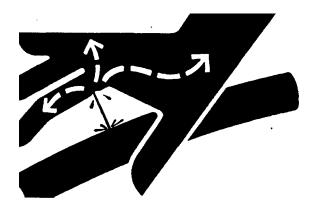
CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available in English from Deere & Company Medical Department in Moline, Illinois, U.S.A., by calling 1-800-822-8262 or +1 309-748-5636.

- 1. Open rate-of-drop valve and lower rockshaft arms completely.
- 2. Operate all SCV levers, if equipped, to relieve hydraulic system pressure.
- 3. Remove surge hitch relief valve (A).

IMPORTANT: Always use new O-rings. Damaged or used O-rings will leak.

Loctite is a trademark of Henkel Corporation



- 4. Lubricate and install new O-rings (B and C).
- 5. Apply Loctite® 242 Thread Lock and Sealer (Medium Strength) to threads of surge hitch relief valve (A).
- 6. Install hitch surge relief valve and tighten to specification.

Specification

SW03989,0001D24 -19-12SEP13-2/2

(9811 —UN—23AUG88

Remove, Inspect, and Install Rate-of-Drop Valve



CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available in English from Deere & Company Medical Department in Moline, Illinois, U.S.A., by calling 1-800-822-8262 or +1 309-748-5636.

- 1. Open rate-of-drop valve and lower rockshaft arms completely.
- 2. Operate all SCV levers, if equipped, to relieve hydraulic system pressure.



NOTE: It is not necessary to separate rockshaft control valve from inlet housing to service rate-of-drop valve.

3. Remove rockshaft control valve and inlet housing assembly. (See Remove and Install Rockshaft Control Valve, in Section 70, Group 15.)

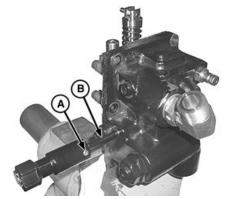
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BB87125,000080A -19-27MAR13-1/3

- 4. If not previously removed, loosen set screw (A) and remove knob.
- 5. If painted, remove paint from valve stem (B) using fine grit emery cloth.

A-Set Screw

B-Stem



Rate of Drop Valve Knob

BB87125,000080A -19-27MAR13-2/3

LV10494 —UN—15SEP04

-V10495 --- UN--- 15SEP04

- 6. Remove plug (A) and O-ring (B) from bottom side of inlet housing.
- NOTE: Turn valve stem (H) counterclockwise to remove from inlet housing.
- 7. Remove spring seat (C) and spring (D).
- 8. Remove valve (E).
- 9. Turn valve stem (H) counterclockwise until free, then pull from bottom of inlet housing.
- 10. Inspect parts for wear or damage. Replace parts as necessary.

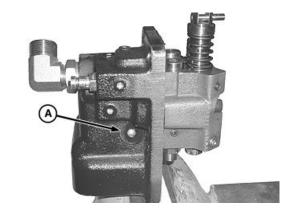
IMPORTANT: Always use new O-rings and backup rings. Damaged or used parts will leak.

- 11. Apply multipurpose grease to O-rings, backup ring, and valve stem shaft.
- 12. Install knob end of valve stem (H) into bottom of inlet housing. Turn valve stem clockwise until seated in inlet housing. Valve stem should move freely.
- 13. Install valve (E), spring (D) and spring seat (C). See photo for reference.
- 14. Install plug (A) using new O-ring (B). Tighten plug to specification.

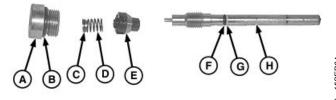
Specification

Plug—Torque.......35—45 N·m (26—33 lb.-ft.)

- 15. Install knob and tighten set screw.
- Install rockshaft control valve and inlet housing assembly. (See Remove and Install Rockshaft Control Valve, in Section 70, Group 15.)



Plug



Rate of Drop Valve Exploded View

A—Plug

B—O-Ring C—Spring Seat

D—Spring S

E—Valve F—O-Ring

G—Backup Ring H—Valve Stem

BB87125,000080A -19-27MAR13-3/3

Remove and Install Rockshaft Case

A

CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available in English from Deere & Company Medical Department in Moline, Illinois, U.S.A., by calling 1-800-822-8262 or +1 309-748-5636.

 Open rate-of-drop valve and lower rockshaft arms completely.



NOTE: It is not necessary to remove cab or platform to remove rockshaft case. Platform shown removed for clarity.

2. Operate SCV levers and Mid-Mount joystick through all positions to relieve hydraulic pressure, if equipped.

Continued on next page

BB87125,000080C -19-27MAR13-1/3

X9811 —UN—23AUG88

NOTE: Open operator station (OOS) with rear SCV and Mid-Mount shown. Tractors with other options are similar.

- 3. Tag and disconnect all hydraulic lines (D) from valve housing (A). Close all openings using caps and plugs.
- 4. Remove rear hydraulic lines (E), if equipped.
- 5. Remove three cap screws (F) and rear SCV bracket, if equipped.
- 6. Disconnect lift links (H) and remove center link (G).
- 7. Remove rate-of-drop knob from valve stem.
- 8. Remove cap screws (I) and valve housing (A).

CAUTION: Avoid Crushing injury. Use approiate lifting device. The approximate weight of the rockshaft case assembly is 82 kg (180 lb.).

- 9. Remove cap screws (C) and rockshaft case assembly (B).
- 10. Repair or replace parts as necessary. (See Inspect and Repair Rockshaft Control Assembly, in Section 70, Group 10.)
- 11. Clean mating surfaces of rockshaft case and differential housing using Cure Primer. Apply Flexible Form-In-Place Gasket to mating surfaces.

A—Valve Housing

B—Rockshaft Case Assembly

C—Cap Screw (11 used)

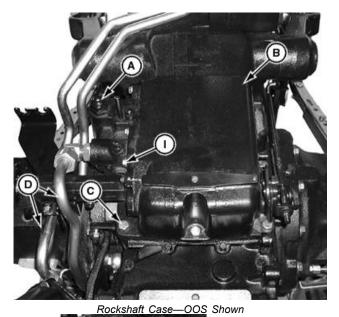
D—Hydraulic Lines E-Hydraulic Lines

F-Cap Screw (3 used)

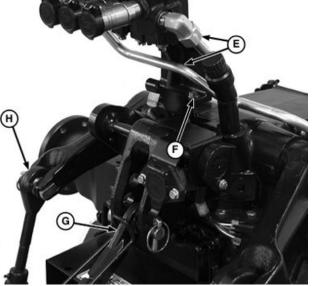
G—Center Link

H-Lift Link (2 used)

I— Cap Screw (6 used)



-V17149 —UN-27MAR13



LV10596 —UN—17SEP04

Hitch Links and SCV Lines

Continued on next page

BB87125,000080C -19-27MAR13-2/3

12. Install rockshaft case assembly (B) and cap screws (C). Tighten cap screws to specification.

Specification

Rockshaft Case-to-Differential Housing Cap

- 13. Clean mating surfaces of valve housing and rockshaft case using Cure Primer. Apply Flexible Form-In-Place Gasket to mating surfaces.
- 14. Apply Thread Lock and Sealer (Medium Strength) to threads of valve housing cap screws.
- 15. Install valve housing (A) using six cap screws (I). Tighten valve housing cap screws to specification.

Specification

Valve Housing Cap

16. Connect hydraulic lines (D) to valve housing (A). Tighten hydraulic line nuts to specification.

Specification

Hydraulic Line

- 17. Install rear SCV bracket and three cap screws (F), if equipped.
- 18. Install rear hydraulic lines (E), if equipped. Tighten hydraulic line nuts to specification.

Specification

Hydraulic Line

19. Install lift links (H) and center link (G).

A—Valve Housing

B—Rockshaft Case Assembly

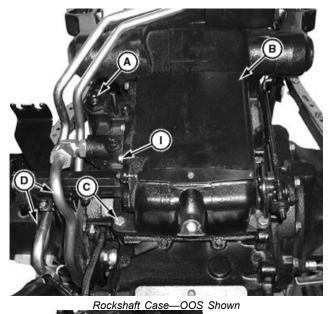
C—Cap Screw (11 used)

D—Hydraulic Line E-Hydraulic Line

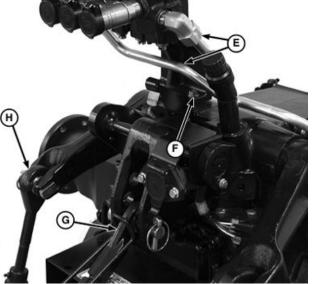
F-Cap Screw (3 used)

G—Center Link

H-Lift Link (2 used) I— Cap Screw (6 used)



-V17149 —UN-27MAR13

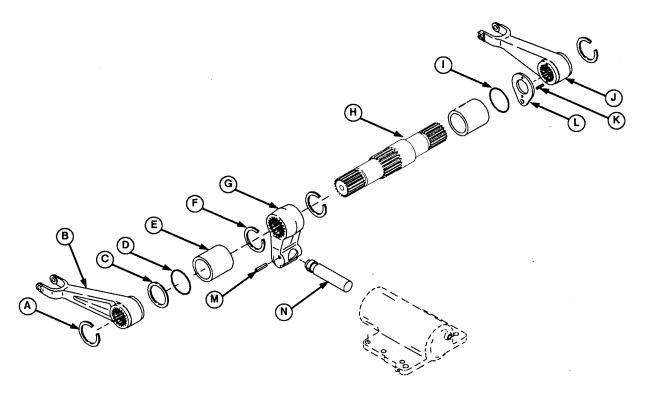


LV10596 —UN—17SEP04

Hitch Links and SCV Lines

BB87125,000080C -19-27MAR13-3/3

Remove, Inspect, and Install Rockshaft Lift Arms



Rockshaft Lift Arms

A—Retaining Ring (2 used) B—Right Lift Arm

C—Washer

D—O-Ring

E—Bushing (2 used)
F—Retaining Ring (2 used)
G—Crank

1. Remove rockshaft case. (See Remove and Install Rockshaft Case, in Section 70, Group 15.)

2. Disconnect feedback linkage from plate (L).

NOTE: Although parts (B, G, H, and J) have indexed splines, these splines are difficult to locate. Index parts with a punch mark before disassembly to aid in correct alignment of these parts during assembly.

- 3. Use a punch to index parts (B, G, H, and J).
- 4. Remove retaining rings (A and F).
- 5. Remove and inspect all parts for wear or damage. Replace as necessary.

NOTE: Bushings (E) are pressed in rockshaft case.

6. Replace bushings (E) using a bushing driver set. Press new bushings into rockshaft case so bushing outer edge is at least 7 mm (0.283 in.) below edge of bore.

H—Rockshaft I— O-Ring J— Left Lift Arm K—Spring Pin (2 used)

L—Plate M—Spring Pin N—Piston Rod

Specification

Rockshaft Bushing
Outer Edge-to-Edge of

-V397AE —UN—28FEB92

7. Apply clean transmission/hydraulic oil to all internal parts.

IMPORTANT: Replace all O-rings. Damaged or used O-rings will leak.

NOTE: Use alignment marks made earlier to aid in assembly.

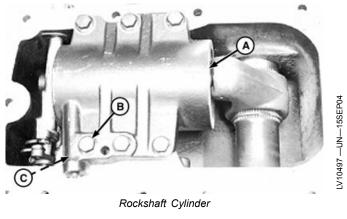
- 8. Assemble all parts.
- 9. Connect feedback link to plate (L).
- 10. Install rockshaft case. (See Remove and Install Rockshaft Case, in Section 70, Group 15.)

BB87125,000080D -19-27MAR13-1/1

Remove, Inspect, and Install Rockshaft **Piston and Cylinder**

- 1. Remove rockshaft case. (See Remove and Install Rockshaft Case, in Section 70, Group 15.)
- 2. Remove six cap screws (B).
- 3. Remove cylinder (A).
- 4. Remove O-ring (C).

A-Rockshaft Cylinder B—Cap Screw (6 used) C-O-Ring



BB87125,000080E -19-27MAR13-1/3

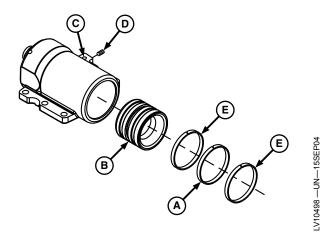
- 5. Remove piston (B).
- 6. Remove plug (D) to check oil passage (C) for debris or obstruction.
- 7. Clean and inspect all parts for wear or damage. Check piston and cylinder for cracks. Replace as necessary.
- 8. Replace seal ring (A) and wear rings (E).
- 9. Apply clean transmission/hydraulic oil to piston and cylinder walls.
- 10. Install piston (B).
- 11. Install plug (D).

A-Seal Ring

D—Plug

E-Wear Ring (2 used) -Piston

C—Oil Passage



Rockshaft Cylinder and Piston

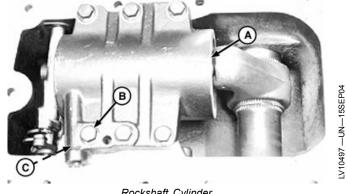
BB87125,000080E -19-27MAR13-2/3

- 12. Lubricate and install new O-ring (C).
- 13. Install cylinder assembly (A).
- 14. Install cap screws (B).
- 15. Install rockshaft case. (See Remove and Install Rockshaft Case, in Section 70, Group 15.)

A—Rockshaft Cylinder

C-O-Ring

B—Cap Screw (6 used)



Rockshaft Cylinder

BB87125,000080E -19-27MAR13-3/3

Inspect and Repair Draft Sensing Support Assembly

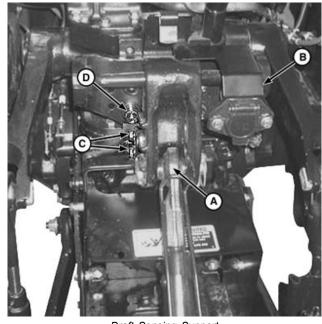
NOTE: Isolated open operator station shown. Straddle mount tractor and cab tractors are similar.

- Open rate-of-drop valve and lower rockshaft arms completely.
- 2. Move draft sensing control lever full forward.
- 3. Remove center link (A).
- 4. Disconnect harness connectors and remove 7-pin connector and bracket (B).
- 5. Remove cap screws (C) and remove draft-sensing rod bracket from support assembly.
- 6. Remove cap screws (D) and support assembly.
- Inspect support assembly for wear or damage. Replace if necessary.
- 8. Install support assembly and cap screws (D). Tighten cap screws to specification.

Specification

Draft Sensing Support Mounting Cap

- 9. Install cap screws (C) and draft-sensing rod bracket.
- 10. Install 7-pin connector bracket (B) and connect harness connectors.
- 11. Install center link (A).



Draft Sensing Support

A—Center Link B—7-Pin Bracket C—Cap Screw (2 used) D—Cap Screw (4 used)

12. Adjust draft-sensing feedback linkage. (See Rockshaft Draft-Sensing Feedback Linkage Adjustment (Mechanical Hitch) in Diagnostic Manual, Section 270, Group 15.)

SW03989,0001D26 -19-12SEP13-1/1

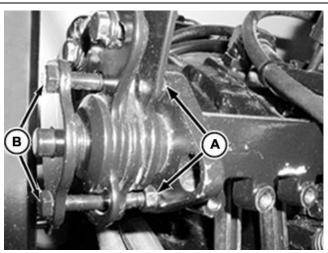
Rockshaft Lever Friction Adjustment

NOTE: Draft-sensing and position control linkages are located on right side of rockshaft case.

- 1. Loosen jam nuts (A).
- Turn adjusting cap screws (B) clockwise to increase friction and counterclockwise to decrease friction. Turn cap screws equal number of times.
- 3. Retighten jam nuts (A) when adjustment is complete.

A—Jam Nut

B—Cap Screw



Friction Adjustment

BB87125,0000858 -19-27MAR13-1/1

PULV007115 -- UN-05MAY10

LV10531 —UN—20SEP04

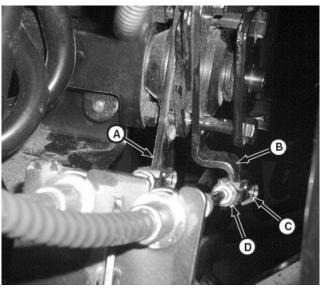
Draft Control and Position Control Cable Adjustment

NOTE: Draft-sensing and position control linkages are located on right side of rockshaft case.

- 1. Disconnect cables from rockshaft draft-sensing (A) and position control (B) linkages.
- 2. Move draft-sensing and position control levers fully forward.
- 3. Rotate draft-sensing and position control linkages fully clockwise.
- 4. Loosen jam nut (D) on the position control linkage and turn cable yoke (C) until hole in cable yoke lines up with hole in linkage. Install spring locking pin and tighten jam nut (D). Repeat step for draft-sensing cable.

A—Draft-Sensing Linkage B—Position Control Linkage

C—Yoke D—Jam Nut



Draft-Sensing and Position Control Cable

BB87125,0000859 -19-27MAR13-1/1

LV7385 —UN-31JUL01

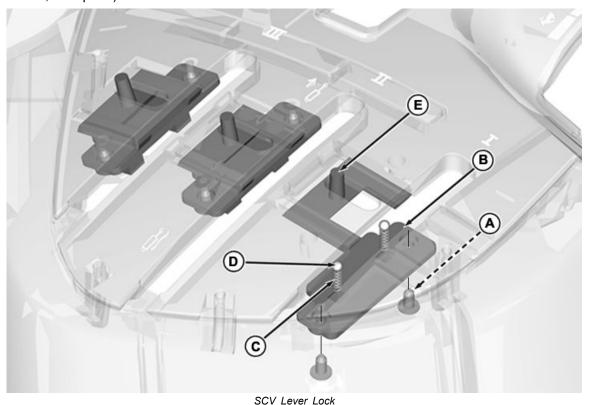
Rockshaft

Other Material		
Number	Name	Use
PM37421 (U.S.) PM38623 (Canadian) 271 (LOCTITE®)	Thread Lock and Sealer (High Strength)	Apply to threads of SCV cable before tightening retaining nut
PM37421 (U.S.) PM38623 (Canadian) 271 (LOCTITE®)	Thread Lock and Sealer (High Strength)	Used on threads of SCV cap screws.
PM37418 (U.S.) PM38621 (Canadian) 242 (LOCTITE®)	Thread Lock and Sealer (Medium Strength)	Apply to end plate cap screw threads.
PM37421 (U.S.) PM38623 (Canadian) 271 (LOCTITE®)	Thread Lock and Sealer (High Strength)	Apply to threads of dual SCV spool detents.
PM37418 (U.S.) PM38621 (Canadian) 242 (LOCTITE®)	Thread Lock and Sealer (Medium Strength)	Apply to threads of cap screws.
PM37418 (U.S.) PM38621 (Canadian) 242 (LOCTITE®)	Thread Lock and Sealer (Medium Strength)	Used on internal threads of triple SCV nut.
PM37418 (U.S.) PM38621 (Canadian) 242 (LOCTITE®)	Thread Lock and Sealer (Medium Strength)	Used on threads of triple SCV cap screws.
PM37421 (U.S.) PM38623 (Canadian) 271 (LOCTITE®)	Thread Lock and Sealer (High Strength)	Apply to threads of SCV cable before tightening retaining nut
PM37421 (U.S.) PM38623 (Canadian) 271 (LOCTITE®)	Thread Lock and Sealer (High Strength)	Apply to threads of SCV cable before tightening retaining nut.
PM37418 (U.S.) PM38621 (Canadian) 242 (LOCTITE®)	Thread Lock and Sealer (Medium Strength)	Used on threads of SCV cap screws.
PM37418 (U.S.) PM38621 (Canadian) 242 (LOCTITE®)	Thread Lock and Sealer (Medium Strength)	Used on internal threads of triple SCV nut.
PM37418 (U.S.) PM38621 (Canadian) 242 (LOCTITE®)	Thread Lock and Sealer (Medium Strength)	Used on threads of triple SCV cap screws.
Loctite is a trademark of Henkel Corporation		BB87125,000084D -19-25MAR13-1/1

Specifications		
Item	Measurement	Specification
SCV Mounting Screws	Torque	12 N·m (106 lbin.)
Hydraulic Hoses Nut at SCV End	Torque	50 N·m (37 lbft.)
Hydraulic Hoses Nut at Coupler End	Torque	69 N·m (51 lbft.)
Mid-Mount Control Valve Hydraulic Lines Nuts to RCV End	Torque	69 N·m (51 lbft.)
Hydraulic Line Nut to RCV	Torque	69 N·m (51 lbft.)
Hydraulic Line Fitting to RCV	Torque	102 N·m (75 lbft.)
Main Relief Valve	Torque	51 N·m (38 lbft)
Spool Detent	Torque	4 N·m (35 lbin.)
Spool End Cap—Cap Screw	Torque	7 N·m (62 lbin.)
Wheel Cap Screw M20	Torque	600 N·m (442 lbft.)
Cable/Retaining Nut	Torque	16—19 N·m (12—14 lbft.)
SCV Mounting Cap Screws	Torque	55 N·m (41 lbft.)
SCV Mounting Bracket-to-Differential Housing Cap Screws	Torque	55 N·m (41 lbft.)
Cable Nut	Torque	16—19 N·m (144—168 lbin.)
Cable Sleeve	Torque	16—19 N·m (144—168 lbin.)
Cap Screw	Torque	26—30 N·m (19—22 lbft.)
Spool Cap-Cap Screw	Torque	12—15 N·m (106—133 lbin.)
Load Check Cap	Torque	34—41 N·m (25—30 lbft.)
End Plate Cap Screw	Torque	12—15 N·m (106—133 lbft.)
SCV Fitting Plug	Torque	54—64 N·m (40— 45lbft.)
Load Check Cap	Torque	34—45 N·m (25—30 lbft.)
Housing Plug	Torque	34—41 N·m (25—30 lbft.)
Load Check Flow Control Valve	Torque	34—45 N·m (25—30 lbft.)
Flow Compensator / Priority Bypass Valve	Torque	20—24 N·m (15—18 lbft.)
Detent Knob Nut	Torque	3—4 N·m (27—33 lbin.)
End Cap Sub-Assembly Cap Screws	Torque	12—15 N·m (9—11 lbft.)
Float Cap-Cap Screws	Torque	12—15 N·m (9—11 lbft.)
Cable Adapter Cap Screws	Torque	12—15 N·m (9—11 lbft.)
Outlet Port	Torque	69 N·m (51 lbft.)
Inlet Port	Torque	69 N·m (51 lbft.)
Fitting to Power Beyond Port	Torque	54—61N·m (40—45 lbft.)
Fitting to Line	Torque	102 N·m (75 lbft.)
SCV Coupler	Torque	69 N·m (51 lbft.) BB87125,000084E -19-25MAR13-1/1

Inspect and Repair SCV Levers and Linkage—Cab

 Remove right side control console panel. (See Remove and Install Right-Side Control Console—Cab, in Section 90, Group 10.)



PUPX001058 —UN—02APR09

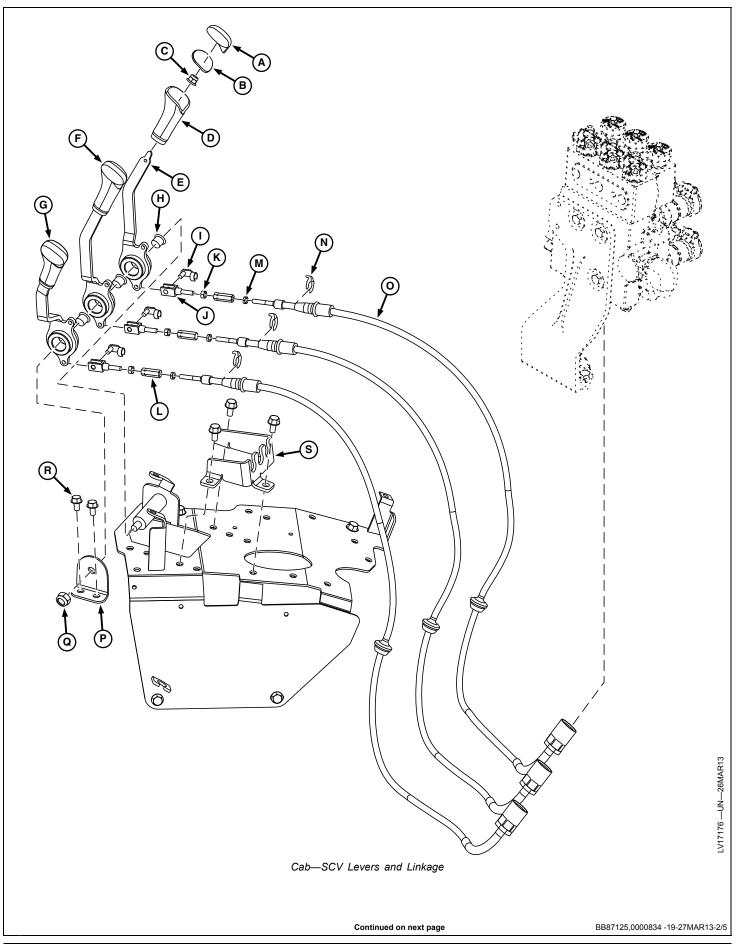
A—Screw B—Plate C—Spring D—Ball

E-Arrestor

- Tractors equipped with SCV lock: Remove parts (A—F).
- 3. Inspect parts for wear or damage. Replace as necessary.

Continued on next page

BB87125,0000834 -19-27MAR13-1/5



Rear Selective Control Valve

A-Insert (3 used) B-Ring (3 used) C-Nut (3 used)

F—SCV II Control Lever (Blue) G—SCV I Control Lever (Green)

H—Bushing (3 used)

D-Knob (3 used) E—SCV III Control Lever (Brown)

I— Spring Locking Pin (3 used)

J— Yoke (3 used) K-Lock Nut (3 used) L—Turnbuckle/Adjusting Nut (3

used) M—Lock Nut (3 used) N—Clip (3 used)

O—Cable (3 used)

P—Bracket Q-Lock Nut R-Screw (9 used)

S—Bracket

NOTE: Rear triple selective control valve (SCV) is shown. For dual SCV, use same procedure.

4. Inspect parts (A—S) for wear or damage. Replace as necessary.

NOTE: Make sure all levers are aligned when in neutral position. If levers are not aligned, make necessary yoke adjustment.

5. Turn lock nut (K) all the way towards yoke (J). Turn adjusting nut (L) towards lock nut (K) and lock nut (M) towards adjusting nut (L).

6. Tighten both lock nuts.

BB87125,0000834 -19-27MAR13-3/5

7. Before installing SCV cables, inspect retaining nut (A). If loose, apply Thread Lock and Sealer (High Strength) and tighten securely without damaging outer edge of retaining nut.

Specification

Cable/Retaining

A—Retaining Nut

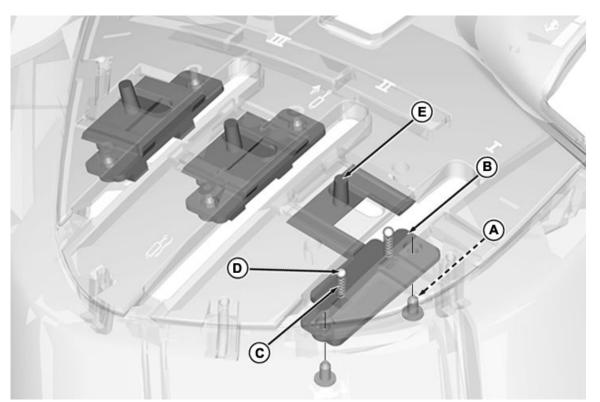


SCV Cable Retaining Nut

Continued on next page

BB87125,0000834 -19-27MAR13-4/5

PULV003867 —UN—16DEC08



SCV Lever Lock

A—Screw B—Plate

C—Spring D—Ball

E-Arrestor

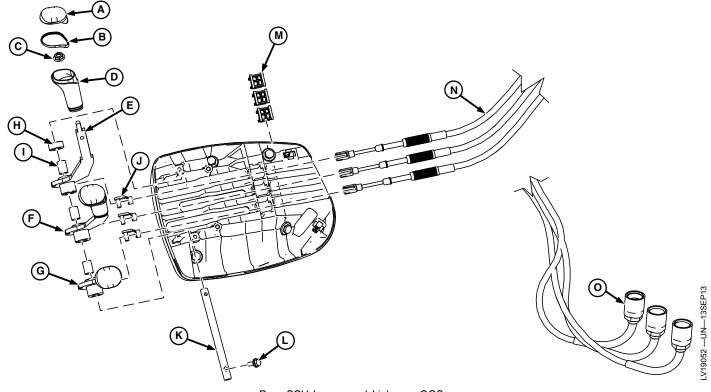
- 8. **Tractors equipped with SCV lock:** Install parts (A—E).
- 9. Adjust control cables. (See Rear SCV Control Cable Adjustment, in Section 70, Group 20.)
- Install right side control console panel. (See Remove and Install Right-Side Control Console—Cab, in Section 90, Group 10.)

BB87125,0000834 -19-27MAR13-5/5

PUPX001058 —UN—02APR09

Inspect and Repair SCV Levers and Linkage—OOS

 Remove right side control console panel. (See Remove and Install Right-Side Control Console—Open Operator Station, in Section 90, Group 10.)



Rear SCV Levers and Linkage—OOS

A—Insert (2 or 3 used)
B—Ring (2 or 3 used)
C—Nut (2 or 3 used)

C—Nut (2 or 3 used)
D—Knob (2 or 3 used)

E—SCV III Control Lever (Brown)

F—SCV II Control Lever (Blue)
G—SCV I Control Lever (Green)

H—Spacer I— Bushing (2 or 3 used)

NOTE: Rear triple selective control valve (SCV) is shown.

For dual SCV, use same procedure.

J—Spring Locking Pin (2 or 3 used)

K—Pivot Pin L—Cap Screw M—Cable Retainer (2 or 3 used) N—Cable (3 used)

—Cable Retaining Nut (2 or 3 used)

Inspect parts (A—O) for wear or damage. Replace parts as necessary.

Continued on next page

SW03989,0001D79 -19-25OCT13-1/2

 Before installing SCV cables, inspect cable retaining nut (O). If loose, apply Thread Lock and Sealer (High Strength) and tighten securely without damaging outer edge of retaining nut.

Specification

Cable Retaining

NOTE: Make sure all levers are aligned when in neutral position without cable retainers installed.

- 4. Allow rear SCV to center in neutral position. Position SCV control levers (E—G) to neutral position and install cable retainer (M) over cable (N).
- Install right side control console panel. (See Remove and Install Right-Side Control Console—Open Operator Station, in Section 90, Group 10.)



Rear SCV Cable Retaining Nut

O—Cable Retaining Nut

SW03989.0001D79 -19-25OCT13-2/2

LV19053 —UN—13SEP13

Remove and Install Dual or Triple Selective Control Valve (SCV)

CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury.

Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available in English from Deere & Company Medical Department in Moline, Illinois, U.S.A., by calling 1-800-822-8262 or +1 309-748-5636.

IMPORTANT: When removing / installing hydraulic lines, always support line adapter and fittings with a backup wrench to keep fittings stationary and prevent damage to line, valve and pump housings.

NOTE: Close all openings using caps and plugs. Tag or label hydraulic lines before disconnecting to aid during installation.



The hydraulic lines may leak oil when being disconnected. Catch leaking oil and dispose of properly.

Triple SCV is shown. For dual SCV removal and installation use the same procedures.

- 1. Operate SCV levers to relieve any pressure in the system.
- 2. Remove draft sensing support assembly. (See Inspect and Repair Draft Sensing Support Assembly in Section 70, Group 15.)

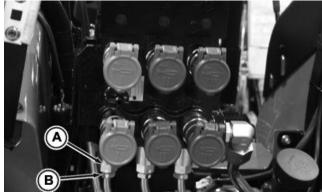
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BB87125,0000837 -19-27MAR13-1/7

3. Loosen cable nut (B). Loosen and remove cable sleeve (A). Unhook control cable from slot in valve spool.

A—Cable Sleeve (3 used)

B-Cable Nut (3 used)



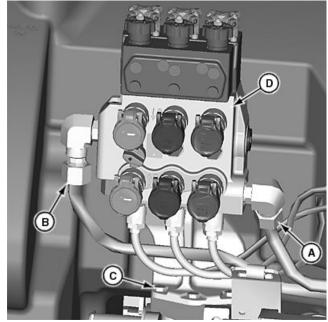
Cable Sleeve and Nuts

BB87125,0000837 -19-27MAR13-2/7

PULV007027 —UN-02FEB10

- 4. Disconnect hydraulic lines (A and B).
- 5. Remove mounting bracket cap screws (C), SCV (D), and mounting bracket.

A—Return Line B—Pressure Line C—Mounting Bracket Cap Screw (3 used) D—SCV



SCV Hydraulic Lines

BB87125,0000837 -19-27MAR13-3/7

LV17186 —UN—26MAR13

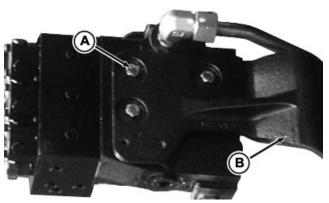
- 6. Remove cap screws (A) and mounting bracket (B) as necessary.
- 7. Repair or replace SCV. (See Disassemble, Inspect, and Assemble Dual Selective Control Valve (SCV) or Disassemble, Inspect, and Assemble Triple Selective Control Valve (SCV) in Section 70, Group 20.)
- 8. If removed, install mounting bracket and cap screws. Tighten cap screws to specification.

Specification

SCV Mounting Cap

A—Cap Screw (3 used)

B—Mounting Bracket



Mounting Bracket

Continued on next page

BB87125,0000837 -19-27MAR13-4/7

PULV007029 —UN—02FEB10

9. Install SCV (D), mounting bracket, and cap screws (C). Tighten cap screws to specification.

Specification

SCV Mounting

Bracket-to-Differential

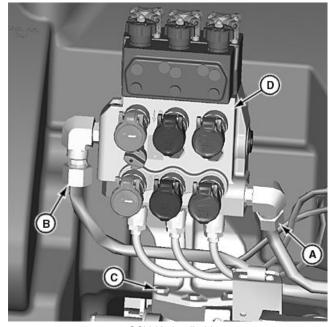
Housing Cap

NOTE: Replace all O-rings and seals. Used damaged O-rings and seals will leak.

10. Connect hydraulic lines (A and B).

A—Return Line B—Pressure Line C—Mounting Bracket Cap Screw (3 used)

D-SCV



SCV Hydraulic Lines

BB87125,0000837 -19-27MAR13-5/7

LV17186 —UN—26MAR13

LV12307 —UN—17FEB05

Before installing SCV cables, inspect retaining nut (A).
 If loose, apply Thread Lock and Sealer (High Strength).
 Tighten securely without damaging OD of retaining nut.

A—Retaining Nut



SCV Cable Retaining Nut

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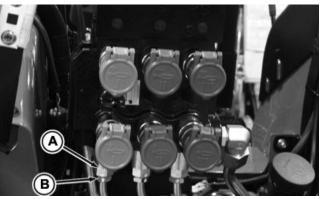
BB87125,0000837 -19-27MAR13-6/7

- 12. Slide control cable end into slot in valve spool.
- 13. Install cable sleeve (A) and cable nut (B). Tighten cable sleeve and nut to specification.

Cable Nut—Torque	. 16—19 N·m (144—168 lbin.)
Cable Sleeve—Torque	. 16—19 N·m (144—168 lbin.)

- 14. Install draft sensing support assembly. (See Inspect and Repair Draft Sensing Support Assembly in Section 70, Group 15.)
- 15. Start engine and operate SCV levers. Check all connections for leaks.

A—Cable Sleeve (3 used) B—Cable Nut (3 used)



Cable Sleeve and Nuts

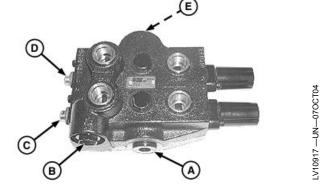
BB87125,0000837 -19-27MAR13-7/7

PULV007027 —UN-02FEB10

Disassemble, Inspect, and Assemble Dual Selective Control Valve (SCV)

1. Remove return-to-sump fitting and pressure inlet fitting, if still installed, and SCV fitting plug (A).

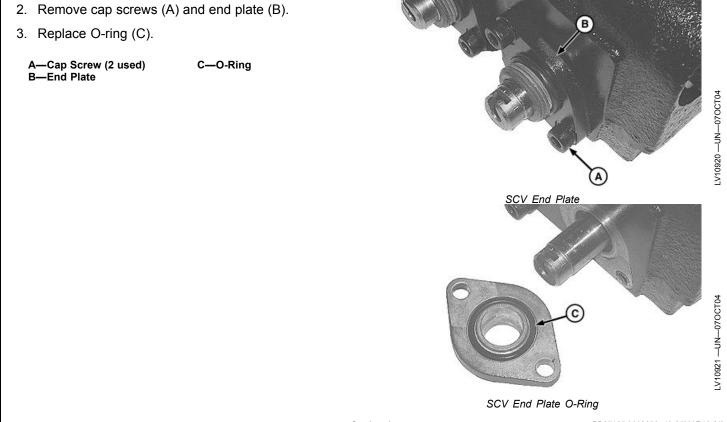
A—SCV Fitting Plug B—Return-to-Sump C—SCV II (Float) Spool D—SCV I (Float) Spool E—Pressure Inlet Fitting



Dual SCV Manifold - Cab and OOS

Continued on next page

BB87125,0000838 -19-25MAR13-1/8



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BB87125,0000838 -19-25MAR13-2/8

Dual SCV Cutaway

M—Pilot Ball

O-O-Ring

N-Back-Up Ring

P—Detent Spring

 A—Check Cap
 G—Cap

 B—Spring
 H—Spring

 C—O-Ring
 I— Cap Screw

 D—Load Check
 J—Washer

 E—Seal Plate
 K—Detent

 F—Cap Screw (2 used)
 L—Detent Ball (4 used)

IMPORTANT: Spools and housing are matched and must be replaced as a unit. Make sure spools are installed in their original bores to ensure proper operation.

> Detents are matched to spool type. Make sure detents are installed with the spools they are removed from.

NOTE: Parts (A—D) and (E—P) are serviced as separate assemblies and are replaced as kits only.

- 4. Remove parts (A—D).
- 5. Remove cap screws (F) and cap (G).

NOTE: Seal plate (E) may come off with spool assembly.

Q—SCV Housing6. Remove spool (S) and parts (H—P) as an assembly

R-O-Ring

S-Spool

- from SCV housing (Q).

 7. Remove seal plate (E).
- 8. Remove back-up ring (N) and O-rings (O and R).
- 9. Hold end of spool with a wrench and remove parts (H—M) and (P).
- 10. Inspect all parts for wear or damage. Replace as necessary.
- 11. Lightly coat detent spring (P), pilot ball (M) and detent balls (L) with multipurpose grease.
- 12. Install detent spring (P), pilot ball (M) and detent balls (L) into spool.

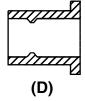
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BB87125,0000838 -19-25MAR13-3/8

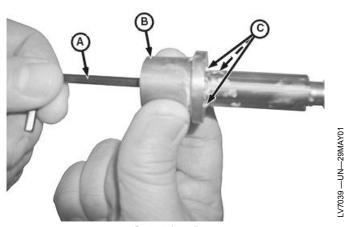
NOTE: Notched detent is used on 6-groove float spool. Stepped detent is used on 5-groove regenerative spool.

- 13. Place detent on spool.
- 14. Using a small allen wrench (A) gently push in pilot ball and detent spring.
- 15. Carefully slide detent (B) over detent balls (C).

A—Allen Wrench B—Detent C—Detent Balls D—Float Detent



Detent

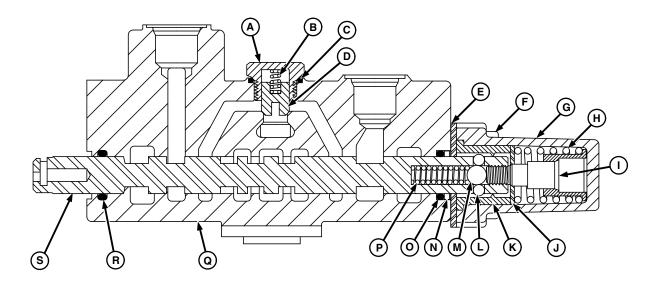


Detent Install

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BB87125,0000838 -19-25MAR13-4/8

LV17200 —UN—26MAR13



LV10918 —UN-070CT04

Dual SCV Cutaway

 A—Check Cap
 F—Screw (2 used)

 B—Spring
 G—Cap

 C—O-Ring
 H—Spring

 D—Load Check
 I— Cap Screw

 E—Seal Plate
 J—Washer

 K—Detent

L—Detent Ball (4 used)

M—Pilot Ball

N—Back-Up Ring

O—O-Ring

P—Detent Spring

Q—SCV Housing

R—O-Ring

S—Spool

16. Install parts (H—J). Tighten cap screw (I) to specification.

Specification

Cap Screw—Torque.......26—30 N·m (19—22 lb.-ft.)

IMPORTANT: Always use new seals and O-rings.

Damaged or used seals and O-rings will leak.

Apply clean hydraulic oil to all internal parts before assembly.

- 17. Lubricate and install new O-rings (R and O) and back-up ring (N).
- 18. Install seal plate (E).

- 19. Coat spool and bore with clean transmission/hydraulic oil.
- 20. Install spool.
- 21. Lightly coat detent assembly with multipurpose grease.
- 22. Apply Thread Lock and Sealer (Medium Strength) to threads of cap screw (F).
- 23. Install cap (G) using cap screws (F) and tighten to specification.

Specification

Continued on next page

BB87125,0000838 -19-25MAR13-5/8

24. Install parts (A-D). Tighten load check cap (A) to specification.

Specification

Load Check

Cap—Torque......34—41 N·m (25—30 lb.-ft.)

BB87125,0000838 -19-25MAR13-6/8

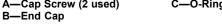
- 25. Replace, lubricate and install new O-ring (C).
- 26. Install end cap (B) and cap screws (A). Tighten cap screws to specification.

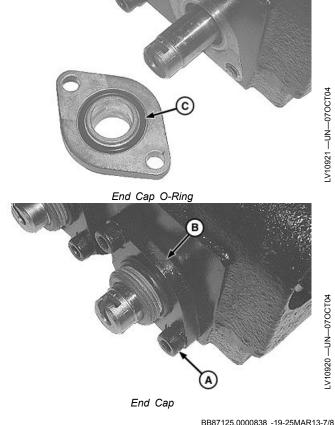
Specification

End Plate Cap

A—Cap Screw (2 used)

C-O-Ring





BB87125,0000838 -19-25MAR13-7/8

IMPORTANT: Always use new seals and O-rings. Damaged or used seals and O-rings will leak.

> Apply clean hydraulic oil to all internal parts before assembly.

27. Replace O-rings and install return-to-sump (B) and pressure inlet fitting (E). Install SCV fitting plug (A). Tighten SCV fitting plug to specification.

Specification

SCV Fitting

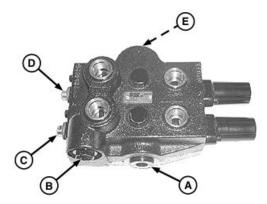
Plug—Torque......54—64 N·m (40— 45lb.-ft.)

A—SCV Fitting Plug

B-Return-to-Sump

C—SCV II (Float) Spool

D—SCV I (Float) Spool E—Pressure Inlet Fitting



Dual SCV Manifold - Cab and OOS

BB87125,0000838 -19-25MAR13-8/8

LV10917 —UN-070CT04

Triple Selective Control Valve (SCV) Cross-Sectional View LV19043 —UN—13SEP13 (AC) AG Triple SCV Cutaway AA—O-Ring A-Socket Head Cap Screw (6 I— Knob (Flow Control) R-Knob AB—Detent Spool AC—Main Spool Spring AD—O-Ring used) J— Stem S-Washer B—Cable Adapter C—Main Spool K—Back-Up Ring T—Nut U-O-Ring L-Spring V—Arming Piston W—Detent Spring X—Detent Sleeve AE—O-Ring AF—Sleeve Spacer AG—Pin D-O-Ring M—Poppet E—O-Ring F—O-Ring G—O-Ring H—Plug (Load Check) N—O-Ring О-Сар P—Selector Spool Y—Steel Ball Z-Steel Ball (4 used) Q—Bias Spring SW03989,0001D7A -19-04OCT13-1/1

Disassemble, Inspect, and Assemble Triple **Selective Control Valve (SCV)**

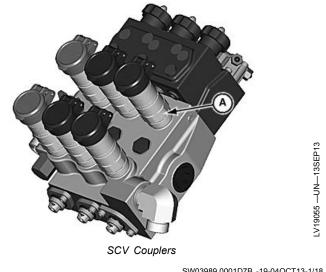
IMPORTANT: Always use new seals and O-rings. Damaged or used seals and O-rings will leak.

> Apply clean hydraulic oil to all internal parts before assembly.

IMPORTANT: Remove dirt, grease, and debris from valve before disassembling to prevent contamination.

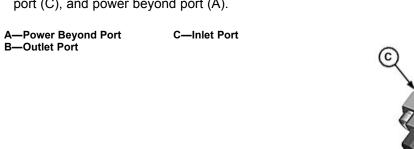
1. Remove SCV couplers (A).

A—SCV Coupler (6 used)



SW03989,0001D7B -19-04OCT13-1/18

2. If necessary, remove fittings from outlet port (B), inlet port (C), and power beyond port (A).



Power Beyond and Work Ports

Continued on next page

SW03989,0001D7B -19-04OCT13-2/18

LV19056 —UN—13SEP13

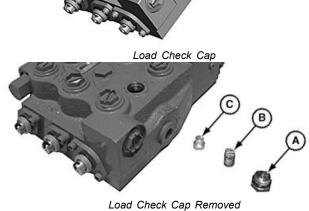
- 3. Remove load check cap (A), spring (B), and poppet (C).
- 4. Inspect components; replace as necessary.
- 5. Install new O-ring on load check cap.
- 6. Lubricate O-ring and install poppet, spring, and load check cap and tighten to specification.

Load Check Cap—Torque......34—45 N·m (25—30 lb.-ft.)

7. Repeat procedure for other load check cap.

A-Load Check Cap **B—Spring**

C-Poppet



SW03989,0001D7B -19-04OCT13-3/18

LV19057 —UN—13SEP13

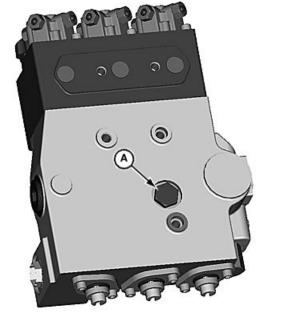
LV19058 —UN—13SEP13

- 8. If leaking, remove housing plug (A).
- 9. Install new O-ring on plug.
- 10. Lubricate O-ring and install housing plug and tighten to specification.

Specification

Housing Plug—Torque......34—41 N·m (25—30 lb.-ft.)

A—Housing Plug



Housing Plug

Continued on next page

SW03989,0001D7B -19-04OCT13-4/18

LV19059 —UN—13SEP13

- NOTE: Replace O-ring (B) individually. Valve internal O-rings and components are available as a repair kit.
- 11. Remove load check flow control valve assembly (A).
- NOTE: If installing flow control valve repair kit proceed to step 14.
- 12. If not installing repair kit, install new O-ring (B).
- 13. Position spring (K) and poppet (L) in place. Lubricate O-ring (B) and install load check flow control valve assembly (A) and tighten to specification.

Load Check Flow

Control Valve

Assembly—Torque......34—45 N·m (25—30 lb.-ft.)

- 14. Install backup ring (C) and O-ring (D) onto stem (E).
- 15. Install stem into plug (G).
- 16. Install knob (I) onto stem with spring pin (J).
- 17. Install poppet (L) and spring (K).
- 18. Install O-ring (F) on plug.
- 19. Lubricate O-ring (B) and install load check flow control valve assembly (A) and tighten to specification.

Specification

Load Check Flow

Control Valve

Assembly—Torque......34—45 N·m (25—30 lb.-ft.)

-Load Check Flow Control Valve Assembly

-O-Ring

-Back-Up Ring D—O-Ring

-Stem

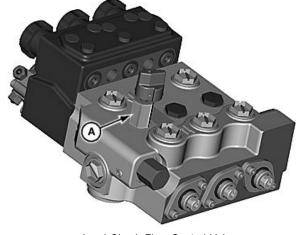
F-O-Ring

G—Plug H—O-Ring

I— Knob J—Spring Pin

L-Poppet





Load Check Flow Control Valve



PULV002527 —UN—29MAY08

LV19060 —UN—13SEP13

PULV002528 —UN—16DEC08

Load Check Flow Control Valve Repair Kit



PULV002529 —UN—29MAY08

Poppet and Spring

Continued on next page

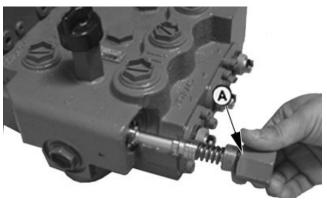
SW03989.0001D7B -19-04OCT13-5/18

- NOTE: Individual seals on compensator valve are non-replaceable. If seal replacement is required, replace compensator valve assembly.
- 20. Remove flow compensator / priority bypass valve (A).
- 21. Lubricate O-ring and seals with clean oil. Install flow compensator / priority bypass valve and tighten to specification.

Flow Compensator / Priority Bypass

Valve—Torque......20—24 N·m (15—18 lb.-ft.)

A-Flow Compensator / Priority **Bypass Valve**



Flow Compensator / Priority Bypass Valve

SW03989,0001D7B -19-04OCT13-6/18

PULV002530 —UN—29MAY08

-V19061 -- UN-13SEP13

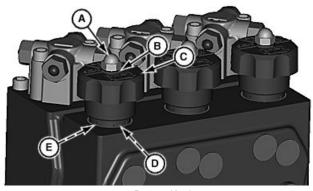
IMPORTANT: Always use new seals. Damaged or used seals will leak.

- 22. Remove nut (A), washer (B), and knob (C).
- 23. Remove detent selector valve (D) from valve housing.
- 24. Peel off flat ring under detent selector valve (D) to remove seal inside.
- 25. Lubricate O-rings and seals with clean oil and install detent selector valve.
- 26. Apply Thread Lock and Sealer (Medium Strength) to internal threads of nut. Install knob (C), washer (B), and nut (A) and tighten nut to specification.

Specification

Detent Knob

27. Repeat repair procedure for other detent selector valves.



Detent Knob

A—Nut B-Washer

C—Knob

Continued on next page

D—Detent Selector Valve E-Sleeve

SW03989.0001D7B -19-04OCT13-7/18

28. Remove cap screws (A) and cable adapter (B). C—Spool

A—Cap Screw (6 used) B—Cable Adapter



Cable Adapter Cap Screws



Cable Adapter

Continued on next page

SW03989,0001D7B -19-04OCT13-8/18

PULV002533 —UN—29MAY08

PULV002534 —UN—29MAY08

- 29. Remove socket head cap screws (A) and float cap (B).
- 30. Remove float spool detent retainers (C) on cap (B).

NOTE: Float spool detent retainers contain spring & ball (detent assembly). Remove and push ball to see if spring compresses.

31. Remove cap screws (D) and end cap sub-assembly (E).

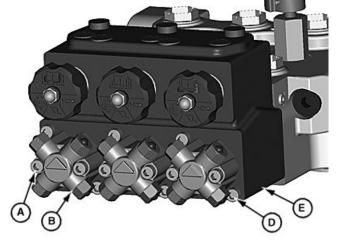
A—Cap Screw (6 used)

D—Cap Screw (6 used) E—End Cap Sub-Assembly

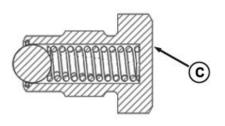
B—Float Cap

ent Retainer

-Float Spool Detent Retainer (4 used)



Float Cap and End Cap Sub-Assembly



Float Spool Detent Retainer

Continued on next page

SW03989,0001D7B -19-04OCT13-9/18

LV19062 —UN—13SEP13

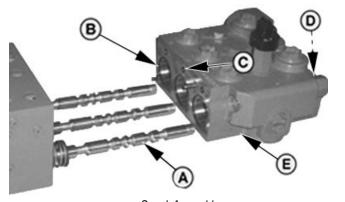
PULV003959 —UN—15JAN09

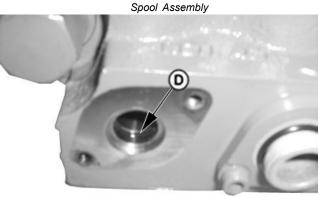
IMPORTANT: Spools and housing are matched and must be replaced as a unit. Make sure that spools are installed in their original bores to ensure proper operation.

Detents are matched to spool type. Make sure that detents are installed with the spools they are removed from.

- 32. Slide out spool assembly (A) from valve body (E) to remove O-rings (B, C, and D).
- 33. Install new O-rings (B, C, and D).

A—Spool Assembly B—O-Ring (3 used) C—O-Ring (3 used) D—O-Ring (3 used) E—Valve Body





O-Ring

SW03989,0001D7B -19-04OCT13-10/18

PULV002537 —UN-29MAY08

PULV002538 —UN—29MAY08

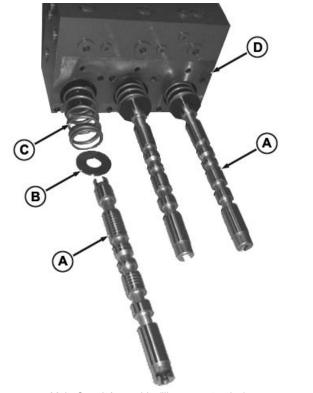
34. Remove main spool assembly (A), spring (C), and washer (B) from end cap sub-assembly (D).

A—Main Spool Assembly

C—Spring

B-Washer

D-End Cap Sub-Assembly



Main Spool Assembly (like current valve)

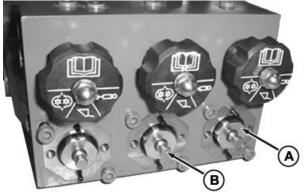
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SW03989,0001D7B -19-04OCT13-11/18

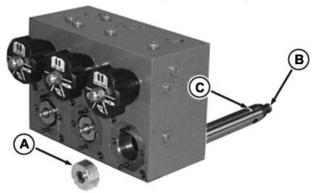
PULV003936 —UN—15JAN09

- 35. Remove retainer nut (A).
- 36. Take out detent float spool assembly (B).
- 37. Remove steel balls (C), large steel ball and spring (not shown) from detent float spool assembly (B).
- 38. Inspect for wear or damage. Replace as necessary.
- 39. Install large steel ball and spring into spool bore.
- 40. Apply a liberal amount of grease to steel balls (C) and install into holes in spool.
- 41. Install detent float spool assembly (B) back into end cap sub-assembly and tighten retainer nut (A).

A—Retainer Nut B—Detent Float Spool Assembly C-Steel Ball (4 used)



Retainer Nut (like current valve)



Detent Float Spool Assembly (like current valve)

SW03989,0001D7B -19-04OCT13-12/18

PULV003934 —UN—31DEC08

PULV003935 —UN—31DEC08

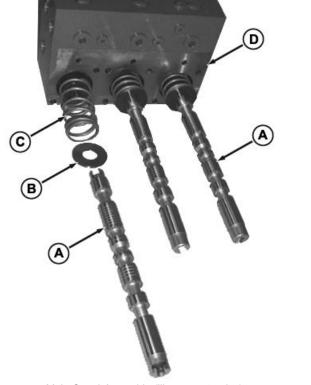
42. Install spring (C), washer (B), and main spool assembly (A) back into end cap sub-assembly (D).

A—Main Spool Assembly

C—Spring

B-Washer

D—End Cap Sub-Assembly



Main Spool Assembly (like current valve)

Continued on next page

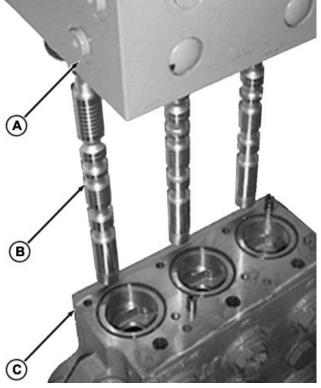
SW03989,0001D7B -19-04OCT13-13/18

PULV003936 —UN—15JAN09

- 43. Place valve body (C) vertically on bench as shown.
- 44. Install end cap sub-assembly (A) with spool assembly (B) back onto valve body (C).

A—End Cap Sub-Assembly B—Spool Assembly

C—Valve Body

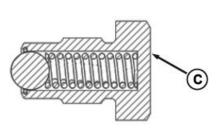


Assemble Valve Body (like current valve)

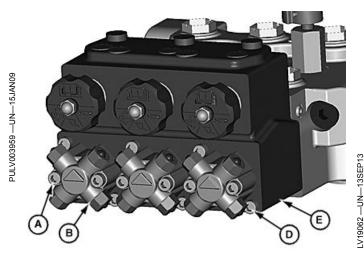
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SW03989,0001D7B -19-04OCT13-14/18

PULV003937 —UN—13JAN09



Float Spool Detent Retainer



End Cap Sub-Assembly and Float Cap

A—Cap Screw (6 used) B—Float Cap C—Float Spool Detent Retainer (4 used)

- D—Cap Screw (6 used)
 E—End Cap Sub-Assembly
- 45. Apply Thread Lock and Sealer (Medium Strength) to threads of cap screws (D).
- 46. Install end cap sub-assembly (E) using cap screws (D). Tighten cap screws to specification.

Specification

47. Install float cap (B) using cap screws (A). Tighten cap screws to specification.

Specification

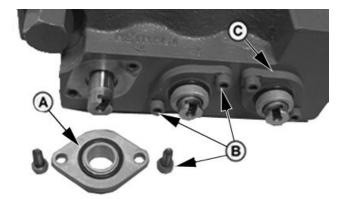
48. Apply a liberal amount of grease to float spool detent retainer (C) and install.

SW03989,0001D7B -19-04OCT13-15/18

- 49. Replace O-rings (A) on cable adapter (C).
- 50. Apply Thread Lock and Sealer (Medium Strength) to threads of cap screws (B).
- 51. Install cable adapter (C) and cap screws (B). Tighten cap screws to specification.

Specification

A—O-Ring (3 used) B—Cap Screw (6 used) C—Cable Adapter



Spool End Cap and Cap Screws

Continued on next page

SW03989,0001D7B -19-04OCT13-16/18

PULV002546 —UN—29MAY08

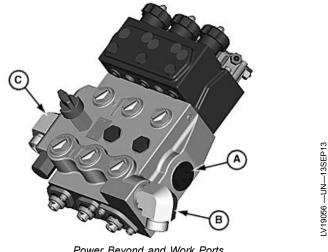
52. If necessary, replace O-rings and install fittings at outlet port (B), inlet port (C) and power beyond port (A). Tighten to specification.

Specification

Outlet Port—Torque	69 N·m (51 lbft.)
Inlet Port—Torque	69 N·m (51 lbft.)
Fitting to Power Beyond	
Port—Torque	54—61 N·m (40—45 lbft.)
Fitting to Line—Torque	102 N·m (75 lbft.)

A—Power Beyond Port **B**—Outlet Port

C-Inlet Port



Power Beyond and Work Ports

SW03989,0001D7B -19-04OCT13-17/18

53. Install SCV couplers (A) and tighten to specification.

Specification

A—SCV Coupler (6 used)



SW03989,0001D7B -19-04OCT13-18/18

Rear SCV Control Cable Adjustment

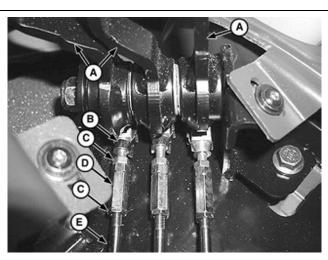
- 1. Remove right-side console cover.
- 2. Loosen both jam nuts (C).
- 3. Rotate turnbuckle (D) to adjust SCV lever.

NOTE: Rear SCV cable is adjusted correctly when lever can be moved fully forward or fully rearward without touching the console.

- 4. Hold turnbuckle (D) and tighten jam nuts (C).
- 5. Repeat on remaining cables.
- 6. Reinstall console cover.

A—Rear SCV Lever B—Yoke C-Jam Nut (2 per cable) **D**—Turnbuckle

E—Rear SCV Control Cable



LV11377 —UN—220CT04

SW03989,0001D7C -19-04OCT13-1/1

Rear Triple Deluxe SCV Kick-Out Relief Valve Adjustment

A

CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available in English from Deere & Company Medical



Department in Moline, Illinois, U.S.A., by calling 1-800-822-8262 or +1 309-748-5636.

Continued on next page

SW03989.0001D7D -19-04OCT13-1/3

NOTE: Selective control valve is factory adjusted to:

Kick-Out Detent—Specification

SCV I Kick-	
Out—Pressure	17200—18200 kPa
	(172—182 bar) (2495—2640 psi)
SCV II and III	
Kick-Out—Pressure	16800—17800 kPa
	(168—178 bar) (2437—2582 psi)

IMPORTANT: Always set kick-out detent pressure as per factory specification. It must be less than operating range of implement/main relief valve, i.e., 19500 ± 500 kPa (195 ± 5 bar) (2828 ± 73 psi).

Adjust if:

- Pressure out of specification
- SCV kicks out too early (control lever goes to neutral too early), or SCV kicks out too late or not at all (lever moves to neutral too late or not at all)

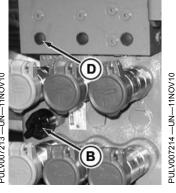
Proceed as follows:

- Perform pressure gauge connections as follows. Refer to Service Tools, in Section 99, Group 10.
 - a. Use JT07120 load valve. Remove male coupler end and install 1/2 (m) NPT straight coupling.
 - Install JT03348 tee fitting to the same port of JT07120 load valve. Reinstall male coupler to the end.
 - Install R36659 jumper hose to other port of JT07120 load valve.
 - d. Install JT03105 connector and JT03261 coupler to center port on JT03348 tee. Attach JT05497 hose and JT07117 triple gauge.
 - e. Install assembly into SCV couplers.

NOTE: For SCV I, turn flow control valve knob (B) full counterclockwise (full open).

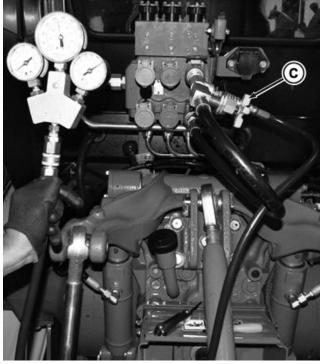
- 2. Select kick-out detent (A). Turn flow control valve (C) counterclockwise (full open).
- 3. Take out the cap (D) and insert Allen wrench.
- 4. Start engine, run at 1200 rpm.
- 5. Move SCV control lever to the rear (extend) or to the front (retract) (the control lever will remain in the relevant position).
- Turn flow control valve (C) clockwise slowly until control lever jumps into neutral. Record pressure.
- 7. Slightly loosen (3—4 turns) flow control valve (C).
- 8. If pressure is more than specification:
 - ☐ Turn Allen wrench counterclockwise (slightly loosen kick-out adjustment screw).
 - □ Perform procedure 5—8.





Kick-Out Detent

Rear SCV



Pressure Gauge



Hydraulic Connections Not Shown for Illustration Purpose

A—Kick-Out Detent B—Flow Control Valve Knob C—Flow Control Valve

D—Cap

If pressure is less than specification:
Continued on next page SW03989,0001D7D -19-04OCT13-2/3

PULV007218 —UN—15NOV10

PULV007216 —UN—11NOV10

Rear Selective Control Valve

	 □ Turn Allen wrench clockwise (slightly tighten kick-out adjustment screw). □ Perform procedure 5—8. 	10. Re-install the cap (D).
9.	Repeat procedure until kick out pressure is within specification.	SW03989,0001D7D -19-04OCT13-3/3

Rear Selective Control Valve

Group 25 Mid-Mount Selective Control Valve

Other Material

Number Name Use

PM37418 (U.S.) Thread Lock and Sealer (Medium Used on threads of SCV cap screws. PM38621 (Canadian) Strength) 242 (LOCTITE®)

LOCTITE is a trademark of Henkel Corp.

BB87125,000081F -19-12MAR13-1/1

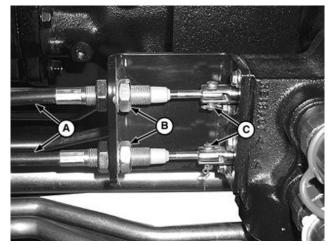
Specifications		
Item	Measurement	Specification
Mid-Mount Control Valve Cap Screw	Torque	55 N·m (41 lbft.)
Mid-Mount Control Valve Line Nut	Torque	69 N·m (50 lbft.)
Cable Bracket Cap Screw	Torque	15 N·m (11 lbft.)
Mid-Mount SCV Mounting Cap Screw	Torque	55 N·m (41 lbft.)
Mid-Mount SCV Line Nut	Torque	102 N·m (75 lbft.)
Spool—Cap Screw	Torque	26—30 N·m (19—22 lbft.)
End Cap—Cap Screw	Torque	12—15 N·m (106—133 lbin.)
Load Check Plug	Torque	34—41 N·m (25—30 lbft.)
Tank Port Fitting	Torque	69 N·m (51 lbft.)
Pressure Port Fitting	Torque	69 N·m (51 lbft.)
Power Beyond Port Fitting	Torque	102 N·m (75 lbft.)
Fitting to Line	Torque	102 N·m (75 lbft.)
Dual Mid-Mount Coupler	Torque	80 N·m (59 lbft.)
Load Check Flow Control Valve	Torque	34—41 N·m (25—30 lbft.)
Load Check Flow Control Assembly	Torque	34—41 N·m (25—30 lbft.)
Flow Compensator Valve	Torque	20—25 N·m (15—18 lbft.)
Plug	Torque	26—30 N·m (19—22 lbft.)
Adapter Plate Cap Screws	Torque	12—15 N·m (106—33 lbin.)
Solenoid Valve Stem	Torque	20—27 N·m (15—20 lbft.)
Coil Nut	Torque	3—4 N·m (27—35 lbin.)
Plug (Internal Hex)	Torque	26—30 N·m (19—22 lbft.)
Spool End Cap-Cap Screw	Torque	12—15 N·m (106—133 lbin.)
Load Check Cap	Torque	34—41 N·m (25—30 lbft.)
Triple Mid-Mount Coupler	Torque	80 N·m (59 lbft.) BB87125,0000820 -19-20MAR13-1/1

Inspect and Repair Joystick and Linkage

- 1. Remove pins (C).
- 2. Remove jam nuts (B) and control cables (A).

A—Control Cable (2 used) B—Jam Nut (2 used)

C—Pin (2 used)



Remove Mid-Mount Cables

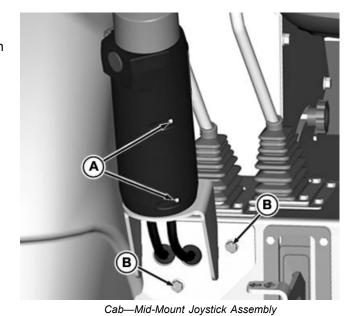
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BB87125,0000821 -19-27MAR13-1/6

- 3. Remove screw and nut (A). Remove cover.
- 4. Remove cap screws (B). Route control cables through floor and remove joystick assembly.

A—Screw and Nut

B—Cap Screw



B B B

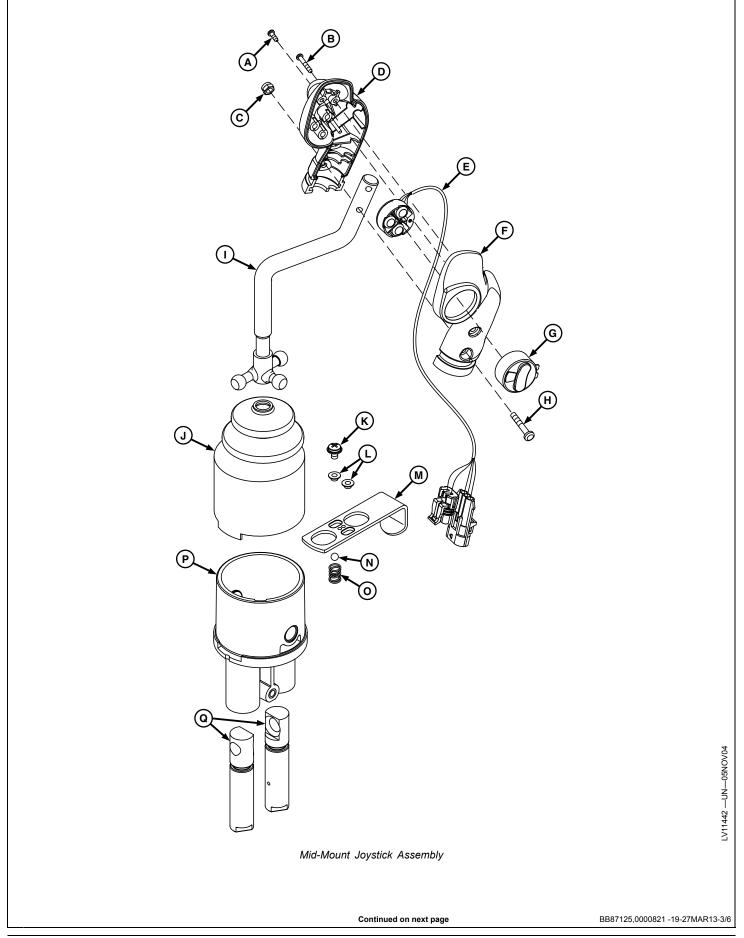
LV15776 —UN—18MAY12

PULV007047 —UN—12FEB10

Open Operator Station—Mid-Mount Joystick Assembly

Continued on next page

BB87125,0000821 -19-27MAR13-2/6



Mid-Mount Selective Control Valve

A-Cap Screw

B—Cap Screw

C-Nut

D-Grip E-Wire Harness (Triple Mid-Mount Only)

necessary.

5. Disassemble parts (A—Q).

F-Grip

G—Switch (Triple Mid-Mount

Only)

I— Control Lever

H—Cap Screw

J— Boot

K—Screw L—Bushing (2 used)

M—Lever N—Ball

O—Spring

7. Assemble parts (A—Q).

P—Housing Q-Piston (2 used)

BB87125,0000821 -19-27MAR13-4/6

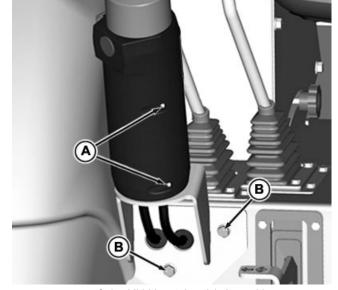
8. Route control cables through floor; install joystick assembly and cap screws (B).

6. Inspect all parts for wear or damage. Replace as

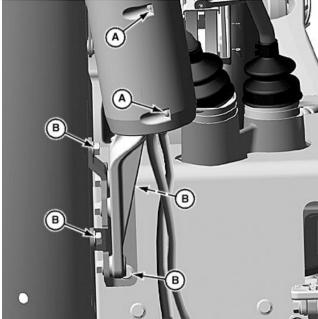
9. Install cover, screw and nut (A).

A—Screw and Nut

B—Cap Screw



Cab-Mid-Mount Joystick Assembly



Open Operator Station—Mid-Mount Joystick Assembly

BB87125,0000821 -19-27MAR13-5/6 Continued on next page

LV15776 —UN—18MAY12

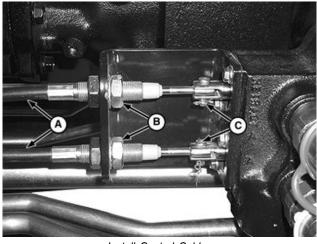
PULV007047 —UN—12FEB10

- 10. Install cables (A), jam nuts (B), and pins (C).
- 11. Adjust Mid-Mount control cables. (See Mid-Mount SCV Control Cable Adjustment, in this group.)

A—Control Cable (2 used)

C-Pin (2 used)

B-Jam Nut (2 used)



Install Control Cables

BB87125,0000821 -19-27MAR13-6/6

Inspect and Repair Multi-Function Control Lever and Linkage (with Secondary Brake)

- 1. Loosen jam nut (A).
- 2. Remove cap screws (B).
- 3. Screw sleeve (C) rearward on cable.
- 4. Remove pin (E).
- 5. Remove sleeve (C), flange (D), and jam nut (A) from cable.
- 6. Repeat steps (1—5) for other cable.
- 7. Cab Tractors:

Remove right-side upholstery. (See Remove and Install Right-Side Upholstery, in Section 90, Group 20.)

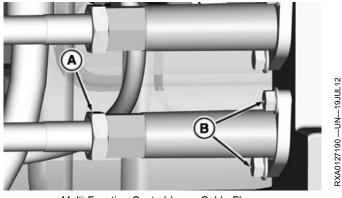
8. Disconnect multi-function control lever harness.

A-Jam Nut B—Cap Screw (2 used)

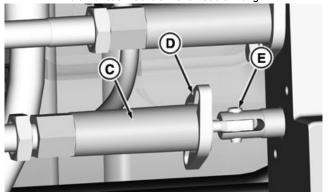
E-Pin

D—Flange

C-Sleeve



Multi-Function Control Lever Cable Flange



Multi-Function Control Lever Cable Sleeve

Continued on next page

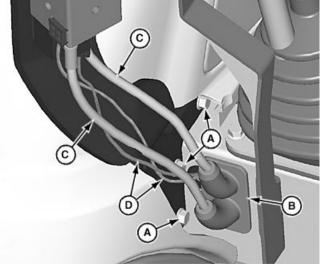
SW03989,0002239 -19-03APR13-1/6

RXA0127191 —UN—19JUL12

- 9. Remove boot (B) from panel.
- 10. Remove screws and nuts (A). Route control cables (C) and harness (D) through panel. Remove multi-function control lever.

A—Screw and Nut (3 used) B—Boot

C—Control Cable (2 used) D—Harness (2 used)

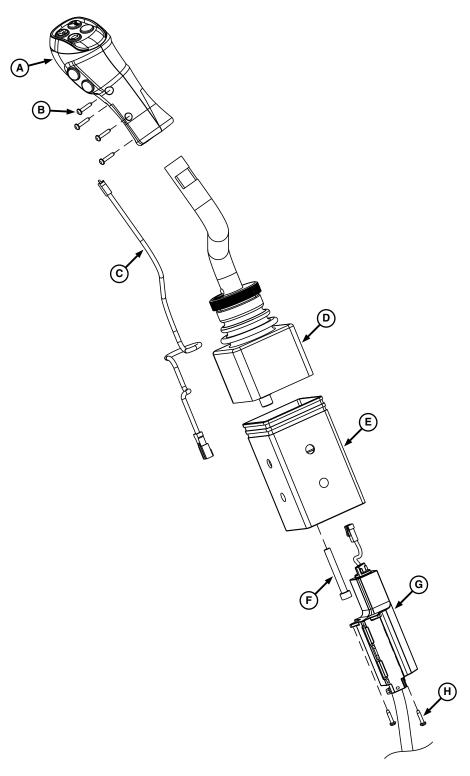


Multi-Function Control Lever Remove

Continued on next page

SW03989,0002239 -19-03APR13-2/6

LV16036 —UN—07SEP12



Multi-Function Control Lever Assembly

A—Handle B—Screw (4 used) C—Handle Harness D—Control Lever Assembly

E—Sleeve F—Screw (2 used) G—Multi-Function Control Lever Harness

H-Screw (2 used)

11. Disassemble parts (A—H).

13. Assemble parts (A—H).

12. Inspect all parts for wear or damage. Replace as necessary.

Continued on next page

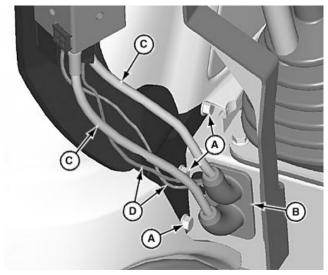
SW03989,0002239 -19-03APR13-3/6

LV16041 —UN—20MAR13

- 14. Route control cables (C) and harnesses (D) through panel. Install multi-function control lever assembly using screws and nuts (A).
- 15. Install boot (B).

A—Screw and Nut (3 used) B—Boot

C—Control Cable (2 used)
D—Harness (2 used)



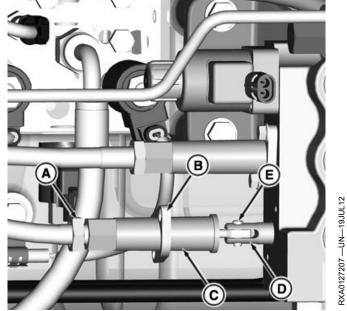
Multi-Function Control Lever Install

SW03989,0002239 -19-03APR13-4/6

LV16036 —UN—07SEP12

- 16. Install jam nut (A), flange (B), and sleeve (C) onto cable.
- 17. Verify spool (D) is in neutral.
- 18. Install cable into spool and install pin (E).

A—Jam Nut D—Spool B—Flange E—Pin C—Sleeve



Multi-Function Control Lever Cable

Continued on next page

SW03989,0002239 -19-03APR13-5/6

NOTE: Flange should allow sleeve to rotate.

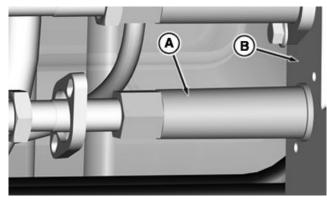
- 19. Rotate sleeve (A) on cable until it contacts valve surface (B).
- 20. Slide flange (C) forward and install cap screws (D) finger tight.
- 21. Adjust control cables. (See Mid-Mount SCV Control Cable Adjustment, in this group.)
- 22. Connect multi-function control lever harnesses.
- 23. Cab tractors:

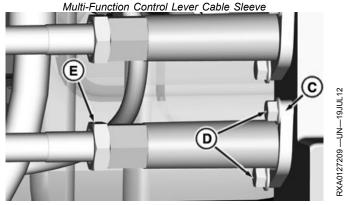
Install right-side upholstery. (See Remove and Install Right-Side Upholstery, in Section 90, Group 20.)

B—Valve Surface C—Flange

D—Cap Screws (2 used)

E—Jam Nut





Multi-Function Control Lever Cable Flange

SW03989,0002239 -19-03APR13-6/6

RXA0127208 —UN—19JUL12

Remove and Install Mid-Mount Selective Control Valve (SCV)

CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available in English from Deere & Company Medical Department in Moline, Illinois, U.S.A., by calling 1-800-822-8262 or +1 309-748-5636.



1. Open rate-of-drop valve and lower rockshaft arms completely.

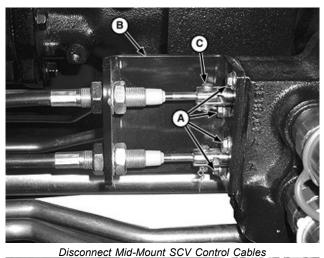
2. Move selective control levers through all positions to relieve hydraulic pressure.

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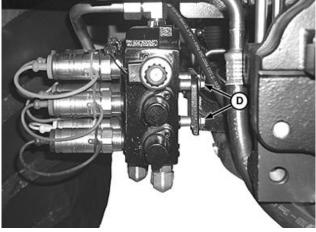
BB87125,0000822 -19-27MAR13-1/3

- 3. Remove cap screws (A), pins (C), and bracket (B).
- NOTE: Tag or label wire connectors before disconnecting to aid during installation.
- Disconnect wire connectors for triple mid-mount SCV, if equipped.
- IMPORTANT: When removing and installing hydraulic lines, always support line adapter and fittings with a back-up wrench to keep fittings stationary and prevent damage to line, valve and pump housings.
- NOTE: Close all openings using caps and plugs. Tag or label hydraulic lines before disconnecting to aid during installation. Catch leaking oil and dispose of it properly.
- 5. Disconnect hydraulic lines at mid-mount SCV. Close all openings using caps and plugs.
- NOTE: Triple mid-mount SCV shown; dual mid-mount SCV similar.
- 6. Remove cap screws (D) and mid-mount SCV.
- Inspect mid-mount SCV for worn or damaged parts. Replace parts as necessary. (See Disassemble, Inspect, and Assemble Dual Mid-Mount Selective Control Valve (SCV) or Disassemble, Inspect, and Assemble Triple Mid-Mount Selective Control Valve (SCV), in this group.)

A—Cap Screw (4 used) B—Bracket C—Pin (2 used) D—Cap Screw (3 used)



711



-V11451 -- UN-01NOV04

Remove Mid-Mount SCV

Continued on next page

BB87125,0000822 -19-27MAR13-2/3

8. Install mid-mount SCV using cap screws (D). Tighten cap screws to specification.

Specification

Mid-Mount Control Valve

Cap Screw—Torque...... 55 N·m (41 lb.-ft.)

9. Connect hydraulic lines at mid-mount SCV. Tighten line nuts to specification.

Specification

- 10. Connect wire connectors, if equipped.
- 11. Install bracket (B), cap screws (A), and pins (C). Tighten cap screws to specification.

Specification

Cable Bracket Cap

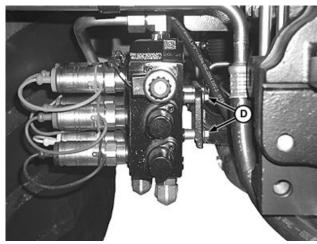
- 12. Adjust mid-mount SCV control cable. (See Mid-Mount SCV Control Cable Adjustment, in this group.)
- Start engine and operate joystick lever. Check for leaks.

A—Cap Screw (4 used)

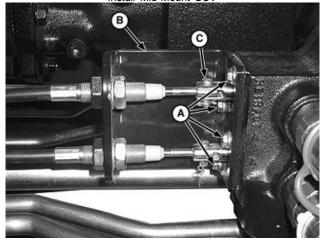
C-Pin (2 used)

B—Bracket

D—Cap Screw (3 used)



Install Mid-Mount SCV



Install Mid-Mount SCV Control Cables

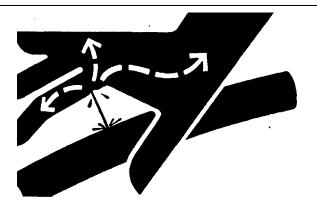
BB87125,0000822 -19-27MAR13-3/3

LV11451 —UN—01NOV04

Remove and Install Mid-Mount Selective Control Valve (SCV) (with Secondary Brake)

CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available in English from Deere & Company Medical Department in Moline, Illinois, U.S.A., by calling 1-800-822-8262 or +1 309-748-5636.



1. Open rate-of-drop valve and lower lift arms completely.

2. Move selective control levers through all positions to relieve hydraulic pressure.

Continued on next page

SW03989,000223A -19-03APR13-1/5

- 3. Loosen jam nut (A).
- 4. Remove cap screws (B).
- 5. Screw sleeve (C) rearward on cable.
- 6. Remove pin (E).
- 7. Repeat steps (3—6) for other cable.

NOTE: Tag or label wire connectors before disconnecting to aid during installation.

8. Disconnect wire connectors for triple mid-mount SCV, if equipped.

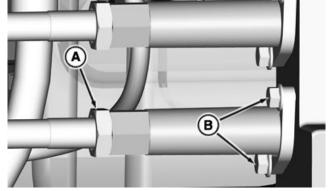
D-Flange

E-Pin

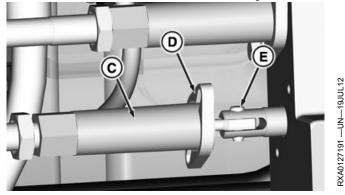
A—Jam Nut B—Cap Screw (2 used)

C—Sleeve

-m



Multi-Function Control Lever Cable Flange



Multi-Function Control Lever Cable Sleeve

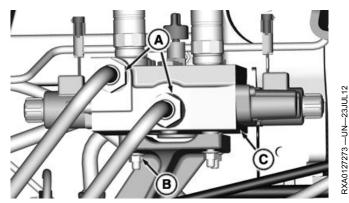
SW03989,000223A -19-03APR13-2/5

RXA0127190 —UN—19JUL12

IMPORTANT: When removing and installing hydraulic lines, always support line adapter and fittings with a back-up wrench to keep fittings stationary and prevent damage to line, valve and pump housings.

NOTE: Close all openings using caps and plugs. Tag or label hydraulic lines before disconnecting to aid during installation. Catch leaking oil and dispose of it properly.

- 9. Disconnect hydraulic lines (A) from mid-mount SCV.
- 10. Remove cap screws (B) and mid-mount SCV (C).
- 11. Inspect mid-mount SCV for worn or damaged parts. Replace parts as necessary. (See Disassemble, Inspect and Assemble Dual Mid-Mount Selective Control Valve (SCV) or see Disassemble, Inspect and Assemble Triple Mid-Mount Selective Control Valve (SCV), in this group.)



Mid-Mount Selective Control Valve (Bottom View)

A—Hydraulic Line (2—3 used) B—Cap Screw (3 used)

C—Mid-Mount SCV

Continued on next page

SW03989,000223A -19-03APR13-3/5

12. Install mid-mount SCV (C) with cap screws (B). Tighten cap screws to specification.

Specification

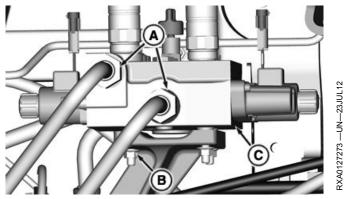
Mid-Mount SCV Mounting

13. Connect hydraulic lines (A) to mid-mount SCV. Tighten line nuts to specification.

Specification

Mid-Mount SCV Line

- 14. Connect wire connectors, if equipped.
- 15. Verify spool is in neutral.
- 16. Install cable into spool and install pin.



Mid-Mount SCV (Bottom View)

A—Hydraulic Line (2—3 used) B—Cap Screw (3 used)

C-Mid-Mount SCV

SW03989.000223A -19-03APR13-4/5

RXA0127208 —UN—19JUL12

17. Rotate sleeve (A) on cable until it contacts valve surface (B).

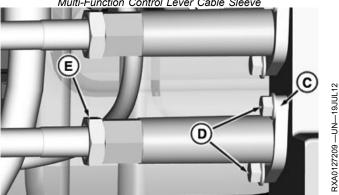
NOTE: Flange should allow sleeve to rotate.

- 18. Slide flange (C) forward and install cap screws (D) finger tight.
- 19. Adjust control cables. (See Mid-Mount SCV Control Cable Adjustment, in this group.)

A-Sleeve **B—Valve Surface** D-Cap Screw (2 used) E-Jam Nut

C—Flange

Multi-Function Control Lever Cable Sleeve



Multi-Function Control Lever Cable Flange

SW03989,000223A -19-03APR13-5/5

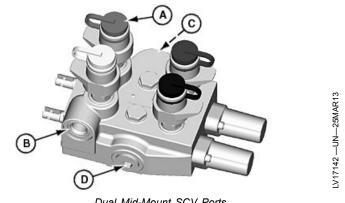
Disassemble, Inspect, and Assemble Dual Mid-Mount Selective Control Valve (SCV)

IMPORTANT: Clean dirt and debris from valve before disassembly to prevent contamination.

> Always use new seals and O-rings. Damaged or used seals and O-rings will leak.

Apply clean hydraulic oil to all internal parts before assembly.

- 1. Remove couplers (A) from dual mid-mount SCV, if equipped.
- 2. If necessary, remove fittings from tank port (B), pressure port (C) and power beyond port (D).



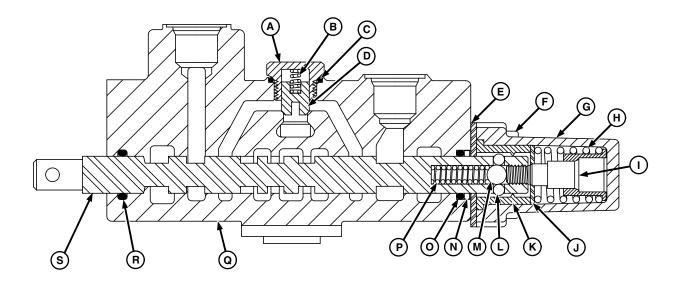
Dual Mid-Mount SCV Ports

A-Coupler (4 used) (if equipped) **B**—Tank Port

C—Pressure Port D—Power Beyond Port

Continued on next page

BB87125,0000823 -19-27MAR13-1/7



7029 — I IN—23MAY01

Dual SCV Cutaway

 A—Load Check Plug
 F—Cap Screw (2 used)

 B—Spring
 G—End Cap

 C—O-Ring
 H—Spring

 D—Load Check
 I— Cap Screw

 E—Seal Plate
 J—Washer

IMPORTANT: Spools and housing are matched and must be replaced as a unit. Make sure spools are installed in their original bores to ensure proper operation.

> Detents are matched to spool type. Make sure detents are installed with the spools they are removed from.

NOTE: Parts (A—D) and (E—P) are serviced as separate assemblies and are replaced as kits only.

- 3. Remove parts (A-D).
- 4. Remove cap screws (F) and end cap (G).

NOTE: Seal plate (E) may come off with spool assembly.

K—Detent P—Detent Spring
L—Detent Ball (4 used) Q—Housing
M—Pilot Ball R—O-Ring
N—Back-Up Ring S—Spool
O—O-Ring

- 5. Remove spool (S) and parts (H—P) as an assembly from housing (Q).
- 6. Remove seal plate (E).
- 7. Remove back-up ring (N) and O-rings (O and R).
- 8. Place a screwdriver through cable pin hole of spool.
- 9. Clamp screwdriver in a soft-jawed vise.
- 10. Remove parts (H—M) and (P).
- 11. Inspect all parts for wear or damage. Replace as necessary.
- 12. Lightly coat detent spring (P), pilot ball (M) and detent balls (L) with multipurpose grease.

Continued on next page

BB87125,0000823 -19-27MAR13-2/7

13. Install detent spring (P), pilot ball (M) and detent balls (L) into spool.

BB87125,0000823 -19-27MAR13-3/7

PULV007030 —UN-02FEB10

NOTE: Notched detent is used on 6-groove float spool. Stepped detent is used on 5-groove regenerative spool.

- 14. Place detent on spool.
- 15. Using a small allen wrench (A) gently push in pilot ball and detent spring.
- 16. Carefully slide detent (B) over detent balls (C).

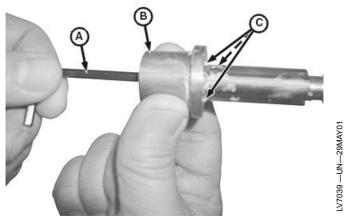
A-Allen Wrench B-Detent **C**—Detent Balls

D—Regenerative Detent E—Float Detent



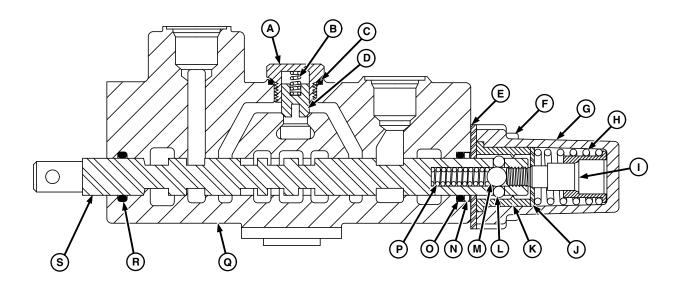
Detents

(D)



Detent Install

Continued on next page BB87125,0000823 -19-27MAR13-4/7



/7029 —UN—23MAY01

Dual SCV Cutaway

 A—Load Check Plug
 F—Cap Screw (2 used)

 B—Spring
 G—End Cap

 C—O-Ring
 H—Spring

 D—Load Check
 I— Cap Screw

 E—Seal Plate
 J—Washer

17. Install parts (H—J). Tighten cap screw (I) to specification.

Specification

Spool—Cap Screw—Torque......26—30 N·m (19—22 lb.-ft.)

IMPORTANT: Always use new seals and O-rings.

Damaged or used seals and O-rings will leak.

Apply clean hydraulic oil to all internal parts before assembly.

- 18. Lubricate and install new O-rings (R and O) and back-up ring (N).
- 19. Install seal plate (E).
- 20. Coat spool and bore with clean transmission/hydraulic oil and install spool into bore.

K—Detent P—Detent Spring
L—Detent Ball (4 used) Q—Housing
M—Pilot Ball R—O-Ring
N—Back-Up Ring S—Spool

O—O-Ring

21. Lightly coat detent assembly with multipurpose grease.

- 22. Apply Thread Lock and Sealer (Medium Strength) to threads of cap screws (F).
- 23. Install end cap (G) using cap screws (F). Tighten cap screws to specification.

Specification

End Cap—Cap Screw—Torque.......12—15 N·m (106—133 lb.-in.)

24. Install parts (A—D). Tighten load check plug (A) to specification.

Specification

Load Check Plug—Torque......34—41 N·m (25—30 lb.-ft.)

Continued on next page

BB87125,0000823 -19-27MAR13-5/7

25. Replace O-rings and install fittings at tank port (B), pressure port (C), and power beyond port (D). Tighten to specification.

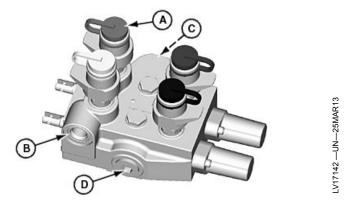
Specification

Tank Port	
Fitting—Torque	69 N·m (51 lbft.)
Pressure Port	
Fitting—Torque	69 N·m (51 lbft.)
Power Beyond Port	
Fitting—Torque	102 N·m (75 lbft.)
Fitting to Line—Torque	102 N·m (75 lbft.)

26. Install couplers (A) and tighten to specification.

Specification

Dual Mid-Mount	
Coupler—Torque	80 N·m (59 lbft.)



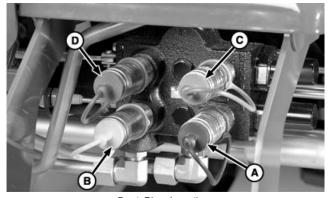
Dual Mid-Mount Selective Control Valve (SCV) Ports

-Coupler (4 used) (if equipped) B—Tank Port

C—Pressure Port D—Power Beyond Port

BB87125,0000823 -19-27MAR13-6/7

- 27. Install dust plugs on couplers in the order shown.
 - (Black)
 - -Bucket Cylinder—Head End (Yellow)
 - A—Bucket Cylinder—Rod End C—Boom Cylinder—Head End (Blue)
 - -Boom Cylinder—Rod End (Red)



Dust Plug Locations

BB87125,0000823 -19-27MAR13-7/7

-V9676 —UN—16AUG04

PULV002555 —UN—25JUN08

Disassemble, Inspect, and Assemble Triple Mid-Mount Selective Control Valve (SCV)

IMPORTANT: Clean dirt and debris from valve before disassembly to prevent contamination.

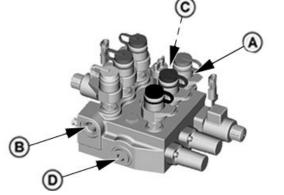
> Always use new seals and O-rings. Damaged or used seals and O-rings will leak.

Apply clean hydraulic oil to all internal parts before assembly.

- 1. Remove couplers (A) as required.
- 2. If necessary, remove fittings from tank port (B), pressure port (C) and power beyond port (D).

Coupler (6 used) (if equipped) -Tank Port

C—Pressure Port D—Power Beyond Port



Triple Mid-Mount Selective Control Valve (SCV) Ports

Continued on next page

BB87125,0000824 -19-27MAR13-1/10

Mid-Mount SCV I Repair

IMPORTANT: Spools and housing are matched and must be replaced as a unit. Make sure spools are installed in their original bores to ensure proper operation.

> Detents are matched to spool type. Make sure detents are installed with the spools they are removed from.

NOTE: O-ring (B) may be replaced individually. Valve internal O-rings and components are available as a repair kit.

- Remove load check flow control valve assembly (A). If installing flow control valve repair kit, proceed to step 5.
- 2. If not installing repair kit, install new O-ring (B).
- 3. Make sure spring (K) and poppet (L) are in place. Lubricate O-ring and install load check flow control valve. Tighten to specification.

Specification

Load Check Flow Control

Valve—Torque.......34—41 N·m (25—30 lb.-ft.)

- 4. Install back-up ring (C) and O-ring (D) onto stem (E).
- 5. Install stem into plug (G).
- 6. Install knob (I) onto stem with spring pin (J).
- 7. Install poppet (L) and spring (K).
- 8. Install O-ring (F) on plug (G).
- 9. Lubricate O-ring and install load check flow control assembly. Tighten load check flow control assembly to specification.

Specification

Load Check Flow Control

Assembly—Torque......34—41 N·m (25—30 lb.-ft.)

-Load Check Flow Control

Valve Assembly

-O-Ring

-Back-Up Ring

D-O-Ring E—Stem

F-O-Ring

G—Plua

H-O-Ring

I— Knob

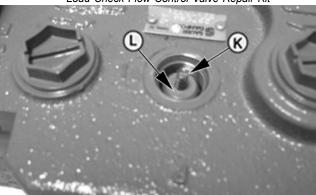
J—Spring Pin K—Spring

L-Poppet





Load Check Flow Control Valve



Poppet and Spring

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BB87125,0000824 -19-27MAR13-2/10

PULV002556 —UN—29MAY08

PULV002528 —UN—16DEC08

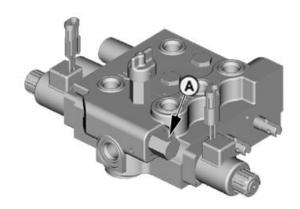
PULV002529 —UN—29MAY08

- NOTE: Individual seals on compensator valve are non-replaceable. If seal replacement is required, replace compensator valve assembly.
- 10. Remove compensator valve (A).
- Lubricate O-ring and seals with clean oil and install flow compensator valve. Tighten flow compensator valve to specification.

Specification

- Remove internal hex-head plug from rear of valve block and install new O-ring.
- 13. Lubricate O-ring and install plug. Tighten plug to specification.

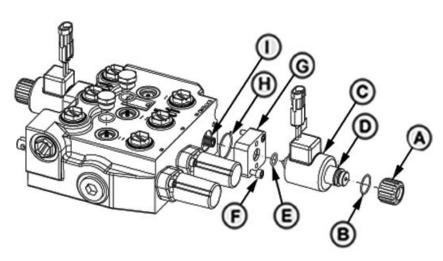
Specification



Flow Compensator / Priority Bypass Valve

A—Flow Compensator / Priority Bypass Valve

BB87125,0000824 -19-27MAR13-3/10



Disassembling Mid-Mount SCV I

A—Nut

B—O-Ring

C—Coil

D-Solenoid Valve Stem

E—O-Ring

F—Cap Screw (2 used)

G-Adapter Plate

H—O-Ring

I— Spring

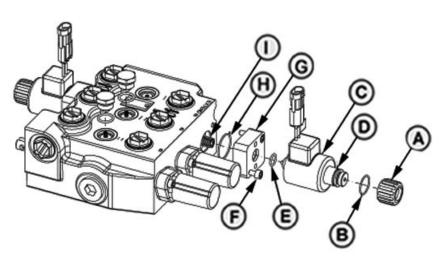
- 14. Remove coil nut (A).
- 15. Remove O-ring (B) and coil (C).
- 16. Using a 3/4 in. wrench on flats of valve, remove solenoid valve stem (D).
- 17. Remove O-ring from solenoid valve stem.
- 18. Remove cap screws (F) and adapter plate (G) along with O-ring (E).
- 19. Remove spool. Inspect spool and bore for damage. Replace is damaged.
- 20. Remove spring (I) and inner washer.
- 21. Remove valve spool from control valve. Inspect spool and bore for wear or damage.

Continued on next page

BB87125,0000824 -19-27MAR13-4/10

PULV002558 —UN—29MAY08

PULV002557 —UN—29MAY08



Assembling Mid-Mount SCV I

A-Nut B—O-Ring C—Coil E-O-Ring F—Cap Screw (2 used) **G**—Adapter Plate H—O-Ring

I— Spring

D-Solenoid Valve Stem

- 22. Install washer and spring onto spool. Install spool in control valve.
- 23. Install new O-ring onto adapter plate (G).
- 24. Apply Thread Lock and Sealer (Medium Strength) to threads of cap screws. Install adapter and cap screws. Tighten cap screws to specification.

Specification

Adapter Plate Cap

- 25. Install new O-ring onto solenoid valve stem (D).
- 26. Lubricate O-ring and install solenoid valve stem. Tighten solenoid valve stem to specification.

Specification

Solenoid Valve

- 27. Install coil (C) and new O-ring (B).
- 28. Install coil nut (A). Tighten coil nut to specification.

Specification

29. Repeat steps 16—28 for other solenoid coil.

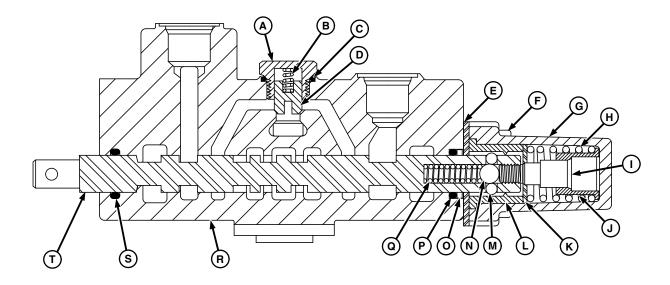
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BB87125,0000824 -19-27MAR13-5/10

PULV002558 —UN-29MAY08

Mid-Mount SCV II and III Repair

IMPORTANT: Spools and housing are matched and must be replaced as a unit. Make sure spools are installed in their original bores to ensure proper operation. Spacers are matched to spool type. Spacers must be installed with the spools they are removed from.



Mid-Mount SCV Spools II and III Cutaway

A—Load Check Cap F—Cap Screw (2 used) L—Detent (F B—Spring G—End Cap M—Detent B C—O-Ring H—Spring N—Pilot Ball D—Load Check Valve I— Plug O—Back-Up E—Seal Plate J—Spacer K—Washer

L—Detent (Float Shown)

M—Detent Ball (4 used)

N—Pilot Ball

O—Back-Up Ring

D—Back-Up Ring

NOTE: Parts (A—D) and (E—P) are serviced as separate assemblies and are replaced as kits only.

- 1. Remove parts (A—D).
- 2. Remove cap screws (F) and end cap (G).

NOTE: Seal plate (E) may come off with spool assembly.

- 3. Remove spool (T) and parts (H—Q) as an assembly from housing (R).
- 4. Remove seal plate (E), if necessary.
- 5. Remove back-up ring (O) and O-rings (P and S).
- 6. Place a screwdriver through cable pin hole of spool.
- 7. Clamp screwdriver in a soft-jawed vise.

NOTE: Spacer (J) must be assembled with the spool it is removed from. Spool number 2 uses a short spacer; spool number 3 uses a long spacer.

Mark or tag spacer for ease of assembly.

- 8. Remove parts (H—N) and (Q).
- 9. Inspect all parts for wear or damage. Replace as necessary.
- 10. Lightly coat detent spring (Q), pilot ball (N) and detent balls (M) with multipurpose grease.
- 11. Install detent spring (Q), pilot ball (N) and detent balls (M) into spool.

Continued on next page

BB87125,0000824 -19-27MAR13-6/10

PULV003960 —UN—18JAN09

12. Place detent on spool. 13. Using a small Allen wrench (A) gently push in pilot ball and detent spring. 14. Carefully slide detent (B) over detent balls (C). D—Regenerative Detent E—Float Detent A-Allen Wrench (D) B—Detent C—Detent Balls PULV007030 —UN-02FEB10 (E) Detents PULV002519 —UN—29MAY08

Continued on next page

BB87125,0000824 -19-27MAR13-7/10

Installing Detent

SCV Spools II and III Cutaway

A—Load Check Cap F—Cap Screw (2 used)
B—Spring G—End Cap
C—O-Ring H—Spring
D—Load Check Valve I— Plug
E—Seal Plate J—Spacer
K—Washer

L—Detent (Float Shown)
M—Detent Ball (4 used)
N—Pilot Ball
O—Back-Up Ring
D—Back-Up Ring
D—Detent Spring
R—Housing
S—O-Ring
T—Spool

- NOTE: Spacer (J) must be installed on the spool it was removed from. Spool number 2 uses a short spacer; spool number 3 uses a long spacer.
- 15. Install parts (H—K). Tighten plug (I) to specification.

Specification

Plug (Internal Hex)—Torque.......26—30 N·m (19—22 lb.-ft.)

IMPORTANT: Always use new seals and O-rings.

Damaged or used seals and O-rings will leak.

Apply clean hydraulic oil to all internal parts before assembly.

- 16. Install new O-rings (S and P) and back-up ring (O).
- 17. Install seal plate (E).
- 18. Coat spool and bore with clean transmission/hydraulic oil. Install spool into bore.

- 19. Lightly coat detent assembly with multipurpose grease.
- 20. Apply Thread Lock and Sealer (Medium Strength) to threads of cap screws (F).
- 21. Install end cap (G) using cap screws (F). Tighten spool end cap-cap screws to specification.

Specification

22. Install parts (A—D). Tighten load check cap (A) to specification.

Specification

Load Check
Cap—Torque......34—41 N·m (25—30 lb.-ft.)

Continued on next page

BB87125.0000824 -19-27MAR13-8/10

For all SCVs

1. Replace O-rings and install fittings at tank port (B), pressure port (C), and power beyond port (D). Tighten to specification.

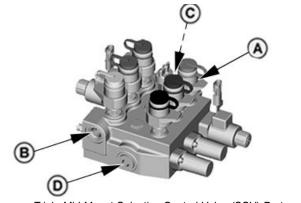
Specification

Tank Port	
Fitting—Torque	69 N·m (51 lbft.)
Pressure Port	
Fitting—Torque	69 N·m (51 lbft.)
Power Beyond Port	
Fitting—Torque	102 N·m (75 lbft.)
Fitting to Line—Torque	102 N·m (75 lbft.)

2. Install mid-mount SCV couplers and tighten to specification.

Specification

Triple Mid-Mount		
Coupler—Torque	80 N·m ((59 lbft.)



Triple Mid-Mount Selective Control Valve (SCV) Ports

A—Coupler (6 used) **B—Tank Port**

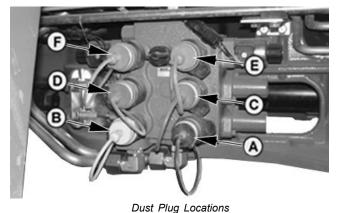
C—Pressure Port D—Power Beyond Port

BB87125,0000824 -19-27MAR13-9/10

PULV002555 —UN-25JUN08

PULV002559 —UN-29MAY08

- 3. Install dust plugs on couplers in the order shown.
 - A—Bucket Cylinder—Rod End
 - (Black) -Bucket Cylinder—Head End (Yellow)
 - -Boom Cylinder—Head End (Blue)
- D—Boom Cylinder—Rod End (Red)
- E—Third-Function Cylinder—Head End (Orange)
- Third-Function Cylinder—Rod End (Green)



BB87125,0000824 -19-27MAR13-10/10

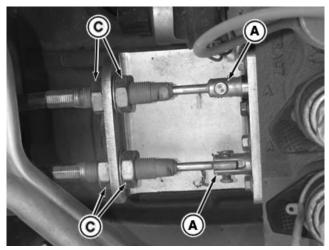
Mid-Mount SCV Control Cable Adjustment

- 1. Disconnect yokes (A) from mid-mount SCV spool.
- 2. Verify SCV spool is in neutral.
- 3. Engage single lever control lock (B).
- 4. Adjust cable jam nuts until hole in cable yoke is aligned with hole in SCV spool.
- 5. Tighten jam nuts (C).
- 6. Connect yokes (A) to mid-mount SCV.

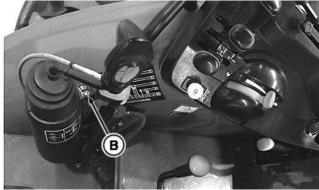
NOTE: When cables are properly adjusted, yoke pin will move freely within yoke and SCV spool holes.

7. Disengage single lever control lock (B).

A—Cable Yoke (2 used) C—Jam Nut (2 per cable)
B—Single Lever Control Lock



Control Cable-to-Mid-Mount SCV Adjustment



Single Lever Control Lock

SW03989,000223B -19-20MAR13-1/1

Mid-Mount SCV Multi-Function Control Cable Adjustment (with Secondary Brake)

1. Engage transport locking ring (A).

A—Transport Locking Ring



Transport Locking Ring

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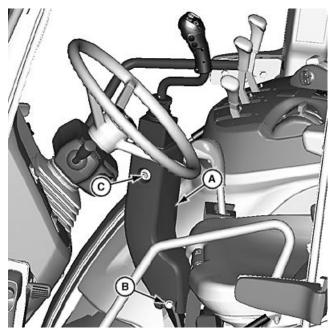
SW03989,000223C -19-03APR13-1/9

PULV002681 —UN—14JUL08

RXA0098601 —UN—09JUL08

2. Remove nut (C) and cap screw (B) to remove cover (A).

A—Cover B—Cap Screw C-Nut



Multi-Function Control Lever Cover

SW03989,000223C -19-03APR13-2/9

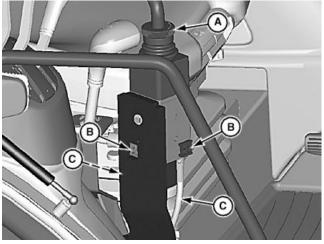
LV16037 —UN-07SEP12

LV16038 —UN—07SEP12

3. Remove adjuster clips (B) from control cables (C).

A—Transport Locking Ring B—Adjuster Clip (2 used)

C—Control Cable (2 used)



Multi-Function Control Lever Adjuster Clips

Continued on next page

SW03989,000223C -19-03APR13-3/9

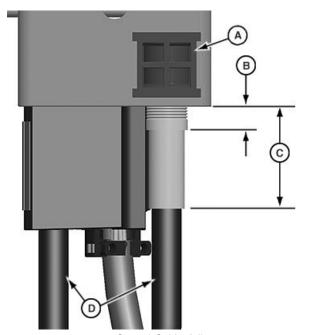
4. Align control cable (D) to pre-adjustment measurement shown.

NOTE: Always use new adjuster clips with new control cables.

Adjuster clips must be flush with joystick housing when installed.

5. Install adjuster clips (A) flush with joystick housing.

A—Adjuster Clips (2 used) B—Measurement 6—10 mm (0.24—0.39 in.) C—Measurement 32—36 mm (1.26—1.42 in.) D—Control Cable (2 used)



Control Cable Adjustment

SW03989,000223C -19-03APR13-4/9

LV16143 —UN-030CT12

LV16018 —UN—28AUG12

6. Disengage transport locking ring (A).

A—Transport Locking Ring



Transport Locking Ring

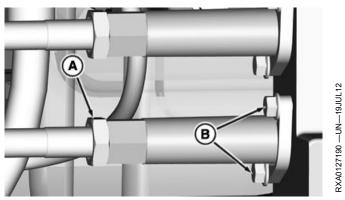
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SW03989,000223C -19-03APR13-5/9

- 7. Remove jam nut (A).
- 8. Loosen cap screws (B).

A-Jam Nut

B—Cap Screw (2 used)



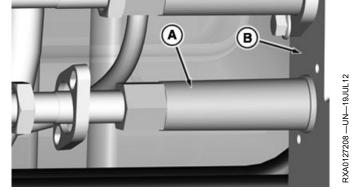
Multi-Function Control Lever Cable Flange

SW03989,000223C -19-03APR13-6/9

9. Screw sleeve (A) onto control cable away from valve surface (B) to create a small gap.

A-Sleeve

B—Valve Surface



Multi-Function Control Lever Cable Sleeve

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SW03989,000223C -19-03APR13-7/9

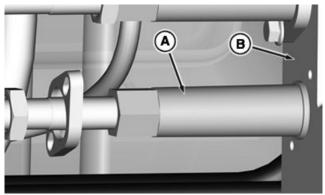
 Rotate sleeve (A) on cable until it contacts valve surface (B).

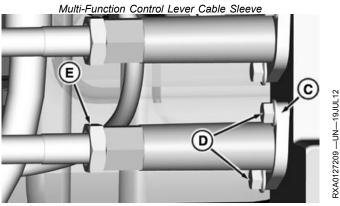
NOTE: Flange should allow sleeve to rotate.

- Slide flange (C) forward and install cap screws (D) finger tight.
- NOTE: Check that transport locking ring engages and disengages smoothly.
- Rotate sleeve either direction until engaging and disengaging transport locking ring is smooth and without resistance.
- 13. Tighten cap screw (D) and jam nut (E) against sleeve.
- NOTE: Tightening of cap screws and jam nut could change adjustment slightly. Recheck that transport locking ring engages and disengages smoothly.
- 14. Recheck joystick positioning by engaging and disengaging transport locking ring.
- 15. Repeat adjustment if necessary.

A—Sleeve B—Valve Surface C—Flange D—Cap Screw (2 used)

E—Jam Nut





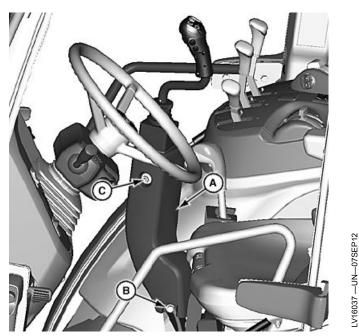
Multi-Function Control Lever Cable Flange

SW03989,000223C -19-03APR13-8/9

RXA0127208 —UN—19JUL12

Install cover (B) and secure with cap screw (B) and nut (C). Tighten cap screw without distorting housing.

A—Cover B—Cap Screw C-Nut



Multi-Function Control Lever Cover

SW03989,000223C -19-03APR13-9/9

Mid-Mount Selective Control Valve

Specifications		
Item	Measurement	Specification
Line Nut-to-Fitting	Torque	97—107 N·m (72—79 lbft.)
Rear Wheel-to-Axle Cap Screw (M20)	Torque	600 N·m (442 lbft.)
Hose-to-Fitting	Torque	42—48 N·m (31—35 lbft.)
Return-to-Transmission Sump Line (E) Fitting	Torque	69 N·m (51 lbft.)
Inlet-from-Implement Pump Line (D) Fitting	Torque	102 N·m (75 lbft.)
Outlet-to-Rockshaft Valve Line (C) Fitting	Torque	69 N·m (51 lbft.)
Service Brake Pilot Line (B) Fitting	Torque	16 N·m (12 lbft.)
		SW03989,0002236 -19-27MAR13-1/1

Inspect and Replace Hydraulic Lines



CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury.

Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available in English from Deere & Company Medical Department in Moline, Illinois, U.S.A., by calling 1-800-822-8262 or +1 309-748-5636.

IMPORTANT: When removing/installing hydraulic lines, always support line adapter and fittings with a back-up wrench to keep fittings stationary and prevent damage to line, valve and pump housings.

NOTE: SCV lines vary depending on SCV configuration of the machine. Some components may need to be removed in order to repair or remove SCV lines.

Close all openings using caps and plugs. Tag or label hydraulic lines before disconnecting to aid during installation.



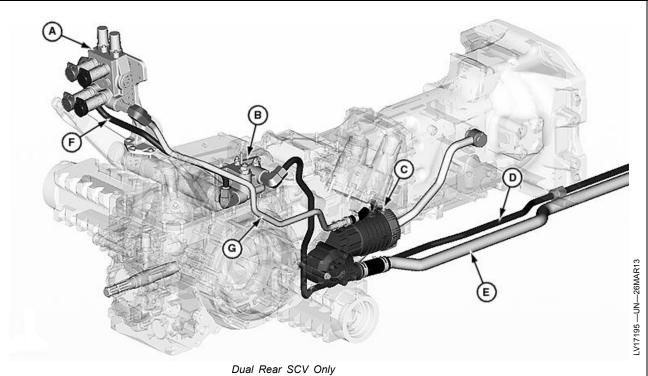
The hydraulic lines may leak when being disconnected. Contain leaking oil and dispose of properly.

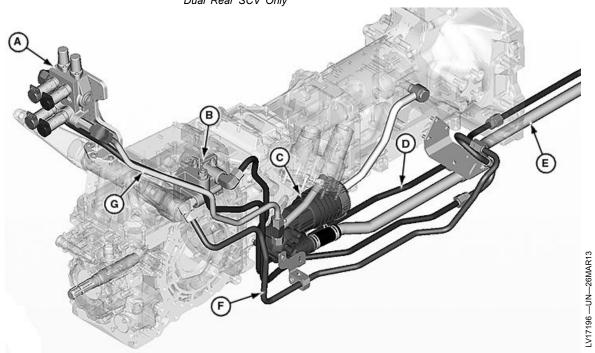
- Relieve pressure in all hydraulic systems. Operate brake pedals, all SCV controllers, and rockshaft controls.
- Remove right side rear wheel and fender as necessary. (See Remove and Install Fenders—Cab or Remove and Install Fenders—Open Operator Station, in Section 80, Group 20.)

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SW03989,0002238 -19-27MAR13-1/4

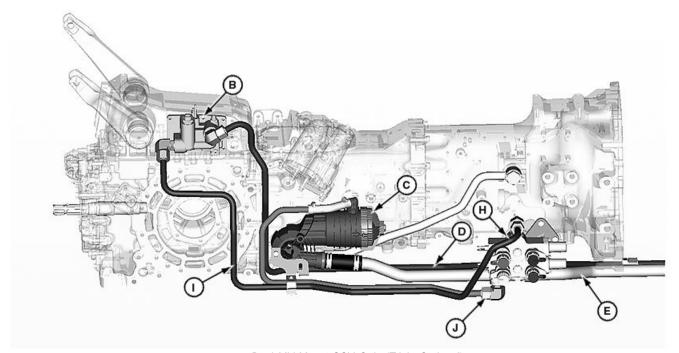
X9811 —UN—23AUG88

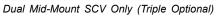


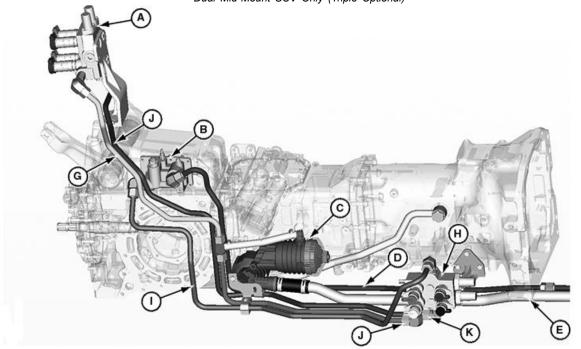


Dual Rear SCV and Mid-Mount SCV Ready

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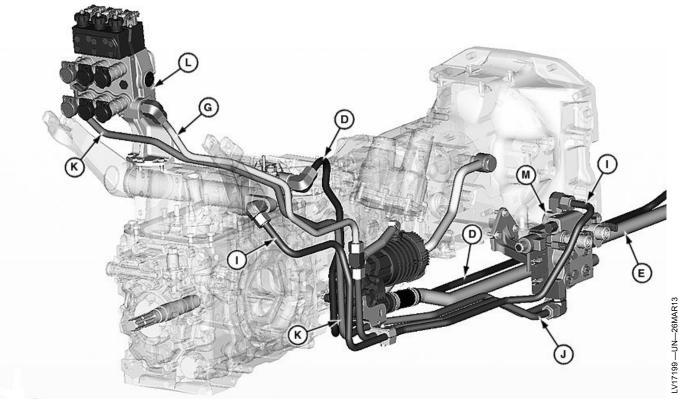




Dual Rear and Dual Mid-Mount SCVs

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SW03989,0002238 -19-27MAR13-3/4



Triple Deluxe Rear and Triple Mid-Mount SCVs

A—Dual Rear SCV

B—Rockshaft Valve

C-Main Filter

D—Implement Pump Pressure-to-Rockshaft Valve Line E—Hydraulic Oil-to-Implement Pump Line

F—Rear SCV Supply Line

G—Rear SCV Return-to-Main Filter Line

Remove line clamps and retainers as needed.
 Remove other system lines and hoses (brakes, cooler, and steering) as necessary.

IMPORTANT: Pumps have to be filled anytime hydraulic lines are removed from tractor.

NOTE: Drain transmission hydraulic oil when removing return lines from hitch valve, rear SCV, or mid-mount SCV.

4. Fill hydraulic pumps with oil. (See Remove and Install Hydraulic Pumps, in Section 70, Group 05.)

IMPORTANT: Replace all O-rings. Damaged or used O-rings will leak.

NOTE: Make sure lines do not touch other components and retaining clamps are properly installed.

5. Inspect hydraulic lines and hoses for wear or damage. Replace as necessary.

NOTE: When removing/installing hydraulic lines, always support line adapter and fittings with a back-up wrench to keep fittings stationary and prevent damage to line, valve and pump housings.

H—Dual Mid-Mount SCV I— Mid-Mount SCV Supply Line

J— Mid-Mount SCV Return-to-Main Filter Line

K—Mid-Mount SCV Power Beyond-to-Rear SCV Line L—Triple Deluxe Rear SCV M—Triple Mid-Mount SCV

6. Tighten line nuts to fittings within specification.

Specification

Line Nut-to-

- 7. Install all lines removed.
- 8. Install fender, if removed. (See Remove and Install Fenders—Cab or Remove and Install Fenders—Open Operator Station, in Section 80, Group 20.)
- 9. Install wheel if removed. Tighten wheel-to-axle cap screws to specification.

Specification

Rear Wheel-to-Axle Cap

- 10. Fill transmission/hydraulic oil to correct level.
- 11. Start engine. Run at idle speed for several minutes to fill brake valve with transmission/hydraulic oil.
- 12. Shut off engine. Bleed Brakes. (See Bleed Brakes, in Section 60, Group 10.)
- 13. Check and adjust transmission/hydraulic oil level.

SW03989,0002238 -19-27MAR13-4/4

Inspect and Replace Implement Pump Hydraulic Lines

A

CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available in English from Deere & Company Medical Department in Moline, Illinois, U.S.A., by calling 1-800-822-8262 or +1 309-748-5636.

IMPORTANT: When removing / installing hydraulic lines, always support line adapter and fittings with a backup wrench to keep fittings



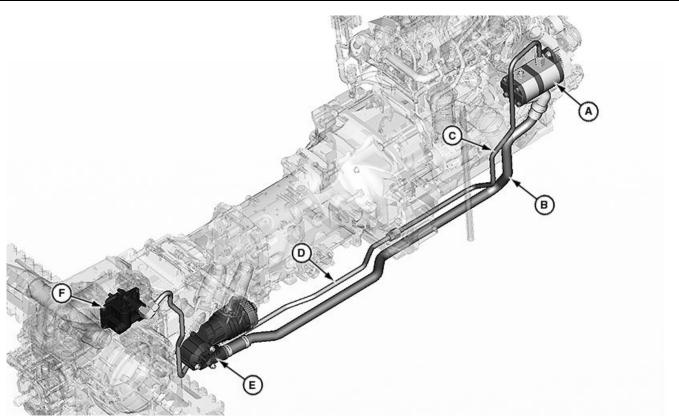
stationary and prevent damage to line, valve and pump housings.

NOTE: Close all openings using caps and plugs.
Identify hydraulic lines before disconnecting to
aid during installation. The hydraulic lines may
leak oil when disconnected. Collect leaking
oil and dispose of properly.

Continued on next page

SW03989,0002241 -19-27MAR13-1/2

X9811 —UN—23AUG88



Implement Pump Hydraulic Lines

A—Implement Pump

B—Supply Line
C—Pressure Supply Line (Front)

E—Main Hydraulic Filter

.

-Pressure Supply Line (Rear) F-Rockshaft Valve

1. Remove right rear wheel and fender.

IMPORTANT: Replace all O-rings. Damaged or used O-rings will leak.

NOTE: If replacement of lines or hoses is necessary, drain transmission/hydraulic oil.

2. Inspect hydraulic lines and hoses for wear or damage. Replace as necessary.

NOTE: When removing/installing hydraulic lines, always support line adapter and fittings with a back-up wrench to keep fittings stationary and prevent damage to line, valve and pump housings.

3. Tighten line nuts to fittings within specification.

Specification

Line Nut-to-

4. Install fender and wheel. Tighten wheel cap screws to specification.

Specification

Rear Wheel-to-Axle Cap

5. Check transmission/hydraulic oil level. Add correct oil as needed. (See Transmission and Hydraulic Oil in Section 10, Group 15.)

SW03989,0002241 -19-27MAR13-2/2

LV17174 —UN—26MAR13

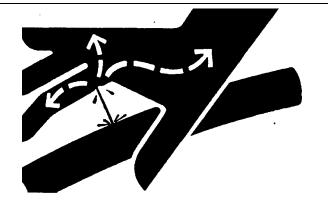
Inspect and Replace Steering Lines and Hoses

A

CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available in English from Deere & Company Medical Department in Moline, Illinois, U.S.A., by calling 1-800-822-8262 or +1 309-748-5636.

IMPORTANT: When removing / installing hydraulic lines, always support line adapter and fittings with a backup wrench to keep fittings



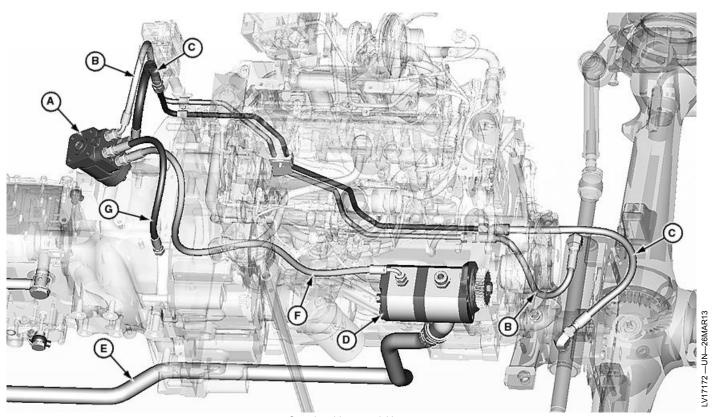
stationary and prevent damage to line, valve and pump housings.

NOTE: Close all openings using caps and plugs.
Identify hydraulic lines before disconnecting to
aid during installation. The hydraulic lines may
leak oil when disconnected. Collect leaking
oil and dispose of properly.

Continued on next page

SW03989,0002240 -19-27MAR13-1/2

X9811 —UN—23AUG88



Steering Lines and Hoses

A—Steering Valve

B—Left Turn Line and Hoses C—Right Turn Line and Hoses D—Steering Pump E—Supply Line

F—Steering Valve Supply Hose

1. Relieve system pressure.

IMPORTANT: Replace all O-rings. Damaged or used O-rings will leak.

NOTE: If replacement of lines or hoses is necessary, drain transmission/hydraulic oil.

2. Inspect hydraulic lines and hoses for wear or damage. Replace as necessary.

NOTE: When removing/installing hydraulic lines, always support line adapter and fittings with a back-up wrench to keep fittings stationary and prevent damage to line, valve and pump housings.

G—Steering Valve Return-to-Brake Reservoir Hose

3. Tighten line nuts to fittings within specification.

Specification

Line Nut-to-

Tighten hoses to fittings within specification.

Specification

Hose-to-Fitting—Torque.......42—48 N·m (31—35 lb.-ft.)

4. Check transmission/hydraulic oil level. Add correct oil as needed. (See Transmission and Hydraulic Oil in Section 10, Group 15.)

SW03989,0002240 -19-27MAR13-2/2

Inspect and Replace Hydraulic Trailer Brake (HTB) Valve Lines

CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available in English from Deere & Company Medical Department in Moline, Illinois, U.S.A., by calling 1-800-822-8262 or +1 309-748-5636.

IMPORTANT: When removing and installing hydraulic lines, always support line adapter and fittings with a back-up wrench to keep fittings stationary and prevent damage to line, valve, and pump housings.

NOTE: Close all openings using caps and plugs. Tag or label hydraulic lines before disconnecting to aid during installation.

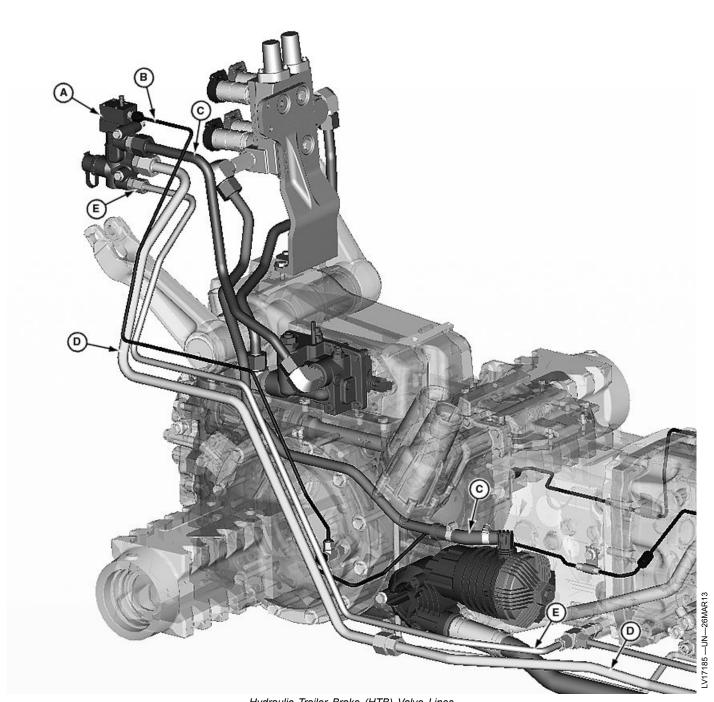


The hydraulic lines may leak when being disconnected. Catch leaking oil and dispose of properly.

- 1. Relieve pressure in hydraulic system.
- Remove right side rear wheel and fender as necessary. (See Remove and Install Fenders—Open Operator Station or Remove and Install Fenders—Cab in Section 80, Group 20.)

Continued on next page

SW03989,0002242 -19-04APR13-1/3



Hydraulic Trailer Brake (HTB) Valve Lines

A—Hydraulic Trailer Brake (HTB) C—Outlet Line-to-Rockshaft Valve

Valve

B—Service Brake Pilot Line

-Inlet Pressure-from-

Implement Pump Line

E-Return Line-to-Transmission

IMPORTANT: Replace all O-rings. Damaged or used O-rings may leak.

NOTE: Make sure lines do not touch other components and retaining clamps are properly installed.

> Always install HTB return line (E) on the bottom of HTB valve first.

3. Inspect hydraulic lines for wear or damage. Replace as necessary.

IMPORTANT: When removing / installing hydraulic lines, always support line adapter and fittings with a backup wrench to keep fittings stationary and prevent damage to line, valve and pump housings.

Continued on next page

Sump

SW03989,0002242 -19-04APR13-2/3

4. Connect hydraulic lines (E, D, C and B) sequentially. Tighten fittings to specification.

Specification

Return-to-Transmission	
Sump Line (E)	
Fitting—Torque	69 N·m (51 lbft.)
Inlet-from-Implement	
Pump Line (D)	
Fitting—Torque	102 N·m (75 lbft.)
Outlet-to-Rockshaft Valve	
Line (C) Fitting—Torque	69 N·m (51 lbft.)
Service Brake Pilot Line	
(B) Fitting—Torque	16 N·m (12 lbft.)

5. Install fender and wheel. Tighten wheel cap screws to specification. (See Remove and Install Fenders—Cab

or Remove and Install Fenders—Open Operator Station in Section 80, Group 20.)

Specification

- 6. Start engine. Run at idle speed for several minutes to fill brake valve with transmission hydraulic oil. Shut off engine and check for leaks.
- 7. Bleed brakes. (See Bleed Brakes in Section 60, Group 10.)
- 8. Check and adjust transmission/hydraulic oil level.

SW03989,0002242 -19-04APR13-3/3

Hydraulic Lines

Group 35 Hydraulic Trailer Brake Valve

Other Material

Number Name Use

PM1330902 (U.S.) 243 (LOCTITE™) Thread Locker Medium Strength Apply to threads of plug

Loctite is a trademark of Henkel Corporation

SW03989,000222F -19-18MAR13-1/1

Specifications		
Item	Measurement	Specification
Adapter (H)	Torque	25 N·m (18 lb-ft)
Adapter (I)	Torque	69 N·m (51 lb-ft)
Adapter (J)	Torque	69 N·m (51 lb-ft)
Adapter (K)	Torque	50 N·m (37 lb-ft)
HTB Valve Mounting Cap Screw	Torque	30 N⋅m (22 lb-ft)
HTB Valve Mounting Flanged Nut	Torque	30 N⋅m (22 lb-ft)
Return-to-Transmission Sump Line (E) Fitting	Torque	69 N·m (51 lb-ft)
Inlet-from-Implement Pump Line (D) Fitting	Torque	102 N·m (75 lb-ft)
Outlet-to-Rockshaft Valve Line (C) Fitting	Torque	69 N·m (51 lb-ft)
Service Brake Pilot Line (B) Fitting	Torque	16 N·m (12 lb-ft)
Plug (P) to Valve Body	Torque	9 N·m (7 lb-ft)
Plug (T) to Valve Body	Torque	40 N·m (30 lb-ft)
Coupler (X) to Valve Body	Torque	80 N·m (59 lb-ft)
Screws (A) to Valve Body	Torque	15 N⋅m (11 lb-ft)
Bleed Screw (B) to Pilot Block	Torque	7 N·m (5 lb-ft)
		SW03989,0002230 -19-20MAR13-1/1

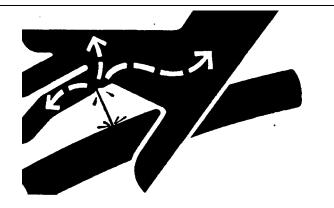
Remove, Inspect and Install Hydraulic Trailer Brake (HTB) Valve

A

CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high-pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available in English from Deere & Company Medical Department in Moline, Illinois, U.S.A., by calling 1-800-822-8262 or +1 309-748-5636.

IMPORTANT: When removing and installing hydraulic lines, always support line adapter and fittings with a back-up wrench to keep fittings stationary and prevent damage to line, valve and pump housings.



NOTE: Close all openings using caps and plugs. Tag or label hydraulic lines before disconnecting to aid during installation.

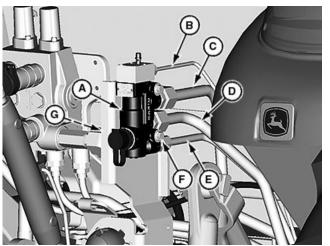
The hydraulic lines may leak when being disconnected. Catch leaking oil and dispose of properly.

1. Relieve hydraulic pressure in steering/brake system.

Continued on next page

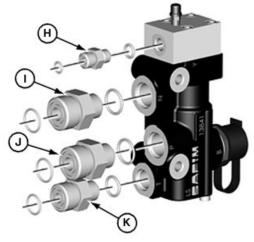
SW03989,0002231 -19-04APR13-1/2

X9811 —UN—23AUG88



HTB Valve

-UN-22MAR13



HTB Valve Adaters

A-Hydraulic Trailer Brake (HTB) D-Inlet-from-Implement Pump Valve

B—Service Brake Pilot Line -Outlet-to-Rockshaft Valve Line

Line

E—Return-to-Transmission Sump Line

F-Cap Screw (2 used)

2. Disconnect hydraulic lines (B, C, D and E) at HTB valve. Close all openings using caps and plugs.

- 3. Remove HTB valve (A).
- 4. Remove adapters (H— K) and all O-rings.
- 5. Inspect parts for wear and damage. Replace as necessary.
- 6. Inspect HTB valve for damage. Inspect holes under fittings for debris or wear. Repair or replace as necessary. (See Disassemble, Inspect and Assemble Hydraulic Trailer Brake (HTB) Valve, in this group.)

IMPORTANT: Replace O-rings. Damaged or used O-rings will leak.

7. Install adapters (H— K). Tighten to specification.

Specification

Adapter (H)—Torque	25	N·m (18	lb-ft)
Adapter (I)—Torque	69	N·m (51	lb-ft)
Adapter (J)—Torque	69	N·m (51	lb-ft)
Adapter (K)—Torque	50	N·m (37	lb-ft)

8. Install HTB valve (A) using cap screws (F) and flanged nuts (G).

Specification

HTB Valve Mounting Cap G—Flange Nut (2 used) H-ORFS 04xM12 Adapter

I— ORFS 12xM22 Adapter

J-ORFS 12xM22 Adapter

K-ORFS 08xM18 Adapter

LV17147 —UN—22MAR13

HTB Valve Mounting

NOTE: Always install return line (E; at the bottom of HTB valve) on HTB valve first.

9. Connect hydraulic lines (E, D, C and B) sequentially. Tighten fittings to specification.

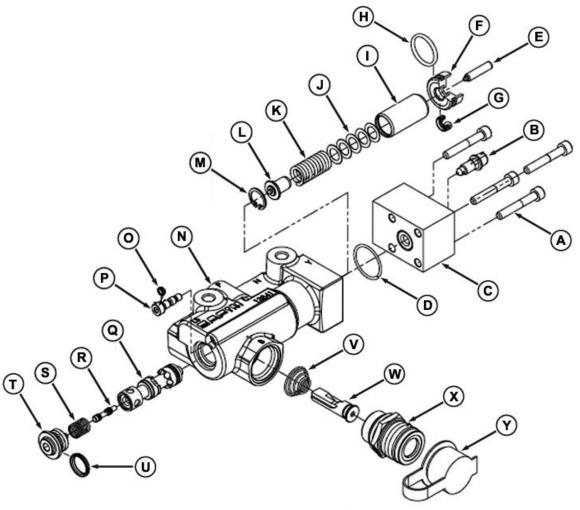
Specification

Return-to-Transmission Sump Line (E) Inlet-from-Implement Pump Line (D) Outlet-to-Rockshaft Valve Line (C) Fitting—Torque...... 69 N·m (51 lb-ft) Service Brake Pilot Line

- 10. Start engine. Run at idle speed for several minutes to fill brake valve with transmission/hydraulic oil. Shut off engine.
- 11. Bleed brakes. (See Bleed Brakes in Section 60, Group 10.)

SW03989,0002231 -19-04APR13-2/2

Disassemble, Inspect and Assemble Hydraulic Trailer Brake (HTB) Valve



HTR Valve - Evoloded View

	HIB Valve - Exploded View		
A—Screw B—Bleed Screw C—Pilot Block D—O-Ring E—Pin F—Pilot Piston	H—O-Ring I— Auxiliary Piston J— Shim K—Auxiliary Spring L—Poppet M—Snap Ring	N—HTB Valve Body O—Seal P—Plug Q—Priority Spool R—Reaction Piston S—Spring	T—Plug U—Seal V—Spring W—Plunger X—Coupler Y—Dust Cap
G—Seal			

1. Thoroughly clean and dry outside of valve.

IMPORTANT: Separate valve sections carefully. Do not allow parts to fall out. Keep individual valve components together as matched sets.

NOTE: Mark or number valve components to aid during assembly.

- 2. Remove pilot head assembly parts (A—C).
- 3. Take out parts (D—M) from valve body (N).
- 4. Remove parts (O—U) from valve body (N).
- 5. Remove coupler assembly parts (V—Y).

IMPORTANT: Replace all seals and O-rings. Damaged or used seals and O-rings will leak.

NOTE: Lubricate all internal parts with clean transmission/hydraulic oil during assembly.

Apply multipurpose grease to lips of seals.

- 6. Inspect all parts for wear or damage. Replace as necessary.
- 7. Apply medium strength Loctite 243 to plug (P).
- 8. Assemble all valve components with new seals and O-rings, aligning all marks made during disassembly.

Continued on next page

SW03989,0002233 -19-18MAR13-1/2

PUPX001407 —UN-03JUN09

Hydraulic Trailer Brake Valve

9. Tighten parts (A, B, P, T and X) to specifications. Specification	Coupler (X) to Valve Body—Torque
Plug (P) to Valve	Body—Torque15 N·m (11 lb-ft)
Body—Torque 9 N·m (7 lb-ft)	Bleed Screw (B) to Pilot
Plug (T) to Valve	Block—Torque 7 N·m (5 lb-ft)
Body—Torque	
	SW03989,0002233 -19-18MAR13-2/

Hydraulic Trailer Brake Valve

70-35-6

Section 80 Miscellaneous Repair

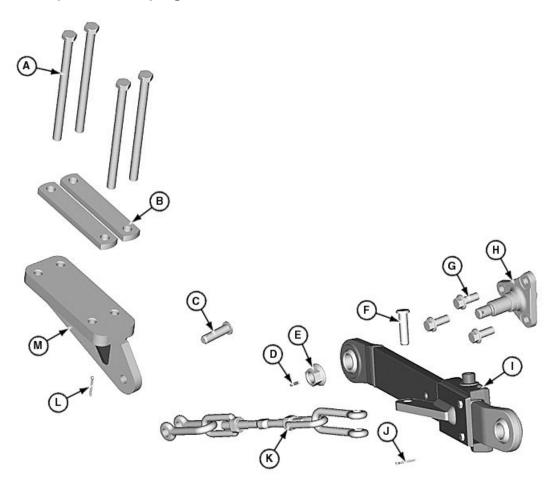
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Contents

Specifications		
Item	Measurement	Specification
Draft Link Support Cap Screw	Torque	200 N·m (148 lbft.)
Stabilizer Bracket Cap Screw—Cab	Torque	350 N·m (258 lbft.)
Stabilizer Bracket Cap Screw—OOS	Torque	1150 N·m (850 lbft.)
Hammerstrap Nut	Torque	128—382 N·m (94—282 lbft.)
Hitch Guide Rail Mounting Screw	Torque	320 N·m (236 lbft.)
Standard Drawbar Support Rear Cap Screw	Torque	275—375 N·m (75—114 lbft.)
Standard Drawbar Support Bottom Cap Screw	Torque	275—375 N·m (203—277 lbft.)
Standard Drawbar Support Side Cap Screw	Torque	200—240 N·m (148—177 lbft.)
Weldment Drawbar Support Cap Screw	Torque	256—384 N·m (188—283 lbft.)
Drawbar Swing Nut	Torque	102—154 N·m (75—114 lbft.)
Shield Nut	Torque	15—45 N·m (11—33 lbft.)
Hitch Guide Rail Mounting Screw	Torque	320 N·m (236 lb-ft)
Trailer Hitch Pin—Vertical	Play (maximum)	6 mm (0.24 in.)
Trailer Hitch Pin Wear Limit	Diameter (minimum)	29.0 mm (1.14 in.)
Top and Bottom Receiver Holes Wear Limit (measured in direction of travel)	Diameter (maximum)	35.0 mm (1.38 in.)
Trailer Hitch and Receiver	Play (maximum)	3.0 mm (0.12 in.)
Trailer Hitch Guide Rails Width	Wear (maximum)	1.2 mm (0.05 in.)
Trailer Hitch Guide	Wear (maximum)	0.8 mm (0.03 in.)
Guide Component Push/Pull Directional	Play (maximum)	2.4 mm (0.09 in.)
Drawbar Pin	Diameter (minimum)	29.5 mm (1.16 in.)
Drawbar Receiver Pin Hole	Diameter (maximum)	35.0 mm (1.38 in.)
		SW03989,0001D2B -19-17SEP13-1/1

Inspect and Repair Telescoping Draft Links



LV15789 —UN—22MAY12

Left Side Shown

Α-	-Cap Screw (4 used)
B-	-Plate (2 used)
^	Dim

E—Flanged Nut F—Pin

-Cap Screw (3 used) D—Spring Pin

H—Support

NOTE: Item B is used on Cab only.

- 1. Inspect draft link assembly for wear or damage. Replace as necessary.
- 2. Tighten draft link support cap screws (G) to specification.

Specification

Draft Link Support Cap

J— Cotter Pin K—Sway Chain L—Cotter Pin

I— Draft Link

3. Tighten stabilizer bracket cap screws (A) to specification.

Specification

Stabilizer Bracket Cap	
Screw-Cab-Torque	350 N·m (258 lbft.)
Stabilizer Bracket	
Cap Screw-Open	
Station—Torque	1150 N·m (850 lbft.)

M-Stabilizer Bracket

OUO1023,0003695 -19-27MAR13-1/1

Inspect and Repair Standard Lift Link

- 1. Remove plugs (I).
- 2. Thread lift link end (D) in until spring pin (E) is centered with plug holes.
- 3. Remove spring pin using a punch and hammer.
- 4. Thread lift link end out.
- 5. Inspect all parts for wear or damage. Replace as necessary.
- 6. Assemble all parts.
- 7. Lubricate lift link assembly at lubrication fittings (G) using multipurpose grease.

A—Quick-Lock Pin (2 used) B—Pin

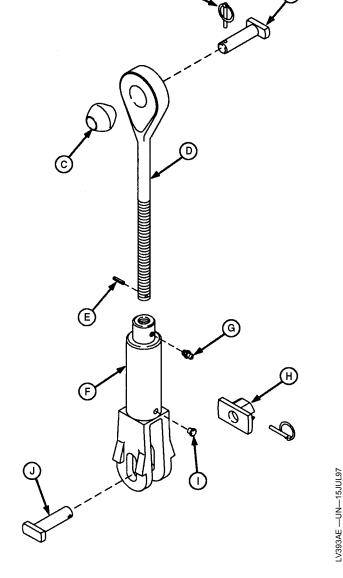
F-Lift Link Body

C—Ball

G—Lubrication Fitting H-Retainer

D-Lift Link End E—Spring Pin

I- Plug (2 used) J— Pin`



OUO1023,0003696 -19-27MAR13-1/1

Inspect and Repair Adjustable Lift Link

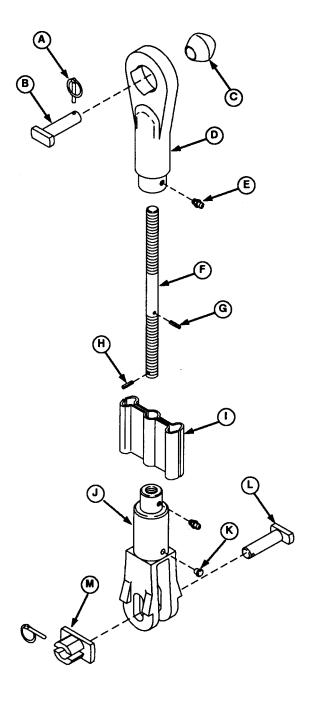
- 1. Remove plugs (K).
- 2. Thread lift link body (J) in until spring pin (H) is centered with plug holes.
- 3. Remove spring pin using a punch and hammer.
- 4. Disassemble all parts.
- 5. Inspect all parts for wear or damage. Replace as necessary.

NOTE: Install handle (I) with notches toward lift link body (J).

- 6. Assemble all parts.
- 7. Lubricate lift link assembly at lubrication fittings (E) using multipurpose grease.

A—Quick-Lock Pin (2 used)
B—Pin
C—Ball
D—Lift Link End
E—Lubrication Fitting (2 used)
F—Link Rod
G—Spring Pin

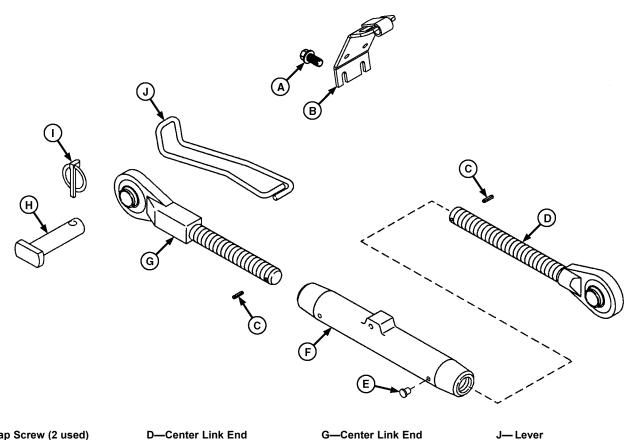
H—Spring Pin
I— Handle
J—Lift Link Body
K—Plug (2 used)
L—Pin
M—Retainer



OUO1023,0003697 -19-27MAR13-1/1

LV489AE —UN—26FEB92

Inspect and Repair Center Link



A—Cap Screw (2 used)
B—Bracket
C—Spring Pin (2 used)

D—Center Link End E—Plug (4 used) F—Center Link Body

NOTE: Bracket (B) is mounted to draft-sensing assembly. Loosen cap screws (A) to remove bracket.

- 1. Remove plugs (E).
- 2. Thread center link ends (D and G) in until spring pins (C) are centered with plug holes.
- 3. Remove spring pins using a punch and hammer.

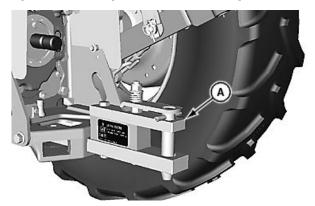
H—Pin I— Quick-Lock Pin

- 4. Disassemble all parts.
- 5. Inspect all parts for wear or damage. Replace as necessary.
- 6. Apply multipurpose grease to ID at both ends of center link body (F).
- 7. Assemble all parts.

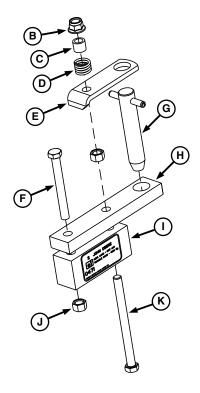
OUO1023,0003698 -19-27MAR13-1/1

LV9858 —UN—30JUL04

Inspect and Repair Hammerstrap Drawbar



.V19118 —UN—19SEP13



LV19119 —UN—19SEP13

A—Hammerstrap Drawbar

B—Flange Nut (M16)

C—Spacer

D—Spring

E—Retainer

F-Cap Screw (M16 x 140)

G—Pin K—Cap Screw (M16 x 200)

H—Drawbar I— Spacer

J-Nut (M16) (2 used)

- 1. Remove flange nut (B), spacer (C), spring (D), and retainer (E).
- 2. Remove pin (G).
- 3. Remove nuts (J) and cap screws (F and K). Remove drawbar (H) and spacer (I) from hitch drawbar.
- 4. Inspect all parts for wear or damage. Replace as necessary.
- 5. Position spacer (I) and drawbar (H) on hitch drawbar.

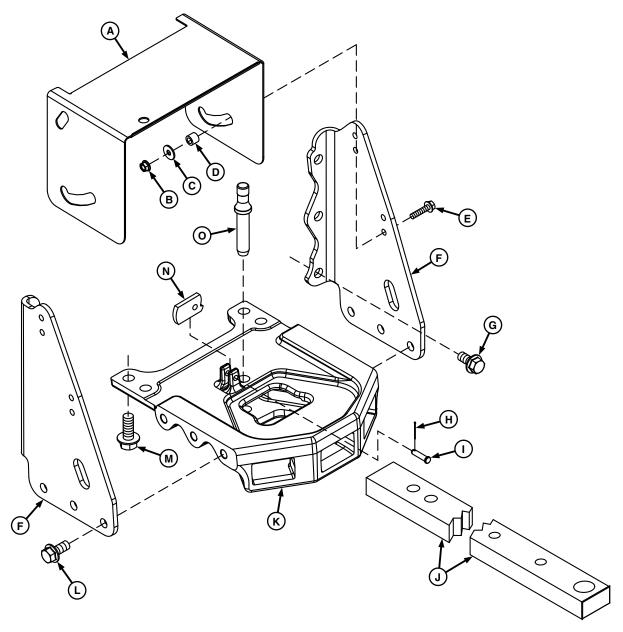
6. Install cap screws (F and K) using nuts (J). Tighten nuts to specification.

Specification

- 7. Install pin (G).
- 8. Install retainer (E), spring (D), spacer (C), and flange nut (B). Tighten flange nut until spring is engaged.

SW03989,0001D2C -19-17SEP13-1/1

Remove and Install Standard Drawbar and Support



Standard Drawbar and Support

I- Pin

A-Shield B-Nut (4 used) C—Washer (4 used) F—Side Plate (2 used) G—Cap Screw (M16 x 25) (6 used) J— Drawbar H—Cotter Pin

K—Support

N-Latch O—Pin

D—Bushing (4 used)

E—Cap Screw (4 used)

L-Cap Screw (M14 x 30) (6 used) M—Cap Screw (M16 x 40) (4 used)

- 1. Remove parts (A—E).
- 2. Lift latch (N) and pull pin (O) upward.
- 3. Remove drawbar (J).

NOTE: Use a floor jack under support (K) to support weight during removal.

- 4. Install floor jack under support (K) and remove cap screws (G and M) to remove support assembly.
- 5. Remove cap screws (L) to remove side plates (F).
- 6. Inspect all parts for wear or damage. Replace if necessary.

Continued on next page

SW03989,0001D27 -19-17SEP13-1/2

-V9859 —UN—02AUG04

7. Install support (K) and side plates (F) using cap screws (L, G, and M). Tighten to specification.

Specification

Standard Drawbar	
Support Rear Cap	
Screw—Torque	275—375 N·m (75—114 lbft.)
Standard Drawbar	
Support Bottom Cap	
Screw—Torque	275—375 N·m (203—277 lbft.)
Standard Drawbar	
Support Side Cap	
Screw—Torque	200—240 N·m (148—177 lbft.)

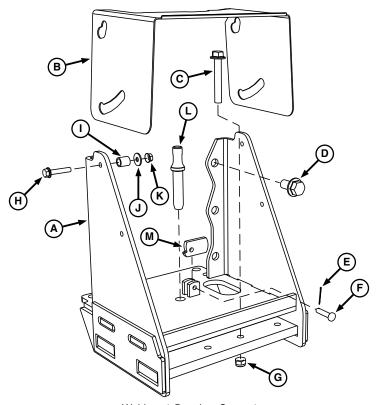
8. Install shield (A) using cap screws (E), bushings (D), washers (C), and nuts (B). Tighten nuts to specification.

Specification

9. Install latch (N) using pin (I) and cotter pin (H). Lift latch (N) and insert pin (I) into drawbar.

SW03989,0001D27 -19-17SEP13-2/2

Remove and Install Weldment Drawbar Support



Weldment Drawbar Support

A—Weldment Drawbar Support D—Cap Screw (M16 x 30) (10 B—Shield used)
C—Cap Screw (M12 x 80) (2 used) E—Cotter Pin F—Pin

used) I— Bushing (4 used) L—Pin
E—Cotter Pin J— Washer (4 used) M—Latch
F—Pin
G—Lock Nut (M12) (2 used)

- 1. Remove cap screws (H), bushings (I), washers (J), nuts (K), and shield (B).
- 2. Lift latch (M) and pull pin (L) upward to remove drawbar.
- 3. Remove cotter pin (E), pin (F), and latch (M).
- 4. Remove drawbar swing cap screws (C) and nuts (G).

NOTE: Use a floor jack under weldment drawbar support (A) to support weight during removal.

- 5. Install floor jack under weldment drawbar support (A) and remove cap screws (D).
- Inspect all parts for wear or damage. Replace if necessary.
- 7. Install weldment drawbar support (A) using cap screws (D). Tighten cap screws to specification.

Specification

Weldment Drawbar Support Cap

H—Cap Screw (M8 x 40) (4 used)

Screw—Torque......256—384 N·m (188—283 lb.-ft.)

K-Nut (M8) (4 used)

8. Install nuts (G) and cap screws (C). Tighten drawbar swing nuts to specification.

Specification

Drawbar Swing

9. Install shield (B) using cap screws (H), bushings (I), washers (J), and nuts (K). Tighten nuts to specification.

Specification

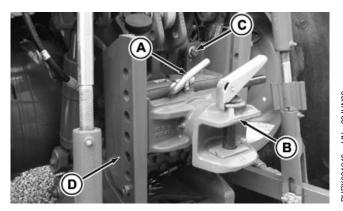
Shield Nut—Torque...... 15—45 N·m (11—33 lb.-ft.)

10. Install latch (M) using pin (F) and cotter pin (E). Lift latch (M) and insert pin (L) into drawbar.

SW03989,0001D29 -19-17SEP13-1/1

LV19120 —UN—19SEP13

Remove and Install Trailer Hitch



Trailer Hitch-Manual

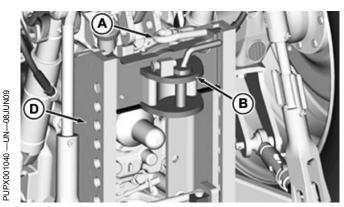
- 1. Lift trailer hitch (B) with handle (A). Slide out from guide rails (D).
- 2. Support hitch guide rail (D) and remove screws (C).
- 3. Remove hitch guide rail (D).
- 4. Check parts for wear and damage. Repair or replace as necessary. (See Checking the Manually Operated Hitch for Wear, in this Group.)
- 5. Install hitch guide rail (D). Tighten screws (C) to specification.

Specification

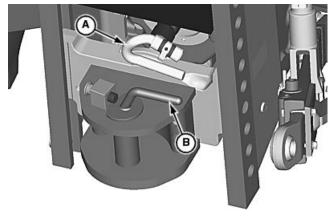
Hitch Guide Rail Mounting

6. Install trailer hitch (B) into hitch guide rail at suitable height.

A—Handle B—Trailer Hitch C—Cap Screw (6 used)
D—Guide Rail



Trailer Hitch-CUNA-C



Trailer Hitch-CUNA-D2

SW03989,0001D2A -19-17SEP13-1/1

UPX001408 —UN—08JUN09

LV18869 —UN—27AUG13

Checking the Manually Operated Trailer Hitch for Wear

IMPORTANT: Parts that have reached or exceeded their wear limit must be replaced with new parts.

Check permissible vertical play of the trailer hitch pin.

Specification

Trailer Hitch

Pin—Vertical—Play

A—Trailer Hitch Pin Latch B—Vertical Play

SW03989,00016D8 -19-25SEP12-1/4

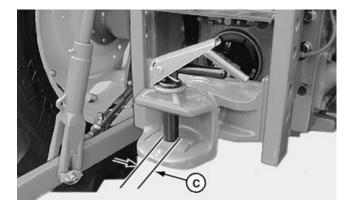
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Check wear of the trailer hitch pin diameter (C).

Specification

Trailer Hitch Pin Wear Limit—Diameter

C—Trailer Hitch Pin Diameter



SW03989,00016D8 -19-25SEP12-2/4

LV16087 —UN—21SEP12

Check wear of the receiver hole diameter (D).

Specification

Top and Bottom Receiver Holes Wear Limit (measured in direction of travel)—Diameter

D—Trailer Hitch Pin Receiver Hole Diameter



LV16088 —UN—21SEP12

Continued on next page

SW03989,00016D8 -19-25SEP12-3/4

Determine play (E) between trailer hitch and receiver.

Specification

Trailer Hitch and Receiver—Play

Determine trailer hitch guide rails width wear (F), trailer hitch guide wear (H), and guide component push/pull directional play (G).

Specification

Trailer Hitch Guide Rails Width—Wear

Trailer Hitch Guide—Wear

Guide Component

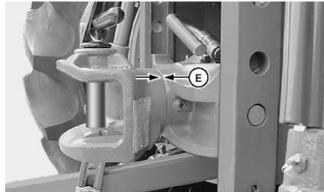
Push/Pull

Directional—Play

E—Trailer Hitch and Receiver

F—Trailer Hitch Guide Rails Width Wear G—Guide Component Push/Pull Directional Play

H—Trailer Hitch Guide Wear



LV16090 —UN—21SEP12

LV16089 —UN—21SEP12

SW03989,00016D8 -19-25SEP12-4/4

Checking the Drawbar for Wear

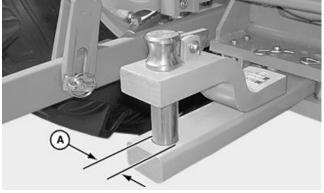
IMPORTANT: Parts that have reached or exceeded their wear limit must be replaced with new parts.

Check diameter (A) of drawbar pin.

Specification

Drawbar Pin—Diameter (minimum).......29.5 mm (1.16 in.)

A—Diameter of Pin



LV16099 —UN—21SEP12

Continued on next page

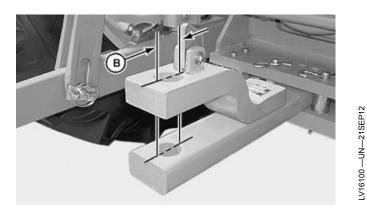
SW03989,00016DB -19-25SEP12-1/2

Check diameters (B) of both top and bottom drawbar receiver pin holes. Measure receiver holes in direction of travel.

Specification

Drawbar Receiver Pin Hole—Diameter

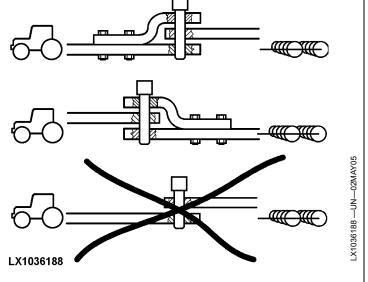
B—Diameter of Receiver Pin Hole (2 used)



SW03989,00016DB -19-25SEP12-2/2

Proper Use of Drawbar

IMPORTANT: Comply with local traffic regulations when using the drawbar. Use suitable, approved hitch pins only. Combine drawbars as shown only.



3-Point Hitch

Group 20 Fenders

Other Material

Number Name Use

PM37521 (U.S.) Silicone Sealer Used to seal gaps between fender and cab frame mating surfaces.

Continued on next page

OUO1023,000369A -19-20DEC12-1/1

Specifications

Item Measurement Specification

Rear Wheel-to-Axle Cap Screw M20 Torque 600 N·m (442 lb-ft)

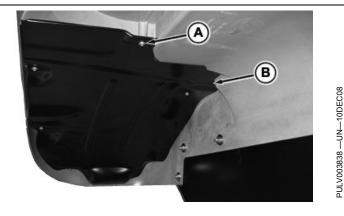
OUO1023,000369B -19-20DEC12-1/1

Remove and Install Fenders—Cab

1. Remove rear wheels.

- 2. Remove upholstery on both sides. (See Remove and Install Left-Side Upholstery and see Remove and Install Right-Side Upholstery, in Section 90, Group 20.)
- 3. Remove screws (A) and inner fender cover (B). Retain for reuse.

A—Screw B—Inner Fender Cover



OUO1023,000369D -19-27MAR13-1/3

NOTE: Slow moving vehicle sign, license plate (if equipped), bracket, and tail light assembly need to be removed only if replacing fender.

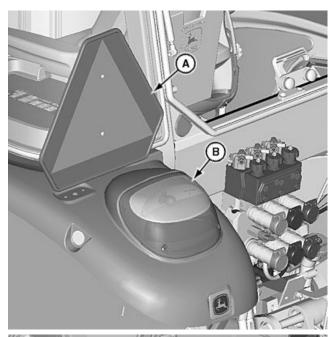
- 4. Remove tail light assembly (B).
- 5. Remove slow moving vehicle sign (A).
- 6. Route tail light wiring harness away from fender.
- 7. Remove cap screws, nuts, and washers (E).
- 8. Remove cap screws and washers (C).
- 9. Remove fender (D) from tractor.
- Remove sealant from fender and cab frame mating surfaces.
- 11. Check all parts for wear or damage. Replace parts as necessary.
- 12. Install fender with Silicone Sealer PM37521, on tractor using cap screws and washers (C).
- 13. Install cap screws, nuts, and washers (E).
- 14. Route tail light wiring harness through hole in fender.
- 15. Install tail light assembly (B).
- 16. Install slow moving vehicle sign (A).

A—Slow Moving Vehicle Sign B—Tail Light Assembly

D—Fender

C—Cap Screw and Washer (7 used)

E—Cap Screw, Nut, and Washer (6 used)



D E

LV17010 -- UN-13MAR13

LV17009 —UN—13MAR13

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OUO1023,000369D -19-27MAR13-2/3

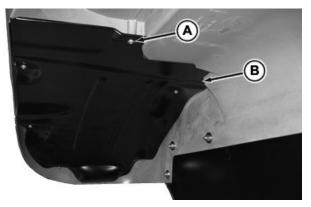
- 17. Install inner fender cover (B) and screws (A).
- Install upholstery on both sides. (See Remove and Install Left-Side Upholstery and see Remove and Install Right-Side Upholstery, in Section 90, Group 20.)
- Install rear wheels. Tighten wheel cap screws to specification.

Specification

Rear Wheel-to-Axle Cap

A-Screw

B—Inner Fender Cover



OUO1023.000369D -19-27MAR13-3/3

PULV003838 —UN—10DEC08

Remove and Install Fenders—Open Operator Station

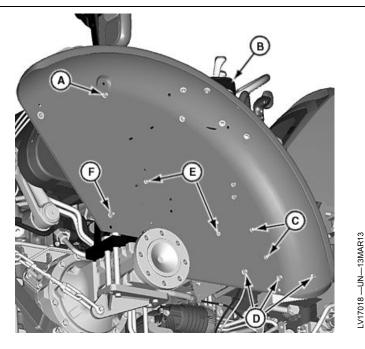
Right-Side Fender

- Remove right-side control console. (See Remove and Install Right-Side Control Console—Open Operator Station, in Section 90, Group 10.)
- 2. Remove right rear wheel.
- 3. Remove hardware (A—F).

NOTE: Disconnect right-side control console harness prior to fender removal.

- 4. Remove right-side fender. Make repairs as necessary.
- 5. Install fender in reverse order of removal.
- 6. Install rear wheel. Tighten wheel cap screws to specification.

Specification



A—Nut

Continued on next page

B—Right-Side Control Console

C—Cap Screw (2 used)

D—Cap Screw and Nut (3 used)
E—Cap Screw and Washer (2

used) F—Cap Screw and Nut

OUO1023,000369E -19-27MAR13-1/2

Fenders

Left-Side Fender

- 1. Remove leftt-side control console. (See Remove and Install Leftt-Side Control Console—Open Operator Station, in Section 90, Group 10.)
- 2. Remove left rear wheel.
- 3. Remove hardware (A—G).

NOTE: Disconnect fuel level sender harness prior to fender removal.

- 4. Remove left-side fender. Make repairs as necessary.
- 5. Install fender in reverse order of removal.
- 6. Install rear wheel. Tighten wheel cap screws to specification.

Specification

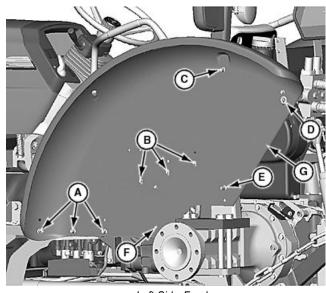
Rear Wheel-to-Axle Cap

A—Cap Screw and Nut (3 used) E—Cap Screw and Nut F—Cap Screw

C—Cap Screw

D—Cap Screw and Nut

G-Left-Side Fender



Left-Side Fender

OUO1023,000369E -19-27MAR13-2/2

LV15791 —UN—22MAY12

PULV005043 —UN—11FEB10

PULV005044 —UN—11FEB10

Remove and Install Hood

- 1. Disconnect head lamp wiring harness connector.
- 2. Remove screw (B) and hood cable (A).

A CAUTION: Support hood before removing struts or hinge cap screws.

IMPORTANT: Do not completely remove hood strut clip; damage may occur.

- 3. Slightly dislodge and lift clips (C) with a small screwdriver to release struts from both ball studs.
- 4. Remove cap screws (D).

NOTE: Do not completely remove cap screw (E). They aid in positioning the hood during reinstallation.

- 5. Loosen cap screws (E) and remove hood.
- 6. Make repairs as necessary.
- 7. Install hood and cap screws (D and E).

Specification

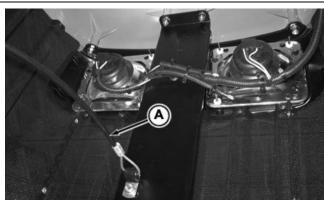
Hood Cap Screws—Torque...... 60 N·m (44 lb.-ft.)

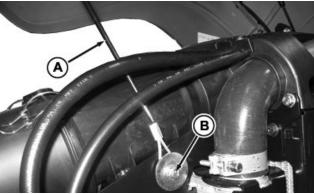
- 8. Slightly dislodge and lift clips (C) with a small screwdriver and push clips into position to retain struts on both ball studs.
- 9. Connect head lamp wiring harness connector.
- 10. Install hood cable (A) and tighten screw (B).

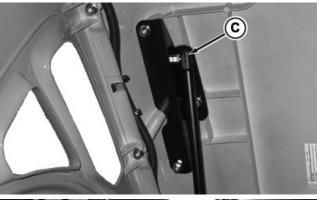
 A—Cable
 D—Cap Screws

 B—Screw
 E—Cap Screws

 C—Clip
 C—Cap Screws









PULV005046 —UN—11FEB10

PULV005045 —UN—11FEB10

OUO1023,000369F -19-14MAR13-1/1

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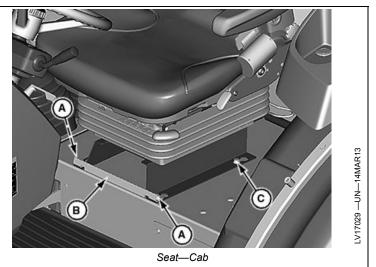
Contents

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Remove and Install Seat and Support—Cab

- 1. Disconnect harness connector behind the seat.
- 2. Remove front cap screws (A) and bracket (B).
- 3. Loosen rear cap screws (C).
- 4. Slide seat forward and remove.
- 5. Install seat in reverse order of removal.

A—Front Cap Screw (2 used) C—Rear Cap Screw (2 used) B—Bracket



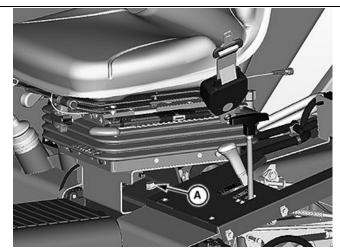
SW03989,0001759 -19-27MAR13-1/1

Remove and Install Seat and Support—Open Operator Station

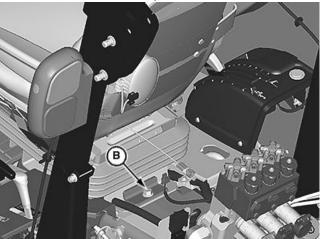
- 1. Disconnect harness connector behind the seat.
- 2. Remove front cap screw (A).
- 3. Remove rear cap screw (B) and seat assembly.
- 4. Install seat in reverse order of removal.

A—Front Cap Screw

B—Rear Cap Screw



Front Cap Screw-OOS



Rear Cap Screw-OOS

SW03989,000175A -19-27MAR13-1/1

LV17030 —UN—14MAR13

Seat and Support

90-05-2

Specifications

Item Measurement Specification

Roll-Gard™—Cap Screw Torque 500 N·m (369 lb.-ft.)

SW03989,000175C -19-27MAR13-1/1

Remove and Install Roll-Gard

NOTE: Rear wheel is removed only for illustration purposes.

 Remove fenders. (See Remove and Install Fenders—Open Operator Station in Section 80, Group 20.)

CAUTION: Approximate weight of Roll-Gard™ crossbar is 20 kg (45 lb.).

- 2. Attach a suitable lifting device to crossbar (C).
- 3. Remove locking pin (A).
- 4. Remove snap ring (D).

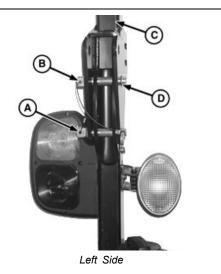
NOTE: Pivot pin (B) is press fit in outside flange of post.

5. Remove pivot pin (B) using a brass drift and hammer.

6. Repeat steps 3—5 for opposite side of Roll-Gard™.

7. Remove crossbar (C).

Roll-Gard is a trademark of Deere & Company



A—Locking Pin B—Pivot Pin C—Crossbar D—Snap Ring

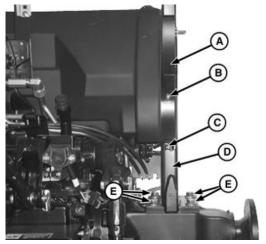
SW03989,000175B -19-27MAR13-1/3

LV9887 —UN—05AUG04

- 8. Remove screw (B) and nut (C) to loosen fuel tank retaining strap (A).
- 9. Disconnect light harness at bottom of post (D).
- 10. Remove four cap screws (E) and remove post (D).
- 11. Repeat steps above to remove left-side post.
- NOTE: Remove lights if Roll-Gard™ repair or replacement is necessary.
- 12. Inspect all parts for damage. Replace as necessary.
- 13. Install post (D) and cap screws (E). Tighten cap screws to specification.

Specification

- Install fuel tank retaining strap and secure with screw
 and nut (C).
- 15. Repeat steps 12 and 13 to install left-side post.
- Install fenders. (See Remove and Install Fenders—Open Operator Station in Section 80, Group 20.)



Fuel Tank Strap and Roll-Gard™ Post

A—Fuel Tank Retaining Strap B—Screw

C—Nut

D—Post

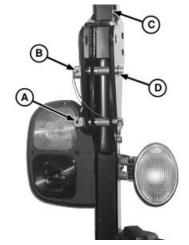
E—Cap Screw (4 used)

SW03989,000175B -19-27MAR13-2/3

LV9888 —UN—05AUG04

- 17. Install crossbar (C).
- 18. Install parts (A, B, and D).

A—Locking Pin B—Pivot Pin C—Crossbar D—Snap Ring



Left Side

SW03989,000175B -19-27MAR13-3/3

LV9887 —UN—05AUG04

Group 10 Control Console and Panel

Specifications

Item Measurement Specification

Screws on Central Panel, Top Panel, Torque 4 N·m (3 lb-ft)

Hand Throttle Assembly

OUO1023,00036E1 -19-20DEC12-1/1

LV17039 —UN—14MAR13

_V17040 —UN—14MAR13

Remove and Install Right-Side Control Console—Cab

- 1. Disconnect negative (—) battery cable first and then positive (+) battery cable.
- 2. Remove cap screws (A).
- 3. Remove position control lever stop and panel (D).

NOTE: Panel (D) is snap fit with tabs into top panel (C).

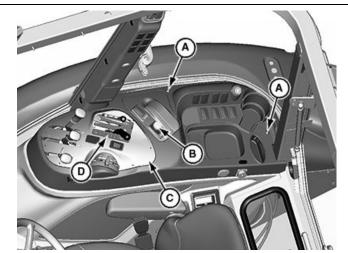
4. Remove top panel (C).

NOTE: Top panel (C) is snap fit with tabs into bottom panel/console.

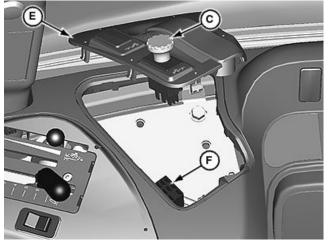
5. Remove panel (E) and disconnect connector (F).

A—Cap Screw B—PTO Switch C—Top Panel D—Mechanical Hitch Control Panel E—PTO Control Panel

—PTO Control Panel
—PTO Switch Harness
Connector



Mechanical Hitch Control



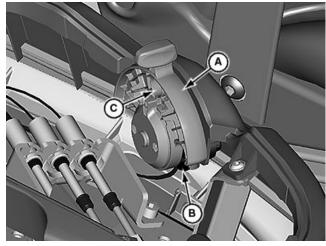
PTO Switch

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OUO1023,000398A -19-03SEP13-1/3

- 6. Disconnect hand throttle harness connector (B).
- 7. Remove cap screws (C) and hand throttle assembly (A).

A—Hand Throttle Assembly B—Hand Throttle Harness Connector C—Cap Screw (3 used)



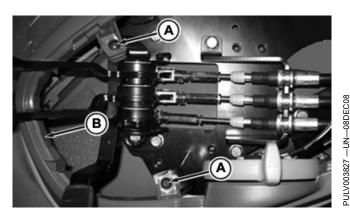
Throttle Control

OUO1023,000398A -19-03SEP13-2/3

LV17037 —UN—14MAR13

-UN-14MAR13

_V17038



Right Console



Convenience and Power Outlet

A—Cap Screw (2 used)

B—Right Console C—Convenience Outlet

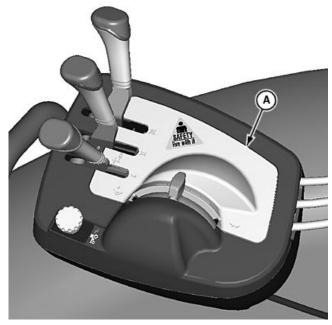
- 8. Remove cap screws (A).
- 9. Raise back of right console (B) and pivot end around cab post. Lift front of console over levers.
- 10. Disconnect 3-terminal convenience outlet (C) and power outlet (D) connectors.
- 11. Disconnect rear wiper switch harness, if equipped.
- 12. Remove right console.

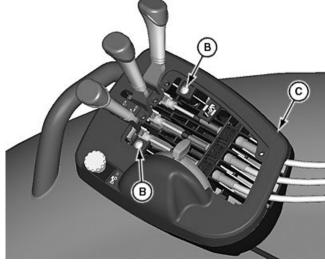
D—Power Outlet

- 13. Repair or replace parts as necessary.
- 14. Install right console in reverse order of removal.
- Adjust SCV cables if necessary. (See Rear SCV Control Cable Adjustment in Section 70, Group 20.)
- 16. Connect positive (+) battery cable first and then negative (—) battery cable.

OUO1023,000398A -19-03SEP13-3/3

Remove and Install Right-Side Control Console—Open Operator Station





Console Cover

Top Panel

A—Top Panel

B-Screw (2 used)

1. Remove top panel (A).

NOTE: Top panel (A) is snap fit with tabs.

2. Remove screws (B) and lift console cover (C).

C—Console Cover

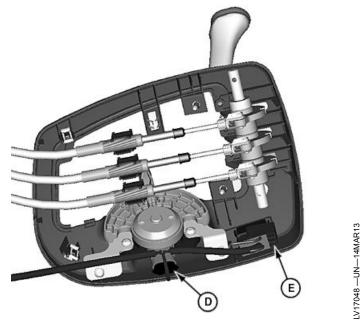
NOTE: Console cover (C) is snap fit with tabs.

SW03989,000175E -19-27MAR13-1/3

LV17047 —UN—14MAR13

3. Disconnect harness from electronic hand throttle (D) and PTO switch (E). Remove console cover from base.

D—Electronic Hand Throttle E—PTO Switch



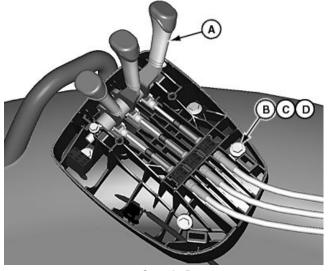
Bottom View of Console Cover

Continued on next page

SW03989,000175E -19-27MAR13-2/3

- Remove SCV lever assembly (A) from console base. (See Inspect and Repair SCV Levers and Linkage—OOS in Section 70, Group 20.)
- 5. Remove cap screws (B), washers (C), and nuts (D).
- 6. Remove console base from fender.
- 7. Make repairs as necessary.
- 8. Install assembly in reverse order of removal.

A—SCV Lever Assembly B—Cap Screw (4 used) C—Washer (4 used) D—Nut (4 used)



Console Base

SW03989,000175E -19-27MAR13-3/3

LV17049 —UN—14MAR13

PULV003951 -- UN--05JAN09

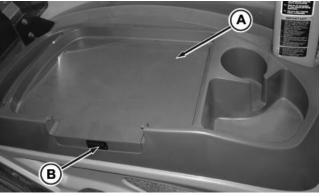
PULV003957 —UN—06JAN09

Remove and Install Left-Side Control Console—Cab

- 1. Remove cover (A) by pressing latch (B).
- 2. Remove cap screws (C and D).
- 3. Raise and remove console (E).
- 4. Inspect for damage. Replace if necessary.
- 5. Install cap screws (C and D).
- 6. Install cover (A).

A—Cover B—Latch D—Cap Screw (3 used) E—Console

C—Cap Screw



Console Cover



Left-Side Console

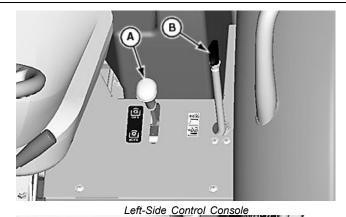
SW03989,000175F -19-27MAR13-1/1

Remove and Install Left-Side Control Console—Open Operator Station

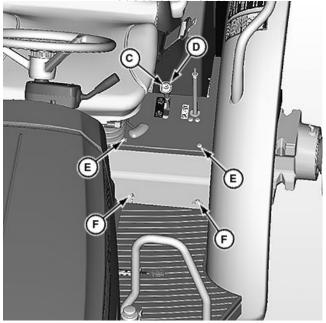
- 1. Remove cap (A) and knob (B).
- 2. Remove nut (C), knob (D), screws (E), and wing screws (F).

A—Cap D—Knob

B—Knob E—Screw (2 used)
C—Nut F—Wing Screw (2 used)



LV15772 —UN—18MAY12



LV17058 —UN—15MAR13

Left-Side Control Console Hardware

Continued on next page

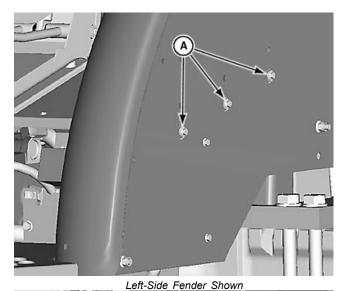
SW03989,0001760 -19-27MAR13-1/3

NOTE: Left-side wheel removed for clarity of illustration only.

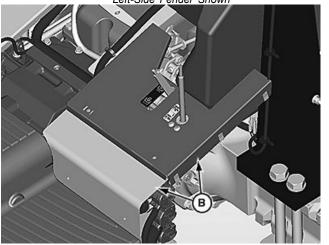
- 3. Remove cap screws (A) from left-side fender.
- 4. Remove seat. (See Remove and Install Seat and Support—Open Operator Station in Section 90, Group 05.)
- 5. Remove left-side control console (B). Make repairs as necessary.
- 6. Install left-side control console (B) and cap screws (A).
- 7. Install seat. (See Remove and Install Seat and Support—Open Operator Station in Section 90, Group 05.)

A—Cap Screw (3 used)

B—Left-Side Control Console



LV15774 —UN—18MAY12



LV17193 —UN—21MAR13

Left-Side Control Console

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SW03989,0001760 -19-27MAR13-2/3

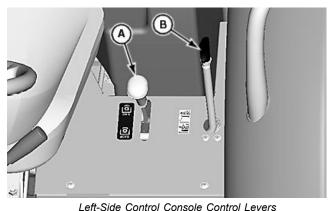
8. Install wing screws (F), screws (E), knob (D), and nut

9. Install knob (B) and cap (A).

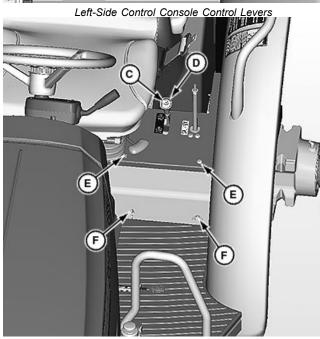
A—Cap B—Knob C—Nut

D—Knob

E—Screw (2 used) F—Wing Screw (2 used)



LV15772 —UN—18MAY12



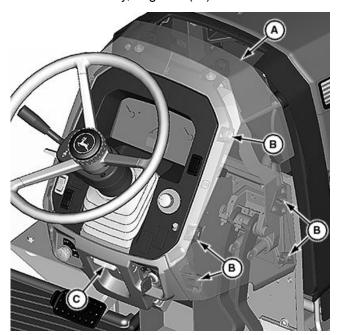
LV17058 —UN—15MAR13

Left-Side Control Console Hardware

SW03989,0001760 -19-27MAR13-3/3

Remove and Install Center Control Console

1. Disconnect battery, negative (—) cable first.

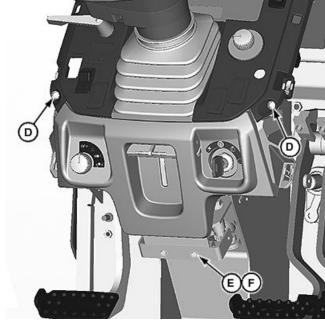


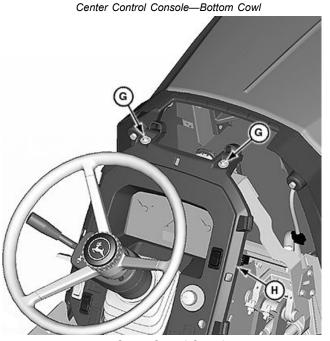
Center Control Console—Top Cowl

2. Remove top cowl (A). Pull on areas where snap fit tabs (B) are located.

NOTE: Guide pins are molded into the top of the cowl.

- 3. Remove knob (C).
- 4. Remove screws (D).
- 5. Remove cap screws (E) and nuts (F).
- 6. Disconnect harness from light and starting switches.
- 7. Rotate bottom cowl up and away from center control console (H).
- 8. Remove cap screws (G).
- 9. Disconnect harness from center control console (H) and remove.
- 10. Make repairs as necessary.
- 11. Install center control console in reverse order of removal.
 - A—Top Cowl
 - B—Snap Fit Tab (10 used)
 - C—Knob
 - D-Screw (2 used)
- E—Cap Screw (2 used)
- F-Nut (2 used)
- G—Cap Screw (2 used)
- **H—Center Control Console**





Center Control Console

SW03989,0001761 -19-27MAR13-1/1

-UN-15MAR13 _V17065

LV17066 —UN—15MAR13

Group 20 Cab Components

Essential Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC).

SERVICEGARD is a trademark of Deere & Company

OUO1023,00036E8 -19-26MAR13-1/2

Cab Lifting Bar......JDG1580

Used to remove and install cab.

OUO1023,00036E8 -19-26MAR13-2/2

Service Equipment and Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD $^{\text{TM}}$ Catalog or from the

SERVICEGARD is a trademark of Deere & Company

European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

OUO1023.00036E9 -19-20DEC12-1/2

Weather Strip Installation Tool.........................JDST-29

Used to install rear lower window seal.

OUO1023,00036E9 -19-20DEC12-2/2

Other Material

Number Name Use

TY22101 (U.S.) PAG Refrigeration Oil Apply to O-ring of A/C lines.

PM38654 (U.S.) Thread Lock and Sealer (High TY9474 (Canadian) Strength) Apply to threads of SCV cable before tightening retaining nut

Loctite is a trademark of Henkel Corporation

OUO1023,00036EA -19-20MAR13-1/1

Cab Components

Specifications		
Item	Measurement	Specification
Cab Door Hinge Mounting Flange Nut	Torque	28 N·m (20 lb-ft)
Inner Cab Roof Mounting Cap Screw	Torque	12 N·m (106 lb-in)
Front Cab Mount Nut	Torque	350 N·m (258 lb-ft)
Rear Cab Mount Cap Screw	Torque	220 N·m (185 lb-ft)
SCV Cable Nut	Torque	16—19 N·m (12—14 lb-ft)
SCV Cable Sleeve	Torque	25 N·m (18 lb-ft)
Cab A/C Lines	Torque	45 N·m (33 lb-ft)
Brake Line Fitting	Torque	16 N·m (12 lb-ft)
Steering Hydraulic Line Nut	Torque	50 N·m (38 lb-ft)
Step Mounting Cap Screw	Torque	60 N·m (44 lb-ft)
Mounting Bracket and Park Position Indicator Cap Screws	Torque	10 ± 2 N·m (7 ± 1.4 lb-ft)
Cooling System—3.0L Engine	Capacity	10 L (2.6 gal.)
Cooling System—4.5L Engine	Capacity	11.4 L (3 gal.)
		OUO1023,00036EB -19-26MAR13-1/1

Remove, Inspect, and Install Cab Interior Recirculating Air Filters

- 1. Remove dome light assembly (A) and courtesy light assembly (B).
- 2. Remove wing nut (D) and filter retainer (E).
- 3. Remove filter (C) and inspect for wear and damage. Replace filter as necessary.
- 4. Install filter (C).
- 5. Install filter retainer (E) and wing nut (D).
- 6. Install dome light assembly (A) and courtesy light assembly (B).

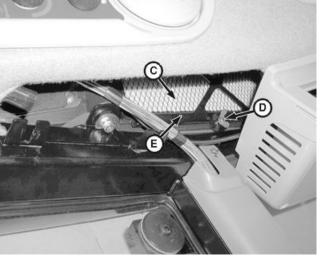
A—Dome Light Assembly D—Wing Nut
B—Courtesy Light Assembly E—Filter Retainer
C—Filter



Dome Light Assembly (Left Side)



Courtesy Light Assembly (Right Side)



Removing Filter

OUO1023,00036EC -19-26MAR13-1/1

LV6815 — UN-12JUL01

LV6812 —UN—03MAY01

LV6813 —UN-03MAY01

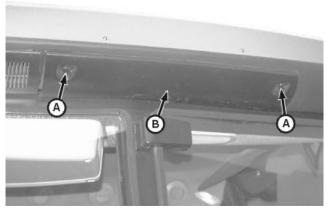
Remove, Inspect, and Install Exterior Cab Intake Air Filter

- 1. Loosen wing screws (A) and remove air filter panel (B).
- 2. Loosen wing screws (C). Remove air filter bracket (D) and exterior air filter (E).
- 3. Inspect exterior air filter (E) and replace if necessary.

NOTE: Install exterior air filter with rubber seal toward air filter bracket.

- 4. Install exterior air filter (E) retaining with air filter bracket (D) on cab. Tighten wing screws (C) securely.
- 5. Install air filter panel (B) on cab and tighten wing screws (A).
- 6. Repeat steps for the exterior air filter on opposite side of cab, if equipped.

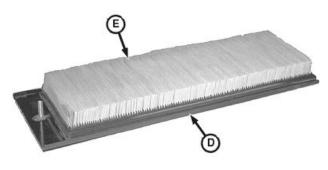
A—Wing Screw (2 used) B—Air Filter Panel C—Wing Screw (2 used) D—Air Filter Bracket E—Exterior Air Filter



Right-Side Air Filter Panel



Exterior Air Filter Bracket



Exterior Air Filter

SW03989,0001762 -19-27MAR13-1/1

LV12137 —UN—25JAN05

LV6859 —UN-25SEP01

LV6858 —UN—25SEP01

Remove and Install Headliner

- 1. Remove radio and panel from tractor, if equipped.
- 2. Remove sun visor with mounting bracket and mirror with mounting bracket.
- 3. Remove dome light assembly (A) by pulling down on outer part of assembly and disconnecting dome light connector.
- 4. Remove console light assembly (B).
- 5. Pull vent covers and retaining rings (C and E) from cab control console (D).
- 6. Remove mounting screws located behind vent covers and pull cab control console from headliner. Do not remove cab control console from tractor.
- 7. Starting at right front corner of headliner and work to the left, pull headliner in and downward from cab roof.
- 8. Repair or replace headliner as necessary.
- 9. Install headliner, beginning at right rear corner.
- 10. Install cab control console (D) using mounting screws.
- 11. Insert vent covers and retaining rings (C and E).
- 12. Connect console light electrical connector to console light assembly (B).
- 13. Connect dome light electrical connector and install dome light assembly (A).
- 14. Install sun visor, mirror, and radio panel with radio, if equipped.

A—Dome Light Assembly **B—Console Light Assembly** C-Vent Cover and Retaining Ring

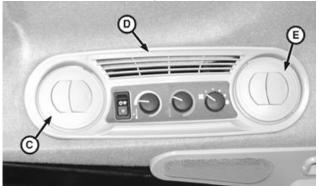
D—Cab Control Console E-Vent Cover and Retaining Ring



Dome Light Assembly



Console Light Assembly



Cab Control Console

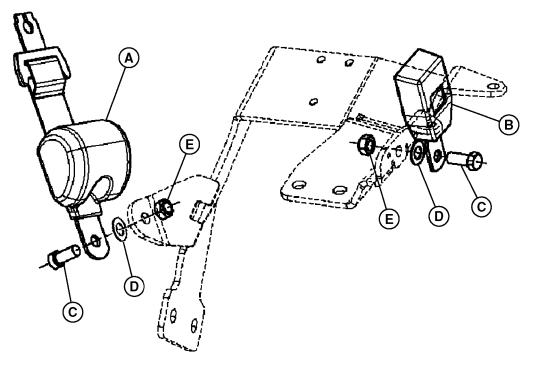
SW03989,0001763 -19-27MAR13-1/1

-V6812 —UN—03MAY01

-V6813 —UN—03MAY01

LV6814 —UN—04JUN01

Remove and Install Instructional Seat



LV12725

Instructional Seat Seat Belt

A—Seat Belt B—Seat Belt Buckle C—Cap Screw D—Washer

E-Lock Nut

NOTE: If repair to seat belt is not required, it is not necessary to remove it from the seat frame.

1. Remove the seat belt (A) and seat belt buckle (B).

2. Remove cap screws from left-side console. (See Remove and Install Left-Side Upholstery in this group.)

SW03989,0001764 -19-27MAR13-1/4

LV12725 —UN—22JUN05

IMPORTANT: Do not completely remove cylinder spring clip. Damage may occur.

- 3. Slightly dislodge and lift spring clip (D) with a small screwdriver to release cylinder (C) from ball stud (A). For alternate method, turn the ball stud hex with a wrench. This allows the cylinder to remain attached.
- IMPORTANT: To avoid damage to door, and to aid during installation of kit parts, hold cab door open using rope. Do not place blocks at hinge points.
- 4. Remove ball stud (A) from cab frame.
- 5. Remove cap screw and washer (B).

A—Ball Stud C—Door Cylinder B—Cap Screw and Washer D—Spring Clip

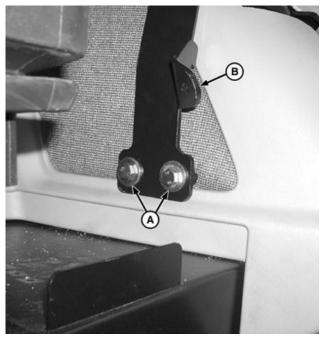
Seat Frame To Cab Frame - Upper

Continued on next page

SW03989,0001764 -19-27MAR13-2/4

LV12718 —UN—15JUN05

- 6. Remove cap screws and washers (A) from seat bracket (B).
 - A—Cap Screw and Washer (2 B—Seat Bracket used)



Seat Frame to Cab Frame—Lower

SW03989,0001764 -19-27MAR13-3/4

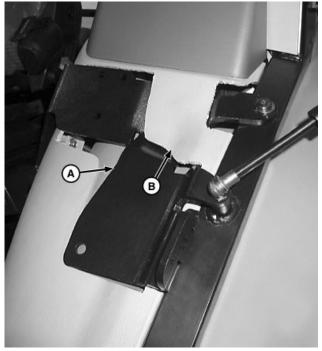
LV13361 —UN—09SEP08

NOTE: Seat is removed from bracket to clearly show how seat bracket is routed under upholstery panel.

- 7. Remove seat and bracket (A) from under upholstery panel (B).
- 8. Make repairs as needed.
- 9. Install seat and bracket under upholstery panel.
- 10. Install lower cap screws and washers.
- 11. Install upper cap screw and washer.
- 12. Install ball stud in cab frame.
- 13. Attach door cylinder as required.
- 14. Install seat belt, if removed.
- 15. Ensure all hardware is securely tightened.

A-Seat Bracket

B—Upholstery Panel



Seat Bracket

SW03989,0001764 -19-27MAR13-4/4

LV13498 —UN—15SEP08

Remove and Install Left-Side Upholstery

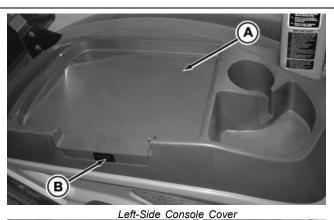
- 1. Remove cover (A) by pressing latch (B).
- 2. If equipped, disconnect Service ADVISOR™ connector (E).
- 3. Remove cap screws (C and D).
- 4. Raise and remove console (F).
- 5. Slide back the front edge to allow upholstery (G) to slide out.
- 6. Inspect for damage. Replace if necessary.

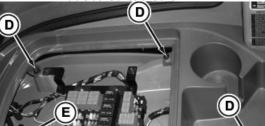
NOTE: While installing upholstery, make use of weld stud at rear on cab floor for positioning.

- 7. Install upholstery (G) and console (F).
- 8. Connect Service ADVISOR™ Connector (E).
- 9. Install cap screws (C and D).
- 10. Install cover (A).

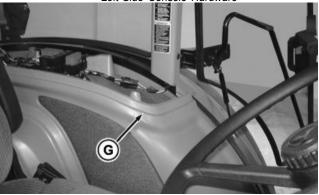
A—Cover B—Latch C—Cap Screw D—Cap Screw (3 used) E—Service ADVISOR™ Connector

F—Console G—Upholstery





Left-Side Console Hardware



Left-Side Upholstery

Service ADVISOR is a trademark of Deere & Company

SW03989,0001765 -19-27MAR13-1/1

PULV003952 —UN-05JAN09

PULV003951 —UN—05JAN09

PULV003953 -- UN-05JAN09

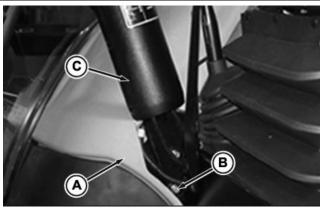
Remove and Install Right-Side Upholstery

- Remove right-side control console. (See Remove and Install Right-Side Control Console—Cab in this section, Group 10.)
- 2. If equipped, loosen cap screws (B) and slide joystick assembly (C) away from upholstery (A).
- 3. Pull upholstery (A) toward seat slowly until it releases from weld studs on cab frame.
- 4. Lift upholstery (A) up and remove.
- 5. Inspect for damage. Replace as necessary.

NOTE: While installing upholstery, make use of weld stud at rear on cab floor for positioning.

- 6. Install upholstery (A).
- 7. Position joystick assembly (C) and tighten cap screws (B).
- 8. Install right-side control console. (See Remove and Install Right-Side Control Console—Cab in this group.)

A—Upholstery B—Joystick Bracket Cap Screw (3 used) C-Joystick Assembly



Joystick



Upholstery

SW03989,0001766 -19-27MAR13-1/1

PULV003955 —UN—05JAN09

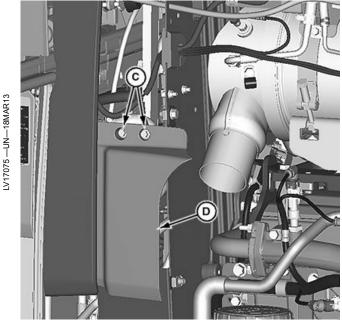
PULV003954 —UN-05JAN09

Remove and Install Windshield

IMPORTANT: A minimum of two personnel will be required to remove, position, and install the windshield.



Work Light



LV17076 —UN—18MAR13

Side Panel

A-Work Light (2 used)

B—Cap Screw (4 used)

1. Remove work lights (A), if equipped.

C—Cap Screw (2 used)

D-Right Side Panel

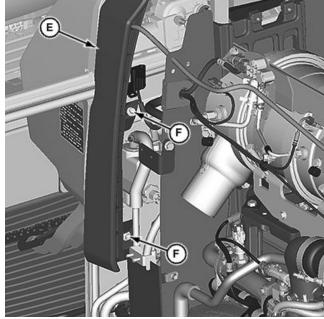
2. Raise hood. Remove cap screws (C) and right side panel (D).

SW03989,0001767 -19-27MAR13-1/3

3. Remove cap screws (F) from both sides of windshield cowl (E).

E—Windshield Cowl

F-Cap Screw (4 used)



Windshield Cowl

Continued on next page

SW03989,0001767 -19-27MAR13-2/3

- 4. Remove nut (H) and wiper arm assembly.
- 5. Remove nut (G) from wiper motor assembly.

IMPORTANT: Support windshield when removing and loosening mounting brackets or plates to prevent damage.

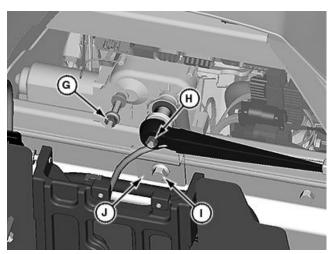
- 6. Remove windshield.
 - a. Loosen cap screw (I) from retaining bracket (J).
 - b. Loosen cap screws (L) from retaining plates (K).
 - c. Remove cap screws (B) and retaining brackets (J).
 - d. Rotate retaining plates (K).
- 7. Repair or replace as necessary.

NOTE: Make sure window seal completely contacts cab frame to prevent leakage.

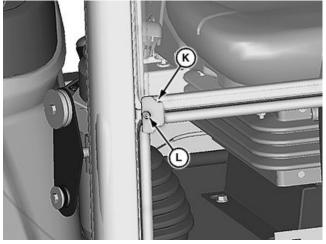
8. Install windshield in reverse order of removal.

G—Nut H—Nut I— Cap Screw (1 used) J—Retaining Bracket (2 used) K—Retaining Plate (2 used)

L—Cap Screw (2 used)



Wiper Hardware



Retaining Plate

SW03989,0001767 -19-27MAR13-3/3

LV17079 —UN—18MAR13

LV17078 —UN—18MAR13

Remove and Install Front Lower Windows

NOTE: Observe position and location of mounting hardware and rubber grommets during removal.

- 1. Remove cap screws (A and B).
- 2. Remove cap screw (C).

CAUTION: Avoid injury from falling or broken glass. Prevent window from falling. Support window while removing cap screws.

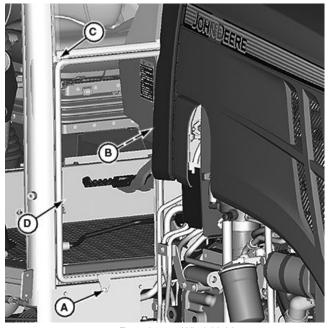
- 3. Remove window (D).
- Repeat steps 1—3 for opposite side of cab, if necessary.

NOTE: Make sure window seal completely contacts cab frame to prevent leakage.

5. Install window (D) and screws (A—C). Tighten all mounting hardware securely.

A—Cap Screw
B—Cap Screw

C—Cap Screw D—Window



Front Lower Windshield

SW03989,0001768 -19-27MAR13-1/1

-V17084 -- UN-18MAR13

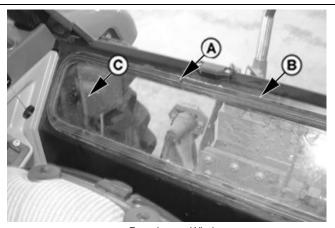
Remove and Install Rear Lower Window

- 1. Remove window seal insert (A) from window seal (B).
- 2. Remove rear lower window (C) into cab.
- Inspect window seal for wear or damage. Replace if necessary.

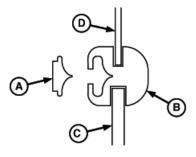
NOTE: Liquid soap may be used to aid installation of seal and window.

- 4. Install window seal (B) around window frame (D).
- 5. Insert rear lower window (C) into window seal (B).
- 6. Install window seal insert (A) into window seal (B) using JDST29 weather strip installation tool.

A—Window Seal Insert B—Window Seal C—Rear Lower Window D—Window Frame



Rear Lower Window



Window Seal

SW03989,000176A -19-28MAR13-1/1

PULV002146 —UN—27MAY08

Remove and Install Rear Upper Window

1. Release window hand latch.

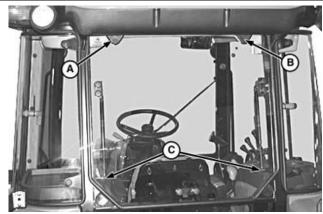
IMPORTANT: Do not completely remove cylinder spring clip. Damage may occur.

2. Slightly dislodge and lift spring clip (C) with a small screwdriver to release cylinder from ball stud.

IMPORTANT: Support rear upper window to prevent it from falling when remaining hardware is removed.

NOTE: Observe position and location of mounting hardware and rubber grommets during removal.

- 3. While supporting rear window, remove screws (A and B). Remove rear window assembly.
- 4. Position window assembly against frame and install screws (A and B). Tighten mounting hardware securely.
- 5. Slightly dislodge and lift spring clip (C) with a small screwdriver and push clip into position to retain cylinder on ball stud.



Rear Upper Window

A—Screw B—Screw C—Cylinder Spring Clip

SW03989,000176B -19-28MAR13-1/1

Remove and Install Side Windows

1. Remove latch pin and retaining clip (A).

NOTE: Observe position and location of mounting hardware and rubber grommets during removal.

2. Remove lower mounting hardware (C).

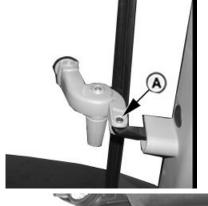
IMPORTANT: Support side window to prevent it from falling when remaining hardware is removed.

- 3. Remove upper mounting hardware (B) and remove window.
- 4. Repeat steps 1—3 for opposite side of cab, if necessary.
- 5. Install window and mounting hardware (B and C). Tighten all mounting hardware securely.
- 6. Install window with latch pin and retaining clip (A). Tighten all mounting hardware securely.

A—Latch Pin and Retaining
Clin

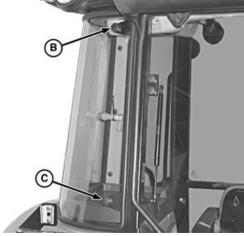
C—Lower Mounting Hardware

B—Upper Mounting Hardware



PULV002215 -- UN-18JUN08

PULV002140 —UN—27MAY08



LV12190 —UN—04FEB05

SW03989,000176C -19-28MAR13-1/1

Remove and Install Cab Doors

NOTE: Left door is shown; right door is similar (if equipped).

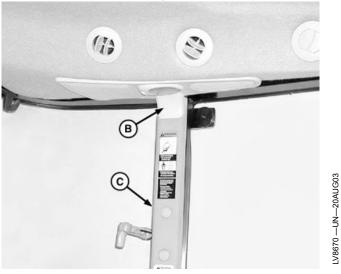
IMPORTANT: Do not completely remove cylinder spring clip. Damage may occur.

- 1. Slightly dislodge and lift spring clip (A) with a small screwdriver to release cylinder from ball stud.
- 2. Remove dome light assembly (B) and center cab support panel (C).

A—Spring Clip B—Dome Light Assembly C—Center Cab Support Panel



Door Cylinder



Dome Light Assembly

Continued on next page

SW03989,000176D -19-28MAR13-1/3

CAUTION: Avoid injury from falling or broken door window. Support door while removing hinges.

- 3. Attach a suitable hoist to cab door. Weight of door is approximately 23 kg (51 lb).
- 4. Remove flange nuts from lower door hinge (B) first, then remove flange nuts from upper door hinge (A).
- 5. Repair or replace cab door as necessary.
- 6. Install cab door using flange nuts on upper door hinge (A) and lower door hinge (B). Tighten flange nuts to specification.

Specification

Cab Door Hinge Mounting

7. Gently close cab door. Verify smooth operation of door hinges and latch. Check alignment of door latch and seal. Adjust hinges and latch striker if necessary.

A-Upper Door Hinge

B—Lower Door Hinge



Door Hinges

Continued on next page

SW03989,000176D -19-28MAR13-2/3

LV8671 —UN—20AUG03

- 8. Install center cab support panel (C) and dome light assembly (B).
- 9. Slightly dislodge and lift spring clip (A) with a small screwdriver and push clip into position to retain cylinder on ball stud.

A—Spring Clip B—Dome Light Assembly

C—Center Cab Support Panel





Door Cylinder

SW03989,000176D -19-28MAR13-3/3

LV8670 —UN—20AUG03

Remove and Install Inner Roof for Air Conditioning Housing Repair

A

CAUTION: Explosive release of fluids from pressurized cooling system can cause serious burns.

Shut off engine. Remove filler cap only when cool enough to touch with bare hands. Slowly loosen cap to relieve pressure before removing completely.

Always pay close attention to battery terminals.

If the air conditioning sub-assemblies are not handled correctly, leaks will result. If leaks occur, pressurized refrigerant will escape, possibly leading to severe personal injury. Always wear appropriate safety gear when working on the air conditioning system.

1. Disconnect the negative (—) battery terminal.



Pressurized fluid safety

- Recover/recycle air conditioning refrigerant. (See Recover/Recycle Air Conditioning Refrigerant in Section 90, Group 30.)
- 3. Drain coolant. (See Drain Coolant in Section 20, Group 10.)

SW03989,000176E -19-28MAR13-1/12

FS281 -- UN-15APR13

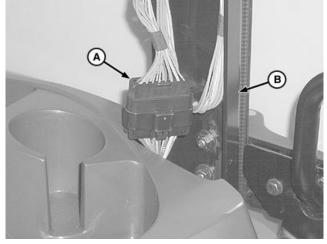
LV8673 —UN—25AUG03

- 4. Remove windshield. (See Remove and Install Windshield in this group.)
- 5. Remove cab headliner. (See Remove and Install Headliner in this group.)
- 6. Remove panel from left center support (B).
- 7. Disconnect cab roof harness connector (A).
- 8. Disconnect left door switch harness connector (D) and remove cap screw (C).
 - A—Cab Roof Harness Connector B—Left Center Support

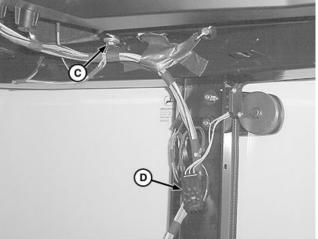
C-Cap Screw

D—Door Switch Harness

Connector



Cab Roof Harness Connector



Door Switch Harness Connector

Continued on next page

SW03989,000176E -19-28MAR13-2/12

LV8674 —UN—25AUG03

IMPORTANT: It is essential to label the heater hoses before disconnecting.

NOTE: Close all openings using caps and plugs to prevent system contamination.

9. Disconnect heater supply hose (A) and return hose (B).

A-Supply Hose

B—Return Hose



Heater Supply and Return Hoses

SW03989,000176E -19-28MAR13-3/12

-V17100 -- UN-21MAR13

PULV002143 —UN—27MAY08

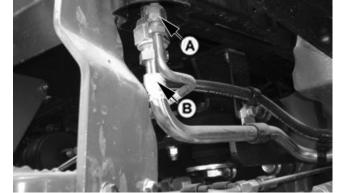
IMPORTANT: When removing air conditioning lines, always support line adapter and fittings with a backup wrench to keep fittings stationary and prevent damage to line.

Seal the air conditioning system disconnection points with caps and plugs immediately to prevent air contamination.

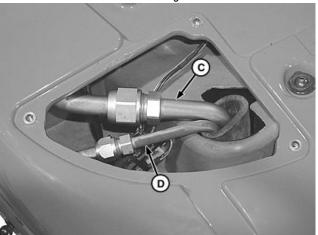
- Recover/recycle air conditioning refrigerant. (See Recover/Recycle Air Conditioning Refrigerant in Section 90, Group 30.)
- Disconnect air conditioning supply line (A) and air conditioning return line (B). Close openings using caps or plugs to prevent contamination.
- 12. Disconnect air conditioning lines (C and D) at right front corner of cab roof and remove both lines from tractor. Close openings using caps or plugs to prevent contamination.

A—Air Conditioning Supply Line

B—Air Conditioning Return Line C—Air Conditioning Line D—Air Conditioning Line



Air Conditioning Lines



Air Conditioning Lines

Continued on next page

SW03989,000176E -19-28MAR13-4/12

-V8678 —UN—25AUG03

TM128319 (28OCT13)

13. Remove right and left drain lines (A) from rear of cab roof.

A—Drain Line (2 used)



Cab Outer Roof Drain Line

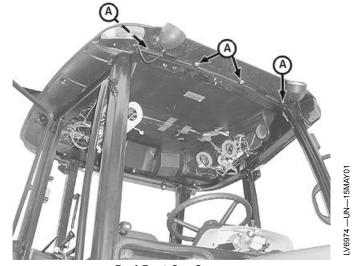
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SW03989,000176E -19-28MAR13-5/12

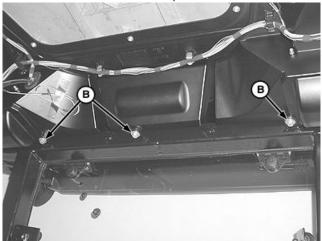
- 14. Remove front cap screws (A).
- 15. Remove rear cap screws (B).
- 16. Remove right-side ground wires (C).
- 17. Remove cap screws (D) from both sides of cab.

A—Front Cap Screw (4 used) C-B—Rear Cap Screw (3 used) D-

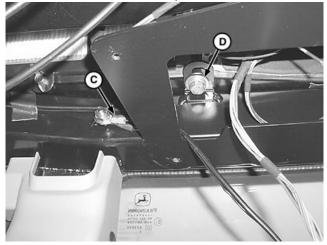
C—Ground Wires D—Cap Screw (2 used)



Roof Front Cap Screws



Roof Rear Cap Screws



Roof Right-Side Ground Wires

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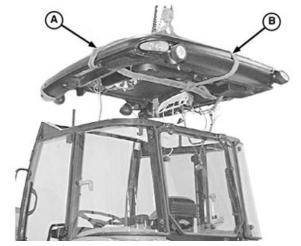
SW03989,000176E -19-28MAR13-6/12

LV8680 —UN—25AUG03

LV8679 —UN—25AUG03

- Remove interior and exterior air filters. (See Remove, Inspect, and Install Cab Interior Recirculating Air Filters and see Remove, Inspect, and Install Exterior Cab Intake Air Filter in this group.)
- 19. Route lifting strap (A) through left air filter opening, across underside of roof, and through right air filter opening. Attach both ends to a suitable lifting device.
- 20. Attach lifting strap (B) to center of lifting strap (A) under cab roof. Route strap (B) between cab frame and roof, and connect to lifting device.
- IMPORTANT: Do not allow straps to contact cab flood lights and warn/turn lights while lifting roof to avoid damage.
- 21. Route straps through holes in left and right front corners of roof and attach to lifting device.
- NOTE: Guide the heater hoses out of the cab support column.
- 22. Lift cab roof from tractor. Repair or replace as necessary.
- 23. Replace cab roof-to-cab frame seal.

IMPORTANT: Make sure cab roof wiring will not be pinched while installing cab roof to cab frame.



Remove Roof

A-Lifting Strap

B—Lifting Strap

NOTE: Lubricate and guide the heater hoses into the cab support column.

24. Install cab roof on cab frame.

Continued on next page

SW03989,000176E -19-28MAR13-7/12

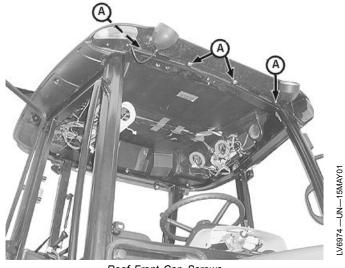
LV12195 —UN—04FEB05

- 25. Install front cap screws (A).
- 26. Install rear cap screws (B).
- 27. Install right-side cap screw (D) and ground wires (C).
- 28. Tighten mounting cap screws (A, B, and D) to specification.

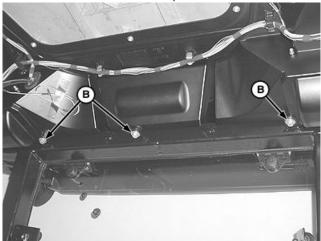
Specification

Inner Cab Roof Mounting

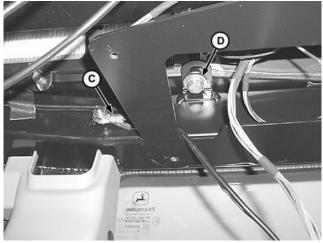
A—Front Cap Screw (4 used) B—Rear Cap Screw (3 used) C—Ground Wires D—Cap Screw (2 used)



Roof Front Cap Screws



Roof Rear Cap Screws



Roof Right Side Ground Wires

Continued on next page

SW03989,000176E -19-28MAR13-8/12

LV8680 —UN-25AUG03

LV8679 —UN—25AUG03

29. Install right and left cab roof drain lines (A).

A-Drain Line (2 used)



Cab Outer Roof Drain Lines

SW03989,000176E -19-28MAR13-9/12

CAUTION: Make sure that air conditioning inlet and outlet hoses/lines are connected to their respective openings.

IMPORTANT: Install new O-rings on air conditioning lines. Used or damaged O-rings will leak.

30. Apply a small amount of TY22101 PAG Refrigeration Oil on O-rings before connecting air conditioning lines.

IMPORTANT: When installing air conditioning lines, always support line adapter and fittings with a backup wrench to keep fittings stationary and prevent damage to line.

Install new O-rings on air conditioning lines. Used or damaged O-rings will leak.

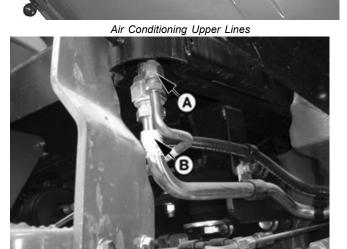
- 31. Install air conditioning lines (C and D) at right front corner of cab roof. Tighten lines to specification.
- 32. Connect air conditioning supply line (A) and air conditioning return line (B). Tighten lines to specification.

Specification

Cab Air Conditioning

A—Air Conditioning Supply Line

B—Air Conditioning Return Line C—Air Conditioning Line D—Air Conditioning Line



Air Conditioning Lines

Continued on next page

SW03989,000176E -19-28MAR13-10/12

LV8678 —UN—25AUG03

LV6981 —UN—15MAY01

PULV002143 —UN—27MAY08

IMPORTANT: Make sure that heater inlet and outlet hoses are connected to their respective openings.

33. Connect heater inlet hose (A) and supply hose (B).

A-Inlet Hose

B—Supply Hose



Connect Heater Hoses

Continued on next page

SW03989,000176E -19-28MAR13-11/12

LV17100 —UN—21MAR13

- 34. Connect left door switch harness connector (D).
- 35. Install cap screw (C) and tighten to specification.

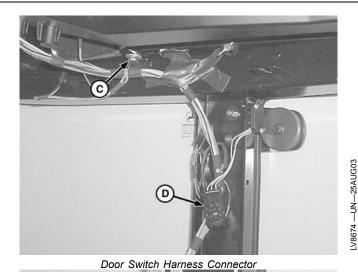
Specification

Inner Cab Roof Mounting

- 36. Connect cab roof harness connector (A).
- 37. Install panel on left center support (B).
- 38. Install cab headliner. (See Remove and Install Headliner in this group.)
- 39. Install windshield. (See Remove and Install Windshield in this group.)
- 40. Fill radiator with coolant.
- 41. Evacuate and charge air conditioning system. (See Charge Air Conditioning System in Section 90, Group 30.)

Start engine and allow it to reach proper operating temperature. Adjust coolant level in recovery tank. (See Heavy Duty Diesel Engine Coolant in Section 10, Group 15.)

A—Cab Roof Harness Connector B—Left Center Support C—Cap Screw D—Door Switch Harness Connector



A B

LV8673 —UN—25AUG03

Cab Roof Harness Connector

SW03989,000176E -19-28MAR13-12/12

Remove Cab

A

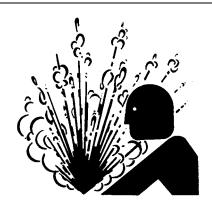
CAUTION: Explosive release of fluids from pressurized cooling system can cause serious burns.

Shut off engine. Remove filler cap only when cool enough to touch with bare hands. Slowly loosen cap to relieve pressure before removing completely.

Always pay close attention to battery terminals.

If the air conditioning sub-assemblies are not handled correctly, leaks will result. If leaks occur, pressurized refrigerant will escape, possibly leading to severe personal injury. Always wear appropriate safety gear when working on the air conditioning system.

- 1. Open the hood. Disconnect the negative (—) battery terminal.
- 2. Remove hood. (See Remove and Install Hood in Section 80, Group 25.)



TS281 -- UN-- 15APR13

- 3. Recover/recycle air conditioning refrigerant. (See Recover/Recycle Air Conditioning Refrigerant in Section 90, Group 30.)
- Drain coolant. (See Drain Coolant in Section 20, Group 10.)

SW03989,0001D30 -19-09OCT13-1/20

- 5. Remove cap screws (A). Remove step assembly.
- 6. Remove step assembly from right side of tractor, if equipped.
- 7. Remove fuel tank. (See Remove, Inspect, and Install Fuel Tank in Section 30, Group 05.)

A—Cap Screw (4 used)

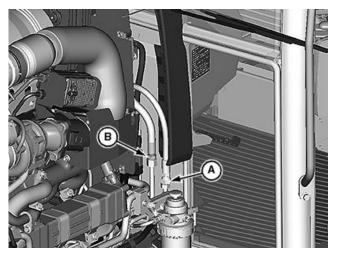


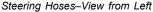
Step Assembly

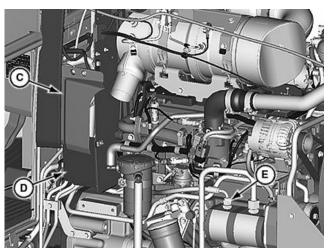
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SW03989,0001D30 -19-09OCT13-2/20

PULV005020 -- UN-08JAN10







Pump Hose and Panels

CAUTION: To avoid injury from escaping fluid under pressure, stop engine and relieve the pressure in the system before disconnecting or connecting hydraulic or other lines. Tighten all connections before applying pressure.

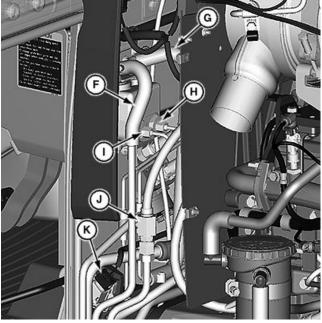
IMPORTANT: When removing hydraulic lines, always support line adapter and fittings with a backup wrench to keep fittings stationary and prevent damage to line, valve, and pump housings.

NOTE: Close all openings with caps and plugs. Tag or label hoses to aid during installation.

8. Remove side panel and disconnect steering hoses (A and B).

NOTE: Side panel is shown removed.

- 9. Remove upper and lower side panels (C and D).
- 10. Disconnect steering valve supply hose (E).
- 11. Disconnect brake valve hoses (F and G) and lines (H and I).
- 12. Disconnect steering valve return hose (J).
- 13. Disconnect foot throttle position sensor (K).



Steering Hose-View from Right

- A-Left Turn Steering Hose
- **B—Right Turn Steering Hose**
- C—Upper Side Panel
- –Lower Side Panel
- E—Steering Valve Supply Hose
- F-Brake Valve Return Hose
- **G—Brake Valve Supply Hose**
- H-Left Service Brake Line
- Right Service Brake Line
- Steering Valve Return Hose
- -Foot Throttle Position Sensor (TPS)

Continued on next page

SW03989,0001D30 -19-09OCT13-3/20

LV17116 —UN—21MAR13

LV17115 —UN—21MAR13

IMPORTANT: Identify heater hoses before disconnecting.

NOTE: Close all opening using caps and plugs to prevent contamination.

14. Disconnect heater supply hose (A) and return hose (B).

A-Supply Hose

B—Return Hose



Heater Supply and Return Hoses

SW03989,0001D30 -19-09OCT13-4/20

-V17100 -- UN-21MAR13

-V17101 -- UN-21MAR13

IMPORTANT: When removing air conditioning lines, always support line adapter and fittings with a backup wrench to keep fittings stationary and prevent damage to line.

> Seal the air conditioning system disconnection points with caps and plugs immediately to prevent air contamination.

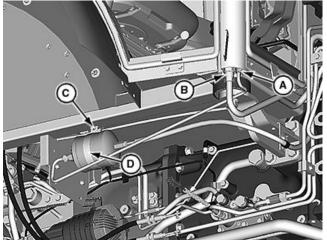
- 15. Remove air conditioning lines (A and B).
- 16. Remove cap screw (C).
- 17. Set aside air conditioning dryer with retaining clamp

A—Air Conditioning Supply Line

-Air Conditioning Return

Line

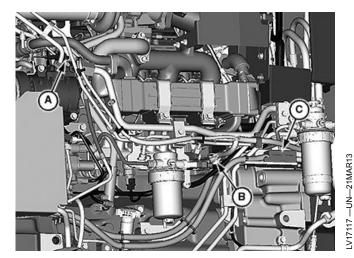
C—Cap Screw D—Dryer Retaining Clamp



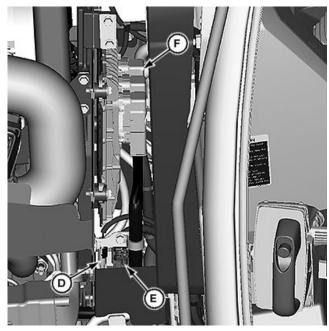
Air Conditioning Lines

Continued on next page

SW03989,0001D30 -19-09OCT13-5/20



Left-Side Connections



18. Disconnect wire harness connectors, ground wires, and cables (A—H).

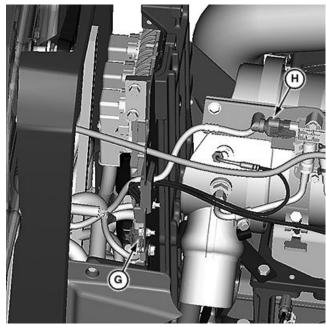
A—Air Conditioning Connector
B—Grounding Wires
C—Power Cable

E—Harness Connector
F—Cab-to-ECU Connector (#3)
G—Harness Connector

D—Harness Connector

G—Harness Connector H—Harness Connector





LV17119 —UN—21MAR13

Right-Side Connections

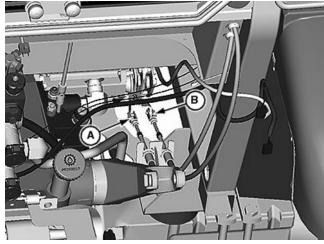
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SW03989,0001D30 -19-09OCT13-6/20

Disconnect control cables (A and B) from rockshaft valve.

A-Control Cable

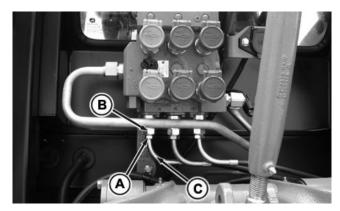
B—Control Cable



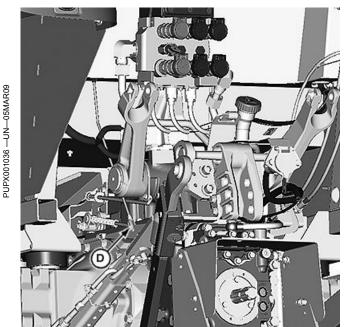
LV17121 —UN—21MAR13

Mechanical Rockshaft Valve

SW03989,0001D30 -19-09OCT13-7/20



SCV Control Cables



.V17123 —UN—21MAR13

PTO Linkage

A—Lock Nut (1—3 used) B—Sleeve (1—3 used) C—SCV Control Cable (1—3 used)

20. Disconnect SCV control cable (C) from spool. (See Inspect and Repair SCV Levers and Linkage—Cab in Section 70, Group 20.)

D—PTO Speed Shift Linkage

21. Disconnect PTO speed shift linkage (D).

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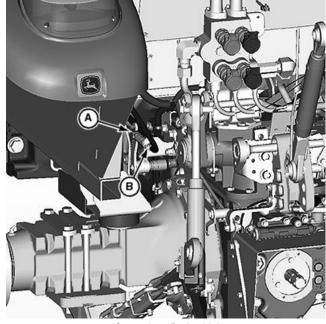
SW03989,0001D30 -19-09OCT13-8/20

22. Tractors equipped with secondary brakes:

Disconnect secondary brake linkage (A) and secondary brake cable at bracket (B).

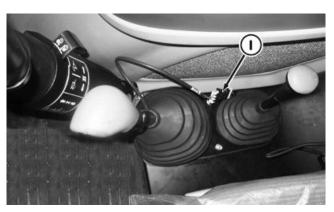
A-Linkage

B—Bracket



Secondary Brake Linkage

SW03989,0001D30 -19-09OCT13-9/20



Harness Connector

23. Disconnect connector (I).

NOTE: Shift levers may be kept with drive train housing while removing cab.

- 24. Remove screws (B), gearshift lever insert (A), and gearshift lever grip (C).
- 25. Remove range shift lever insert (D) and inside screw to remove range shift lever grip (E).
- 26. Remove screws (F) and retainer (G). Carefully slide out boots (H). Retain parts for reuse.

A—Gearshift Lever Insert

B—Screws

C—Gearshift Lever Grip

D—Range Shift Lever Insert

E—Range Shift Lever Grip

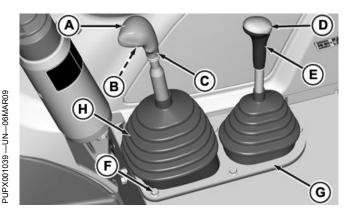
F—Screws

G—Retainer

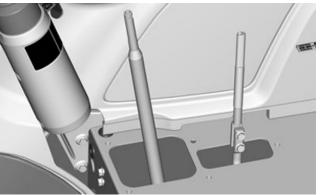
H—Boot (2 used)

— Hi-Lo Switch Harness

Connector



Shift Levers



Boot Retainer Removed

Continued on next page

SW03989,0001D30 -19-09OCT13-10/20

LV17138 —UN—21MAR13

PUPX001030 —UN—04MAR09

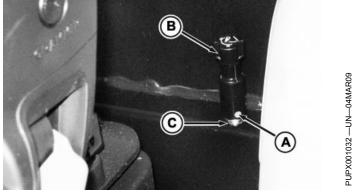
PUPX001031 —UN—04MAR09

TM128319 (28OCT13)

- 27. Remove set screw (A) and remove rate-of-drop valve knob (B).
- 28. Remove clip (C) to release control cable from cab.

A-Set Screw B-Knob

C-Clip



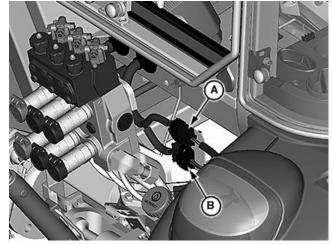
Rate-of-Drop Valve

SW03989,0001D30 -19-09OCT13-11/20

29. Disconnect cab-to-transmission harness connectors (A and B).

A—Harness Connector

B—Harness Connector



Harness Connectors

SW03989,0001D30 -19-09OCT13-12/20

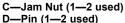
LV17125 —UN—21MAR13

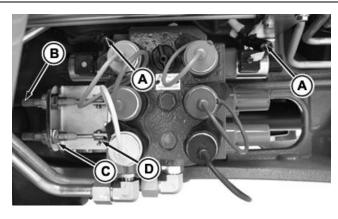
PUPX001033 —UN—05MAR09

- 30. For triple mid-mount SCV, disconnect harness connectors (A).
- 31. Remove pins (D), jam nuts (C), and cables (B). (See Inspect and Repair Joystick and Linkage or Inspect and Repair Multi-Function Control Lever and Linkage (with Secondary Brake) in Section 70, Group 25.)

-Solenoid Valve Harness Connectors (if equipped) B—Cable (1—2 used)

D—Pin (1—2 used)





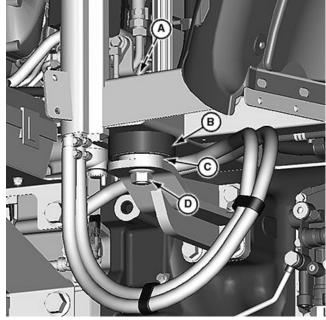
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SW03989,0001D30 -19-09OCT13-13/20

- 32. Lift right and left front corners of cab floor mat to access cab mount cap screws (A).
- 33. Remove left and right front cab mount nuts (D). Isolators (B) and washers (C) will remain in place during cab removal.

NOTE: Observe position and location of cab mounting hardware to aid during installation.

A—Cap Screw (2 used) B—Isolator (2 used) C—Washer (2 used) D—Nut (2 used)



Front Cab Mount

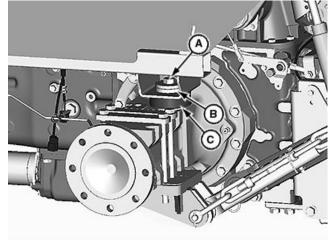
SW03989,0001D30 -19-09OCT13-14/20

LV17133 —UN—21MAR13

LV17134 —UN—21MAR13

34. Remove left and right rear cab mount cap screws (A), washers (B), and isolators (C).

A—Cap Screw (2 used) B—Washer (4 used) C-Isolator (2 used)



Rear Cab Mount

Continued on next page

SW03989,0001D30 -19-09OCT13-15/20

35. Disconnect differential lock pedal linkage (A).

A—Differential Lock Pedal Linkage



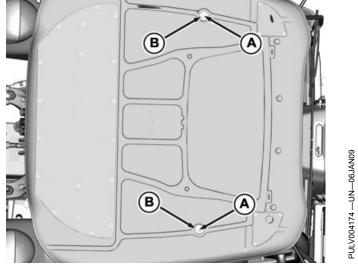
Differential Lock

SW03989,0001D30 -19-09OCT13-16/20

36. Remove cap screws (A) and washers (B).

A—Cap Screws

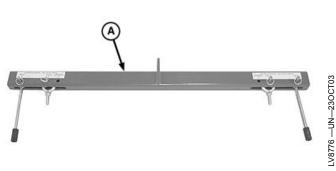
B—Washers

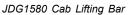


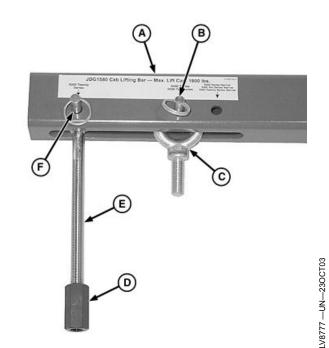
Cab Roof

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SW03989,0001D30 -19-09OCT13-17/20



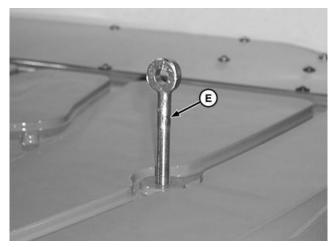




37. Install JDG1580 cab lifting bar (A) to a suitable hoist.

38. Remove retaining pins (B), JDG1580-2 eye bolts (C), and JDG1580-4 nut (D) from JDG1580-4 cab lifting bar (A). Repeat this step on opposite end of lifting bar.

A—JDG1580 Cab Lifting Bar B—Retaining Pin (2 used) C—JDG1580-2 Eye Bolt (2 used) D—JDG1580-4 Nut (2 used) E—JDG1833 Eye Bolt (2 used) F—Retaining Pin Lock (2 used)



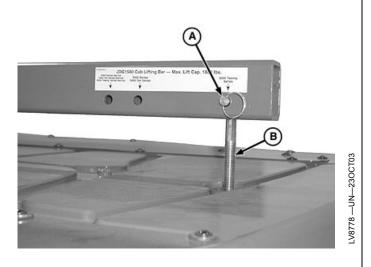
LV8840 —UN—23OCT03

Continued on next page

SW03989,0001D30 -19-09OCT13-18/20

39. Position hoist with JDG1580 cab lifting bar over tractor.

A—Retaining Pin and Pin Lock B—JDG1833 Eye Bolt (2 used) (2 used)

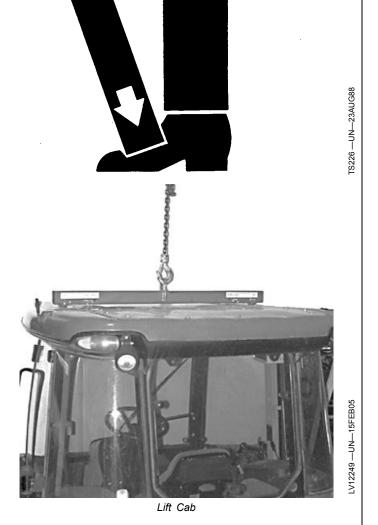


SW03989,0001D30 -19-09OCT13-19/20

CAUTION: Avoid personal injury or damage to cab. Use proper lifting equipment.

IMPORTANT: When raising the cab, watch lines, hoses, cables, and wiring harnesses. There is a risk of entanglement on other components.

40. Raise cab clear of the tractor.



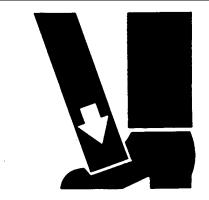
SW03989,0001D30 -19-09OCT13-20/20

Install Cab

CAUTION: Avoid personal injury or damage to cab. Use proper lifting equipment.

IMPORTANT: Do not pinch or bend hoses, lines, wires, cables, or linkages when installing cab.

1. Lower cab just above mounts. Be sure isolators and washers are properly positioned. Observe proper routing and connections of hoses, lines, wires, cables, and linkages.



TS226 —UN-23AUG88



LV12249 —UN—15FEB05

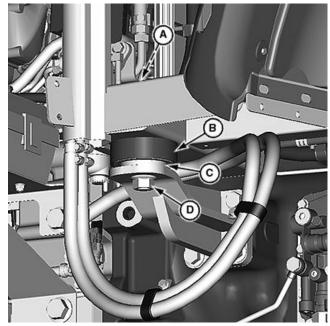
Install Cab

Continued on next page

SW03989,0001770 -19-03APR13-1/19

- 2. Be sure isolators (B) and washers (C) are properly positioned. Install left and right front cap screws (A) and nuts (D).
- 3. Install cab floor mat.

A—Cap Screw (2 used) B—Isolator (2 used) C—Washer (2 used) D—Nut (2 used)



Front Cab Mount

SW03989,0001770 -19-03APR13-2/19

LV17133 —UN—21MAR13

LV17134 —UN—21MAR13

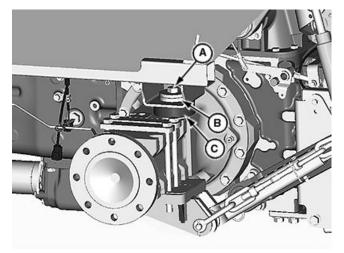
- 4. Install left and right rear cab mount cap screws (A), washers (B), and isolators (C).
- 5. Lower cab completely and tighten cab mount cap screws to specification.

Specification

Front Cab Mount

Rear Cab Mount Cap

A—Cap Screw (2 used) B—Washer (4 used) C—Isolator (2 used)

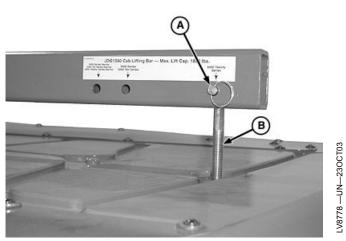


Rear Cab Mount

Continued on next page

SW03989,0001770 -19-03APR13-3/19

- 6. Remove retaining pin lock and pin. Raise JDG1580 cab lifting bar and remove JDG1822 eye bolts from cab.
 - A—Retaining Pin and Pin Lock B—JDG1822 Eye Bolt (2 used) (2 used)



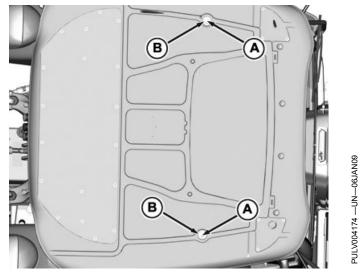
Cab Lifting Bar-to-Cab

SW03989,0001770 -19-03APR13-4/19

7. Install washers (B) and cap screws (A).

A—Cap Screws

B—Washers



Cab Roof

Continued on next page

SW03989,0001770 -19-03APR13-5/19

8. Connect differential lock (A) pedal linkage.

A—Differential Lock



Differential Lock

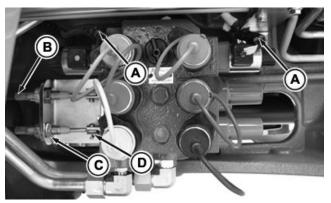
SW03989,0001770 -19-03APR13-6/19

LV17135 —UN—21MAR13

PUPX001033 —UN—05MAR09

- 9. For triple mid-mount SCV, connect harness connectors (A).
- Install mid-mount SCV cable (B), jam nut (C), and yoke pin (D). Adjust cables and linkage as necessary. (See Inspect and Repair Joystick and Linkage or Inspect and Repair Multi-Function Control Lever and Linkage (with Secondary Brake) in Section 70, Group 25.)

A—Solenoid Valve Harness Connectors (if equipped) B—Cable (1—2 used) C—Jam Nut (1—2 used) D—Pin (1—2 used)



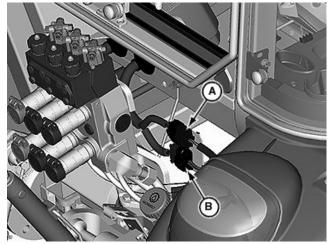
Mid-Mount SCV—Triple Shown

SW03989,0001770 -19-03APR13-7/19

11. Connect cab to transmission harness connectors (A and B).

A—Harness Connector

B—Harness Connector



Cab Harness Connectors

Continued on next page

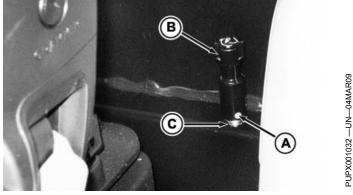
SW03989,0001770 -19-03APR13-8/19

LV17125 —UN—21MAR13

12. Install rate-of-drop valve knob (B) and secure with set screw (A) and install clip (C).

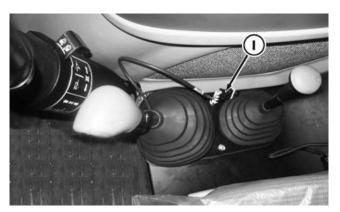
A—Set Screw B—Knob

C-Clip



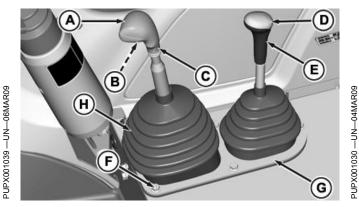
Rate-of-Drop Valve

SW03989,0001770 -19-03APR13-9/19

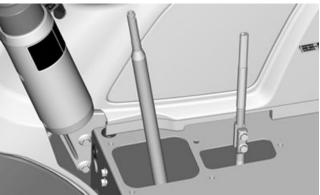


Harness Connector

- 13. Install boots (H) carefully over shift levers.
- 14. Install retainer (G) and screws (F).
- 15. Install grips (C and E) and inserts (A and D).
- 16. Tractors equipped with PowrReverser Plus: Connect harness connector (I).
 - A—Gearshift Lever Insert
 - **B—Screws**
 - C—Gearshift Lever Grip
 - D—Range Shift Lever Insert
 - E—Range Shift Lever Grip
- F—Screws
- G-Retainer
- H-Boot
- I— Hi-Lo Switch Harness
 - Connector



Shift Levers



Boot Retainer Removed

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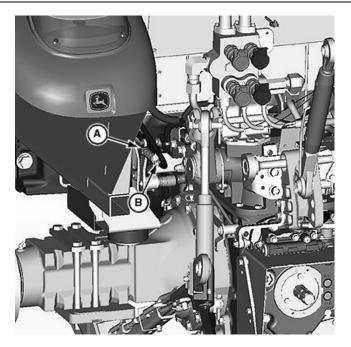
SW03989,0001770 -19-03APR13-10/19

PUPX001031 —UN—04MAR09

- 17. **Tractors equipped with secondary brakes:** Connect secondary brake cable to bracket (B).
- NOTE: Be sure secondary brake indicator light on instrument panel is turned ON when brake lever is engaged and turned OFF when lever is released.
- 18. Connect secondary brake linkage (A). Adjust brake as necessary.

A—Harness Connector

B—Bracket



LV17138 —UN—21MAR13

SW03989,0001770 -19-03APR13-11/19

19. Before installing rear SCV cables, inspect retaining nut (A). Apply thread lock and sealer (high strength) and tighten securely without damaging outer edge of retaining nut.

A—Retaining Nut

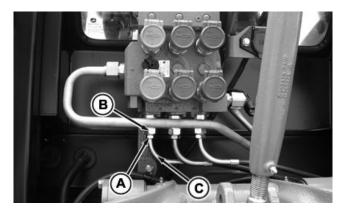


PULV003867 —UN—16DEC08

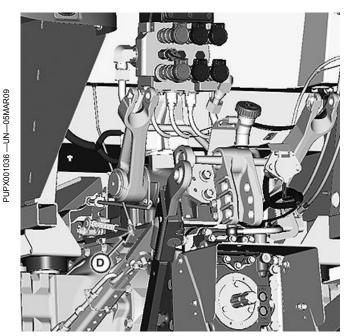
Rear SCV Cable Retaining Nut

Continued on next page

SW03989,0001770 -19-03APR13-12/19



SCV Control Cables



-V17123 —UN—21MAR13

A—Retaining Nut B—Sleeve

C—SCV Control Cable

20. Install cable sleeve (B) and retaining nut (A). Tighten to specification.

Specification

 D—PTO Speed Shift Linkage

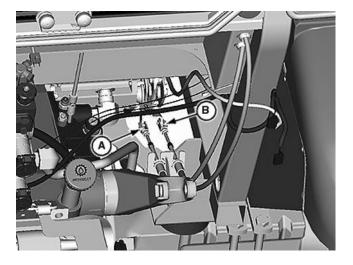
- 21. Adjust control cables as necessary. (See Hydraulics Rear SCV Cable Adjustment in Section 270, Group 50AA.)
- 22. Connect PTO speed shift linkage (D).

SW03989,0001770 -19-03APR13-13/19

- 23. Connect control cables (A and B) to hitch valve.
- 24. Adjust cables and linkage as necessary. (See Hydraulics Rockshaft Draft-Sensing and Position Control Cable Adjustment in Section 270, Group 50AA.)

A—Control Cable

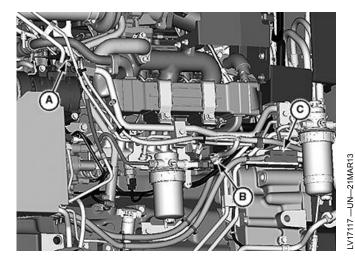
B—Control Cable



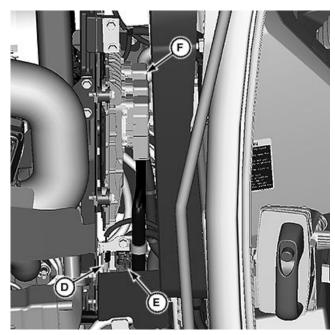
LV17121 —UN—21MAR13

Continued on next page

SW03989,0001770 -19-03APR13-14/19



Left Side Connections



25. Connect wire harness connectors, cables, and wires (A—H).

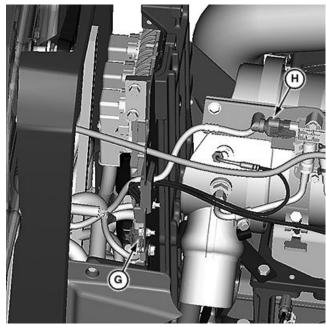
A—Air Conditioning Connector
B—Grounding Wires
C—Power Cable

E—Harness Connector
F—Cab-to-ECU Connector (#3)
G—Harness Connector

D—Harness Connector

H—Harness Connector



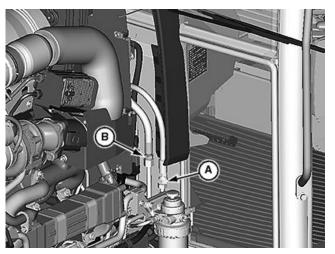


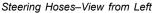
LV17119 —UN—21MAR13

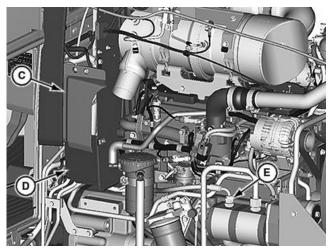
Right Side Connections

Continued on next page

SW03989,0001770 -19-03APR13-15/19







Pump Hose and Panels

IMPORTANT: When installing hydraulic lines, always support line adapter and fittings with a backup wrench to keep fittings stationary and prevent damage to line, valve, and pump housings.

Always use new O-rings. Damaged or used O-rings will leak.

- 26. Connect foot throttle position sensor (K).
- 27. Connect steering valve return hose (J) and supply hose (E). Tighten to specification.

Specification

Specification

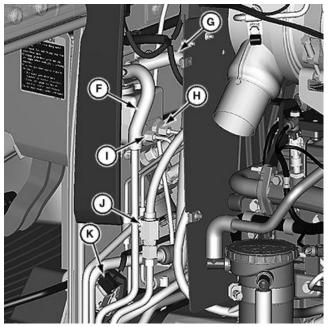
30. Connect steering hoses (A and B) and install side panel. Tighten to specification.

29. Install upper and lower side panels (C and D).

Specification

NOTE: Side panel is shown removed.

I). Tighten to specification.



Steering Hose-View from Right

A—Left Turn Steering Hose

B—Right Turn Steering Hose

C—Upper Side Panel

D—Lower Side Panel

E—Steering Valve Supply Hose

F—Brake Valve Return Hose

G—Brake Valve Supply Hose

H-Left Service Brake Line

- Right Service Brake Line

- Steering Valve Return Hose

-Foot Throttle Position Sensor (TPS)

Continued on next page

SW03989,0001770 -19-03APR13-16/19

LV17116 —UN—21MAR13

LV17115 —UN—21MAR13

IMPORTANT: When removing/installing air conditioning lines, always support line adapter and fittings with a backup wrench to keep fittings stationary and prevent damage to line.

> Install new O-rings on air conditioning lines. Used or damaged O-rings will leak.

Apply a small amount of refrigeration oil on O-rings before connecting air conditioning lines.

- 31. Install dryer with retaining clamp (D) and cap screw (C).
- 32. Install air conditioning lines (A and B). Tighten to specification.

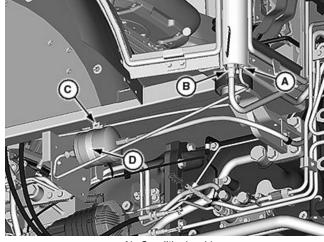
Specification

Air Conditioning

-Air Conditioning Supply Line

D—Dryer Retaining Clamp -Air Conditioning Return Line

C-Cap Screw



Air Conditioning Lines

SW03989,0001770 -19-03APR13-17/19

LV17101 —UN—21MAR13

CAUTION: Make sure that heater inlet and outlet hoses are connected to their respective openings.

33. Connect heater supply hose (A) and return hose (B).

A-Supply Hose

B—Return Hose



Heater Supply and Return Hoses

Continued on next page

SW03989,0001770 -19-03APR13-18/19

LV17100 —UN—21MAR13

- 34. Install fuel tank. (See Remove, Inspect, and Install Fuel Tank in Section 30, Group 05.)
- 35. Install step assembly on both sides. Tighten cap screws (A) to specification.

Specification

36. Fill radiator with coolant.

Specification

- 37. Evacuate and charge air conditioning system. (See Charge Air Conditioning System in Section 90, Group 30.)
- 38. Install hood. (See Remove and Install Hood in Section 80, Group 25.)
- 39. Connect the negative (—) battery terminal.
- 40. Run engine at operating temperature. Check for coolant and hydraulic leaks. Adjust coolant level in recovery tank.



Step Assembly

A—Cap Screws

- 41. Bleed brakes. (See Bleed Brakes in Section 60, Group 10.)
- 42. Check and adjust hydraulic oil level.

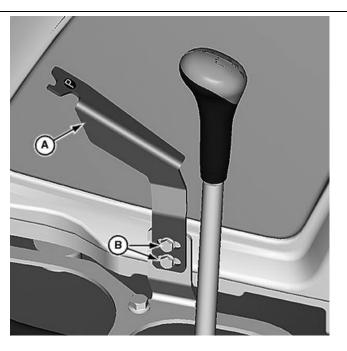
SW03989,0001770 -19-03APR13-19/19

PULV005020 -- UN-08JAN10

Park Position Indicator Installation (If Equipped)

- 1. Place gearshift lever in park. Starting in neutral "home" position, move gearshift lever as mentioned below.
 - a. Move lever straight outward (until internal stop is reached).
 - b. Move lever straight forward (until internal stop is reached).
 - c. Move lever straight inward (until internal stop is reached).
 - d. Move lever straight rearward (until internal stop is reached).
- 2. Install park position indicator (A) using cap screws (B).
- Adjust park position indicator fore-or-aft. Tighten cap screws.

A—Park Position Indicator B—Cap Screw (2 used)



SW03989,0001D32 -19-20SEP13-1/1

LV17166 —UN-21MAR13

Cab Components

Group 30 Air Conditioning System

Essential Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC).

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SW03989,0001D51 -19-20SEP13-1/11

Recovery/Recycling, and Charging Station..... JDG10974

Used to service air conditioning system using R134a refrigerant.

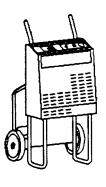


RW21613 -- UN-15APR13

SW03989,0001D51 -19-20SEP13-2/11

Recovery/Recycling Station........................JDG10555

Used to service air conditioning system using R134a refrigerant.



RW21613 -- UN-15APR13

SW03989,0001D51 -19-20SEP13-3/11

A/C Compressor Clutch SpannerJDG747

Removing compressor clutch.



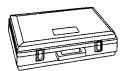
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SW03989,0001D51 -19-20SEP13-4/11

Air Conditioning System

Removing compressor pulley.

RW40022 -- UN-08SEP93



SW03989,0001D51 -19-20SEP13-5/11

Jaws JDG748

Used with D05277ST pulley remover to remove compressor pulley.



SW03989,0001D51 -19-20SEP13-6/11

Forcing Screw Pilot.......................JDG771

Removing compressor clutch.

RW21598 —UN—17AUG92

RW19935 —UN—19MAY92



SW03989,0001D51 -19-20SEP13-7/11

Installing seal on compressor.

RW19943 —UN—19MAY92



SW03989,0001D51 -19-20SEP13-8/11

Air Conditioning Flushing UnitJT02075

Flushing air conditioning system.



RW25566 —UN—16DEC96

Continued on next page

SW03989,0001D51 -19-20SEP13-9/11

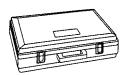
Air Conditioning System

Flushing Attachment Kit......JT02078

Flushing air conditioning system.

RW40022 -- UN-08SEP93

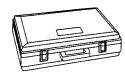
RW40022 —UN—08SEP93



SW03989,0001D51 -19-20SEP13-10/11

Air Conditioning R12/R134a Fitting Kit......JT02098

Connecting flushing, purging, and pressure equipment.



SW03989,0001D51 -19-20SEP13-11/11

Service Equipment and Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the

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European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

OUO1023,00036FD -19-20DEC12-1/10

AdapterJT02099	Connecting gauge set to suction port of compressor. OUO1023,00036FD -19-20DEC12-2/10
	0001023,00030FD -19-20DEC12-2/10
CapJT03194	Closing suction port adapter during compressor volumetric efficiency test.
	OUO1023,00036FD -19-20DEC12-3/10
AdapterJT02100	Connecting gauge set to discharge port of compressor.
	OUO1023,00036FD -19-20DEC12-4/10
AdapterJT02121	Connecting gauge set to discharge port of compressor.
	OUO1023,00036FD -19-20DEC12-5/10
HoseJT02109	Connecting gauge set to discharge port of compressor.
	OUO1023,00036FD -19-20DEC12-6/10
Electronic Leak DetectorJT02081	Detecting refrigerant leaks.
CC	ontinued on next page OUO1023,00036FD -19-20DEC12-7/10

Air Conditioning System

Holding compressor during repair.

¹Dealer fabricated tool. See Section 99 Group 05 for instructions to make tool.

OUO1023,00036FD -19-20DEC12-8/10

Adapter......JT02102

Connecting flusher outlet hose to inlet connection of compressor discharge line for flushing condenser.

OUO1023,00036FD -19-20DEC12-9/10

Adapter......JT03197

Attaching return hose and aerator nozzle to receiver/dryer inlet line connection for flushing condenser.

OUO1023,00036FD -19-20DEC12-10/10

Number Name Use

TY22025 (U.S.) R134a Refrigerant Oil Used to lubricate O-rings, gaskets,

and lip seal during assembly

of compressor.

TY15949 (12 oz) (U.S.)

TY15950 (15 lb) (U.S.)

Specifications

TY15951 (30 lb) (U.S.)

Refrigerant R134a

Used to charge the air conditioning

system.

JT02077 (U.S.) ART338 A/C Flushing Solvent Used to flush air conditioning system.

GENESOLV 2004 Solvent®

Used to flush air conditioning system.

Naphtha 673 Parts Solvent

Used to flush air conditioning system.

GENESOLV 2004 is a registered trademark of the Micro Care

Corporation (800-638-0125).

OUO1023,00036FE -19-20DEC12-1/1

Opecifications		
Item	Measurement	Specification
Receiver-Dryer Lines	Torque	14—20 N·m (10—15 lbft.)
Condenser Outlet Line	Torque	14—20 N·m (10—15 lbft.)
Condenser Inlet Line	Torque	33—39 N·m (24—29 lbft.)
Compressor Suction Line	Torque	35—42 N·m (25—31 lbft.)
Compressor Discharge Line	Torque	33—39 N·m (24—29 lbft.)
Clutch Hub Retaining Cap Screw	Torque	14 N·m (10 lbft.)
Compressor Through Bolt	Torque	26 N·m (19 lbft.)
Hub-to-Pulley	Clearance	0.35—0.65 mm (0.014—0.026 in.)
Manifold Cap Screw	Torque	26 N·m (19 lbft.)
Compressor Relief Valve	Torque	12—16 N·m (9—12 lbft.)

OUO1023,00036FF -19-26MAR13-1/1

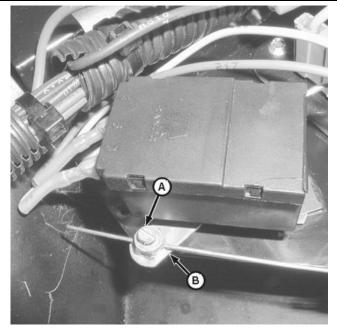
Adjust A/C Deicing Switch

NOTE: A/C deicing switch is located in evaporator/heater core housing in cab roof.

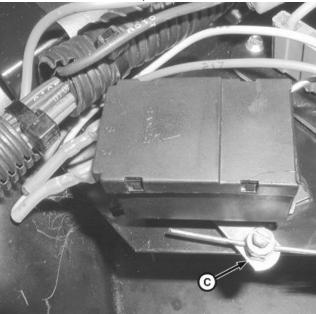
- 1. Turn A/C temperature control knob counterclockwise to full cool position.
- 2. Loosen set screw (A) and move A/C deicing switch arm to full open position (B). Tighten set screw.
- 3. Turn A/C temperature control knob to OFF (CW). A/C deicing switch arm should be in the full closed position (C). Adjust arm as required.

A—Set Screw
B—A/C Deicing Switch
Arm—Full Open Position

C—A/C Deicing Switch
Arm—Full Closed Position



Full Open Position



Full Closed Position

MS30225,0000032 -19-28MAR13-1/1

LV6464 —UN-07MAR01

LV6465 —UN—07MAR01

Recover/Recycle Air Conditioning Refrigerant

If the compressor is operable, operate the air conditioning system for 10 minutes with engine at 2000 rpm. Set temperature control for maximum cooling and blower switch at high. This allows the refrigerant oil to be circulated through the system and indicates the quantity of oil in the compressor.

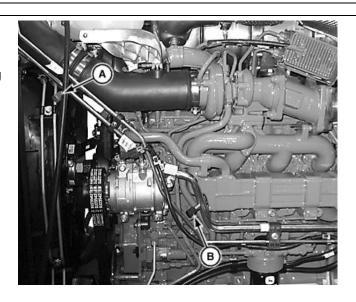
Stop the engine and use the following procedure to recover and recycle the A/C refrigerant.

IMPORTANT: Use only R134a refrigerant recovery, recycling, and charging stations. Do not mix R134a equipment, refrigerant, and refrigerant oils with R-12 systems to prevent compressor damage.

 Connect JDG10555 Recovery/Recycling Station and JT02051 Manifold with Gauges.

NOTE: JDG10555 Recovery/Recycling Station can be substituted for the JT02046 and JT02050.

 Connect low-side hose (blue) from the charging station to suction fitting (B) on the compressor. Connect high-side hose (red) to discharge fitting (A) on the discharge line.



A—Discharge Fitting (High Side)

B—Suction Fitting (Low Side)

3. Follow the manufacturer's instructions and discharge the system. Cap the fittings to prevent contamination from entering the system.

SW03989,0001D52 -19-20SEP13-1/1

Replace Air Conditioning Receiver-Dryer

NOTE: The receiver-dryer is not serviceable. If malfunction is suspected, install new receiver/dryer.

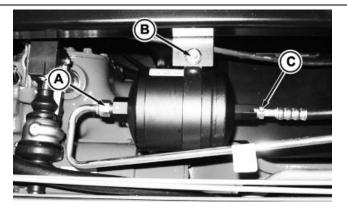
 Recover/recycle air conditioning refrigerant. (See Recover/Recycle Air Conditioning Refrigerant in this group.)

NOTE: Receiver-dryer is located along the right side of transmission.

- 2. Disconnect lines (A and C) from receiver-dryer. Close all lines with caps and plugs to prevent contamination.
- 3. Remove cap screw and nut (B).

NOTE: When a new receiver-dryer is installed and there were no leaks found in the system, add 15 mL (0.5 oz) of R134a refrigerant oil. If leaks are evident in the system, follow procedure for checking and adding refrigerant oil. (See Determine Correct Refrigerant Oil Charge and Add Refrigerant Oil to System in this group.)

IMPORTANT: When installing a new receiver-dryer after replacing the air conditioning compressor, flush the air conditioning system before installing the new receiver-dryer. See Flush Air Conditioning System in this group.



A—Line to Evaporator B—Cap Screw and Nut

C—Line from Condenser

- Install receiver-dryer with area marked top in up position. Install cap screw and nut (B).
- 5. Connect lines (A and C). Tighten to specification.

Specification

Receiver-Dryer

Evacuate and charge the system. (See Charge Air Conditioning System in this group.)

OUO1023,0003702 -19-26MAR13-1/1

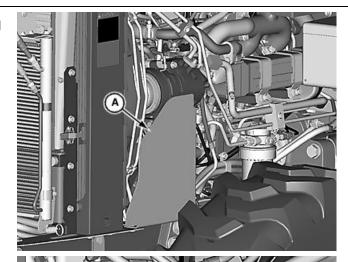
PULV004182 —UN—31DEC08

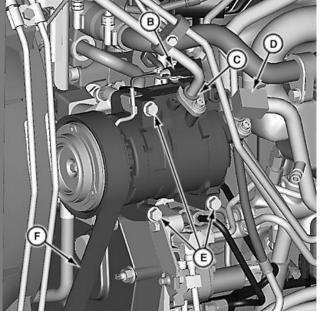
-V15388 -- UN-25JAN12

Remove, Inspect, and Install Air Conditioning Condenser

- Recover/recycle air conditioning refrigerant. (See Recover/Recycle Air Conditioning Refrigerant in Repair Technical Manual.)
- 2. Remove left-hand fan guard (A).
- 3. Release belt tension and remove belt (F) from compressor pulley.
- 4. Disconnect suction line (D) and discharge line (C).
- 5. Disconnect electrical connector (B).
- 6. Remove cap screws (E).
- 7. Repair or replace compressor, if necessary.
- 8. Flush the complete system if the compressor was repaired or replaced. (See Flush Air Conditioning System in Repair Technical Manual.)
- 9. Install a new receiver-dryer if the compressor was repaired or replaced. (See Replace Air Conditioning Receiver-Dryer in Repair Technical Manual.)
- IMPORTANT: A new compressor already has the required amount of PAG oil installed. Failure to flush the air conditioning system before the new compressor is installed will create excess PAG oil in the system, resulting in excessive high pressure, which can lead to compressor failure.
- Determine correct compressor oil charge. (See Determine Correct Refrigerant Oil Charge in Repair Technical Manual.)
- 11. Install compressor with cap screws E).
- 12. Connect electrical connector (B).
- Connect suction line (D) and discharge line (C) to compressor.
- 14. Install belt (F) on compressor pulley.
- 15. Evacuate and recharge system. (See Charge Air Conditioning System in Repair Technical Manual.)

IMPORTANT: If new compressor clutch was installed, turn compressor on and off (with engine running) in one-second intervals for five seconds (cycle five times in five seconds). This will burnish clutch and hub drive surfaces.





-V15393 —UN—25JAN12

LV15392 —UN-25JAN12

- A—Left-Hand Fan Guard
- **B**—Connector
- C—Discharge Line (High Side)
- D—Suction Line (Low Side) E—Cap Screw (3 used)
- F—Belt

16. Install left-hand fan guard (A).

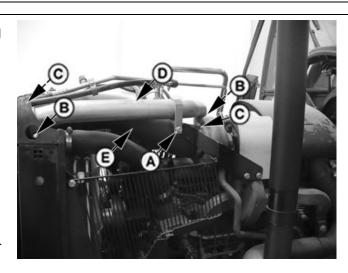
OUO1023,0003703 -19-26MAR13-1/1

Remove, Inspect, and Install Air Conditioning Compressor

- 1. Recover/recycle air conditioning refrigerant. (See Recover/Recycle Air Conditioning Refrigerant in this Group.)
- 2. Remove cap screw (A).
- 3. Remove clamps (B).
- 4. Remove pipe (D).
- 5. Remove clamps (C).
- 6. Remove hose (E).
- 7. Release belt tension and remove belt from compressor pulley.

D-Pipe A—Cap Screw **B**—Clamp

E-Hose C—Clamp



PULV002181 —UN—27MAY08

OUO1023.0003704 -19-26MAR13-1/4

- 8. Disconnect suction line (A) and discharge line (B).
- 9. Disconnect electrical connector (C).

NOTE: Note location of compressor ground wire to aid during assembly.

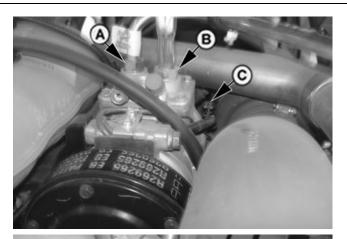
- 10. Remove cap screws (D).
- 11. Repair or replace compressor, if necessary.
- 12. Flush the complete system if the compressor was repaired or replaced. (See Flush Air Conditioning System in this group.)
- 13. Install a new receiver-dryer if the compressor was repaired or replaced. (See Replace Air Conditioning Receiver-Dryer in this group.)

IMPORTANT: A new compressor already has the required amount of PAG oil installed. Failure to flush the air conditioning system before the new compressor is installed will create excess PAG oil in the system, resulting in excessive high pressure, which can lead to compressor failure.

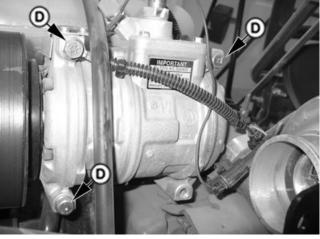
14. Determine correct compressor oil charge. (See Determine Correct Refrigerant Oil Charge in this group.)

-Suction Line (Low Side) C-Connector

B—Discharge Line (High Side) D—Cap screw (3 used)



PULV002182 —UN—27MAY08



PULV002183 —UN—09JUN08

Continued on next page

OUO1023,0003704 -19-26MAR13-2/4

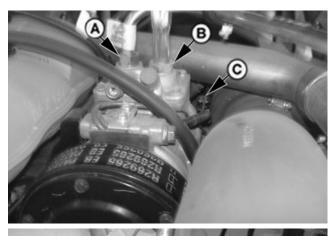
NOTE: Install compressor ground wire with cap screw (D).

- 15. Install compressor with cap screws (D).
- 16. Connect electrical connector (C).
- 17. Connect suction line (A) and discharge line (B) to compressor.
- 18. Install belt on compressor pulley.
- 19. Evacuate and recharge system. (See Charge Air Conditioning System in this group.)

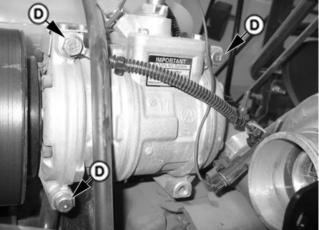
A—Suction Line (Low Side)

C—Connector

B—Discharge Line (High Side) D—Cap Screw (3 used)



PULV002182 —UN—27MAY08



PULV002183 —UN—09JUN08

OUO1023,0003704 -19-26MAR13-3/4

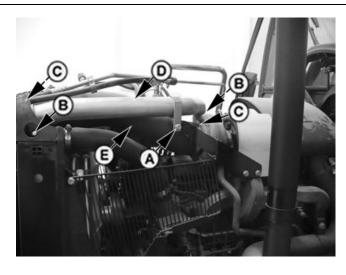
- 20. Connect hose (E) and secure clamps (C).
- 21. Connect pipe (D) and secure clamps (B).

IMPORTANT: If new compressor clutch was installed, turn compressor on and off (with engine running) in one-second intervals for five seconds (cycle five times in five seconds). This will burnish clutch and hub drive surfaces.

—Cap Screw

B—Clamp C—Clamp

D-Pipe E-Hose



PULV002181 —UN—27MAY08

OUO1023,0003704 -19-26MAR13-4/4

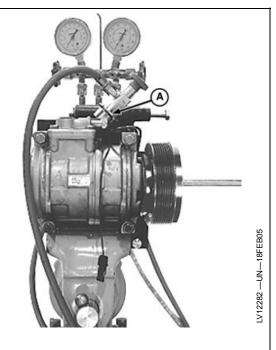
Test Volumetric Efficiency of Compressor

- 1. Drain oil from compressor and record amount.
- 2. Remove front cover from compressor pulley and rotate drive shaft using a speed wrench and 10 mm socket, 30 turns.
- Drain remaining oil from compressor and record amount.

If oil was drained in steps 1 and 3, go to step 4.

If no oil was drained, add 60 mL (2 oz.) of R134a refrigerant oil in suction port and slowly turn compressor shaft in each direction at least two times. Repeat steps 1—3.

- 4. Secure compressor in a vise with ports upward.
- 5. Install JT02099 adapter in suction port with JT03194 cap.
- 6. Connect suction hose coupler of gauge set to suction test port (A) on manifold.
- 7. Close discharge side valve of gauge set and open valve on suction side of gauge set.
- Rotate compressor drive shaft with speed wrench to obtain peak vacuum on low-side gauge. Check for even suction (no pulsing) while turning wrench at a slow rate to maintain peak vacuum at 63.5 cm Hg (25 in. Hg) minimum.
- Stop rotating shaft and check leak-down time. Compressor should hold peak vacuum for three seconds minimum.



A-Suction Test Port

If compressor does not hold peak vacuum for three seconds, inspect compressor valve plates and cylinder walls for damage. Repair compressor.

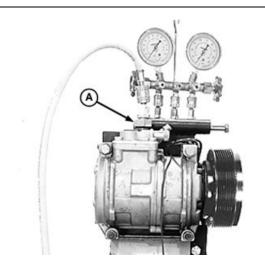
10. Open suction port of compressor to atmosphere.

OUO1023.0003705 -19-26MAR13-1/2

- Connect gauge set suction hose to discharge port (A) using adapters JT02100 and JT02121, and JT02109 hose.
- 12. Close gauge set suction side valve.
- Rotate drive shaft no faster than two turns per second for six turns.
- 14. Record pressure after six complete turns. Pressure should be 380 kPa (3.8 bar) (55 psi) minimum.

NOTE: Pressure normally leaks down when rotation stops.

- 15. Continue to rotate compressor at a uniform speed to obtain peak pressure. Compression pressure should increase smoothly and should not vary more than 34 kPa (0.34 bar) (5 psi) at peak pressure. Bleed off pressure and repeat steps 12—15 four times.
- NOTE: Pressure varying more than 34 kPa (0.34 bar) (5 psi) indicates a leaking reed valve or piston seal. Inspect compressor valve plates and cylinder walls for damage. Repair compressor.



A—Discharge Port

16. Leak test compressor. (See Test Compressor Shaft Seal Leakage in this group.)

OUO1023,0003705 -19-26MAR13-2/2

Test Compressor Shaft Seal Leakage

- 1. Remove front plate from compressor pulley.
- 2. Remove clutch hub and screw.

IMPORTANT: Do not lose inner clutch hub shims.

- 3. Install JT02099 adapter in suction port and JT02100 adapter in discharge port. Plug discharge port adapter using JT03194 cap.
- 4. Connect gauge set and/or container of R134a refrigerant to suction port of compressor as shown.
- 5. Open valves to pressurize compressor.

IMPORTANT: Do not exceed range of low pressure gauge.

- 6. Check the following for leaks using JT02081 electronic leak detector or 50-50 mixture of soap and water:
 - Shaft seal
 - Manifold seal
 - Housing seals at front, rear, and midsection of compressor body
 - Relief valve
 - Suction coupler Schrader valve

Leakage should not exist. Repair compressor, if required, and repeat test.



LV12284 —UN—18FEB05

 Assemble compressor and add required oil. (See Determine Correct Refrigerant Oil Charge in this group.)

OUO1023,0003706 -19-26MAR13-1/1

Disassemble and Assemble Compressor Clutch

- Mount compressor on DFRW20 compressor holding fixture using two 155 x 5.0 mm (6 x 1/4 in.) eye bolts with nuts as illustrated. (See DFRW20—Compressor Holding Fixture in Section 99, Group 05.)
- 2. Remove dust cover.
- 3. Hold clutch hub using JDG747 compressor clutch spanner (A) and remove clutch hub retaining cap screw (B).
- 4. Remove clutch hub (C). Remove shims (H) from clutch hub and save for installation.
- Remove and discard pulley snap ring (D). Remove pulley (E) using a plastic hammer or D05277ST pulley remover, JDG748 jaws, and JDG771 forcing screw pilot.
- 6. Disconnect clutch coil lead wire. Remove and discard clutch coil snap ring (F) and remove clutch coil (G).

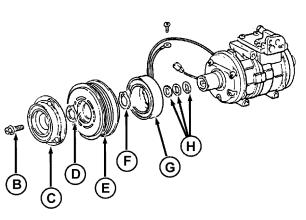
NOTE: The bearing in the pulley is NOT serviceable.

- 7. Check pulley bearing operation. Replace pulley and bearing as required.
- Install clutch coil (G) and new clutch coil snap ring (F) with flat side of snap ring down. Connect clutch coil lead wire.
- 9. Install pulley (E) and new pulley snap ring (D) with flat side of snap ring down. Apply grease to shims (H) and install to clutch hub (C).
- 10. Install clutch hub (C) and retaining cap screw (B), and tighten to specification. Install dust cover.

Specification

 Check clutch hub clearance. (See Check Compressor Clutch Hub Clearance in this group.)





RW21158 —UN—29JUL98

RW21157 —UN—24JUN92

- A—JDG747 Compressor Clutch Spanner
- B—Clutch Hub Retaining Cap Screw
- C-Clutch Hub
- D—Pulley Snap Ring

E—Pulley

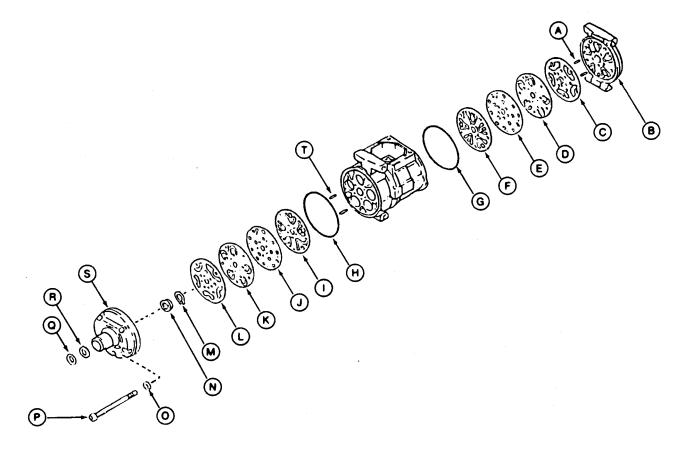
F—Clutch Coil Snap Ring

G—Clutch Coil

H—Shim

OUO1023,0003707 -19-26MAR13-1/1

Disassemble, Inspect, and Assemble Compressor



A—Rear Pin

B—Rear Housing

C-Rear Gasket

D—Rear Discharge Reed Valve

E—Rear Valve Plate

F—Rear Suction Reed Valve

G—Rear O-Ring H—Front O-Ring

I— Front Suction Reed Valve

J— Front Valve Plate

 Clean compressor using solvent before disassembly. Mount compressor on holding fixture and remove clutch. (See Disassemble and Assemble Compressor Clutch in this group.)

IMPORTANT: When removing front and rear housings, be careful NOT to damage sealing surfaces.

Disassemble compressor, as illustrated, and discard O-rings, gaskets, seal, snap ring, and through bolt washers. Replace parts.

NOTE: Valve plates, reed valves, cylinders, and cylinder housing are NOT serviceable. Some cylinder scuffing (light scratches) is normal.

K—Front Discharge Reed Valve

L—Front Gasket

M—Snap Ring

N—Seal

O-Washer

P—Through Bolt

Q—Felt Holder R—Felt

S—Front Housing

T—Front Pin

- Inspect valves for an even wear pattern, and cylinders for scoring or excessive wear. Replace compressor as required.
- Remove shaft seal snap ring (M). Turn housing over and remove felt holder (Q) and felt (R) from front housing (S).
- 5. Remove shaft seal (N) from front housing (S) using a small tool with 16 mm (5/8 in.) OD.
- Wash all parts in clean solvent and dry, using moisture-free compressed air before assembly.

Continued on next page

OUO1023,0003708 -19-26MAR13-1/2

RW21161 —UN—24JUN92

- IMPORTANT: Lubricate O-rings, gaskets, and seals using only TY22025 (R134a) refrigerant oil during assembly. Other oils could damage the compressor.
- 7. Apply R134a oil to the bore of the front housing and install new seal (N) to the bottom of the bore using a socket. Install new snap ring (M) flat side down.

IMPORTANT: Bushing spacer (U) must be in position before assembling the compressor.

- 8. Install pins (A) and new O-ring (G) in the rear cylinder.
- NOTE: The rear valve plate is marked with an "R" and is installed face up.
- 9. Install parts (F—D) over the pins on the rear cylinder.
- 10. Install a new rear gasket (C) flat side down and the rear housing (B) on the rear cylinder. Mount compressor onto holding fixture.
- 11. Install front pins (T) and new front O-ring (H) in the front cylinder.
- NOTE: The front valve plate is marked with an "F" and is installed face up.
- 12. Install parts (I—K) over the pins on the front cylinder.
- 13. Install a new front gasket (L) flat side down. Put JDG746 compressor seal protector on the shaft and lubricate with R134a refrigerant oil.
- 14. Install the front housing (S) on the front cylinder and remove seal protector. Install through bolts (P) and new washers (O).
- 15. Partially tighten through bolts, and then tighten to specification.

Specification

Compressor Through

- 16. Install the felt (R) and felt holder (Q) using the clutch hub.
- 17. Install the pulley-clutch hub and check clearance. (See Disassemble and Assemble Compressor Clutch in this group.)
- IMPORTANT: To prevent damage, flush the complete air conditioning system and install a new receiver-dryer.
- 18. Flush the complete system before installing repaired compressor. (See Flush Air Conditioning System in this group.)





RW21163 —UN—24JUN92

C—Rear Gasket

D-Rear Discharge Reed Valve

E-Rear Valve Plate

F-Rear Suction Reed Valve **U—Bushing Spacer**

- 19. Install a new receiver-dryer. (See Replace Air Conditioning Receiver-Dryer in this group.)
- 20. Add correct amount of oil before installing compressor. (See Refrigerant Oil Information in this group.)

OUO1023,0003708 -19-26MAR13-2/2

Check Compressor Clutch Hub Clearance

NOTE: The clutch coil is NOT polarity sensitive.

- Check pulley-to-clutch-hub clearance using a dial indicator. Mount the gauge to the pulley as shown and connect a set of jumper wires from the compressor to a 12-volt battery.
- 2. Rotate the pulley and check for proper clearance specification in three equally spaced locations around the clutch hub. Add or remove shims as required.

Specification

3. Tighten clutch hub retaining cap screw to specification after correct clearance is obtained.

Specification



OUO1023,0003709 -19-26MAR13-1/1

Inspect Compressor Manifold

- 1. Remove cap screws (A) and manifold (B).
- Remove and discard manifold seal (C). Inspect porting surfaces.

NOTE: Lubricate new manifold seal with R134a refrigerant oil.

- 3. Lubricate and install a new manifold seal (C).
- Install manifold (B) and tighten manifold cap screws (A) to specification.

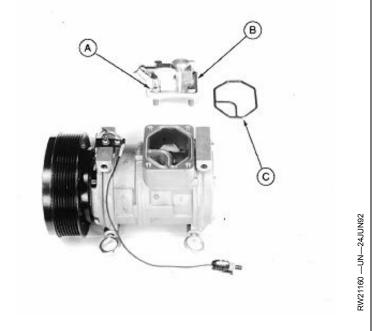
Specification

Manifold Cap

A—Cap Screw (4 used)

B—Manifold

C—Manifold Seal

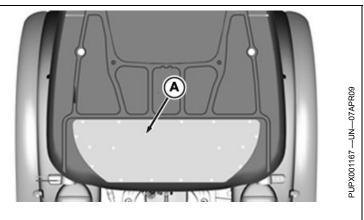


OUO1023,000370A -19-26MAR13-1/1

Remove and Install HVAC Housing Cover

- 1. Remove screws and HVAC housing cover (A).
- 2. Make repairs as necessary.
- 3. Check HVAC housing cover seal, and replace if needed.
- 4. Install HVAC housing cover (A) and screws.

A-HVAC Housing Cover



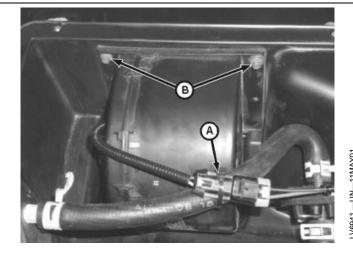
OUO1023,000370C -19-26MAR13-1/1

Remove Blower Motors

- 1. Remove HVAC housing cover. (See Remove and Install HVAC Housing Cover in this group.)
- 2. Disconnect blower motor wiring connector (A).
- 3. Remove two screws (B) and blower motor. Repeat this procedure for blower motor on opposite side, if removal is necessary.

A—Wiring Connector

B-Screw (2 used)



OUO1023,000370D -19-26MAR13-1/1

Remove Evaporator-Heater Core

- 1. Remove HVAC housing cover. (See Remove and Install HVAC Housing Cover in this group.)
- Recover/recycle air conditioning refrigerant. (See Recover/Recycle Air Conditioning Refrigerant in this group.)

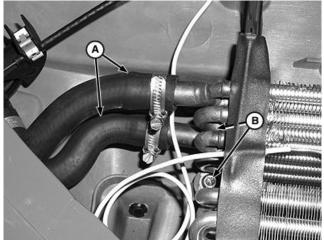
CAUTION: Explosive release of fluids from pressurized cooling system can cause serious burns.

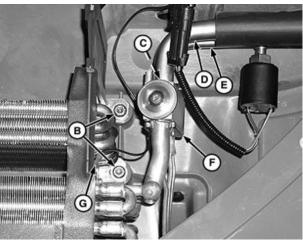
Shut off engine. Remove radiator filler cap only when cool enough to touch with bare hands. Slowly loosen cap to first stop to relieve pressure before removing cap completely.

- 3. Drain approximately 7.6 L (2 gal) coolant from radiator.
- 4. Disconnect battery, negative (—) cable first.

NOTE: Close all openings using caps and plugs.

- 5. Disconnect coolant hoses (A) from heater core.
- 6. Remove socket head screw (C) and clamping plate. Remove A/C lines (D and E). Close all openings using caps and plugs to prevent contamination.
- 7. Remove two cap screws (B) from each side of core.
- 8. Disconnect ground wire (G).
- 9. Lift evaporator/heater core and expansion valve (F) from housing as a unit.
- Disconnect expansion valve (F) from core. Close all openings using caps and plugs to prevent contamination.





LV12134 —UN—21JAN05

- A—Coolant Hose (2 used)
- B—Cap Screw (4 used)
 C—Socket Head Screw
- D—A/C Line
- E—A/C Line F—Expansion Valve G—Ground Wire

OUO1023,000370E -19-26MAR13-1/1

Leak Test Evaporator/Heater Core

- Install JT02106 test block using JT02098 air conditioning R12/R134a fitting kit, JT02124 and JT02123 plates, JT02126 and JT02125 screws, and JT02105 and JT02103 adapters. Close one adapter with JT03194 cap. Connect shop air to other adapter.
- 2. Apply shop air pressure and spray surface using 50-50 mixture of liquid soap and water to check for leaks.

NOTE: Minor leaks may be eliminated, but evaporator/heater core should be replaced if there is a major leak or restriction.

3. Repair or replace evaporator/heater core as required.

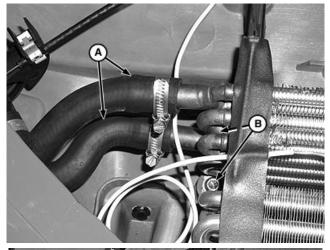
OUO1023,000370F -19-26MAR13-1/1

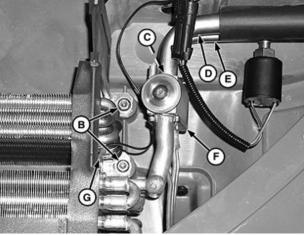
Install Evaporator-Heater Core

- Make sure evaporator/heater cavity drain outlets are not plugged.
- 2. Flush evaporator core if evaporator was air tested.
- 3. If evaporator was completely flushed or replaced with a new unit, and no major system leaks were found, add 60 mL (2.0 oz) of R134a refrigerant oil before installation. If leaks are found in the system, check refrigerant oil charge. (See Determine Correct Refrigerant Oil Charge in this group.)

NOTE: Install new O-rings at all A/C connections during assembly. Used or damaged O-rings will leak.

- 4. Attach expansion valve (F) to evaporator core.
- 5. Install evaporator/heater core in housing and tighten screws (B).
- 6. Connect A/C lines (D and E) to expansion valve (F) and install clamping plate using socket head screw (C).
- 7. Connect coolant hoses (A) to heater core.
- 8. Connect ground wire (G).
- 9. Connect battery, negative (—) cable last.
- Add coolant to radiator as necessary. Start engine and run the heating system to check for leaks. Check coolant level again and add as necessary.
- 11. Install HVAC housing cover. (See Remove and Install HVAC Housing Cover in this group.)
- Charge air conditioning system. (See Charge Air Conditioning System in this group.)





LV12134 —UN—21JAN05

- A—Coolant Hose (2 used)
- B—Screw (4 used)
- C—Socket Head Screw
- D-A/C Line
- E—A/C Line F—Expansion Valve G—Ground Wire

OUO1023,0003710 -19-26MAR13-1/1

Service Expansion Valve

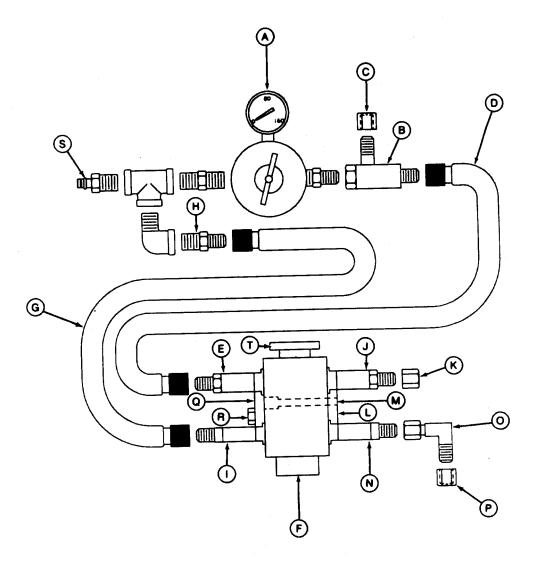
NOTE: The expansion valve is assembled to the evaporator/heater core prior to installation and is removed as a unit.

- 1. Remove expansion valve. (See Remove Evaporator/Heater Core in this group.)
- 2. Test expansion valve. (See Expansion Valve Bench Test in this group.)
- 3. Replace expansion valve as required and assemble to evaporator/heater core.
- 4. Install expansion valve and evaporator/heater core as a unit in the cab roof. (See Install Evaporator/Heater Core in this group.)

OUO1023,0003711 -19-26MAR13-1/1

Air Conditioning System

Expansion Valve Bench Test



A—Regulator

B—Tee (JT03191)

C—Orifice Cap (JT02111)

D—Hose (JT02109)

E—Tube (JT02105)

F-Expansion Valve

G-Hose (JT02108)

H—Regulator Inlet (#218887)

I— Tube (JT02103)

J— Tube (JT02105)

K—Cap (JT03194)

L—Plate (R115927/JT02123)

M—Screw (AT127259/JT02125)

N—Tube (JT02109)

O-Elbow (JT05483)

P—Orifice Cap (JT02111)

Q—Plate (L77942/JT02124)

R—Screw (M67175/JT02126)

S—Air Inlet Tee Assembly

(JT02112) T—Power Head

1. Connect expansion valve (F) to regulator (A) which can support 820 kPa (8.2 bar) (120 psi).

- Install tee (B) with 0.05 cm (0.020 in.) orifice cap (C) at regulator outlet.
- Connect blue hose (D) between tee (B) and tube (E) on inlet side of expansion valve (F).
- Connect red hose (G) between elbow of regulator inlet (H) and tube (I) of expansion valve inlet.
- Install tube (J) with cap (without orifice) (K) on expansion valve outlet. Secure tubes with plate (L) and screws (M).

 Install tube (N) with 90° elbow (O) and orifice cap (P) on expansion valve outlet. Secure tubes with plate (Q) and screw (R).

NOTE: Both orifice caps used must have a 0.05 cm (0.020 in.) orifice. Any other size will provide false results.

- 2. Fill container with ice water.
- 3. Attach regulator assembly to air inlet tee assembly (S) of 620 kPa (6.2 bar) (90 psi) minimum.
- 4. Adjust regulator until air flowing from outlet side of expansion valve (F) is shut off. Air should stop flowing at 520—590 kPa (5.2—5.9 bar) (75—85 psi).

Continued on next page

OUO1023,0003712 -19-26MAR13-1/2

7W40024 —UN—27AUG93

- Adjust regulator to approximately 70 kPa (0.7 bar) (10 psi). Hold power head (T) of expansion valve in ice water and slowly adjust regulator to increase pressure. Air flow from orifice cap (P) should stop at 170—240 kPa (1.7—2.4 bar) (25—35 psi).
- Adjust regulator to 280 kPa (2.8 bar) (40 psi). Valve should close when power head of expansion valve is dipped in ice water. Valve should open after removing valve from water and warming power head.
- 7. Repeat step 6, adjusting regulator to 480 kPa (4.8 bar) (70 psi).
- 8. Replace valve if any test failed. Install valve.
- 9. Perform diagnostic checks. (See Tests and Adjustments in Diagnostic Manual, Section 290, Group 15.)

OUO1023,0003712 -19-26MAR13-2/2

Refrigerant Oil Information



CAUTION: New compressors are charged with a mixture of nitrogen, R134a refrigerant, and TY22025 (R134a) refrigerant oil. Wear safety goggles and discharge compressor slowly to avoid possible injury.

New compressors contain 230—245 mL (7.7—8.2 fl. oz.) of new oil. The oil level visible through the suction port is normally below the drive shaft. The amount of trapped oil is 81 mL (2.7 fl. oz.). Approximately 60 mL (2.0 fl. oz.) will seep into the cylinders during shipping and storage.

Typically, 21 mL (0.7 fl. oz.) of oil covers internal surfaces of the compressor exposed to refrigerant gas and cannot be drained.

The oil level will be above the drive shaft when 245 mL (8.2 fl. oz.) is put in a dry compressor.

The normal operating oil level of a compressor is 30—45 mL (1.0—1.5 fl. oz.) and cannot be seen through the suction port.

OUO1023,0003713 -19-26MAR13-1/1

Check Compressor Oil Charge

- Remove compressor. (See Remove, Inspect, and Install Air Conditioning Compressor in this group.)
- 2. Remove manifold caps and drain oil. Record amount.

NOTE: Save oil if compressor is new.

3. If MORE than 6 mL (0.2 fl. oz.) of oil was drained and appears normal, or any other components were replaced or flushed. (See Determine Correct Refrigerant Oil Charge in this group.)

If LESS than 6 mL (0.2 fl. oz.) of oil was drained or appears very black:

 Perform a volumetric efficiency test on compressor to determine serviceable condition. Flush with solvent to internally wash out oil if compressor is serviceable. (See Test Volumetric Efficiency of Compressor in this group.)

- Remove, clean, and bench test expansion valve, but do not disassemble valve. (See Expansion Valve Bench Test in this group.)
- Remove and discard receiver-dryer. (See Replace Air Conditioning Receiver-Dryer in this group.)
- Install a new receiver-dryer.
- Flush complete system. (See Flush Air Conditioning System in this group.)
- Install required oil. (See Determine Correct Refrigerant Oil Charge in this group.)
- Connect all components.
- Purge, evacuate, and charge system. (See Evacuate Air Conditioning System and Charge Air Conditioning System in this group.)

OUO1023,0003714 -19-26MAR13-1/1

Determine Correct Refrigerant Oil Charge

IMPORTANT: Use care in checking and adding oil.

Too much oil will reduce cooling capacity. Too
little oil will result in poor lubrication of the
compressor, leading to early failure.

NOTE: Determine amount of oil charge for system prior to installation of compressor.

Compressors are divided into three categories when determining correct oil charge:

- New compressor.
- Used compressor, not flushed.
- Used compressor, flushed.
- If complete system, lines, and components were flushed, add correct amount of oil:
 - New compressor contains correct amount of new oil, 230 +15/-0 mL (7.7 +0.5/-0 fl. oz.).
 - Used compressor (drained)
 - Not flushed, add 210 mL (7.1 fl. oz.) of new oil.
 - Flushed, add 230 +15/-0 mL (7.7 +0.5/-0 fl. oz.) of new oil.
- 2. If complete system was not flushed, add correct amount of oil for compressor, plus amount of oil for each component serviced:
 - New compressor contains 230 +15/-0 mL (7.7 +0.5/-0 fl. oz.) of new oil. Connect battery to clutch coil and rotate drive shaft to remove all oil. Return 25 mL (0.85 fl. oz.) of oil to compressor.
 - Used compressor (drained)
 - Not flushed, add 40 mL (1.4 fl. oz.) of new oil.
 - Flushed, add 60 mL (2.0 fl. oz.) of new oil.

Remove compressor to determine correct oil charge if any components have been removed, drained, and flushed.

Use the following chart as a guide for adding oil:

NOTE: If the complete system was purged with all components in place, the amount of oil lost is negligible.

Component	Oil Charge
Evaporator	60 mL (2.0 fl. oz.)
Condenser	60 mL (2.0 fl. oz.)
Receiver-Dryer	15 mL (0.5 fl. oz.)
Compressor	60 mL (2.0 fl. oz.)
Hoses	50 mL (1.7 fl. oz.)

NOTE: Hoses = 2 mL per 30 cm (0.06 fl oz per 1 ft). Approximate total length equals 600 cm (20 ft).

If any section of hose is removed and flushed or replaced, measure length of hose and use the formula to determine correct amount of oil to be added.

IMPORTANT: DO NOT leave the system or R134a compressor oil containers open. Oil easily absorbs moisture.

DO NOT spill R134a compressor oil on acrylic or ABS plastic. Oil will deteriorate these materials rapidly.

Label R134a oil containers and take measures to eliminate accidental mixing of different oils.

OUO1023,0003715 -19-26MAR13-1/1

Add Refrigerant Oil to System

 Add approximately 170 mL (5.6 fl. oz.) of R134a refrigerant oil through compressor suction port and 85 mL (2.9 fl. oz.) into discharge port when system has been completely flushed. (See Determine Correct Refrigerant Oil Charge in this group.)

IMPORTANT: Use only TY22025 (R134a) refrigerant oil.

NOTE: Some oil may have to be added through compressor line and fitting.

2. Install manifold to compressor, if removed. Tighten cap screws to specification.

Specification

OUO1023,0003716 -19-26MAR13-1/1

System Information

FLUSHING

Flushing the system or a component is a cleaning process using a liquid solvent to wash out oil and debris. Purging is always necessary after flushing to remove solvent from the system or component.

PURGING

Purging the system or a component is a cleaning process using a gas to force liquid from the system. Purging alone will not force refrigerant oil out of the system.

EVACUATING

Evacuating the system is a process to draw air and moisture from the system with a vacuum.

WHEN TO FLUSH AN AIR CONDITIONING SYSTEM?

- The compressor has an internal failure.
- No oil remains in used compressor.
- Oil drained from compressor appears or smells overheated.
- System was contaminated with a mixture of refrigerant oils.

GENESOLV 2004 is a registered trademark of the Micro Care Corporation (800-638-0125).

- System was left open to the atmosphere long enough for dirt, moisture, or debris to enter the tubing or components.
- System has an internal blockage.

WHEN TO PURGE AN AIR CONDITIONING SYSTEM?

- After flushing system with solvent, to prevent oil dilution.
- System was contaminated with nitrogen or two refrigerants.
- System was left open to the atmosphere and flushing could not be performed.
- A repair required installation of new lines, condenser, or evaporator.

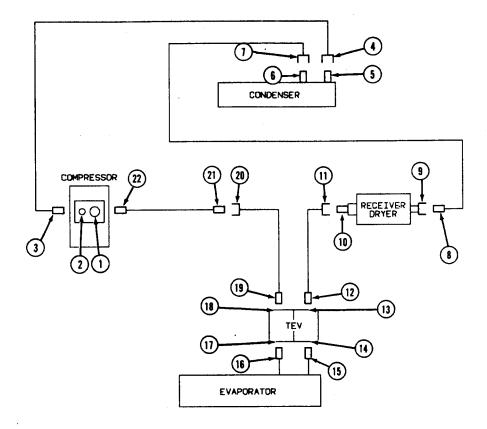
SOLVENTS

The following three solvents are recommended for flushing air conditioning systems. Each adequately dissolves oil and sludge but at a different rate. Use only solvents with an equivalent MSDS.

- GENESOLV 2004® Solvent
- ART338 A/C Flushing Solvent (JT02077)
- Naphtha 673 Parts Solvent

OUO1023,0003717 -19-20DEC12-1/1

Flush Air Conditioning System



- 1—Compressor Manifold Suction 7—Receiver-Dryer Inlet Hose, **Port**
- Compressor Manifold Discharge Port
- Compressor Discharge Hose Inlet Port
- Compressor Discharge Hose **Outlet Port**
- Condenser Inlet Port
- Condenser Outlet Port
- Inlet End
- Receiver-Dryer Inlet Hose, **Outlet End**
- Receiver-Dryer Inlet Port
- 10— Receiver-Dryer Outlet Port 11- Receiver-Dryer Outlet Hose,
- Inlet End - Receiver-Dryer Outlet Hose, 18-**Outlet End**
- 13— Expansion Valve Pressure **Inlet Port**
- 14— Expansion Valve Pressure **Outlet Port**
- 15— Evaporator Inlet Tube
- 16— Evaporator Outlet Tube
- Expansion Valve Return **Inlet Port**
 - Expansion Valve Return **Outlet Port**
- 19— Expansion Valve Outlet Hose, Inlet End
- Expansion Valve Outlet Hose, Outlet End
- Compressor Inlet Hose, Inlet End

RW40023 —UN—27AUG93

· Compressor Inlet Hose, **Outlet End**

AIR CONDITIONING SYSTEM FITTING—REFERENCE CHART		
Location	SERVICE GUARD ^a Number	
Compressor Manifold 1. Suction port 2. Discharge port	JT02099 JT02100	
Compressor Discharge Hose 3. Inlet end 4. Outlet end	JT02102 JT03180 & JT03183	
Condenser 5. Inlet port 6. Outlet port	JT03195 & JT03181 JT03183	
Receiver-Dryer Inlet Hose 7. Inlet end 8. Outlet end	JT03188 JT03197	
Receiver-Dryer 9. Inlet port 10. Outlet port	JT02110 JT03183	
Receiver-Dryer Outlet Hose 11. Inlet end 12. Outlet end	JT03188 JT02106 & JT02104	

Continued on next page

OUO1023,0003718 -19-26MAR13-1/3

AIR CONDITIONING SYSTEM FITTING—REFERENCE CHART		
Location SERVICE GUARD ^a Number		
Expansion Valve Pressure 13. Inlet port 14. Outlet port	JT02103 JT02104	
Evaporator 15. Inlet tube 16. Outlet tube	JT02106 & JT02103 JT02106 & JT02105	
Expansion Valve Return 17. Inlet port 18. Outlet port	JT02105 JT02105	
Expansion Valve Outlet Hose 19. Inlet end 20. Outlet end	JT02106 & JT02105 JT03187	
Compressor Inlet Hose 21. Inlet end 22. Outlet end	JT03182 JT02101	

^{*}SERVICE GUARD

Review air conditioning system diagram showing adapters used at each hose and component connection.

Add flushing solvent to system with JT02075 air conditioning flushing unit and JT02078 flushing attachment kit. Use JT02098 air conditioning R12/R134a fitting kit, and JT02138 update kit.

- Discharge system. (See Recover/Recycle Air Conditioning Refrigerant in this group.)
- 2. Remove compressor and measure oil drained from both manifold ports.
- 3. Clean compressor as follows:
 - Pour 240 mL (8 fl. oz.) of JT02077 Flushing Solvent into suction port and 120 mL (4 fl. oz.) into discharge port. Plug both ports in compressor manifold, using JT02099 and JT02100 adapters with JT03194 caps.
 - Turn compressor end for end and roll it side to side.
 - Remove both plugs from manifold ports and drain solvent from compressor.
 - Connect battery power to compressor clutch coil.
 Rotate pulley at least five revolutions to move solvent out of cylinders.
 - Invert compressor, roll to all sides, and drain thoroughly.
 - Let compressor sit inverted for three to five minutes.
 - Repeat previous two steps at least three times.
- 4. Remove and discard receiver/dryer.
- 5. Flushing can be performed on tractor. Divide system into two circuits:
 - Condenser, including inlet and outlet hoses (see steps 6—13).
 - Evaporator, including inlet and outlet hoses (see steps 14—30).

IMPORTANT: DO NOT attempt to flush through compressor or receiver/dryer. Flushing through expansion valve or an orifice tube is acceptable if refrigerant oil has a normal odor and appearance.

Connect flusher outlet hose to inlet connection of compressor discharge hose (3) using JT02102 adapter to flush condenser.

- Attach a return hose and aerator nozzle to connection of receiver/dryer inlet hose (8) using JT03197 Adapter. Put nozzle in container to collect flushing solvent.
- 8. Fill flusher tank with 4 L (1 gal) of solvent and fasten all connections.

NOTE: Air pressure must be at least 620 kPa (6.2 bar) (90 psi) for flushing and purging.

- 9. Connect a supply line of moisture-free compressed air or dry nitrogen to flusher air valve.
- 10. Open air valve to force flushing solvent into condenser circuit. Flusher tank is empty when hose pulsing stops. Additional flushing cycles are required if system is heavily contaminated with burned oil or metal particles.
- 11. Purging the condenser circuit takes 10—12 minutes to thoroughly remove solvent.
- Disconnect hose from aeration nozzle to check circuit for solvent. Hold hose close to a piece of cardboard; continue purging until discharge air on cardboard is dry.
- 13. Go to step 27 if evaporator does not require flushing.
- 14. FLUSH EVAPORATOR:

Remove expansion valve to flush evaporator if system is contaminated with burned refrigerant oil or debris.

Go to step 23 to flush evaporator through expansion valve if oil appears normal.

Remove evaporator/heater core housing cover to access expansion valve. (See Remove and Install HVAC Housing Cover in this group.)

NOTE: JT02106 flushing block, JT02101 adapter and JT03188 adapter can be found in JT02098 air conditioning R12/R134a fitting kit.

6. FLUSH/PURGE CONDENSER:

Continued on next page

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- Install JT02106 flushing block in place of expansion valve.
- 16. Connect flusher outlet hose to compressor suction hose (22) using JT02101 adapter.
- Attach a hose and aerator nozzle to receiver/dryer outlet hose (11) connector using JT03188 adapter. Put nozzle in container to collect flushing solvent.
- 18. Repeat steps 8—10 to flush evaporator.
- 19. Purging the evaporator circuit takes 12—15 minutes to thoroughly remove solvent.
- Disconnect hose from aeration nozzle to check circuit for solvent. Hold hose close to a piece of cardboard; continue purging until discharge air on cardboard is dry.
- 21. Reinstall expansion valve, and reconnect heater coolant tubing. Clean up spilled antifreeze in evaporator housing and return coolant to radiator. Install operator seat.
- 22. Go to step 27.
- 23. FLUSH EVAPORATOR THROUGH EXPANSION VALVE:

- Connect flusher outlet hose to connection of receiver-dryer outlet hose (11) using JT03188 adapter.
- 24. Attach a hose and aerator nozzle to connection of compressor suction hose (22) using JT02101 adapter. Put nozzle in a container to collect solvent.
- 25. Repeat steps 8—10 to flush evaporator.
- 26. Repeat steps 19 and 20 to purge evaporator.
- 27. Install a new receiver/dryer compatible with R134a refrigerant. Fasten connections and mounting brackets.
- 28. Add required oil. (See Determine Correct Refrigerant Oil Charge in this group.)
- Install compressor. Connect refrigerant lines to manifold.
- 30. Connect clutch coil wire. Install drive belt.
- 31. Purge system.

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Evacuate Air Conditioning System

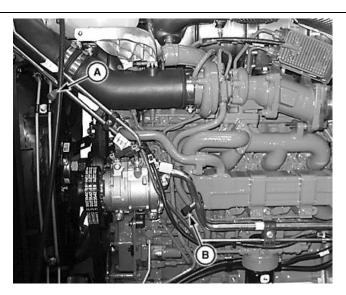
- IMPORTANT: Use only R134a refrigerant recovery, recycling, and charging stations. Do not mix R134a equipment, refrigerant, and refrigerant oils with R12 systems to prevent compressor damage.
- 1. Connect JDG10555 Recovery/Recycling Station and JT02051 Manifold with Gauges.
- NOTE: JDG10555 Recovery/Recycling Station can be substituted for the JT02046 and JT02050.

Pump must be capable of pulling at least 72.6 cm Hg (28.6 in. Hg) vacuum at sea level. Deduct 2.54 cm Hg (1 in. Hg) from 75.9 cm Hg (29.9 in. Hg) for each 300 m (1000 ft) elevation above sea level.

2. Connect low-side hose (blue) from charging station to suction fitting (B) on compressor. Connect high-side hose (red) to discharge fitting (A) on discharge line.

IMPORTANT: Do not operate compressor during evacuation.

 Follow manufacturer's instructions and evacuate system. Evacuate system for 15 minutes if ambient temperature is below 30°C (85°F) to remove nitrogen and air.



A—Discharge Fitting (High-Side)

B—Suction Fitting (Low-Side)

Evacuate system for 30 minutes if ambient temperature is above 30°C (85°F).

4. Charge system. (See Charge Air Conditioning System in Repair Technical Manual.)

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Charge Air Conditioning System

- Evacuate system. (See Evacuate Air Conditioning System in this group.)
- IMPORTANT: Use only R134a refrigerant recovery, recycling, and charging stations. Do not mix R134a equipment, refrigerant, and refrigerant oils with R12 systems to prevent compressor damage.
- 2. Connect JDG10974 Recovery/Recycling, and Charging Station to charge system.
- NOTE: JDG10555 Recovery/Recycling Station can be substituted for JT02045.
- Connect low-side hose (blue) to suction fitting on compressor. Connect high-side hose (red) to discharge fitting on discharge line.
- IMPORTANT: Do not run engine. System must hold a minimum vacuum of 72.6 cm Hg (28.6 in. Hg). Deduct 2.54 cm Hg (1 in. Hg) from 75.9 cm (29.9 in.) for each 300 m (1000 ft.) elevation above sea level.
- 4. Follow manufacturer's instructions and charge system.
- 5. Weigh refrigerant supply tank and invert so refrigerant enters system as a liquid.

- Begin charging through discharge port first. As suction pressure nearly equals discharge pressure, open suction valve.
- IMPORTANT: Close discharge valve on gauge manifold before starting engine and compressor, to prevent over-pressurizing refrigerant container.
- 7. Continue charging system until 1.58 kg (3.50 lb.) is installed. Start engine to complete charging system if a heated cylinder is not being used.
- 8. Close both gauge manifold valves and perform a system operational check as follows:
 - Engine at 2000 rpm. Close door and all windows.
 - Compressor operating with temperature control at maximum cooling and blower at purge.
 - Check ambient air temperature and cab air duct temperature, along with suction and discharge pressures. Compare to the temperature-pressure chart and temperature drop specifications. (See Tests and Adjustments in Diagnostic Manual, Section 290, Group 15).

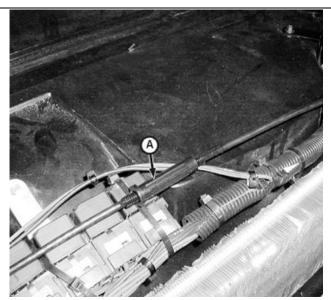
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Air Conditioning System

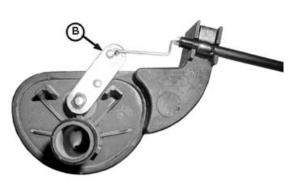
Adjust Heater Temperature Control Cable

NOTE: Heater cable adjuster (A) is located in the evaporator/heater core housing, in the cab roof. Remove HVAC housing cover for adjustment.

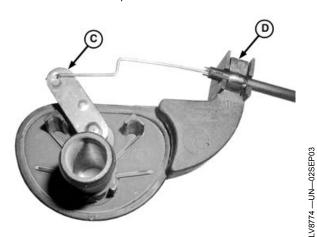
- Turn heater temperature control knob (CW) to full heat position.
- 2. Adjust cable adjuster (A) until heater valve arm is in full open position (B).
- 3. Adjust cable position with retainer clip (D).
- 4. Turn heater temperature control knob to OFF (CCW).
- 5. Verify heater valve arm is in full closed position (C). Repeat all steps if readjustment is required.
 - A—Heater Cable Adjuster B—Heater Valve Arm—Full Open Position
- C—Heater Valve Arm—Full Closed Position D—Retainer Clip



Heater Control Cable Adjuster



Full Open Position



Full Closed Position

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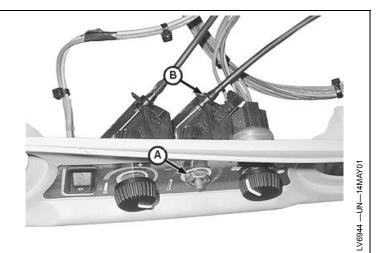
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Replace Heater Temperature Control Cable

- Disconnect battery negative (—) cable.
- Pull vent covers and retaining rings from cab control console. Remove three mounting screws located behind vent covers and pull cab control console from headliner.
- 3. Remove heater control knob.
- 4. Remove nut (A).
- 5. Disconnect control cable (B).

A-Nut

B—Control Cable



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- 6. Remove HVAC housing cover. (See Remove and Install HVAC Housing Cover in this Section, Group 30.)
- 7. Remove cable retaining clip (B) and disconnect control cable (C) from heater control valve (A).

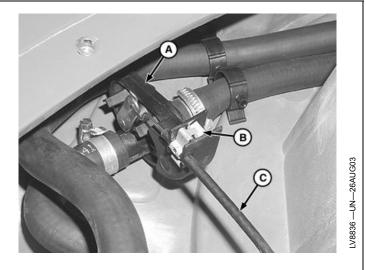
NOTE: Follow routing path of control cable before removing to aid during installation.

8. Replace heater control cable (C).

A—Heater Control Valve

C—Control Cable

B-Clip

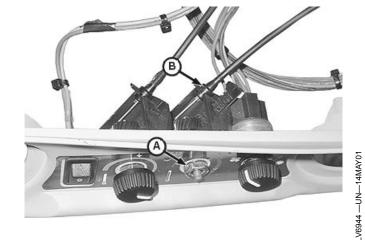


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- 9. Connect cable (B) and tighten nut (A).
- 10. Install headliner and screws.
- 11. Install heater control knob.

A—Nut

B—Control Cable



Continued on next page

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5085E, 5095E and 5100E Tractors

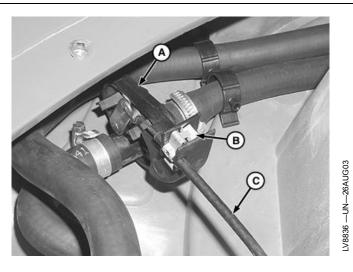
NOTE: Make sure the heater control knob and the heater control valve (A) are in the closed position as shown before installing clip (B).

- 12. Connect cable (C) and install clip (B).
- Adjust heater control cable. (See Adjust Heater Temperature Control Cable in Diagnostic manual Section 290, Group 15.)
- 14. Install HVAC housing cover. (See Remove and Install HVAC Housing Cover in this Section, Group 30.)
- 15. Connect battery negative (—) cable.

A—Heater Control Valve

C—Control Cable

B-Clip



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Remove Heater Control Valve

1. Remove HVAC housing cover. (See Remove and Install HVAC Housing Cover in this Section, Group 30.)

NOTE: A small amount of coolant will leak out of valve and heater core.

- 2. Disconnect hoses (C and E).
- 3. Remove clip (B) and disconnect control cable (D).
- 4. Remove heater control valve (A) and test for leakage. (See Leak Test Heater Control Valve in this Group.)

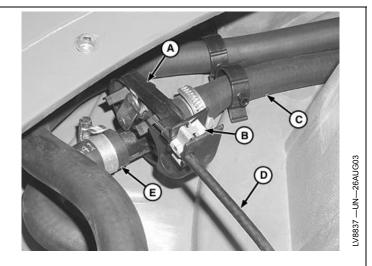
A—Heater Control Valve

B—Clip

C—Heater Valve Inlet Hose

D—Control Cable

E—Heater Valve Outlet Hose



OUO1023,000371D -19-20DEC12-1/1

Leak Test Heater Control Valve

- 1. Connect water pressure hose to control valve inlet and turn the valve arm to closed position.
- 2. Turn water pressure on and check for leakage from the valve outlet.

NOTE: The heater control valve is not serviceable.

3. Replace valve as required.

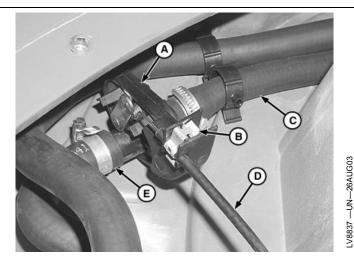
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Install Heater Control Valve

1. Inspect heater hoses and replace as necessary.

NOTE: Make sure the heater control knob and the heater control valve are in the closed position before connecting cable.

- 2. Install heater control valve (A) and connect heater control cable (D) and hoses (C and E).
- 3. Adjust heater control cable. (See Adjust Heater Temperature Control Cable in Diagnostic manual Section 290, Group 15.)
- 4. Add coolant to radiator if necessary. Start engine and run the heating system to check for leaks.
- 5. Install HVAC housing cover. (See Remove and Install HVAC Housing Cover in this Section, Group 30.)



A—Heater Control Valve

B-Clip

C-Heater Valve Inlet Hose

D—Control Cable E—Heater Valve Outlet Hose

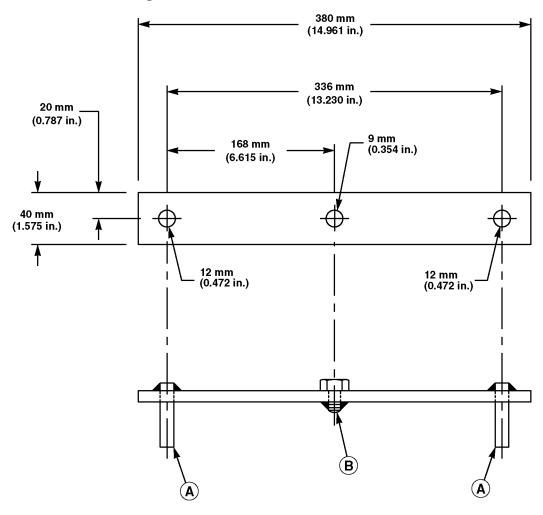
OUO1023,000371F -19-20DEC12-1/1

Section 99 Special Tools

Contents

Contents

DFLV1A—Final Drive Turning Tool



A—Rod

B—Cap Screw

Use: Tool is used to rotate final drive housing to determine rolling drag torque.

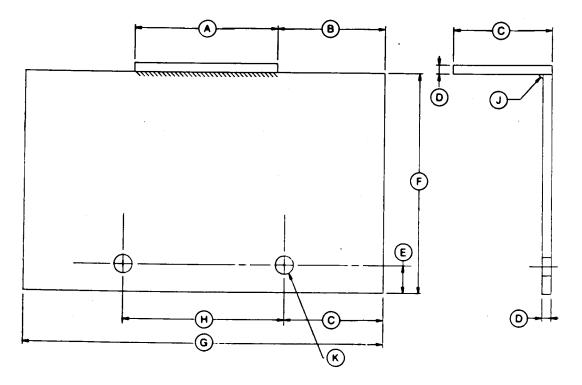
Material Required:

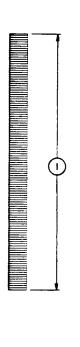
- 40 x 10 x 380 mm (1.575 x 0.394 x 14.961 in.) Flat Steel Stock
- 12 x 50 mm long (0.472 x 1.969 in. long) Round Steel Stock (2 used)
- M8 x 15 mm Cap Screw
- Drill two 12 mm (0.472 in.) and one 9 mm (0.354 in.) holes as shown
- Weld rods (A) and cap screw (B) to flat steel stock as shown

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LV12304 —UN—25FEB05

DFRW20—Compressor Holding Fixture





RW13619 —UN—20SEP89

A—102 mm (4 in.) B—76 mm (3 in.) C-70 mm (2.75 in.) D-6.4 mm (0.25 in.)

E-19 mm (0.75 in.) F—152 mm (6 in.) G—254 mm (10 in.) H—114 mm (4.5 in.)

Use: Tool is used to hold air conditioner compressor during disassembly and assembly.

Material Required:

• 2—Steel Plates (4 x 2.27 in.) and (10 x 6 in.)

I— 12.7 mm (0.5 in.) x 178 mm (7 in.) Threaded Rod J— Weld

K-12.7 mm (0.5 in.) Hole (2 used)

- 2—Threaded Steel Rods (0.5 x 7 in.)
- 4—Matching Lock Washers and Nuts
- 2—Eye Bolts (6 x 1/4 in.)
- 2—Matching Washers and Nuts

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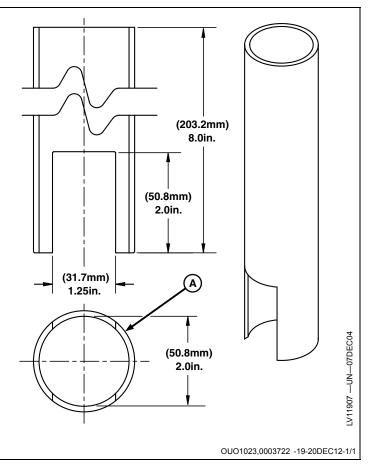
DFT1162—Snap Ring Removal Tool

Use: Tool is used to remove and install snap ring from MFWD drop gearbox output shaft, and PTO pinion shaft.

Material Required:

• 2 in. ID x 8 in. Long Pipe

A—Fabricated Tool



Dealer Fabricated Tools

Group 10 Service Tools

Essential and Recommended Tools

NOTE: For further information, see SERVICEGARD™

online tool catalog.

Below are tools listed in this Manual.

D05277ST Pulley Remover

DFRW20 Compressor Holding Fixture

KJD10580 Filling Reservoir JDE83 Flywheel Turning Tool

JDG19 Lifting Bracket

JDG23 Engine Lifting Sling

JDG364 Extraction Tool

JDG746 Compressor Seal Protector

JDG747 A/C Compressor Clutch Spanner

JDG748 Jaws

JDG771 Forcing Screw Pilot

JDG776 WEATHER PACK™ Extractor (Wide)

JDG777 WEATHER PACK™ Extractor (Narrow)

JDG783 Terminal Applicator

JDG865 Crimping Tool

JDG1177 Terminal Extraction Tool

JDG1580 Cab Lifting Bar

JDG10555 Recovery/Recycling Station

JDG10974 Recovery/Recycling, and Charging Station

JDST29 Weather Strip Installation Tool

JT01748 Lifting Bracket

JT02075 Air Conditioning Flushing Unit

JT02078Flushing Attachment Kit

JT02081 Electronic Leak Detector

JT02098 Air Conditioning R12/R134a Fitting Kit

JT02099 Adapter

JT02100 Adapter

JT02102 Adapter

JT02109 Hose

JT02121 Adapter

JT03194 Cap

JT03197 Adapter

JT07195B Technician's Electrical Repair Kit

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Service Tools