1050K Crawler Dozer

(PIN: F268234—)

JOHN DEERE

OPERATOR'S MANUAL

1050K Crawler Dozer

OMT312911X19 ISSUE I3 (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.

**Worldwide Construction,
And Forestry Division**
PRINTED IN U.S.A.

JOHN DEERE

U.S. AND CANADA EMISSION CONTROL WARRANTY STATEMENT
YOUR WARRANTY RIGHTS AND OBLIGATIONS

To determine if the John Deere engine qualifies for the additional warranties set forth below, look for the "Emissions Control Information" label located on the engine. If the engine is operated in the United States or Canada and the Emissions Control information label states: "This engine complies with US EPA regulations for nonroad and stationary diesel engines", or "This engine conforms to US EPA nonroad compression-ignition regulations", refer to the "U.S. and Canada Emission Control Warranty Statement." If the engine is operated in California, and the label states: "This engine complies with US EPA and CARB regulations for nonroad diesel engines", or "This engine conforms to US EPA and California nonroad compression-ignition emission regulations", also refer to the "California Emission Control Warranty Statement."

Warranties stated on this certificate refer only to emissions-related parts and components of your engine. The complete engine warranty, less emissions-related parts and components, is provided separately. If you have any questions about your warranty rights and responsibilities, you should contact John Deere at 1-319-292-5400.

JOHN DEERE'S WARRANTY RESPONSIBILITY

John Deere warrants to the ultimate purchaser and each subsequent purchaser that this off-road diesel engine including all parts of its emission-control system was designed, built and equipped so as to conform at the time of the sale with Section 213 of the Clean Air Act and is free from defects in materials and workmanship which would cause the engine to fail to conform with applicable US EPA regulations for a period of five years from the date the engine is placed into service or 3,000 hours of operation, whichever first occurs.

Where a warrantable condition exists, John Deere will repair or replace, as it elects, any part or component with a defect in materials or workmanship that would increase the engine's emissions of any regulated pollutant within the stated warranty period at no cost to you, including expenses related to diagnosing and repairing or replacing emission-related parts. Warranty coverage is subject to the limitations and exclusions set forth herein. Emission- related components include engine parts developed to control emissions related to the following:

Air-Induction System
Fuel System
Ignition System
Exhaust Gas Recirculation Systems
Aftertreatment Devices
Crankcase Ventilation Valves
Sensors
Engine Electronic Control Units

EMISSION WARRANTY EXCLUSIONS

John Deere may deny warranty claims for malfunctions or failures caused by:

- Non-performance of maintenance requirements listed in the Operator's Manual
- The use of the engine/equipment in a manner for which it was not designed
- Abuse, neglect, improper maintenance or unapproved modifications or alterations
- Accidents for which it does not have responsibility or by acts of God

The off-road diesel engine is designed to operate on diesel fuel as specified in the Fuels, Lubricants and Coolants section in the Operators Manual. Use of any other fuel can harm the emissions control system of the engine/equipment and is not approved for use.

To the extent permitted by law John Deere is not liable for damage to other engine components caused by a failure of an emission-related part, unless otherwise covered by standard warranty.

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Emission_CI_EPA (18Dec09)

TS1721—UN—15JUL13

DX,EMISSIONS,EPA-19-12DEC12-2/2

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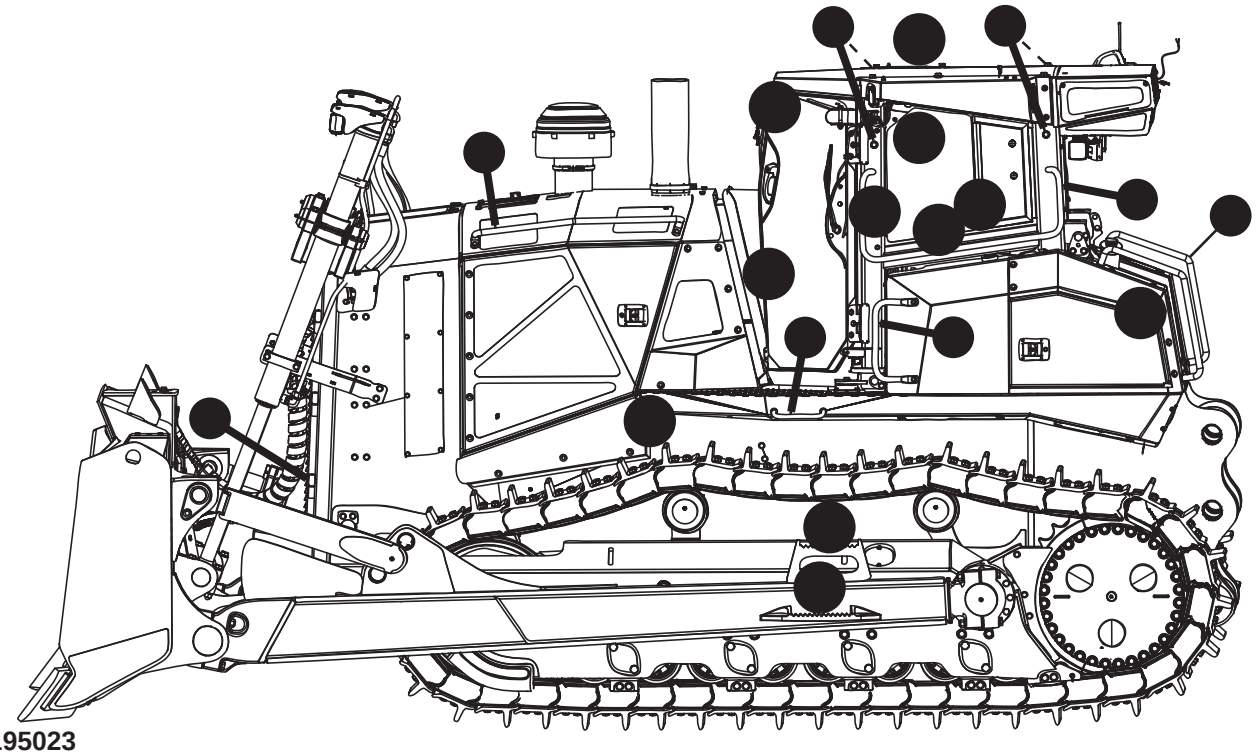
Safety and Operator Convenience Features



Safety and Operator Convenience Features

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

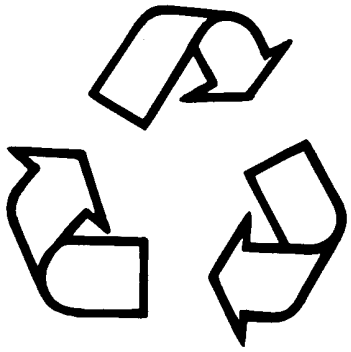
1. **ROPS, FOPS, and OPS.** Structures designed to help protect the operator are certified to ISO and OSHA. Enclosures also deflect sun and rain.
2. **Pressurized Cab.** Positive pressure ventilation system circulates both outside and inside air through filters for a clean working environment. Built-in defroster vents direct air flow for effective window defogging/deicing.
3. **Interior Rear View Mirror.** Offers operator a broad view of area behind machine.
4. **Transmission Start.** After the park lock levers are moved to the down (unlocked) position, the transmission control lever (TCL) must be in the neutral (N) position before the transmission is able to engage.
5. **Handholds.** Large, conveniently placed handholds make it easy to enter or exit the operator's station.
6. **Bypass Start Protection.** Shielding over the starter solenoid helps prevent dangerous bypass starting.
7. **Engine Fan Guard.** A secondary fan guard inside engine compartment helps prevent contact with engine fan blades.
8. **Steps.** Wide, skid-resistant steps help prevent slipping while getting in or out of the operator's station.
9. **Park Lock Start and Park Lock Levers.** Park lock start feature prevents the engine from being started unless the park lock levers are in the up (locked) position. When park lock levers are placed in up (locked) position, the transmission shifts to neutral, the hydrostatic system is deactivated, and the park brake is engaged.
10. **Automatic Seat Belt Retractors.** Seat belt retractors help keep belts clean and are convenient to use.
11. **Backup Alarm.** Alerts bystanders when reverse travel direction is selected by operator.
12. **Operator Manual Holder.** A sealed manual holder keeps manual on machine clean and dry.
13. **Verified Anchor Points.** May be used for attaching job-specific devices.

KR46761,0000F18-19-03JUN15-1/1

Decommissioning — Proper Recycling and Disposal of Fluids and Components

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);



TS1133—UN—15APR13

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.

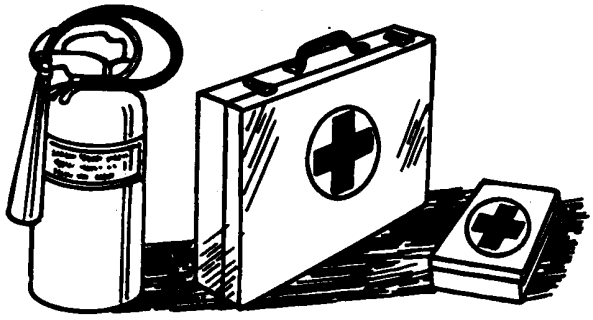
DX,DRAIN-19-01JUN15-1/1

Prepare for Emergencies

Be prepared if a fire starts.

Keep a first aid kit and fire extinguisher handy.

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



TS291—UN—15APR13

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

Remove Paint Before Welding or Heating

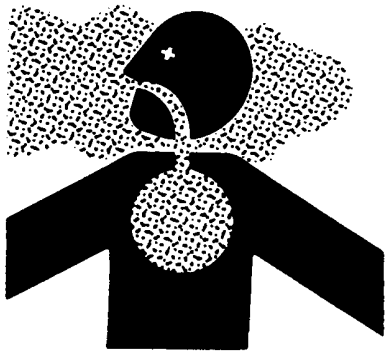
Avoid potentially toxic fumes and dust.

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—15APR13

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 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.

T133547—UN—15APR13

Heating Near Pressurized Fluid Lines

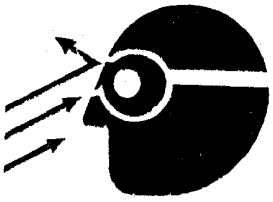
Use a qualified welding technician for structural repairs. Make sure there is good ventilation. Wear eye protection and protective equipment when welding.

TX,WELD,SAFE-19-08MAY20-1/1

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 could dislodge chips at high velocity.

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



T133738—UN—15APR13

TX,PINS-19-20JAN11-1/1

23—Rear Auxiliary Mode

- Indicator illuminates rear element function as ripper, winch, rear auxiliary, or towed implement mode.

24—STOP Engine Indicator

IMPORTANT: Prevent possible injury or machine damage. If STOP engine indicator illuminates and alarm sounds, stop machine immediately and investigate cause.

- Indicator illuminates when a problem has developed. Stop machine immediately and determine cause of problem.

25—Park Brake Indicator

- Indicator illuminates when park brake is engaged.

26—Wait-to-Start Indicator

- Indicator illuminates when engine is cold and switched power is ON. Indicator illuminates for a maximum of 0.3 seconds then goes out. Engine can now be started.

27—Engine Coolant Temperature Gauge

IMPORTANT: Prevent machine damage. DO NOT operate machine when engine coolant temperature is high.

- Gauge indicates engine coolant temperature.
- Normal operating temperature is indicated by green zone.
- If needle points to RED zone, gauge turns red, STOP engine indicator illuminates, and an audible alarm sounds, engine is over operating temperature. Stop machine and operate engine at fast idle under no load until engine cools.
- If gauge pointer still points to red indicator after several minutes, stop engine. See an authorized John Deere dealer.

28—Hydraulic Oil Temperature Gauge

- Gauge indicates hydraulic oil temperature.
- Normal operating temperature is indicated by green zone.
- If needle points to RED zone, gauge turns red, STOP engine indicator illuminates, and an audible alarm sounds, hydraulic oil pressure has dropped below recommended pressure. Immediately park machine in a safe area and stop engine.

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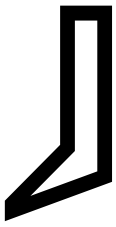
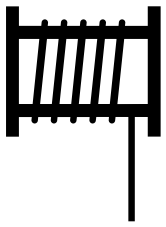


Ripper Indicator

TX1162841—UN—11JUN14



Winch Indicator

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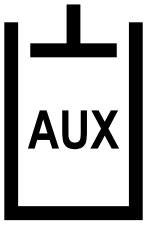


Rear Auxiliary Indicator

TX1162845—UN—11JUN14

Towed Implement Indicator

29—Transmission Oil Temperature Gauge

- Gauge indicates transmission oil temperature.
- Normal operating temperature is indicated by green zone.
- If needle points to RED zone, gauge turns red, transmission oil pressure indicator illuminates, STOP engine indicator illuminates, and an audible alarm sounds, transmission oil temperature is too high. Stop machine and operate engine at fast idle under no load until transmission cools.
- If gauge remains RED after several minutes, stop engine and see an authorized John Deere dealer.

30—Engine Oil Pressure Gauge

- Displays current engine oil pressure level when engine is running.
- Normal operating pressure is indicated by green zone.
- If needle points to RED zone, gauge turns red, STOP engine indicator illuminates, and an audible alarm sounds, engine oil pressure has dropped below recommended pressure. Immediately park machine in a safe area and stop engine.

KR46761,0000F19-19-09AUG18-4/4

Work and Drive Lights

Front and Rear Drive Lights

Front and rear drive lights switch (1) enables standard drive lights.

To enable front and rear drive lights:

- Press and release switch (both LEDs illuminated) to enable front and rear lights.
- Press and hold switch until monitor beeps to enable advanced mode.
- Press and release switch (first LED illuminated) to enable front lights only—advanced mode.
- Press and release switch (second LED illuminated) to enable rear lights only—advanced mode.
- Press and release switch again (all LEDs off) to turn off auxiliary power.

Cab Work Lights—If Equipped

Cab work lights switch (2) enables optional work lights on the machine.

To enable cab work lights:

- Press and release switch (both LEDs illuminated) to enable front and rear lights.
- Press and hold switch until monitor beeps to enable advanced mode.
- Press and release switch (first LED illuminated) to enable front lights only—advanced mode.

TX1161588—UN—27MAY14

Sealed Switch Module (SSM)

1—Front and Rear Drive Lights Switch
2—Cab Work Lights Switch (if equipped)

- Press and release switch (second LED illuminated) to enable rear lights only—advanced mode.
- Press and release switch again (all LEDs off) to turn off cab work lights.

CN93077,000028C-19-06MAR17-1/1

Reversing Fan

CAUTION: Prevent possible injury from flying debris. Clear area of bystanders.

Automatic Fan Reversing System:

NOTE: Timer does not reset when engine is turned off. Time between reversal continues when engine is restarted. For more information, see Setup—Machine Preference. (Section 2-3.)

The reversing fan switch (1) of the sealed switch module (SSM) will indicate when the automatic timer has been activated to purge debris from the radiator (LED is illuminated).

Manually Activated System:

NOTE: Timer does not reset when utilizing the manual reversing fan switch.

If reversing fan switch is not illuminated, the operator may reverse the fan manually by pressing the reversing fan switch.

When activated, reverse operation will proceed for 10 seconds and return to default value.

TX1161591—UN—27MAY14

Sealed Switch Module (SSM)

1—Reversing Fan Switch

CN93077,000028D-19-17SEP14-1/1

Check Instruments Before Starting

Press and release engine start switch (1). The alarm sounds briefly, a gray screen is displayed momentarily, and all indicators on display monitor illuminate.

If security system has been enabled by owner, operator logon screen appears on display window. Operator must enter valid personal identification number (PIN) to access monitor screens.

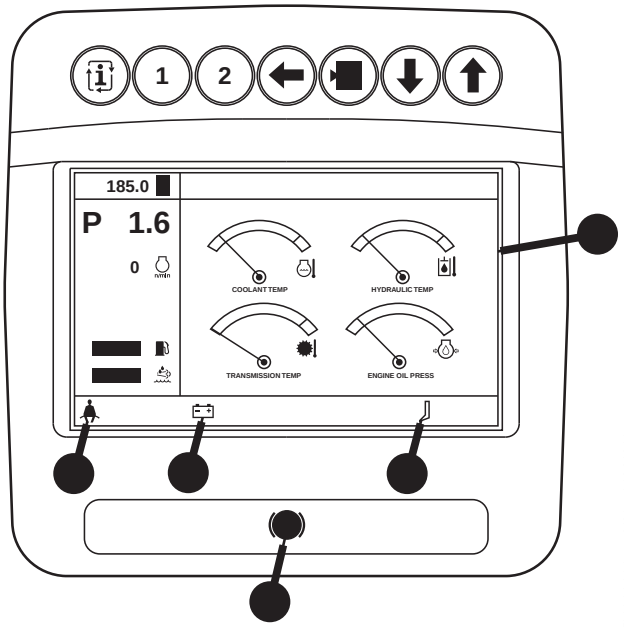
Display (2) window then populates with normal display items with gauge pointers positioned to current input values. Fasten seat belt indicator (3) will stay illuminated until operator fastens seat belt. The engine alternator voltage indicator (4) will also remain on until engine is running and alternator is charging. Rear auxiliary mode (5) illuminates with the selected device.

After the indicator check, the park brake indicator (6) remains illuminated.

1—Engine Start Switch
2—Display
3—Fasten Seat Belt Indicator
4—Engine Alternator Voltage Indicator
5—Rear Auxiliary Mode
6—Park Brake Indicator

TX1160763—UN—16MAY14

Sealed Switch Monitor (SSM)



TX1161834—UN—30MAY14

Primary Display Unit (PDU)

CN93077,000029C-19-02SEP14-1/1

Decelerator/Brake Pedal and Decelerator Mode Switch

CAUTION: Prevent possible injury from unexpected machine movement. Pushing decelerator/brake pedal (1) beyond a point of increased resistance will apply brakes and stop machine abruptly.

The decelerator mode switch (2) is used to set operational mode of foot pedal. Two modes are available.

Engine Mode

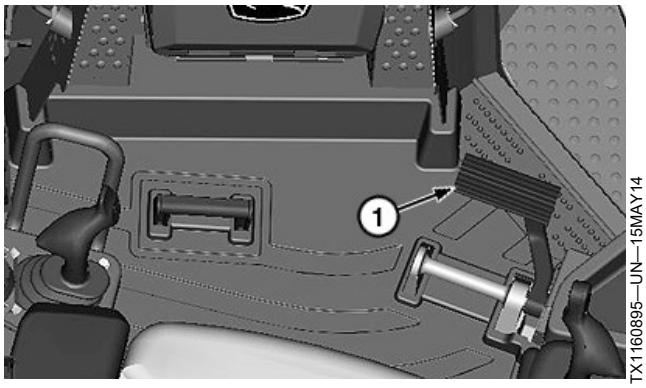
The default setting is engine mode. In engine mode, pressing on the decelerator/brake pedal will both slow engine speed and reduce machine ground speed. Pushing pedal beyond a point of increase resistance will apply brakes and machine will stop abruptly. **Travel will resume as pedal is released.**

Transmission Mode

Pressing the decelerator mode switch (LED illuminated) enables decelerator/brake pedal in transmission mode. In transmission mode, pressing the decelerator/brake pedal will reduce machine ground speed but will not slow engine speed. Pushing pedal beyond a point of increased resistance will apply brakes and machine will stop abruptly. **Travel will resume as pedal is released.**

NOTE: Decelerator mode can be changed at any time. With transmission control lever (TCL) in neutral (N), mode change will take effect immediately. If TCL is not in neutral (N), return-to-neutral indicator will illuminate on the monitor, indicating TCL must be moved to neutral for decelerator mode change to take effect.

1—Decelerator/Brake Pedal **2—Decelerator Mode Switch**



TX1160895—UN—15MAY14

Decelerator/Brake Pedal

TX1160896—UN—15MAY14

Sealed Switch Module (SSM)

CN93077,00002EA-19-16FEB17-1/1

IMPORTANT: Do not remove battery leads for at least 4 minutes after engine stops. The SCR system automatically purges itself of Diesel Exhaust Fluid (DEF) immediately after the engine is stopped. If adequate time is not allowed for lines to be purged, residual DEF can freeze and possibly damage components of the SCR system during cold-weather exposure.

In order to comply with national and local emission requirements, this engine series contains a Selective Catalytic Reduction (SCR) system. The main components of the SCR system include the SCR catalyst (A), DEF dosing injector (B), DEF dosing unit (C), DEF tank (D), and DEF tank header assembly (E). The SCR system is effective at reducing the nitrogen oxides (NOx) emissions. NOx is a major component of smog and acid rain.

During combustion, NOx molecules are formed in the exhaust. DEF is injected into the exhaust stream before the SCR catalyst. Through a chemical reaction in the SCR, NOx is converted into nitrogen and water.

Water vapor is a normal by-product of combustion. During cold-weather operation at low exhaust temperatures, this water vapor can condense and resemble white smoke from the exhaust. This will dissipate as operating temperature increases and the water is further vaporized. This situation is considered normal.

A DEF solution begins to crystallize and freeze at -11 °C (12 °F). With climate temperatures that can range much colder than this, DEF is expected to freeze in the DEF tank. For this reason, the DEF tank contains a heating element that provides rapid thawing of DEF upon start-up. The heating element cycles to maintain fluidity during operation as needed. DEF is not dosed upon initial start-up, therefore it is not necessary to have liquid DEF at cold start-up.

If DEF quality deteriorates and it is no longer within specifications, the engine can derate. DEF should be crystal clear with a light ammonia smell. If DEF appears cloudy, has a colored tint, or has a profound ammonia smell, it is likely not within specification.

DX,SCR,OVERVIEW-19-30MAR20-2/2

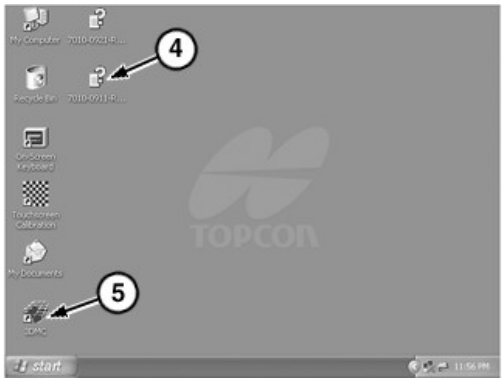
Operating IGC System—Topcon® Factory Installation, If Equipped

TX1161234—UN—20MAY14

Blade Control Lever

TX1122271A—UN—27SEP12

IGC Display Unit



TX1122381A—UN—27SEP12

IGC System Display

1—IGC On/Off Switch
2—IGC System Display Unit ON Button
3—IGC System Display Unit OFF Button
4—Reference Guide Icon
5—IGC System Icon

Only machines equipped with integrated grade control (IGC) system may utilize the IGC system. For proper operation of IGC system, see system's reference guide.

When IGC system is enabled, machine will direct blade based on commands received from IGC system.

NOTE: IGC display unit can be activated without enabling IGC system.

Activating IGC System Display Unit: Press and release IGC display unit ON button (2).

Switching OFF IGC System Display Unit: Press and release IGC display unit OFF button (3).

Accessing IGC Reference Guide

1. Activate IGC system display unit.

NOTE: If menu bar is not visible, press the icon located in the upper right corner of IGC display unit screen.

2. Press **File** on IGC display unit menu bar.
3. Select **Exit 3DMC** from dropdown menu to close program.

*NOTE: Reference guide icon (4) has the label **7010-0911** directly underneath the icon.*

4. Double-click the reference guide icon to open reference guide.

Closing IGC Reference Guide

1. Press the **X** button in upper right corner of reference guide window.

*NOTE: IGC system icon (5) has the label **3DMC** directly underneath the icon.*

2. Double-click the IGC system icon to return to IGC system.

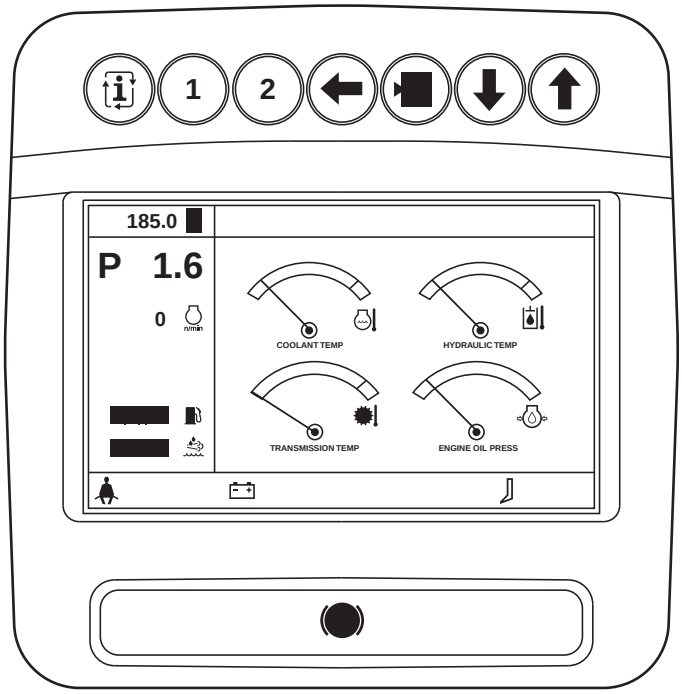
NOTE: IGC system must be enabled to guide blade based on commands from IGC system.

Enabling IGC System:

1. Enable hydraulics. See Hydraulics Enable in this section.
2. Activate IGC system display unit.
3. Press and release IGC on/off switch (1) until auto blade indicator is illuminated on primary display unit (PDU). See Diagnostics—Diagnostic Help Screens. (Section 2-3.)

CN93077,00002FC-19-14SEP16-1/1

Primary Display Unit (PDU)



TX1161155

TX1161155—UN—22MAY14

Primary Display Unit (PDU)

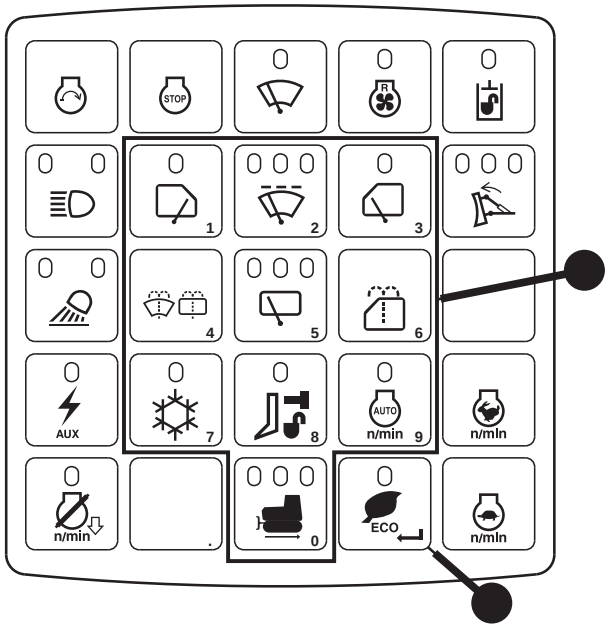
When engine start switch is pressed the first time, ignition switch power is turned on and applied to control units and display unit. Display unit performs a display check sequence as follows:

1. Alarm sounds for approximately 2 seconds.
2. A gray screen is displayed momentarily.
3. Display screen lights (no data displayed).
4. Three indicators at the bottom of display unit light momentarily.
5. If security system has been enabled by owner, operator logon screen appears on display unit. Operator must enter valid personal identification number (PIN).
6. After display check is complete:
   - Display screen populates with normal display items.
   - Gauges position pointers to current input values.

CN93077,00002C0-19-15AUG14-1/1

- Using numeric keypad (1) on SSM, then press enter key (2).
- Using primary display unit (PDU) buttons:
  a. Press UP or DOWN button to start process of entering PIN.
  b. Press UP button to increment number shown. If pressed when “9” is shown, display will wrap around to “0”.
  c. Press DOWN button to decrement number shown. If pressed when “0” is shown, display will wrap around to “9”.
  d. Press SELECT button to store current digit.
  e. Continue entering remaining digits of PIN.
  f. When PIN is correctly displayed, press BACK button to enter PIN and activate ANTI-THEFT/SECURITY menu.

1—Numeric Keypad **2—Enter Key**



Keypad

ANTI-THEFT/SECURITY Menu Items					
Menu Items		Submenu Items		Submenu Items	Description
1: SECURITY	>>	1: ON 2: OFF			
2: CHANGE OWNER PIN	>>	ENTER CURRENT OWNER PIN	>>	ENTER NEW OWNER PIN	
3: MANAGE OPERATOR PINS	>>	1: OPERATOR 1 (########) 2: OPERATOR 2 (########) 3: OPERATOR 3 (########) 4: OPERATOR 4 (########) 5: OPERATOR 5 (########) 6: OPERATOR 6 (########) 7: OPERATOR 7 (########) 8: OPERATOR 8 (########) 9: OPERATOR 9 (########) 10: OPERATOR 10 (########)	>>	1: ENTER NEW PIN 2: CLEAR PIN (DISABLE OPERATOR)	PINs can be from 1—8 numeric characters in length. Leading zeros are recognized. For example, 1, 01, and 001 are each valid and unique PINs. PINs can only be added or deleted by the owner.
4: MANAGE TRANSPORT PIN	>>	1: ENTER NEW PIN 2: CLEAR PIN (DISABLE OPERATOR) 3: TRANSPORT TIME			Transport time is total amount of time that transport operator can operate machine before a different operator PIN is used.
5: OPERATOR LOGOUT	>>	1: 0 MINUTES 2: 5 MINUTES 3: 60 MINUTES			Allows machine owner to set time interval allowed for logout after machine is shut off. Once logout time expires, operator must enter a PIN to restart machine.
6: OWNER LOCKOUT SETTINGS	>>	1: ENABLED 2: DISABLED			

CN93077,00002D8-19-06MAR17-2/2

Testing Diesel Exhaust Fluid (DEF)

IMPORTANT: Using DEF with the correct concentration is critical to engine and aftertreatment system performance. Extended storage and other conditions can adversely alter the DEF concentration.

If DEF quality is questionable, draw a sample out of the DEF tank or storage tank into a clear container. DEF must be crystal clear with a light ammonia smell. If DEF appears cloudy, has a colored tint, or has a profound ammonia smell, it is likely not within specification. DEF in this condition should not be used. Drain tank, flush with distilled water and refill with new or good DEF. After refilling the tank, check the DEF concentration.

If the DEF passes the visual and smell test, check the DEF concentration with a handheld refractometer calibrated to measure DEF.

DEF concentration should be checked when the engine has been stored for extended periods, or if there is suspicion the engine or packaged DEF fluid has been contaminated with water.

Two approved tools are available through your John Deere dealer:

- JDG11594 Digital DEF Refractometer—A digital tool providing an easy to read concentration measurement
- JDG11684 DEF Refractometer—Low-cost alternative tool providing an analog reading

Follow instructions included with either tool to obtain the measurement.

The correct DEF concentration is 31.8—33.2% urea. If the DEF concentration is not within specification, drain the DEF tank, flush with distilled water and fill with new or good DEF. If packaged DEF is not within specification, dispose of DEF packages and replace with new or good DEF.

DX,DEF,TEST-19-13JUN13-1/1

Storing Diesel Exhaust Fluid (DEF)

CAUTION: Avoid contact with eyes. In case of contact, immediately flush eyes with large amounts of water for a minimum of 15 minutes. Reference the Materials Safety Data Sheet (MSDS) for additional information.

Do not ingest DEF. In the event DEF is ingested, contact a physician immediately. Reference the Materials Safety Data Sheet (MSDS) for additional information.

IMPORTANT: It is unlawful to tamper with or remove any component of the aftertreatment system. Do not use DEF that does not meet the required specifications or operate the engine with no DEF.

Never attempt to create DEF by mixing agricultural grade urea with water. Agricultural grade urea does not meet the necessary specifications and can damage the aftertreatment system.

Do not add any chemicals or additives to DEF in an effort to prevent freezing. Any chemicals or additives added to DEF can damage the aftertreatment system.

Never add water or any other fluid in place of, or in addition to DEF. Operating with a modified DEF or using an unapproved DEF can damage the aftertreatment system.

Storage information provided below is for reference and is to be used as a guideline only.

It is preferred to store DEF out of extreme ambient temperatures. DEF freezes at –11°C (12°F). Exposure to temperatures greater than 30°C (86°F) can degrade DEF over time. Do not store DEF in direct sunlight.

Dedicated DEF storage containers must be sealed between uses to prevent evaporation and contamination. Containers made of polyethylene, polypropylene, or stainless steel are recommended to transport and store DEF.

Ideal conditions for storage of DEF are:

- Store at temperatures between –5°C and 30°C (23°F and 86°F)
- Store in dedicated containers sealed to avoid contamination and evaporation

Under these conditions, DEF is expected to remain useable for a minimum of 18 months. Storing DEF at higher temperatures can reduce its useful life by approximately 6 months for every 5°C (9°F) temperature above 30°C (86°F).

If unsure how long or under what conditions DEF has been stored, test DEF. See Testing Diesel Exhaust Fluid (DEF).

Long-term storage in the DEF tank (over 12 months) is not recommended. If long-term storage is necessary, test DEF prior to operating engine. See Testing Diesel Exhaust Fluid (DEF).

It is recommended to purchase DEF in quantities that will be consumed within 12 months.

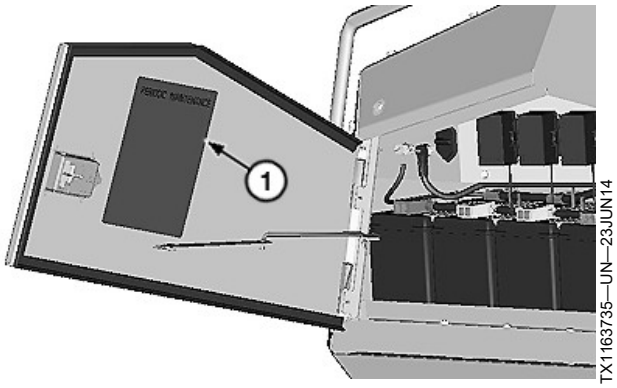
DX,DEF,STORE-19-15JUL20-1/1

Service Machine at Specified Intervals

Lubricate and make service checks and adjustments at intervals shown on the periodic maintenance chart (1) and on the following pages.

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.

1—Periodic Maintenance Chart



Periodic Maintenance Chart

CN93077,0000300-19-02JUN15-1/1

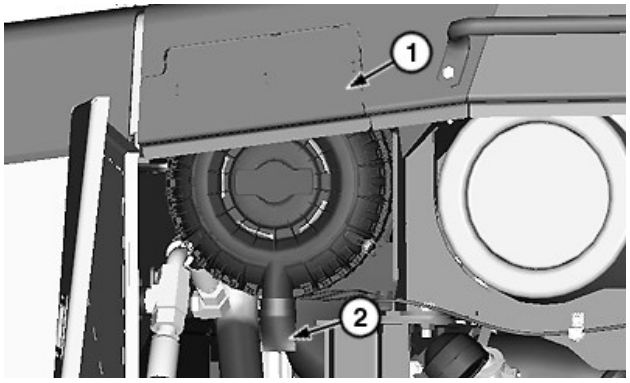
Prepare Machine for Maintenance

Before performing maintenance procedures in the following chapters and before leaving operator's seat, park machine as described below unless another position is specified in the procedure.

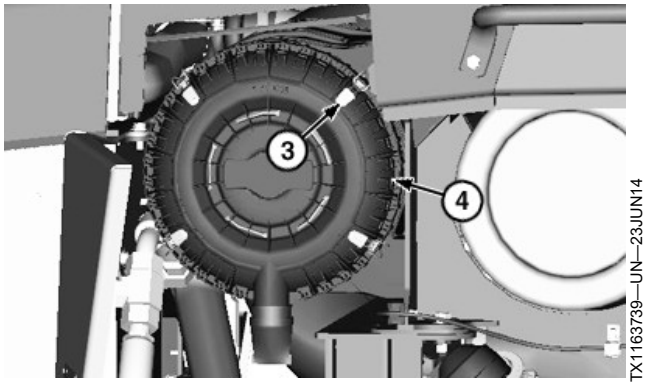
Continued on next page

CN93077,0000301-19-04JUN15-1/3

Replace Primary and Secondary Engine Air Filter Elements



Engine Air Cleaner Dust Unloader Valve

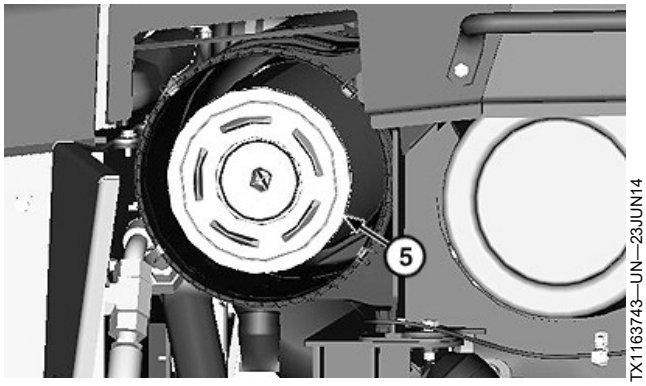


Engine Air Cleaner Access Cover and Latches

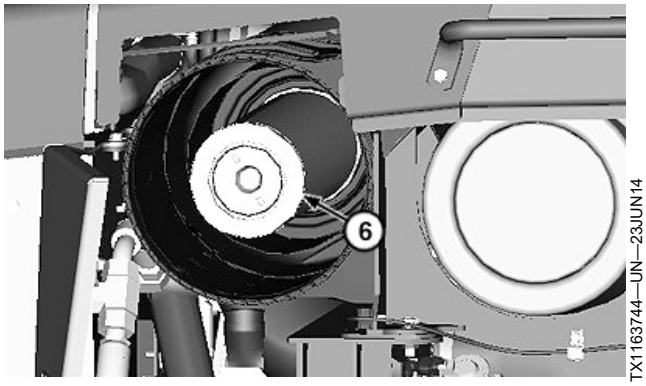
1. Park machine on level surface and lower all equipment to ground.
2. Engage park lock levers in up (locked) position.
3. Open left front service door to access engine air cleaner.
4. Remove upper side panel (1).
5. Squeeze engine air cleaner dust unloader valve (2) to remove dust from air cleaner.
6. Release latches (3) and remove engine air cleaner access cover (4).
7. Remove primary engine air filter element (5).
8. Using a damp cloth, wipe the inside area of the engine air cleaner compartment.
9. Remove secondary engine air filter element (6).
10. Using a damp cloth, wipe the sealing surfaces of the air cleaner elements.

IMPORTANT: Damaged or dirty engine air filter elements can cause engine damage. DO NOT clean engine air filter elements; replace engine air filter elements as required.

11. Install secondary engine air filter element. Verify that secondary engine air filter element is centered and securely positioned.
12. Install primary engine air filter element. Press the element against the air cleaner housing for the seal to seat.
13. Install engine air cleaner access cover and secure latches.
14. Replace upper side panel and close service door.



Primary Engine Air Filter Element



Secondary Engine Air Filter Element

1—Upper Side Panel
2—Engine Air Cleaner Dust Unloader Valve
3—Latch (4 used)
4—Engine Air Cleaner Access Cover
5—Primary Engine Air Filter Element
6—Secondary Engine Air Filter Element

CN93077,0000309-19-17JUL14-1/1

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.

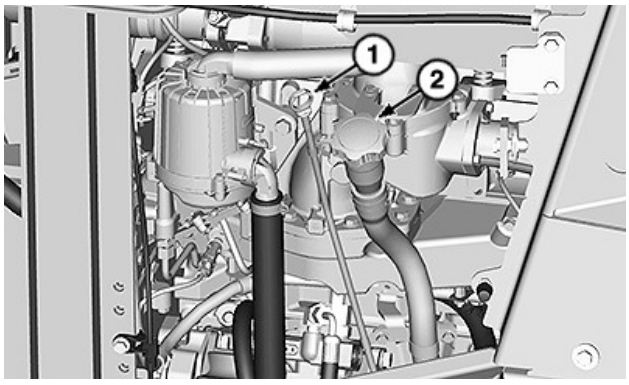
1. Park machine on level surface and lower all equipment to ground.
2. Engage park lock levers in up (locked) position.
3. Press engine stop switch.
4. Open left front service door.
5. Remove dipstick (1) and allow oil pressure to equalize for 30—60 seconds before checking engine oil level.

   BEFORE THE ENGINE IS STARTED: The engine is full when oil level is in the dipstick cross-hatch area (3). It is acceptable to run the engine when the oil level is above the ADD mark.

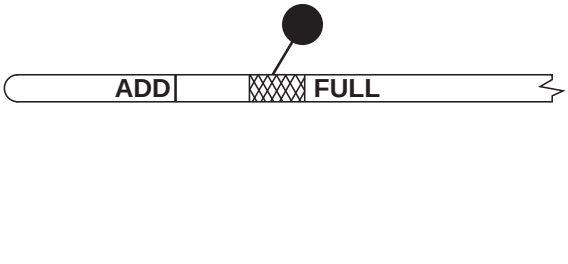
   AFTER THE ENGINE HAS BEEN RUN: Allow the oil to drain into the oil pan for 10 minutes before checking the oil level. Ten minutes after shutdown, the engine oil level must be above the ADD mark.

IMPORTANT: Avoid engine damage. Make sure that area around and above engine oil filler cap is clean and clear of debris before removing cap.

6. If necessary, remove fill tube cap (2) to add oil.
7. If oil level is below ADD mark, add oil as necessary. See Diesel Engine Oil — Interim Tier 4, Final Tier 4, Stage IIIB, and Stage IV. (Section 3-1.)



Engine Oil Dipstick and Fill Tube Cap



Dipstick and Cross-Hatch Area

1—Dipstick
2—Fill Tube Cap
3—Dipstick Cross-Hatch Area

8. Install dipstick and close service door.

CN93077,0000315-19-02MAY17-1/1

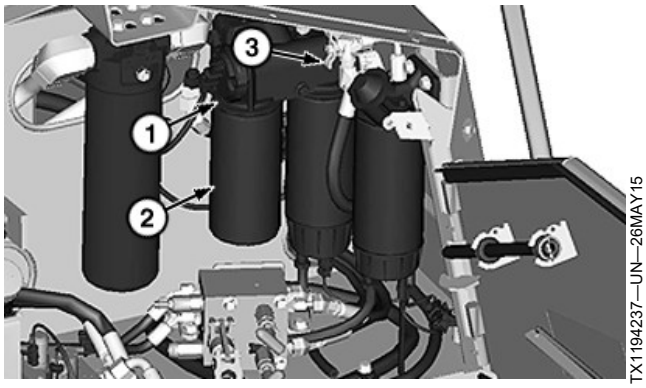
Remove and Install Final Fuel Filter Element

1. Thoroughly clean final fuel filter header (1) and surrounding area to keep from getting dirt and debris into fuel system.
2. Close fuel valve (3).
3. Turn final fuel filter (2) counterclockwise to remove.
4. Inspect filter header sealing surfaces. Clean as required.

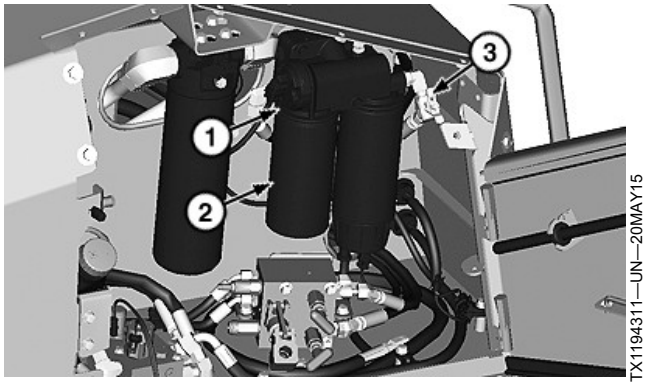
IMPORTANT: Do not prefill fuel filters. Debris in unfiltered fuel will damage fuel system components.

5. Install fuel filter into fuel filter header, turning clockwise. Tighten until fuel filter snugly mates with fuel filter header.
6. Turn filter 1/2—3/4 turn further clockwise.
7. Open fuel valve and close service door.
8. Bleed fuel system. See Bleed Fuel System. (Section 4-1.)

1—Final Fuel Filter Header
2—Final Fuel Filter
3—Fuel Valve



Machine Equipped With Auxiliary Fuel Filter (upper shield removed for clarity)



Machine Not Equipped With Auxiliary Fuel Filter (upper shield removed for clarity)

CN93077,000031D-19-28MAY15-3/3

1. Park machine on a level surface so that sprocket oil level line (2) is parallel with ground and outer drain plug (3) is at bottom of sprocket. Turn off engine.
2. Remove outer fill plug (1), inner fill plug (4), outer drain plug, and inner drain plug (5) to drain oil into suitable container. Dispose of oil properly.
3. Install and tighten drain plugs.

IMPORTANT: Avoid overheating and damage to components. Do not overfill final drives. If specified fill volumes are not met, malfunction of final drive can occur.

4. Fill final drives with oil according to specifications. See Final Drive and Track Frame Pivot Oil. (Section 3-1.) Fill housing with oil until oil flows from fill port.

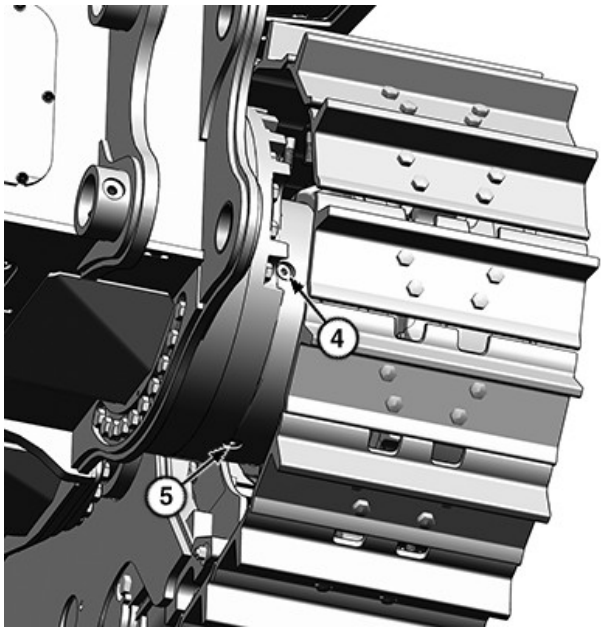
Inner Final Drive Oil (each side) — Specification

Inner Final Drive Oil—Capacity. . . . . 6.2 L
1.6 gal

Outer Final Drive Oil (each side) — Specification

Outer Final Drive Oil—Capacity. . . . . 29.3 L
7.7 gal

5. Install and tighten fill plugs.



XJ1307077—UN—09DEC20

Inner Final Drive Housing—Double Bogie Undercarriage

1—Outer Fill Plug
2—Sprocket Oil Level Line
3—Outer Drain Plug
4—Inner Fill Plug
5—Inner Drain Plug

CN93077,0000323-19-09DEC20-3/3

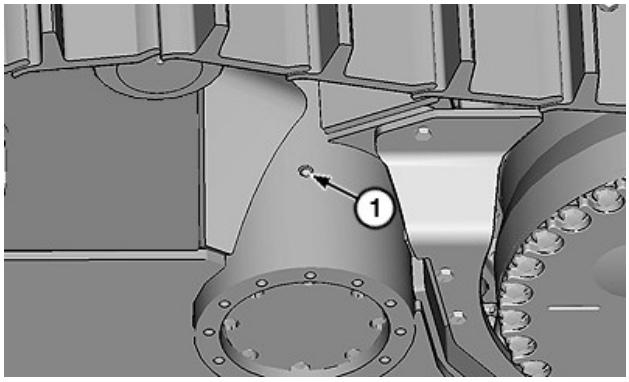
Check and Refill Track Frame Pivot Shaft Bushing Oil

1. Park machine on level surface and lower all equipment to ground.
2. Engage park lock levers in up (locked) position.
3. Press engine stop switch.
4. Remove cap screw (1).
5. Check oil level and fill completely. See Final Drive and Track Frame Pivot Oil. (Section 3-1.)

Specification

Track Frame Pivot Shaft Bushing Oil
(per side)—Capacity. . . . . 2.4 L
2.5 qt

6. Oil level must be between 13 mm (1/2 in) from the bottom of the fill hole to even with the bottom of the fill hole.
7. Install cap screw.



TX1165603—UN—15JUL14

Track Frame Pivot Shaft Bushing (left side shown)

1—Cap Screw (2 used)

8. Repeat procedure on other side of machine.

CN93077,0000325-19-16DEC20-1/1

Replace Diesel Exhaust Fluid (DEF) Tank Breather Filter

Diesel exhaust fluid (DEF) tank breather filter (1) is located behind diesel exhaust fluid (DEF) tank, underneath the cab.

1. Raise the cab. See Operator's Station Tilting Procedure. (Section 4-1.)
2. Loosen clamp.
3. Remove diesel exhaust fluid (DEF) tank breather filter.
4. Install new diesel exhaust fluid (DEF) tank breather filter and tighten clamp.
5. Lower cab to run position.

1—Diesel Exhaust Fluid (DEF) Tank Breather Filter

Diesel Exhaust Fluid (DEF) Tank Breather Filter

KR46761,0000C69-19-18APR16-1/1

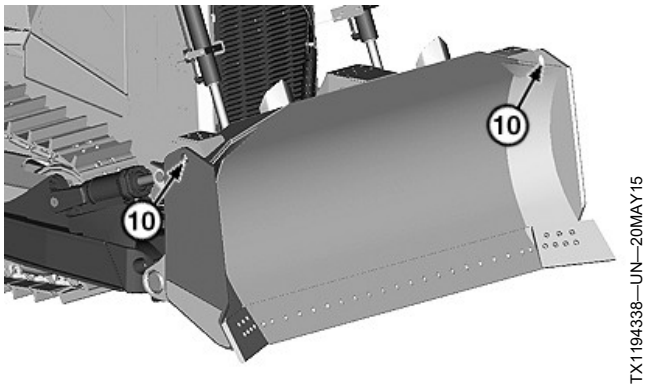
CAUTION: Prevent possible injury from heavy component. Use appropriate lifting device.

20. Attach lifting device to blade at lift points (10).

NOTE: Blade weights include standard cutting edges and end bits.

Specification

Semi U-Blade—Weight (approximate)	2984 kg 6578 lb
Semi U-Blade With Push Plate—Weight (approximate)	3309 kg 7295 lb
Semi U-Blade With Rock Rack (with wear plates)—Weight (approximate)	3706 kg 8170 lb
Waster Handler Semi U-Blade With Trash Rack (with wear plates)—Weight (approximate)	3919 kg 8640 lb
U-Blade—Weight (approximate)	3672 kg 8095 lb
U-Blade With Rock Rack (with wear plates)—Weight (approximate)	4404 kg 9709 lb
Waster Handler U-Blade With Trash Rack (with wear plates)—Weight (approximate)	4623 kg 10 192 lb
Coal Handler Blade—Weight (approximate)	4228 kg 9321 lb
Pushbeam—Fixed Undercarriage—Weight (approximate)	2690 kg 5931 lb



Lifting Points

10—Lift Point (2 used)

Pushbeam—Double Bogie Undercarriage—Weight (approximate)	2664 kg 5887 lb
U-Blade Plumbing—Weight (approximate)	53 kg 117 lb
Semi U-Blade Plumbing—Weight (approximate)	53 kg 117 lb
Pitch Cylinder—Weight (approximate)	148 kg 326 lb
Tilt/Pitch Cylinder—Weight (approximate)	161 kg 355 lb

CAUTION: Prevent injury from unexpected machine movement. Ensure that blade is properly secure on blocks before working underneath.

21. Lift blade and move to pushbeam assembly.

Continued on next page

CN93077,000062B-19-11OCT21-10/23

IMPORTANT: When installing lift cylinders, ensure bearing in rod clevis is flush with both sides of rod clevis and that blade is free to rotate.

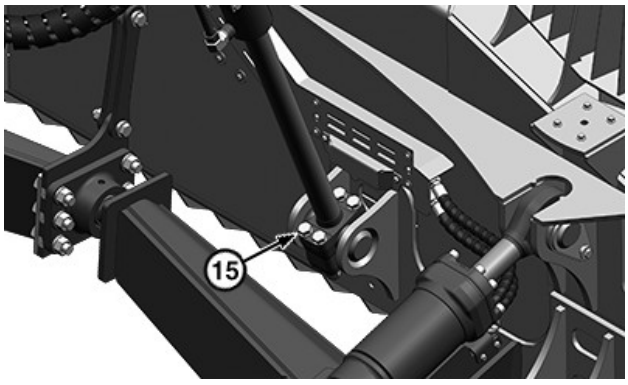
23. Install lift cylinder mounting cap screws (15) (8 total, 4 per side). Tighten to specification.

Specification	
Lift Cylinder Mounting Cap Screw—Torque	1150 N·m 848 lb·ft

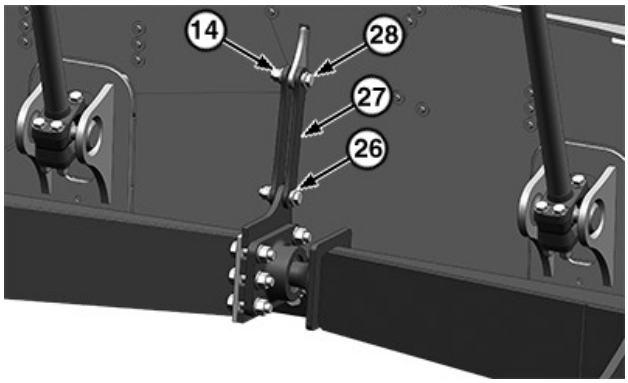
NOTE: Blocks or floor jacks may be necessary to raise pushbeams for easier installation of center link locknuts (14).

24. Install center links (27). Install bushings (26), center link cap screws (28), and center link locknuts (14). Tighten cap screws. Do not bend center link. Installed link must be able to move freely.

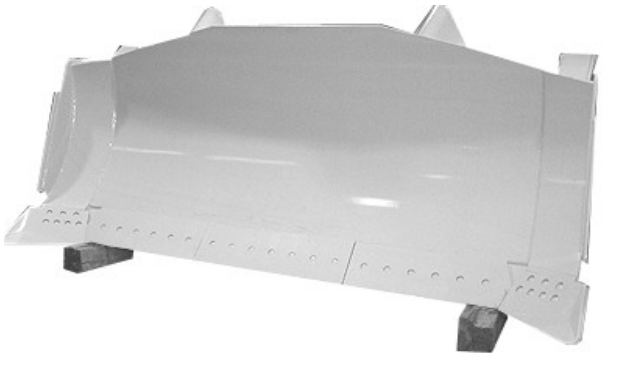
14—Center Link Locknut (2 used)
15—Lift Cylinder Mounting Cap Screw (8 used)
26—Bushing (4 used)
27—Center Link (2 used)
28—Center Link Cap Screw (2 used)



Lift Cylinder Mounting Cap Screws



Pushbeam Cap Screws



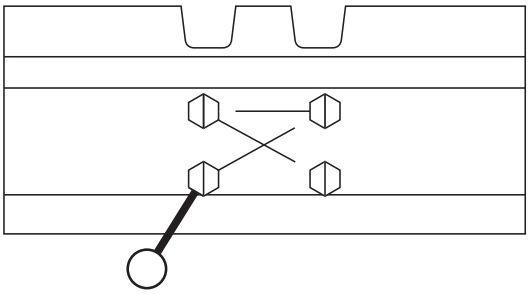
Blade on Blocks

CN93077,000062B-19-11OCT21-23/23

Tighten master cap screws in a crisscross sequence (1). Repeat sequence a second time. Use same tightening sequence for additional turns.

Specification	
Master Link (7/8 in) Cap Screw—Torque	650 ± 70 N·m 480 ± 50 lb·ft
Torque Turn	1/3 turn (120°)

1—Master Link Tightening Sequence



TX1176206—UN—10NOV14

Master Link Cap Screw

KR46761,0000C56-19-07AUG15-2/2

Do Not Service or Adjust Injection Nozzles or High-Pressure Fuel Pump

If injection nozzles are not working correctly or are dirty, the engine will not run normally. See an authorized John Deere dealer for service.

Changing the high-pressure fuel pump in any way not approved by the manufacturer will end the warranty. See copy of the John Deere warranty on this machine.

Do not service a high-pressure fuel pump that is not operating correctly. See an authorized John Deere dealer.

VD76477,0000366-19-30MAR17-1/1

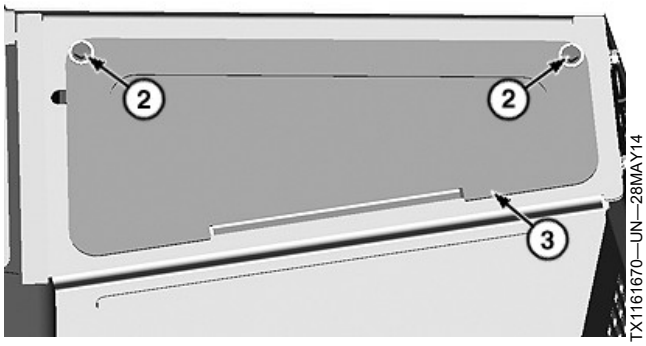
Checking Air Conditioner Receiver-Dryer

The receiver-dryer (4) is located in rear of operator's cab roof. Remove cap screws (2) and cover (3) to access receiver-dryer.

IMPORTANT: Prevent possible compressor damage. The moisture content in the system must be checked regularly, otherwise the air conditioning system can be destroyed due to acid formation.

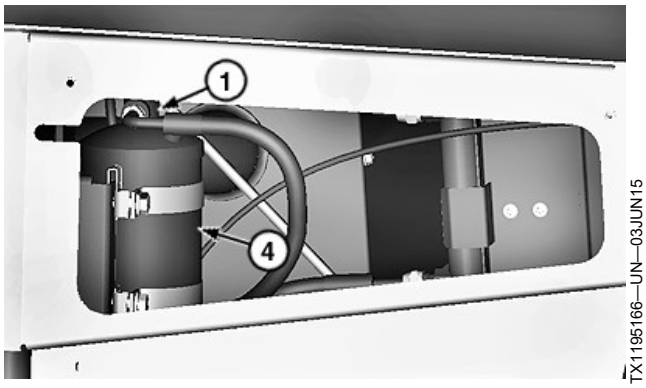
- Check the color of the indicator pearls: a white floater ball and an orange moisture indicator.
- When the engine is running, the refrigerant must flow through the sight glass (1) of the receiver-dryer without air bubbles and lift the white floater ball.
- After the engine is turned off, the fluid level must fall back into the receiver-dryer to ensure that the system is not overfilled.
- If the orange ball in the sight glass changes its color to colorless, then the dryer must be replaced.

1—Sight Glass
2—Cap Screw (2 used)
3—Cover
4—Receiver-Dryer



TX1161670—UN—28MAY14

Cap Screws and Cover



TX1195166—UN—03JUN15

Receiver-Dryer Location

KR46761,0000C58-19-03JUN15-1/1

Checking Transmission Start System

CAUTION: Avoid possible injury or death. Be sure all bystanders are away from machine when park lock start checks are performed.

1. With engine running on a level surface, place park lock levers in up (locked) position.
2. Move transmission control lever (TCL) to forward (F) or reverse (R) position.
3. Move throttle to 1500 rpm position.
4. Move park lock levers to down (unlocked) position.
5. Return to neutral indicator should illuminate on the monitor.
6. Move TCL to neutral (N) position and return to neutral indicator should turn off on monitor.

KR46761,0000C73-19-22SEP14-1/1

Keep ROPS Installed Properly

CAUTION: Avoid possible injury or death. Make certain all parts are installed correctly if the roll-over protective structure (ROPS) is loosened or removed for any reason. Tighten mounting bolts to proper torque.

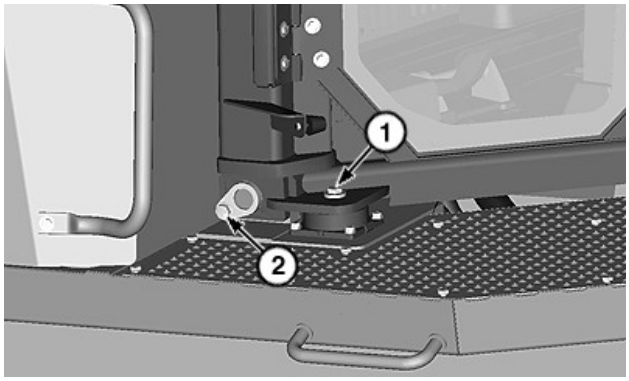
The protection offered by ROPS will be impaired if ROPS is subjected to structural damage, is involved in an overturn incident, or is in any way altered. A damaged ROPS should be replaced, not reused.

KR46761,0000C51-19-07AUG15-1/2

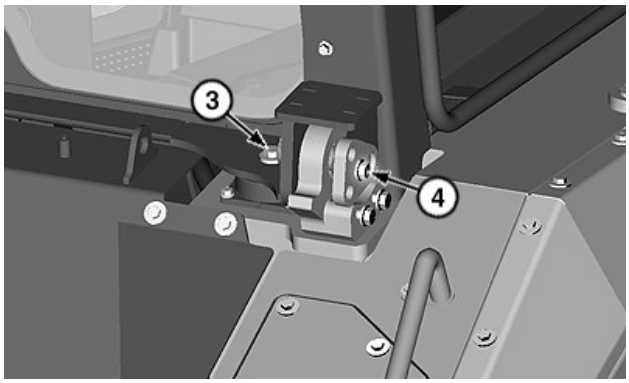
When installation of equipment on a machine necessitates loosening or removing ROPS, mounting bolts must be tightened to 320 N·m (236 lb·ft).

Specification	
ROPS Mounting Bolts—Torque	320 N·m 236 lb·ft

1—Front Operator's Station Cap Screw (2 used)
2—Front Pin Retainer Cap Screw (2 used)
3—Rear Operator's Station Cap Screw (2 used)
4—Flag Cap Screw (2 used)



Operator's Station Front Mounting (right side shown)



Rear Operator's Station (right side shown)

KR46761,0000C51-19-07AUG15-2/2

JDLink™ Machine Monitoring System (MMS)

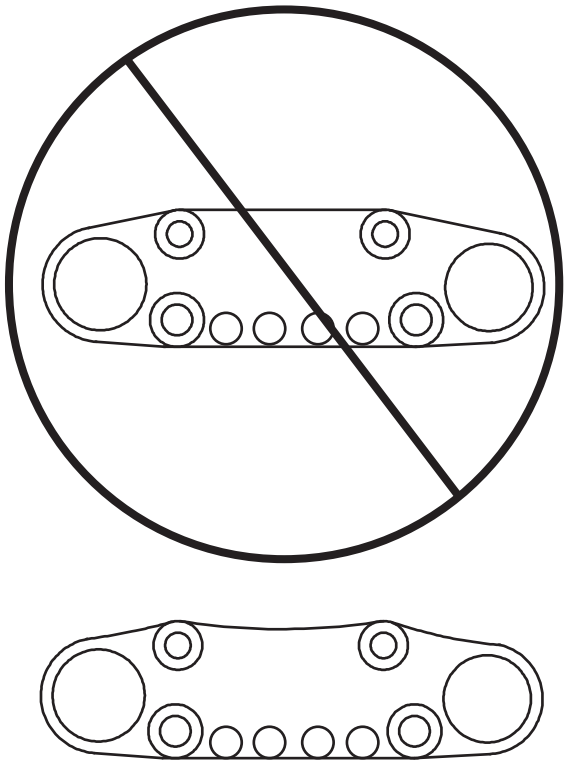
JDLink™ is an equipment monitoring and information delivery system. JDLink™ automatically collects and manages information about where and how construction and forestry equipment is being used, as well as critical machine health data and service status.

JDLink is a trademark of Deere & Company

For more information, see an authorized John Deere dealer or visit www.deere.com (browse to Construction, Services and Support, JDLink™).

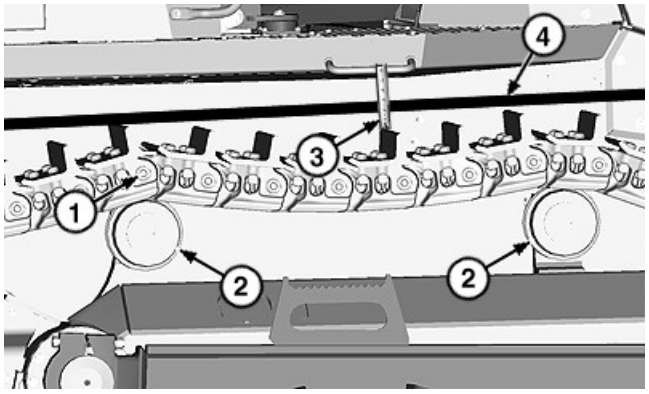
CN93077,0000339-19-28MAY15-1/1

Track Sag, Roller, and Idler Leakage Checks



T207501—UN—15FEB05

Track Sag



TX1164036—UN—01JUL14

Check Track Sag (fixed undercarriage)

1—Track Pin
2—Carrier Roller (2 used)
3—Track Sag
4—Straightedge

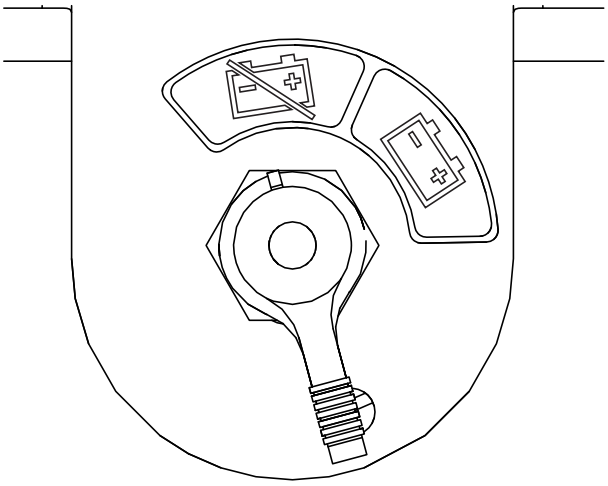
Continued on next page

Cab Door and Window Seals Check	Open and close door and windows. Inspect seals. *LOOK: Do door and windows contact seals evenly?* *LOOK: Are seals in position and in good condition?*	**YES:** Go to next step in this check. **NO:** Adjust door and windows to close against seals properly. Replace seals as necessary.
	LOOK: Are latches aligned with strikers?	**YES:** Go to next step in this check. **NO:** Align latches with strikers.
	FEEL/LOOK: Are door, window, and door hold-open latches easy to operate?	**YES:** Go to next check. **NO:** Adjust or replace latches as necessary.

CN93077,0000346-19-20NOV20-19/68

Operational Checks—Switched Power ON, Engine OFF

CN93077,0000346-19-20NOV20-20/68

Battery Disconnect Switch Check	*NOTE: Battery disconnect switch is located inside of the right rear service door.*  TX1158186—UN—17APR14 *Battery Disconnect Switch in OFF Position* Turn battery disconnect switch OFF. Press engine start switch on sealed switch module (SSM). *LOOK: Do monitor indicator lights illuminate?*	**YES:** Switch is malfunctioning. Repair battery disconnect switch. **NO:** Go to next check.

CN93077,0000346-19-20NOV20-21/68

Battery Disconnect Switch Check (continued)	Turn battery disconnect switch ON. Press engine start switch on sealed switch module (SSM). Do not start engine. *LOOK: Do monitor indicator lights illuminate?*	**YES:** Go to next check. **NO:** Repair battery disconnect switch.

Continued on next page

CN93077,0000346-19-20NOV20-22/68

Front and Rear Washer Motor Check

TX1159563A—UN—20JUN14

Front and Rear Washer Motor Switch

1—Front and Rear Washer Motor Switch

Press front and rear washer motor switch (1).

LOOK: Do front and rear washers operate?

LOOK: Do front and rear wipers continue to operate?

YES: Go to next check.

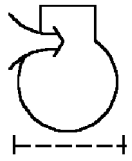
NO: Washer fluid reservoir may be empty. Check washer fluid. See Check and Fill Windshield Washer Fluid. (Section 3-3.)

NO: See an authorized John Deere dealer.

Continued on next page

CN93077,0000346-19-20NOV20-33/68

Engine Air Filter Restriction Check



TX1000024—UN—04NOV05

Engine Air Filter Restriction Indicator

Run engine at fast idle with park lock levers in full up (locked) position.

LOOK: Is air filter restriction indicator off?

YES: Go to next check.

NO: Replace air cleaner elements. See Replace Primary and Secondary Engine Air Filter Elements. (Section 3-3.)

CN93077,0000346-19-20NOV20-45/68

Cooling Fan Circuit Check

NOTE: This check will not work if engine or hydraulic oil temperature is above 52°C (125°F). Change in fan speed may be hard to detect.

Run engine at slow idle.

Move park lock levers to full up (locked) position.

LISTEN/LOOK: Does fan speed increase when sensor is disconnected?

NOTE: If fan circuit is malfunctioning, the cooling fan will default to high speed.

Connect temperature sensor.

LISTEN/LOOK: Does fan speed decrease when sensor is connected?

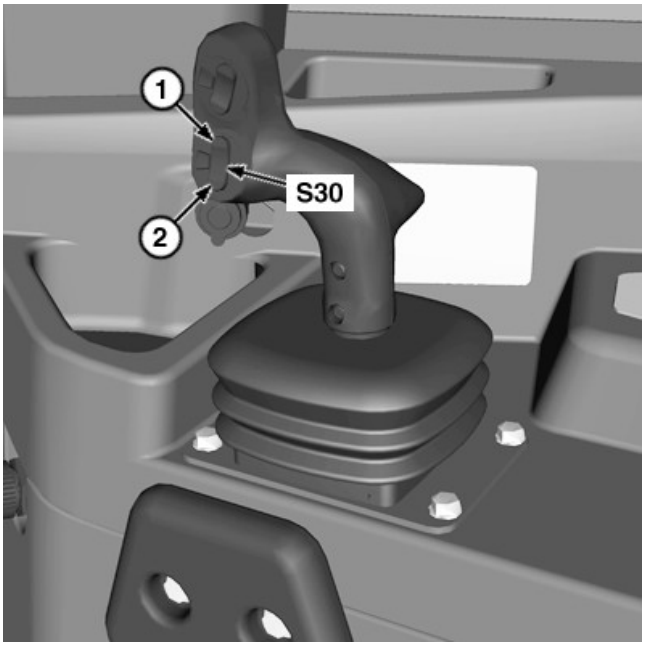
YES: Go to next check.

NO: See an authorized John Deere dealer.

Continued on next page

CN93077,0000346-19-20NOV20-46/68

Power Pitch Check (if equipped)



TX1165969A—UN—17JUL14

Power Pitch Control Switch

1—Pitch Forward
2—Pitch Reverse
S30—Power Pitch Control Switch

Operate engine at slow idle.

Press hydraulic enable switch to unlocked position.

Press power pitch control switch (S30) to pitch forward (1) position.

LOOK: Does blade pitch forward?

Press power pitch control switch to pitch rearward (2) position.

LOOK: Does blade pitch rearward?

YES: Go to next check.

NO: See an authorized John Deere dealer.

Continued on next page

CN93077,0000346-19-20NOV20-63/68

Electrical System

Symptom	Problem	Solution
Primary Display Unit (PDU) Message Displayed	Generated display message on PDU	See an authorized John Deere dealer.
No Electrical Functions	Battery undercharged or dead	Charge or replace battery.
	Battery disconnect switch is in the OFF position	Turn battery disconnect switch to the ON position. See Battery Disconnect Switch. (Section 2-2.)
	Main 120 A circuit breaker malfunction	Reset circuit breaker.
Starter Will Not Turn	Battery undercharged or dead	Charge or replace battery.
	Battery cables making poor connection	Clean and tighten battery terminals.
	Starter	Repair or replace starter.
	Starter motor pinion jammed in flywheel gear	Repair or replace starter and/or ring gear.
	Battery disconnect switch is in the OFF position	Turn battery disconnect switch to the ON position. See Battery Disconnect Switch. (Section 2-2.)
Engine Cranks Slowly	Battery undercharged	Charge or replace battery.
	Starter	Repair or replace starter.
	Battery cables making poor connections	Clean and tighten connections.
	Battery cables making poor connection	Clean and tighten battery terminals.
Starter Turns, but Will Not Crank Engine	Starter	Repair or replace starter.
Starter Continues to Run After Engine Starts	Starter relay	Disconnect battery ground. Replace starter relay.
	Starter	Repair or replace starter.
Battery Uses Too Much Water	Cracked battery case	Replace battery.
	High ambient temperature	Refill with distilled water and recharge battery.
Low Battery Output	Low water level	Add distilled water and recharge battery.
	Dirty or wet battery top, causing discharge	Clean and wipe battery top dry.
	Battery cables making poor connection	Clean and tighten battery terminals.
	Broken battery posts	Wiggle posts by hand. If posts wiggle or turn, replace batteries.

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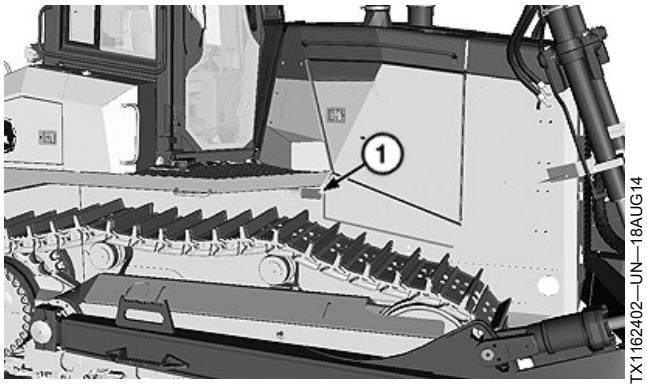
KR46761,0000C6F-19-31OCT16-1/2

Record Product Identification Number (PIN)

Fixed Undercarriage

1—PIN Plate



Product Identification Number (PIN) Plate

KR46761,0000C66-19-23NOV20-1/2

Double Bogie Undercarriage

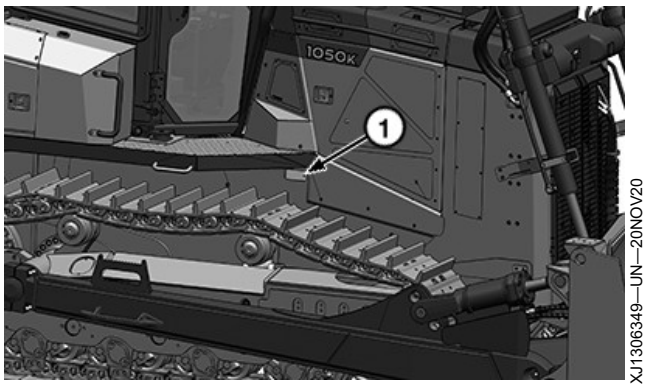
Purchase Date

Product Identification Number (PIN)

Record all 17 characters of the product identification number (PIN).

The PIN plate (1) is located on the right side of the machine, above the track.

1—PIN Plate



Product Identification Number (PIN) Plate

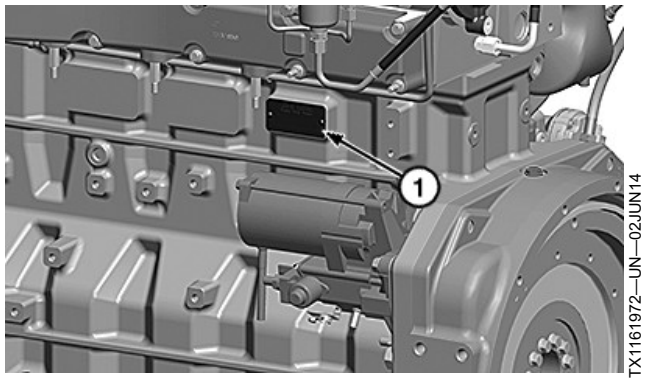
KR46761,0000C66-19-23NOV20-2/2

Record Engine Serial Number

Engine Serial Number

The engine serial number plate (1) is located on the engine above the starter.

1—Engine Serial Number Plate



Engine Serial Number Plate

KR46761,0000C67-19-05JUN14-1/1

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

OUT4001,000063E-19-24JUL12-1/1

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