844J
Loader
Operation and Test

TECHNICAL MANUAL
844J Loader Operation and Test
TM2306

TM2306 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,MB52 –19–12SEP97–1/1

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

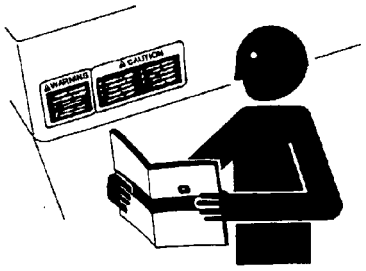
T133588 –19–28AUG00

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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TX03679,00016F9 –19–18OCT07–1/1

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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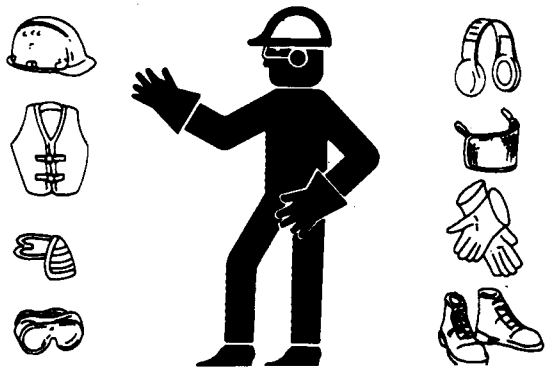
Wear Protective Equipment

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.

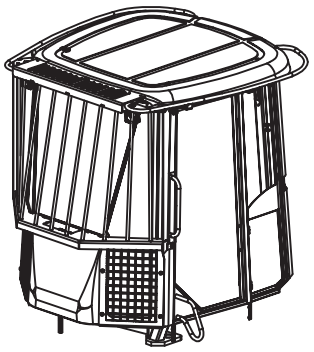
Always contact an authorized John Deere dealer before making machine modifications that change the intended use, weight or balance of the machine, or that alter machine controls, performance or reliability.

AM40430,00000A9 –19–14JAN08–1/1

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.



T141893 –UN–04MAY01

TX03679,00017C6 –19–18OCT07–1/1

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

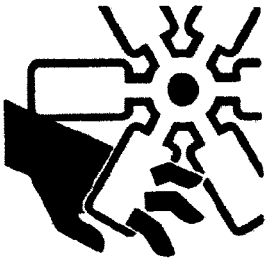
TX03679,0001734 –19–01OCT07–1/1

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 Oils

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.

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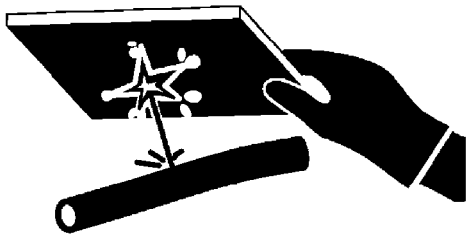

T133840 –UN–20SEP00

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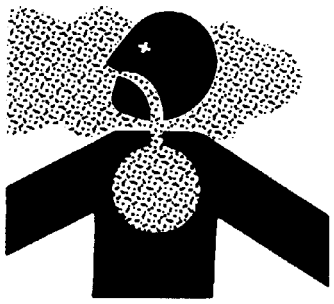
Beware of Exhaust Fumes

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.

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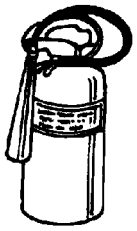

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Prevent Battery Explosions

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).

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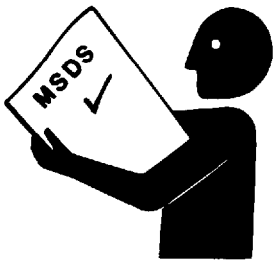
Handle Chemical Products Safely



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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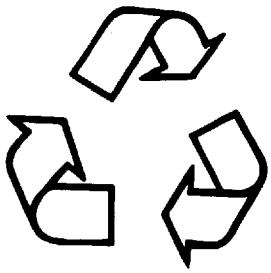
Dispose of Waste Properly



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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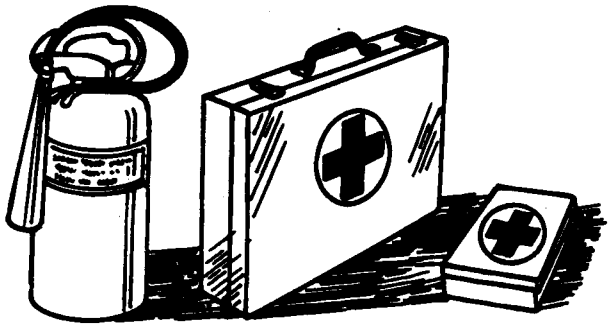
Prepare for Emergencies



TS291 –UN–23AUG88

Be prepared if an emergency occurs or a fire starts.

Keep a first aid kit and fire extinguisher handy.

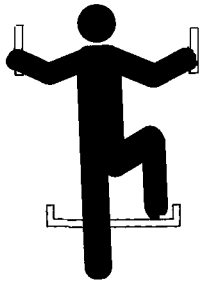
Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.

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.



T133468 –UN–30AUG00

TX03679,00016F2 –19–25JAN07–1/1

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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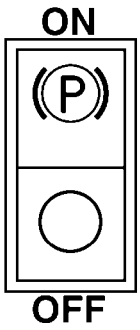
Prevent Unintended Machine Movement

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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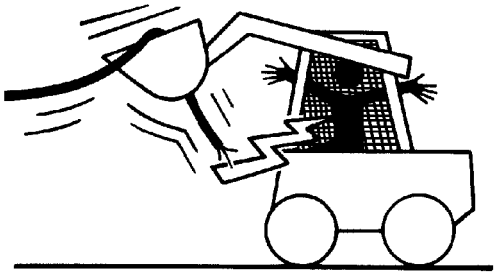
Avoid Work Site Hazards

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

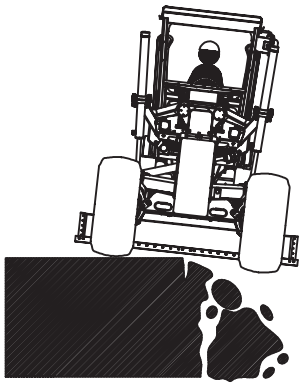
Prepare work site properly. Avoid operating near structures or objects that could fall onto the machine. Clear away debris that could move unexpectedly if run over.



T192984 –UN–26AUG03

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.



T141904 –UN–15MAY01

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 seat belt.

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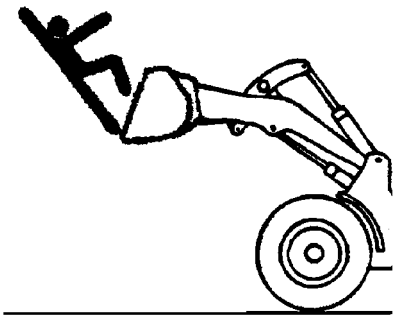
Use Special Care When Operating Loader

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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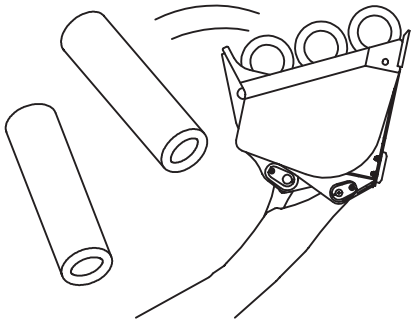

T141902 –UN–07MAY01

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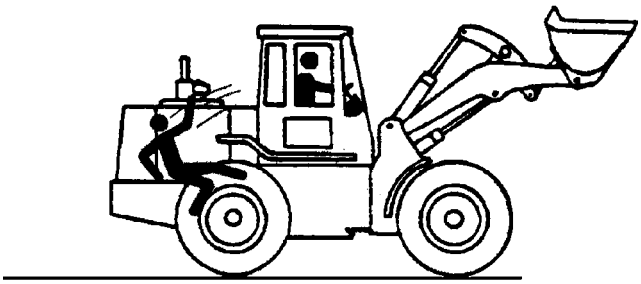
Keep Riders Off Machine

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.



T141671 –UN–04MAY01

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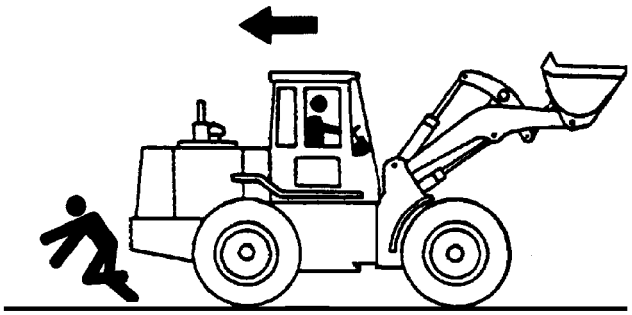
Avoid Backover Accidents

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.



T141673 –UN–04MAY01

TX03679,000179C –19–20APR01–1/1

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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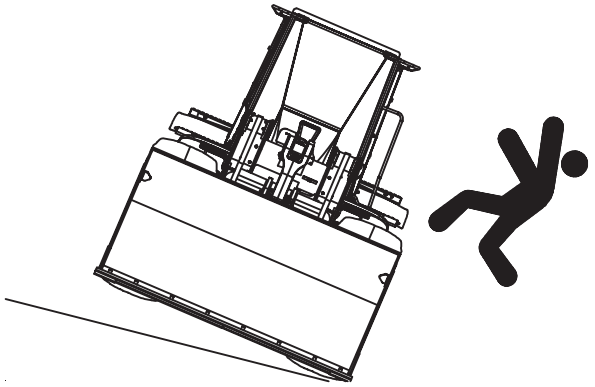

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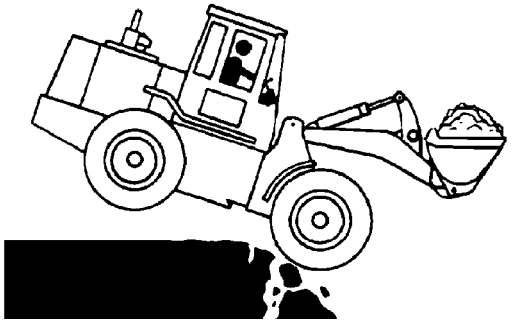

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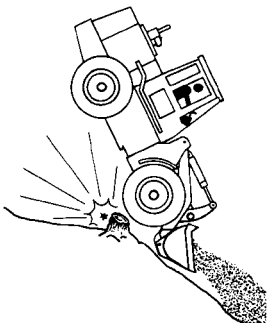
Operating on Slopes

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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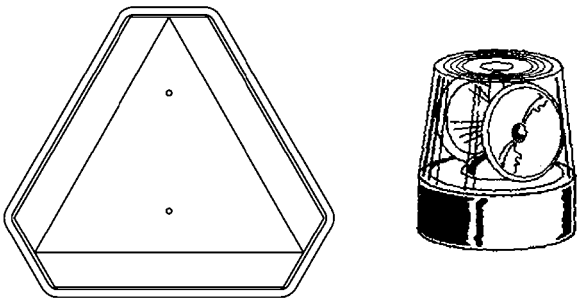
TX03679,000179E –19–14MAY01–1/1

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.

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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 frame locking bar.
- Attach a “Do Not Operate” tag in an obvious place in the operator’s station.

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.

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

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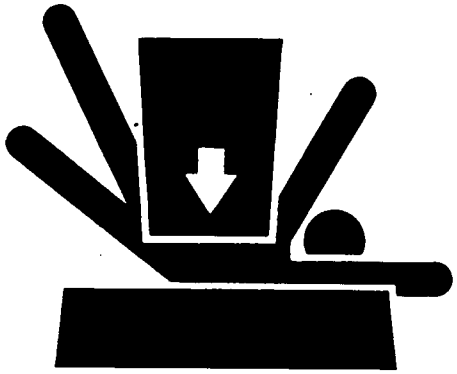


TS229 –UN–23AUG88

TX03679,00017A0 –19–18SEP01–1/1

Service Cooling System Safely

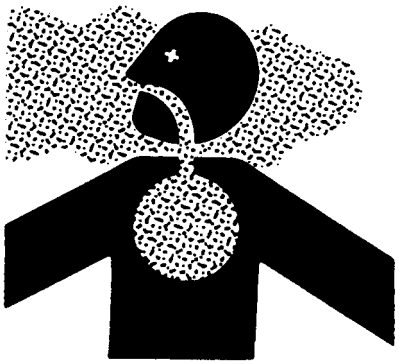
Explosive release of fluids from pressurized cooling system can cause serious burns.

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.

TS281 –UN–23AUG88

DX,RCAP –19–04JUN90–1/1

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

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Make Welding Repairs Safely

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

T133547 –UN–31AUG00

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.

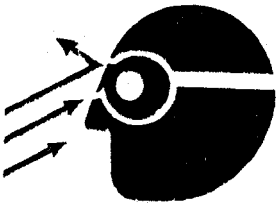
Remove paint properly. Do not inhale paint dust or fumes. Use a qualified welding technician for structural repairs. Make sure there is good ventilation. Wear eye protection and protective equipment when welding.

TX03679,00016D5 –19–12SEP07–1/1

Drive Metal Pins Safely

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.



T133738 –UN–14SEP00

TX03679,0001745 –19–17JUL07–1/1

Section 9005
Operational Checkout Procedure

Contents

Operational Checkout Procedure

Use this procedure to make a quick check of machine operation by doing a walk around inspection and performing specific checks from operator's seat.

Complete visual checks (oil levels, oil condition, external leaks, loose hardware, linkage, wiring, etc.) before performing checkout.

Most checks will require machine systems to be at normal operating temperatures and a level area with adequate space to operate machine. Some checks may require varied surfaces.

No special tools are necessary to perform the checkout.

If no problem is found, go to next check. If problem is indicated, an additional check or repair procedure will be suggested.

TX19495,000018B –19–19SEP06–1/1

❶ Key Switch OFF, Engine OFF Checks

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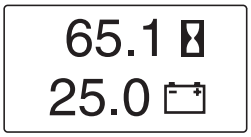
Battery Check	 T194308 –UN–11SEP03 *Hour Meter and Battery Meter*	Key off. Press SELECT button and hold until battery voltage and hour meter are displayed. *LOOK: Does display show machine hours and battery voltage?* *LOOK: Is battery voltage above 24 volts?* *LOOK: Does fuel gauge indicate fuel level?*	**YES:** Go to next check. **NO:** Display does not show hours, battery voltage, or does not work. Check CAN Monitor Unit Battery Power 5 A Fuse (F34) and Check CAN Monitor Unit/Sealed Switch Module Ignition Power 5 A Fuse (F13). See Fuse And Relay Specifications. (Group 9015-10.) Battery voltage low. Replace batteries. See Removing and Installing Batteries. (Operator's Manual) Fuel gauge does not display fuel level. Add fuel. Check fuel level sensor. See Electrical Component Specifications. (Group 9015-20.) – – –1/1

❷ Key Switch ON, Engine OFF Checks

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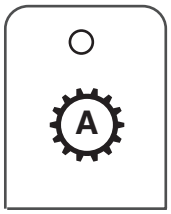
Diagnostic Trouble Code Check	Always check for diagnostic trouble codes and correct them before performing the operational checkout. Diagnostic trouble codes are displayed on the monitor. Sit in seat, turn key switch ON, and access diagnostic trouble code menu. See CAN Monitor Unit (CMU) Circuit Theory of Operation for instructions to access diagnostic trouble code menu. (Group 9015-15.) *LOOK: Are diagnostic trouble codes present?*	**YES:** Correct all diagnostic trouble codes. See Diagnostic Trouble Code Quick Reference List. (Group 9015-20.) **NO:** Proceed with operational checkout. – – –1/1

Monitor Check	Key switch on. Observe monitor and note changes for first 3 seconds (bulbs, indicators and gauges). *LOOK/LISTEN: Do all monitor indicator lights illuminate and warning alarm sound?* *Do gauge and monitor backlighting turn on?* *Does the monitor display show John Deere 844?* *Do all the gauge needles point to approximately 12:00 o'clock position?* After 4 seconds observe changes in monitor. *LOOK: Do gauge needles change from 12:00 o'clock position to indicate machine status?* *Does monitor display show gear, engine speed, and hourmeter/speedometer/odometer?* *Does park brake indicator remain On?* *Does Stop and engine oil pressure indicator flash?* *Do all other indicators turn off?* *Does alarm stop sounding?*	**YES:** Go to next check. **NO:** Gauges do not move, monitor back lighting does not come On. Check CAN Monitor Unit Battery Power 5 A Fuse (F34) and Check CAN Monitor Unit/Sealed Switch Module Ignition Power 5 A Fuse (F13). See Fuse And Relay Specifications. (Group 9015-10.) Display does not show 844 as the model number. Reconfigure machine model in monitor. See CAN Monitor Unit (CMU) Circuit Theory of Operation. (Group 9015-15.) Park brake or oil pressure indicator do not remain on. Check park brake switch and oil pressure sensor. See Electrical Component Specifications. (Group 9015-20.) – – –1/1

Sealed Switch Module Check	Cycle key switch OFF and then ON. *LOOK: Do all sealed switch module indicator lights illuminate?* *Does sealed switch module backlight turn on?*	**YES:** Go to next check. **NO:** Check CAN Monitor Unit/Sealed Switch Module Ignition Power 5 A Fuse (F13). See Fuse And Relay Specifications. (Group 9015-10.) Check sealed switch module connector and wiring. See Load Center Harness (W3) Wiring Diagram. (Group 9015-10.) – – –1/1

Transmission Control Lever And Neutral Lock Latch Checks	 T194310 –UN–11SEP03 *Automatic Transmission Switch*	Push automatic transmission switch to off position. Move transmission control lever to Forward (F), Neutral and Reverse (R) positions. *LOOK: Does lever move into Forward, Neutral and Reverse positions easily?* *Does lever stay in detented positions?* *Does back-up alarm sound in reverse position?* Put neutral lock in locked position. Apply slight effort to move lever into forward (F) and reverse (R). *LOOK: Does neutral lock stay engaged and lever stay in neutral?* Put neutral lock in unlock position. Twist lever to shift into each gear 1st, 2nd, 3rd and 4th. *LOOK: Does gear number align with pointer in each detented position?* *Does twist handle remain in detented positions?* *Does monitor display show "1N" with gear selection below it?* Select auto transmission mode. *LOOK: Does monitor display indicate "Auto" below gear selection?*	**YES:** Go to next check. **NO:** If lever does not move or lock properly, replace lever. **NO:** If gears do not change on monitor, check control lever circuit. See Transmission Control Unit (TCU) Circuit Theory of Operation. (Group 9015-15.) – – –1/1

Neutral Start Check	Move transmission FNR control to 1st gear forward (1F) or to 1st gear reverse (1R), turn key switch to START. *LOOK/LISTEN: Does engine start?* *Does monitor display indicate a neutral gear selection?* *Does machine remain stationary with park brake On?* *NOTE: Machine will not move and gear display will not show "F" for forward or "R" for reverse until shifter is cycled back to neutral and park brake released.*	**YES:** Go to next check. **NO:** See Starting and Charging Circuit Theory of Operation. (Group 9015-15.) – – –1/1

❸ Key Switch ON, Engine ON Checks

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Monitor Check	Start engine. Observe CMU and check bulbs, indicators and gauges. *LOOK/LISTEN: Do all indicators illuminate?* *Does monitor alarm sound?* *Is backlighting of gauges on?* After four seconds observe changes in monitor. *LOOK: Do gauges show normal readings?* *Does monitor display change to show gear, rpm, and hourmeter/speedometer/odometer?* *Does engine speed read idle speed?* *Does seat belt indicator go off five seconds after engine starts?* *Does park brake indicator remain On?*	**YES:** Go to next check. **NO:** Check CAN Monitor Unit Battery Power 5 A Fuse (F34) and Check CAN Monitor Unit/Sealed Switch Module Ignition Power 5 A Fuse (F13). See Fuse And Relay Specifications. (Group 9015-10.) **NO:** If other indicators remain on, check diagnostic trouble codes or check appropriate diagnostic item on diagnostics menu. See CAN Monitor Unit (CMU) Circuit Theory of Operation. (Group 9015-15.) – – –1/1

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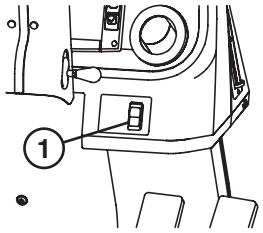
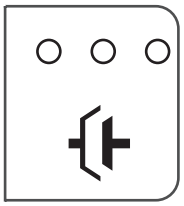
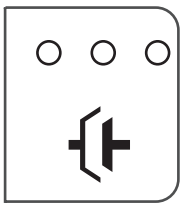
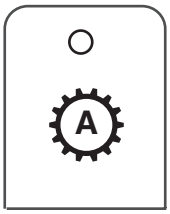
Park Brake Check	 T213698 –UN–25AUG05 *Park Brake Switch* **1—Park Brake Switch** Release park brake by pushing park brake switch to off position. See Park Brake Switch for switch operation. (Operator's Manual.) *LOOK: Does park brake indicator go off when brake is released? Will machine move when put into gear?* **CAUTION: Seat belt must be worn during this check to prevent possible injury from sudden machine stops.** Fasten seat belt. Put transmission in manual mode. Put transmission in 1st gear forward. Drive machine at 3 MPH and push park brake switch to on. *LOOK/FEEL: Does machine come to a stop within 1 meters (3 feet) when park brake is engaged at 3 MPH? Does transmission shift to neutral?* *Does STOP indicator illuminate and warning alarm sound?*	**YES:** Go to next check. **NO:** See Transmission Control Unit (TCU) Circuit Theory of Operation for park brake operation. (Group 9015-15.) **NO:** If machine does not stop within specified distance, See Park Brake Pressure Test. (Group 9020-25.) – – –1/1

Service Brake Check		Move each pedal with hand to check “free travel.” *FEEL: Does each pedal have about 6 mm (0.25 in.) free travel?*	**YES:** Continue check. **NO:** Inspect for debris under brake pedal. Inspect brake pedal linkage for damage.
	 T194311 –UN–11SEP03 *Clutch Cut-Off Switch*	Disable clutch cut-off. Fully apply either service brake pedal. Push park brake switch to OFF. Put transmission in 2nd forward. Increase engine speed to high idle. *LOOK: Does machine remain stationary or move very slowly?* Repeat check three times to ensure accurate results.	**YES:** Go to next check. **NO:** See Service Brake Inspection. (Group 1011.) **IF OK:** Inspect for leaks from brake system. See Diagnose Service Brake Malfunctions. (Group 9020-15.) – – –1/1

Clutch Cut-Off Check	 T194311 –UN–11SEP03 *Clutch Cut-Off Switch*	Press clutch cut-off switch to enable clutch cut-off at any slope. LEDs will illuminate. Apply service brake. Release park brake Increase engine rpm to 1500. Press clutch cut-off switch until clutch cut-off is turned off. All LEDs will be off. *LISTEN/LOOK: Does engine rpm drop?* *FEEL: Can you feel machine pull through brakes?*	**YES:** Go to next check. **NO:** Check clutch cut-off sensor. See Clutch Cut-Off Sensor Check and Adjustment. (Group 9015-20.) **IF OK:** Check clutch cutoff sensor using CAN Monitor Unit (CMU). See CAN Monitor Unit (CMU) Circuit Theory of Operation. (Group 9015-15.) – – –1/1

Automatic Shift And Speedometer Check	 T194310 –UN–11SEP03 *Automatic Transmission Switch*	*NOTE: In the automatic mode, transmission will shift to highest gear selected as ground speed increases, or will down shift to 2nd as ground speed decreases. In auto to first mode, the transmission will start in 1st when initially shifted from Neutral to Forward or Reverse. After the initial shift from Neutral, the transmission will downshift no lower than 2nd unless a load is encountered. Transmission will upshift or downshift as ground speed dictates.* Perform this check in an open area away from other people and machinery. Automatic transmission switch to auto. Release park brake and shift to (4th) forward. Drive machine on level ground and slowly accelerate to fast idle speed until 4th gear is reached and note shifting. Reduce engine rpm to idle and note each downshift. *LOOK: Does the transmission shift upshift and downshift through the gears?*	**YES:** Go to next check. **NO:** See Diagnose Transmission Malfunctions. (Group 9020-15.) – – –1/1

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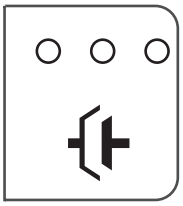
Quick Shift Check	Put transmission in manual mode. Set quick shift mode to shift up and down. See CAN Monitor Unit (CMU) Circuit Theory of Operation for instructions to access quick shift mode selection. (Group 9015-15.) Release park brake and shift to 3rd forward. Drive machine at approximately 1600 rpm and press quick shift switch once. *NOTE: On machines equipped with single lever pilot controls, the quick shift switch is the raised switch on the top of the controller. On machines equipped with two lever pilot controls, the quick shift switch is located on the top of the boom (left) pilot control.* *LOOK/FEEL: Does transmission shift to and remain in 2nd gear?* Press quick shift switch once more. *LOOK/FEEL: Does transmission shift back to 3rd gear?* *NOTE: If quick shift switch is pressed twice, transmission will shift down one gear then immediately back up to where it was. Quick shift feature operates in all gears.* Set quick shift mode to shift down only. Release park brake and shift to 4th forward. Drive machine at approximately 1200 rpm and press quick shift switch once. *LOOK/FEEL: Does transmission shift to and remain in 3rd gear?* Press quick shift switch once more. *LOOK/FEEL: Does transmission shift to and remain in 2nd gear?* Press quick shift switch once more. *LOOK/FEEL: Does transmission shift to and remain in 1st gear?* Press quick shift switch once more. *LOOK/FEEL: Does transmission stay in 1st gear?* *NOTE: In down only mode pressing quick shift switch will not change gears once 1st gear is reached, unless a direction or gear change is made.*	**YES:** Go to next check. **NO:** Check restriction switch/radio ignition power/fuel pump 10 A fuse (F11). See Fuse And Relay Specifications. (Group 9015-10.) **NO:** Check quick shift switch. See Transmission Control Unit (TCU) Circuit Theory of Operation. (Group 9015-15.) – – –1/1

Transmission Shift Modulation Check



T194311 –UN–11SEP03
Clutch Cut-Off Switch

Disable clutch cut-off.

Enable manual transmission mode.

CAUTION: Fasten seat belt before performing this check. Machine will change directions abruptly!

Shift transmission to 1st forward, increase engine speed to fast idle, shift from forward to reverse and reverse to forward several times, allowing machine to reach full speed in forward and reverse before changing directions. Repeat check in 2nd gear.

LOOK: Does machine slow down and change direction smoothly?

Drive machine in 2nd gear at high idle, apply service brakes to slow engine down to 1800 rpm, then while still holding service brakes, shift to 1st gear.

FEEL: Does transmission shift smooth without jerking?

YES: Go to next check.

NO: See Transmission Shifts Too Slow or See Transmission Shifts Too Fast. (Group 9020-15.)

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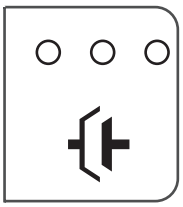
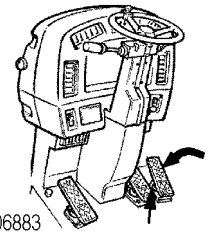
Torque Converter and Engine Power Check



T194311 –UN–11SEP03
Clutch Cut-Off Switch



T106883
T106883 –UN–14FEB97

Turn clutch cutoff switch to off.

Apply service brakes.

Release park brake.

Shift transmission to 3rd forward.

Push accelerator pedal until it touches stop bolt. Record engine speed in basic display window.

LOOK: Is torque converter stall speed within following range:

- No. 1 fuel: 1780—1930 rpm
- No. 2 fuel: 1880—2030 rpm

Move transmission control lever to neutral "N" position and run for 15 seconds to cool oil.

YES: Go to next check.

NO: If stall speed is outside range, problem may be engine power or torque converter. See Torque Converter Stall and Engine Pulldown Test. (Group 9020-25.)

IF OK: If power is ok, see Diagnose Transmission Malfunctions. (Group 9020-15.)

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Service Brake Pressure Switch And Brake Accumulator Precharge	 T194312 –UN–11SEP03 *Pilot Enable/Boom Down Switch*	Turn key to on position. Display brake accumulator pressure. See Hydraulic Diagnostics in the monitor menu. See CAN Monitor Unit (CMU) Circuit Theory of Operation. (Group 9015-15.) Start engine. Hold a hydraulic function over relief to charge brake accumulators to 24 130 kPa (241 bar) (3500 psi). Stop engine. Turn key to on position. Display brake accumulator pressure. Press and hold pilot enable/boom down switch and cycle hydraulic control lever in all directions 20 times to bleed charge pressure. Press brake pedal and record number of applications until brake pressure indicator comes on. Continue pushing brake pedal and counting applications until brake lights fail to come on. *LOOK: Are at least 12 brake pedal applications needed before brake pressure indicator comes on?* *LOOK: Are at least 30 brake pedal applications needed before brake lights fail to come on?*	**YES:** Go to next check. **NO:** If brake oil pressure indictor does not come on, check rear service brake pressure sensor (B26) or front service brake pressure sensor (B27). See Electrical Component Specifications (Group 9015-20.) **NO:** If brake lights fail to come on, check brake light pressure switch (B40). See Electrical Component Specifications. (Group 9015-20.) **NO:** Check brake light pressure switch 5 A fuse. See Fuse And Relay Specifications. (Group 9015-10.) **IF OK:** If fewer than 12 brake pedal applications are required to turn brake oil pressure indicator on, accumulator charge pressure may be low. See Service Brake Accumulator Precharge Test. (Group 9025-25.) – – –1/1

Pilot Controller Lock Check

T194312 –UN–11SEP03
Pilot Enable/Boom Down Switch

Run machine at idle.

Press pilot enable/boom down switch to lock the pilot controls (LED unlit).

Hold control lever in boom raise position.

Press pilot enable/boom down switch to unlock the pilot controls (LED illuminated).

LOOK: Does boom raise when pilot controls are unlocked?

Press pilot enable/boom down switch to lock the pilot controls (LED unlit) and observe boom.

LOOK: Does boom stop when controls are locked?

Unlock pilot controls and check all hydraulic functions.

- Boom up/down
- Bucket roll/dump
- Auxiliary functions (if equipped)
- Pin disconnect (if equipped)

LOOK: Do all equipped hydraulic functions operate correctly?

YES: Go to next check.

NO: Check pilot enable/boom down switch and circuit. See Flex Load Controller (FLC) Circuit Theory of Operation. (Group 9015-15.)

NO: See Diagnose Hydraulic System Malfunctions. (Group 9025-15.)

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Pilot Enable/Boom Down Solenoid Check

T194312 –UN–11SEP03
Pilot Enable/Boom Down Switch

Raise boom.

Stop engine.

Turn key to on position.

Press and hold pilot enable/boom down switch.

CAUTION: Boom will quickly lower to ground.

Move control lever to boom lower position.

LOOK: Does boom lower?

YES: Go to next check.

NO: Check boom down accumulator solenoid (Y15). See Engine Frame Harness (W5) Component Location. (Group 9015-10.)

NO: Check boom down accumulator solenoid (Y15). See Engine Frame Harness (W5) Component Location. (Group 9015-10.)

NO: Check CMU/SSM ignition power 5 A fuse (F13), FLC ignition power 5 A fuse (F15) and FLC battery power 10 A fuse (21). See Fuse And Relay Specifications. (Group 9015-10.)

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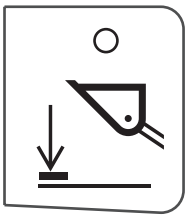
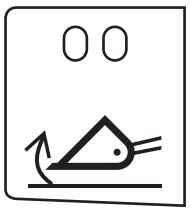
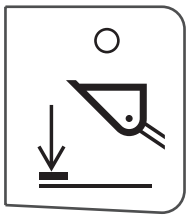
Pilot Control Valve Boom Float Check	 T194313 –UN–11SEP03 *Ride Control Switch*  T194315 –UN–11SEP03 *Return-to-Carry Switch* Run engine at slow idle. Push ride control switch off. Push return-to-carry switch off. With the bucket partially dumped, lower boom to raise front of machine. Push control lever to the float detent position and release lever. *LOOK: Does front of machine lower to the ground and valve remain in float position when lever is released?*	**YES:** Go to next check. **NO:** See Pilot Control Valve Pressure Test. (Group 9025-25.) **NO:** Check FLC ignition power 5 A fuse (F15) and FLC battery power 10 A fuse (21). See Fuse And Relay Specifications. (Group 9015-10.) – – –1/1
Return-to-Dig Check	 T213684 –UN–26AUG05 *Return-to-Dig Switch* *NOTE: A Return-to-Dig position must be set before performing this check. See Return-to-Dig Adjustment to set position. (Group 9015-20.)* Raise the boom to about eye level. Fully dump the bucket. Verify that return-to-dig function is turned on. Place controller in the bucket load detent position. *LOOK/FEEL: Does pilot controller detent?* *LOOK: Does bucket travel stop upon reaching dig position?*	**YES:** Go to next check. **NO:** Verify that the sensor is adjusted correctly. See Return-to-Dig Adjustment. (Group 9015-20.) **NO:** Check return-to-dig circuit. See Flex Load Controller (FLC) Circuit Theory of Operation. (Group 9015-15.) – – –1/1

Return-to-Carry Check	 T194315 –UN–11SEP03 *Return-to-Carry Switch*	*NOTE: A Return-to-Carry position must be set before performing this check. See Boom Height Kickout/Return-to-Carry Adjustment to set position. (Group 9015-20.)* Fully raise boom. Place bucket in dig position. Verify that the return-to-carry function is turned on. Place controller in the boom down detent position. *LOOK/FEEL: Does pilot controller detent?* *LOOK: Does boom travel stop upon reaching carry position?*	**YES:** Go to next check. **NO:** Verify that the sensor is adjusted correctly. See Boom Height Kickout/Return-to-Carry Adjustment. (Group 9015-20.) **NO:** Check return-to-carry circuit. See Flex Load Controller (FLC) Circuit Theory of Operation. (Group 9015-15.) – – –1/1

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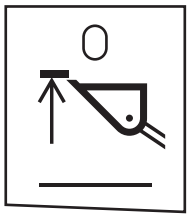
Boom Height Kickout Check	 T213683 –UN–26AUG05 *Boom Height Kickout Switch*	*NOTE: A Boom Height Kickout position must be set before performing this check. See Boom Height Kickout/Return-to-Carry Adjustment to set position. (Group 9015-20.)* Lower boom to the ground. Place bucket in dig position. Verify that boom height kickout function is turned on. Place controller in the boom up detent position. *LOOK/FEEL: Does pilot controller detent?* *LOOK: Does boom travel stop before reaching full height?*	**YES:** Go to next check. **NO:** Verify that the sensor is adjusted correctly. See Boom Height Kickout/Return-to-Carry Adjustment. (Group 9015-20.) **NO:** Check boom height kickout circuit. See Flex Load Controller (FLC) Circuit Theory of Operation. (Group 9015-15.) – – –1/1

Ride Control Check

T194313 –UN–11SEP03
Ride Control Switch

CAUTION: Boom will jump upward during this check. Make sure area around bucket is clear.

Turn ride control off by pressing the ride control switch until no LEDs are lit.

Raise boom to maximum height and hold control lever over relief for two seconds.

Lower boom to eye level. Press ride control switch once to enable manual mode and observe loader boom.

LOOK/FEEL: Does boom jump upward 30 cm (12 in) or more?

Raise boom to maximum height.

Lower boom to eye level and release lever.

LOOK/FEEL: Does boom "bounce" and feel "spongy"?

Press ride control switch once more enable auto mode. Both LEDs will illuminate.

Raise boom to maximum height and hold control lever over relief for two seconds.

NOTE: Ride control activation speed will need to be set between three and five mph for this check. See CAN Monitor Unit (CMU) Circuit Theory of Operation for instructions to change ride control activation speed. (Group 9015-20.)

Lower boom and bucket to eye level and slowly accelerate to five mph while watching speedometer and bucket.

LOOK/FEEL: Does ride control come on at approximately three mph and bucket raise slightly?

YES: Go to next check.

NO: Check ride control circuit. See Flex Load Controller (FLC) Circuit Theory of Operation. (Group 9015-15.)

NO: Verify that function is enabled in CAN Monitor Unit (CMU) machine configuration. See CAN Monitor Unit (CMU) Circuit Theory of Operation. (Group 9015-15.)

IF OK: Check ride control accumulator charge pressure. See Charge Ride Control Accumulator. (Group 9025-20.)

IF OK: Check valve or solenoid valve in ride control manifold is stuck open. See Ride Control Remove and Install. (Group 3160.)

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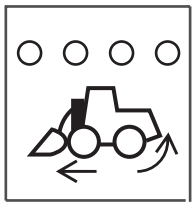
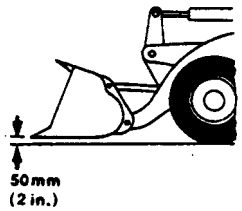
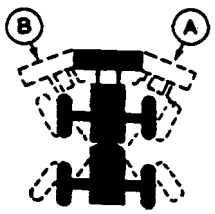
Spin Control Check (If Equipped)	 T194320 –UN–11SEP03 *Spin Control Switch*	Run engine at high idle. Transmission in first forward. Drive ahead in an open clear area Press spin control switch once. First LED will illuminate. Hold lever in roll back position. *LOOK/LISTEN: Does engine rpm drop?* *NOTE: The engine rpm will remain at lower level until transmission control lever is shifted through neutral position or spin control switch is turned off.* Press spin control switch until function is disabled. All LEDs are unlit. Hold lever in roll back position. Note engine rpm drop as hydraulic system is at high standby pressure. Repeat for switch positions 2—4. The rpm will drop respectively for each position. • 1—1850 • 2—1700 • 3—1575 • 4—1450	**YES:** Go to next check. **NO:** Verify that function is enabled in CAN Monitor Unit (CMU) machine configuration. See CAN Monitor Unit (CMU) Circuit Theory of Operation. (Group 9015-15.) **NO:** Check spin control circuit. See Flex Load Controller (FLC) Circuit Theory of Operation. (Group 9015-15.) – – –1/1
Reverse Fan Check (If Equipped)	 T194319 –UN–11SEP03 *Reverse Fan Switch*	Press the reverse fan switch to activate manual mode (LED illuminated). *NOTE: Reverse fan function cannot be operated twice within 1 minute. Wait 1 minute before attempting to reverse fan direction again.* *LISTEN/LOOK: Does fan reverse direction and operate at full speed for 15 seconds?* Fan will change directions and operate at normal speed.	**YES:** Go to next check. **NO:** Verify that function is enabled in CAN Monitor Unit (CMU) machine configuration.See CAN Monitor Unit (CMU) Circuit Theory of Operation. (Group 9015-15.) **NO:** Check reverse fan circuit and proportional fan circuit. See Flex Load Controller (FLC) Circuit Theory of Operation. (Group 9015-15.) **IF OK:** Check fan hydraulic circuit. See Fan Drive Operation. (Group 9025-05.) – – –1/1

Proportional Fan Check (If Equipped)	Press and hold the MENU button on the CAN Monitor Unit (CMU) for 5 seconds to enter the service menu. Press NEXT until **Machine Config** is highlighted and press SELECT. Press NEXT until **Fan Speed %** is highlighted and press SELECT. Press SELECT to manually set the fan speed to 0%. The CMU will confirm the selection. *LOOK/FEEL: Take notice of fan speed.* Press BACK then SELECT to manually set the fan speed to 100%. *LOOK/FEEL: Is the fan speed higher than at 0%?*	**YES:** Go to next check. **NO:** Verify that function is enabled in CAN Monitor Unit (CMU) machine configuration. See CAN Monitor Unit (CMU) Circuit Theory of Operation. (Group 9015-15.) **NO:** Check proportional fan circuit. See Flex Load Controller (FLC) Circuit Theory of Operation. (Group 9015-15.) **IF OK:** Check fan hydraulic circuit. See Fan Drive Operation. (Group 9025-05.) – – –1/1
Boom And Bucket Cylinder Drift Check	 T6564NZ –UN–19OCT88 *Bucket Position* Set bucket flat on the ground and raise about 50 mm (2 in.). Stop engine. Observe bucket for one minute. *LOOK: Does bucket remain in position? Bucket should not settle to the ground.* *NOTE: Use good judgement to determine if the amount of drift is objectionable for your loader application.*	**YES:** Go to next check. **NO:** See Boom, Bucket and Steering Cylinder Leakage Test to isolate cylinder or valve leakage. (Group 9025-25.) – – –1/1
Steering Valve Check	 T6471AQ –UN–19OCT88 *Machine Articulation (Overhead View)* Transmission in neutral. Run engine at low idle. Remove foot from brake pedal. Release park brake. Turn steering wheel until machine frames contact right and left frame stops. *LOOK: Does machine steer smoothly in both directions?* *NOTE: It is normal for machine frames to drift away from frame stops when steering wheel is released.* When steering wheel is stopped, frames must stop. *FEEL: Is excessive effort required to turn steering wheel?*	**YES:** Go to next check. **NO:** See Orbital Steering Valve Leakage Test. (Group 9025-25.) – – –1/1