644J Loader Operation and Test
(Serial No. 611232-)

TECHNICAL MANUAL
644J Loader Operation and Test (S.N. 611232—)

TM10231 14JAN08 (ENGLISH)

For complete service information also see:

Worldwide Construction And Forestry Division
LITHO IN U.S.A

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.

TX,INTR,DU2141 –19–22MAR97–1/1

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TX,TM,FAX –19–03JUL01–1/1

Contents

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.

Section 9000
General Information

Contents

Recognize Safety Information

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

Follow the precautions and safe operating practices highlighted by this symbol.

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

On your machine, DANGER signs are red in color, WARNING signs are orange, and CAUTION signs are yellow. DANGER and WARNING signs are located near specific hazards. General precautions are on CAUTION labels.

T133555 –UN–28AUG00

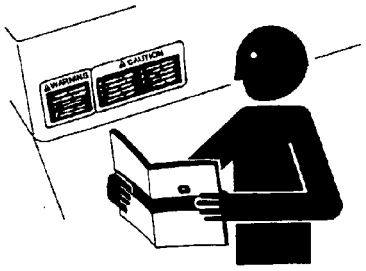
T133588 –19–28AUG00

TX03679,00016CC –19–01OCT07–1/1

Follow Safety Instructions

Read the safety messages in this manual and on the machine. Follow these warnings and instructions carefully. Review them frequently. Keep safety signs in good condition. Replace missing or damaged safety signs. Replacement safety signs are available from your authorized John Deere dealer.

Be sure all operators of this machine understand every safety message. Replace operator's manual and safety labels immediately if missing or damaged.



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Operate Only If Qualified

Do not operate this machine unless you have read the operator's manual carefully and you have been qualified by supervised training and instruction.

Familiarize yourself with the job site and your surroundings before operating. Try all controls and machine functions with the machine in an open area before starting to work.

Know and observe all safety rules that may apply to your work situation and your work site.

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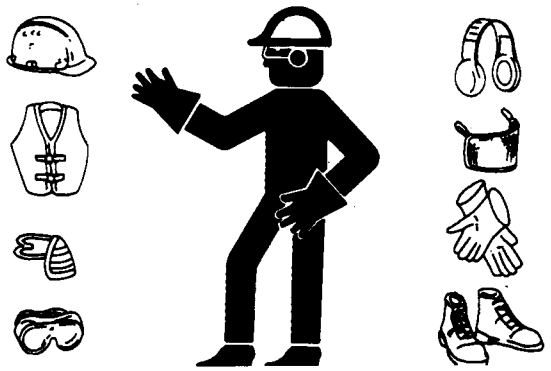
Wear Protective Equipment

Guard against injury from flying pieces of metal or debris; wear goggles or safety glasses.

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

Prolonged exposure to loud noise can cause impairment or loss of hearing. Wear suitable hearing protection such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.



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Avoid Unauthorized Machine Modifications

John Deere recommends using only genuine John Deere replacement parts to ensure machine performance. Never substitute genuine John Deere parts with alternate parts not intended for the application as these can create hazardous situations or hazardous performance. Non-John Deere Parts, or any damage or failures resulting from their use are not covered by any John Deere warranty.

Modifications of this machine, or addition of unapproved products or attachments, may affect machine stability or reliability, and may create a hazard for the operator or others near the machine. The installer of any modification which may affect the electronic controls of this machine is responsible for establishing that the modification does not adversely affect the machine or its performance.

Always contact an authorized John Deere dealer before making machine modifications that change the intended use, weight or balance of the machine, or that alter machine controls, performance or reliability.

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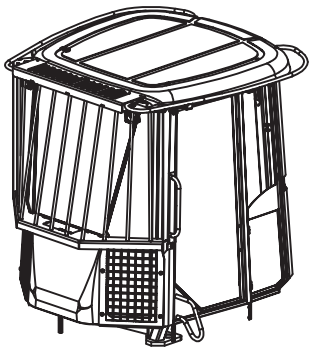
Add Cab Guarding For Special Uses

Special work situations or machine attachments may create an environment with falling or flying objects. Loading logs, using fork attachments, or operating in waste management applications requires special work tools. Added cab guarding to protect the operator may also be required.

Use load-clamping grapples to keep bulky loads from falling and add special screens or guarding when objects may be directed toward the cab. Contact your authorized John Deere dealer for information on devices intended to protect the operator from falling or flying objects in special work situations.



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Inspect Machine

Inspect machine carefully each day by walking around it before starting.

Keep all guards and shields in good condition and properly installed. Fix damage and replace worn or broken parts immediately. Pay special attention to hydraulic hoses and electrical wiring.

T6607AQ –UN–18OCT88

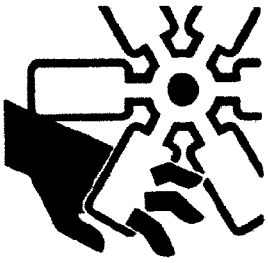
TX03679,0001734 –19–01OCT07–1/1

Stay Clear of Moving Parts

Entanglements in moving parts can cause serious injury.

Stop engine before examining, adjusting or maintaining any part of machine with moving parts.

Keep guards and shields in place. Replace any guard or shield that has been removed for access as soon as service or repair is complete.



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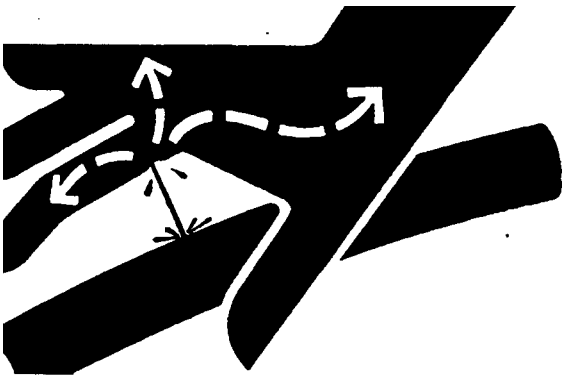
Avoid High-Pressure Fluids



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

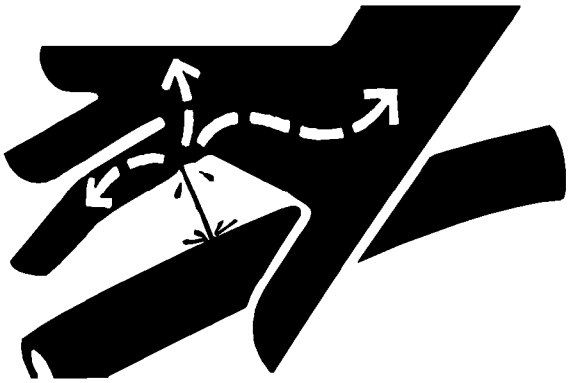
Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure.

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 from Deere & Company Medical Department in Moline, Illinois, U.S.A.

DX,FLUID –19–03MAR93–1/1

Avoid High-Pressure Oils



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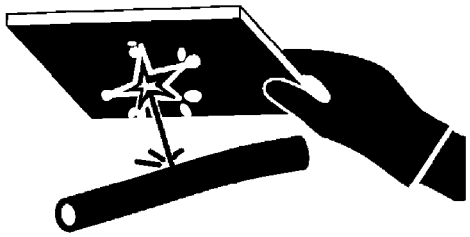


T133840 –UN–20SEP00

This machine uses a high-pressure hydraulic system. Escaping oil under pressure can penetrate the skin causing serious injury.

Never search for leaks with your hands. Protect hands. Use a piece of cardboard to find location of escaping oil. Stop engine and relieve pressure before disconnecting lines or working on hydraulic system.

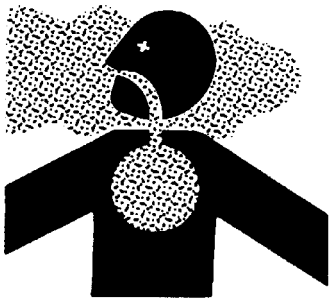
If hydraulic oil penetrates your skin, see a doctor immediately. Injected oil must be removed surgically within hours or gangrene may result. Contact a knowledgeable medical source or the Deere & Company Medical Department in Moline, Illinois, U.S.A.

TX03679,00016D3 –19–01OCT07–1/1

Beware of Exhaust Fumes

Prevent asphyxiation. Engine exhaust fumes can cause sickness or death.

If you must operate in a building, provide adequate ventilation. Use an exhaust pipe extension to remove the exhaust fumes or open doors and windows to bring outside air into the area.



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Prevent Fires

Handle Fuel Safely: Store flammable fluids away from fire hazards. Never refuel machine while smoking or when near sparks or flame.

Clean Machine Regularly: Keep trash, debris, grease and oil from accumulating in engine compartment, around fuel lines, hydraulic lines and electrical wiring. Never store oily rags or flammable materials inside a machine compartment.

Maintain Hoses and Wiring: Replace hydraulic hoses immediately if they begin to leak, and clean up any oil spills. Examine electrical wiring and connectors frequently for damage.

Keep A Fire Extinguisher Available: Always keep a multipurpose fire extinguisher on or near the machine. Know how to use extinguisher properly.

T133552 –UN–14SEP00

T133553 –UN–07SEP00

T133554 –UN–07SEP00

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Prevent Battery Explosions

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

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

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

TS204 –UN–23AUG88

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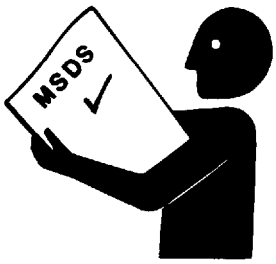
Handle Chemical Products Safely



T133580 –UN–25AUG00

Exposure to hazardous chemicals can cause serious injury. Under certain conditions, lubricants, coolants, paints and adhesives used with this machine may be hazardous.

If uncertain about safe handling or use of these chemical products, contact your authorized John Deere dealer for a Material Safety Data Sheet (MSDS) or go to internet website http://www.jdmsds.com. The MSDS describes physical and health hazards, safe use procedures, and emergency response techniques for chemical substances. Follow MSDS recommendations to handle chemical products safely.

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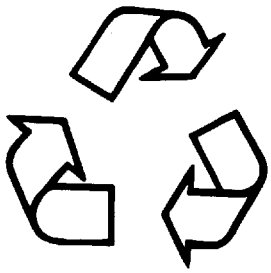
Dispose of Waste Properly



T133567 –UN–25AUG00

Improper disposal of waste can threaten the environment. Fuel, oils, coolants, filters and batteries used with this machine may be harmful if not disposed of properly.

Never pour waste onto the ground, down a drain, or into any water source.

Air conditioning refrigerants can damage the atmosphere. Government regulations may require using a certified service center to recover and recycle used refrigerants.

If uncertain about the safe disposal of waste, contact your local environmental or recycling center or your dealer for more information.

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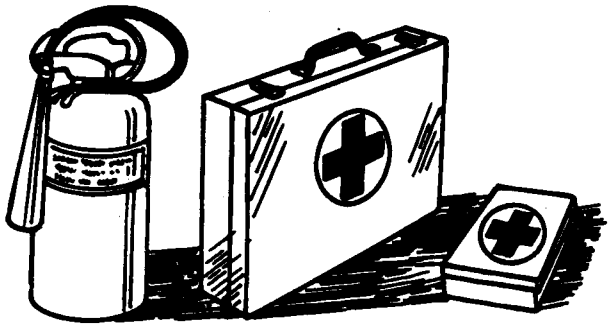
Prepare for Emergencies



TS291 –UN–23AUG88

Be prepared if an emergency occurs or a fire starts.

Keep a first aid kit and fire extinguisher handy.

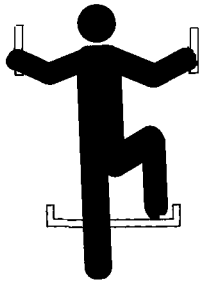
Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.

TX03679,000174B –19–31JAN07–1/1

Use Steps and Handholds Correctly

Prevent falls by facing the machine when you get on and off. Maintain 3-point contact with steps and handrails. Never use machine controls as handholds.

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.



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Start Only From Operator's Seat

Avoid unexpected machine movement. Start engine only while sitting in operator's seat. Ensure all controls and working tools are in proper position for a parked machine.

Never attempt to start engine from the ground. Do not attempt to start engine by shorting across the starter solenoid terminals.

T133715 –UN–07SEP00

TX03679,0001799 –19–03JAN07–1/1

Use and Maintain Seat Belt

Use seat belt when operating machine. Remember to fasten seat belt when loading and unloading from trucks and during other uses.

Examine seat belt frequently. Be sure webbing is not cut or torn. Replace seat belt immediately if any part is damaged or does not function properly.

The complete seat belt assembly should be replaced every 3 years, regardless of appearance.

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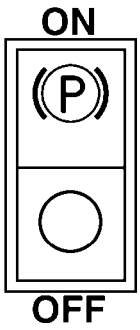
Prevent Unintended Machine Movement

When coworkers are present, disable hydraulics.

Lower all equipment to the ground during work interruptions. Lock transmission control in neutral, engage park brake and stop engine before allowing anyone to approach the machine.

Follow these same precautions before standing up, leaving the operator's seat, or exiting the machine.



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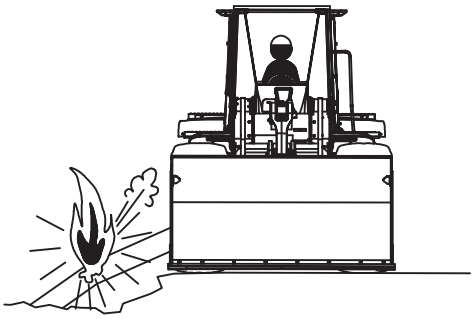
Avoid Work Site Hazards

Avoid contact with gas lines, buried cables and water lines. Call utility line location services to identify all underground utilities before starting work.

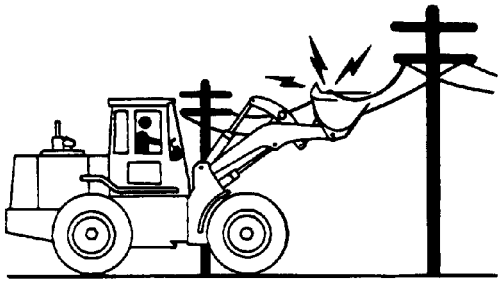
Prepare work site properly. Avoid operating near structures or objects that could fall onto the machine. Clear away debris that could move unexpectedly if run over.



T141894 –UN–15JUN01

Avoid boom or attachment contact with overhead obstacles or overhead electrical lines. Never move machine closer than 3 m (10 ft) plus twice the line insulator length to overhead wires.

Keep bystanders clear at all times. Use barricades or a signal person to keep vehicles and pedestrians away. Use a signal person if moving machine in congested areas or where visibility is restricted. Always keep signal person in view. Coordinate hand signals before starting machine.

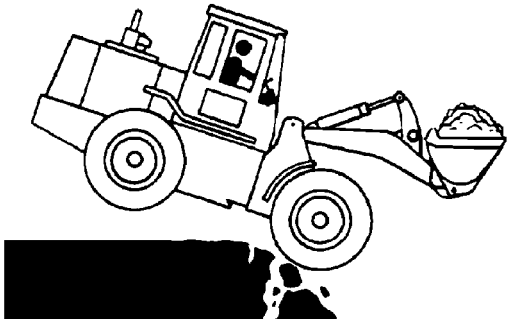


T141670 –UN–24APR01

Operate only on solid footing with strength sufficient to support machine. Be especially alert working near embankments or excavations.

Avoid working under over-hanging embankments or stockpiles that could collapse under or on machine.

Reduce machine speed when operating with tool on or near ground when obstacles may be hidden (e.g., during snow removal or clearing mud, dirt, etc.). At high speeds hitting obstacles (rocks, uneven concrete or manholes) can cause a sudden stop. Always wear your seatbelt.



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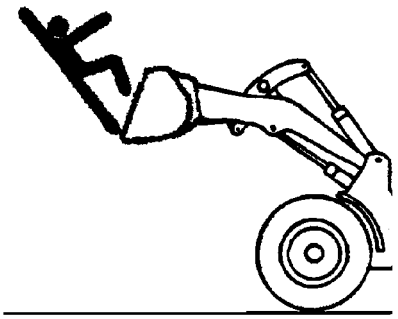
Use Special Care When Operating Loader

Never use the loader to lift people. Do not allow anyone to ride in the bucket or use the bucket as a work platform.

Operate carefully with raised loads. Raising the load reduces machine stability, especially on side slopes or an unstable surface. Drive and turn slowly with a raised load.

Ensure that objects in the bucket are secure. Do not attempt to lift or carry objects that are too big or too long to fit inside the bucket unless secured with an adequate chain or other device. Keep bystanders away from raised loads.

Be careful when lifting objects. Never attempt to lift objects too heavy for your machine. Assure machine stability and hydraulic capability with a test lift before attempting other maneuvers. Use an adequate chain or sling and proper rigging techniques to attach and stabilize loads. Never lift an object above or near another person.



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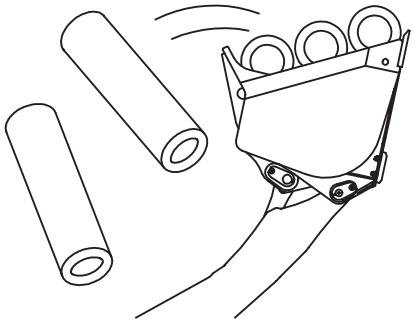

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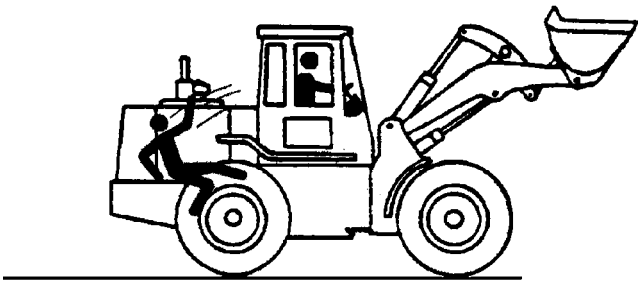
Keep Riders Off Machine

Only allow operator on machine.

Riders are subject to injury. They may fall from machine, be caught between machine parts, or be struck by foreign objects.

Riders may obstruct operator's view or impair his ability to operate machine safely.



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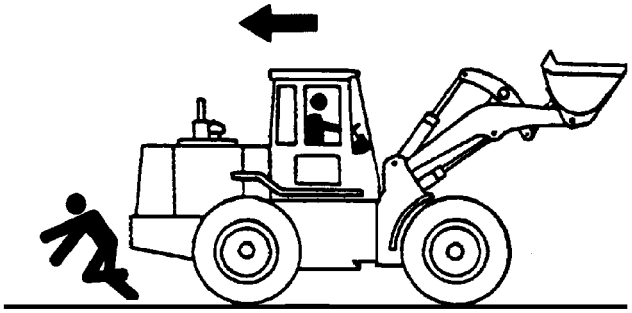
Avoid Backover Accidents

Before moving machine, be sure all persons are clear of machine path. Turn around and look directly for best visibility. Use mirrors to assist in checking all around machine. Keep windows and mirrors clean, adjusted, and in good repair.

Be certain reverse warning alarm is working properly.

Use a signal person when backing if view is obstructed or when in close quarters. Keep signal person in view at all times. Use prearranged hand signals to communicate.



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Avoid Machine Tip Over

Use seat belt at all times.

Do not jump if the machine tips. You will be unlikely to jump clear and the machine may crush you.

Load and unload from trucks or trailers carefully. Be sure truck is wide enough and on a firm level surface. Use loading ramps and attach them properly to truck bed.

Be careful on slopes. Avoid sharp turns. Balance loads so weight is evenly distributed and load is stable. Carry tools and loads close to the ground to aid visibility and lower center of gravity. Use extra care on soft, rocky or frozen ground.

Know the capacity of the machine. Do not overload. Be careful with heavy loads. Using oversize buckets or lifting heavy objects reduces machine stability.

Ensure solid footing. Use extra care in soft ground conditions that may not uniformly support the wheels, especially when raising the boom. Do not operate close to banks or open excavations that may cave in and cause machine to tip or fall.

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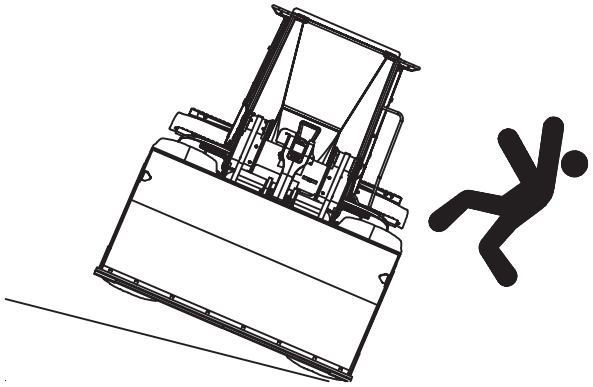

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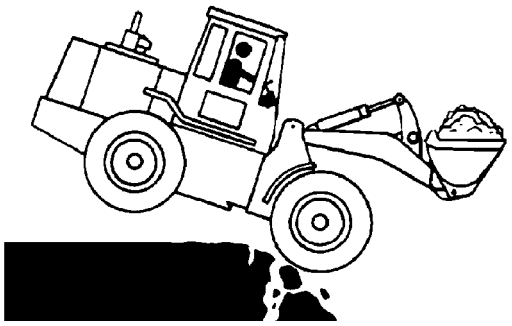

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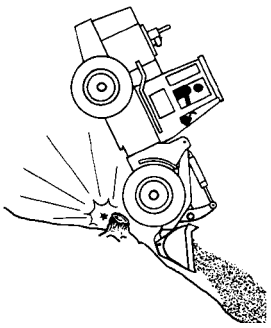
Operating on Slopes

Avoid side slope travel whenever possible. Drive up steep slope in forward and down in reverse.

Select low gear speed before starting down slope. The grade of the slope will be limited by ground condition and load being handled.

Use service brakes to control speed. Sudden brake application with a loaded bucket on downhill side could cause machine to tip forward.



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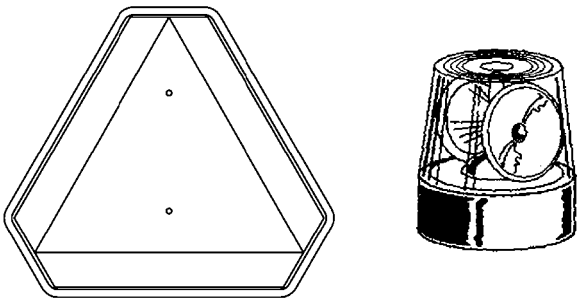
Operating or Traveling On Public Roads

Machines that work near vehicle traffic or travel slower than normal highway speeds must have proper lighting and markings to assure they are visible to other drivers.

Install additional lights, beacons, slow moving vehicle (SMV) emblems, or other devices and use as required to make the machine visible and identify it as a work machine. Check state and local regulations to assure compliance. Keep these devices clean and in working condition.



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Inspect and Maintain ROPS

A damaged roll-over protective structure (ROPS) should be replaced, not reused.

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.

If ROPS was loosened or removed for any reason, inspect it carefully before operating the machine again.

To maintain the ROPS:

- Replace missing hardware using correct grade hardware.
- Check hardware torque.
- Check isolation mounts for damage, looseness or wear; replace them if necessary.
- Check ROPS for cracks or physical damage.

TX03679,000179F –19–07SEP06–1/1

Add and Operate Attachments Safely

Always verify compatibility of attachments by contacting your authorized dealer. Adding unapproved attachments may affect machine stability or reliability, and may create a hazard for others near the machine.

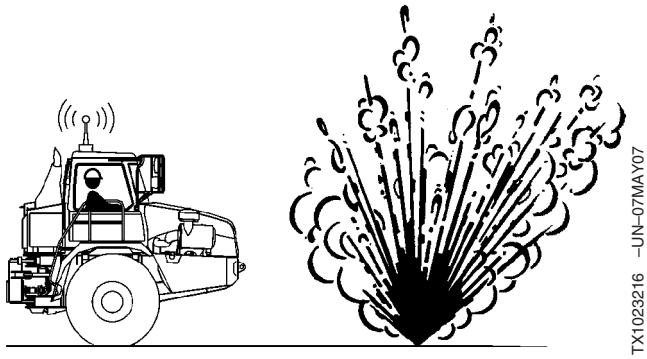
Ensure that a qualified person is involved in attachment installation. Add guards to machine if operator protection is required or recommended. Verify that all connections are secure and attachment responds properly to controls.

Carefully read attachment manual and follow all instructions and warnings. In an area free of bystanders and obstructions, carefully operate attachment to learn its characteristics and range of motion.

TX03679,00016F0 –19–24JAN07–1/1

Prevent Unintended Detonation of Explosive Devices

Avoid serious injury or death from an explosion hazard. Deactivate all cellular or radio frequency devices on equipment stored or operating in an area, such as a blasting zone, where the use of radio transmitting devices are prohibited.



TX1023216 –UN–07MAY07

VD76477,0001543 –19–08JAN08–1/1

9000
01
14

Park And Prepare For Service Safely

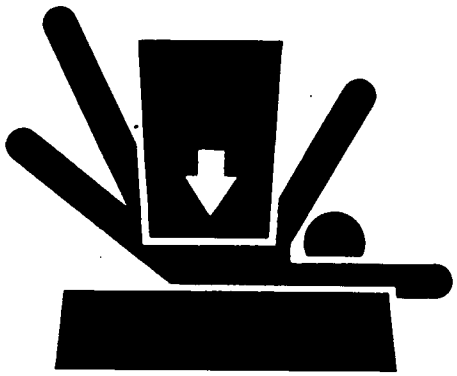
Warn others of service work. Always park and prepare your machine for service or repair properly.

- Park machine on a level surface and lower equipment to the ground.
- Engage park brake.
- Stop engine and remove key.
- Install articulation locking bar.
- Attach a “Do Not Operate” tag in an obvious place in the operator’s station.

T133332 –19–14DEC01

Securely support machine or attachment before working under it.

- Do not support machine with boom, bucket, or other hydraulically actuated equipment.
- Do not support machine with cinder blocks or wooden pieces that may crumble or crush.
- Do not support machine with a single jack or other devices that may slip out of place.



TS229 –UN–23AUG88

Understand service procedures before beginning repairs. Keep service area clean and dry. Use two people whenever the engine must be running for service work.

TX03679,00017A0 –19–18SEP01–1/1

Service Cooling System Safely

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

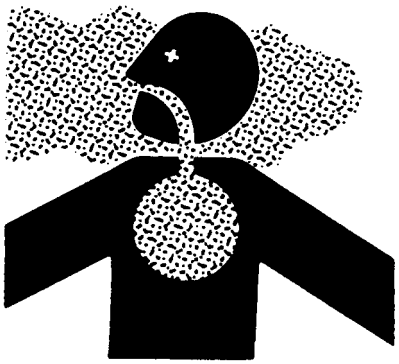
Do not service radiator through the radiator cap. Only fill through the surge tank filler cap.

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

TS281 –UN–23AUG88

OUO6043,0001B26 –19–11OCT06–1/1

Remove Paint Before Welding or Heating



TS220 –UN–23AUG88

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

Make Welding Repairs Safely

T133547 –UN–31AUG00

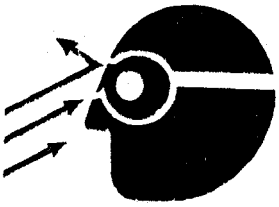
IMPORTANT: Disable electrical power before welding. Turn off main battery switch or disconnect positive battery cable. Separate harness connectors to engine and vehicle microprocessors.

Avoid welding or heating near pressurized fluid lines. Flammable spray may result and cause severe burns if pressurized lines fail as a result of heating. Do not let heat go beyond work area to nearby pressurized lines.

Remove paint properly. Do not inhale paint dust or fumes. Use a qualified welding technician for structural repairs. Make sure there is good ventilation. Wear eye protection and protective equipment when welding.

TX03679,00016D5 –19–12SEP07–1/1

Drive Metal Pins Safely



T133738 –UN–14SEP00

Always wear protective goggles or safety glasses and other protective equipment before striking hardened parts. Hammering hardened metal parts such as pins and bucket teeth may dislodge chips at high velocity.

Use a soft hammer or a brass bar between hammer and object to prevent chipping.

TX03679,0001745 –19–17JUL07–1/1

Section 9001
Diagnostic Trouble Codes (DTC)

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Group 50—Sealed Switch Module (SSM) Diagnostic Trouble Codes

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CAN Monitor Unit (CMU) Diagnostic Trouble Codes

The diagnostic trouble code number is indicated by a Suspect Parameter Number (SPN) and a Failure Mode Indicator (FMI) number. In the example **829.05**, 829 is the SPN and 05 is the FMI number.

To view diagnostic trouble codes, use one of the following methods:

- Service ADVISOR™ system. See Reading Diagnostic Trouble Codes with Service ADVISOR Diagnostic Application. (Group 9015-20.)
- CAN Monitor Unit (CMU). See CAN Monitor Unit (CMU) Menu Structure—Service Mode. (Group 9015-20.)

Note: For in-depth diagnostics on all CMU diagnostic trouble codes, see specific code diagnostic procedure. (Group 9001-10.)

Service ADVISOR is a trademark of Deere & Company

AA95137,00008F4 –19–20AUG07–1/1

000829.05 — Fuel Level Open or Short

Fuel level sensor circuit is open or short to power.

AA95137,00008F5 –19–05JUN07–1/1

Fuel Level Sensor Open or Short Diagnostic Procedure

Alarm Level:

No Warning Lamp

– – –1/1

❶ Component Check	Turn key switch OFF. Disconnect fuel level sensor (B17). See Engine Harness (W6) Component Location. (Group 9015-10.) Measure resistance across sensor pins. **Specification** Fuel Level Sensor (B17)—Resistance..... 168—192 ohms at 100% fill (full) 91—109 ohms at 50% fill 4—16 ohms at 0% fill (empty) Is resistance within specifications?	**YES:** Go to Open Circuit Check. **NO:** Fuel level sensor (B17) malfunction. Replace sensor. – – –1/1
❷ Open Circuit Check	Turn key switch OFF. Disconnect fuel level sensor (B17) and CAN monitor unit (CMU) connector (X48). See Engine Harness (W6) Component Location and see Front Console Harness (W4) Component Location. (Group 9015-10.) Check circuit Y02 YEL for continuity between pin B on fuel level sensor (B17) connector and pin N on CMU connector (X48). Check circuit R02 BLK for continuity between pin A on fuel level sensor (B17) connector and pin F on CMU connector (X48). Is continuity indicated?	**YES:** Go to Short Circuit Check. **NO:** Go to next step in this check.
	Key switch OFF and fuel level sensor (B17) disconnected. Disconnect connector (X4). See Engine Harness (W6) Component Location. (Group 9015-10.) Check circuit Y02 YEL for continuity between pin B on fuel level sensor (B17) connector and pin 32 on engine harness side of connector (X4). Check circuit R02 BLK for continuity between pin A on fuel level sensor (B17) connector and pin 21 on engine harness side of connector (X4). Is continuity indicated?	**YES:** Go to next step in this check. **NO:** Open circuit in engine harness (W6). Repair circuit without continuity or replace engine harness. See Engine Harness (W6) Wiring Diagram. (Group 9015-10.)
	Key switch OFF. Disconnect connector (X30) and CMU connector (X48). See Front Console Harness (W4) Component Location. (Group 9015-10.) Check circuit Y02 YEL for continuity between pin N on CMU connector (X48) and pin 31 on front console harness side of connector (X30). See Load Center Harness (W3) Wiring Diagram and see Front Console Harness (W4) Wiring Diagram. (Group 9015-10.) Check circuit R02 BLK for continuity between pin F on CMU connector (X48) and pin 7 on front console harness side of connector (X30). Is continuity indicated?	**YES:** Open circuit in load center harness (W3). Repair circuit without continuity or replace load center harness. **NO:** Open circuit in front console harness (W4). Repair circuit without continuity or replace front console harness. – – –1/1

❸ **Short Circuit Check**	Turn key switch OFF. Disconnect fuel level sensor (B17). See Engine Harness (W6) Component Location. (Group 9015-10.) Turn key switch ON. Check circuit Y02 YEL for voltage between pin B on fuel level sensor (B17) connector and machine ground. Is system voltage present (approximately 24 volts)?	**YES:** Go to next step in this check. **NO:** Go to Reprogram Controller.
	Turn key switch OFF. Disconnect connector (X30). See Front Console Harness (W4) Component Location. (Group 9015-10.) Turn key switch ON. Check circuit Y02 YEL for voltage between pin 31 on front console harness side of connector (X30) and machine ground. See Front Console Harness (W4) Wiring Diagram. (Group 9015-10.) Is system voltage present (approximately 24 volts)?	**YES:** Circuit Y02 YEL is short to power in front console harness (W4). Repair circuit Y02 YEL or replace harness. **NO:** Go to next step in this check.
	Turn key switch OFF. Disconnect connector (X4). See Load Center Harness (W3) Component Location. (Group 9015-10.) Turn key switch ON. Check circuit Y02 YEL for voltage between pin 32 on load center harness side of connector (X4) and machine ground. See Load Center Harness (W3) Wiring Diagram. (Group 9015-10.) Is system voltage present (approximately 24 volts)?	**YES:** Circuit Y02 YEL is short to power in load center harness (W3). Repair circuit Y02 YEL or replace harness. **NO:** Circuit Y02 YEL is short to power in engine harness (W6). Repair circuit Y02 YEL or replace harness. – – –1/1

❹ **Reprogram Controller**	Reprogram CAN monitor unit (CMU). Check for active codes. Is CMU code 000829.05 present?	**YES:** Replace controller. **NO:** Checks complete. – – –1/1

002000.09 — Missing Message From ECU

The CAN monitor unit (CMU) is not receiving a CAN signal from the engine control unit (ECU).

AA95137,00008F6 –19–09APR07–1/1

ECU Signal Missing from CMU Diagnostic Procedure

Alarm Level:

No Warning Lamp

– – –1/1

❶ **Controller Sensors Check**	Turn key switch ON. View engine control unit (ECU) monitored sensor outputs by accessing the Diagnostics / Engine Sensors / Display All menu on the CAN monitor unit (CMU). See CAN Monitor Unit (CMU) Menu Structure—Service Mode. (Group 9015-20.) Does the monitor show a reading for all sensors?	**YES:** Go to Reprogram CAN Monitor Unit. **NO:** Go to Fuse Check.

– – –1/1

❷ **Fuse Check**	Turn key switch OFF. Remove fuses (F3 and F10). See Fuse and Relay Specifications. (Group 9015-10.) Check continuity of fuses (F3 and F10). Is continuity indicated?	**YES:** Go to Circuit Check. **NO:** Replace fuse(s) without continuity. See Fuse and Relay Specifications. (Group 9015-10.)

– – –1/1

❸ **Circuit Check**	Turn key switch OFF. Disconnect ECU connector (X24). See Load Center Harness (W3) Component Location. (Group 9015-10.) Turn key switch ON. Check circuit P10 RED for voltage between pin E3 on ECU connector (X24) and machine ground. See Load Center Harness (W3) Wiring Diagram. (Group 9015-10.) Check circuit P03 RED for voltage between pin B1 on ECU connector (X24) and machine ground. Check circuit P03 RED for voltage between pin B2 on ECU connector (X24) and machine ground. Is system voltage (approximately 24 volts) present?	**YES:** Go to next step in this check. **NO:** Open circuit in load center harness (W3). Repair circuit without voltage or replace harness.
	Turn key switch OFF. ECU connector (X24) disconnected. Check circuit G11 BLK for ground at pins C2 and C3 on ECU connector (X24). See Load Center Harness (W3) Wiring Diagram. (Group 9015-10.) Is ground present?	**YES:** Go to CAN Circuit Check. **NO:** Circuit G11 BLK open circuit in load center harness (W3). Repair circuit G11 BLK or replace harness. – – –1/1

❹ **CAN Circuit Check**	Perform CAN Circuit Test. (Group 9015-20.) Does CAN circuit test good?	**YES:** Go to Reprogram Engine Control Unit. **NO:** Repair CAN circuit. – – –1/1

❺ **Reprogram Engine Control Unit**	Reprogram engine control unit (ECU). Check for active codes. Is CMU code 002000.09 present?	**YES:** Replace ECU. **NO:** Checks complete. – – –1/1

❻ **Reprogram CAN Monitor Unit**	Reprogram CAN monitor unit (CMU). Check for active codes. Is CMU code 002000.09 present?	**YES:** Replace CMU. **NO:** Checks complete. – – –1/1

002003.09 — Missing Message From TCU

The CAN monitor unit (CMU) is not receiving a CAN signal from transmission control unit (TCU).

AA95137,00008F7 –19–09APR07–1/1

TCU Signal Missing from CMU Diagnostic Procedure

Alarm Level:

No Warning Lamp

– – –1/1

❶ **Controller Sensors Check**	Turn key switch ON. View transmission control unit (TCU) monitored sensor outputs by accessing the Diagnostics / Transmission / Display All menu on the CAN monitor unit (CMU). See CAN Monitor Unit (CMU) Menu Structure—Service Mode. (Group 9015-20.) Does the monitor show reading for all sensors?	**YES:** Go to Reprogram CAN Monitor Unit. **NO:** Go to Fuse Check.

– – –1/1

❷ **Fuse Check**	Turn key switch OFF. Remove fuses (F18 and F28). See Fuse and Relay Specifications. (Group 9015-10.) Check continuity of fuses (F18 and F28). Is continuity indicated?	**YES:** Go to Circuit Check. **NO:** Replace fuse(s) without continuity.

– – –1/1

❸ **Circuit Check**	Turn key switch OFF. Disconnect TCU connector (X23). See Load Center Harness (W3) Component Location. (Group 9015-10.) Turn keys switch ON. Check circuit P18 RED for voltage between pin 23 on TCU connector (X23) and machine ground. See Load Center Harness (W3) Wiring Diagram. (Group 9015-10.) Check circuit P28 RED for voltage between pin 45 on TCU connector (X23) and machine ground. Check circuit P28 RED for voltage between pin 68 on TCU connector (X23) and machine ground. Is system voltage (approximately 24 volts) present?	**YES:** Go to next step in this check. **NO:** Open circuit in load center harness (W3). Repair circuit without voltage or replace harness.
	Turn key switch OFF. TCU connector (X23) disconnected. Check circuit G01 BLK for ground at pins 1 and 2 on TCU connector (X23). See Load Center Harness (W3) Wiring Diagram. (Group 9015-10.) Is ground present?	**YES:** Go to CAN Circuit Check. **NO:** Circuit G01 BLK open circuit in load center harness (W3). Repair circuit G01 BLK or replace harness. – – –1/1
❹ **CAN Circuit Check**	Perform CAN Circuit Test. (Group 9015-20.) Does CAN circuit test good?	**YES:** Go to Reprogram Transmission Control Unit. **NO:** Repair CAN circuit. – – –1/1
❺ **Reprogram Transmission Control Unit**	Reprogram transmission control unit (TCU). Check active codes. Is CMU code 002003.09 present?	**YES:** Replace TCU. **NO:** Checks complete. – – –1/1
❻ **Reprogram CAN Monitor Unit**	Reprogram CAN monitor unit (CMU). Check active codes. Is CMU code 002003.09 present?	**YES:** Replace CMU. **NO:** Checks complete. – – –1/1

002033.09 — Missing Message From FLC

The CAN monitor unit (CMU) is not receiving a CAN signal from flex load controller (FLC).

AA95137,00008F8 –19–05JUN07–1/1

FLC Signal Missing from CMU Diagnostic Procedure

Alarm Level:

No Warning Lamp

– – –1/1

❶ **Controller Sensors Check**	Turn key switch ON. View flex load controller (FLC) monitored sensor outputs by accessing the Diagnostics / Hydraulic / Display All menu on the CAN monitor unit (CMU). See CAN Monitor Unit (CMU) Menu Structure—Service Mode. (Group 9015-20.) Does the monitor show a reading for all sensors?	**YES:** Go to Reprogram CAN Monitor Unit. **NO:** Go to Fuse Check.

– – –1/1

❷ **Fuse Check**	Turn key switch OFF. Remove fuses (F15 and F21). See Fuse and Relay Specifications. (Group 9015-10.) Check continuity of fuses (F15 and F21). Is continuity indicated?	**YES:** Go to Circuit Check. **NO:** Replace fuse(s) without continuity.

– – –1/1

❸ **Circuit Check**	Turn key switch OFF. Disconnect FLC connector (X41). See Load Center Harness (W3) Component Location. (Group 9015-10.) Turn key switch ON. Check circuit P21 RED for voltage between pin L1 on FLC connector (X41) and machine ground. See Load Center Harness (W3) Wiring Diagram. (Group 9015-10.) Check circuit P15 RED for voltage between pin M1 on FLC connector (X41) and machine ground. Is system voltage (approximately 24 volts) present?	**YES:** Go to next step in this check. **NO:** Open circuit in load center harness. Repair circuit without voltage or replace harness.
	Turn key switch OFF. FLC connector (X41) disconnected. Check for ground at pins M2 and L2 (circuit G01 BLK) on FLC connector (X41). See Load Center Harness (W3) Wiring Diagram. (Group 9015-10.) Is ground present?	**YES:** Go to CAN Circuit Check. **NO:** Circuit G01 BLK open circuit in load center harness (W3). Repair circuit G01 BLK or replace harness. – – –1/1

❹ **CAN Circuit Check**	Perform CAN Circuit Test. (Group 9015-20.) Does CAN circuit test good?	**YES:** Go to Reprogram Flex Load Controller. **NO:** Repair CAN circuit. – – –1/1

❺ **Reprogram Flex Load Controller**	Reprogram flex load controller (FLC). Check for active codes. Is CMU code 002033.09 present?	**YES:** Replace FLC. **NO:** Checks complete. – – –1/1

❻ **Reprogram CAN Monitor Unit**	Reprogram CAN monitor unit (CMU). Check for active codes. Is CMU code 002033.09 present?	**YES:** Replace CMU. **NO:** Checks complete. – – –1/1

002140.09 — Missing Message From SSM

The CAN monitor unit (CMU) is not receiving a CAN signal from the sealed switch module (SSM).

AA95137,00008FA –19–09APR07–1/1

SSM Signal Missing from CMU Diagnostic Procedure

Alarm Level:

No Warning Lamp

– – –1/1

❶ **Button Check**	Turn key switch ON. Access the sealed switch module (SSM) test by accessing the Diagnostics / Switch Module menu on the CAN monitor unit (CMU). See CAN Monitor Unit (CMU) Menu Structure—Service Mode. (Group 9015-20.) Push the buttons on the SSM. Do the corresponding squares on the CMU window come on when the buttons are pushed?	**YES:** CMU is communicating with the SSM. Go to Reprogram CAN Monitor Unit. **NO:** Go to Fuse Check.

– – –1/1

❷ **Fuse Check**	Turn key switch OFF. Remove fuse (F13). See Fuse and Relay Specifications. (Group 9015-10.) Check continuity of fuse (F13). Is continuity indicated?	**YES:** Go to Circuit Check. **NO:** Replace fuse (F13).

– – –1/1

❸ **Circuit Check**	Turn key switch OFF. Disconnect SSM connector (X53). See Load Center Harness (W3) Component Location. (Group 9015-10.) Turn key switch ON. Check circuit P13 RED for voltage between pin 1 on SSM connector (X53) and machine ground. See Load Center Harness (W3) Wiring Diagram. (Group 9015-10.) Is system voltage (approximately 24 volts) present?	**YES:** Go to next step in this check. **NO:** Circuit P13 open circuit on load center harness (W3). Repair circuit P13 RED or replace harness.
	Turn key switch OFF. SSM connector (X53) disconnected. Check circuit G01 BLK for ground at pin 2 on SSM connector (X53). See Load Center Harness (W3) Wiring Diagram. (Group 9015-10.) Is ground present?	**YES:** Go to CAN Circuit Check. **NO:** Circuit G01 BLK open circuit in load center harness (W3). Repair circuit G01 BLK or replace harness. – – –1/1

❹ **CAN Circuit Check**	Perform CAN Circuit Test. (Group 9015-20.) Does CAN circuit test good?	**YES:** Go to Reprogram Sealed Switch Module. **NO:** Repair CAN circuit. – – –1/1

❺ **Reprogram Sealed Switch Module**	Reprogram sealed switch module (SSM). Check for active codes. IS CMU code 002140.09 present?	**YES:** Replace controller. **NO:** Checks complete. – – –1/1

❻ **Reprogram CAN Monitor Unit**	Reprogram CAN monitor unit (CMU). Check for active codes. Is CMU code 002140.09 present?	**YES:** Replace controller. **NO:** Checks complete. – – –1/1

002367.04 — Left Turn Switch Short to Ground

Left turn input signal is short to ground.

AA95137,00008FB –19–09APR07–1/1

Left Turn Switch Short to Ground Diagnostic Procedure

Alarm Level:

No Warning Lamp

– – –1/1

❶ **Component Check**	Turn key switch OFF. Disconnect turn switch (S25) connector. See Front Console Harness (W4) Component Location. (Group 9015-10.) Put turn switch (S25) in the LEFT turn position. Check for continuity between pins E and F on switch. Is continuity indicated?	**YES:** Go to Short Circuit Check. **NO:** Turn switch (S25) malfunction. Replace switch.

– – –1/1

❷ **Short Circuit Check**	Turn key switch OFF. Disconnect turn switch (S25) connector. See Front Console Harness (W4) Component Location. (Group 9015-10.) Check circuit L07 BRN for ground at pin E on turn switch (S25) connector. See Front Console Harness (W4) Wiring Diagram. (Group 9015-10.) Is ground present?	**YES:** Go to next step in this check. **NO:** Go to Reprogram Controller.
	Key switch OFF and turn switch (S25) disconnected. Disconnect CMU connector (X48). See Front Console Harness (W4) Component Location. (Group 9015-10.) Check circuit L07 BRN for ground at pin E on turn switch (S25) connector. See Front Console Harness (W4) Wiring Diagram. (Group 9015-10.) Is ground present?	**YES:** Circuit L07 BRN short to ground on front console harness (W4). Repair circuit L07 BRN or replace harness. **NO:** Go to Continuity Check.

– – –1/1

❸ **Continuity Check**	Turn manual battery disconnect (S2) OFF. Disconnect turn switch (S25) and CMU connector (X48). See Front Console Harness (W4) Component Location. (Group 9015-10.) Check continuity between pin R (circuit L07 BRN) on CMU connector (X48) and all other pins on CMU connector (X48). See Front Console Harness (W4) Wiring Diagram. (Group 9015-10.) Is continuity indicated?	**YES:** Circuit L07 BRN is short to circuit with continuity indicated on front frame harness (W4). Repair circuit L07 BRN or replace harness. **NO:** Go to Reprogram Controller. – – –1/1

❹ **Reprogram Controller**	Reprogram CAN monitor unit (CMU). Check for active codes. Is CMU code 002367.04 present?	**YES:** Replace controller. **NO:** Checks complete. – – –1/1

002369.04 — Right Turn Switch Short to Ground

The right turn input signal is short to ground.

AA95137,00008FC –19–09APR07–1/1

Right Turn Switch Short to Ground Diagnostic Procedure

Alarm Level:

No Warning Lamp

– – –1/1

❶ **Component Check**	Turn key switch OFF. Disconnect turn switch (S25) connector. See Front Console Harness (W4) Component Location. (Group 9015-10.) Put turn switch (S25) in the RIGHT turn position. Check for continuity between pins D and F on switch. Is continuity indicated?	**YES:** Go to Short Circuit Check. **NO:** Turn switch (S25) malfunction. Replace switch. – – –1/1

❷ **Short Circuit Check**	Turn key switch OFF. Disconnect turn switch (S25) connector. See Front Console Harness (W4) Component Location. (Group 9015-10.) Check circuit L10 BRN for ground at pin D on turn switch (S25) connector. Is ground present?	**YES:** Go to next step in this check. **NO:** Go to Reprogram Controller.
	Key switch OFF and turn switch (S25) disconnected. Disconnect CMU connector (X48). See Front Console Harness (W4) Component Location. (Group 9015-10.) Check circuit L10 BRN for ground at pin D on turn switch (S25) connector. See Front Console Harness (W4) Wiring Diagram. (Group 9015-10.) Is ground present?	**YES:** Circuit L10 BRN is short to ground on front frame harness (W4). Repair circuit L10 BRN or replace harness. **NO:** Go to Continuity Check. – – –1/1

❸ **Continuity Check**	Turn manual battery disconnect (S2) OFF. Turn switch (S25) disconnected and CMU connector (X48) disconnected. Check continuity between pin S (circuit L10 BRN) on CMU connector (X48) and all other pins on CMU connector (X48). Is continuity indicated?	**YES:** Circuit L10 BRN is short to circuit with continuity indicated on front frame harness (W4). Repair circuit L10 BRN or replace harness. See Front Console Harness (W4) Wiring Diagram. (Group 9015-10.) **NO:** Go to Reprogram Controller. – – –1/1

❹ **Reprogram Controller**	Reprogram CAN monitor unit (CMU). Check for active codes. Is CMU code 002369.04 present?	**YES:** Replace controller. **NO:** Checks complete. – – –1/1

524250.31 — Inspect Park Brake

The CAN monitor unit (CMU) indicates that the park brake has been applied and the machine speed was 15.5 miles an hour or more.

CAUTION: The park brake should be checked before operation of vehicle due to possible park brake damage. CMU code 524250.31 will stay active and park brake indicator light will flash (regardless of park brake position) until code is cleared. For more information on the park brake operation, see Transmission Control Unit (TCU) Circuit Theory of Operation. (Group 9015-15.)

AA95137,0000938 –19–31MAY07–1/1

Inspect Park Brake Diagnostic Procedure

– – –1/1

❶ **Component Check**	Check operation of park brake. Perform Park Brake Check. See Operational Checkout. (Group 9005-10.) Does park brake test good?	**YES:** Checks complete. **NO:** See Park Brake Diagnose Malfunctions. – – –1/1