

**444J (S.N. —611274)**  
**544J (S.N. —611799)**  
**624J (S.N. —611796)**  
**Loaders**

**OPERATOR'S MANUAL**  
**444J, 544J, and 624J Loaders**  
**OMT197190 ISSUE G0 (ENGLISH)**

**CALIFORNIA**

**Proposition 65 Warning**

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

If this product contains a gasoline engine:

**⚠ WARNING**

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

The State of California requires the above two warnings.

Additional Proposition 65 Warnings can be found in this manual.

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

# Introduction

## Foreword

READ THIS MANUAL carefully to learn how to operate and service your machine correctly. Failure to do so could result in personal injury or equipment damage. This manual and safety signs on your machine may also be available in other languages. (See your John Deere dealer to order.)

THIS MANUAL SHOULD BE CONSIDERED a permanent part of your machine and should remain with the machine when you sell it.

MEASUREMENTS in this manual are given in both metric and customary U.S. unit equivalents. Use only correct replacement parts and fasteners. Metric and inch fasteners may require a specific metric or inch wrench.

RIGHT-HAND AND LEFT-HAND sides are determined by facing in the direction of forward travel.

WRITE PRODUCT IDENTIFICATION NUMBERS (P.I.N.) in the Machine Numbers section. Accurately record all the numbers to help in tracing the machine should it be stolen. Your dealer also needs these numbers when you order parts. File the identification numbers in a secure place off the machine.

WARRANTY is provided as part of John Deere's support program for customers who operate and maintain their

equipment as described in this manual. The warranty is explained on the warranty certificate or statement which you should have received from your dealer.

This warranty provides you the assurance that John Deere will back its products where defects appear within the warranty period. In some circumstances, John Deere also provides field improvements, often without charge to the customer, even if the product is out of warranty. Should the equipment be abused, or modified to change its performance beyond the original factory specifications, the warranty will become void and field improvements may be denied. Setting fuel delivery above specifications or otherwise overpowering machines will result in such action.

THE TIRE MANUFACTURER'S warranty supplied with your machine may not apply outside the U.S.

If you are not the original owner of this machine, it is in your interest to contact your local John Deere dealer to inform them of this unit's serial number. This will help John Deere notify you of any issues or product improvements.

DX,IFC7 -19-03APR09-1/1

**Emission Control Statement****EMISSIONS CONTROL WARRANTY STATEMENT FOR  
NEW JOHN DEERE CONSTRUCTION EQUIPMENT (U.S. AND CANADA)**

To determine if the engine in your machine qualifies for the additional warranties set forth below, look for the "Engine Information" label located on your engine. If you reside in the United States and the engine label states: "Engine conforms to US EPA regulations on heavy duty non road diesel cycle engines," you are entitled to the "U.S. Emission Control Warranty Statement." If you reside in California, and the engine label states: "Engine conforms to California regulations on heavy duty non road diesel cycle engines," you are entitled to the "California Emission Control Warranty Statement."

**U.S. EPA EMISSIONS CONTROL WARRANTY STATEMENT**

Emissions control-related parts and components are warranted by John Deere for five years or 3000 hours of operation, whichever occurs first. John Deere further warrants that the engine covered by this warranty was designed, built, and equipped so as to conform at the time of sale with all U.S. emissions standards at the time of manufacture, and that it is free of defects in materials and workmanship which would cause it not to meet these standards within the period of five years or 3000 hours of operations, whichever occurs first.

Warranties stated on this certificate refer only to emissions-related parts and components of your engine. The complete machine warranty, less emissions-related parts and components, is provided separately as "John Deere "Secure Warranty" For New Construction Products."

**CALIFORNIA EMISSION CONTROL WARRANTY STATEMENT  
YOUR WARRANTY RIGHTS AND OBLIGATIONS**

The California Air Resources Board (CARB) and John Deere are pleased to explain the emission control system on your new engine. In California, new heavy-duty engines must be designed, built and equipped to meet the State's stringent anti-smog standards. John Deere must warrant the emission control system on your engine for the periods of time listed below provided there has been no abuse, neglect, or improper maintenance of your machine.

Your emissions control system includes:

Fuel Metering System  
Fuel Injection System

Air Induction System  
Intake Manifold  
Turbocharger System  
Charge Air Cooling System

Miscellaneous Items used in Above Systems

Where a warrantable condition exists, i.e. failure due to defect in John Deere-supplied material and/or workmanship, John Deere will repair your heavy-duty engine at no cost to you including diagnosis, parts and labor

**JOHN DEERE'S WARRANTY COVERAGE:**

The emission control system of your heavy-duty engine is warranted for five years or 3000 hours of operation, whichever occurs first. If any emission-related part on your engine is defective, the part will be repaired or replaced by John Deere. Warranties stated on this certificate refer only to emissions-related parts and components of your engine. The complete machine warranty, less emissions-related parts and components, is provided separately as the "John Deere "Secure Warranty" For New Construction Products."

**OWNER'S WARRANTY RESPONSIBILITIES:**

As the heavy-duty engine owner, you are responsible for the performance of the required maintenance as outlined in the

Operator's Manual. John Deere recommends that you retain all receipts covering maintenance on your heavy-duty engine, but John Deere cannot deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

However, as the heavy-duty engine owner, you should be aware that John Deere may deny your warranty coverage if your heavy-duty engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

Your engine is designed to operate on diesel fuel only. Use of any other fuel may result in your engine no longer operating in compliance with California's emissions requirements.

You are responsible for initiating the warranty process. The CARB suggests that you present your machine to the nearest authorized John Deere dealer as soon as a problem is suspected. The warranty repairs should be completed by the service dealer as expeditiously as possible.

If you have any questions regarding your warranty rights and responsibilities, you should contact John Deere at 1-319-292-5400, or the State of California Air Resources Board, Mobile Source Operation Division, PO Box 8001, El Monte, CA 91731-2900

The warranty period begins on the date the machine is delivered to an ultimate purchaser, or when otherwise put into service. John Deere warrants to the ultimate purchaser and each subsequent purchaser that the engine is designed, built and equipped so as to conform with all applicable regulations adopted by the Air Resources Board, and that it is free from defects in materials and workmanship which would cause the failure of a warranted part.

Any warranted part which is scheduled for replacement as required maintenance by the operator's manual is warranted by John Deere for the period of time prior to the first scheduled replacement point for that part. If the part fails prior to the first scheduled replacement point, the part shall be repaired or replaced under warranty. Any such part repaired or replaced under warranty is warranted for the remainder of the period prior to the first scheduled replacement point for that part.

Any warranted part which is not scheduled for replacement as required maintenance, or which is scheduled only for regular inspection to the effect of repairing or replacing as necessary, is warranted for the warranty period.

Repair or replacement of a warranted part will be performed at no charge to you by an authorized John Deere dealer. You will not be charged for diagnostic labor which leads to the determination that a warranted part is defective, if the diagnostic work is performed by a John Deere dealer.

John Deere is liable for damages to other engine components caused by failure under warranty of any warranted part.

John Deere is NOT liable for travel or mileage on extended emissions warranty service calls.

Any replacement part may be used in the performance of any maintenance or repairs, and such use will not reduce the warranty obligations of John Deere. However, the use of add-on or modified parts are grounds for disallowing a warranty claim.

OUO1065,000006C -19-08JAN08-1/1

T132126 -19-28JUN00

### Technical Information Feedback Form

We need your help to continually improve our technical publications. Please copy this page and FAX or mail your comments, ideas and improvements.

**SEND TO:** John Deere Dubuque Works  
18600 South John Deere Road  
Attn: Publications, Dept. 324  
Dubuque, IA 52004-0538  
USA

**FAX NUMBER:** 1-563-589-5800 (USA)

Publication Number: \_\_\_\_\_

Page Number: \_\_\_\_\_

Ideas, Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Name: \_\_\_\_\_

Phone: \_\_\_\_\_

Email Address: \_\_\_\_\_

**THANK YOU!**

TX,II,FAX -19-10JUL01-1/1

# Contents

Page	Page
<b>Safety—Safety and Operator Conveniences</b>	
Safety and Operator Convenience Features ..... 1-1-1	
<b>Safety—General Precautions</b>	
Recognize Safety Information ..... 1-2-1	
Follow Safety Instructions ..... 1-2-1	
Operate Only If Qualified ..... 1-2-1	
Wear Protective Equipment ..... 1-2-2	
Avoid Unauthorized Machine Modifications ..... 1-2-2	
Add Cab Guarding For Special Uses ..... 1-2-2	
Inspect Machine ..... 1-2-3	
Stay Clear of Moving Parts ..... 1-2-3	
Avoid High-Pressure Fluids ..... 1-2-3	
Avoid High-Pressure Oils ..... 1-2-4	
Work In Ventilated Area ..... 1-2-4	
Prevent Fires ..... 1-2-5	
Prevent Battery Explosions ..... 1-2-5	
Handle Chemical Products Safely ..... 1-2-5	
Dispose of Waste Properly ..... 1-2-6	
Prepare for Emergencies ..... 1-2-6	
Clean Debris from Machine ..... 1-2-6	
<b>Safety—Operating Precautions</b>	
Use Steps and Handholds Correctly ..... 1-3-1	
Start Only From Operator's Seat ..... 1-3-1	
Use and Maintain Seat Belt ..... 1-3-1	
Prevent Unintended Machine Movement ..... 1-3-1	
Avoid Worksite Hazards ..... 1-3-2	
Use Special Care When Operating Loader ..... 1-3-2	
Keep Riders Off Machine ..... 1-3-3	
Avoid Backover Accidents ..... 1-3-3	
Avoid Machine Tip Over ..... 1-3-4	
Operating on Slopes ..... 1-3-4	
Operating or Traveling On Public Roads ..... 1-3-5	
Inspect and Maintain ROPS ..... 1-3-5	
Add and Operate Attachments Safely ..... 1-3-5	
<b>Safety—Maintenance Precautions</b>	
Park And Prepare For Service Safely ..... 1-4-1	
Service Cooling System Safely ..... 1-4-1	
Remove Paint Before Welding or Heating ..... 1-4-2	
Make Welding Repairs Safely ..... 1-4-2	
Drive Metal Pins Safely ..... 1-4-2	
<b>Safety—Safety Signs</b>	
Safety Signs ..... 1-5-1	
	Safety Signs ..... 1-5-2
	Replace Safety Signs ..... 1-5-3
	<b>Operation—Operator's Station</b>
	Levers ..... 2-1-1
	Pedals ..... 2-1-2
	Monitor Panel (CMU) ..... 2-1-3
	Monitor Panel Functions ..... 2-1-4
	Switch Pad ..... 2-1-6
	Switch and Accessory Functions ..... 2-1-7
	Monitor Display Unit—Accessory Menu
	Normal Display ..... 2-1-8
	Monitor Display Unit—Main Menu ..... 2-1-9
	Monitor Display Unit—Main Menu—Codes ..... 2-1-10
	Monitor Display Unit—Main
	Menu—Codes—Active Codes ..... 2-1-10
	Monitor Display Unit—Main
	Menu—Codes—Stored Codes ..... 2-1-11
	Monitor Display Unit—Main
	Menu—Machine Settings ..... 2-1-11
	Monitor Display Unit—Main
	Menu—Machine Settings—Quick Shift ..... 2-1-12
	Monitor Display Unit—Main
	Menu—Machine Settings—Auto to 1st ..... 2-1-12
	Monitor Display Unit—Main
	Menu—Machine Settings—Job
	Timer ..... 2-1-13
	Monitor Display Unit—Main
	Menu—Machine Settings—Stopwatch ..... 2-1-13
	Monitor Display Unit—Main
	Menu—Diagnostics ..... 2-1-13
	Monitor Display Unit—Main
	Menu—Diagnostics—Battery
	Monitor ..... 2-1-14
	Monitor Display Unit—Main
	Menu—Diagnostics—Engine
	Sensors ..... 2-1-15
	Monitor Display Unit—Main
	Menu—Diagnostics—Transmission ..... 2-1-16
	Monitor Display Unit—Main
	Menu—Diagnostics—Hydraulic ..... 2-1-17
	Monitor Display Unit—Main
	Menu—Diagnostics—Machine ..... 2-1-17
	Monitor Display Unit—Main
	Menu—Diagnostics—Machine
	Switches ..... 2-1-18

Continued on next page

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

COPYRIGHT © 2010  
DEERE & COMPANY  
Moline, Illinois  
All rights reserved.  
A John Deere ILLUSTRATION © Manual  
Previous Editions  
Copyright © 2005, 2006, 2008, 2009

Page	Page
Monitor Display Unit—Main	Towing Procedure.....2-2-21
Menu—Diagnostics—Switch	Lifting the Machine .....2-2-23
Module .....2-1-19	
Monitor Display Unit—Main	<b>Maintenance—Machine</b>
Menu—Diagnostics—Machine	Diesel Fuel.....3-1-1
I.D.....2-1-19	Lubricity of Diesel Fuel .....3-1-1
Monitor Display Unit—Main	Handling and Storing Diesel Fuel.....3-1-2
Menu—Monitor Settings.....2-1-20	Biodiesel Fuel.....3-1-3
Monitor Display Unit—Main	Low Sulfur Diesel Fuel Conditioner .....3-1-4
Menu—Monitor Settings—Units.....2-1-20	Testing Diesel Fuel .....3-1-4
Monitor Display Unit—Main	Minimizing the Effect of Cold Weather
Menu—Monitor Settings—Backlighting.....2-1-20	on Diesel Engines .....3-1-5
Monitor Display Unit—Main	Alternative and Synthetic Lubricants .....3-1-6
Menu—Monitor Settings—LCD	Diesel Engine Oil.....3-1-6
Contrast.....2-1-21	Diesel Engine Oil and Filter Service Intervals ...3-1-7
Horn Button .....2-1-21	Transmission, Park Brake, and
Turn Signals .....2-1-21	Differential Oil.....3-1-8
Air Conditioning Controls and Heater	Hydraulic Reservoir Oil.....3-1-8
Operation .....2-1-22	Grease.....3-1-9
Adjusting Steering Wheel Tilt .....2-1-22	Heavy Duty Diesel Engine Coolant .....3-1-10
Opening and Securing Side Door.....2-1-23	
Opening Side Window/Secondary Exit.....2-1-24	<b>Maintenance—Periodic Maintenance</b>
Opening Rear Side Window .....2-1-24	Service Your Machine at Specified Intervals .....3-2-1
Adjusting Seat .....2-1-25	Check Hour Meter Regularly .....3-2-1
Seat Belt.....2-1-25	Prepare Machine for Maintenance .....3-2-2
	Opening Engine Side Shields and
<b>Operation—Operating the Machine</b>	Service Doors.....3-2-3
Inspect Machine Daily Before Starting .....2-2-1	Locking Machine Frame .....3-2-3
Check Instruments Before Starting.....2-2-1	Boom Lock.....3-2-4
Starting the Engine.....2-2-2	Pin Removal—If Equipped With
Starting Fluid—If Equipped (Cold	Powerllel Linkage .....3-2-5
Weather Starting Aid).....2-2-3	Opening Grille Door.....3-2-5
Engine Heater—If Equipped.....2-2-4	Check Windshield Washer Fluid Level .....3-2-6
Using Coolant Heater—If Equipped .....2-2-4	Fluid Analysis Program Test Kits and
Warm-Up .....2-2-4	3-Way Coolant Test Kit.....3-2-6
Cold Weather Warm-Up .....2-2-4	Service Intervals.....3-2-7
Neutral Lock .....2-2-5	Required Parts.....3-2-9
Shifting the Transmission .....2-2-5	
Park Brake Switch .....2-2-6	<b>Maintenance—As Required</b>
Boom and Bucket Control Lever—One	Check Tire Pressure .....3-3-1
Lever Design .....2-2-7	Tire Pressures (444J Z-Bars and High Lifts) .....3-3-2
Boom and Bucket Control Lever	Tire Pressures (444J Powerllels and
Two Lever Design .....2-2-8	Tool Carriers).....3-3-3
Quick Shift Switch.....2-2-9	Tire Pressures (544J Z-Bars and High Lifts) .....3-3-4
Ride Control—If Equipped.....2-2-10	Tire Pressures (544J Powerllels and
Secondary Steering—If Equipped .....2-2-11	Tool Carriers).....3-3-5
Differential Lock Switch .....2-2-12	Tire Pressures (624J Z-Bars and High Lifts) .....3-3-6
Boom Height Kickout Adjustment.....2-2-12	Tire Pressures (624J Powerllels and
Return-to-Carry Kickout Adjustment.....2-2-12	Tool Carriers).....3-3-7
Return-To-Dig Adjustment for Z-Bar	Tighten Wheel Retainer Nuts .....3-3-8
Linkage Only .....2-2-13	Clean or Replace Air Cleaner Elements.....3-3-9
Return-To-Dig Adjustment—If	Drain and Clean Primary Fuel Filter .....3-3-10
Equipped With Powerllel Linkage.....2-2-14	Check Cab Fresh Air Filter—If
Using the Loader Bucket .....2-2-15	Equipped With Cab .....3-3-10
Backdragging.....2-2-16	Check Cab Recirculating Air Filter—If
Fork Attachment .....2-2-17	Equipped With Cab .....3-3-13
Parking the Machine.....2-2-18	Inspect Serpentine Belt .....3-3-14
Loading Machine on a Trailer.....2-2-19	Replace Final Fuel Filter.....3-3-14

Continued on next page

Page	Page
<b>Maintenance—Every 10 Hours or Daily</b>	
Check Recovery Tank Coolant Level.....	3-4-1
Clean Air Cleaner Dust Unloader Valve .....	3-4-1
Check Engine Oil Level .....	3-4-2
Check Hydraulic Oil Level .....	3-4-3
Check Transmission Oil Level .....	3-4-4
<b>Maintenance—Every 100 Hours</b>	
Grease Loader Linkage and Cylinder Pivots.....	3-5-1
Grease Front Steering Cylinder Pivots .....	3-5-4
Grease Oscillating Rear Axle and Rear Steering Cylinder Pivots.....	3-5-4
<b>Maintenance—Initial Service - 250 Hours</b>	
Change Engine Break-In Oil and Replace Filter .....	3-6-1
Change Front and Rear Differential/Axle Oil.....	3-6-2
<b>Maintenance—Every 250 Hours</b>	
Grease Front Driveline Sliding Joint.....	3-7-1
Check Surge Tank Level.....	3-7-2
Take Engine Oil Sample .....	3-7-2
<b>Maintenance—Every 500 Hours</b>	
Lubricate Upper and Lower Drive Line Sliding Joints .....	3-8-1
Check Air Intake Hoses.....	3-8-2
Check Battery Electrolyte Level and Terminals .....	3-8-2
Change Engine Oil and Replace Filter .....	3-8-4
Replace Primary Fuel Filter.....	3-8-5
Replace Primary Fuel Filter Strainer (444J, S.N. 598949—; 544J, 624J, S.N. 598854—) .....	3-8-5
Replace Final Fuel Filter.....	3-8-5
Replace Hydraulic System Return Filter.....	3-8-6
Grease Rear Oscillating Support Cover .....	3-8-6
Replace Hydraulic Reservoir Breather Filter .....	3-8-6
Check Park Brake Oil Level.....	3-8-7
Check Front and Rear Differential/Axle Oil Level .....	3-8-7
Take Fluid Samples .....	3-8-8
<b>Maintenance—Every 1000 Hours</b>	
Clean Engine Crankcase Vent Tube .....	3-9-1
Replace Air Cleaner Dust Unloader Valve.....	3-9-1
Replace Air Cleaner Elements .....	3-9-2
Replace Transmission Oil Filter.....	3-9-3
Check Coolant .....	3-9-4
Check Radiator Hoses.....	3-9-5
Grease Frame Hinge Pivots .....	3-9-5
Change Park Brake Oil.....	3-9-6
<b>Maintenance—Every 2000 Hours</b>	
Adjust Engine Valve Lash (Clearance).....	3-10-1
Draining the Cooling System.....	3-10-1
Filling the Cooling System.....	3-10-2
Change Transmission Oil .....	3-10-3
Change Front and Rear Differential/Axle Oil.....	3-10-4
Clean Axle Differential Recirculation Screen...	3-10-5
Re-Run Clutch Calibration.....	3-10-6
<b>Maintenance—Every 4000 Hours</b>	
Change Hydraulic Oil.....	3-11-1
Clean Hydraulic System Strainer.....	3-11-2
<b>Maintenance—Every 4500 Hours</b>	
Replace Engine Crankshaft Dampener (544J and 624J Only).....	3-12-1
<b>Miscellaneous—Machine</b>	
Bleed the Fuel System .....	4-1-1
Precautions for Alternator and Regulator .....	4-1-3
Handling, Checking, and Servicing Batteries Carefully.....	4-1-4
Using Booster Batteries—24-Volt System .....	4-1-5
Using Battery Charger .....	4-1-6
Replacing Batteries .....	4-1-6
Removing Batteries .....	4-1-7
Replacing Fuses.....	4-1-7
Fuse (Blade-Type) Color Codes .....	4-1-9
Replacing Halogen Bulbs .....	4-1-10
Engine Speeds .....	4-1-10
Checking Neutral Start System .....	4-1-11
Servicing Air Conditioning System .....	4-1-11
Welding on Machine .....	4-1-11
External Service Brake Inspection—444J (S.N. —604689), 544J, 624J.....	4-1-12
External Service Brake Inspection—444J (S.N. 604690— ) .....	4-1-13
Checking Brake Accumulators—444J (S.N. —604689), 544J, 624J.....	4-1-14
Checking Brake Accumulators—444J (S.N. 604690— ) .....	4-1-14
Checking Ride Control Accumulator—If Equipped.....	4-1-15
Transmission Cooler and Radiator External Cleaning Procedure .....	4-1-16
Service Recommendations For Snap-To-Connect (STC®) Fittings .....	4-1-17
Do Not Service Control Valves, Cylinders, Pumps or Motors.....	4-1-18
Hardware Torque Specifications.....	4-1-18
Keep ROPS Installed Properly .....	4-1-18
Metric Bolt and Screw Torque Values.....	4-1-19
Unified Inch Bolt and Screw Torque Values.....	4-1-20
<b>Miscellaneous—Operational Checkout</b>	
Operational Checkout.....	4-2-1

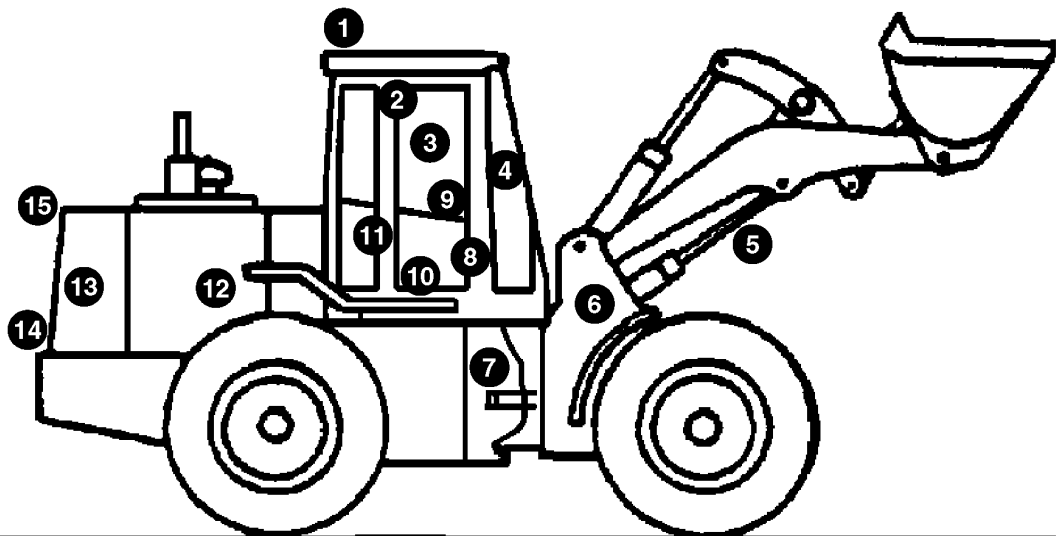
Continued on next page

	Page
<b>Miscellaneous—Troubleshooting</b>	
Troubleshooting Procedure .....	4-3-1
Diagnostic Trouble Codes Quick Reference List .....	4-3-2
Engine .....	4-3-6
Diagnose	
Transmission System Malfunctions .....	4-3-8
Differential And Axle Malfunctions .....	4-3-10
Service Brake Malfunctions .....	4-3-11
Drive Line Malfunctions .....	4-3-11
Park Brake Malfunctions .....	4-3-12
Loader Hydraulic System Malfunctions .....	4-3-13
Steering Malfunctions .....	4-3-14
Air Conditioning System .....	4-3-15
Heater System .....	4-3-16
<b>Miscellaneous—Storage</b>	
Prepare Machine For Storage .....	4-4-1
Monthly Storage Procedure .....	4-4-1
<b>Miscellaneous—Machine Numbers</b>	
Record Product Identification Number (PIN) .....	4-5-1
Record Engine Serial Number .....	4-5-1
Record Transmission Serial Number .....	4-5-1
Record Hydraulic Pump Serial Number .....	4-5-2
Record Axle Serial Number .....	4-5-2
Keep Machines Secure .....	4-5-3
Keep Proof of Ownership .....	4-5-3
<b>Miscellaneous—Specifications</b>	
444J Specifications .....	4-6-1
444J Tool Carrier Specifications .....	4-6-3
444J High Lift Specifications .....	4-6-5
444J Powerlifter Specifications .....	4-6-7
444J Drain and Refill Capacities .....	4-6-8
544J Specifications .....	4-6-9
544J Tool Carrier Specifications .....	4-6-11
544J High Lift Specifications .....	4-6-13
544J Powerlifter Specifications .....	4-6-15
544J Drain and Refill Capacities .....	4-6-16
624J Specifications .....	4-6-17
624J Tool Carrier Specifications .....	4-6-19
624J High Lift Specifications .....	4-6-21
624J Powerlifter Specifications .....	4-6-23
624J Drain and Refill Capacities .....	4-6-24



# Safety—Safety and Operator Conveniences

## Safety and Operator Convenience Features



TX1004727

TX1004727—UN—13MAR06

Please remember, the operator is the key to preventing accidents.

1. **ROPS, FOPS, and OPS.** Structures designed to help protect the operator are certified to ISO, SAE, and OSHA. Enclosures also deflect sun and rain.
2. **Pressurized Cab with Heater/Defroster.** Positive pressure ventilation system circulates both outside and inside air through filters for a clean working environment. Built in defroster vents direct air flow for effective window defogging/deicing.
3. **Mirrors.** Large exterior mirrors on both sides and an inside mirror offers operator a broad view of area behind machine.
4. **Large Windshield Wiper with Washer.** Extra long wiper cleans large windshield area.
5. **Loader Boom Service Lock.** Loader includes a mechanical lock for securing boom in the raised position before work is started on or around the machine.
6. **Halogen Lights and Turn Signals.** High intensity halogen drive/work lights and high-visibility turn signals are standard equipment.
7. **Articulation Locking Bar.** A self-storing mechanical lock is provided for transport or service.
8. **Handholds.** Large, conveniently placed handholds make it easy to enter or exit the operator's station or service area.
9. **Horn.** Standard horn is useful when driving or signaling coworkers.
10. **Independent Parking Brake.** Electronically controlled and engages whenever the engine is stopped.
11. **Seat Belt Retractors.** Seat belt retractors help keep belts clean and convenient to use.
12. **Bypass Start Protection.** Shielding over the starter terminals helps prevent dangerous bypass starting.
13. **Engine Fan Guard.** A secondary fan guard inside the engine compartment helps prevent contact with the rotating fan blades.
14. **Back Up Alarm.** Alerts bystanders when reverse travel direction is selected by operator.
15. **Stop and Signal Lights.** Highly visible stop lights are standard equipment.

MM61211,000142D -19-21JUN10-1/1

# Safety—General Precautions

## 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

T133568 —19—28AUG00

TX03679,00016CC -19-03NOV08-1/1

## Follow Safety Instructions

Carefully read all safety messages in this manual and on your machine safety signs. Keep safety signs in good condition. Replace missing or damaged safety signs. Be sure new equipment components and repair parts include the current safety signs. Replacement safety signs are available from your John Deere dealer.

There can be additional safety information contained on parts and components sourced from suppliers that is not reproduced in this operator's manual.

Learn how to operate the machine and how to use controls properly. Do not let anyone operate without instruction.

Keep your machine in proper working condition. Unauthorized modifications to the machine may impair the function and/or safety and affect machine life.



TS201 —UN—23AUG88

If you do not understand any part of this manual and need assistance, contact your John Deere dealer.

DX\_READ -19-16JUN09-1/1

## 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.

TX03679,00016FA -19-03NOV08-1/1

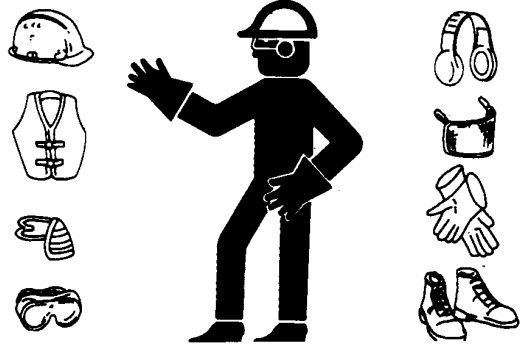
### Wear Protective Equipment

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

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

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

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. Radio or music headphones are not suitable to use for hearing protection.



TS206 —UN—23AUG88

OUT4001,0000570 -19-12FEB10-1/1

### 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.

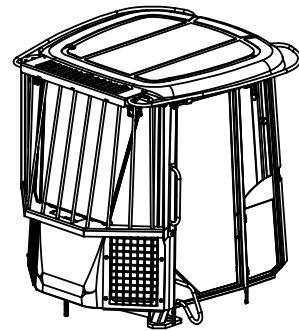
Always contact an authorized John Deere dealer before making machine modifications that change the intended use, weight or balance of the machine, or that alter machine controls, performance or reliability.

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.



T141883 —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

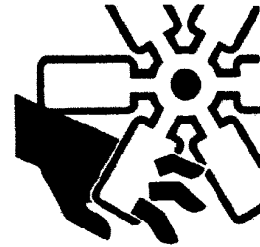
TX03679,0001734 -19-03NOV08-1/1

### 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.



T133592 —UN—12SEP01

TX03679,00016D2 -19-03NOV08-1/1

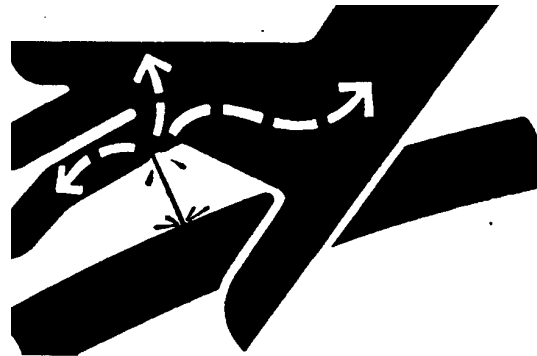
### Avoid High-Pressure Fluids

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

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

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

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



X9811 —UN—23AUG88

Moline, Illinois, U.S.A., by calling 1-800-822-8262 or +1 309-748-5636.

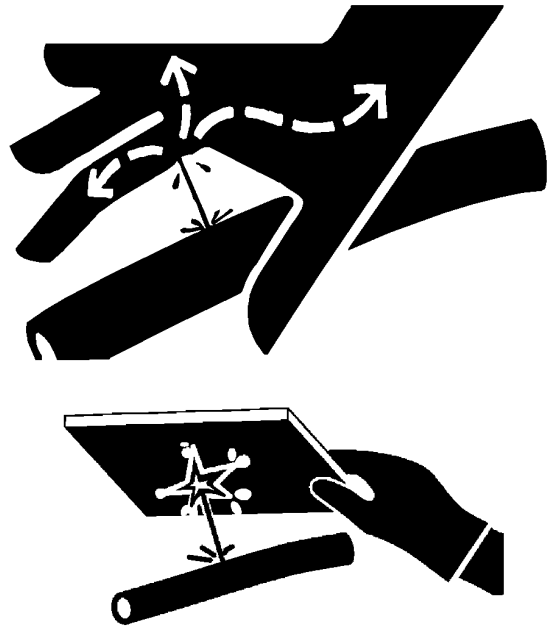
DX,FLUID -19-20AUG09-1/1

### 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.



T133509—UN—17MAR06

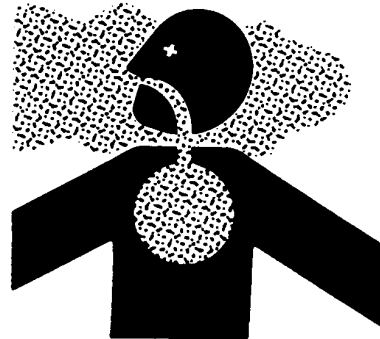
T133840—UN—20SEP00

TX03679,00016D3 -19-03NOV08-1/1

### Work In Ventilated Area

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

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



TS220—UN—23AUG88

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

## Prevent Fires

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

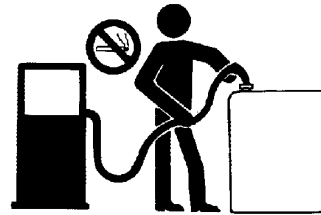
**Clean Machine Regularly:** Keep trash, debris, grease and oil from accumulating in engine compartment, around fuel lines, hydraulic lines, exhaust components, and electrical wiring. Never store oily rags or flammable materials inside a machine compartment.

**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.

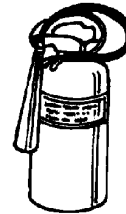
**Keep A Fire Extinguisher Available:** Always keep a multipurpose fire extinguisher on or near the machine. Know how to use extinguisher properly.



T133553 —UN—07SEP00



T133554 —UN—07SEP00



TX03679,00016F5 -19-03NOV08-1/1

T133552 —UN—14SEP00

## 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).



TX03679,000174A -19-03NOV08-1/1

TS204 —UN—23AUG88

## Handle Chemical Products Safely

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 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.

TX03679,00016D7 -19-03JAN07-1/1

T133580 —UN—25AUG00

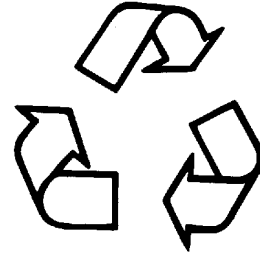
### Dispose of Waste Properly

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.



T133567 —UN—25AUG00

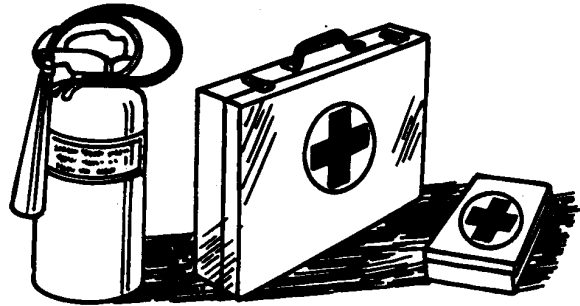
TX03679,0001733 -19-03NOV08-1/1

### Prepare for Emergencies

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.



TS291 —UN—23AUG88

TX03679,000174B -19-03NOV08-1/1

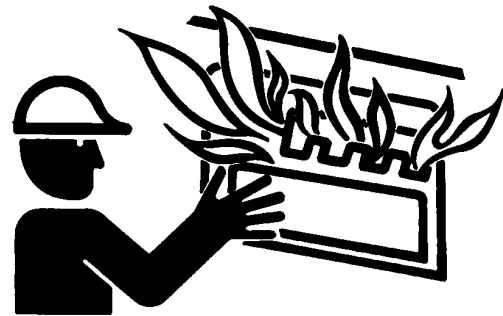
### Clean Debris from Machine

Keep engine compartment, radiator, batteries, hydraulic lines, exhaust components, fuel tank, and operator's station clean and free of debris.

Clean any oil spills or fuel spills on machine surfaces.

Temperature in engine compartment may go up immediately after engine is stopped. **BE ON GUARD FOR FIRES DURING THIS PERIOD.**

Open access door(s) to cool the engine faster, and clean engine compartment.



T6669AG —UN—18OCT88

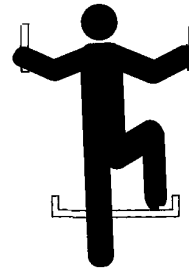
OUT4001,00000E3 -19-20AUG09-1/1

# Safety—Operating Precautions

## Use Steps and Handholds Correctly

Prevent falls by facing the machine when getting 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 -19-15MAR07-1/1

## 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 -19-22APR10-1/1

## 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.**



# USE SEAT BELT

T133716 —19—14SEP00

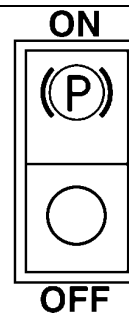
TX03679,00016DD -19-03NOV08-1/1

## 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.



T142001 —UN—15MAY01

TX03679,00017C7 -19-08MAR07-1/1



### Avoid Worksite 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 worksite properly.** Avoid operating near structures or objects that could fall onto the machine. Clear away debris that could move unexpectedly if run over.

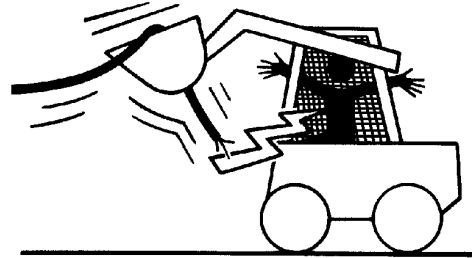
**Avoid boom or attachment contact with overhead obstacles or overhead electrical lines.** Never move machine closer than 3 m (10 ft) plus twice the line insulator length to overhead wires.

**Keep bystanders clear at all times.** Keep bystanders away from raised booms, attachments and unsupported loads. Avoid swinging or raising booms, attachments, or loads over or near personnel. 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.

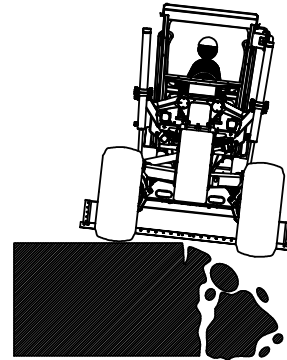
**Operate only on solid footing** with strength sufficient to support machine. Be especially alert working near embankments or excavations.

**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



T192984 —UN—26AUG03



T141904 —UN—15MAY01

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.

AM40430.0000098 -19-15JUN10-1/1

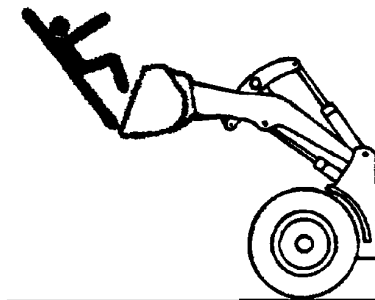
### Use Special Care When Operating Loader

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

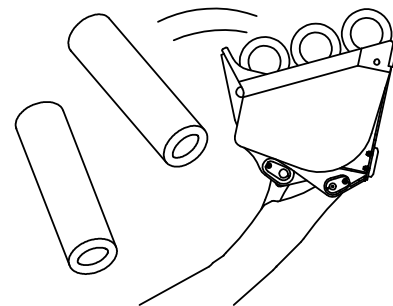
**Operate carefully with raised loads.** Raising the load reduces machine stability, especially on side slopes or an unstable surface. Drive and turn slowly with a raised load.

**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.



T141957 —UN—15MAY01



T141902 —UN—07MAY01

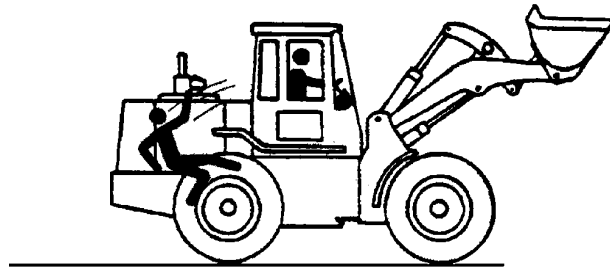
TX03768.0000B70 -19-14MAY01-1/1

### 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

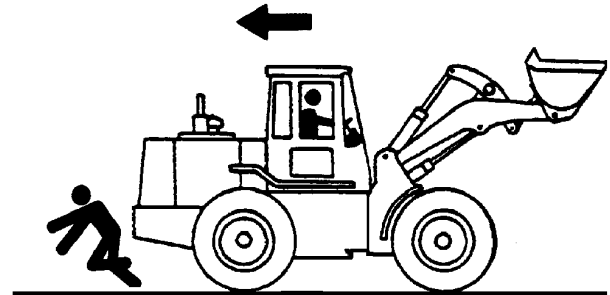
TX03679,000179B -19-20APR01-1/1

### 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.

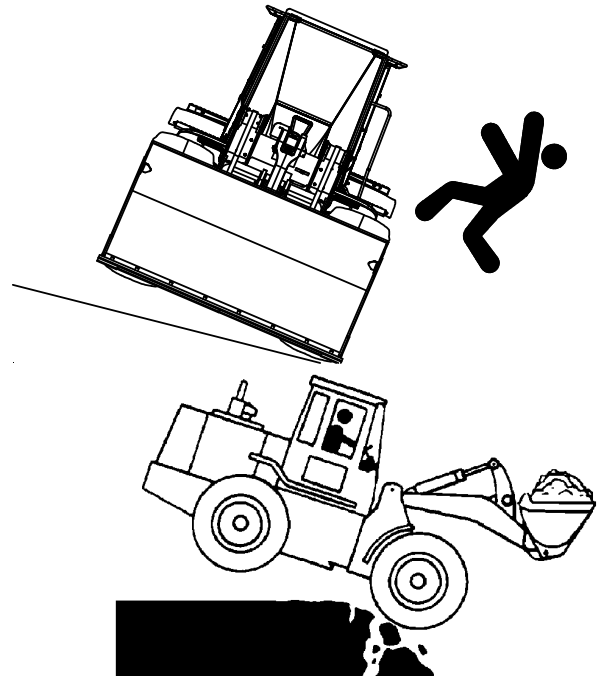
**Be careful on slopes.** Avoid sharp turns. Balance loads so weight is evenly distributed and load is stable. Carry tools and loads close to the ground to aid visibility and lower center of gravity. Use extra care on soft, rocky or frozen ground.

**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.



# USE SEAT BELT



T133716 —19—14SEP00

T141676 —UN—04MAY01

T141672 —UN—04MAY01

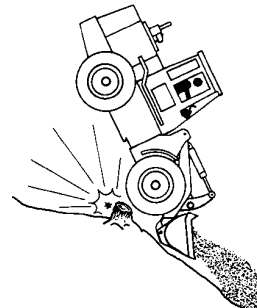
TX03679,000179D -19-02MAY01-1/1

## 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.



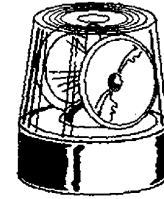
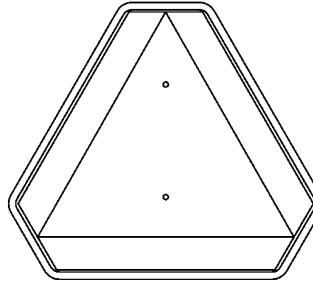
T141681 —UN—30APR01

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.



T141891 —UN—22MAY01

TX03679,00017C8 -19-02MAR07-1/1

### 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

# Safety—Maintenance Precautions

## Park And Prepare For Service Safely

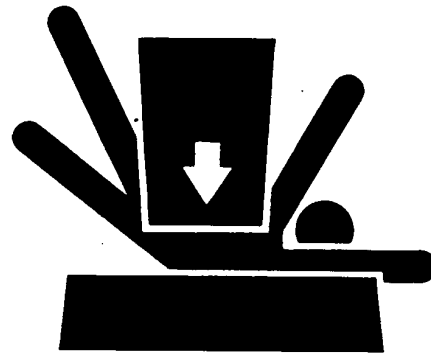
**Warn others of service work.** Always park and prepare your machine for service or repair properly.

- 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.

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.



T133332—19—14DEC01

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

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.



TS220—UN—23AUG88

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

**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.



T133647—UN—31AUG00

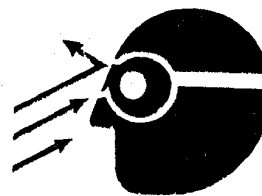
Make sure there is good ventilation. Wear eye protection and protective equipment when welding.

TX03679,00016D5 -19-25APR08-1/1

### 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 -19-03JAN07-1/1

# Safety—Safety Signs

## Safety Signs

**CAUTION**

- **AVOID DEATH OR SERIOUS INJURY** - Read and understand Operator's Manual before operating this machine.
- Operate only from seat.
- Before leaving seat:
  - Lower bucket to ground.
  - Lock transmission selector in neutral.
  - Set park brake.
  - Turn pilot hydraulic switch to locked position.
  - Stop engine (turn key switch to OFF).
- Do not permit riders.
- Avoid contact with overhead obstacles when operating or hauling machine.

(POWERLINKAGE ONLY)

**CAUTION**

Avoid injury from sudden linkage movement.  
Support bellcrank before removing any pins.  
See Operator's Manual for details.

(IF EQUIPPED)

**CAUTION**

**MACHINE EQUIPPED WITH SECONDARY STEERING SYSTEM**

Stop machine immediately if light or buzzer warns of low steering pressure.

Secondary steering system only functions with key switch on.

Test secondary system periodically. See Operator's Manual.

**CAUTION**

**PRESSURIZED**  
**DO NOT OPEN HOT**

Remove Slowly  
15 P.S.I.  
AT 173610

**WARNING**

Avoid crushing  
**DO NOT JUMP**  
if machine tips

T145067

**USE SEAT BELT**

**WARNING**

**AVOID SERIOUS INJURY**

Block wheels to prevent machine movement before deactivating park brake for towing.

T150028

**WARNING**

**ALWAYS INSTALL BOOM LOCK BEFORE WORKING ON OR AROUND THIS MACHINE WITH THE LOADER BOOM RAISED.**

Empty bucket and place in dump position. Install boom lock with tab centered and engaged in boom cylinder rod end cone.

See Operator's Manual for complete instructions.

**WARNING**

Crushing injury may result in hinge area if machine is turned.  
Make sure people are clear of machine before starting engine or moving steering wheel.  
Attach locking bar before performing service near center of machine or transporting on a truck.

T146525

**WARNING**

Avoid injury from escaping fluid. Contents of this accumulator are under pressure.

1. Refer to proper Machine Model Technical Manual for removal and installation procedure.
2. This accumulator is charged with DRY NITROGEN by the manufacturer and is NOT rechargeable.

T174298

Maximum Working Pressure  
24820 kPa [3600 PSI]

**CAUTION**

This machine may be equipped with batteries on each side.  
Always disconnect both ground straps before working on electrical system.

T146438

T203576

Left Side Shown

TX03679,00017F6 -19-30SEP04-1/1

T203576 — 19—05OCT04

Safety Signs

**⚠ WARNING**

**AVOID INJURY FROM RELEASE OF HIGH PRESSURE OIL**

Always discharge ride-control accumulator before disassembly of hydraulic lines.

See Operator's Manual for instructions.

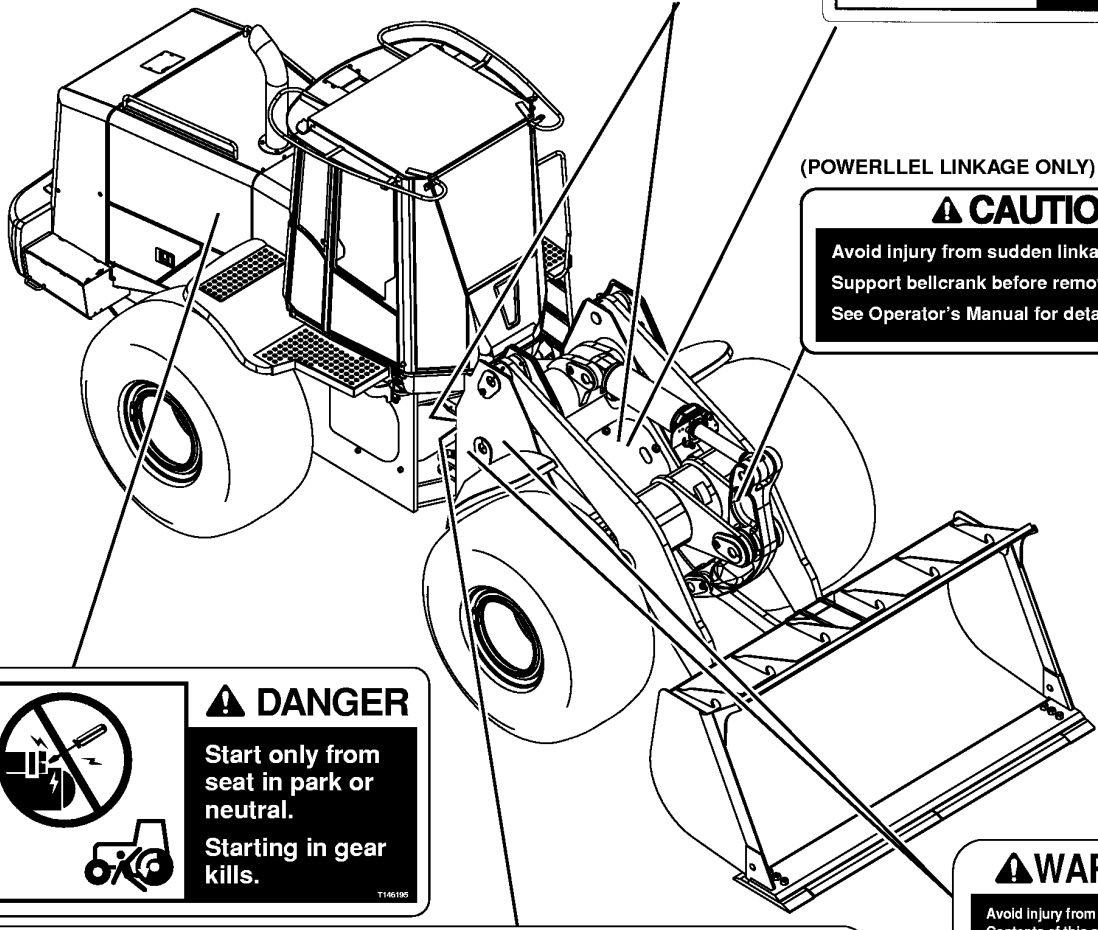
T146795

**⚠ DANGER**



To avoid injury, securely brace lift arm before disassembly of valve or piping.

T146178



(POWERLLEL LINKAGE ONLY)

**⚠ CAUTION**

Avoid injury from sudden linkage movement. Support bellcrank before removing any pins. See Operator's Manual for details.

T21190


**⚠ DANGER**



Start only from seat in park or neutral. Starting in gear kills.

T146195

**⚠ WARNING**



Crushing injury may result in hinge area if machine is turned. Make sure people are clear of machine before starting engine or moving steering wheel. Attach locking bar before performing service near center of machine or transporting on a truck.

T146438

**⚠ WARNING**

Avoid injury from escaping fluid. Contents of this accumulator are under pressure.

1. Refer to proper machine model Technical Manual for disassembly or charging instructions and equipment required.
2. Charge with DRY NITROGEN only.

Maximum Working Pressure  
27579 kPa [4000 PSI]

T160944

T203577

Right Side Shown

HG31779,0000043 -19-01OCT04-1/1

T203577—19—05OCT04



### Replace Safety Signs

Replace missing or damaged safety signs. Use this operator's manual for correct safety sign placement.

There can be additional safety information contained on parts and components sourced from suppliers that is not reproduced in this operator's manual.



TS201—UN—23AUG88

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

# Operation—Operator's Station

## Levers



T194168A—UN—18SEP03

Single Lever with Auxiliary Control Design Shown with Joystick FNR



T194169A—UN—18SEP03

Two Lever with Auxiliary Control Design

HG31779,0000152 -19-08AUG03-1/2

1— Column FNR

2— Turn Signal



T195153A—UN—25SEP03

HG31779,0000152 -19-08AUG03-2/2

## Pedals

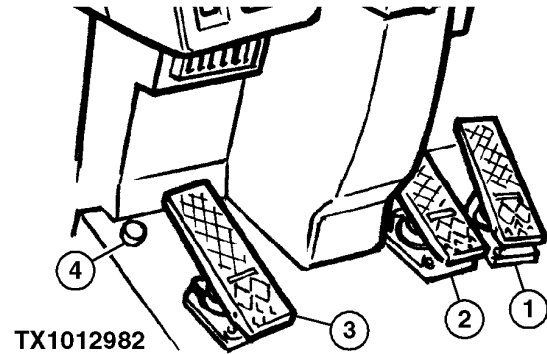
**Accelerator pedal (1):** Depress to increase speed of machine.

**Brake pedals (2 and 3):** Depress left brake pedal (3) or right brake pedal (2) to stop machine.

*NOTE: Brake pedals also serve as clutch cutoff pedals when clutch cutoff switch is in "clutch disengaged" position.*

**Differential Lock Foot Switch (4)—If Equipped:** Depress switch (4) to lock front axle differential. Release switch to unlock differential.

*NOTE: Use differential lock only when conditions require traction. Avoid using differential lock when steering.*



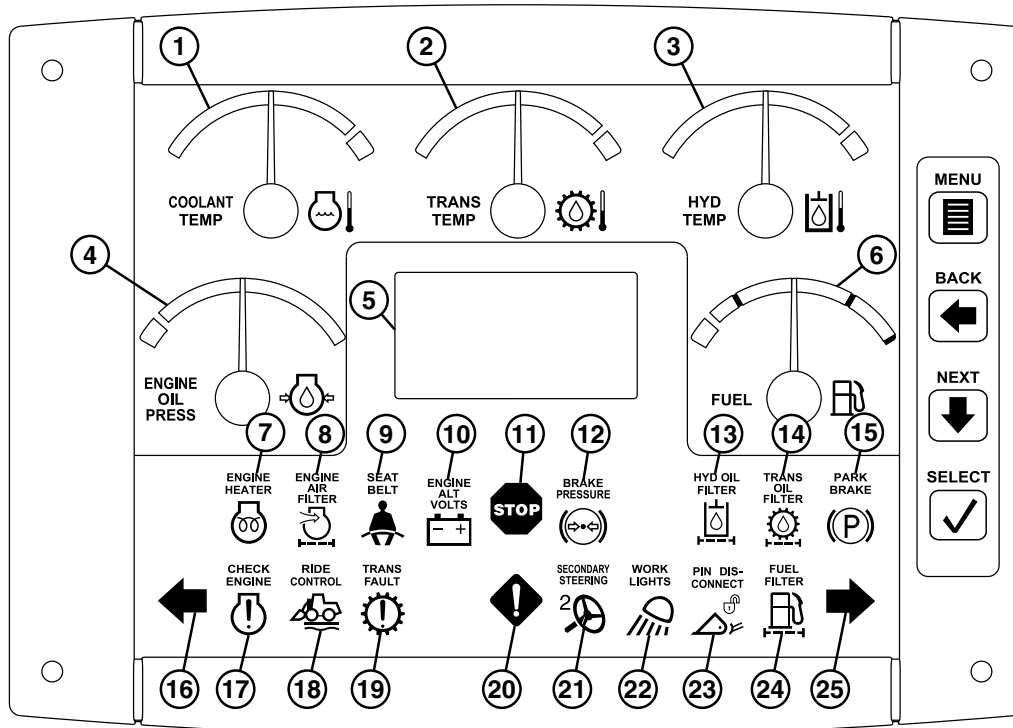
TX1012982

- 1— Accelerator
- 2— Brake/Clutch Cutoff Pedal
- 3— Brake/Clutch Cutoff Pedal
- 4— Differential Lock Foot Switch—If Equipped

TX1012982 —UN—06OCT06

TX,10,JC1191 -19-18DEC06-1/1

## Monitor Panel (CMU)



T193262

T193262 —UN—21JUL03

- |  |  |  |  |
|--|--|--|--|
| 1— Engine Coolant Temperature Gauge    | 8— Engine Air Filter Restriction Indicator     | 15— Park Brake Indicator                     | 22— Work Lights ON Indicator—If Equipped |
| 2— Transmission Oil Temperature Gauge  | 9— Fasten Seat Belt Indicator                  | 16— Left Turn Indicator                      | 23— Pin Disconnect Indicator             |
| 3— Hydraulic Oil Temperature Gauge     | 10— Engine Alt Volts Indicator                 | 17— Check Engine Indicator                   | 24— Fuel Filter Restriction Indicator    |
| 4— Engine Oil Pressure Gauge           | 11— STOP Indicator                             | 18— Ride Control Indicator                   | 25— Right Turn Indicator                 |
| 5— Display Window                      | 12— Brake Pressure Indicator                   | 19— Transmission Fault Indicator             |  |
| 6— Fuel Gauge                          | 13— Hydraulic Oil Filter Restriction Indicator | 20— Service Required Indicator               |  |
| 7— Engine Heater Indicator—If Equipped | 14— Transmission Oil Filter Indicator          | 21— Secondary Steering Indicator—If Equipped |  |

- MENU provides initial entry into machine settings, diagnostics, and monitor settings. Once a main menu has been selected, pressing MENU again will return to the Normal Display Mode Menu.
- BACK will back out of a menu, one item each time the key is pressed. The BACK key will eventually return to the normal display.
- NEXT will move to the next selection within a menu or mode. Press NEXT to cycle through all the possible selections in a menu.
- SELECT toggles between the odometer, hour meter, and speedometer displays during normal operation. During menu modes, SELECT will activate the currently chosen menu, provide additional information on codes, make selection, reset timers, or turn on/off stop watch.

HG31779,00002BC -19-23JUN03-1/1

## Monitor Panel Functions

**1—Engine Coolant Temperature Gauge:** Indicator will light, STOP indicator will flash and audible alarm will sound when pointer is in red zone. Stop machine and allow engine to cool. Shut off engine and take corrective action.

If pointer deflects to the far left side of the scale, electronic communication is lost or a sensor error is active. Indicator will not light.

**2—Hydraulic Oil Temperature Gauge:** Indicator will light and service required indicator will light when pointer is in red zone. Stop work cycle and cycle loader functions without load to lower indicator reading. If indicator still stays in red zone, stop machine and see your authorized dealer.

If pointer deflects to the far left side of the scale, electronic communication is lost or a sensor error is active. Indicator will not light.

### 3—Engine Oil Pressure Gauge:

**IMPORTANT: Prevent possible engine damage. If engine oil pressure indicator light comes on while operating, stop machine. STOP ENGINE IMMEDIATELY.**

Indicator will flash, STOP indicator will flash, and alarm will sound when engine oil pressure gauge indicates low pressure. Stop machine. STOP ENGINE IMMEDIATELY.

If pointer deflects to the far left side of the scale, electronic communication is lost or a sensor error is active. Indicator will not light.

*NOTE: Extreme steep slope (off level) operation may cause indicator to light.*

**4—Transmission Oil Temperature Gauge:** If pointer is in red zone, indicator will light, STOP indicator will flash, and audible alarm will sound indicating that the temperature is too high. Stop machine and allow transmission to cool. Shut off engine and take corrective action.

If pointer deflects to the far left side of the scale, electronic communication is lost or a sensor error is active. Indicator will not light.

**5—Display Window:** The display window has eight displays:

- Actual Gear
- Requested Gear
- TCL (Transmission Control Lever)
- Auto/Manual Transmission Mode
- Tachometer
- Hour Meter
- Odometer
- Speedometer

**6—Fuel Gauge:** Gauge will reflect fuel level in tank. Indicator will flash to indicate low level condition.

If pointer deflects to the far left side of the scale, electronic communication is lost or a sensor error is active. Indicator will not light.

Always fill tank at the end of the day to eliminate condensation in fuel tank.

**7—Engine Heater Indicator—If Equipped:** If preheat is needed, Indicator will light when key switch is turned clockwise to the “On” position. Light will turn off approximately 15-45 seconds depending on engine temperature, indicating that preheating is completed. Light will turn off while cranking engine. Indicator will also light for approximately 15-45 seconds after engine is running, indicating post heat.

**8—Engine Air Filter Restriction Indicator:** Indicator will light and service required indicator will light when air elements are restricted.

**9—Fasten Seat Belt Indicator:** Indicator will light for the first 5 seconds after the engine is started to warn the operator to fasten seat belt.

**10—Engine Alt Volts Indicator:** Indicator will light and service required indicator will light when alternator output is below 24 volts with engine running or below 18 volts when engine is not running. Check battery charge under Diagnostics—Battery Monitor on digital display.

### 11—STOP Indicator:

**⚠ CAUTION: Prevent possible injury or machine damage. If STOP indicator flashes and alarm sounds, stop immediately and investigate cause of problem.**

Indicator will light when a problem has developed.

### 12—Brake Pressure Indicator:

**⚠ CAUTION: Prevent possible injury or machine damage. If brake pressure indicator comes on while operating, stop machine immediately.**

Indicator will flash, STOP indicator will flash, and alarm will sound when brake oil pressure is low or brake accumulator has lost its charge. Stop machine immediately and push park brake switch to ON.

### 13—Hydraulic Oil Filter Restriction Indicator:

**IMPORTANT: Prevent possible hydraulic pump damage. Change hydraulic oil filter as soon as possible when a problem occurs.**

Indicator will light and service required indicator will light when hydraulic filter element is restricted.

*NOTE: Cold oil may cause hydraulic oil filter restriction indicator to light until oil is warm.*

**14—Transmission Oil Filter Indicator:** Indicator will light and the service required indicator will light when the transmission filter is restricted.

**15—Park Brake Indicator:** Indicator will light when park brake is engaged.

If transmission is shifted out of "Neutral" with engine running and park brake engaged, the STOP indicator will flash, park brake indicator will flash and alarm will sound until park brake is disengaged or transmission shifted back to neutral.

**16—Left Turn Indicator :** Indicator will light when left turn signal switch or 4-way flashers switch is engaged.

**17—Check Engine Indicator:** Indicator will flash when excessive water is present in final fuel filter or a fuel system failure has been detected. STOP indicator will flash, alarm will sound, and engine will derate to 50% of full power until water is drained.

When water is drained, indicators and alarm will turn off and the engine will return to full power.

**18—Ride Control Indicator:** Indicator will light when ride control is activated.

**19—Transmission Fault Indicator:** Transmission fault indicator and service required indicator will light and stay on when a transmission clutch slippage service code has been detected or if "limp home" mode has been requested. The transmission will shift to "Neutral" and then machine can only be moved in "limp home" mode. A service code will be logged in Monitor Display Unit.

The indicator light will turn off when key switch has been turned off. Every time clutch slippage occurs, the transmission service indicator and service required indicator will light and will remain on until key switch is turned off.

**20—Service Required Indicator (Yellow):** Indicator will light when a problem is developing. It is not necessary to stop the engine immediately, but the cause should be investigated as soon as possible.

It is not necessary to stop the engine immediately but the cause should be investigated as soon as possible.

**21—Secondary Steering Warning Indicator—If Equipped:**

**IMPORTANT: Prevent possible damage to secondary steering system. Stop machine immediately if secondary steering indicator light and alarm come on while operating. THE SECONDARY STEERING SYSTEM IS NOT INTENDED FOR CONTINUOUS USE.**

Indicator will flash, STOP indicator will flash, and alarm will sound when secondary steering system is activated. Stop machine immediately and take corrective action. The secondary steering system is not intended for continuous use.

**22—Cab Work Lights Indicator:** Indicator will light when cab work lights switch is activated.

**23—Pin Disconnect Indicator:** Indicator will light and alarm will sound every ten seconds when pin disconnect switch is activated to retract cylinders for removal of attachments.

**24—Fuel Filter Restriction Indicator:**

*NOTE: Indicator may come on during cold startups or when machine is under heavy loads.*

*A flickering light is an early warning that fuel filter needs to be changed.*

Indicator will light and service required indicator will light when fuel pressure drops below 300 kPa (43.5 psi).

If pressure drops below 200 kPa (29 psi), indicator will remain on. Service required indicator will light and engine will derate to 50% of full power.

**25—Right Turn Indicator:** Indicator will light when right turn signal switch or 4-way flashers switch is engaged.

HG31779.00002BD -19-10NOV06-2/2

Switch Pad



- |                                    |  |  |                                |
|------------------------------------|--|--|--------------------------------|
| 1— Not Used                        | 6— Cab Work Light Switch—If Equipped                                       | 11— Air Conditioning Switch—If Equipped      | 16— Return-to Dig Switch       |
| 2— Drive, Tail and Marker Switch   | 7— Beacon Switch—If Equipped   | 12— Pin Disconnect Switch—If Equipped        | 17— Boom Height Kickout Switch |
| 3— Automatic Transmission Switch   | 8— Axle Disconnect Switch—If Equipped                                      | 13— Reversing Cooling Fan Switch—If Equipped | 18— Return-to-Carry Switch     |
| 4— Ride Control Switch—If Equipped | 9— Spin Control Switch—If Equipped (Not Available on 444, 544, 624 models) | 14— Front Washer Switch                      | 19— Rear Washer Switch         |
| 5— Pilot Enable/Boom Down Switch   | 10— Clutch Cut-Off Switch  | 15— Front Wiper Switch                       | 20— Rear Wiper Switch          |

T192095B—UN—18SEP03

AM40430.0000045 -19-09FEB05-1/1

## Switch and Accessory Functions

### 1—Not Used

**2—Drive and Marker Light Switch:** The switch has three positions:

- Press and release switch until one light is illuminated to turn on marker lights
- Press and release switch until two lights are illuminated to turn on drive lights and marker lights
- Press and release switch until no lights are illuminated to turn lights off

*NOTE: When marker or drive lights are turned on, the backlighting of the switch pad will turn on and the intensity of the lights will be decreased automatically for nighttime operation.*

*When a communication fault occurs between the switch pad and Flex Load Controller (FLC) or a stuck button condition, the marker lights, drive lights, and backlighting turn on automatically.*

**3—Automatic Transmission Switch:** Press and release switch until light is illuminated. The transmission is now in "Auto" mode. Move transmission lever to 3 or 4. Transmission will start in 2nd gear. As speed increases, transmission will automatically shift to 3rd and 4th gear. As load increases or speed decreases, transmission will automatically shift to 3rd and 2nd gear.

*NOTE: Transmission will start in first gear if "Auto to 1st" mode is selected in Machine Settings Menu on the display monitor.*

Press and release switch until light is not illuminated. The transmission is now in manual mode.

**4—Ride Control Switch—If Equipped:** The switch has three positions:

- Press switch until one light is illuminated to turn ride control on
- Press switch until two lights are illuminated to "Auto" position that functions the same as the "On" position with one exception. The ride control is turned off when ground speed is approximately 6 km/h (3—1/2 mph) or less
- Press switch until no lights are illuminated to turn ride control off

**5—Pilot Enable/Boom Down Switch:** The switch has three positions:

- Press and hold switch while actuating boom down to lower boom with engine off and key switch on
- Press and release switch until light is illuminated to unlock pilot controllers; normal operation
- Press and release switch until light is not illuminated to lock pilot controllers; locks hydraulic controls

**6—Cab Work Light Switch—If Equipped:** The switch has four positions:

- Press switch and release until one light is illuminated to turn on front lights
- Press switch and release until two lights are illuminated to turn on front and rear lights
- Third selection not used
- Press switch and release until no lights are illuminated to turn lights off

**7—Beacon Switch—If Equipped:** Press and release switch until light is illuminated to turn beacon light on. Press and release switch until light is not illuminated to turn beacon light off.

**8—Axle Disconnect Switch—If Equipped:** Press and release switch until light is illuminated to disconnect front axle. Press and release switch until light is not illuminated to connect front axle.

**9—Spin Control Switch—If Equipped (Not Available on 444, 544, 624J models)**

**10—Clutch Cut-Off Switch:** This switch has four positions:

**⚠ CAUTION: Prevent possible injury from unexpected machine movement. When stopping on inclines, press switch until no lights are illuminated to engage clutch cutoff before releasing left service brake. This will prevent the machine from rolling downhill during transmission re-engagement cycle.**

*NOTE: By turning one of these functions on, the other two are automatically turned off.*

- Press and release switch until one light is illuminated to turn on the Level Slope setting. On this setting the clutch releases with low brake pedal pressure.
- Press and release switch until two lights are illuminated to turn on Small Slope setting. On this setting the clutch releases with medium brake pedal pressure.
- Press and release switch until three lights are illuminated to turn on Steep Slope setting. On this setting the clutch releases with high brake pressure.
- Press and release switch until no lights are illuminated to disable clutch cutoff.

Use the switch in situations such as truck loading where machine positioning and maximum hydraulics are needed.

*NOTE: The park brake will also disengage the transmission clutches. Release park brake before operating.*

**11—Air Conditioning Switch—If Equipped:** Press and release switch until light is illuminated to turn air conditioning on. Press and release switch until light is not illuminated to turn air conditioning off.

*NOTE: Engine must be running and blower fan speed switch must be on for air conditioning to function.*



**12—Pin Disconnect Switch—If Equipped:** Press and hold switch for 2 seconds to retract cylinders for removal of attachments. The light will remain illuminated, the pin disconnect indicator will light, and the audible alarm will sound every ten seconds.

Press and release switch until light is not illuminated to extend cylinders for attachment.

**13—Reversing Cooling Fan Switch—If Equipped:** Every 30 minutes the radiator cooling fan will automatically reverse direction for 15 seconds without intervention from the operator. Press switch and hold for 2 seconds to turn on "Manual" mode to manually reverse the direction of the fan for 15 seconds.

*NOTE: The reversing fan function shall not be reactivated within one minute of its last completion (this time includes "Automatic" cycle).*

**14—Front Washer Switch:** Push switch to wash front window. Pressing switch will also activate low speed front wiper operation. After releasing washer switch the wiper blade will swipe three times and automatically turn off .

**15—Front Wiper Switch:** The switch has four positions:

- Press and release switch until one light is illuminated for intermittent front wiper operation
- Press and release switch until two lights are illuminated for low speed front wiper operation
- Press and release switch until three lights are illuminated for high speed front wiper operation
- Press and release switch until no lights are illuminated to turn front wipers off

**16—Return-to-Dig Switch:**The switch has three positions:

- Press and release switch until one light is illuminated for bucket position on Powerllel linkage machines only.
- Press and release switch until two lights are illuminated for fork position on Powerllel linkage machines only.
- Press and release switch until no lights are illuminated to turn return-to-dig off for Z-Bar linkage machines.

**17—Boom Height Kickout Switch:** The switch has three positions:

- Press and release switch until one light is illuminated to activate boom height kickout. Pull boom lever to raise detent position. Boom will kick-out of detent position when it reaches a preset height from ground.
- While light is illuminated, press and hold switch to set boom height. Light will flash and audible alarm will sound to indicate position has been set.
- Press and release switch until no light is illuminated to deactivate boom height kickout

**18—Return-to-Carry Switch:** The switch has three positions:

- Press and release switch until one light is illuminated to activate return-to-carry. Push boom lever to float position. Boom will kick-out of float position when it reaches a preset distance from ground.
- Press and hold switch to set return-to-carry height
- Press and release switch until no light is illuminated to deactivate return-to-carry

*NOTE: Boom float will not work once the boom is below preset distance from ground. Press switch to "Off" position to activate boom float.*

**19—Rear Washer Switch:** Push switch to wash rear window. Pressing switch will also activate low speed rear wiper operation. After releasing washer switch the wiper blade will swipe five times and automatically turn off .

**20—Rear Wiper Switch:** The switch has four positions:

- Press and release switch until one light is illuminated for intermittent rear wiper operation
- Press and release switch until two lights are illuminated for low speed rear wiper operation
- Press and release switch until three lights are illuminated for high speed rear wiper operation
- Press and release switch until no lights are illuminated to turn rear wipers off

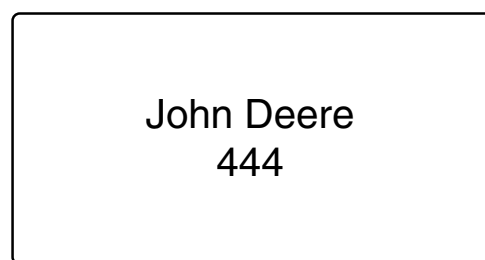
AM40430,0000046 -19-09FEB05-2/2

## Monitor Display Unit—Normal Display

When key switch is turned on, all lights on display monitor will come on, all gauges will position gauge needle to the 12 o'clock position, and alarm will sound.

The basic display window will show the bulb check mode. After bulb check mode, the stop indicator and engine oil pressure indicator will flash.

The machine model number will show in the basic display window.



444J Monitor Shown

T193366 —UN—05AUG03

Continued on next page

HG31779,0000320 -19-11AUG03-1/2

Approximately five seconds later, the Normal display will be shown.

The Actual Gear Display (1) shows the gear the transmission has engaged when machine is not in neutral. When a transmission controller unit failure occurs, this display will show gear 1.

The FNR Display (2) shows the forward, neutral, reverse status. When a transmission controller unit failure occurs, the FNR display will show neutral.

The Requested Gear Display (3) shows the requested gear position of the shift lever or gear select.

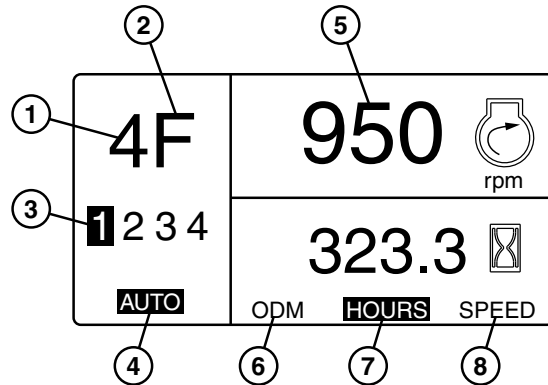
The Transmission Mode Display (4) shows whether the transmission is in "Auto" mode or "Manual" mode. When a transmission controller unit failure occurs, this display will show manual mode.

The Tachometer Display (5) shows the engine revolutions per minute to the nearest fifth of a rpm. When a transmission controller unit malfunction occurs, a "---" is displayed.

*NOTE: Press SELECT or NEXT to toggle between the odometer, hour meter, and speedometer displays.*

The Odometer Display (6) shows the odometer reading in miles/km to the nearest tenth. The odometer is capable of displaying up to 99,999.9 total kilometers or 62137.1 miles. The odometer runs only when the engine is on.

The Hour Meter Display (7) shows the machine hours to the nearest tenth of an hour. The hour meter accumulates



- |                              |                       |
|------------------------------|-----------------------|
| 1— Actual Gear Display       | 5— Tachometer Display |
| 2— FNR Display               | 6— Odometer Display   |
| 3— Requested Gear Display    | 7— Hour Meter Display |
| 4— Transmission Mode Display | 8— Speedometer        |

hours only when the engine is on; and the icon flashes once per second. The hour meter displays up to 99,999.9 hours.

The Speedometer Display (8) will show speed in mph/km/h. When a flex load controller failure occurs, a "- -" is displayed.

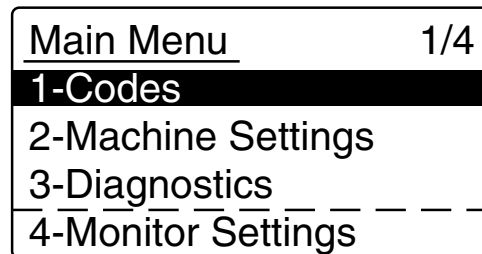
HG31779,0000320 -19-11AUG03-2/2

T194715—UN—17SEP03

## Monitor Display Unit—Main Menu

The Main Menu provides the capability to select the next sub menus. The Main Menu is accessed by pressing the MENU key. The sub menus under Main Menu include:

- "Codes" menu allows service personnel or operator to view "active" or "stored" diagnostic trouble codes.
- "Machine Settings" menu allows the operator to make changes to various operating characteristics of the machine.
- "Diagnostics" menu provides a limited set of tools, and is intended to be used by service personnel and machine operator's for diagnostic and troubleshooting functions.
- "Monitor Settings" menu allows the operator to make changes to various operating characteristics of the monitor.



HG31779,0000309 -19-11AUG03-1/1

T194565—19—30SEP03

### Monitor Display Unit—Main Menu—Codes

The Codes menu provides the capability to select the next sub menu.

At the Main Menu with "1-Codes" highlighted, press SELECT to display sub menu.

<u>Codes</u>	1/2
1-Active Codes	
2-Stored Codes	

T193363 —19—22SEP03

HG31779,000030A -19-11AUG03-1/1

### Monitor Display Unit—Main Menu—Codes—Active Codes

The Active Code sub menu will display up to twenty of the latest Diagnostic Trouble Codes that are currently active on the machine. As the diagnostic codes are resolved or fixed, the code will be removed from the active code list.

The following will be displayed:

- Text description of the DTC (Diagnostic Trouble Code)
- Source controller of fault (ECU, CMU, FLC, SSM, or TCU)
- SPN (Suspect Parameter Number)
- FMI (Failure Mode Indicator)
- Circuit information: fuse number, wire numbers, connector and pin numbers of source controller, and schematic section number

*NOTE: Information on the circuit will vary based upon diagnostic trouble code.*

Press SELECT. An active diagnostic trouble code will be displayed.

Press SELECT again to view circuit information to help diagnose problem.

Press NEXT to display next active code.

<u>Active Codes</u>	1/3
Right Turn Lts	
High Current	
FLC 2370.6	

T193365 —19—30SEP03

<u>Active Codes</u>	2/3
Fuse: F18 F28	
Wires: M12 YEL M13 GRN	
P18 RED P28 RED	
CONN PIN: X23 25	
X23 26 23 68 45	
SECTION: SE23	

T195057 —19—07NOV03

HG31779,000030E -19-11AUG03-1/1

### Monitor Display Unit—Main Menu—Codes—Stored Codes

The Stored Code sub menu will display up to twenty of the latest diagnostic trouble codes that have occurred on the machine. Each diagnostic trouble code will be saved in the order it occurred. If twenty codes exist and another DTC is present, the listing will be adjusted first in/first out.

The following will be displayed:

- Text description of the DTC (Diagnostic Trouble Code)
- Source controller of fault (ECU, CMU, FLC, SSM, or TCU)
- SPN (Suspect Parameter Number)
- FMI (Failure Mode Indicator)
- Value of sensor at time of fault (if applicable)
- Current value of sensor (if applicable)
- Hour meter reading at first and last occurrence
- Total number of occurrences
- Circuit information: fuse number, wire numbers, connector and pin numbers of source controller, and schematic section number

*NOTE: Information on the circuit will vary based upon diagnostic trouble code.*

Press SELECT. A stored diagnostic trouble code will be displayed.

Press SELECT again to view circuit information to help diagnose problem.

Press NEXT to display next active code.

<u>Stored Codes</u>	2/3
CAN Comm	
Lost for TCU	
CMU 2003.9	

<u>Stored Codes</u>	2/3
Occurrences: 7	
<u>First:</u>	<u>Last:</u>
118.0 hrs	119.5 hrs

<u>Stored Codes</u>	2/3
Fuse: F18 F28	
Wires: M12 YEL M13 GRN	
P18 RED P28 RED	
CONN PIN: X23 25	
X23 26 23 68 45	
SECTION: SE23	

T193356 —19—06OCT03

T195058 —19—23SEP03

T195059 —19—30SEP03

HG31779,000030F -19-11AUG03-1/1

### Monitor Display Unit—Main Menu—Machine Settings

The Machine Settings menu allows the operator to make changes to various operating conditions of the machine. The last selection of the machine settings will be stored and upon turning the ignition switch on, the last value will be retrieved.

Press NEXT at Main Menu to highlight Machine Settings.

Press SELECT to display sub menu.

<u>Machine Settings</u>	1/4
<b>1-Quick Shift</b>	
2-Auto to 1st	
3- <u>J</u> ob <u>T</u> imer _ _ _ _ _	
4-Stopwatch	

T193357 —19—06OCT03

HG31779,000030B -19-08AUG03-1/1

### Monitor Display Unit—Main Menu—Machine Settings—Quick Shift

The Quick Shift mode allows the operator to choose between Down/Up and Down Only shift functions when the transmission is in manual or automatic operation.

**Down/Up:** When this function is turned On, the transmission will down shift one gear when the Quick Shift Switch (at top of pilot controller handle) is pressed down once. It is not possible to down shift more than one gear.

When the quick shift switch is pressed down again, the transmission will electronically shift up one gear again.

#### Down Only—Transmission in Manual Operation:

When this function is turned On, each time the quick shift switch (at top of pilot controller handle) is pressed down, the transmission will shift down one gear (regardless of selected gear).

If the operator presses down on the quick shift switch while no shift is taking place, the controller will cause the transmission to shift down one gear (regardless of selected gear).

Once a down shift is made by pressing the quick shift switch, the transmission will not shift up again unless a direction or gear change is made.

#### Down Only—Transmission in Automatic Operation:

If the operator presses the quick shift switch when the transmission is in automatic operation, the transmission will down shift to one gear below the gear displayed in basic display window. This change is made independent from shifter switch selection.

Down Only works basically the same in automatic as in manual, except it will shift Up or Down from the highest gear downshifted to.

<u>Quick Shift</u>	1/2
✓ Down/Up	
Down Only	

T193358 —19—05AUG03

If the operator presses down on the quick shift switch while an up shift is taking place, the transmission controller will cause the transmission to shift down to the previous gear.

In "Auto" mode, if the operator presses down on the quick shift switch while a down shift is taking place, the transmission controller will ignore the request for the down shift.

Transmission will automatically shift up or down from the gear displayed in basic display window until shifter switch is moved to Neutral. This will cancel down shift mode and transmission will go back to fully automatic mode.

Press SELECT at Machine Settings menu.

If the display shows a checkmark next to Down/Up, the Down/Up function is on.

To turn on Down Only function and disable Down/Up function, press NEXT then press SELECT.

Press BACK to return to Machine Settings menu.

HG31779,0000310 -19-08AUG03-1/1

### Monitor Display Unit—Main Menu—Machine Settings—Auto to 1st

In Auto to 1st mode, the transmission will shift to first gear if a high load is sensed while the transmission is actually in second gear. This shift change is made independent from shifter switch selection.

A direction change during normal conditions will not cause the transmission to shift down into first gear. If a direction change is made during high transmission load conditions, the transmission will shift down into first gear.

Press NEXT at Machine Settings menu to highlight Auto to 1st.

Press SELECT.

If Auto to 1st function is off, press NEXT then press SELECT to turn Auto to 1st function on.

<u>Auto to 1st</u>	1/2
✓ Off	
On	

T193358 —19—05AUG03

HG31779,0000311 -19-08AUG03-1/1

**Monitor Display Unit—Main Menu—Machine Settings—Job Timer**

The job timer is a resettable hour meter that can be used to time tasks to the nearest tenth of an hour. The maximum capacity displayed is 999.9 hours. The job timer will stop and the value will be set to zero when it exceeds 999.9 hours. The job timer will run even when the Job Timer sub menu is not active. The job timer value will be stored when the ignition switch is turned off.

At Machine Settings menu, press NEXT to highlight Job Timer.

Press SELECT.

Press SELECT to reset the timer to zero.

Job Timer  
**SELECT to Reset**  
**BACK to Exit**  
  
 0.0 hours

Press BACK to exit.

T193360 —19—05AUG03

HG31779.0000312 -19-08MAR07-1/1

**Monitor Display Unit—Main Menu—Machine Settings—Stopwatch**

The stop watch is a resettable timer that is used to measure time in hours, minutes, seconds and tenths of seconds. The maximum capacity displayed is 24:00:00:0 hours. The stopwatch will stop and the value will be set to zero when it exceeds 24:00:00:0 hours. The stopwatch will run even when the Stop Watch sub menu is not active. The stopwatch will be turned off and will reset to zero when the ignition switch is turned off.

At Machine Settings menu, press NEXT to highlight Stop Watch.

Press SELECT.

Press SELECT again to start the timer when the stopwatch is off and has a value of zero.

Press SELECT to stop the timer when the stopwatch is on.

STOPWATCH  
**SELECT on/off**  
**NEXT to reset**  
**BACK to Exit**  
  
 00:00:00.0

Press NEXT to reset the timer.

Press BACK to exit.

T193361 —19—30SEP03

HG31779.0000313 -19-08MAR07-1/1

**Monitor Display Unit—Main Menu—Diagnostics**

The Diagnostics menu provides a limited set of tools and is intended for use by service personnel and machine operators for diagnostic and troubleshooting functions.

Press NEXT at Main Menu to highlight Diagnostics.

Press SELECT to display sub menu.

<u>Diagnostics</u>	1/8
1-Battery Monitor	
2-Engine Sensors	
3-Transmission	
4-Hydraulic	
5-Machine	
6-Machine Switches	
7-Switch Module	
8-Machine I.D.	

T193362 —19—30SEP03

HG31779.000030C -19-08AUG03-1/1

**Monitor Display Unit—Main  
Menu—Diagnostics—Battery Monitor**

Press SELECT when "Battery Monitor" is highlighted to view the current voltage of the left and right batteries.

Press BACK to return to sub menu.

*NOTE: If 12 volt center tap wire is not connected to the right battery, left battery will display system voltage and right battery will display 0.0.*

**Battery Monitor**

Left Battery

13.7



Right Battery

13.7



T193363 —19—05AUG03

HG31779,0000314 -19-08AUG03-1/1

### Monitor Display Unit—Main Menu—Diagnostics—Engine Sensors

This mode allows the technician to monitor all engine sensors that are accessible to the Engine Controller Unit (ECU).

Press NEXT at Diagnostics menu to highlight Engine Sensors.

Press SELECT.

Press SELECT again at Display All sub menu to display all data items. Continue to press SELECT or NEXT to scroll through the engine coolant temperature, engine oil pressure, throttle sensor, manifold air temperature, and fuel temperature displays.

OR

Press NEXT to highlight Coolant Temp.

Press SELECT.

Engine Coolant Temperature will be displayed in °C or °F (depending on setting selected in "Units" display in "Monitor Settings" menu.)

Press BACK.

Press NEXT to highlight Oil Pressure.

Press SELECT.

Engine Oil Pressure will be displayed in kPa or psi.

Press BACK.

Press NEXT to highlight Throttle Sensor.

Press SELECT.

Throttle Sensor voltage will be displayed as a percentage.

Press BACK.

Press NEXT to highlight MAT.

Press SELECT.

Intake Air Manifold Temperature will be displayed in °C or °F.

Press BACK.

Press NEXT to highlight Fuel Temp.

Press SELECT.

Fuel Temperature will be displayed in °C or °F.

Engine Sensors 1/8

1-Display All

2-Coolant Temp

3-Oil Pressure

4-Throttle Sensor

5-MAT

6-Fuel Temp

7-Fuel Pressure

8-MAP

Engine Sensors 1/7

Coolant

Temperature

141°F

Coolant Temp Display Shown

Press BACK.

*NOTE: Fuel Pressure and MAP (Manifold Air Pressure) will not be displayed on menu if machine is not equipped with sensor.*

Press NEXT to highlight Fuel Pressure.

Fuel Pressure will be displayed in kPa or psi.

Press BACK.

Press NEXT to highlight MAP.

Press SELECT.

Manifold Air Pressure will be displayed in kPa or psi.

Press BACK twice to return to the Diagnostics menu.

T193364 —19—01OCT03

T195234 —19—30SEP03

HG31779,0000315 -19-08AUG03-1/1



**Monitor Display Unit—Main  
Menu—Diagnostics—Transmission**

This mode allows the technician to monitor all transmission sensors that are accessible to the Transmission Controller (TCU).

Press NEXT at Diagnostics Menu to highlight Transmission.

Press SELECT.

Press SELECT again at Display All sub menu to display all data items. Continue to press SELECT or NEXT to scroll through the transmission oil temperature, torque converter input speed, torque converter output speed, clutch speed, output shaft speed, and clutch cutoff voltage displays.

OR

Press NEXT to highlight Oil Temp.

Press SELECT.

Transmission Oil Temperature will be displayed in °C or °F.

Press BACK.

Press NEXT to highlight TC Input Speed.

Press SELECT.

Torque Converter Input Speed will be displayed in rpm.

Press BACK.

Press NEXT to highlight TC Output Speed.

Press SELECT.

Torque Converter Output Speed will be displayed in rpm.

Press BACK.

Press NEXT to highlight Clutch Speed.

Transmission 1/7

**1-Display All**

2-Oil Temp

3-TC Input Speed

4-TC Output Speed

5-Clutch Speed

6-Output Shaft Spd

7-Clutch Cutoff V

Press SELECT.

Internal Clutch Speed will be displayed in rpm.

Press BACK.

Press NEXT to highlight Output Shaft Spd.

Press SELECT.

Output Shaft Speed will be displayed in rpm.

Press BACK.

Press NEXT to highlight Clutch Cutoff V.

Press SELECT.

Clutch Cut-off will be displayed in volts.

Press BACK to exit.

T193372 -19-01OCT03

HG31779,0000316 -19-08AUG03-1/1

### Monitor Display Unit—Main Menu—Diagnostics—Hydraulic

This mode allows the technician to monitor hydraulic sensors that are accessible to the Flex Load Controller (FLC).

Press NEXT at Diagnostics Menu to highlight Hydraulic.

Press SELECT.

Press SELECT again at Display All sub menu to display all data items. Continue to press SELECT or NEXT to scroll through the hydraulic oil temperature and hydraulic system pressure displays.

Press NEXT to highlight Oil Temp.

Press SELECT.

Hydraulic Oil Temperature will be displayed in °C or °F (depending on setting selected in "Units" display in "Monitor Settings" menu).

Press BACK.

Press NEXT to highlight Hyd Sys Press.

<u>Hydraulic</u>	1/3
1-Display All	
2-Oil Temp	
3-Hyd Sys Press	

T193379—19—25JUL03

Press SELECT.

Hydraulic System Pressure will be displayed in kPa or psi.

Press BACK twice to exit.

*NOTE: Hydraulic system pressure will only be displayed on machines equipped with spin control.*

HG31779,0000317 -19-08AUG03-1/1

### Monitor Display Unit—Main Menu—Diagnostics—Machine

This mode allows the technician to monitor machine sensors that are accessible to the Flex Load Controller (FLC).

Press NEXT at Diagnostics Menu to highlight Machine.

Press SELECT.

Press SELECT again at Display All sub menu to display all data items. Continue to press SELECT or NEXT to scroll through the boom height and fuel level displays.

OR

Press NEXT to highlight Boom Height.

Press SELECT.

Boom Height will be displayed as a percentage.

Press BACK.

*NOTE: Bucket position will only be displayed on machine equipped with linkage coupler.*

Press NEXT to highlight Bucket Position.

Press SELECT.

Bucket Position will be displayed as a percentage.

<u>Machine</u>	1/4
1-Display All	
2-Boom Height	
3-Bucket Position	
4-Fuel Level	
5-Ambient Air	

T196065—19—04NOV03

Press NEXT to highlight Fuel Level.

Press SELECT.

Fuel Level will be displayed as a percentage of fuel remaining in tank.

Press BACK.

Press NEXT to highlight Ambient Air.

Ambient Air Temperature will be displayed in °C or °F (depending on setting selected in "Units" display in "Monitor Settings" menu).

Press BACK twice to exit.

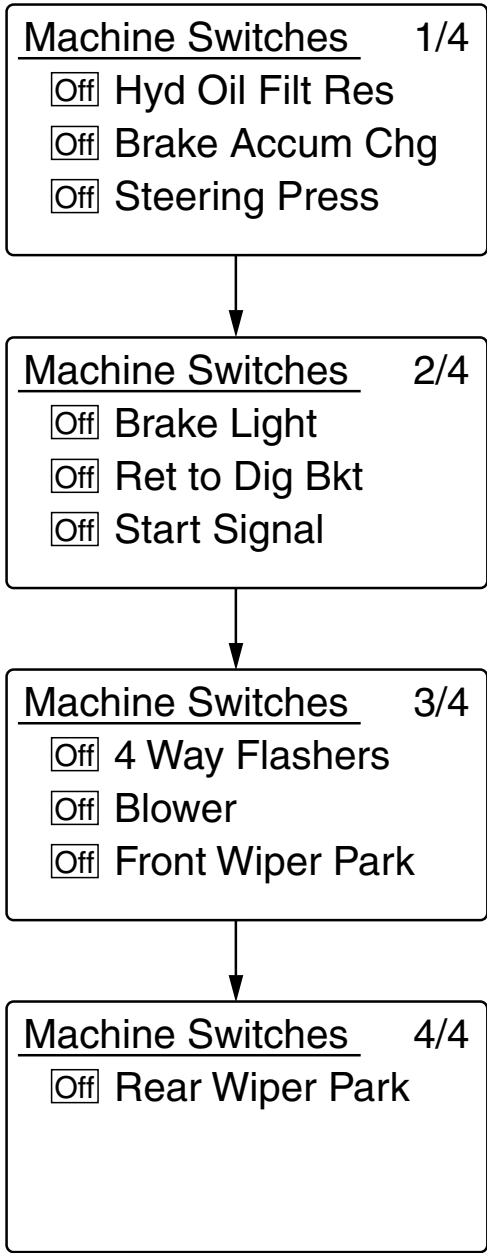
HG31779,0000318 -19-08AUG03-1/1

**Monitor Display Unit—Main  
Menu—Diagnostics—Machine Switches**

This mode allows the technician to monitor all machine switches hardwired to the Flex Load Controller (FLC).

When a change occurs to the machine switch, the box to the left of the machine switch description will change and the audible alarm will sound.

“Off” indicates no signal present and “On” indicates a signal present to the FLC.



T193385 —19—15OCT03

HG31779,000031B -19-08AUG03-1/1

### Monitor Display Unit—Main Menu—Diagnostics—Switch Module

This mode allows the technician to check continuity function of the Sealed Switch Module (SSM).

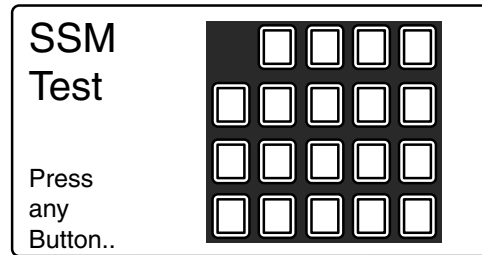
Pressing a switch on the SSM will change the status of the corresponding switch icon on the monitor.

When a change occurs to the SSM, the corresponding switch icon will change and audible alarm will sound.

A blank square indicates no switch pressed.

"On" indicates switch pressed.

"?" indicates no CAN communication between the Can Monitor Unit (CMU) and Sealed Switch Module (SSM).



Press BACK to return to previous screen.

HG31779,0000319 -19-08AUG03-1/1

T193388 —19—22SEP03

### Monitor Display Unit—Main Menu—Diagnostics—Machine I.D.

This mode allows the service technician to view the version of software and controller numbers.

Press NEXT to highlight CMU.

Press SELECT.

The box serial number, box part number, software part number and software version number for the CAN Monitor Unit will be displayed.

Press BACK.

Press NEXT to highlight FLC.

Press SELECT.

The box serial number, box part number, software part number and software version number for the FLC (Flex Load Controller) will be displayed.

Press BACK.

Press NEXT to highlight SSM.

Press SELECT.

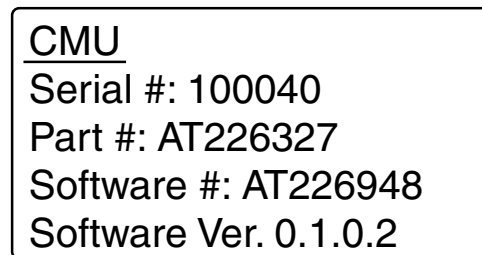
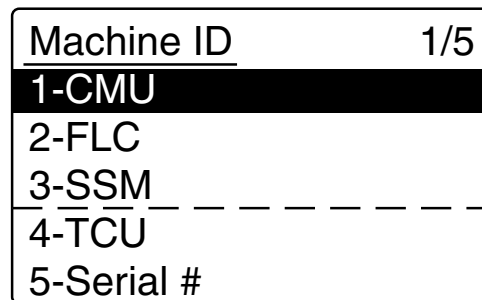
The box part number, software part number and software version number for the SSM (Sealed Switch Module) will be displayed.

Press BACK.

Press NEXT to highlight TCU.

Press SELECT.

The machine model, machine serial number, box part number and software version for the TCU (Transmission Control Unit) will be displayed.



CMU Display Shown

Press BACK.

Press NEXT to highlight Serial #.

Press SELECT.

The machine serial number will be displayed.

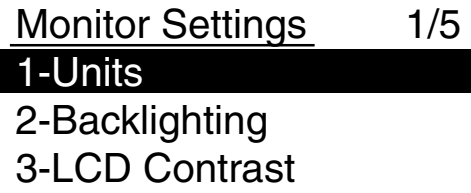
HG31779,000031A -19-08AUG03-1/1

T193390 —19—01OCT03

T193391 —19—08OCT03

### Monitor Display Unit—Main Menu—Monitor Settings

The Monitor Settings Menu provides the capability to select sub menus.



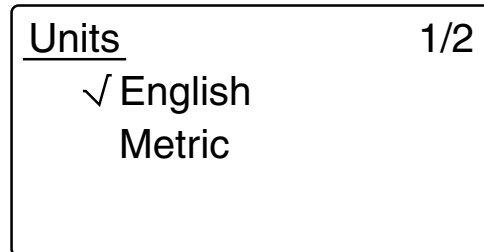
T193394 —19—07NOV03

HG31779,000030D -19-08AUG03-1/1

### Monitor Display Unit—Main Menu—Monitor Settings—Units

This mode allows the technician to choose between metric and English unit displays.

When there is a checkmark next to English, all values will be shown in English units. When there is checkmark next to Metric, all values will be shown in metric.



T193395 —19—05AUG03

HG31779,000031C -19-08AUG03-1/1

### Monitor Display Unit—Main Menu—Monitor Settings—Backlighting

This mode allows the operator to adjust the backlighting of the monitor. The backlight value is displayed in percentage and is incremented by 1. The range of adjustment is from 0 (no light) to 10 (brightest setting). The default backlight value is 10%.

Press NEXT to highlight Backlighting.

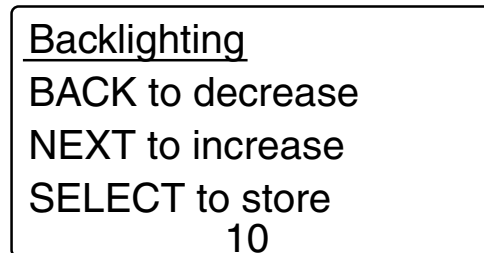
Press SELECT.

Press NEXT to increase backlighting by 1.

Press BACK to decrease backlighting by 1.

Press SELECT to store currently displayed value. The stored value will be used as the default backlight value until changed.

*NOTE: Changing the backlight value without storing the setting with the SELECT key will only affect*



T193397 —19—15OCT03

*the backlighting until the key switch is turned off. The previously stored value will be used when the key switch is turned on again.*

Press MENU to exit.

HG31779,000031E -19-08AUG03-1/1

### Monitor Display Unit—Main Menu—Monitor Settings—LCD Contrast

This mode allows the operator to adjust the contrast setting of the monitor display. The range of adjustment is from 1 (lightest, or least contrast) to 9 (darkest, or most contrast). The default contrast value is 5.

Press NEXT at Monitor Settings menu to highlight LCD Contrast.

Press SELECT.

Press NEXT to increase contrast by 1.

Press BACK to decrease contrast by 1.

Press SELECT to store currently displayed value. The stored value will be used as default contrast value until it is changed.

*NOTE: Changing the contrast without storing the setting with the SELECT key will only affect the*

**LCD Contrast**  
**BACK** to decrease  
**NEXT** to increase  
**SELECT** to store  
**9**

*contrast until the key switch is turned off. The previously stored value will be used when the key switch is turned on again.*

Press MENU to exit.

HG31779,000031F -19-08AUG03-1/1

T193398 —19—22SEP03

### Horn Button

1—Horn Button



Horn Button

HG31779,00002CD -19-26JUN03-1/1

T192867A —UN—18SEP03

### Turn Signals

Push turn signal lever (1) forward to signal a left turn. Pull turn signal lever rearward to signal a right turn.

1—Turn Signal Lever



HG31779,00002CE -19-26JUN03-1/1

T192869A —UN—18SEP03

## Air Conditioning Controls and Heater Operation

**IMPORTANT:** Before you start air conditioner first time in the season, check filters and condenser. Clean them if necessary. Check refrigerant level.

**NOTE:** Engine must be running and blower fan speed switch must be on for air conditioning to function.

### To Operate Air Conditioning—If Equipped:

Press air conditioning switch (1) until light is illuminated.

Turn temperature control knob (2) clockwise to increase temperature.

Turn blower speed knob (3) clockwise to increase blower speed. (Knob also turns on heater blower.) Blower has four speeds.

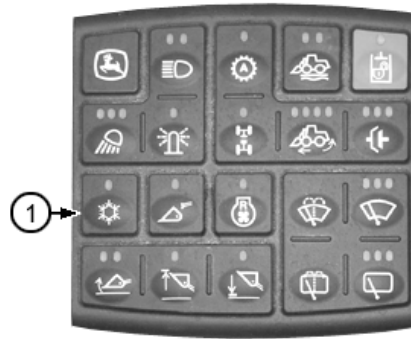
### To Operate Heater:

Air conditioning switch (1) should be in the "Off" position.

Temperature control knob (2) should be in the heat position.

Turn blower speed knob (3) to desired blower speed.

- 1— Air Conditioning Switch      3— Blower Speed Knob  
2— Temperature Control Knob



T192344B —UN—18SEP03

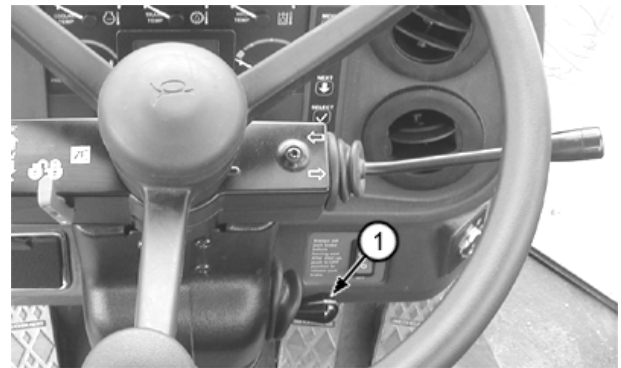
T194783A —UN—18SEP03

HG31779,00002C0 -19-23JUN03-1/1

## Adjusting Steering Wheel Tilt

Lift lever (1) to adjust steering column to desired tilt. Release lever.

- 1— Lever



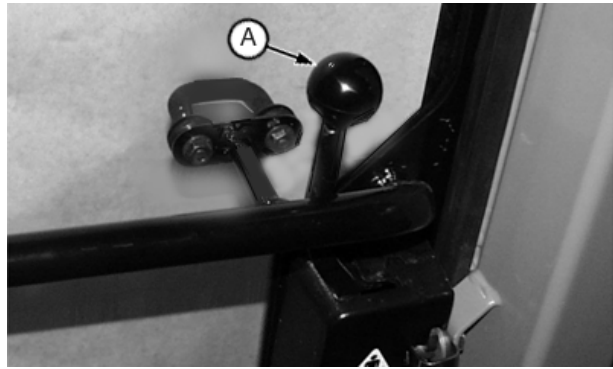
T192870A —UN—18SEP03

HG31779,00002FD -19-07JUL03-1/1

### Opening and Securing Side Door

To open left side cab door from inside, push forward on lever (A).

A—Lever



T131654B —UN—13JUN00

CED,OUOE035,10 -19-14JUN00-1/2

Open door until outside latch (A) fastens into notch (B).

Door must be secure against bumper (C). Adjust rubber bumper as necessary to maintain proper tension.

To release secured open door from inside the cab or on the ground, pull up on lever (D) located to the left of the operator's seat.

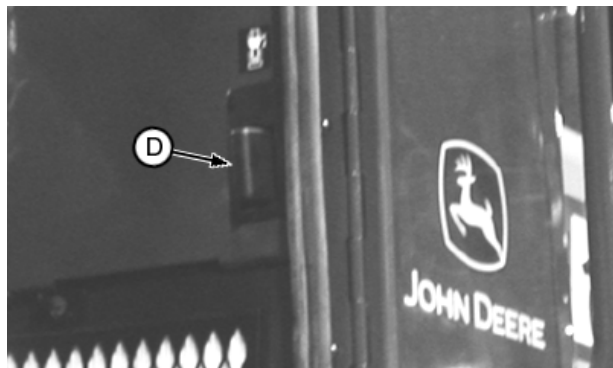
Door will latch when closed.

A—Outside Latch  
B—Notch

C—Bumper  
D—Release Lever



T118147 —UN—02NOV98



T160555B —UN—17OCT02

CED,OUOE035,10 -19-14JUN00-2/2



### Opening Side Window/Secondary Exit

*NOTE: The cab right side window can be used as a secondary exit.*

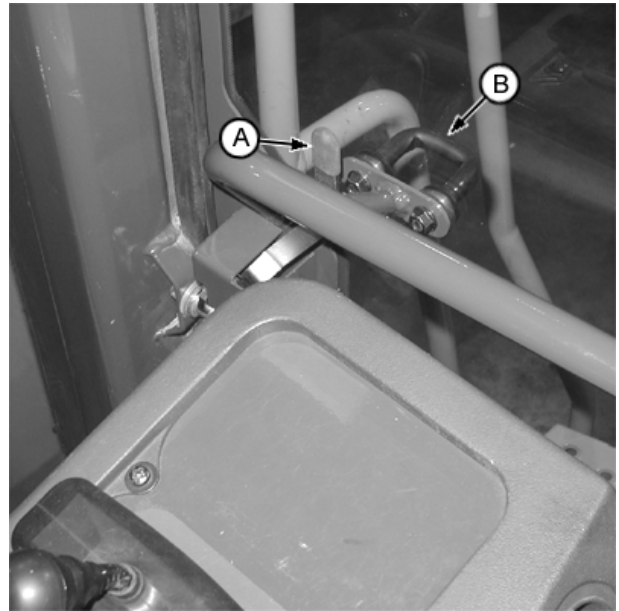
Push up on lever (A) to open window.

Position outer notch (B) over catch to hold window open.

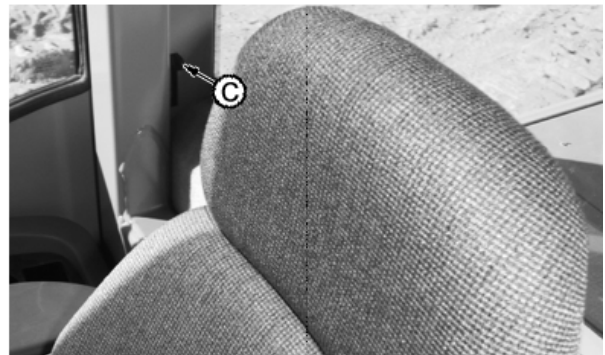
To release secured window, push down on lever (C) located behind cab seat.

A—Lever  
B—Outer Notch

C—Lever



T160249C —UN—15OCT02



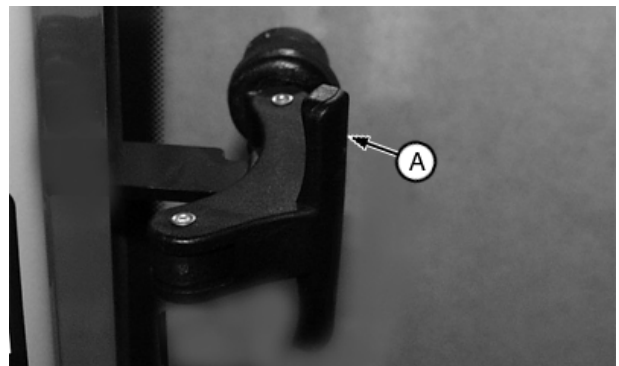
T103919B —UN—12DEC96

HG31779,0000151 -19-15OCT02-1/1

### Opening Rear Side Window

Pull on latch tab (A) to release window lock.

A—Latch Tab



T131656B —UN—19JUN00

TX,10,JC1589 -19-14JUN00-1/1

## Adjusting Seat

**⚠ CAUTION:** You can lose control of machine and be injured if seat is loose. Be sure seat is properly locked in position before operating the machine.

Use flip-out lever to turn weight adjustment knob (F). Turn knob clockwise for firm ride and counterclockwise for soft ride.

Lift fore-aft lever (H) to move seat forward and rearward. Release handle at one of several positions.

Remove your weight from seat. Lift seat height adjustment lever (E) and move seat to desired height.

Move seat to mid-to-aft position. While sitting in seat, turn weight adjustment knob (F) to support weight. Check weight indicator (G) for appropriate weight setting and continue to turn until yellow pointer inside tube is flush with tube opening.

While sitting in seat, lift backrest tilt adjustment knob (D) and allow cushion to angle forward or lean backward into desired position and release handle.

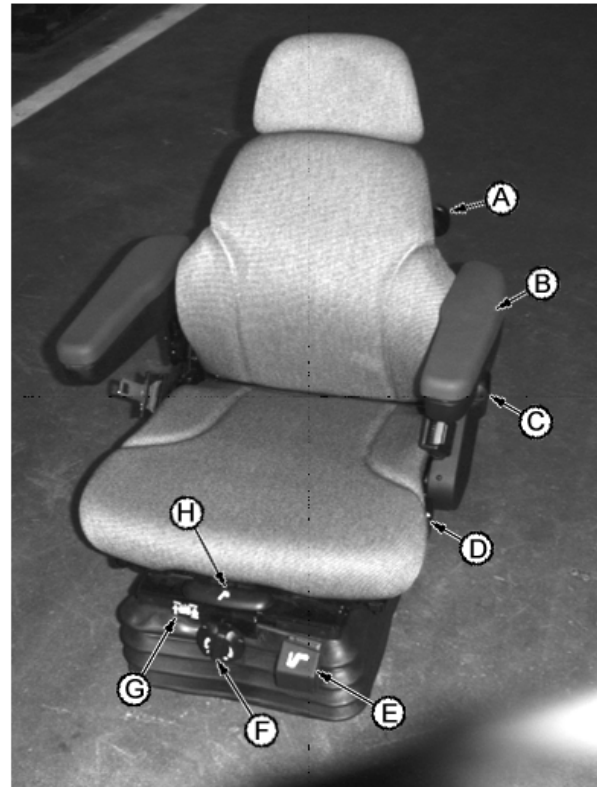
While sitting in seat, rotate armrest tilt knob (C) to tilt to desired armrest position.

To raise or lower armrest height, loosen two nuts on armrest height adjustment bracket (B) and adjust to desired position. Tighten nuts to secure.

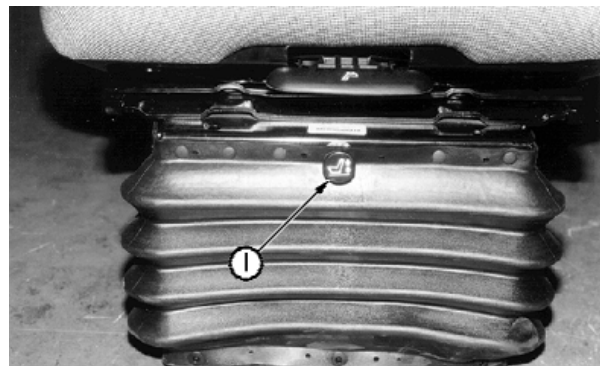
While sitting in seat, rotate lumbar support lever (A) to increase or decrease support to lower back

On air ride equipped seats, to lower seat height or decrease firmness in ride, pull out on height/firmness adjustment knob (I). To raise seat or increase firmness in ride, turn key to ON and push in on height/firmness adjustment knob.

- |                                   |  |
|-----------------------------------|--|
| A—Lumbar Support Lever            | F—Weight Adjustment Knob                               |
| B—Armrest Height Adjustment Screw | G—Weight Indicator                                     |
| C—Armrest Adjustment Knob         | H—Fore-Aft Adjustment Lever                            |
| D—Backrest Tilt Adjustment Knob   | I—Height/Firmness Adjustment Knob (air ride seat only) |
| E—Seat Height Adjustment Lever    |  |



T103679B—JUN—22NOV96



T105452—JUN—26NOV96

TX,10,JC1742 -19-01OCT04-1/1

## Seat Belt

Seat belt and mounting hardware must be inspected for wear or damage before operating the machine. Replace the belt or mounting hardware if worn or damaged.

Replace the complete seat belt assembly every 3 years regardless of appearance.

TX,10,JC1623 -19-21JUL09-1/1

# Operation—Operating the Machine

## Inspect Machine Daily Before Starting

Do periodic service checks.

A—Check wheels (front and rear) for loose or missing hardware.

B—Clean operator's station.

C—Check air inlet cover.

D—Clean radiator.

E—Check fuel level on monitor.

F—Check tires (front and rear).

**ELECTRICAL SYSTEM:** Check for worn or frayed wires and loose or corroded connections.

**BOOM, BUCKET, SHEET METAL:** Check for bent, broken, loose, or missing parts.

**HARDWARE:** Check for loose or missing parts.

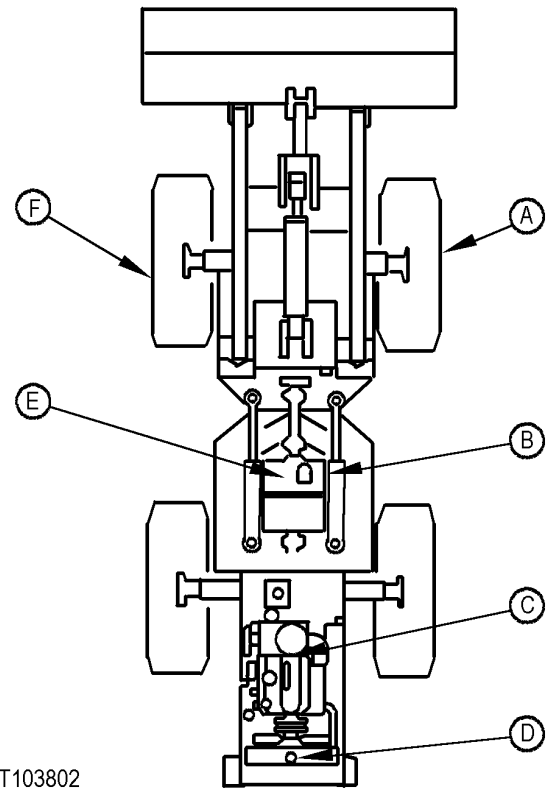
**PARK BRAKE:** Check for correct operation.

**HYDRAULIC SYSTEM:** Check for leaks, missing or loose clamps, kinked hoses, and lines or hoses that rub against each other or other parts.

**LUBRICATION:** Check lubrication points shown on Periodic Maintenance Chart.

**PROTECTIVE DEVICES:** Check guards, shields, ROPS, covers, seat belt.

**SAFETY:** Walk around machine to clear all persons from machine area.



T103802

T103802—UN—18SEP96

A—Wheels (front and rear)  
B—Operator's Station  
C—Air Inlet Cover

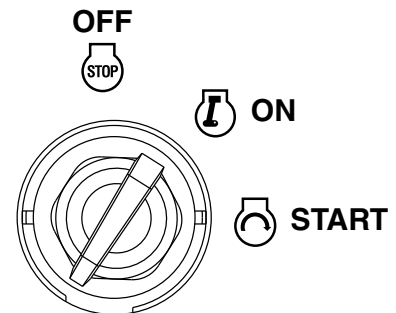
D—Radiator  
E—Fuel Level (monitor)  
F—Tires

TX,20,JC1199 -19-01OCT04-1/1

## Check Instruments Before Starting

Turn key switch clockwise to "On" position. All lights on display monitor will come on, all gauges will position gauge needle to the 12 o'clock position, and alarm will sound.

The basic display window will show the bulb check mode. After bulb check mode, the stop indicator and engine oil pressure indicator will flash.



T195405—19—07OCT03

HG31779,00000B1 -19-18JUL02-1/1

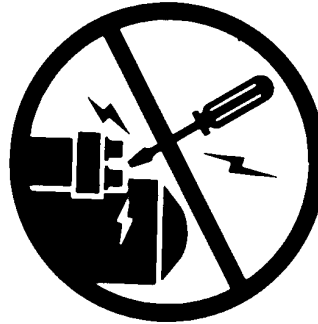
## Starting the Engine

**CAUTION:** Avoid possible injury or death from a runaway machine.

**DO NOT** start engine by shorting across starter terminals. Machine will start in gear if normal circuitry is bypassed.

**NEVER** start engine while standing on ground. Start engine only from operator's seat, with FNR in "Neutral". Engage park brake.

Use of seat belt with roll-over protective structure (ROPS) is recommended under all operating conditions.



TS177—UN—11JAN89

1. Fasten seat belt.

HG31779,00002CF -19-26JUN03-1/2

2. Move FNR (1) to N.

**NOTE:** Engine will not start with FNR in F "Forward" or R "Reverse". The FNR must be in N "Neutral" before starting engine.

3. Turn key switch to "On" position. Push horn button to sound horn to alert bystanders that machine will be started.

**IMPORTANT:** Never operate starter motor for more than 20 seconds at a time. If engine fails to start after two or three tries, return key switch to "Off" position. Wait for about 2 minutes, then try again.

**After a false start, DO NOT** turn key switch until engine stops or starter may be damaged.

**Engine will not start by towing or pushing. Permanent damage to transmission will result.**

4. Turn key switch to "Start" position. DO NOT crank engine more than 20 seconds. Wait 2 minutes before trying again. Release key when engine starts.

**IMPORTANT:** If STOP indicator light does not go out within 10 seconds after starting engine, STOP THE ENGINE. Find and correct the cause.

5. Operate machine at less than normal loads and at slow idle speed until engine warms up.

**IMPORTANT:** If engine stops when operating under load, remove load. Restart engine immediately. Run 30 seconds at 1/2 speed before adding load.



Column FNR Shown

T194598A—UN—18SEP03



Joystick FNR Shown

T194851A—UN—18SEP03

1—FNR

HG31779,00002CF -19-26JUN03-2/2

### Starting Fluid—If Equipped (Cold Weather Starting Aid)

#### USE STARTING FLUID

**CAUTION:** Prevent possible injury from exploding container. Starting fluid is highly flammable. Keep container away from heat, sparks, and open flame. Contents are pressurized. **DO NOT** puncture or incinerate container. Remove container from machine if engine does not need starting fluid.



**IMPORTANT:** Prevent damage to engine. Use starting aid when temperatures are below 4°C (40°F) and only when engine is COLD.

1. Turn key switch clockwise to “Start” position.

AM40430,0000044 -19-09FEB05-1/2

TS281 —UN—23AUG88

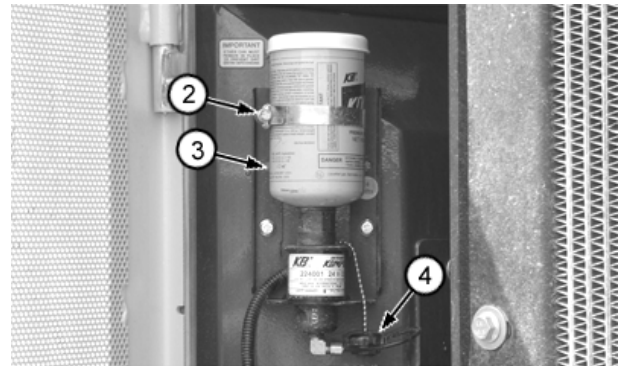
**IMPORTANT:** Excess starting fluid could damage engine; press starting aid button only when engine is cold and cranking. Do not hold the starting aid button for more than 5 seconds. Starting aid fluid is being injected into engine as long as you press button.

2. While cranking engine, press start aid button (1). Crank engine for 20 seconds maximum, then allow 2 minutes between cranking periods.



#### REPLACING START AID CONTAINER

1. Loosen hose clamp (2).
2. Turn start aid container (3) counterclockwise to remove.
3. Remove safety cap from new container.
4. Turn container clockwise in starting aid base to install.
5. Tighten hose clamp.



#### OPERATING MACHINE WITHOUT START AID CONTAINER INSTALLED

**IMPORTANT:** Protect starting aid components from possible damage. Install starting aid plug in starting aid base.

Remove container from base and install plug (4) in base.

1— Start Aid Button  
2— Hose Clamp

3— Start Aid Container  
4— Plug

AM40430,0000044 -19-09FEB05-2/2

T192675A —UN—18SEP03

T192875A —UN—18SEP03

### Engine Heater—If Equipped

**IMPORTANT: DO NOT USE ETHER WITH THIS SYSTEM. Damage to your engine may occur.**

*NOTE: As long as monitor light remains on, heater will be operating.*

1. Turn key switch to “On”. If engine temperature is below 10°C (50°F), engine heater indicator (1) will light and stay on 0—30 seconds, depending on initial engine temperature. Light will turn off, indicating that preheating is completed.
2. Turn key to “Start”. Light will turn off while cranking or if battery voltage drops below 20 volts.
3. If engine temperature is 20°C (68°F) or lower, heater indicator will light and will remain on for approximately 30 seconds depending on current engine temperature.

**IMPORTANT: Warm up at 1/2 speed and DO NOT accelerate rapidly during warm-up.**



1—Engine Heater Indicator

*NOTE: Battery voltage light may come on during post heat and may remain on for a short period of time.*

T194774A—UN—18SEP03

HG31779,00002D1 -19-26JUN03-1/1

### Using Coolant Heater—If Equipped

**CAUTION: Prevent property damage as a result of possible fire from an overheated electrical**

**cord. Use a heavy-duty, grounded cord to connect heater to electrical power.**

Connect the coolant heater to 115-volt outlet, as needed, before you start the engine.

T82,25,C53 -19-19DEC06-1/1

### Warm-Up

Operate machine at less-than-normal loads and speeds for first few minutes until temperatures and pressures reach normal operating range.

TX,25,JC247 -19-29NOV94-1/1

### Cold Weather Warm-Up

**IMPORTANT: If hydraulic oil and transmission oil are cold, functions move slowly. Do not attempt normal machine operations until hydraulic and transmission functions move at close-to-normal cycle times.**

1. Start engine. Run engine at minimum speed for 5 minutes.
2. Cycle boom with bucket stalled in rollback position until bucket functions move at normal speed.
3. Check transmission oil level with engine at low idle. Prepare machine to shift transmission as follows:

- Machine—stopped
  - Engine—slightly above low idle
  - Bucket—off the ground and empty
  - Brakes—apply right or left brake pedal with clutch cutoff disengaged
  - Parking brake—released
  - Cycle transmission 10 times by shifting: Neutral-F1—R1—F1—R1—F1—Neutral. Each cycle should be approximately 5 seconds.
4. Shift from F1-R1 without braking until transmission operates normally.

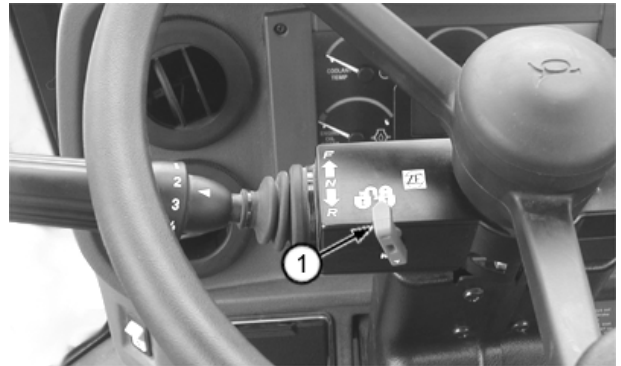
ER93822,000006D -19-19NOV07-1/1

### Neutral Lock

**CAUTION:** Prevent possible injury from unexpected machine movement. Always move transmission control lever (TCL) to neutral "N", and engage neutral lock before starting or dismounting.

Move neutral lock (1) to the locked position to engage neutral lock. Move lock to the unlocked position to disengage neutral lock.

1— Neutral Lock



T192873B —UN—18SEP03

HG31779.00002D2 -19-08FEB07-1/1

### Shifting the Transmission

Unlock neutral lock (if equipped with column FNR).

Release park brake.

Change direction of machine by moving FNR (1) to F "Forward" or R "Reverse".

If equipped with column FNR, change speed of machine by rotating transmission control lever to desired gear. If equipped with joystick FNR, press button (2) to increase speed. Press button (3) to decrease speed. Machine has four forward gears and three reverse gears. Shifting to 4th gear reverse will give same travel speed as 3rd gear reverse. Select a gear suitable to operating and road conditions.

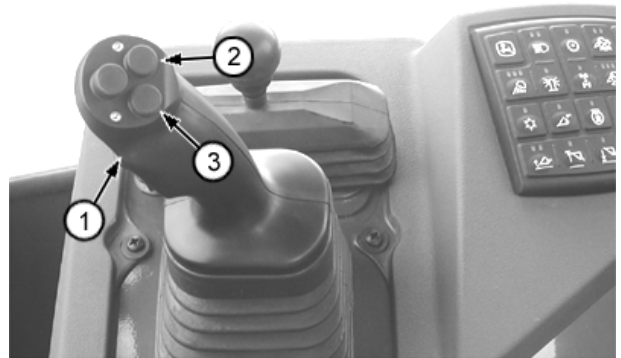
When automatic transmission switch (4) is on, transmission will shift up or down as required to highest gear selected. In automatic transmission mode, transmission starts out in 2nd gear.

- 1— FNR
- 2— Increase Speed Button
- 3— Decrease Speed Button
- 4— Automatic Transmission Switch



Column FNR Shown

T194598A —UN—18SEP03



Joystick FNR Shown

T194597C —UN—02OCT03



T192455D —UN—02OCT03

HG31779.00002D6 -19-26JUN03-1/1

## Park Brake Switch

**CAUTION:** Prevent possible injury or death from machine runaway. Before disengaging park brake, be sure engine is running and service brakes are operational.

*NOTE: Transmission clutches are disengaged when park brake is applied.*

The park brake switch (1) has three positions:

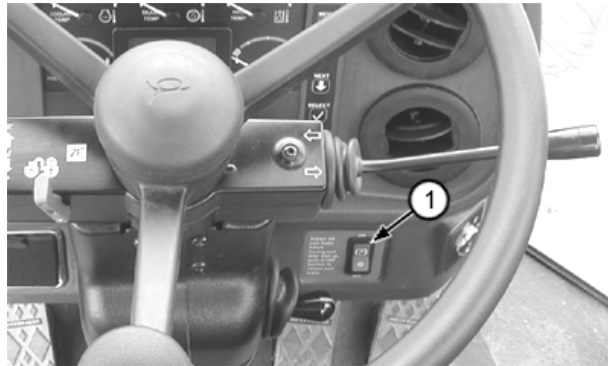
- Park brake ON
- Neutral, center detented position
- Park brake release, momentary position

To engage park brake, move switch from the neutral, center detented position to the park brake ON, detented position.

To release park brake, move switch to the neutral, center detented position, then the park brake release momentary position.

*NOTE: If park brake is engaged when engine is running and transmission control lever (TCL) is in "Neutral", park brake indicator will light.*

*If park brake is engaged when engine is running and TCL is moved to F or R, park brake indicator will flash, STOP indicator will flash,*



T192869C—UN—18SEP03

**1—Park Brake Switch**

*and alarm will sound. Monitor display will read "N" until park brake is released.*

*If engine is stopped with park brake switch OFF, park brake is automatically applied. Press park brake switch to ON and then back to momentary position to release park brake after starting engine.*

*Park brake will come on if transmission pressure drops below 150 psi.*

HG31779,00002D3 -19-08FEB07-1/1



### Boom and Bucket Control Lever—One Lever Design

Move control lever forward (1) to lower boom, or rearward (4) to raise boom.

**NOTE:** Pilot enable/boom down switch (9) must be pushed and held down while moving control lever forward to lower boom with engine stopped.

Move control lever left (6) to roll back bucket, or right (3) to dump bucket.

Return-to-Carry (10)—If Equipped: With Return-to-Carry switch on, push boom down lever to “Float” position (lever in full forward detent position [2]). The boom will stop at a preset height and lever will return to neutral position automatically.

**NOTE:** Return-to-carry will override float position. Return-to-carry must be off for float detent to operate.

**NOTE:** Boom float will not work once the boom is below preset distance from ground. Push switch to “Off” position to activate boom float.

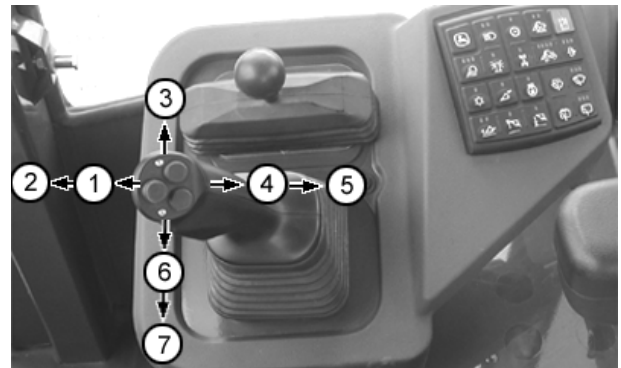
Float (lever in full forward detent position [4]): This position allows oil to flow in and out both ends of cylinders so the bucket can follow the contour of the ground. Manually release lever from this position.

Return-to-Dig (RTD) (lever in full left detent position [7]): Bucket will return to set dig position.

**NOTE:** For Z-Bar linkage machines, the LED light of the RTD switch must be illuminated for the RTD feature to function.

**NOTE:** For Powerl1el linkage machines, RTD will return to the memory position setting of either the left memory position or right memory position, depending which LED is illuminated.

Boom Height Kickout (lever in full rear detent position [5]): With the Boom Height Kickout switch on, lever will remain



DW1051735A —UN—19NOV08



T 192344E —UN—18SEP03

- |                        |  |
|------------------------|--|
| 1— Lower Boom          | 6— Rollback Bucket                     |
| 2— Float               | 7— Return-to-Dig                       |
| 3— Dump Bucket         | 9— Pilot Enable/Boom Down Switch       |
| 4— Raise Boom          | 10— Return-to-Carry Switch—If Equipped |
| 5— Boom Height Kickout |  |

in this position until boom is at a preset height, then will return to neutral automatically.

Boom and bucket functions can be operated simultaneously by moving lever between positions. For example, to raise boom and roll back bucket, move lever between positions (4) and (6).

MD04263,0000025 -19-19NOV08-1/1

## Boom and Bucket Control Lever—Two Lever Design

Move left control lever forward (1) to dump bucket, or rearward (2) to roll back bucket.

Return-to-Carry (10)—If Equipped: With Return-to-Carry switch on, push boom down lever to “Float” position (lever in full forward detent position [4]). The boom will stop at a preset height and lever will return to neutral position automatically.

**NOTE:** Pilot enable/boom down switch (9) must be pushed and held down while moving control lever forward to lower boom with engine stopped.

Move right control lever forward (5) to lower boom or rearward (6) to raise boom.

**NOTE:** Return-to-carry will override float position. Return-to-carry must be off for float detent to operate.

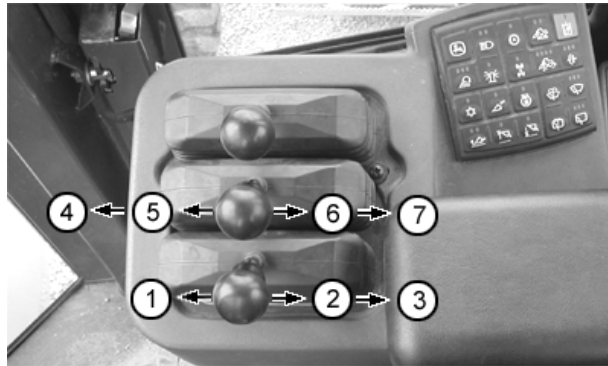
**NOTE:** Boom float will not work once the boom is below preset distance from ground. Push switch to “Off” position to activate boom float.

Float (right lever in full forward detent position [4]): This position allows oil to flow in and out both ends of cylinders so the bucket can follow the contour of the ground. Manually release lever from this position.

Return-to-Dig (left lever in full rearward detent position [3]): Bucket will return to set dig position.

**NOTE:** For Z-Bar linkage machines, the LED light of the RTD switch must be illuminated for the RTD feature to function.

**NOTE:** For Powerllel linkage machines, RTD will return to the memory position setting of either the left memory position or right memory position, depending which LED is illuminated.



- |                    |  |
|--------------------|--|
| 1— Dump Bucket     | 6— Raise Boom                          |
| 2— Rollback Bucket | 7— Boom Height Kickout                 |
| 3— Return-to-Dig   | 9— Pilot Enable/Boom Down Switch       |
| 4— Float           | 10— Return-to-Carry Switch—If Equipped |
| 5— Lower Boom      |  |

Boom Height Kickout (lever in full rear detent position [7]): With the Boom Height Kickout switch on, lever will remain in this position until boom is at a preset height, then will return to neutral automatically.

DW1051741A — UN — 19NOV08

T192344E — UN — 18SEP03

MD04263,0000026 -19-19NOV08-1/1

## Quick Shift Switch

### Down/Up

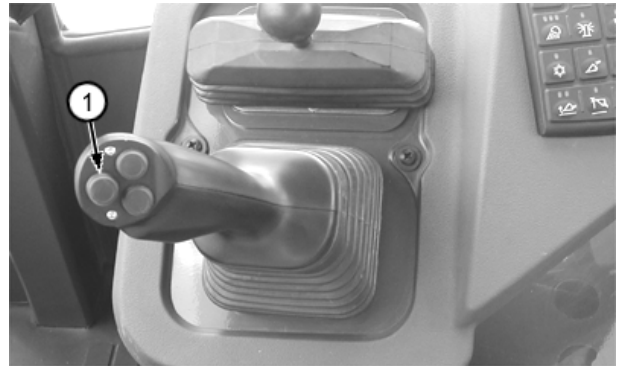
Press switch (1) to down shift from selected gear to next lower gear when transmission is in gears 2—4. Press again to return to original gear.

*NOTE: Machine can be programmed with Quick Shift Mode in the Machine Settings Menu for down/up or down only.*

### Down Only

This mode will allow transmission to down shift one gear for each pressing of button. Once a down shift is made by pressing the quick shift switch, the transmission will not shift up again unless a direction or gear change is made.

1— Switch



Single Lever with Auxiliary Control Design Shown

T194775A —UN—18SEP03



Two Lever with Auxiliary Control Design Shown

T194778A —UN—18SEP03

HG31779.00002D7 -19-26JUN03-1/1

## Ride Control—If Equipped

Ride control will improve machine ride and reduce tire flexing when traveling through rough terrain or at high speeds. Ride control will also reduce material spillage from the bucket by cushioning boom movement.

The Ride Control Auto Speed set point is adjustable via the monitor with a range of adjustment from 3.0 km/h to 24.0 km/h or 2.0 mph to 15.0 mph in increments of 0.5 units. The default Ride Control Speed set point value is 6.0 km/h.

### “On” Position

*NOTE: The “On” position has ride control on 100% of the time. It is best suited for fork and non-bucket loading applications.*

Once engine is running and the ride control switch (1) is cycled to the “On” position (left light illuminated), ride control will remain on with or without the engine running. If key switch is turned “Off” and then “On” with ride control switch in “On” position, ride control is automatically turned off. Ride control will remain off until the ride control switch is cycled to “Off” then “On”.

### “Auto” Position

*NOTE: The “Auto” position is best suited for bucket loading applications since it will temporarily disengage ride control to stop boom movement while crowding the pile for improved bucket loading.*

With the ride control switch in the “Auto” position (both lights illuminated), ride control will remain on as long as engine is running and ground speed is above the auto speed set point. The key switch will not turn off “Auto” ride control.

### “Off” Position

Ride control is turned off (no lights illuminated).



1— Ride Control Switch

## Operating Ride Control

**CAUTION:** Prevent possible injury from unexpected boom movement. The boom may move up when ride control switch is turned ON. Clear all bystanders from area.

1. Make sure area around bucket is clear.
2. Start the engine.

Observe ride control switch:

- If ride control switch light are not illuminated, cycle switch to select “On” or “Auto” mode.
- If switch left light is illuminated it is in “On” position, cycle switch to “Off” then “On” to activate ride control.
- If switch has two lights illuminated it is in “Auto” position, ride control will automatically reactivate as soon as a ground speed greater than 6 km/h (3.5 mph) is reached and will operate until switch is turned “Off”.

Continued on next page

AM40430,00001BE -19-23MAY06-1/2

T192456A—UN—18SEP03

### Discharging Ride Control Accumulator

1. Turn ride control “Off”.
2. Lower boom and bucket to ground and stop engine.
3. Turn return-to-carry switch (1) “Off”.
4. Make sure area around bucket is clear.

**CAUTION:** Prevent possible injury from unexpected boom movement. The boom may move up when ride control switch is turned ON. Clear all bystanders from area.

5. Turn key switch to “On” without starting the engine and cycle ride control switch (2) to the “On” position (left light illuminated).
6. Press and hold the pilot enable/boom down switch (3) while holding the boom control in the float position for 5 seconds.



1— Return-to-Carry Switch  
2— Ride Control Switch

3— Pilot Enable/Boom Down Switch

7. Turn key “Off”.

AM40430,00001BE -19-23MAY06-2/2

T192464A —UN—18SEP03

### Secondary Steering—If Equipped

**IMPORTANT:** Prevent possible damage to secondary steering system. Stop machine immediately if steering pressure indicator light and audible alarm come on while operating. **THE SECONDARY STEERING SYSTEM IS NOT INTENDED FOR CONTINUOUS USE.**

*NOTE: For optimum secondary steering performance, ensure electrical system and batteries are properly maintained.*

Steering pressure indicator (2) will flash, STOP indicator (1) will flash, and audible alarm will sound when secondary steering system is activated. The light indicates low hydraulic pressure resulting from mechanical malfunction, such as loss of engine power. An electrically driven pump will actuate to provide steering

The secondary steering system will function only when key switch is “On”.



A—STOP Indicator

B—Steering Pressure Indicator

*NOTE: Secondary steering is activated if the engine dies with key switch “On”. The secondary steering motor will stop when the key switch is turned to “Off”.*

AM40430,00002D5 -19-12JAN06-1/1

T194774B —UN—18SEP03

### Differential Lock Switch

Hold switch (A) down to lock front differential or front and rear differential, if equipped.

Release switch to unlock differential.

*NOTE: Use differential lock only when conditions require traction. Avoid using differential lock when steering.*

A—Switch



T113525 —UN—13FEB98

TX,35,JC1943 -19-02SEP98-1/1

### Boom Height Kickout Adjustment

1. With engine running and pilot enable/boom down switch (2) on, position boom in desired boom height kickout position.
2. Press and release boom height kickout switch (1) to turn on function.
3. Press and hold boom height kickout switch until audible alarm sounds and light flashes.

*NOTE: The boom height kickout position will remain the same until a new position is set.*

1—Boom Height Kickout Switch

2—Pilot Enable/Boom Down Switch



T192344C —UN—07OCT03

HG31779,0000307 -19-09FEB05-1/1

### Return-to-Carry Kickout Adjustment

1. With engine running and pilot enable/boom down switch (2) on, position boom in desired return-to-carry position.
2. Press and release return-to-carry switch (1) to turn function on.
3. Press and hold return-to-carry switch until audible alarm sounds.

*NOTE: The return-to-carry position will remain the same until a new position is set.*

1—Return-to-Carry Switch

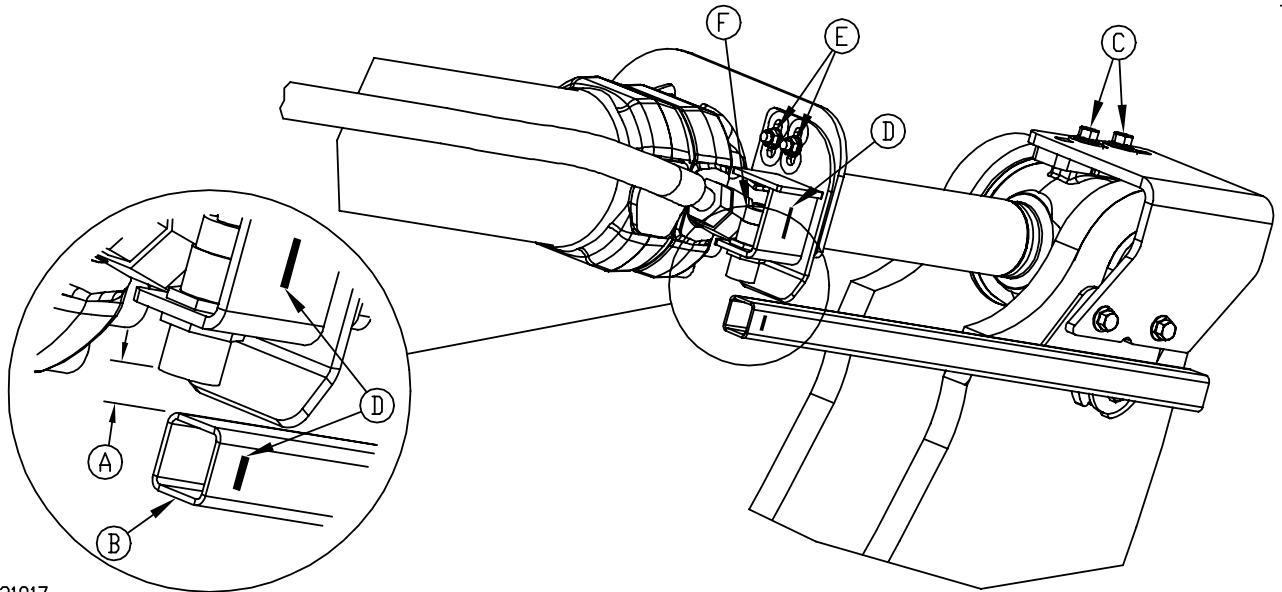
2—Pilot Enable/Boom Down Switch



T192344K —UN—07OCT03

HG31779,0000308 -19-22JUL03-1/1

### Return-To-Dig Adjustment for Z-Bar Linkage Only



T131917

T131917—UN—12MAR09

**A—Air Gap Switch-To-Bar**  
**B—Adjustable Bar**

**C—Cap Screws**  
**D—Alignment Marks**

**E—Hex Nuts**  
**F—Switch**

**NOTE:** The machine's hydraulic system must be at operating temperatures and the boom and bucket cylinders should be cycled their full length 4 times before setting return-to-dig to assure there is warm hydraulic oil in the cylinders. Do not set return-to-dig with a cold hydraulic system!

1. Raise boom approximately 300 mm (12 in.) above ground. Move bucket from full rollback to dump.

**NOTE:** Engine speed should be approximately 1500 to 1700 rpm.

2. Move loader control lever to return-to-dig detent position and release.
3. After control lever returns to neutral, scribe a mark (D) on the switch bracket and adjustable bar (B) to align with each other.
4. Position the boom and bucket in the desired return-to-dig position. Stop engine.
5. Remove cap screws (C), one at a time and remove old thread lock and sealer using Clean and Cure Primer.

Apply medium strength thread lock and sealer to cap screws.

6. Install cap screws but do not tighten. Adjust bar to align marks on switch bracket and end of bar. Tighten cap screws to specification.

**Specification**

Cap Screw—Torque.....	121 N·m
	89 lb·ft

7. Loosen hex nuts (E) to switch bracket. Adjust air gap (A) between switch and adjustable bar to specification. Tighten hex nuts to specification.

**Specification**

Air Gap Between Switch and Bar—Distance.....	5—8 mm
	0.197— 0.315 in.
Hex Screw—Torque.....	75 N·m
	55 lb·ft

AM40430,000003A -19-12MAR09-1/1

### Return-To-Dig Adjustment—If Equipped With Powerllel Linkage

*NOTE: The machine's hydraulic system must be at operating temperatures and the boom and bucket cylinders should be cycled its full length 4 times before setting return-to-dig to assure there is warm hydraulic oil in the cylinders. Do not set return-to-dig with a cold hydraulic system!*

1. Position bucket or attachment in the desired tilt position.
2. Press the return-to-dig switch (1) until the desired position memory is illuminated.
3. Press and hold the return-to-dig switch until the monitor alarm beeps. The monitor will display on-screen instructions.



T192456B —UN—08SEP04

OUT4001,0000001 -19-20JUL06-1/2

**RTD Calibration 1/4**  
**1-Position Bucket or Forks**  
**2-Lower Bucket/Forks until touches ground**  
**3-Press RTD Button**

TX1006707 —19—26APR06

**RTD Calibration 2/4**  
**4-Do NOT move Bucket Lever**  
**5-Raise Boom to Max Height**  
**6-Press RTD Button**

TX1006710 —19—26APR06

**RTD Calibration 3/4**  
**7-Do NOT move Bucket Lever**  
**8-Lower Bucket/Fork until touches ground**  
**9-Press RTD Button**

TX1006711 —19—26APR06

**RTD Calibration 4/4**  
**Complete**

TX1006714 —19—26APR06

OUT4001,0000001 -19-20JUL06-2/2

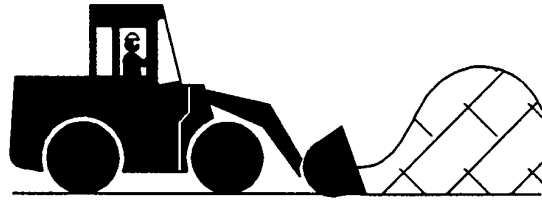


### Using the Loader Bucket

1. Place bucket in the return-to-dig position and lower to ground.

*NOTE: Bucket and boom can be positioned while machine is on-the-go.*

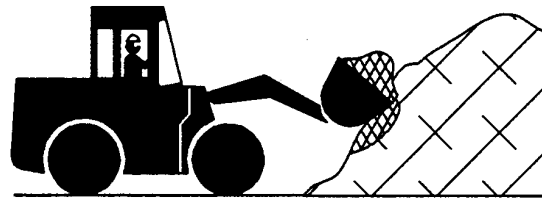
2. Move transmission control lever to 1st or 2nd gear depending on ground condition.
3. Move forward into the material.



T7747BB —UN—19MAY92

OUT4001,000025C -19-21MAR07-1/4

4. Raise and curl bucket to hold load.

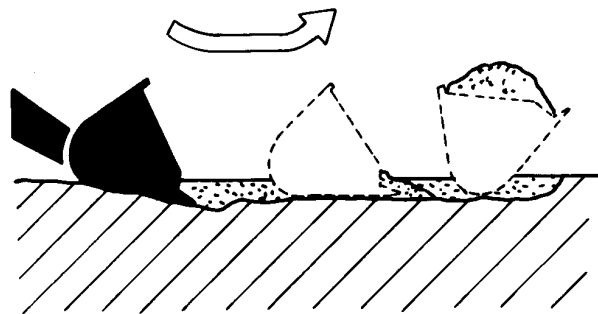


T7747BC —UN—19MAY92

OUT4001,000025C -19-21MAR07-2/4

**EXCAVATING ON THE LEVEL:** Position bucket at a slightly downward angle on ground (use bucket teeth for this type of digging).

**IMPORTANT:** Prevent possible damage to the bellcrank linkage. **DO NOT** bulldoze with bucket in dump position. When dozing, keep bucket bottom parallel to the ground.



T7208AR —UN—30JAN90

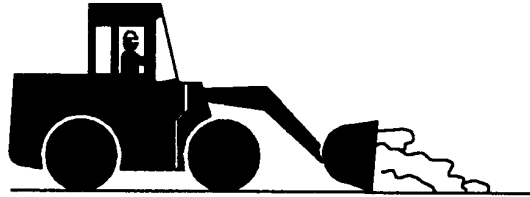
Continued on next page

OUT4001,000025C -19-21MAR07-3/4

**DOZING:** With bucket parallel to ground, remove as little dirt as possible from the top surface. Let dirt spill from partially dumped bucket to fill in low spots.

**USING BOOM IN FLOAT POSITION:** Place the boom in float position and bucket in return-to-dig position to prevent gouging the surface, as in cleaning concrete and snow removal. Also use float position to avoid mixing surface material with stockpile material.

**DIGGING IN HARD, DENSE, OR TIGHTLY-PACKED MATERIAL:** To break material loose, use a gentle up-and-down motion of the bucket.

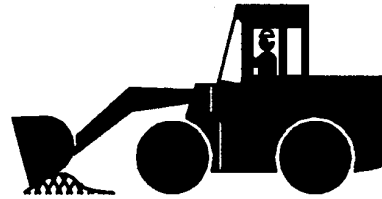


T7747BD—JUN—19MAY92

OUT4001.000025C -19-21MAR07-4/4

### Backdragging

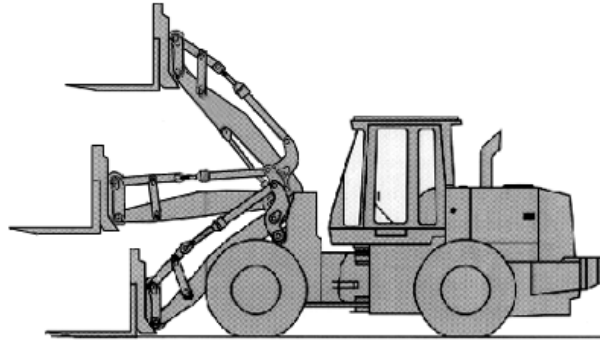
Leveling and grading can be done with the boom in the float position by backdragging the loader bucket while traveling in reverse. (Float position allows the bucket to follow contour of the ground.)



T7747BG—JUN—19MAY92

OUT4001.000025D -19-21MAR07-1/1

## Fork Attachment



T110742—UN—06AUG97

### LOADING

- Center forks and carriage before lifting.
- Inspect load to ensure stability when lifted.
- Never attempt to lift load with one fork.
- Approach load slowly and squarely with fork tips level. Move forks slowly under load with load positioned equally on forks. Continue to drive forward until load is against backrest of forks.

### UNLOADING

- Always use a signal person if you cannot see the placement area for the load. Make certain area is clear of all objects.
- Lower load to ground and tilt forks to a level position. Back away carefully to disengage forks.

### ELEVATED LOADS

- Slowly raise load with a slight back tilt to cradle load. Never tilt load forward unless load is over landing area and ready to be set down.
- If there is any indication of load instability during the lift such as movement, leaning, or swaying, stop lifting immediately. Lower load and restock.
- As load approaches desired height, slow the lift speed to a minimum. Continue the lift until load is slightly higher than the landing point.
- After load is securely in place, retract forks clear of load and lower forks to traveling height before moving.

### DRIVING ON A SLOPE

**⚠ CAUTION: Prevent possible injury from machine rollover, do not turn on slopes. Do not drive across slopes under any circumstances.**

Driving up or down slope WITH load on forks:

- Lower load near to ground.
- Keep mast tilted back to retain load. Slowly drive straight up or back straight down slope.

Driving up or down slope WITHOUT load on forks:

- Lower forks near to ground.
- Keep mast tilted back.
- Slowly drive straight down or back straight up slope.

### LIFTING CAPACITY

To maintain stability, only lift loads equal to or less than mast capacity or rated operating capacity of machine, whichever is less. (See Specifications chapter for machine lifting capacities.)

### TRAVELING

- Operate machine controls from operator seat only.
- While driving, carry load low for good visibility and machine stability.
- Downshift with care. A sudden deceleration could shift or topple load.
- A sudden reversal of travel direction could tip load or over turn the machine. Come to a gradual stop before reversing directions.
- Slow travel speed when making turns to avoid an overturn.
- Use low gear for hillside or ramp operation. Never coast downhill with transmission in neutral. The machine could go out of control and tip over.
- Reduce speed when driving over rough terrain, carrying a heavy load, or working in a congested area. Avoid rocks, curbs, and ditches.

### OPERATING TIPS

- Never use the fork attachment as a working platform.
- Know locations of bystanders in the working area at all times.
- DO NOT touch, lean on, or reach through the mast, boom or lift mechanism or permit others to do so. Never climb on the mast, boom, or attachments.
- NEVER allow anyone to stand or pass under the raised forks, mast, carriage, boom, or attachments.
- Reduce speed and sound horn at blind intersections, exits, and when approaching pedestrians.

### FORK INSPECTION

The forks are the main load bearing components of the mast. Forks must be maintained and checked periodically to assure safe operation.

Inspect forks daily. If any of the following conditions exist, replace forks before operating machine.

Continued on next page

CED, TX03679, 5542 -19-03NOV99-1/2

- Check for visibly bent forks and abrasions. If forks are bent more than 3°, replace forks. (Tapered forks are 90° nominal and standard forks are 87° nominal.) If a flat spot is clearly evident from abrasive wear, replace forks.
- Inspect forks for cracks along the inside radius of heel.
- Inspect hanger block welds for visible cracks.
- Check to see that the spring loaded keeper, with washer, is in position in the upper hanger block and that the keeper is functioning properly. (Spring in keeper must pull pin down into hanger block when pin is pulled out and released.)
- Inspect hanger blocks for any sign of deformation, cracks, and wear.
- Bent forks are not always detectable by sight. Remove forks and measure the interior angle of each fork to detect a bent fork.
- Tapered tip forks have an interior angle of 90°. Standard square tip forks have an interior angle of 87°. If angle is bent more than 3°, replace fork.

### FORK ADJUSTMENT

To change fork position:

**⚠ CAUTION: To prevent injury, never stand under forks or any part of lift mechanism.**

1. Lower forks to approximately 25 mm (1 in.) above ground.

**⚠ CAUTION: To prevent injury when sliding forks, keep hands and fingers out of fork adjustment path.**

2. Lift pin and slide fork to desired position. Slide fork by placing a foot on tine and palm of other hand on top of fork. Alternately push fork with hand (top) and foot (lower) in a rocking motion until fork reaches desired position.
3. Release pin and check that fork is engaged in notch.
4. Check that mast backing plate pins are in place at each end. Measure backing plate pins for wear. Pins should be equal in length on both sides of plate. Replace pins if worn or damaged.

CED, TX03679, 5542 -19-03NOV99-2/2

### Parking the Machine

1. Park machine on a level surface.
2. Lower bucket to ground.
3. Move FNR (1) to N. If equipped with column FNR, engage neutral lock (2).

**⚠ CAUTION: Prevent possible injury from unexpected machine movement. Machine can unexpectedly roll or move under power, resulting in death or serious injury. Always turn engine off or push park brake switch to ON to hold machine.**

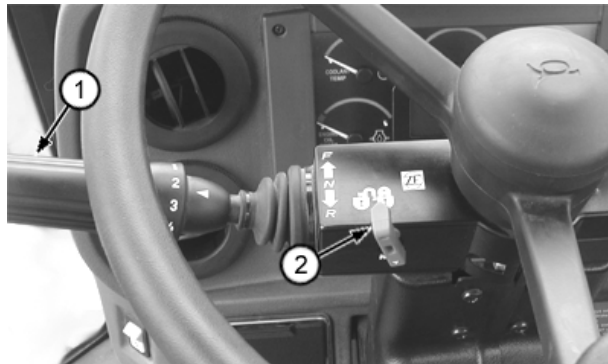
4. Push park brake switch to ON.

**IMPORTANT: Turbocharger may be damaged if engine is not properly shut down.**

5. Run engine at 1/2 speed without load for 2 minutes before stopping, to avoid damage to turbocharger. Release accelerator pedal to slow idle.
6. Turn key switch to “Off”.
7. Turn battery disconnect switch OFF.

1—FNR

2—Neutral Lock



Column FNR Shown



Joystick FNR Shown

T192873A—UN—18SEP03

T194597A—UN—18SEP03

HG31779,00002DB -19-26JUN03-1/1

### Loading Machine on a Trailer

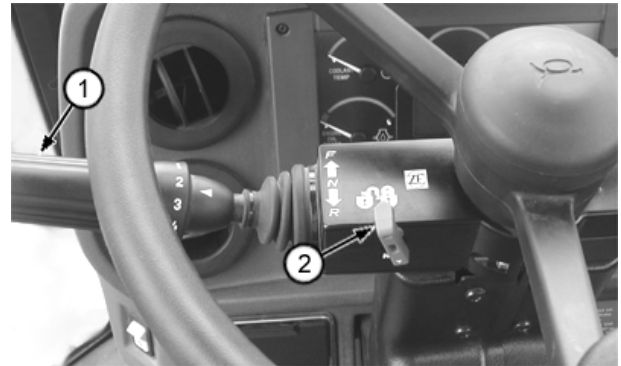
1. Keep the trailer bed clean. Put chock blocks against trailer wheels.
2. Use a ramp or loading dock. Ramps must be strong enough, have a low angle, and correct height.
3. Fasten seat belt before starting engine.

**CAUTION:** Prevent possible injury from tipover. Position the machine so that its centerline is over the centerline of the truck bed. NEVER steer the machine while on the ramp. If changing direction is required on the ramp, unload the machine from the ramp, reposition the machine on the ground, then try loading again.

4. Drive the machine onto the ramp slowly. The centerline of the machine should be over the centerline of the trailer.
5. Lower all equipment onto blocks or trailer bed.
6. Move FNR (1) to N. If equipped with column FNR, engage neutral lock (2).

**CAUTION:** Prevent possible injury from unexpected machine movement. Machine can unexpectedly roll or move under power, resulting in death or serious injury. Always turn off engine or push park brake switch to ON to hold machine.

7. Push park brake switch to ON.
8. Connect articulation locking bar.
9. Turn key switch to "Off".
10. Turn battery disconnect switch OFF.



Column FNR Shown



Joystick FNR Shown

1— FNR

2— Neutral Lock

11. Cover exhaust opening to prevent entry of debris and water.

Continued on next page

HG31779,00002DC -19-26JUN03-1/2

T192873A —UN—18SEP03

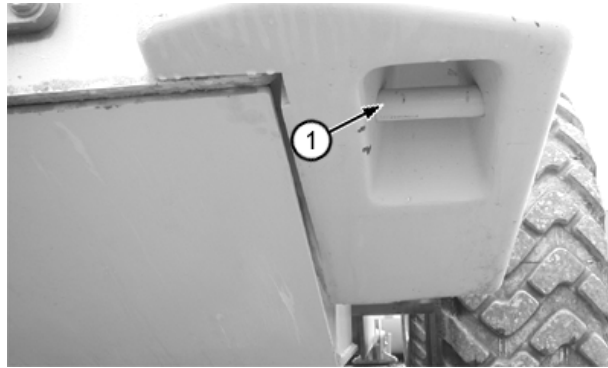
T194597A —UN—18SEP03

12. Fasten the machine to the trailer with chains or cables with appropriate load binders at the following tiedown points:

- Left Side and Right Side Rear Counterweight (1)
- Left Side and Right Side Front Axle (2)

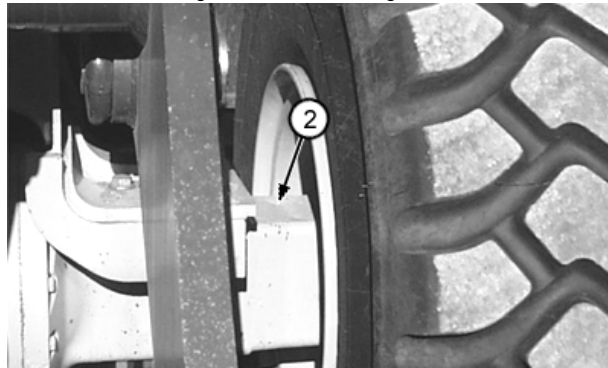
1—Left Side and Right Side Rear Counterweight

2—Left Side and Right Side Front Axle



T196308A —UN—12NOV03

*Right Rear Counterweight Shown*

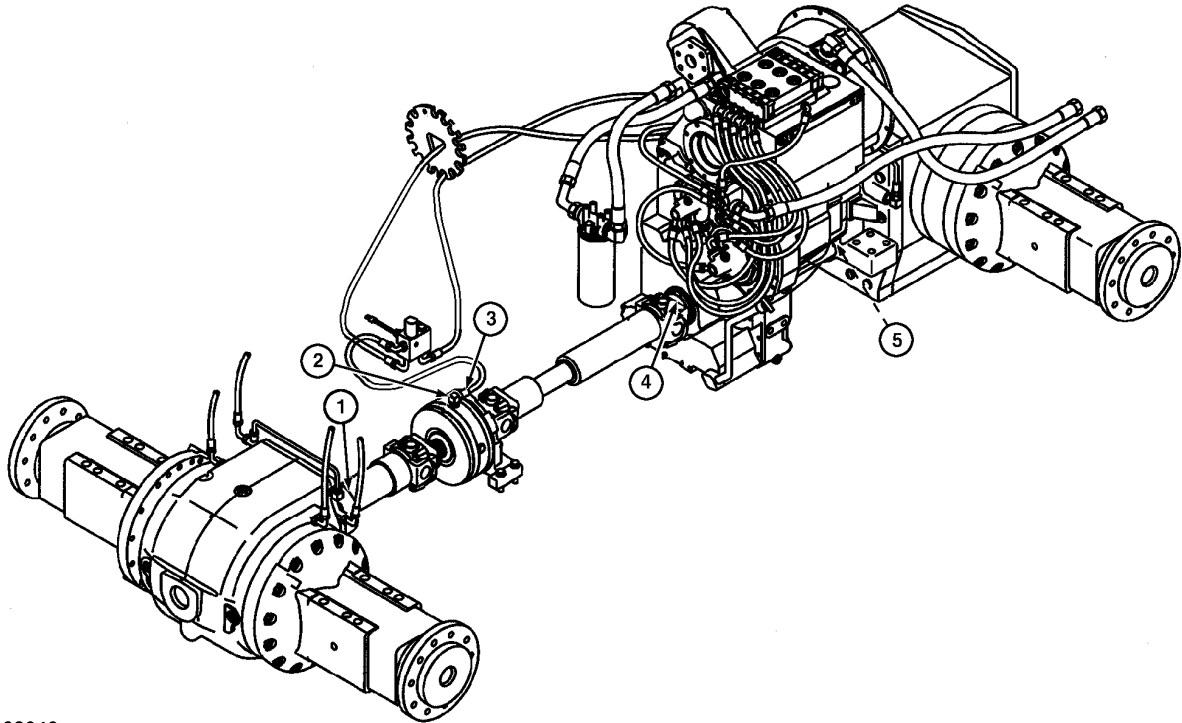


T19632A —UN—17OCT03

*Left Front Axle Shown*

HG31779,00002DC -19-26JUN03-2/2

## Towing Procedure



T138646

1— Front Driveshaft  
2— Park Brake Fitting Plug

3— Park Brake Hose  
4— Telescoping Driveshaft

5— Rear Driveshaft

**CAUTION:** Do not allow an operator on the machine being towed unless the operator can control the steering and brakes.

**IMPORTANT:** Engine cannot be started by towing.

Tow the machine off-road to the nearest location where repair work can be done. Haul the machine if it must be moved further than 460 m (500 yd).

Never tow machine faster than 3.2 km/hr (2 mph) to avoid transmission damage.

If the engine or the transmission hydraulic system are non-functional, the park brake is ON.

**CAUTION:** Prevent possible injury from unexpected machine movement. Place blocks at front and rear of tires to prevent machine from rolling.

1. Place blocks at front and rear of tires.
2. Connect the towed and towing machines together.

*NOTE:* Articulation locking bar is installed to prevent weaving as machine is towed.

3. Start engine if possible, and install articulation locking bar.
4. Move FNR to "Neutral" position. If equipped with column FNR, engage neutral lock.
5. If park brake indicator does not come on, the park brake is OFF. Go to Step 11.  
If park brake indicator is on, the park brake is ON. Go to Step 6.
6. Stop engine.

**CAUTION:** Prevent possible injury from unexpected machine movement. Install articulation locking bar.

7. Disconnect park brake hose (3) from park brake fitting (2). Plug hose.
8. Connect a hose from a hand operated hydraulic pump to the fitting on park brake.

*NOTE:* Keep hydraulic hand operated pump filled with oil.

Continued on next page

OUE003,000009E -19-18JUL02-1/2

**⚠ CAUTION: Prevent possible injury from unexpected machine movement. Sit in operator's seat when pumping the hydraulic pump. When towing the machine, maintain at least 1379 kPa (13.8 bar) (200 psi). If pressure is below 1379 (13.8 bar) (200 psi), park brake may engage.**

9. Place hydraulic hand pump on left side of operator's station floor.

**IMPORTANT: Do not pump pressure up to more than 2068 kPa (20.7 bar) (300 psi) to avoid damage to the park brake.**

10. Pump handle until gauge needle indicates 1379 kPa (13.8 bar) (200 psi) which will be required to disengage park brake.

To engage the park brake, open the valve in the hand-operated pump to relieve pressure.

**⚠ CAUTION: Prevent possible injury from unexpected machine movement. Never**

**attempt to remove driveshafts without blocking front and rear tires.**

11. Remove driveshafts if a hand operated pump is not available to release the park brake.

Disconnect driveshafts (1 and 4) at differential and transmission and remove from machine.

**⚠ CAUTION: Prevent possible injury from unexpected machine movement. Place blocks at front and rear of tires to prevent machine from rolling.**

*NOTE: Limit tow to 460 m (500 yd) maximum.*

12. Tow the machine slowly.
13. Place blocks at front and at rear of tires.
14. Reapply park brake or reinstall driveshaft if it was removed. See your authorized dealer for installation information.

OUOE003,000009E -19-18JUL02-2/2



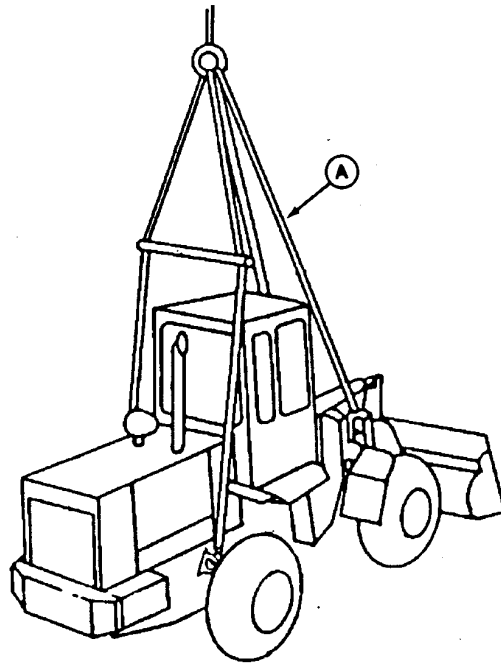
## Lifting the Machine

**CAUTION:** Prevent possible injury from unexpected machine movement. Clear all bystanders from lifting area. Select correct lifting cable strength for weight of machine. Test lift by raising machine 0.3 m (1 ft) off the ground.

### Specification

444J (S.N. -604689)	
Loader—Weight.....	10 272 kg
	22 645 lb
444J (S.N. 604690- )	
Loader—Weight.....	10 042 kg
	22 139 lb
444J (S.N. -604689)	
High Lift—Weight.....	10 377 kg
	22 877 lb
444J (S.N. 604690- )	
High Lift—Weight.....	10 147 kg
	22 370 lb
444J (S.N. -604689) Tool	
Carrier—Weight.....	10 615 kg
	23 406 lb
444J (S.N. 604690- )	
Tool Carrier—Weight.....	10 385 kg
	22 895 lb
444J (S.N. -604689)	
Powerllel—Weight.....	10 851 kg
	23 926 lb
444J (S.N. 604690- )	
Powerllel—Weight.....	10 621 kg
	23 415 lb
544J Loader—Weight.....	12 469 kg
	27 489 lb
544J High Lift—Weight.....	12 538 kg
	27 641 lb
544J Tool	
Carrier—Weight.....	12 521 kg
	27 609 lb
544J Powerllel—Weight.....	12 987 kg
	28 636 lb
624J Loader—Weight.....	14 375 kg
	31 691 lb
624J High Lift—Weight.....	14 463 kg
	31 885 lb
624J Tool	
Carrier—Weight.....	14 375 kg
	31 691 lb
624J Powerllel—Weight.....	15 208 kg
	33 534 lb

1. Install machine frame locking bar.
2. Attach cables (A) to machine so cables do not rub machine.



A—Cables

3. Attach a tether cable to machine to control machine as it is lifted.
4. Test lift by raising machine 0.3 m (1 ft) off the ground.
5. Lift machine and swing to unloading area.

T7477AV —UN—19MAR91

MM61211,00013D1 -19-16MAR06-1/1

# Maintenance—Machine

## Diesel Fuel

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

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

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

### Required Fuel Properties

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

**Cetane number of 43 minimum.** Cetane number greater than 47 is preferred, especially for temperatures below  $-20^{\circ}\text{C}$  ( $-4^{\circ}\text{F}$ ) or elevations above 1500 m (5000 ft).

**Cold Filter Plugging Point (CFPP)** should be at least  $5^{\circ}\text{C}$  ( $9^{\circ}\text{F}$ ) below the expected lowest temperature or **Cloud Point** below the expected lowest ambient temperature.

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

### Sulfur Content for Interim Tier 4 and EU Stage IIIB Engines

- Diesel fuel quality and fuel sulfur content must comply with all existing emissions regulations for the area in which the engine operates.
- Use **ONLY** ultra low sulfur diesel (ULSD) fuel with a maximum of 0.0015% (15 mg/kg) sulfur content.

### Sulfur Content for Other Engines

- Diesel fuel quality and fuel sulfur content must comply with all existing emissions regulations for the area in which the engine operates.
- Use of diesel fuel with sulfur content less than 0.10% (1000 mg/kg) is **STRONGLY** recommended.
- Use of diesel fuel with sulfur content 0.10% (1000 mg/kg) to 0.50% (5000 mg/kg) may result in **REDUCED** oil and filter change intervals. Refer to table in Diesel Engine Oil and Filter Service Intervals.
- **BEFORE** using diesel fuel with sulfur content greater than 0.50% (5000 mg/kg), contact your John Deere dealer.

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

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

DX,FUEL1 -19-03AUG09-1/1

## Lubricity of Diesel Fuel

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

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

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

If fuel of low or unknown lubricity is used, add John Deere **PREMIUM DIESEL FUEL CONDITIONER** (or equivalent) at the specified concentration.

### Lubricity of Biodiesel Fuel

Significant improvement in lubricity can occur with biodiesel blends up to B20. The gain in lubricity above a 20% blend is limited.

DX,FUEL5 -19-05OCT07-1/1

## Handling and Storing Diesel Fuel

**⚠ CAUTION: Handle fuel carefully. Do not fill the fuel tank when engine is running.**

**DO NOT smoke while you fill the fuel tank or service the fuel system.**

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

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

Ensure that all fuel tank caps and covers are installed properly to prevent moisture from entering.

Monitor water content of the fuel regularly.

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

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

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

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

DX,FUEL4 -19-19DEC03-1/1

## Biodiesel Fuel

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

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

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

John Deere approved fuel conditioners containing detergent/dispersant additives are recommended when using lower biodiesel blends, but are required when using blends of B20 or greater.

John Deere engines can also operate on biodiesel blends above B20 (up to 100% biodiesel) ONLY if the biodiesel meets the EN 14214 specification (primarily available in Europe). Engines operating on biodiesel blends above B20 may not fully comply with all applicable emissions regulations. Expect up to a 12% reduction in power and an 18% reduction in fuel economy when using 100% biodiesel. John Deere approved fuel conditioners containing detergent/dispersant additives are required.

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

Biodiesel blends up to B20 must be used within 90 days of the date of biodiesel manufacture. Biodiesel blends from B21 to B100 must be used within 45 days of the date of biodiesel manufacture.

Request a certificate of analysis from your fuel distributor to ensure that the fuel is compliant with the above specifications.

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

When using biodiesel fuel, the engine oil level must be checked daily. If oil becomes diluted with fuel, shorten oil change intervals. Refer to Diesel Engine Oil and Filter Service Intervals for more details regarding biodiesel and engine oil change intervals.

The following must be considered when using biodiesel blends up to B20:

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

The following must also be considered when using biodiesel blends above B20.

- Possible coking and/or blocked injector nozzles, resulting in power loss and engine misfire if John Deere approved fuel conditioners containing detergent/dispersant additives are not used
- Possible crankcase oil dilution, requiring more frequent oil changes
- Possible corrosion of fuel injection equipment
- Possible lacquering and/or seizure of internal components
- Possible formation of sludge and sediments
- Possible thermal oxidation of fuel at elevated temperatures
- Possible elastomer seal and gasket material degradation ( primarily an issue with older engines)
- Possible compatibility issues with other materials (including copper, lead, zinc, tin, brass, and bronze) used in fuel systems and fuel handling equipment
- Possible reduction in water separator efficiency
- Potential high acid levels within fuel system
- Possible damage to paint if exposed to biodiesel

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

DX,FUEL7 -19-04OCT07-1/1

### Low Sulfur Diesel Fuel Conditioner

When possible, use existing fuel formulations for engines used off-highway. This fuel will not require any additives to provide good performance and engine reliability. However, many local fuel distributors will not carry both low and regular sulfur diesel fuels.

If the local fuel distributor will supply only low sulfur fuel, order and use John Deere PREMIUM DIESEL FUEL

CONDITIONER. It provides lubricating properties along with other useful benefits, such as cetane improver, anti-oxidant, fuel stabilizer, corrosion inhibitor and others. John Deere PREMIUM DIESEL FUEL CONDITIONER is specifically for use with low sulfur fuels. Nearly all other diesel fuel conditioners only improve cold weather flow and stabilize long-term fuel storage. They do not contain the lubrication additives needed by rotary fuel injection pumps.

TX,45,JC2126 -19-15AUG97-1/1

### Testing Diesel Fuel

DIESELSCAN™ is a John Deere fuel analysis program that can be used to monitor the quality of your fuel. The DIESELSCAN analysis verifies fuel type, cleanliness,

*DIESELSCAN is a trademark of Deere & Company*

water content, suitability for cold weather operation, and whether the fuel meets specifications.

Check with your John Deere dealer for availability of DIESELSCAN kits.

DX,FUEL6 -19-14NOV05-1/1

## Minimizing the Effect of Cold Weather on Diesel Engines

John Deere diesel engines are designed to operate effectively in cold weather.

However, for effective starting and cold-weather operation, a little extra care is necessary. The following information outlines steps that can minimize the effect that cold weather may have on starting and operation of your engine. See your John Deere dealer for additional information and local availability of cold-weather aids.

### Use Winter Grade Fuel

When temperatures fall below 0 °C (32 °F), winter grade fuel (No. 1-D in North America) is best suited for cold-weather operation. Winter grade fuel has a lower cloud point and a lower pour point.

**Cloud point** is the temperature at which wax will begin to form in the fuel and this wax causes fuel filters to plug.

**Pour point** is the lowest temperature at which movement of the fuel is observed.

*NOTE: On an average, winter grade diesel fuel has a lower BTU (heat content) rating. Using winter grade fuel may reduce power and fuel efficiency, but should not cause any other engine performance effects. Check the grade of fuel being used before troubleshooting for low-power complaints in cold-weather operation.*

### Air Intake Heater

An air intake heater is an available option for some engines to aid cold weather starting.

### Ether

An ether port on the intake is available to aid cold weather starting.

**⚠ CAUTION: Ether is highly flammable. Do not use ether when starting an engine equipped with glow plugs or an air intake heater.**

### Coolant Heater

An engine block heater (coolant heater) is an available option to aid cold weather starting.

### Seasonal Viscosity Oil and Proper Coolant Concentration

Use seasonal grade viscosity engine oil based on the expected air temperature range between oil changes and a proper concentration of low silicate antifreeze as recommended. (See DIESEL ENGINE OIL and ENGINE COOLANT requirements in this section.)

### Diesel Fuel Flow Additive

Use John Deere PREMIUM DIESEL FUEL CONDITIONER (winter formula), which contains anti-gel

chemistry, or equivalent fuel conditioner to treat non-winter grade fuel (No. 2-D in North America) during the cold-weather season. This generally extends operability to about 10 °C (18 °F) below the fuel cloud point. For operability at even lower temperatures, use winter grade fuel.

**IMPORTANT: Treat fuel when outside temperature drops below 0 °C (32 °F). For best results, use with untreated fuel. Follow all recommended instructions on label.**

### BioDiesel

When operating with biodiesel blends, wax formation can occur at warmer temperatures. Begin using John Deere PREMIUM BIODIESEL FUEL CONDITIONER (winter formula) at 5 °C (41 °F) to treat biodiesel fuels during the cold-weather season. Use B5 or lower blends at temperatures below 0 °C (32 °F). Use only winter grade petroleum diesel fuel at temperatures below -10 °C (14 °F).

### Winterfronts

Use of fabric, cardboard, or solid winterfronts is not recommended with any John Deere engine. Their use can result in excessive engine coolant, oil, and charge air temperatures. This can lead to reduced engine life, loss of power and poor fuel economy. Winterfronts may also put abnormal stress on fan and fan drive components potentially causing premature failures.

If winterfronts are used, they should never totally close off the grill frontal area. Approximately 25% area in the center of the grill should remain open at all times. At no time should the air blockage device be applied directly to the radiator core.

### Radiator Shutters

If equipped with a thermostatically controlled radiator shutter system, this system should be regulated in such a way that the shutters are completely open by the time the coolant reaches 93 °C (200 °F) to prevent excessive intake manifold temperatures. Manually controlled systems are not recommended.

If air-to-air aftercooling is used, the shutters must be completely open by the time the intake manifold air temperature reaches the maximum allowable temperature out of the charge air cooler.

For more information, see your John Deere dealer.

DX,FUEL10 -19-03AUG09-1/1

## Alternative and Synthetic Lubricants

Conditions in certain geographical areas may require lubricant recommendations different from those printed in this manual. Some John Deere brand coolants and lubricants may not be available in your location.

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

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

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

Avoid mixing different brands or types of oils. Oil manufacturers blend base stock and additives to create their oils and to meet certain specifications and performance requirements. Mixing different oils can interfere with proper functioning of these formulations and degrade lubricant performance.

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

AM40430,00000AA -19-03NOV08-1/1

## Diesel Engine Oil

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

**John Deere Plus-50™ II oil is preferred.**

John Deere Plus-50™ is also recommended.

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

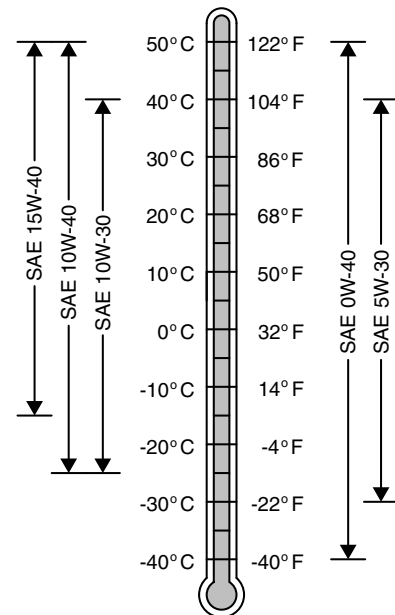
- John Deere Torq-Gard Supreme™
- API Service Category CJ-4
- API Service Category CI-4 PLUS
- API Service Category CI-4
- API Service Category CH-4
- ACEA Oil Sequence E9
- ACEA Oil Sequence E7
- ACEA Oil Sequence E6
- ACEA Oil Sequence E5
- ACEA Oil Sequence E4
- ACEA Oil Sequence E3

**Multi-viscosity diesel engine oils are preferred.**

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

DO NOT use diesel fuel with sulfur content greater than 1.0% (10 000 mg/kg).

*Plus-50 is a trademark of Deere & Company  
Torq-Gard Supreme is a trademark of Deere & Company*



Oil Viscosities for Air Temperature Ranges

TS1689 —JUN—18JUL07

DX,ENOIL7 -19-03AUG09-1/1

## Diesel Engine Oil and Filter Service Intervals

The oil and filter service intervals in the following table should be used as guidelines. Actual service intervals also depend on operation and maintenance practices. It is suggested to use oil analysis to determine the actual useful life of the oil and to aid in selection of the proper oil and filter service interval.

Oil and filter service intervals are based on a combination of oil pan capacity, type of engine oil and filter used, and sulfur content of the diesel fuel.

Engine Oil and Filter Service Intervals		
	Standard Drain Oil Pan	Extended Drain Oil Pan
<b>Fuel Sulfur</b>	Less than 0.05% (500 mg/kg)	
Plus-50	375 hours	500 hours
Other Oils	250 hours	250 hours
<b>Fuel Sulfur</b>	0.05 - 0.50% (500 - 5000 mg/kg)	
Plus-50	275 hours	400 hours
Other Oils	150 hours	150 hours
<b>Fuel Sulfur</b>	0.50 - 1.00% (5000 - 10 000 mg/kg)	
Plus-50	187 hours	250 hours
Other Oils	125 hours	125 hours

The service interval of "Other Oils" may be extended only if oil analysis is performed to determine the actual service life, to a maximum not to exceed that of Plus-50.

Diesel fuel sulfur level will affect engine oil and filter service intervals. Higher fuel sulfur levels reduce oil and filter service intervals as shown in the table.

- Use of diesel fuel with sulfur content less than 0.05% (500 mg/kg) is strongly recommended.

*Plus-50 is a trademark of Deere & Company  
Torq-Gard Supreme is a trademark of Deere & Company*

- Use of diesel fuel with sulfur content 0.05% (500 mg/kg) to 0.50% (5000 mg/kg) may result in REDUCED oil and filter change intervals as shown in the table.
- BEFORE using diesel fuel with sulfur content greater than 0.50% (5000 mg/kg), contact your John Deere dealer.

**IMPORTANT: When using biodiesel blends greater than B20, reduce the oil and filter service interval by 50% or monitor engine oil based on test results from Oilscan.**

**Oil types** in the table include:

- John Deere Plus-50™ II and John Deere Plus-50 oils.
- "Other Oils" include John Deere Torq-Gard Supreme™, API CJ-4, API CI-4 PLUS, API CI-4, API CH-4, ACEA E9, ACEA E7, ACEA E6, ACEA E5, ACEA E4, or ACEA E3 oils.

**NOTE:** The 500 hour extended oil and filter change interval is only allowed if all the following conditions are met:

- Engine equipped with an extended drain interval oil pan
- Use of diesel fuel with sulfur content less than 0.05% (500 mg/kg)
- Use of John Deere Plus-50™ II or John Deere Plus-50 oil
- Use of an approved John Deere oil filter

DX.ENOIL12 -19-03AUG09-1/1



### Transmission, Park Brake, and Differential Oil

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

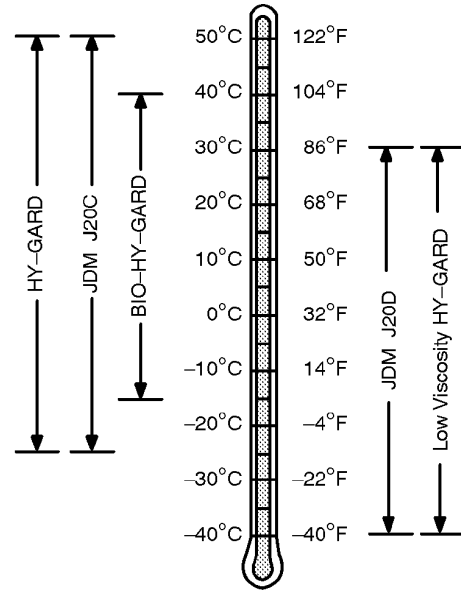
The following oils are preferred:

- John Deere HY-GARD®
- John Deere Low Viscosity HY-GARD®

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

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

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



TS1660—UN—100CT97

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

HG31779.0000336 -19-08DEC03-1/1

### Hydraulic Reservoir Oil

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

The following oil is preferred:

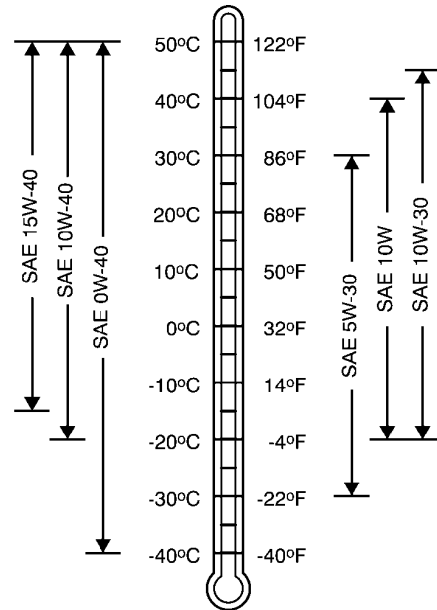
- John Deere PLUS-50™

The following oil is also recommended:

- John Deere TORQ-GARD SUPREME™

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

- API Service Classification CH-4
- API Service Classification CG-4



T148385—UN—19NOV01

*PLUS-50 is a trademark of Deere & Company  
TORQ-GARD SUPREME is a trademark of Deere & Company*

HG31779.0000335 -19-08DEC03-1/1

## Grease

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

**John Deere SD POLYUREA GREASE is preferred.**

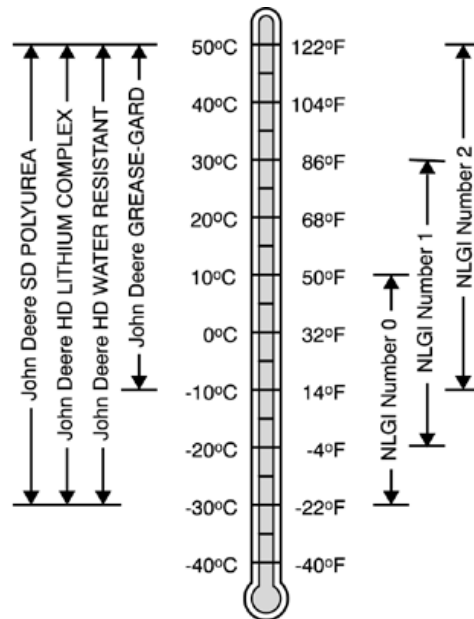
The following greases are also recommended

- John Deere HD LITHIUM COMPLEX GREASE
- John Deere HD WATER RESISTANT GREASE
- John Deere GREASE-GARD™

Other greases may be used if they meet the following:

NLGI Performance Classification GC-LB

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



TS1673—UN—31OCT03

*GREASE-GARD is a trademark of Deere & Company*

DX,GREA1 -19-07NOV03-1/1

## Heavy Duty Diesel Engine Coolant

The engine cooling system is filled to provide year-round protection against corrosion and cylinder liner pitting, and winter freeze protection to  $-37^{\circ}\text{C}$  ( $-34^{\circ}\text{F}$ ). If protection at lower temperatures is required, consult your John Deere dealer for recommendations.

### John Deere COOL-GARD™ II Premix Coolant is preferred.

John Deere COOL-GARD II Premix is available in a concentration of 50% ethylene glycol.

### Additional Recommended Coolants

The following engine coolants are also recommended:

- John Deere COOL-GARD II Concentrate in a 40% to 60% mixture of concentrate with quality water.
- John Deere COOL-GARD Premix (available in a concentration of 50% ethylene glycol).
- John Deere COOL-GARD Concentrate in a 40% to 60% mixture of concentrate with quality water.
- John Deere COOL-GARD PG Premix (available in a concentration of 55% propylene glycol).

John Deere COOL-GARD II Premix and COOL-GARD II Concentrate coolants do not require use of supplemental coolant additives.

John Deere COOL-GARD Premix, COOL-GARD Concentrate, and COOL-GARD PG Premix do not require use of supplemental coolant additives, except for periodic replenishment of additives during the drain interval.

Use John Deere COOL-GARD PG Premix when a non-toxic coolant formulation is required.

### Other Coolants

It is possible that John Deere COOL-GARD II, COOL-GARD, and COOL-GARD PG coolants are

*COOL-GARD is a trademark of Deere & Company*

unavailable in the geographical area where service is performed.

If these coolants are unavailable, use a coolant concentrate or prediluted coolant intended for use with heavy duty diesel engines and with a minimum of the following chemical and physical properties:

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

The additive package must be part of one of the following coolant mixtures:

- ethylene glycol or propylene glycol base prediluted (40% to 60%) heavy duty coolant
- ethylene glycol or propylene glycol base heavy duty coolant concentrate in a 40% to 60% mixture of concentrate with quality water

### Water Quality

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

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

**Do not mix ethylene glycol and propylene glycol base coolants.**

**Do not use coolants that contain nitrites.**

DX,COOL3 -19-03NOV08-1/1

# Maintenance—Periodic Maintenance

## Service Your Machine at Specified Intervals

Lubricate, make service checks and adjustments at intervals shown on the periodic maintenance chart (A) and on the following pages.

Service items at multiples of the original requirement. For example, at 500 hours also service those items (if applicable) listed under 250 hours, 100 hours, 50 hours and 10 hours or daily.

A—Periodic Maintenance Chart



T133372C—UN—18AUG00

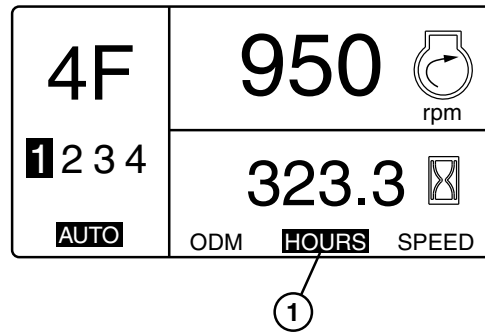
CED,OUOE035,32 -19-17FEB06-1/1

## Check Hour Meter Regularly

Check hour meter display (1) to determine when your machine needs periodic maintenance.

Intervals on the periodic maintenance chart are for operating in normal conditions. If you operate your machine in severe conditions, you should service it at SHORTER INTERVALS.

1—Hour Meter Display



T193351—19—13OCT03

HG31779,00002DE -19-26JUN03-1/1

## Prepare Machine for Maintenance

Before performing maintenance procedures given in the following sections, and before leaving the operator's seat, park the machine as described below unless another position is specified in the procedure.

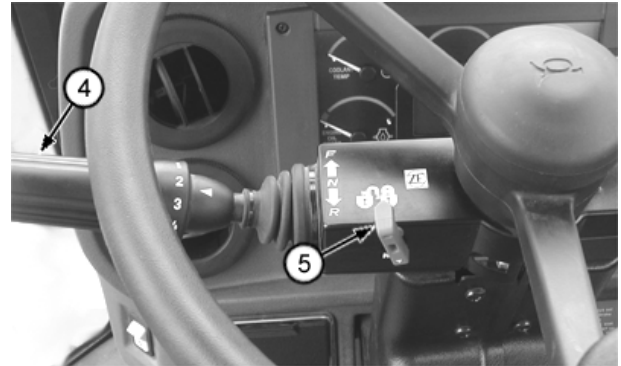
1. Lower equipment to ground.  
If bucket needs to be off ground for maintenance, see Boom Lock. (Section 3-2.)
2. Stop engine.
3. Turn key switch to "On".
4. Press return-to-carry switch (1) to "Off" position, if equipped.

**CAUTION: Prevent possible injury from unexpected boom movement. The boom may move up when ride control switch is turned ON. Clear all bystanders from area.**

5. Cycle ride control switch (2) from "OFF" (no lights) to "ON" (left light only illuminated), if equipped, to discharge ride control accumulator.
6. Press and hold pilot enable/boom down switch (3) while moving control lever forward to lower boom.
7. While still holding the pilot enable/boom down switch, put boom in float position for 5 seconds, then cycle each hydraulic control lever to relieve pressure.
8. Move FNR (4) to N. If equipped with column FNR, engage neutral lock (5).

**CAUTION: Prevent possible injury from unexpected machine movement. Push park brake switch to ON to hold machine.**

9. Push park brake switch to ON.
10. Turn key switch to "Off". If maintenance must be performed with engine running, do not leave machine unattended.
11. Turn battery disconnect switch OFF, if equipped.



Column FNR Shown



Joystick FNR Shown

- |                                  |                       |
|----------------------------------|-----------------------|
| 1— Return-to-Carry Switch        | 4— FNR                |
| 2— Ride Control Switch           | 5— Neutral Lock Lever |
| 3— Pilot Enable/Boom Down Switch |                       |

VD76477,000046C -19-23MAY06-1/1

T192464A —UN—18SEP03

T192873C —UN—18SEP03

T194851B —UN—18SEP03

### Opening Engine Side Shields and Service Doors

**CAUTION:** Prevent possible injury from engine service door closing. Always keep service door in the open locked position when servicing the engine area.

1. Pull out on latch (1) to open lower engine service door.

1—Latch

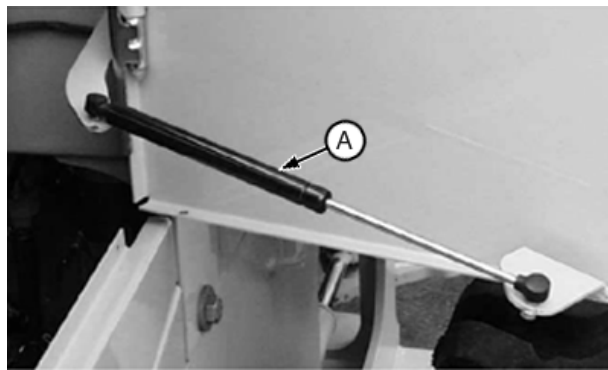


T192358A—UN—18SEP03

HG31779,00002B9 -19-19JUN03-1/2

2. Open service door to full extent. Gas cylinder (A) will lock door in place.

A—Cylinder



T131518B—UN—07JUN00

HG31779,00002B9 -19-19JUN03-2/2

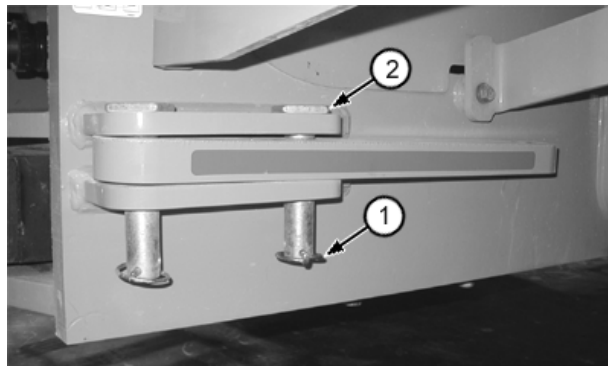
### Locking Machine Frame

**CAUTION:** Prevent possible injury from unexpected machine movement. Connect frame locking bar to both frames before you work in frame pivot area.

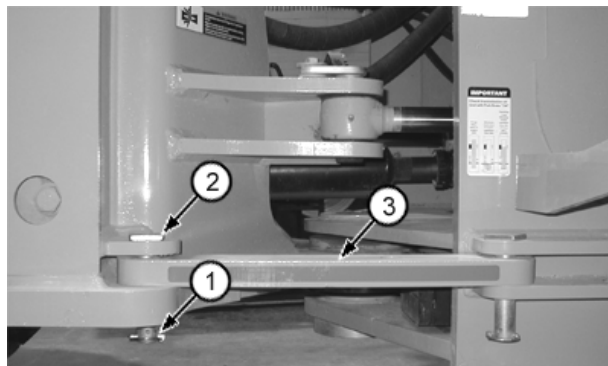
1. Align machine frames.
2. Remove quick lock ring (1) and pull locking pin (2) from hole.
3. Rotate locking bar (3) to align with hole in machine frame.
4. Install locking pin through hole in loader frame and end of locking bar. Install quick lock ring to secure locking bar in place.

1—Quick Lock Ring  
2—Locking Pin

3—Locking Bar



T161062B—UN—29OCT02



T161061B—UN—29OCT02

HG31779,0000171 -19-29OCT02-1/1

## Boom Lock

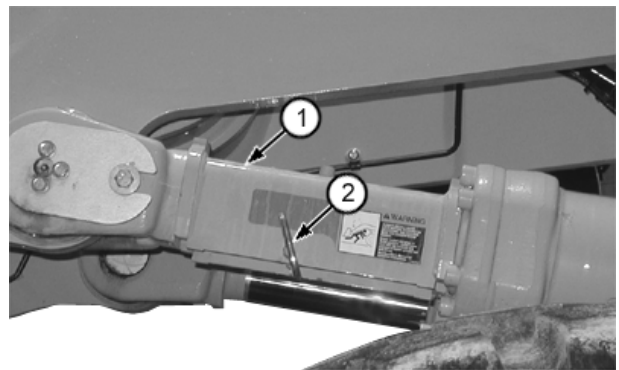
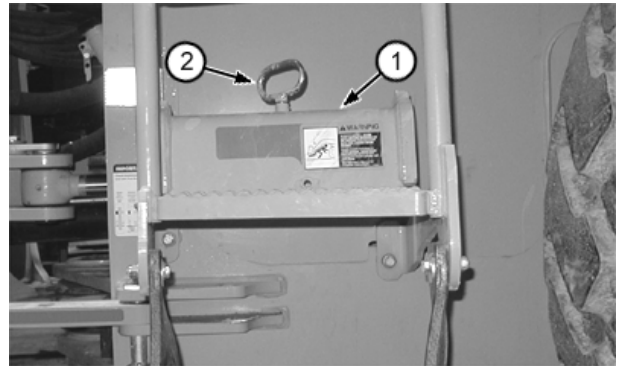
**⚠ CAUTION: Prevent possible crushing injury from falling boom. Always install boom lock before working on or around this machine with the boom raised.**

**Empty bucket and place in dump position before installing boom lock.**

1. Raise boom. Empty bucket and place in dump position before installing boom lock (1).
2. Loosen hand bolt (2) and remove boom lock from side of machine.
3. Install lock on boom cylinder and lock lever facing to outside of machine and lower boom onto lock.
4. Tighten hand bolt.
5. Perform the Prepare Machine for Maintenance procedure. (Section 3-2).
6. Before removing boom lock from cylinder, raise boom slightly to relieve pressure. Return boom lock to storage position on side of machine and tighten hand hold.

1— Boom Lock

2— Hand Bolt



T161064B—UN—29OCT02

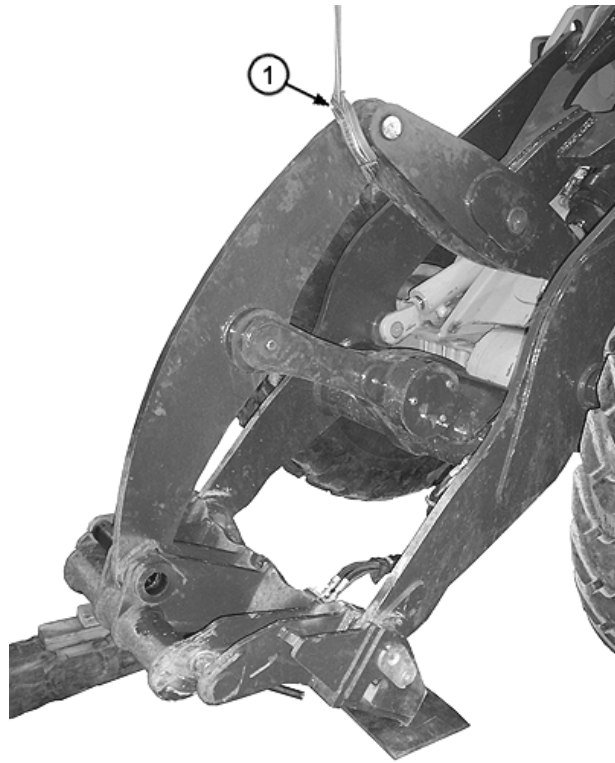
T161065B—UN—29OCT02

HG31779,0000172 -19-23MAY06-1/1

### Pin Removal—If Equipped With Powerllet Linkage

**CAUTION:** Avoid injury from sudden linkage movement. Support powerllet bell crank before removing any pins.

Before removing any pin on the powerllet linkage, you must support the bell crank (1) with hoist. See your authorized dealer for further details.



T202191B—UN—28SEP04

HG31779,000003E -19-30SEP04-1/1

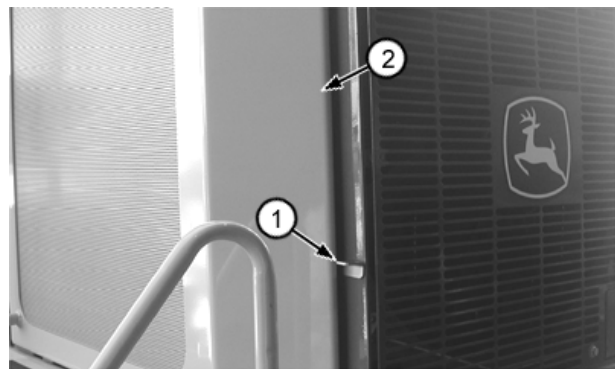
### Opening Grille Door

**IMPORTANT:** Avoid machine damage. Open right and left cooling package side doors prior to opening grille door.

Push up on side door release lever (1) to open cooling package side door (2) to full extent.

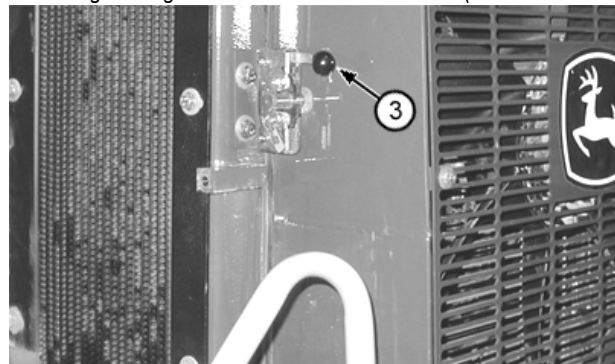
Press down on release lever (3) to open grille door.

- 1—Cooling Package Side Door Release Lever (one on each side)
- 2—Cooling Package Side Door (one on each side)
- 3—Release Lever



T196239A—UN—18NOV03

Cooling Package Side Door and Release Lever (one on each side)



T196240A—UN—11NOV03

HG31779,00002DF -19-26JUN03-1/1



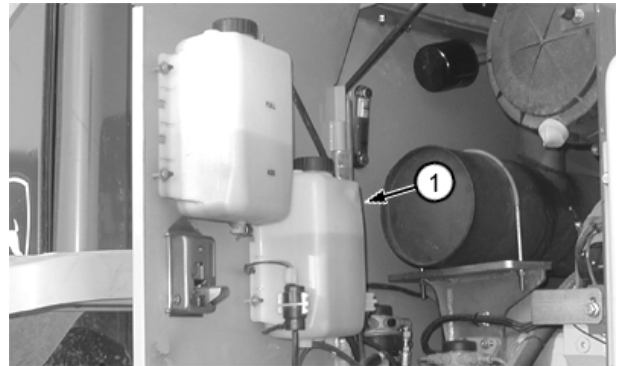
### Check Windshield Washer Fluid Level

Open lower left engine side shield.

Check fluid in windshield washer bottle (1).

During winter season, use all season windshield washer fluid which will not freeze.

1— Windshield Washer Bottle



T192360A —UN—18SEP03

HG31779,00002BA -19-19JUN03-1/1

### Fluid Analysis Program Test Kits and 3-Way Coolant Test Kit

Fluid Analysis Program Test Kits and the 3-Way Coolant Test Kit are John Deere fluid sampling products to help you monitor machine maintenance and system condition. The objective of a fluid sampling program is to ensure machine availability when you need it and to reduce repair costs by identifying potential problems before they become critical.

Engine, hydraulic, power train, and coolant samples should be taken from each system on a periodic basis, usually prior to a filter and/or fluid change interval. Certain systems require more frequent sampling. Consult your authorized John Deere dealer on a maintenance program for your specific application. Your authorized John Deere dealer has the sampling products and expertise to assist



TX1003513A —UN—20FEB06

you in lowering your overall operating costs through fluid sampling.

AM40430,00002FE -19-25MAR10-1/1

## Service Intervals

<b>Model:</b> 444J, 544J and 624J Loader	<b>PIN/Serial Number:</b>
<b>Hour Meter Reading:</b>	
<b>SERVICE INTERVALS</b>	
Service your machine at intervals shown on this chart. Also, perform service on items at multiples of the original requirement. For example, at 500 hours also service those items (if applicable) listed under 250 hours, 100 hours, 50 hours, and 10 hours or daily.	
<b>FLUID SAMPLING</b>	
Take fluid samples from each system as indicated on this form. The manufacturer of the fluid analysis kits will provide maintenance recommendations based upon the results of the fluid analysis and the operating information you supply. Regular fluid sampling extends the operational life of your machine.	
<b>As Required</b>	
<input type="checkbox"/> Inspect tires and check pressure	<input type="checkbox"/> Drain primary fuel filter and clean strainer
<input type="checkbox"/> Tighten wheel retainer nuts	<input type="checkbox"/> Check and clean cab fresh air filter
<input type="checkbox"/> Clean or replace air cleaner elements	<input type="checkbox"/> Check and clean cab recirculating air filter
<input type="checkbox"/> Inspect belt, A/C compressor and alternator	<input type="checkbox"/> Replace final fuel filter
<b>Every 10 Hours or Daily</b>	
<input type="checkbox"/> Check coolant recovery tank level	<input type="checkbox"/> Check hydraulic system oil level
<input type="checkbox"/> Clean air cleaner dust unloader valve	<input type="checkbox"/> Check transmission oil level
<input type="checkbox"/> Check engine oil level	
<b>Every 100 Hours</b>	
<input type="checkbox"/> Grease loader linkage and cylinder pivots	<input type="checkbox"/> Grease oscillating rear axle
<input type="checkbox"/> Grease front steering cylinder pivots	<input type="checkbox"/> Grease rear steering cylinder pivots
<b>Initial Service—250 Hours<sup>1</sup></b>	
<input type="checkbox"/> Change engine break-in oil and replace filter	<input type="checkbox"/> Change front and rear differential/axle oil
<sup>1</sup> Perform initial service once after the first 250 hours of operation.	
<b>Every 250 Hours</b>	
<input type="checkbox"/> Grease driveline sliding joints	<input type="checkbox"/> Check surge tank level
<input type="checkbox"/> Take engine oil sample	
<b>Every 500 Hours</b>	
<input type="checkbox"/> Grease drive line sliding joints, upper and lower	<input type="checkbox"/> Replace hydraulic reservoir breather filter
<input type="checkbox"/> Check air intake hoses	<input type="checkbox"/> Check park brake oil level
<input type="checkbox"/> Check battery electrolyte level and terminals	<input type="checkbox"/> Check front and rear differential/axle oil level
<input type="checkbox"/> Change engine oil and replace filter	<input type="checkbox"/> Take transmission oil sample
<input type="checkbox"/> Replace final fuel filter	<input type="checkbox"/> Take engine coolant sample
<input type="checkbox"/> Replace primary fuel filter and fuel strainer	<input type="checkbox"/> Take diesel fuel sample
<input type="checkbox"/> Replace hydraulic system return filter	<input type="checkbox"/> Take axle oil sample
<input type="checkbox"/> Lubricate rear oscillating support cover	<input type="checkbox"/> Take hydraulic oil sample
<b>Every 1000 Hours</b>	
<input type="checkbox"/> Remove and clean engine crankcase vent tube	<input type="checkbox"/> Grease frame hinge pivots
<input type="checkbox"/> Replace air cleaner dust unloader valve	<input type="checkbox"/> Drain and refill park brake oil
<input type="checkbox"/> Replace air cleaner elements	<input type="checkbox"/> Check radiator coolant and hoses
<input type="checkbox"/> Replace transmission oil filter	

Continued on next page

CS58540,0000062 -19-23JUN10-1/2

*Maintenance—Periodic Maintenance*

<b>Every 2000 Hours</b>	
<input type="checkbox"/> Check and adjust engine valve lash	<input type="checkbox"/> Clean magnetic axle oil drain plug <sup>2</sup>
<input type="checkbox"/> Drain and refill cooling system	<input type="checkbox"/> Change transmission oil (normal operation) <sup>3</sup>
<input type="checkbox"/> Change front and rear differential/axle oil	<input type="checkbox"/> Re-run clutch calibration (cab monitor)
<input type="checkbox"/> Clean axle differential recirculation screen (if equipped) <sup>4</sup>	
<p><sup>2</sup>The magnetic axle oil drain plug is serving its function when a ball of fine metal particles or machining chips are found on the magnet. If concerned with the amount of debris on the magnet of the drain plug, the magnet could be cleaned and checked again after running a short period of time with fresh oil.</p>	
<p><sup>3</sup>Service intervals should be reduced to 1500 hours in severe applications, which run the torque converter at high loads for more than approximately 25% of the time. (Examples may include basement digging, land clearing, etc.)</p>	
<p><sup>4</sup>Axle differential recirculation screen is equipped with the optional axle oil coolers.</p>	
<b>Every 4000 Hours</b>	
<input type="checkbox"/> Drain, flush, and refill hydraulic oil	<input type="checkbox"/> Clean hydraulic system fill strainer
<b>Every 4500 Hours</b>	
<input type="checkbox"/> Replace engine crankshaft dampener	

CS58540,0000062 -19-23JUN10-2/2

## Required Parts

REQUIRED PARTS								
Insure machine performance and availability; use only genuine John Deere parts. Verify part numbers are current and that any associated parts are also on hand i.e. filter O-rings.								
Description	Part Number	Initial Service <sup>1</sup> - 250 Hours	Every 250 Hours	Every 500 Hours	Every 1000 Hours	Every 2000 Hours	Every 4000 Hours	Every 4500 Hours
Engine Oil Filter	RE541420	1		1	1	1	1	1
Primary Fuel Filter:								
• 444J	RE517180			1	1	1	1	1
• 544J & 624J	RE509036			1	1	1	1	1
Fuel Strainer	AH162914			1	1	1	1	1
In-line Fuel Filter:	AT223493			1	1	1	1	1
Final Fuel Filter	RE509032			1	1	1	1	1
Transmission Filter	AT336140				1	1	1	
Hydraulic System Return Filter	AT310905			1	1	1	1	1
Hydraulic Reservoir Breather Filter	AM39653			1	1	1	1	1
Air Cleaner Dust Unloader Valve	M89679				1	1	1	
Air Filter (Primary)	AT300487				1	1	1	
Air Filter (Secondary)	AT314583				1	1	1	
Engine Rocker Arm Cover Gasket:								
• 444J	R123542					1	1	
• 544J	R123543					1	1	
• 624J	R504882					1	1	
Engine Crankshaft Dampener:								
• 544J	RE59355							1
• 624J	RE508577							1
John Deere Plus-50™ II Engine & Hydraulic Oil:								
• 444J	TY26674 <sup>5</sup>	17.5 L (4.6 gal)		17.5 L (4.6 gal)	17.5 L (4.6 gal)	17.5 L (4.6 gal)	114.0 L (30.0 gal)	17.5 L (4.6 gal)
• 544J	TY26674 <sup>5</sup>	18.5 L (5.0 gal)		18.5 L (5.0 gal)	18.5 L (5.0 gal)	18.5 L (5.0 gal)	115.0 L (30.3 gal)	18.5 L (5.0 gal)
• 624J	TY26674 <sup>5</sup>	24.0 L (6.3 gal)		24.0 L (6.3 gal)	24.0 L (6.3 gal)	24.0 L (6.3 gal)	143.0 L (37.8 gal)	24.0 L (6.3 gal)
HY-GARD™ Oil:								
• 444J (S.N.—604689)	TY6354 <sup>5</sup>	34.0 L (9.0 gal)			0.3 L 0.3 qt	52.5 L (13.8 gal)	148.0 L (39.0 gal)	
• 444J (S.N.604690— )	TY6354 <sup>5</sup>	44.0 L (11.6 gal)			0.3 L 0.3 qt	62.5 L (16.5 gal)	161.0 L (42.5 gal)	
• 544J	TY6354 <sup>5</sup>	36.0 L (9.5 gal)			0.3 L 0.3 qt	54.5 L (14.4 gal)	148.0 L (39.0 gal)	
• 624J	TY6354 <sup>5</sup>	44.5 L (11.8 gal)			0.3 L 0.3 qt	65.5 L (17.8 gal)	189.0 L (50.0 gal)	
Pre-Diluted Coolant:								
• 444J & 544J	TY25081					21.0 L (5.5 gal)	21.0 L (5.5 gal)	
• 624J	TY25081					22.0 L (5.8 gal)	22.0 L (5.8 gal)	
Coolant Conditioner	TY16004					As Required		
<b>Fluid Analysis Kits<sup>6</sup></b>								
Diesel Engine Oil	AT317904		1	1	1	1	1	1
Transmission Oil	AT303189			1	1	1	1	1

Continued on next page

CS58540,0000068 -19-21JUL10-1/2

*Maintenance—Periodic Maintenance*

Axle Oil	AT303189			2	2	2	2	2
Hydraulic Oil	AT303189			1	1	1	1	1
Diesel Fuel	AT180344			1	1	1	1	1
Engine Coolant	AT183016			1	1	1	1	1
3-Way Heavy Duty Coolant Test Kit	TY16175			1	1	1	1	1

<sup>1</sup>Perform initial service once after the first 250 hours of operation.  
<sup>5</sup>For recommended oil type and oil viscosities based on operating temperatures, see Maintenance—Machine. (Section 3-1.)  
<sup>6</sup>Based on fluid analysis results, intervals may need to be adjusted for your operating conditions. Consult your local John Deere dealer.

*PLUS-50 is a trademark of Deere & Company*  
*HY-GARD is a trademark of Deere & Company*

CS58540,0000068 -19-21JUL10-2/2

# Maintenance—As Required

## Check Tire Pressure

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

Always maintain the correct tire pressure. **DO NOT** inflate tires above the recommended pressure.

Inspect tires and wheels daily. **DO NOT** operate with low pressure, cuts, bubbles, damaged rims, or missing lug bolts.

Carefully inspect any tire and rim assembly that has been run flat or severely underinflated before reinflating the tire. Damage to the rim and tire may have developed. Call your authorized dealer or a qualified repair service to inspect the rim and tire assembly and make necessary repairs.

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

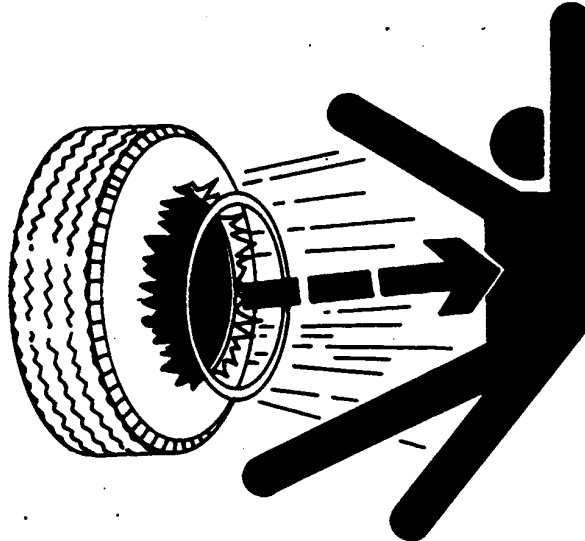
**NEVER** cut or weld on an inflated tire or rim assembly. Heat from welding could cause an increase in pressure and may result in tire explosion.

**Do not attempt to mount a tire if you do not have the proper equipment and experience to perform the job. Have it done by your authorized dealer or a qualified repair service.**

Check tire pressure with an accurate gauge having 7.0 kPa (0.07 bar) (1 psi) graduations.

1. Remove pipe cap (A).
2. Shut off air supply to hose.
3. Move gauge hand to correct pressure.
4. Lock air chuck on tire valve.
5. Turn on air supply. Stand to front or rear of tire when you add air to tire.
6. After tire is at correct pressure, shut off air supply. Release chuck. (See following Tire Pressure chart.)
7. Inspect tire for damage.

A—Pipe Cap



TSZ11 —UN—23AUG88



T108057B —UN—12MAR97



T87502 —UN—21OCT88

TX,55,JC1944 -19-11MAR97-1/1

**Maintenance—As Required**

**Tire Pressures (444J Z-Bars and High Lifts)**

The following tables indicate the recommended Tire Pressures (PSI) for 22,500 pound loader with 2.5 cubic yard bucket, handling 3400 pound per cubic yard material.

Recommended ply ratings for Bias Ply Tires and star ratings for Radial Tires in parenthesis.

Addition of fluids, water and/or calcium chloride does not affect recommended tire pressures.

To increase side-to-side stability, increase front tire pressures in 2 PSI increments.

To adjust fore-aft stability, increase or decrease rear tire pressures in 2 PSI increments.

See Tire Manufacturer's charts for detailed load, pressure and distance recommendations.

Size		Bridgestone			Firestone			General			Goodyear		
		Front	Rear	Ply Rating	Front	Rear	Ply Rating	Front	Rear	Ply Rating	Front	Rear	Ply Rating
15.5-25	L2, L2/E2, L2/E2/G2, L3, L3/E3, L3/E3/G3, L4, L5	400 kPa (4.00 bar) (58 psi)	276 kPa (2.76 bar) (33 psi)	12	400 kPa (4.00 bar) (58 psi)	276 kPa (2.76 bar) (33 psi)	12	400 kPa (4.00 bar) (58 psi)	276 kPa (2.76 bar) (33 psi)	12	400 kPa (4.00 bar) (58 psi)	276 kPa (2.76 bar) (33 psi)	12
17.5-25	L2, L2/E2, L2/E2/G2, L3, L3/E3, L3/E3/G3, L4, L5	303 kPa (3.03 bar) (44 psi)	152 kPa (1.52 bar) (22 psi)	12	303 kPa (3.03 bar) (44 psi)	152 kPa (1.52 bar) (22 psi)	12	303 kPa (3.03 bar) (44 psi)	152 kPa (1.52 bar) (22 psi)	12	303 kPa (3.03 bar) (44 psi)	152 kPa (1.52 bar) (22 psi)	12
20.5-25	L2, L2/E2, L2/E2/G2, L3, L3/E3, L3/E3/G3, L4, L5	276 kPa (2.76 bar) (33 psi)	110 kPa (1.10 bar) (16 psi)	12	276 kPa (2.76 bar) (33 psi)	110 kPa (1.10 bar) (16 psi)	12	276 kPa (2.76 bar) (33 psi)	110 kPa (1.10 bar) (16 psi)	12	276 kPa (2.76 bar) (33 psi)	110 kPa (1.10 bar) (16 psi)	12
28L-26	LS2				241 kPa (2.41 bar) (35 psi)	207 kPa (2.07 bar) (30 psi)	14						

Size		Bridgestone			Firestone			Goodyear			Michelin		
		Front	Rear	Star Rating	Front	Rear	Star Rating	Front	Rear	Star Rating	Front	Rear	Star Rating
15.5R25	L2, L2/E2, L2/E2/G2	503 kPa (5.03 bar) (73 psi)	234 kPa (2.34 bar) (34 psi)	*	503 kPa (5.03 bar) (73 psi)	234 kPa (2.34 bar) (34 psi)	*	503 kPa (5.03 bar) (73 psi)	234 kPa (2.34 bar) (34 psi)	*	448 kPa (4.48 bar) (65 psi)	200 kPa (2.00 bar) (29 psi)	*
	L3, L3/E3, L3/E3/G3, L4, L5	503 kPa (5.03 bar) (73 psi)	234 kPa (2.34 bar) (34 psi)	*	503 kPa (5.03 bar) (73 psi)	234 kPa (2.34 bar) (34 psi)	*	503 kPa (5.03 bar) (73 psi)	234 kPa (2.34 bar) (34 psi)	*	400 kPa (4.00 bar) (58 psi)	200 kPa (2.00 bar) (29 psi)	*
17.5R25	L2, L2/E2, L2/E2/G2	400 kPa (4.00 bar) (58 psi)	200 kPa (2.00 bar) (29 psi)	*	400 kPa (4.00 bar) (58 psi)	200 kPa (2.00 bar) (29 psi)	*	379 kPa (3.79 bar) (55 psi)	193 kPa (1.93 bar) (28 psi)	*	352 kPa (3.52 bar) (51 psi)	200 kPa (2.00 bar) (29 psi)	*
	L3, L3/E3, L3/E3/G3, L4, L5	400 kPa (4.00 bar) (58 psi)	200 kPa (2.00 bar) (29 psi)	*	400 kPa (4.00 bar) (58 psi)	200 kPa (2.00 bar) (29 psi)	*	379 kPa (3.79 bar) (55 psi)	193 kPa (1.93 bar) (28 psi)	*	303 kPa (3.03 bar) (44 psi)	200 kPa (2.00 bar) (29 psi)	*
550/65R25	L3							324 kPa (3.24 bar) (47 psi)	166 kPa (1.66 bar) (24 psi)	*	248 kPa (2.48 bar) (36 psi)	200 kPa (2.00 bar) (29 psi)	*
20.5R25	L2, L2/E2, L2/E2/G2	310 kPa (3.10 bar) (45 psi)	159 kPa (1.59 bar) (23 psi)	*	310 kPa (3.10 bar) (45 psi)	159 kPa (1.59 bar) (23 psi)	*	310 kPa (3.10 bar) (45 psi)	159 kPa (1.59 bar) (23 psi)	*	248 kPa (2.48 bar) (36 psi)	200 kPa (2.00 bar) (29 psi)	*
	L3, L3/E3, L3/E3/G3, L4, L5	310 kPa (3.10 bar) (45 psi)	159 kPa (1.59 bar) (23 psi)	*	310 kPa (3.10 bar) (45 psi)	159 kPa (1.59 bar) (23 psi)	*	310 kPa (3.10 bar) (45 psi)	159 kPa (1.59 bar) (23 psi)	*	200 kPa (2.00 bar) (29 psi)	200 kPa (2.00 bar) (29 psi)	*

**NOTE:** Tire shipping pressure may not be the same as tire operating pressure. You may change tire

pressures to suit working condition according to tire manufacturer's recommendations.

HG31779,000013A -19-25SEP02-1/1

### Tire Pressures (444J Powerlles and Tool Carriers)

The following tables indicate the recommended Tire Pressures (PSI) for 25,000 pound loader with 2.5 cubic yard bucket, handling 3400 pound per cubic yard material.

Recommended ply ratings for Bias Ply Tires and star ratings for Radial Tires in parenthesis.

Addition of fluids, water and/or calcium chloride does not affect recommended tire pressures.

To increase side-to-side stability, increase front tire pressures in 2 PSI increments.

To adjust fore-aft stability, increase or decrease rear tire pressures in 2 PSI increments.

See Tire Manufacturer's charts for detailed load, pressure and distance recommendations.

Size		Bridgestone			Firestone			General			Goodyear		
		Front	Rear	Ply Rating	Front	Rear	Ply Rating	Front	Rear	Ply Rating	Front	Rear	Ply Rating
17.5-25	L2, L2/E2, L2/E2/G2, L3, L3/E3, L3/E3/G3, L4, L5	352 kPa (3.52 bar) (51 psi)	179 kPa (1.79 bar) (26 psi)	12	352 kPa (3.52 bar) (51 psi)	179 kPa (1.79 bar) (26 psi)	12	352 kPa (3.52 bar) (51 psi)	179 kPa (1.79 bar) (26 psi)	12	352 kPa (3.52 bar) (51 psi)	179 kPa (1.79 bar) (26 psi)	12
20.5-25	L2, L2/E2, L2/E2/G2, L3, L3/E3, L3/E3/G3, L4, L5	228 kPa (2.28 bar) (33 psi)	110 kPa (1.10 bar) (16 psi)	12	228 kPa (2.28 bar) (33 psi)	110 kPa (1.10 bar) (16 psi)	12	228 kPa (2.28 bar) (33 psi)	110 kPa (1.10 bar) (16 psi)	12	228 kPa (2.28 bar) (33 psi)	110 kPa (1.10 bar) (16 psi)	12
28L-26	LS2				241 kPa (2.41 bar) (35 psi)	207 kPa (2.07 bar) (30 psi)	14						

Size		Bridgestone			Firestone			Goodyear			Michelin		
		Front	Rear	Star Rating	Front	Rear	Star Rating	Front	Rear	Star Rating	Front	Rear	Star Rating
17.5R25	L2, L2/E2, L2/E2/G2	414 kPa (4.14 bar) (60 psi)	207 kPa (2.07 bar) (30 psi)	*	414 kPa (4.14 bar) (60 psi)	207 kPa (2.07 bar) (30 psi)	*	414 kPa (4.14 bar) (60 psi)	207 kPa (2.07 bar) (30 psi)	*	352 kPa (3.52 bar) (51 psi)	200 kPa (2.00 bar) (29 psi)	*
	L3, L3/E3, L3/E3/G3, L4, L5	414 kPa (4.14 bar) (60 psi)	207 kPa (2.07 bar) (30 psi)	*	414 kPa (4.14 bar) (60 psi)	207 kPa (2.07 bar) (30 psi)	*	414 kPa (4.14 bar) (60 psi)	207 kPa (2.07 bar) (30 psi)	*	303 kPa (3.03 bar) (44 psi)	200 kPa (2.00 bar) (29 psi)	*
550/65R25	L3							324 kPa (3.24 bar) (47 psi)	166 kPa (1.66 bar) (24 psi)	*	303 kPa (3.03 bar) (44 psi)	200 kPa (2.00 bar) (29 psi)	*
600/65R25	L3							324 kPa (3.24 bar) (47 psi)	166 kPa (1.66 bar) (24 psi)	*	241 kPa (2.41 bar) (35 psi)	200 kPa (2.00 bar) (29 psi)	*
20.5R25	L2, L2/E2, L2/E2/G2	345 kPa (3.45 bar) (50 psi)	172 kPa (1.72 bar) (25 psi)	*	345 kPa (3.45 bar) (50 psi)	172 kPa (1.72 bar) (25 psi)	*	345 kPa (3.45 bar) (50 psi)	172 kPa (1.72 bar) (25 psi)	*	296 kPa (2.96 bar) (43 psi)	200 kPa (2.00 bar) (29 psi)	*
	L3, L3/E3, L3/E3/G3, L4, L5	345 kPa (3.45 bar) (50 psi)	172 kPa (1.72 bar) (25 psi)	*	345 kPa (3.45 bar) (50 psi)	172 kPa (1.72 bar) (25 psi)	*	345 kPa (3.45 bar) (50 psi)	172 kPa (1.72 bar) (25 psi)	*	248 kPa (2.48 bar) (36 psi)	200 kPa (2.00 bar) (29 psi)	*

NOTE: Tire shipping pressure may not be the same as tire operating pressure. You may change tire

pressures to suit working condition according to tire manufacturer's recommendations.

HG31779,000013A -19-25SEP02-1/1



### Tire Pressures (544J Z-Bars and High Lifts)

The following tables indicate the recommended Tire Pressures (PSI) for 26,000 pound loader with 3 cubic yard bucket, handling 3400 pound per cubic yard material.

Recommended ply ratings for Bias Ply Tires and star ratings for Radial Tires in parenthesis.

Addition of fluids, water and/or calcium chloride does not affect recommended tire pressures.

To increase side-to-side stability, increase front tire pressures in 2 PSI increments.

To adjust fore-aft stability, increase or decrease rear tire pressures in 2 PSI increments.

See Tire Manufacturer's charts for detailed load, pressure and distance recommendations.

Size		Bridgestone			Firestone			General			Goodyear		
		Front	Rear	Ply Rating	Front	Rear	Ply Rating	Front	Rear	Ply Rating	Front	Rear	Ply Rating
17.5-25	L2, L2/E2, L2/E2/G2, L3, L3/E3, L3/E3/G3, L4, L5	400 kPa (4.00 bar) (58 psi)	200 kPa (2.00 bar) (29 psi)	14	400 kPa (4.00 bar) (58 psi)	200 kPa (2.00 bar) (29 psi)	14	400 kPa (4.00 bar) (58 psi)	200 kPa (2.00 bar) (29 psi)	14	400 kPa (4.00 bar) (58 psi)	200 kPa (2.00 bar) (29 psi)	14
20.5-25	L2, L2/E2, L2/E2/G2, L3, L3/E3, L3/E3/G3, L4, L5	248 kPa (2.48 bar) (36 psi)	124 kPa (1.24 bar) (18 psi)	12	248 kPa (2.48 bar) (36 psi)	124 kPa (1.24 bar) (18 psi)	12	248 kPa (2.48 bar) (36 psi)	124 kPa (1.24 bar) (18 psi)	12	248 kPa (2.48 bar) (36 psi)	124 kPa (1.24 bar) (18 psi)	12
23.1-26	LS2				276 kPa (2.76 bar) (40 psi)	241 kPa (2.41 bar) (35 psi)	10						
28L-26	LS2				241 kPa (2.41 bar) (35 psi)	207 kPa (2.07 bar) (30 psi)	14						

Size		Bridgestone			Firestone			Goodyear			Michelin		
		Front	Rear	Star Rating	Front	Rear	Star Rating	Front	Rear	Star Rating	Front	Rear	Star Rating
17.5R25	L2, L2/E2, L2/E2/G2	476 kPa (4.76 bar) (69 psi)	241 kPa (2.41 bar) (35 psi)	*	476 kPa (4.76 bar) (69 psi)	241 kPa (2.41 bar) (35 psi)	*	483 kPa (4.83 bar) (70 psi)	241 kPa (2.41 bar) (35 psi)	*	400 kPa (4.00 bar) (58 psi)	200 kPa (2.00 bar) (29 psi)	*
	L3, L3/E3, L3/E3/G3, L4, L5	476 kPa (4.76 bar) (69 psi)	241 kPa (2.41 bar) (35 psi)	*	476 kPa (4.76 bar) (69 psi)	241 kPa (2.41 bar) (35 psi)	*	483 kPa (4.83 bar) (70 psi)	241 kPa (2.41 bar) (35 psi)	*	352 kPa (3.52 bar) (51 psi)	200 kPa (2.00 bar) (29 psi)	*
600/65R25	L3, E3							324 kPa (3.24 bar) (47 psi)	166 kPa (1.66 bar) (24 psi)	*	310 kPa (3.10 bar) (45 psi)	206 kPa (2.06 bar) (30 psi)	
20.5R25	L2, L2/E2, L2/E2/G2	345 kPa (3.45 bar) (50 psi)	172 kPa (1.72 bar) (25 psi)	*	345 kPa (3.45 bar) (50 psi)	172 kPa (1.72 bar) (25 psi)	*	345 kPa (3.45 bar) (50 psi)	172 kPa (1.72 bar) (25 psi)	*	269 kPa (2.69 bar) (39 psi)	200 kPa (2.00 bar) (29 psi)	*
	L3, L3/E3, L3/E3/G3, L4, L5	345 kPa (3.45 bar) (50 psi)	172 kPa (1.72 bar) (25 psi)	*	345 kPa (3.45 bar) (50 psi)	172 kPa (1.72 bar) (25 psi)	*	345 kPa (3.45 bar) (50 psi)	172 kPa (1.72 bar) (25 psi)	*	221 kPa (2.21 bar) (32 psi)	200 kPa (2.00 bar) (29 psi)	*

**NOTE:** Tire shipping pressure may not be the same as tire operating pressure. You may change tire

pressures to suit working condition according to tire manufacturer's recommendations.

HG31779,0000332 -19-25NOV03-1/1

### Tire Pressures (544J Powerlles and Tool Carriers)

The following tables indicate the recommended Tire Pressures (PSI) for 30,000 pound loader with 3 cubic yard bucket, handling 3400 pound per cubic yard material.

Recommended ply ratings for Bias Ply Tires and star ratings for Radial Tires in parenthesis.

Addition of fluids, water and/or calcium chloride does not affect recommended tire pressures.

To increase side-to-side stability, increase front tire pressures in 2 PSI increments.

To adjust fore-aft stability, increase or decrease rear tire pressures in 2 PSI increments.

See Tire Manufacturer's charts for detailed load, pressure and distance recommendations.

Size		Bridgestone			Firestone			General			Goodyear		
		Front	Rear	Ply Rating	Front	Rear	Ply Rating	Front	Rear	Ply Rating	Front	Rear	Ply Rating
17.5-25	L2, L2/E2, L2/E2/G2, L3, L3/E3, L3/E3/G3, L4, L5	476 kPa (4.76 bar) (69 psi)	241 kPa (2.41 bar) (35 psi)	16	476 kPa (4.76 bar) (69 psi)	241 kPa (2.41 bar) (35 psi)	16	476 kPa (4.76 bar) (69 psi)	241 kPa (2.41 bar) (35 psi)	16	476 kPa (4.76 bar) (69 psi)	241 kPa (2.41 bar) (35 psi)	16
20.5-25	L2, L2/E2, L2/E2/G2, L3, L3/E3, L3/E3/G3, L4, L5	303 kPa (3.03 bar) (44 psi)	152 kPa (1.52 bar) (22 psi)	16	303 kPa (3.03 bar) (44 psi)	152 kPa (1.52 bar) (22 psi)	16	303 kPa (3.03 bar) (44 psi)	152 kPa (1.52 bar) (22 psi)	16	303 kPa (3.03 bar) (44 psi)	152 kPa (1.52 bar) (22 psi)	16
23.1-26	LS2				310 kPa (3.10 bar) (45 psi)	241 kPa (2.41 bar) (35 psi)	10						
28L-26	LS2				276 kPa (2.76 bar) (40 psi)	207 kPa (2.07 bar) (30 psi)	14						

Size		Bridgestone			Firestone			Goodyear			Michelin		
		Front	Rear	Star Rating	Front	Rear	Star Rating	Front	Rear	Star Rating	Front	Rear	Star Rating
17.5R25	L2, L2/E2, L2/E2/G2	572 kPa (5.72 bar) (83 psi)	290 kPa (2.90 bar) (42 psi)	**	572 kPa (5.72 bar) (83 psi)	324 kPa (3.24 bar) (47 psi)	**	552 kPa (5.52 bar) (80 psi)	276 kPa (2.76 bar) (40 psi)	**	496 kPa (4.96 bar) (72 psi)	248 kPa (2.48 bar) (36 psi)	*
	L3, L3/E3, L3/E3/G3, L4, L5	572 kPa (5.72 bar) (83 psi)	290 kPa (2.90 bar) (42 psi)	**	572 kPa (5.72 bar) (83 psi)	324 kPa (3.24 bar) (47 psi)	**	552 kPa (5.52 bar) (80 psi)	276 kPa (2.76 bar) (40 psi)	**	448 kPa (4.48 bar) (65 psi)	248 kPa (2.48 bar) (36 psi)	*
600/65R25	L3,E3							324 kPa (3.24 bar) (47 psi)	166 kPa (1.66 bar) (24 psi)	*	310 kPa (3.10 bar) (45 psi)	207 kPa (2.07 bar) (30 psi)	*
20.5R25	L2, L2/E2, L2/E2/G2	379 kPa (3.79 bar) (55 psi)	207 kPa (2.07 bar) (30 psi)	**	379 kPa (3.79 bar) (55 psi)	207 kPa (2.07 bar) (30 psi)	**	379 kPa (3.79 bar) (55 psi)	207 kPa (2.07 bar) (30 psi)	**	352 kPa (3.52 bar) (51 psi)	200 kPa (2.00 bar) (29 psi)	*
	L3, L3/E3, L3/E3/G3, L4, L5	379 kPa (3.79 bar) (55 psi)	207 kPa (2.07 bar) (30 psi)	*	379 kPa (3.79 bar) (55 psi)	207 kPa (2.07 bar) (30 psi)	*	379 kPa (3.79 bar) (55 psi)	207 kPa (2.07 bar) (30 psi)	*	303 kPa (3.03 bar) (44 psi)	200 kPa (2.00 bar) (29 psi)	*

NOTE: Tire shipping pressure may not be the same as tire operating pressure. You may change tire

pressures to suit working condition according to tire manufacturer's recommendations.

HG31779,000013A -19-25SEP02-1/1

### Tire Pressures (624J Z-Bars and High Lifts)

The following tables indicate the recommended Tire Pressures (PSI) for 30,000 pound loader with 3.5 cubic yard bucket, handling 3400 pound per cubic yard material.

Recommended ply ratings for Bias Ply Tires and star ratings for Radial Tires in parenthesis.

Addition of fluids, water and/or calcium chloride does not affect recommended tire pressures.

To increase side-to-side stability, increase front tire pressures in 2 PSI increments.

To adjust fore-aft stability, increase or decrease rear tire pressures in 2 PSI increments.

See Tire Manufacturer's charts for detailed load, pressure and distance recommendations.

Size		Bridgestone			Firestone			General			Goodyear		
		Front	Rear	Ply Rating	Front	Rear	Ply Rating	Front	Rear	Ply Rating	Front	Rear	Ply Rating
20.5-25	L2, L2/E2, L2/E2/G2, L3, L3/E3, L3/E3/G3, L4, L5	352 kPa (3.52 bar) (51 psi)	179 kPa (1.79 bar) (26 psi)	16	352 kPa (3.52 bar) (51 psi)	179 kPa (1.79 bar) (26 psi)	16	324 kPa (3.24 bar) (47 psi)	159 kPa (1.59 bar) (23 psi)	16	324 kPa (3.24 bar) (47 psi)	159 kPa (1.59 bar) (23 psi)	16
28L-26	LS2				276 kPa (2.76 bar) (40 psi)	241 kPa (2.41 bar) (35 psi)	14						

Size		Bridgestone			Firestone			Goodyear			Michelin		
		Front	Rear	Star Rating	Front	Rear	Star Rating	Front	Rear	Star Rating	Front	Rear	Star Rating
650/65R25	L3, E3							324 kPa (3.24 bar) (47 psi)	166 kPa (1.66 bar) (24 psi)	*	296 kPa (2.96 bar) (43 psi)	200 kPa (2.00 bar) (29 psi)	*
20.5R25	L2, L2/E2, L2/E2/G2	400 kPa (4.00 bar) (58 psi)	200 kPa (2.00 bar) (29 psi)	*	400 kPa (4.00 bar) (58 psi)	200 kPa (2.00 bar) (29 psi)	*	379 kPa (3.79 bar) (55 psi)	193 kPa (1.93 bar) (28 psi)	*	352 kPa (3.52 bar) (51 psi)	200 kPa (2.00 bar) (29 psi)	*
	L3, L3/E3, L3/E3/G3, L4, L5	400 kPa (4.00 bar) (58 psi)	200 kPa (2.00 bar) (29 psi)	*	400 kPa (4.00 bar) (58 psi)	200 kPa (2.00 bar) (29 psi)	*	379 kPa (3.79 bar) (55 psi)	193 kPa (1.93 bar) (28 psi)	*	303 kPa (3.03 bar) (44 psi)	200 kPa (2.00 bar) (29 psi)	*

**NOTE:** Tire shipping pressure may not be the same as tire operating pressure. You may change tire

pressures to suit working condition according to tire manufacturer's recommendations.

HG31779,0000333 -19-25NOV03-1/1

### Tire Pressures (624J Powerlles and Tool Carriers)

The following tables indicate the recommended Tire Pressures (PSI) for 35,000 pound loader with 3.5 cubic yard bucket, handling 3400 pound per cubic yard material.

Recommended ply ratings for Bias Ply Tires and star ratings for Radial Tires in parenthesis.

Addition of fluids, water and/or calcium chloride does not affect recommended tire pressures.

To increase side-to-side stability, increase front tire pressures in 2 PSI increments.

To adjust fore-aft stability, increase or decrease rear tire pressures in 2 PSI increments.

See Tire Manufacturer's charts for detailed load, pressure and distance recommendations.

Size		Bridgestone			Firestone			General			Goodyear		
		Front	Rear	Ply Rating	Front	Rear	Ply Rating	Front	Rear	Ply Rating	Front	Rear	Ply Rating
20.5-25	L2, L2/E2, L2/E2/G2, L3, L3/E3, L3/E3/G3, L4, L5	372 kPa (3.72 bar) (54 psi)	186 kPa (1.86 bar) (27 psi)	16	372 kPa (3.72 bar) (54 psi)	186 kPa (1.86 bar) (27 psi)	16	372 kPa (3.72 bar) (54 psi)	186 kPa (1.86 bar) (27 psi)	16	372 kPa (3.72 bar) (54 psi)	186 kPa (1.86 bar) (27 psi)	16
28L-26	LS2				310 kPa (3.10 bar) (45 psi)	241 kPa (2.41 bar) (35 psi)	14						

Size		Bridgestone			Firestone			Goodyear			Michelin		
		Front	Rear	Star Rating	Front	Rear	Star Rating	Front	Rear	Star Rating	Front	Rear	Star Rating
600/65R25	L3,E3							324 kPa (3.24 bar) (47 psi)	166 kPa (1.66 bar) (24 psi)	*	352 kPa (3.52 bar) (51 psi)	200 kPa (2.00 bar) (29 psi)	*
20.5R25	L2, L2/E2, L2/E2/G2	448 kPa (4.48 bar) (65 psi)	228 kPa (2.28 bar) (33 psi)	*	448 kPa (4.48 bar) (65 psi)	228 kPa (2.28 bar) (33 psi)	*	448 kPa (4.48 bar) (65 psi)	228 kPa (2.28 bar) (33 psi)	*	400 kPa (4.00 bar) (58 psi)	200 kPa (2.00 bar) (29 psi)	*
	L3, L3/E3, L3/E3/G3, L4, L5	448 kPa (4.48 bar) (65 psi)	228 kPa (2.28 bar) (33 psi)	*	448 kPa (4.48 bar) (65 psi)	228 kPa (2.28 bar) (33 psi)	*	448 kPa (4.48 bar) (65 psi)	228 kPa (2.28 bar) (33 psi)	*	352 kPa (3.52 bar) (51 psi)	200 kPa (2.00 bar) (29 psi)	*

**NOTE:** Tire shipping pressure may not be the same as tire operating pressure. You may change tire

pressures to suit working condition according to tire manufacturer's recommendations.

HG31779,000013A -19-25SEP02-1/1

**Tighten Wheel Retainer Nuts**

*that, tighten as required. Threads should be clean and lightly oiled.*

*NOTE: Tighten nuts after first 10 hours, then again after first 50 hours of loaded operation. After*

Item	Measurement	Specification
444J (S.N.–604689), 544J/624J Wheel Nut — During Inspection	Torque	501 N·m 370 lb-ft
444J (S.N. 604690–) Wheel Nut — During Inspection	Torque	580 N·m 428 lb-ft
444J (S.N.–604689), 544J/624J Wheel Nut — If Servicing Wheels	Torque	624 N·m 460 lb-ft
444J (S.N. 604690–) Wheel Nut — If Servicing Wheels	Torque	725 N·m 535 lb-ft

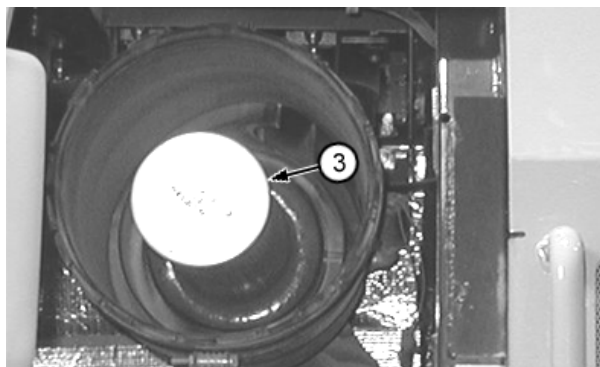
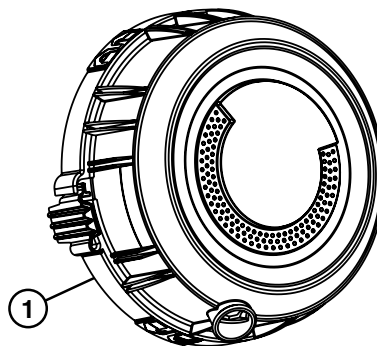
MM61211,0001431 -19-16MAR06-1/1

### Clean or Replace Air Cleaner Elements

1. Lift and hold lever (1) to unlock cover.
2. Rotate cover counterclockwise and remove cover.
3. Remove primary element (2).
4. Remove secondary element (3).
5. Clean air cleaner canister.
6. Install new filter elements into housing one at a time making sure secondary element is centered in canister.
7. Attach cover by rotating clockwise until lock arrows on body and cover are aligned.

1—Lever  
2—Primary Element

3—Secondary Element



T200914—UN—15JUN04

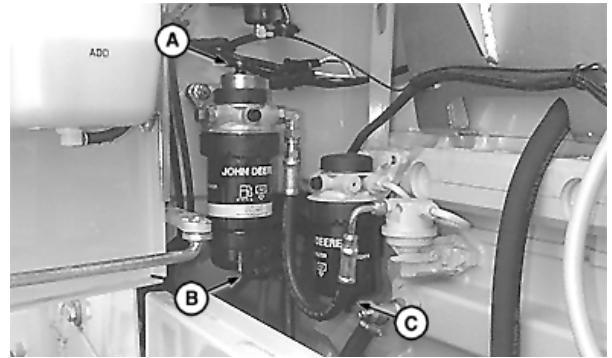
T196122A—UN—07NOV03

T196123A—UN—07NOV03

HG31779,00002E1 -19-26JUN03-1/1

### Drain and Clean Primary Fuel Filter

1. Open left engine side shield to access primary fuel filter.
2. Put container under drain valves (B and C).
3. Rotate retaining ring around filter element counterclockwise 1/4 turn. Lifting ring as it is rotated helps get it past retaining detent. Ring should drop down and release filter from base.
4. Remove hand primer (A) from fuel filter base. Disassemble hand primer assembly and clean out any debris.



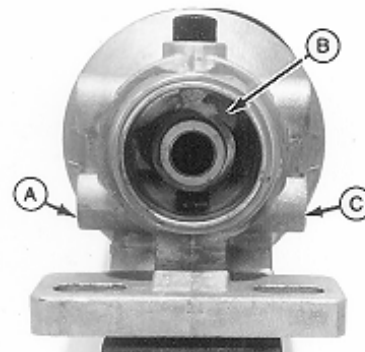
444J Shown

T117049 —UN—10SEP98

- |  |  |
|--|--|
| <b>A—Hand Primer</b>                       | <b>C—Drain Valve (Final Fuel Filter)</b> |
| <b>B—Drain Valve (Primary Fuel Filter)</b> |  |

AM40430.00002F4 -19-20JAN06-1/2

5. Remove fuel inlet line (A) and fuel drain plug (C).
6. Flush any debris from filter base (B).
7. Install fuel inlet drain plug and fuel inlet line.
8. Assemble primer assembly and install onto fuel filter base.
9. Install filter element to fuel filter base.
10. Bleed fuel system.
11. Close side shield.
12. Dispose of waste properly.



- |                          |                          |
|--------------------------|--------------------------|
| <b>A—Fuel Inlet line</b> | <b>C—Fuel Drain Plug</b> |
| <b>B—Filter Base</b>     |                          |

T8387AD —UN—17DEC94

AM40430.00002F4 -19-20JAN06-2/2

### Check Cab Fresh Air Filter—If Equipped With Cab

1. Open cab fresh air filter door by pulling up on lever (A) to the left of the operator's seat.

- A—Lever**



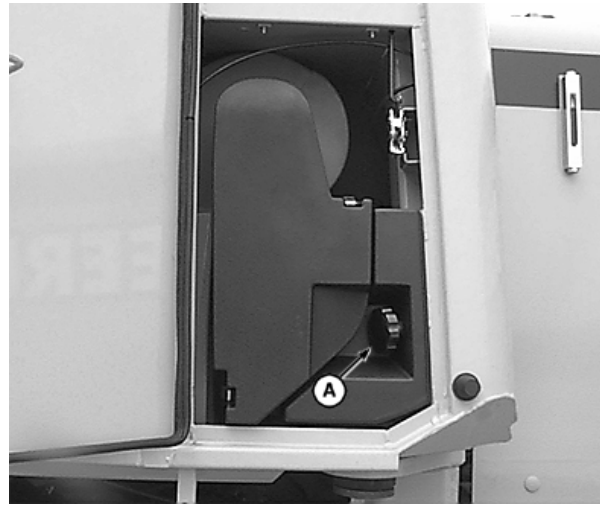
T1105479B —UN—12DEC96

Continued on next page

TX,70,JC2295 -19-03SEP98-1/3

2. Remove filter assembly by turning knob (A).

A—Knob



T117050—UN—10SEP98

Continued on next page

TX,70,JC2295 -19-03SEP98-2/3



**NOTE:** If operating in dusty conditions, cab fresh air filter should be checked and cleaned as necessary.

3. Release clips (B).
4. Remove filter (C). Replace if damaged.
5. Clean filter in one of these ways:

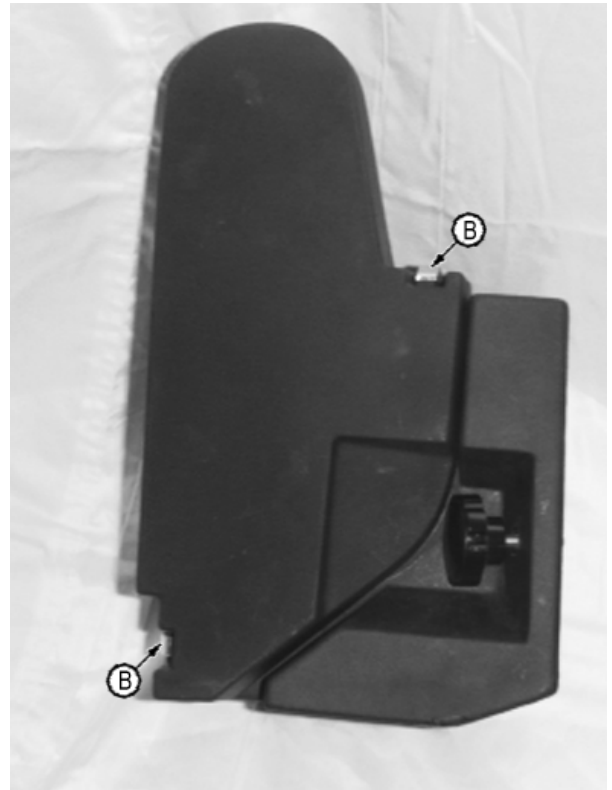
**⚠ CAUTION:** Prevent possible injury from flying chips if compressed air is more than 210 kPa (2.1 bar) (30 psi). Reduce compressed air to less than 210 kPa (2.1 bar) (30 psi) when using for cleaning purposes. Clear area of bystanders, guard against flying chips, and wear personal protection equipment including eye protection.

- Tap filter on a flat surface with the dirty side down.
- Use compressed air opposite to the normal air flow.
- Wash the filter in warm, soapy water. Flush the filter. Let it dry before using the heater, defroster, or air conditioner.

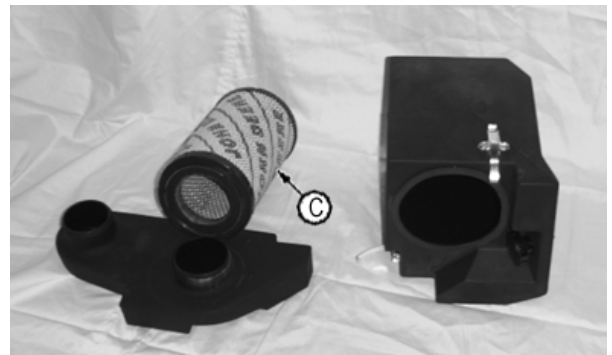
6. Remove dust from filter housing.
7. Install filter and filter duct work.
8. Install filter assembly. Close cab fresh air filter door.

B—Clip (2 used)

C—Filter



T105493B —UN—12DEC96



T105494B —UN—12DEC96

TX,70,JC2295 -19-03SEP98-3/3

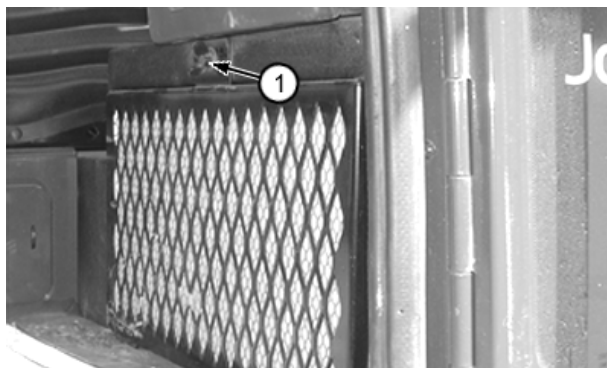
### Check Cab Recirculating Air Filter—If Equipped With Cab

*NOTE: The cab recirculating air filter is located next to the seat.*

1. Loosen wing bolt (1) holding grille. Remove grille.
2. Remove filter.

**⚠ CAUTION:** Prevent possible injury from flying chips if compressed air is more than 210 kPa (2.1 bar) (30 psi). Reduce compressed air to less than 210 kPa (2.1 bar) (30 psi) when using for cleaning purposes. Clear area of bystanders, guard against flying chips, and wear personal protection equipment including eye protection.

3. Clean filter in one of these ways:
  - Tap it on a flat surface with the dirty side down.
  - Use compressed air opposite to the normal air flow.
4. Install filter.
5. Install grille.



1—Wing Bolt

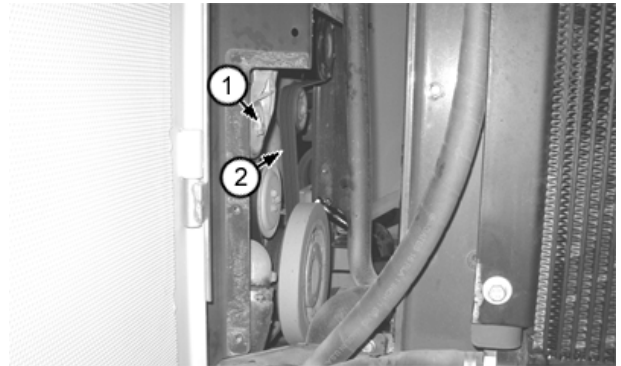
T159520B—UN—18SEP02

HG31779,0000121 -19-18SEP02-1/1

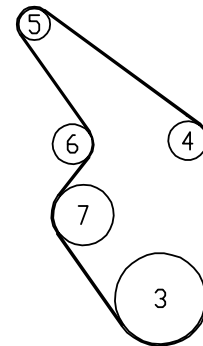
### Inspect Serpentine Belt

1. Open cooling package left access door.
2. Check belt (2) regularly for cracks, frayed edges, or wear at bottom of grooves.
3. Remove rear engine access panel.
4. Hold tension adjuster assembly (1) away from belt while removing old belt and installing new belt.
5. Install rear engine access panel.

- |                            |                               |
|----------------------------|-------------------------------|
| 1— Belt Tensioner Assembly | 5— Alternator Pulley          |
| 2— Belt                    | 6— Belt Tensioner             |
| 3— Crankshaft Pulley       | 7— Water Pump                 |
| 4— Idler                   | 8— Air Conditioner Compressor |



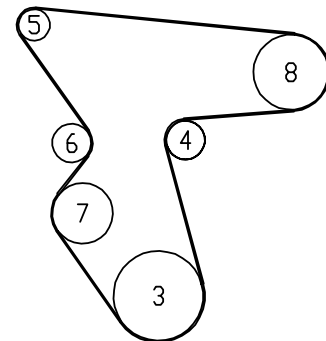
T195677A —UN—24OCT03



T195684

Belt Routing Without Air Conditioning

T195684 —UN—07NOV03



T195685

Belt Routing With Air Conditioning

T195685 —UN—07NOV03

HG31779,0000331 -19-17NOV03-1/1

### Replace Final Fuel Filter

1. Turn filter locking ring (A) counterclockwise to remove filter. Allow sediment to drain into a container. Dispose of waste properly.
2. Clean filter base.
3. Install new filter. (Follow instructions on filter.)
4. Bleed fuel system.

- A—Filter Locking Ring



444J Shown

T117066 —UN—10SEP98

HG31779,00002EB -19-26JUN03-1/1

# Maintenance—Every 10 Hours or Daily

## Check Recovery Tank Coolant Level

With the engine cold, coolant level must be between FULL and ADD marks on the recovery tank.

If coolant is below the ADD mark, add coolant to the recovery tank.

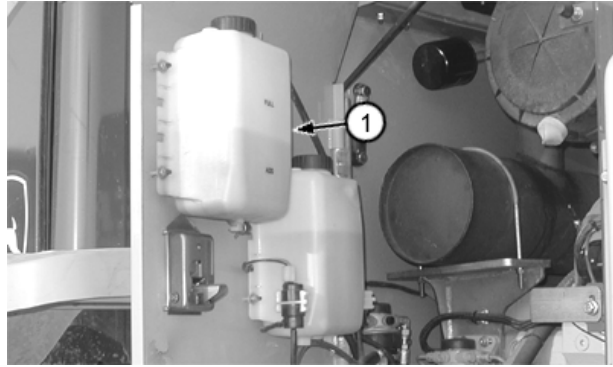
**CAUTION:** Prevent possible injury from hot spraying coolant. **DO NOT** remove radiator filler cap unless engine is cool. Then turn cap slowly to the stop. Release all pressure before you remove cap.

If coolant recovery tank (1) is empty, check for leaks. Repair as required. Add coolant to the radiator and the recovery tank.

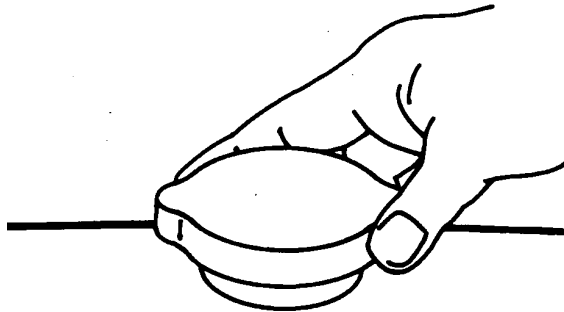
*NOTE: If recovery tank is full and radiator is low, check for leaks in radiator cap and hose connections between radiator and coolant recovery tank.*

Coolant level must be at bottom of the filler neck.

1—Coolant Recovery Tank



T192360B —UN—18SEP03



Radiator Cap

T6274AQ —UN—18OCT88

HG31779,00002BB -19-19JUN03-1/1

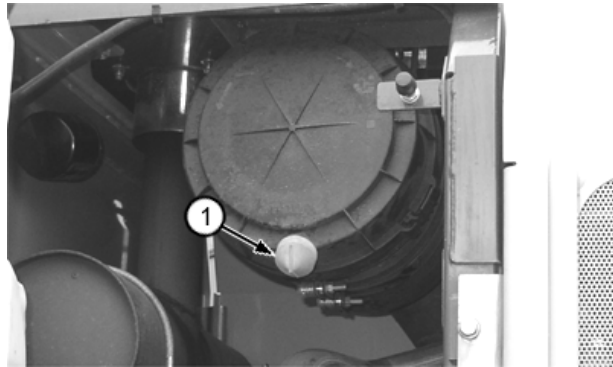
## Clean Air Cleaner Dust Unloader Valve

**IMPORTANT:** A missing, damaged, or hardened dust unloader valve will make the dust cup precleaner ineffective, causing very short element life. Valve should suck closed above 1/3 engine speed.

Squeeze dust valve (1) to remove dust from the air cleaner.

If operating in high dust conditions, squeeze dust valve every couple of hours of operation to release dust.

1—Dust Valve



T195376A —UN—03OCT03

HG31779,00002E5 -19-26JUN03-1/1

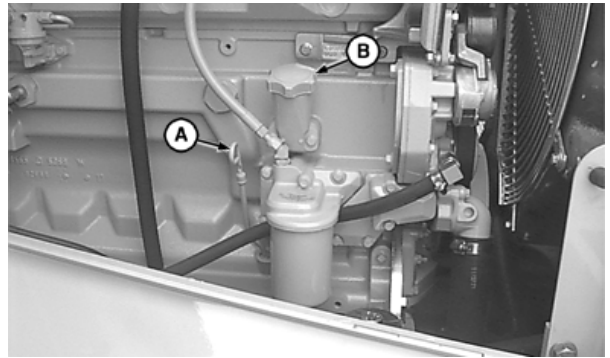
## Check Engine Oil Level

**IMPORTANT:** If oil level is low, the engine can be damaged. **DO NOT** operate the engine when oil level is below the **ADD** mark.

The most accurate oil level reading is obtained when the engine is cold, before starting the engine for the day's operation.

1. Park machine on a level surface.
2. Push park brake switch to ON.
3. Make sure dipstick (A) is fully seated.
4. **BEFORE THE ENGINE IS STARTED:** The engine is full when oil level is in the cross hatched area. It is acceptable to run the engine when the oil level is above the **ADD** mark.

**AFTER THE ENGINE HAS BEEN RUN:** Allow the oil to drain into the oil pan for 10 minutes before checking the oil level. Ten minutes after shutdown the engine oil level must be above the **ADD** mark.



T117051—UN—11SEP98

**A—Dipstick**

**B—Filler Cap**

5. If necessary, remove filler cap (B) to add oil. See Diesel Engine Oil. (Section 3-1.)

CED.OUOE002,1723 -19-03SEP98-1/1

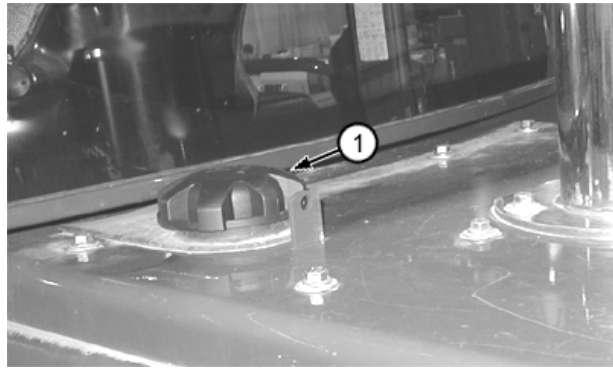
## Check Hydraulic Oil Level

**IMPORTANT: Prevent possible hydraulic pump damage. DO NOT operate engine without oil in the hydraulic reservoir.**

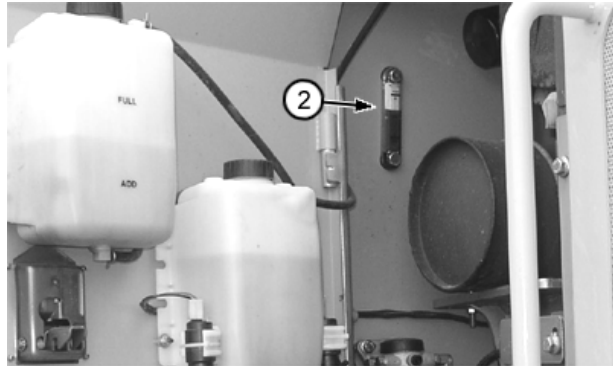
1. Park machine on a level surface.
2. Lower equipment to the ground.
3. When oil is cold, oil level must be in FULL range on sight glass (2).
4. If necessary, remove filler cap (1) and add oil. See Hydraulic Reservoir Oil. (Section 3-1.)
5. Install filler cap.

1— Filler Cap

2— Sight Glass



T196188A—UN—11NOV03



T192369A—UN—18SEP03

VD76477,00004FD -19-26JUN06-1/1

## Check Transmission Oil Level

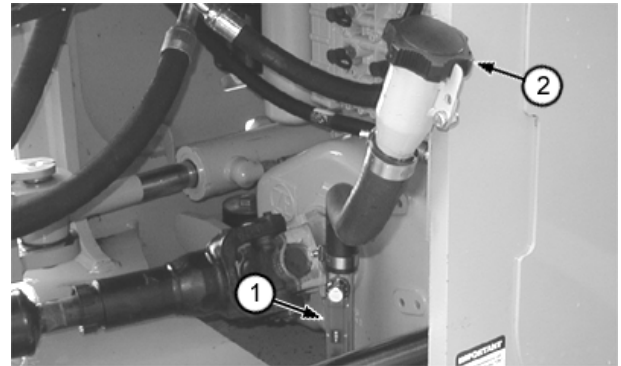
**IMPORTANT: Prevent possible transmission damage. DO NOT operate engine when transmission oil level is low.**

1. Before starting engine, check oil level on sight gauge (1). If oil level is higher than the sight gauge, there is sufficient oil to start the engine.
2. If necessary, add oil at filler tube (2). See Transmission, Park Brake, and Differential Oil. (Section 3-1.)
3. Start engine.
4. Engage service brakes. Move clutch cut-off switch to disengaged position.
5. Move auto transmission switch to "Off" position. Release park brake.
6. Move FNR to 3rd speed forward "3F" position.

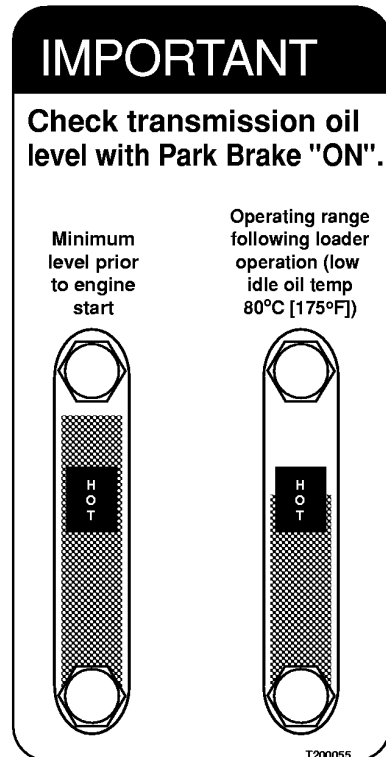
Operate engine at fast idle for 30 seconds. Reduce engine speed to slow idle and place FNR in neutral "N", for 15 seconds.

Repeat this step until transmission oil reaches normal operating temperature (approximately (80 °C) (175 °F)).

7. Move FNR to neutral "N". If equipped with column FNR, engage neutral lock. Lower all equipment to ground.
8. Push park brake switch to ON.
9. Release service brakes.
10. Allow 2 minutes for oil level to stabilize.
11. Check oil level with engine at slow idle. With oil at normal operating temperature, oil level should be between HOT marks on sight gauge.
12. If necessary, add oil. See Transmission, Park Brake, and Differential Oil. (Section 3-1.)



T159631B —UN—20SEP02



T161201 —19—01NOV02

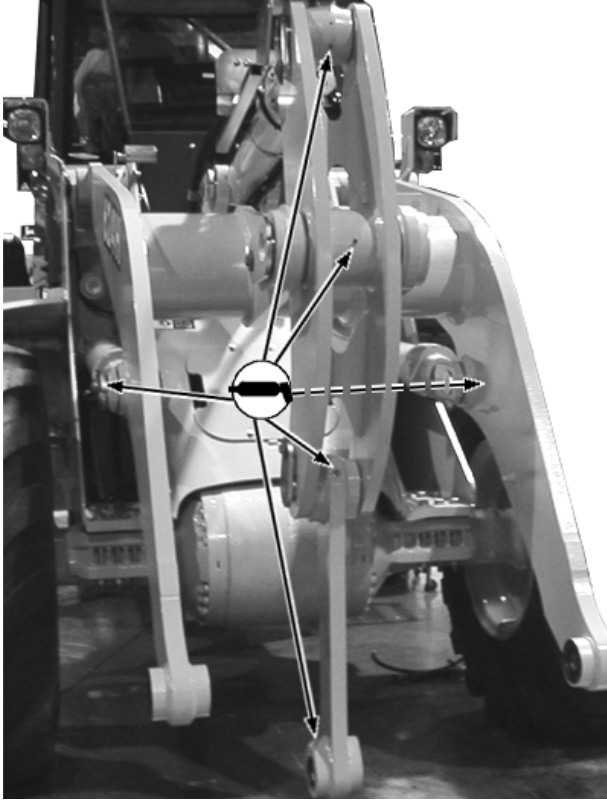
1— Sight Gauge

2— Filler Tube

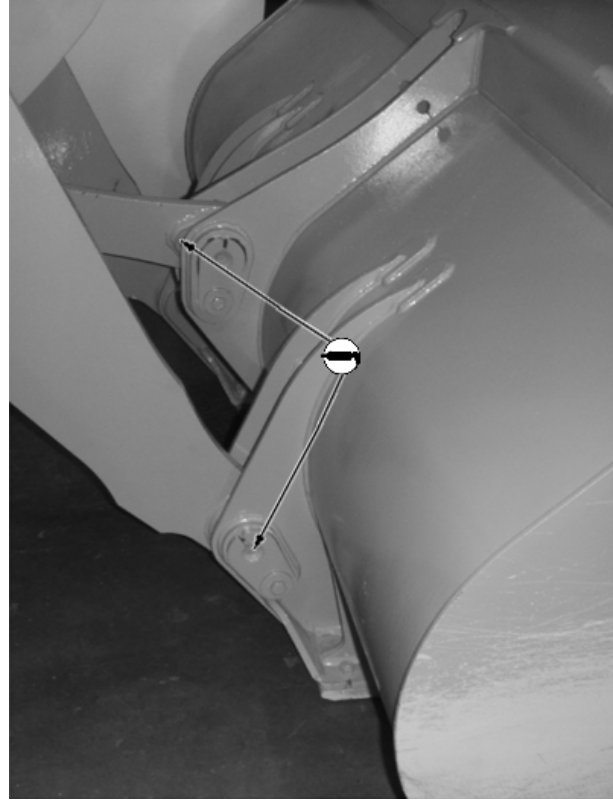
VD76477,00004FE -19-26JUN06-1/1

# Maintenance—Every 100 Hours

## Grease Loader Linkage and Cylinder Pivots



6 Points



3 Points, Right Side Shown

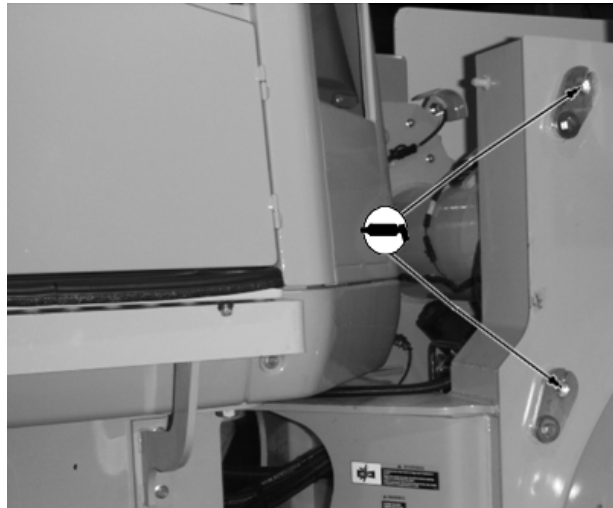
**⚠ CAUTION:** Prevent possible injury from unexpected machine movement. Install frame locking bar before lubricating.

### 444J, 544J, and 624J Loader Lubricating Points

Lower bucket flat on ground.

Lubricate following 13 points until grease escapes around seals. See Grease. (Section 3-1.)

Lubricate every 10 hours when operating in severe conditions such as deep mud, water, or snow.



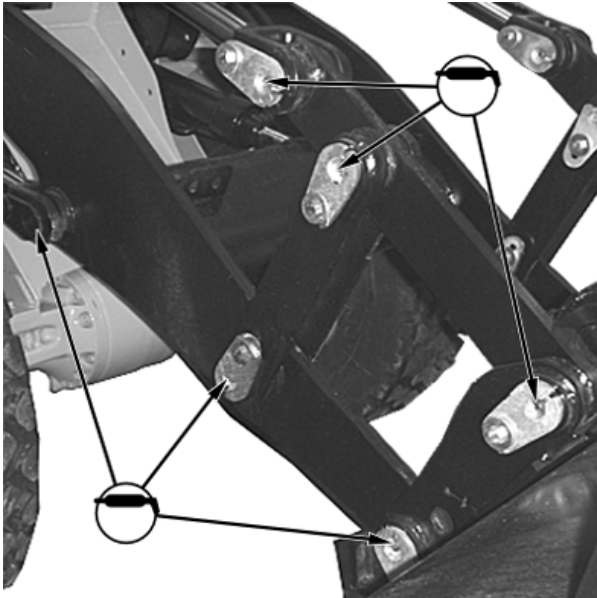
4 Points, Right Side Shown

Continued on next page

MM61211,0001515 -19-30MAR06-1/3



**444J, 544J, and 624J Tool Carrier Lubricating points**



12 Points, Right Side Shown

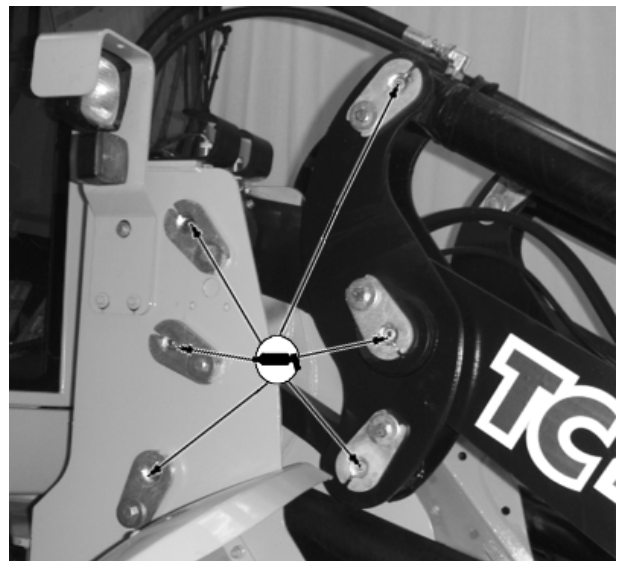


2 Points, Left Side Shown

Lower bucket flat on ground.

Lubricate following 26 points until grease escapes around seals. See Grease. (Section 3-1.)

Lubricate every 10 hours when operating in severe conditions such as deep mud, water, or snow.



12 Points, Right Side Shown

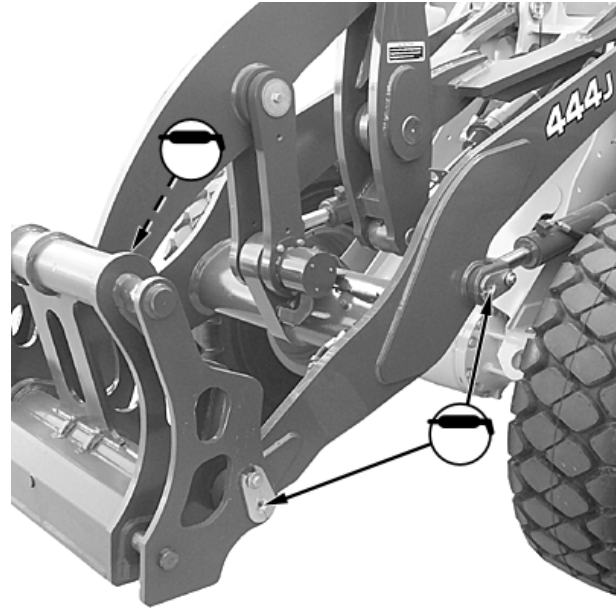
Continued on next page

MM61211,0001515 -19-30MAR06-2/3

### 444J, 544J, and 624J Powerllei Lubricating Points



7 Points, Right Side Shown



3 Points, Left Side Shown

Lower bucket flat on ground.

Lubricate following 13 points until grease escapes around seals. See Grease. (Section 3-1.)

Lubricate every 10 hours when operating in severe conditions such as deep mud, water, or snow.



3 Points, Left side Shown

MM61211,0001515 -19-30MAR06-3/3

### Grease Front Steering Cylinder Pivots

**⚠ CAUTION:** Prevent possible injury from unexpected machine movement. Install frame locking bar before lubricating.

Lubricate each point with three shots of grease. See Grease. (Section 3-1.)

Grease daily when operating in severe conditions such as deep mud, water or snow.



Two Points, Right Side Shown

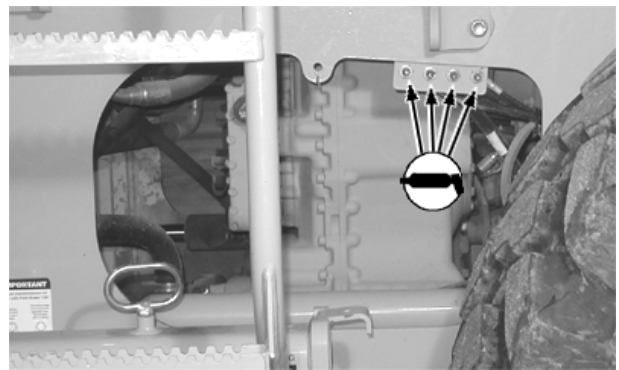
T106372B —UN—28JAN97

TX,70\_JC1817 -19-20JAN06-1/1

### Grease Oscillating Rear Axle and Rear Steering Cylinder Pivots

**⚠ CAUTION:** Prevent possible injury from unexpected machine movement. Install frame locking bar before lubricating.

Lubricate oscillating rear axle with 10 shots of grease and rear steering cylinder pivots with three shots of grease. See Grease. (Section 3-1.) Grease daily when operating in severe conditions such as deep mud, water, or snow.



Four Points

T196189A —UN—11NOV03

HG31779,00002E8 -19-20JAN06-1/1

# Maintenance—Initial Service - 250 Hours

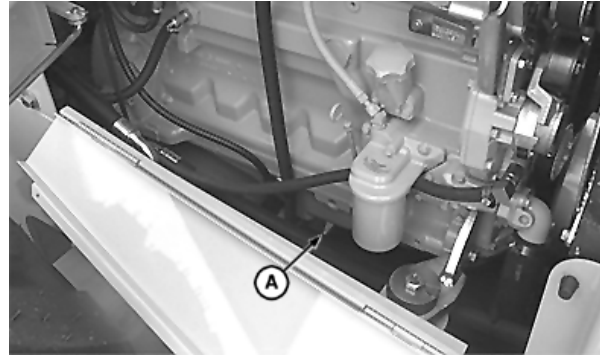
## Change Engine Break-In Oil and Replace Filter

**IMPORTANT:** If fuel sulphur content exceeds 0.5 percent, change engine oil at 1/2 the normal interval.

1. Run engine to warm oil.
2. Park machine on a level surface.
3. Lower equipment to ground.
4. Move FNR to neutral "N". If equipped with column FNR, engage neutral lock.

**CAUTION:** Prevent possible injury from unexpected machine movement. Machine can unexpectedly roll or move under power, resulting in death or serious injury. Always turn engine off or push park brake switch to ON to hold machine.

5. Push park brake switch to ON.
6. Turn key switch to "Off".



T117053—UN—10SEP98

A—Engine Oil Drain Valve

*NOTE:* Drain located at front left corner of fuel tank cradle.

7. Open drain valve (A). Allow oil to drain into a container. Dispose of waste oil properly.

VD76477,00004E3 -19-20JUN06-1/2

8. Turn filter (C) counterclockwise to remove.
9. Clean mounting surface. Apply thin film of oil to gasket of new filter.

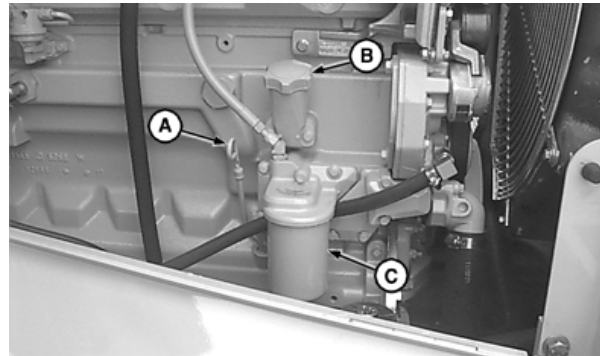
*NOTE:* Before installing filter, to assure proper lubrication at start-up, fill the engine oil filter with engine oil.

10. Install new filter. Turn filter clockwise by hand until gasket touches mounting surface.
11. Tighten 1/2—1 turn more.
12. Tighten drain valve.
13. Remove filler cap (B).
14. Fill engine with oil. See Diesel Engine Oil. (Section 3-1.)

### Engine Oil With Filter—Specification

444J—Capacity.....	17.5 L
	18.5 qt
544J—Capacity.....	18.5 L
	20 qt
624J—Capacity.....	24 L
	25 qt

15. Install filler cap.
16. Start engine and run at slow idle.



T117054—UN—10SEP98

A—Dipstick  
B—Filler Cap

C—Filter

17. Check that engine oil pressure light on monitor goes out and audible alarm stops immediately. If not, stop engine immediately and find cause.
18. Stop the engine. Check oil level. The engine is full when oil level is in the cross hatched area on the dipstick (A).
19. Check for any leakage at filter. Tighten filter only enough to stop leakage.

VD76477,00004E3 -19-20JUN06-2/2

## Change Front and Rear Differential/Axle Oil

**NOTE:** Perform this service at the first 250 hours of operation and then at 2000 hour intervals thereafter.

**CAUTION:** Prevent possible injury from hot spraying oil. Slowly loosen dipstick to relieve any air pressure.

**NOTE:** The axle drain plug is magnetized and should be cleaned when changing differential/axle oil. Axle differential recirculation screens (if equipped) should also be cleaned at this time. See Clean Axle Differential Recirculation Screen in this section.

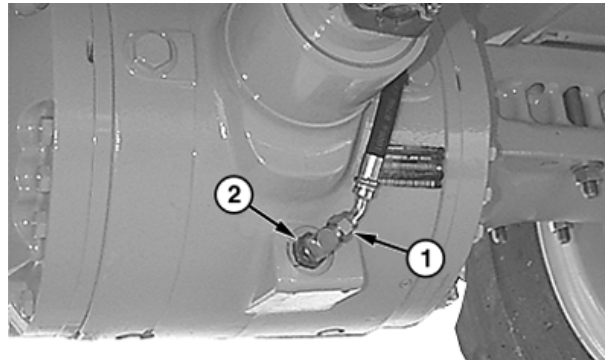
- ALL MACHINES—** Remove hose (1) and screen fitting (2). Allow oil to drain into a container. Dispose of waste oil properly. Install screen fitting and hose.
- 444J (S.N. 604690— ) only** Remove plugs (3) from axle ends and clean magnetized ends of plugs. Allow oil to drain into a container. Dispose of waste oil properly.

### Front Differential/Axle Oil—Specification

444J (S.N. —604689)—Capacity.....	17 L
	18 qt
444J (S.N. 604690— )—Capacity.....	22 L
	23 qt
544J—Capacity.....	18 L
	19 qt
624J—Capacity.....	24.5 L
	26 qt

### Rear Differential/Axle Oil—Specification

444J (S.N. —604689)—Capacity.....	17 L
	18 qt
444J (S.N. 604690— )—Capacity.....	22 L
	23 qt



Front Differential 444J (S.N. —604689), 544J, 624J Shown



Axle End Drain Plug 444J (S.N. 604690— ) Shown

- 1— Hose
- 2— Screen Fitting (If Equipped)
- 3— Axle End Drain Plug (4 used)

544J—Capacity.....	18 L
	19 qt
624J—Capacity.....	20 L
	21 qt

Continued on next page

MH66O88,000013C -19-04APR06-1/2

TX1004689A —UN—13MAR06

TX1004688A —UN—13MAR06

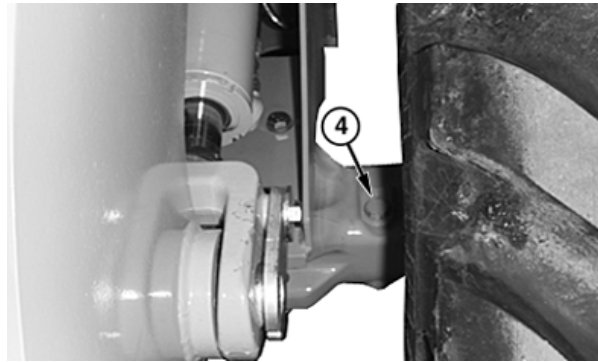
3. 444J (S.N. —604689), 544J, 624J Remove dipstick (4). 444J (S.N. 604690— ) Remove dipstick (5).
4. **444J (S.N. —604689), 544J, 624J only**— add oil slowly through dipstick port on left front and left rear differential .
5. **444J (S.N. 604690— ) only**— fill front differential/axle housing with oil through right side dipstick port (5). And through left rear dipstick port for the rear differential/axle housing.

**IMPORTANT: To properly check oil level, do not thread dipstick into dipstick port.**

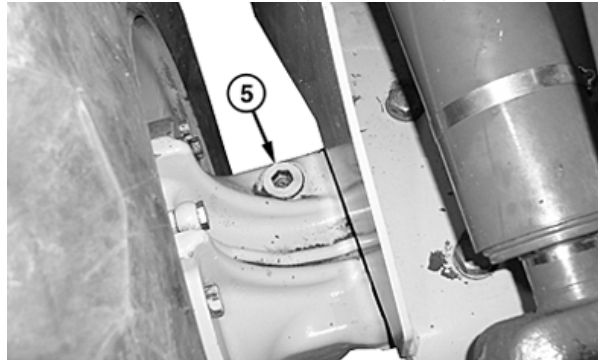
6. Check oil level.
7. Install dipstick and tighten.

4—Dipstick

5—Dipstick



Left Front Axle Shown 444J (S.N. —604689), 544J, 624J



Right Front Axle Shown 444J (S.N. 604690— )

TX1004673A —UN—13MAR06

TX1004674A —UN—13MAR06

MH66O88,000013C -19-04APR06-2/2

# Maintenance—Every 250 Hours

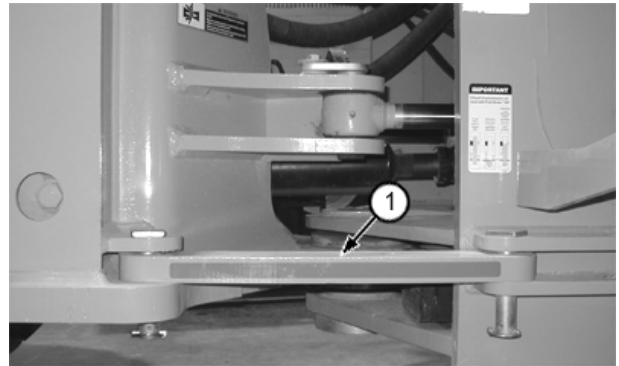
## Grease Front Driveline Sliding Joint

**CAUTION:** Prevent possible injury from unexpected machine movement. Turn engine off and lower bucket to ground before lubricating.

**NOTE:** To prevent plug loss, lubricate the machine when it is fully articulated or half articulated and NOT in the straight position.

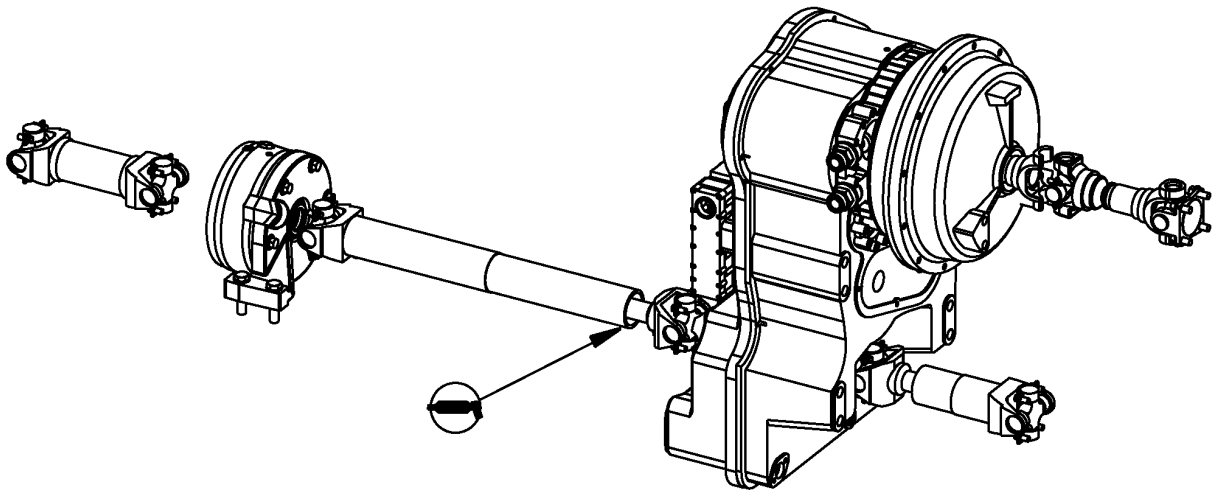
Install frame lock bar using hole (1) for articulated position.

1— Frame Locking Bar



T161066B —JUN—29OCT02

TX,75,JC1818 -19-11NOV98-1/2



T118181

Lubricate until grease escapes around vent holes in drive shaft end. See Grease. (Section 3-1.)

**NOTE:** Grease daily when operating in deep mud, water, or snow.

T118181 —JUN—02NOV98

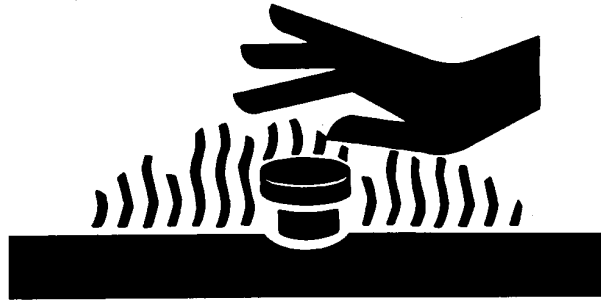
TX,75,JC1818 -19-11NOV98-2/2

## Check Surge Tank Level

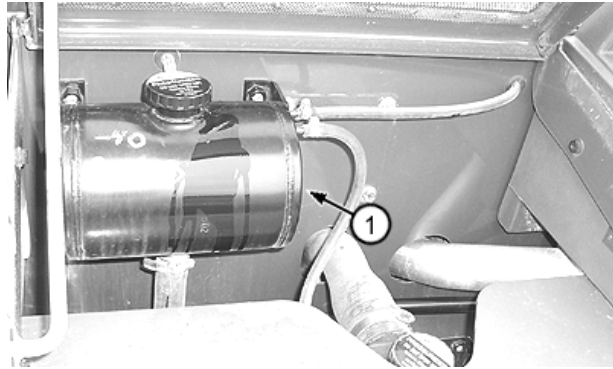
**⚠ CAUTION:** Prevent possible injury from hot spraying coolant. **DO NOT** remove filler cap unless engine is cool. Then turn cap slowly to the stop. Release air to relieve all pressure before you remove cap.

1. Slowly remove cap. Coolant level should be to top of tank.
2. Add coolant, if necessary.
3. Install filler cap.

1—Surge Tank



T6642EK —UN—01NOV88



T211310A —UN—13MAY05

AM40430,00000B3 -19-11MAY05-1/1

## Take Engine Oil Sample

See your authorized dealer.

OUT4001,000039B -19-25FEB09-1/1



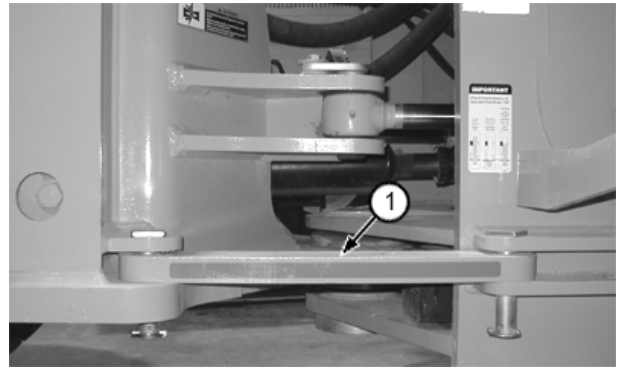
## Maintenance—Every 500 Hours

### Grease Upper and Lower Drive Line Sliding Joints

**⚠ CAUTION:** Prevent possible injury from unexpected machine movement. Turn engine off and lower bucket to ground before lubricating.

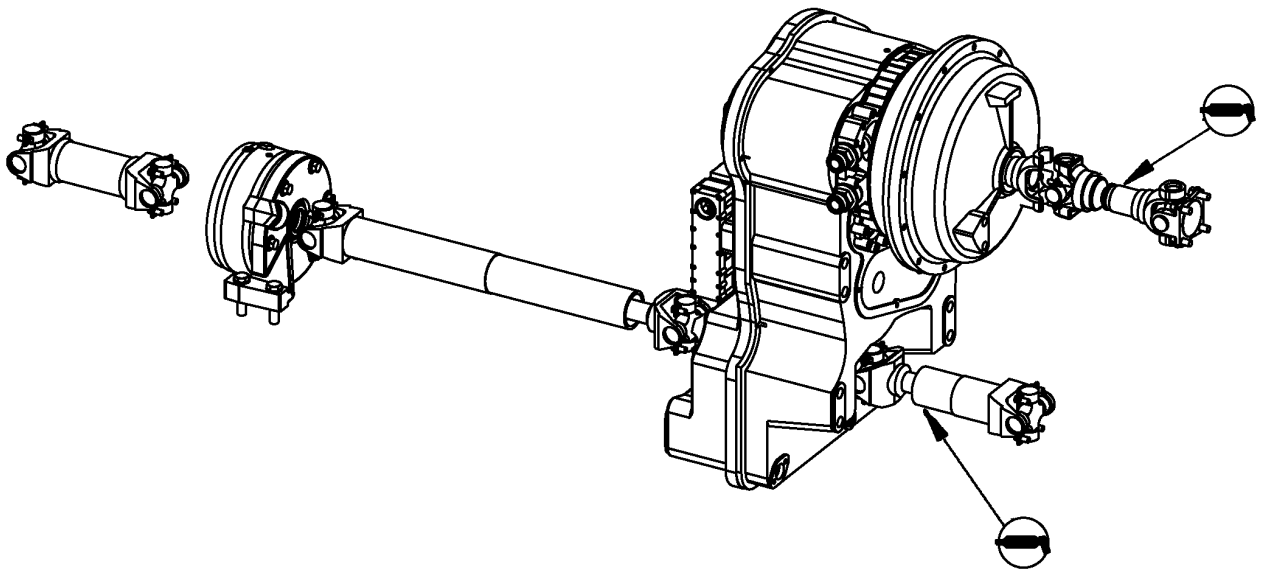
Install frame lock bar using hole (1) for articulated position.

1— Frame Locking Bar



T161066B —UN—29OCT02

TX,80,JC1821 -19-11NOV98-1/2



T118182

Lubricate until grease escapes around vent holes in drive shaft end. See Grease. (Section 3-1.)

*NOTE: Grease daily when operating in deep mud, water, or snow.*

T118182 —UN—04NOV98

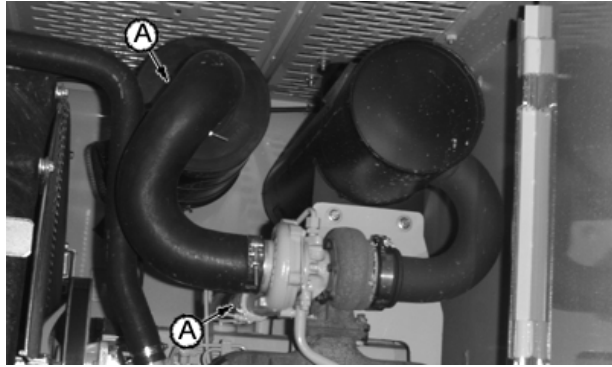
TX,80,JC1821 -19-11NOV98-2/2

### Check Air Intake Hoses

Check hoses (A) for cracks.

Check hose clamps for tightness.

A—Hose



T106360C —UN—24JAN97

HG31779,00002E9 -19-26JUN03-1/1

### Check Battery Electrolyte Level and Terminals

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

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

**ALWAYS** remove grounded (-) battery clamp first and replace it last.

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

Avoid the hazard by:

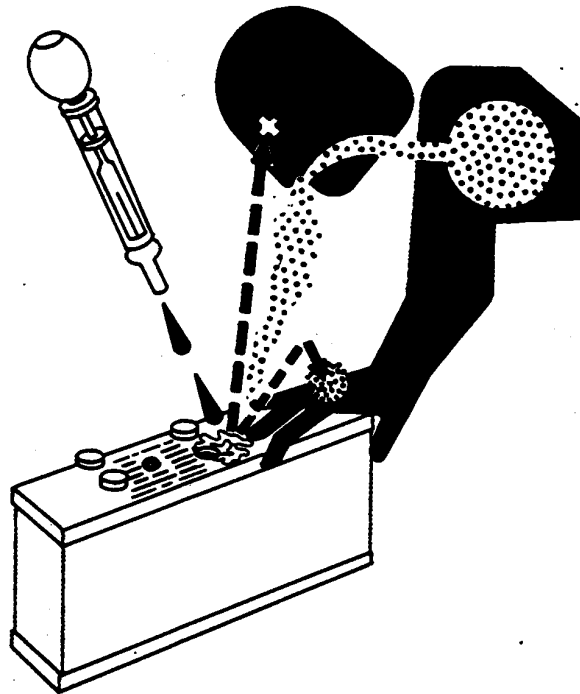
1. Filling batteries in a well-ventilated area.
2. Wearing eye protection and rubber gloves.
3. Avoiding breathing fumes when electrolyte is added.
4. Avoiding spilling or dripping electrolyte.
5. Use proper jump start procedure.

If you spill acid on yourself:

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

If acid is swallowed:

1. Do not induce vomiting.



TS203 —UN—23AUG88

2. Drink large amounts of water or milk, but do not exceed 1.9 L (2 quarts).
3. Get medical attention immediately.

1. Remove battery box cover.

Continued on next page

TX,75,DH1574 -19-28APR93-1/3

**IMPORTANT:** If water is added to batteries during freezing weather, batteries must be charged after water is added to prevent batteries from freezing. Charge battery using a battery charger or by running the engine.

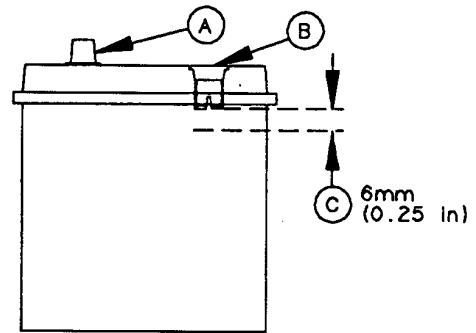
2. Fill each cell to within specified range with distilled water. DO NOT overfill.

**CAUTION:** Prevent possible injury. ALWAYS remove grounded (-) battery clamp first and replace it last.

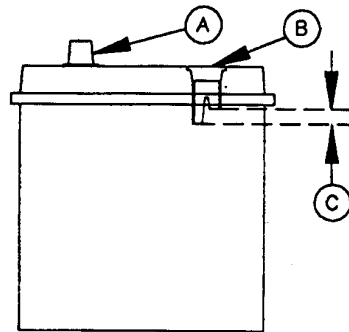
3. Disconnect battery clamps, grounded clamp first.

A—Battery Post  
B—Fill Tube

C—Electrolyte Level Range



T6996DB—UN—10FEB89



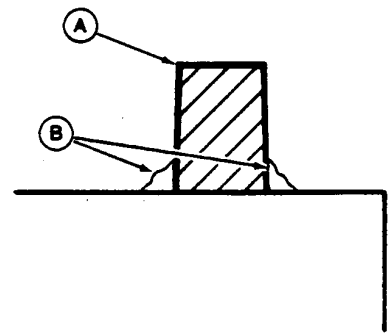
T6996DA—UN—10FEB89

TX,75,DH1574 -19-28APR93-2/3

4. Clean battery terminals (A) and clamps with a stiff brush.
5. Apply lubricating grease (B) around battery terminal base only.
6. Install and tighten clamps, grounded clamp last.

A—Battery Terminal

B—Lubricating Grease



T6758AA—UN—21OCT88

TX,75,DH1574 -19-28APR93-3/3

### Change Engine Oil and Replace Filter

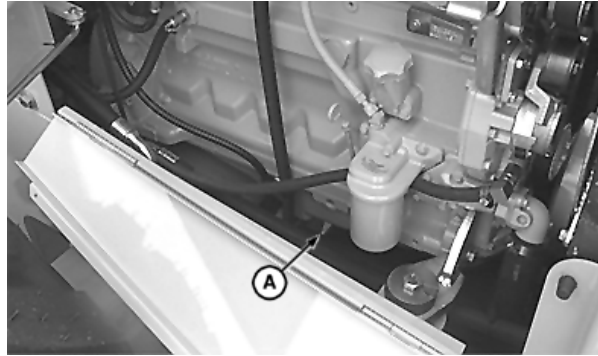
**IMPORTANT:** If fuel sulphur content exceeds 0.5 percent, change engine oil at 1/2 the normal interval.

*NOTE: If engine has not run 500 hours before the season changes, change oil.*

1. Run engine to warm oil.
2. Park machine on a level surface.
3. Lower equipment to ground.
4. Move FNR to neutral "N". If equipped with column FNR, engage neutral lock.

**⚠ CAUTION:** Prevent possible injury from unexpected machine movement. Machine can unexpectedly roll or move under power, resulting in death or serious injury. Always turn engine off or push park brake switch to ON to hold machine.

5. Push park brake switch to ON.



T117053—UN—10SEP98

A—Engine Oil Drain Valve

6. Turn key switch to "Off".

*NOTE: Drain located at front left corner of fuel tank cradle.*

7. Open drain valve (A). Allow oil to drain into a container. Dispose of waste oil properly.

VD76477,00004E4 -19-20JUN06-1/2

8. Turn filter (C) counterclockwise to remove.
9. Clean mounting surface. Apply thin film of oil to gasket of new filter.

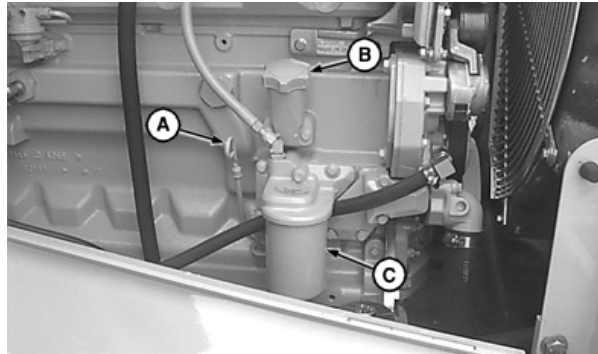
*NOTE: Before installing filter, to assure proper lubrication at start-up, fill the engine oil filter with engine oil.*

10. Install new filter. Turn filter clockwise by hand until gasket touches mounting surface.
11. Tighten 1/2—1 turn more.
12. Tighten drain valve.
13. Remove filler cap (B).
14. Fill engine with oil. See Diesel Engine Oil. (Section 3-1.)

#### Engine Oil With Filter—Specification

444J—Capacity.....	17.5 L
	18.5 qt
544J—Capacity.....	18.5 L
	20 qt
624J—Capacity.....	24 L
	25 qt

15. Install filler cap.
16. Start engine and run at slow idle.



T117054—UN—10SEP98

A—Dipstick  
B—Filler Cap

C—Filter

17. Check that engine oil pressure light on monitor goes out and audible alarm stops immediately. If not, stop engine immediately and find cause.

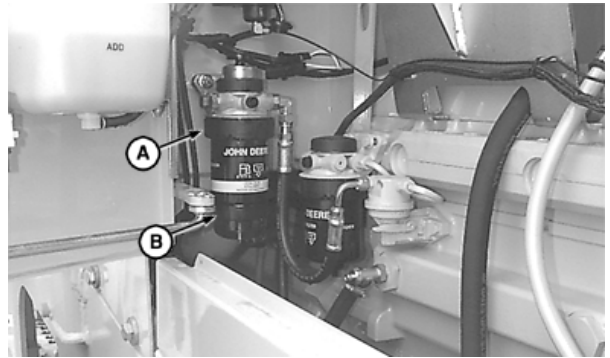
18. Stop the engine. Check oil level. The engine is full when oil level is in the cross hatched area on the dipstick (A).

19. Check for any leakage at filter. Tighten filter only enough to stop leakage.

VD76477,00004E4 -19-20JUN06-2/2

### Replace Primary Fuel Filter

1. Turn filter locking ring (A) counterclockwise to remove filter. Allow sediment to drain into a container. Dispose of waste properly.
2. Turn sediment bowl (B) counterclockwise to remove from filter assembly.
3. Clean filter base.
4. Install new filter. (Follow instructions on filter.)
5. Install sediment bowl.
6. Bleed fuel system. See Bleeding Fuel System. (Section 4-1.)



T 117067 —UN—10SEP98

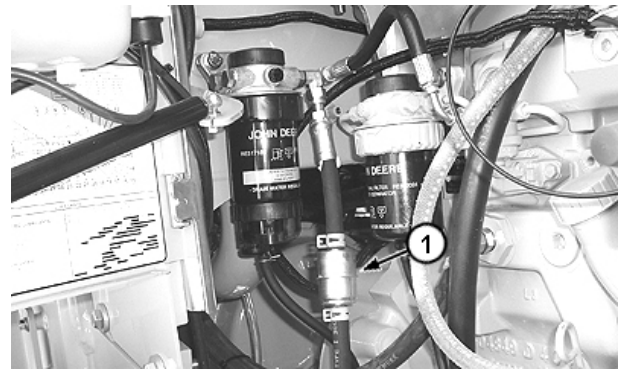
A—Filter Locking Ring

B—Sediment Bowl

HG31779,00002EA -19-26JUN03-1/1

### Replace Primary Fuel Filter Strainer (444J, S.N. 598949—; 544J, 624J, S.N. 598854—)

1. Loosen and slide hose clamps away from fuel strainer (1). Remove hoses.
2. Remove fuel filter.
3. Install new filter.
4. Install hoses and tighten clamps.
5. Bleed fuel system. See Bleeding Fuel System. (Section 4-1.)



T212528A —UN—23JAN06

444J Shown

1— Fuel Strainer

AM40430,00002F7 -19-20JAN06-1/1

### Replace Final Fuel Filter

1. Turn filter locking ring (A) counterclockwise to remove filter. Allow sediment to drain into a container. Dispose of waste properly.
2. Clean filter base.
3. Install new filter. (Follow instructions on filter.)
4. Bleed fuel system.



T 117066 —UN—10SEP98

444J Shown

A—Filter Locking Ring

HG31779,00002EB -19-26JUN03-1/1

### Replace Hydraulic System Return Filter

**⚠ CAUTION:** Prevent possible injury from unexpected machine movement. Install frame locking bar before changing filter.

1. Turn filter (A) counterclockwise to remove.
2. Clean mounting surface. Apply thin film of oil to gasket of new filter.
3. Install new filter. Tighten filter 3/4 of a full turn after seal contacts mounting base.
4. Fully loosen filter element. Repeat step 3.
5. Start engine. Check for leaks around filter base. Tighten filter only enough to stop leaks.
6. Stop engine. Check oil level.



Cover removed for clarity of photograph

A—Filter

T107880B —UN—06MAR97

MM61211,000142A -19-08MAR06-1/1

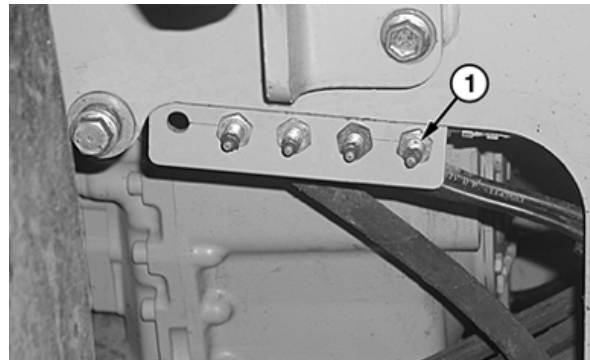
### Grease Rear Oscillating Support Cover

**⚠ CAUTION:** Prevent possible injury from unexpected machine movement. Install frame locking bar before lubricating.

Lubricate point (1) with three shots of grease. See Grease. (Section 3-1.)

Grease daily when operating in severe conditions such as deep mud, water or snow.

1—Lubrication Fitting



TX1004718A —UN—13MAR06

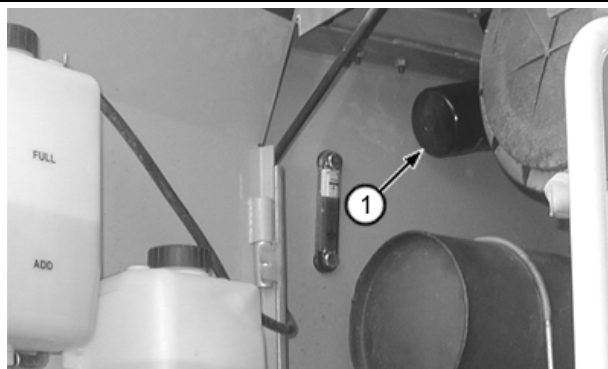
MM61211,000142C -19-10MAR06-1/1

### Replace Hydraulic Reservoir Breather Filter

Hydraulic reservoir breather filter is located on back side of reservoir under the hood.

1. Turn filter (1) counterclockwise to remove.
2. Install new filter and tighten until snug.

1—Filter



T195377A —UN—03OCT03

HG31779,00002ED -19-26JUN03-1/1

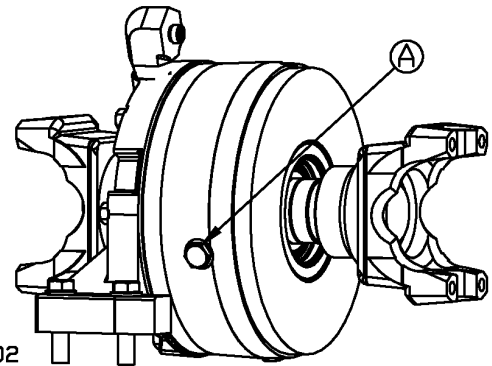
### Check Park Brake Oil Level

**NOTE:** Park brake oil should be changed every 500 hours for applications running in deep water, mud or snow.

1. Remove plug (A). Check oil level.

**IMPORTANT:** Do not operate machine with park brake overfilled. Oil must be at bottom of the check plug on the side of the park brake. Too much oil can cause overheating; too little can cause bearing failure. Drain excess oil down before replacing plug.

2. Add oil if necessary. Allow 2 minutes for oil to settle to bottom of level plug.
3. Check oil level and install plug.



T114802

A—Plug

T114802—UN—14APR98

CED,OUOE002,1730 -19-10MAY05-1/1

### Check Front and Rear Differential/Axle Oil Level

**NOTE:** Dipsticks are located on left front and left rear axle housing on 444J (S.N. —604689), 544J, 624J. Dipsticks for 444J (S.N. 604690— ) are located on the right front and left rear axle housings.

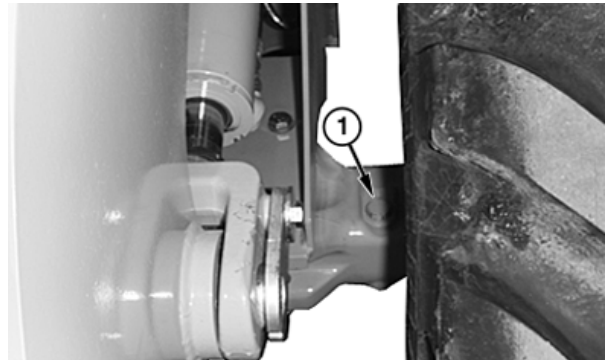
1. Clean area around dipstick.

**IMPORTANT:** To properly check oil level, do not thread dipstick into dipstick port.

2. 444J (S.N. —604689), 544J, 624J remove dipstick (1).  
444J (S.N. 604690— ) remove dipstick (2).

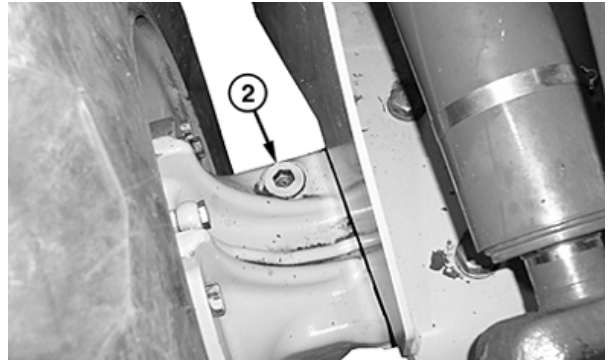
1—Dipstick

2—Dipstick



Front Axle Dipstick Plug 444J (S.N. —604689), 544J, 624J Shown

TX1004765A—UN—13MAR06



Front Axle Dipstick Plug 444J (S.N. 604690— ) Shown

TX1004764A—UN—13MAR06

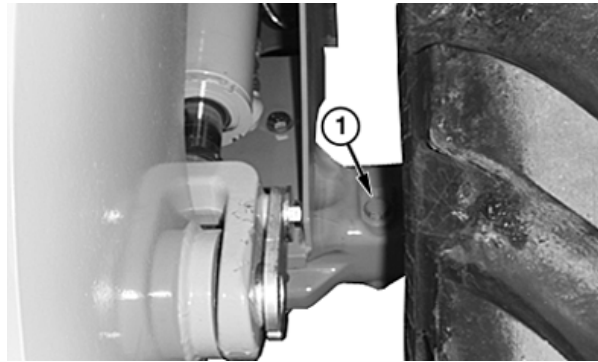
Continued on next page

VD76477,00004FF -19-26JUN06-1/3

**IMPORTANT:** Each differential housing has three separate components. Allow 10 minutes for oil to stabilize in each sump before checking.

3. **444J (S.N. —604689), 544J, 624J only**— Check front and rear differential/axle housing through left side dipstick port (1).

1— Dipstick



TX1004765A —JUN—13MAR06

Front Axle Dipstick Plug 444J (S.N. —604689), 544J, 624J Shown

VD76477,00004FF -19-26JUN06-2/3

4. **444J (S.N. 604690— ) only**— Check front differential/axle housing through right side dipstick port and left rear dipstick port for the rear differential/axle housing.
5. Oil must be to the FULL level on dipstick.

*NOTE: If axle is hot and dipstick is too warm to hold with bare hands, the oil can expand and may be as much as 25 mm (1 in.) above FULL mark. This is normal. DO NOT adjust level. If oil level is above the FULL mark after axle cools, drain and check oil level.*

6. If necessary, add oil. See Transmission, Park Brake, and Differential Oil. (Section 3-1.)
7. Install dipstick.



TX1004764A —JUN—13MAR06

Front Axle Dipstick Plug 444J (S.N. 604690— ) Shown

2— Dipstick

VD76477,00004FF -19-26JUN06-3/3

### Take Fluid Samples

See your authorized dealer for taking the following fluid samples:

- Hydraulic Oil

- Transmission Oil
- Axle Oil
- Coolant
- Diesel Fuel

CS58540,0000069 -19-22JUN10-1/1



## Maintenance—Every 1000 Hours

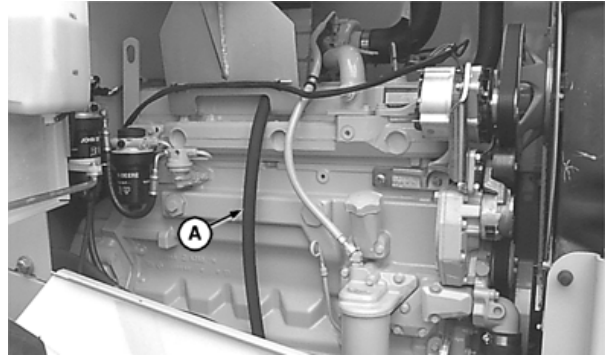
### Clean Engine Crankcase Vent Tube

Remove crankcase vent tube (A) and clean.

**IMPORTANT: Do not pull on hose. Connector damage may occur.**

Remove hose (A) and clean.

A—Crankcase Vent Tube



T117069 —UN—10SEP98

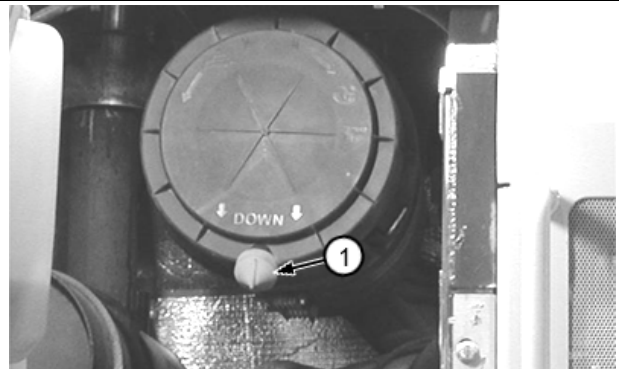
HG31779,00002EE -19-26JUN03-1/1

### Replace Air Cleaner Dust Unloader Valve

*NOTE: A missing, damaged, or hardened dust valve will cause the air filter elements to be ineffective.*

Replace dust unloader valve (1).

1— Dust Unloader Valve



T196190A —UN—11NOV03

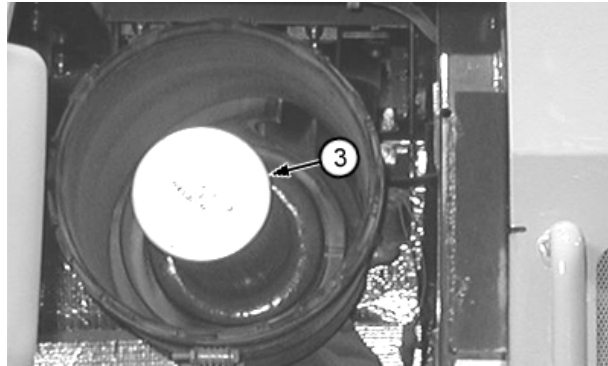
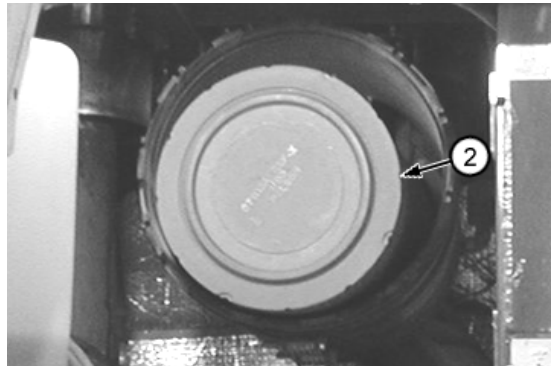
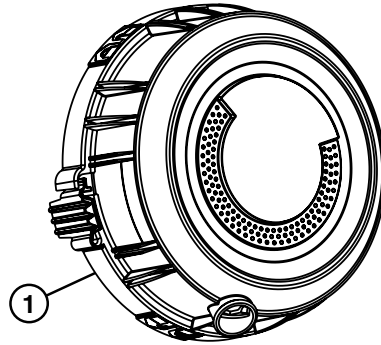
HG31779,00002EF -19-26JUN03-1/1

### Replace Air Cleaner Elements

1. Lift and hold lever (1) to unlock cover.
2. Rotate cover counterclockwise and remove cover.
3. Remove primary element (2).
4. Remove secondary element (3).
5. Clean air cleaner canister.
6. Install new filter elements into housing one at a time making sure secondary element is centered in canister.
7. Attach cover by rotating clockwise until lock arrows on body and cover are aligned.

1—Lever  
2—Primary Element

3—Secondary Element



T200914—UN—15JUN04

T196122A—UN—07NOV03

T196123A—UN—07NOV03

HG31779,00002F0 -19-26JUN03-1/1

## Replace Transmission Oil Filter

1. Operate machine under load until transmission oil reaches normal operating temperature.
2. Park machine on a level surface.
3. Lower bucket to ground.
4. Move FNR to neutral "N". If equipped with FNR, engage neutral lock.

**⚠ CAUTION: Prevent possible injury from unexpected machine movement. Machine can unexpectedly roll or move under power, resulting in death or serious injury. Always turn engine off or push park brake switch to ON to hold machine.**

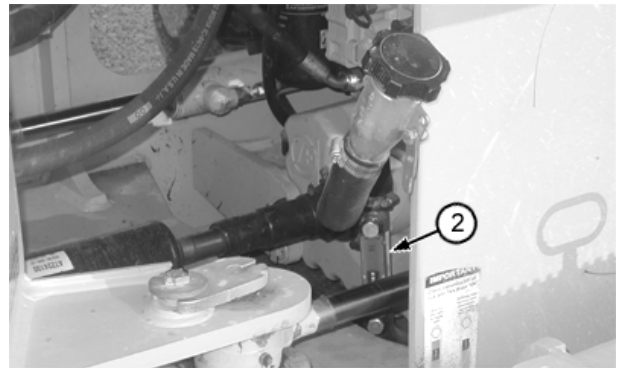
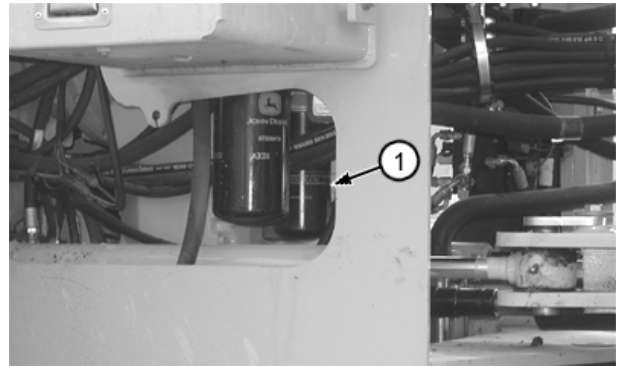
5. Push park brake switch to ON.

**⚠ CAUTION: Prevent possible injury from unexpected machine movement. Install frame locking bar before changing oil filter.**

6. Install frame locking bar.

**IMPORTANT: Turbocharger may be damaged if engine is not properly shut down.**

7. Run engine at 1/2 speed for 2 minutes before stopping to avoid damage to turbocharger. Release accelerator pedal to slow idle.
8. Turn key switch to "Off".
9. Turn filter (1) counterclockwise to remove.
10. Clean mounting surface. Apply thin film of oil to gasket of new filter.
11. Install new filter. Turn filter clockwise by hand until gasket touches mounting surface.
12. Tighten 3/4 of a full turn more.



1— Transmission Oil Filter

2— Sight Gauge

13. Start engine and run for 2 minutes.
14. Move FNR to neutral "N". If equipped with column FNR, engage neutral lock.
15. Check oil level. Oil must be between marks on sight gauge (2). Add oil if necessary.
16. Check for leaks around the filter base. Tighten filter only enough to stop leaks.

HG31779,00002CB -19-24JUN03-1/1

T192391A —UN—18SEP03

T192390A —UN—18SEP03

## Check Coolant

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

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

**IMPORTANT:** John Deere Liquid Coolant Conditioner does not protect against freezing. Coolant conditioner prevents rust, scale, and liner cavitation.

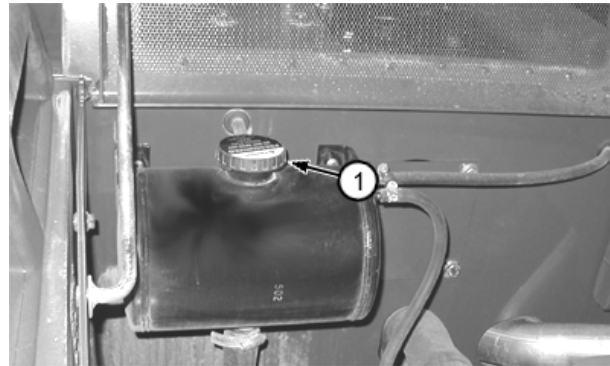
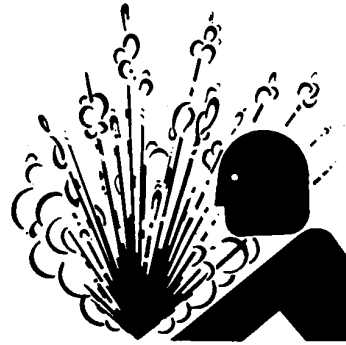
**NOTE:** Check coolant every 500 hours or 6 months, or when replacing 1/3 or more of coolant. Add coolant conditioner as necessary.

- Remove radiator cap (1) and test coolant solution. Use one of the following kits to check coolant.
  - 3-WAY Heavy Duty Coolant Test Kit (TY16175) Coolant test strips provide an effective method to check freeze point and additive levels of engine coolant. See your authorized dealer for 3-WAY Heavy Duty Coolant Test Kit and follow instructions on kit.
- Add TY16004 John Deere Coolant Conditioner or equivalent non-chromatic conditioner/rust inhibitor as necessary. Follow instructions on container for amount.

### Cooling System—Specification

444J—Capacity.....	21.0 L
	5.5 gal
544J—Capacity.....	21.0 L
	5.5 gal
624J—Capacity.....	22.0 L
	5.8 gal

- Install cap.



3-Way Test Kit

1—Radiator Cap

TS281—UN—23AUG88

T196191A—UN—12NOV03

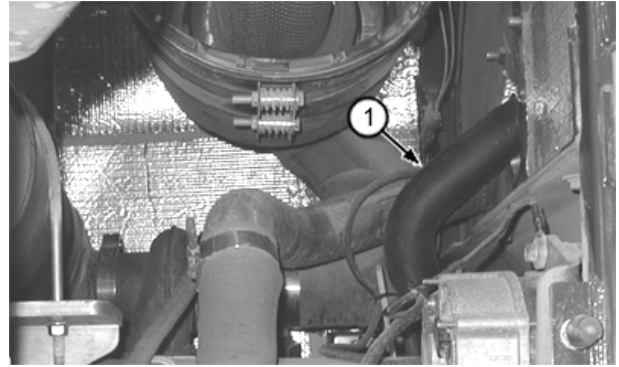
T111110—UN—13AUG97

HG31779,00002F1 -19-30JUN10-1/1

### Check Radiator Hoses

1. Check upper (1) and lower radiator hoses for cracks and leaks. Replace if necessary.
2. Tighten clamps.

1— Upper Radiator Hose



Upper Radiator Hose Shown

T196192A—UN—11NOV03

HG31779,00002F2 -19-26JUN03-1/1

### Grease Frame Hinge Pivots

**⚠ CAUTION: Prevent possible injury from unexpected machine movement. Install frame locking bar before lubricating.**

Lubricate each point with a minimum of three shots of grease and until grease escapes around the seals. See Grease. (Section 3-1.)



Two Points

T106386C—UN—10MAR97

TX,85,JC1832 -19-13OCT03-1/1

## Change Park Brake Oil

**NOTE:** Park brake oil should be changed every 500 hours for applications running in deep water, mud or snow.

**CAUTION:** Prevent possible injury from unexpected machine movement. Always install frame locking bar.

**IMPORTANT:** Do not operate machine with park brake overfilled. Oil must be at bottom of the check plug on the side of the park brake. Too much oil can cause overheating; too little can cause bearing failure. Drain excess oil down before replacing plug.

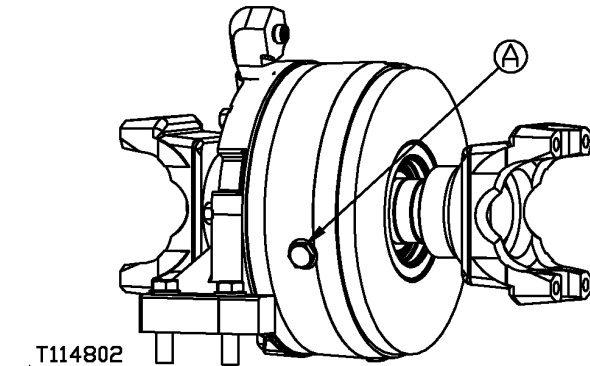
### Specification

Park Brake

Oil—Capacity..... 300 mL  
10 oz

1. Remove plug (A).
2. Drain oil into a container. Dispose of waste oil properly.

*HY-GARD is a trademark of Deere & Company.*



T114802

A—Plug

T114802—UN—14APR98

3. Add John Deere HY-GARD® oil. Allow oil to settle for approximately 2 minutes after filling.
4. Drain or add oil if necessary.
5. Install plug.

CED,OUOE002,1733 -19-01OCT04-1/1

# Maintenance—Every 2000 Hours

## Adjust Engine Valve Lash (Clearance)

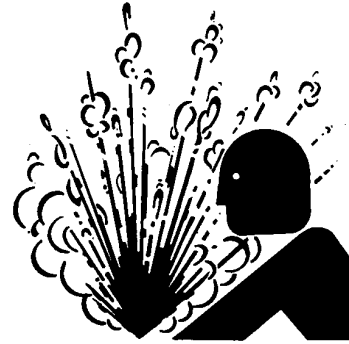
See your authorized dealer.

TX03679,00017DD -19-08MAY01-1/1

## Draining the Cooling System

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

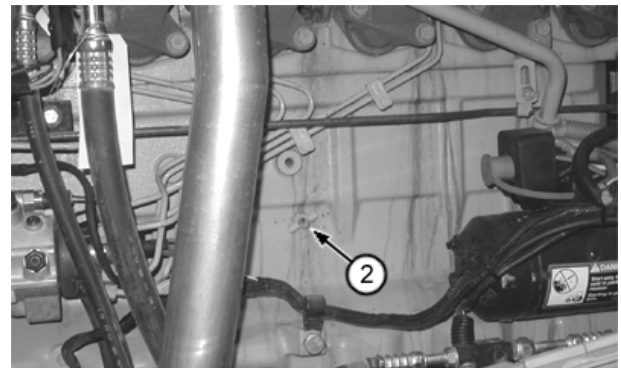
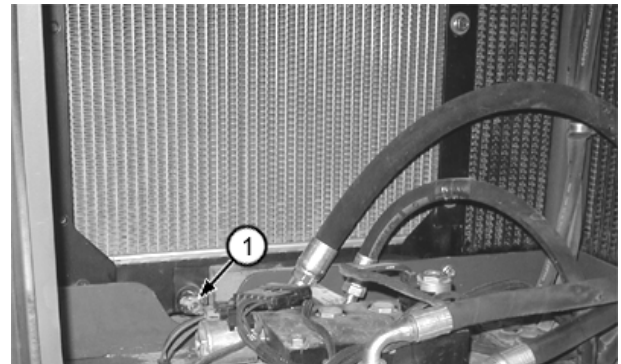
Shut off engine. Only remove filler cap when cool enough to touch with bare hands. Slowly loosen cap to first stop to relieve pressure before removing completely.



1. Check radiator hoses for cracks and leaks. Replace, if necessary.
2. Tighten clamps.
3. Check radiator and oil cooler for dirt, damage, leaks, and loose or broken mountings. Clean radiator and oil cooler fins.
4. Connect a hose to drain valve (1) on radiator.
5. Turn drain valve counterclockwise to open. Allow coolant to drain into a container. Dispose of used coolant properly.
6. Turn drain valve (2) counterclockwise to drain engine block. Allow coolant to drain into a container. Dispose of used coolant properly.

1— Radiator Drain Valve

2— Engine Drain Valve



TS281 —UN—23AUG88

T196223A —UN—11NOV03

T196219A —UN—11NOV03

HG31779,00002F6 -19-26JUN03-1/1

## Filling the Cooling System

**⚠ CAUTION:** Prevent possible injury from hot spraying coolant. **DO NOT** remove radiator cap unless the engine is cool. Then turn cap slowly to the stop. Release pressure before removing cap.

### Cooling System—Specification

444J—Capacity.....	21 L	22 qt
544J—Capacity.....	21 L	22 qt
624J—Capacity.....	22 L	23 qt

**IMPORTANT:** Use only permanent-type, low silicate, ethylene glycol base antifreeze in coolant solution. Other types of antifreeze may damage cylinder seals.

**FREEZING TEMPERATURES:** Fill with permanent-type, low silicate, ethylene glycol antifreeze (without stop-leak additive) and clean, soft water. Add TY16004 John Deere Coolant Conditioner or equivalent.

*NOTE: All machines are shipped from the factory with a 50-50 mixture for protection to -34 °C (-30 °F). Adjust mixture accordingly to provide freeze protection for your machine.*

### FILL

- Fill radiator to the bottom of the radiator fill neck.
- Fill the recovery tank to the FULL mark.

### DEAERATION



TS281—JUN—23AUG88

The cooling system requires several warm-up and cool down cycles to deaerate. It will NOT deaerate during normal operation. Only during warm-up and cool down cycles will the system deaerate.

- Start engine. Run engine until coolant reaches a warm temperature.
- Stop engine. Allow coolant to cool.
- Check coolant level at recovery tank.
- Repeat Steps 1—3 until recovery tank coolant level is repeatedly at the same level (stabilized).

*NOTE: The level of the coolant in the cooling system MUST BE repeatedly checked after all drain and refill procedures to insure that all air is out of the system which allows the coolant level to stabilize. Check coolant level only when the engine is cold.*

HG31779,00002F7 -19-26JUN03-1/1



## Change Transmission Oil

**NOTE:** \*Most applications would be considered "normal" operation. Service intervals should be reduced in severe applications which run the torque converter at high load more than approximately 25% of the time. (Examples may include basement digging, land clearing, etc.)

Oil type		
Operation*	John Deere Hy-Gard - Oils meeting JDM J20C	John Deere Low Viscosity Hy-Gard - Oils meeting JDM J20D
Normal	2000	1500
Severe	1500	1000

1. Operate machine under load until transmission oil reaches normal operating temperature.
2. Park machine on a level surface.
3. Lower bucket to ground.
4. Move FNR to N. Engage neutral lock.

**CAUTION:** Prevent possible injury from unexpected machine movement. Machine can unexpectedly roll or move under power, resulting in death or serious injury. Always turn engine off or push park brake switch to ON to hold machine.

5. Push park brake switch to ON.

**CAUTION:** Prevent possible injury from unexpected machine movement. Install frame locking bar before changing oil.

6. Install frame locking bar.

**IMPORTANT:** Turbocharger may be damaged if engine is not properly shut down.

7. Run engine at 1/2 speed for 2 minutes before stopping to avoid damage to turbocharger. Release accelerator pedal to slow idle.
8. Turn key switch to "Off". Let machine sit for approximately 10 minutes.

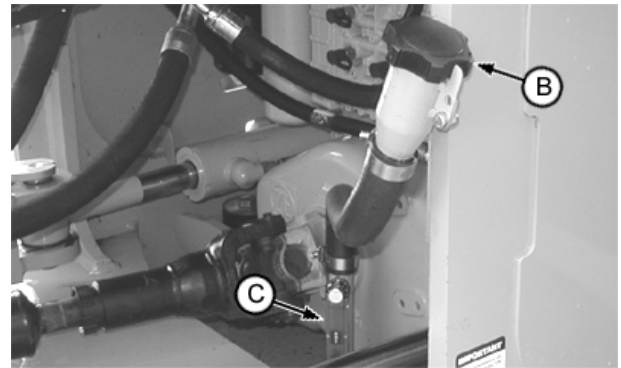
**NOTE:** Drain plug is magnetic. If an excessive amount of metal particles appear on plug, see your John Deere dealer.

9. Remove bottom guard, if equipped. Remove plug (A), located inside hole in bottom guard, to drain oil. Allow oil to drain into a container. Dispose of waste oil properly.

10. Install drain plug. Tighten to specification.

Specification	
Drain Plug—Torque.....	80 N·m 59 lb-ft

11. Fill transmission with oil at filler tube (B). See Transmission, Park Brake, and Differential Oil. (Section 3-1.)



A—Plug  
B—Filler Tube

C—Sight Gauge

### Transmission Case and Filter Oil—Specification

444J—Capacity.....	18.5 L 19.5 qt
544J—Capacity.....	18.5 L 19.5 qt
624J—Capacity.....	26.5 L 28 qt

12. Start engine and run for 2 minutes.
13. Move FNR to N. If equipped with column FNR, engage neutral lock.
14. Check oil level with oil at operating temperature. Oil must be between marks on sight gauge (C).

VD76477.0000501 -19-26JUN06-1/1

## Change Front and Rear Differential/Axle Oil

**NOTE:** Perform this service at the first 250 hours of operation and then at 2000 hour intervals thereafter.

**⚠ CAUTION:** Prevent possible injury from hot spraying oil. Slowly loosen dipstick to relieve any air pressure.

**NOTE:** The axle drain plug is magnetized and should be cleaned when changing differential/axle oil. Axle differential recirculation screens (if equipped) should also be cleaned at this time. See Clean Axle Differential Recirculation Screen in this section.

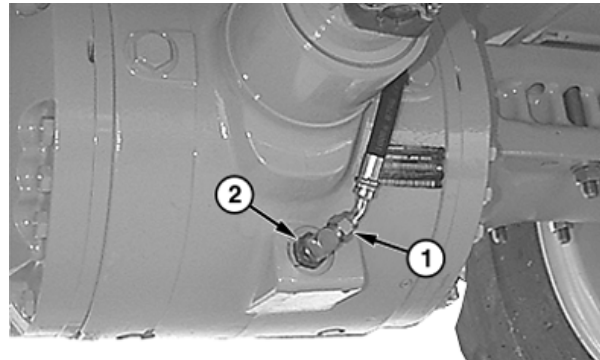
- 1. ALL MACHINES—** Remove hose (1) and screen fitting (2). Allow oil to drain into a container. Dispose of waste oil properly. Install screen fitting and hose.
- 2. 444J (S.N. 604690— ) only** Remove plugs (3) from axle ends and clean magnetized ends of plugs. Allow oil to drain into a container. Dispose of waste oil properly.

### Front Differential/Axle Oil—Specification

444J (S.N. —604689)—Capacity.....	17 L
	18 qt
444J (S.N. 604690— )—Capacity.....	22 L
	23 qt
544J—Capacity.....	18 L
	19 qt
624J—Capacity.....	24.5 L
	26 qt

### Rear Differential/Axle Oil—Specification

444J (S.N. —604689)—Capacity.....	17 L
	18 qt
444J (S.N. 604690— )—Capacity.....	22 L
	23 qt



Front Differential 444J (S.N. —604689), 544J, 624J Shown



Axle End Drain Plug 444J (S.N. 604690— ) Shown

1—Hose  
2—Screen Fitting (If Equipped)      3—Axle End Drain Plug (4 used)

544J—Capacity.....	18 L
	19 qt
624J—Capacity.....	20 L
	21 qt

Continued on next page

MM61211,0001433 -19-04APR06-1/2

TX1004689A—UN—13MAR06

TX1004688A—UN—13MAR06

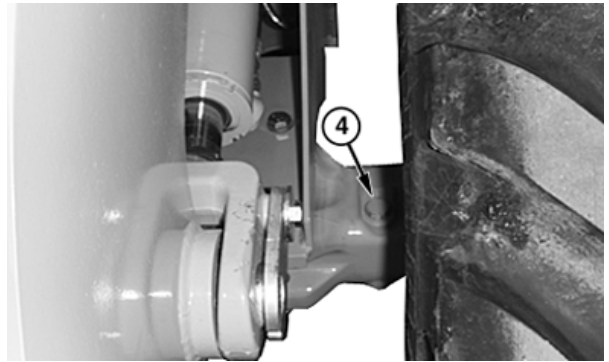
3. 444J (S.N. —604689), 544J, 624J Remove dipstick (4). 444J (S.N. 604690— ) Remove dipstick (5).
4. **444J (S.N. —604689), 544J, 624J only**— add oil slowly through dipstick port on left front and left rear differential .
5. **444J (S.N. 604690— ) only**— fill front differential/axle housing with oil through right side dipstick port (5). And through left rear dipstick port for the rear differential/axle housing.

**IMPORTANT: To properly check oil level, do not thread dipstick into dipstick port.**

6. Check oil level.
7. Install dipstick and tighten.

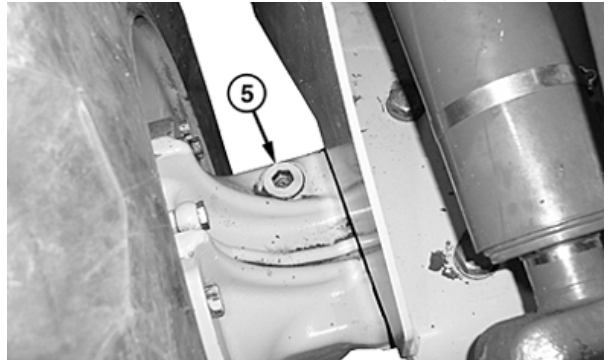
4— Dipstick

5— Dipstick



Left Front Axle Shown 444J (S.N. —604689), 544J, 624J

TX1004673A —UN—13MAR06



Right Front Axle Shown 444J (S.N. 604690— )

TX1004674A —UN—13MAR06

MM61211,0001433 -19-04APR06-2/2

### Clean Axle Differential Recirculation Screen

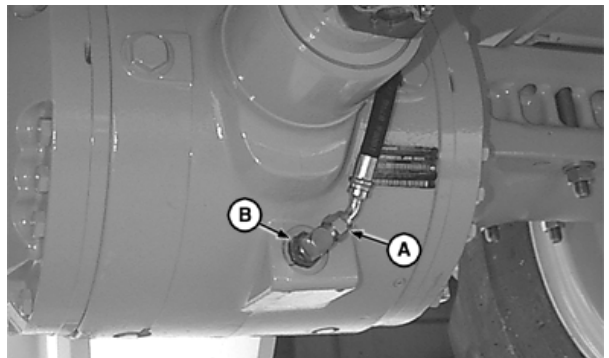
1. Disconnect hose (A) and remove screen fitting (B).
2. Drain differential oil into a container. Dispose of waste properly.

*NOTE: Fitting and screen are of a one piece design. Screen should be thoroughly cleaned and reused.*

3. Clean screen with solvent.
4. Install screen fitting.
5. Install hose.
6. Refill differential with oil.

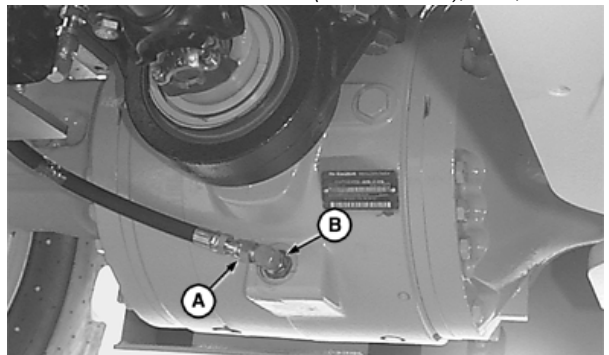
A—Hose

B—Screen Fitting



Front Differential Shown 444J (S.N. —604689), 544J, 624J

T117325 —UN—22SEP98



Rear Differential Shown

T117326 —UN—22SEP98

MM61211,00013CF -19-22APR08-1/1

*Maintenance—Every 2000 Hours*

**Re-Run Clutch Calibration**

See your authorized dealer.

HG31779,000032E -19-07NOV03-1/1

# Maintenance—Every 4000 Hours

## Change Hydraulic Oil

1. Lower bucket to the ground.
2. Stop engine.
3. Turn key switch to “On.”

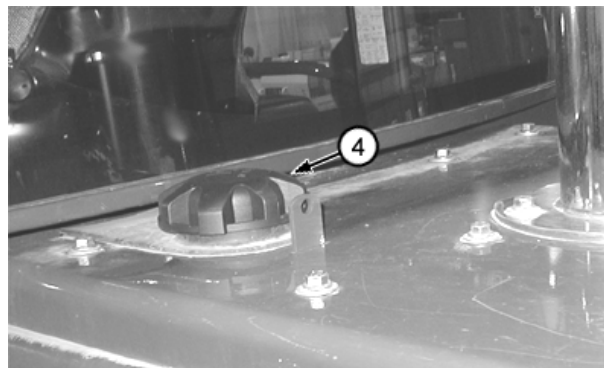
*NOTE: Return-to-carry (1) must be OFF for float detent to operate.*

4. Move hydraulic control lever to float detent position.

**CAUTION:** Prevent possible injury from unexpected boom movement. The bucket may “jump up” when ride control switch is turned ON. Clear all bystanders from area.

5. Cycle ride control switch (2) from OFF to ON.
6. Push pilot enable/boom down switch (3) to release accumulator pressure.
7. Turn key switch “Off”.
8. Remove hydraulic reservoir filler cap (4).

- |                          |                                 |
|--------------------------|---------------------------------|
| 1—Return-to-Carry Switch | 3—Pilot Enable/Boom Down Switch |
| 2—Ride Control Switch    | 4—Filler Cap                    |



T192344L—UN—13OCT03

T196188B—UN—14NOV03

VD76477.0000502 -19-26JUN06-1/2

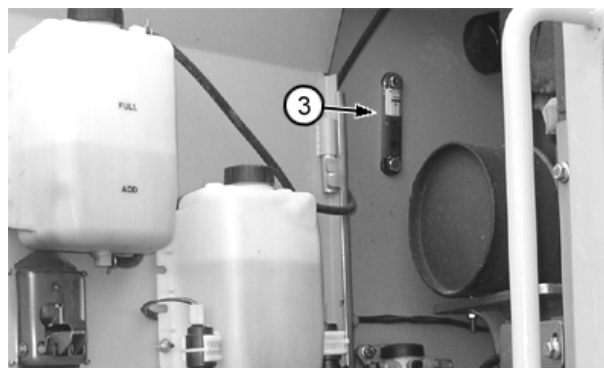
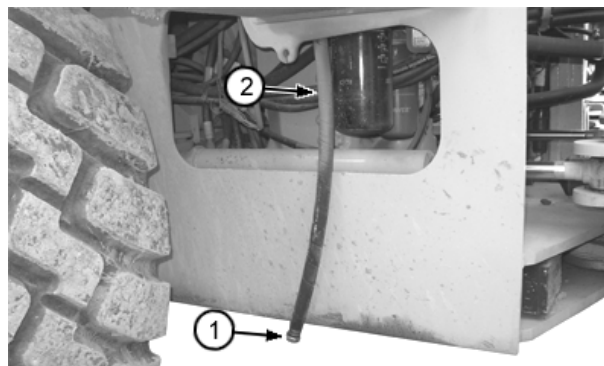
9. Loosen hose clamp and remove plug (1) from end of drain hose (2). Allow oil to drain into a container. Dispose of waste oil properly.
10. Flush reservoir with diesel fuel.
11. Reinstall plug on end of drain hose and tighten hose clamp.
12. Fill reservoir. See Hydraulic Reservoir Oil. (Section 3-1.)

### Hydraulic Reservoir and Filters—Specification

444J—Capacity.....	96.5 L
	25.5 gal
544J—Capacity.....	98.5 L
	26 gal
624J—Capacity.....	119 L
	31.5 gal

13. Install filler cap.
14. Check oil level in sight glass (3). Oil should be in FULL range.

- |              |               |
|--------------|---------------|
| 1—Plug       | 3—Sight Glass |
| 2—Drain Hose |               |



T196383A—UN—14NOV03

T192369B—UN—14NOV03

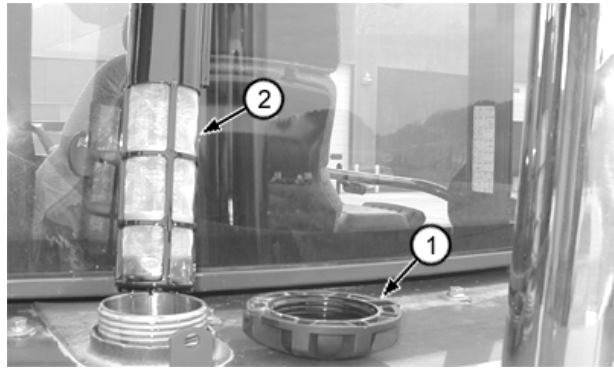
VD76477.0000502 -19-26JUN06-2/2

### Clean Hydraulic System Strainer

1. Remove hydraulic reservoir filler cap (1).
2. Remove snap ring.
3. Remove strainer (2) and clean with solvent.
4. Install strainer and snap ring.
5. Replace cap.

1—Filler Cap

2—Strainer



T196236A—UN—11NOV03

HG31779,00002F5 -19-26JUN03-1/1

## Maintenance—Every 4500 Hours

### **Replace Engine Crankshaft Dampener (544J and 624J Only)**

The crankshaft dampener assembly is not repairable and should be replaced every five years or 5000 hours,

whichever occurs first, or whenever crankshaft is replaced. See your authorized dealer.

OUT4001,000025F -19-10JUN09-1/1

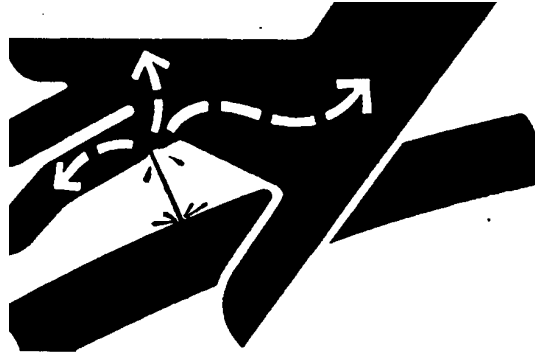
## Miscellaneous—Machine

### Bleed the Fuel System

**⚠ CAUTION:** Escaping fluid under pressure can penetrate the skin causing serious injury. Relieve pressure before disconnecting fuel or other lines. Tighten all connections before applying pressure. Keep hands and body away from pinholes and nozzles that eject fluids under high pressure. Use a piece of cardboard or paper to search for leaks. Do not use your hand.

If ANY fluid is injected into the skin, a doctor familiar with this type of injury must surgically remove it within a few hours or gangrene may result. Doctors unfamiliar with this type of injury may call the Deere & Company Medical Department in Moline, Illinois, or other knowledgeable medical source.

Whenever the fuel system has been opened up for service (lines disconnected or filters removed), it will be necessary to bleed air from the system.

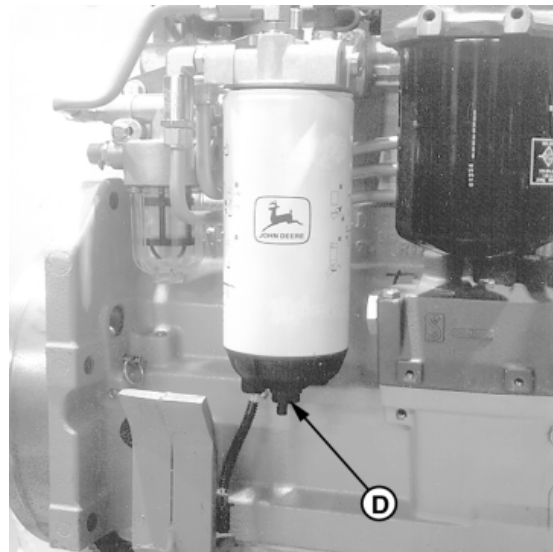


X9811—UN—23AUG88

RG41221,0000031 -19-22APR02-1/3

1. Drain water and contaminants from water separator bowl by opening the drain valve (D).

**D—Drain Valve**



*Drain Valve on Final Filter*

RG11519B—UN—14DEC00

Continued on next page

RG41221,0000031 -19-22APR02-2/3



2. Connect JT03472 coupler and hose to diagnostic port (A). If JT03472 coupler is not available, loosen the diagnostic port to allow air and fuel to escape. Bleed fuel into suitable container.
3. Unlock and operate hand primer (B) until a steady flow of fuel (without bubbles) flows out of hose. This could take 270 - 330 strokes until steady fuel flow is free of bubbles.
4. Continue to pump hand primer while disconnecting JT03472 coupler from diagnostic port, or while tightening diagnostic port to specification below.

**Specification**

Diagnostic Port—Torque..... 14 N·m (10 lb-ft)

5. Start engine and run at 1200-1500 RPM for 3-5 minutes.
6. If engine fails to start, loosen high pressure fuel line fittings (C). Pump hand primer (B) until steady flow of fuel escapes the fuel pump. Tighten fuel lines to specification below and lock hand primer. This could take an addition 90 - 120 strokes until steady fuel flow is free of bubbles.

**Specification**

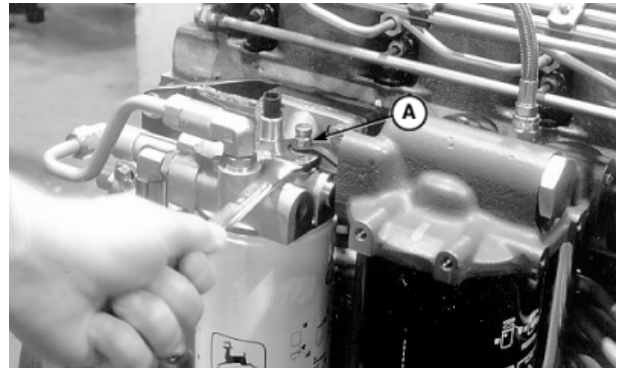
High Pressure Fuel Lines—Torque..... 27 N·m (20 lb-ft)

7. Crank engine up to 15 seconds. If engine does not start, wait 15 seconds and then crank for an additional 15 seconds. If engine starts, run at 1200-1500 RPM for 3-5 minutes.
8. If engine fails to start, loosen fuel line fitting on HPCR flow limiter #6. Place rag around fitting to absorb fuel. Pump hand primer (B) until steady flow of fuel escapes the flow limiter. Tighten fuel lines to specification below and lock hand primer (pull up, then push down and lock).

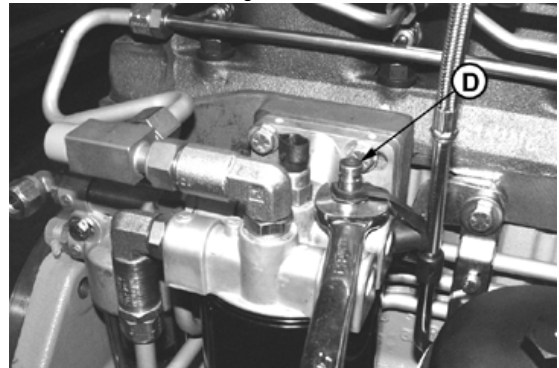
**Specification**

High Pressure Fuel Lines—Torque..... 27 N·m (20 lb-ft)

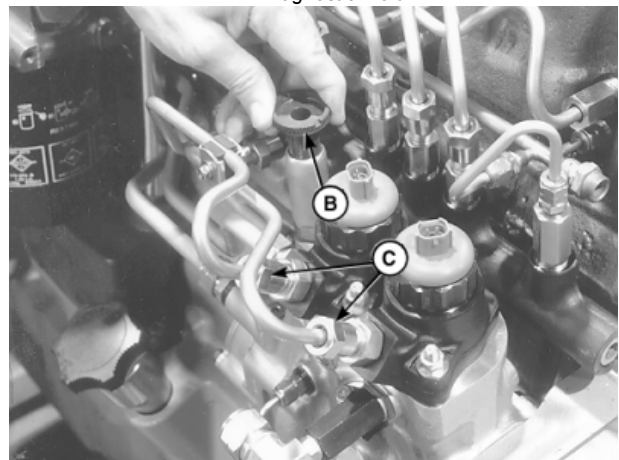
9. Crank engine up to 15 seconds. If engine does not start, wait 15 seconds and then crank for an additional 15 seconds. If engine starts, run at 1200-1500 RPM for 3-5 minutes.



Diagnostic Port



Diagnostic Port



Hand Primer

A—Diagnostic Port  
B—Hand Primer

C—High Pressure Fuel Line Fittings

RG11081 —UN—10NOV00

RG12279A —UN—22APR02

RG11518 —UN—11DEC00

RG41221,0000031 -19-22APR02-3/3

### Precautions for Alternator and Regulator

When batteries are connected, follow these rules:

1. Disconnect negative (-) battery cable when you work on or near alternator or regulator.
2. DO NOT TRY TO POLARIZE ALTERNATOR OR REGULATOR.
3. Be sure alternator wires are correctly connected BEFORE you connect batteries.
4. Do not ground alternator output terminal.
5. Do not disconnect or connect any alternator or regulator wires while batteries are connected or while alternator is operating.
6. Connect batteries or a booster battery in the correct polarity (positive [+] to positive [+] and negative [-] to negative [-]).
7. Do not disconnect the batteries when engine is running and alternator is charging.
8. Disconnect battery cables before you connect battery charger to the batteries. If machine has more than one battery, each battery must be charged separately.

04T,90,C151 -19-20JUL92-1/1

## Handling, Checking, and Servicing Batteries Carefully

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

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

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

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

Avoid the hazard by:

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

If you spill acid on yourself:

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

If acid is swallowed:

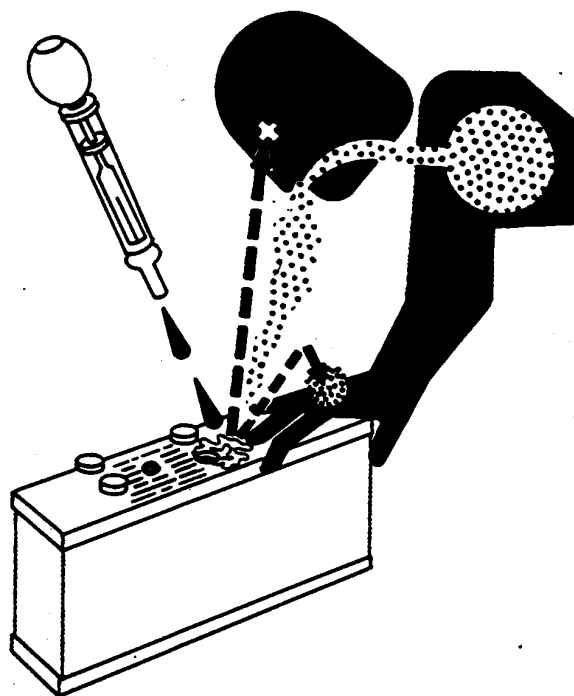
1. Do not induce vomiting.
2. Drink large amounts of water or milk, but do not exceed 1.9 L (2 qts).
3. Get medical attention immediately.

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

If electrolyte spills on the floor, use one of the following mixtures to neutralize the acid: 0.5 kg (1 lb) baking soda in 4 L (1 gal) water, or 0.47 L (1 pt) household ammonia in 4 L (1 gal) water.



TS204—UN—23AUG88



TS203—UN—23AUG88

**IMPORTANT:** Do not overfill the battery cells.

Check the specific gravity of electrolyte in each battery cell.

Continued on next page

TX03679.0001788 -19-04AUG09-1/2

See your authorized dealer for JT05460 SERVICEGARD™ battery and coolant tester. Follow directions included with the tester.

A fully charged battery will have a corrected specific gravity reading of 1.260. If the reading is below 1.200, charge the battery.



T85402 —UN—10NOV88

SERVICEGARD is a trademark of Deere & Company

TX03679,0001788 -19-04AUG09-2/2

### Using Booster Batteries—24-Volt System

Before boost starting, machine must be properly shut down and secured to prevent unexpected machine movement when engine starts.

**CAUTION:** An explosive gas is produced while batteries are in use or being charged. Keep flames or sparks away from the battery area. Make sure the batteries are charged in a well ventilated area.

**IMPORTANT:** The machine electrical system is a 24-volt negative (-) ground. Connect two 12-volt booster batteries together in series as shown for 24 volts.

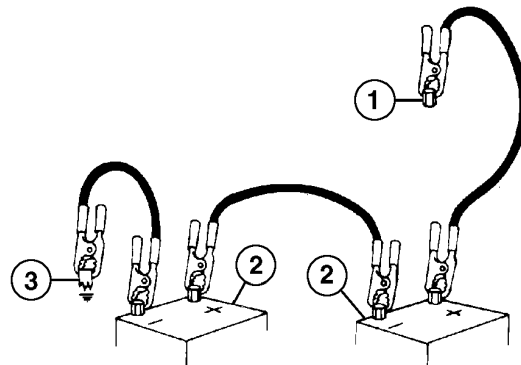
1. Connect one end of the positive cable to the lug on starter (1) and the other end to the positive terminal of booster batteries (2).
2. Connect one end of the negative cable to the negative terminal of booster batteries. Then connect the other end of negative cable to the machine frame (3) as far away from the machine batteries as possible.
3. Start the engine.
4. Immediately after starting the engine, disconnect the end of negative cable from the machine frame first. Then disconnect the other end of negative cable from the negative terminal of booster batteries.
5. Disconnect the positive cable from the booster batteries and lug on starter.

1—Lug on Starter  
2—Booster Batteries

3—Machine Frame



TS204 —UN—23AUG88



TX1014128 —UN—16NOV06



TX1015327A —UN—21NOV06

OUT4001,0000058 -19-02JUL09-1/1

### Using Battery Charger

**CAUTION:** Prevent possible injury from exploding battery. Do not charge a battery if the battery is frozen or it may explode. Warm battery to 16°C (60°F) before charging.

Turn off charger before connecting or disconnecting it.

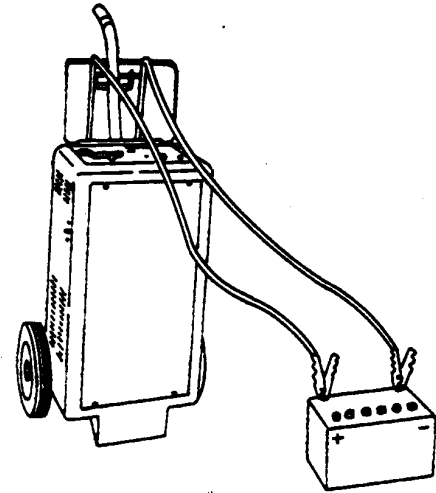
**IMPORTANT:** Do not use battery charger as a booster if a battery has a 1.150 specific gravity reading or lower.

Disconnect battery ground (-) clamp before you charge batteries in the machine to prevent damage to electrical components.

A battery charger may be used as a booster to start engine.

Ventilate the area where batteries are being charged.

Stop or cut back charging rate if battery case feels hot, or is venting electrolyte. Battery temperature must not exceed 52°C (125°F).



TS204—UN—23AUG88

N36890—UN—07OCT88

OUT4001,0000239 -19-16MAR10-1/1

### Replacing Batteries

Your machine is equipped with a negative ground electrical system. It uses two 12-volt batteries. If one of the two batteries fails, both batteries must be replaced. Use only batteries meeting following specifications.

#### Specification

Battery—BCI Group.....	30H
Cold Cranking Amps at -18°C (0°F) .....	625
Reserve Capacity at 25 amps.....	160 Minutes

CED,OUOE002,1772 -19-15SEP98-1/1

## Removing Batteries

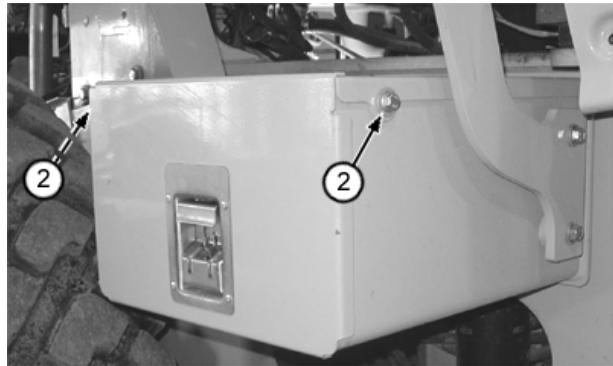
**NOTE:** Turn off master shut-off switch (1), if equipped, before disconnecting cables.

1. Open battery compartment door.
2. Remove bolts (2) to remove battery cover.

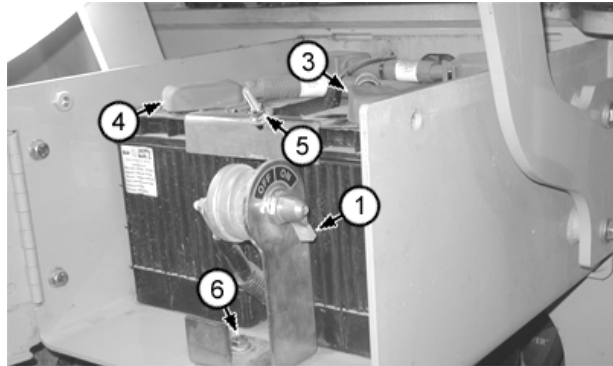
**⚠ CAUTION:** To prevent injury from battery covers dropping, remove when servicing or replacing batteries. Hinge is in place to aid in removal only. Cover must not be held or propped open during servicing.

**⚠ CAUTION:** To prevent injury from explosion or fire, disconnect the right side battery first regardless of which battery is being removed.

3. Disconnect negative (-) battery cable (3) first, then positive (+) cable (4).
4. Remove hex nut and washer (5) and battery disconnect bracket.
5. Remove capscrew and washer (6) and hold-down bracket.
6. Remove batteries.



T196314A—UN—11NOV03



T196316A—UN—11NOV03

1— Master Shut-off Switch  
2— Bolts (2 used)  
3— Negative (-) Cable

4— Positive (+) Cable  
5— Hex Nut and Washer  
6— Capscrew and Washer

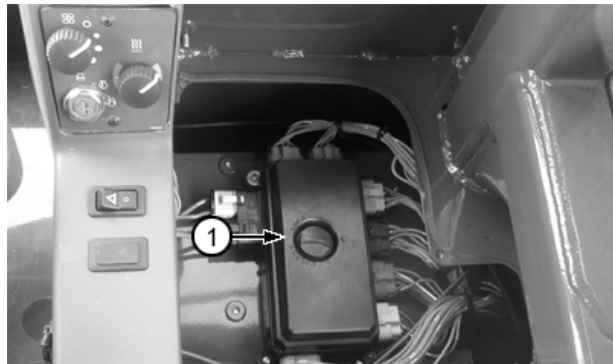
HG31779,00002F8 -19-26JUN03-1/1

## Replacing Fuses

The fuse block is located in the load center. Remove fuse panel cover (1) to access fuse panel.

**IMPORTANT:** Install fuse with correct amperage rating to prevent electrical system damage from overload.

1— Fuse Panel Cover

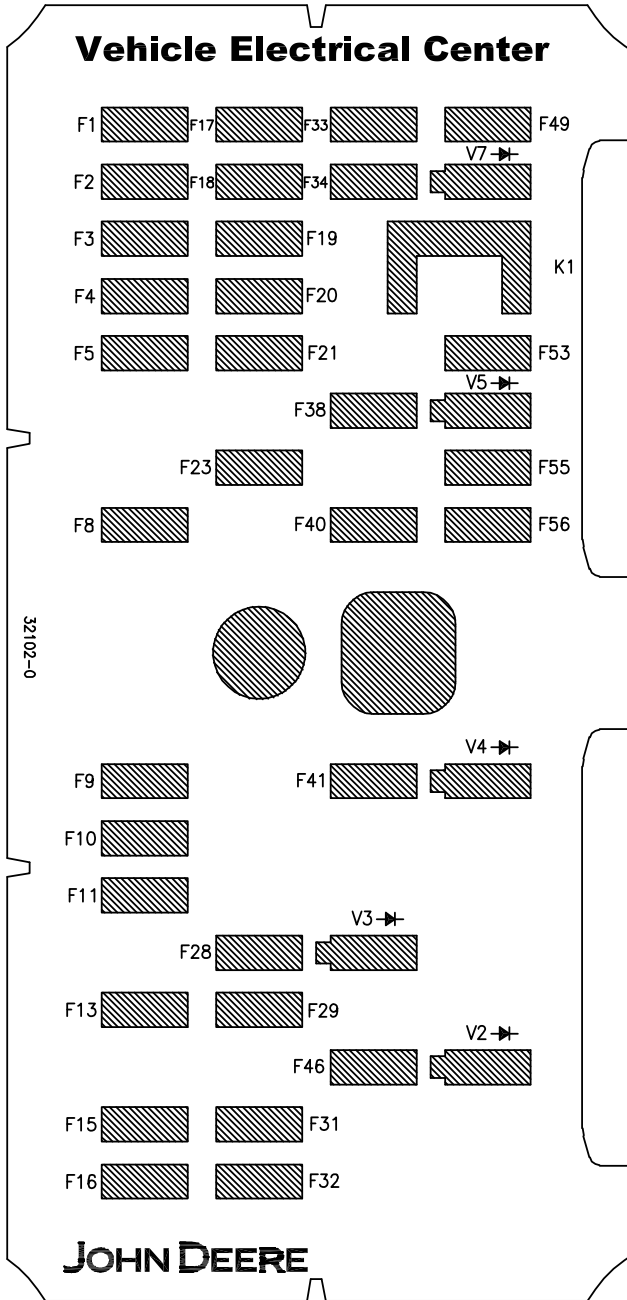


T195538A—UN—16OCT03

Continued on next page

MM61211,00013D2 -19-22FEB06-1/3

### Vehicle Electrical Center



T192491

Continued on next page

MM61211,00013D2 -19-22FEB06-2/3

T192491—UN—12SEP03

Miscellaneous—Machine

F1— Flashers (5A)	F15— (FLC) Flex Load Controller Ignition Power (5A)	F32— Park Brake Release Switch/Backup Alarm (5A)	F56— Front Wiper Motor (5A)
F2— Brake Light Pressure Switch (5A)	F16— Spare Ignition Power (15A)	F33— Pressurizer Motor (10A)	K1—Horn Relay
F3— (ECU) Engine Control Unit Battery Power (20A)	F17— Spare Battery Power (15A)	F34— (CMU) Can Monitor Unit Battery Power (5A)	V2— Start Aid Solenoid Diode (3A)
F4— Converter Battery Power (15A)	F18— (TCU) Transmission Control Unit Battery power (5A)	F38— Differential Lock Foot Switch (5A)	V3— Ignition Relay Diode (3A)
F5— Blower Motor (25A)	F19— Horn (5A)	F40— Transmission Output Speed Sensor (5A)	V4— Start Relay Diode (3A)
F8— Electric Adjust Seat (10A)	F20— Spare Battery Power (5A)	F41— Start Relay (5A)	V5— Alternator Excitation Diode (3A)
F9— Converter Ignition Power (10A)	F21— (FLC) Flex Load Controller Battery Power (10A)	F46— Start Aid Solenoid Switch (10A)	V7— Reverse Polarity Diode (3A)
F10— (ECU) Engine Control Unit Ignition Power (5A)	F22— Brake/Steering Pressure Switch (5A)	F49— Radio, Diagnostic Connector, Dome Light Battery Power (10A)	
F11— Restriction Switch/Radio Ignition Power (10A)	F28— (TCU) Transmission Control Unit Ignition power (5A)	F53— Alternator Excitation (5A)	
F13— (CMU) Can Monitor Unit, (SSM) Sealed Switch Module, Ignition Power (5A)	F31— Spare Ignition Power (5A)	F55— Rear Wiper Motor (5A)	

MM61211,00013D2 -19-22FEB06-3/3

**Fuse (Blade-Type) Color Codes**

Amperage Rating	Color
1	Black
3	Violet
4	Pink
5	Tan
7.5	Brown
10	Red
15	Light Blue
20	Yellow
25	Natural (White)
30	Light Green

CED,OUO1021,127 -19-13MAR98-1/1



## Replacing Halogen Bulbs

**IMPORTANT:** To get the correct lighting pattern, lens must be installed so the word "TOP" is on top when lamp is installed so wider section is on top when lamp is installed.

Before disassembling, remember how bezel and lens are installed with respect to mounting stud.

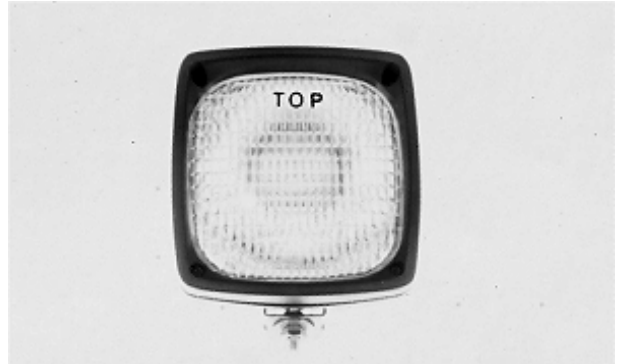
1. Remove four screws (H) to remove bezel (G) and lens (F).
2. Disconnect wiring lead and release retainer clip to remove bulb (D).
3. To disconnect ground wiring lead, push tab up, then pull connector from terminal.

**IMPORTANT:** Do not touch the halogen bulb with bare hands. Oil and moisture may cause premature bulb failure. Clean bulb using a soft, oil-free cloth and alcohol.

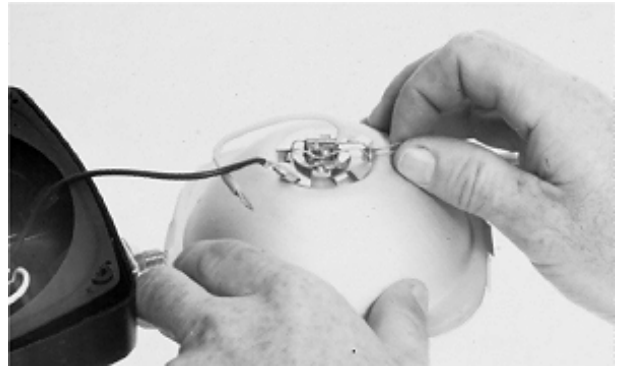
4. Install new bulb so square notch is aligned with square tab on reflector back.
5. Install retainer clip into locking tabs on reflector back.
6. Connect wiring leads. Check wiring leads are free of clip.
7. Install lens assembly (F) in housing (C) making sure wires are not crimped, or keeping lens assembly from seating on gasket.
8. Install bezel so wider section is on top. Sealing flange must be inside housing on all four sides before tightening screws.
9. Tighten screws alternately. Do not overtighten as screws may strip out plastic.

A—Flange Nut  
B—Lock Washer  
C—Housing  
D—Bulb

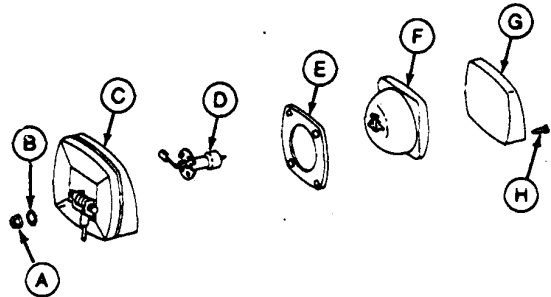
E—Gasket  
F—Lens  
G—Bezel  
H—Screw



T5894AG1 —UN—17APR89



T5894A11 —UN—20OCT88



T6249AU —UN—19OCT88

TX.90,RR,1725 -19-11MAR94-1/1

## Engine Speeds

### Specification

Engine—Slow Idle  
Speed..... 900 ± 25 rpm  
Fast Idle Speed ..... 2350 ± 25 rpm

TX.90,JC2103 -19-01OCT04-1/1

## Checking Neutral Start System

**⚠ CAUTION:** Avoid possible injury or death. **DO NOT attempt to start machine unless you are sitting in operator's seat with the FNR in neutral "N" position with park brake applied. DO NOT bypass or disable any of the starting system parts.**

Check the neutral start system to ENSURE that the machine:

1. WILL start with the FNR in neutral "N" position.
2. WILL start with the FNR in forward "F" or reverse "R" position, but will not move until it has been cycled back to "N".

If starting system fails to operate correctly, have your John Deere dealer repair the system immediately.

TX,90,JC1862 -19-18MAY05-1/1

## Servicing Air Conditioning System

1. Check compressor clutch engagement.
2. Check evaporator core for clogging.
3. Check air intake filters for clogging.
4. Check blowers for proper operation.
5. Check the condenser core to see that it is not partially or completely plugged with dirt or trash. Clean with compressed air or water when needed.
6. Run air conditioning system for several minutes.
7. Check sight glass (1) on receiver dryer (from outside of cab). Bubbles must not be present in sight glass. If bubbles are present, see your authorized dealer for charging the air conditioning system.



T106394C—UN—08APR97

1— Receiver Dryer Sight Glass

TX,90,JC1978 -19-20MAR97-1/1

## Welding on Machine

**IMPORTANT:** Disconnect battery ground strap or turn battery disconnect switch to "OFF" to prevent voltage spikes through alternator or monitor.

**Connect welder ground clamp close to each weld area so electrical current does not arc inside any bearings, bushings or pins.**

*NOTE: Machine is adequately grounded. It is not necessary to disconnect any controllers (microprocessors).*

TX,90,JC1603 -19-29AUG96-1/1

**External Service Brake Inspection—444J (S.N. —604689), 544J, 624J**

Do first inspection at 5000 hours followed by 1000-hour inspection intervals after the first 5000-hour inspection.

If the service brakes are subjected to severe duty, inspect more frequently.

1. Remove plug from brake inspection port.
2. Start engine and run for 1 minute.
3. Stop and apply the brakes. Block pedal or have someone hold brakes on.
4. Using a tool (A), measure the thickness of disks (B) at dimension (C). Check dimension of two different disks.

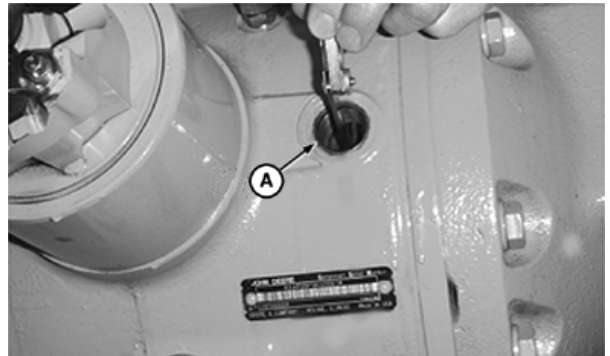
**Specification**

Used Service Brake Disk	
Thickness—Distance.....	2.29 mm 0.090 in.
New Service Brake Disk	
Thickness—Distance.....	2.90 mm 0.114 in.

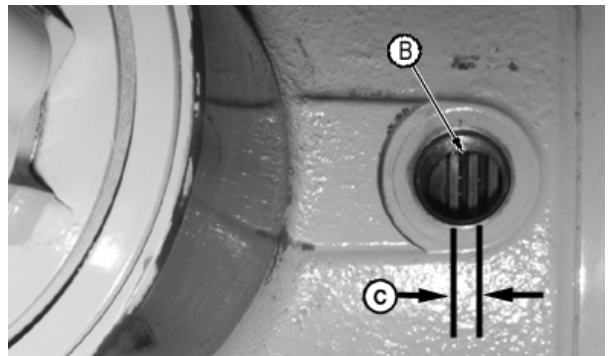
5. If either of the disk thickness at dimension (C) is less than the minimum specification, the brake packs must be replaced.

A—Feeler Gauge  
B—Disks

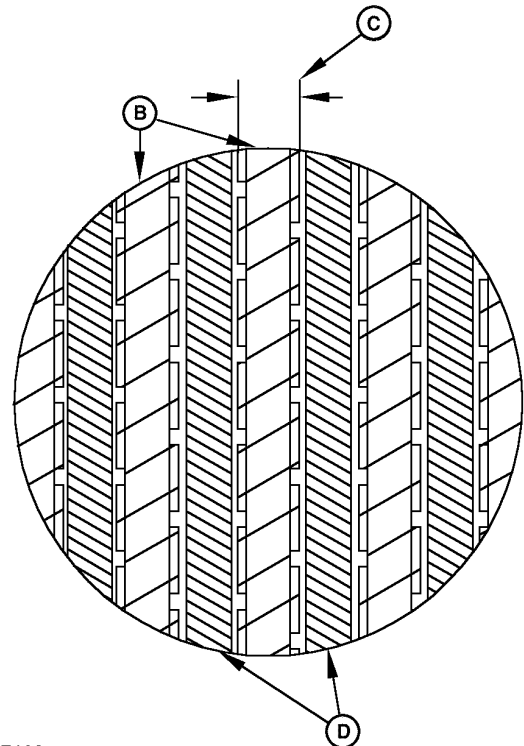
C—Dimension  
D—Plates



T 105193B —UN—02NOV98



T117102 —UN—10SEP98



T117103

T117103 —UN—23SEP98

MM61211,0000DAA -19-16MAR06-1/1

**External Service Brake Inspection—444J  
(S.N. 604690— )**

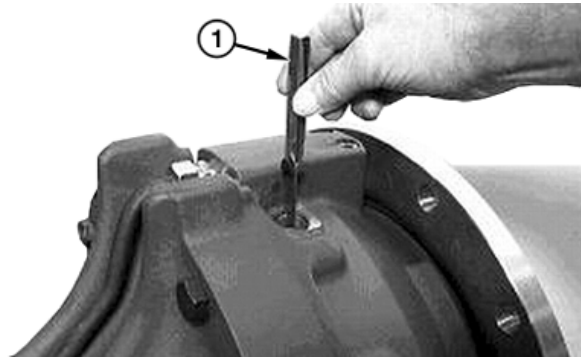
**⚠ CAUTION:** Prevent possible injury from hot spraying oil. Slowly loosen plug to relieve any pressure.

**IMPORTANT:** Perform first inspection at 5000 hours followed by 1000-hour inspection intervals after the first inspection, or if ever any of the following are suspected:

- Brake Noises.
- Reduced Braking Power.
- Deceleration Changes.
- Brake Fluid Level Changes.
- Brake Pressure Changes.

**If the service brakes are subjected to severe duty, inspect more frequently.**

1. Apply brakes and block pedal or have someone hold brakes on.



TX1003414 —UN—07FEB06

1— Feeler Gauge

2. Remove plug from brake inspection port.

MM61211.0000DA9 -19-04APR06-1/2

3. Using a feeler gauge (1), measure the dimension (2) between plates (3). Check measurements on both output sides.

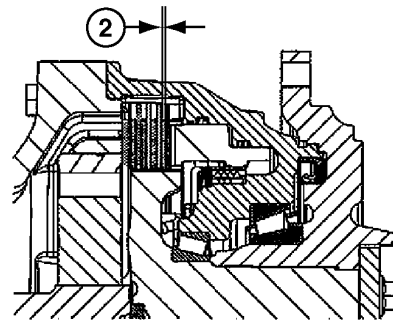
**Specification**

Service Brake Disk	
Thickness—If Distance Is	
Less Than.....	4.0 mm
	0.15 in.

4. If the disk thickness at dimension (2) is less than the minimum specification, the brake packs must be replaced.

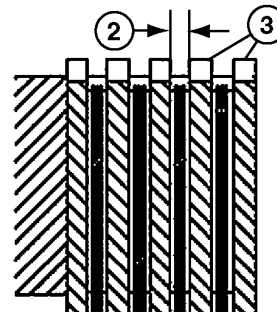
2— Dimension

3— Plates



TX1003413

TX1003413 —UN—07FEB06



TX1003419

Exploded View

TX1003419 —UN—07FEB06

MM61211.0000DA9 -19-04APR06-2/2

### Checking Brake Accumulators—444J (S.N. —604689), 544J, 624J

1. Start engine.

*NOTE: If machine is equipped with return-to-charge, the return-to-charge switch must be in the OFF position.*

2. Lower boom by placing controller handle in "float" position.
3. Run engine for 1 minute at slow idle. Apply brake pedal four or five times.
4. Stop engine.

5. Turn key switch to ON position.

*NOTE: Accumulators are precharged and must be replaced, not recharged.*

6. Apply brake pedal. The brake low pressure indicator light may come on after 18 to 35 full brake applications.  
If brake light comes on with less than 18 applications, see your authorized dealer.
7. Repeat procedure three times to ensure accurate results.

MM61211,00013BD -19-16MAR06-1/1

### Checking Brake Accumulators—444J (S.N. 604690— )

**CAUTION:** Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high-pressure fluids.

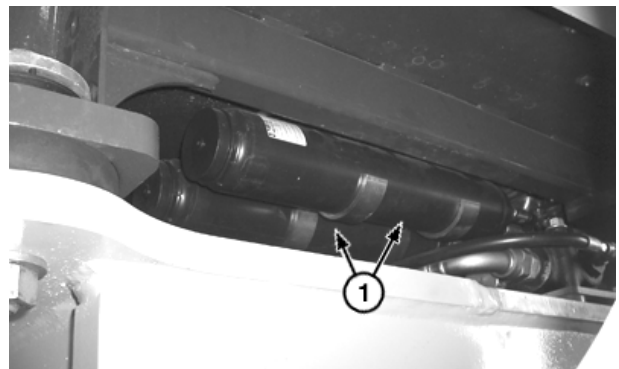
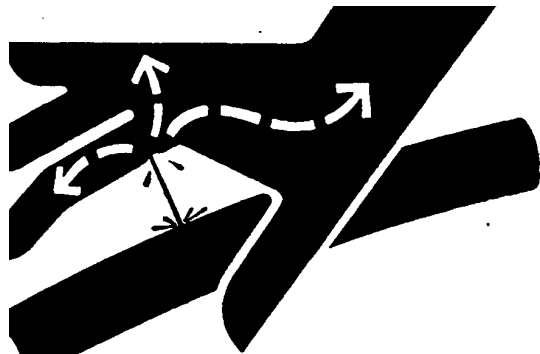
If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury may call the Deere & Company Medical Department in Moline, Illinois, or other knowledgeable medical source.

1. Start engine.
2. Run engine for 1 minute at slow idle. Apply brake pedal four or five times.
3. Stop engine.
4. Turn key switch to ON position.

*NOTE: Accumulators are precharged and must be replaced, not recharged.*

5. Apply brake pedal. The brake low pressure indicator light may come on after five to six full brake applications. The indicator light will stay on 2—3 seconds after each application and then go off. After seven to eight applications, indicator light will stay on.

If brake light comes on with less than four applications, individual accumulators (1) should be replaced.



1— Brake Accumulator (2 used)

6. Repeat procedure three times to ensure accurate results.

MM61211,00013BC -19-16MAR06-1/1

X9811 —UN—23AUG88

TZ14029A —UN—30AUG05

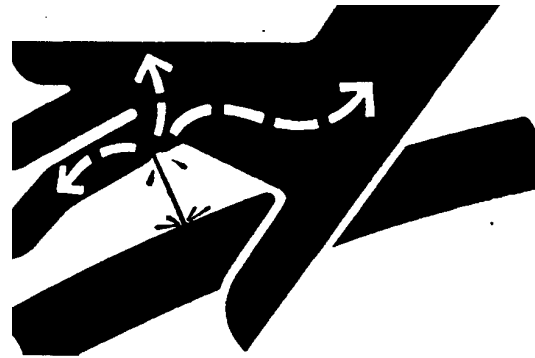
## Checking Ride Control Accumulator—If Equipped

**⚠ CAUTION:** Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high-pressure fluids.

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

**⚠ CAUTION:** Prevent possible injury from unexpected machine movement. The boom will jump upward during this check. Make sure area around bucket is clear.

1. Start engine.
2. Push ride control switch (1) to OFF position.
3. Raise boom to maximum height and hold control lever over relief for 2 seconds.
4. Lower boom and bucket to ground and stop engine. Put boom control lever in neutral.



1— Ride Control Switch

Continued on next page

MM61211,00013BE -19-19APR06-1/2

X9811 —UN—23AUG88

T192456A —UN—18SEP03

**NOTE:** When ride control switch is in "A" (automatic) position, ride control works at 6.0 km/h (3.7 mph) or above.

5. Turn key switch to the ON position.
6. Push ride control switch to the MANUAL/ON position. Switch will light. Boom will jump upward, approximately 100 mm (4 in.), as accumulator (A) pressure is released.
7. If ride control accumulator has lost gas charge, see your authorized dealer.

**To Discharge Accumulator**

1. Start engine.
2. Raise boom to access front cover on frame.

**NOTE:** If machine is equipped with return-to-carry, the return-to-carry switch must be in the OFF position.

3. Install boom lock.

**NOTE:** Boom should be raised and boom lock installed so there is approximately 6" between the boom lock and cylinder barrel.

4. Stop engine.
5. Turn key switch to the ON position.
6. Push ride control switch to the MANUAL/ON position. Switch will light.



T1108328C —UN—27AUG97

A—Accumulator

**NOTE:** If ride control switch is already in the MANUAL/ON position, it must be cycled to OFF then back to MANUAL/ON position.

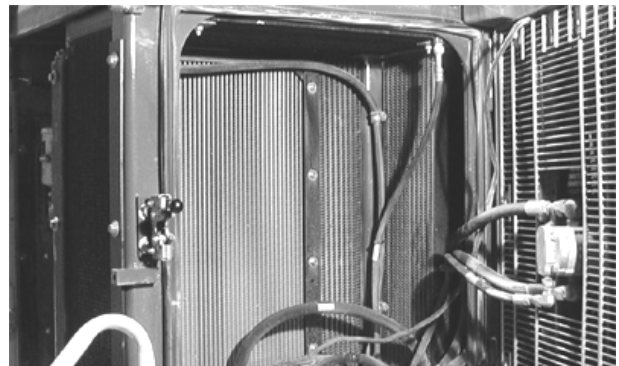
7. Push and hold pilot enable/boom down switch.
8. Push and hold hydraulic control lever in the boom float position until the boom lock contacts the cylinder barrel.

**NOTE:** If pressure still remains in the accumulators it will be difficult to connect the transducer to the diagnostic quick coupler. Repeat process if necessary.

MM61211,00013BE -19-19APR06-2/2

**Transmission Cooler and Radiator External Cleaning Procedure**

1. If dust or debris is light, clean oil cooler by blowing air through the fins. Do not exceed 6 bar (90 psi). Blow air straight through fins to avoid bending them.
2. If air fails to clean the oil cooler, use a high-pressure washer with soap and water not to exceed 48 bar (700 psi). Direct water straight through fins to avoid bending them.



T1196193A —UN—11NOV03

HG31779,00002FC -19-26JUN03-1/1

## Service Recommendations For Snap-To-Connect (STC®) Fittings

Snap-To-Connect (STC®) fittings are used on this machine. The fittings are designed to allow the hydraulic hose to rotate as needed when the system is not pressurized. This prevents the hydraulic hoses from binding when components are put back to their operating position.

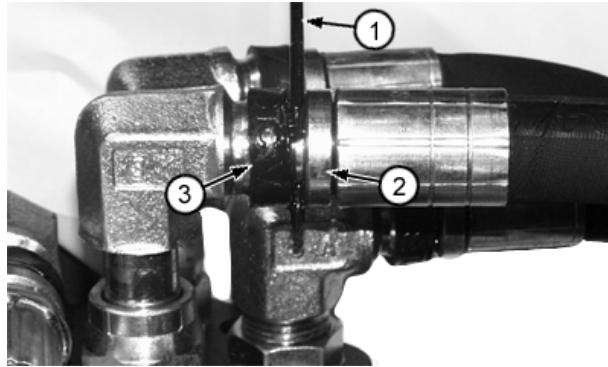
Fittings are easily disconnected using special tool, JDG1385 STC Fitting Release Tool (1) (supplied in machine with Operator's Manual). The special tool has a different size slot cut into each end. The narrow slot is for -06 size fittings. The wide slot is for -08 size fittings. Use appropriate end of special tool on fitting being disconnected. To connect fittings, simply push each half of fitting together.

**IMPORTANT: DO NOT pry against release sleeve (3) or damage to fitting may result.**

**DO NOT force release sleeve beyond normal range of travel, otherwise, release sleeve may fall off when hose is disconnected. If this happens and fitting is connected without the release sleeve installed, fitting will not be able to be disconnected again.**

1. Disconnect STC type fittings:
  - a. Clean area around fitting, especially around the release sleeve (3).

*Snap-To-Connect (STC) is a trademark of Eaton Corp.*



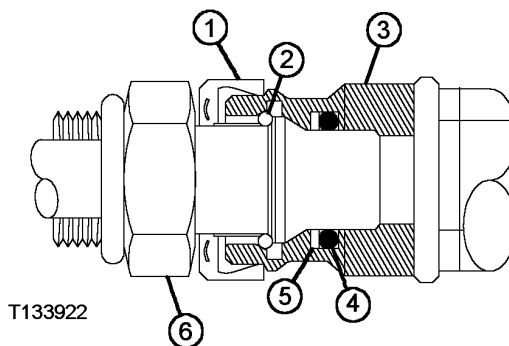
T134792C—UN—24OCT00

- |                                     |                   |
|-------------------------------------|-------------------|
| 1— JDG1385 STC Fitting Release Tool | 3— Release Sleeve |
| 2— Shoulder Of Fitting              |                   |

- b. While keeping JDG1385 STC Fitting Release Tool (1) perpendicular to the fitting, insert tool between release sleeve (3) and shoulder (2).
- c. Gently push, **DO NOT PRY**, release sleeve away from shoulder to disconnect the fitting.
- d. Pull hose to disconnect.

2. Inspect STC fittings:
  - a. Check seal mating surfaces for nicks, scratches, or flat spots.
  - b. Check O-ring (4), backup ring (5), and retaining ring (2) for wear or damage.
  - c. Make sure O-ring, backup ring, and retaining ring are in position before connecting fitting halves together.

3. Connect STC fittings:
  - a. Make sure fitting halves (3 and 6) are clean and free of contaminants.
  - b. Make sure release sleeve (1) is on male half (6) of fitting before connecting fitting halves together.
  - c. Push fitting halves together until a definite snap and solid stop is felt.
  - d. Pull back on hose to make sure fitting halves are locked together.



T133922

T133922—UN—21SEP00

- |                               |                             |
|-------------------------------|-----------------------------|
| 1— Release Sleeve             | 4— O-Ring                   |
| 2— Retaining Ring             | 5— Backup Ring              |
| 3— Female Half of STC Fitting | 6— Male Half of STC Fitting |

- e. To prevent hoses from binding, move component into position before pressurizing hydraulic system.

OUO1010,0000457 -19-22JUL10-2/2



### Do Not Service Control Valves, Cylinders, Pumps or Motors

If these parts need service, see your authorized dealer.

Special tools and information are needed to service control valves, cylinders, pumps, or motors.

TX,90,DH2537 -19-03SEP92-1/1

### Hardware Torque Specifications

Check cap screws and nuts to be sure they are tight. If hardware is loose, tighten to torque shown on the following charts unless a special torque is specified.

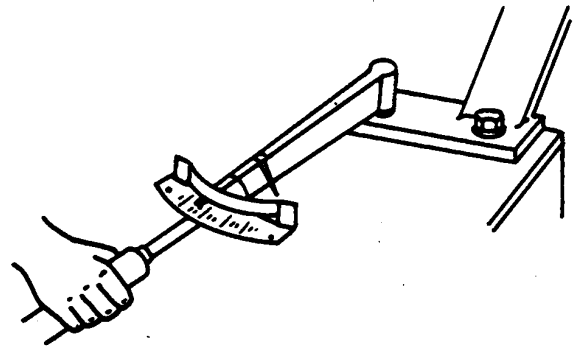
T82,SKMA,AT -19-01AUG94-1/1

### Keep ROPS Installed Properly

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

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

When installation of equipment on a machine necessitates loosening or removing ROPS, mounting bolts must be tightened.



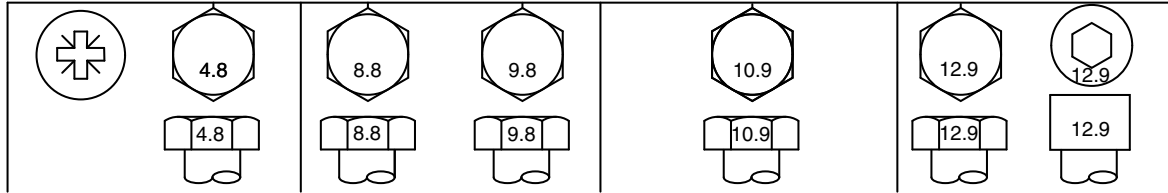
TS176—UN—23AUG88

	Specification
ROPS Mounting	
Bolt—Torque.....	1150 N·m 850 lb-ft

TX,90,JC1925 -19-05NOV08-1/1

### Metric Bolt and Screw Torque Values

TS1670 —UN—01MAY03



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

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

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

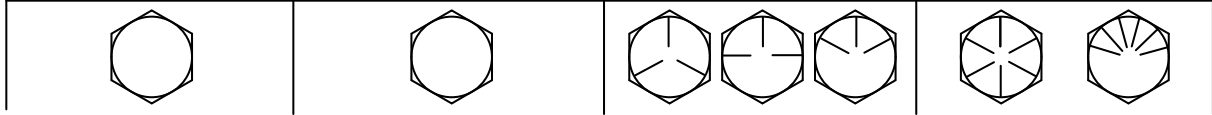
<sup>a</sup>“Lubricated” means coated with a lubricant such as engine oil, fasteners with phosphate and oil coatings, or M20 and larger fasteners with JDM F13C zinc flake coating.

<sup>b</sup>“Dry” means plain or zinc plated without any lubrication, or M6 to M18 fasteners with JDM F13B zinc flake coating.

DX,TORQ2 -19-08DEC09-1/1

## Unified Inch Bolt and Screw Torque Values

TS1671 —UN—01MAY03



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

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

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

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

<sup>b</sup>"Lubricated" means coated with a lubricant such as engine oil, fasteners with phosphate and oil coatings, or 7/8 in. and larger fasteners with JDM F13C zinc flake coating.

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

DX,TORQ1 -19-08DEC09-1/1

# Miscellaneous—Operational Checkout

## Operational Checkout

Use this procedure to check all systems and functions on the machine. It is designed so you can make a quick check of the operation of the machine while doing a walk around inspection and performing specific checks from the operator's seat.

Should you experience a problem with your machine, you will find helpful diagnostic information in this checkout that will pinpoint the cause. This information may allow you to perform a simple adjustment which will reduce the downtime of your machine. Use the table of contents to help find adjustment procedures.

The information you provide after completing the operational checkout will allow you or your authorized dealer to pinpoint the specific test or repair work needed to restore the machine to design specifications.

A location will be required which is level and has adequate space to complete the checks. No tools or equipment are needed to perform the checkout.

Complete the necessary visual checks (oil levels, oil condition, external leaks, loose hardware, linkage, wiring, etc.) prior to doing the checkout. The machine must be at operating temperature for many of the checks.

Before starting this operational checkout, check diagnostic Service codes in monitor. These service codes must be corrected or cleared before starting this checkout.

Start at the top of the left column and read completely down column before performing check, follow this sequence from left to right. In the far right column, if no problem is found (YES), you will be instructed to go to next check. If a problem is indicated (NO) or (NOT OK), you will be referred to either a section in this manual or to your authorized dealer.

HG31779.000032B -19-12JAN06-1/31

## 1 Engine Off Checks

HG31779.000032B -19-12JAN06-2/31

### Battery Check

65.1   
25.0 

T194308 —UN—11SEP03

Key OFF.

Press SELECT button and hold until battery volts are displayed.

*LOOK: Does battery volts read a minimum of 24 volts?*

**YES:** Go to next check.

**NO:** See Monitor Display Unit—Diagnostics Menu. Check voltage on each battery before recharging.

If one battery will not hold a charge, replace both batteries.

Continued on next page

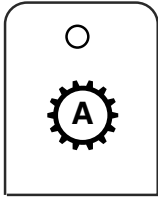
HG31779.000032B -19-12JAN06-3/31

Miscellaneous—Operational Checkout

<b>Monitor Check</b>	Key switch ON. Observe Monitor and note changes for first 3 seconds (Bulbs, Indicators and Gauges). <i>LOOK/LISTEN: Do all lights come ON and does alarm sound?</i> <i>Does the LCD display show John Deere and the model number?</i> <i>Do all the gauge indicators point to approximately 12:00 O' clock position?</i> <i>Is backlighting of gauges ON?</i> After 4 seconds observe changes in Monitor. <i>LOOK: Do gauge indicators change from 12:00 O'clock to normal readings?</i> <i>Does the LCD show gear, engine speed, and hourmeter/speedometer/odometer?</i>	<b>YES:</b> Go to next check. <b>NO:</b> Check CMU / SSM ignition power 5 A fuse.  HG31779,000032B -19-12JAN06-4/31
----------------------	---	--

<b>Cab System Checks</b>	Check the following for proper working order: <ul style="list-style-type: none"><li>• Seat Adjustment</li><li>• Seat Belt</li><li>• Tilt Wheel Counsel</li><li>• Front and rear work lights</li><li>• Drive and marker lights</li><li>• Turn signals</li><li>• Dome light</li><li>• Horn</li><li>• Front and rear windshield wiper and washer</li><li>• Four speed (five position) blower fan</li><li>• Door and window latches</li><li>• Side shield latches</li><li>• Grill housing door latch</li><li>• Fuel fill cap and fuel door</li><li>• Cab Mount Ladder</li><li>• Boom Lock check</li><li>• Service Decal check</li></ul>	<b>YES:</b> Go to next check. <b>NO:</b> Go to specific problem.  Continued on next page HG31779,000032B -19-12JAN06-5/31
--------------------------	---	---

**Transmission Gear Shift Switch And Neutral Lock Latch Checks**



T194310 —UN—11SEP03

Push automatic transmission switch to OFF position (LED unlit).

Move transmission gear shift to Forward (F), Neutral and Reverse (R) positions.

*LISTEN/LOOK: Does switch move into Forward, Neutral and Reverse positions.*

*Does switch stay in detented positions?*

*Does Backup alarm sound when in Reverse?*

*NOTE: Neutral lock only applies to steering column mounted shifter switch.*

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.

*NOTE: The following check applies only to steering column mounted shifter switch.*

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 LCD display indicate correct gear and "N" position? (1 N, 2 N, 3 N and 4 N)*

*NOTE: The following checks applied only to hydraulic control lever mounted shift controls.*

Press the up-shift button and down-shift button on the control lever.

*LOOK: Does LCD display indicate correct gear and "N" position? (1 N, 2 N, 3 N and 4 N)*

**YES:** Go to next check.

**NO:** If lever does not move or lock properly, replace lever.

**NO:** If gears do not change on monitor, see your authorized dealer.

HG31779,000032B -19-12JAN06-6/31

**Neutral Start Check**

Move FNR to 1st gear forward (1F) of to 1st gear reverse (1R), turn key switch to START.

*LOOK/LISTEN: Does engine start?*

*Does LCD display indicate a neutral gear selection?*

*NOTE: Gear display will not display "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 your authorized dealer.

HG31779,000032B -19-12JAN06-7/31

**2 Engine Running Checks**

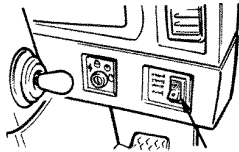
Continued on next page

HG31779,000032B -19-12JAN06-8/31

Miscellaneous—Operational Checkout

<b>Monitor Check</b>	Start Engine. Observe CMU and check bulbs, indicators and gauges. <i>LOOK/LISTEN: Do all lights illuminate?</i> <i>Does monitor alarm sound?</i> <i>Is backlighting of gauges ON?</i> After 4 seconds observe changes in Monitor.  <i>LOOK: Do gauges show normal readings?</i> <i>Does home screen change to show gear, rpm, and hourmeter/speedometer/odometer?</i> <i>Does engine speed read idle speed?</i> <i>Does seat belt indicator go OFF 5 seconds after engine starts?</i>	<b>YES:</b> Go to next check.  <b>NO:</b> Check CMU / SSM ignition power 5 A fuse (F13). IF OK: Check appropriate diagnostic item on diagnostics menu.
----------------------	---	---

HG31779,000032B -19-12JAN06-9/31

<b>Park Brake Check</b>	 <p>T103441 T103441 —UN—09SEP96</p> <p>Release park brake by pushing park brake switch to OFF position. <i>LOOK: Does park brake indicator go off when brake is released? Will machine move if put into gear?</i></p> <p><b>⚠ CAUTION: Seat belt must be worn during this check to prevent possible injury from sudden machine stops.</b></p> <p>Fasten seat belt. Place transmission in 1st gear forward. Drive machine at 3 MPH and push park brake switch to ON. <i>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 alarm sound?</i></p>	<b>YES:</b> Go to next check. <b>NO:</b> If machine does not stop within specified distance, see your authorized dealer.
-------------------------	--	---

Continued on next page

HG31779,000032B -19-12JAN06-10/31

Miscellaneous—Operational Checkout

<p><b>Service Brake Check</b></p>	<p>Move each pedal with hand to check "free travel."  <i>FEEL: Does each pedal have about 6 mm (0.25 in.) free travel?</i></p>	<p><b>YES:</b> Go to next check.  <b>NO:</b> Inspect for debris under brake pedal. Inspect brake pedal linkage for damage.</p>
	<div> </div> <p>T194311 —UN—11SEP03            Push clutch cutoff switch until function is OFF (LEDs unlit).            Fully apply either service brake pedal.            Push park brake switch to OFF.            Put transmission in 2nd forward.            Increase engine speed to high idle.  <i>LOOK: Does machine remain stationary or move very slowly?</i>            Repeat check three times to ensure accurate results.</p>	<p><b>YES:</b> Go to next check.  <b>NO:</b> See your authorized dealer.</p>

HG31779,000032B -19-12JAN06-11/31

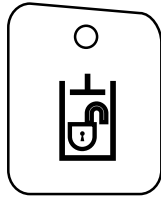
<p><b>Pilot Controller Lock Check</b></p>	<div> </div> <p>T194312 —UN—11SEP03</p> <div> </div> <p>T103429            T103429 —UN—09SEP96</p> <p>Press pilot enable/boom down switch to lock the pilot controls (LED unlit).            Hold control lever in boom raise position.            Press pilot enable/boom down switch to unlock the pilot controls (LED illuminated).  <i>LOOK: Does boom raise when pilot controls are unlocked?</i>            Press pilot enable/boom down switch to lock the pilot controls (LED unlit) and observe boom.  <i>LOOK: Does boom stop when controls are locked?</i>            Unlock pilot controls and check all hydraulic functions.</p> <ul style="list-style-type: none"> <li>• Boom Up/Down</li> <li>• Bucket Roll/Dump</li> <li>• Auxiliary functions (if equipped)</li> <li>• Steering (Left and Right)</li> <li>• Pin Disconnect (if equipped)</li> </ul> <p><i>LOOK: Do all equipped hydraulic functions operate correctly?</i></p>	<p><b>YES:</b> Go to next check.  <b>NO:</b> See your authorized dealer.</p>
---	--	--

Continued on next page

HG31779,000032B -19-12JAN06-12/31



**Pilot Enable/Boom Down Solenoid Check**



T194312 —UN—11SEP03

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.

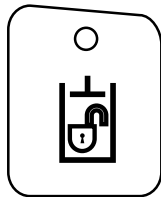
*LOOK: Does boom lower?*

**YES:** Go to next check.

**NO:** See your authorized dealer.

HG31779.000032B -19-12JAN06-13/31

**Service Brake Pressure Switch And Brake Accumulator Precharge**



T194312 —UN—11SEP03

Stop engine.  
 Turn key to ON position.  
 Press and hold Pilot Enable/Boom Down Switch and cycle hydraulic control lever in all directions 20 times to bleed charge pressure from PRV/brake accumulator.  
 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.

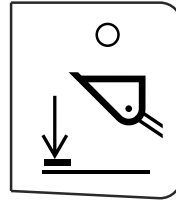
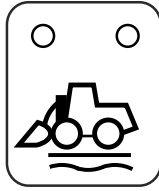
**NO:** If brake oil pressure indicator does not come on, see your authorized dealer.

**NO:** If brake lights fail to come on, see your authorized dealer.

Continued on next page

HG31779.000032B -19-12JAN06-14/31

**Pilot Control Valve Boom Float Check**

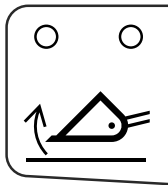


Run engine at idle.  
 Turn ride control off.  
 Turn return-to-carry off.  
 With the bucket partially dumped, lower boom to raise front of machine.  
 Push control lever to the float detent position and release lever.  
*LOOK: Does front of machine lower to the ground and valve remain in float position when lever is released?*

**YES:** Go to next check.  
**NO:** See your authorized dealer.

HG31779,000032B -19-12JAN06-15/31

**Return-to-Dig Check**

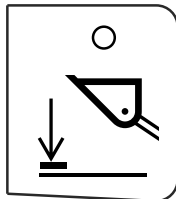


T194314 —UN—11SEP03  
 Raise the boom to about eye level.  
 Fully dump the bucket.  
 Verify that return-to-dig function is turned on.  
 Place controller in the bucket load detent position.  
*LOOK/FEEL: Does pilot controller detent?*  
  
*LOOK: Does bucket travel stop upon reaching dig position?*

**YES:** Go to next check.  
**NO:** Verify that the sensor is adjusted correctly. See Return-to-Dig Adjustment.  
**NO:** See your authorized dealer.

HG31779,000032B -19-12JAN06-16/31

**Return-to-Carry Check**



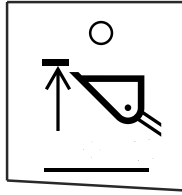
T194315 —UN—11SEP03  
 Fully raise boom.  
 Place bucket in dig position.  
 Verify that the return-to-carry function is turned on.  
 Place controller in the boom down detent position.  
*LOOK/FEEL: Does pilot controller detent?*  
*LOOK: Does boom travel stop upon reaching carry position?*

**YES:** Go to next check.  
**NO:** Verify that the sensor is adjusted correctly. See your authorized dealer.

HG31779,000032B -19-12JAN06-17/31

Continued on next page

**Boom Height Kickout  
Check**



T194316 —UN—11SEP03

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?*

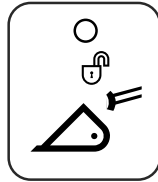
*LOOK: Does boom travel stop before reaching full height?*

**YES:** Go to next check.

**NO:** Verify that the sensor is adjusted correctly. See your authorized dealer.

HG31779,000032B -19-12JAN06-18/31

**Pin Disconnect System  
Check (If Equipped)**



T194317 —UN—11SEP03

Run engine at slow idle.

Position bucket flat on the ground.

Push and hold pin disconnect switch on the sealed switch module (SSM).

*LOOK: Does pin disconnect cylinder retract both pins while switch is pressed?*

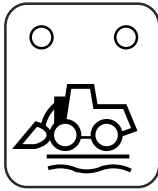
**YES:** Go to next check.

**NO:** See your authorized dealer.

Continued on next page

HG31779,000032B -19-12JAN06-19/31

Ride Control Check



T194313 —UN—11SEP03

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

Press ride control switch on SSM to enable ride control manual mode. Left LED will illuminate.

Raise boom to maximum height and hold control lever over relief for 2 seconds.

Lower boom and bucket to eye level. Observe loader boom as Ride Control Switch is switched to ON.

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

Press ride control switch on the SSM once more to enable auto mode. Right LED will illuminate.

Raise boom to maximum height and hold control lever over relief for 2 seconds.

Lower boom and bucket to eye level and slowly accelerate to 5 mph while watching speedometer and bucket.

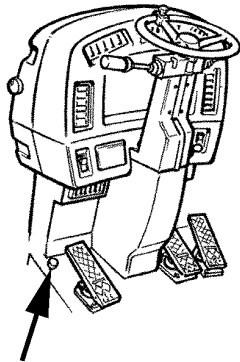
*LOOK/FEEL: Does ride control come on at approximately 3 mph and bucket raise slightly?*

**YES:** Go to next check.

**NO:** See your authorized dealer.

HG31779,000032B -19-12JAN06-20/31

Differential Lock Check



T103168

T103168 —UN—05SEP96

Park unit on a hard surface.

Release brakes.

Push differential lock switch and steer unit left and right.

Release switch and steer unit left and right.

*LOOK: Do front wheels slide with differential lock on?*

*NOTE: It is normal to get a "clunk" sound when you release switch.*

*LOOK: Do front wheels rotate in opposite directions with differential lock switch released?*

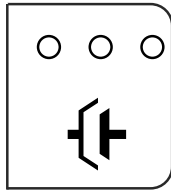
**YES:** Go to next check.

**NO:** See your authorized dealer.

Continued on next page

HG31779,000032B -19-12JAN06-21/31

**Clutch Cutoff Check**



T194311 —UN—11SEP03

Press clutch cutoff switch to enable clutch cutoff at any slope. LED(s) will illuminate.

Apply brake.

Increase engine rpm to 1500.

Press clutch cutoff switch until clutch cutoff is turned off. All LEDs will be off.

*LISTEN/LOOK: Does engine rpm drop?*

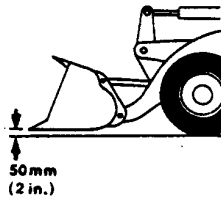
*FEEL: Can you feel machine pull through brakes?*

**YES:** Go to next check.

**NO:** See your authorized dealer.

HG31779,000032B -19-12JAN06-22/31

**Boom And Bucket  
Cylinder Drift Check**



T6564NZ —UN—19OCT88

Set bucket flat on the ground and raise about 50 mm (2 in.).

Stop engine. Observe bucket for 1 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 your authorized dealer.

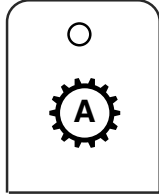
Continued on next page

HG31779,000032B -19-12JAN06-23/31

Miscellaneous—Operational Checkout

**Automatic Shift And Speedometer Check**

*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. Transmission will never shift to 1st gear. In AUTO MODE TO FIRST 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 high load is encountered. Transmission will upshift or downshift as ground speed dictates.*



T194310 —UN—11SEP03

Press automatic transmission switch to place transmission in automatic mode. LED is illuminated.

Release park brake and shift to (4th) forward.

Drive machine on level ground and slowly accelerate to fast idle speed and note speed when shifts are made until engaged in 4th gear. Reduce engine rpm to idle and note speed when transmission makes each downshift.

*LOOK: Does the transmission shift at following approximate speeds?*

644J, 724J		
Shift	MPH	Km/H
2nd-3rd	6	9
3rd-4th	10	16
4th-3rd	7	11
3rd-2nd	4	6

*NOTE: In 4th Forward automatic the transmission starts out in 2nd gear and upshifts to 3rd then 4th. When transmission downshifts it returns to 2nd. Transmission will shift at different speeds depending on machine loads. Use only as reference.*

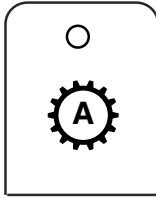
**YES:** Go to next check.

**NO:** See your authorized dealer.

Continued on next page

HG31779,000032B -19-12JAN06-24/31

**Transmission Shift Mode Check**



T194310 —UN—11SEP03

Press automatic transmission switch to place transmission in manual mode. LED is off.

Press MENU to bring up the main menu, select Machine Settings (2), then Quick Shift (1).

Press SELECT to set quick shift in Down/Up mode.

Release park brake and shift to 3rd forward.

Drive machine at approximately 1600 rpm and press Quick Shift Switch once.

*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.*

Press MENU to bring up the main menu, select Machine Settings (2), then Quick Shift (1).

Press NEXT to highlight Down Only then press SELECT to set quick shift in Down only mode.

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.

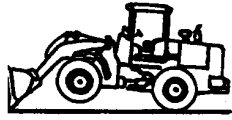
**NO:** Check restriction switch / radio ignition power 10 A fuse (F11).

**NO:** See your authorized dealer.

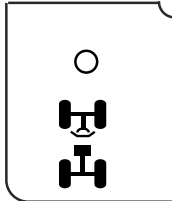
Continued on next page

HG31779.000032B -19-12JAN06-25/31

**Axle Disconnect Check  
(If Equipped)**



T6601AA —UN—19OCT88



T194318 —UN—11SEP03

Operate machine in an open area away from bystanders.  
With bucket partially dumped, lower boom to raise front wheels off the ground.  
Press Axle Disconnect Switch on Sealed Switch Module (SSM) to disconnect axle.  
Watch front wheels while operating the machine in reverse. Front wheels must not rotate as machine moves backwards.

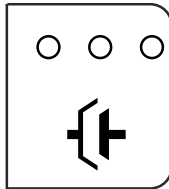
*LOOK: Do front wheels remain stationary while machine moves backwards?*

**YES:** Go to next check.

**NO:** See your authorized dealer.

HG31779,000032B -19-12JAN06-26/31

**Transmission Shift  
Modulation Check**



T194311 —UN—11SEP03

Press clutch cutoff switch to turn off clutch cutoff (all LEDs off).  
Press automatic transmission switch to place transmission in manual mode. LED is off.

**⚠ 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.

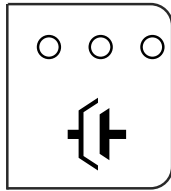
**NO:** See your authorized dealer.

Continued on next page

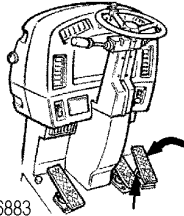
HG31779,000032B -19-12JAN06-27/31



**Torque Converter and Engine Power Check**



T194311 —UN—11SEP03



T106883  
T106883 —UN—14FEB97

Release park brake.  
 Press clutch cutoff switch to turn off clutch cutoff (all LEDs off).  
 Apply service brakes so machine does not move.  
 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:*

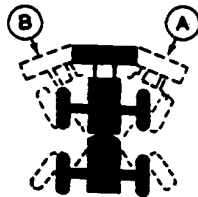
- No. 1 fuel: 2040—2170 rpm
- No. 2 fuel: 2070—2190 rpm

Move FNR to neutral "N" position and run for 15 seconds to cool oil.

**YES:** Go to next check.  
**NO:** If stall speed is outside range, see your authorized dealer.

HG31779,000032B -19-12JAN06-28/31

**Steering Valve Check**



T6471AQ —UN—19OCT88

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 your authorized dealer.

Continued on next page

HG31779,000032B -19-12JAN06-29/31

Miscellaneous—Operational Checkout

**Secondary Steering System Check (If Equipped)**

**IMPORTANT: Do not operate secondary steering pump for more than 15 seconds with the steering in neutral or damage to the pump and motor can occur.**

Park unit on a hard level surface with engine running and machine frames straight.

Remove ECU ignition power fuse (F10).

Secondary steering will activate.

Steer unit to right and left.

*LOOK: Does machine steer approximately half way to stops in both directions? Does light in monitor come on and stay on until key is turned off?*

**YES:** Go to next check.

**NO:** See your authorized dealer.

HG31779,000032B -19-12JAN06-30/31

**Diagnostic Trouble Codes Check**

Check Diagnostic Trouble Codes. Diagnostic Trouble Codes can be displayed using SERVICE ADVISOR™ system or machine CAN monitor unit (CMU).

**Display diagnostic trouble codes using machine CMU:**

Press MENU to reach main menu. Press SELECT to view code menu, then select Active Codes or Stored Codes. Press NEXT to view the next code or press SELECT to view more information on that code.

If any codes appear, see Diagnostic Trouble Codes.

IF OK: Operational Checkout complete.

*SERVICE ADVISOR is a trademark of Deere & Company*

HG31779,000032B -19-12JAN06-31/31

## Miscellaneous—Troubleshooting

### Troubleshooting Procedure

*NOTE: Troubleshooting charts are arranged from the simplest to verify, to least likely, more difficult to verify. When diagnosing a problem, use all possible means to isolate the problem to a single component or system. Use the following steps to diagnose problems:*

*Step 1. Operational Checkout Procedure*

*Step 2. Troubleshooting Charts*

*Step 3. Adjustments*

*Step 4. See your authorized John Deere dealer.*

HG31779,0000020 -19-06MAY10-1/1

## Diagnostic Trouble Codes Quick Reference List

The diagnostic trouble code number is indicated by an (SPN) Suspect Parameter Number and a (FMI) Failure Mode Indicator number. **(91.03)** 91 is the SPN number and 03 is the FMI number.

Use SERVICE ADVISOR™ system or see Stored Codes in the Display Menu to view stored diagnostic trouble codes.

### (ECU) Engine Controller Unit Diagnostic Trouble Codes

- 91.03—Engine Throttle Short To Power/Voltage Above Normal
- 91.04—Engine Throttle Open or Short To Ground
- 91.14—Engine Throttle Input Invalid
- 94.03—Fuel Pressure Open or Short To Power
- 94.04—Fuel Pressure Open or Short To Ground
- 94.10—Fuel Pressure Abnormal
- 94.17—Fuel Pressure To Low
- 100.01—Engine Oil Pressure Low
- 100.03—Engine Oil Pressure Short To Power/Voltage Above Normal
- 100.04—Engine Oil Pressure Open or Short To Ground/Voltage Below Normal
- 100.16— Engine Oil Pressure High
- 100.18— Engine Oil Pressure Low
- 105.03— Manifold Air Temperature Open or Short To Power/Voltage Above Normal
- 105.04— Manifold Air Temperature Open or Short To Ground/Voltage Below Normal
- 105.16— Manifold Air Temperature Too High
- 107.00— Engine Air Filter Restriction
- 110.00— Engine Coolant Temperature Too High (Most Severe)
- 110.03— Engine Coolant Temperature Voltage Above Normal
- 110.04— Engine Coolant Temperature Voltage Short To Ground/Voltage Below Normal
- 110.16— Engine Coolant Temperature High (Moderately Severe)
- 158.17— ECU Can Not Power Down
- 174.03— Fuel Temperature Open or Short To Power Voltage To High
- 174.04— Fuel Temperature Short To Ground Voltage To Low
- 174.16—Fuel Temperature High (Moderately Severe)
- 523.09—Current Gear Message Not Received Or Invalid
- 611.03—Injector Wiring Short To Power
- 611.04—Injector Wiring Short To Ground
- 620.03—Sensor Supply Voltage Too High
- 620.04—Sensor Supply Voltage Too Low
- 627.01—Battery Supply Voltage Is Low
- 629.13—ECU Not Programed
- 636.02—Engine Position Sensor
- 636.08—Engine Position Sensor
- 636.10—Engine Position Sensor
- 637.02—Timing Sensor
- 637.07—Timing Sensor

- 637.08—Timing Sensor
- 637.10—Crank Position Sensor
- 651.05—Cylinder #1 Injector
- 651.06—Cylinder #1 Injector
- 651.07—Cylinder #1 Injector
- 652.05—Cylinder #2 Injector
- 652.06—Cylinder #2 Injector
- 652.07—Cylinder #2 Injector
- 653.05—Cylinder #3 Injector
- 653.06—Cylinder #3 Injector
- 653.07—Cylinder #3 Injector
- 654.05—Cylinder #4 Injector
- 654.06—Cylinder #4 Injector
- 654.07—Cylinder #4 Injector
- 655.05—Cylinder #5 Injector
- 655.06—Cylinder #5 Injector
- 655.07—Cylinder #5 Injector
- 656.05—Cylinder #5 Injector
- 656.06—Cylinder #5 Injector
- 656.07—Cylinder #5 Injector
- 1076.00—Fuel Injection Pump Control Valve
- 1076.01—Fuel Injection Pump Control Valve
- 1076.03—Fuel Injection Pump Control Valve
- 1076.05—Fuel Injection Pump Control Valve
- 1076.06—Fuel Injection Pump Control Valve
- 1076.07—Fuel Injection Pump Control Valve
- 1076.10—Fuel Injector Problem
- 1076.13—Fuel Injection Pump Control Valve
- 1079.03—Excitation Voltage Too High
- 1079.04—Excitation Voltage Too Low
- 1080.03 —Sensor Supply Voltage Too High
- 1080.04 —Sensor Supply Voltage Short To Ground
- 1347.03—Fuel Pump Solenoid Short to Power
- 1347.05—Fuel Pump Solenoid 1 Open
- 1347.07—Fuel System Failure
- 1569.31—Engine Protection Derate
- 2000.06—Control Of Injector Bad

### (CMU) Can Monitor Unit Diagnostic Trouble Codes

- 829.05—Fuel Level Sensor Open Or Short To Power
- 2000.09—Missing Message From ECU
- 2003.09—Missing Message From TCU
- 2033.09—Missing Message From FLC
- 2140.09—Missing Message From SSM
- 2367.04—Left Turn Switch Shorted To Ground
- 2369.04—Right Turn Switch Shorted To Ground

### (FLC) Flex Load Controller Diagnostic Trouble Codes

- 1045.04—Brake Light Pressure Switch Shorted To Ground
- 1071.31—Variable Speed Fan Circuit
- 117.01—Service Brake Accumulator Low
- 117.04—Service Brake Accumulator Short To Ground
- 1638.00—Hydraulic Oil Temperature High
- 1638.04—Hydraulic Oil Temperature Circuit Shorted To Ground
- 167.16—System Voltage High (Engine Running)
- 167.18—System Voltage Low (Engine Running)
- 168.16—System Voltage High (Engine Off)

Continued on next page

HG31779,000032D -19-14OCT03-1/4

- 168.18—System Voltage Low (Engine Off)
- 171.04—Ambient Air Temperature Short To Ground
- 1713.01—Hydraulic Oil Filter Restricted
- 1762.03—Hydraulic System Pressure Sensor Voltage High
- 1762.04—Hydraulic System Pressure Sensor Voltage Low
- 2000.19—Missing Message From ECU
- 2003.19—Missing Message From TCU
- 2023.19—Missing Message From CMU
- 2140.19—Missing Message From SSM
- 2350.05—Drive Light Circuit Open or Short To Power
- 2350.06—Drive Light Circuit High Current
- 2356.06—Front Work Lights Circuit High Current
- 2356.05—Front Work Lights Circuit Open or Short To Power
- 2362.06—Rear Work Lights Circuit High Current
- 2362.05—Rear Work Lights Circuit Open or Short To Power
- 2366.06—Docking Work Lights Circuit High Current
- 2366.05—Docking Work Lights Circuit Open or Short To Power
- 2368.03—Left Turn Lights Circuit Short To Power
- 2368.05—Left Turn Lights Circuit Open
- 2368.06—Left Turn Lights Circuit High Current
- 2370.03—Right Turn Lights Circuit Short To Power
- 2370.05—Right Turn Lights Circuit Open
- 2370.06—Right Turn Lights Circuit High Current
- 2378.03—Marker/Tail Lights Circuit Short To Power
- 2378.05—Marker/Tail Lights Circuit Open
- 2378.06—Marker/Tail Lights Circuit High Current
- 2386.06—E15 Beacon Circuit High Current
- 2386.05—E15 Beacon Circuit Open or Short To Power
- 2875.04—S24 Four Way Flasher Switch Short To Ground
- 522438.03—Y20 Pin Disconnect Solenoid Short To Power
- 522438.05—Y20 Pin Disconnect Solenoid Open
- 522438.06—Y20 Pin Disconnect Solenoid High Current
- 522437.03—S17 Return To Dig Switch (Bucket) Short To Ground
- 522436.03—S37 Return To Dig Sensor (Bucket) Short To Power
- 522436.04—S37 Return To Dig Sensor (Bucket) Open or Short To Ground
- 299261.02—Machine Configuration Error
- 444.05—12V Center Tap Open or Short to Ground
- 444.18—Battery Voltage Imbalance
- 523137.01—Steering Pressure Low
- 523137.04—Steering System Pressure Switch Short To Ground
- 523214.05—No Power From VEC To FLC
- 523215.05—No Power From VEC To FLC
- 523216.05—No Power From VEC To FLC
- 523217.05—No Power From VEC To FLC
- 523218.05—No Power From VEC To FLC
- 523219.05—No Power From VEC To FLC
- 523436.17—FLC Internal Timer Failure
- 523577.03—M8 Secondary Steering Pump Short To Power
- 523577.05—M8 Secondary Steering Pump Open
- 523577.06—M8 Secondary Steering Pump High Current
- 523786.03—B45 Analog Boom Position Sensor Voltage Too High
- 523786.04—B45 Analog Boom Position Sensor Voltage Too Low
- 523948.03—Y18, Y34 Ride Control Solenoids Short To Power
- 523948.05—Y18, Y34 Ride Control Solenoids Open
- 523948.06—Y18, Y34 Ride Control Solenoids High Current
- 522435.03—Front Wiper (High Speed) Short To Power
- 522435.05—Front Wiper (High Speed) Open Circuit
- 522435.06—Front Wiper (High Speed) High Current
- 522434.05—Front Wiper (Low Speed) Open or Short To Power Circuit
- 522434.06—Front Wiper (Low Speed) High Current
- 522427.04—Front Wiper (Park) Missing
- 522797.03—Front Washer Pump Short To Power
- 522797.05—Front Washer Pump Open Circuit
- 522797.06—Front Washer Pump High Current
- 522426.04—Rear Wiper (Park) Signal Missing
- 522432.03—Rear Wiper (High Speed) Short To Power
- 522432.05—Rear Wiper (High Speed) Open Circuit
- 522432.06—Rear Wiper (High Speed) High Current
- 522433.05—Rear Wiper (Low Speed) Open Circuit or Short To Power
- 522433.06—Rear Wiper (Low Speed) High Current
- 522796.03—Rear Washer Pump Short To Power
- 522796.05—Rear Washer Pump Open Circuit
- 522796.06—Rear Washer Pump High Current
- 785.03—Y14, Y15 Pilot Enable Solenoids Short To Power
- 785.05—Y14, Y15 Pilot Enable Solenoids Open Circuit
- 785.06—Y14, Y15 Pilot Enable Solenoids High Current
- 880.03—Brake Lights Short To Power
- 880.05—Brake Lights Open Circuit
- 880.06—Brake Lights High Current
- 928.03—Y28 Axle Disconnect Solenoid Short To Power
- 928.05—Y28 Axle Disconnect Solenoid Open Circuit
- 928.06—Y28 Axle Disconnect Solenoid High Current
- 977.03—Y38 Reverse Fan Solenoid Short To Power
- 977.05—Y38 Reverse Fan Solenoid Open Circuit
- 977.06—Y38 Reverse Fan Solenoid High Current
- 1079.04—FLC Sensor Supply #1 Voltage Short To Ground
- 1080.04—FLC Sensor Supply #2 Voltage Short To Ground
- 524265.19—Data Error
- 522431.2—Hardware Failure

**(SSM) Sealed Switch Module Unit Diagnostic Trouble Codes**

- 629.12—SSM Software Failure
- 2033.09—Missing CAN Message From FLC
- 639.12—SSM Can Hardware Failure
- 639.19—SSM Lost CAN Communications
- 523523.10—Rear Wiper Keypad Stuck
- 523524.10—Front Wiper Keypad Stuck
- 523525.10—Front Washer Keypad Stuck
- 523526.10—Reverse Fan Keypad Stuck
- 523527.10—Pin Disconnect Keypad Stuck

Continued on next page

HC31779.000032D -19-14OCT03-2/4

- 523528.10—A/C Keypad Stuck
- 523529.10—Work Lights Keypad Stuck
- 523530.10—Beacon Light Keypad Stuck
- 523531.10—Axle Disconnect Keypad Stuck
- 523532.10—Spin Control Keypad Stuck
- 523533.10—Clutch Cutoff Keypad Stuck
- 523534.10—Pilot Enable Keypad Stuck
- 523535.10—Ride Control Keypad Stuck
- 523536.10—Auto Transmission Keypad Stuck
- 523537.10—Drive Lights Keypad Stuck
- 523538.10—Keypad Not Used
- 523607.10—Return To Dig Keypad Stuck
- 523608.10—Boom Height Kickout Keypad Stuck
- 523609.10—Return To Carry Keypad Stuck
- 523610.10—Rear Washer Keypad Stuck

**(TCU) Transmission Controller Unit Diagnostic Trouble Codes**

- 522421.02—Can Signal For Automatic Downshift Is Defective
- 522420.02—Can Signal For Manual Downshift Is Defective
- 522419.02—Can Signal For Clutch Cutoff Is Defective
- 522399.02—Clutch K1 Calculated Value Is Out Of Range
- 522395.02—Clutch K2 Calculated Value Is Out Of Range
- 522392.02—Clutch K3 Calculated Value Is Out Of Range
- 522389.02—Clutch K4 Calculated Value Is Out Of Range
- 522386.02—Clutch KV Calculated Value Is Out Of Range
- 522383.02—Clutch KR Calculated Value Is Out Of Range
- 522412.12—Gear Selector Fault
- 522411.12—FNR Selector Fault
- 522409.12—FNR Selector #2 Selector Fault
- 522407.03—Clutch Cutoff Sensor Short To Power
- 522407.04—Clutch Cutoff Sensor Open
- 522406.03—Transmission Oil Temperature Sensor Short To Power
- 522406.04—Transmission Oil Temperature Sensor Short To Ground
- 522404.03—B28 Torque Converter Input Speed Sensor Short To Power
- 522404.04—B28 Torque Converter Input Speed Sensor Short To Ground
- 522404.12—B28 Torque Converter Input Speed Sensor Open
- 522403.03—B29 Torque Converter Output Speed Sensor Open or Short To Power
- 522403.04—B29 Torque Converter Output Speed Sensor Short To Ground
- 522403.12—B29 Torque Converter Output Speed Sensor Open
- 522402.03—B30 Transmission Internal Clutch Speed Sensor Open or Short To Power
- 522402.04—B30 Transmission Internal Clutch Speed Sensor Short To Ground
- 522402.12—B30 Transmission Internal Clutch Speed Sensor Open
- 522401.03—B31 Transmission Output Speed Sensor Open or Short To Power
- 522401.04—B31 Transmission Output Speed Sensor Short To Ground
- 522401.12—B31 Transmission Output Speed Sensor Open
- 522401.02—B31 Transmission Output Speed Sensor Failed Signals
- 2023.09—Can Communication Lost For CMU
- 2033.09—Can Communication Lost For FLC
- 522399.03—Y1 Solenoid Short To Power
- 522399.04—Y1 Solenoid Short To Ground
- 522399.05—Y1 Solenoid Open
- 522395.03—Y2 Solenoid Short To Power
- 522395.04—Y2 Solenoid Short To Ground
- 522395.05—Y2 Solenoid Open
- 522392.03—Y3 Solenoid Short To Power
- 522392.04—Y3 Solenoid Short To Ground
- 522392.05—Y3 Solenoid Open
- 522389.03—Y4 Solenoid Short To Power
- 522389.04—Y4 Solenoid Short To Ground
- 522389.05—Y4 Solenoid Open
- 522386.03—Y5 Solenoid Short To Power
- 522386.04—Y5 Solenoid Short To Ground
- 522386.05—Y5 Solenoid Open
- 522383.03—Y6 Solenoid Short To Power
- 522383.04—Y6 Solenoid Short To Ground
- 522383.05—Y6 Solenoid Open
- 522382.03—H3 Backup Alarm Short To Power
- 522382.04—H3 Backup Alarm Short To Ground
- 522382.05—H3 Backup Alarm Open
- 522379.03—Y19 Park Brake Release Solenoid Short To Power
- 522379.04—Y19 Park Brake Release Solenoid Short To Ground
- 522379.05—Y19 Park Brake Release Solenoid Open
- 522376.0—Transmission Oil Temperature Max Value
- 522375.0—Transmission Oil Filter Restricted
- 522374.03—TCU Supply Voltage Short To Power
- 522374.04—TCU Supply Voltage Short To Ground
- 522373.03—TCU Supply Voltage High
- 522373.04—TCU Supply Voltage Low
- 522371.02—TCU P78 Red Wire Shorted To Power Or Ground
- 522370.02—TCU P78 Red Wire Shorted To Power Or Ground
- 522369.03—X1 Service ADVISOR System Connector Shorted To Power
- 522369.04—X1 Service ADVISOR System Connector Shorted To Ground
- 522368.02—TCU Memory Failure
- 522367.13—TCU Configuration Lost
- 522366.13—TCU Application Error
- 522365.13—TCU Limp Home Request
- 522364.07—Transmission Clutch Adjustment Out Of Limit

Continued on next page

HG31779,000032D -19-14OCT03-3/4

- 522364.13—TCU Was Unable To Read Clutch Adjustment Parameters

*SERVICE ADVISOR is a trademark of Deere & Company*

HG31779,000032D -19-14OCT03-4/4

## Engine

Symptom	Problem	Solution
<b>Engine Cranks/Won't Start</b>	Fuel quality and quantity	Check fuel quality and quantity.
	Engine cranking speed	Check engine cranking speed.
	Oil viscosity	Check for correct oil viscosity.
	Intake or exhaust restrictions	Check for intake and exhaust restrictions.
	Air heater not working	If engine has an air heater, verify air heater operation in cold temperatures.
<b>Engine Misfires/Runs Irregularly</b>	Intake manifold air leaks	Check for intake manifold air leaks
	Mechanical problems	Check for mechanical problems.
	Transmission problems	Check for transmission problems.
	Engine accessories cycling on and off	Check engine accessories, such as A/C, cycling on and off.
	Electronic interference	Check for improperly installed radios, etc.
<b>Engine Does Not Develop Full Power</b>	Restricted or plugged air and fuel filters	Check for restricted or plugged air and fuel filters.
	Fuel quality	Check fuel quality.
	Transmission problems	Check for transmission problems.
	Engine mechanical problems	Check for engine mechanical problems.
	Excessive load	Check for excessive load on the engine.
<b>Engine Emits Excessive White Exhaust Smoke</b>	Fuel quantity and quality	Check fuel quantity and quality.
	Low engine coolant temperature	Check for extremely low engine coolant temperature.
<b>Engine Emits Excessive Black Or Gray Smoke</b>	Fuel quantity and quality	Check fuel quantity and quality.
	Restricted or plugged air filter	Check for restricted or plugged air filter.
	Excessively loaded engine	Check for excessively loaded engine.
<b>Engine Will Not Crank</b>	Weak battery	Replace battery.

Continued on next page

TX17961,000000B -19-03OCT02-1/2



Miscellaneous—Troubleshooting

Symptom	Problem	Solution
	Corroded or loose battery connections	Clean battery terminals and connections.
	Defective main switch or start safety switch	Repair switch as required.
	Starter solenoid defective	Replace solenoid.
	Starter defective	Replace starter.
	Start circuit defective	Check wiring, fuses, and relays.
	Engine is seized	Check by rotating engine by hand.
<b>Engine Idles Poorly</b>	Poor fuel quality	Drain fuel and replace with quality fuel of the proper grade.
	Air leak on suction side of air intake system	Check hose and pipe connections for tightness; repair as required.

TX17961,000000B -19-03OCT02-2/2

## Transmission

Symptom	Problem	Solution
<b>Transmission Clutch Slippage</b>	Low oil level	See Transmission, Hydraulic System, Park Brake, and Differential Oil.
	Wrong oil grade	See Transmission, Hydraulic System, Park Brake, and Differential Oil.
	Restricted Transmission pump suction screen	Remove and clean screen.
<b>Machine Will Not Move</b>	Diagnostic Trouble Code (DTC) related problem	Check Diagnostic Trouble Codes to define problem.
	Applied park brake (electrical problem)	Check park brake fuse.
		Check operation of park brake.
	Low oil level	Check transmission oil level.
	Clutch cutoff activated	Check that brake pedal is fully released.
	No power to transmission control unit	Check transmission control switched 5A fuse.
		Check monitor and transmission control unswitched fuse.
	Hydraulic failure of park brake	Check operation of park brake.
	Failed shift switch	Check that display window shows correct gear when shift switch is moved.
	Broken drive shafts	Inspect drive shafts and universal joints for external damage.
<b>Machine Does Not Engage</b>	Clutch cutoff activated	Check that brake pedal is fully released.
	Shift switch problem	Check Diagnostic Trouble Codes to define problem.
<b>Machine Will Not Shift Correctly</b>	Speed sensor disconnected or failed	Check electrical connectors on transmission speed sensors.
	Low oil level	Add oil.
<b>Transmission Shifts Too Slow</b>	Low oil level (aeration of oil)	Add oil.
	Restricted transmission pump suction screen	Remove and clean suction screen.
<b>Transmission Hydraulic System Overheats</b>	High oil level	Check transmission oil level.

Continued on next page

TX17961,000016A -19-03OCT02-1/2

*Miscellaneous—Troubleshooting*

Symptom	Problem	Solution
		Transmission overfilled or hydraulic pump seal leaking.
	Low oil level	Check transmission oil level.
	Wrong oil grade	Check oil type.
	Park brake dragging	Check for heat in park brake area.
	Pinched, restricted or leaking lube lines	Check cooler lines.
	Malfunction in temperature gauge or sender	Install temperature sensor to verify temperature.
	Restricted air flow through oil cooler or radiator	Check oil cooler and radiator for debris. Clean if needed.
<b>Excessive Transmission Noise (under load or no load)</b>	Worn parts or damaged in transmission	Inspect suction screen for metal particles.
	Damaged drive dampener	Inspect drive dampener.
	Driveline or park brake	Inspect drive line and park brake.
<b>Foaming Oil</b>	Incorrect type of oil	Check oil type. Change oil if needed.
	High oil level	Check oil level. Transmission overfilled or hydraulic pump seal leaking.
	Low oil level	Check oil level. Add oil if needed.
<b>Oil Ejected From Dipstick</b>	Plugged breather	Inspect breather on top of transmission. Replace if needed.
<b>Machine Vibrates</b>	Aerated oil	Check oil level. Add oil if needed.
	Failed universal joints on transmission drive shaft or differential drive shafts	Check universal joints.
	Damaged drive dampener.	Inspect drive dampener.
<b>Machine Lacks Power And Acceleration</b>	Incorrect transmission oil	Drain transmission oil and refill. See Change Transmission Oil.
	Aerated oil	Check oil level. Add oil if needed.

TX17961,000016A -19-03OCT02-2/2

## Differential and Axle

Symptom	Problem	Solution
<b>No differential Lock Operation</b>	Malfunction in electrical circuit	With engine stopped and key switch on, activate differential lock and listen for a click from solenoid valve.
	Stuck differential lock solenoid valve	With engine stopped and key switch on, activate differential lock and listen for a click from solenoid valve.
	Excessive leakage in differential lock piston seals	Check differential oil level.
<b>Differential Lock Slips Or Chatters When Engaged</b>	Axle oil broken down	Change axle oil. See Change Front and Rear Differential/Axle Oil.
	Excessive leakage differential lock piston seals	Check differential oil level.
<b>Differential Lock Will Not Release</b>	Stuck foot switch	Inspect.
	Malfunction in electrical circuit	With engine stopped and key switch on, activate differential lock and listen for a click from solenoid valve.
	Stuck differential lock solenoid valve	With engine stopped and key switch on, activate differential lock and listen for a click from solenoid valve.
<b>Differential Low On Oil</b>	External leakage	Inspect axle and differential for leaks.
<b>Excessive Differential And/Or Axle Noise</b>	Low oil level in differential	Check oil. Remove drain plug and inspect for metal particles in differential case. See Check Front and Rear Differential Oil Level.
	Engaged differential lock	Release lock.  If circuit remains pressurized, check if foot switch is sticking. Remove and inspect.  Check solenoid valve for sticking. Remove and inspect valve.
<b>Oil Seeping From Outer Axle Seal</b>	Dirt in face seal	Inspect face seals.
	Overfilled differential	Check differential lock oil return system for excessive internal restriction.
	High pressure in axle	Check axle breather.
<b>Axle Overheats</b>	Low differential oil	Check oil level. Add oil if needed.

Continued on next page

MM61211,00013D3 -19-23FEB06-1/2

*Miscellaneous—Troubleshooting*

Symptom	Problem	Solution
	Overfilled differential	Check oil level. Drain oil if needed.
	Axle recirculation motor dual pump screens plugged	Inspect axle recirculation filter screen located in differential housing below input yoke. See Clean Axle Differential Recirculation Screen.

MM61211,00013D3 -19-23FEB06-2/2

<b>Service Brake</b>		
Symptom	Problem	Solution
<b>Poor or No Brakes</b>	Axle overheated	Check axle temperature.
	Brake disks worn or warped	Inspect service brake pads.
<b>Aggressive Brakes</b>	Clutch cutoff mode set to steep slope	Press clutch cutoff switch until "OFF" position.
<b>Brakes Drag</b>	Brake pedal not returning	Inspect floor mat and pedal.
<b>Brakes Chatter</b>	Brake disk friction material worn	Inspect brake disks.
	Oil broken down	Change oil. See Change Front and Rear Differential/Axle Oil.
	Wrong oil in hydraulic system	Drain hydraulic reservoir and differentials. Refill with correct oil. See Change Front and Rear Differential/Axle Oil.

MM61211,00013D4 -19-23FEB06-1/1

<b>Drive Line</b>		
Symptom	Problem	Solution
<b>Excessive Drive Line Vibration Or Noise</b>	Lack of lube in park brake	Inspect park brake oil level and adjust as required. See Check Park Brake Oil Level.
	Bent drive shaft	Inspect all drive shafts.
	Loose yoke retaining nuts (drive shafts wobble at high speed)	Inspect. Replace.
	Rear axle oscillating support	Inspect.
	Lack of lubrication	Lubricate with proper grade of grease.

TX17961,000016E -19-03OCT02-1/1

**Park Brake**

Symptom	Problem	Solution
<b>Brake Will Not Hold</b>	Breather plugged	Inspect and clean breather.
	Malfunctioning park brake solenoid	Inspect.
<b>Brake Overheats</b>	Overfilled with oil	Adjust oil level. See Check Park Brake Oil Level.
	Breather plugged	Inspect and clean breather.
<b>Park Brake Indicator In Monitor Comes On When Shifting From Fwd to Rev (All Other Gears OK)</b>	Low oil level	Check oil level. Add oil if needed.
	Cold oil	Warm oil.
<b>Park Brake Light Comes On For Each Shift</b>	Cold oil	Warm oil.
<b>Park Brake Indicator In Monitor Does Not Come On When Brake Applied</b>	Faulty wiring or switch	Inspect for loose or broken wires between brake indicator switch and indicator on dash.

TX17961,000016F -19-03OCT02-1/1

## Hydraulic System

Symptom	Problem	Solution
<b>No Hydraulic Functions</b>	Pilot enable switch OFF	Turn switch ON
	Pilot enable switch failed	Check pilot enable switch.
<b>Slow Hydraulic Functions</b>	Cold oil	Warm oil.
	Slow engine speed	Check fast idle speed.
	Suction line air leak	Check for foamy oil.
	Low oil supply	Add recommended oil.
	Wrong oil viscosity	Use recommended oil.
	Blocked or damaged line	Inspect lines.
<b>Noisy Hydraulic Pump</b>	Low oil supply or wrong viscosity	Fill reservoir with recommended oil.
	Plugged or pinched suction line	Clean or replace line.
	Air in oil	Check for foamy oil. Tighten connections. Replace O-rings and/or lines.
	Loose or missing hydraulic line clamps	Tighten or replace clamps.
	Hydraulic lines in contact with frame	Inspect and repair.
<b>Boom Float Function Does Not Work</b>	Return-to-carry switch ON	Turn switch OFF.
<b>One Hydraulic Function Does Not Work</b>	Blockage in oil lines or valve	Inspect lines for damage.
<b>Function Drifts Down</b>	Leaking cylinders	Check cylinder leakage.
	Boom lower solenoid valve	Check Solenoid.
	Leaking loader control valve	Replace valve section.
<b>Boom Down Does Not Work (Engine Off)</b>	Pilot enable/boom down switch not held down	Push and hold pilot enable/boom down switch as loader control lever is moved.
	Boom down solenoid failed	Replace solenoid.
	Pilot enable/boom down switch failed.	Replace switch.
<b>Oil Overheats</b>	Low oil viscosity in hot weather	Use recommended oil.
	Cylinder Leakage	Check cylinder leakage.

Continued on next page

TX17961,0000170 -19-03OCT02-1/2

*Miscellaneous—Troubleshooting*

Symptom	Problem	Solution
<b>Hydraulic Oil Foams</b>	Restriction in oil lines or loader valve	Inspect for dented or kinked lines.
	Low oil level	Add recommended oil.
	Wrong oil	Change to recommended oil.
	Water in oil	Drain oil from reservoir and cylinders. Fill with recommended oil.
<b>Pin Disconnect Cylinders Will Not Retract</b>	Loose or faulty suction lines (air leak in system)	Tighten or install new lines.
	Electrical circuit failure	Hold a screwdriver against end of pin disconnect solenoid valve and check for magnetism with switch pushed.
	Solenoid valve failure	Remove and inspect.
	Cylinder binding	Inspect cylinder and adjust loads.

TX17961,0000170 -19-03OCT02-2/2

<b>Steering</b>		
Symptom	Problem	Solution
<b>No Steering Functions</b>	Articulation locking bar in place	Pin locking bar in unused position.
	Low oil level	Add recommended oil.
	Pinched steering line	Inspect and repair line.
<b>Erratic Steering</b>	Air in oil	Check for foamy oil.
	Low oil level	Add recommended oil.
<b>Spongy or Soft Steering</b>	Air in oil	Check for foamy oil.
	Low oil level	Add recommended oil.
<b>Machine Turns in Opposite Direction</b>	Lines to cylinders connected to wrong ports at steering valve.	Connect lines to correct ports.

TX17961,0000171 -19-03OCT02-1/1



**Air Conditioning System**

Symptom	Problem	Solution
<b>Air Conditioning System Does Not Operate</b>	FLC ignition power 5A fuse (F15)	Replace fuse.
	FLC battery power 10A fuse (F21)	Replace fuse.
	Blower motor 25A fuse (F5)	Replace fuse.
	Pressurizer motor 10A fuse (F33)	Replace fuse.
	Blower speed switch (S21)	Check switch.
	Blower speed resistor (R3)	Check resistor.
	Main blower motor (M6)	Check motor.
	Pressurizer blower motor (M7)	Check motor.
	A/C (On/Off) switch (S22)	Check switch.
	Freeze control switch (B35)	Check switch.
	A/C binary pressure switch (B50)	Check switch.
	A/C compressor clutch solenoid (Y16)	Check clutch operation.
	<b>Air Conditioner Does Not Cool Interior of Cab</b>	Fresh air filter clogged
Condenser fins clogged with debris		Clean condenser fins.
Recirculating air filter clogged		Clean or replace filter.
Compressor pulley worn		Replace pulley.
Refrigerant hose kinked, pinched or collapsed		Re-route or re-index hoses, replace kinked or collapsed hoses.
Heater or evaporator core fins clogged with dirt or dust		Clean heater or evaporator core fins.
Pressurizer blower motor failed or operating too slowly		Check motor speed.
Compressor clutch slipping or failed		Inspect and/or replace compressor clutch.
Warm outside air leaking into cab		Inspect, repair or replace door and window seals.
Heater valve remaining open		Inspect, repair, adjust or replace heater valve or cable.
System refrigerant (R134A) charge low	Inspect system for leaks.	

Continued on next page

TX17961,0000172 -19-03OCT02-1/2

*Miscellaneous—Troubleshooting*

Symptom	Problem	Solution
	Evaporator fins frosting or freezing	Freeze control switch capillary tube not positioned correctly in evaporator core.
<b>Air Conditioner Runs Constantly, Too Cold</b>	Freeze control switch capillary tube not positioned in evaporator correctly	Reposition capillary tube in evaporator core
<b>Interior Windows Continue To Fog</b>	Fresh air filter clogged	Clean or replace filter.
	A/C system off	Turn A/C (ON/OFF) switch ON.

TX17961,0000172 -19-03OCT02-2/2

<b>Heater System</b>		
Symptom	Problem	Solution
<b>Heater System Does Not Operate</b>	Blower motor fuse	Replace fuse.
	Blower speed switch	Check switch.
<b>Heater Does Not Warm Interior Of Cab</b>	Fresh air filter clogged	Clean or replace filter.
	Recirculating air filter clogged	Clean or replace filter.
	Heater hose kinked, pinched or collapsed	Re-route or re-index hoses, replace collapsed hoses.
	Heater core fins clogged with dirt or dust	Clean heater fins.
	Heater valve remaining closed	Inspect, repair, adjust or replace heater valve or cable.
	Temperature control switch failed	Inspect, repair or replace switch.
<b>Interior Windows Continue To Fog</b>	Fresh air filter clogged	Clean or replace filter.
	A/C system off (if equipped)	Turn A/C ON/OFF switch ON (if equipped).

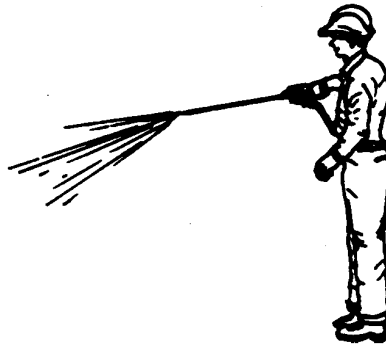
TX17961,0000173 -19-03OCT02-1/1

# Miscellaneous—Storage

## Prepare Machine For Storage

1. Repair worn or damaged parts. Install new parts, if necessary, to avoid needless delays later.
2. Check primary air cleaner. Replace filter, if necessary.

**IMPORTANT: High pressure washing greater than 1379 kPa (13.8 bar) (200 psi) can damage freshly painted finishes. Paint should be allowed to air dry for 30 days minimum after receipt of machine before cleaning parts or machines with high pressure. Use low pressure wash operations until 30 days have elapsed.**



T5813AM—UN—09FEB89

3. Wash the machine. Use low pressure wash operations (less than 1379 kPa (13.8 bar) (200 psi) until 30 days after receipt of machine have elapsed. Paint areas to prevent rust. Replace decals, where needed.
4. Apply waste oil to track chains. Run machine back and forth several times. Park machine on a hard surface to prevent tracks from freezing to ground.
5. Store machine in a dry, protected place. If stored outside, cover with a waterproof material.
6. Retract all hydraulic cylinders, if possible. If not, coat exposed cylinder rods with LPS @ 3 Rust Inhibitor.
7. Place a "DO NOT OPERATE" tag on the right control lever.
8. Lubricate all grease points.
9. Remove batteries.
10. Remove seat cushion and other perishable items.
11. Remove keys and lock all covers and doors.

**IMPORTANT: LPS 3 Rust Inhibitor can destroy painted finish. DO NOT spray LPS 3 Rust Inhibitor on painted areas.**

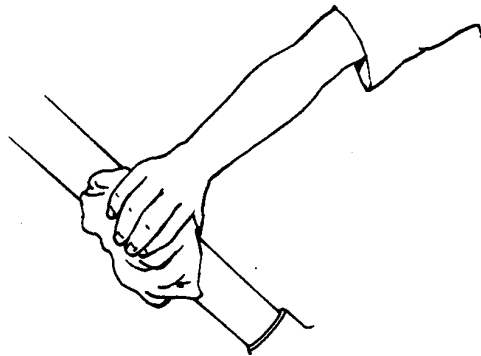
*LPS is a trademark of the Holt Lloyd Corporation.*

TX,105,FF2313 -19-03NOV08-1/1

## Monthly Storage Procedure

**CAUTION: Prevent possible injury or death from asphyxiation. Engine exhaust fumes can cause sickness or death. Start engine ONLY in a well-ventilated area.**

1. Drain water and sediment from fuel tank when air temperature is above freezing.
2. Remove LPS 3 ® Rust Inhibitor from cylinder rods with a cleaning solvent.



T6191AA—UN—18OCT88

*LPS 3 Rust Inhibitor is manufactured by Holt Lloyd Corporation.*

Continued on next page

VD76477,00016A3 -19-08JAN08-1/2

**IMPORTANT: Prevent possible engine damage.**  
 During cold temperatures, check fluidity of engine oil on dipstick. If the oil appears waxy and/or jelly-like rather than liquid, **DO NOT attempt to start engine.** Use external heat source to warm the crankcase until oil appears fluid.

3. Check all fluid levels. If low, check for leaks and add oil as required.
4. Check belts.
5. Check condition of all hoses and connections.
6. Check battery electrolyte level. Charge and install battery.

7. For machines with **tires**, check condition of tires and tire pressure.

For machines with **tracks**, check condition of tracks and track sag.

On crawler machines with non sealed-and-lubricated track chains, apply oil to the pin-to-bushing joints. Run machine back and forth several times.

8. Park machine on a hard surface to prevent tracks from freezing to ground.
9. Fill fuel tank.
10. Pre-lubricate turbocharger bearings, if equipped:
  - a. Disconnect fuel shutoff fuse.
  - b. Crank engine for 10 seconds.
  - c. Connect fuel shutoff fuse.
11. Inspect engine compartment, and remove any foreign material that may have accumulated. Start engine and



T6181AU — JUN—18OCT88

run until it reaches operating temperature. Run at 1/2 speed for five minutes. Do not run at fast or slow idle.

- If engine fails to start or runs poorly after starting, change fuel filter(s). Bleed fuel system.

12. Operate all controls, levers, seat adjustments, etc.

**⚠ CAUTION: Prevent possible injury from unexpected machine movement. Clear the area of all persons before running machine through the operation procedure.**

13. Make sure the area is clear to allow for movement. Cycle all hydraulic functions several times. Check condition of all hoses and connections.
14. Park the machine with cylinder rods retracted, if possible. Turn key switch to OFF.
15. Apply LPS 3 Rust Inhibitor to exposed cylinder rod areas.

VD76477,00016A3 -19-08JAN08-2/2

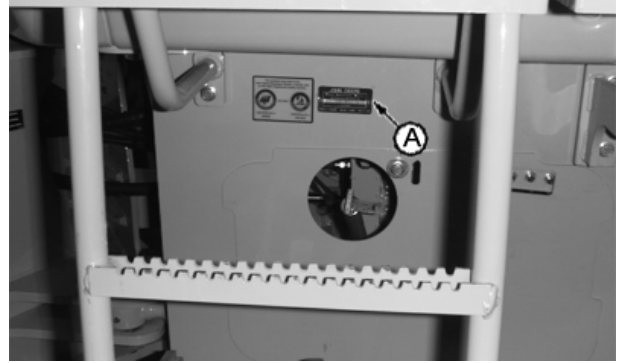
# Miscellaneous—Machine Numbers

## Record Product Identification Number (PIN)

Purchase Date \_\_\_\_\_

*NOTE: Record all 13 characters of the Product Identification Number.*

**A—Product Identification Number**



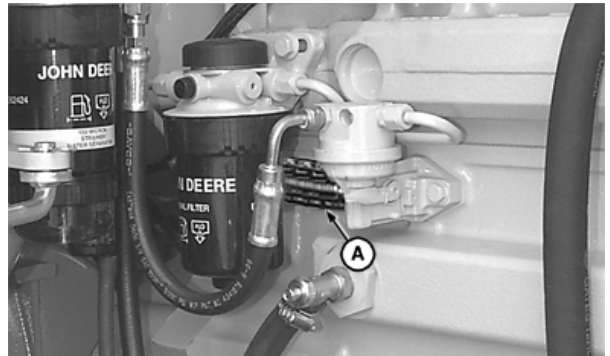
T106371B —UN—24JAN97

TX,110,JC1841 -19-31JAN97-1/1

## Record Engine Serial Number

Engine Serial Number \_\_\_\_\_

**A—Engine Serial Number**



T117111 —UN—10SEP98

CED,OUOE002,1739 -19-08SEP98-1/1

## Record Transmission Serial Number

Transmission Serial Number \_\_\_\_\_

Located near lower left corner of case.

**A—Transmission Serial Number**



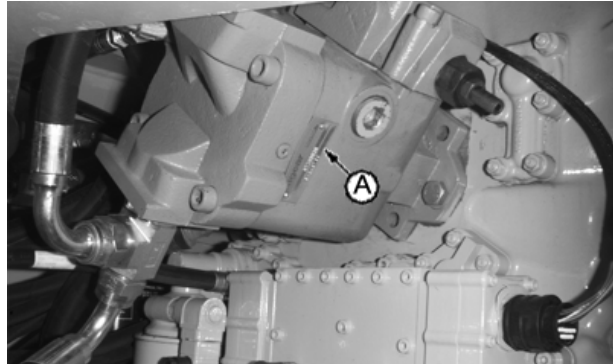
T132627B —UN—17JUL00

CED,OUOE002,1740 -19-10AUG00-1/1

### Record Hydraulic Pump Serial Number

Hydraulic Pump Serial Number \_\_\_\_\_

**A—Hydraulic Pump Serial Number**



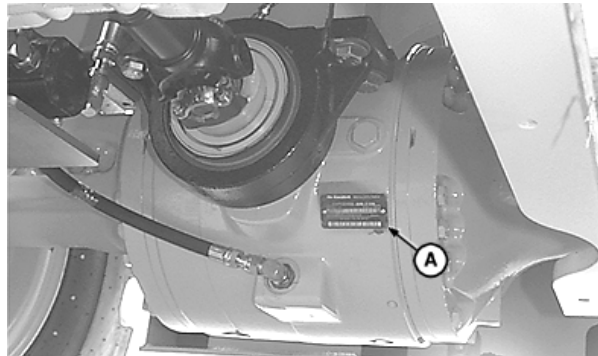
T106391B —UN—24JAN97

TX,110,JC1859 -19-05FEB97-1/1

### Record Axle Serial Number

Axle Serial Number \_\_\_\_\_

**A—Axle Serial Number—444J  
(S.N. —604689), 544J, 624J**

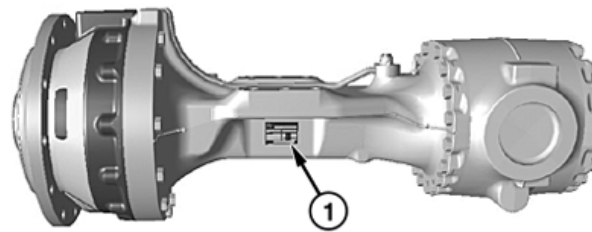


T117115 —UN—10SEP98

Axle—444J (S.N. —604689), 544J, 624J

MM61211,00013C7 -19-16MAR06-1/2

**1—Axle Serial Number—444J  
(S.N. 604640—)**



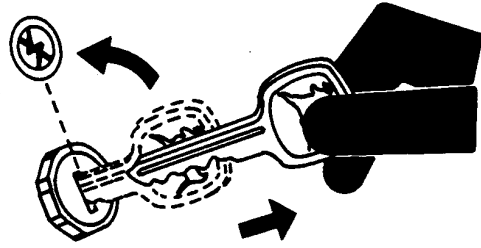
TX1003880 —UN—15FEB06

Axle—444J (S.N. 604690—)

MM61211,00013C7 -19-16MAR06-2/2

### Keep Machines Secure

1. Install vandal-proof devices.
2. When machine is in storage:
  - Lower equipment to the ground
  - Set wheels to widest position to make loading more difficult
  - Remove any keys and batteries
3. When parking indoors, put large equipment in front of exits and lock your storage buildings.
4. When parking outdoors, store in a well-lighted and fenced area.
5. Make note of suspicious activity and report any thefts immediately to law enforcement agencies.
6. Notify your John Deere dealer of any losses.

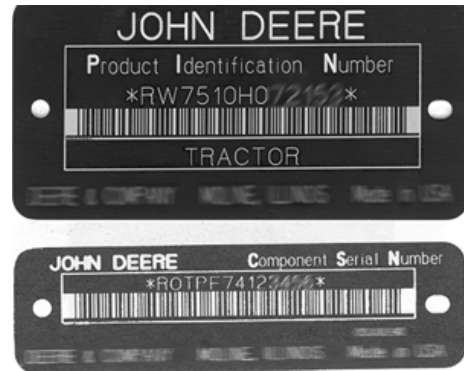


TS230—UN—24MAY89

DX,SECURE2 -19-18NOV03-1/1

### Keep Proof of Ownership

1. Maintain in a secure location an up-to-date inventory of all product and component serial numbers.
2. Regularly verify that identification plates have not been removed. Report any evidence of tampering to law enforcement agencies and order duplicate plates.
3. Other steps you can take:
  - Mark your machine with your own numbering system
  - Take color photographs from several angles of each machine

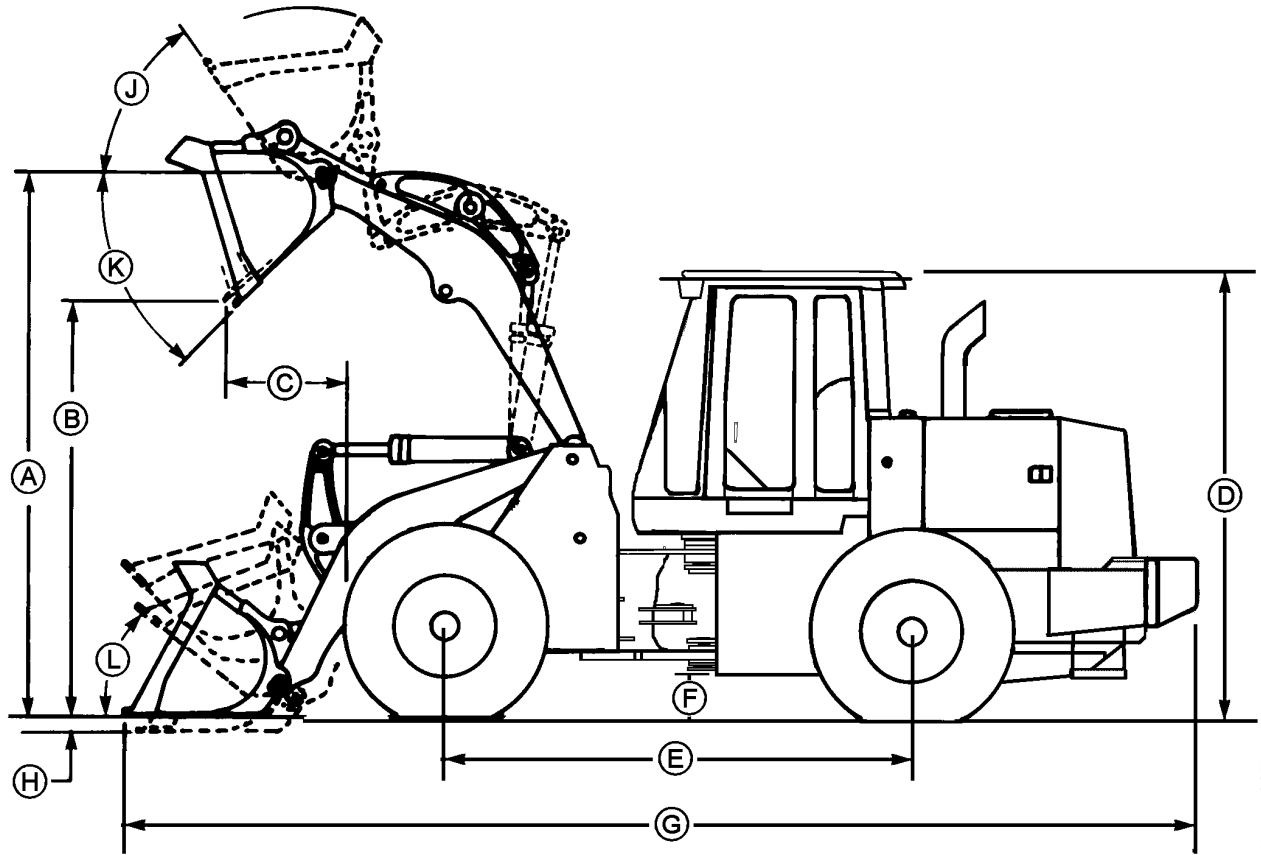


TS1680—UN—09DEC03

DX,SECURE1 -19-18NOV03-1/1

# Miscellaneous—Specifications

## 444J Specifications



T203668—UN—01OCT04

### T203668

A—Bucket Hinge Height  
B—Dump Height  
C—Dump Reach

D—Machine Overall Height  
E—Wheelbase  
F—Machine-to-Ground Clearance

G—Machine Overall Length  
H—Maximum Digging Depth  
J—Maximum Roll Back at Full Height

K—Bucket Dump at Full Height  
L—Maximum Rollback at Ground Level

Item	Measurement	Specification
A—Bucket Hinge	Height	3597 mm 11 ft 10.0 in.
B—Dump	Height	2674 mm 8 ft 9.3 in.
C—Dump	Reach	1024 mm 3 ft 4.3 in.
D—Overall Machine	Height	3154 mm 10 ft 4.2 in.
E—Wheelbase	Length	2750 mm 9 ft 0.3 in.
F—Machine-to-Ground	Clearance	396 mm 15.6 in.
G—Overall Machine	Length	6752 mm 22 ft 2.0 in.
	Weight (S.N. —604689)	10 272 kg

Continued on next page

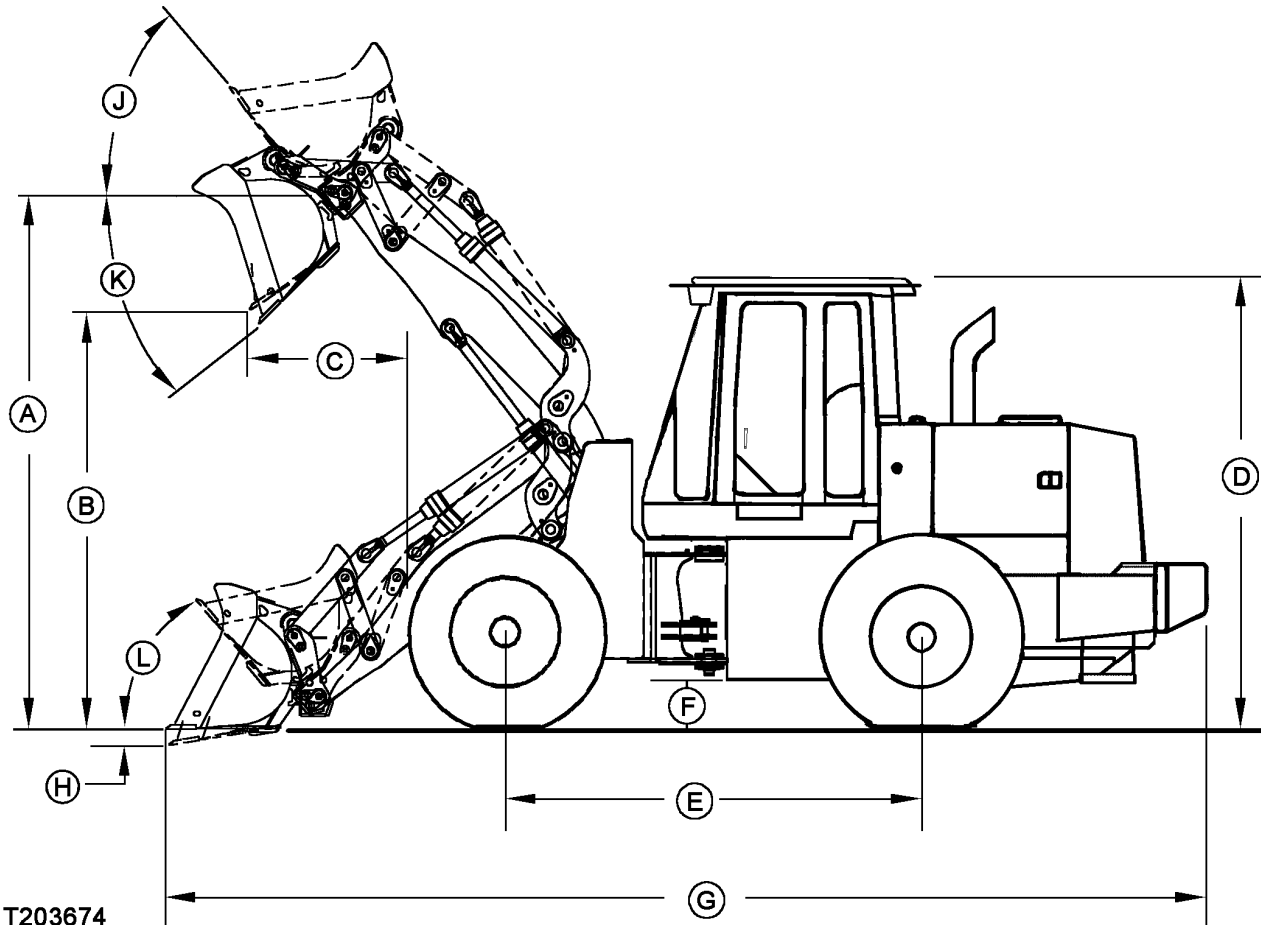
MM61211,00013D5 -19-16MAR06-1/2



*Miscellaneous—Specifications*

Item	Measurement	Specification
	Weight (S.N. 604690— )	22,645 lb 10 042 kg 22 139 lb
H—Maximum Digging Depth	Depth	86 mm 3.4 in.
J—Maximum Rollback at Full Height	Angle	55°
K—Bucket Dump at Full Height	Angle	50°
L—Maximum Rollback at Ground Level	Angle	40°
<p><i>NOTE: Specifications and design subject to change without notice. Wherever applicable, specifications are in accordance with SAE standards. Except where otherwise noted, specifications are based on a machine equipped with all standard equipment,</i></p>		<p><i>ROPS cab, diff lock front axle with standard rear axle, 2 spool valve with two lever control, heater and defroster, 79 kg (175 lb) operator, 2.5 cu yd. pin-on-bucket (2.5 cu yd coupler bucket for a Tool Carrier), and full fuel tank.</i></p>
<small>MM61211,00013D5 -19-16MAR06-2/2</small>		

### 444J Tool Carrier Specifications



T203674—UN—01OCT04

- A—Bucket Hinge Height
- B—Dump Height
- C—Dump Reach
- D—Machine Overall Height
- E—Wheelbase
- F—Machine-to-Ground Clearance
- G—Machine Overall Length
- H—Maximum Digging Depth
- J—Maximum Roll Back at Full Height
- K—Bucket Dump at Full Height
- L—Maximum Rollback at Ground Level

Item	Measurement	Specification
A—Bucket Hinge	Height	3682 mm 12 ft 1.0 in.
B—Dump	Height	2676 mm 8 ft 9.4 in.
C—Dump	Reach	1258 mm 4 ft 1.5 in.
D—Overall Machine	Height	3135 mm 10 ft 4.2 in.
E—Wheelbase	Length	2750 mm 9 ft 0.3 in.
F—Machine-to-Ground	Clearance	396 mm 15.6 in.
G—Overall Machine	Length	7104 mm 23 ft 4.0 in.
	Weight (S.N. —604689)	10 615 kg

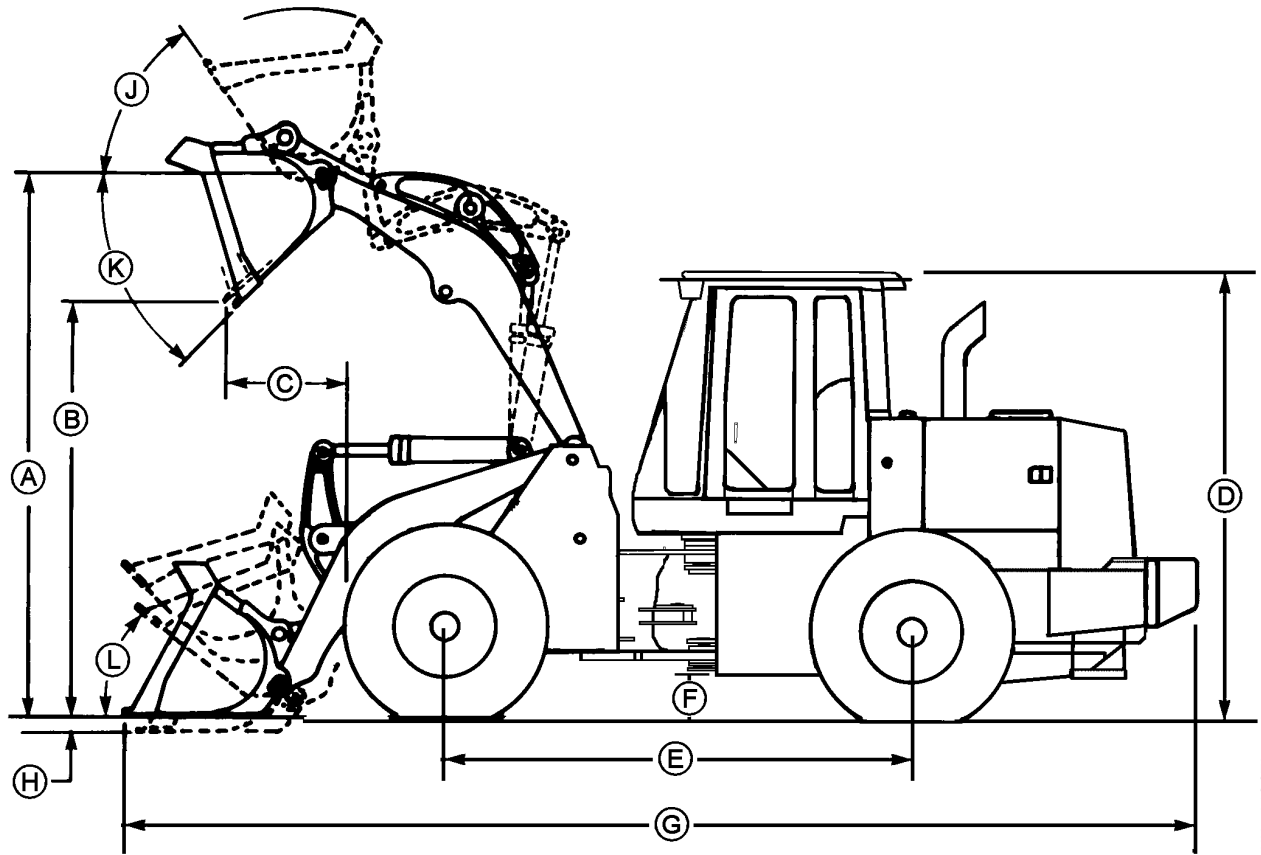
Continued on next page

MM61211,00013D6 -19-16MAR06-1/2

*Miscellaneous—Specifications*

Item	Measurement	Specification
	Weight (S.N. 604690— )	23,406 lb 10 385 kg 22 895 lb
H—Maximum Digging Depth	Depth	145 mm 5.7 in.
J—Maximum Rollback at Full Height	Angle	54.2°
K—Bucket Dump at Full Height	Angle	50°
L—Maximum Rollback at Ground Level	Angle	50.2°
<p><i>NOTE: Specifications and design subject to change without notice. Wherever applicable, specifications are in accordance with SAE standards. Except where otherwise noted, specifications are based on a machine equipped with all standard equipment,</i></p>		<p><i>ROPS cab, diff lock front axle with standard rear axle, 2 spool valve with two lever control, heater and defroster, 79 kg (175 lb) operator, 2.5 cu yd coupler bucket, and full fuel tank.</i></p>
MM61211,00013D6 -19-16MAR06-2/2		

### 444J High Lift Specifications



T203668—UN—01OCT04

**T203668**

- |                              |                                      |   |   |
|------------------------------|--------------------------------------|---|---|
| <b>A—Bucket Hinge Height</b> | <b>D—Machine Overall Height</b>      | <b>G—Machine Overall Length</b>           | <b>K—Bucket Dump at Full Height</b>       |
| <b>B—Dump Height</b>         | <b>E—Wheelbase</b>                   | <b>H—Maximum Digging Depth</b>            | <b>L—Maximum Rollback at Ground Level</b> |
| <b>C—Dump Reach</b>          | <b>F—Machine-to-Ground Clearance</b> | <b>J—Maximum Roll Back at Full Height</b> |   |

Item	Measurement	Specification
A—Bucket Hinge	Height	3975 mm 13 ft 0.5 in.
B—Dump	Height	3052 mm 10 ft 0.2 in.
C—Dump	Reach	1050 mm 3 ft 5.3 in.
D—Overall Machine	Height	3154 mm 10 ft 4.24 in.
E—Wheelbase	Length	2750 mm 9 ft 0.3 in.
F—Machine-to-Ground	Clearance	396 mm 15.6 in.
G—Overall Machine	Length	7133 mm 23 ft 5.0 in.
	Weight (S.N. —604689)	10 377 kg

Continued on next page

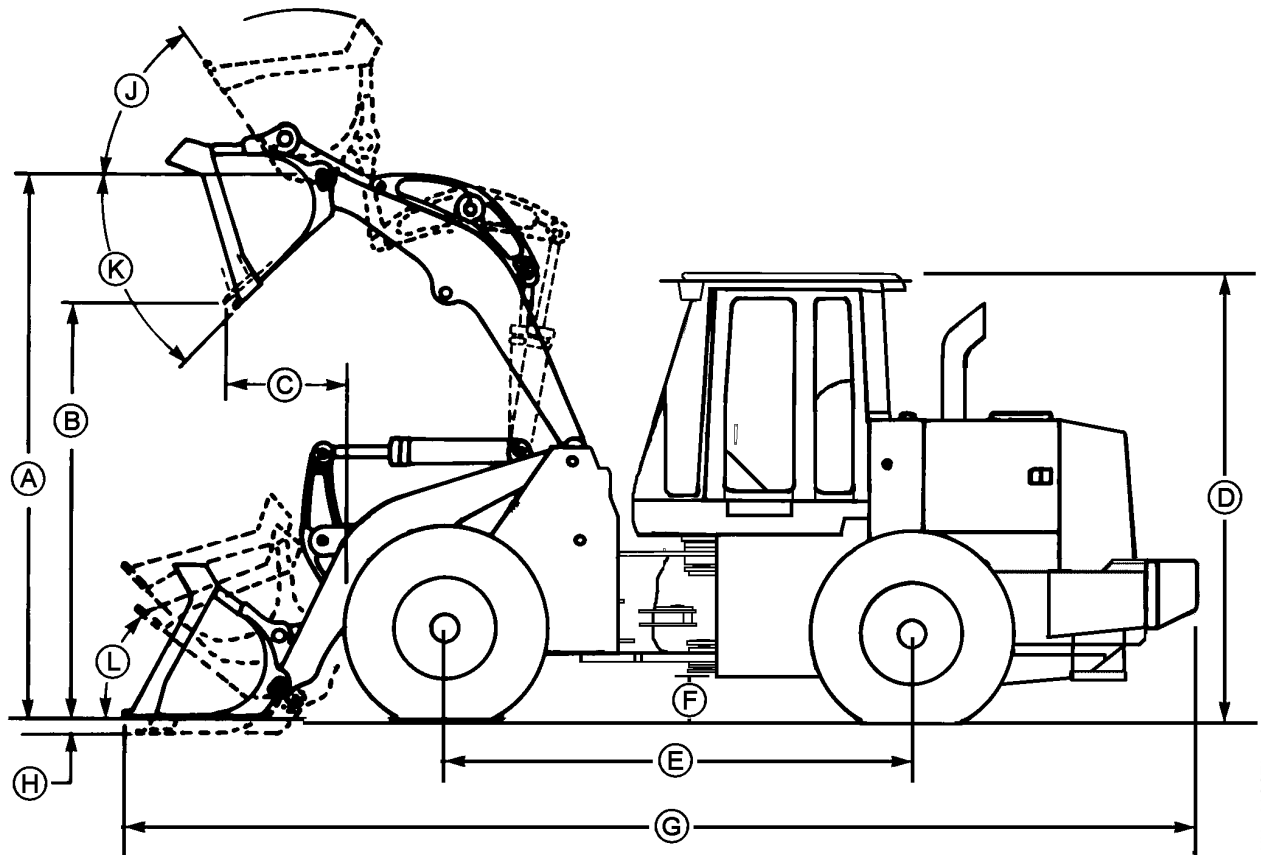
MM61211,00013D7 -19-16MAR06-1/2

Miscellaneous—Specifications

Item	Measurement	Specification
	Weight (S.N. 604690— )	22,877 lb 10 147 kg 22 370 lb
H—Maximum Digging Depth	Depth	105 mm 4.1 in.
J—Maximum Rollback at Full Height	Angle	49°
K—Bucket Dump at Full Height	Angle	45°
L—Maximum Rollback at Ground Level	Angle	40°

MM61211,00013D7 -19-16MAR06-2/2

### 444J Powerllei Specifications



T203668—UN—01OCT04

T203668

- A—Bucket Hinge Height
- B—Dump Height
- C—Dump Reach
- D—Machine Overall Height
- E—Wheelbase
- F—Machine-to-Ground Clearance
- G—Machine Overall Length
- H—Maximum Digging Depth
- J—Maximum Roll Back at Full Height
- K—Bucket Dump at Full Height
- L—Maximum Rollback at Ground Level

Item	Measurement	Specification
A—Bucket Hinge	Height	3650 mm 12 ft 0 in.
B—Dump	Height	2680 mm 8 ft 9.5 in.
C—Dump	Reach	1138 mm 3 ft 8.8 in.
D—Overall Machine	Height	3154 mm 10 ft 4.2 in.
E—Wheelbase	Length	2750 mm 9 ft 0.3 in.
F—Machine-to-Ground	Clearance	396 mm 15.6 in.
G—Overall Machine	Length	6937 mm 22 ft 9.0 in.
	Weight (S.N. —604689)	10 851 kg

Continued on next page

MM61211,00013D8 -19-16MAR06-1/2

*Miscellaneous—Specifications*

Item	Measurement	Specification
		23,926 lb
	Weight (S.N. 604690— )	10 621 kg
		23 415 lb
H—Maximum Digging Depth	Depth	151 mm 5.9 in.
J—Maximum Rollback at Full Height	Angle	48°
K—Bucket Dump at Full Height	Angle	50°
L—Maximum Rollback at Ground Level	Angle	42°
<p><i>NOTE: Specifications and design subject to change without notice. Wherever applicable, specifications are in accordance with SAE standards. Except where otherwise noted, specifications are based on a machine equipped with all standard equipment,</i></p>		<p><i>ROPS cab, diff lock front axle with standard rear axle, 2 spool valve with two lever control, heater and defroster, 79 kg (175 lb) operator, 2.5 cu yd. pin-on-bucket (2.5 cu yd coupler bucket for a Tool Carrier), and full fuel tank.</i></p>

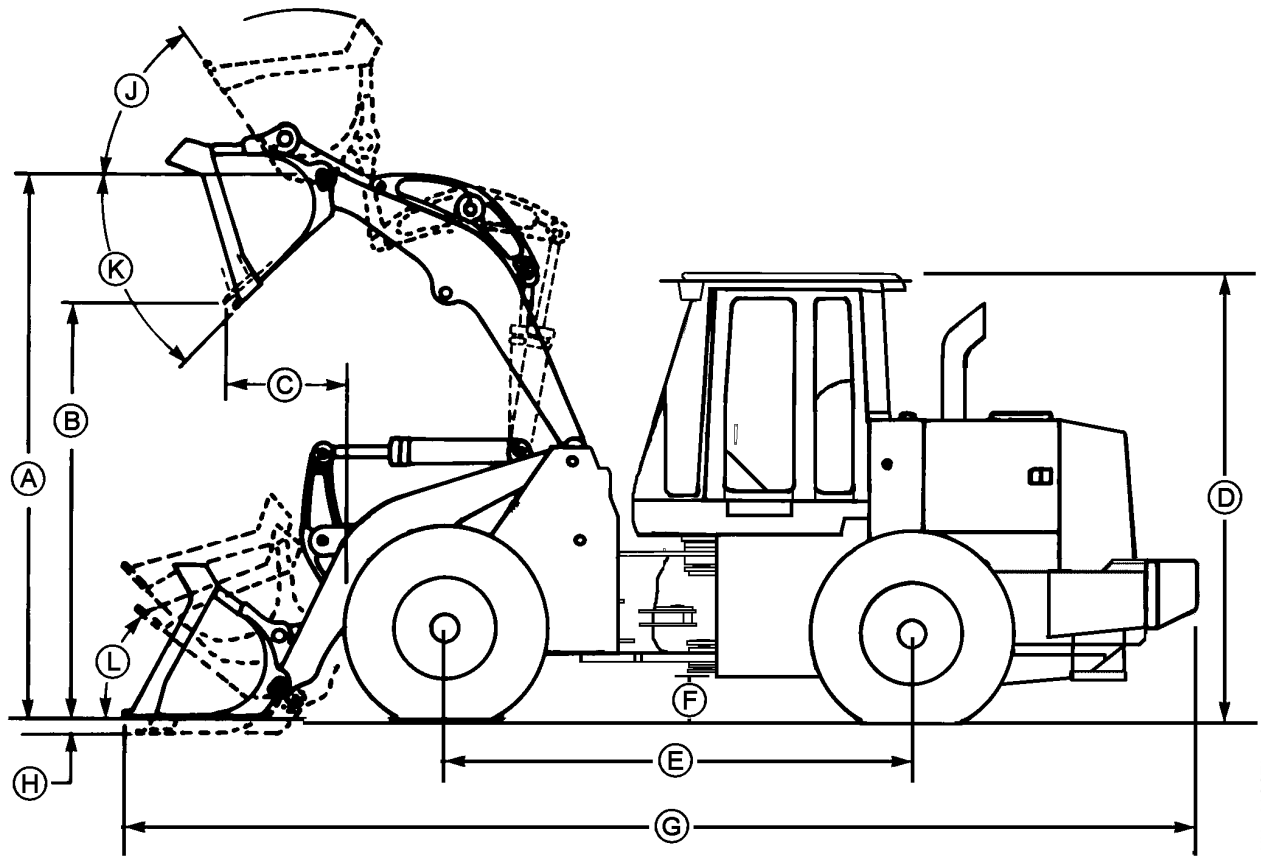
MM61211,00013D8 -19-16MAR06-2/2

### 444J Drain and Refill Capacities

Item	Measurement	Specification
Cooling System	Capacity	21.0 L 5.5 gal
Fuel Tank	Capacity	246.0 L 65.0 gal
Engine Crankcase and Filter	Capacity	17.5 L 4.6 gal
Transmission Case and Filter	Capacity	18.5 L 19.5 qt
Front Differential—444J (S.N. —604689)	Capacity	17.0 L 4.5 gal
Front Differential—444J, (S.N. 604690— )	Capacity	22.0 L 5.8 gal
Rear Differential—444J (S.N. —604689)	Capacity	17.0 L 4.5 gal
Rear Differential—444J, (S.N. 604690— )	Capacity	22.0 L 5.8gal
Hydraulic Reservoir and Filters	Capacity	96.5 L 25.5 gal
Park Brake	Capacity	0.300 L 10 oz

MM61211,0000DA8 -19-30JUN10-1/1

544J Specifications



T203668—UN—01OCT04

T203668

- A—Bucket Hinge Height
- B—Dump Height
- C—Dump Reach
- D—Machine Overall Height
- E—Wheelbase
- F—Machine-to-Ground Clearance
- G—Machine Overall Length
- H—Maximum Digging Depth
- J—Maximum Roll Back at Full Height
- K—Bucket Dump at Full Height
- L—Maximum Rollback at Ground Level

Item	Measurement	Specification
A—Bucket Hinge	Height	3836 mm 12 ft 7.0 in.
B—Dump	Height	2787 mm 9 ft 3.5 in.
C—Dump	Reach	997 mm 3 ft 3.3 in.
D—Overall Machine	Height	3241 mm 10 ft 7.6 in.
E—Wheelbase	Length	2900 mm 9 ft 6.2 in.
F—Machine-to-Ground	Clearance	451 mm 17.7 in.
G—Overall Machine	Length	7385 mm 24 ft 3.0 in.
	Weight	12 469 kg

Continued on next page

CED.TX03679,5730 -19-30SEP04-1/2



Miscellaneous—Specifications

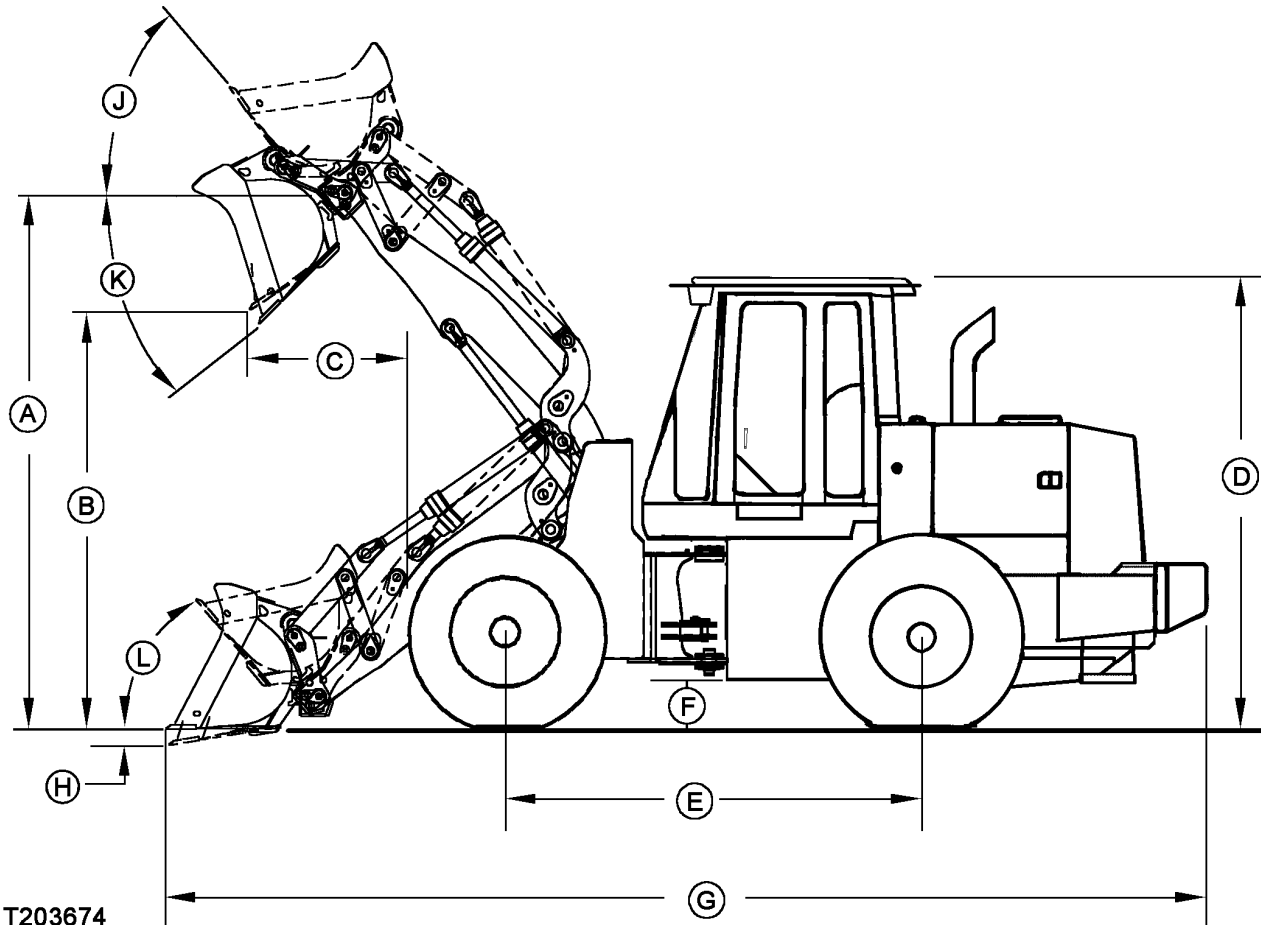
Item	Measurement	Specification
		27,489 lb
H—Maximum Digging Depth	Depth	83 mm 3.25 in.
J—Maximum Rollback at Full Height	Angle	55°
K—Bucket Dump at Full Height	Angle	50°
L—Maximum Rollback at Ground Level	Angle	40°

*NOTE: Specifications and design subject to change without notice. Wherever applicable, specifications are in accordance with SAE standards. Except where otherwise noted, specifications are based on a machine equipped with all standard equipment,*

*ROPS cab, diff lock front axle with standard rear axle, 2 spool valve with two lever control, heater and defroster, 79 kg (175 lb) operator, 3.5 cu yd. pin-on-bucket, and full fuel tank.*

CEID,TX03679,5730 -19-30SEP04-2/2

### 544J Tool Carrier Specifications



A—Bucket Hinge Height  
B—Dump Height  
C—Dump Reach

D—Machine Overall Height  
E—Wheelbase  
F—Machine-to-Ground Clearance

G—Machine Overall Length  
H—Maximum Digging Depth  
J—Maximum Roll Back at Full Height

K—Bucket Dump at Full Height  
L—Maximum Rollback at Ground Level

Item	Measurement	Specification
A—Bucket Hinge	Height	3894 mm 12 ft 9.0 in.
B—Dump	Height	2846 mm 9 ft 4.0 in.
C—Dump	Reach	1298 mm 4 ft 3.0 in.
D—Overall Machine	Height	3241 mm 10 ft 7.6 in.
E—Wheelbase	Length	2900 mm 9 ft 6.2 in.
F—Machine-to-Ground	Clearance	451 mm 17.7 in.
G—Overall Machine	Length	7518 mm 24 ft 8.0 in.
	Weight	12 521 kg

Continued on next page

CEDEX03679,5735 -19-30SEP04-1/2

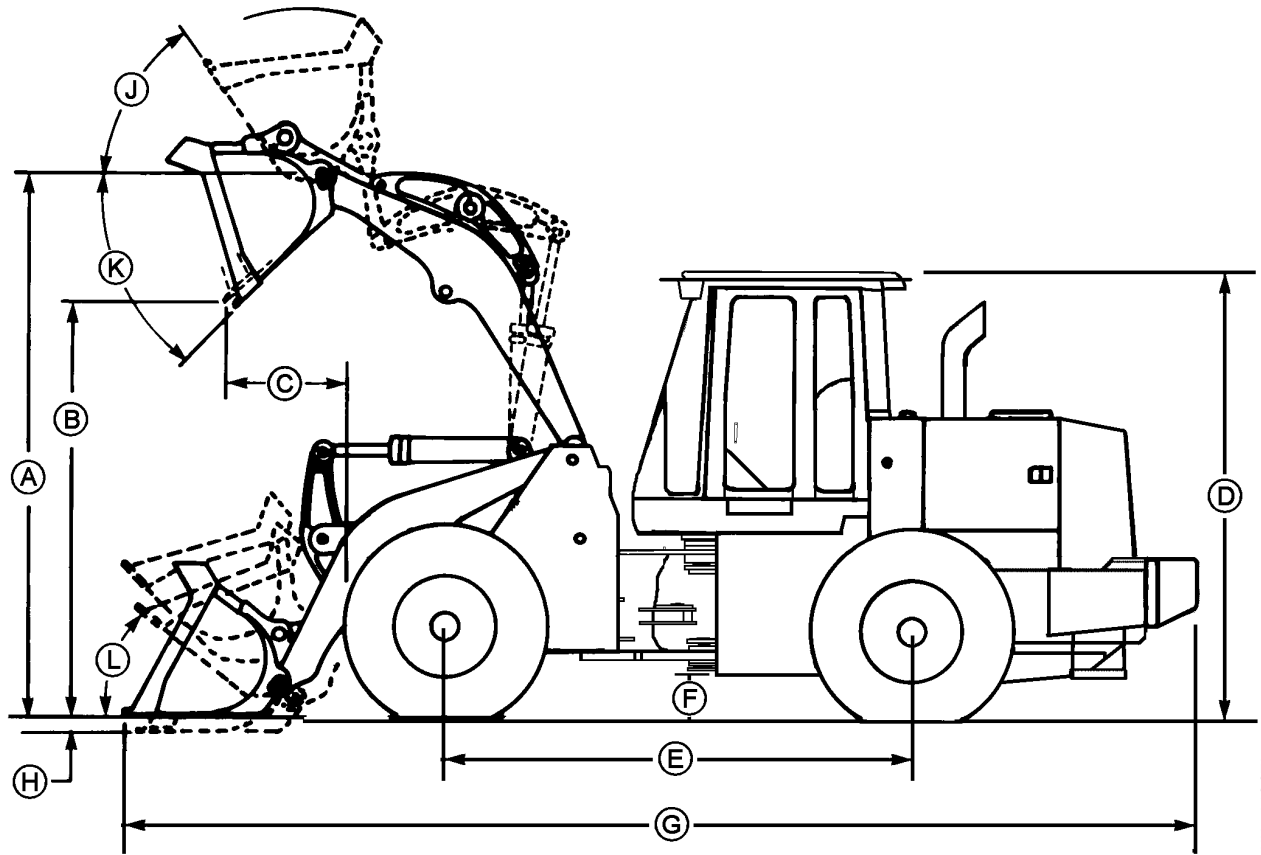
T203674—UN—01OCT04

Miscellaneous—Specifications

Item	Measurement	Specification
		27,609 lb
H—Maximum Digging Depth	Depth	74 mm 2.9 in.
J—Maximum Rollback at Full Height	Angle	56°
K—Bucket Dump at Full Height	Angle	50°
L—Maximum Rollback at Ground Level	Angle	50.2°
<i>NOTE: Specifications and design subject to change without notice. Wherever applicable, specifications are in accordance with SAE standards. Except where otherwise noted, specifications are based on a machine equipped with all standard equipment,</i>		<i>ROPS cab, diff lock front axle with standard rear axle, 2 spool valve with two lever control, heater and defroster, 79 kg (175 lb) operator, 3.0 cu yd. coupler bucket, and full fuel tank.</i>

CED, TX03679, 5735 -19-30SEP04-2/2

### 544J High Lift Specifications



T203668—UN—01OCT04

T203668

- A—Bucket Hinge Height
- B—Dump Height
- C—Dump Reach
- D—Machine Overall Height
- E—Wheelbase
- F—Machine-to-Ground Clearance
- G—Machine Overall Length
- H—Maximum Digging Depth
- J—Maximum Roll Back at Full Height
- K—Bucket Dump at Full Height
- L—Maximum Rollback at Ground Level

Item	Measurement	Specification
A—Bucket Hinge	Height	4188 mm 13 ft 9.0 in.
B—Dump	Height	4188 mm 13 ft 9.0 in.
C—Dump	Reach	999 mm 3 ft 3.3 in.
D—Overall Machine	Height	3241 mm 10 ft 7.6 in.
E—Wheelbase	Length	2900 mm 9 ft 6.2 in.
F—Machine-to-Ground	Clearance	451 mm 17.7 in.

Continued on next page

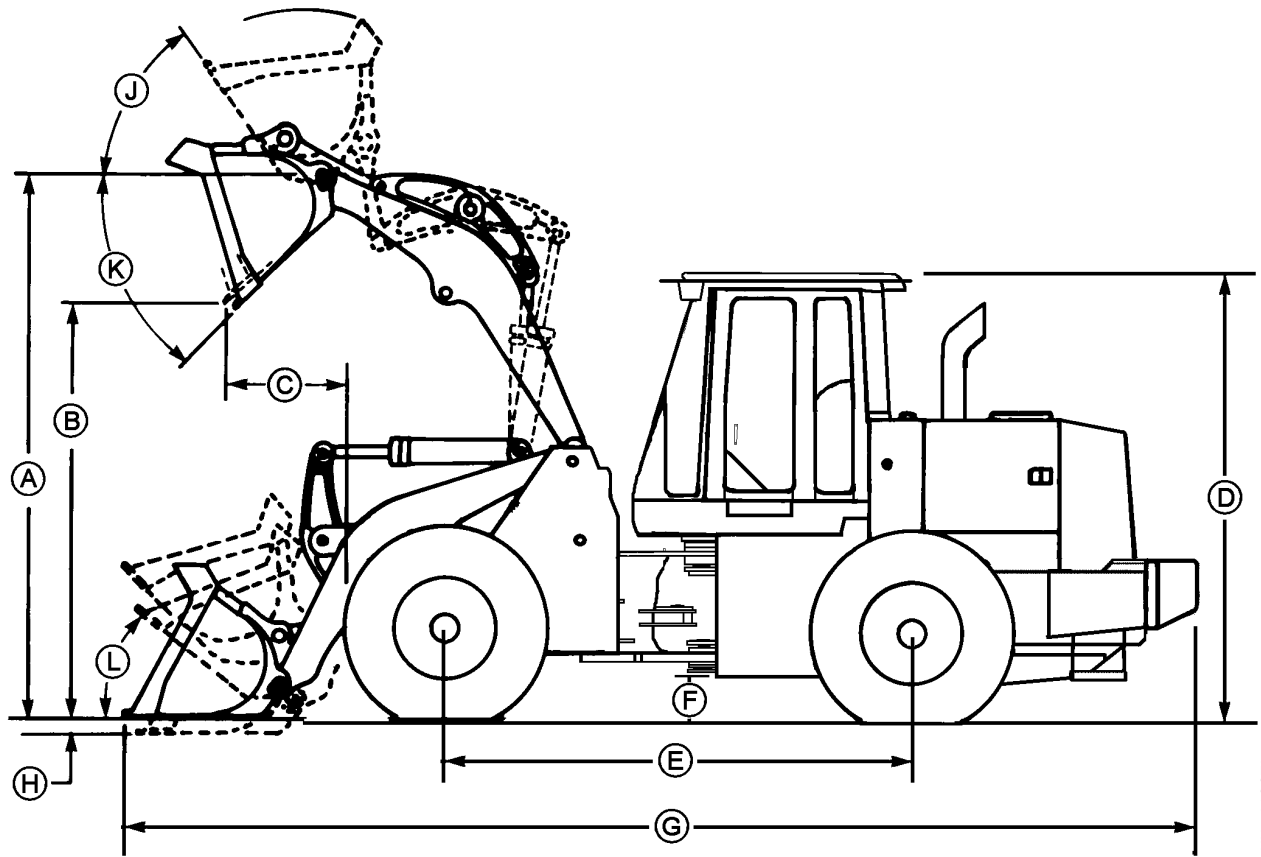
CED.TX03679,5813 -19-30SEP04-1/2

Miscellaneous—Specifications

Item	Measurement	Specification
G—Overall Machine	Length	7689 mm 25 ft 3.0 in.
	Weight	12 538 kg 27,641 lb
H—Maximum Digging Depth	Depth	265 mm 6.5 in.
J—Maximum Rollback at Full Height	Angle	49°
K—Bucket Dump at Full Height	Angle	46°
L—Maximum Rollback at Ground Level	Angle	40°

CED, TX03679, 5813 -19-30SEP04-2/2

### 544J Powerllei Specifications



T203668—UN—01OCT04

T203668

A—Bucket Hinge Height  
B—Dump Height  
C—Dump Reach

D—Machine Overall Height  
E—Wheelbase  
F—Machine-to-Ground Clearance

G—Machine Overall Length  
H—Maximum Digging Depth  
J—Maximum Roll Back at Full Height

K—Bucket Dump at Full Height  
L—Maximum Rollback at Ground Level

Item	Measurement	Specification
A—Bucket Hinge	Height	3870 mm 12 ft 8.0 in.
B—Dump	Height	2841 mm (9 ft 4.0 in.
C—Dump	Reach	999 mm 3 ft 5.1 in.
D—Overall Machine	Height	3241 mm 10 ft 7.6 in.
E—Wheelbase	Length	2900 mm 9 ft 6.2 in.
F—Machine-to-Ground	Clearance	451 mm 17.7 in.
G—Overall Machine	Length	7422 mm 24 ft 4.0 in.
	Weight	12 987 kg

Continued on next page

HG31779,0000040 -19-30SEP04-1/2

Miscellaneous—Specifications

Item	Measurement	Specification
		28,636 lb
H—Maximum Digging Depth	Depth	127 mm 5.0 in.
J—Maximum Rollback at Full Height	Angle	50°
K—Bucket Dump at Full Height	Angle	50°
L—Maximum Rollback at Ground Level	Angle	42°

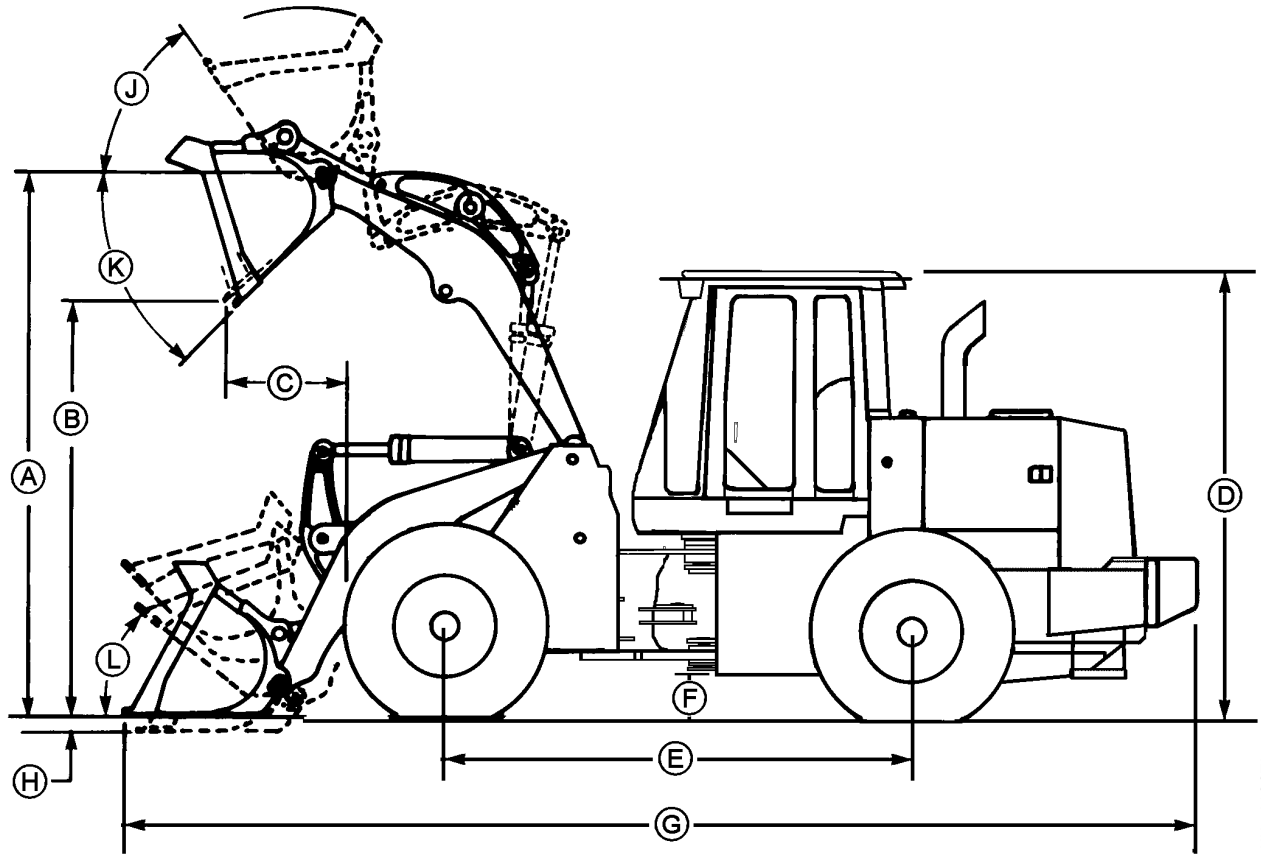
HG31779.0000040 -19-30SEP04-2/2

**544J Drain and Refill Capacities**

Item	Measurement	Specification
Cooling System	Capacity	21.0 L 5.5 gal
Fuel Tank	Capacity	322.0 L 85.0 gal
Engine Crankcase and Filter	Capacity	18.5 L 5.0 gal
Transmission Case and Filter	Capacity	18.5 L 5.0 gal
Front Differential	Capacity	18.0 L 4.75 gal
Rear Differential	Capacity	18.0 L 4.75 gal
Hydraulic Reservoir and Filters	Capacity	96.5 L 25.5 gal
Park Brake	Capacity	0.300 L 10 oz

CED, TX03679, 5734 -19-30JUN10-1/1

624J Specifications



T203668—UN—01OCT04

T203668

- A—Bucket Hinge Height
- B—Dump Height
- C—Dump Reach
- D—Machine Overall Height
- E—Wheelbase
- F—Machine-to-Ground Clearance
- G—Machine Overall Length
- H—Maximum Digging Depth
- J—Maximum Roll Back at Full Height
- K—Bucket Dump at Full Height
- L—Maximum Rollback at Ground Level

Item	Measurement	Specification
A—Bucket Hinge	Height	3966 mm 13 ft 0.0 in.
B—Dump	Height	2885 mm 9 ft 5.6 in.
C—Dump	Reach	1031 mm 3 ft 4.6 in.
D—Overall Machine	Height	3317 mm 10 ft 10.6 in.
E—Wheelbase	Length	3030 mm 9 ft 11 in.
F—Machine-to-Ground	Clearance	436 mm 17.1 in.
G—Overall Machine	Length	7572 mm 24 ft 10.0 in.
	Weight	14 375 kg

Continued on next page

CED,OUOE002,1791 -19-30SEP04-1/2



Miscellaneous—Specifications

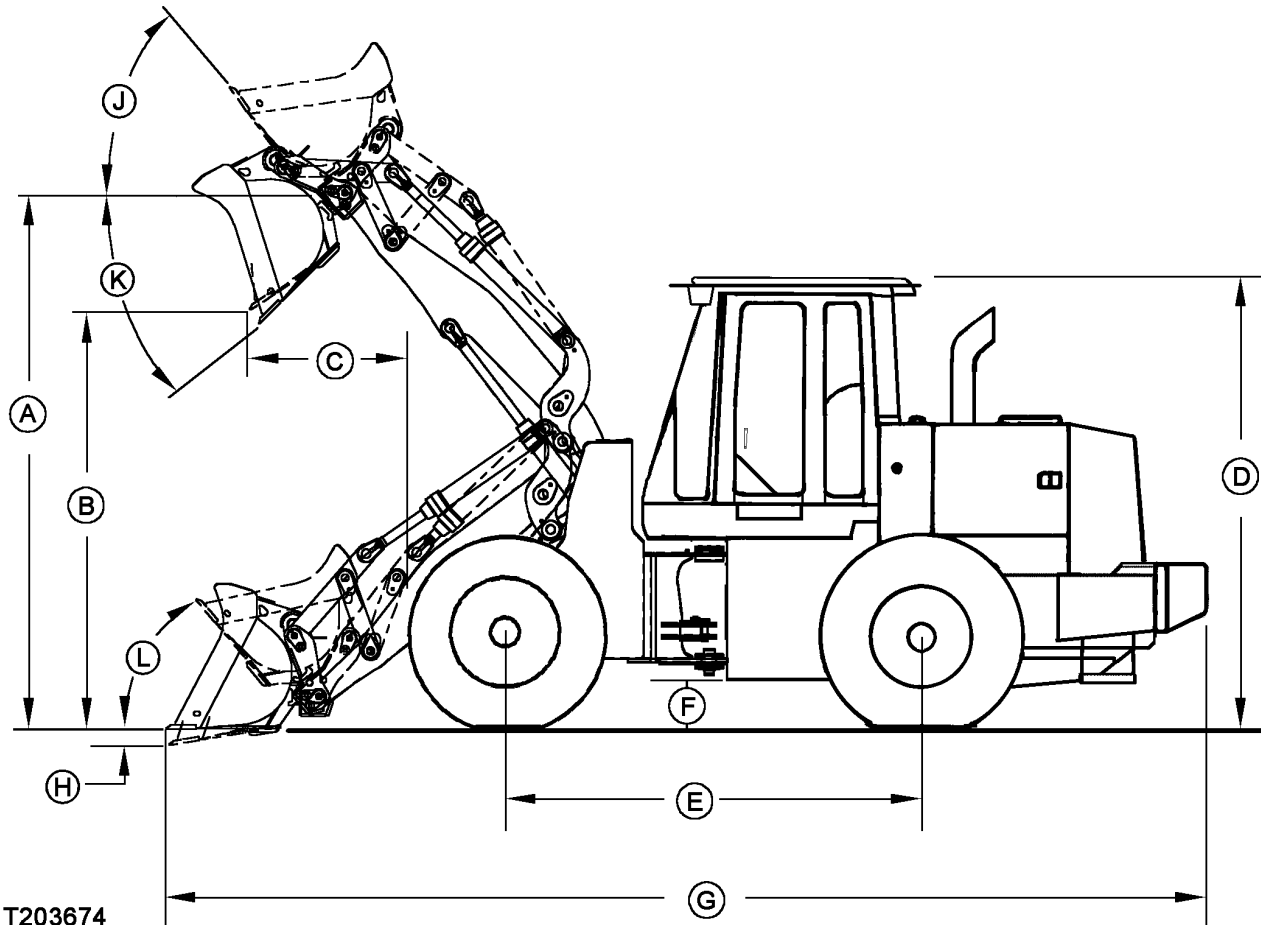
Item	Measurement	Specification
		31,691 lb
H—Maximum Digging Depth	Depth	88 mm 3.5 in.
J—Maximum Rollback at Full Height	Angle	55°
K—Bucket Dump at Full Height	Angle	50°
L—Maximum Rollback at Ground Level	Angle	40°

*NOTE: Specifications and design subject to change without notice. Wherever applicable, specifications are in accordance with SAE standards. Except where otherwise noted, specifications are based on a machine equipped with all standard equipment,*

*ROPS cab, diff lock front axle with standard rear axle, 2 spool valve with two lever control, heater and defroster, 79 kg (175 lb) operator, 3.5 cu yd. pin-on-bucket, and full fuel tank.*

CED,OUOE002,1791 -19-30SEP04-2/2

### 624J Tool Carrier Specifications



T203674—UN—01OCT04

A—Bucket Hinge Height  
B—Dump Height  
C—Dump Reach

D—Machine Overall Height  
E—Wheelbase  
F—Machine-to-Ground Clearance

G—Machine Overall Length  
H—Maximum Digging Depth  
J—Maximum Roll Back at Full Height

K—Bucket Dump at Full Height  
L—Maximum Rollback at Ground Level

Item	Measurement	Specification
A—Bucket Hinge	Height	4005 mm 13 ft 2.0 in.
B—Dump	Height	2907 mm 9 ft 6.5 in.
C—Dump	Reach	1278 mm 4 ft 2.3 in.
D—Overall Machine	Height	3317 mm 10 ft 10.6 in.
E—Wheelbase	Length	3030 mm 9 ft 11 in.
F—Machine-to-Ground	Clearance	436 mm 17.1 in.
G—Overall Machine	Length	7572 mm 24 ft 10.0 in.
	Weight	14 375 kg

Continued on next page

CED,OUOE002,1791 -19-30SEP04-1/2

Miscellaneous—Specifications

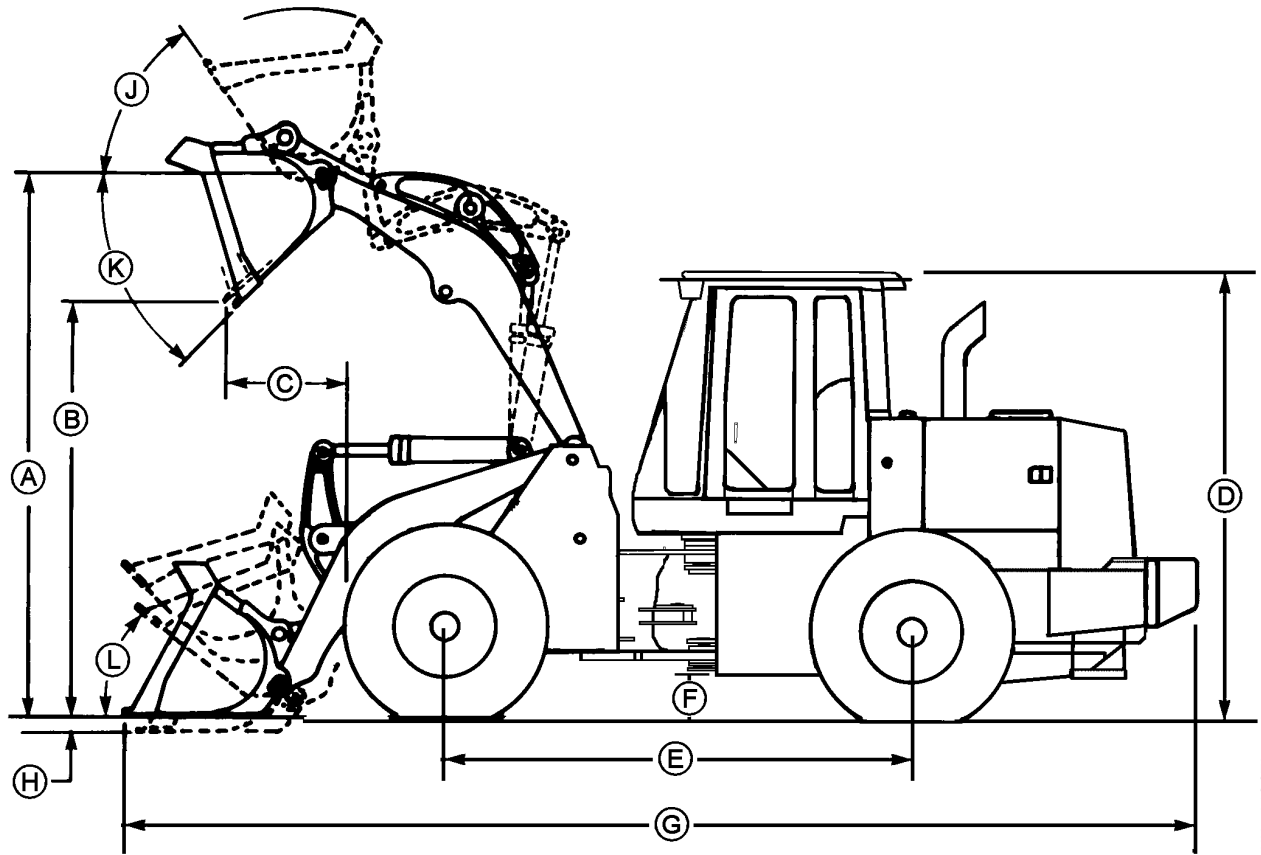
Item	Measurement	Specification
		31,691 lb
H—Maximum Digging Depth	Depth	188 mm 7.4 in.
J—Maximum Rollback at Full Height	Angle	55°
K—Bucket Dump at Full Height	Angle	50°
L—Maximum Rollback at Ground Level	Angle	40°

*NOTE: Specifications and design subject to change without notice. Wherever applicable, specifications are in accordance with SAE standards. Except where otherwise noted, specifications are based on a machine equipped with all standard equipment,*

*ROPS cab, diff lock front axle with standard rear axle, 2 spool valve with two lever control, heater and defroster, 79 kg (175 lb) operator, 3.5 cu yd. coupler bucket, and full fuel tank.*

CED,OUOE002,1791 -19-30SEP04-2/2

624J High Lift Specifications



T203668—UN—01OCT04

T203668

- A—Bucket Hinge Height
- B—Dump Height
- C—Dump Reach
- D—Machine Overall Height
- E—Wheelbase
- F—Machine-to-Ground Clearance
- G—Machine Overall Length
- H—Maximum Digging Depth
- J—Maximum Roll Back at Full Height
- K—Bucket Dump at Full Height
- L—Maximum Rollback at Ground Level

Item	Measurement	Specification
A—Bucket Hinge	Height	4332 mm 14 ft 3.0 in.
B—Dump	Height	3251 mm 10 ft 8.0 in.
C—Dump	Reach	1117 mm 3 ft 8.0 in.
D—Overall Machine	Height	3317 mm 10 ft 10.6 in.
E—Wheelbase	Length	3030 mm 9 ft 11 in.
F—Machine-to-Ground	Clearance	436 mm 17.1 in.
G—Overall Machine	Length	7984 mm 26 ft 2.0 in.
	Weight	14 463 kg

Continued on next page

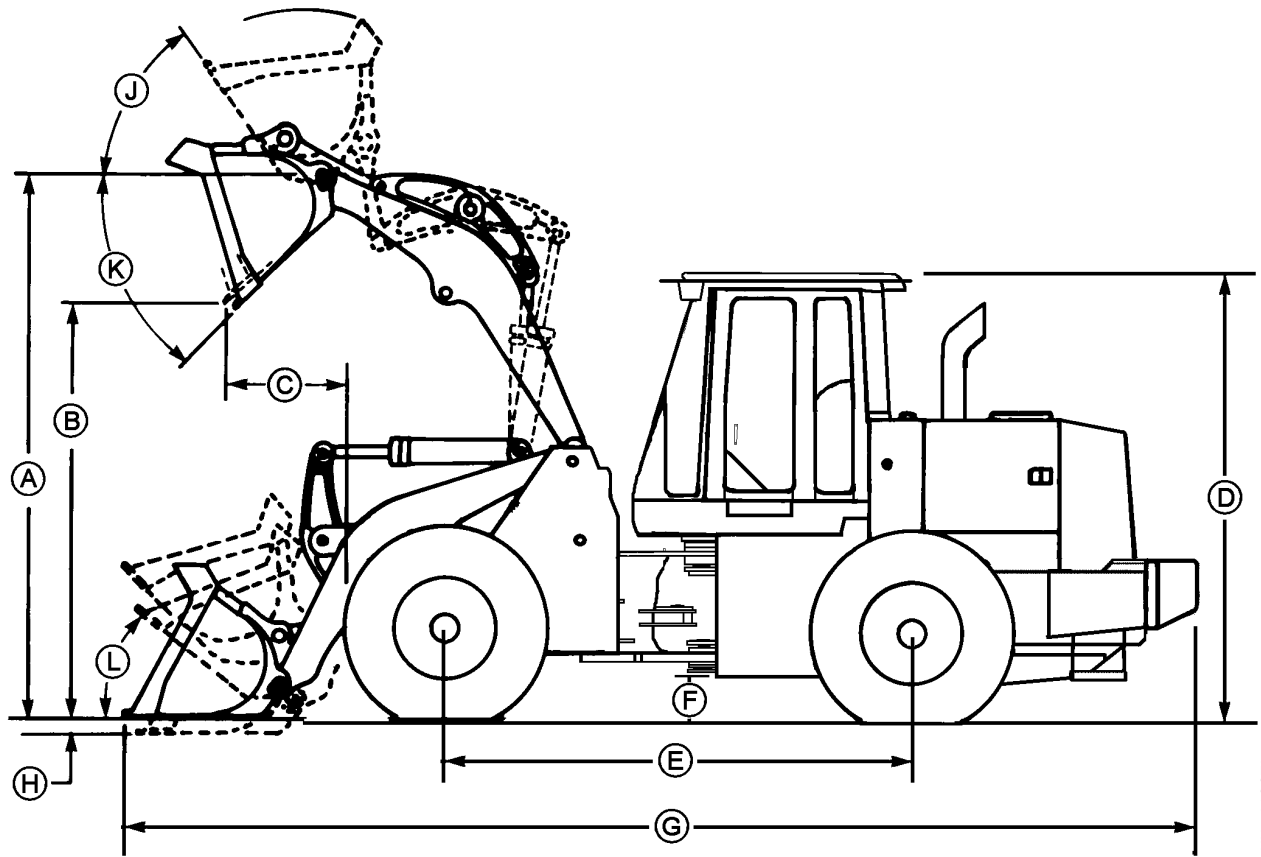
CED.TX03679,5802 -19-30SEP04-1/2

Miscellaneous—Specifications

Item	Measurement	Specification
		31,885 lb
H—Maximum Digging Depth	Depth	193 mm 7.6 in.
J—Maximum Rollback at Full Height	Angle	49°
K—Bucket Dump at Full Height	Angle	46°
L—Maximum Rollback at Ground Level	Angle	40°

CED,TX03679,5802 -19-30SEP04-2/2

### 624J Powerllel Specifications



T203668—UN—01OCT04

**T203668**

- A—Bucket Hinge Height
- B—Dump Height
- C—Dump Reach
- D—Machine Overall Height
- E—Wheelbase
- F—Machine-to-Ground Clearance
- G—Machine Overall Length
- H—Maximum Digging Depth
- J—Maximum Roll Back at Full Height
- K—Bucket Dump at Full Height
- L—Maximum Rollback at Ground Level

Item	Measurement	Specification
A—Bucket Hinge	Height	4000 mm 13 ft 2.0 in.
B—Dump	Height	2837 mm 9 ft 3.7 in.
C—Dump	Reach	1112 mm 3 ft 7.8 in.
D—Overall Machine	Height	3317 mm 10 ft 10.6 in.
E—Wheelbase	Length	3030 mm 9 ft 11 in.
F—Machine-to-Ground	Clearance	436 mm 17.1 in.
G—Overall Machine	Length	7757 mm 25 ft 5.0 in.
	Weight	15 208 kg

Continued on next page

HG31779,0000041 -19-30SEP04-1/2

*Miscellaneous—Specifications*

Item	Measurement	Specification
		33,534 lb
H—Maximum Digging Depth	Depth	129 mm 5.1 in.
J—Maximum Rollback at Full Height	Angle	50°
K—Bucket Dump at Full Height	Angle	50°
L—Maximum Rollback at Ground Level	Angle	42°
<p><i>NOTE: Specifications and design subject to change without notice. Wherever applicable, specifications are in accordance with SAE standards. Except where otherwise noted, specifications are based on a machine equipped with all standard equipment,</i></p>		<p><i>ROPS cab, diff lock front axle with standard rear axle, 2 spool valve with two lever control, heater and defroster, 79 kg (175 lb) operator, 3.5 pin-on-bucket, and full fuel tank.</i></p>

HG31779,0000041 -19-30SEP04-2/2

### 624J Drain and Refill Capacities

Item	Measurement	Specification
Cooling System	Capacity	22.0 L 5.8 gal
Fuel Tank	Capacity	348.0 L 92.0 gal
Engine Crankcase and Filter	Capacity	24.0 L 6.3 gal
Transmission Case and Filter	Capacity	23.0 L 6.0 gal
Front Differential	Capacity	24.5 L 6.5 gal
Rear Differential	Capacity	20.0 L 5.0 gal
Hydraulic Reservoir and Filters	Capacity	119.0 L 31.5 gal
Park Brake	Capacity	0.300 L 10 oz

CED,OUOE002,1792 -19-30JUN10-1/1





# Index

	Page		Page
<b>A</b>			
Accumulator		Accumulator—444J (S.N. —604689), 544J, 624J.....	4-1-14
Brake Check—444J (S.N. 604690— ).....	4-1-14	Brakes	
Brake—444J (S.N. —604689), 544J, 624J.....	4-1-14	External inspection—444J (S.N. —604689), 544J, 624J.....	4-1-12
Acid burns.....	3-8-2	Bucket	
Adjustment		Control lever-one lever design.....	2-2-7
Engine valve clearance.....	3-10-1	Control lever-two lever design.....	2-2-8
Seat.....	2-1-25	<b>C</b>	
Steering wheel tilt.....	2-1-22	Cab	
Air cleaner		Fresh air filter.....	3-3-10
Clean elements.....	3-3-9	Recirculating air filter.....	3-3-13
Replace elements.....	3-9-2	Cab fresh air filter	
Unloader valve.....	3-4-1	Clean.....	3-3-10
Air conditioning		Cab recirculating air filter	
Control.....	2-1-22	Clean.....	3-3-13
Diagnose malfunctions.....	4-3-15	Capacities, drain and refill	
Service.....	4-1-11	444J.....	4-6-8
Air heater.....	2-2-4	544H.....	4-6-16
Air intake		624H/TC62H.....	4-6-24
Hose.....	3-8-2	Chemical products	
Alternator.....	4-1-3	Handling.....	1-2-5
Attachments		Control lever	
Adding safely.....	1-3-5	Shifting transmission.....	2-2-5
Operating safely.....	1-3-5	Coolant	
Axle		Diesel engine.....	3-1-10
Clean recirculation screen.....	3-10-5	Engine.....	3-9-4
Serial number.....	4-5-2	Heater.....	2-2-4
<b>B</b>			
Backdragging.....	2-2-16	Level recovery tank.....	3-4-1
Batteries		Sample.....	3-8-8
Using battery charger.....	4-1-6	Cooling	
Battery		Drain.....	3-10-1
Acid burns.....	3-8-2	System fill.....	3-10-2
Booster.....	4-1-5	Crankshaft dampener replacement.....	3-12-1
Electrolyte level check.....	3-8-2	Cylinder.....	4-1-18
Explosion.....	3-8-2	<b>D</b>	
Handling, checking, and servicing.....	4-1-4	Daily inspection.....	2-2-1
Removing.....	4-1-7	Dampener replacement, crankshaft.....	3-12-1
Replacing.....	4-1-6	Diagnose	
Terminals.....	3-8-2	Drive Line Malfunctions.....	4-3-11
Battery explosions		Diagnose malfunction	
Prevent.....	1-2-5	Hydraulic system.....	4-3-13
Bleed Fuel System.....	4-1-1	Transmission system.....	4-3-8
Bolt and screw torque values		Diagnose malfunctions	
Metric.....	4-1-19	Troubleshooting procedure.....	4-3-1
Unified inch.....	4-1-20	Diesel fuel.....	3-1-1, 3-1-3
Boom		Sample.....	3-8-8
Control lever-one lever design.....	2-2-7	Diesel fuel conditioner	
Control lever-two lever design.....	2-2-8	Low sulfur.....	3-1-4
Height kickout adjustment.....	2-2-12	Differential	
Boom Lock		Clean axle recirculation screen.....	3-10-5
Storage.....	3-2-4	Lock foot switch.....	2-1-2
Brake		Lock pedal.....	2-2-12
Accumulator Check—444J (S.N.604690— ).....	4-1-14		

Continued on next page

Index

	Page		Page
Oil change.....	3-6-2, 3-10-4	Frame	
Oil specification.....	3-1-8	Machine lock bar.....	3-2-3
Differential oil		Front driveline	
Check level.....	3-8-7	Lubricate.....	3-7-1
Differential/axle		Fuel	
Diagnose malfunctions.....	4-3-10	Diesel.....	3-1-1, 3-1-3
Digging		Filter change.....	3-8-5
Loader bucket.....	2-2-15	Handling and storing.....	3-1-2
Door		Lubricity.....	3-1-1
Grille.....	3-2-5	Fuel System	
Locking open side.....	2-1-23	Bleed the Fuel System.....	4-1-1
Driving metal pins.....	1-4-2	Fuse	
Dust valve.....	3-9-1	Specification.....	4-1-7
<b>E</b>		<b>G</b>	
Electrical		Gauge	
Fuse Specifications.....	4-1-7	Engine coolant temperature.....	2-1-3
Emergency preparation.....	1-2-6	Fuel.....	2-1-3
Engine		Transmission oil temperature.....	2-1-3
Air heater.....	2-2-4	Grease	
Boost starting.....	4-1-5	Alternative and synthetic lubricants.....	3-1-6
Cold weather warm-up.....	2-2-4	Boom and cylinder pivots.....	3-5-1
Coolant conditioner.....	3-9-4	Extreme pressure and multipurpose.....	3-1-9
Crankshaft dampener replacement.....	3-12-1	Frame hinge pivots.....	3-9-5
Oil change.....	3-6-1, 3-8-4	Oscillating rear axle.....	3-5-4
Oil level.....	3-4-2	Steering cylinder pivots.....	3-5-4
Serial number.....	4-5-1	Grille door.....	3-2-5
Speed.....	4-1-10		
Starting.....	2-2-2	<b>H</b>	
Valve clearance adjust.....	3-10-1	Halogen bulbs.....	4-1-10
Vent tube.....	3-9-1	Handhold use.....	1-3-1
Engine side shields		Hardware	
Opening.....	3-2-3	Torque specifications.....	4-1-18
Explosion		Hardware torque values	
Battery.....	1-2-5	Metric.....	4-1-19
External service brake injection		Unified inch.....	4-1-20
444J (S.N. 604690— ).....	4-1-13	Hazards	
<b>F</b>		Avoiding.....	1-3-2
Features		Heater	
Operator convenience.....	1-1-1	Control.....	2-1-22
Safety.....	1-1-1	Coolant.....	2-2-4
Filter		Engine air.....	2-2-4
Cab air recirculating.....	3-3-13	Heater system	
Cab fresh air.....	3-3-10	Diagnose malfunctions.....	4-3-16
Engine oil.....	3-6-1, 3-8-4	High-pressure oils	
Final fuel.....	3-3-14, 3-8-5	Avoid.....	1-2-4
Fuel.....	3-8-5	Horn button.....	2-1-21
Fuel drain.....	3-3-10	Hose	
Hydraulic reservoir breather.....	3-8-6	Air intake.....	3-8-2
Hydraulic return.....	3-8-6	Coolant.....	3-10-1
Primary fuel drain and clean.....	3-3-10	Hoses	
Transmission oil.....	3-9-3	Check.....	3-9-5
Final fuel filter		Hydraulic	
Replace.....	3-3-14, 3-8-5	Oil.....	3-1-8
Fire prevention.....	1-2-5	Oil change.....	3-11-1
Fluid analysis test kit.....	3-2-6	Oil level.....	3-4-3
		Oil specification.....	3-1-8

Continued on next page

Index

	Page		Page
Reservoir breather filter .....	3-8-6	Maintenance	
Return filter .....	3-8-6	Preparing machine .....	3-2-2
Hydraulic pump		Required parts .....	3-2-9
Serial number .....	4-5-2	Service intervals .....	3-2-7
Hydraulic system		Metal pins .....	1-4-2
Malfunctions .....	4-3-13	Metric bolt and screw torque values .....	4-1-19
Suction strainer .....	3-11-2	Monitor display unit	
<b>I</b>		Check .....	3-2-1
Indicator		Normal display .....	2-1-8
Location .....	2-1-3	Motor .....	4-1-18
Secondary steering .....	2-2-11	<b>N</b>	
Inspection		Neutral	
External service brake—444J (S.N. —604689), 544J, 624J .....	4-1-12	Lock .....	2-2-5
Instruments		Start system check .....	4-1-11
Check before starting .....	2-2-1	<b>O</b>	
<b>J</b>		Oil	
Jump starting .....	4-1-5	Alternative and synthetic lubricants .....	3-1-6
<b>L</b>		Axle sample .....	3-8-8
Lamps .....	4-1-10	Change differential .....	3-6-2, 3-10-4
Lever		Change engine .....	3-6-1, 3-8-4
Boom control-one lever design .....	2-2-7	Change hydraulic .....	3-11-1
Boom control-two lever design .....	2-2-8	Change park brake .....	3-9-6
Bucket control-one lever design .....	2-2-7	Change transmission .....	3-10-3
Bucket control-two lever design .....	2-2-8	Check level park brake .....	3-8-7
Loader .....	2-1-1	Engine sample .....	3-7-2
Lifting		Hydraulic reservoir .....	3-1-8
Machine .....	2-2-23	Hydraulic sample .....	3-8-8
Lock		Level engine .....	3-4-2
Bar, machine frame .....	3-2-3	Level hydraulic system .....	3-4-3
Neutral .....	2-2-5	Level transmission .....	3-4-4
Low sulfur diesel fuel conditioner .....	3-1-4	Specification differential .....	3-1-8
Lubricants		Specification hydraulic system .....	3-1-8
Alternative and synthetic lubricants .....	3-1-6	Specification park brake .....	3-1-8
Lubricate		Specification transmission .....	3-1-8
Boom and cylinder pivots .....	3-5-1	Transmission sample .....	3-8-8
Frame hinge pivots .....	3-9-5	<b>P</b>	
Front driveline .....	3-7-1	Park brake	
Oscillating rear axle .....	3-5-4	Change oil .....	3-9-6
Rear driveline .....	3-8-1	Diagnose malfunctions .....	4-3-12
Rear oscillating support cover .....	3-8-6	Oil level check .....	3-8-7
Rear steering cylinder pivots .....	3-5-4	Oil specification .....	3-1-8
Steering cylinder pivots .....	3-5-4	Operation .....	2-2-6
Lubricity of diesel fuel .....	3-1-1	Switch .....	2-2-6
<b>M</b>		Pedal	
Machine		Differential lock .....	2-2-12
Frame locking bar .....	3-2-3	Pedals	
Machine modifications		Accelerator .....	2-1-2
Avoid .....	1-2-2	Brake .....	2-1-2
		Powerllel linkage	
		Return-to-dig adjustment .....	2-2-14
		Prepare Machine for Maintenance .....	3-2-2

Continued on next page

*Index*

	Page		Page
Primary fuel filter		Signs.....	1-5-1
Strainer.....	3-8-5	Stay clear of moving parts.....	1-2-3
Product Identification Number.....	4-5-1	Seat	
Pump		Adjust.....	2-1-25
Service.....	4-1-18	Seat belt.....	2-1-25
<b>Q</b>		Use and maintenance.....	1-3-1
Quick shift		Secondary steering	
Switch.....	2-2-9	Operation.....	2-2-11
<b>R</b>		Serial number	
Radiator		Axle.....	4-5-2
External cleaning.....	4-1-16	Engine.....	4-5-1
Radiator hoses		Hydraulic pump.....	4-5-2
Check.....	3-9-5	Transmission.....	4-5-1
Rear driveline		Service	
Lubricate.....	3-8-1	Interval.....	3-2-1, 3-3-1
Rear oscillating support cover		Service brake inspection, external	
Grease.....	3-8-6	444J (S.N. 604690— ).....	4-1-13
Lubricate.....	3-8-6	Service brakes	
Rear steering cylinder pivots		External inspection—444J (S.N.	
lubricate.....	3-5-4	—604689), 544J, 624J.....	4-1-12
Recovery tank		Service codes	
Coolant level.....	3-4-1	Quick reference list.....	4-3-2
Regulator.....	4-1-3	Service Doors	
Required parts.....	3-2-9	Opening.....	3-2-3
Return-to-carry		Service intervals	
Height kickout adjustment.....	2-2-12	Maintenance.....	3-2-7
Return-to-dig		Shifting	
Adjustment		Transmission.....	2-2-5
Power/lift linkage.....	2-2-14	Snap-to-connect (STC) fittings	
Return-to-dig circuit		Service recommendations.....	4-1-17
Adjustment.....	2-2-13	Specification	
Ride control		Fuse.....	4-1-7
Accumulator.....	4-1-15	Specifications	
Switch.....	2-2-10	444J.....	4-6-1
Roads		444J High Lift.....	4-6-5, 4-6-7
Operating or traveling.....	1-3-5	544H.....	4-6-9
Roll-over protective structure		544H High Lift.....	4-6-13, 4-6-15
Torque value.....	4-1-18	624H high lift.....	4-6-21
ROPS		624H/TC62H.....	4-6-17, 4-6-19, 4-6-23
Inspect.....	1-3-5	Cooling system.....	3-9-4
Maintain.....	1-3-5	Differential oil.....	3-1-8
Rust inhibitor.....	3-9-4	Hardware torque.....	4-1-18
<b>S</b>		Hydraulic oil.....	3-1-8
Safety		Park brake.....	3-1-8
Add cab guarding for special uses.....	1-2-2	TC444J.....	4-6-3
Clean debris from machine.....	1-2-6	TC54H.....	4-6-11
Features.....	1-1-1	Transmission oil.....	3-1-8
Inspect machine.....	1-2-3	Speed	
Operate only if qualified.....	1-2-1	Engine.....	4-1-10
Operator's seat.....	1-3-1	Starting	
Protective equipment.....	1-2-2	The engine.....	2-2-2
Recognize safety information.....	1-2-1	Starting fluid	
		If equipped.....	2-2-3
		STC fittings	
		Service recommendations.....	4-1-17
		Steering	
		Wheel tilt adjust.....	2-1-22
		Steps use.....	1-3-1

Continued on next page

Index

	Page		Page
Storage		Traveling	
Machine .....	4-4-1	On public roads .....	1-3-5
Monthly .....	4-4-1	Troubleshooting procedure.....	4-3-1
Storing fuel .....	3-1-2		
Strainer		<b>U</b>	
Primary fuel filter .....	3-8-5	Unified inch bolt and screw torque values .....	4-1-20
Suction strainer		Unloader valve	
Hydraulic system.....	3-11-2	Air cleaner .....	3-4-1
Surge Tank			
Level .....	3-7-2	<b>V</b>	
Switch		Valve	
Differential lock .....	2-1-2	Air cleaner dust unloader .....	3-4-1
Park brake.....	2-2-6	Control .....	4-1-18
Quick shift .....	2-2-9	Dust unloader.....	3-9-1
Ride control.....	2-2-10	Vent tube	
		Engine crankcase .....	3-9-1
<b>T</b>		Vibration	
Tank		Crankshaft damper replacement.....	3-12-1
Surge .....	3-7-2		
Test		<b>W</b>	
Bleed the Fuel System.....	4-1-1	Warm-up	
Tire		Engine, cold weather .....	2-2-4
Pressure check .....	3-3-1	Washer	
Pressures.....	3-3-2, 3-3-7	Windshield fluid level .....	3-2-6
Torque charts		Waste disposal .....	1-2-6
Metric .....	4-1-19	Welding.....	4-1-11
Unified inch .....	4-1-20	Welding repairs.....	1-4-2
Torque specifications		Wheel	
Hardware .....	4-1-18	Cap screw torque.....	3-3-8
Roll-over protective structure .....	4-1-18	Window	
Torque values		Opening .....	2-1-24
Wheel retaining cap screw.....	3-3-8	Sliding .....	2-1-24
Towing Procedure.....	2-2-21	Windshield	
Transmission		Washer fluid .....	3-2-6
Oil change.....	3-10-3	Worksite hazards	
Oil filter replace .....	3-9-3	Avoid .....	1-3-2
Oil level .....	3-4-4		
Oil specification.....	3-1-8		
Serial number.....	4-5-1		
Shifting.....	2-2-5		
Transmission cooler			
External cleaning .....	4-1-16		

