370E, 410E, and 460E Articulated Dump Truck Repair

REPAIR TECHNICAL MANUAL

iT4/S3B models 370E, 410E, 460E (SN. E634583-668586)

TM12408 27 DEC 15 (ENGLISH)

For complete service information also see:

370E, 410E, and 460E Articulated Dump Truck Diagnostic	**TM12406**
JDLink (MTG) Technical Manual	**TM114519**
120 Series Hydraulic Cylinders	**CTM120519**
TMV 1500 Series Axle 370E, 410E, 460E Series Outboard Planetary Axles	**CTM115319**
6135 PowerTech Diesel Engine (Interim Tier 4) Level 22 ECU	**CTM104919**

John Deere Construction and Forestry
Pinted by Belgreen

TM12408

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Foreword

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

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

CAUTION:

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

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

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

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

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

Manual Identification—READ THIS FIRST!

IMPORTANT:

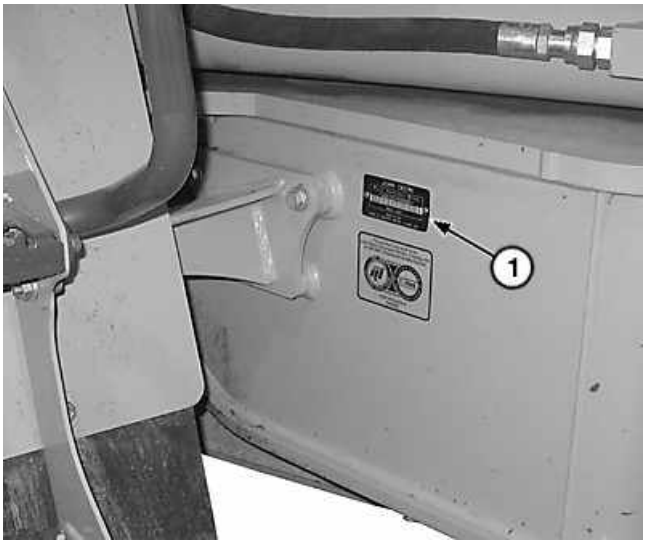
Use only supporting manuals designated for your specific machine. If incorrect manual is chosen, improper service may occur. Verify product identification number (PIN) when choosing the correct manual.

Choosing the Correct Supporting Manuals

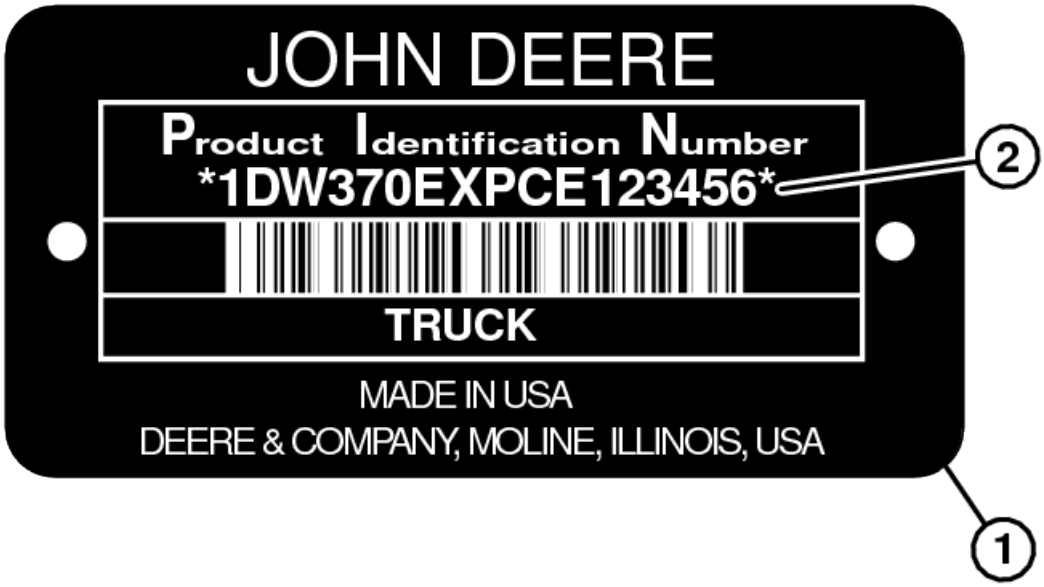
John Deere articulated dump trucks are available in different machine configurations based on the various markets into which they are sold. Different supporting manuals exist for different machine configurations.

When necessary, product identification numbers are listed on the front covers of articulated dump truck manuals. These numbers are used to identify the correct supporting manual for your machine.

Product Identification Number



PIN Plate Location



PIN Plate

LEGEND:

1	PIN Plate
2	17 Character PIN

The product identification number (PIN) plate (1) is located on the left-side of equipment frame under operator′s station. Each machine has a 17 character PIN (2) shown on PIN plate.

PIN Identification

PIN Identification																
3			**4**				**5**	**6**	**7**	**8**	**9**					
1	D	W	3	7	0	E	X	_	_	E	1	2	3	4	5	6
1	D	W	3	7	0	E	X	_	_	C	1	2	3	4	5	6
1	D	W	4	1	0	E	X	_	_	E	1	2	3	4	5	6
1	D	W	4	1	0	E	X	_	_	C	1	2	3	4	5	6
1	D	W	4	6	0	E	X	_	_	E	1	2	3	4	5	6
1	D	W	4	6	0	E	X	_	_	C	1	2	3	4	5	6

- **3—World Code** —Identifies location where machine is manufactured.
- **4—Machine Model Identifier** —Identifies model number.
- **5—Option Code** —Identifies which major machine option is equipped. This digit will change from one machine to another.
- **6—Check Letter** —This is a random character assigned by the factory. This is not used in machine identification.
- **7—Manufacturing Year Code** —Identifies year of machine manufacture.
- **8—Engine Emission Code** —Represents engine emission certification.
- **9—Machine Serial Number**

The PIN identifies the producing factory, machine model number, machine option, year of manufacture, engine emission level, and machine serial number. The following is an example for a 370E Interim Tier 4/Stage IIIB machine:

PIN Identification

1DW370EX_ _E123456

1DW		**World Code** (manufacturing location)
	1DW	Davenport Works
	1T0	Dubuque Works
370E		**Machine Model Identifier**
X		**Machine Option Code**
	X	Base Machine
	T	Truck
_		**Check Letter** (variable)
_		**Manufacturing Year Code** (variable)
	C	2012
	D	2013
	E	2014
	F	2015
	G	2016
E		**Engine Emission Code**
	C	Tier 2/Stage II
	D	Tier 3/Stage IIIA
	E	Interim Tier 4/Stage IIIB
	F	Tier 4
123456		**Machine Serial Number**

Section 00 - GENERAL INFORMATION

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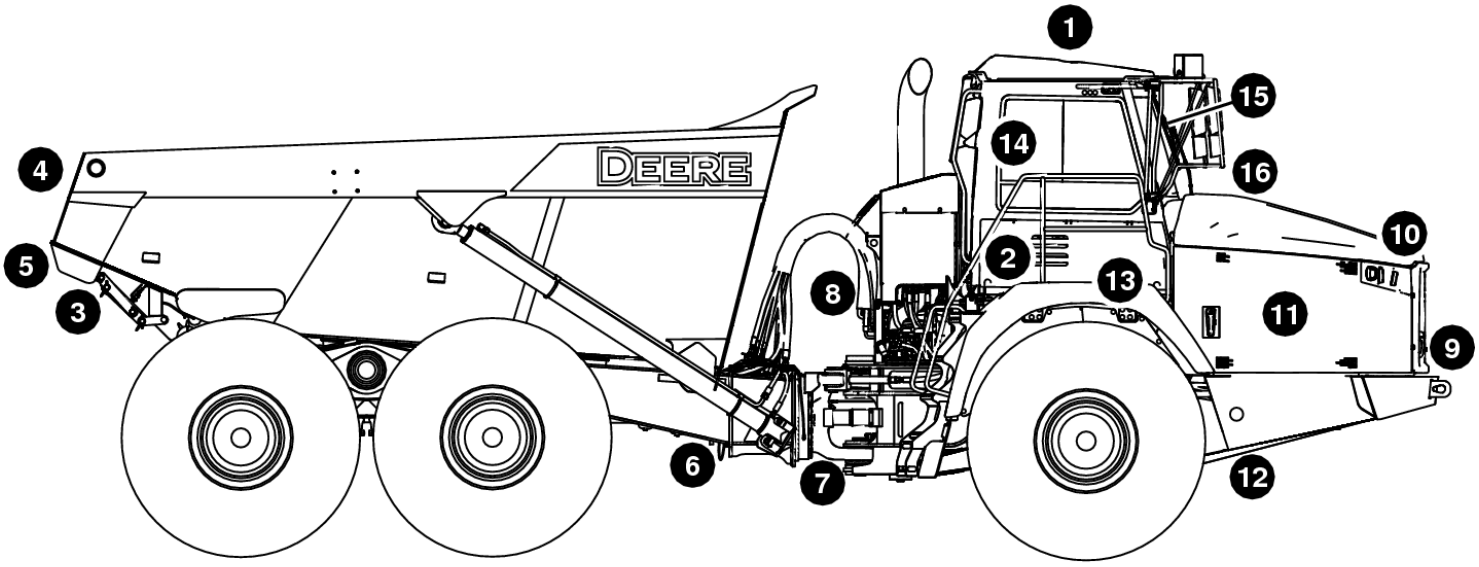
Group 0001 - Safety

Safety and Operator Convenience Features



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Safety Features

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

1. **ROPS/FOPS Cab Protection.** Structures designed to help protect the operator are certified to ISO, SAE, and OSHA. Enclosures also deflect sun and rain.
2. **Cab with Heater/Defroster.** Cab ventilation system circulates both outside and inside air through a filter for a clean working environment. Built-in defroster vents direct air flow for effective window defogging/deicing.
3. **Dump Body Service Lock.** A mechanical lock is provided for working on or around this machine with the dump body raised.
4. **Stop/Backup Lights.** Highly visible lights are standard equipment.
5. **Backup Alarm.** Alerts bystanders when reverse travel direction is selected by the operator.
6. **Independent Parking Brake.** Is mechanically engaged and hydraulically released. It engages whenever the engine stop switch is turned on or the park brake switch is activated.
7. **Articulation Locking Bar.** A self-storing mechanical lock is provided for transport or service.
8. **Secondary Steering.** Ground driven, continuously in operation. Secondary steering indicator light will light when active.
9. **Horn.** Standard horn is useful when driving or when signaling co-workers.
10. **Halogen Lights and Turn Signals.** High-intensity halogen drive/work lights and high-visibility turn signals are standard equipment.
11. **Engine Fan Guard.** A fan guard on both fan doors helps prevent contact with rotating fan blades.
12. **Bypass Start Protection.** Shielding over the starter terminals helps prevent dangerous bypass starting.
13. **Transmission Retarder.** Engages whenever the truck is in motion and the operator lets up on the accelerator.
14. **Seat Belt Retractors.** Help keep belts clean and convenient to use.
15. **Mirrors.** Large exterior mirrors on both sides offer the operator a view of activity behind the machine.
16. **Large Windshield Wiper with Washer.** Extra long wiper cleans large windshield area.

Recognize Safety Information

Safety alert Symbols

Safety Alert Symbols

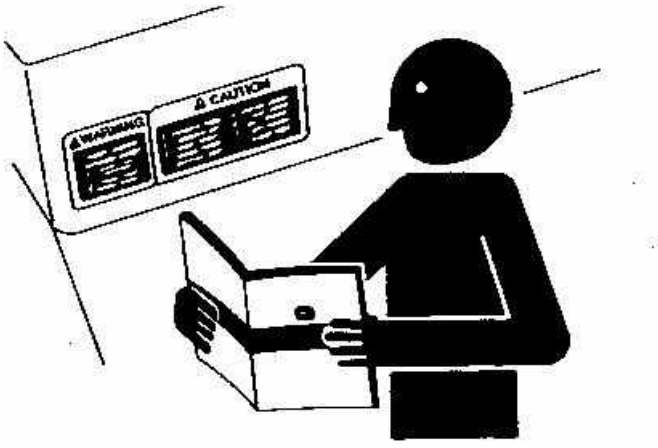
This is the safety alert symbol. When you see this symbol on your machine or in this manual, be alert for the potential of personal injury.

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.

Follow Safety Instructions



Safety Messages

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. Use this operator’s manual for correct safety sign placement. Be sure that 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 could impair the function or safety and affect machine life.

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

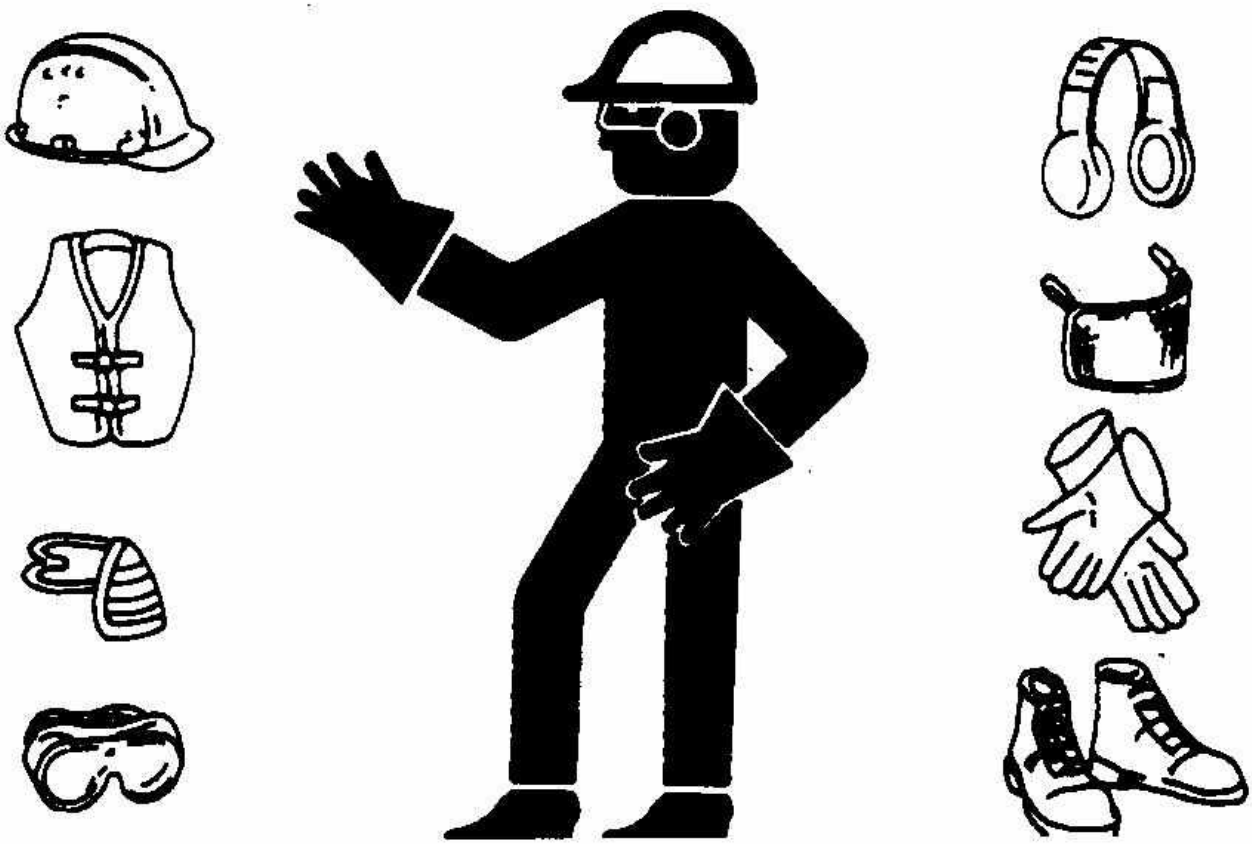
Operate Only If Qualified

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

Operator should be familiar with the job site and 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 every work situation and work site.

Wear Protective Equipment



Protective Clothing

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.

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 malfunctions 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 dealer before making machine modifications that change the intended use, weight or balance of the machine, or that alter machine controls, performance, or reliability.

Inspect Machine

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.

Stay Clear of Moving Parts

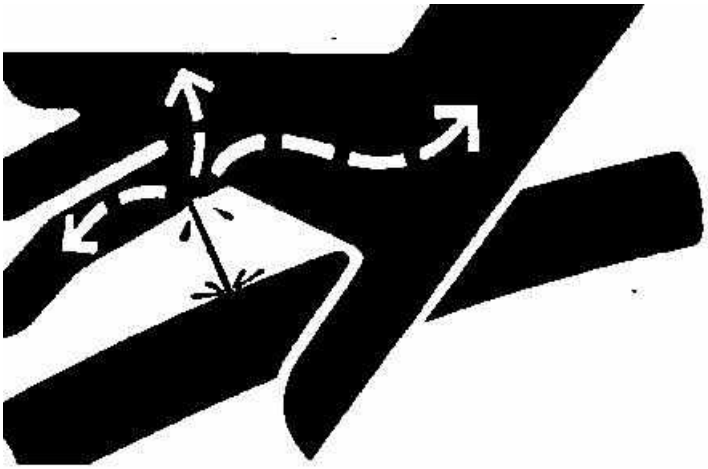
Stay Clear of Moving Parts

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.

Avoid High-Pressure Fluids



High Pressure

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

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

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

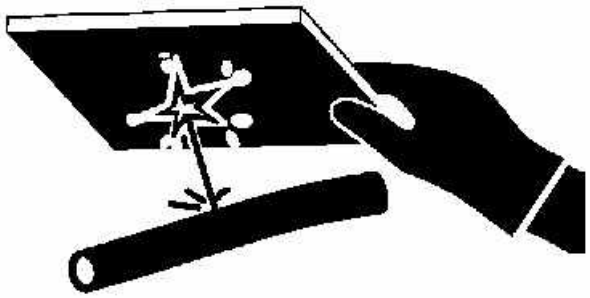
Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure.

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

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available in English from Deere & Company Medical Department in Moline, Illinois, U.S.A., by calling 1-800-822-8262 or +1 309-748-5636.

Avoid High-Pressure Oils

Avoid High Pressure Oils



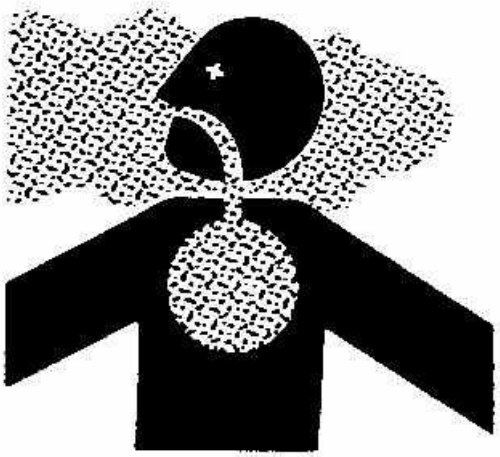
Avoid High-Pressure Oils

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 could result. Contact a knowledgeable medical source or the Deere & Company Medical Department in Moline, Illinois, U.S.A.

Work In Ventilated Area



Engine exhaust fumes

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.

Prevent Fires

Handle Fuel Safely

Clean Machine Regularly

Carry A Fire Extinguisher

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.

Prevent Battery Explosions

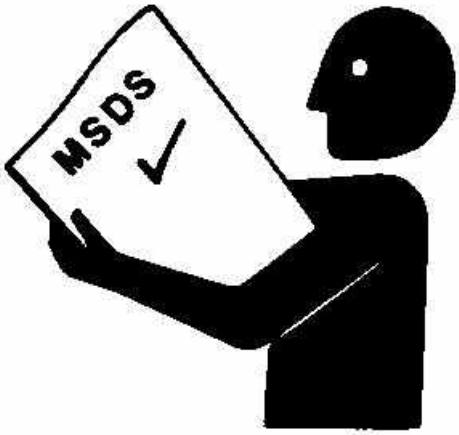
Battery Explosions

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

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

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

Handle Chemical Products Safely



Material Safety Data Sheet

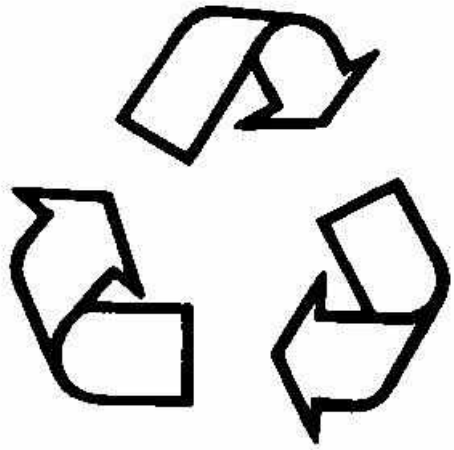
Direct exposure to hazardous chemicals can cause serious injury. Potentially hazardous chemicals used with John Deere equipment include such items as lubricants, coolants, paints, and adhesives.

A Material Safety Data Sheet (MSDS) provides specific details on chemical products: physical and health hazards, safety procedures, and emergency response techniques.

Check the MSDS before you start any job using a hazardous chemical. That way you will know exactly what the risks are and how to do the job safely. Then follow procedures and recommended equipment.

(See your John Deere dealer for MSDS’s on chemical products used with John Deere equipment.)

Decommissioning: Proper Recycling and Disposal of Fluids and Components



Recycle Waste

Safety and environmental stewardship measures must be taken into account when decommissioning a machine and/or component. These measures include the following:

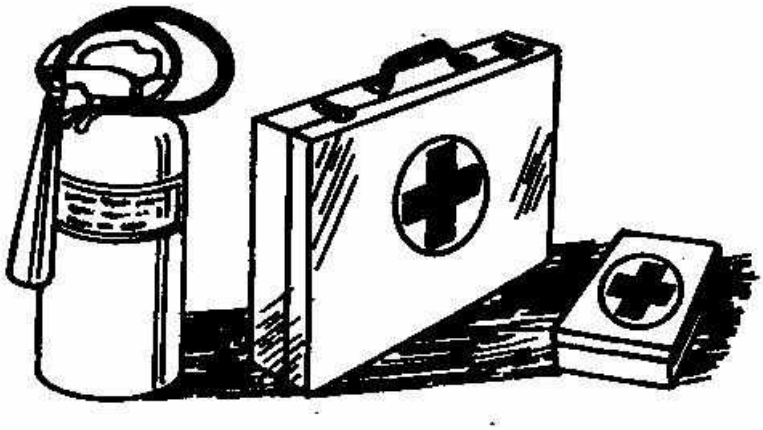
- Use appropriate tools and personal protective equipment such as clothing, gloves, face shields or glasses, during the removal or handling of objects and materials.
- Follow instructions for specialized components.
- Release stored energy by lowering suspended machine elements, relaxing springs, disconnecting the battery or other electrical power, and releasing pressure in hydraulic components, accumulators, and other similar systems.
- Minimize exposure to components which may have residue from agricultural chemicals, such as fertilizers and pesticides. Handle and dispose of these components appropriately.
- Carefully drain engines, fuel tanks, radiators, hydraulic cylinders, reservoirs, and lines before recycling components. Use leak-proof containers when draining fluids. Do not use food or beverage containers.
- Do not pour waste fluids onto the ground, down a drain, or into any water source.
- Observe all national, state, and local laws, regulations, or ordinances governing the handling or disposal of waste fluids (example: oil, fuel, coolant, brake fluid); filters; batteries; and, other substances or parts. Burning of flammable fluids or components in other than specially designed incinerators may be prohibited by law and could result in exposure to harmful fumes or ashes.
- Service and dispose of air conditioning systems appropriately. Government regulations may require a certified service center to recover and recycle air conditioning refrigerants which could damage the atmosphere if allowed to escape.
- Evaluate recycling options for tires, metal, plastic, glass, rubber, and electronic components which may be recyclable, in part or completely.
- Contact your local environmental or recycling center, or your John Deere dealer for information on the proper way to recycle or dispose of waste.

Exhaust Filter Ash Handling and Disposal

CAUTION:

Under federal, state, and local laws or regulations, exhaust filter ash can be classified as a hazardous waste. Hazardous waste must be disposed of in accordance with all applicable federal, state, and local laws or regulations governing hazardous waste disposal. Only a qualified service provider should remove ash from the exhaust filter. Personal protective equipment and clothing, maintained in a sanitary and reliable condition, should be used when handling and cleaning exhaust filter. See your authorized dealer for exhaust filter ash handling and disposal.

Prepare for Emergencies



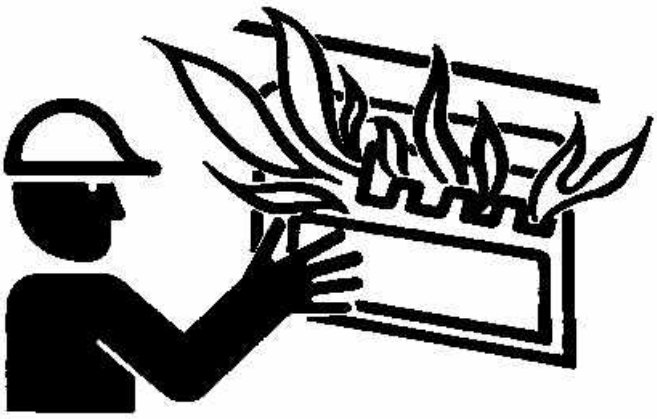
First Aid Kit

Be prepared if a fire starts.

Keep a first aid kit and fire extinguisher handy.

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

Clean Debris from Machine



Clean Debris From Machine

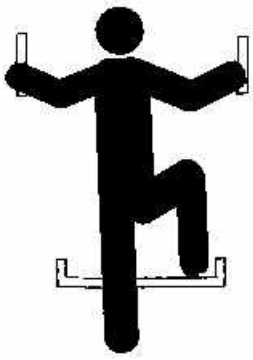
Keep engine compartment, radiator, batteries, hydraulic lines, exhaust components, fuel tank, and operator′s station clean and free of debris.

Clean any oil spills or fuel spills on machine surfaces.

Temperature in engine compartment could 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.

Use Steps and Handholds Correctly



Use Handholds And Steps

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

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

Start Only From Operator′s Seat

Operate Only From Operators Seat

Avoid unexpected machine movement. Start engine only while sitting in operator′s seat. Ensure that 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.

Use and Maintain Seat Belt

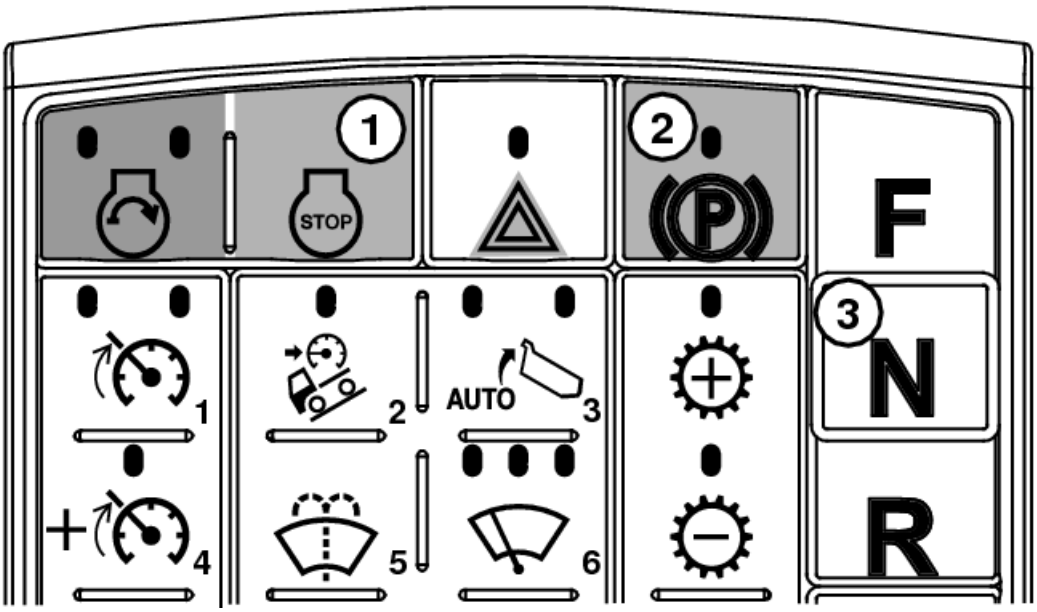
Use and Maintain Seat Belt

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 that 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 three years, regardless of appearance.

Prevent Unintended Machine Movement



25-Button Sealed Switch Module (SSM) Park Function

LEGEND:

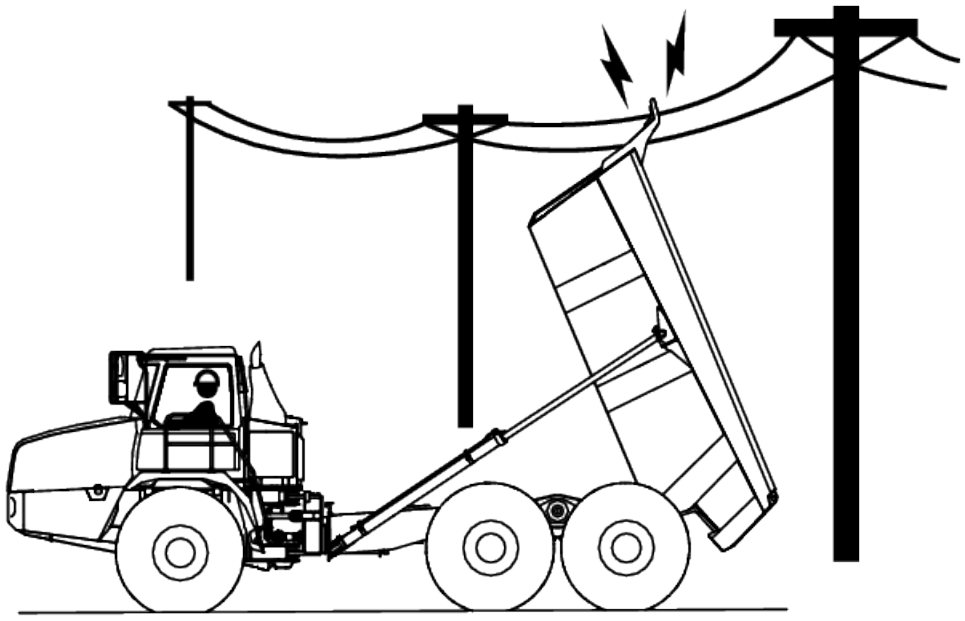
1	Engine Stop Switch
2	Park Brake Switch
3	Neutral Selection Switch

Be careful not to accidentally actuate controls when coworkers are present.

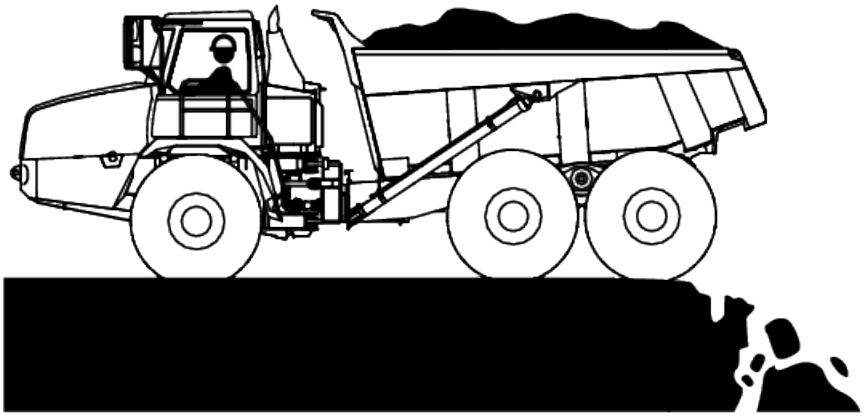
Ensure dump body is lowered during work interruptions. Push neutral selection switch (3) to engage neutral gear, push park brake switch (2) to engage park brake, and push engine stop switch (1) to stop engine before allowing anyone to approach the machine.

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

Avoid Work Site Hazards



Contact with Overhead Wires



Operate Only on Solid Footing

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

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

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.

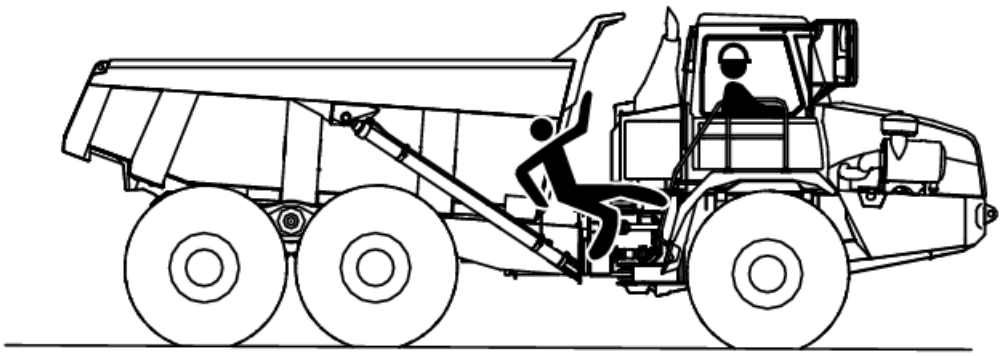
Keep bystanders clear at all times. Keep bystanders away from raised booms, attachments, and unsupported loads. Avoid swinging or raising booms, attachments, or loads over or near personnel. Use barricades or a signal person to keep vehicles and pedestrians away. Use a signal person if moving machine 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 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.

Keep Riders Off Machine



Keep Riders Off Machine

Use seat belt at all times.

Only allow operator on machine except when necessary for instruction or short periods of observation.

Riders are subject to injury. They may fall from machine, be caught between machine parts, or be struck by foreign objects. They also may obstruct operator’s view or impair his ability to operate machine safely.

Use the instructional seat only to accommodate trainers or persons needing to observe machine operation for short periods.

Avoid Backover Accidents

Avoid Backover Accidents

Before moving machine, be sure that all persons are clear of machine path. Turn around and look directly for best visibility. Use 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.

Do not rely on the rear camera and radar object detection systems to determine if personnel are behind the machine. The system has limitations due to maintenance practices, environmental conditions, and operating range.

Avoid Machine Tip Over

Use Seat Belt

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.

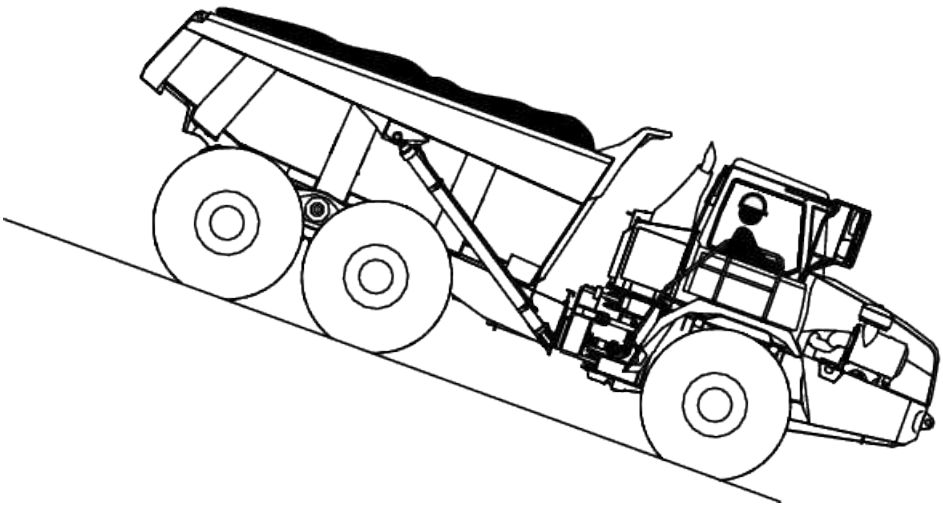
Use extra care when bin (dump body) is raised. Machine stability is greatly reduced when bin (dump body) is raised. Drive slowly. Avoid sharp turns and uneven ground.

Be careful on slopes and soft, rocky, or frozen ground. Traction and stability are reduced by slopes and adverse terrain. Avoid piles of dirt and banks or excavations that may cave in and cause the machine to tip or fall.

Do not overload the machine. Oversize loads reduce machine stability, increase tire flex, and erode travel surfaces. Braking capability and brake life are also reduced.

If machine tips, carefully inspect brake and hydraulic lines, electrical wiring, and machine structure before operating.

Operating on Slopes



Operating on Slopes

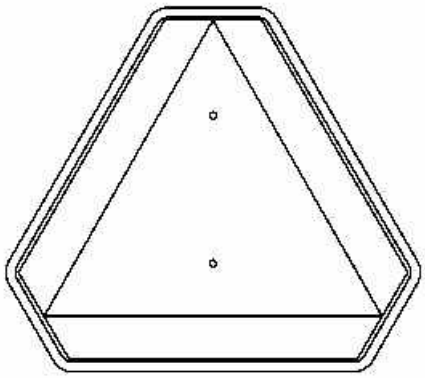
Avoid side slope travel whenever possible.

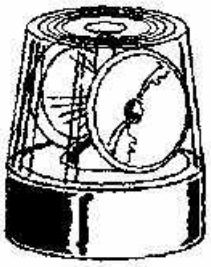
Check service brake condition frequently when operating on slopes.

Select low gear speed before starting down slope. The maximum slope you can operate on will be limited by ground conditions and the load being handled.

Use the transmission retarder, exhaust brake, and service brakes to control speed. Sudden brake application with a loaded bin (dump body) could cause loss of machine control.

Operating or Traveling On Public Roads





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, beacon lights, 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.

Inspect and Maintain ROPS

A damaged rollover protective structure (ROPS) should be replaced, not reused.

The protection offered by ROPS could 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.

Add and Operate Attachments Safely

Always verify compatibility of attachments by contacting your authorized dealer. Adding unapproved attachments could affect machine stability or reliability and could 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.

Prepare Machine for Maintenance

Before performing maintenance on machine:

[1] - Unload dump body.

[2] - Wash machine.

[3] - Park machine on firm, level ground. Steer machine to straighten frames.

[4] - Install articulation locking bar. See Install Articulation Locking Bar. (Section 3-2.)

[5] - Fully lower dump body, unless specifically instructed otherwise in a maintenance procedure. If dump body must be raised, install dump body support rod. See Install Dump Body Locking Bar. (Section 3-2.)

[6] - Fully lower the strut lowering system.

[7] - Stop engine and engage park brake.

[8] - Attach a DO NOT OPERATE sign to steering wheel.

[9] - Relieve hydraulic pressure:

a. Turn steering wheel back and forth three times.
b. If dump body is fully lowered, hydraulic pressure is automatically relieved. If dump body is raised and dump body support rod is installed, move dump body control lever forward and rearward three times to ensure that the weight of the dump body is securely settled onto the dump body support rod.

[10] -

CAUTION:

Avoid serious injury or death from being crushed by machine moving unexpectedly. To prevent rollaway, install wheel chocks on one axle.

Install wheel chocks to ensure that machine cannot move backward or forward during service.

[11] -

CAUTION:

Prevent injury when working with hot equipment and fluids. Hot equipment and fluids can cause burns to unprotected skin. Wear personal protective equipment.

CAUTION:

To avoid injury from escaping fluid under pressure, stop engine and relieve the pressure in the system before disconnecting or connecting hydraulic or other lines. Tighten all connections before applying pressure.

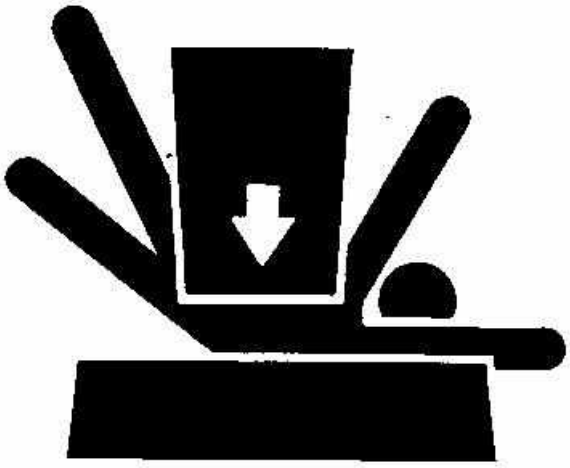
Allow time for the engine and all fluids to cool, unless specifically instructed otherwise in a maintenance procedure.

→NOTE:

The air conditioning system is charged with gas under pressure. Air conditioning service should be performed only by a qualified technician with proper equipment. (See your authorized dealer.)

Park and Prepare for Service Safely

Do Not Operate Tag



Support Machine Properly

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

- Park machine on a level surface.
- Lower bin (dump body) unless raised position is required for service.
- Engage park brake.
- Stop engine.
- Lower struts completely.
- Attach a “Do Not Operate” tag in an obvious place in the operator’s station.
- Install the articulation lock bar.
- Install service locks if bin (dump body) or cab is raised for service.

Securely support machine before working under it.

Install wheel chocks to ensure that machine cannot move backward or forward during service.

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

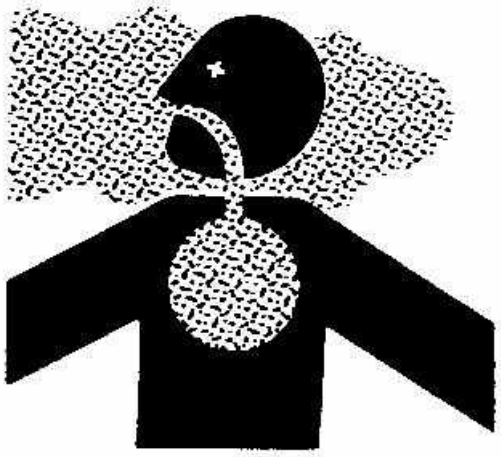
Service Cooling System Safely

Cooling System

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

Do not service radiator through the radiator cap. Only fill through the surge tank filler cap. Shut off engine. Only remove surge tank filler cap when cool enough to touch with bare hands. Slowly loosen cap to relieve pressure before removing completely.

Remove Paint Before Welding or Heating



Toxic Fumes

Avoid potentially toxic fumes and dust.

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

Remove paint before heating:

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

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

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

Dispose of paint and solvent properly.

Make Welding Repairs Safely

Heating Near Pressurized Fluid Lines

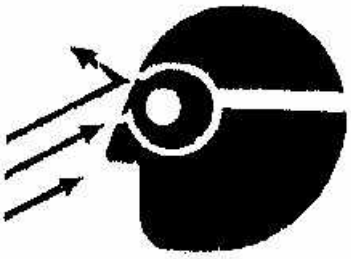
> ***IMPORTANT:***
>
> ***Disable electrical power before welding. Turn off main battery switch and disconnect positive (+) and negative (-) battery cables.***

Do not weld or apply heat on any part of a reservoir or tank that has contained oil or fuel. Heat from welding and cutting can cause oil, fuel, or cleaning solution to create gases which are explosive, flammable, or toxic.

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

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

Drive Metal Pins Safely

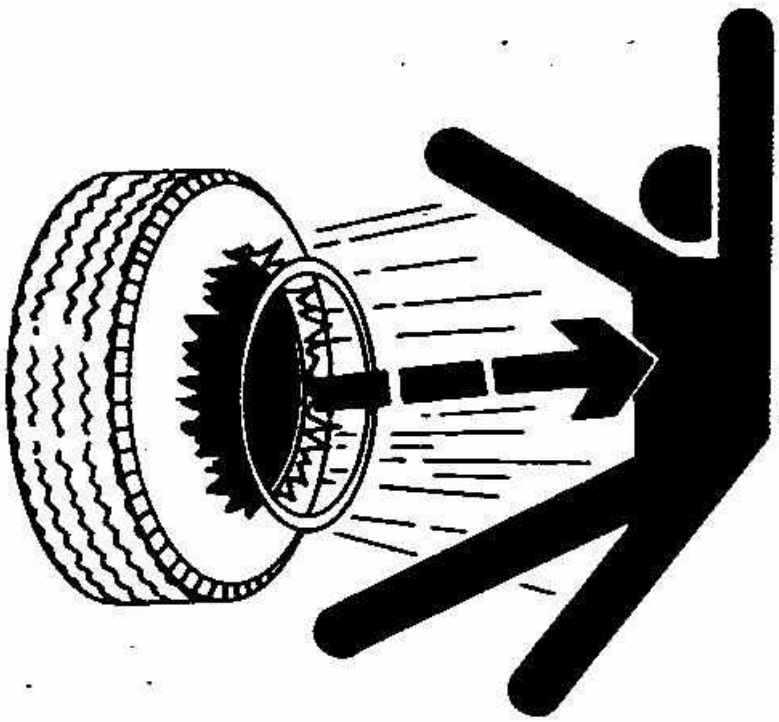


Hardened Metal Parts

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 could dislodge chips at high velocity.

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

Service Tires Safely



Explosive Tire and Rim Parts

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

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

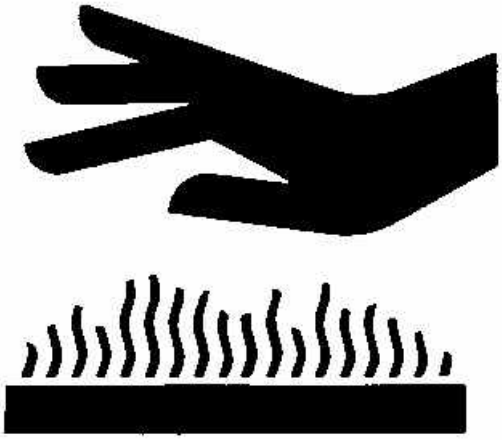
Always maintain the correct tire pressure. Do not inflate the tires above the recommended pressure. Never weld or heat a wheel and tire assembly. The heat can cause an increase in air pressure resulting in a tire explosion. Welding can structurally weaken or deform the wheel.

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

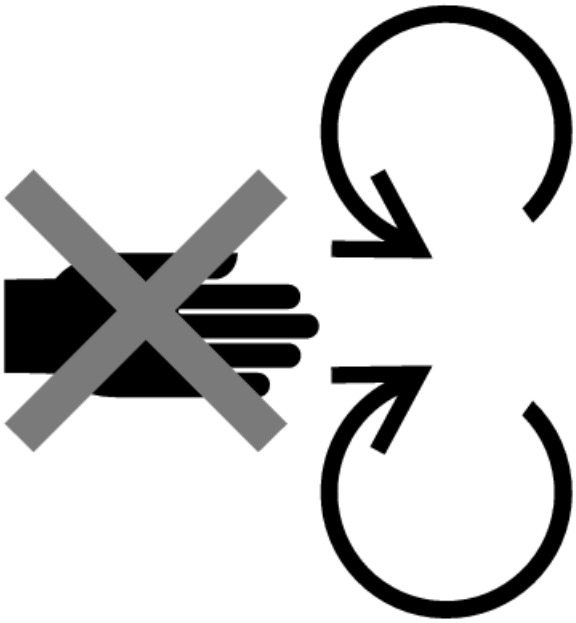
Check wheels for low pressure, cuts, bubbles, damaged rims or missing lug bolts and nuts.

Clean Exhaust Filter Safely

Fire Safety



Hand Over Flame



Moving Parts

Stop

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

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

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

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

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

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

Avoid contact with these components until cooled to safe temperatures.

If service procedure requires engine to be running:

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

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

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

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

Section 01 - WHEELS

Table of contents

Group 0100 - Removal and Installation

Wheel Remove and Install

Specifications

SPECIFICATIONS	
370E Articulated Dump Truck Weight	30 112 kg 66 386 lb.
410E Articulated Dump Truck Weight	31 450 kg 69 335 lb.
460E Articulated Dump Truck Weight	31 822 kg 70 155 lb.
Tire and Rim Weight (approximate)	771 kg 1700 lb.
Wheel Cap Screw Torque	675 N·m 500 lb.-ft.

Service Equipment and Tools

SERVICE EQUIPMENT AND TOOLS
JT07372 Heavy Duty Wheel Chock
18-t (20-ton) Service Jack
D01182AA 18-t (20-ton) Floor Stand
JT05726 Wheel and Axle Lift

[1] -

→NOTE:

It is necessary to establish each tire′s pressure sensor information after performing tire maintenance involving rotating the tires and wheels on the machine or after replacing a tire pressure sensor. If a tire is mounted or dismounted, this procedure may also be necessary. A special tool is required to complete this procedure. See TPM—Programming Sensors with SmartWave® Advanced Maintenance Tool . (Group 9015-20.)

→NOTE:

If the sensor identification number is known, the number can be entered manually using the monitor display unit (MDU) and the 25-button sealed switch module (SSM) (OC3). See TPM—Programming Using Sensor Identification Numbers . (Group 9015-20.) If the sensor identification number is not known, the sensor can be programmed using the JDG10928 SmartWave ™ Advanced Maintenance Tool. See TPM—Programming Sensors with SmartWave® Advanced Maintenance Tool . (Group 9015-20.)

Park the machine on firm, level ground.

[2] - Prepare Machine for Maintenance . (Group 0001.)

[3] -

CAUTION:

Prevent possible injury from unexpected machine movement. Install wheel chocks at front and rear of at least one other wheel when raising a wheel off the ground.

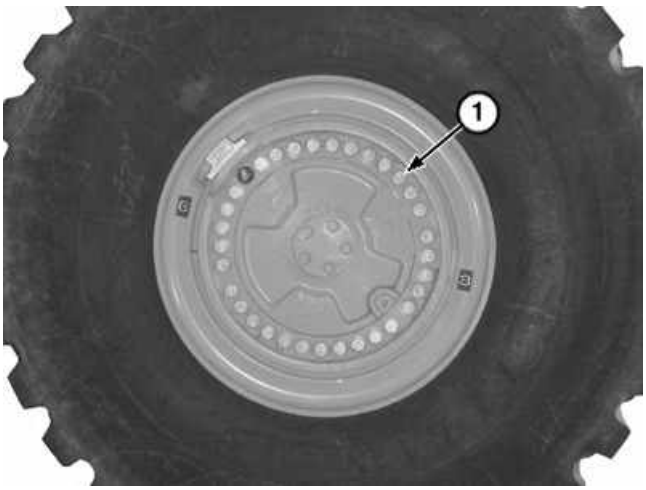
Install heavy duty wheel chocks under one or more of the wheels not being removed.

Heavy Duty Wheel Chock

JT07372

Used to block the wheels during repair to prevent machine movement.

[4] -



LEGEND:

1 Cap Screw and Washer (32 used)

Cap Screw and Washer

Loosen cap screws (1) one full turn.

[5] -

CAUTION:

Prevent possible crushing injury from heavy component. Use appropriate lifting device.

Item	Measurement	Specification
370E Articulated Dump Truck	Weight	30 112 kg
		66 386 lb.
410E Articulated Dump Truck	Weight	31 450 kg
		69 335 lb.
460E Articulated Dump Truck	Weight	31 822 kg
		70 155 lb.

Raise wheel being removed off the floor using a (20-ton) service jack under axle housing. Support axle housing with a 18-t (20-ton) floor stand.

18-t (20-ton) Service Jack

Used under an axle housing to raise wheel being removed off the floor.

18-t (20-ton) Floor Stand

D01182AA

To support axle housing when removing a wheel.

[6] -

LEGEND:

2	Wheel Lift

Wheel Lift

Attach wheel lift (2) to wheel. Secure tire with safety chain.

Item	Measurement	Specification
Tire and Rim	Weight (approximate)	771 kg
		1700 lb.

Wheel and Axle Lift

JT05726

To remove and install a wheel on the machine.

[7] - Remove cap screws and washers. Remove wheel.

[8] - Clean cap screw threads with solvent and wipe until dry. Clean mating surfaces of cap screws, washers, rim, and hub.

[9] -

IMPORTANT:

Check tire diameter before installing wheel. Difference in tire diameter must be within 2% across axles and between axles. Excessive differences in tire rollout will cause drive train malfunctions.

IMPORTANT:

Check torque on cap screws after 5 hours. Tighten as necessary. Check torque every 50 hours thereafter.

Install wheel. Install washers and cap screws. Tighten cap screws to specification in a crisscross pattern.

Item	Measurement	Specification
Wheel Cap Screw	Torque	675 N·m
		500 lb.-ft.

Tire Remove and Install

CAUTION:

Tire repair should only be performed by a qualified tire repair service. Do not attempt to mount or demount a tire unless you have the proper equipment and experience to perform the job safely. Failure to follow proper procedures when mounting or demounting a tire from a wheel or rim can result in explosive separation of a tire and rim parts, causing serious injury or death.

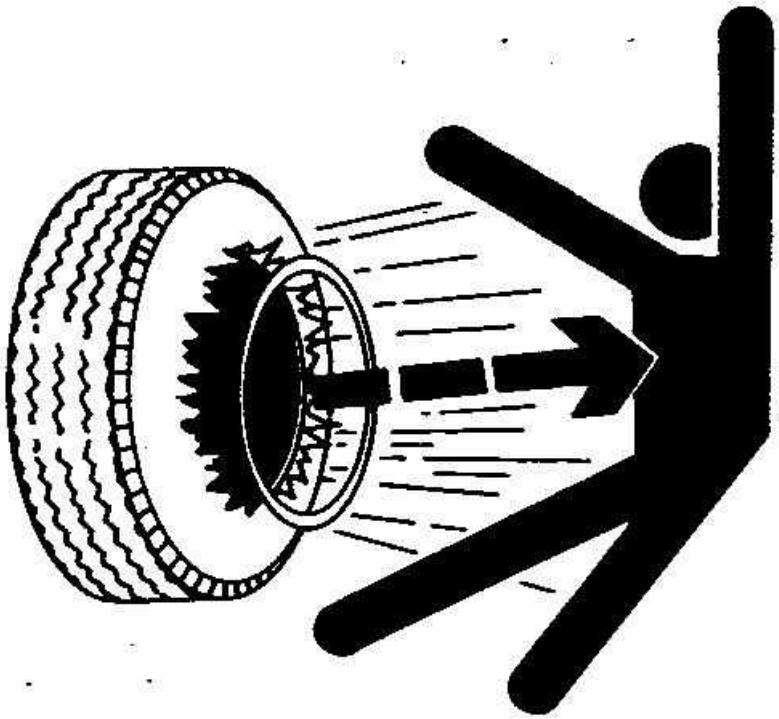
IMPORTANT:

Avoid tire pressure sensor damage on machines equipped with the tire pressure monitoring (TPM) system. When removing tire from rim, always follow these instructions, along with the instructions in TPM—Tire Pressure Sensor Remove and Install. (Group 9015-20.)

IMPORTANT:

Avoid damage to tire pressure monitoring (TPM) system, if equipped. TPM sensor may not function if liquids are present inside tire. Do not expose TPM sensor to liquids (rust inhibitors, calcium chloride, etc.).

Explosive Single Piece Rim and Tire



Explosive Multi-Piece Rim and Tire

Always maintain the correct tire pressure. Do not inflate the tires above the recommended pressure. Never weld or heat a wheel and tire assembly, as heating can increase air pressure and result in tire explosion. Welding can also structurally weaken or deform the wheel.

For initial inflation, always 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. Inflate in a safety cage if available. Use safety chains, cables, or equivalent restraining devices during inflation.

CAUTION:

Stand clear when using a cable or chain sling. These devices can snap and lash out, causing serious injury or death.

Check tire and wheel assemblies for low pressure, cuts, bubbles, damaged rim components, or missing lug bolts and nuts.

Check that the tire size exactly matches the rim size. Improperly-sized tires may not perform as intended.

Wheels may contain multi-piece rim components. Inspect all rim components and replace those that are cracked, worn, damaged, or severely rusted. Use only rim components designed to work with one another. Do not combine rim components from different rim types or rim manufacturers. Incorrectly assembled or mismatched rim components can fly apart with explosive force.

Section 02 - AXLES AND SUSPENSION SYSTEMS

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Group 0200 - Removal and Installation

TeamMate V 1500 Series Axle

This machine uses John Deere TeamMate ™ V axles.

To identify the model of axle, see Axle Identification . (CTM115319.)

For repair on John Deere TeamMate V axles, see the following:

- TeamMate V 1500 Series Axle Rebuild Stand . (CTM115319.)
- Yoke List . (CTM115319.)
- Input Shaft Assembly List . (CTM115319.)
- Output Shaft Assembly List . (CTM115319.)
- Input Housing with Drop Assembly List . (CTM115319.)
- Final Drive Assembly List . (CTM115319.)
- Brake Group List . (CTM115319.)
- Differential Gear Case List . (CTM115319.)
- Differential Lock Assembly List . (CTM115319.)

Front Axle Remove and Install

Specifications

SPECIFICATIONS	
370E Operating Weight (approximate)	30 782 kg 67 862 lb.
410E Operating Weight (approximate)	31 853 kg 70 224 lb.
460E Operating Weight (approximate)	32 216 kg 71 024 lb.
Panhard Link and Panhard Link Mounting Bracket Weight (approximate)	96 kg 211 lb.
Axle Weight (approximate)	1630 kg 3594 lb.
A-Frame Mounting Cap Screw Torque	920 N·m 679 lb.-ft.
Panhard Link Mounting Bracket Cap Screw Torque	920 N·m 679 lb.-ft.

Service Equipment and Tools

SERVICE EQUIPMENT AND TOOLS
JT07372 Heavy Duty Wheel Chock

[1] - Park and prepare machine for service safely. See Prepare Machine for Maintenance . (Group 0001.)

[2] - Install JT07372 Heavy Duty Wheel Chocks in front and behind middle and rear wheels.

Heavy Duty Wheel Chock

JT07372

Used to block the wheels during repair to prevent machine movement.

[3] -

CAUTION:

Prevent possible crushing injury from heavy component. Weight may increase significantly due to buildup of mud or debris. Remove debris before proceeding with task. Use appropriate lifting device.

Raise front of machine and install floor stands underneath front frame.

Item	Measurement	Specification
370E Operating Weight	Weight (approximate)	30 782 kg 67 862 lb.
410E Operating Weight	Weight (approximate)	31 853 kg 70 224 lb.
460E Operating Weight	Weight (approximate)	32 216 kg 71 024 lb.

[4] -

CAUTION:

Prevent possible crushing injury from heavy component. Use appropriate lifting device.

Remove front fenders. See Fender Remove and Install . (Group 1910.)

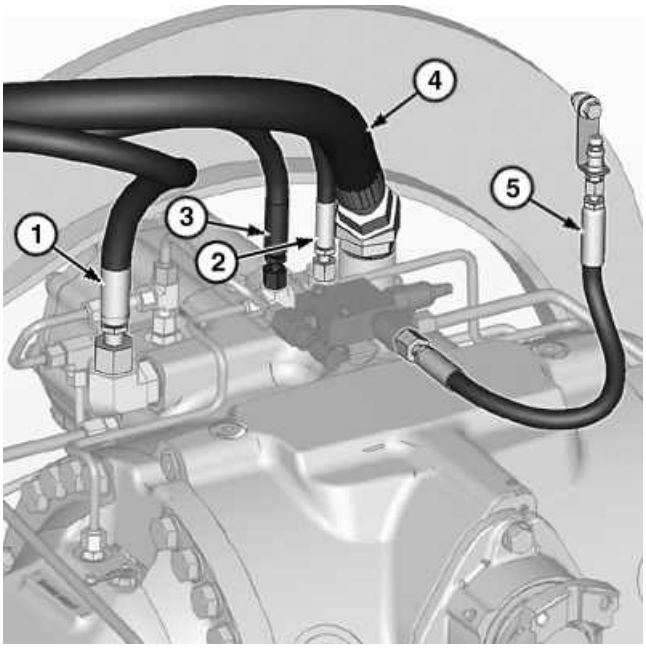
[5] - Disconnect drive shaft at front axle. See Transmission-to-Front Axle Drive Shaft or Transmission-to-Oscillation Joint Drive Shaft Remove and Install . (Group 0225.)

[6] - Remove front wheels. See Wheel Remove and Install . (Group 0110.)

[7] - Support axle using appropriate lifting device.

[8] - Remove lower mounting bolts at front struts. See Front Suspension Strut Remove and Install . (Group 0242.)

[9] - Tag and disconnect hoses (1—5). Close all openings using caps and plugs.



LEGEND:

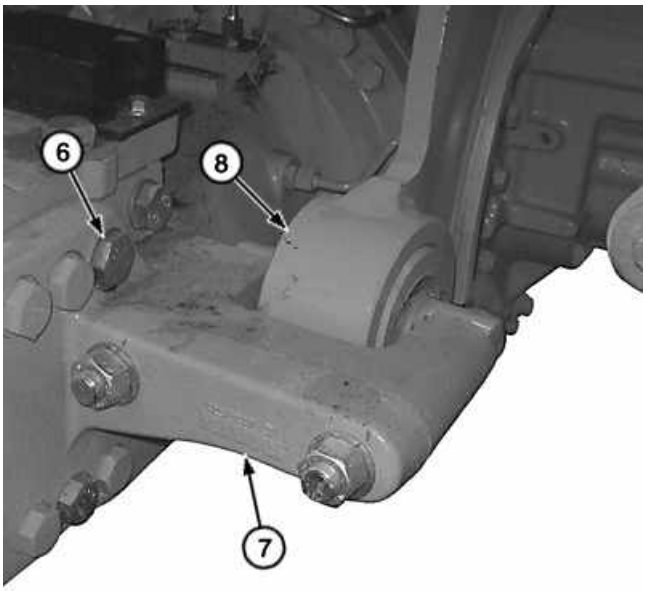
1	Axle-to-Axle Filter Supply Hose
2	Brake Hose
3	Axle Filter-to-Axle Return Hose
4	Axle Coolant Pump-to-Axle Hose
5	Breather Hose

Hydraulic Hoses

[10] -

CAUTION:

Prevent possible crushing injury from heavy component. Use appropriate lifting device.



LEGEND:

6	Cap Screw (9 used)
7	Panhard Link Mounting Bracket
8	Panhard Link

Panhard Link Mounting Bracket

Support panhard link (8) and panhard link mounting bracket (7) with appropriate lifting device.

Item	Measurement	Specification
Panhard Link and Panhard Link Mounting Bracket	Weight (approximate)	96 kg 211 lb.