550K and 650K Crawler Dozer

(PIN: 1T0550KX_ _F275977—303907)

(PIN: 1T0650KX_ _F275978—303837)



OPERATOR'S MANUAL

550K and 650K Crawler Dozers (PIN: 1T0550KX_ _F275977—303907) (PIN: 1T0650KX_ _F275978—303837)

OMT356886X19 ISSUE D0 (ENGLISH)

CALIFORNIA

Proposition 65 Warning

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

If this product contains a gasoline engine:

⚠ WARNING

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

The State of California requires the above two warnings.

Additional Proposition 65 Warnings can be found in this manual.

Worldwide Construction And Forestry Division

PRINTED IN U.S.A.

Introduction

Foreword

READ THIS MANUAL carefully to learn how to operate and service machine correctly. Personal injury or equipment damage can result if manual is not read. This manual and safety signs on the machine may also be available in other languages; see an authorized John Deere dealer to order.

THIS MANUAL SHOULD BE CONSIDERED a permanent part of the machine and should remain with machine when machine is sold.

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

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

WRITE PRODUCT IDENTIFICATION NUMBERS (P.I.N.) in the Machine Numbers section. Accurately record all the numbers to help in tracing the machine if machine is ever stolen. A dealer also needs these numbers when parts are ordered. File the identification numbers in a secure place off machine.

WARRANTY is provided as part of John Deere's support program for customers who operate and maintain their equipment as described in this manual. The warranty is explained on the warranty certificate or statement which should have been received from the dealer.

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

If current owner is not the original owner of this machine, contact an authorized John Deere dealer to inform them of this unit's serial number. This will help John Deere notify current owner of any issues or product improvements.

VD76477,00004EB -19-07JUL15-1/1

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.

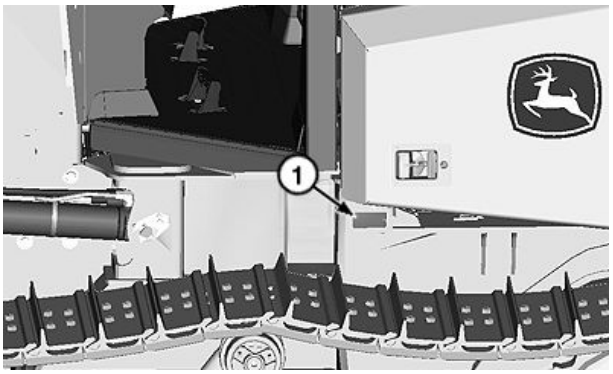
Choosing the Correct Supporting Manuals

John Deere crawlers 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 crawler manuals. These numbers are used to identify the correct supporting manual for your machine.

Product Identification Number

The product identification number (PIN) plate (1) is located on the left side of the machine, above the center of the tracks. Each machine has a 17-character PIN (2) shown on PIN plate.



PIN Plate Location

TX1187692 —UN—11MAR15



Example of PIN Plate

TX1175561 —UN—28OCT14

1— PIN Plate **2— 17-Character PIN**

Continued on next page

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 machine that meets Final Tier 4 and Stage IV emission levels:

17-Character PIN Examples																
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**
1	T	0	6	5	0	K	X	_	_	F	2	7	5	9	7	8

- **(1—3) World Code:** Identifies location where machine is manufactured.

1T0 ..... **World Code** (manufacturing location)

1DW ..... Davenport Works

1T8 ..... Thibodaux Works

1T0 ..... Dubuque Works

1FF ..... Deere—Hitachi (Kernersville, NC, USA)

1F9..... Deere—Hitachi (Indaiatuba, São Paulo, Brazil)

- **(4—8) Machine Model and Series Identifier:** Identifies model number and series.

550K ..... **Machine Model and Series Identifier**

650K ..... **Machine Model and Series Identifier**

NOTE: Characters 7—8 identify series and major machine configuration options. These characters will change from one machine to another.

X..... **Machine Option Code** (variable)

X..... Base Machine Model

- **(9) Check Letter:** This is a random character assigned by the factory. This is not used in machine identification.

_ ..... **Check Letter** (variable)

- **(10) Manufacturing Year Code:** Identifies year of machine manufacture.

_ ..... **Manufacturing Year Code** (variable)

D..... 2013

E 2014

F 2015

G 2016

- **(11) Engine Emission Code:** Represents engine emission certification.

F ..... **Engine Emission Code**

C ..... Tier 2 and Stage II

D ..... Tier 3 and Stage III A

E ..... Interim Tier 4 and Stage III B

F ..... Final Tier 4 and Stage IV

G ..... Interim Tier 4 and Stage III A (19-56 kW)

H..... Final Tier 4 and Stage III A (19-37 kW)

J ..... Final Tier 4 and Stage III B (37-56 kW)

K..... Final Tier 4 (8-19 kW)

- **(12—17) Machine Serial Number:** Identifies machine serial number. This character will change from one machine to another.

275978 ..... **Machine Serial Number**

CN93077,000043B -19-11MAR15-2/2

IMPORTANT

Warranty will not apply to engine and drivetrain failures resulting from unauthorized adjustments to this engine.

Unauthorized adjustments are in violation of the emissions regulations applicable to this engine and may result in substantial fines and penalties.

VD76477,000104D -19-27JUN12-1/1

License Agreement for John Deere Software

LICENSE AGREEMENT FOR JOHN DEERE SOFTWARE

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regulations, laws, safety laws, or voluntary safety standards (e.g., ISO standards) that are supported by LPs, LMs, or (e) apply any circumvention devices or hacking devices from any third parties in an attempt to reverse engineer the LM or that could be used to access trade secrets or other confidential information in the LM that is protected under applicable law. You also agree not to permit any third party acting under your control to do any of the foregoing activities related to circumvention of SM.

6. **Consideration, License Fees**. The license fees or other good and valuable consideration paid by you are paid in consideration of the licenses granted under this License Agreement.

7. **Limited Warranty**. Licensor warrants, for your benefit alone and not for the benefit of any other party, that during the "**Warranty Period**" defined below, the Software will operate substantially in accordance with the applicable functional specifications ("**Specifications**") set forth in the Operators' Manuals. If, prior to expiration of the Warranty Period, the Software fails to perform substantially in accordance with the Specifications, you may return the LP to the place of purchase for repair or replacement of the non-performing Software. As used in this License Agreement. The "Warranty Period" is one (1) year from the date you take delivery of the LP.

8. **DISCLAIMER OF WARRANTIES**. YOU HEREBY AGREE THAT THE LIMITED WARRANTY PROVIDED ABOVE (THE "**LIMITED WARRANTY**") CONSTITUTES YOUR SOLE AND EXCLUSIVE REMEDY FOR ANY PROBLEM WHATSOEVER WITH THE LM. EXCEPT AS PROVIDED IN THE LIMITED WARRANTY, THE LM IS LICENSED "AS IS," AND LICENSOR, ITS AFFILIATES AND THIRD PARTY SUPPLIERS EXPRESSLY DISCLAIM AND YOU EXPRESSLY WAIVE, RELEASE AND RENOUNCE ALL WARRANTIES ARISING BY LAW OR OTHERWISE WITH RESPECT TO THE LM, INCLUDING, BUT NOT LIMITED TO: ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE; ANY IMPLIED WARRANTY ARISING FROM COURSE OF PERFORMANCE, COURSE OF DEALING OR TRADE USAGE; ANY WARRANTY OF TITLE OR NON-INFRINGEMENT; AND, ANY OTHER WARRANTY ARISING UNDER ANY THEORY OF LAW, INCLUDING TORT, NEGLIGENCE, STRICT LIABILITY, CONTRACT OR OTHER LEGAL OR EQUITABLE THEORY. NO REPRESENTATION OR OTHER AFFIRMATION OF FACT INCLUDING, BUT NOT LIMITED TO, STATEMENTS REGARDING SUITABILITY FOR USE, SHALL BE DEEMED TO BE A WARRANTY BY LICENSOR OR ANY OF ITS AFFILIATES OR THIRD PARTY SUPPLIERS. LICENSOR DOES NOT WARRANT THAT THE LM AND/OR LP IS ERROR-FREE OR WILL OPERATE WITHOUT INTERRUPTION.

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13. **Costs of Litigation**. If any claim or action is brought by either party to this License Agreement against the other party regarding the subject matter hereof, the prevailing party shall be entitled to recover, in

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Deere Open Source Compliance Team
P.O. Box 1202
Moline, IL 61266-1202
USA

Please include name of the product and the version number of the software in the request letter. This offer is valid to anyone in receipt of this information.

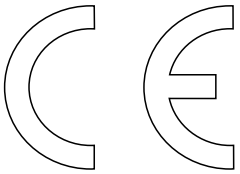
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Conformity Marking for European Union (EU) and Eurasian Economic Union (EAEU)

NOTE: Some or all machine models listed on the front cover of this manual are available in optional factory configurations that meet or exceed European Union (EU) or Eurasian Economic Union (EAEU) conformity requirements.

To validate conformance of a particular machine for sale into the EU or EAEU markets, check for the applicable marking on the machine, or see an authorized John Deere dealer.

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European Union (EU)

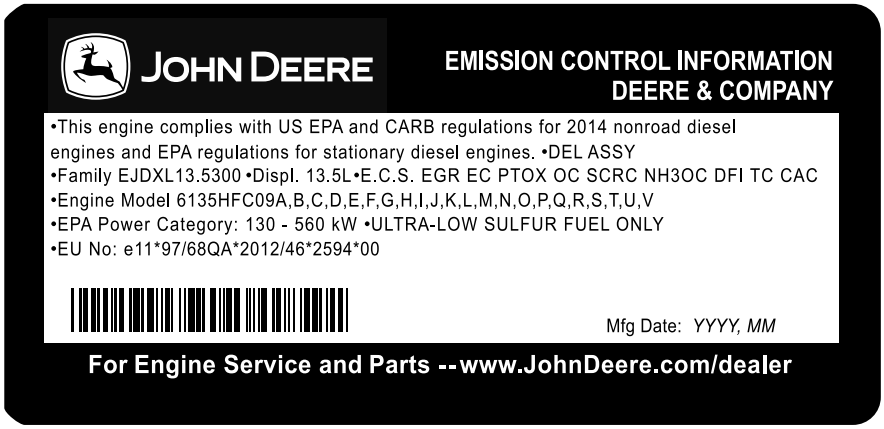
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Eurasian Economic Union (EAEU)

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Emissions Control System Certification Label



RG24291 —UN—18SEP13

Engine Emissions Label

⚠ CAUTION: Statutes providing severe penalties for tampering with emissions controls may apply to the user or dealer.

The emissions warranty applies to those engines marketed by John Deere that have been certified by the United States Environmental Protection Agency (EPA) and/or California Air Resources Board (CARB); and used in the United States and Canada in Non-road equipment. The presence of an emissions label like the one shown signifies that the engine has been certified with the EPA and/or CARB. The EPA and CARB warranties only apply to new engines having the certification label affixed to the engine and sold as stated above in the geographic areas. The presence of an EU number signifies that the engine has been certified with the European Union countries per Directive 97/68/EC. The EPA and/or CARB emissions warranties do not apply to the EU countries.

The emissions label has applicable US EPA and/or CARB regulatory year. The regulatory year determines which warranty statement is applicable to engine. See “EPA Non-road Emissions Control Warranty Statement—Compression Ignition” and “CARB Non-road Emissions Control Warranty Statement—Compression Ignition”. For additional regulatory year warranty statements, see www.JohnDeere.com or contact the nearest John Deere service dealer for assistance.

Emission Control System(s) Laws

The U.S. EPA and California ARB prohibit the removal or rendering inoperative of any device or element of design installed on or in engines/equipment in compliance with applicable emission regulations prior to or after the sale and delivery of the engines/equipment to the ultimate purchaser.

DX,EMISSIONS,LABEL -19-01AUG14-1/1

EPA Non-road Emissions Control Warranty Statement—Compression Ignition

DXLOGOV1 —UN—28APR09

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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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.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. REMEDIES UNDER THIS WARRANTY ARE LIMITED TO THE PROVISIONS OF MATERIAL AND SERVICES AS SPECIFIED HEREIN. WHERE PERMITTED BY LAW, NEITHER JOHN DEERE NOR ANY AUTHORIZED JOHN DEERE ENGINE DISTRIBUTOR, DEALER, OR REPAIR FACILITY OR ANY COMPANY AFFILIATED WITH JOHN DEERE WILL BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

Emission_CI_EPA (18Dec09)

TS1721 —UN—15JUL13

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

CARB Non-road Emissions Control Warranty Statement—Compression Ignition

Emissions Control Warranty Statement 2016 through 2018

DXLOGOV1 —UN—28APR09



JOHN DEERE

CALIFORNIA EMISSIONS 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 “Emission Control Information” label located on the engine. If the engine is operated in the United States or Canada and the engine label states: “This engine complies with US EPA regulations for nonroad and stationary diesel engines”, or “This engine complies with US EPA regulations for stationary emergency diesel engines”, refer to the “U.S. and Canada Emission Control Warranty Statement.” If the engine is operated in California, and the engine label states: “This engine complies with US EPA and CARB regulations for nonroad diesel engines” also refer to the “California Emissions Control Warranty Statement.”

Warranties stated on this certificate refer only to emissions-related parts and components of your engine. The complete engine warranty, less emission-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.

CALIFORNIA EMISSIONS CONTROL WARRANTY STATEMENT:

The California Air Resources Board (CARB) is pleased to explain the emission-control system warranty on 2016 through 2018 off-road diesel engines. In California, new off-road engines must be designed, built and equipped to meet the State’s stringent anti-smog standards. John Deere must warrant the emission control system on your engine for the periods of time listed below provided there has been no abuse, neglect or improper maintenance of your engine.

Your emission control system may include parts such as the fuel injection system and the air induction system. Also included may be hoses, belts, connectors and other emission-related assemblies.

John Deere warrants to the ultimate purchaser and each subsequent purchaser that this off-road diesel engine was designed, built, and equipped so as to conform at the time of sale with all applicable regulations adopted by CARB and is free from defects in materials and workmanship which would cause the failure of a warranted part to be identical in all material respects to the part as described in John Deere's application for certification for a period of five years from the date the engine is delivered to an ultimate purchaser or 3,000 hours of operation, whichever occurs first for all engines rated at 19 kW and greater. In the absence of a device to measure hours of use, the engine shall be warranted for a period of five years.

EMISSIONS WARRANTY EXCLUSIONS:

John Deere may deny warranty claims for failures caused by the use of an add-on or modified part which has not been exempted by the CARB. A modified part is an aftermarket part intended to replace an original emission-related part which is not functionally identical in all respects and which in any way affects emissions. An add-on part is any aftermarket part which is not a modified part or a replacement part.

In no event will John Deere, any authorized engine distributor, dealer, or repair facility, or any company affiliated with John Deere be liable for incidental or consequential damage.

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JOHN DEERE'S WARRANTY RESPONSIBILITY:

Where a warrantable condition exists, John Deere will repair or replace, as it elects, your off-road diesel engine at no cost to you, including diagnosis, parts or labor. Warranty coverage is subject to the limitations and exclusions set forth herein. The off-road diesel engine is warranted for a period of five years from the date the engine is delivered to an ultimate purchaser or 3,000 hours of operation, whichever occurs first. The following are emissions-related parts:

Air Induction System

- Intake manifold
- Turbocharger
- Charge air cooler

Fuel Metering system

- Fuel injection system

Exhaust Gas Recirculation

- EGR valve

Catalyst or Thermal Reactor Systems

- Catalytic converter
- Exhaust manifold

Emission control labels

Particulate Controls

- Any device used to capture particulate emissions
- Any device used in the regeneration of the capturing system
- Enclosures and manifolding
- Smoke Puff Limiters

Positive Crankcase Ventilation (PCV) System

- PCV valve
- Oil filler cap

Advanced Oxides of Nitrogen (NOx) Controls

- NOx absorbers and catalysts

SCR systems and urea containers/dispensing systems

Miscellaneous Items used in Above Systems

- Electronic control units, sensors, actuators, wiring harnesses, hoses, connectors, clamps, fittings, gasket, mounting hardware

Any warranted emissions-related part scheduled for replacement as required maintenance is warranted by John Deere for the period of time prior to the first scheduled replacement point for the part. Any warranted emissions-related part not scheduled for replacement as required maintenance or scheduled only for regular inspection is warranted by John Deere for the stated warranty period.

OWNER'S WARRANTY RESPONSIBILITIES:

As the off-road diesel engine owner you are responsible for the performance of the required maintenance listed in your Operator's Manual. John Deere recommends that the owner retain all receipts covering maintenance on the off-road diesel engine, but John Deere cannot deny warranty solely for the lack of receipts or for the owner's failure to ensure the performance of all scheduled maintenance. However, as the off-road diesel engine owner, you should be aware that John Deere may deny you warranty coverage if your off-road diesel engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

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 may result in the engine no longer operating in compliance with applicable emissions requirements.

The owner is responsible for initiating the warranty process, and should present the machine to the nearest authorized John Deere dealer as soon as a problem is suspected. The warranty repairs should be completed by the authorized John Deere dealer as quickly as possible.

Emissions regulations require the customer to bring the unit to an authorized servicing dealer when warranty service is required. As a result, John Deere is NOT liable for travel or mileage on emissions warranty service calls.

Emission_CI_CARB (13Jun14)

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Emissions Control Warranty Statement 2016 through 2018

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JOHN DEERE

CALIFORNIA EMISSIONS 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 “Emission Control Information” label located on the engine. If the engine is operated in the United States or Canada and the engine label states: “This engine complies with US EPA regulations for nonroad and stationary diesel engines”, or “This engine complies with US EPA regulations for stationary emergency diesel engines”, refer to the “U.S. and Canada Emission Control Warranty Statement.” If the engine is operated in California, and the engine label states: “This engine complies with US EPA and CARB regulations for nonroad diesel engines” also refer to the “California Emissions Control Warranty Statement.”

Warranties stated on this certificate refer only to emissions-related parts and components of your engine. The complete engine warranty, less emission-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.

CALIFORNIA EMISSIONS CONTROL WARRANTY STATEMENT:

The California Air Resources Board (CARB) is pleased to explain the emission-control system warranty on 2016 through 2018 off-road diesel engines. In California, new off-road engines must be designed, built and equipped to meet the State’s stringent anti-smog standards. John Deere must warrant the emission control system on your engine for the periods of time listed below provided there has been no abuse, neglect or improper maintenance of your engine.

Your emission control system may include parts such as the fuel injection system and the air induction system. Also included may be hoses, belts, connectors and other emission-related assemblies.

John Deere warrants to the ultimate purchaser and each subsequent purchaser that this off-road diesel engine was designed, built, and equipped so as to conform at the time of sale with all applicable regulations adopted by CARB and is free from defects in materials and workmanship which would cause the failure of a warranted part to be identical in all material respects to the part as described in John Deere's application for certification for a period of five years from the date the engine is delivered to an ultimate purchaser or 3,000 hours of operation, whichever occurs first for all engines rated at 19 kW and greater. In the absence of a device to measure hours of use, the engine shall be warranted for a period of five years.

EMISSIONS WARRANTY EXCLUSIONS:

John Deere may deny warranty claims for failures caused by the use of an add-on or modified part which has not been exempted by the CARB. A modified part is an aftermarket part intended to replace an original emission-related part which is not functionally identical in all respects and which in any way affects emissions. An add-on part is any aftermarket part which is not a modified part or a replacement part.

In no event will John Deere, any authorized engine distributor, dealer, or repair facility, or any company affiliated with John Deere be liable for incidental or consequential damage.

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DX,EMISSIONS,CARB -19-03FEB17-3/8

JOHN DEERE'S WARRANTY RESPONSIBILITY:

Where a warrantable condition exists, John Deere will repair or replace, as it elects, your off-road diesel engine at no cost to you, including diagnosis, parts or labor. Warranty coverage is subject to the limitations and exclusions set forth herein. The off-road diesel engine is warranted for a period of five years from the date the engine is delivered to an ultimate purchaser or 3,000 hours of operation, whichever occurs first. The following are emissions-related parts:

Air Induction System

- Intake manifold
- Turbocharger
- Charge air cooler

Fuel Metering system

- Fuel injection system

Exhaust Gas Recirculation

- EGR valve

Catalyst or Thermal Reactor Systems

- Catalytic converter
- Exhaust manifold

Emission control labels

Particulate Controls

- Any device used to capture particulate emissions
- Any device used in the regeneration of the capturing system
- Enclosures and manifolding
- Smoke Puff Limiters

Positive Crankcase Ventilation (PCV) System

- PCV valve
- Oil filler cap

Advanced Oxides of Nitrogen (NOx) Controls

- NOx absorbers and catalysts

SCR systems and urea containers/dispensing systems

Miscellaneous Items used in Above Systems

- Electronic control units, sensors, actuators, wiring harnesses, hoses, connectors, clamps, fittings, gasket, mounting hardware

Any warranted emissions-related part scheduled for replacement as required maintenance is warranted by John Deere for the period of time prior to the first scheduled replacement point for the part. Any warranted emissions-related part not scheduled for replacement as required maintenance or scheduled only for regular inspection is warranted by John Deere for the stated warranty period.

OWNER'S WARRANTY RESPONSIBILITIES:

As the off-road diesel engine owner you are responsible for the performance of the required maintenance listed in your Operator's Manual. John Deere recommends that the owner retain all receipts covering maintenance on the off-road diesel engine, but John Deere cannot deny warranty solely for the lack of receipts or for the owner's failure to ensure the performance of all scheduled maintenance. However, as the off-road diesel engine owner, you should be aware that John Deere may deny you warranty coverage if your off-road diesel engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

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 may result in the engine no longer operating in compliance with applicable emissions requirements.

The owner is responsible for initiating the warranty process, and should present the machine to the nearest authorized John Deere dealer as soon as a problem is suspected. The warranty repairs should be completed by the authorized John Deere dealer as quickly as possible.

Emissions regulations require the customer to bring the unit to an authorized servicing dealer when warranty service is required. As a result, John Deere is NOT liable for travel or mileage on emissions warranty service calls.

Emission_CI_CARB (13Jun14)

RG26036 —UN—24JUN14

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DX,EMISSIONS,CARB -19-03FEB17-4/8

Emissions Control Warranty Statement 2019 through 2021

DXLOGOV1 —UN—28APR09

JOHN DEERE

CALIFORNIA EMISSIONS 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 “Emission Control Information” label located on the engine. If the engine is operated in the United States or Canada and the engine label states: “This engine complies with US EPA regulations for nonroad and stationary diesel engines”, or “This engine complies with US EPA regulations for stationary emergency diesel engines”, refer to the “U.S. and Canada Emission Control Warranty Statement.” If the engine is operated in California, and the engine label states: “This engine complies with US EPA and CARB regulations for nonroad diesel engines” also refer to the “California Emissions Control Warranty Statement.”

Warranties stated on this certificate refer only to emissions-related parts and components of your engine. The complete engine warranty, less emission-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.

CALIFORNIA EMISSIONS CONTROL WARRANTY STATEMENT:

The California Air Resources Board (CARB) is pleased to explain the emission-control system warranty on 2019 through 2021 off-road diesel engines. In California, new off-road engines must be designed, built and equipped to meet the State’s stringent anti-smog standards. John Deere must warrant the emission control system on your engine for the periods of time listed below provided there has been no abuse, neglect or improper maintenance of your engine.

Your emission control system may include parts such as the fuel injection system and the air induction system. Also included may be hoses, belts, connectors and other emission-related assemblies.

John Deere warrants to the ultimate purchaser and each subsequent purchaser that this off-road diesel engine was designed, built, and equipped so as to conform at the time of sale with all applicable regulations adopted by CARB and is free from defects in materials and workmanship which would cause the failure of a warranted part to be identical in all material respects to the part as described in John Deere's application for certification for a period of five years from the date the engine is delivered to an ultimate purchaser or 3,000 hours of operation, whichever occurs first for all engines rated at 19 kW and greater. In the absence of a device to measure hours of use, the engine shall be warranted for a period of five years.

EMISSIONS WARRANTY EXCLUSIONS:

John Deere may deny warranty claims for failures caused by the use of an add-on or modified part which has not been exempted by the CARB. A modified part is an aftermarket part intended to replace an original emission-related part which is not functionally identical in all respects and which in any way affects emissions. An add-on part is any aftermarket part which is not a modified part or a replacement part.

In no event will John Deere, any authorized engine distributor, dealer, or repair facility, or any company affiliated with John Deere be liable for incidental or consequential damage.

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DX,EMISSIONS,CARB -19-03FEB17-5/8

JOHN DEERE'S WARRANTY RESPONSIBILITY:

Where a warrantable condition exists, John Deere will repair or replace, as it elects, your off-road diesel engine at no cost to you, including diagnosis, parts or labor. Warranty coverage is subject to the limitations and exclusions set forth herein. The off-road diesel engine is warranted for a period of five years from the date the engine is delivered to an ultimate purchaser or 3,000 hours of operation, whichever occurs first. The following are emissions-related parts:

Air Induction System

- Intake manifold
- Turbocharger
- Charge air cooler

Fuel Metering system

- Fuel injection system

Exhaust Gas Recirculation

- EGR valve

Catalyst or Thermal Reactor Systems

- Catalytic converter
- Exhaust manifold

Emission control labels

Particulate Controls

- Any device used to capture particulate emissions
- Any device used in the regeneration of the capturing system
- Enclosures and manifolding
- Smoke Puff Limiters

Positive Crankcase Ventilation (PCV) System

- PCV valve
- Oil filler cap

Advanced Oxides of Nitrogen (NOx) Controls

- NOx absorbers and catalysts

SCR systems and urea containers/dispensing systems

Miscellaneous Items used in Above Systems

- Electronic control units, sensors, actuators, wiring harnesses, hoses, connectors, clamps, fittings, gasket, mounting hardware

Any warranted emissions-related part scheduled for replacement as required maintenance is warranted by John Deere for the period of time prior to the first scheduled replacement point for the part. Any warranted emissions-related part not scheduled for replacement as required maintenance or scheduled only for regular inspection is warranted by John Deere for the stated warranty period.

OWNER'S WARRANTY RESPONSIBILITIES:

As the off-road diesel engine owner you are responsible for the performance of the required maintenance listed in your Operator's Manual. John Deere recommends that the owner retain all receipts covering maintenance on the off-road diesel engine, but John Deere cannot deny warranty solely for the lack of receipts or for the owner's failure to ensure the performance of all scheduled maintenance. However, as the off-road diesel engine owner, you should be aware that John Deere may deny you warranty coverage if your off-road diesel engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

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 may result in the engine no longer operating in compliance with applicable emissions requirements.

The owner is responsible for initiating the warranty process, and should present the machine to the nearest authorized John Deere dealer as soon as a problem is suspected. The warranty repairs should be completed by the authorized John Deere dealer as quickly as possible.

Emissions regulations require the customer to bring the unit to an authorized servicing dealer when warranty service is required. As a result, John Deere is NOT liable for travel or mileage on emissions warranty service calls.

Emission_CI_CARB (01Feb17)

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Emissions Control Warranty Statement 2019 through 2021

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JOHN DEERE

CALIFORNIA EMISSIONS 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 “Emission Control Information” label located on the engine. If the engine is operated in the United States or Canada and the engine label states: “This engine complies with US EPA regulations for nonroad and stationary diesel engines”, or “This engine complies with US EPA regulations for stationary emergency diesel engines”, refer to the “U.S. and Canada Emission Control Warranty Statement.” If the engine is operated in California, and the engine label states: “This engine complies with US EPA and CARB regulations for nonroad diesel engines” also refer to the “California Emissions Control Warranty Statement.”

Warranties stated on this certificate refer only to emissions-related parts and components of your engine. The complete engine warranty, less emission-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.

CALIFORNIA EMISSIONS CONTROL WARRANTY STATEMENT:

The California Air Resources Board (CARB) is pleased to explain the emission-control system warranty on 2019 through 2021 off-road diesel engines. In California, new off-road engines must be designed, built and equipped to meet the State’s stringent anti-smog standards. John Deere must warrant the emission control system on your engine for the periods of time listed below provided there has been no abuse, neglect or improper maintenance of your engine.

Your emission control system may include parts such as the fuel injection system and the air induction system. Also included may be hoses, belts, connectors and other emission-related assemblies.

John Deere warrants to the ultimate purchaser and each subsequent purchaser that this off-road diesel engine was designed, built, and equipped so as to conform at the time of sale with all applicable regulations adopted by CARB and is free from defects in materials and workmanship which would cause the failure of a warranted part to be identical in all material respects to the part as described in John Deere's application for certification for a period of five years from the date the engine is delivered to an ultimate purchaser or 3,000 hours of operation, whichever occurs first for all engines rated at 19 kW and greater. In the absence of a device to measure hours of use, the engine shall be warranted for a period of five years.

EMISSIONS WARRANTY EXCLUSIONS:

John Deere may deny warranty claims for failures caused by the use of an add-on or modified part which has not been exempted by the CARB. A modified part is an aftermarket part intended to replace an original emission-related part which is not functionally identical in all respects and which in any way affects emissions. An add-on part is any aftermarket part which is not a modified part or a replacement part.

In no event will John Deere, any authorized engine distributor, dealer, or repair facility, or any company affiliated with John Deere be liable for incidental or consequential damage.

RG29280 —UN—02FEB17

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DX,EMISSIONS,CARB -19-03FEB17-7/8

JOHN DEERE'S WARRANTY RESPONSIBILITY:

Where a warrantable condition exists, John Deere will repair or replace, as it elects, your off-road diesel engine at no cost to you, including diagnosis, parts or labor. Warranty coverage is subject to the limitations and exclusions set forth herein. The off-road diesel engine is warranted for a period of five years from the date the engine is delivered to an ultimate purchaser or 3,000 hours of operation, whichever occurs first. The following are emissions-related parts:

Air Induction System

- Intake manifold
- Turbocharger
- Charge air cooler

Fuel Metering system

- Fuel injection system

Exhaust Gas Recirculation

- EGR valve

Catalyst or Thermal Reactor Systems

- Catalytic converter
- Exhaust manifold

Emission control labels

Particulate Controls

- Any device used to capture particulate emissions
- Any device used in the regeneration of the capturing system
- Enclosures and manifolding
- Smoke Puff Limiters

Positive Crankcase Ventilation (PCV) System

- PCV valve
- Oil filler cap

Advanced Oxides of Nitrogen (NOx) Controls

- NOx absorbers and catalysts

SCR systems and urea containers/dispensing systems

Miscellaneous Items used in Above Systems

- Electronic control units, sensors, actuators, wiring harnesses, hoses, connectors, clamps, fittings, gasket, mounting hardware

Any warranted emissions-related part scheduled for replacement as required maintenance is warranted by John Deere for the period of time prior to the first scheduled replacement point for the part. Any warranted emissions-related part not scheduled for replacement as required maintenance or scheduled only for regular inspection is warranted by John Deere for the stated warranty period.

OWNER'S WARRANTY RESPONSIBILITIES:

As the off-road diesel engine owner you are responsible for the performance of the required maintenance listed in your Operator's Manual. John Deere recommends that the owner retain all receipts covering maintenance on the off-road diesel engine, but John Deere cannot deny warranty solely for the lack of receipts or for the owner's failure to ensure the performance of all scheduled maintenance. However, as the off-road diesel engine owner, you should be aware that John Deere may deny you warranty coverage if your off-road diesel engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

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 may result in the engine no longer operating in compliance with applicable emissions requirements.

The owner is responsible for initiating the warranty process, and should present the machine to the nearest authorized John Deere dealer as soon as a problem is suspected. The warranty repairs should be completed by the authorized John Deere dealer as quickly as possible.

Emissions regulations require the customer to bring the unit to an authorized servicing dealer when warranty service is required. As a result, John Deere is NOT liable for travel or mileage on emissions warranty service calls.

Emission_CI_CARB (01Feb17)

RG29281 —UN—27FEB17

DX,EMISSIONS,CARB -19-03FEB17-8/8

FCC Notifications to User

FCC Notification

These devices comply with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) These devices may not cause harmful interference, and (2) these devices must accept any interference received, including interference that may cause undesired operation.

These devices must be operated as supplied by John Deere Ag Management Solutions. Any changes or modifications made to these devices without the express written approval of John Deere Ag Management Solutions may void the user's authority to operate these devices.

Modular Telematics Gateway and Satellite Module

This equipment has been tested and found to comply with the limits for Class B digital devices, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, no guarantee shall be made that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

MM16284,000196F -19-20FEB19-1/1

Service ADVISOR™ Remote (SAR)—SOFTWARE TERMS AND CONDITIONS

IMPORTANT -- READ CAREFULLY: THIS SOFTWARE LICENSE AGREEMENT IS A LEGAL CONTRACT BETWEEN YOU AND THE LICENSOR ("LICENSOR") IDENTIFIED BELOW AND GOVERNS YOUR USE OF THE SOFTWARE DELIVERED TO YOUR MACHINE (THE “MACHINE”).

BY INDICATING YOUR ACCEPTANCE ON A DISPLAY ON THE MACHINE, BY INSTALLING SOFTWARE TO THE MACHINE, OR USING SOFTWARE ON THE MACHINE, YOU ARE ACCEPTING AND AGREEING TO THE TERMS OF THIS LICENSE AGREEMENT WITH RESPECT TO THE SOFTWARE (THE "Software") THAT IS DELIVERED TO YOUR MACHINE. YOU AGREE THAT THIS SOFTWARE LICENSE AGREEMENT, INCLUDING THE WARRANTY DISCLAIMERS, LIMITATIONS OF LIABILITY AND TERMINATION PROVISIONS BELOW, IS BINDING UPON YOU, AND UPON ANY COMPANY ON WHOSE BEHALF YOU USE THE SOFTWARE AS WELL AS THE EMPLOYEES OF ANY SUCH COMPANY (COLLECTIVELY REFERRED TO AS "YOU" IN THIS SOFTWARE LICENSE AGREEMENT). IF YOU DO NOT AGREE TO THE TERMS OF THIS AGREEMENT, OR IF YOU ARE NOT AUTHORIZED TO ACCEPT THESE TERMS ON BEHALF OF YOUR COMPANY OR ITS EMPLOYEES, PLEASE CLICK THE [Decline] ICON ON THE DISPLAY ON THE MACHINE TO DECLINE THESE TERMS AND CONDITIONS. THIS LICENSE AGREEMENT REPRESENTS THE ENTIRE AGREEMENT CONCERNING THE SOFTWARE BETWEEN YOU AND THE LICENSOR.

1. Delivery of Software. Software may be delivered to your Machine by Licensor wirelessly or via an agent of Licensor, such as a dealer. If it is delivered wirelessly, you may be responsible for any data transmission fees incurred due to such delivery.

2. License. Licensor hereby grants to you, and you accept, a nonexclusive license to use the Software in machine-readable, object code form, only as authorized in this License Agreement and the applicable provisions of the Operators' Manuals, which you agree to review carefully prior to using the Software. The Software may be used only on the Machine to which it was initially delivered. You agree that you will not assign, sublicense, transfer, pledge, lease, rent, or share your rights under this License Agreement, except that you may permanently transfer all of your rights under this License Agreement in connection with the sale of the Machine on which the Software covered by this Agreement is installed.

3. Licensor's Rights. You acknowledge and agree that the Software is proprietary to Licensor and is protected under copyright law. You further acknowledge and agree that all right, title, and interests in and to the Software, including associated intellectual property rights, are and shall remain with Licensor. This License Agreement does not convey to you any title or interest in or to the Software, but only a limited right of use revocable in accordance with the terms of this License Agreement. You agree that you will not: (a) reverse assemble, reverse compile, modify, or otherwise translate the Software, or attempt to defeat the copyright protection and application enabling mechanisms therein; (b) copy or reproduce the Software; or, (b) remove or obliterate any copyright, trademark or other proprietary rights notices from the Software. You also agree not to permit any third party acting under your control to do any of the foregoing.

4. License Fees. The license fees paid by you, if any, are paid in consideration of the licenses granted under this License Agreement.

5. Limited Warranty. Licensor warrants, for your benefit alone and not for the benefit of any other party, that during the "**Warranty Period**" defined below, the Software will operate substantially in accordance with the applicable functional specifications ("**Specifications**") set forth in the Operators' Manuals. If, prior to expiration of the Warranty Period, the Software fails to perform substantially in accordance with the Specifications, you may return the Machine to the place of purchase for repair or replacement of the non-performing Software. The Warranty Period is ninety (90) days from the date of installation of the Software or the duration of the warranty period of the component of the Machine on which the Software is installed, whichever is longer. The Software Warranty Period does not affect the warranty period of the Machine itself or any component thereof.

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Place of Purchase	Address	Governing Law	Venue
United States of America	John Deere Shared Services, Inc. One John Deere Place Moline, IL 61265 U.S.A.	State of Illinois, USA	Rock Island County, Illinois, USA
Argentina	Industrias John Deere Argentina, S.A. Casilla de Correo 80 Rosario (Santa Fe), 2000, Argentina	Province of Santa Fe, Argentina	Province of Santa Fe, Argentina
Australia or New Zealand	John Deere Limited (Australia) P.O. Box 2022 Crestmead, Queensland, Australia 4132	State of Queensland, Australia	State of Queensland, Australia
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Europe	ETIC Strassburgerallee 5 67657 Kaiserslautern, Germany	Federal Republic of Germany	Kaiserslautern, Germany
Other	The John Deere entity identified for the location of your Machine on www.JDLink.com.	The John Deere entity identified for the location of your Machine on www.JDLink.com.	The John Deere entity identified for the location of your Machine on www.JDLink.com.

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Contents

Page

Safety—Safety and Operator Conveniences
Safety and Operator Convenience Features 1-1-1

Safety—General Precautions
Information for European Union Directives and Eurasian Economic Union Technical Regulations Compliance 1-2-1
Recognize Safety Information 1-2-2
Follow Safety Instructions.....1-2-3
Operate Only If Qualified 1-2-3
Wear Protective Equipment.....1-2-3
Avoid Unauthorized Machine Modifications.....1-2-4
Inspect Machine 1-2-4
Stay Clear of Moving Parts.....1-2-4
Avoid High-Pressure Fluids 1-2-5
Avoid High-Pressure Oils 1-2-5
Work In Ventilated Area.....1-2-5
Avoid Static Electricity Risk When Refueling.....1-2-6
Prevent Fires 1-2-6
In Case of Machine Fire 1-2-7
Prevent Battery Explosions 1-2-7
Handle Chemical Products Safely 1-2-7
Decommissioning — Proper Recycling and Disposal of Fluids and Components 1-2-8
Exhaust Filter Ash Handling and Disposal 1-2-8
Prepare for Emergencies.....1-2-8
Clean Debris from Machine 1-2-9
Add Cab Guarding for Special Uses.....1-2-9

Safety—Operating Precautions
Use Steps and Handholds Correctly 1-3-1
Start Only From Operator's Seat 1-3-1
Use and Maintain Seat Belt.....1-3-1
Prevent Unintended Machine Movement 1-3-1
Avoid Work Site Hazards.....1-3-2
Keep Riders Off Machine 1-3-2
Avoid Backover Accidents 1-3-3
Avoid Machine Tip Over and Machine Damage.....1-3-4
Use Special Care When Operating 1-3-4
Inspect and Maintain ROPS 1-3-5
Travel Safely.....1-3-5
Add and Operate Attachments Safely 1-3-5
Prevent Acid Burns.....1-3-6

Page

Safety—Maintenance Precautions
Park and Prepare for Service Safely 1-4-1
Service Cooling System Safely 1-4-1
Remove Paint Before Welding or Heating.....1-4-2
Make Welding Repairs Safely 1-4-2
Drive Metal Pins Safely 1-4-2
Clean Exhaust Filter Safely 1-4-3

Safety—Safety Signs and Other Instructions
Safety Signs and Other Instructions.....1-5-1

Operation—Operator's Station
Standard Display Monitor (SDM) Functions 2-1-1
Sealed Switch Module (SSM) Functions 2-1-4
Transmission Control Lever.....2-1-6
Blade Control Lever.....2-1-6
Auxiliary Control Levers—If Equipped.....2-1-7
Using Park Lock Levers.....2-1-8
Heating and Air Conditioning System—If Equipped 2-1-8
Seat Adjustment 2-1-9
Seat Heater—If Equipped.....2-1-9
Under Seat Heater—If Equipped.....2-1-10
Windshield Wipers and Washers—If Equipped 2-1-11
Work and Drive Lights 2-1-12
Reversing Fan—If Equipped 2-1-13
Horn.....2-1-13
Dome Light—If Equipped 2-1-14
Radio—If Equipped 2-1-15
Auxiliary Power Outlets 2-1-17
Door Latch—If Equipped 2-1-17
Secondary Exits—If Equipped.....2-1-18
Cab Windows—If Equipped.....2-1-19
Fire Extinguisher Mounting Location 2-1-19
Beacon Light—If Equipped.....2-1-20

Operation—Operating the Machine
Before Starting Work 2-2-1
Inspect Machine Daily Before Starting 2-2-1
Check Instruments Before Starting.....2-2-2
Battery Disconnect Switch.....2-2-2
Engine Break-In Period 2-2-3
Engine Block Heater—If Equipped.....2-2-3

Continued on next page

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Page

Starting the Engine 2-2-4
Engine Warm-Up 2-2-5
Cold Weather Warm-Up 2-2-6
Driving the Machine 2-2-7
Setting Travel Speed 2-2-8
Setting Engine Speed 2-2-8
Auto-Idle Operation 2-2-9
Economy (ECO) Mode Operation 2-2-9
Decelerator/Brake Pedal and Decelerator Mode Switch 2-2-10
Stopping the Machine 2-2-11
Parking the Machine 2-2-12
Hydraulic System Pressure Release 2-2-14
Blade Release 2-2-15
Exhaust Filter 2-2-16
Selective Catalytic Reduction (SCR) System Overview 2-2-18
Qualified Emergency Use — SCR Override Option 2-2-20
Service ADVISOR™ Remote (SAR) Software Delivery Process 2-2-21
Operating in Water and Mud 2-2-21
Operating on Steep Hills 2-2-22
Avoid Track Damage 2-2-22
Extend Undercarriage Life 2-2-22
Hydraulics Enable—If Equipped 2-2-23
Operating Blade 2-2-24
Changing Blade Pitch 2-2-25
Operating IGC System—Topcon Factory Installation, If Equipped 2-2-26
Ripper Operation—If Equipped 2-2-27
Operating Winch—If Equipped 2-2-28
Fasten Cable to Winch Drum—4000S Series 2-2-29
Winch Free Spool Drag Adjustment 2-2-32
Loading Machine on a Trailer 2-2-33
Lifting the Machine 2-2-34
Releasing Park Brake to Tow the Machine 2-2-35

Operation—Monitor Operation

Standard Display Monitor (SDM) 2-3-1
Main Menu, SDM 2-3-2
Operation—Job Timer, SDM 2-3-2
Operation—Exhaust Filter, SDM 2-3-3
Operation—Exhaust Filter Auto Cleaning, SDM 2-3-3
Operation—Exhaust Filter Parked Cleaning, SDM 2-3-4
Operation—Exhaust Filter Emergency Override, SDM 2-3-5
Operation—Software Update, SDM 2-3-5
Diagnostics—Codes, SDM 2-3-6
Diagnostics—Machine Readings, SDM 2-3-6
Diagnostics—Engine Readings, SDM 2-3-7
Diagnostics—Transmission Readings, SDM 2-3-7
Diagnostics—JDLink Readings, SDM 2-3-8
Diagnostics—Controller Info, SDM 2-3-8
Diagnostics—Machine ID, SDM 2-3-9

Page

Setup—Monitor, SDM 2-3-9
Setup—Security, SDM 2-3-10
Setup—Preferences, SDM 2-3-11

Maintenance—Machine

Required Emission-Related Information 3-1-1
Diesel Fuel 3-1-1
Diesel Fuel Specifications 3-1-2
Lubricity of Diesel Fuel 3-1-2
Handling and Storing Diesel Fuel 3-1-2
Biodiesel Fuel 3-1-3
Testing Diesel Fuel 3-1-4
Supplemental Diesel Fuel Additives 3-1-4
Fuel Filters 3-1-4
Minimizing the Effect of Cold Weather on Diesel Engines 3-1-5
Diesel Exhaust Fluid (DEF) — Use in Selective Catalytic Reduction (SCR) Equipped Engines 3-1-6
Refilling Diesel Exhaust Fluid (DEF) Tank 3-1-7
Testing Diesel Exhaust Fluid (DEF) 3-1-8
Storing Diesel Exhaust Fluid (DEF) 3-1-8
Disposal of Diesel Exhaust Fluid (DEF) 3-1-9
John Deere Break-In Plus™ Engine Oil — Interim Tier 4, Final Tier 4, Stage IIIB, Stage IV, and Stage V 3-1-9
Diesel Engine Oil — Interim Tier 4, Final Tier 4, Stage IIIB, Stage IV, and Stage V 3-1-10
Engine Oil and Filter Service Intervals — Interim Tier 4, Final Tier 4, Stage IIIB, Stage IV, and Stage V Engines 3-1-11
Oil Filters 3-1-11
Diesel Engine Coolant (engine with wet sleeve cylinder liners) 3-1-12
Water Quality for Mixing with Coolant Concentrate 3-1-13
Operating in Warm Temperature Climates 3-1-13
Testing Coolant Freeze Point 3-1-14
Disposing of Coolant 3-1-14
Alternative and Synthetic Lubricants 3-1-15
Final Drive Oil 3-1-15
Hydraulic and Hydrostatic Oil 3-1-16
Track Rollers, Front Idler, and Carrier Roller Oil 3-1-17
Winch Oil 3-1-17
Multipurpose Extreme Pressure (EP) Grease 3-1-18
Lubricant Storage 3-1-18
Mixing of Lubricants 3-1-18

Maintenance—Periodic Maintenance

Service Machine at Specified Intervals 3-2-1
Prepare Machine for Maintenance 3-2-1
Check Hour Meter Regularly 3-2-2
Fuel Tank 3-2-3

Continued on next page

Page

Fluid Analysis Program Test Kits and 3-Way Coolant Test Kit....3-2-3
Service Intervals....3-2-4
Required Parts....3-2-6

Maintenance—As Required
Inspect and Clean Cooling Package....3-3-1
Inspect or Replace Belt and Check Automatic Belt Tensioner....3-3-2
Check and Drain Primary Fuel Filter and Water Separator....3-3-3
Check and Drain Auxiliary Fuel Filter and Water Separator—If Equipped....3-3-3
Inspect and Replace Cab Fresh Air and Recirculation Filter Elements....3-3-4
Check and Fill Windshield Washer Fluid....3-3-4
Replace Primary and Secondary Engine Air Filter Elements....3-3-5
Check Air Cleaner Dust Unloader Valve....3-3-6
Track Sag General Information....3-3-7
Check and Adjust Track Sag....3-3-8
Service Exhaust Filter....3-3-11
Check and Clean Engine Air Filter Precleaner....3-3-11
Clean and Tighten Battery Terminals....3-3-12

Maintenance—Every 10 Hours or Daily
Check Coolant Level at Surge Tank....3-4-1
Check Engine Oil Level....3-4-2
Check Hydraulic/Hydrostatic System Oil Level....3-4-3
Lubricate Dozer Linkage and Blade Socket....3-4-4

Maintenance—Every 50 Hours
Lubricate Rear Ripper—If Equipped....3-5-1

Maintenance—Every 250 Hours
Check Final Drive Oil Level....3-6-1
Take Engine Oil Sample....3-6-1

Maintenance—Every 500 Hours
Drain and Refill Engine Oil and Replace Filter....3-7-1
Replace Primary and Final Fuel Filters....3-7-2
Replace Auxiliary Fuel Filter—If Equipped....3-7-3
Replace Winch Oil Filter—If Equipped....3-7-4
Drain Water and Sediment From Fuel Tank....3-7-5
Check Hybrid Battery Electrolyte Level—If Equipped....3-7-6
Take Fluid Samples....3-7-7
Check Blade Shim Adjustment....3-7-8

Maintenance—Every 1000 Hours
Replace Cab Fresh Air and Recirculation Filters....3-8-1
Drain and Refill Final Drive Oil....3-8-2

Page

Clean or Replace Winch Hydraulic Breather Filter—If Equipped....3-8-2
Drain and Refill Winch Oil and Replace Filter—If Equipped....3-8-3
Check Air Intake Hoses and Connections....3-8-4
Check Coolant Condition....3-8-5

Maintenance—Every 2000 Hours
Access Diesel Exhaust Fluid (DEF) Dosing Unit Filter....3-9-1
Replace Diesel Exhaust Fluid (DEF) Dosing Unit Filter....3-9-1
Replace Open Crankcase Ventilation (OCV) Filter....3-9-2
Drain and Refill Hydraulic System Oil and Replace Filters....3-9-3
Replace Fuel Tank Breather....3-9-4

Maintenance—Every 3000 Hours
Check and Adjust Engine Valve Lash....3-10-1

Maintenance—Every 4000 Hours
Replace Diesel Exhaust Fluid (DEF) Baffle....3-11-1
Replace Diesel Exhaust Fluid (DEF) Header Suction Filter....3-11-1
Clean Diesel Exhaust Fluid (DEF) Tank....3-11-1
Replace Diesel Exhaust Fluid (DEF) Tank Breather....3-11-1

Maintenance—Every 6000 Hours
Drain and Refill Engine Cooling System....3-12-1

Miscellaneous—Machine
Replace Coolant In-Line Filter....4-1-1
Opening and Closing the Grille....4-1-2
Remove Operator's Station Floor Plate....4-1-3
Operator's Seat Tilting Procedure....4-1-4
Check Air Inlet Cover....4-1-5
Replacing Fuses....4-1-6
Checking Park Lock Start System....4-1-7
Checking Transmission Start System....4-1-7
Lubricating Door Latches—If Equipped....4-1-8
Drain Fuel From Fuel Tank....4-1-8
Bleed Fuel System....4-1-9
Fluid Sampling Test Ports—If Equipped....4-1-10
Quick Service Connectors—If Equipped....4-1-10
JDLink™ Machine Monitoring System (MMS)—If Equipped....4-1-11
Keep Electronic Control Unit Connectors Clean....4-1-11
Do Not Service or Adjust Injection Nozzles or Injection Pump....4-1-11
Do Not Service Control Valves, Cylinders, Pumps, or Motors....4-1-11
Precautions for Alternator and Regulator....4-1-12

Continued on next page

Page

Handling, Checking, and Servicing Batteries Carefully....4-1-13
Using Battery Charger....4-1-14
Using Booster Batteries—24-Volt System....4-1-15
Replacing and Removing Batteries....4-1-16
Keep ROPS Installed Properly....4-1-17
Track Shoe Cap Screw Torque....4-1-18
Checking Carrier Roller Oil Level....4-1-19
Checking Idlers and Rollers for Oil Leakage....4-1-19
Welding Near Electronic Control Units....4-1-20
Welding on Machine....4-1-20
Replacing Ripper Teeth—If Equipped....4-1-21
Hardware Torque Specifications....4-1-21
Unified Inch Bolt and Screw Torque Values....4-1-22
Metric Bolt and Screw Torque Values....4-1-23

Miscellaneous—Operational Checkout
Operational Checkout....4-2-1

Miscellaneous—Troubleshooting
Troubleshooting Procedure....4-3-1
Engine....4-3-2
Electrical System....4-3-6
Hydraulic System....4-3-8
Hydrostatic Transmission System....4-3-9
Air Conditioning System....4-3-10
Heater System....4-3-12
Software Update....4-3-12

Miscellaneous—Storage
Prepare Machine for Storage....4-4-1
Monthly Storage Procedure....4-4-2
Preparing Engine for Long-Term Storage....4-4-3
Removing Engine From Long-Term Storage....4-4-4

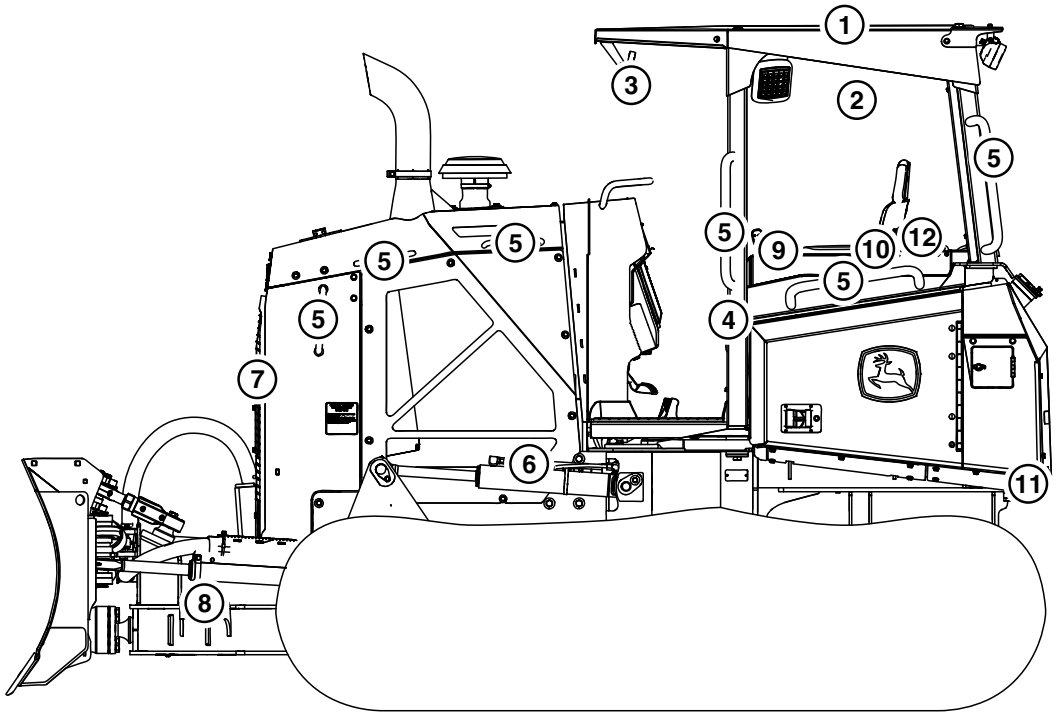
Miscellaneous—Machine Numbers
Record Product Identification Number (PIN)....4-5-1
Record Engine Serial Number....4-5-1
Keep Proof of Ownership....4-5-1
Keep Machines Secure....4-5-1

Miscellaneous—Specifications
550K XLT Crawler Dozer Dimensions....4-6-1
550K XLT Crawler Dozer Specifications....4-6-3
550K XLT Crawler Dozer Weights....4-6-4
550K LGP Crawler Dozer Dimensions....4-6-5
550K LGP Crawler Dozer Specifications....4-6-7
550K LGP Crawler Dozer Weights....4-6-8
550K XLT and 550K LGP Crawler Dozer Drain and Refill Capacities....4-6-9
650K XLT Crawler Dozer Dimensions....4-6-10
650K XLT Crawler Dozer Specifications....4-6-13
650K XLT Crawler Dozer Weights....4-6-14
650K LGP Crawler Dozer Dimensions....4-6-15
650K LGP Crawler Dozer Specifications....4-6-18
650K LGP Crawler Dozer Weights....4-6-19
650K XLT and 650K LGP Crawler Dozer Drain and Refill Capacities....4-6-20

Page

Parallelogram Ripper....4-6-21
4000S Winch....4-6-22
Eurasian Economic Union....4-6-22
Machine Design Life....4-6-22

Safety and Operator Convenience Features



TX1175556 —UN—28OCT14

TX1175556

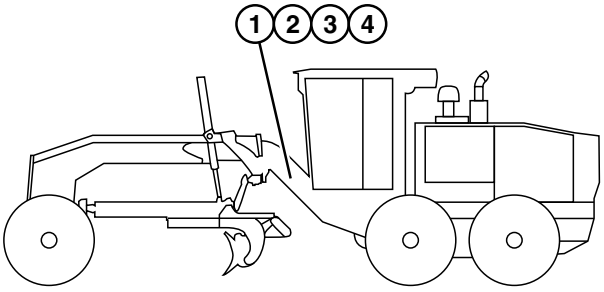
Safety Features (650K shown)

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

1. **ROPS, FOPS, and OPS.** Structures designed to help protect the operator are certified by ISO and OSHA. Enclosures also deflect sun and rain.
2. **Pressurized Cab (if equipped).** Positive pressure ventilation system circulates both outside and inside air through filters for a cleaner working environment. Built-in defroster vents direct air flow for effective window defogging/deicing.
3. **Interior Rear View Mirror.** Mirror offers operator a broad view of area behind machine.
4. **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.
5. **Handholds.** Large, conveniently placed handholds help operator 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. **Neutral Start.** Neutral start feature prevents the engine from being started unless transmission control lever is in neutral.
10. **Automatic Seat Belt Retractors.** Seat belt retractors help keep belts clean and convenient to use.
11. **Backup Alarm.** 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.

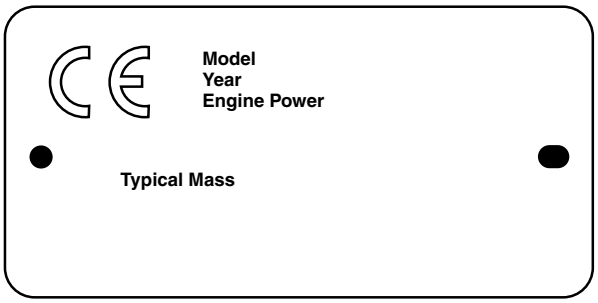
CN93077,000043D -19-05DEC14-1/1

Information for European Union Directives and Eurasian Economic Union Technical Regulations Compliance



TX1193626 —UN—14MAY15

Motor Grader



TX1066144 —UN—19OCT09

CE Mark



TX1066156 —UN—15OCT09

PIN Plate



TX1252152 —UN—09FEB18

EAC Marking

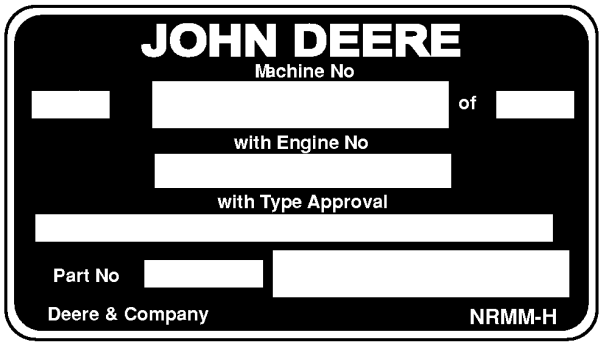
To the Customer

Effective June, 2006, all machines sold in the European Union must comply with the machinery directive 2006/42/EC and any amendments. Each machine meeting these requirements must bear the conformity mark CE. In addition, each machine must be accompanied with a Declaration of Conformity by the machine manufacturer. This declaration must be kept with the machine at all times and does not declare conformity to national road regulations.

Effective February 15, 2013, all machines sold in the Eurasian Economic Union must comply with the Technical Regulations of the Eurasian Economic Union TR TS 010/2011 “On Safety of machinery and Equipment.” Each machine meeting these requirements must bear the EAC Marking.

NOTE: This machine may need country approval for travel on public roads in Europe as some European countries require special equipment and approvals.

Product Identification Number (PIN), CE Mark, EAC Marking, and EU Flex Label Locations



TX1066630 —UN—21OCT09

EU Flex Label

1— PIN Plate
2— CE Mark (if required)
3— EAC Marking (if required)
4— EU Flex Label (if required)

The machine is identified by the PIN that is stamped on a serial number plate. The PIN plate (1), CE Mark or EAC Marking, and if required, EU flex label are located on the machine as indicated in the machine image.

Continued on next page

NOTE: If this machine was certified (homologated) to the requirements of the European Union, there will be a CE mark affixed in indicated area (2). If required this machine will also be affixed with an EU Flex label (4) beside the CE mark in the indicated area.

If this machine was certified (homologated) to the requirements of the Eurasian Economic Union, there will be a EAC marking (3) affixed in the indicated area.

Sound and Vibration Specifications

Model	**550K**	**650K**
Operator sound pressure and exterior sound power levels are:		
Cab	71 dB(A) and 109 dB(A) or less *	71 dB(A) and 109 dB(A) or less *
NOTE: Factors affecting listed values include operator performance, machine age, seat condition, the use of accessories, environment, and any machine movement. *(*) Data acquisition system precision values with a 2% technical uncertainty.* Sound levels were obtained using the test method specified per ISO 6396:2008 and ISO 6395:2008, respectively.		
Eurasian Economic Union Operator vibration levels are for properly maintained machines operating on a flat dirt area free of large objects such as trees and rocks. Whole body vibration levels were obtained using the test method specified per GOST 31191.1:2004.		
Whole Body		
Hand Arm		
NOTE: Factors affecting listed values include operator performance, machine age, the condition of window and door seals, the use of accessories, environment, and any machine movement.		
European Union Operator vibration levels are for properly maintained machines operating on a flat dirt area free of large objects such as trees and rocks. Vibration levels were obtained using the test method specified per ISO 2631-1:1997 or ISO TR 25398 where applicable.		
Whole Body	0.6 m/s^2 or less	0.6 m/s^2 or less
Hand Arm	2.5 m/s^2 or less	2.5 m/s^2 or less
NOTE: Factors affecting listed values include operator performance, machine age, the condition of window and door seals, the use of accessories, environment, and any machine movement.		

MB60223,000506D -19-16APR18-2/2

Recognize Safety Information

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

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

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

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



T133555 —UN—15APR13

T133588 —19—28AUG00

TX,RECOGNIZE -19-28JUN10-1/1

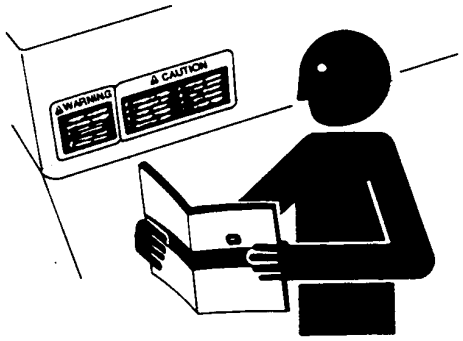
Follow Safety Instructions

Carefully read all safety messages in this manual and on your machine safety signs. Keep safety signs in good condition. Replace missing or damaged safety signs. 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.



TS201 —UN—15APR13

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

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

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.

TX,QUALIFIED -19-18JAN11-1/1

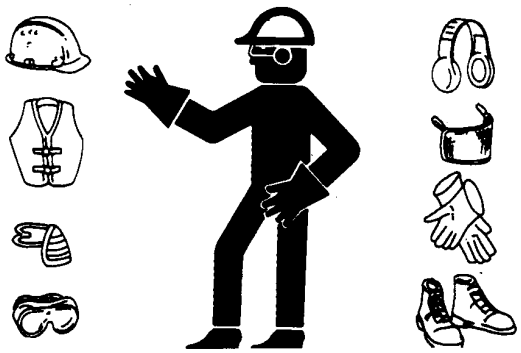
Wear Protective Equipment

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

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

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

Prolonged exposure to loud noise can cause impairment or loss of hearing. Wear suitable hearing protection such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises. Radio or music headphones are not suitable to use for hearing protection.



TS206 —UN—15APR13

TX,WEAR,PE -19-22SEP10-1/1

Avoid Unauthorized Machine Modifications

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

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

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

AM40430,00000A9 -19-02JUN15-1/1

Inspect Machine

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

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



T6607AQ —UN—15APR13

TX,INSPECT -19-08SEP10-1/1

Stay Clear of Moving Parts

Entanglements in moving parts can cause serious injury.

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

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



T133592 —UN—15APR13

TX,MOVING,PARTS -19-20JAN11-1/1

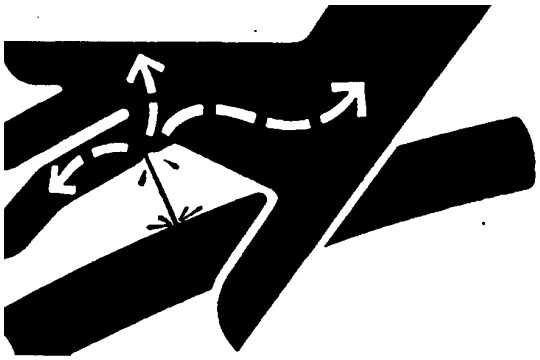
Avoid High-Pressure Fluids

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

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

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

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



X9811 —UN—23AUG88

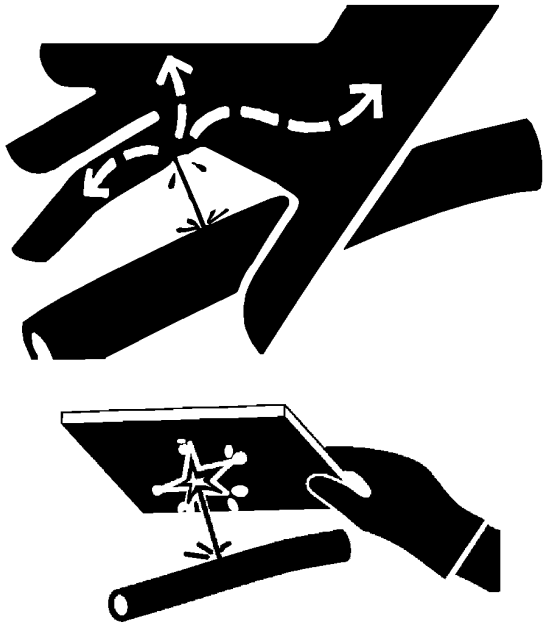
DX,FLUID -19-06OCT16-1/1

Avoid High-Pressure Oils

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

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

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



T133509 —UN—15APR13

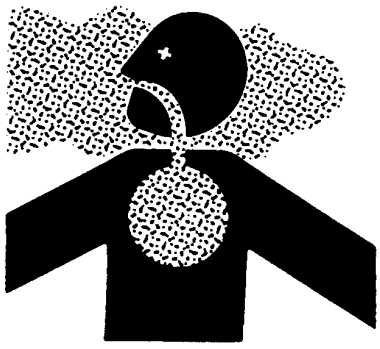
T133840 —UN—20SEP00

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

Work In Ventilated Area

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

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



TS220 —UN—15APR13

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

Avoid Static Electricity Risk When Refueling

The removal of sulfur and other compounds in Ultra-Low Sulfur Diesel (ULSD) fuel decreases its conductivity and increases its ability to store a static charge.

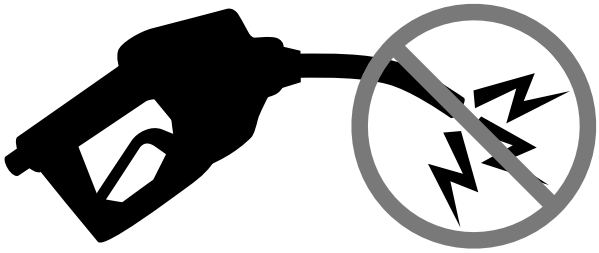
Refineries may have treated the fuel with a static dissipating additive. However, there are many factors that can reduce the effectiveness of the additive over time.

Static charges can build up in ULSD fuel while it is flowing through fuel delivery systems. Static electricity discharge when combustible vapors are present could result in a fire or explosion.

Therefore, it is important to ensure that the entire system used to refuel your machine (fuel supply tank, transfer pump, transfer hose, nozzle, and others) is properly grounded and bonded. Consult with your fuel or fuel system supplier to ensure that the delivery system is in compliance with fueling standards for proper grounding and bonding practices.



RG22142 —UN—17MAR14



RG21992 —UN—21AUG13

DX,FUEL,STATIC,ELEC -19-12JUL13-1/1

Prevent Fires

Handle Fluids Safely: All fuels, most lubricants, and some coolant mixtures are flammable. Store flammable fluids away from fire hazards. Never refuel machine while smoking or when near sparks or flame.

Clean Machine Regularly: Keep flammable debris (trash, leaves, twigs, straw, and so forth), 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, Tubes, and Wiring: Replace hoses and tubes 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 an extinguisher properly.

Be Aware of the Operating Environment: Airborne debris may contain sparks or embers. Do not operate near any flame.



T133552 —UN—15APR13

T133553 —UN—07SEP00



T133554 —UN—07SEP00



TX,PREVENT,FIRE -19-09JUN16-1/1

In Case of Machine Fire

CAUTION: Avoid personal injury from exposed flames. Maintain safe distance.

- Turn the engine off.
- Turn the battery disconnect switch to the OFF position (if equipped).
- If possible, fight the fire using the portable fire extinguisher or other fire suppression equipment (if equipped).
- Ensure that the fire does not spread to the surrounding area. Do not risk injury. If a fire is too far advanced, do not try to extinguish fire.
- Call for help.



TS227 —UN—15APR13

In Case of Machine Fire

TX,MACH,FIRE -19-24FEB20-1/1

Prevent 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 voltmeter or hydrometer.

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

Keep battery electrolyte levels properly maintained.



TS204 —UN—15APR13

Battery Explosions

TX,PREVENT,BATT -19-24FEB20-1/1

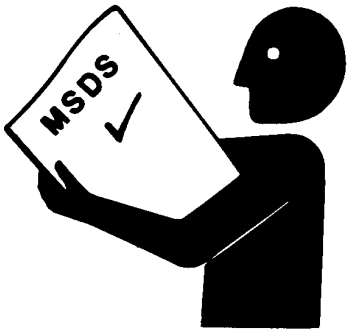
Handle Chemical Products Safely

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.)



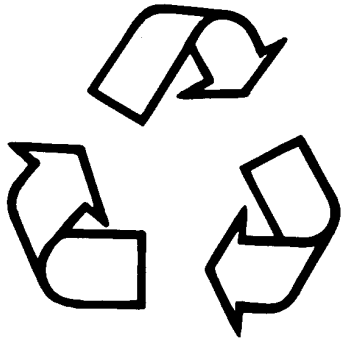
TS1132 —UN—15APR13

DX,MSDS,NA -19-03MAR93-1/1

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

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.

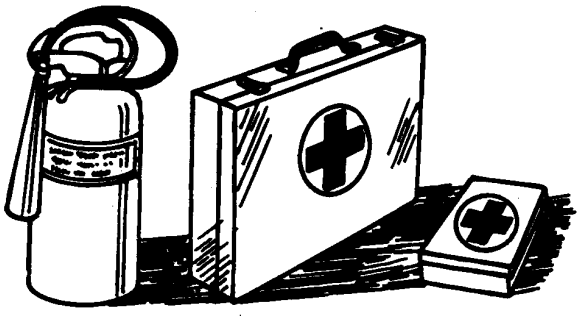
TX,ASH,DISP -19-20JAN11-1/1

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

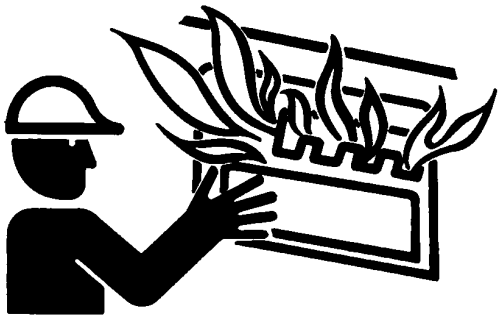
Clean Debris from Machine

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.



T6669AG —UN—15APR13

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

Add Cab Guarding for Special Uses

Special work situations or machine attachments could create an environment with falling or flying objects. Working near an overhead bank, demolition work, using a hydraulic hammer or winch, working in a forestry application or wooded area, or working in a waste management application, for example, could require added guarding to protect the operator.

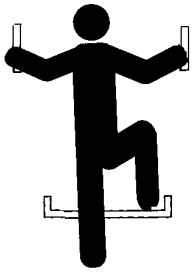
Additional level II FOPS (falling object protective structure), forestry protection packages, and special screens or guarding should be installed when falling or flying objects could enter or damage the machine. A rear screen should always be used with a winch to protect against a snapping cable. Before operating in any special work environments, follow the operator protection recommendations of the manufacturer of any specialized attachment or equipment. Contact your authorized John Deere dealer for information on protective guarding.

TX,CABGUARD -19-12FEB13-1/1

Use Steps and Handholds Correctly

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

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



T133468 —UN—15APR13

TX,STEPS -19-09FEB11-1/1

Start Only From Operator's 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.



T133715 —UN—15APR13

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

Use and Maintain Seat Belt

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

Examine seat belt frequently. Be sure 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 3 years, regardless of appearance.



Use and Maintain Seat Belt

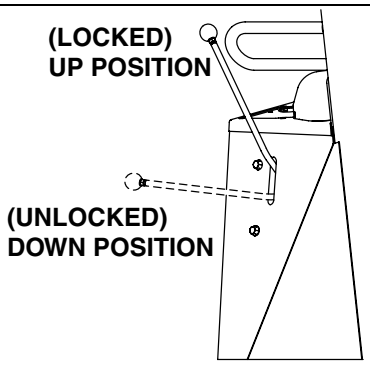
TX1165594 —19—23JUL14

CN93077,0000340 -19-05FEB19-1/1

Prevent Unintended Machine Movement

Always move the park lock levers to the up (locked) position before leaving the operator's seat for any reason.

Be careful not to accidentally actuate controls when coworkers are present. Engage park lock and lower work equipment to the ground during work interruptions. Stop the engine before allowing anyone to approach the machine. Follow these same precautions before standing up, leaving the operator's seat, or exiting the machine.



T207688 —19—31JAN05

ER79617,0000CF9 -19-30NOV10-1/1

Avoid Work Site Hazards

Before digging, check local requirements and call utility line location services to identify and mark all underground utilities in digging area before starting work. Avoid contact with gas lines, buried cables and water lines.

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.

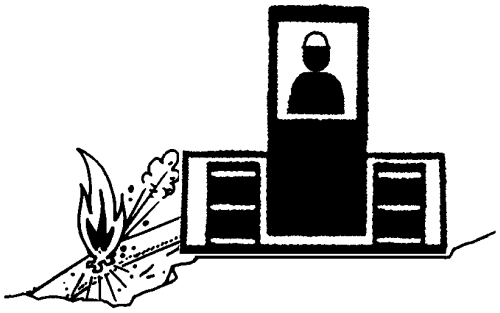
Avoid boom or attachment contact with overhead obstacles or overhead electrical lines. Never move machine closer than 3 m (10 ft) plus twice the line insulator length to overhead wires.

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.



T139002 —UN—05MAR01

Contact With Gas Line

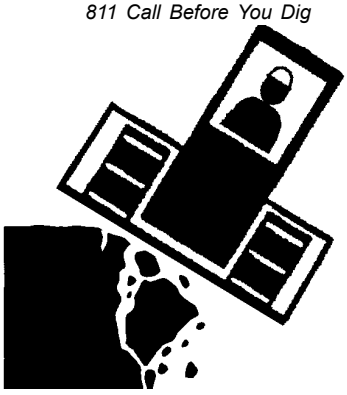


811 Know what's below. Call before you dig.

(USA only)
1-888-258-0808
(USA & Canada)

TX1286211 —UN—03OCT19

811 Call Before You Dig



T139003 —UN—05MAR01

Only on Solid Footing

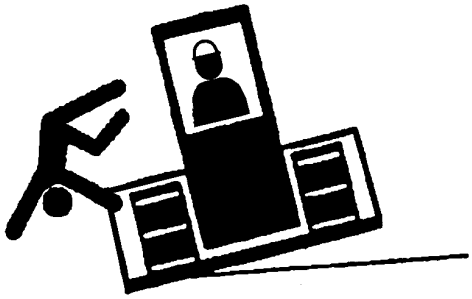
VD76477,000135C -19-04OCT19-1/1

Keep Riders Off Machine

Only allow operator on machine.

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

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



T137580 —UN—22FEB01

Keep Riders Off Machine

TX03768,0000B73 -19-03JUN15-1/1

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, if equipped, to determine if personnel are behind the machine. The system has limitations due to maintenance practices, environmental conditions, and operating range.



PC10857XW —UN—15APR13

TX,AVOID,BACKOVER -19-04MAR16-1/1

Avoid Machine Tip Over and Machine Damage

Use seat belt at all times.

Do not jump if the machine tips. Operator is unlikely to jump clear and may be crushed by machine.

Load and unload from trucks or trailers carefully. Be sure truck is wide enough and secured on a firm, level surface. Use loading ramps and attach them properly to truck bed. Avoid trucks with steel beds because tracks slip more easily on steel.

Be careful on slopes. Use extra care on soft, rocky, or frozen ground because machine may slip sideways in these conditions. When traveling up or down steep slopes, keep the bucket or blade on uphill side and just above ground level.

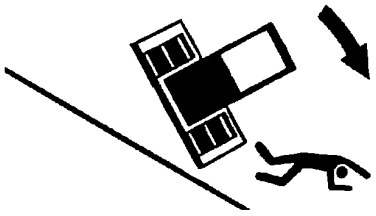
Ensure solid footing. Use extra care when operating on stockpile materials or near banks or excavations that may cave in and cause machine to tip or fall.

Avoid machine damage on slopes. Use extra care to operate machine.



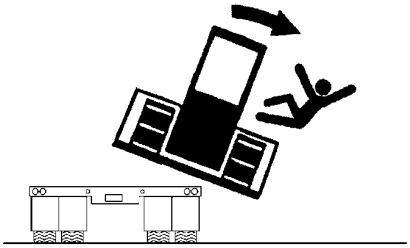
TX1165594 —19—23JUL14

Use Seat Belt



T138416 —UN—22FEB01

Do Not Jump if Machine Tips



T138415 —UN—22FEB01

Load and Unload From Trucks or Trailers Carefully



TX1165684 —UN—17JUL14

Be Careful on Slopes

CN93077,0000342 -19-05FEB19-1/1

Use Special Care When Operating

Never use the attachment to lift people. Do not allow anyone to ride on attachment or use it as a work platform.

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

Be careful when lifting loads. Never attempt to lift loads too heavy for machine. Ensure machine stability and hydraulic capability with a test lift before attempting other maneuvers. Keep bystanders away from raised loads.

DB84312,00000CA -19-21JAN16-1/1

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.

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

Travel Safely

When working on steep slopes, travel as straight up and down as possible to prevent roll-over.

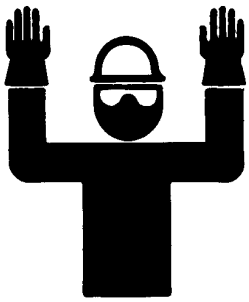
DO NOT PARK ON A HILLSIDE OR AN INCLINE.

Always park the machine on level ground.

Know the location of bystanders before moving the machine.

Always keep the reverse warning alarm in working condition. The alarm warns bystanders when the machine starts to move in reverse.

Use a signal person when moving the machine in congested areas. Coordinate hand signals before starting the machine.



T6964AD —UN—20DEC88

Travel Safely

CN93077,00000B3 -19-01JUL15-1/1

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.

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

Prevent Acid Burns

Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, eat holes in clothing, and cause blindness if splashed into eyes.

Avoid the hazard by:

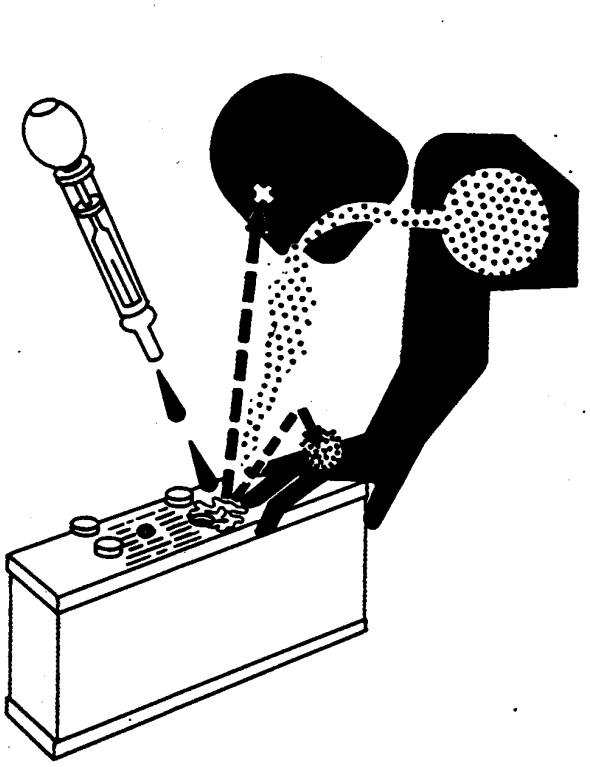
1. Filling batteries in a well-ventilated area.
2. Wearing eye protection and rubber gloves.
3. Avoiding breathing fumes when electrolyte is added.
4. Avoiding spilling or dripping electrolyte.
5. Use proper jump start procedure.

If you spill acid on yourself:

1. Flush your skin with water.
2. Apply baking soda or lime to help neutralize the acid.
3. Flush your eyes with water for 15—30 minutes. Get medical attention immediately.

If acid is swallowed:

1. Do not induce vomiting.
2. Drink large amounts of water or milk, but do not exceed 2 L (2 quarts).
3. Get medical attention immediately.



TS203 —UN—23AUG88

DX,POISON -19-21APR93-1/1

Park and Prepare for Service Safely

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

- Park machine on a level surface and lower blade and attachments to the ground.
- Place park lock lever(s) in “up” (locked) position. Stop engine.
- Attach a “Do Not Operate” tag in an obvious place in the operator's station.

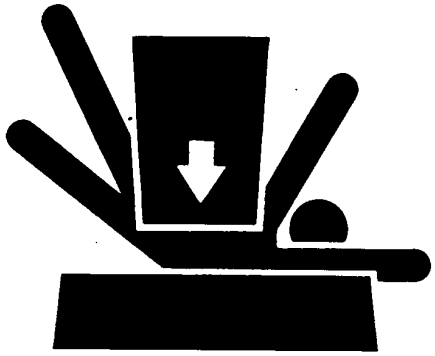
Securely support machine or attachment before working under it.

- Do not support machine with blade or attachments.
- Do not support machine with cinder blocks or wooden pieces that may crumble or crush.
- Do not support machine with a single jack or other devices that may slip out of place.

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



T133332 —19—17APR13



TS229 —UN—23AUG88

TX,PARK,CRW -19-30JAN12-1/1

Service Cooling System Safely

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

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



TS281 —UN—15APR13

TX,SURGE -19-19JAN11-1/1

Remove Paint Before Welding or Heating

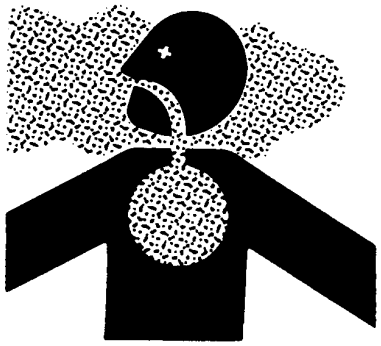
Avoid potentially toxic fumes and dust.

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

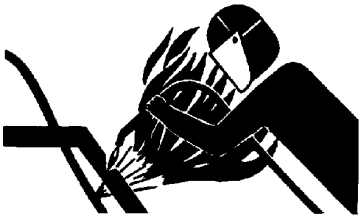
Make Welding Repairs Safely

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. Use a qualified welding technician for structural repairs.



T133547 —UN—15APR13

Heating Near Pressurized Fluid Lines

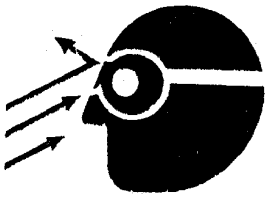
Make sure there is good ventilation. Wear eye protection and protective equipment when welding.

MB60223,0000212 -19-02JUL15-1/1

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

Clean Exhaust Filter Safely

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.

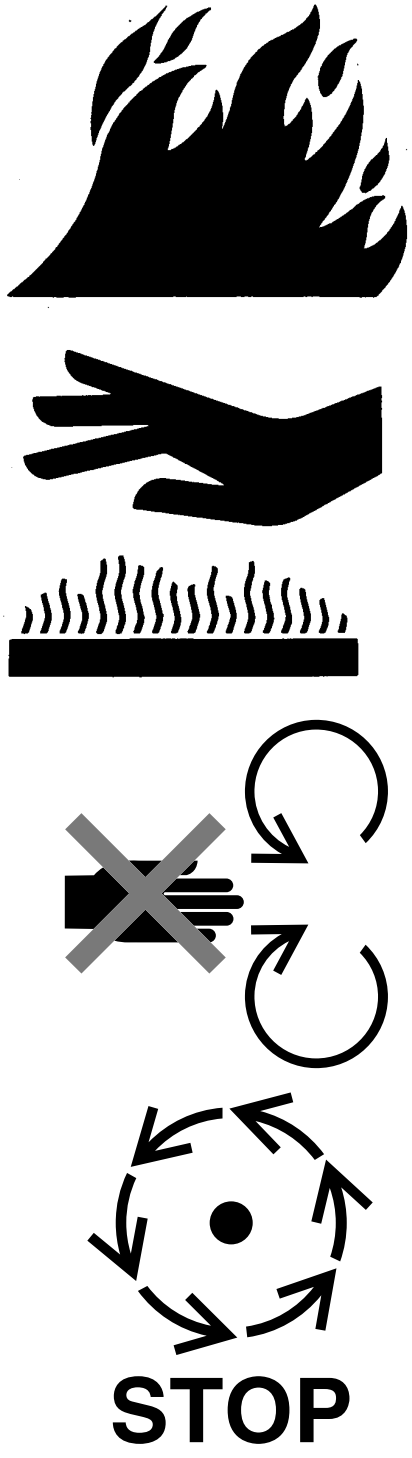
If service procedure requires engine to be running:

- 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.



TS227 —UN—15APR13

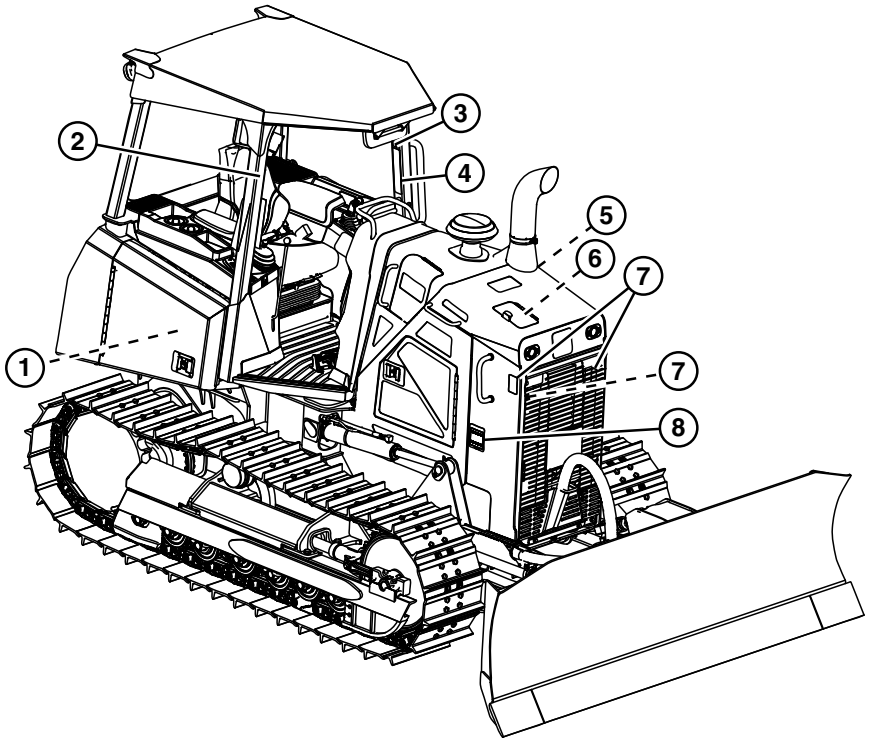
TS271 —UN—23AUG88

TS1693 —UN—09DEC09

TS1695 —UN—07DEC09

DX,EXHAUST,FILTER -19-12JAN11-1/1

Safety Signs and Other Instructions



TX1178465

TX1178465 —UN—21NOV14

Safety Signs

1— WARNING, Avoid Injury From Escaping Fluid
2— WARNING, Use Seat Belt
3— Protective Structure Certification
4— CAUTION, Avoid Death or Serious Injury
5— DANGER, Start Only From Seat
6— WARNING, Pressurized System
7— WARNING, Rotating Fan
8— Lift and Tiedown

CN93077,000043F -19-10DEC14-1/9

1. **WARNING, Avoid Injury From Escaping Fluid**

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

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

   This label is located inside the right rear service compartment, near pilot control accumulator.



TX1175510 —19—29OCT14

WARNING, Avoid Injury From Escaping Fluid

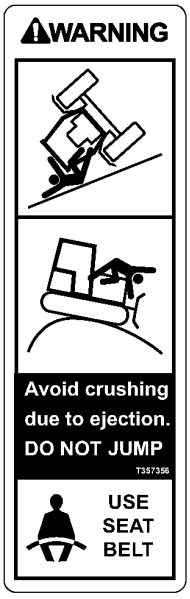
Continued on next page

CN93077,000043F -19-10DEC14-2/9

2. **WARNING, Use Seat Belt**

   A seat belt should be worn at all times during machine operation to prevent serious injury or death in the event of an accident or machine overturn. Failure to wear a seat belt during machine operation may result in serious injury or death.

   This label is located inside the cab or canopy on the right middle ROPS post.



WARNING, Use Seat Belt

TX1165587 —19—28JUL14

CN93077,000043F -19-10DEC14-3/9

3. **Protective Structure Certification**

   To maintain unimpaired operator protection and manufacturer's protective structure certification:

   - Damaged Roll Over Protective Structure (ROPS) or Falling Object Protective Structure (FOPS) must be replaced, not repaired or revised.
   - Any alteration to the ROPS or FOPS must be approved by the manufacturer.

NOTE: Maximum machine weight can be found in the Operator's Manual.

   This label is located inside the cab or canopy on the left middle ROPS post.



Protective Structure Certification

TX1175507 —19—27OCT14

Continued on next page

CN93077,000043F -19-10DEC14-4/9

4. **CAUTION, Avoid Death or Serious Injury**

   AVOID DEATH OR SERIOUS INJURY.

   - Read and understand Operator's manual before operating this machine.
   - Operate machine only from operator's seat.
   - Before leaving operator's seat:
     - Lower equipment to ground.
     - Place transmission in Neutral.
     - Apply the park brake.
     - Stop engine, unless service procedure requires engine to be running.
     - Do not leave running machine unattended.
   - Keep riders off machine.

   This label is located inside the cab or canopy on the left middle ROPS post.



CAUTION, Avoid Death or Serious Injury

TX1160949 —19—22MAY14

CN93077,000043F -19-10DEC14-5/9

5. **DANGER, Start Only From Seat**

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

   This label is located inside the left engine service panel on the starter.



DANGER, Start Only From Seat

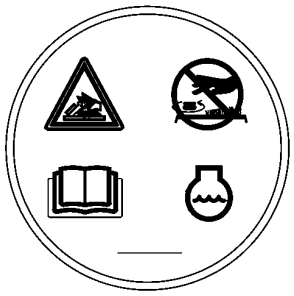
TX1143001 —19—16OCT13

CN93077,000043F -19-10DEC14-6/9

6. **WARNING, Pressurized System**

   Pressurized system. Hot coolant can cause serious burns, injury, or death. To open the cooling system filler cap, stop the engine and wait until the cooling system components are cool. Loosen the cooling system pressure cap slowly in order to relieve the pressure.

   This label is located on the surge tank cap.



WARNING, Pressurized System

TX1099924 —UN—24OCT11

Continued on next page

CN93077,000043F -19-10DEC14-7/9

7. **WARNING, Rotating Fan**

   Avoid rotating fan. Stop engine. Keep clear to avoid serious injury.

   This label is located at the front of the machine inside front grille housing in the upper left and right corners, and on right front outside of machine near grille housing.



WARNING, Rotating Fan

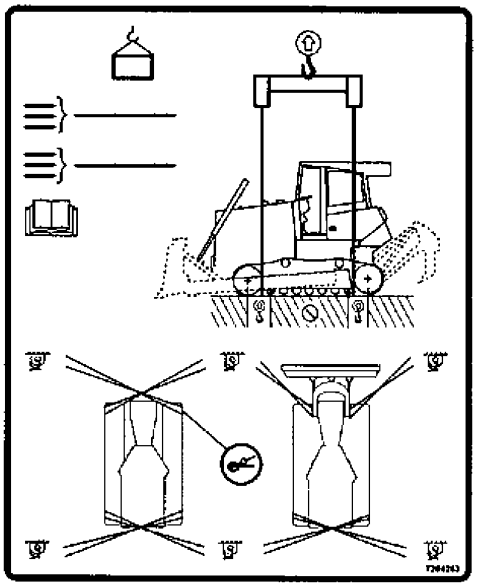
TX1125730 —19—17DEC12

CN93077,000043F -19-10DEC14-8/9

8. **Lift and Tiedown**

   Route appropriate lift and tiedown devices through points identified on this label.

   This label is located on the right front side of the machine.



Lift and Tiedown

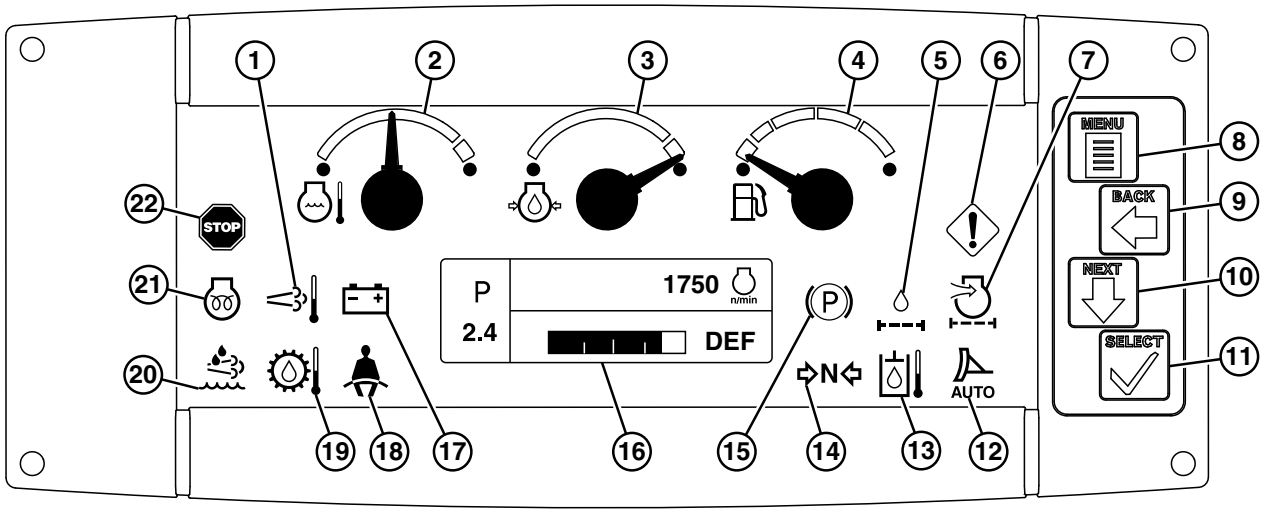
TX1170380 —UN—27AUG14

CN93077,000043F -19-10DEC14-9/9

Standard Display Monitor (SDM) Functions

NOTE: The navigation keys MENU, BACK, NEXT, and SELECT are located at the right side of the standard display monitor (SDM) display.

NOTE: Translations shown on display may be abbreviated.



TX1170526 —UN—02SEP14

TX1170526

Standard Display Monitor (SDM)

1— Exhaust Filter Cleaning Indicator
2— Engine Coolant Temperature Gauge
3— Engine Oil Pressure Gauge
4— Fuel Level Gauge
5— Oil Filter Restriction Indicator
6— Caution Indicator
7— Engine Air Filter Restriction Indicator
8— MENU Button
9— BACK Button
10— NEXT Button
11— SELECT Button
12— Auto Blade Control Indicator (if equipped)
13— Hydraulic Oil Temperature Indicator
14— Return to Neutral Indicator
15— Park Brake Indicator
16— Display
17— Engine Alternator Voltage Indicator
18— Fasten Seat Belt Indicator
19— Transmission Oil Temperature Indicator
20— Diesel Exhaust Fluid (DEF) Indicator
21— Wait to Start Indicator
22— STOP Engine Indicator

NOTE: Battery disconnect switch must be in ON position for monitor to operate.

1—Exhaust Filter Cleaning Indicator

Indicator illuminates when exhaust gas temperature is high, elevated idle is active, or exhaust filter cleaning is in process. Machine can be operated as normal unless operator determines machine is not in a safe location for high exhaust temperatures and disables auto cleaning. When engine emissions temperature indicator is combined with warning indicator or STOP engine indicator, engine performance is reduced by the electronic control unit (ECU) because the exhaust gas temperature is higher than expected. See your authorized dealer.

2—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 your authorized dealer.

3—Engine Oil Pressure Gauge

- Displays current engine oil pressure level when engine is running.

Continued on next page

- 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.

4—Fuel Level Gauge

- Displays current fuel level.
- If fuel level falls below 1/8 full, gauge turns yellow. Always fill tank at end of day to prevent condensation.

5—Oil Filter Restriction Indicator

Indicator illuminates and check service code will pop-up when engine is running and an oil filter becomes restricted. Park machine in a safe area and shut engine off immediately. Check transmission and hydraulic filters for restrictions. Replace filters as necessary.

6—Caution Indicator

Indicator illuminates when a problem is developing. Operator may not need to stop the engine immediately, but the cause should be investigated as soon as possible. See Diagnostics—Codes, SDM. (Section 2-3.)

7—Engine Air Filter Restriction Indicator

Indicator illuminates and STOP engine indicator illuminates when engine is running with restricted engine air filter elements.

8—MENU Button

Provides initial entry into machine settings, diagnostics, and monitor settings. Used to display main menu window.

9—BACK Button

- Cancel an adjustment or calibration and return to previous menu or submenu displayed.
- Toggles between the hour meter, charge pressure, voltmeter, and diesel exhaust fluid (DEF) level displays during normal operation.

10—NEXT Button

- Will move to the next selection within a menu or mode.
- Displays next screen.
- Toggles between the hour meter, charge pressure, voltmeter, and diesel exhaust fluid (DEF) level displays during normal operation.

11—SELECT Button

- Activate current menu function or make selections on individual submenu displays.
- Complete an adjustment or calibration.
- Acknowledge pop-up screens.

NOTE: The auto blade indicator is functional only when third party global positioning system (GPS) and/or laser guidance equipment is installed on machines with integrated grade control (IGC) only.

12—Auto Blade Control Indicator—If Equipped

Indicator illuminates when integrated grade control (IGC) is enabled.

13—Hydraulic Oil Temperature Indicator

IMPORTANT: Prevent machine damage. DO NOT operate machine when hydraulic oil temperature is high.

Indicator illuminates, STOP indicator will flash, and audible alarm will sound indicating that the temperature is over operating temperature. Stop machine and cycle hydraulic functions with no load until temperature lowers. If indicator remains illuminated after several minutes, stop engine. See your authorized dealer.

14—Return to Neutral Indicator

Indicator illuminates when engine start switch has been pressed with park lock levers in up (locked) position and transmission control lever (TCL) is out of neutral (N) position. TCL must be moved back to neutral (N) position for machine movement.

15—Park Brake Indicator

Indicator illuminates when park brake is engaged.

Continued on next page

16—Display

NOTE: Diesel exhaust fluid (DEF) level, hour meter, transmission charge pressure, and system voltage display is located in bottom right corner of the display.

Communicates information to the operator. Messages may be displayed to the user based on any of the following conditions:

Press NEXT to toggle between DEF, hours, transmission charge pressure, and system voltage.

- Diagnostic Trouble Codes (DTCs).
- Changes in any parameter being displayed for machine hours, charge pressure, battery voltage, or engine RPM.
- Operator input via the NEXT, SELECT, MENU, or BACK buttons.
- A command from any other controller for functions related to that device.

17—Engine Alternator Voltage Indicator

Indicator illuminates when battery power supply is limited and when engine start switch is on and engine is not running. Check battery connections.

18—Fasten Seat Belt Indicator

Indicator illuminates and stays on for 5 seconds when the machine is started.

19—Transmission Oil Temperature Indicator

Amber indicator illuminates, STOP indicator will flash, and audible alarm will sound when the temperature is too high. Stop machine and operate engine at fast idle under no load until transmission cools. If indicator remains illuminated after several minutes, stop engine and see your authorized dealer.

20—Diesel Exhaust Fluid (DEF) Indicator

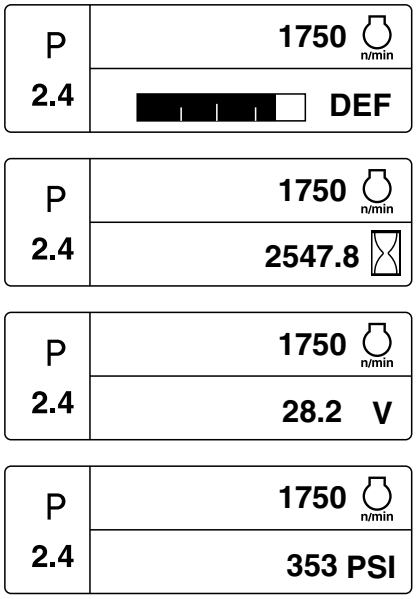
Indicator illuminates when DEF is low. Fill DEF tank.

21—Wait to Start Indicator

Indicator illuminates when engine is cold and switched power is ON. When indicator is no longer illuminated engine can be started. See Starting the Engine. (Section 2-2.)

22—STOP Engine Indicator

IMPORTANT: Avoid machine damage. Stop engine immediately if STOP indicator flashes and alarm sounds indicating a diagnostic trouble code (DTC) has been detected.



Display Screens

TX1170634 —UN—02SEP14

Red indicator flashes and alarm sounds when a diagnostic trouble code (DTC) is detected which requires the engine to be immediately stopped. Diagnostic trouble codes that trigger the STOP indicator include:

- Engine air filter restrictions
- DEF level is low
- Low engine oil pressure
- High engine coolant temperature
- Extremely low coolant pressure
- High hydraulic oil temperature
- High transmission oil
- Fuel pressure problems
- Limited engine power
- Extremely high engine speed
- Water in fuel
- High final drive oil temperature

If indicators do not function correctly, see Miscellaneous—Troubleshooting. (Section 4-3.)

DB84312,000014C -19-19DEC14-3/3

Sealed Switch Module (SSM) Functions

Most switches on the sealed switch module (SSM) utilize light emitting diodes (LEDs) to indicate current switch setting. Press and release switch to advance to next setting. For switches with more than one LED, press and hold switch for 2—3 seconds to return to OFF from any setting.

1—Engine Start Switch: This switch has three settings:

- Press and release switch (first LED is illuminated) to energize ignition and apply power to control units and display unit.
- After display unit has initialized, press and hold switch to start engine. Both LEDs are illuminated when engine is cranking. Only first LED is illuminated when engine is running.
- When engine stop switch is pressed, engine stops and both LEDs are off.

2—Engine Stop Switch: Press switch to shut off engine.

If vehicle speed is greater than 0.5 km/h (0.3 mph), engine stops and ignition power remains on until vehicle speed is less than 0.5 km/h (0.3 mph). To turn off ignition power while vehicle is still moving, press and hold switch or press and release switch twice.

3—Front Window Wiper Switch (if equipped): Press and release switch (LED is illuminated) for front window wiper operation. Press and release switch again (LED off) to turn off front window wiper.

Speed is determined by state of wiper speed switch.

4—Reversing Fan Switch: This switch is used to indicate the automatic timer has been activated to purge debris from the radiator (LED is illuminated) or operator may manually press switch to activate.

- Press and release switch to reverse fan. The LED will turn ON indicating fan reverse ENABLED.

5—Hydraulic Enable Switch (IGC machines only): Press switch (LED is illuminated) to enable hydraulic functions while engine is running. Press switch again to disable hydraulic functions (LED is off).

While engine is not running, press switch and hold hydraulic enable switch to enable pilot pressure to allow blade to be lowered without starting engine.

6—Front and Rear Drive Lights Switch: This switch enables standard 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 (LED off) to turn off auxiliary power.



TX1175976 —UN—03NOV14

Sealed Switch Module (SSM) (IGC shown)

1— Engine Start Switch
2— Engine Stop Switch
3— Front Window Wiper Switch (if equipped)
4— Reversing Fan Switch
5— Hydraulic Enable Switch (IGC machines only)
6— Front and Rear Drive Lights Switch
7— Left Door Window Wiper Switch (if equipped)
8— Front and Door Window Wiper Speed Switch (if equipped)
9— Right Door Window Wiper Switch (if equipped)
10— Not Used
11— Cab Work Light Switch (if equipped)
12— Front and Rear Window Washer Switch (if equipped)
13— Rear Window Wiper Switch (if equipped)
14— Door Window Washer Switch (if equipped)
15— Not Used
16— Auxiliary Power Switch
17— Not Used
18— Not Used
19— Auto-Idle Switch
20— Engine Speed Increase Switch
21— Decelerator Mode Switch
22— Not Used
23— Reverse Ratio Switch
24— Economy (ECO) Mode Switch
25— Engine Speed Decrease Switch

7—Left Door Window Wiper Switch (if equipped): Press and release switch (LED is illuminated) for left door window wiper operation. Press and release switch again (LED off) to turn off left door window wiper.

Speed is determined by state of wiper speed switch.

8—Front and Door Window Wiper Speed Switch (if equipped): This switch has three settings:

NOTE: Wiper speed switch will only work when the door or front cab window wiper switch is also activated.

Continued on next page

CN93077,000047D -19-15JUL15-1/2

- Press and release switch (first LED illuminated) for intermittent low-speed wiper operation.
- Press and release switch again (first and second LED illuminated) for medium-speed wiper operation.
- Press and release switch again (all three LEDs are illuminated) for high-speed wiper operation.

9—Right Door Window Wiper Switch (if equipped): Press and release switch (LED is illuminated) for right door window wiper operation. Press and release switch again (LED off) to turn off left door window wiper.

Speed is determined by state of wiper speed switch.

10—Not Used

11—Cab Work Light Switch (if equipped): This switch enables optional work lights on the machine.

There are four settings:

- Press and release switch (both LEDs illuminated) to enable front and rear lights.
- Press and release switch again (LED off) to turn off cab work lights.

12—Front and Rear Window Washer Switch (if equipped): Press switch to spray washer fluid on front and rear windows and activate low-speed front and rear wiper operation.

13—Rear Window Wiper Switch (if equipped): This switch has three settings:

- Press and release switch (first LED illuminated) for intermittent low-speed rear wiper operation.
- Press and release switch again (second LED illuminated) for medium-speed rear wiper operation.
- Press and release switch again (third LED illuminated) for high-speed rear wiper operation.

14—Door Window Washer Switch (if equipped): Press switch to spray washer fluid on left and right door windows and activate low-speed right and left wiper operation.

15—Not Used

16—Auxiliary Power Switch: This switch enables spare power output from the vehicle control unit (VCU) to power additional lighting or a beacon.

- Press and release switch (LED illuminated) to enable auxiliary power.
- Press and release switch (LED off) to turn off auxiliary power.

17—Not Used

18—Not Used

NOTE: If the owner has auto-idle mode enabled or disabled through the primary display unit, a display message will appear on the primary display unit. Function will not change.

19—Auto-Idle Switch: Press and release switch (LED is illuminated) to enable auto-idle feature to bring engine speed down to low idle when machine is not commanding movement or hydraulic load. Press and release switch again (LED off) to disable auto-idle switch.

This state will be saved over a power cycle.

20—Engine Speed Increase Switch: This switch controls the increase engine speed. This switch works in two ways:

- Press and release switch within 1/2 second to increase to highest throttle.
- Press switch longer than 1/2 second to increase engine speed until switch is released or highest throttle is reached.

21—Decelerator Mode Switch: Press switch once to activate engine mode (LED is off). When the decelerator/brake pedal is pushed with the switch in engine mode, the engine speed will be decreased and effectively decrease ground speed.

Press switch again to activate transmission mode (LED illuminated). When the decelerator/brake pedal is pushed with the switch in transmission mode, the transmission speed will decrease, but the engine speed will remain constant.

22—Not Used

23—Reverse Ratio Switch: This switch has three settings:

- Press and release switch (first LED is illuminated) for reverse speed ratio of 100%.
- Press and release switch again (first and second LED are illuminated) for reverse speed ratio of 115%.
- Press and release switch again (all three LEDs are illuminated) for reverse speed ratio of 130%.

NOTE: If the owner has ECO mode enabled or disabled through the primary display unit, a display message will appear on the primary display unit. Function will not change.

24—Economy (ECO) Mode Switch: Press and release switch (LED illuminated) to activate feature that automatically lowers engine speed to reduce fuel when engine is not under load. Press and release switch again (LED off) to turn ECO mode off.

25—Engine Speed Decrease Switch:

- Press and release switch within 1/2 second to decrease to lowest throttle.
- Press switch longer than 1/2 second to decrease engine speed until switch is released or lowest throttle is reached.

CN93077,000047D -19-15JUL15-2/2

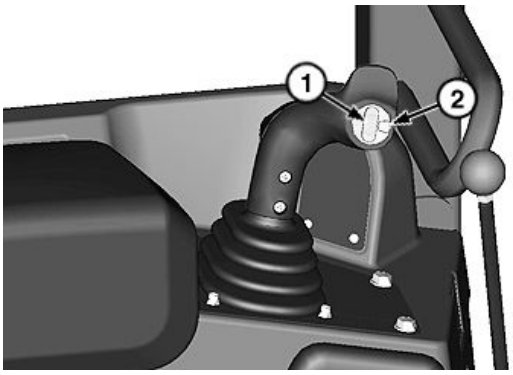
Transmission Control Lever

Push the top of the transmission speed-in-grip (SIG) switch (1) to increase transmission speed. Push the bottom of the transmission SIG switch to decrease transmission speed.

Push the horn switch (2) to sound the machine horn when needed.

The transmission control lever (TCL) controls the direction (forward and reverse), steering (left turn and right turn), pivot turn, and counter rotation.

- Press lever forward to go forward.
- Pull lever rearward to go in reverse.
- Push lever to the right to go right.
- Push lever to the left to go left.



TX1176093 —UN—30OCT14

Transmission Control Lever (TCL)

1— Transmission Speed-in-Grip (SIG) Switch

2— Horn Switch

CN93077,0000484 -19-01APR19-1/1

Blade Control Lever

Mechanical Hydraulic Control Machines

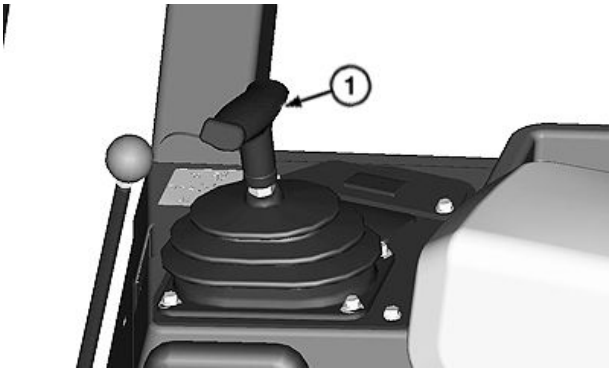
IMPORTANT: To avoid overheating hydraulic oil, allow control lever to return to neutral position when cylinders reach end of stroke.

Blade control lever (1) is used for all hydraulic functions.

Blade float detent position is used for back blading.

When blade control lever is put into float position, blade control lever must be moved manually back to neutral position.

- Push lever fully forward to blade float detent position for blade float.
- Push lever forward one position for blade lower.
- Pull lever rearward for blade lift.
- Push lever to the left for blade tilt left.
- Push lever to the right for blade tilt right.
- Twist lever clockwise to move left edge of blade forward.



TX1175991 —UN—30OCT14

Blade Control Lever

1— Blade Control Lever

- Twist lever counterclockwise to move right edge of blade forward.

Continued on next page

CN93077,000047E -19-30OCT14-1/2

Power Angle Tilt (PAT) With Integrated Grade Control (IGC) Machines

NOTE: Increment (up) switch (4), decrement (down) switch (5), and IGC On/Off switch (2) are available when machine is equipped with integrated grade control (IGC) system. For more information, see Operating IGC System—Topcon Factory Installation, If Equipped (Section 2-2.)

IMPORTANT: To avoid overheating hydraulic oil, allow control lever to return to neutral position when cylinders reach end of stroke.

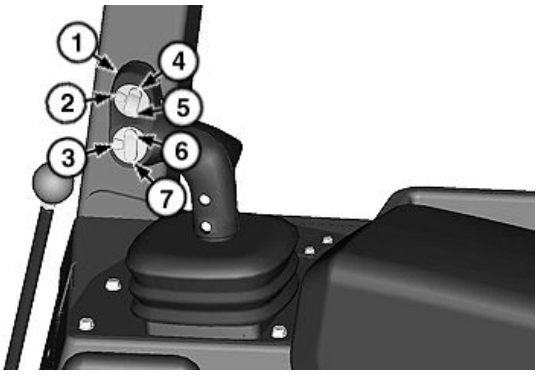
Blade control lever (1) is used for all hydraulic functions.

Blade float detent position is used for back blading.

When blade control lever is put into float position, blade control lever will return to neutral on its own.

To disable blade float, push lever forward or rearward after lever has returned to neutral. Moving lever to the left or right will not disable blade float.

- Push lever fully forward to blade float detent position for blade float.
- Push lever forward one position for blade lower.
- Pull lever rearward for blade lift.



TX1175999 —UN—30OCT14

Blade Control Lever

1— Blade Control Lever
2— IGC On/Off Switch (if equipped)
3— Blade Shake Switch
4— Increment (up) Switch
5— Decrement (down) Switch
6— Blade Angle Right Switch
7— Blade Angle Left Switch

- Push lever to the left for blade tilt left.
- Push lever to the right for blade tilt right.
- Press blade shake switch (3) to activate blade shake.
- Press blade angle right switch (6) to angle blade right.
- Press blade angle left switch (7) to angle blade left.

CN93077,000047E -19-30OCT14-2/2

Auxiliary Control Levers—If Equipped

Auxiliary Control Lever

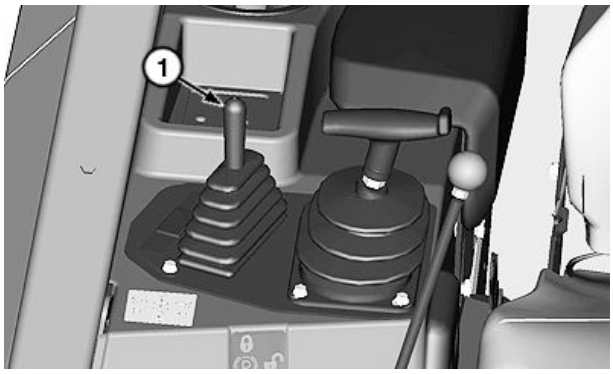
Operation of Ripper

Use auxiliary control lever (1) to operate adjustment of ripper height and pitch. For more information on ripper operation, see Ripper Operation—If Equipped. (Section 2-2.)

Operation of Winch

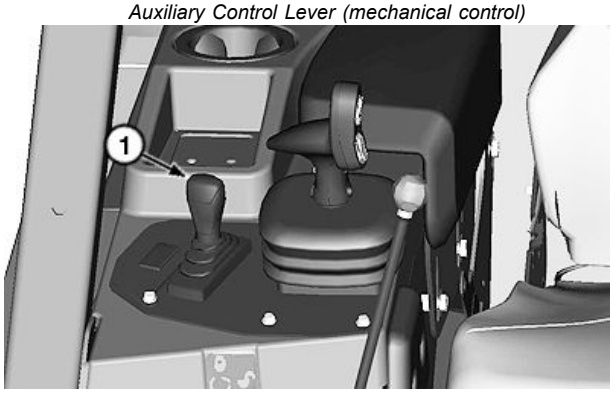
Use auxiliary control lever to operate adjustment of winch cable and speed. For more information on winch operation, see Operating Winch—If Equipped. (Section 2-2.)

1— Auxiliary Control Lever



TX1176024 —UN—30OCT14

Auxiliary Control Lever (mechanical control)



TX1176025 —UN—30OCT14

Auxiliary Control Lever (SmartGrade/IGC control)

CN93077,000047F -19-10NOV15-1/1

Using Park Lock Levers

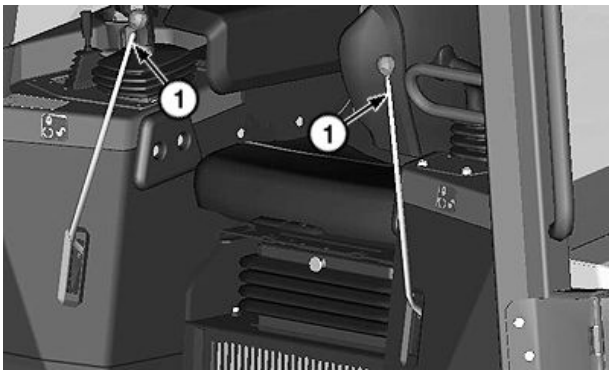
CAUTION: Prevent possible injury from unexpected machine movement. Always move park lock levers up (locked) before starting or dismounting.

When park lock levers (1) are in the up (locked) position, transmission control lever (TCL) can move but will not operate the machine.

When park lock levers are in the down (unlocked) position, TCL can move machine.

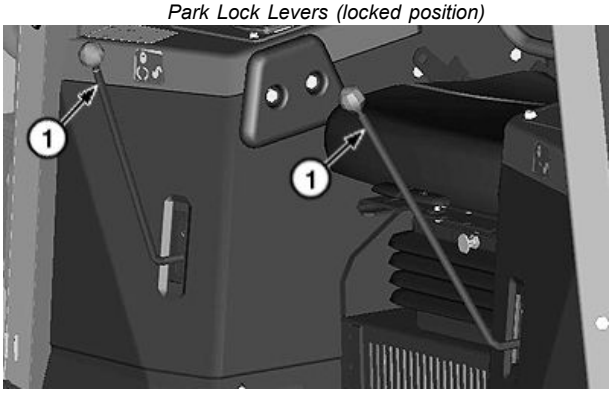
If park lock levers are pulled down while the TCL is in forward or reverse, the machine will not move. Put TCL in neutral (N), then raise and lower the park lock levers. Machine is now operable.

1— Park Lock Lever (2 used)



TX1168922 —UN—12AUG14

Park Lock Levers (locked position)



TX1168921 —UN—12AUG14

Park Lock Levers (unlocked position)

CN93077,0000352 -19-12AUG14-1/1

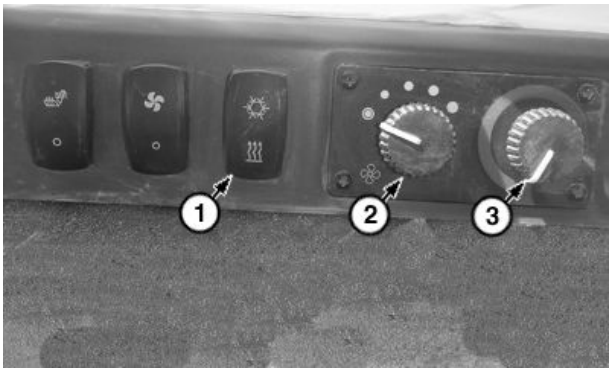
Heating and Air Conditioning System—If Equipped

NOTE: Louvers may be moved left or right to direct or restrict air flow.

Do not operate air conditioner when air temperature is below (-1°C) 30°F.

When warm weather begins, check refrigerant for proper charge before using air conditioner.

1. **Air Conditioner Switch:** Press air conditioner switch (1) to turn air conditioner on or off.
2. **Blower Control Dial:** Turn blower control dial (2) clockwise to increase blower speed.
3. **Temperature Dial:** Turn temperature control dial (3) clockwise to increase temperature. Turn temperature control dial counterclockwise to increase cold air flow. If temperature in cab becomes too cold, the temperature control dial can be turned to add heat even though air conditioner is on.



TX1169032 —UN—13AUG14

Heating and Air Conditioning System

1— Air Conditioner Switch
2— Blower Control Dial
3— Temperature Control Dial

CN93077,0000480 -19-12NOV14-1/1

Seat Adjustment

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

Seat height adjusts automatically to weight of operator.

Lift seat fore-aft adjustment lever (1) to move seat forward or rearward. Release lever to lock seat in position.

Lift seat tilt adjustment lever (2) to adjust cushion position. Release lever to lock seat in position.

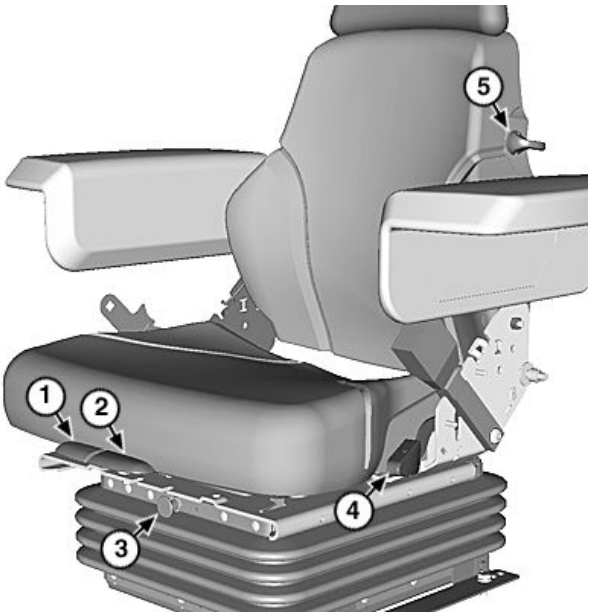
Push seat height adjustment knob (3) in to add air and raise seat. Pull seat height adjustment knob out to release air and lower seat. Release knob to lock seat into position.

While sitting in seat, lift backrest tilt adjustment lever (4) to tilt seat forward or backward. Release lever to lock seat in position.

While sitting in seat, turn backrest lumbar adjustment lever (5) to increase or decrease support to lower back.

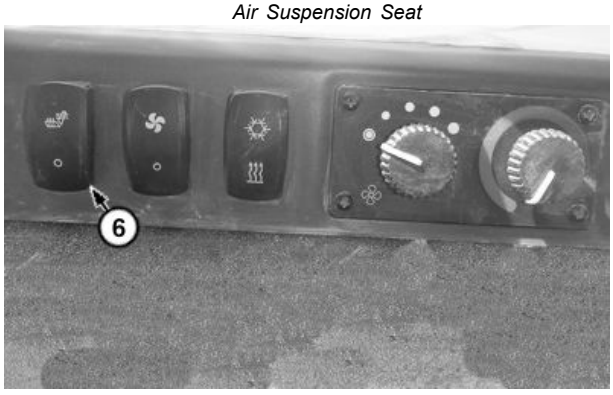
Press seat heater switch (if equipped) (6) on left console to energize seats equipped with heaters.

1— Fore-Aft Adjustment Lever
2— Seat Tilt Adjustment Lever
3— Seat Height Adjustment Knob
4— Backrest Tilt Adjustment Lever
5— Backrest Lumbar Adjustment Lever
6— Seat Heater Switch (if equipped)



TX1084246 —UN—08NOV10

Air Suspension Seat



TX1169091 —UN—14AUG14

Seat Heater Switch (if equipped)

CN93077,0000354 -19-26JUN18-1/1

Seat Heater—If Equipped

Press seat heater switch (1) to allow operator's seat to warm.

1— Seat Heater Switch



TX1169025 —UN—13AUG14

Seat Heater Switch

CN93077,0000355 -19-13AUG14-1/1

Under Seat Heater—If Equipped

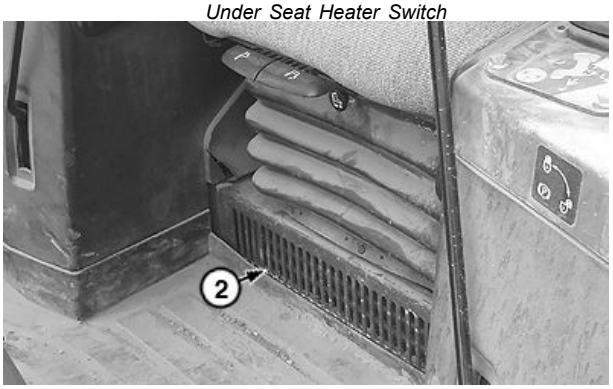
Press under seat heater switch (1) to activate heat from under seat heater vent (2).

1— Under Seat Heater Switch **2— Under Seat Heater Vent**



Under Seat Heater Switch

TX1169034 —UN—13AUG14



Under Seat Heater Vent

TX1169035 —UN—13AUG14

CN93077,0000356 -19-22SEP14-1/1

Windshield Wipers and Washers—If Equipped

To operate front windshield wiper, press and release front window wiper switch (1) (LED is illuminated).

To operate left door window wiper, press and release left door window wiper switch (2) (LED is illuminated).

To operate right door window wiper, press and release right door window wiper switch (4) (LED is illuminated).

NOTE: Wiper speed switch will only work when the door, or front cab window wiper switch is also activated.

To control the speed for front, left, and right windshield wipers, use wiper speed switch (3). This switch has three settings:

- Press and release switch (first LED illuminated) for intermittent low-speed wiper operation.
- Press and release switch again (second LED illuminated) for medium-speed wiper operation.
- Press and release switch again (third LED illuminated) for high-speed wiper operation.

To operate rear window wiper, use rear window wiper switch (6). This switch has three settings:

- Press and release switch (first LED illuminated) for intermittent low-speed rear wiper operation.
- Press and release switch again (second LED illuminated) for medium-speed rear wiper operation.
- Press and release switch again (third LED illuminated) for high-speed rear wiper operation.

To operate front and rear window washer fluid, press and release front and rear window washer switch (5) to spray washer fluid on front and rear windows and activate low-speed operation.

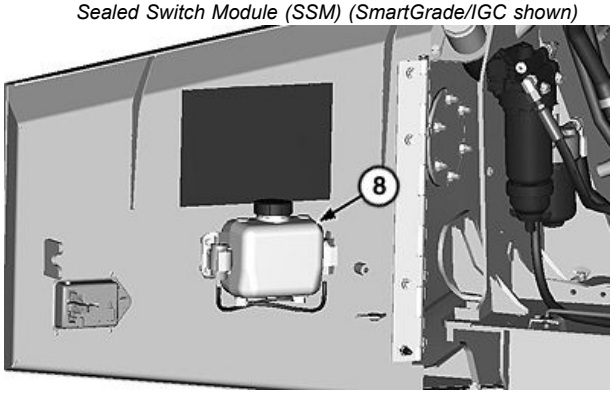
To operate left and right door window washer fluid, press door window washer switch (7) to spray washer fluid on left and right door windows and activate low-speed right and left wiper operation.

Fill the washer fluid reservoir through the washer fluid fill port (8), located inside the right rear service door.



TX1176082 —UN—30OCT14

Sealed Switch Module (SSM) (SmartGrade/IGC shown)



TX1176083 —UN—10NOV14

Washer Fluid Fill Port

1— Front Window Wiper Switch
2— Left Door Window Wiper Switch
3— Wiper Speed Switch
4— Right Door Window Wiper Switch
5— Front and Rear Window Washer Switch
6— Rear Window Wiper Switch
7— Door Window Washer Switch
8— Washer Fluid Fill Port

CN93077,0000481 -19-10NOV15-1/1

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 (LED 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.
- Press and release switch (second LED illuminated) to enable rear lights only—advanced mode.



TX1176091 —UN—30OCT14

Sealed Switch Module (SSM) (SmartGrade/IGC shown)

1— Front and Rear Drive Lights Switch

2— Cab Work Lights Switch (if equipped)

- Press and release switch again (LED off) to turn off cab work lights.

CN93077,0000482 -19-10NOV15-1/1

Reversing Fan—If Equipped

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—Preferences, SDM. (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.



TX1176092 —UN—30OCT14

Sealed Switch Module (SSM) (SmartGrade/IGC shown)

1— Reversing Fan Switch

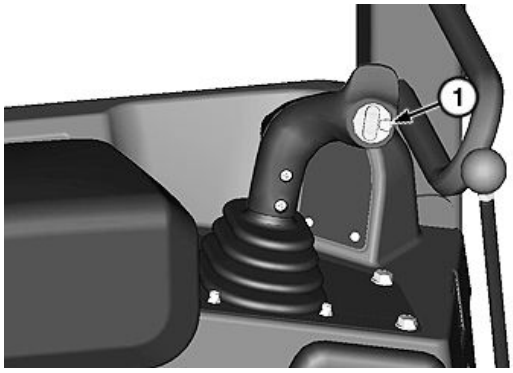
CN93077,0000483 -19-10NOV15-1/1

Horn

NOTE: Sound the horn momentarily to warn bystanders before starting the engine or commencing operation.

The horn button (1) is located on the front of the left transmission control lever (TCL).

1— Horn Button



TX1176094 —UN—30OCT14

Horn Button

CN93077,0000485 -19-30OCT14-1/1

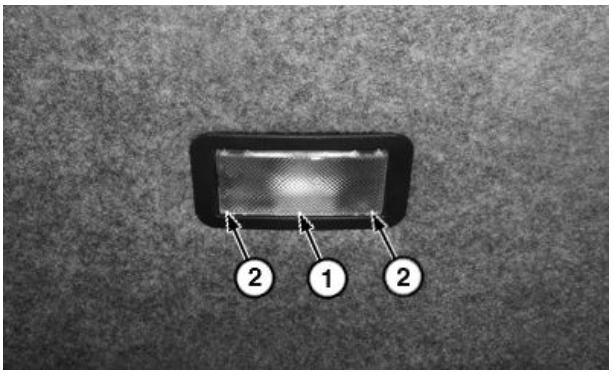
Dome Light—If Equipped

Turn interior dome light on by pressing either left or right side of dome light end (2).

Turn interior dome light off (1) by bringing dome light back to level position.

1— Dome Light Off

2— Dome Light End

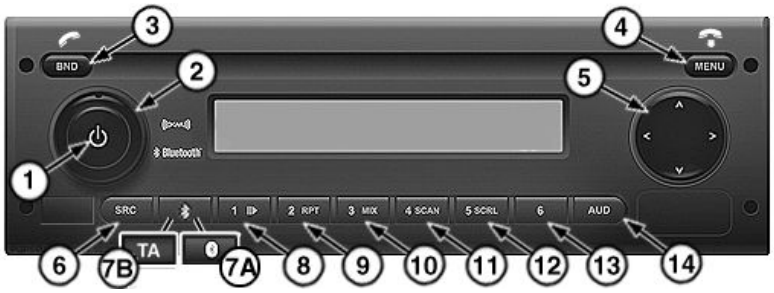


TX1161432 —UN—22MAY14

Dome Light

CN93077,000035B -19-31JUL18-1/1

Radio—If Equipped



XJ1269111 —UN—04DEC18

Radio (premium radio shown)

1— Power Button
2— Volume Control Dial
3A— BND Button
3B— Pickup Call Button (if equipped)
4A— MENU Button
4B— Hang-Up Call Button (if equipped)
5— Multi-Function Rocker Switch
6— Source Button
7A— Bluetooth® Button (if equipped)
7B— TA Button
8— Preset Button 1
9— Preset Button 2
10— Preset Button 3
11— Preset Button 4
12— Preset Button 5
13— Preset Button 6
14— Audio Button

NOTE: The radio can be turned on using the power button (1) even when the ignition is off. The radio is then turned off automatically after a preset time to preserve the vehicle battery (see Adjust Turn-Off Time in this section).

1. Power—Press power button (1) to turn radio on. Press and hold power button to turn radio off.

   Adjust Turn-Off Time:
   - Press MENU button (4A) until HOUR and the current turn-off time setting is displayed.
   - Turn volume control dial (2) counterclockwise or clockwise to adjust the turn-off time from 1—60 minutes.
   - Press MENU button several times to exit the menu.

2. Mute—Press power button to silence radio audio. Turn radio audio on by pressing power button or turning volume control dial.
3. AM/FM—Press band (BND) button (3A) to change between AM bands (AM1 and AMT) and FM bands (FM1, FM2, and FMT).
4. Preset Stations—Six numbered preset buttons (8—13) store and recall stations for each AM and FM band. To store a station, select a band and then select a station. Press and hold preset button for 3 seconds. Current station will be stored and corresponding preset number will appear in display. To recall a station, select a band and then press preset button. Radio will automatically tune to stored station.

   NOTE: Radio will only change sources if media is plugged in and available.

5. Press source button (6) to select between radio, USB, AUX, and SiriusXM® Satellite Radio.

Audio and Menu Adjustment:

Audio Adjustment—Press audio button (14) to step through the following audio adjustment options: Bass, Treble, Balance (left to right), and restore radio to factory settings. When desired option appears on display, rotate volume control dial to adjust audio feature. When no adjustments have been made for 3 seconds, radio will resume normal operation.

Menu Adjustment—Press MENU button to enter menu adjustment mode and adjust any of the menu options.

When desired option appears on display, rotate volume control dial to adjust that option. When no adjustments have been made for 3 seconds, the radio will resume normal operation.

The following menu options may be adjusted using this feature:

1. Beep Confirm (on and off)—Determines if a beep will be heard each time a button is pressed.
2. Display Brightness (-5 min to +5 max)—Determines brightness level of display.
3. Turn on Volume (5—25)—Selects desired volume level for radio to assume when turned on.

Volume Adjustment:

Increase Volume—Turn volume control dial clockwise to increase volume setting.

Decrease Volume—Turn volume control dial counterclockwise to decrease volume setting.

Tuning Radio:

Increase Manual Tune Frequency—Press up on multi-function rocker switch (5) to tune frequency one notch higher.

Decrease Manual Tune Frequency—Press down on multi-function rocker switch to tune frequency one notch lower.

Press right side of multi-function rocker switch to seek next strong station.

Press left side of multi-function rocker switch to seek previous strong station.

Continued on next page

Automatic Tune Frequency—Press and hold left or right side of multi-function rocker switch to quickly scan to station of choice.

Bluetooth®—If Equipped:

This radio system is equipped with an integrated Bluetooth® module. Using radio communication, Bluetooth allows for a safe data transfer between the radio system and a paired close-range Bluetooth device such as a cell phone.

Turn on Bluetooth:

- Radio without TA button (7B) only: Press Bluetooth button (7A).
- Radio with TA button only: Press MENU button on radio faceplate until BT MODE displays.
- Wait for 2 seconds until current setting BT OFF or BT ON is displayed.
- Turn volume control counterclockwise or clockwise to turn Bluetooth on or off. After 2 seconds, the new setting becomes active and Bluetooth symbol starts flashing.
- Display screen will show PAIR. A code will then be displayed to put into the operator's personal audio device to securely connect.

To change connection type, press hang-up call button (4B) until CON-TYPE is displayed. Turn volume control counterclockwise or clockwise to select connection type (phone/audio stream).

Receive a Call:

When the radio system is paired with a cell phone, calls can be received and placed.

When a call is coming in, a ring tone sounds and CALL is displayed. After 2 seconds, the display changes and the contact name or the phone number of the caller is displayed.

- Press pickup call button (3B) to answer the call.
- Use the volume control dial to adjust the phone volume, if necessary.
- Press hang-up call button to end the call. CALL END is displayed for 2 seconds and the radio system returns to the currently selected mode.

Place a Call:

- Press and hold the source button for more than 3 seconds to open the contact list.
- Use multi-function rocker switch to select the desired contact and press pickup call button to establish the connection.
- Press hang-up call button to end the call. CALL END is displayed for 2 seconds and the radio system returns to the currently selected mode.

SiriusXM® Radio—If Equipped:

Bluetooth is a trademark of Bluetooth SIG
SiriusXM is a trademark of Sirius XM Radio Inc.

This radio system is equipped with a SiriusXM tuner to receive digital radio stations via satellite (e.g. SiriusXM Radio). There are three SiriusXM bands (SiriusXM1, SiriusXM2, and SiriusXM3 memory levels) with up to 6 channels each that can be assigned to the 6 preset buttons. Storing of the SiriusXM channels on preset buttons is identical to storing analog radio stations.

A subscription through SiriusXM Radio is needed to use service.

To turn SiriusXM Radio on for the first time, press hang-up call button until XM OFF is displayed. Turn volume control clockwise to enable SiriusXM Radio.

Traffic Information

Press TA button (7B) to turn the traffic information priority on or off for all modes. The traffic information priority is activated if TA or TP is displayed. When a traffic announcement is received, the outputs are interrupted and the radio system switches to the traffic announcement. TRAFFIC is displayed for the duration of the announcement.

- An acoustic alarm sounds regardless of the playback source when leaving the transmission range of the station broadcasting traffic information and the automatic scan does not find an alternative station with traffic information.
- An acoustic alarm also sounds when changing from a station with traffic information to a station without traffic information.

In both cases, either turn the traffic information priority off or tune into a station that broadcasts traffic announcements.

Adjust traffic announcement volume:

NOTE: While a traffic announcement is broadcast, the volume can be adjusted for the duration of the announcement using the volume control.

Based on the currently selected volume, the volume for traffic announcements can be increased.

- Select the radio mode (FM frequency band).
- Press MENU button on radio faceplate until TA DIFF and current setting is displayed.
- Turn the volume control counterclockwise or clockwise to adjust the value of DIFF from 0—10. The numbers represent the volume increase in relation to the selected volume.
- Press MENU button several times to exit the menu.

Cancel traffic announcement:

Press TA button to cancel an ongoing traffic announcement and return to the previous output source. The traffic information priority remains on.

DB84312,00000D7 -19-05DEC18-2/2

Auxiliary Power Outlets

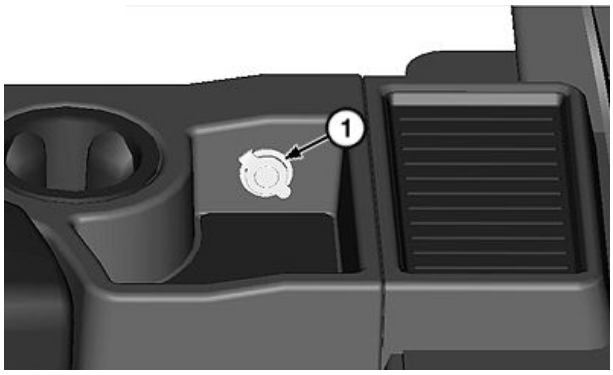
One 12-volt auxiliary port (1) is positioned for operator's convenience to the right of the operator’s seat.

Additional items (max. load 10 A) can be connected to the 12-volt auxiliary ports.

Radio auxiliary port (if equipped) (2) and second 12-volt auxiliary port (if equipped) (3) are located right of the overhead radio.

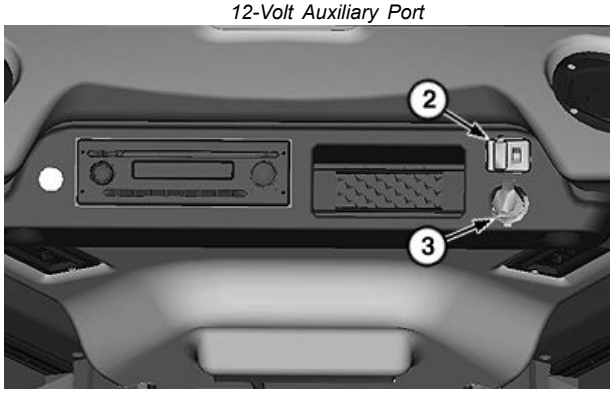
These outlets can only be used if switch power is on.

1— 12-Volt Auxiliary Port
2— Radio Auxiliary Port (if equipped)
3— 12-Volt Auxiliary Port (if equipped)



TX1176095 —UN—30OCT14

12-Volt Auxiliary Port



TX1169055 —UN—13AUG14

Radio and 12-Volt Auxiliary Port (if equipped)

CN93077,0000486 -19-12NOV14-1/1

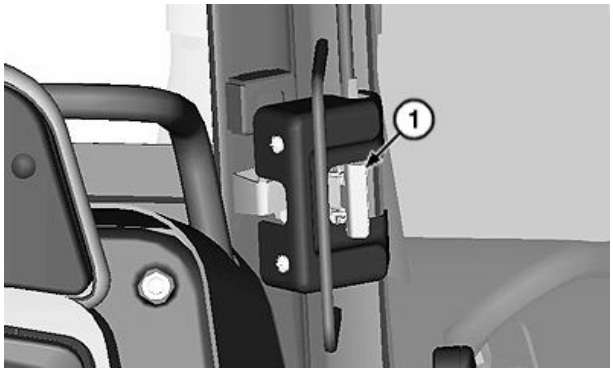
Door Latch—If Equipped

From inside of cab, push inside door latch lever (1) to open door.

Doors can be latched in the open position when pushed back against cab side.

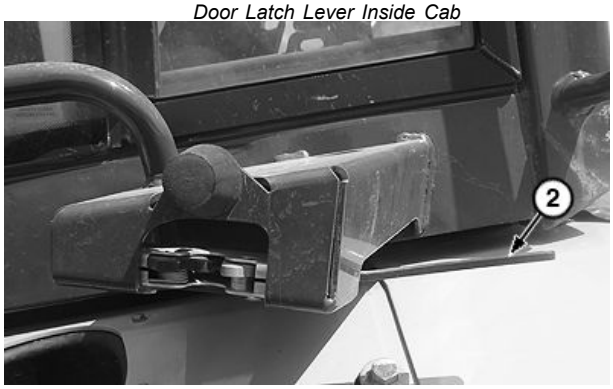
From outside of cab, pull outside door latch lever (2) to release door.

1— Inside Door Latch Lever
2— Outside Door Latch Lever



TX1169134 —UN—14AUG14

Door Latch Lever Inside Cab



TX1169042 —UN—14AUG14

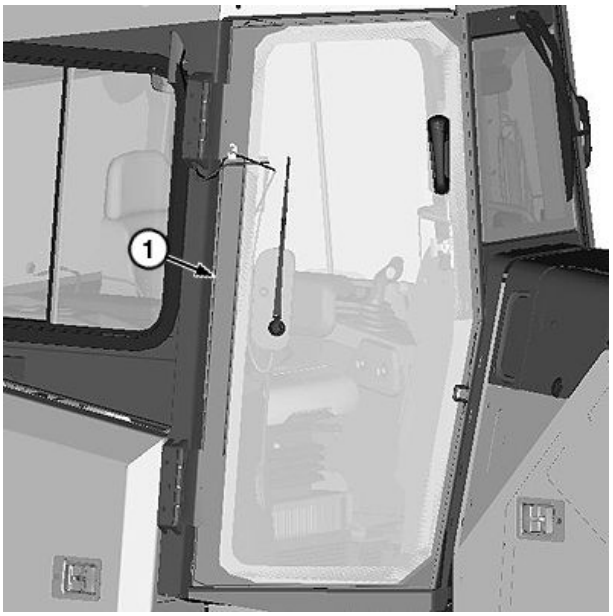
Door Latch Lever Outside Cab

CN93077,000035D -19-14AUG14-1/1

Secondary Exits—If Equipped

Exit cab through left-side door. Right-side door (1) can be used as secondary exit.

1— Door



TX1176226 —UN—31OCT14

Right-Side Door

CN93077,000048F -19-31OCT14-1/2

If necessary, use exit tool (1) to break glass or cut seat belt.

1— Exit Tool (if equipped)



TX1052640A —UN—05DEC08

Exit Tool (if equipped)

CN93077,000048F -19-31OCT14-2/2

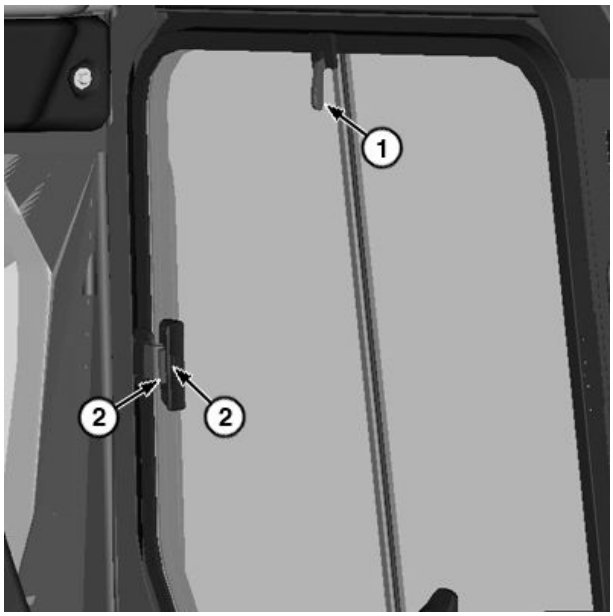
Cab Windows—If Equipped

To open windows, pull locking lever (1) down and squeeze window tabs (2) together. Slide window forward to desired position. Raise locking lever to lock window in place.

To close, pull locking lever down, squeeze tabs and slide window rearward until window latch engages.

1— Locking Lever

2— Window Tab (2 used)



TX1176096 —UN—30OCT14

Cab Window (left side shown)

CN93077,0000487 -19-30OCT14-1/1

Fire Extinguisher Mounting Location

MOUNTING LOCATION:

The designated fire extinguisher mounting location (1) is inside the cab, underneath the operating console.

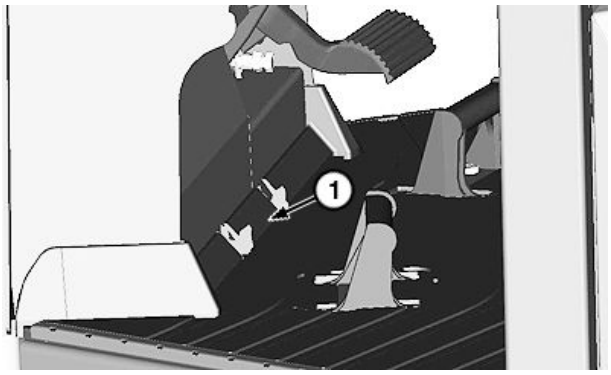
USE:

NOTE: All fire extinguishers do not operate the same. Read operating instructions on canister.

The portable fire extinguisher is used to aid in the extinguishing of small fires. Refer to individual manufacturers' instructions and proper fire fighting procedures before the need to use the fire extinguisher arises. See Prevent Fires. (Section 1-2.)

MAINTENANCE:

IMPORTANT: Avoid possible machine damage. Check gauge (if equipped) on fire extinguisher. If fire extinguisher is not fully charged, recharge or replace it according to the manufacturer's instructions.



TX1176097 —UN—31OCT14

Fire Extinguisher Mounting Location (left side shown)

1— Fire Extinguisher Mounting Location

Inspect and maintain the fire extinguisher following the manufacturer's recommendations and all local, regional, and national regulations.

CN93077,0000488 -19-25NOV14-1/1

Beacon Light—If Equipped

Mounting location for a beacon light is available on the right rear of cab roof.

An auxiliary power switch (1) located on the sealed switch module (SSM), enables spare power output from the vehicle control unit (VCU) to power a beacon light when available.

1— Auxiliary Power Switch



TX1176151 —UN—31OCT14

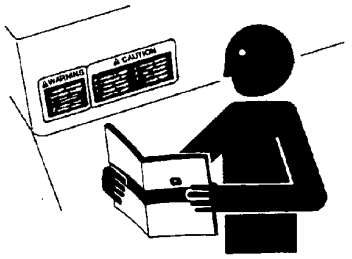
Sealed Switch Module (SSM) (SmartGrade/IGC shown)

CN93077,0000489 -19-10NOV15-1/1

Before Starting Work

Review the operating precautions in the Safety Section of this manual.

Use seat belt when operating machine. Remember to fasten seat belt even during brief periods of use.



T133556 —UN—24AUG00

Reading Operator's Manual

CN93077,000029B -19-05MAY14-1/1

Inspect Machine Daily Before Starting

Perform daily maintenance checks. See Maintenance—Every 10 Hours or Daily. (Section 3-4.)

- Inspect grille and radiator screen (1) for obstructions.
- Clean engine shields (2) on each side of machine.
- Inspect precleaner (3) and clean as necessary.
- Clean operator's station (4), check pedals for freedom of movement, and check fire extinguisher charge (if equipped).
- Check fuel level. Remove fuel tank cap (5) and fill with proper fuel if necessary.

Inspect the following before starting:

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

HYDRAULIC SYSTEM: Check for leaks, missing or loose clamps, kinked hoses, and lines or hoses that are making contact with each other or other machine parts.

FUEL SYSTEM: Check for leaks, missing or loose clamps, kinked hoses, drain water and sediment from primary and auxiliary fuel filters, and lines or hoses that are making contact with each other or other machine parts.

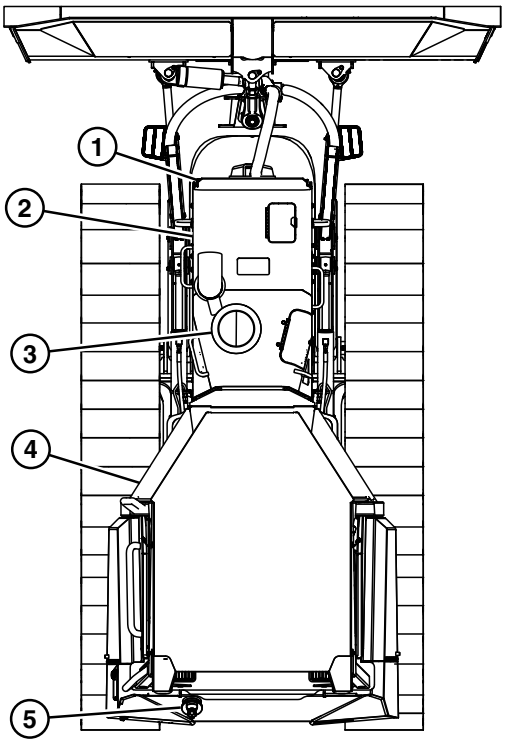
HARDWARE: Check for loose or missing parts.

LUBRICATION: Check lubrication points on Periodic Maintenance Chart. See Service Machine at Specified Intervals. (Section 3-2.)

SHEET METAL AND TRACKS: Check for bent, broken, loose, or missing parts.

PROTECTIVE DEVICES: Inspect guards, shields, roll-over protective structure (ROPS), and seat belt.

SAFETY: Walk around machine to be sure all persons are away from machine area.



TX1176282 —UN—07NOV14

Machine Inspection

1— Grille and Radiator Screen
2— Engine Shield (2 used)
3— Precleaner
4— Operator's Station
5— Fuel Tank Cap

CN93077,0000490 -19-03DEC14-1/1

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.

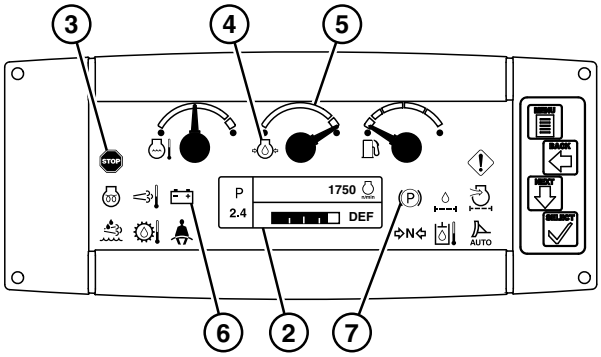
After the indicator check, the STOP indicator (3) and park brake indicator (7) remain illuminated (the STOP indicator flashes). The engine oil pressure gauge (5) and engine oil warning indicator (4) are highlighted in red and flash until engine is started. The engine alternator voltage indicator (6) will also remain on until engine is running and alternator is charging.

1— Engine Start Switch
2— Display
3— STOP Indicator
4— Engine Oil Warning Indicator
5— Engine Oil Pressure Gauge
6— Engine Alternator Voltage Indicator
7— Park Brake Indicator



TX1176288 —UN—03NOV14

Sealed Switch Monitor (SSM) (IGC shown)



TX1176293 —UN—07NOV14

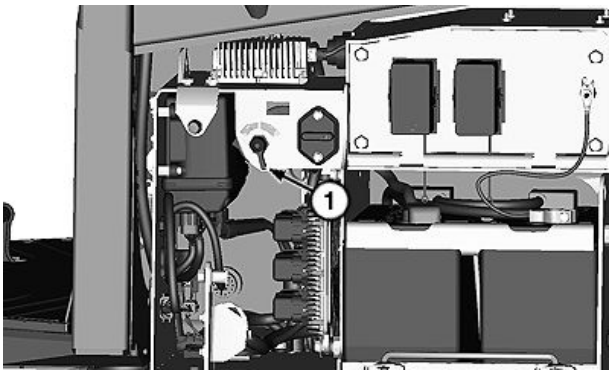
Standard Display Monitor (SDM)

CN93077,0000492 -19-10NOV14-1/1

Battery Disconnect Switch

Battery disconnect switch (1) is located in the left rear service compartment. Push switch to OFF position to disconnect electrical power to machine.

1— Battery Disconnect Switch



TX1176329 —UN—03NOV14

Battery Disconnect Switch

CN93077,0000493 -19-06NOV14-1/1

Engine Break-In Period

IMPORTANT: Observing the engine break-in period is critical to avoid engine damage. Extra care during the first 500 hours of operation will result in more satisfactory long-term engine performance and life. DO NOT exceed 500 hours of operation with John Deere Break-In Plus™ engine oil.

This machine is factory filled with John Deere Break-In Plus engine oil.

1. Operate the machine at heavy or normal loads with minimal idling during the break-in period. During the first 20 hours, avoid prolonged periods of engine idling or sustained maximum load operation. If engine will idle longer than 5 minutes, stop engine.

IMPORTANT: DO NOT add make-up oil until the oil level is BELOW the ADD mark on the dipstick. John Deere Break-In Plus oil should be used to make up any oil consumed during the break-in period. See John Deere Break-In Plus™ Engine Oil — Interim Tier 4, Final Tier 4, Stage IIIB, and Stage IV. (Section 3-1.)

If John Deere Break-In Plus Engine Oil is not available, use a 10W-30 diesel engine oil meeting one of the following during the initial 250 hours of operation:

- **API Service Category CJ-4**
- **ACEA Oil Sequence E9**
- **ACEA Oil Sequence E6**

2. Check engine oil level more frequently during the engine break-in period.
3. Change oil and oil filter after first 500 hours of operation (maximum). Fill crankcase with the normal seasonal viscosity grade oil. See Diesel Engine Oil — Interim Tier 4, Final Tier 4, Stage IIIB, and Stage IV. (Section 3-1.)
4. Watch coolant temperature gauge closely. If coolant temperature rises above specified limits on the gauge, reduce load on engine. Unless temperature drops quickly, stop the engine and determine the cause before resuming operation. See Troubleshooting. (Section 4-3.)
5. Watch oil pressure gauge for pressure within specification.
6. Check belt for proper alignment and seating in pulley grooves.

Break-In Plus is a trademark of Deere & Company

CN93077,0000348 -19-27SEP14-1/1

Engine Block Heater—If Equipped

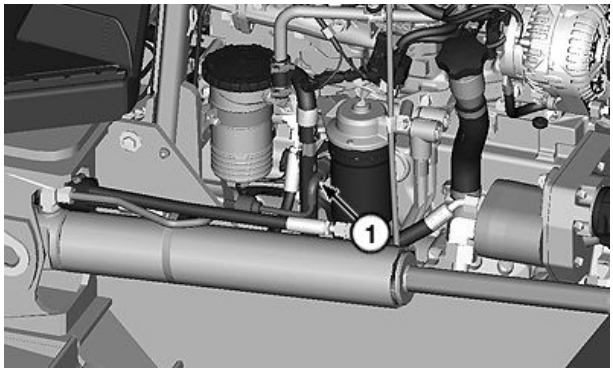
CAUTION: Prevent possible injury from electrical shock. Use grounded cord and inspect for damage before connecting to power source.

IMPORTANT: Prevent property damage as a result of possible fire from an overheated electrical cord. Use a heavy-duty, grounded cord to connect heater to electrical power.

Supply voltage for engine block heater is 120 V. Ensure correct supply voltage is used for engine block heater.

Open right front service door to access engine block heater.

Connect engine block heater (1) to electrical power 10 hours before starting engine.



TX1176399 —UN—03NOV14

Engine Block Heater (lower shield removed for clarity)

1— Engine Block Heater

CN93077,000049A -19-06NOV14-1/1

Starting the Engine

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

If you must operate engine in a building, be positive there is adequate ventilation. Either use an exhaust pipe extension to remove the exhaust fumes or open doors and/or windows to bring enough outside air into the area.

CAUTION: Avoid possible injury or death from a runaway machine. Do not start engine by shorting across starter terminals. Machine will start in gear if normal starting circuitry is bypassed.

NEVER start engine while standing on ground. Start engine only from operator's seat with transmission in neutral and park lock levers in up (locked) position.



TS220 —UN—15APR13

Hazardous Fumes



T6607AO —UN—18OCT88

Runaway Machine

CN93077,0000498 -19-03NOV14-1/3

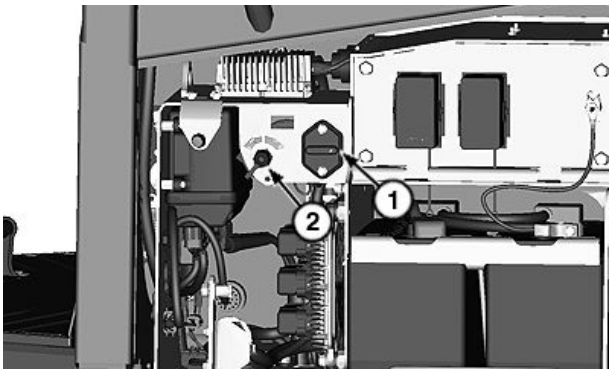
NOTE: Engine will not start if circuit breaker (1) is off.

1. Turn battery disconnect switch (2) clockwise to ON position.

CAUTION: Use seat belt to avoid possible injury or death in case of an accident such as an overturn.

2. Fasten seat belt before starting engine.

1— Circuit Breaker **2— Battery Disconnect Switch**



TX1176374 —UN—03NOV14

Circuit Breaker and Battery Disconnect Switch

Continued on next page

CN93077,0000498 -19-03NOV14-2/3

3. Place transmission control lever (TCL) (3) in neutral (N) position.
4. Park lock levers (5) must be in up (locked) position.
5. Push horn button (4) to sound horn.

NOTE: Starting engine is a two-step process. First step applies power to control units and display monitor. Second step applies power to starter motor.

6. Press and release engine start switch. Wait for display monitor to initialize. Press and hold engine start switch. Release switch when engine starts.

   Starter will disengage if engine does not start within 30 seconds. Release engine start switch and wait 60 seconds before trying again.

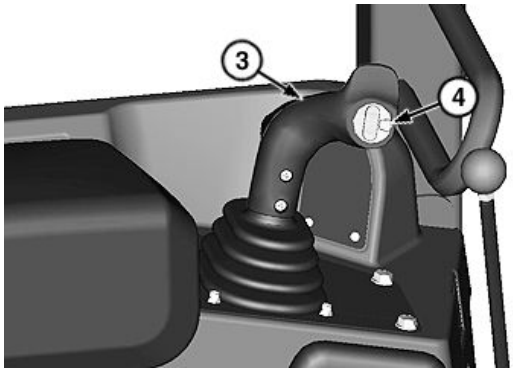
   If engine does not start after 2—3 attempts, press engine stop switch. Wait 2 minutes before trying again.
7. Press engine speed decrease switch (6) to slow idle.

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

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

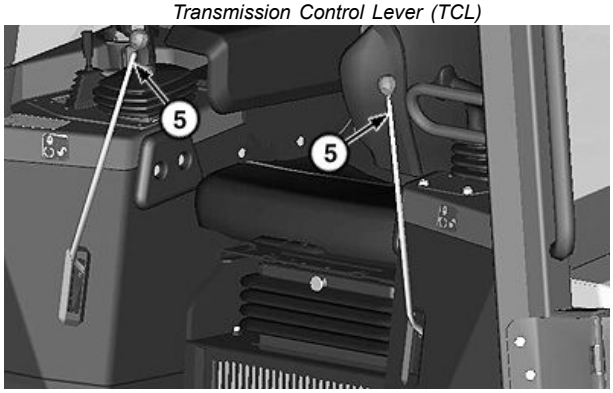
Operate machine at less than normal loads and at half speed until engine warms up.

3— Transmission Control Lever (TCL)
4— Horn Button
5— Park Lock Lever (2 used)
6— Engine Speed Decrease Switch



Transmission Control Lever (TCL)

TX1176366 —UN—03NOV14



Park Lock Levers

TX1169452 —UN—18AUG14



Sealed Switch Module (SSM) (IGC shown)

TX1176367 —UN—03NOV14

CN93077,0000498 -19-03NOV14-3/3

Engine Warm-Up

1. After engine starts, run at slow idle for 2 minutes. Do not run at fast idle.
2. Operate machine at less-than-normal loads and speeds until engine is at normal operating temperature.

CN93077,00002E6 -19-07NOV18-1/1

Cold Weather Warm-Up

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

For temperatures at or below 0°C (32°F), an extended warm-up period will be necessary. The transmission speed and engine speed will be limited.

The transmission oil temperature indicator will illuminate, indicating the crawler engine and ground speed are being limited due to extreme cold conditions. Engine speed will be limited to 25% for up to 10 minutes.

- Transmission control lever (TCL) must be out of neutral with machine movement for more than 30 seconds.
- Engine must be running for at least 10 minutes, or hydrostatic oil temperature is at or above 3°C (37°F) to complete cold weather warm-up.

After completing the engine warm-up period, the transmission speed setting will be limited to 1.7 until the crawler has moved 92 meters (300 feet). The transmission oil temperature indicator will illuminate and speed setting on monitor flashes if a transmission speed setting above 1.7 is commanded to indicate that the transmission speed is limited.

The transmission limiting feature will reactivate if the machine has been running at slow idle for more than 90 minutes and engine air intake temperature is less than 0°C (32°F).

For transmission oil temperatures over 0°C (32°F) and less than 37°C (99°F), the transmission speed setting will be limited to 2.5 or lower. The transmission oil temperature indicator will illuminate and speed setting on monitor flashes if a transmission speed setting above the transmission limit is commanded to indicate that the transmission speed is limited. Full functionality is restored when oil temperature exceeds 40°C (104°F).

Avoid sudden operation of hydraulic functions until engine is thoroughly warmed up. Remove ice, snow, and mud before operation. The transmission oil temperature indicator will turn off when the engine speed is no longer limited.

NOTE: Use lower viscosity oil in the hydraulic and transmission system to help start the engine when ambient temperature is below -18°C (0°F). See Hydraulic and Hydrostatic Oil. (Section 3-1.)

Cycle all hydraulic functions to distribute warmed oil until all functions operate freely.

CN93077,000032F -19-14AUG14-1/1

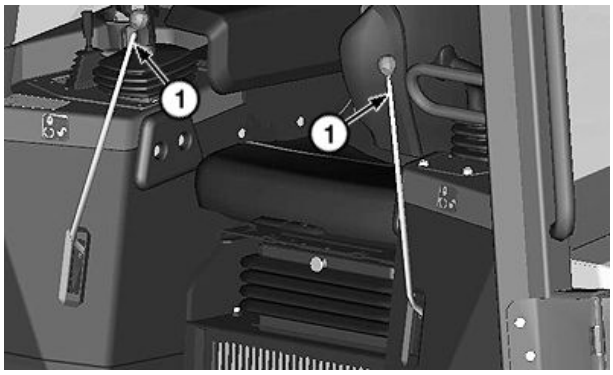
Driving the Machine

1. Fasten seat belt.
2. Park lock levers (1) must be in the up (locked) position.
3. Place transmission control lever (TCL) (2) to neutral (N).
4. Push horn button to sound horn.
5. Press and hold engine start switch (4) to start engine.
6. Press engine speed increase switch (5) or engine speed decrease switch (6) to a desired engine setting.
7. Depress decelerator/brake pedal.
8. Move park lock levers to down (unlocked) position. Speed gauge will display default transmission setting 1.6.
9. Place TCL in desired travel position.

NOTE: Transmission speed-in-grip (SIG) switch (3) adjusts travel speed and may be adjusted at any time. The transmission speed range is preset for a start-up speed range of 1.6. The transmission speed range can vary depending on operator's preference from 1.0—3.3. Slowest actual machine ground speed can vary from 1.6—10.9 km/h (1.0—6.8 mph).

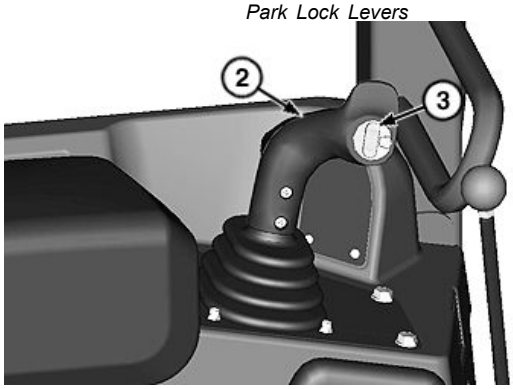
10. Press transmission SIG switch to desired setting (1.0—3.3) as seen in display monitor.
11. Slowly release decelerator/brake pedal to move machine.
12. Move TCL in desired turning direction to steer.

1— Park Lock Lever (2 used)
2— Transmission Control Lever (TCL)
3— Transmission Speed-in-Grip (SIG) Switch
4— Engine Start Switch
5— Engine Speed Increase Switch
6— Engine Speed Decrease Switch



TX1168922 —UN—12AUG14

Park Lock Levers



TX1176402 —UN—03NOV14

Transmission Control Lever (TCL)



TX1176408 —UN—03NOV14

Sealed Switch Module (SSM) (IGC shown)

CN93077,000049B -19-25NOV14-1/1

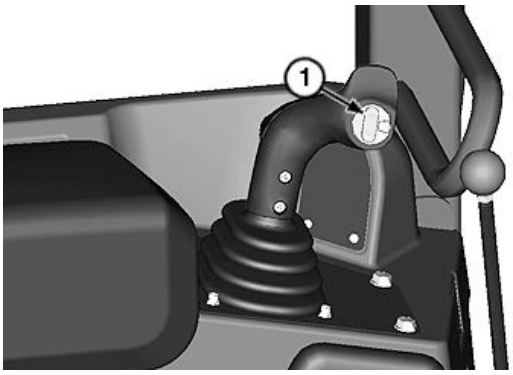
Setting Travel Speed

NOTE: When transmission control lever (TCL) is in forward or reverse, pressing engine speed increase switch may cause machine to move, or will increase machine travel speed. For more information, see Setting Engine Speed in this section.

Push the top of transmission speed-in-grip (SIG) switch (1) to increase transmission speed. Push bottom of the SIG switch to lower machine transmission speed.

Hydrostatic dual path transmission provides variable travel speed (1.0—3.3) ranging from 1.6—10.9 km/h (1.0—6.8 mph) in forward or reverse.

Reverse speed ratios of 100%, 115%, and 130% are available until maximum km/h (mph) is reached from 1.6—10.9 km/h (1.0—6.8 mph) in reverse.



TX1176414 —UN—03NOV14

Transmission Control Lever (TCL)

1— Transmission Speed-in-Grip (SIG) Switch

CN93077,000049C -19-02DEC14-1/1

Setting Engine Speed

Increase Engine Speed

Press and release engine speed increase switch (1) within 1/2 second to increase to highest throttle.

Press switch longer than 1/2 second to increase engine speed until switch is released or highest throttle is reached.

Decrease Engine Speed

Press and release engine speed decrease switch (2) within 1/2 second to decrease to lowest throttle.

Press switch longer than 1/2 second to decrease engine speed until switch is released or lowest throttle is reached.

1— Engine Speed Increase Switch

2— Engine Speed Decrease Switch



TX1176418 —UN—03NOV14

Sealed Switch Module (SSM) (IGC shown)

CN93077,000049D -19-17NOV16-1/1

Auto-Idle Operation

NOTE: Disabling Auto-Idle when continuously operating a mechanical winch is recommended.

Press and release auto-idle switch (1) (LED illuminated) to enable auto-idle feature to bring engine speed down to low idle when machine is not commanding movement or hydraulic load. Press and release switch again (LED off) to disable auto-idle switch.

This state will be saved over a power cycle.

Auto-idle delay is configured through the monitor. See Setup—Preferences, SDM. (Section 2-3.)

1— Auto-Idle Switch



TX1176420 —UN—03NOV14

Sealed Switch Module (SSM) (IGC shown)

CN93077,000049E -19-06NOV14-1/1

Economy (ECO) Mode Operation

Economy (ECO) mode is a feature provided to reduce fuel consumption and increase machine productivity when required.

When in ECO mode, minimum engine speed will be 1700 rpm. Maximum engine speed will be limited to 2050 rpm.

To enable ECO mode, press ECO mode switch (1) (LED illuminated) on the sealed switch module (SSM).

This state will be saved over a power cycle.

1— ECO Mode Switch



TX1176422 —UN—03NOV14

Sealed Switch Module (SSM) (IGC shown)

CN93077,000049F -19-03NOV14-1/1

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.

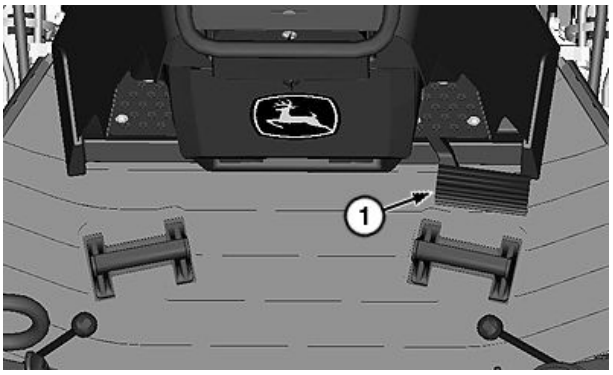
Engine Mode

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.



Decelerator/Brake Pedal

TX1176456 —UN—03NOV14



Sealed Switch Module (SSM) (IGC shown)

TX1176453 —UN—03NOV14

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

CN93077,00004A0 -19-03NOV14-1/1

Stopping the Machine

IMPORTANT: During freezing weather, park machine on a hard surface to prevent tracks from freezing to the ground. Clean debris from tracks.

If tracks are frozen to the ground, move machine carefully to prevent damage to drive train and tracks.

Brake Auto Apply

Brake automatically engages under the following conditions:

- When the engine is not running.
- If transmission control lever (TCL) is in neutral (N) and machine senses hydrostatic motor movement for more than 1.5 seconds.

Brake Hill Hold

CAUTION: Prevent possible injury from unexpected machine movement. Never rely on transmission control lever (TCL) alone to keep machine from moving. Machine can unexpectedly roll or move under power, resulting in death or serious injury. Always engage park lock levers to hold machine.

Brake hill hold feature is intended to prevent machine from continuing to creep or roll when transmission is in neutral and machine is on an incline or decline.

Brake hill hold automatically engages under the following conditions:

- If TCL is in neutral (N) and machine senses hydrostatic motor movement for more than 3 seconds.
- If TCL is in forward (F) or reverse (R), decelerator/brake pedal is pushed all the way to the floor (not into brake range), and machine senses hydrostatic motor movement for more than 3 seconds.

Brake hill hold status is no longer active when the following conditions exist:

- If park lock levers are down (unlocked) position.
- If decelerator/brake pedal is not pushed all the way to floor.
- If TCL is in forward (F) or reverse (R).

Stopping Machine Manually

CAUTION: Prevent possible injury from unexpected machine movement. Pushing on decelerator/brake pedal will stop machine abruptly. Brake will release as pedal is released. Moving the park lock levers to up (locked) position will stop machine abruptly.

Stop crawler by doing one of the following:

- Move transmission control lever (TCL) to neutral (N).
- Depress decelerator/brake pedal to floor.
- Move park lock levers to up (locked) position.

CAUTION: Prevent possible injury from overturning the machine. If blade is dropped when moving rapidly down a steep hill, machine may overturn.

- If machine cannot be stopped using methods listed above, drop blade to stop machine.

CN93077,00002F1 -19-02DEC14-1/1

Parking the Machine

IMPORTANT: Avoid engine damage. Before stopping engine that has been operating at working load, idle engine at 1/2 speed for 2 minutes to cool hot engine parts. If engine stalls while operating under load, restart engine immediately and idle at 1/2 speed for 2 minutes before stopping to allow coolant to continue circulating through engine.

IMPORTANT: To avoid damage to turbocharger, run engine at slow idle with no load for 2 minutes.

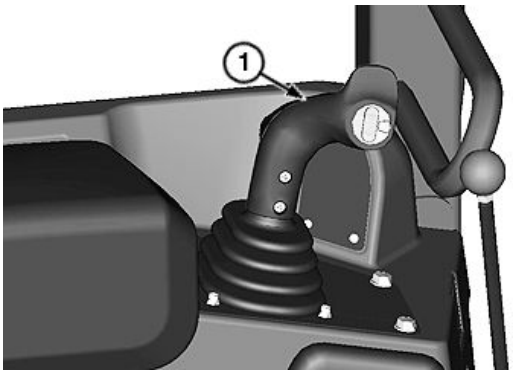
If engine stop switch is pressed and the turbocharger needs to cool down, a pop-up displays on the monitor. The engine will run until the turbocharger is cool enough to shut down.

1. Park machine on a level surface.
2. Lower all equipment to ground.
3. Move transmission control lever (TCL) (1) to neutral (N).

CAUTION: Prevent possible injury from unexpected machine movement. Never rely on transmission control lever (TCL) alone to keep machine from moving. Machine can unexpectedly roll or move under power, resulting in death or serious injury. Always engage park lock levers to hold machine.

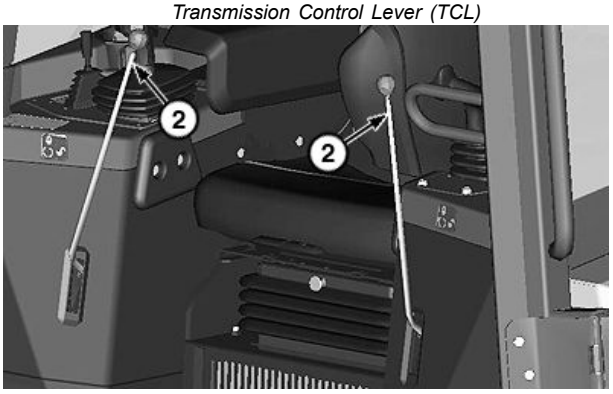
4. Move park lock levers (2) to up (locked) position.
5. Run engine at 1/2 speed without load for 2 minutes.
6. Press engine speed decrease switch (3) on sealed switch module (SSM) to slow idle.
7. Press engine stop switch (4) to stop engine.

1— Transmission Control Lever (TCL)
2— Park Lock Lever (2 used)
3— Engine Speed Decrease Switch
4— Engine Stop Switch



Transmission Control Lever (TCL)

TX1176507 —UN—04NOV14



Park Lock Levers

TX1169521 —UN—19AUG14



Sealed Switch Module (SSM) (IGC shown)

TX1176508 —UN—04NOV14

Continued on next page

CN93077,00004A1 -19-18DEC14-1/2

8. Relieve pressure within the hydraulic system.

   Integrated Grade Control (IGC) Machines:

   Press and release engine start switch (5) once. DO NOT START engine.

   Press and hold the hydraulic enable switch (6) while moving the control levers to release hydraulic pressure.

   Press engine stop switch (4).

   Non IGC Machines:

   Cycle hydraulic functions several times until circuit pressures have been discharged.

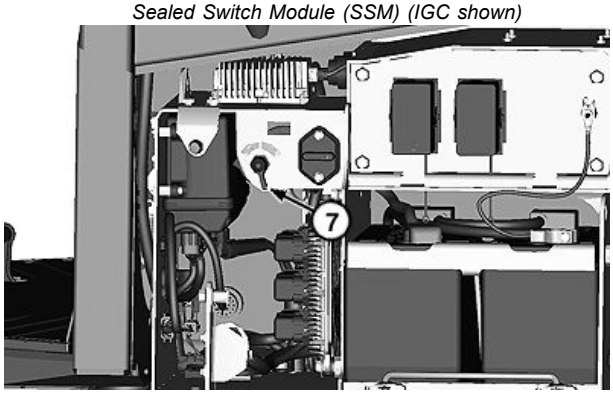
9. Turn battery disconnect switch (7) to OFF position.

4— Engine Stop Switch
5— Engine Start Switch
6— Hydraulic Enable Switch
7— Battery Disconnect Switch



TX1176513 —UN—04NOV14

Sealed Switch Module (SSM) (IGC shown)



TX1176514 —UN—04NOV14

Battery Disconnect Switch

CN93077,00004A1 -19-18DEC14-2/2

Hydraulic System Pressure Release

CAUTION: Prevent possible injury from high-pressure fluid. Discharge accumulator before servicing any hydraulic components. Hydraulic oil in accumulator can be stored at pressures equal to or above system relief pressures.

Integrated Grade Control (IGC) Machines:

With engine off, pressing and holding hydraulic enable switch (3) while moving the control levers releases hydraulic pressure.

To relieve pressure within the hydraulic system:

1. Lower all equipment to ground and press engine stop switch (2).
2. Press and release engine start switch (1) but DO NOT start engine.
3. Press and hold hydraulic enable switch.
4. Cycle hydraulic functions several times until circuit pressures have been discharged.
5. Press engine stop switch.

Non IGC Machines:

1. Lower all equipment to ground and press engine stop switch.



TX1176604 —UN—04NOV14

Sealed Switch Module (SSM) (IGC shown)

1— Engine Start Switch
2— Engine Stop Switch
3— Hydraulic Enable Switch

2. Cycle hydraulic functions several times until both circuit and accumulator pressures have been discharged.

CN93077,00004A4 -19-09DEC14-1/1

Blade Release

The blade release procedure is to be used when blade is in a partially raised position and engine is stopped and will not start.

Integrated Grade Control (IGC) Machines:

1. Press engine start switch (1) to energize machine.
2. Press and hold hydraulic enable switch (3) (LED illuminated) on sealed switch module (SSM).
3. Hold hydraulic enable switch while moving blade control lever forward to blade lower position until blade is lowered to ground.
4. Release hydraulic enable switch to disable hydraulics (LED off).
5. Press engine stop switch (2).
6. Turn battery disconnect switch to OFF position.

Non IGC Machines:

1. Press engine stop switch.
2. Move blade control lever forward to blade lower position until blade is lowered to ground.



TX1176604 —UN—04NOV14

Sealed Switch Module (SSM) (IGC shown)

1— Engine Start Switch
2— Engine Stop Switch
3— Hydraulic Enable Switch

CN93077,00004A5 -19-05NOV14-1/1

Exhaust Filter

The exhaust filter is a critical component in the engine's emissions control system, which is required to meet governmental emissions regulations. The exhaust filter captures soot and ash to prevent its release into the atmosphere. To keep the exhaust filter functioning properly, soot and ash must be eliminated from the exhaust filter. The process of eliminating collected soot is called exhaust filter cleaning. There are three types of exhaust filter cleaning available to the operator:

- **NATURAL/PASSIVE**
- **AUTO**
- **PARKED**

There are five soot levels to describe the amount of restriction in the exhaust filter. These levels determine the type of cleaning that is required:

- LOW
- MODERATE
- HIGH
- VERY HIGH
- SERVICE

For more information, see Operation—Exhaust Filter, SDM. (Section 2-3.)

Auto cleaning is able to activate (if not disabled by the operator) when the exhaust filter restriction is anywhere between MODERATE and HIGH soot levels. Auto cleaning is no longer available if exhaust filter restriction reaches VERY HIGH or SERVICE soot levels.

Parked cleaning can only be initiated when the exhaust filter restriction reaches HIGH or VERY HIGH soot levels.

If exhaust filter restriction reaches SERVICE soot level, contact your authorized dealer.

In addition to the cleaning procedures, the exhaust filter also requires maintenance to remove accumulated ash as required, which is a noncombustible result of additives used in crankcase lubrication oils and the fuel. Ash removal CANNOT be performed by the operator. For more information on exhaust filter ash removal, see Service Exhaust Filter. (Section 3-3.)

NOTE: Unnecessary idling can cause exhaust filter soot to accumulate more quickly. For the best possible exhaust filter operation that requires the least amount of operator interaction, keep idling to a minimum.

Natural/Passive Cleaning

During normal machine operation, the exhaust heat will naturally clean the soot buildup in the exhaust filter.

Auto Cleaning

CAUTION: Servicing machine during exhaust filter auto cleaning can result in serious personal injury. Avoid exposure and skin contact with hot gases and components.

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

Auto cleaning is set from the factory in the monitor menu to be enabled. Different settings can be chosen for the default state after a power cycle. These settings are:

NOTE: If auto cleaning is set to disabled, machine may revert back to enabled after a power cycle.

□ REMEMBER SETTING
□ DEFAULT TO ENABLED
□ DEFAULT TO DISABLED

See your authorized dealer if a different default setting is preferred.

With auto cleaning enabled, exhaust filter cleaning is automatically performed as needed, with no interaction from the operator. An exhaust filter cleaning indicator will illuminate on the monitor when the system is actively performing an exhaust filter auto cleaning. Machine can be operated as normal. When the exhaust filter auto cleaning process has completed its cycle, the exhaust filter cleaning indicator will automatically turn off.

If filter restriction reaches the HIGH soot level with auto cleaning enabled, further action is needed to clean the filter. Initiate a parked filter cleaning.

NOTE: Disabling exhaust filter auto cleaning is not preferred. Whenever possible, auto cleaning should be enabled to keep soot buildup to a minimum and to increase overall machine uptime.

If operating in conditions where elevated exhaust temperatures may be unsafe, auto cleaning can be disabled. When disabled, a green exhaust filter auto cleaning disabled indicator will display on monitor. For more information, see Operation—Exhaust Filter Auto Cleaning, SDM. (Section 2-3.)

Parked Cleaning

CAUTION: Servicing machine during exhaust filter parked cleaning can result in serious personal injury. Avoid exposure and skin contact with hot gases and components.

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

Avoid death or serious injury from machine movement. Do not leave running machine unattended during exhaust filter cleaning.

Continued on next page

CN93077,00004A6 -19-05OCT16-1/2

IMPORTANT: Avoid machine damage. Always park machine in a safe location and check for adequate fuel level before beginning exhaust filter parked cleaning.

Parked cleaning is prompted by the monitor and initiated by the operator. This process allows the system to clean the exhaust filter. Parked cleaning is most commonly initiated after extended operation with exhaust filter auto cleaning disabled or frequent engine shut downs have occurred while the auto cleaning process was active.

During the cleaning process, the engine speed will be controlled automatically and the machine must remain parked to complete the procedure. Complete cleaning time takes less than 45 minutes, but will vary on several criteria including fuel type, oil type, duty cycle, and the number of previously aborted exhaust filter cleaning requests.

Parked cleaning needs to be activated through the monitor menu. The first parked cleaning menu offers a choice to either automatically shut down the machine after parked cleaning is complete or to not shutdown. For more information, see Operation—Exhaust Filter Parked Cleaning, SDM. (Section 2-3.) Parked cleaning can only be initiated if the filter restriction is at HIGH or VERY HIGH soot levels. Machine needs to be in a predetermined safe state. This safe state includes three conditions:

- Park brake engaged.
- Forward, neutral, and reverse (FNR) in neutral position.
- Engine running at slow idle.

Parked cleaning occurs in two stages. The first stage is to prepare the exhaust filter by automatically raising exhaust filter temperature to 300°C (572°F). Preparation status is displayed on the monitor. Once the exhaust filter temperature reaches 275—300°C (527—572°F), the cleaning process may begin. The second stage is when the cleaning process begins and may result in exhaust filter temperatures exceeding 550°C (1022°F). Progress status is displayed on the monitor. The cleaning process will continue until one of the following conditions exist:

- Until there is no soot restriction in the exhaust filter
- 45 minutes has elapsed causing a time-out
- Operator cancels the parked cleaning procedure by releasing park brake or increasing engine speed
- Parked cleaning is aborted due to a fault
- Engine runs out of fuel
- Engine is shut off by operator (not recommended)

The exhaust filter cleaning indicator will be illuminated on the monitor during a parked cleaning. When parked cleaning procedure is complete, engine will automatically return to slow idle and exhaust filter cleaning indicator will turn off. Machine is ready to return to operation.

IMPORTANT: Avoid engine damage. If machine will NOT be returning to operation immediately after a parked cleaning procedure, allow the engine and exhaust filter time to return to normal operating temperatures BEFORE stopping engine.

Operator can choose to have the machine automatically shutdown when parked cleaning procedure is complete by selecting the auto-shutdown feature from the monitor parked cleaning menu. If auto-shutdown was not chosen and operator decides not to return to operation after a parked cleaning procedure, allow the engine and exhaust filter time to return to normal operating temperatures BEFORE stopping engine.

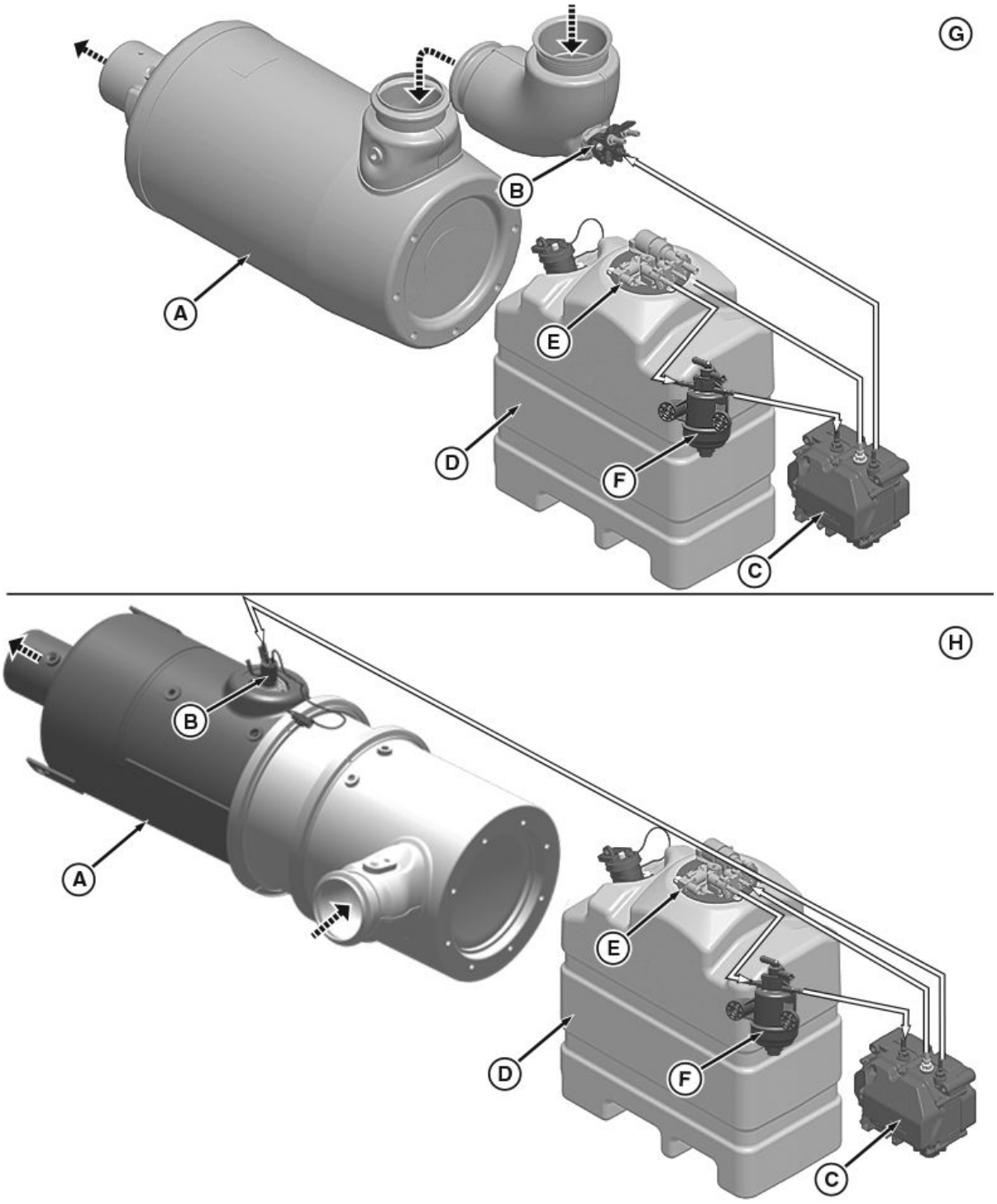
Avoid disabling the auto cleaning process unless absolutely necessary. Repeated disabling of the auto cleaning process or ignoring prompts to perform a parked cleaning procedure, will cause engine power limitations and can eventually lead to dealer required service cleaning.

Ash Removal

The exhaust filter cleaning procedures described previously cleaned the soot from the machine's exhaust filter. The exhaust filter also traps ash deposits over time which are not removed during an exhaust filter cleaning. When the exhaust filter has run several thousand hours, these ash deposits can restrict engine performance and must be removed. For more information on ash removal, see Service Exhaust Filter. (Section 3-3.)

CN93077,00004A6 -19-05OCT16-2/2

Selective Catalytic Reduction (SCR) System Overview



SCR System

A—SCR Catalyst
B—DEF Dosing Injector
C—DEF Dosing Unit
D—DEF Tank
E—DEF Tank Header Assembly
F—Inline DEF Filter (If Equipped)
G—Modular Canning Configuration
H—Inline Canning Configuration

Continued on next page

DX,SCR,OVERVIEW -19-30MAR20-1/2

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

Qualified Emergency Use — SCR Override Option

NOTE: This is a US EPA only option. Engine must have a US EPA and EU emission label. Option is not available for engine with EU only emission label.

IMPORTANT: Operating the engine without emissions related derates could damage the aftertreatment system.

Description: Qualified Emergency Use – SCR Override Option

Under the US EPA's regulations the Qualified Emergency SCR Override Option (Emergency SCR Override) is considered an Auxiliary Emission Control Device (AECD), which is only permitted during qualified emergency situations. To ensure compliance with US EPA regulations governing this type of AECD it is important that operators read the following information and comply with the requirements.

Emergency SCR Override enables a Selective Catalyst Reduction (SCR) equipped application to operate without emissions-related derates for a specified period of time during qualified emergency situations. A qualified emergency situation is one in which the condition of an engine's emission controls poses a significant direct or indirect risk to human life. An example of a direct risk is an emission control condition that inhibits the performance of an engine being used to rescue a person from a life-threatening situation. An example of an indirect risk is an emission control condition that inhibits the performance of an engine being used to provide electrical power to a data center that routes "911" emergency response telecommunications.

Emergency SCR Override Activation / Reporting

The operator can activate the Emergency SCR Override through the operator interface. Once activated, the engine can operate free of emissions-related derates for 120 hours. If the derate condition is corrected during the 120 hours, the Emergency SCR Override can be paused in order to preserve the remainder of time for future use. The option expires along with any remaining time 240 hours after the Emergency SCR Override is activated.

When the Emergency SCR Override has expired, the engine informational Diagnostic Trouble Code (DTC) is displayed to the operator upon every engine start and every hour until acknowledged by the operator. To clear the DTC and reset the Emergency SCR Override timer for future use, the operator (or other person responsible for the engine/equipment) must submit a report to the John Deere Dealer Technical Assistance Center, which must include the following:

- Contact name, mail and email addresses, and telephone number for responsible company or entity
- Description of the emergency situation, the location of the engine during the emergency, and the contact information for an official who can verify the emergency situation (such as a county sheriff, fire marshal, or hospital administrator)
- Reason for the Emergency SCR Override activation during the emergency situation, such as the lack of diesel exhaust fluid, or the failure of an emission-related sensor when the engine was needed to respond to an emergency situation
- Engine's serial number
- Description of the extent and duration of the engine operation while the Emergency SCR Override was active, including a statement describing whether or not the Override was manually deactivated after the emergency situation ended

In no event may this report be submitted to John Deere or other qualified service provide later than 60 calendar days after the Emergency SCR Override is activated.

LEGAL Notification

The following actions by the operator are an improper use of the Emergency SCR Override and are prohibited by the Clean Air Act and US EPA regulations:

- Activating the Emergency SCR Override for something other than a qualified emergency situation;
- Failing to disable the Emergency SCR Override after a qualified emergency situation ends; and,
- Failing to notify John Deere and send it reports as required in this Operators Manual and federal regulations. Note: John Deere is required to report to the US EPA the operator's failure to report to it any Emergency SCR Override event (to the extent it becomes aware of such event).

The maximum civil penalty the US EPA may assess under 40 CFR 1068.101 is $4,454 for each day an engine or piece of equipment is operated in violation of the requirements associated with the Emergency SCR Override.

US EPA regulations governing the Emergency SCR Override can be found at 40 CFR §1039.665, as may be amended.

DX,SCR,EMRGNCY,OVERIDE -19-21DEC16-1/1

Service ADVISOR™ Remote (SAR) Software Delivery Process

Theory of Operation

Service ADVISOR™ is a diagnostic tool used by John Deere dealers to perform diagnostics as well as updates to machine settings and software. Dealers can access diagnostic trouble codes and diagnostic addresses, create readings and recordings, and program controllers. This technology consists of both software and hardware. Technicians attend a minimum of 8 hours of training to become certified in utilizing this tool.

Service ADVISOR Remote (SAR) is a function of Service ADVISOR. SAR allows the dealer technician to connect to a SAR-enabled machine via the JDLink™ network to remotely access diagnostic trouble code information and record diagnostic data, as well as program controllers.

Similar to software (payload) updates in the computer industry, SAR enables John Deere to remotely deliver updated software via the JDLink hardware on board. Remote programming gives John Deere the ability to update software to enhance the performance of the machine. This capability can be used to reprogram most machine controllers. The user actively participates with the dealer in this process by both downloading the software update and installing the software update.

NOTE: Some vehicle controllers may not be compatible for SAR reprogramming.

Service ADVISOR is a trademark of Deere & Company
JDLink is a trademark of Deere & Company

For more information about Service ADVISOR Remote, consult your local John Deere dealer.

Vehicle Reprogramming

NOTE: Factory setting is set to always accept software downloads. To change this setting, consult your John Deere dealer to either be prompted for software updates or deny all software updates.

Normal machine operation can continue during the software download process.

Customer will be notified by John Deere or a John Deere dealer of pending software updates with appropriate installation instructions via letter or phone.

Customer will determine the appropriate time and place to install the new software on the machine via the machine monitor. For more information, see Operation—Software Update, SDM. (Section 2-3.)

Once the customer initiates delivery and installation of the software, SAR will start and manage the installation of the new payload to the appropriate machine controllers.

NOTE: Software download speed capability depends on JDLink cellular coverage.

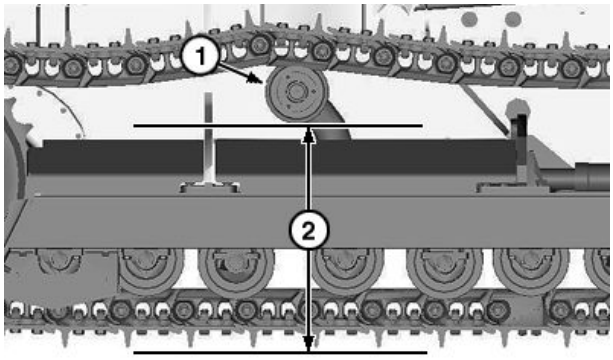
CN93077,00004A7 -19-04NOV14-1/1

Operating in Water and Mud

IMPORTANT: Damage to the hydrostatic motors, hydrostatic pumps, cooling fan, and other components could occur if fording depth is exceeded. Never exceed maximum fording depth (2) higher than the lower edge of carrier rollers (1).

When it is necessary to operate or drive the machine in water or mud, water or mud must not go higher than the lower edge of carrier rollers (1).

After working in water or mud, lubricate all grease and lubrication points.



XJ1276625A —UN—16APR19

Maximum Fording Depth

1— Carrier Roller (2 used) **2— Maximum Fording Depth**

PN36905,00099D6 -19-17APR19-1/1

Operating on Steep Hills

IMPORTANT: Use caution when operating on steep hills. It is important to operate machine at slow transmission speeds to protect the engine and/or transmission from damage.

NOTE: Disabling economy (ECO) mode when continuously operating on steep slopes is recommended.

CN93077,0000430 -19-17OCT17-1/1

Avoid Track Damage

IMPORTANT: Avoid machine damage. If machine is equipped with a sealed and lubricated track, avoid water being forced between the plastic pins and rubber plugs while washing machine with pressure washer.

JH91824,00002EA -19-22JUL10-1/1

Extend Undercarriage Life

Proper maintenance and adjustment of your machine's undercarriage will provide maximum wear life in many operating and soil conditions. You can and will make a difference in getting maximum wear life from the components. Here are some operating tips that will make a difference:

PROPER TRACK SAG ADJUSTMENT—Maintaining proper amount of track sag 45—57 mm (1.75—2.25 in) is the most important adjustment to maintain. Tight tracks can reduce wear life by more than 50 percent and cause loading on undercarriage components, increasing the wear rate. Track sag should be adjusted as soil conditions change. Observe the amount of sag every day and adjust as needed. Refer to the periodic service interval in this manual or decal on machine for proper adjustment procedure.

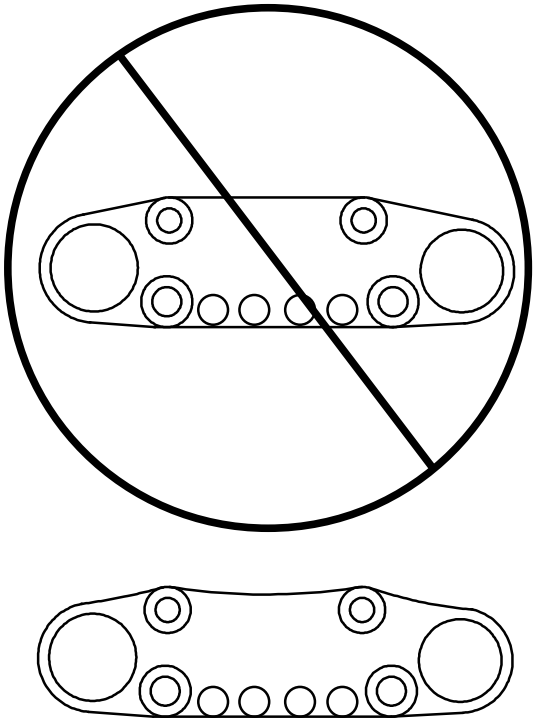
REDUCE OPERATING TIME IN REVERSE—On all track machines, bushing and sprocket wear rate increases significantly when operating in reverse rather than forward.

To get the most life out of undercarriage, minimize the amount of time operating in reverse.

REDUCE OPERATING AND TRAVEL SPEED WHEN POSSIBLE—As machine speed increases, wear rates increase. Operate at minimum ground speed required to match type of work. Excessive track slipping will also increase wear, particularly on grouser tips.

REDUCE UNNECESSARY ADDED WEIGHT—Additional machine weight due to counterweight attachments will cause faster wear rate.

USE PROPER CHAIN GUIDES OR GUARDS—Properly installed and maintained track guides or guards will keep chain aligned with roller and idler, extending wear life.



T207501 —UN—15FEB05

Extend Undercarriage Life

SELECT PROPER TRACK PAD WIDTH—Wider track pads increase loading and wear on undercarriage components. Use narrowest pad possible for operating conditions.

CN93077,00004D4 -19-06FEB19-1/1

Hydraulics Enable—If Equipped

Pressing hydraulic enable switch (1) once (LED illuminated) enables all hydraulic functions if engine is running.

Pressing hydraulic enable switch again (LED off) disables all hydraulic functions in all conditions.

With switched power on but engine off, pressing and holding hydraulic enable switch while moving control levers releases hydraulic pressure.

1— Hydraulic Enable Switch

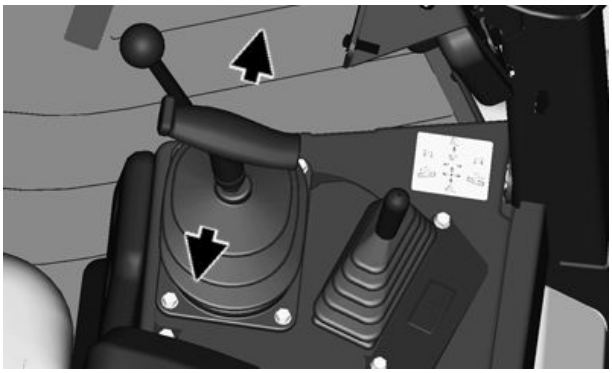


TX1176605 —UN—04NOV14

Sealed Switch Module (SSM) (IGC shown)

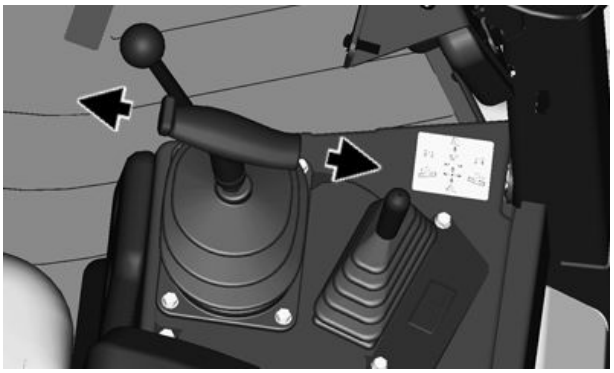
CN93077,00004AA -19-04NOV14-1/1

Operating Blade



TX1101285 —UN—18NOV11

Blade Control Lever



TX1101283 —UN—18NOV11

Tilting Blade

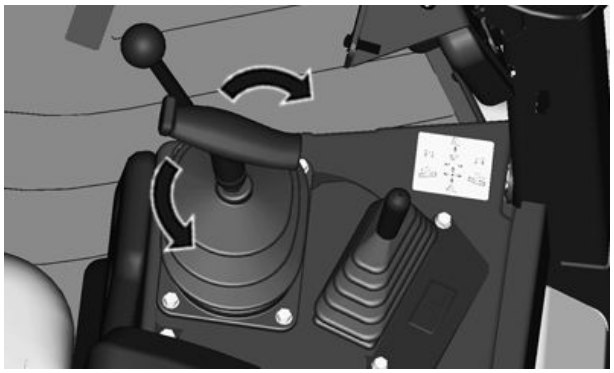
IMPORTANT: To avoid overheating of hydraulic oil, allow control lever to return to neutral when cylinders reach the end of their travel.

Blade float detent position (1) is used for back blading.

When blade control lever is put into float position, blade control lever must be moved manually back to neutral position.

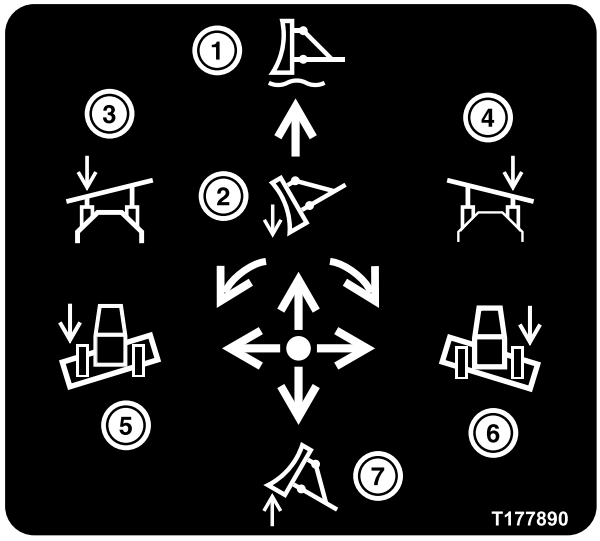
- Pull blade control lever rearward for blade lift (7).
- Push blade control lever forward for blade lower (2).
- Push blade control lever left for blade tilt left (5).
- Push blade control lever right for blade tilt right (6).
- Twist blade control lever counterclockwise for blade angle left (3).
- Twist blade control lever clockwise for blade angle right (4).

1— Blade Float Detent Position
2— Blade Lower
3— Blade Angle Left
4— Blade Angle Right
5— Blade Tilt Left
6— Blade Tilt Right
7— Blade Lift



TX1101284 —UN—18NOV11

Angling Blade



TX1177407 —UN—13NOV14

Blade Control Lever Function

CN93077,00004AC -19-13NOV14-1/1

Changing Blade Pitch

Changing blade pitch may be necessary depending on the type of work being done, soil conditions being dozed, or to change the feel of the dozer to operator's preference.

Blade Pitch Forward Advantages:

With the blade pitched forward, the blade will not carry as much soil. The weight of the soil carried by the blade adds to the weight of the dozer and moves the balance of weight on the tracks forward. A dozer off balance can cause the front idlers of the crawler to sink in loose or soft soils. When the idlers sink, the blade cuts unevenly into the soil. With the blade pitched forward, the dozer balance does not change as much with a full blade; therefore, the tendency for idlers to sink is reduced.

With blade pitched forward, there is less of a tendency for dirt to come over the back of the blade when dozing uphill. It is also easier to drop dirt at the end of a push when dozing uphill or when dozing very sticky materials.

Blade Pitch Back Advantages:

With the blade pitched back, the cutting edge lies more horizontally, resulting in a heavier cut into soils. Having the cutting edge more horizontal also provides a smoother cut in heavy soils. More soil is carried by the blade when blade is pitched back. Carrying more soil on the blade adds to the weight of the dozer. Added dozer weight can increase push force in heavy soils. The soil carried by the blade also moves the balance of weight forward on the machine. In heavy soils, increased weight can be an advantage because the increased weight can help keep the front of the machine down and keep the cutting edge penetrating during heavy cutting.

Changing the Pitch:

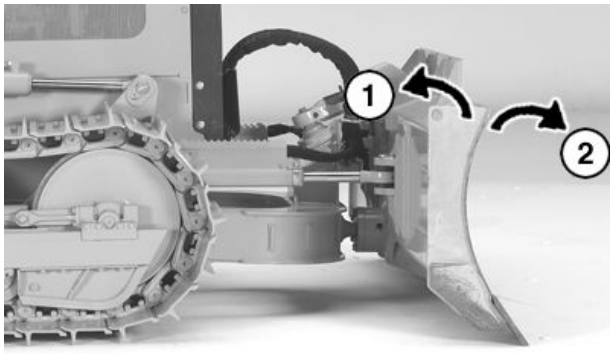
NOTE: Machine is delivered from the factory with the blade in the mid-pitched position (56°).

Pitching the blade back:

To pitch the blade back, rotate the adjusting sleeve nut (3) counterclockwise (left handed threads). The blade can be pitched back to a minimum of 52°. To achieve minimum pitch, rotate adjusting sleeve nut counterclockwise until it bottoms out against the casting.

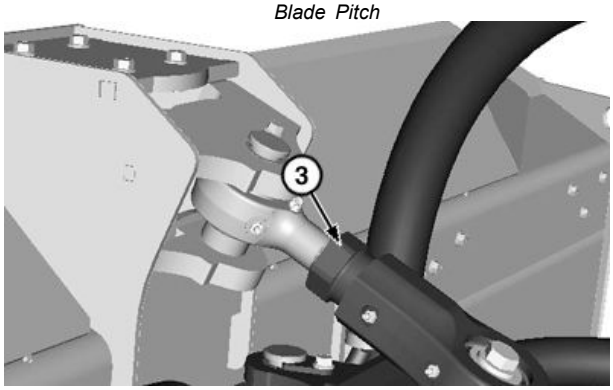
Pitching the blade forward:

To pitch the blade forward, rotate the adjusting sleeve nut clockwise (left-handed threads). The blade can be pitched forward to a maximum of 58°. To achieve maximum blade pitch, rotate adjusting sleeve nut clockwise until the internal snap ring bottoms out.



TX1034969A —UN—25JAN08

Blade Pitch



TX1105011A —UN—06JAN12

Blade Pitch Adjusting Sleeve

1— Back Pitch
2— Forward Pitch
3— Adjusting Sleeve Nut

Setting blade at mid-pitch:

Depending on the pitch of the blade, rotate the adjusting sleeve nut clockwise (if pitched less than 56°), or counterclockwise (if pitched greater than 56°). Look for visual indication of ridge on adjusting sleeve nut to be in line with leading edge of casting.

NOTE: Blade pitch adjustment may require release of cylinder hydraulic pressure.

CN93077,00004AD -19-04NOV14-1/1

Operating IGC System—Topcon Factory Installation, If Equipped



TX1161234 —UN—20MAY14

Blade Control Lever



TX1122271A —UN—27SEP12

IGC Display Unit

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.

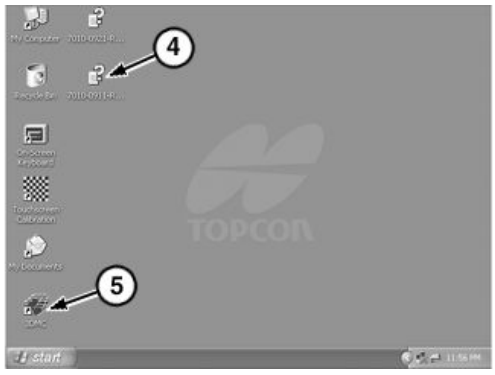
NOTE: Reference guide icon (4) has the label ***7010-0911*** *directly underneath the icon.*

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.*



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

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—If Equipped 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 the monitor. See Diagnostics—Machine Readings, SDM. (Section 2-3.)

CN93077,00004AB -19-11MAR15-1/1

Ripper Operation—If Equipped

IMPORTANT: When using the ripper, operate the machine in LOW travel speed.

Avoid machine damage. Do not turn machine with ripper engaged in material.

Using multi-teeth rippers is usually more beneficial versus selecting a higher travel speed.

Easy-to-rip material, which breaks into smaller pieces, can be removed with a multi-tooth ripper with two or three teeth.

During the ripper application, always make sure that both tracks are fully on the ground at all times. If necessary, prepare the site accordingly.

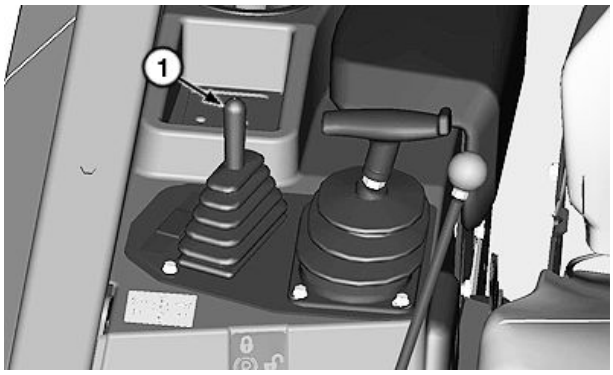
The ground should be ripped as deep as possible. If the ground is layered, proceed to rip one layer at a time. To reach the desired depth, running over the same track several times may be necessary.

Cutting crosswise may be necessary in some cases.

On slopes, always rip going downhill.

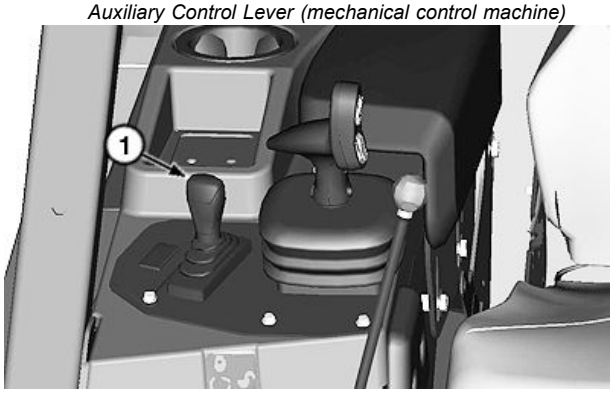
Operation of the Ripper

- To lower ripper, push the auxiliary control lever (1) forward.
- To raise ripper, pull the auxiliary control lever rearward.



TX1176024 —UN—30OCT14

Auxiliary Control Lever (mechanical control machine)



TX1176025 —UN—30OCT14

Auxiliary Control Lever (IGC machine)

1— Auxiliary Control Lever

CN93077,00004AF -19-09DEC14-1/1

Operating Winch—If Equipped

CAUTION: Prevent possible injury from breaking cable. Always be sure rear screen between winch and operating compartment is in place before operating winch.

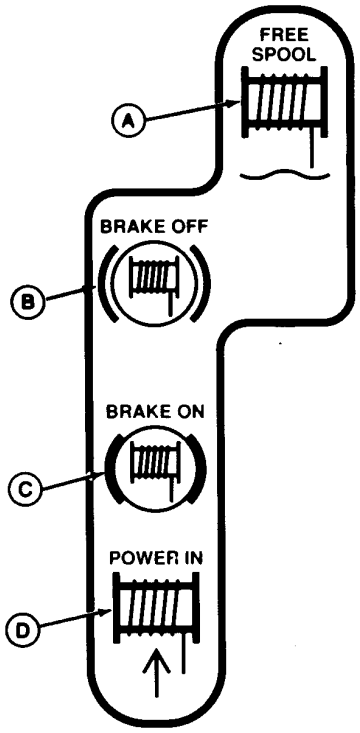
Operate the winch only from operator's station.

A coolant heater is recommended with winch option if ambient temperature is below -18°C (0°F).

Before operating winch, place winch control in free spool to circulate oil through winch until winch oil reaches operating temperature.

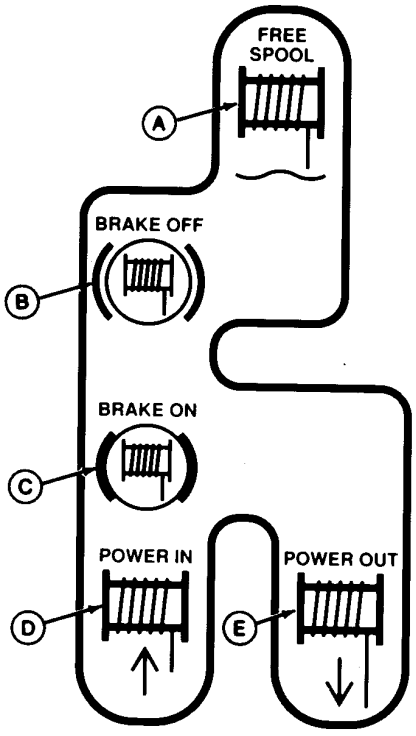
- Move lever to FREE SPOOL (A) position so cable can be pulled out freely.
- Move lever to the BRAKE OFF (B) position so cable can be pulled out with tension.
- Move lever to the BRAKE ON (C) position to hold cable.
- Move lever to POWER IN (D) position to wind cable on drum.
- Move lever to POWER OUT (E) position (if equipped) to unwind cable from drum.

A—Free Spool
B—Brake Off
C—Brake On
D—Power In
E—Power Out



T7440BG —UN—20DEC90

Standard Control Pattern



T7440BH —UN—20DEC90

Power In, Power Out Control Pattern

TX,36,FF2210 -19-02DEC14-1/1

Fasten Cable to Winch Drum—4000S Series

Maximum Cable Capacities	
Cable Size	**Winch Capacity**
15.88 mm (0.625 in.)	77.4 m (254 ft)
19.05 mm (0.75 in)	54.6 m (179 ft)
22.23 mm (0.875 in)	39.3 m (129 ft)

To conform with certain state laws, the cable must be attached to the drum so that it can come loose if the cable is unwound from winch drum.

Attach cable to winch drum using one of the following methods:

CAUTION: Prevent possible personal injury from cutting wire. Wear gloves when handling cable to protect hands from cable wire cuts. DO NOT guide cable on winch with hands.

IMPORTANT: If a ferruled cable is used, the drum plug (B) MUST be installed to prevent cable from bending cable slot.

First Method—Breakaway Anchor:

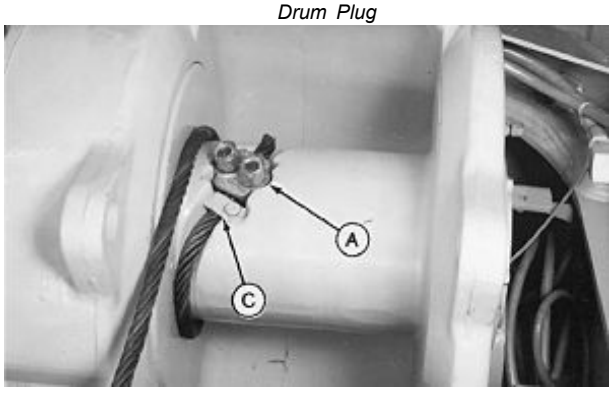
1. Attach a ferrule or cable clamp (A) to end of cable.
2. Wrap cable around the drum and slide the ferrule or cable clamp under the cable and into slot in drum and secure with tab (C).

A—Ferrule or Cable Clamp
B—Drum Plug
C—Tab



T7347AS —UN—27SEP90

Drum Plug



T7382AH —UN—03OCT90

Cable Clamp and Tab

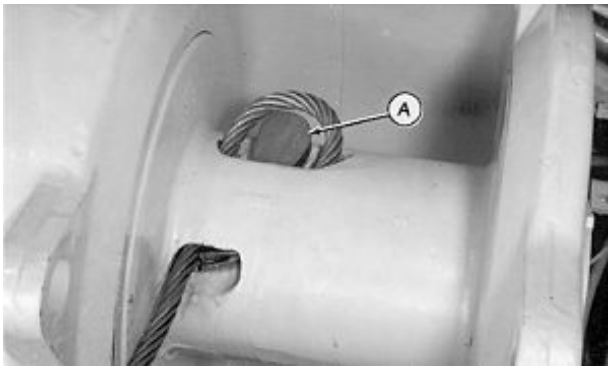
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TX,35,RR,798 -19-21AUG17-1/3

Second Method—Fixed Anchor:

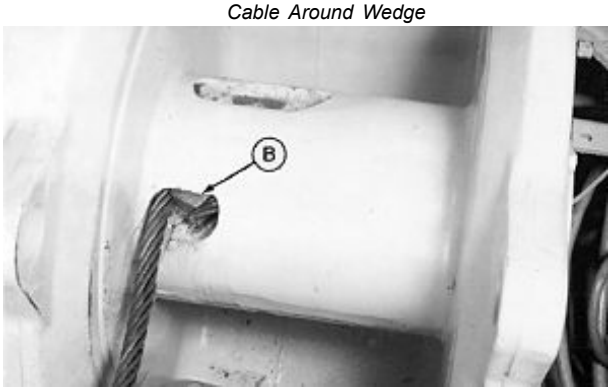
1. Remove drum plug.
2. Thread cable up through small hole and wrap cable around wedge (A). Insert cable back down through lower hole and pull wedge into drum (B).

A—Wedge **B—Drum**



T7382AK —UN—03OCT90

Cable Around Wedge



T7382AJ —UN—03OCT90

Drum

Continued on next page

TX,35,RR,798 -19-21AUG17-2/3

Third Method:

IMPORTANT: If cable is unwound below one turn on drum, cable will come off drum.

1. Remove drum plug (B).

CAUTION: Prevent possible personal injury from cutting wire. Wear gloves when handling cable to protect hands from cable wire cuts. DO NOT guide cable on winch with hands.

2. Thread cable up through small hole and insert cable back down through lower hole. Pull loop into drum.
3. Adjust free spool drag to operator's preference. See Winch Free Spool Drag Adjustment in this section.

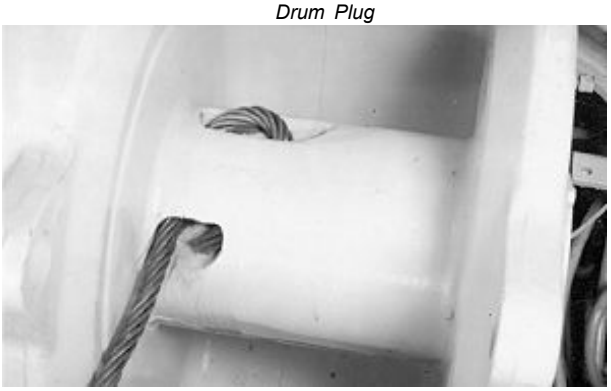
NOTE: Factory free spool drag setting was done without cable; adjust free spool drag to operator's preference when cable is added.

B—Drum Plug



Drum Plug

T7347AS —UN—27SEP90



Loop in Drum

T7382AI —UN—03OCT90

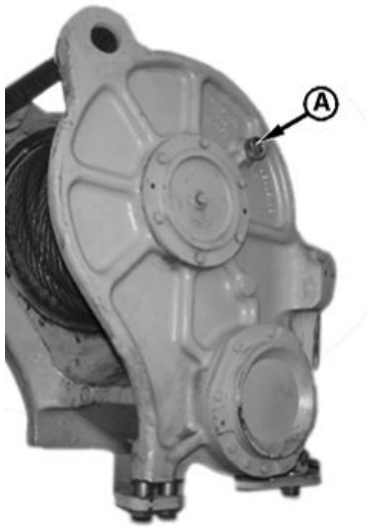
TX,35,RR,798 -19-21AUG17-3/3

Winch Free Spool Drag Adjustment

The winch drum drag can be adjusted to operator's preference.

1. Start engine.
2. Lower equipment to ground.
3. Engage park brake.
4. Place winch control handle in FREE SPOOL position.
5. Loosen nut (A).
6. Adjust slotted shaft to desired winch drum drag.
7. Tighten nut.

A—Nut



T118240B —UN—12NOV98

Winch (right side)

TX,35,RR4679 -19-10JAN12-1/1

Loading Machine on a Trailer

NOTE: An over-width permit may be required to transport machine. Height verification of machine and trailer before transporting is necessary.

1. Keep trailer bed clean. Put chocks against truck wheels.
2. Use a ramp or loading dock. Ramps must be strong enough, have a low angle, and be of correct height.
3. Load and unload the machine on a level surface.
4. Fasten seat belt before starting engine.
5. Make sure doors are securely latched while loading and unloading.

CAUTION: Prevent possible injury from unexpected machine movement. Whenever possible, back the machine onto the trailer to prevent possible tipping.

6. Drive the machine onto the ramps squarely.
7. The centerline of machine should be over the centerline of trailer.
8. Lower all equipment onto blocks.
9. Move transmission control lever (TCL) to neutral (N).

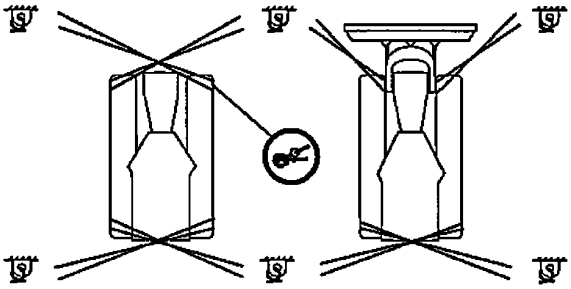
CAUTION: Prevent possible injury from unexpected machine movement. Never rely on transmission control lever (TCL) alone to keep machine from moving. Machine can unexpectedly roll or move under power, resulting in death or serious injury. Always engage park lock levers to hold machine.

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

IMPORTANT: To avoid damage to turbocharger, run engine at slow idle with no load for 2 minutes.

If engine stop switch is pressed and the turbocharger needs to cool down, a pop-up displays on the monitor. The engine will run until the turbocharger is cool enough to shut down.

11. Run engine at slow idle no load for 2 minutes.
12. Press engine decrease switch on sealed switch module (SSM) to slow idle.



TX1053585 —UN—22DEC08

Tiedowns

13. Press engine stop switch to stop engine.
14. Relieve pressure within the hydraulic system.

    Integrated Grade Control (IGC) Machines:

    Press engine start switch once. DO NOT start engine.

    While engine is not running, press and hold hydraulic enable switch, while moving control levers, to release hydraulic pressure.

    Press engine stop switch.

    Non IGC Machines:

    Cycle hydraulic functions several times until circuit pressures have been discharged.

15. Turn battery disconnect switch to OFF position.
16. Cover exhaust opening to prevent entry of wind and water.

IMPORTANT: Avoid machine damage. Fasten chains or cables to machine frame or track shoes. Do not place chains or cables over or against hydraulic lines or hoses.

17. Fasten each corner of machine to trailer with chains or cables.
    - Front: Use either outside or inside of track shoe as shown.
    - Side: Use inside edge of track shoe.
    - Rear: Use outer edge of track shoe. In addition, using the drawbar (if equipped) is permissible.

CN93077,00004CD -19-18DEC14-1/1

Lifting the Machine

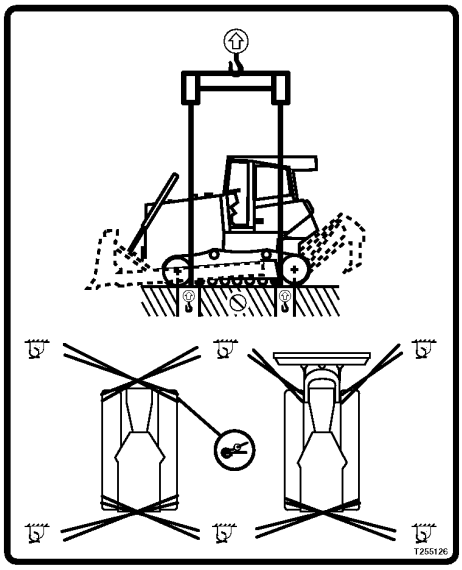
CAUTION: Avoid injury or machine damage from unexpected machine movement. Properly lift machine and use proper tiedowns.

NOTE: Do not use handles or steps in order to lift or tiedown machine.

For specific weight information, see Miscellaneous—Specifications. (Section 4-6.)

1. Engage parking brake.
2. Use proper rated cables and slings for lifting. The crane should be positioned so that machine is lifted parallel to the ground.

   Position slings beneath front of track and beneath rear of track in designated lifting zones.
3. On sharp corners, use corner protectors.
4. To prevent contact with machine, lifting cables should have sufficient length.
5. Width and strength of the spreader bar should be sufficient to prevent contact with machine.



Lifting the Machine

TX1085702 —UN—13DEC10

CN93077,00003AA -19-27SEP14-1/1

Releasing Park Brake to Tow the Machine

This procedure is used to release the park brakes for towing the machine.

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

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

1. Remove rubber mat and floor plate from operator's station to access hydrostatic pumps.

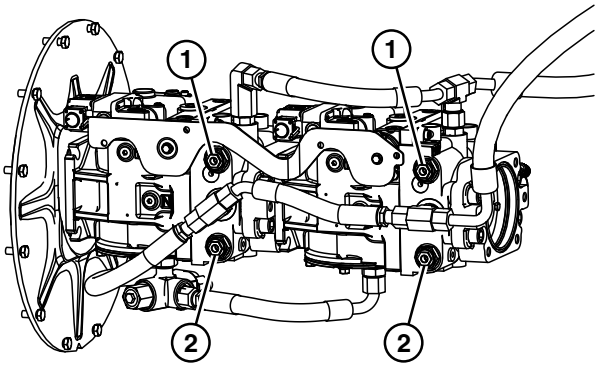
NOTE: Multi-function pump bypass valves can be turned out using a 1-3/8 in. socket and a flexible head ratchet. Engine does not have to be running to tow machine.

The forward multi-function pump bypass valves (1) are in the forward side of the closed loop circuit and the reverse multi-function pump bypass valves (2) are in the reverse side of the closed loop circuit. The front hydrostatic pump controls the right track and the rear hydrostatic pump controls the left track.

2. **TO TOW MACHINE FORWARD OR REVERSE:** Both forward and reverse multi-function pump bypass valves must be turned out (counterclockwise) 3 turns.
3. Blade must be raised off the ground.

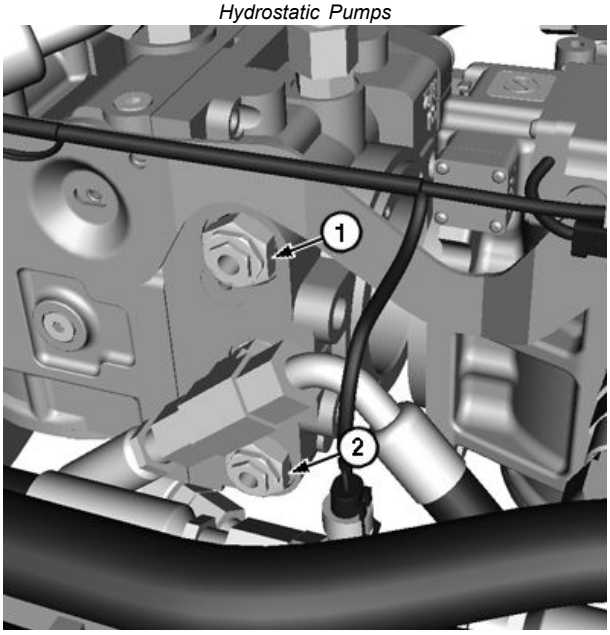
   Electrohydraulic (EH) Machines: If engine will crank but will not start, blade can be raised by cranking engine while pressing and holding hydraulic enable switch and engaging blade raise function.

   Manual Control Machines: If engine will crank but will not start, blade can be raised by cranking engine while engaging blade raise function.



TX1176770 —UN—11NOV14

Hydrostatic Pumps



TX1099754A —UN—07NOV11

Front Multi-Function Pump Bypass Valves

1— Forward Multi-Function Pump Bypass Valve

2— Reverse Multi-Function Pump Bypass Valve

Continued on next page

4. Disconnect brake hose quick coupler (3) from pump.

NOTE: If spare AM102420 Male Quick Coupler is not available, the male quick coupler can be removed from hydrostatic pump and used to adapt port-a-power hose. Install fitting cap to seal hydrostatic pump fitting.

5. Install AM102420 Male Quick Coupler (4) on port-a-power hose. Connect quick coupler fittings so port-a-power can pressurize the brake circuit.

6. Move park lock levers to the unlock (down) position.

NOTE: TOW will allow the machine to be towed without the system automatically applying the brakes (hill hold disabled).

7. Set brake control setting to TOW in the monitor. Use arrow and select buttons to navigate submenus to brake mode, highlight and select TOW. See Setup—Preferences, SDM. (Section 2-3.)

8. View park brake oil pressure in monitor. Use arrow and select buttons to navigate submenus to park brake oil pressure. See Diagnostics—Transmission Readings, SDM. (Section 2-3.)

IMPORTANT: Prevent over pressurizing the brake circuit. Brake circuit pressure must not exceed the maximum charge pressure. Brake seals can be damaged if pressurized above 2758 kPa (27.58 bar) (400 psi).

Release brakes using a port-a-power equipped with a pressure gauge so the pressure applied to the brakes can be monitored. Apply a minimum pressure of 1378 kPa (13.79 bar) (200 psi) and a maximum pressure of 2758 kPa (27.58 bar) (400 psi).

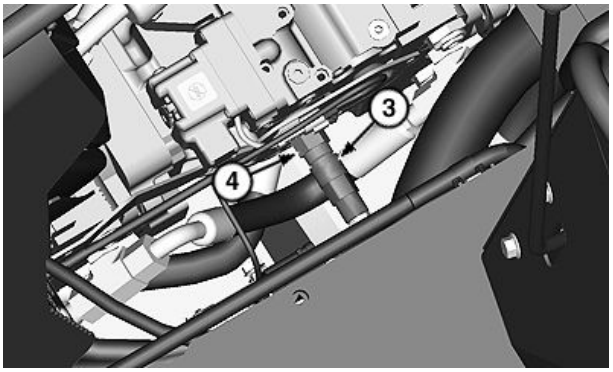
NOTE: The brakes initially start to release at approximately 896 kPa (8.96 bar) (130 psi) and are fully released at approximately 1310 kPa (13.1 bar) (190 psi). When the park lock levers are in the unlock (down) position, pressure to release the park brake can be monitored by accessing the BRAKE pressure submenu located in the SDM menu structure.

9. Pressurize brake circuit to specification.

Specification

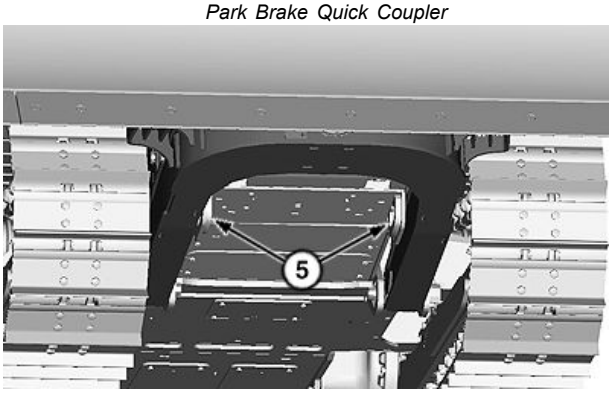
Brake Circuit—Pressure	1379—2758 kPa 13.8—27.6 bar 200—400 psi

IMPORTANT: Do not tow machine faster than 1.6 km/h (1 mph) (646 motor rpm max) for 10 minutes or not to exceed 305 m (1000 ft.) of total tow distance. Failure to do this may result in extensive machine damage.



TX1176805 —UN—13NOV14

Park Brake Quick Coupler



TX1176788 —UN—05NOV14

Frame Tiedown

3— Brake Hose Quick Coupler
4— AM102420 Male Quick Coupler
5— Frame Tiedown (view from under machine)

10. Tow machine using frame tiedowns (5).

NOTE: Brake pressure will degrade due to internal brake valve leakage. Brake pressure will fall quickly from 2068 kPa (20.68 bar) (300 psi), however, the brake pistons will not need to be pumped up again until pressure drops below 1000 kPa (10 bar) (145 psi).

11. Remove port-a-power and connect brake hose to hydrostatic pump.

12. Tighten multi-function pump bypass valve lock nut to specification.

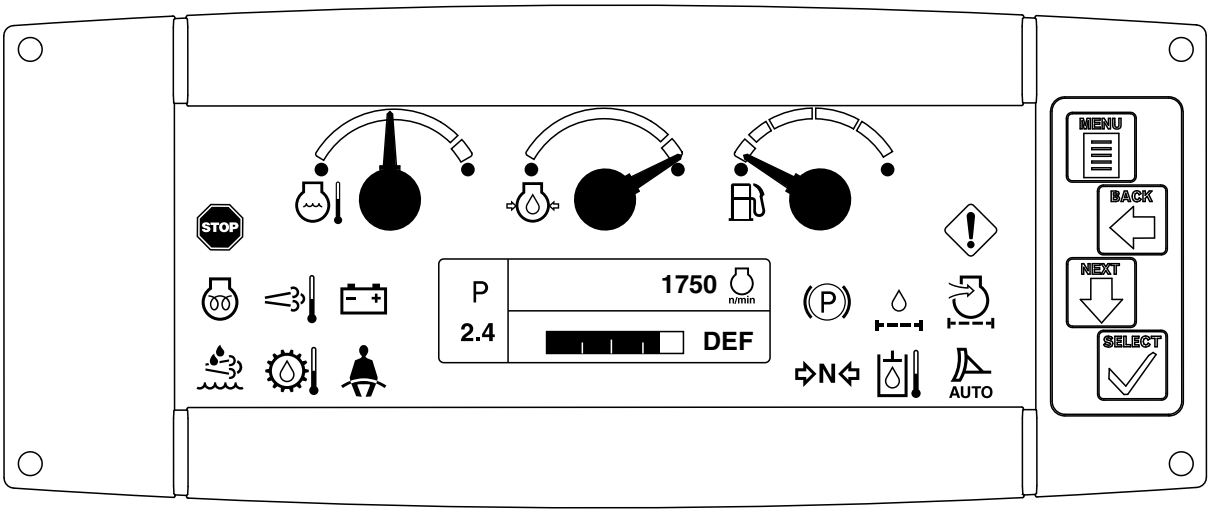
Specification

Multi-Function Pump Bypass Valves Lock Nut—Torque	79 N·m 58 lb.-ft.

13. Press engine stop switch to turn off ignition (switched) power and reset brake mode to NORMAL.

CN93077,00004B0 -19-10OCT19-2/2

Standard Display Monitor (SDM)



TX1170625 —UN—03SEP14

TX1170625

Standard Display Monitor (SDM)

Wake-Up Mode

Standard display monitor (SDM) wake-up mode occurs when SELECT button is depressed and held when switch power is OFF. Once SELECT button is released, SDM shall power down.

Display unit performs as follows:

1. Backlight remains on.
2. All icons remain off and display window will be cleared.
3. Upper line of display will show battery voltage with lower line showing machine hours.

Normal Switch Power On

When switch power is turned on for the first time, ignition switch power is turned on and applied to control units and display units.

Display unit performs a display check sequence as follows:

1. Alarm sounds for approximately 2 seconds.
2. Backlight will turn on.
3. Display monitor goes into bulb check mode. All lights on display monitor will illuminate.
4. All gauges position gauge needle to center position before returning to normal runtime position.
5. A TMC BY/JOHN DEERE shall display momentarily on display window.
6. If security system has been enabled by owner, operator logon screen will appear on display unit. Operator must enter valid personal identification number (PIN).
7. After display check is complete, display screen populates with normal display items.

CN93077,00003C2 -19-17SEP14-1/1

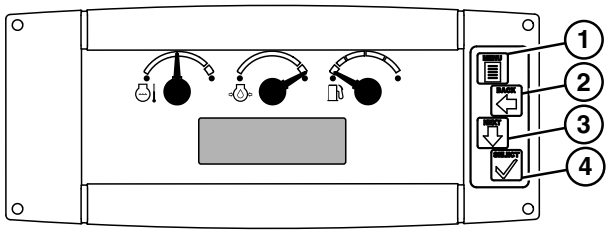
Main Menu, SDM

The MAIN MENU displays three submenus that can be selected to view diagnostic information or change various operating characteristics of machine or display unit.

NOTE: Translations shown on display may be abbreviated.

Press MENU button (1) to access MAIN MENU.

Navigate menu using BACK (2), NEXT (3), and SELECT (4) buttons on standard display monitor (SDM). For button operation, see Standard Display Monitor (SDM) Functions. (Section 2-1.)



TX1171031 —UN—04SEP14

1— MENU Button
2— BACK Button
3— NEXT Button
4— SELECT Button

Standard Display Monitor (SDM)

MAIN MENU Items	
Menu Items	Description
OPERATION	Allows operator to change various operating characteristics of machine.
DIAGNOSTICS	Provides a limited set of tools, and is intended to be used by machine operators and service personnel for diagnostic and troubleshooting functions.
SETUP	Allows operator to change various operating characteristics of machine and display unit.

CN93077,00003C3 -19-17SEP14-1/1

Operation—Job Timer, SDM

JOB TIMER menu contains a resettable timer that may be used to display hours to nearest tenth of an hour for a job.

Navigate through menu: **MAIN MENU >> OPERATION >> JOB TIMER**.

JOB TIMER Menu Items	
Menu Items	Description
SHOW TIMER	Displays the current hours since last reset.
RESET TIMER	Resets the timer. Timer rolls over to 0 after 999.9 hours have been reached.

CN93077,00003D1 -19-04SEP18-1/1

Operation—Exhaust Filter, SDM

EXHAUST FILTER menu displays the current filter soot level and provides options for filter cleaning.

Navigate through menu: **MAIN MENU >> OPERATION >> EXHAUST FILTER**.

There are five soot levels that determine the type of filter cleaning required.

- AUTO CLEANING (if enabled) may initiate a filter cleaning automatically when soot levels are MODERATE or HIGH.
- PARKED CLEANING can only be initiated when soot levels are HIGH or VERY HIGH.
- At SERVICE soot level, contact an authorized dealer.

For more information on the exhaust filter, see Exhaust Filter. (Section 2-2.)

EXHAUST FILTER Menu Items

Menu Items		Submenu Items	Value	Description
SOOT LEVEL			• LOW • MODERATE • HIGH • VERY HIGH • SERVICE	Describes soot restriction level of exhaust filter which determines type of cleaning required.
AUTO CLEANING	>>	ENABLED DISABLED		For more information, see Operation—Exhaust Filter Auto Cleaning, SDM in this section.
PARKED CLEANING	>>		• ENGINE MUST BE RUNNING • CLEANING CYCLE NOT REQUIRED • SERVICE REQUIRED	For more information, see Operation—Exhaust Filter Parked Cleaning, SDM in this section.
EMERGENCY OVERRIDE[1]	>>	EMERGENCY USE ONLY. SEE MANUAL. PENALTIES APPLY FOR MISUSE. • SELECT TO CONTINUE • BACK TO EXIT		For more information, see Operation—Exhaust Filter Emergency Override, SDM in this section.

[1] *If equipped*

CN93077,00003C7 -19-20APR17-1/1

Operation—Exhaust Filter Auto Cleaning, SDM

CAUTION: Servicing machine during exhaust filter auto cleaning can result in serious personal injury. Avoid exposure and skin contact with hot gases and components.

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

NOTE: Disabling exhaust filter auto cleaning is not preferred. Whenever possible, auto cleaning should be enabled to keep soot buildup to a minimum and to increase overall machine uptime.

If enabled, an exhaust filter cleaning is capable of initiating automatically when filter soot levels are MODERATE or HIGH.

Auto cleaning is set to ENABLED from the factory. If operating in conditions where elevated exhaust temperatures may be unsafe, auto cleaning can be disabled. When disabled, a green exhaust filter auto cleaning disabled indicator will display on monitor.

For more information on exhaust filter cleaning, see Exhaust Filter. (Section 2-2.)

Set AUTO CLEANING Mode:

1. Navigate through menu: **MAIN MENU >> OPERATION >> EXHAUST FILTER >> AUTO CLEANING**.
2. Highlight desired option and press SELECT button to activate.

CN93077,00003C8 -19-21APR15-1/1

Operation—Exhaust Filter Parked Cleaning, SDM

CAUTION: Servicing machine during exhaust filter parked cleaning can result in serious personal injury. Avoid exposure and skin contact with hot gases and components.

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

IMPORTANT: Avoid machine damage. Always park machine in a safe location and check for adequate fuel and diesel exhaust fluid (DEF) level before beginning exhaust filter parked cleaning.

PARKED CLEANING allows operator to manually initiate an exhaust filter cleaning. Certain conditions must be met before a parked cleaning will proceed, display monitor will warn operator of these conditions if not met. Once a filter cleaning cycle is started, a status bar and percentage complete are displayed.

For more information on exhaust filter cleaning, see Exhaust Filter. (Section 2-2.)

Initiate PARKED CLEANING:

1. Navigate through menu: **MAIN MENU >> OPERATION >> EXHAUST FILTER**.

NOTE: PARKED CLEANING can only be performed when filter soot levels are HIGH or VERY HIGH. If filter soot level is at SERVICE, contact an authorized dealer for exhaust filter cleaning.

2. View FILTER SOOT LEVEL in menu to verify filter soot levels are appropriate for filter cleaning.
3. Select PARKED CLEANING from menu.
4. Display monitor prompts operator if machine shutdown is desired after cleaning.
5. The following conditions must be met before exhaust filter cleaning proceeds.
   - Park brake engaged.
   - Forward, neutral, and reverse (FNR) in neutral position.
   - Engine speed at slow idle.
6. If fuel level or DEF level is low, display monitor will warn and prompt operator if exhaust filter cleaning is still desired.
7. Machine will prepare exhaust filter for cleaning then proceed with cleaning cycle.

IMPORTANT: Prevent diesel exhaust filter damage. If filter cleaning is canceled or machine is shut down during a filter cleaning cycle, component damage may result.

If necessary, an in-process exhaust filter cleaning may be canceled by releasing park brake or increasing engine speed, but is not suggested.

If machine detects any of the following, exhaust filter cleaning will abort:

- Unable to maintain cleaning temperature.
- Machine fault.
- System fault.
- System time-out.

CN93077,00003C9 -19-04OCT16-1/1

Operation—Exhaust Filter Emergency Override, SDM

IMPORTANT: Operating the engine without emissions-related derates could damage the aftertreatment system.

Emergency SCR Override enables a selective catalyst reduction (SCR) equipped application to operate without emissions-related derates for a specified period of time during qualified emergency situations. A qualified emergency situation is one in which the condition of an engine's emission controls poses a significant direct or indirect risk to human life. For more information on emergency override, see Qualified Emergency Use—SCR Override Option. (Section 2-2.)

Activate Emergency Override

1. Navigate through menu: **MAIN MENU >> OPERATION >> EXHAUST FILTER >> EMERGENCY OVERRIDE**.
2. Display monitor prompts operator to press select button to continue or back button to exit.

NOTE: Emergency override code number is last four digits of the product identification number (PIN).

3. Display monitor prompts operator to enter emergency override code.
4. Display monitor indicates emergency override activated and XXX hours remaining.
5. Press select button to continue and return to exhaust filter menu.

Deactivate Emergency Override

1. Navigate through menu: **MAIN MENU >> OPERATION >> EXHAUST FILTER >> EMERGENCY OVERRIDE**.
2. Display monitor displays emergency override activated screen. Press select button to deactivate emergency override system or back button to exit.

JR58078,0000061 -19-18APR17-1/1

Operation—Software Update, SDM

This menu allows for software updates to be downloaded remotely via JDLink™ cellular connection. Software updates are sent to machine using Service ADVISOR™ Remote (SAR). Downloads can take place with engine running and machine operating. However, software installation can only process if engine is not running. If conditions exist that will not allow the download or installation to happen, screens will appear on the monitor advising what needs to be done in order to continue. For more information, contact an authorized John Deere dealer.

1. Read Service ADVISOR™ Remote (SAR)—Software Terms and Conditions found at the beginning of this manual.

NOTE: SOFTWARE DELIVERY menu must be enabled by dealer.

2. Navigate through menu: **MAIN MENU >> OPERATION >> SOFTWARE DELIVERY >> SOFTWARE UPDATE**.
3. Operator is notified of one of the following conditions:
   - Download complete. Ready to install.
   - Download completed. Stop engine.
   - Downloading.
   - Download not available.
   - Status unknown. Please check later.

NOTE: If operator chooses to reject download, dealer interaction is necessary to have rejected software downloaded at another time.

4. If new software is available, select APPROVE DOWNLOAD.
5. When download is complete press SELECT to accept the software license agreement.
6. To proceed with software installation, the following criteria must be met:
   - Engine must be off.
   - Battery power must be at a sufficient level.
   - Park brake must be engaged.
7. Software installation will commence. Do not press stop button during installation.

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Service ADVISOR is a trademark of Deere & Company

CN93077,00003E4 -19-22DEC15-1/1

Diagnostics—Codes, SDM

The CODES menu provides the capability to select and display active and stored diagnostic trouble codes (DTCs) and information about the DTC.

Navigate through menu: **MAIN MENU >> DIAGNOSTICS >> CODES**.

CODES Menu Items			
Menu Items		Submenu Items	Description
ACTIVE AND STORED CODES	>>	• Source controller of fault (example: VCU, SSM, ECU) • Suspect parameter number (SPN) • Failure mode indicator (FMI) • Code type: active or stored • Text description of the DTC	Provides the capability to display in sequence up to 20 of the latest DTCs that are currently active and stored on the machine. As each active DTC is resolved or fixed, the code is removed from the active code list and added to the stored code list. Each DTC is saved in order of occurrence. The listed information is displayed for each code.

CN93077,00003C4 -19-03AUG18-1/1

Diagnostics—Machine Readings, SDM

The MACHINE READINGS menu displays current data from machine sensors that provide input to machine controllers.

Navigate through menu: **MAIN MENU >> DIAGNOSTICS >> MACHINE INFORMATION >> MACHINE READINGS**.

MACHINE READINGS Menu Items		
Menu Items		Submenu Items
TEMPERATURES	>>	HYDRAULIC OIL TEMP ..... °C, °F
PRESSURES	>>	HYDRAULIC PRESSURE ..... PSI, kPa LOAD SENSE PRESSURE ..... PSI, kPa MARGIN ..... PSI, kPa HYDRAULIC FAN PRESSURE ..... PSI, kPa
VALUES	>>	FAN SPEED ..... % HYDRAULIC OIL FILTER RESTRICTED ..... YES, NO FUEL LEVEL ..... % DEF LEVEL ..... % JOYSTICK LIFT[1] ..... % JOYSTICK TILT[1] ..... % IGC ON/OFF SW[1] ..... ON, OFF ACU CONNECTED[1] ..... YES, NO

[1] *SmartGrade™/IGC machines only.*

CN93077,000045F -19-11NOV15-1/1

Diagnostics—Engine Readings, SDM

The ENGINE READINGS menu displays current data from machine sensors that provide input to machine controllers.

Navigate through menu: **MAIN MENU >> DIAGNOSTICS >> MACHINE INFORMATION >> ENGINE READINGS**.

ENGINE READINGS Menu Items		
Menu Items		Submenu Items
TEMPERATURES	>>	COOLANT ..... °C, °F MANIFOLD AIR ..... °C, °F CAC OUT ..... °C, °F FUEL ..... °C, °F COMPRESSOR INLET ..... °C, °F
PRESSURES	>>	ENGINE OIL ..... PSI, kPa FUEL PRESSURE ..... PSI, kPa FUEL RAIL PRESSURE ..... PSI, kPa BOOST PRESSURE ..... PSI, kPa
VALUES	>>	THROTTLE ..... % START SIGNAL ..... ON, OFF

CN93077,00003D5 -19-27AUG14-1/1

Diagnostics—Transmission Readings, SDM

The TRANSMISSION READINGS menu displays current data from machine sensors that provide input to machine controllers.

Navigate through menu: **MAIN MENU >> DIAGNOSTICS >> MACHINE INFORMATION >> TRANSMISSION READINGS**.

TRANSMISSION READINGS Menu Items		
Menu Items		Submenu Items
TEMPERATURES	>>	TRANSMISSION OIL ..... °C, °F
PRESSURES	>>	CHARGE OIL ..... PSI, kPA BRAKE PRESSURE ..... PSI, kPA LEFT SYSTEM PRESSURE ..... PSI, kPA RIGHT SYSTEM PRESSURE ..... PSI, kPA HYD FAN PRESSURE ..... PSI, kPA
VALUES	>>	BRAKE SOLENOID ..... ON, OFF TRANS OIL FILT REST ..... ON, OFF REVERSE ALARM ..... ON, OFF LEFT MOTOR SPEED ..... RPM RIGHT MOTOR SPEED ..... RPM FORWARD DISTANCE ..... KM, M FORWARD TIME ..... HRS REVERSE DISTANCE ..... HRS REVERSE TIME ..... KM, M LEFT PARK RUN ..... ON, OFF LEFT PARK LOCK ..... ON, OFF RIGHT PARK RUN ..... ON, OFF RIGHT PARK LOCK ..... ON, OFF

CN93077,00003D6 -19-03AUG18-1/1

Diagnostics—JDLink Readings, SDM

The JDLINK READINGS menu allows the operator to view specific information regarding Service ADVISOR™ Remote and JDLink™.

Navigate through menu: **MAIN MENU >> DIAGNOSTICS >> MACHINE INFORMATION >> JDLINK READINGS**.

JDLINK READINGS Menu Items	
Menu Items	Value
CELL STRENGTH	%
CARRIER	Service Provider
REG STATE	• UNREGISTERED • REGISTERED • PENDING • UNKNOWN
LATITUDE	Degrees
LONGITUDE	Degrees
GPS ANTENNA	• GOOD • NOT GOOD
CELL ANTENNA	• UNKNOWN • US • EU • SHORT • OPEN • 3G MULTIBAND • 4G • 4G LTE • 4G LTE

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JDLink is a trademark of Deere & Company

CN93077,00003D7 -19-04SEP18-1/1

Diagnostics—Controller Info, SDM

The CONTROLLER INFO menu allows the operator to view hardware and software information for all machine controllers.

Navigate through menu: **MAIN MENU >> DIAGNOSTICS >> CONTROLLER INFO**.

CONTROLLER ID Menu Items			
Menu Items		Submenu Items	Description
SDM	>>	SW VERSION SW PART NUMBER HW NUMBER	Displays software version number, software part number, and hardware part number for the standard display monitor (SDM).
VCU	>>		Displays software version number, software part number, and hardware part number for the vehicle control unit (VCU).
VC2	>>		Displays software version number, software part number, and hardware part number for the vehicle control unit 2 (VC2).
ECU	>>	SW VERSION HW NUMBER	Displays software version number and hardware part number for the engine control unit (ECU).
HVC[1]	>>	SW VERSION SW PART NUMBER HW NUMBER	Displays software version number, software part number, and hardware part number for the hydraulic valve controller (HVC).

[1] *SmartGrade™/IGC machines only.*

CN93077,0000460 -19-11NOV15-1/1

Diagnostics—Machine ID, SDM

The MACHINE ID menu displays machine identification information.

Navigate through menu: **MAIN MENU >> DIAGNOSTICS >> MACHINE ID**.

MACHINE ID Menu Items	
Menu Items	Description
MACHINE VIN	Displays 17-character product identification number.
MODEL	Displays machine model number and emissions level.

[1]*IGC machines only.*

CN93077,00003CC -19-10NOV15-1/1

Setup—Monitor, SDM

The MONITOR menu displays current monitor settings and allows operator to view and change a variety of settings for the monitor.

Navigate through menu: **MAIN MENU >> SETUP >> MONITOR**.

MONITOR Menu Items		
Menu Items		Submenu Items
UNITS	>>	ENGLISH METRIC
LANGUAGE	>>	ENGLISH SPANISH FRENCH
CONTRAST	>>	Displays a value between 1—10. Press NEXT button to increase and BACK button to decrease value and SELECT button to store.

CN93077,00003DE -19-03OCT14-1/1

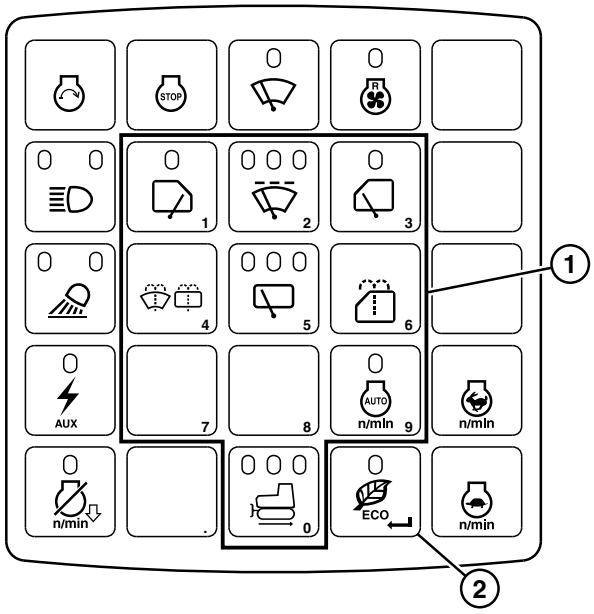
Setup—Security, SDM

The SECURITY menu allows owner to enable/disable security as well as remove, add, and modify operator PINs and security levels. Owner can also set the time interval allowed for logout after the machine is shut off. When enabled, the security feature is designed to impede theft or unauthorized use of the machine by preventing the engine from starting until the operator correctly enters a valid security code.

Navigate through menu: **MAIN MENU >> SETUP >> SECURITY**.

Enter OWNER PIN using one of the following methods:

- Using numeric keypad (1) on SSM, press enter key (2).
- Using standard display monitor (SDM) 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 SECURITY menu.



TX1175316 —UN—24OCT14

Keypad

1— Numeric Keypad **2— Enter Key**

ANTI-THEFT/SECURITY Menu Items					
Menu Items		Submenu Items		Submenu Items	Description
SECURITY ON/OFF	>>	ON OFF			
OWNER PIN	>>	USE KEYPAD TO ENTER VALUES	>>	ENTER NEW PIN	
OPERATOR PINS	>>	1 (########) 2 (########) 3 (########) 4 (########) 5 (########) 6 (########) 7 (########) 8 (########) 9 (########) 10 (########)	>>	ENTER PIN 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.
TRANSPORT PIN	>>	ENTER PIN CLEAR PIN (DISABLE OPERATOR) TRANSPORT TIME			Transport time is total amount of time that transport operator can operate machine before a different operator PIN is used.
PASSWORD DELAY	>>	0 MINUTES 5 MINUTES 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.

CN93077,0000461 -19-22DEC15-1/1

Setup—Preferences, SDM

The PREFERENCES menu allows the operators to change machine settings to suit their needs.

Navigate through menu: **MAIN MENU >> SETUP >> PREFERENCES**.

PREFERENCES Menu Items				
Menu Items		Submenu Items		Submenu Items
TRANSMISSION	>>	AGGRESSIVENESS DECEL RESPONSE FNR SHIFT RATE STEER RATE STEER MODULATION	>>	LOW NORMAL HIGH
HYDRAULIC[1]	>>	BLADE RAISE BLADE LOWER TILT LEFT TILT RIGHT	>>	
		BLADE SHAKE[2]	>>	OFF ON
COURTESY LIGHTS[2]	>>	OFF 1 MINUTE 2 MINUTES 3 MINUTES		
REVERSING FAN[2]	>>	OFF 30 MINUTES 45 MINUTES 60 MINUTES 90 MINUTES		
BRAKE MODE	>>	NORMAL TOW		
AUTO-IDLE	>>	3 SECONDS 5 SECONDS 15 SECONDS		
FUEL ECONOMY[3]	>>	1: ECO MODE 2: AUTO IDLE	>>	1: FORCED ENABLED 2: FORCED DISABLED 3: OPERATOR SELECTABLE
	>>	3: AUTO SHUTDOWN	>>	1: OFF 2: 1 MINUTE 3: 2 MINUTES 4: 3 MINUTES 5: 4 MINUTES 6: 5 MINUTES 7: 10 MINUTES 8: 15 MINUTES 9: 20 MINUTES 10: 25 MINUTES 11: 30 MINUTES

[1] *SmartGrade™/IGC machines only.*
[2] *If equipped.*
[3] *Owner PIN required.*

TRANSMISSION

1. AGGRESSIVENESS—Sets power management routine intended to prevent engine from stalling when large transmission load is applied.
2. DECELERATOR—Determines dependency between engine and transmission speeds when actuating decelerator pedal for neutral and reverse.
3. FNR—Determines dependency between engine and transmission speeds when actuating decelerator pedal for neutral and reverse.
4. STEER RATE—Sets rate at which machine steers to prevent oversteering.
5. STEER MODULATION—Sets steer output for left and right steer commands.

COURTESY LIGHTS[2]

Operator can set courtesy light time interval when key switch position changes from ON to OFF.

BRAKE MODE

Default setting is NORMAL. If setting is changed, brake mode will default to NORMAL after a power cycle.

CN93077,0000462 -19-06DEC16-1/1

Required Emission-Related Information

Service Provider

A qualified repair shop or person of the owner's choosing may maintain, replace, or repair emission control devices and systems with original or equivalent replacement parts. However, warranty, recall, and all other services paid for by John Deere must be performed at an authorized John Deere service center.

DX,EMISSIONS,REQINFO -19-12JUN15-1/1

Diesel Fuel

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

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

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

Required Fuel Properties

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

Cetane number of 43 minimum. Cetane number greater than 47 is preferred, especially for temperatures below -20°C (-4°F) or elevations above 1500 m (5000 ft).

Cloud Point should be below the expected lowest ambient temperature or **Cold filter plugging point** (CFPP) should be at least 5°C (9°F) below the expected lowest temperature or **Cloud Point** below the expected lowest ambient temperature.

Fuel lubricity should pass a maximum scar diameter of 0.52 mm as measured by ASTM D6079 or ISO 12156-1. A maximum scar diameter of 0.45 mm is preferred.

Diesel fuel quality and sulfur content must comply with all existing emissions regulations for the area in which the engine operates. DO NOT use diesel fuel with sulfur content greater than 10 000 mg/kg (10 000 ppm).

E-Diesel fuel

CAUTION: Avoid severe injury or death due to the fire and explosion risk from using E-Diesel fuel.

DO NOT use E-Diesel (Diesel fuel and ethanol blend).

Use of E-Diesel fuel in any John Deere machine may void the machine warranty.

Sulfur Content for Engines That Meet Interim Tier 4, Final Tier 4, Stage III B, Stage IV, and Stage V Engines

- Use ONLY ultra low sulfur diesel (ULSD) fuel with a maximum of 15 mg/kg (15 ppm) sulfur content.

Use of fuel other than ULSD will reduce the efficiency and durability of the engine, will harm and permanently damage the engine's advanced emissions control systems, reduce fuel economy, and possibly prevent the engine from running at all. Emission-related warranties are likely to be rendered void by the use of fuel that does not meet these specifications.

Sulfur Content for Engines That Meet Tier 3 and Stage III A Engines

- Use of diesel fuel with sulfur content less than 2000 mg/kg (2000 ppm) is RECOMMENDED.
- Use of diesel fuel with sulfur content 2000—5000 mg/kg (2000—5000 ppm) REDUCES the oil and filter change interval.
- BEFORE using diesel fuel with sulfur content greater than 5000 mg/kg (5000 ppm), contact an authorized John Deere dealer.

Sulfur Content for Engines That Meet Tier 2 and Stage II Engines

- Use of diesel fuel with sulfur content less than 2000 mg/kg (2000 ppm) is RECOMMENDED.
- Use of diesel fuel with sulfur content 2000—5000 mg/kg (2000—5000 ppm) REDUCES the oil and filter change interval.
- BEFORE using diesel fuel with sulfur content greater than 5000 mg/kg (5000 ppm), contact an authorized John Deere dealer.

Sulfur Content for Other Engines

- Use of diesel fuel with sulfur content less than 5000 mg/kg (5000 ppm) is RECOMMENDED.
- Use of diesel fuel with sulfur content greater than 5000 mg/kg (5000 ppm) REDUCES the oil and filter change interval.

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

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

MB60223,0000029 -19-11FEB20-1/1

Diesel Fuel Specifications

The engine in this machine is designed to operate only with ultra low sulfur diesel (ULSD) fuel. Use of fuel other than ULSD will reduce the efficiency and durability of the engine, will harm and permanently damage the engine's advanced emissions control systems, reduce fuel economy, and possibly prevent the engine from running at all. Emission-related warranties are likely to be rendered void by the use of fuel that does not meet these specifications.

OUT4001,000060A -19-10JAN12-1/1

Lubricity of Diesel Fuel

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

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

Fuel lubricity should pass a maximum scar diameter of 0.52 mm as measured by ASTM D6079 or ISO 12156-1. A maximum scar diameter of 0.45 mm is preferred.

If fuel of low or unknown lubricity is used, add John Deere Fuel-Protect Diesel Fuel Conditioner (or equivalent) at the specified concentration.

Lubricity of BioDiesel Fuel

Fuel lubricity can improve significantly with BioDiesel blends up to B20 (20% BioDiesel). Further increase in lubricity is limited for BioDiesel blends greater than B20.

DX,FUEL5 -19-07FEB14-1/1

Handling and Storing Diesel Fuel

CAUTION: Reduce the risk of fire. Handle fuel carefully. DO NOT fill the fuel tank when engine is running. DO NOT smoke while you fill the fuel tank or service the fuel system.

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

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

Ensure that all fuel tank caps and covers are installed properly to prevent moisture from entering. Monitor water content of the fuel regularly.

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

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

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

When fuel is stored for an extended period or if there is a slow turnover of fuel, add a fuel conditioner to stabilize the fuel. Keeping the free water drained and treating the bulk fuel storage tank quarterly with a maintenance dose of a biocide will prevent microbial growth. Contact your fuel supplier or John Deere dealer for recommendations.

DX,FUEL4 -19-13JAN18-1/1

Biodiesel Fuel

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

Before using fuel containing biodiesel, review the Biodiesel Use Requirements and Recommendations in this Operator's Manual.

Environmental laws and regulations can encourage or prohibit the use of biofuels. Operators should consult with appropriate governmental authorities prior to using biofuels.

John Deere Stage V Engines Operating in the European Union

Where the engine is to be operated within the Union on diesel or non-road gas-oil, a fuel with a FAME content not greater than 8% volume/volume (B8) shall be used.

John Deere Engines with Exhaust Filter Except Stage V Engines Operating in the European Union

Biodiesel blends up to B20 can be used ONLY if the biodiesel (100% biodiesel or B100) meets ASTM D6751, EN 14214, or equivalent specification. Expect a 2% reduction in power and a 3% reduction in fuel economy when using B20.

Biodiesel concentrations above B20 can harm the engine's emission control systems and should not be used. Risks include, but are not limited to, more frequent stationary regeneration, soot accumulation, and increased intervals for ash removal.

John Deere Fuel conditioners or equivalent, which contain detergent and dispersant additives, are required when using biodiesel blends from B10 to B20, and are recommended when using lower biodiesel blends.

John Deere Engines Without Exhaust Filter

Biodiesel blends up to B20 can be used ONLY if the biodiesel (100% biodiesel or B100) meets ASTM D6751, EN 14214, or equivalent specification. Expect a 2% reduction in power and a 3% reduction in fuel economy when using B20.

These John Deere engines can operate on biodiesel blends above B20 (up to 100% biodiesel). Operate at levels above B20 ONLY if the biodiesel is permitted by law and meets the EN 14214 specification (primarily available in Europe). Engines operating on biodiesel blends above B20 might not fully comply with or be permitted by all applicable emissions regulations. Expect up to a 12% reduction in power and an 18% reduction in fuel economy when using 100% biodiesel.

John Deere fuel conditioners or equivalent, which contain detergent and dispersant additives, are required when using biodiesel blends from B10 to B100, and are recommended when using lower biodiesel blends.

Biodiesel Use Requirements and Recommendations

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

Biodiesel users in the U.S. are strongly encouraged to purchase biodiesel blends from a BQ-9000 Certified Marketer and sourced from a BQ-9000 Accredited Producer (as certified by the National biodiesel Board). Certified Marketers and Accredited Producers can be found at the following website: http://www.bq9000.org.

Biodiesel contains residual ash. Ash levels exceeding the maximums allowed in either ASTM D6751 or EN14214 can result in more rapid ash loading and require more frequent cleaning of the Exhaust Filter (if present).

The fuel filter can require more frequent replacement when using biodiesel fuel, particularly if switching from diesel. Check engine oil level daily prior to starting engine. A rising oil level can indicate fuel dilution of the engine oil. Biodiesel blends up to B20 must be used within 90 days of the date of biodiesel manufacture. Biodiesel blends above B20 must be used within 45 days from the date of biodiesel manufacture.

When using biodiesel blends up to B20, the following must be considered:

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

Request a certificate of analysis from your fuel distributor to ensure that the fuel is compliant with the specifications provided in this Operator's Manual.

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

The following must also be considered if using biodiesel blends above B20:

- Possible coking or blocked injector nozzles, resulting in power loss and engine misfire if John Deere fuel additives and conditioners or equivalent containing detergent/dispersants are not used
- Possible crankcase oil dilution (requiring more frequent oil changes)
- Possible lacquering or seizure of internal components
- Possible formation of sludge and sediments
- Possible thermal oxidation of fuel at elevated temperatures

Continued on next page

DX,FUEL7 -19-13JAN18-1/2

- Possible compatibility issues with other materials (including copper, lead, zinc, tin, brass, and bronze) used in fuel handling, distribution, and storage equipment
- Possible reduction in water separator efficiency
- Possible damage to paint if exposed to biodiesel
- Possible corrosion of fuel injection equipment
- Possible elastomeric seal and gasket material degradation (primarily an issue with older engines)
- Possible high acid levels within fuel system
- Because biodiesel blends above B20 contain more ash, using blends above B20 can result in more rapid ash loading and require more frequent cleaning of the Exhaust Filter (if present)

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

DX,FUEL7 -19-13JAN18-2/2

Testing Diesel Fuel

A fuel analysis program can help to monitor the quality of diesel fuel. The fuel analysis can provide critical data such as calculated cetane index, fuel type, sulfur content, water content, appearance, suitability for cold weather operations, bacteria, cloud point, acid number, particulate contamination, and whether the fuel meets ASTM D975 or equivalent specification.

Contact your John Deere dealer for more information on diesel fuel analysis.

DX,FUEL6 -19-13JAN18-1/1

Supplemental Diesel Fuel Additives

Diesel fuel can be the source of performance or other operational problems for many reasons. Some causes include poor lubricity, contaminants, low cetane number, and a variety of properties that cause fuel system deposits. These and others are referenced in other sections of this Operator's Manual.

To optimize engine performance and reliability, closely follow recommendations on fuel quality, storage, and handling, which are found elsewhere in this Operator's Manual.

To further aid in maintaining performance and reliability of the engine's fuel system, John Deere has developed a family of fuel additive products for most global markets. The primary products include Fuel-Protect Diesel Fuel Conditioner (full feature conditioner in winter and summer formulas) and Fuel-Protect Keep Clean (fuel injector deposit removal and prevention). Availability of these and other products varies by market. See your local John Deere dealer for availability and additional information about fuel additives that might be right for your needs.

DX,FUEL13 -19-07FEB14-1/1

Fuel Filters

The importance of fuel filtration cannot be overemphasized with modern fuel systems. The combination of increasingly restrictive emission regulations and more efficient engines requires fuel system to operate at much higher pressures. Higher pressures can only be achieved using fuel injection components with very close tolerances. These close manufacturing tolerances have significantly reduced capacities for debris and water.

John Deere brand fuel filters have been designed and produced specifically for John Deere engines.

To protect the engine from debris and water, always change engine fuel filters as specified in this manual.

DX,FILT2 -19-14APR11-1/1

Minimizing the Effect of Cold Weather on Diesel Engines

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

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

Use Winter Grade Fuel

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

Cloud point is the temperature at which wax begins to form in the fuel. This wax causes fuel filters to plug. **Pour point** is the lowest temperature at which movement of the fuel is observed.

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

Air Intake Heater

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

Ether

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

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

Coolant Heater

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

Seasonal Viscosity Oil and Proper Coolant Concentration

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

Diesel Fuel Cold Flow Additive

Use John Deere Fuel-Protect Diesel Fuel Conditioner (winter formula), which contains anti-gel chemistry, or equivalent fuel conditioner to treat non-winter grade fuel (No. 2-D in North America) during the cold-weather season. This generally extends operability to about 10°C (18°F) below the fuel cloud point. For operability at even lower temperatures, use winter grade fuel.

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

Biodiesel

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

Winterfronts

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

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

Radiator Shutters

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

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

For more information, see your John Deere dealer.

DX,FUEL10 -19-13JAN18-1/1

Diesel Exhaust Fluid (DEF) — Use in Selective Catalytic Reduction (SCR) Equipped Engines

In order to maintain the emissions performance of the engine, it is essential to use and refill DEF in accordance with the specification.

Diesel exhaust fluid (DEF) is a high purity liquid that is injected into the exhaust system of engines equipped with selective catalytic reduction (SCR) systems. Maintaining the purity of DEF is important to avoid malfunctions in the SCR system. Engines requiring DEF shall use a product that meets the requirements for aqueous urea solution 32 (AUS 32) according to ISO 22241-1.

The use of John Deere Diesel Exhaust Fluid is recommended. John Deere Diesel Exhaust Fluid is available at your John Deere dealer in a variety of package sizes to suit your operational needs.

If John Deere Diesel Exhaust Fluid is not available, use DEF that is certified by the American Petroleum Institute (API) Diesel Exhaust Fluid Certification Program or by the AdBlue™ Diesel Exhaust Fluid Certification Program. Look for the API certification symbol or the AdBlue™ name on the container.

AdBlue is a trademark of VDA, the German Association of the Automotive Industry.

RG30211 —UN—08MAR18



In some cases, DEF is referred to by one or more of these names:

- Urea
- Aqueous Urea Solution 32
- AUS 32
- AdBlue™
- NOx Reduction Agent
- Catalyst Solution

DX,DEF -19-13JAN18-1/1

Refilling Diesel Exhaust Fluid (DEF) Tank

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.



TS17731 —UN—23AUG13

IMPORTANT: Use only distilled water to rinse components that are used to deliver DEF. Tap water can contaminate DEF. If distilled water is not available, rinse with clean tap water, then thoroughly rinse with ample amounts of DEF.

If DEF is spilled or contacts any surface other than the storage tank, immediately clean the surface with clear water. DEF is corrosive to painted and unpainted metallic surfaces and can distort some plastic and rubber components.

If DEF is filled into engine fuel tank or other fluid compartment, do not operate engine until system is properly purged of DEF. Contact your John Deere dealer immediately to determine how to clean and purge the system.

Reasonable care should be taken when refilling the DEF tank. Ensure that the DEF tank cap area is free of debris before removing the cap. Seal containers of DEF between use to prevent contamination and evaporation.

Avoid splashing DEF and do not allow DEF to come into contact with skin, eyes, or mouth.

DEF is not harmful to handle, but DEF can be corrosive to materials such as steel, iron, zinc, nickel, copper, aluminum, and magnesium. Use suitable containers to transport and store DEF. Containers made of polyethylene, polypropylene, or stainless steel are recommended.

Avoid prolonged contact with skin. In case of accidental contact, wash skin immediately with soap and water.

Keep anything used to store or dispense DEF clean of dirt and dust. Wash and rinse containers or funnels thoroughly with distilled water to remove contaminants.

If an unapproved fluid, such as diesel fuel or coolant is added to the DEF tank, contact your John Deere dealer immediately to determine how to clean and purge the system.

If water has been added to the DEF tank, a tank cleaning is necessary. See Cleaning DEF Tank in this manual. After refilling the tank, check the DEF concentration. See Testing Diesel Exhaust Fluid (DEF).

The operator must maintain appropriate DEF levels at all times. Check the DEF level daily and refill the tank as needed. A typical engine with EGR will consume approximately 40:1 Fuel:DEF and without EGR 15:1 Fuel:DEF (by volume). The filling port is identified by a blue colored cap embossed with the DEF symbol, shown.

DX,DEF,REFILL -19-13JAN18-1/1

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.

The following storage information is provided 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.

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 -19-13JUN13-1/1

Disposal of Diesel Exhaust Fluid (DEF)

Although there is little issue with minor spillage of DEF on the ground, large amounts of DEF should be contained. If large spills occur, contact local environmental authorities for assistance with clean-up.

If a substantial quantity of DEF is not within specification, contact the DEF supplier for assistance with disposal. Do not dump substantial quantities of DEF onto the ground or send DEF to wastewater treatment facilities.

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

John Deere Break-In Plus™ Engine Oil — Interim Tier 4, Final Tier 4, Stage IIIB, Stage IV, and Stage V

New engines are filled at the factory with John Deere Break-In Plus™ Engine Oil. During the break-in period, add John Deere Break-In Plus™ Engine Oil, as needed to maintain the specified oil level.

Operate the engine under various conditions, particularly heavy loads with minimal idling, to help seat engine components properly.

During the initial operation of a new or rebuilt engine, change the oil and filter between a minimum of 100 hours and maximum equal to the interval specified for John Deere Plus-50™ II oil.

After engine overhaul, fill the engine with John Deere Break-In Plus™ Engine Oil.

If John Deere Break-In Plus™ Engine Oil is not available, use an SAE 10W-30 viscosity grade diesel engine oil meeting one of the following:

- API Service Category CK-4
- API Service Category CJ-4
- ACEA Oil Sequence E9
- ACEA Oil Sequence E6

If one of these oils is used during the initial operation of a new or rebuilt engine, change the oil and filter between a minimum of 100 hours and a maximum of 250 hours.

IMPORTANT: Do not use any other engine oils during the initial break-in of a new or rebuilt engine.

John Deere Break-In Plus™ Engine Oil can be used for all John Deere diesel engines at all emission certification levels.

After the break-in period, use John Deere Plus-50™ II or other diesel engine oil as recommended in this manual.

Break-In Plus is a trademark of Deere & Company
Plus-50 is a trademark of Deere & Company.

DX,ENOIL16 -19-13JAN18-1/1

Diesel Engine Oil — Interim Tier 4, Final Tier 4, Stage IIIB, Stage IV, and Stage V

Failure to follow applicable oil standards and drain intervals can result in severe engine damage that might not be covered under warranty. Warranties, including the emissions warranty, are not conditioned on the use of John Deere oils, parts, or service.

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

John Deere Plus-50™ II is the recommended engine oil.

Extended service intervals may apply when John Deere Plus-50™ II engine oil is used. Refer to the engine oil drain interval table and consult your John Deere dealer for more information.

If John Deere Plus-50™ II engine oil is not available, engine oil meeting one or more of the following may be used:

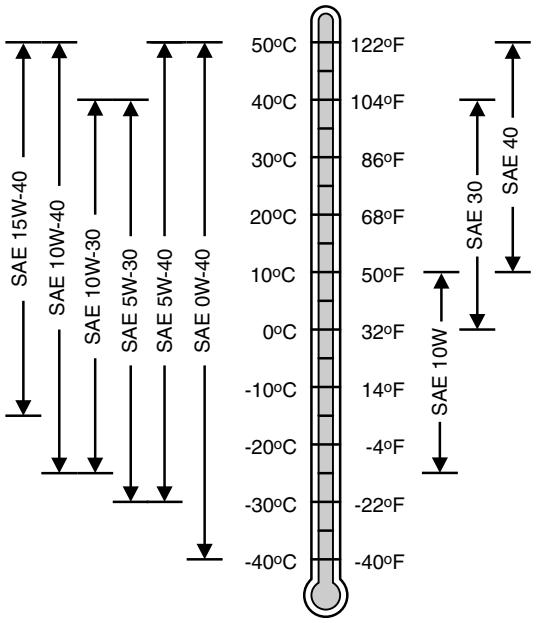
- API Service Category CK-4
- API Service Category CJ-4
- ACEA Oil Sequence E9
- ACEA Oil Sequence E6

DO NOT use engine oil containing more than 1.0% sulfated ash, 0.12% phosphorus, or 0.4% sulfur.

Multi-viscosity diesel engine oils are preferred.

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

Plus-50 is a trademark of Deere & Company



Oil Viscosities for Air Temperature Ranges

IMPORTANT: Use only ultra low sulfur diesel (ULSD) fuel with a maximum sulfur content of 15 mg/kg (15 ppm).

DX,ENOIL14 -19-23APR19-1/1

Engine Oil and Filter Service Intervals — Interim Tier 4, Final Tier 4, Stage IIIB, Stage IV, and Stage V Engines

Failure to follow applicable oil standards and drain intervals can result in severe engine damage that might not be covered under warranty. Warranties, including the emissions warranty, are not conditioned on the use of John Deere oils, parts, or service.

Recommended oil and filter service intervals are based on a combination of oil pan capacity, type of engine oil and filter used, and sulfur content of the diesel fuel. Actual service intervals also depend on operation and maintenance practices.

Approved Oil Types:

- John Deere Plus-50™ II
- "Other Oils" include API CK-4, API CJ-4, ACEA E9, and ACEA E6

Use oil analysis to evaluate the condition of the oil and to aid in selection of the proper oil and filter service interval. Contact your John Deere dealer or other qualified service provider for more information on engine oil analysis.

Change the oil and oil filter at least once every 12 months even if the hours of operation are fewer than the otherwise recommended service interval.

Diesel fuel sulfur content affects engine oil and filter service intervals. Higher fuel sulfur levels reduce oil and filter service intervals.

Use of diesel fuel with sulfur content less than 15 mg/kg (15 ppm) is REQUIRED.

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Engine operation at high altitude decreases oil change intervals. See Diesel Engine Oil Service Interval for Operation at High Altitude for additional information.

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

- *Use of diesel fuel with sulfur content less than 15 mg/kg (15 ppm)*
- *Use of John Deere Plus-50™ II oil*
- *Use of an approved John Deere oil filter*

Engine Oil and Filter Service Intervals	
John Deere Plus-50™ II	500 hours
Other Oils	250 hours
Oil analysis may extend the service interval of "Other Oils" to a maximum not to exceed the interval of Plus-50™ II oils. Oil analysis means taking a series of oil samples at 50-hour increments beyond the normal service interval until either the data indicates the end of useful oil life or the maximum service interval of John Deere Plus-50 II oils is reached.	

IMPORTANT: To avoid engine damage:

- **Reduce oil and filter service intervals by 50% when using biodiesel blends greater than B20. Oil analysis may allow longer service intervals.**
- **Use only approved oil types.**

DX,ENOIL15,IT4,120toMAX -19-13JAN18-1/1

Oil Filters

Filtration of oils is critically important for proper operation and lubrication. John Deere brand oil filters have been designed and produced specifically for John Deere applications.

John Deere filters adhere to engineering specifications for quality of the filter media, filter efficiency rating, strength of the bond between the filter media and the element end cap, fatigue life of the canister (if applicable), and pressure capability of the filter seal. Non-John Deere branded oil filters might not meet these key John Deere specifications.

Always change oil filters regularly as specified in this manual.

DX,FILT1 -19-11APR11-1/1

Diesel Engine Coolant (engine with wet sleeve cylinder liners)

Failure to follow applicable coolant standards and drain intervals can result in severe engine damage that may not be covered under warranty. Warranties, including the emissions warranty, are not conditioned on the use of John Deere coolants, parts or service.

Preferred Coolants

Failure to follow applicable coolant standards and drain intervals can result in severe engine damage that may not be covered under warranty. Warranties, including the emissions warranty, are not conditioned on the use of John Deere coolants, parts, or service.

The following pre-mix engine coolants are preferred:

- **John Deere COOL-GARD™II**
- **John Deere COOL-GARD II PG**

COOL-GARD II pre-mix coolant is available in several concentrations with different freeze protection limits as shown in the following table.

COOL-GARD II Pre-Mix	Freeze Protection Limit
COOL-GARD II 20/80	-9°C (16°F)
COOL-GARD II 30/70	-16°C (3°F)
COOL-GARD II 50/50	-37°C (-34°F)
COOL-GARD II 55/45	-45°C (-49°F)
COOL-GARD II PG 60/40	-49°C (-56°F)
COOL-GARD II 60/40	-52°C (-62°F)

Not all COOL-GARD II pre-mix products are available in all countries.

Use COOL-GARD II PG when a non-toxic coolant formulation is required.

Additional Recommended Coolants

The following engine coolant is also recommended:

- John Deere COOL-GARD II Concentrate in a 40—60% mixture of concentrate with quality water.

IMPORTANT: When mixing coolant concentrate with water, do not use less than 40% or greater than 60% concentration of coolant. Less than 40% gives inadequate additives for corrosion protection. Greater than 60% can result in coolant gelation and cooling system problems.

COOL-GARD is a trademark of Deere & Company

[1]Coolant analysis may extend the service interval of other "Coolants" to a maximum not to exceed the interval of Cool-Gard II coolants. Coolant analysis means taking a series of coolant samples at 1000 hour increments beyond the normal service interval until either the data indicate the end of useful coolant life or the maximum service interval of Cool-Gard II is reached.

Other Coolants

Other ethylene glycol or propylene glycol base coolants may be used if they meet the following specification:

- Pre-mix coolant meeting ASTM D6210 requirements
- Are nitrite-free
- Coolant concentrate meeting ASTM D6210 requirements in a 40—60% mixture of concentrate with quality water

If coolant meeting one of these specifications is unavailable, use a coolant concentrate or pre-mix coolant that has a minimum of the following chemical and physical properties:

- Provides cylinder liner cavitation protection according to either the John Deere Cavitation Test Method or a fleet study run at or above 60% load capacity
- Is formulated with a nitrite-free additive package
- Protects the cooling system metals (cast iron, aluminum alloys, and copper alloys such as brass) from corrosion

Water Quality

Water quality is important to the performance of the cooling system. Deionized or demineralized water is recommended for mixing with ethylene glycol and propylene glycol base engine coolant concentrate.

Coolant Drain Intervals

Drain and flush the cooling system and refill with fresh coolant at the indicated interval, which varies with the coolant used.

When COOL-GARD II or COOL-GARD II PG is used, the drain interval is 6 years or 6000 hours of operation.

If a coolant other than COOL-GARD II or COOL-GARD II PG is used, reduce the drain interval to 2 years or 2000 hours of operation.[1]

IMPORTANT: Do not use cooling system sealing additives or antifreeze that contains sealing additives.

Do not mix ethylene glycol and propylene glycol base coolants.

Do not use coolants that contain nitrites.

DX,COOL3 -19-13JAN18-1/1

Water Quality for Mixing with Coolant Concentrate

Engine coolants are a combination of three chemical components: ethylene glycol (EG) or propylene glycol (PG) antifreeze, inhibiting coolant additives, and quality water.

Water quality is important to the performance of the cooling system. Deionized or demineralized water is recommended for mixing with ethylene glycol and propylene glycol base engine coolant concentrate.

All water used in the cooling system should meet the following minimum specifications for quality:

Chlorides	<40 mg/L
Sulfates	<100 mg/L
Total solids	<340 mg/L
Total dissolved I hardness	<170 mg/L
pH	5.5—9.0

IMPORTANT: Do not use bottled drinking water because it often contains higher concentrations of total dissolved solids.

Freeze Protection

The relative concentrations of glycol and water in the engine coolant determine its freeze protection limit.

Ethylene Glycol	Freeze Protection Limit
40%	-24°C (-12°F)
50%	-37°C (-34°F)
60%	-52°C (-62°F)
Propylene Glycol	**Freeze Protection Limit**
40%	-21°C (-6°F)
50%	-33°C (-27°F)
60%	-49°C (-56°F)

DO NOT use a coolant-water mixture greater than 60% ethylene glycol or 60% propylene glycol.

DX,COOL19 -19-13JAN18-1/1

Operating in Warm Temperature Climates

John Deere engines are designed to operate using recommended engine coolants.

Always use a recommended engine coolant, even when operating in geographical areas where freeze protection is not required.

IMPORTANT: Water may be used as coolant *in emergency situations only.*

Foaming, hot surface aluminum and iron corrosion, scaling, and cavitation occur when water is used as the coolant, even when coolant conditioners are added.

Drain cooling system and refill with recommended engine coolant as soon as possible.

DX,COOL6 -19-17FEB20-1/1

Testing Coolant Freeze Point

The use of a handheld coolant refractometer is the quickest, easiest, and most accurate method to determine coolant freeze point. This method is more accurate than a test strip or a float-type hydrometer which can produce poor results.

A coolant refractometer is available through your John Deere dealer under the SERVICEGARD™ tool program. Part number 75240 provides an economical solution to accurate freeze point determination in the field.

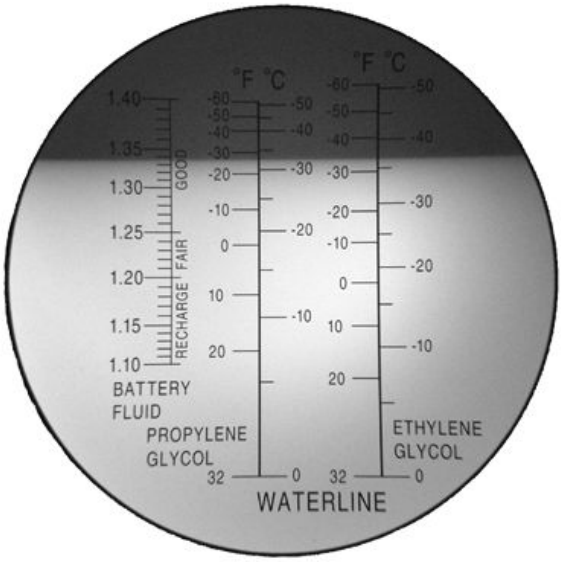
To use this tool:

1. Allow cooling system to cool to ambient temperatures.
2. Open radiator cap to expose coolant.
3. With the included dropper, collect a small coolant sample.
4. Open the lid of the refractometer, place one drop of coolant on the window and close the lid.
5. Look through the eyepiece and focus as necessary.
6. Record the listed freeze point for the type of coolant (ethylene glycol coolant or propylene glycol) being tested.



TS1732 —UN—04SEP13

SERVICEGARD™ Part Number 75240



TS1733 —UN—04SEP13

Image with a Drop of 50/50 Coolant Placed on the Refractometer Window

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

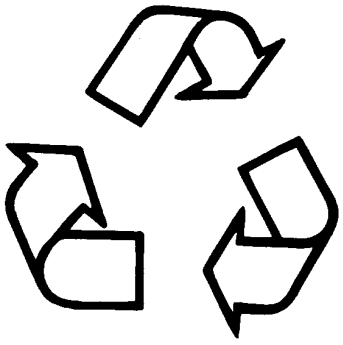
Disposing of Coolant

Improperly disposing of engine coolant can threaten the environment and ecology.

Use leakproof containers when draining fluids. Do not use food or beverage containers that may mislead someone into drinking from them.

Do not pour waste onto the ground, down a drain, or into any water source.

Inquire on the proper way to recycle or dispose of waste from your local environmental or recycling center, or from your authorized John Deere dealer.



TS1133 —UN—15APR13

Recycle Waste

OUT4001,0000685 -19-09JUL10-1/1

Alternative and Synthetic Lubricants

Conditions in certain geographical areas may require lubricant recommendations different from those printed in this manual.

Some John Deere brand coolants and lubricants may not be available in your location.

Consult your John Deere dealer to obtain information and recommendations.

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

The temperature limits and service intervals shown in this manual apply to John Deere branded fluids or fluids that have been tested and/or approved for use in John Deere equipment.

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

DX,ALTER -19-13JAN18-1/1

Final Drive Oil

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

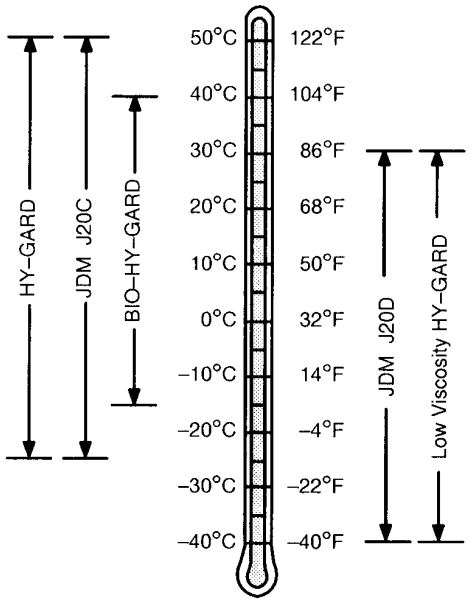
The following oils are preferred:

- John Deere Hy-Gard™
- John Deere Low Viscosity Hy-Gard™

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

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

Use John Deere Bio Hy-Gard™ oil when a biodegradable fluid is required.[1]



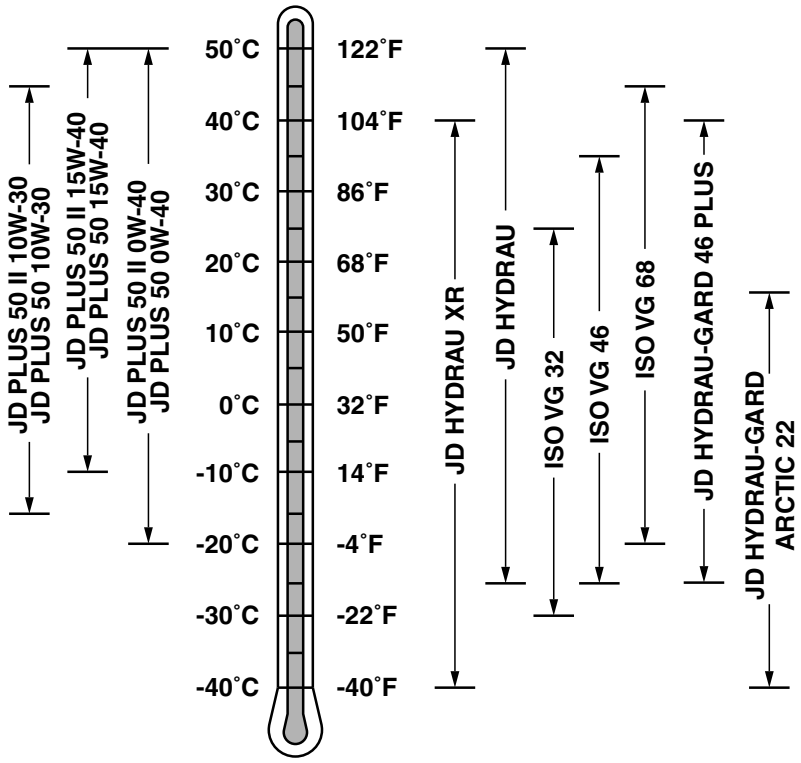
Oils for Air Temperature Ranges

Hy-Gard is a trademark of Deere & Company
Bio Hy-Gard is a trademark of Deere & Company

[1]Bio Hy-Gard meets or exceeds the minimum biodegradability of 80% within 21 days according to CEC-L-33-T-82 test method. Bio Hy-Gard should not be mixed with mineral oils because this reduces the biodegradability and makes proper oil recycling impossible.

KR46761,00015DC -19-31JUL17-1/1

Hydraulic and Hydrostatic Oil



TX1180348

Oil Viscosities for Ambient Temperature Ranges

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

IMPORTANT: Avoid machine damage. Do not mix fluids of different type or brand. Do not mix zinc-free and zinc-based. Mixing fluids can result in additive fall-out and lubricant degradation. Zinc-free oils are not approved for use.

2000-Hour Change Interval

The following oils are preferred:

- John Deere Hydrau™
- John Deere Hydrau™XR
- John Deere Plus-50™ II
- John Deere Plus-50™
- John Deere Hydrau-Gard™ 46 Plus[1]

1000-Hour Change Interval

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

- Minimum API classification CI-4
- Anti-Wear Hydraulic Oils (AWHO):
  - ISO 11158 Category HV
  - DIN 51524-3

Cold weather operation only:

- John Deere Hydrau-Gard™ 22 Arctic[1]

[1]*Fluid is not available in the United States or Canada.*

Hydrau is a trademark of Deere & Company
Plus-50 is a trademark of Deere & Company
Hydrau-Gard is a trademark of Deere & Company

CN93077,0000332 -19-06MAR17-1/1

Track Rollers, Front Idler, and Carrier Roller Oil

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

The following oils are preferred:

- John Deere GL-5 GEAR LUBRICANT (SAE 80W90)

Extreme-Gard is a trademark of Deere & Company

- John Deere Extreme-Gard™

The following oils are recommended:

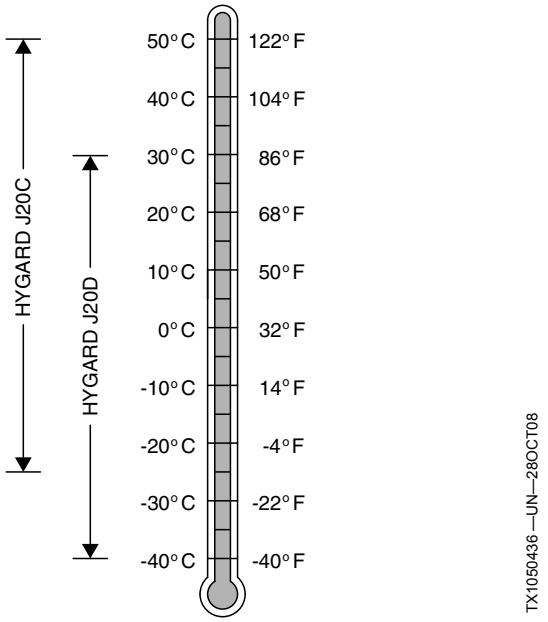
- API Service Classification API GL-5 gear oil (SAE 80W90)
- Arctic oils such as (MIL-L-10324A) may be used at temperatures below -30°C (-11°F).

MD04263,0000056 -19-27JUL17-1/1

Winch Oil

Depending on the expected air temperature range between oil changes, use oil viscosity shown on the chart above.

John Deere Hy-Gard™ is preferred.



Winch Oil Temperature Specifications

Hy-Gard is a trademark of Deere & Company

MD04263,0000002 -19-09JAN12-1/1

Multipurpose Extreme Pressure (EP) Grease

IMPORTANT: For automated lubrication systems different ambient air temperatures need to be considered.

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

John Deere SD Polyurea Grease is preferred.

The following greases are also recommended:

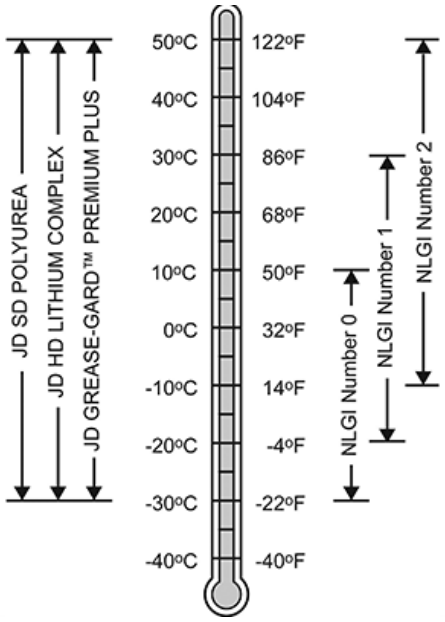
- John Deere HD Lithium Complex Grease
- John Deere Grease-Gard™ Premium Plus

Other greases may be used if they meet the following:

- NLGI Performance Classification GC-LB
- ISO-L-X-BDHB 2 or DIN KP 2 N-10 Lithium Complex, Non-Synthetic Base Oil (100 to 220 mm2/s @ 40°C)

IMPORTANT: Some types of thickeners, base oils, and additives used in greases are not compatible with others. Mixing greases should be avoided. Consult your grease supplier before mixing different types of grease.

Grease-Gard is a trademark of Deere & Company



Greases for Air Temperature Ranges

DX,GREA1 -19-13JAN18-1/1

Lubricant Storage

Your equipment can operate at top efficiency only when clean lubricants are used.

Use clean containers to handle all lubricants.

Store lubricants and containers in an area protected from dust, moisture, and other contamination. Store containers on their side to avoid water and dirt accumulation.

Make certain that all containers are properly marked to identify their contents.

Properly dispose of all old containers and any residual lubricant they may contain.

DX,LUBST -19-11APR11-1/1

Mixing of Lubricants

In general, avoid mixing different brands or types of oil. Oil manufacturers blend additives in their oils to meet certain specifications and performance requirements.

Mixing different oils can interfere with the proper functioning of these additives and degrade lubricant performance.

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

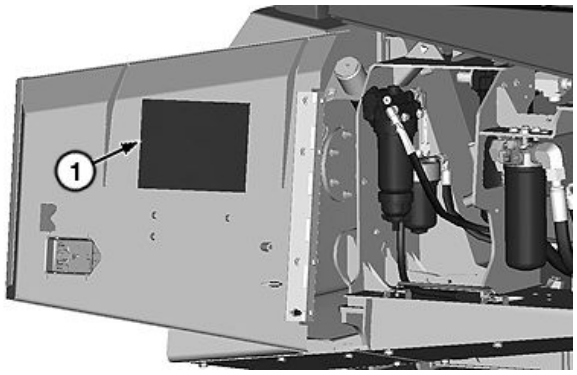
DX,LUBMIX -19-18MAR96-1/1

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



TX1176920 —UN—06NOV14

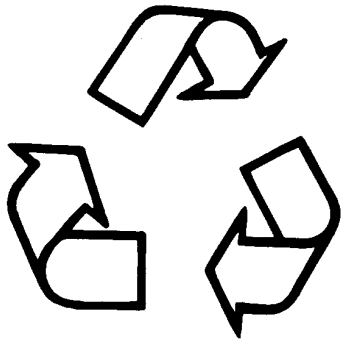
Periodic Maintenance Chart

CN93077,00004B1 -19-05DEC14-1/1

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.

IMPORTANT: Improperly disposing of waste can threaten the environment and ecology. Potentially harmful waste used with John Deere equipment includes such items as oil, fuel, coolant, brake fluid, filters, and batteries. Do not pour waste onto the ground, down a drain, or into any water source.

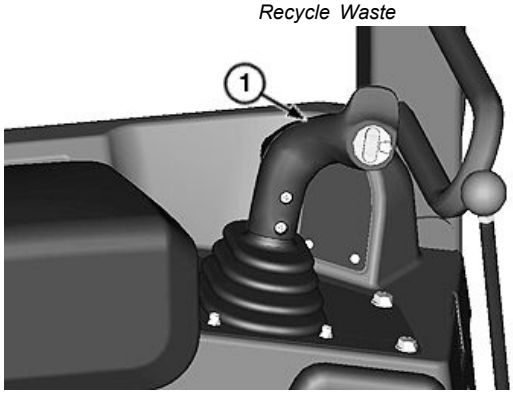


TS1133 —UN—15APR13

Recycle Waste

1. Park machine on a level surface.
2. Lower all equipment to ground.
3. Move transmission control lever (TCL) (1) to neutral (N) position.

CAUTION: Prevent possible injury from unexpected machine movement. Never rely on transmission control lever (TCL) alone to keep machine from moving. Machine can unexpectedly roll or move under power, resulting in death or serious injury. Always engage park lock levers to hold machine.

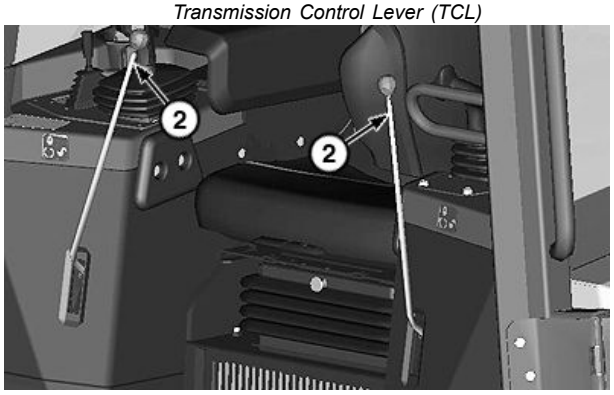


TX1176507 —UN—04NOV14

Transmission Control Lever (TCL)

4. Move park lock levers (2) to up (locked) position.

1— Transmission Control Lever (TCL) **2— Park Lock Lever (2 used)**



TX1169521 —UN—19AUG14

Park Lock Levers

Continued on next page

CN93077,00004B2 -19-05DEC14-1/2

5. Run engine at 1/2 speed without load for 2 minutes.

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

6. Press engine decrease switch (6) on sealed switch module (SSM) to slow idle.
7. Press engine stop switch (4).

NOTE: If maintenance must be performed with engine running, do not leave machine unattended.

8. Press engine start switch (3) (first LED is illuminated).
9. **Integrated Grade Control (IGC) Machines:** Press and hold the hydraulic enable switch (5) while moving the control levers to release hydraulic pressure.

   Non IGC Machines: Move the control levers to release hydraulic pressure.
10. Press engine stop switch.

IMPORTANT: Disable electrical power before welding. Turn off battery disconnect switch (7) and disconnect positive and negative battery cables.

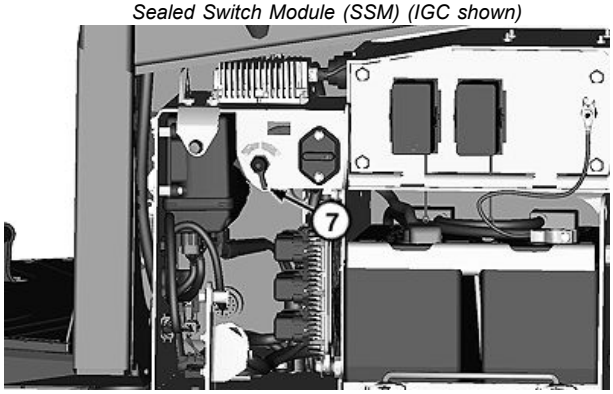
Turn battery disconnect switch (7) OFF (counterclockwise) if making adjustments to electrical systems or welding on machine. For more information, see Make Welding Repairs Safely. (Section 1-4.) Also see Welding On Machine. (Section 4-1.)

3— Engine Start Switch
4— Engine Stop Switch
5— Hydraulic Enable Switch
6— Engine Decrease Switch
7— Battery Disconnect Switch



Sealed Switch Module (SSM) (IGC shown)

TX1176922 —UN—06NOV14



Battery Disconnect Switch

TX1176514 —UN—04NOV14

CN93077,00004B2 -19-05DEC14-2/2

Check Hour Meter Regularly

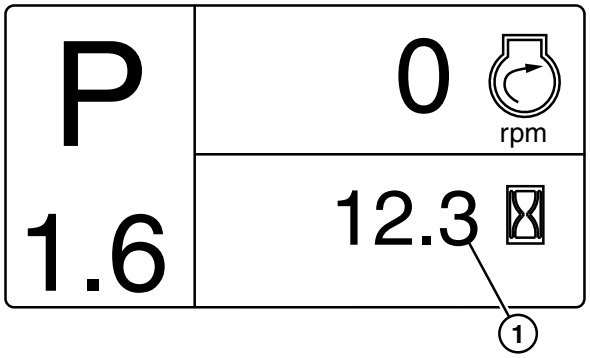
NOTE: Hour meter (1) display is located in the bottom center of the standard display monitor (SDM).

Standard Display Monitor (SDM)

- Press UP or DOWN arrows to toggle between engine hours, diesel exhaust fluid (DEF) level gauge, transmission charge pressure, and battery voltage.

Use the hour meter (1) to determine when your machine needs periodic maintenance.

Intervals on the periodic maintenance chart are for operating in normal conditions. If operating machine in severe conditions, machine should be serviced at shorter intervals.



SDM Hour Meter

TX1084924 —UN—19NOV10

1— Hour Meter

CN93077,00004B3 -19-06NOV14-1/1

Fuel Tank

CAUTION: Handle fuel carefully. If the engine is hot or running, do not fill the fuel tank. Do not smoke while you fill fuel tank or working on fuel system.

IMPORTANT: Avoid possible damage to fuel cap. Do not hold fuel cap when locking and unlocking.

To avoid condensation, fill the fuel tank at the end of each day's operation.

Specification	
Fuel Tank—Capacity	234.0 L 61.9 gal.



TS185 —UN—23AUG88

No Smoking Around Fuel Tank

CN93077,00004B4 -19-10DEC14-1/1

Fluid Analysis Program Test Kits and 3-Way Coolant Test Kit

Fluid Analysis Program Test Kits and the 3-Way Coolant Test Kit are John Deere fluid sampling products to help you monitor machine maintenance and system condition. The objective of a fluid sampling program is to ensure machine availability when you need it and to reduce repair costs by identifying potential problems before they become critical.

Engine, hydraulic, power train, and coolant samples should be taken from each system on a periodic basis, before a filter or fluid change interval. Certain systems require more frequent sampling. Consult your authorized John Deere dealer on a maintenance program for your specific application. Your authorized John Deere dealer has the sampling products and expertise to assist you in lowering your overall operating costs through fluid sampling.



TX1003513A —UN—20FEB06

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

Service Intervals

Models:	**PIN/Serial Number:**
Hour Meter Reading:	
SERVICE INTERVALS	
Service machine at intervals shown on this chart. Also, perform service on items at multiples of the original requirement. For example, at 500 hours also service those items (if applicable) listed under 250 hours, 100 hours, 50 hours, and 10 hours or daily.	
FLUID SAMPLING	
Fluid samples should be taken from each system at its recommended change interval prior to actually draining the fluid. Regular oil sampling will extend the operational life of the machine.	
As Required	
□ Inspect and clean cooling package	□ Check and drain primary fuel filter and water separator
□ Inspect or replace belt and check automatic belt tensioner	□ Check and drain auxiliary fuel filter and water separator (if equipped)
□ Check and clean engine air filter precleaner	□ Inspect and replace cab fresh air and recirculation filter elements
□ Replace primary and secondary engine air filter elements	□ Check and adjust track sag
□ Check air cleaner dust unloader valve	□ Service exhaust filter
□ Check and fill windshield washer fluid	□ Clean and tighten battery terminals
Every 10 Hours or Daily	
□ Check coolant level at surge tank	□ Check hydraulic/hydrostatic system oil level
□ Check engine oil level	□ Lubricate dozer linkage and blade socket
Every 50 Hours	
□ Lubricate rear ripper (if equipped)	
Every 250 Hours	
□ Check final drive oil level	□ Take engine oil sample
Every 500 Hours	
□ Drain and refill engine oil and replace filter	□ Replace winch oil filter (if equipped)
□ Replace primary and final fuel filters	□ Take diesel fuel sample
□ Replace auxiliary fuel filter (if equipped)	□ Take engine coolant sample
□ Drain water and sediment from fuel tank	□ Take final drives oil sample
□ Check hybrid battery electrolyte level (if equipped)	□ Take hydraulic/hydrostatic system oil sample
□ Check blade shim adjustment	
Every 1000 Hours	
□ Check coolant condition	□ Replace cab fresh air and recirculation filters
□ Check air intake hoses and connections	□ Clean or replace winch hydraulic breather filter (if equipped)
□ Drain and refill final drive oil	□ Drain and refill winch oil and replace filter (if equipped)
Every 2000 Hours	
□ Replace open crankcase ventilation (OCV) filter	□ Replace fuel tank breather

Continued on next page

MB60223,00003C0 -19-22JAN20-1/2

□ Drain and refill hydraulic system oil and replace filters	□ Replace diesel exhaust fluid (DEF) dosing unit filter
Every 3000 Hours	
□ Check and adjust engine valve lash	
Every 4000 Hours	
□ Replace diesel exhaust fluid (DEF) tank breather	□ Replace diesel exhaust fluid (DEF) header suction filter
□ Clean diesel exhaust fluid (DEF) tank	□ Replace diesel exhaust fluid (DEF) baffle
Every 6000 Hours	
□ Drain and refill engine cooling system	

MB60223,00003C0 -19-22JAN20-2/2

Required Parts

REQUIRED PARTS							
Ensure machine performance and availability; use only genuine John Deere parts. Verify part numbers are current and that any associated parts are also on-hand, i.e., filter O-rings.							
Description	**Every 250 Hours**	**Every 500 Hours**	**Every 1000 Hours**	**Every 2000 Hours**	**Every 3000 Hours**	**Every 4000 Hours**	**Every 6000 Hours**
Engine Oil Filter		1	1	1	1	1	1
Primary Fuel Filter Element		1	1	1	1	1	1
Final Fuel Filter Element		1	1	1	1	1	1
Auxiliary Fuel Filter Element (if equipped)		1	1	1	1	1	1
Winch Oil Filter (if equipped)		1	1	1	1	1	1
Winch Hydraulic Reservoir Breather Filter (if equipped)			1	1	1	1	1
Cab Fresh Air Filter Element			2	2	2	2	2
Cab Recirculation Air Filter Element			1	1	1	1	1
Open Crankcase Ventilation (OCV) Filter				1		1	1
Hydraulic System Oil Filter				1		1	1
Hydrostatic Charge Oil Filter				1		1	1
Fuel Tank Breather				1		1	1
Diesel Exhaust Fluid (DEF) Dosing Unit Filter				1		1	1
Engine Rocker Arm Cover Gasket					1		1
Diesel Exhaust Fluid (DEF) Header Suction Filter and Baffle						1	
Diesel Exhaust Fluid (DEF) Tank Breather						1	
Diesel Particulate Filter (component of exhaust filter)	As Required						
Engine Air Filter Element—Primary	As Required						
Engine Air Filter Element—Secondary	As Required						
Serpentine Belt	As Required						
John Deere Plus-50™ II Engine Oil[1]		15.1 L (4.0 gal)	15.1 L (4.0 gal)	15.1 L (4.0 gal)	15.1 L (4.0 gal)	15.1 L (4.0 gal)	15.1 L (4.0 gal)
John Deere Hydrau™ Hydraulic and Hydrostatic System Oil[1]				87.8 L (23.2 gal)		87.8 L (23.2 gal)	87.8 L (23.2 gal)
John Deere Hy-Gard™ Final Drive Oil[1]			8.5 L (2.3 gal)	8.5 L (2.3 gal)	8.5 L (2.3 gal)	8.5 L (2.3 gal)	8.5 L (2.3 gal)
John Deere Hy-Gard™ Winch Oil (if equipped)[1]			38.0 L (10.0 gal)	38.0 L (10.0 gal)	38.0 L (10.0 gal)	38.0 L (10.0 gal)	38.0 L (10.0 gal)
John Deere Cool-Gard™ II Pre-Mix							22.6 L (6.0 gal)
Fluid Analysis Kits[2]							
Diesel Engine Oil	1	1	1	1	1	1	1
Hydraulic/Hydrostatic System Oil		1	1	1	1	1	1
Final Drive Oil		2	2	2	2	2	2
Diesel Fuel		1	1	1	1	1	1

Continued on next page

CN93077,00004B6 -19-18APR19-1/2

REQUIRED PARTS							
Ensure machine performance and availability; use only genuine John Deere parts. Verify part numbers are current and that any associated parts are also on-hand, i.e., filter O-rings.							
Description	**Every 250 Hours**	**Every 500 Hours**	**Every 1000 Hours**	**Every 2000 Hours**	**Every 3000 Hours**	**Every 4000 Hours**	**Every 6000 Hours**
Engine Coolant		1	1	1	1	1	1

[1]*For recommended oil type and oil viscosities based on operating temperatures, see Maintenance—Machine. (Section 3-1.)*
[2]*Based on fluid analysis results, intervals may need to be adjusted for operating conditions. Consult an authorized John Deere dealer.*

PLUS-50 is a trademark of Deere & Company
Hydrau is a trademark of Deere & Company
Hy-Gard is a trademark of Deere & Company
Cool-Gard is a trademark of Deere & Company

CN93077,00004B6 -19-18APR19-2/2

Inspect and Clean Cooling Package

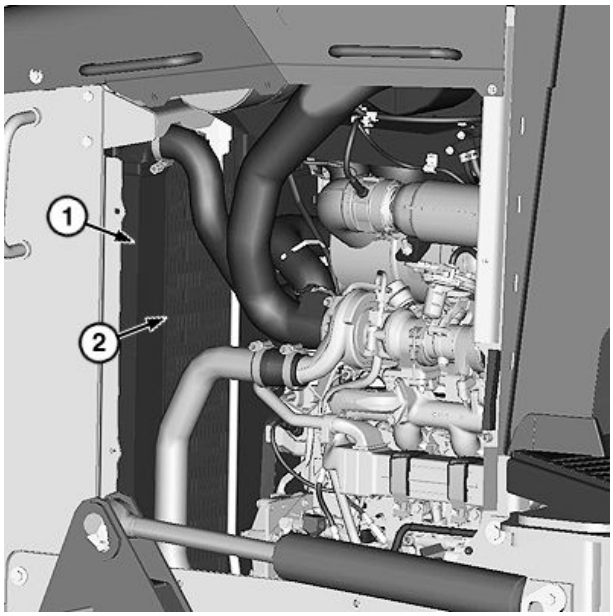
CAUTION: Entanglements in moving parts can cause serious injury. Stop engine before examining, adjusting, or maintaining any part of machine with moving parts. Keep guards and shields in place. Replace any guard or shield that has been removed for access as soon as service or repair is complete.

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. Access front of cooler cores through front grille housing. See Opening and Closing the Grille. (Section 4-1.)

NOTE: Cooling core passages are plugged if water splash-back is significant.

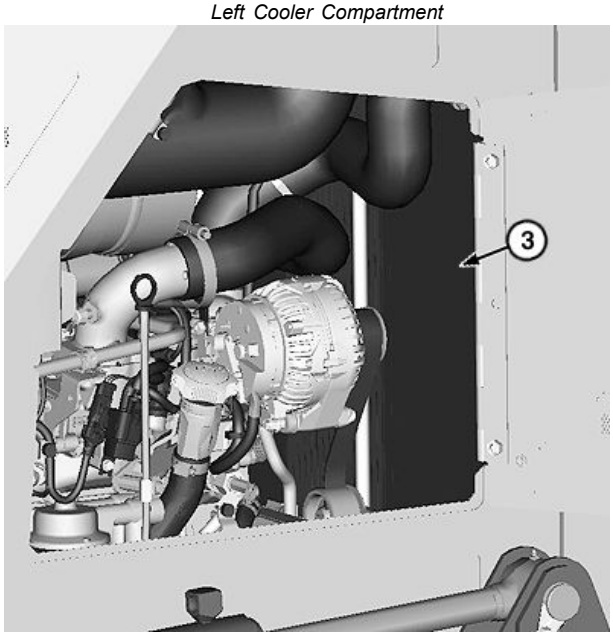
5. With engine off, blow air through the fins from front to rear. Use a high-pressure washer capable of producing 700—1500 psi if cores remain plugged. Water pressure nozzle should be 76.2 mm (3 in.) from the core. Direct water straight through fins to avoid bending them.
6. Open right front service door and remove left front access panel.
7. Blow debris from cooler core compartment.
8. Check hoses for crack and leaks and tighten clamps.
9. Check radiator (3) for dirt, damage, leaks, and loose or broken mountings.
10. Close front grille housing and right front service door. Install left front access panel.
11. Run engine at slow idle for 5 minutes to allow fins to dry before operating in dusty conditions.

1— Charge Air Cooler
2— Hydraulic Oil Cooler
3— Radiator



TX1177955 —UN—17NOV14

Left Cooler Compartment



TX1177956 —UN—15DEC14

Right Cooler Compartment

CN93077,000046A -19-19DEC14-1/1

Inspect or Replace Belt and Check Automatic Belt Tensioner

Belt drive systems equipped with automatic belt tensioner (1) cannot be adjusted or repaired. The automatic belt tensioner is designed to maintain proper belt tension over the life of the belt (2).

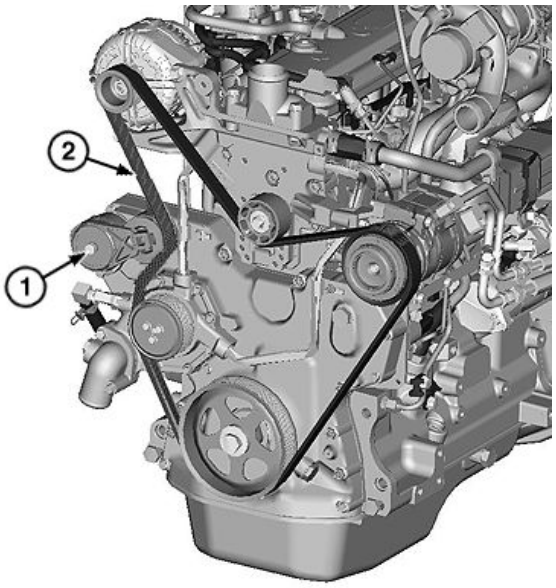
A belt tension gauge will not give an accurate measure of the belt tension when automatic spring tensioner is used.

Inspect Serpentine Belt

1. Start engine and run at fast idle.
2. Belt (2) must not emit a loud squealing sound at slow idle, fast idle, or rapid acceleration. If belt produces a squealing sound under any of these conditions, see your authorized dealer. If belt does not produce a squealing sound, proceed to next step.
3. Turn on air conditioning (if equipped) and lights. If belt produces a squealing sound under any of these conditions, see your authorized dealer. If belt does not produce a squealing sound, proceed to next step.
4. Visually inspect belt for wear, cracks, or fraying. If belt shows signs of excessive wear, replace belt.

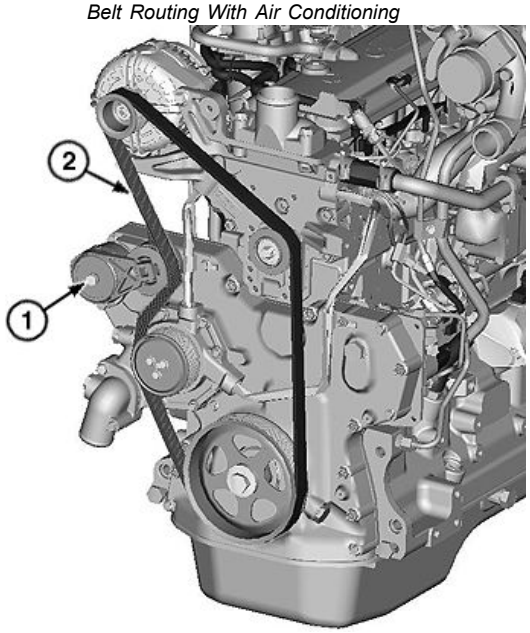
Replace Serpentine Belt

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. Check belt regularly for wear, especially for cracks at the bottom of grooves and for frayed edges.
5. Install a 1/2 in. drive socket wrench to the automatic belt tensioner. Turn wrench to pull automatic belt tensioner pulley away from belt, releasing belt tension.
6. Hold automatic belt tensioner away from belt while removing old belt and installing new belt.
7. Slowly release wrench tension to allow automatic belt tensioner to move against new belt. Tension is automatically adjusted.
8. Remove wrench.



TX1177806 —UN—01DEC14

Belt Routing With Air Conditioning



TX1177805 —UN—01DEC14

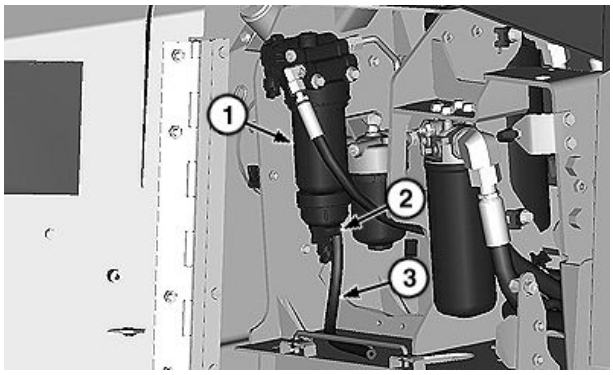
Belt Routing Without Air Conditioning

1— Automatic Belt Tensioner **2— Belt**

CN93077,00004CE -19-26NOV14-1/1

Check and Drain Primary Fuel Filter and Water Separator

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 right rear service door to access primary fuel filter and water separator (1).
5. Clean area around primary fuel filter and water separator.
6. Place end of drain hose (3) into a suitable container.
7. Loosen drain valve (2) and drain water and sediment into container.
8. Tighten drain valve. Dispose of waste properly.
9. Bleed fuel system. See Bleed Fuel System. (Section 4-1.)



TX1177970 —UN—15DEC14

Primary Fuel Filter and Water Separator

1— Primary Fuel Filter and Water Separator
2— Drain Valve
3— Drain Hose

10. Close service door.

CN93077,00004CF -19-15DEC14-1/1

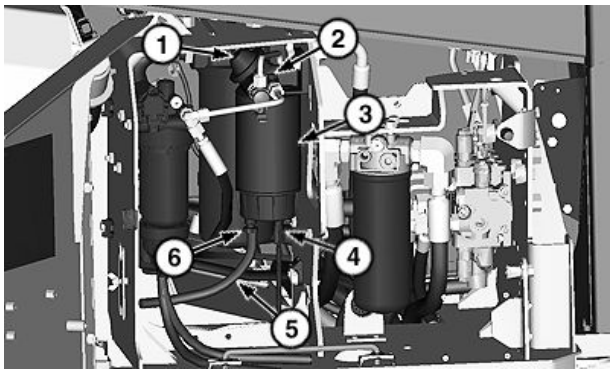
Check and Drain Auxiliary Fuel Filter and Water Separator—If Equipped

NOTE: Auxiliary fuel filter and water separator comes equipped with a heater element (4). Heater element prevents fuel from solidifying in severe cold conditions.

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 right rear service door to access auxiliary fuel filter and water separator (3).
5. Clean area around auxiliary fuel filter and water separator.
6. Place end of drain hose (5) into a suitable container.
7. Loosen air vent (2) and drain valve (6). Drain water and sediment into suitable container.
8. Tighten drain valve. Dispose of waste properly.

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

9. Bleed fuel system with fuel priming pump button (1) until air is vented.



TX1177975 —UN—15DEC14

Auxiliary Fuel Filter and Water Separator

1— Fuel Priming Pump Button (hand operated)
2— Air Vent
3— Auxiliary Fuel Filter and Water Separator
4— Heater Element
5— Drain Hose
6— Drain Valve

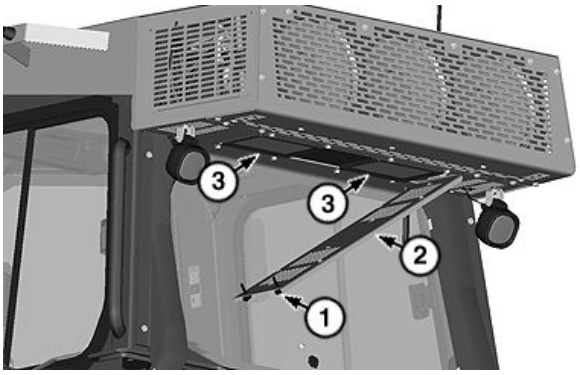
10. Tighten air vent.
11. Operate engine and check for leaks.
12. Close service door.

CN93077,00004D0 -19-15DEC14-1/1

Inspect and Replace Cab Fresh Air and Recirculation Filter Elements

NOTE: Effectiveness of filter varies with condition and use. Regular inspection is necessary.

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. Loosen wing nuts (1) to open cab fresh air filter panel (2).
5. Remove cab fresh air filter elements (3).
6. Remove dust from filter panel and housing. Replace cab fresh air filters as required.
7. Install filter elements.
8. Close fresh air filter panel and tighten wing nuts.



TX1177150 —UN—10NOV14

Fresh Air Filters and Panel

1— Wing Nut (2 used)
2— Cab Fresh Air Filter Panel
3— Cab Fresh Air Filter Element (2 used)

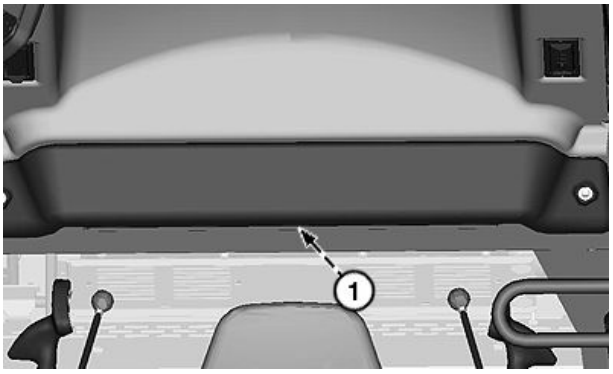
CN93077,00004C4 -19-16DEC14-1/2

Cab recirculating air filter is located inside the upper rear of the cab.

1. Press filter tab (1) to remove recirculating air filter.

CAUTION: Avoid injury from flying debris. Clear area of bystanders and wear personal protection equipment including eye protection. Reduce compressed air to less than 210 kPa (2.1 bar) (30 psi) when using for cleaning purposes.

2. Use compressed air under 210 kPa (2.1 bar) (30 psi). Direct air opposite to normal air flow.
3. Wash filter in warm, soapy water. Rinse and dry.
4. If filter will not come clean, replace filter.
5. Press filter tab to insert recirculating air filter.



TX1171680 —UN—11SEP14

Filter Tab

1— Filter Tab

CN93077,00004C4 -19-16DEC14-2/2

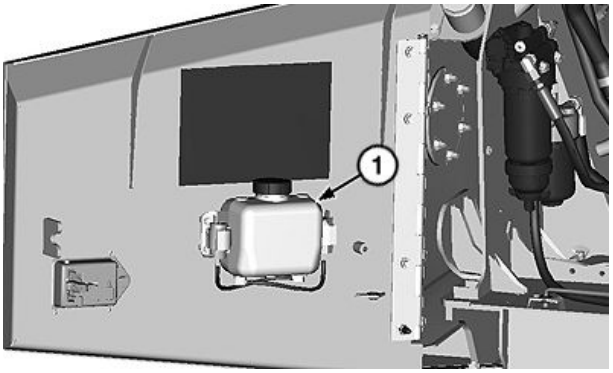
Check and Fill Windshield Washer Fluid

1. Open right rear service door to access windshield washer fluid bottle (1).

NOTE: All-season windshield washer fluid is recommended during the winter season.

2. Check fluid level in windshield washer fluid bottle and refill as required.
3. Close service door.

1— Windshield Washer Fluid Bottle



TX1177152 —UN—10NOV14

Windshield Washer Fluid Bottle

CN93077,00004C5 -19-10NOV14-1/1

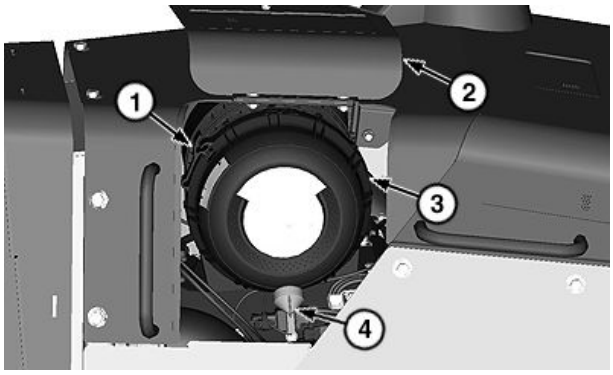
Replace Primary and Secondary Engine Air Filter Elements

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

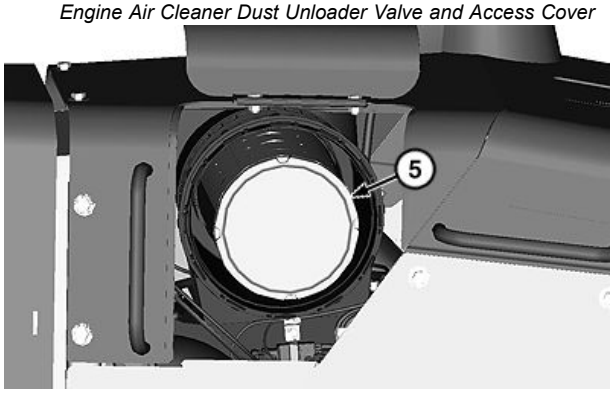
10. Install secondary engine air filter element. Verify that secondary engine air filter element is centered and securely positioned.
11. Install primary engine air filter element. Press the element against the air cleaner housing for the seal to seat.
12. Install engine air cleaner access cover and secure latch.
13. Lower right upper side panel.

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



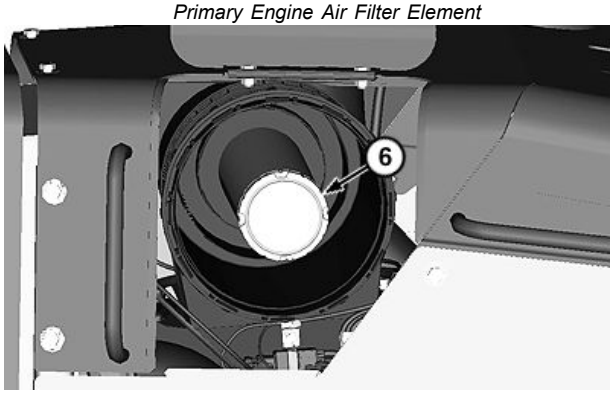
TX1177983 —UN—17NOV14

Engine Air Cleaner Dust Unloader Valve and Access Cover



TX1177984 —UN—17NOV14

Primary Engine Air Filter Element



TX1177985 —UN—17NOV14

Secondary Engine Air Filter Element

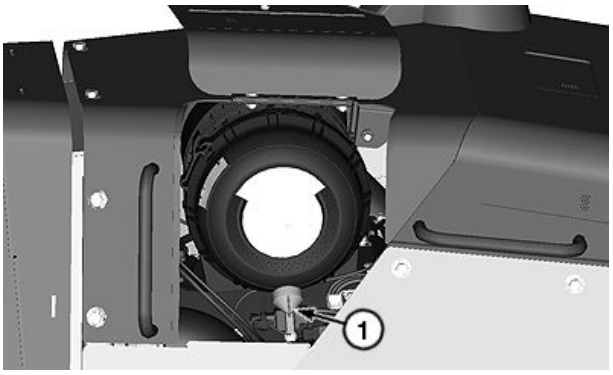
CN93077,00004D1 -19-01DEC14-1/1

Check Air Cleaner Dust Unloader Valve

IMPORTANT: Avoid machine damage. A missing, damaged, or hardened air cleaner dust unloader valve (1) will make the dust cup precleaner ineffective, causing very short element life. Valve should close when engine is running.

NOTE: If operating in high-dust conditions, squeeze dust valve every 2 hours of operation to release dust.

1. Park machine on level surface and lower all equipment to ground.
2. Engage park lock levers in up (locked) position.
3. Lift right upper side panel to access air cleaner dust unloader valve (1).
4. Squeeze air cleaner dust unloader valve to remove dust from the air cleaner.
5. Check condition of air cleaner dust unloader valve. Replace if hardened or damaged.



TX1177986 —UN—17NOV14

Air Cleaner Dust Unloader Valve

1— Air Cleaner Dust Unloader Valve

6. Close right upper side panel.

CN93077,00004D2 -19-17NOV14-1/1

Track Sag General Information

Properly adjusted tracks prolong chain life. To get the maximum life out of track bushings, keep the track sag properly adjusted. Improperly adjusted track wears at a more rapid rate.

A tight track causes higher loading which will increase wear on the pins, bushings, links, sprocket, and front idler. The graph shows how the loading on the track chain increases significantly when tracks are too tight. A tight track requires more horsepower, which increases fuel consumption and decreases productivity.

In some applications, tracks may require adjustment several times during a working day. Periodically check track sag when working in different conditions on the same job site as moisture content of the soil changes.

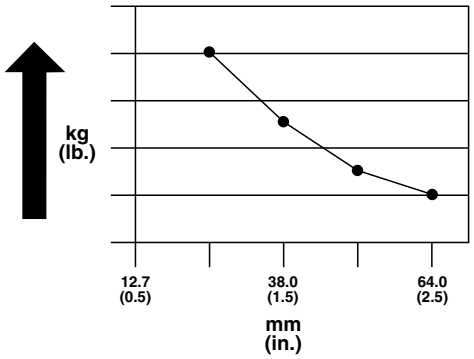
Tracks should always be adjusted in the actual operating conditions. If material packs in the undercarriage, the tracks should be adjusted with the material packed in the components.

When packing occurs, track will tighten and must be loosened to extend wear life. The track spring will recoil and the machine will continue to operate with tight track. However, continued operation without loosening the tracks will result in excessive pin and bushing wear, sprocket popping, tooth tip wear, and excessive loads on the entire undercarriage and final drive system.

With sealed chain, internal pin and bushing wear creates sag which reduces the effects of packing. However, if a sealed chain is too tight, accelerated bushing wear occurs.

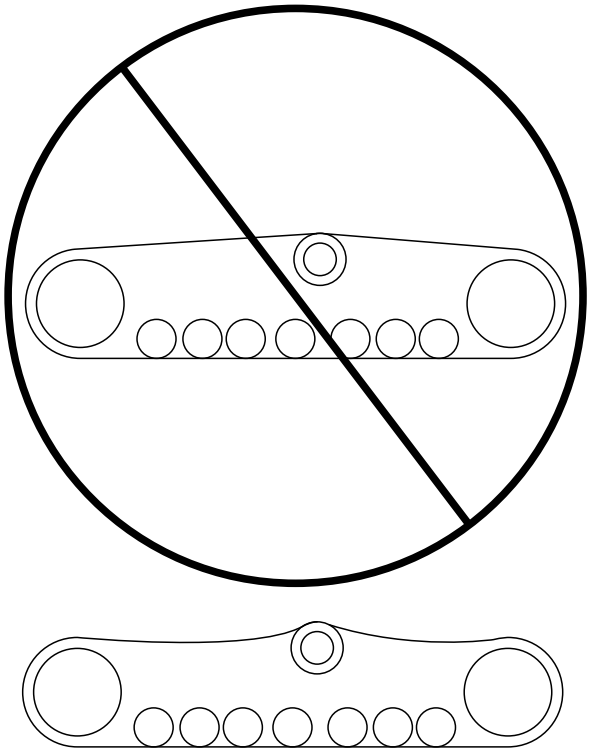
Lubricated chain is different due to the absence of internal pin and bushing wear. Properly adjusted tracks are essential to prevent accelerated bushing outside diameter wear.

Maintaining track sag is very important regardless of the type of track being used.



TX1167807 —UN—09SEP14

Track Tension kg (lb.) vs. Track Sag mm (in.)



TX1178069 —UN—19NOV14

Proper Track Sag

CN93077,00004D6 -19-18NOV14-1/1

Check and Adjust Track Sag

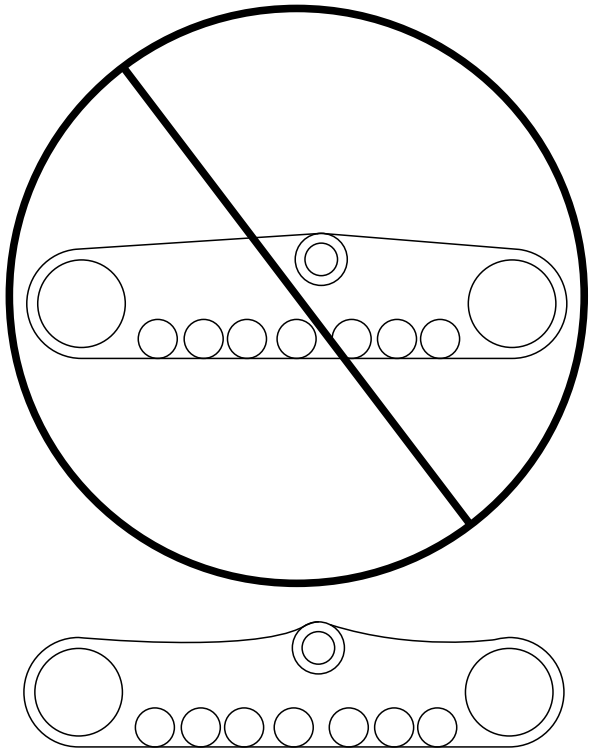
Maintaining proper track sag (1) to specification is the single most important adjustment. Tight tracks can reduce wear life by more than 50% over tracks which are properly maintained at 51 mm (2.0 in.) of sag. Tight tracks increase loading on undercarriage components and accelerate wear rate. Track sag should be adjusted as soil conditions change. See Track Sag General Information in this section.

1. Allow machine to slowly roll forward so track pin is centered over carrier roller.
2. Engage park lock levers in up (locked) position.
3. Measure track sag from top of track grouser to a straightedge (2). If track sag is not within specification, see Adjust Track Sag in this section.

Specification

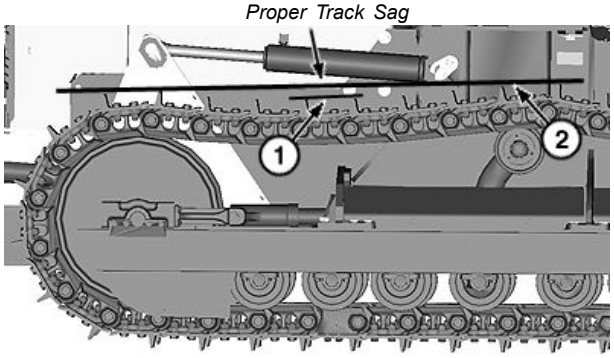
Track Sag—Distance.....45—57 mm
1.75—2.25 in.

1— Track Sag **2— Straightedge**



TX1178069 —UN—19NOV14

Proper Track Sag



TX1178020 —UN—18NOV14

Measuring Track Sag

Continued on next page

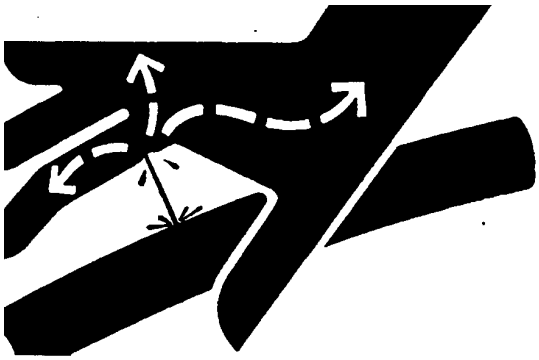
CN93077,00004D5 -19-20MAR15-1/3

Adjust Track Sag

CAUTION: Prevent possible injury from high-pressure grease. Grease for track adjuster cylinder is under high pressure. Never remove special grease fitting or check valve to release grease. If grease does not escape immediately from vent hole with check valve loosened, slowly drive forward and reverse until grease escapes. DO NOT disassemble parts unless you know the correct procedure and have correct tools. See your authorized dealer for service.

If an accident occurs, see a doctor immediately. Any fluid injected into skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury may call the Deere & Company Medical Department in Moline, Illinois, or other knowledgeable medical source.

IMPORTANT: Prevent possible damage to track components. DO NOT clean track before adjusting chain if ground conditions cause packing around sprocket and idlers.



X9811 —UN—23AUG88

Escaping Fluid Under Pressure

Grease fitting (4) on check valve (5) is used for track sag adjustment only.

To move piston, an air assisted grease gun can be used. If piston does not move, check for seized track adjuster parts.

Continued on next page

CN93077,00004D5 -19-20MAR15-2/3

Decrease Track Sag:

NOTE: Grease gun with 55 200 kPa (552 bar) (8000 psi) minimum capacity is required.

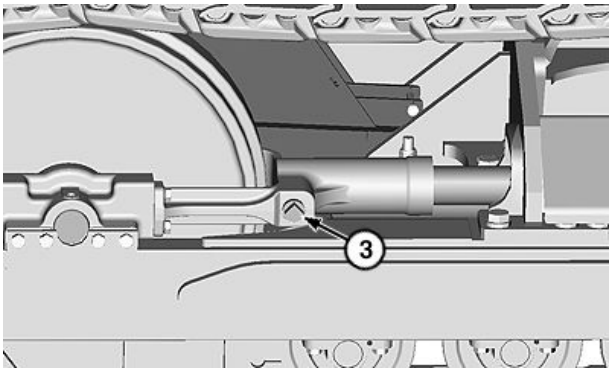
1. Remove access plug (3).
2. To decrease sag, apply grease to grease fitting (4) using grease gun.
3. After adding grease, operate unit to allow track adjuster cylinder to fully adjust and then check sag again.
4. Install access plug.

Increase Track Sag:

CAUTION: Prevent possible serious injury from high-pressure grease penetrating your skin. Never remove grease fitting or check valve to release the grease. If grease does not escape immediately from vent hole when check valve nut is loosened, slowly drive machine in forward and reverse directions until grease escapes. DO NOT disassemble parts unless you know the correct procedure and have correct tools. See your authorized John Deere dealer.

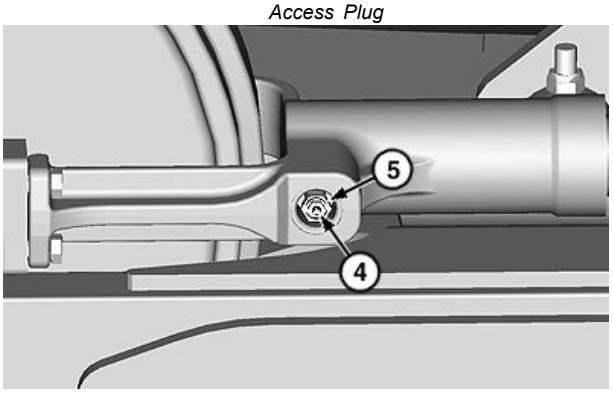
If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury may call the Deere & Company Medical Department in Moline, Illinois, or other knowledgeable medical source.

1. To increase sag, turn check valve (5) two turns counterclockwise to release grease through vent hole (6).
2. Turn check valve clockwise to close.
3. After releasing grease, operate unit to allow track adjuster cylinder to fully adjust and check sag again.
4. Install access plug.



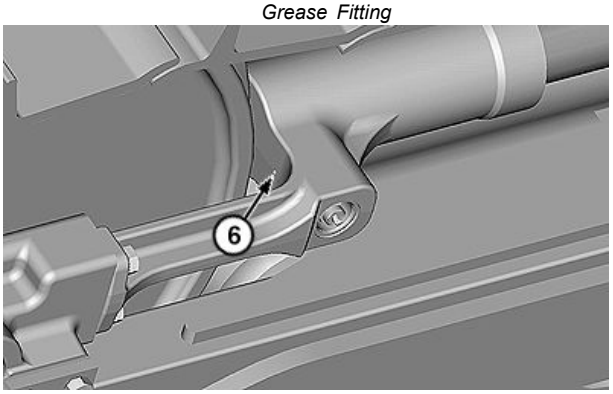
TX1178022 —UN—18NOV14

Access Plug



TX1178023 —UN—18NOV14

Grease Fitting



TX1178027 —UN—18NOV14

Vent Hole

3— Access Plug
4— Grease Fitting
5— Check Valve
6— Vent Hole

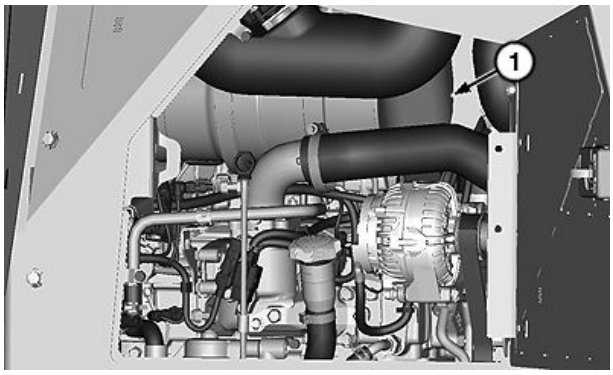
CN93077,00004D5 -19-20MAR15-3/3

Service Exhaust Filter

CAUTION: Under federal, state, and/or local laws or regulations, exhaust filter ash may 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. See your authorized dealer for exhaust filter ash handling and disposal.

The exhaust filter (1) is designed to retain residual ash, which is a noncombustible result of additives used in crankcase lubrication oils and the fuel. As ash levels rise, the capacity for soot storage is reduced. Engine performance can be reduced due to increased exhaust system back pressure. The residual ash must be removed from the filter. Ash removal is performed by removing the exhaust filter from machine and having the exhaust filter cleaned by specialized equipment or replacing the exhaust filter.

Do **NOT** attempt to remove exhaust filter from machine. **Contact your authorized dealer to remove exhaust filter for ash removal or replacement.**



TX1177988 —UN—17NOV14

Exhaust Filter

1— Exhaust Filter

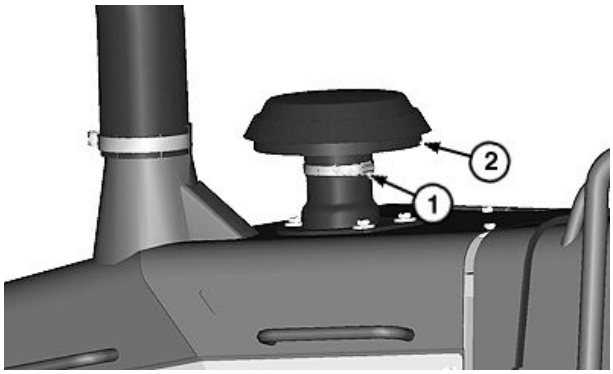
Failure to follow the approved ash removal methods may violate U.S. federal, state, and local hazardous waste laws, along with damage to the exhaust filter resulting in potential denial of the emissions warranty.

CN93077,00004D3 -19-08DEC14-1/1

Check and Clean Engine Air Filter Precleaner

1. Park machine on level surface and lower all equipment to ground.
2. Engage park lock levers in up (locked) position.
3. Loosen hose clamp (1).
4. Remove engine air filter precleaner (2).
5. Check cover for dirt and debris and clean as required.
6. Install engine air filter precleaner and tighten hose clamp.

1— Hose Clamp **2— Engine Air Filter Precleaner**



TX1175485 —UN—24OCT14

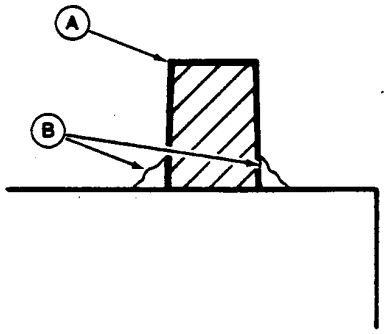
Engine Air Filter Precleaner

CN93077,00004CC -19-12NOV14-1/1

Clean and Tighten Battery Terminals

CAUTION: Battery gas can explode. Keep sparks and flames away from batteries. Always remove grounded (-) battery clamp first and replace it last.

1. Disconnect battery clamps, grounded clamp first.
2. Clean terminal (A) and clamp with a stiff brush.
3. Apply lubricating grease (B) where battery terminal meets top of battery case to prevent grease from escaping.
4. Install and tighten clamps, grounded clamp last.



T6758AA —UN—21OCT88

Battery Terminal

A—Terminal

B—Lubricating Grease

TX,55,FF765 -19-30NOV16-1/1

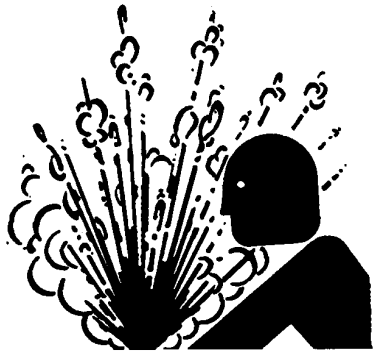
Check Coolant Level at Surge Tank

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 top right access door to access surge tank.

CAUTION: Prevent possible injury from hot spraying fluids. Shut off engine. Remove filler cap only when cool enough to touch with bare hands. Slowly loosen cap to relieve pressure before removing completely.

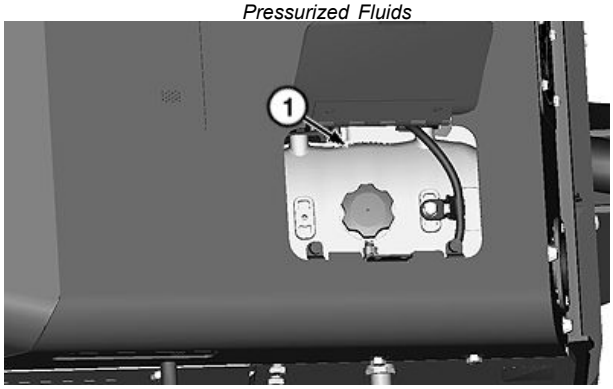
5. With the engine cold, coolant level must be above the COLD mark on the surge tank (1).
6. If coolant is below the COLD mark, add coolant to the surge tank.
7. If surge tank is empty, check for leaks. Repair as required. Add coolant to the surge tank.
8. Close access door.

1— Surge Tank



T6464AV —UN—18OCT88

Pressurized Fluids



TX1178145 —UN—19NOV14

Surge Tank

CN93077,00004D7 -19-18NOV14-1/1

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 notch.

The most accurate oil level reading is obtained when the engine is cold, before starting the engine for the day's operation.

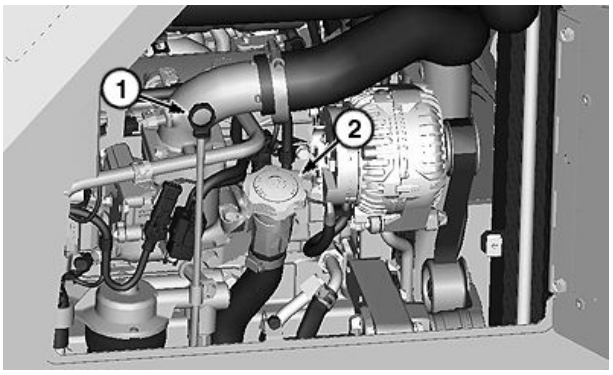
1. Park machine on level surface and lower all equipment to ground.
2. Engage park lock levers in up (locked) position.
3. Press engine stop switch.
4. Open right front service door.
5. Make sure dipstick (1) is fully seated.
6. Remove dipstick to check oil level.

   BEFORE THE ENGINE IS STARTED: The engine is full when oil level is between FULL notch (3) and ADD notch (4). Running the engine when the oil level is above the ADD notch is acceptable.

   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 notch.

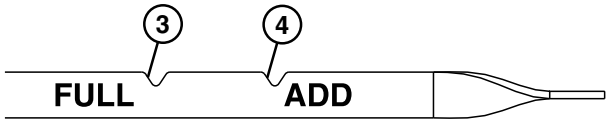
IMPORTANT: Avoid engine damage. Make sure that area around and above engine oil filler cap is clean and clear of debris before removing cap.

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



TX1178142 —UN—18NOV14

Engine Oil Dipstick and Fill Tube Cap



TX1101430 —UN—05DEC11

Oil Dipstick Markings

1— Dipstick
2— Fill Tube Cap
3— FULL Notch
4— ADD Notch

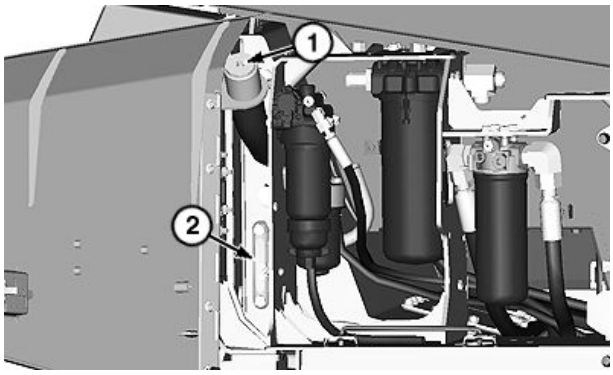
9. Install dipstick and close service door.

CN93077,00004D8 -19-01DEC14-1/1

Check Hydraulic/Hydrostatic System Oil Level

IMPORTANT: Prevent possible hydraulic pump damage. DO NOT operate engine without oil in the hydraulic reservoir.

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. The hydraulic oil reservoir, fill port (1), and sight glass (2) are located on the right side of machine.
5. Open right rear service door to access hydraulic sight glass. Oil must be between ADD and FULL marks in sight glass.
6. If necessary, remove hydraulic reservoir cap and add oil to fill port. See Hydraulic and Hydrostatic Oil. (Section 3-1.)
7. Check O-ring on hydraulic reservoir cap before installing.



TX1178149 —UN—18NOV14

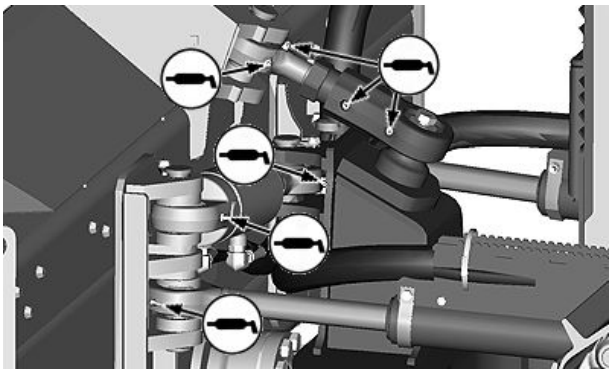
Hydraulic Oil Level

1— Fill Port **2— Sight Glass**

8. Close service door.

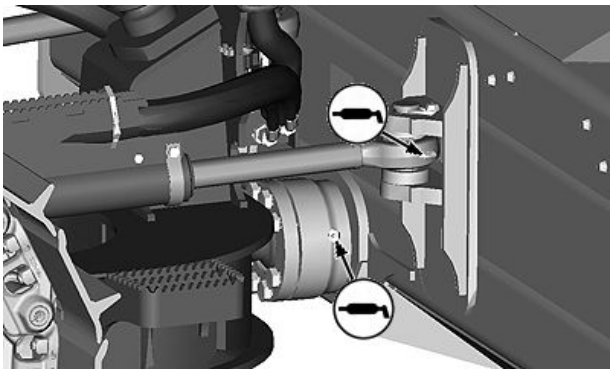
CN93077,00004D9 -19-18NOV14-1/1

Lubricate Dozer Linkage and Blade Socket



TX1178167 —UN—18NOV14

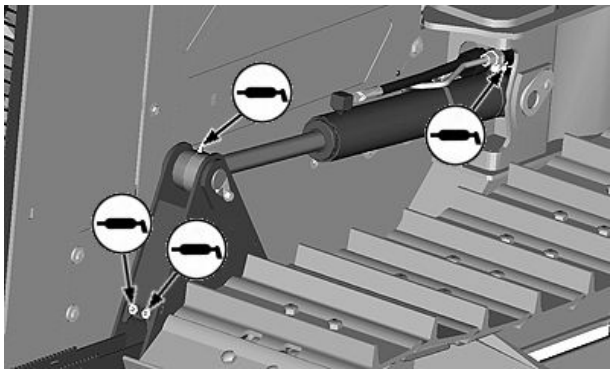
Seven Points (left side shown)



TX1178175 —UN—18NOV14

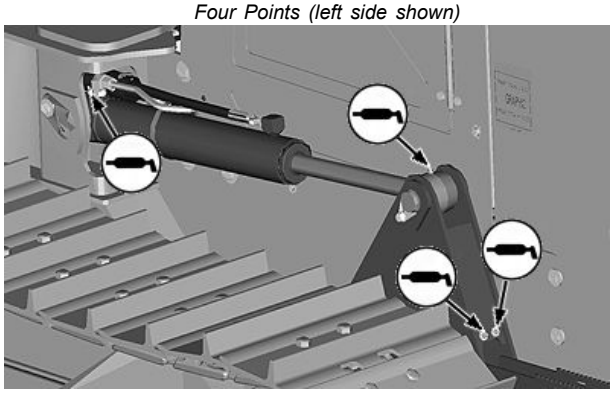
Two Points (right side shown)

Lubricate each grease fitting until grease escapes at joints. See Grease. (Section 3-1.)



TX1178169 —UN—18NOV14

Four Points (left side shown)



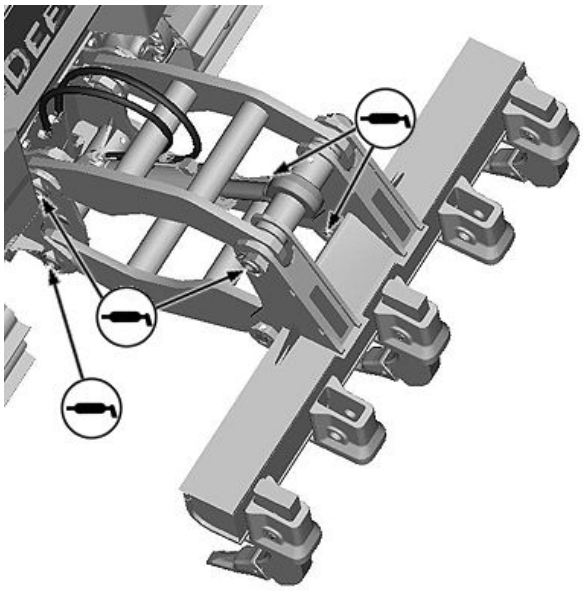
TX1178173 —UN—18NOV14

Four Points (right side shown)

CN93077,00004DA -19-19NOV14-1/1

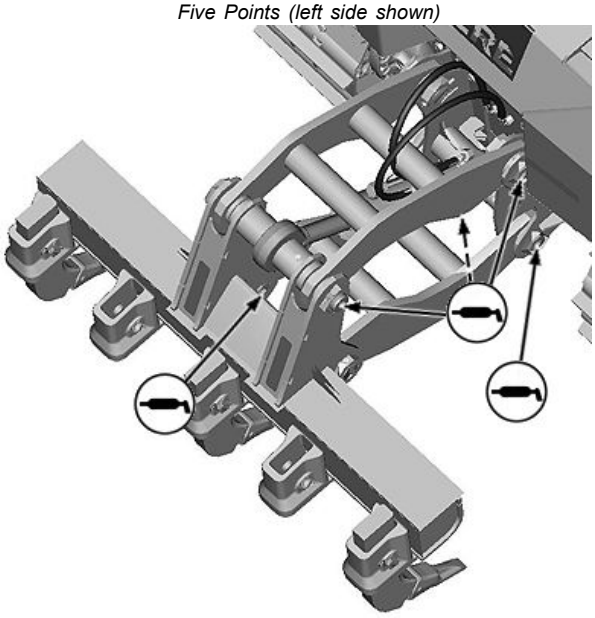
Lubricate Rear Ripper—If Equipped

Lubricate each grease fitting until grease escapes at joints. See Grease. (Section 3-1.)



TX1178450 —UN—01DEC14

Five Points (left side shown)



TX1178451 —UN—01DEC14

Five Points (right side shown)

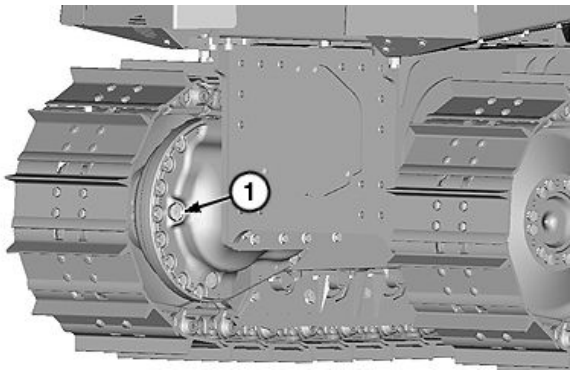
CN93077,00004E1 -19-01DEC14-1/1

Check Final Drive Oil Level

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 inner fill plug (1).
5. 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.

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.

6. Add oil as necessary. See Final Drive Oil. (Section 3-1.)
7. Install and tighten fill plug.



TX1178422 —UN—20NOV14

Final Drive (left side shown)

1— Inner Fill Plug (2 used)

8. Repeat procedure on other side of machine.

CN93077,00004E2 -19-11MAY16-1/1

Take Engine Oil Sample

See an authorized John Deere dealer for procedures and sampling equipment. For more information, see Fluid Sampling Test Ports—If Equipped. (Section 4-1.)

CN93077,000041E -19-26JAN16-1/1

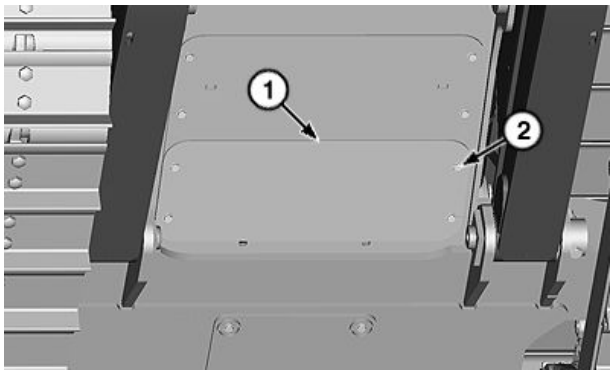
Drain and Refill Engine Oil and Replace Filter

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 screws (2) and engine oil drain valve service cover (1) located below engine.
5. Place drain hose (4) into suitable container.
6. Open drain valve (3) and allow oil to drain into suitable container. Dispose of waste oil properly.
7. Close drain valve.
8. Open right front service door.
9. Turn engine oil filter (5) counterclockwise to remove.
10. Clean mounting surface on base. Apply thin film of oil to gasket of new filter.
11. Install new engine oil filter. Turn engine oil filter clockwise by hand until gasket touches mounting surface.
12. Tighten engine oil filter an additional 1/2 turn.
13. Remove fill tube cap (7). Fill engine with oil at fill tube. See Diesel Engine Oil — Interim Tier 4, Final Tier 4, Stage IIIB, and Stage IV. (Section 3-1.)

Specification	
Engine Oil—Capacity	15.1 L 4.0 gal

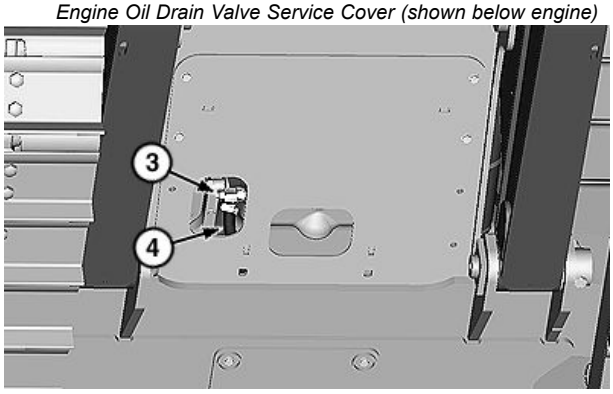
14. Install fill tube cap.
15. Start engine.

    Engine oil pressure indicator on standard display monitor must go out within 15—20 seconds. If not, stop engine immediately and find the cause.
16. After running engine for 2 minutes, stop engine. Using dipstick (6), check oil level.
17. Check for leaks around filter and drain plug. Tighten only enough to stop leaks.
18. Install service cover and close service door.



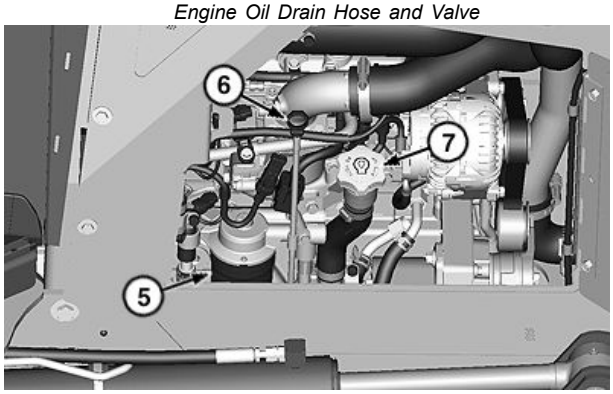
TX1178538 —UN—21NOV14

Engine Oil Drain Valve Service Cover (shown below engine)



TX1178539 —UN—21NOV14

Engine Oil Drain Hose and Valve



TX1178540 —UN—21NOV14

Engine Fill Tube, Dipstick, and Filter

1— Engine Oil Drain Valve Service Cover
2— Cap Screw (4 used)
3— Drain Valve
4— Drain Hose
5— Engine Oil Filter
6— Dipstick
7— Fill Tube Cap

CN93077,00004E6 -19-18APR19-1/1

Replace Primary and Final Fuel Filters

NOTE: When operating in dry, dusty conditions, fuel filter replacement may be required more often.

NOTE: Both primary and final filters must be replaced at the same time.

Remove and Install Primary Fuel Filter Element

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 screws (2) and rear service panel (1).
5. Close fuel valve (3).
6. Open right rear service door to access primary fuel filter (4).
7. Thoroughly clean primary fuel filter and surrounding area to keep from getting dirt and debris into fuel system.
8. Place end of drain hose (9) into a suitable container.

CAUTION: Fuel in filter may be under pressure. Escaping fuel under pressure can penetrate the skin and cause serious injury. Relieve pressure before removing filter.

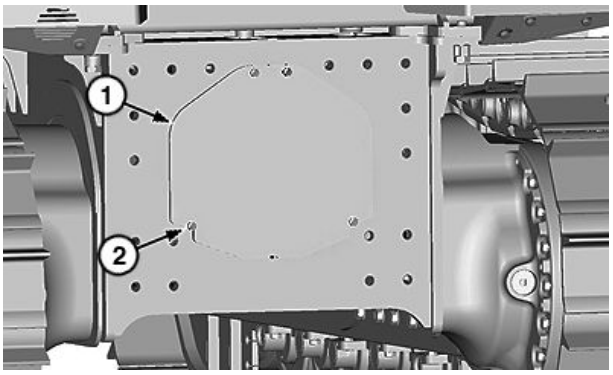
9. Loosen drain valve (8) on bottom of filter to relieve pressure and drain fuel. Dispose of waste properly.
10. Disconnect water-in-fuel (WIF) sensor (5) connector.

NOTE: Additional fuel will remain in the primary fuel filter housing. Fuel may not reach the top of primary fuel filter.

11. Turn filter canister counterclockwise to remove.
12. Once filter canister is removed, pull filter element down to remove from filter header.
13. Inspect filter header and filter canister sealing surfaces. Clean as required.
14. Install new filter element into primary fuel filter canister.

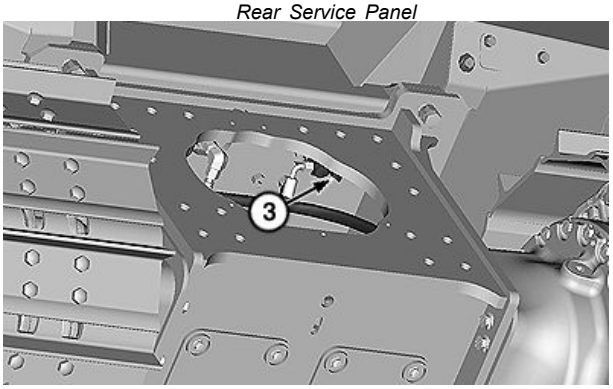
IMPORTANT: Do not prefill fuel filters. Debris in unfiltered fuel will damage fuel system components.

15. Install primary fuel filter.



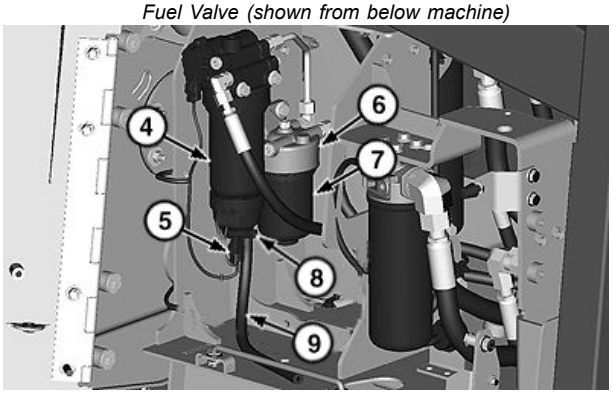
Rear Service Panel

TX1176905 —UN—06NOV14



Fuel Valve (shown from below machine)

TX1176904 —UN—06NOV14



Primary and Final Fuel Filters

TX1178550 —UN—21NOV14

1— Rear Service Panel
2— Cap Screw (4 used)
3— Fuel Valve
4— Primary Fuel Filter
5— Water-in-Fuel (WIF) Sensor
6— Final Fuel Filter Header
7— Final Fuel Filter
8— Drain Valve
9— Drain Hose

16. Connect WIF sensor connector.

Continued on next page

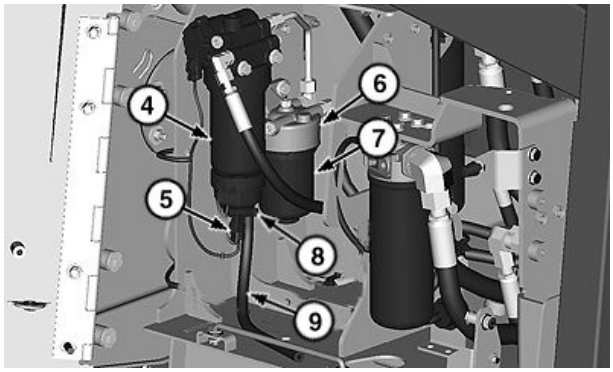
Remove and Install Final Fuel Filter Element

NOTE: Both primary and final filters must be replaced at the same time.

1. Thoroughly clean final fuel filter header (6) and surrounding area to keep from getting dirt and debris into fuel system.
2. Turn final fuel filter (7) counterclockwise to remove.
3. Inspect filter head sealing surfaces. Clean as required.

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

4. Install fuel filter into fuel filter header turning clockwise. Tighten until fuel filter snugly mates with fuel filter header.
5. Turn filter 1/2—3/4 turn further clockwise.
6. Open fuel valve, install service panel, and close service doors.



TX1178550 —UN—21NOV14

Primary and Final Fuel Filters

4— Primary Fuel Filter
5— Water-in-Fuel (WIF) Sensor
6— Final Fuel Filter Header
7— Final Fuel Filter
8— Drain Valve
9— Drain Hose

7. Bleed fuel system. See Bleed Fuel System. (Section 4-1.)

CN93077,00004E7 -19-05DEC14-2/2

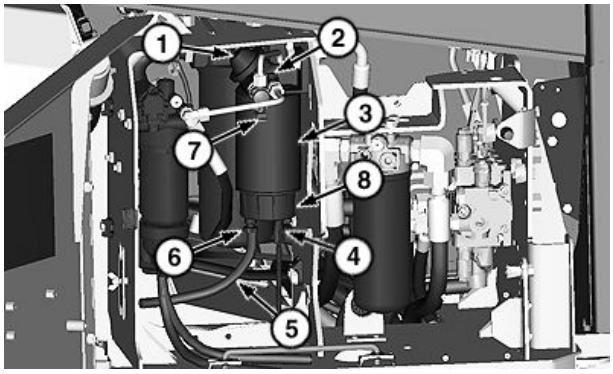
Replace Auxiliary Fuel Filter—If Equipped

NOTE: Auxiliary fuel filter and water separator comes equipped with a heater element (4). Heater element prevents fuel from solidifying in severe cold conditions.

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 right rear service door to access auxiliary fuel filter and water separator (3).
5. Thoroughly clean auxiliary fuel filter and surrounding area to keep from getting dirt and debris into fuel system.
6. Close fuel valve (7).
7. Place end of drain hose (5) into a suitable container.
8. Open drain valve (6) and air vent (2) to relieve pressure and drain fuel. Dispose of waste properly.
9. Turn filter canister counterclockwise to remove.
10. Clean and dry water separator bowl (8).

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

11. Install auxiliary fuel filter.



TX1178560 —UN—21NOV14

Auxiliary Fuel Filter and Water Separator

1— Fuel Priming Hand Pump
2— Air Vent
3— Auxiliary Fuel Filter and Water Separator
4— Heater Element
5— Drain Hose
6— Drain Valve
7— Fuel Valve
8— Water Separator Bowl

12. Remove trapped air from fuel filter by using air vent and fuel priming hand pump (1).
13. Open fuel valve.
14. Start engine and let engine run for 1 minute. Check for leaks.
15. If needed, tighten filter element and glass bowl only enough to stop leaks.
16. Close service door.

CN93077,00004E8 -19-05DEC14-1/1

Replace Winch Oil Filter—If Equipped

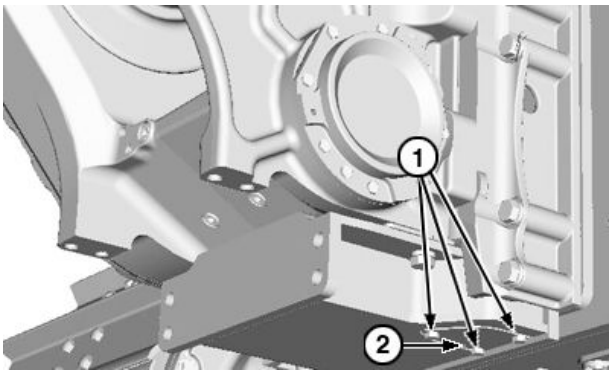
The winch oil filter is located on right side between winch and crawler.

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 screws (1) and winch oil filter access panel (2).

NOTE: The filter canister has a recessed 1/2 in. drive on bottom to assist removal of filter.

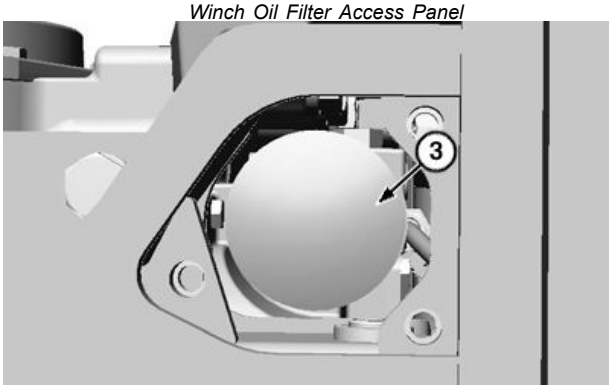
5. Remove filter (3) by turning counterclockwise.
6. Apply a thin film of oil to gasket of new filter.
7. Install new filter.
8. Install winch oil filter access panel and cap screws.
9. Run engine at slow idle.
10. Open winch oil dipstick fill port access door (4) located on top of winch.
11. Check oil level on dipstick. Oil must be between ADD and FILL marks on dipstick. Add oil through winch oil dipstick fill port (5) if necessary.
12. Check oil level again.
13. Close access door, install access panel, and cap screws.

1— Cap Screw (3 used)
2— Winch Oil Filter Access Panel
3— Winch Oil Filter
4— Winch Oil Dipstick Fill Port Access Door
5— Winch Oil Dipstick Fill Port



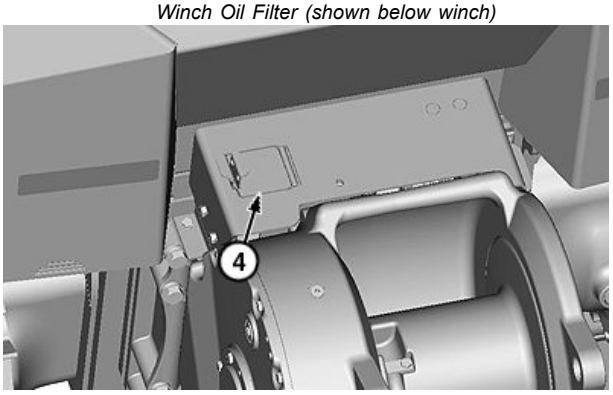
TX1104285A —UN—22DEC11

Winch Oil Filter Access Panel



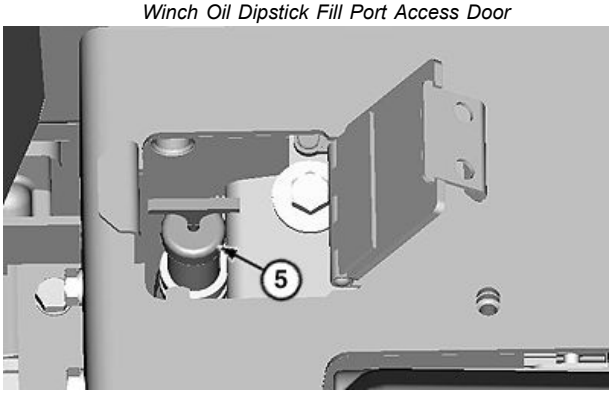
TX1104286A —UN—22DEC11

Winch Oil Filter (shown below winch)



TX1178906 —UN—25NOV14

Winch Oil Dipstick Fill Port Access Door



TX1178887 —UN—25NOV14

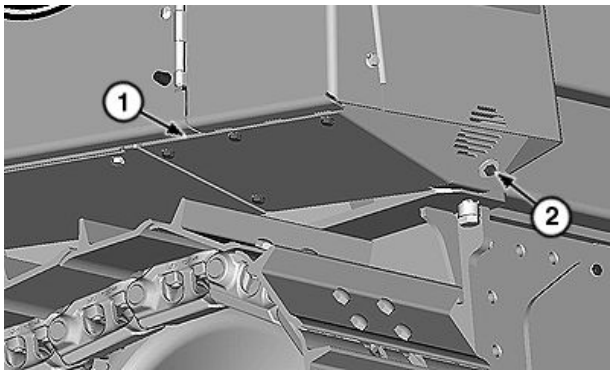
Winch Oil Dipstick Fill Port

CN93077,00004ED -19-05DEC14-1/1

Drain Water and Sediment From Fuel Tank

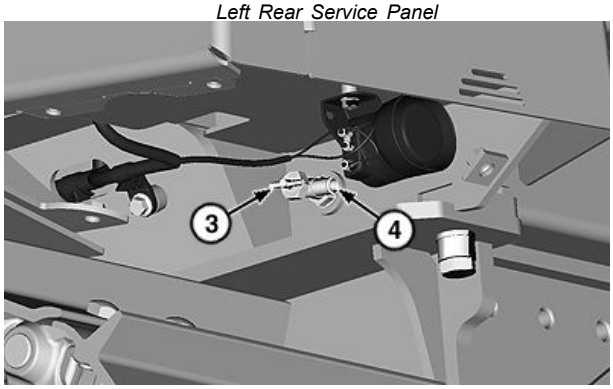
1. Park machine on level surface and lower all equipment to ground.
2. Engage park lock levers in up (locked) position.
3. Press engine stop switch.
4. Remove cap screws (2) and left rear service panel (1) to access fuel tank drain valve (3).
5. Route environmental drain hose from fuel tank drain fitting (4) into a suitable container.
6. Open fuel tank drain valve. Drain water and sediment into a suitable container until clean fuel emerges. Dispose of waste properly.
7. Close fuel tank drain valve.
8. Install left rear service panel and cap screws.

1— Left Rear Service Panel
2— Cap Screw (5 used)
3— Fuel Tank Drain Valve
4— Fuel Tank Drain Fitting



TX1175618 —UN—27OCT14

Left Rear Service Panel



TX1175620 —UN—27OCT14

Fuel Tank Drain Valve

CN93077,00004E9 -19-09DEC14-1/1

Check Hybrid Battery Electrolyte Level—If Equipped

CAUTION: Battery gas can explode. Keep sparks and flames away from batteries. Use a flashlight to check battery electrolyte level.

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

ALWAYS remove grounded (-) battery clamp first and replace it last.

Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, eat holes in clothing, and cause blindness if splashed into eyes.

Avoid the hazard by:

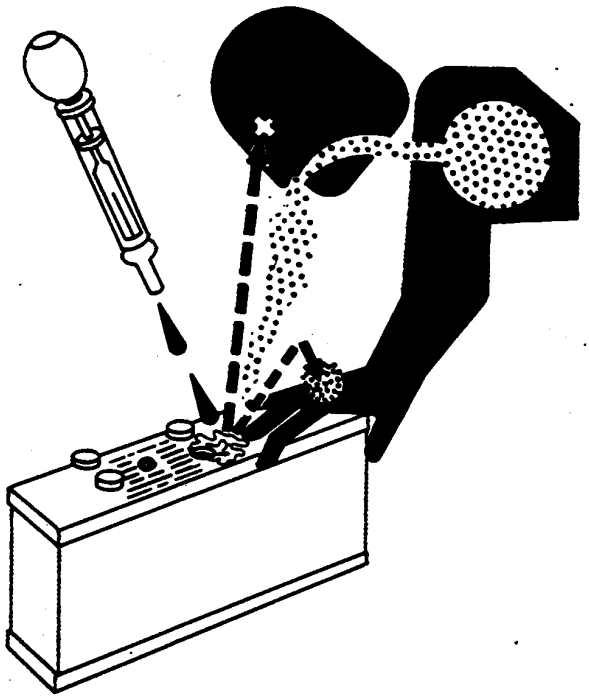
1. **Filling batteries in a well-ventilated area.**
2. **Wearing eye protection and rubber gloves.**
3. **Avoiding breathing fumes when electrolyte is added.**
4. **Avoiding spilling or dripping electrolyte.**
5. **Using proper jump start procedure.**

If acid is spilled on skin:

1. **Flush skin with water.**
2. **Apply baking soda or lime to help neutralize the acid.**
3. **Flush eyes with water for 15–30 minutes.**
4. **Get medical attention immediately.**

If acid is swallowed:

1. **Do not induce vomiting.**
2. **Drink large amounts of water or milk but do not exceed 1.9 L (2 qt).**
3. **Get medical attention immediately.**



TS203 —UN—23AUG88

Avoid Acid Burns

1. Remove battery box cover.

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MB60223,000036D -19-11FEB20-1/2

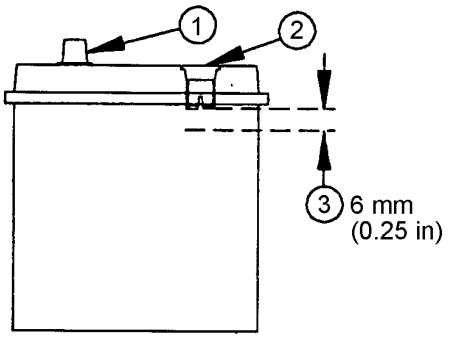
IMPORTANT: If water is added to batteries during freezing weather, batteries must be charged after water is added to prevent batteries from freezing. Charge battery using a battery charger or by running the engine.

2. Fill each cell to within the specified range with distilled water. DO NOT overfill.

CAUTION: Prevent possible injury. ALWAYS remove grounded (-) battery clamp first and replace it last.

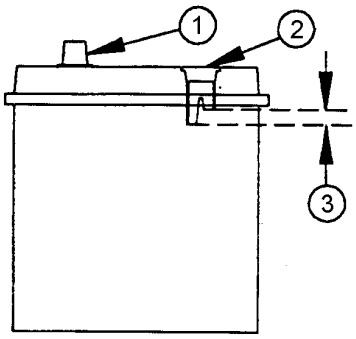
3. Disconnect battery clamps, grounded clamp first.
4. Clean battery terminal (4) and clamps with a stiff brush.
5. Apply lubricating grease (5) around battery terminal base only.
6. Install and tighten clamps, grounded clamp last.

1— Battery Post
2— Fill Tube
3— Electrolyte Level Range
4— Battery Terminal
5— Lubricating Grease



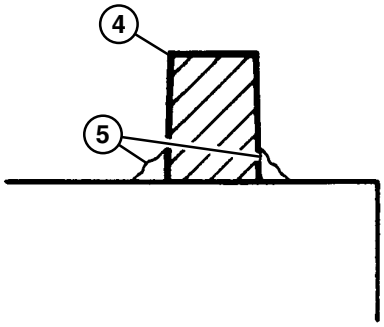
TX1208617 —UN—05JAN16

Battery Terminal and Fill Hole



T137536 —UN—25JAN01

Fill Level



TX1265575 —UN—03OCT18

Terminal and Grease

MB60223,000036D -19-11FEB20-2/2

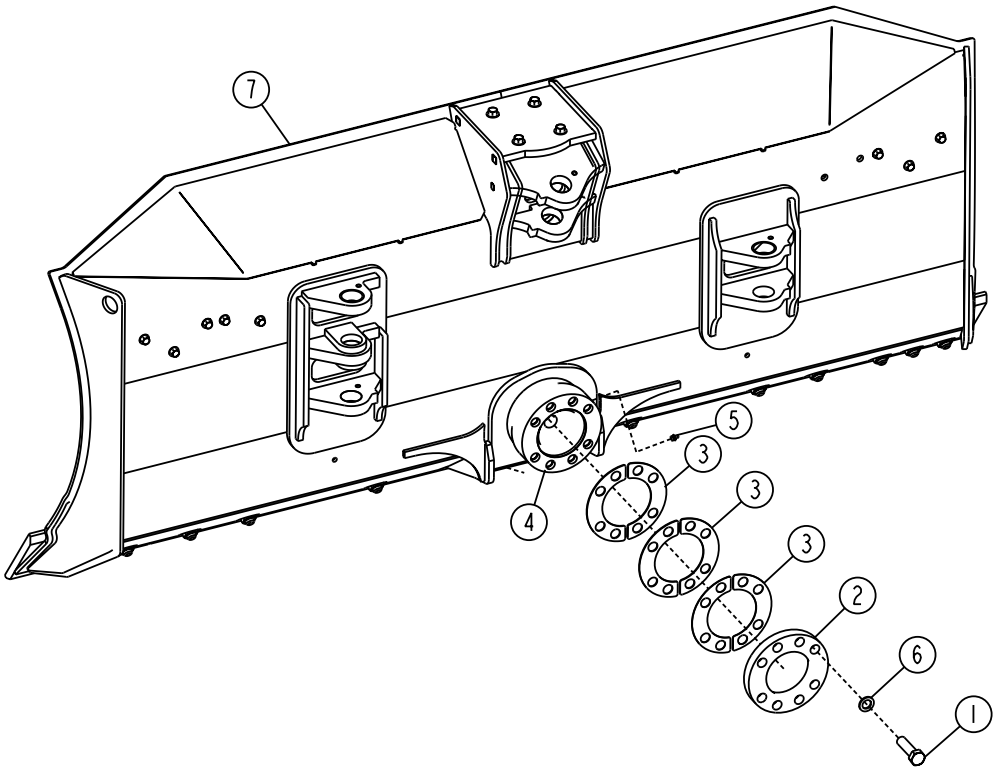
Take Fluid Samples

See your authorized dealer for procedures and sampling equipment. For more information, see Fluid Sampling Test Ports—If Equipped. (Section 4-1.)

- Hydraulic System Oil
- Final Drive Oil
- Engine Coolant
- Diesel Fuel

CN93077,00004EB -19-20NOV14-1/1

Check Blade Shim Adjustment



Blade Pivot Shim Adjustment

1— Cap Screw (8 used)
2— Socket Retainer
3— Shim (3 included)
4— Socket
5— Lubrication Fitting
6— Washer (8 used)
7— Blade

1. Park machine on level surface. Lower blade to ground.
2. Remove cap screws (1) from socket retainer (2). Remove shims (3).
3. Install ball socket retainers without shims. Measure gap, remove ball socket retainers.
4. Install enough shims to fill gap, plus one extra shim.

Continued on next page

CN93077,0000517 -19-15DEC14-1/2

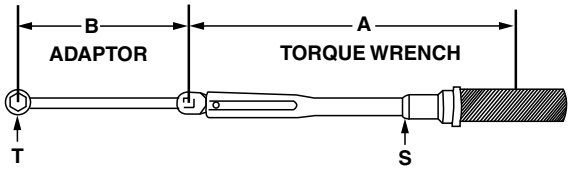
NOTE: Do not use anti-seize lubricant on these cap screws.

5. Install ball socket retainers and install socket cap screws to blade ball. Tighten pivot cap screws using DFT1278 (see your authorized dealer) along with torque adaptor formula: S = (A·T)/(A+B);
   - S = Torque setting on the torque wrench.
   - A = Distance from center of the square drive to the center of the handle grip.
   - B = Length of the adapter from the center of the square drive to the center of the cap screw. Use only the length which is parallel to the handle.
   - T = Torque desired.

Specification

Socket Retainer Cap Screws—Torque	490 N·m 361 lb.-ft.

NOTE: There should be some play in the ball and socket joint.



TX1064881 —UN—23SEP09

Torque Wrench

6. Verify the ball and socket joint is not bound.

CN93077,0000517 -19-15DEC14-2/2

Replace Cab Fresh Air and Recirculation Filters

Cab Fresh Air Filter

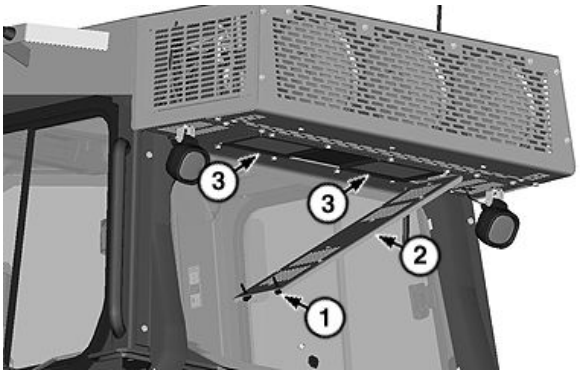
1. Park machine on level surface and lower all equipment to ground.
2. Engage park lock levers in up (locked) position.
3. Press engine stop switch.
4. Loosen wing nuts (1) to open cab fresh air filter panel (2).

NOTE: Machines equipped with HVAC precleaner will have one cab fresh air filter element.

5. Remove cab fresh air filter elements (3).

CAUTION: Avoid injury from flying debris. Clear area of bystanders and wear personal protection equipment, including eye protection. Reduce compressed air to less than 210 kPa (2.1 bar) (30 psi) when using for cleaning purposes.

6. Use compressed air under 210 kPa (2.1 bar) (30 psi). Direct air opposite to normal air flow.



TX1177150 —UN—10NOV14

Fresh Air Filters and Panel

1— Wing Nut (2 used)
2— Cab Fresh Air Filter Panel
3— Cab Fresh Air Filter Element (2 used)

7. Install new cab fresh air filter elements.
8. Close cab fresh air filter panel and tighten wing nuts.

CN93077,00004F3 -19-21NOV14-1/2

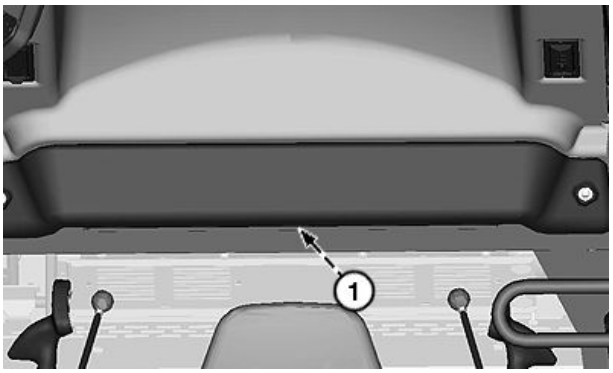
Cab Recirculating Air Filter

Cab recirculating air filter is located inside the upper rear of the cab.

1. Press filter tab (1) to remove recirculating air filter.

CAUTION: Avoid injury from flying debris. Clear area of bystanders and wear personal protection equipment including eye protection. Reduce compressed air to less than 210 kPa (2.1 bar) (30 psi) when using for cleaning purposes.

2. Use compressed air under 210 kPa (2.1 bar) (30 psi). Direct air opposite to normal air flow.
3. Press filter tab to insert new recirculating air filter.



TX1171680 —UN—11SEP14

Filter Tab

1— Filter Tab

CN93077,00004F3 -19-21NOV14-2/2

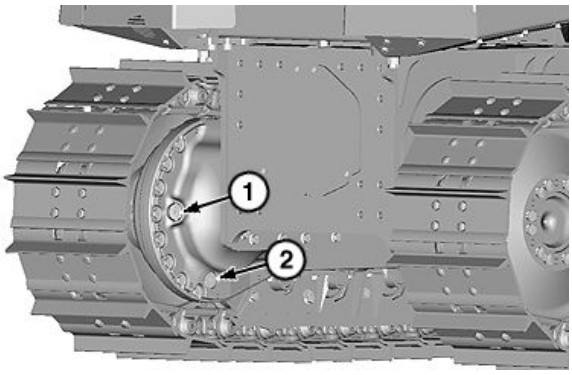
Drain and Refill Final Drive Oil

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. Place suitable container under drain plug (2).
5. Remove drain plug and fill plug (1) to drain oil into suitable container. Dispose of oil properly.
6. Repeat procedure on other side of machine.
7. 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.

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

Specification	
550K Final Drive Oil—Capacity	8.5 L 2.3 gal.



TX1179240 —UN—01DEC14

Final Drive Housing (left side shown)

1— Fill Plug (2 used)
2— Drain Plug (2 used)

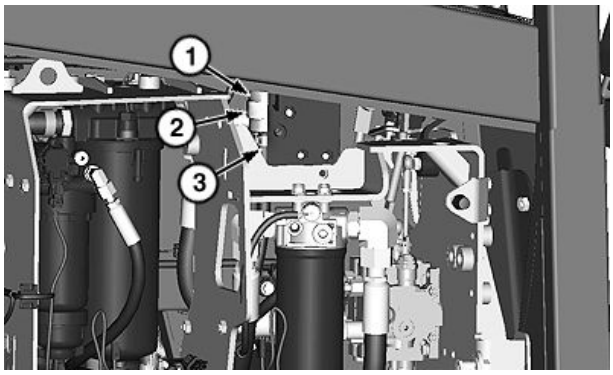
650K Final Drive Oil—Capacity	8.5 L 2.3 gal.

9. Install and tighten fill plugs.

CN93077,00004F6 -19-11MAY16-1/1

Clean or Replace Winch Hydraulic Breather Filter—If Equipped

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 right rear service door to access winch hydraulic breather filter (1).
5. Remove hose (3) and clamp (2) from winch hydraulic breather filter.
6. Using compressed air, clean filter. If filter will not come clean, replace filter.
7. Install winch hydraulic breather filter making sure arrow points in direction of reservoir.
8. Tighten clamp with cap screw.
9. Close service door.



TX1179359 —UN—04DEC14

Winch Hydraulic Breather Filter

1— Winch Hydraulic Breather Filter
2— Clamp
3— Hose

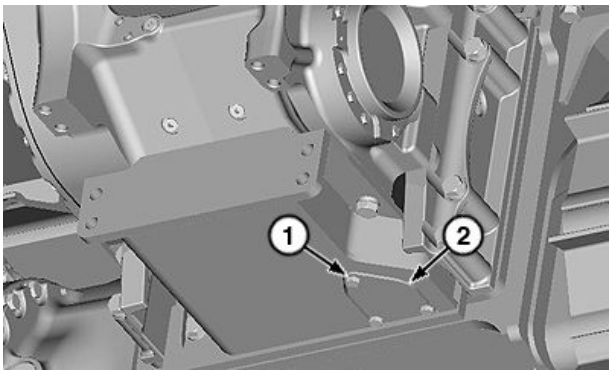
CN93077,00004F7 -19-05DEC14-1/1

Drain and Refill Winch Oil and Replace Filter—If Equipped

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. The winch oil filter (3) is located on right side between winch and crawler.
5. Remove cap screws (1) and winch oil filter access panel (2) to access winch oil filter and drain plug (4).

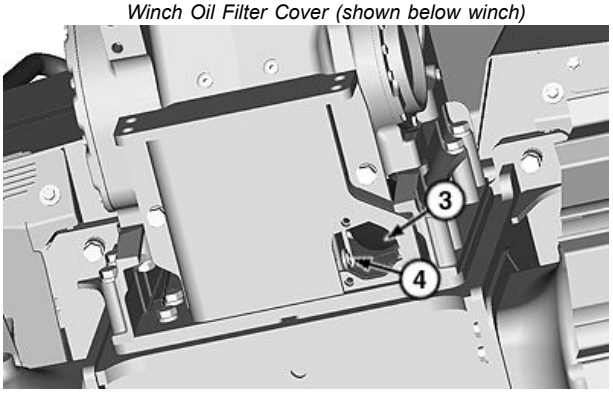
NOTE: The filter canister has a recessed 1/2 in. drive on bottom to assist removal of filter.

6. Remove filter by turning counterclockwise.
7. Place suitable container under drain plug.
8. Remove drain plug.
9. Allow oil to drain into container. Dispose of waste properly.
10. Install drain plug.
11. Apply a thin film of oil to gasket of new filter.
12. Install new filter.



TX1179309 —UN—01DEC14

Winch Oil Filter Cover (shown below winch)



TX1179310 —UN—01DEC14

Winch Oil Filter and Drain Plug (shown below winch)

1— Cap Screw (3 used)
2— Winch Oil Filter Access Panel
3— Winch Oil Filter
4— Drain Plug

Continued on next page

CN93077,0000501 -19-16DEC14-1/2

13. Fill winch oil reservoir through main winch oil fill port (5) per specification. Main winch oil port is located at top of winch. See Final Drive Oil and Winch Oil. (Section 3-1.)

Specification

Main Winch Oil Fill Port—Capacity..... 34.0 L 9.0 gal.

14. Add additional winch oil through dipstick fill port (6) per specification.

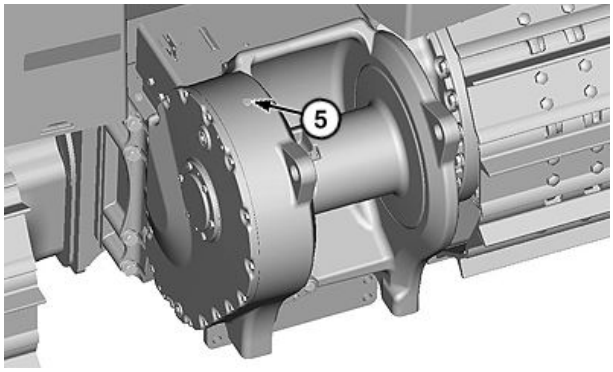
Specification

Winch Oil Dipstick Fill Port—Capacity..... 4.0 L 1.0 gal.

15. Run engine at slow idle. Check oil level on dipstick. Oil must be between ADD and FULL marks on dipstick. Add oil if necessary. Check oil level again.

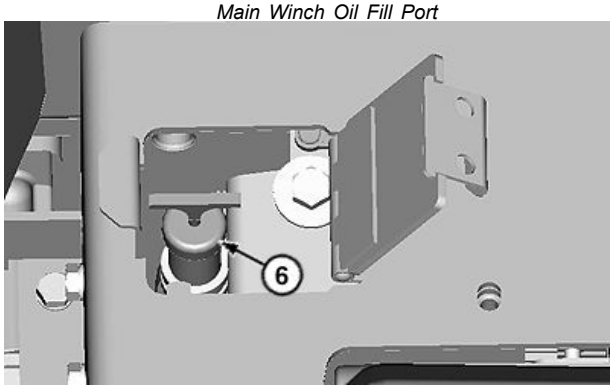
16. Install winch oil filter access cover and cap screws.

5— Main Winch Oil Fill Port **6— Winch Oil Dipstick Fill Port**



TX1179311 —UN—01DEC14

Main Winch Oil Fill Port



TX1179312 —UN—01DEC14

Winch Oil Dipstick Fill Port

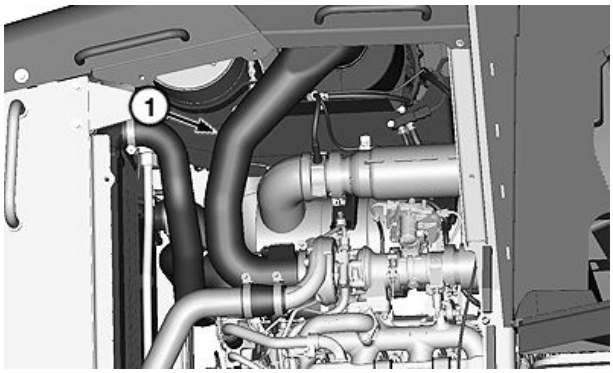
CN93077,0000501 -19-16DEC14-2/2

Check Air Intake Hoses and Connections

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 left front access panel to access air intake hose (1).
5. Check air intake hose for cracks and replace as necessary.
6. Check for loose connections and tighten clamps to specifications.

Specification

Clamps—Torque.....4.5 N·m 40 lb.-in.



TX1179362 —UN—02DEC14

Air Intake Hose

1— Air Intake Hose

CN93077,00004F9 -19-02DEC14-1/1

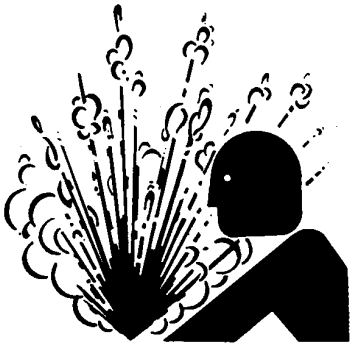
Check Coolant Condition

CAUTION: Prevent possible injury from hot, spraying fluids. Shut off engine. Remove filler cap only when cool enough to touch with bare hands. Slowly loosen cap to relieve pressure before removing completely.

NOTE: Check coolant every 1000 hours or 1 year, or when replacing 1/3 or more of coolant using SERVICEGARD™ tool program.

1. Open top right access door to access surge tank.
2. Test engine coolant. See Testing Coolant Freeze Point. (Section 3-1.)
3. Install surge tank cap.

SERVICEGARD is a trademark of Deere & Company



Pressurized Fluids

TS281 —UN—15APR13

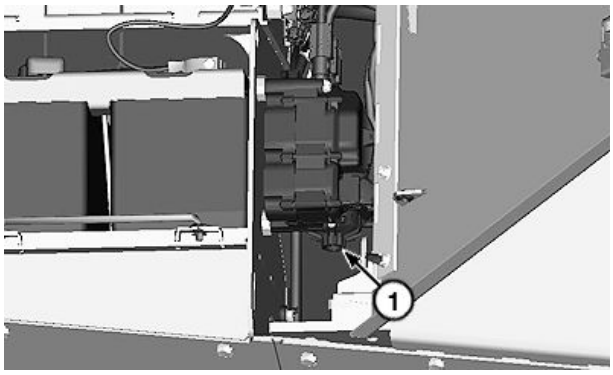
4. Close top right access door.

CN93077,0000344 -19-23SEP16-1/1

Access Diesel Exhaust Fluid (DEF) Dosing Unit Filter

To access diesel exhaust fluid (DEF) dosing unit filter (1), open left rear service door.

1— Diesel Exhaust Fluid (DEF) Dosing Unit Filter



TX1179627 —UN—03DEC14

Diesel Exhaust Fluid (DEF) Dosing Unit Filter Access

CN93077,0000504 -19-03DEC14-1/1

Replace Diesel Exhaust Fluid (DEF) Dosing Unit Filter

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.

IMPORTANT: If the DEF is spilled or contacts any surface other than the storage tank, immediately clean the surface with clear water. The DEF is corrosive to painted and unpainted metallic surfaces and can distort some plastic and rubber components.

Spilled DEF, if left to dry or if only wiped away with a cloth, leaves a white residue. Improperly cleaned DEF spill can interfere with diagnosis of selective catalytic reduction (SCR) system leakage problems.

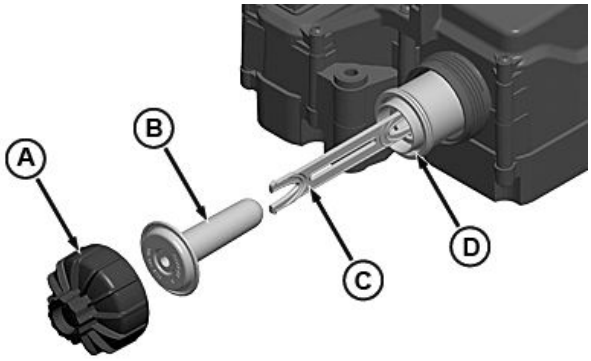
NOTE: Servicing the DEF dosing unit filter may require removing additional covers or components. See Access DEF Dosing Unit for location information.

1. Remove the DEF dosing unit filter cover (A).
2. Remove and discard the DEF dosing unit filter equalizing element (B).

NOTE: The DEF dosing unit filter tool (C) is supplied with replacement filter.

3. Insert black end of the DEF dosing unit filter tool (C) into the DEF dosing unit filter (D) until a click is felt or heard indicating the DEF dosing unit filter tool is fully engaged.

NOTE: A tool, such as a screwdriver, can be inserted into the DEF dosing unit filter tool slot to assist in removal.



RG22534 —UN—21MAR13

DEF Dosing Unit Filter

A—DEF Dosing Unit Filter Cover
B—DEF Dosing Unit Filter Equalizing Element
C—DEF Dosing Unit Filter Tool (supplied with new filter)
D—DEF Dosing Unit Filter

4. Pull the DEF dosing unit filter tool and the DEF dosing unit filter from the DEF dosing unit. Discard the DEF dosing unit filter and the DEF dosing unit filter tool.
5. Clean the DEF dosing unit threads and mating surfaces with distilled water.
6. Lubricate the DEF filter O-rings with clean DEF. Carefully insert the DEF dosing unit filter into the DEF dosing unit.
7. Install new the DEF dosing unit filter equalizing element into the DEF dosing unit filter.
8. Install the DEF dosing unit filter cover and tighten to specification.

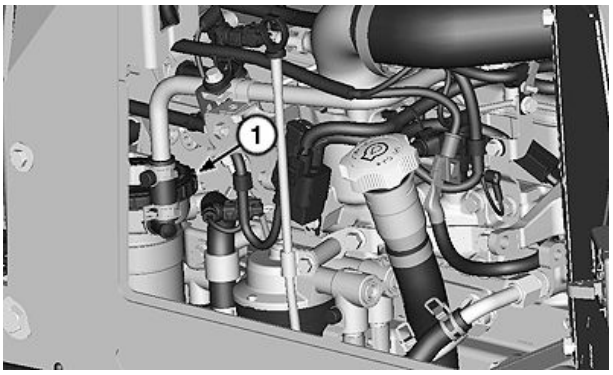
Specification

DEF Dosing Unit Filter Cover—Torque.....23 N·m
204 lb·in

TX,DEF,CHANGE,FILT -19-30NOV17-1/1

Replace Open Crankcase Ventilation (OCV) Filter

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 right front service door.
5. Remove open crankcase ventilation (OCV) filter cap (1) by turning counterclockwise.
6. Inspect filter housing for dirt and debris.
7. Install new OCV filter element.
8. Install OCV filter cap. Hand tighten only.



TX1179695 —UN—03DEC14

Open Crankcase Ventilation (OCV) Filter

1— Open Crankcase Ventilation (OCV) Filter Cap

CN93077,0000505 -19-03DEC14-1/1

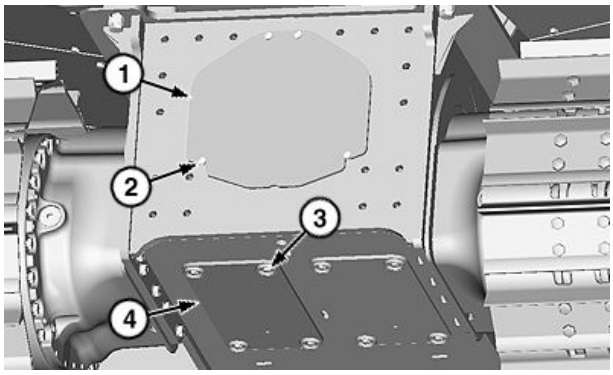
Drain and Refill Hydraulic System Oil and Replace Filters

IMPORTANT: Avoid hydraulic system component damage. Replace filter before recommended service interval if hydraulic oil temperature gauge stays red after oil is warm.

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 right rear service door.
5. Loosen hydraulic reservoir cap (7) to relieve pressure.
6. Remove cap screws (3) and lower left rear access panel (4) to access environmental drain hose (6).
7. Remove cap screws (2) and rear access panel (1) to access hydraulic drain valve (5).
8. Route environmental drain hose through access hole into suitable container.
9. Open hydraulic drain valve and drain oil into container. Dispose of waste oil properly.
10. Close drain valve and route environmental drain hose back into access hole.
11. Install lower left rear access panel, rear access panel, and cap screws.
12. Clean area around hydraulic oil filter element (8) and remove by turning counterclockwise.
13. Apply a film of oil to sealing ring on new hydraulic oil filter element. Install so gasket touches mounting surface and tighten an additional 3/4—1 turn with a suitable wrench.
14. Clean area around hydrostatic charge oil filter element (10) and remove by turning counterclockwise.
15. Apply a film of oil to sealing ring on new hydrostatic charge oil filter element. Install so gasket touches mounting surface and tighten an additional 3/4—1 turn with a suitable wrench.
16. Remove hydraulic reservoir cap and add oil to fill port. See Hydraulic and Hydrostatic Oil. (Section 3-1.)

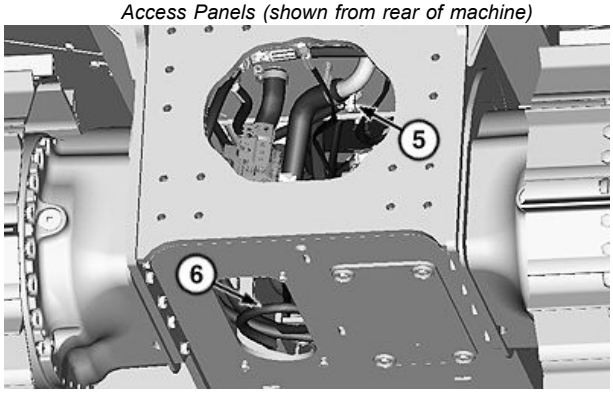
Specification	
Hydraulic System Oil—Capacity	87.8 L 23.2 gal.

17. Check O-ring on hydraulic reservoir cap before installing.
18. Move transmission control lever (TCL) to neutral (N). Start engine and run at slow idle for 5 minutes before operating machine.



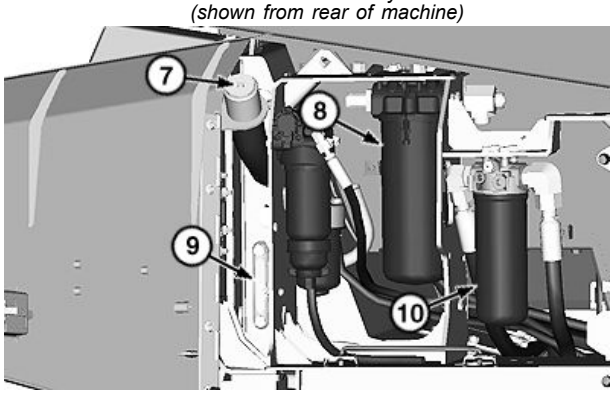
TX1179744 —UN—03DEC14

Access Panels (shown from rear of machine)



TX1179745 —UN—03DEC14

Environmental Drain Hose and Hydraulic Drain Valve (shown from rear of machine)



TX1179702 —UN—03DEC14

Hydraulic System

1— Rear Access Panel
2— Cap Screw (4 used)
3— Cap Screw (4 used)
4— Lower Left Rear Access Panel
5— Hydraulic Drain Valve
6— Environmental Drain Hose
7— Hydraulic Reservoir Cap
8— Hydraulic Oil Filter Element
9— Sight Glass
10— Hydrostatic Charge Oil Filter Element

19. Slowly pull blade control lever rearward to raise blade. Slowly push blade control lever forward to lower blade. Hydraulic oil filter element will refill and air will purge from charge circuit.
20. Check for any leakage around hydraulic oil filter element and hydrostatic charge oil filter element. Tighten as necessary to stop leakage.

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CN93077,0000506 -19-05DEC14-1/2

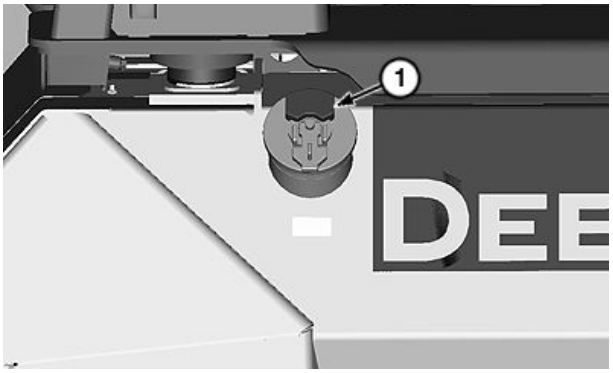
21. Check oil level in sight glass (9). Oil should be to midpoint.
22. Close right rear service door.

CN93077,0000506 -19-05DEC14-2/2

Replace Fuel Tank Breather

Fuel tank breather (1) is located at the rear of the machine on the fuel cap.

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 fuel tank cap from fuel tank.
5. Remove cap screws from inside fuel tank cap to remove fuel tank breather.
6. Install new fuel tank breather and cap screws.
7. If necessary, fill fuel tank. Install fuel cap.



TX1179749 —UN—03DEC14

Fuel Tank Breather

1— Fuel Tank Breather

CN93077,0000507 -19-03DEC14-1/1

Check and Adjust Engine Valve Lash

See an authorized John Deere dealer.

CS33148,0000956 -19-20MAY15-1/1

Replace Diesel Exhaust Fluid (DEF) Baffle

See an authorized John Deere dealer.

DB84312,00001C2 -19-21SEP17-1/1

Replace Diesel Exhaust Fluid (DEF) Header Suction Filter

See an authorized John Deere dealer.

JG33441,00000C5 -19-21SEP17-1/1

Clean Diesel Exhaust Fluid (DEF) Tank

See an authorized John Deere dealer.

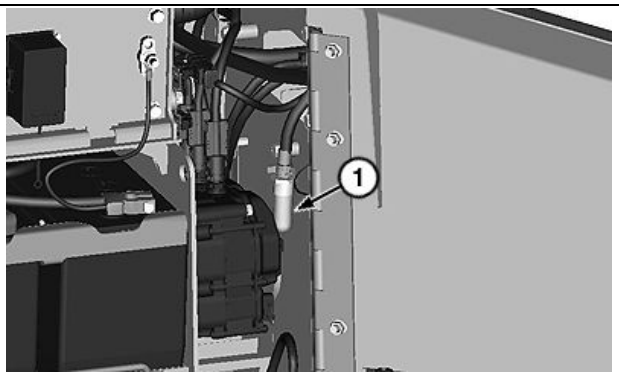
MB60223,00050A5 -19-04FEB20-1/1

Replace Diesel Exhaust Fluid (DEF) Tank Breather

Diesel exhaust fluid (DEF) tank breather (1) is located in the left rear service door.

1. Open left rear service door.
2. Loosen clamp.
3. Remove diesel exhaust fluid (DEF) tank breather.
4. Install new diesel exhaust fluid (DEF) tank breather and tighten clamp.
5. Close service door.

1— Diesel Exhaust Fluid (DEF) Tank Breather



TX1178475 —UN—20NOV14

Diesel Exhaust Fluid (DEF) Tank Breather

CN93077,00004E4 -19-16DEC14-1/1

Drain and Refill Engine Cooling System

CAUTION: Prevent possible injury from hot spraying fluids. Shut off engine. Remove filler cap only when cool enough to touch with bare hands. Slowly loosen cap to relieve pressure before removing completely.

Drain and flush cooling system using clean water and refill with new coolant.

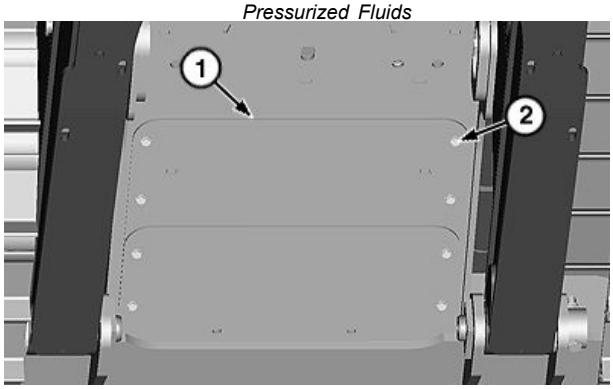
1. Park machine on level surface and lower all equipment to ground.
2. Engage park lock levers in up (locked) position.
3. Press engine stop switch.
4. Remove cap screws (2). Remove lower front access panel (1) to access radiator drain hose (3).
5. Route radiator drain hose through access hole into suitable container.

1— Lower Front Access Panel
2— Cap Screw (8 used)
3— Radiator Drain Hose



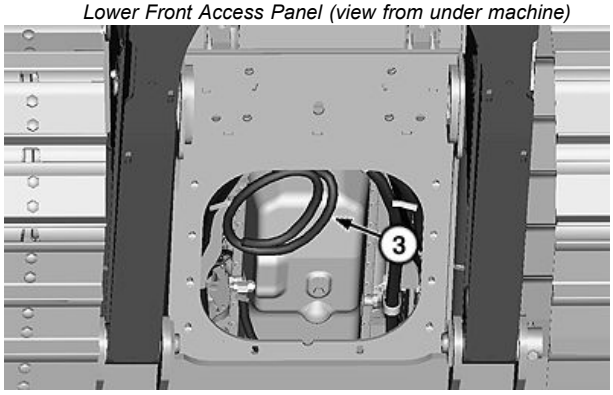
TS281 —UN—15APR13

Pressurized Fluids



TX1179481 —UN—02DEC14

Lower Front Access Panel (view from under machine)



TX1179483 —UN—02DEC14

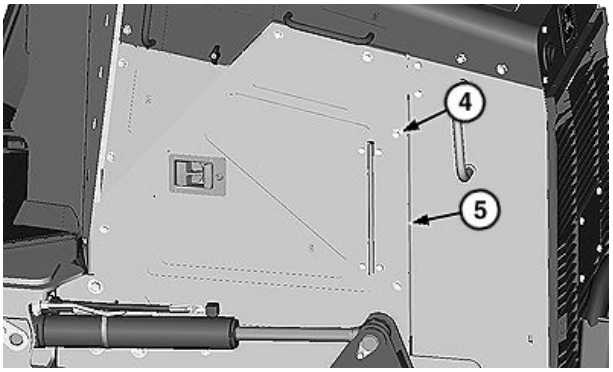
Radiator Drain Hose (view from under machine)

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CN93077,0000502 -19-05DEC14-1/3

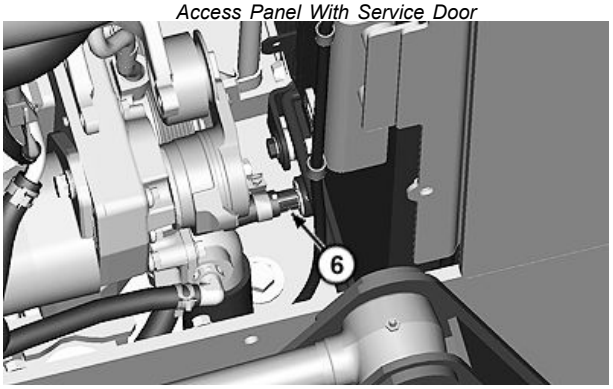
6. Remove cap screws (4) and right front access panel with service door (5) to access radiator drain valve (6).
7. Open radiator drain valve and allow coolant to drain into suitable container. Dispose of waste properly.
8. Close radiator drain valve and route drain hose back through lower access panel.
9. Open engine block drain valve (7) and allow coolant to drain into suitable container. Dispose of waste properly.
10. Close engine block drain valve.
11. Install right access panel with service door and lower front access panel.

4— Cap Screw (9 used)
5— Access Panel With Service Door
6— Radiator Drain Valve
7— Engine Block Drain Valve



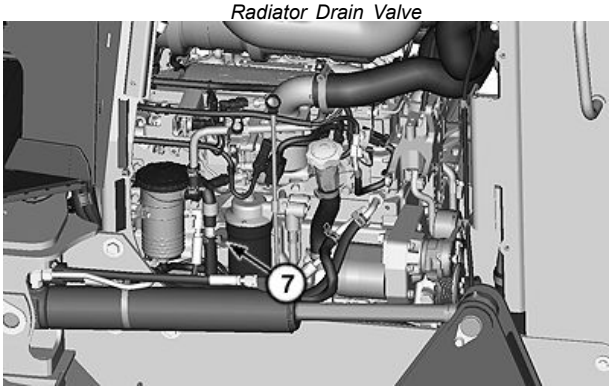
TX1179484 —UN—02DEC14

Access Panel With Service Door



TX1179485 —UN—02DEC14

Radiator Drain Valve



TX1179486 —UN—02DEC14

Engine Block Drain Valve

Continued on next page

CN93077,0000502 -19-05DEC14-2/3

IMPORTANT: Use only permanent-type, low silicate, ethylene glycol base antifreeze in coolant solution. Other types of antifreeze can damage cylinder seals. If not using premixed coolant, use only distilled water when mixing with ethylene glycol concentrate. Premixed coolant provides winter freeze protection to -37°C (-34°F). If protection at lower temperatures is required, consult your authorized John Deere dealer.

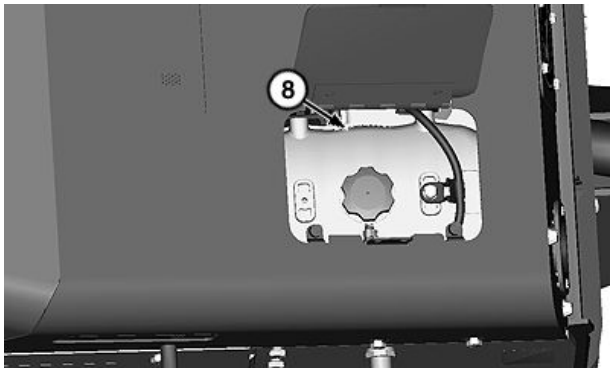
12. Open top right access door to access surge tank (8).
13. Fill system with coolant to the MAX COLD mark on surge tank. See Diesel Engine Coolant (engine with wet sleeve cylinder liners). (Section 3-1.)

Specification	
Coolant—Capacity	22.6 L 6.0 gal.

NOTE: Coolant level must be checked several times after draining and refilling to ensure that all air is out of the system to allow coolant level to stabilize.

Cooling system does not deaerate during normal operation. Several warm-up and cool down cycles are required to remove trapped air.

14. Deaerate cooling system as follows:
    - Start and run engine until coolant is warm.
    - Stop engine and allow coolant to cool.
    - Check coolant level at surge tank. Add coolant as required. See Check Coolant Level at Surge Tank. (Section 3-4.)
    - Repeat above steps until coolant level in surge tank stabilizes at the same level.
15. Close top right access door.



TX1179489 —UN—02DEC14

Surge Tank

8— Surge Tank

CN93077,0000502 -19-05DEC14-3/3

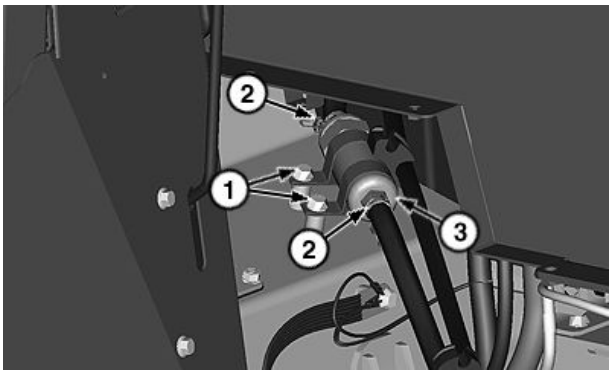
Replace Coolant In-Line Filter

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 rubber mat and floor plate from operator's station to access coolant in-line filter (3). See Remove Operator's Station Floor Plate in this section.
5. Tilt operator's seat. See Operator's Seat Tilting Procedure in this section.

CAUTION: Prevent possible injury from hot spraying fluids. Shut off engine. Remove filler cap only when cool enough to touch with bare hands. Slowly loosen cap to relieve pressure before removing completely.

6. Allow engine to cool and remove surge tank cap.
7. Drain cooling system. See Drain and Refill Engine Cooling System. (Section 3-12.)
8. Remove cap screws (1) from mounting clamps.
9. Remove hose clamps (2) from each end of the coolant in-line filter. Close all openings using caps and plugs.

IMPORTANT: Avoid component damage. Install coolant in-line filter in correct orientation. Coolant in-line filter inlet is the hose coming from the engine and coolant in-line filter outlet is the hose going to the diesel exhaust fluid (DEF) tank.



TX1180115 —UN—08DEC14

Coolant In-Line Filter (shown with seat tilted and floor plate removed)

1— Cap Screw (2 used)
2— Hose Clamp (2 used)
3— Coolant In-Line Filter

10. Install new coolant in-line filter removing caps and plugs, and tighten hose clamps.
11. Install mounting clamps and cap screws.
12. Refill engine cooling system and install surge tank cap.
13. Lower operator's seat, install operator's station floor plate, and rubber mat.

CN93077,0000479 -19-12DEC14-1/1

Opening and Closing the Grille

Opening the Grille

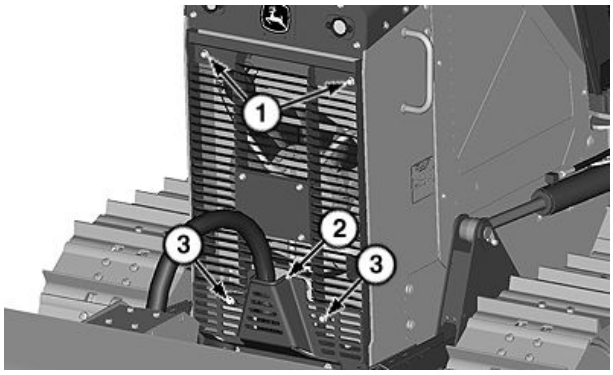
1. Park machine on level surface and lower all equipment to ground.
2. Engage park lock levers in up (locked) position.
3. Press engine stop switch.
4. Remove hose guard cap screws (3) and move hose guard (2) aside.

CAUTION: Prevent possible injury from falling object. Always inspect grille hinge points at bottom edge of grille before opening grille. If grille hinge points appear damaged, DO NOT remove grille cap screws. See your authorized dealer.

CAUTION: Prevent possible injury lifting heavy objects. The approximate weight of the standard grille is 49 kg (108 lb.). The approximate weight of the heavy-duty grille is 61 kg (135 lb.). Use adequate lifting device to move grille.

Grille—Specification

Standard —Weight	49 kg (108 lb.)
Heavy-Duty —Weight	61 kg (135 lb.)



TX1175735 —UN—28OCT14

Standard Grille

1— Grille Cap Screw (2 used)
2— Hose Guard
3— Hose Guard Cap Screw (2 used)

5. Remove grille cap screws (1) and tilt grille forward.

Closing the Grille

1. Tilt grille into place and install grille cap screws.
2. Install hose guard into position and install hose guard cap screws.

CN93077,0000478 -19-12DEC14-1/1

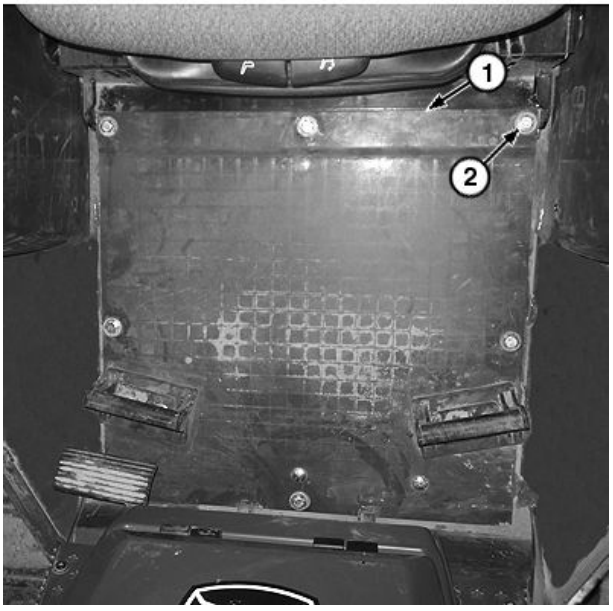
Remove Operator's Station Floor Plate

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 rubber floor mat from operator's station.
5. Remove cap screws (2) and raise operator's station floor plate (1).

NOTE: Machines with JDLink™ system controllers may be equipped with both modular telematics gateway (MTG) and satellite (SAT) or machines may only be equipped with MTG.

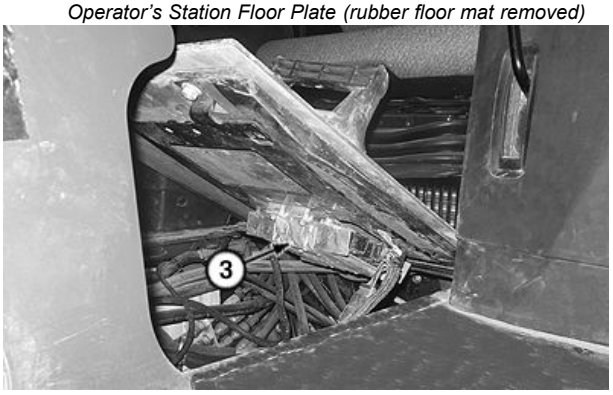
6. Disconnect JDLink™ system controllers (if equipped) and remove operator's station floor plate to access applicable components below cab.
7. Connect JDLink system controllers, install operator's station floor plate, cap screws, and rubber floor mat.

1— Operator's Station Floor Plate
2— Cap Screw (6 used)
3— Modular Telematics Gateway (MTG)



Operator's Station Floor Plate (rubber floor mat removed)

TX1180104A —UN—09DEC14



JDLink System Controllers (if equipped)

TX1180215A —UN—09DEC14

JDLink is a trademark of Deere & Company

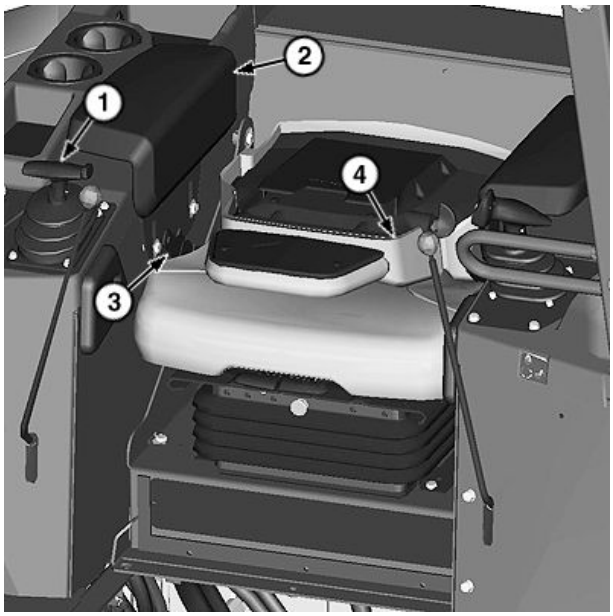
CN93077,000050C -19-12DEC14-1/1

Operator's Seat Tilting Procedure

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. Turn battery disconnect switch to OFF position.
5. Loosen blade control lever (1) and remove, or rotate 90 degrees out of the way.
6. Remove operator's station floor plate. See Remove Operator's Station Floor Plate. (Section 4-1.)
7. Tilt back of seat (4) to down position and strap into position with seat belt (3).
8. Adjust operator's seat to maximum forward and lowest position.
9. Remove arm rest (2), toolbox (if equipped), and knee rest (if equipped).
10. Remove cap screws (6) on seat base.

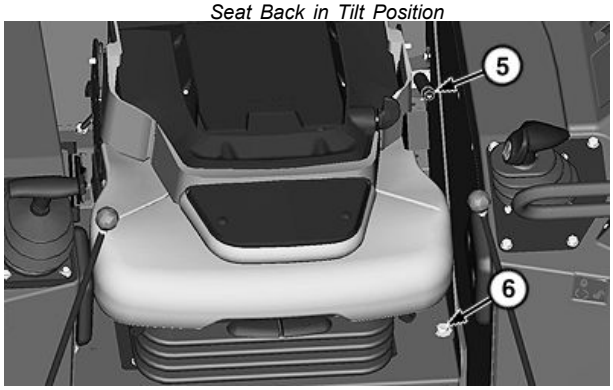
NOTE: Seat base to be raised no more than 90 degrees.

11. Turn seat base tilt jack screw (5) clockwise to raise seat.
12. Turn seat base tilt jack screw counterclockwise to lower seat base.
13. Install cap screws on seat base.
14. Install arm rest, toolbox (if equipped), and knee rest (if equipped).
15. Retract seat belt and raise back of seat to up position.
16. Install operator's station floor plate and rubber mat.
17. Realign blade control lever to working position.



TX1180110 —UN—08DEC14

Seat Back in Tilt Position



TX1180111 —UN—08DEC14

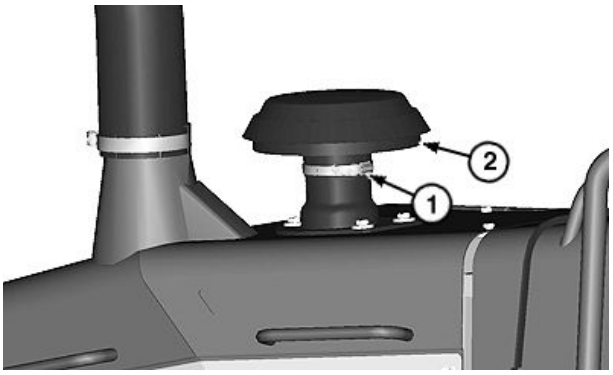
Seat Base Tilt Jack Screw

1— Blade Control Lever
2— Arm Rest
3— Seat Belt
4— Back of Seat
5— Seat Base Tilt Jack Screw
6— Cap Screw (4 used)

CN93077,000050D -19-12DEC14-1/1

Check Air Inlet Cover

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. Loosen hose clamp (1).
5. Remove air inlet cover (2).
6. Check cover for dirt and debris and clean as required.
7. Install air inlet cover and tighten hose clamp.



TX1175485 —UN—24OCT14

Air Inlet Cover

1— Hose Clamp **2— Air Inlet Cover**

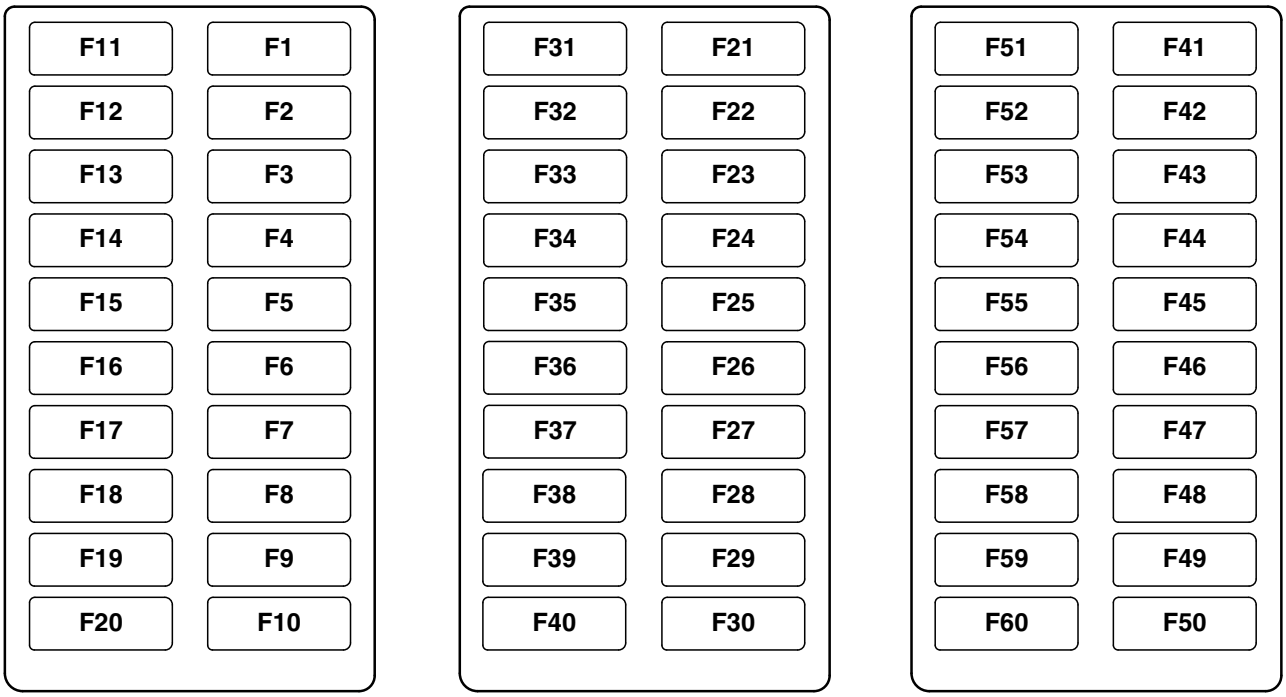
CN93077,0000464 -19-15DEC14-1/1

Replacing Fuses

IMPORTANT: Install fuse with correct amperage rating to prevent electrical system damage from overload.

NOTE: The 120-amp circuit breaker is located to the left of the fuse boxes.

The vehicle electrical center (VEC) is located in the left rear compartment of the machine.



TX1180245

Fuse Blocks

F1 — Display Unit Unswitched Power 10 A Fuse
F2 — Engine Control Unit (ECU) Unswitched Power 25 A Fuse 2
F3 — Engine Control Unit (ECU) Unswitched Power 25 A Fuse 3
F4 — Low-Pressure Fuel Pump 15 A Fuse
F5 — Vehicle Control Unit (VCU) Unswitched Power 10 A Fuse
F6 — Vehicle Control Unit 2 (VC2) Unswitched Power 10 A Fuse
F7 — Sealed Switch Module (SSM) Unswitched Power 5 A Fuse
F8 — 12 V Converter Unswitched Power 10 A Fuse
F9 — Service ADVISOR™ Connector 5 A Fuse
F10 — Not Used
F11 — Display Unit Switched Power 5 A Fuse
F12 — Engine Control Unit (ECU) Switched Power 5 A Fuse
F13 — Vehicle Control Unit 2 (VC2) Switched Power 5 A Fuse
F14 — Fuel Filter Heater 10 A Fuse
F15 — Transmission Switches 5 A Fuse
F16 — Fuel Lift Pump 5 A Fuse
F17 — Window Wipers 15 A Fuse
F18 — 12 V Converter Switched Power 10 A Fuse
F19 — 12 V Converter Switched Power 10 A Fuse (if equipped)
F20 — Not Used
F21 — Blower Motor 15 A Fuse
F22 — Under Seat Heater 15 A Fuse
F23 — Spare Switched Power 10 A Fuse
F24 — Air Seat Motor 10 A Fuse
F25 — Dome Light/Backlight 5 A Fuse
F26 — JDLink™ Switched Power 5 A Fuse
F27 — Condition Sensor 10 A Fuse
F28 — Not Used
F29 — Not Used
F30 — Not Used
F31 — Engine Control Unit (ECU) Unswitched Power 25 A Fuse 1
F32 — JDLink™ Unswitched Power 5 A Fuse
F33 — Condenser Fan Motor 1 15 A Fuse
F34 — Condenser Fan Motor 2 15 A Fuse
F35 — Condenser Fan Motor 3 15 A Fuse
F36 — Air Conditioner Compressor Clutch 5 A Fuse
F37 — Engine Compartment Light 5 A Fuse
F38 — Not Used
F39 — Not Used
F40 — Not Used
F41 — Blade Control Joystick 5 A Fuse
F42 — Pitch Cylinder Position Sensor 5 A Fuse
F43 — Hydraulic Valve Controller (HVC) Switched Power 10 A Fuse

Continued on next page

CN93077,000050B -19-09DEC14-1/2

F44 — Hydraulic Valve Controller (HVC) Switched Power 10 A Fuse
F45 — Hydraulic Valve Controller (HVC) Switched Power 10 A Fuse
F46 — Hydraulic Valve Controller (HVC) Switched Power 10 A Fuse
F47 — Hydraulic Valve Controller (HVC) Switched Power 10 A Fuse
F48 — Integrated Grade Control (IGC) Switched Power 15 A Fuse
F49 — Not Used
F50 — Not Used
F51 — Hydraulic Valve Controller (HVC) Unswitched Power 10 A Fuse
F52 — Integrated Grade Control (IGC) Unswitched Power 10 A Fuse 1
F53 — Integrated Grade Control (IGC) Unswitched Power 10 A Fuse 2
F54 — Integrated Grade Control (IGC) Unswitched Power 10 A Fuse 3
F55 — Not Used
F56 — Not Used
F57 — Not Used
F58 — Not Used
F59 — Not Used
F60 — Not Used

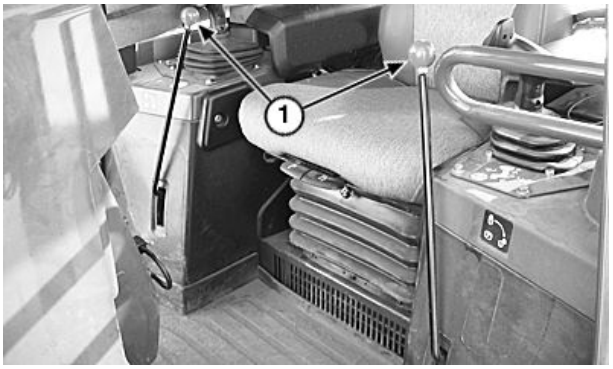
Service ADVISOR is a trademark of Deere & Company
JDLink is a trademark of Deere & Company

CN93077,000050B -19-09DEC14-2/2

Checking Park Lock Start System

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

1. Place transmission control lever (TCL) in neutral (N) position.
2. Move park lock levers (1) to down (unlocked) position.
3. Press engine start switch once to energize ignition. Starter must not engage. If engine starts, return park lock levers to up (locked) position and see your John Deere dealer.
4. Move park lock levers to up (locked) position.
5. Press and hold engine start switch to start engine. Starter should engage, turning engine over. If engine does not turn over, see your John Deere dealer.



TX1084331A —UN—09NOV10

Park Lock Levers (locked position)

1— Park Lock Lever (2 used)

ER79617,0000CA1 -19-17DEC10-1/1

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.

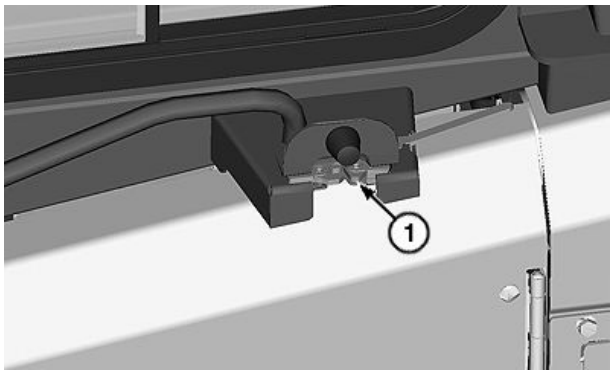
1. With engine running on a level surface, place park lock levers in up (locked) position.
2. Move transmission control lever (TCL) to forward (F) or reverse (R) position.
3. Move throttle to 1500 rpm position.
4. Move park lock levers to down (unlocked) position.
5. Return to neutral indicator should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

CN93077,0000428 -19-22SEP14-1/1

Lubricating Door Latches—If Equipped

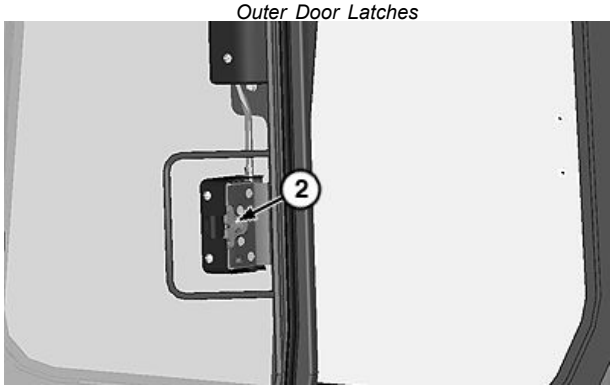
Lubricate inner door latches (2) and outer door latches (1) with dry graphite when necessary.

1— Outer Door Latch (2 used) **2— Inner Door Latch (2 used)**



TX1175333 —UN—27OCT14

Outer Door Latches



TX1175568 —UN—27OCT14

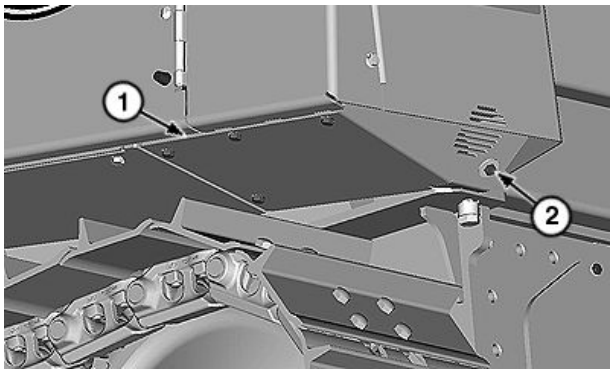
Inner Door Latches

CN93077,0000469 -19-27OCT14-1/1

Drain Fuel From Fuel Tank

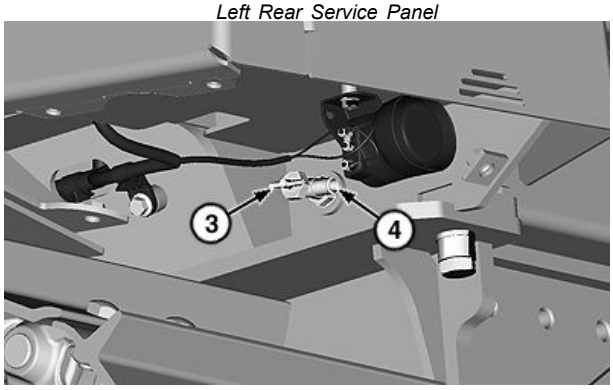
1. Park machine on level surface and lower all equipment to ground.
2. Engage park lock levers in up (locked) position.
3. Press engine stop switch.
4. Remove cap screws (2) and left rear service panel (1) to access fuel drain valve.
5. Route environmental drain hose from fuel tank drain fitting (4) into a suitable container.
6. Open fuel tank drain valve (3). Drain fuel into a suitable container until clean fuel emerges. Dispose of waste properly.
7. Close fuel tank drain valve.
8. Install left rear service panel and cap screws.

1— Left Rear Service Panel **3— Fuel Tank Drain Valve**
2— Cap Screw (5 used) **4— Fuel Tank Drain Fitting**



TX1175618 —UN—27OCT14

Left Rear Service Panel



TX1175620 —UN—27OCT14

Fuel Tank Drain Valve

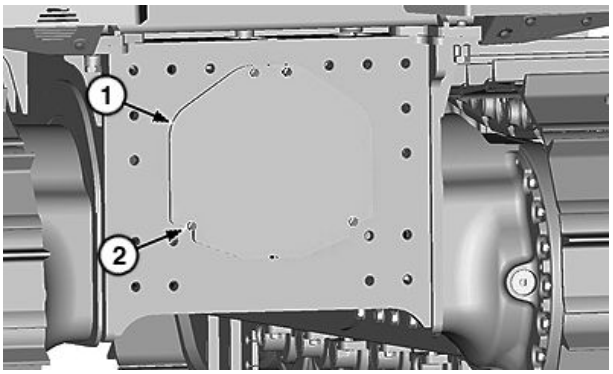
CN93077,000046B -19-12DEC14-1/1

Bleed Fuel System

NOTE: This procedure should be performed after each fuel filter change or when the engine has run out of fuel.

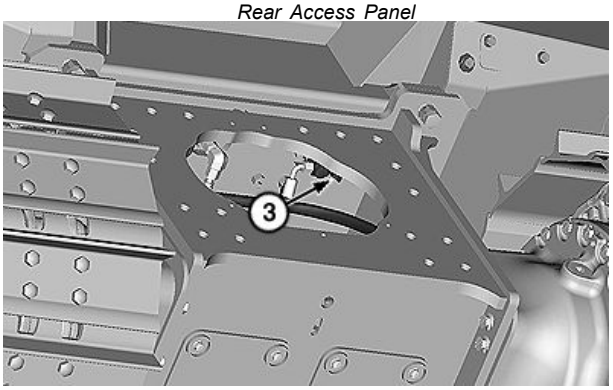
Air can enter fuel system when changing fuel filters or when machine has run out of fuel. Air in the fuel system can prevent the engine from starting or cause rough idle. This machine is equipped with an electric priming pump. Prime fuel system and bleed air as follows:

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 screws (2) and rear access panel (1) to access fuel valve (3).
5. Verify fuel valve is open.
6. Install rear access panel and caps screws.
7. Press and release engine start switch to energize ignition system and fuel pump. Let pump run for 60 seconds to prime fuel system.
8. After 60 seconds, press engine start switch to start the engine.
9. Run engine for 5 minutes at slow idle.



Rear Access Panel

TX1176905 —UN—06NOV14



Fuel Valve

TX1176904 —UN—06NOV14

1— Rear Access Panel
2— Cap Screw (4 used)
3— Fuel Valve

CN93077,0000463 -19-03DEC14-1/1

Fluid Sampling Test Ports—If Equipped

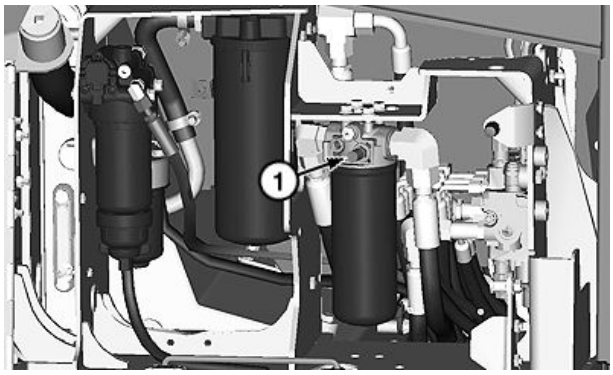
Hydraulic Oil Sample Ports

Open right rear service door to access hydraulic oil sample port (1).

Engine Coolant and Engine Oil Sample Ports

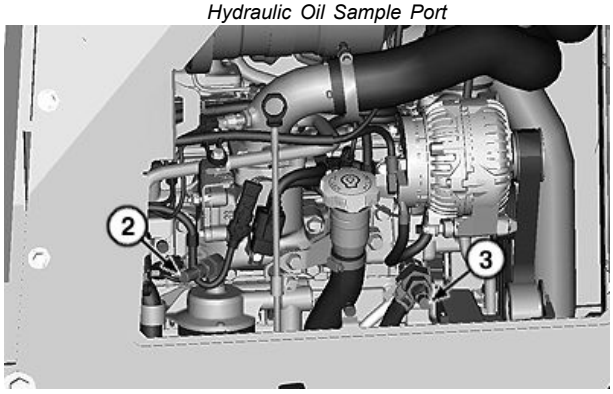
Open right front service door to access the engine oil sample port (2) and engine coolant sample port (3).

1— Hydraulic Oil Sample Port
2— Engine Oil Sample Port
3— Engine Coolant Sample Port



TX1175916 —UN—29OCT14

Hydraulic Oil Sample Port



TX1175915 —UN—29OCT14

Engine Coolant and Engine Oil Sample Ports

CN93077,0000470 -19-29OCT14-1/1

Quick Service Connectors—If Equipped

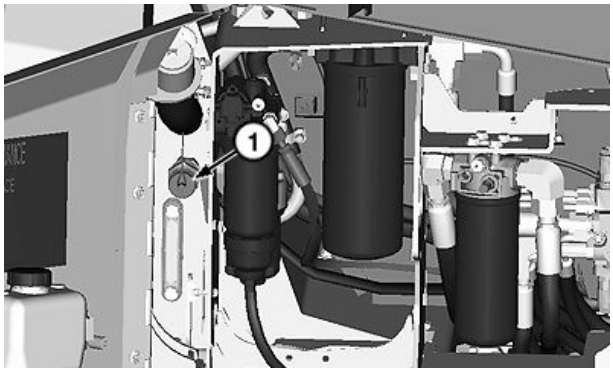
Hydraulic Oil Service Connection Port

Open right rear service door to access hydraulic oil service connection port (1).

Engine Oil and Engine Coolant Service Connection Ports

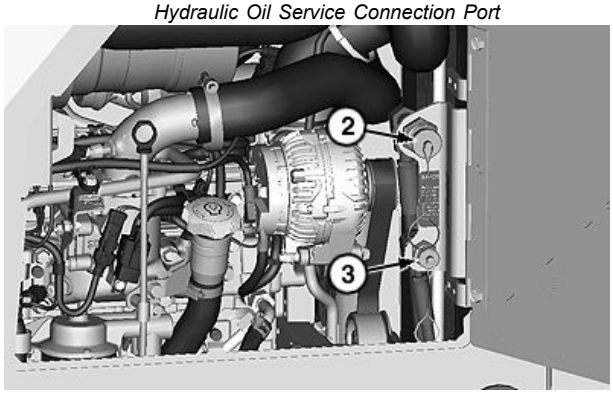
Open right front engine service door to access engine coolant service connection port (3) and engine oil service connection port (2).

1— Hydraulic Oil Service Connection Port
2— Engine Oil Service Connection Port
3— Engine Coolant Service Connection Port



TX1175910 —UN—29OCT14

Hydraulic Oil Service Connection Port



TX1175911 —UN—29OCT14

Engine Oil and Engine Coolant Service Connection Ports

CN93077,0000471 -19-29OCT14-1/1

JDLink™ Machine Monitoring System (MMS)—If Equipped

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.

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

JDLink is a trademark of Deere & Company

VD76477,0001541 -19-26MAR15-1/1

Keep Electronic Control Unit Connectors Clean

IMPORTANT: Do not open control unit and do not clean with a high-pressure spray. Moisture, dirt, and other contaminants may cause permanent damage.

1. Keep terminals clean and free of foreign debris. Moisture, dirt, and other contaminants may cause the terminals to erode over time and not make a good electrical connection.
2. If a connector is not in use, put on the proper dust cap or an appropriate seal to protect it from foreign debris and moisture.
3. Control units are not repairable.
4. Since control units are the components LEAST likely to fail, isolate failure before replacing by completing a diagnostic procedure. (See your John Deere dealer.)
5. The wiring harness terminals and connectors for electronic control units are repairable.

DX,WW,ECU04 -19-11JUN09-1/1

Do Not Service or Adjust Injection Nozzles or Injection Pump

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

Changing the injection pump in any way not approved by the manufacturer will end the warranty. See your copy of the John Deere warranty on this machine.

Do not service an injection pump that is not operating correctly. See your authorized injection pump service center.

TX,90,FF3116 -19-03NOV08-1/1

Do Not Service Control Valves, Cylinders, Pumps, or Motors

Special tools and information are needed to service control valves, cylinders, pumps, or motors.

If these parts need service, see an authorized John Deere dealer.

TX,90,DH2537 -19-27JUL15-1/1

Precautions for Alternator and Regulator

When batteries are connected, follow these rules:

1. Disconnect negative (-) battery cable when working on or near alternator or regulator.
2. DO NOT TRY TO POLARIZE ALTERNATOR OR REGULATOR.
3. Be sure that alternator wires are correctly connected BEFORE connecting batteries.
4. Do not ground alternator output terminal.
5. Do not disconnect or connect any alternator or regulator wires while batteries are connected or while the alternator is operating.
6. Connect batteries or a booster battery in the correct polarity (positive [+] to positive [+] and negative [-] to negative [-]).
7. Do not disconnect the batteries when engine is running and alternator is charging.
8. Disconnect battery cables before connecting battery charger to the batteries. If machine has more than one battery, each battery must be charged separately.
9. Before washing machine, place a water repellent cover over the alternator.
10. To prevent component damage, the water jets need to be set at a 45-degree angle with reduced water pressure. Avoid direct contact with electrical and electronic connectors.

CED,OUO1021,185 -19-04MAR20-1/1

Handling, Checking, and Servicing Batteries Carefully

NOTE: Under normal operating conditions, general service of maintenance free batteries is not required.

CAUTION: Battery gas can explode. Keep sparks and flames away from batteries. Use a flashlight to check battery electrolyte level.

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

Always remove grounded (-) battery clamp first and replace it last.

Sulfuric acid in battery electrolyte is poisonous. Sulfuric acid is strong enough to burn skin, eat holes in clothing, and cause blindness if splashed into eyes.

Avoid the hazard by:

1. **Filling batteries in a well-ventilated area.**
2. **Wearing eye protection and rubber gloves.**
3. **Avoiding breathing fumes when electrolyte is added.**
4. **Avoiding spilling or dripping electrolyte.**
5. **Using proper jump start procedure.**

If acid is spilled on a person:

1. **Flush contacted skin with water.**
2. **Apply baking soda or lime to contacted area to help neutralize the acid.**
3. **Flush eyes with water for 15—30 minutes.**
4. **Get medical attention immediately.**

If acid is swallowed:

1. **Do not induce vomiting.**
2. **Drink large amounts of water or milk, but do not exceed 1.9 L (2 qt).**
3. **Get medical attention immediately.**

CAUTION: Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. Wash hands after handling.

If electrolyte spills on the floor, use one of the following mixtures to neutralize the acid: 0.5 kg (1 lb) baking soda in 4 L (1 gal) water or 0.47 L (11.0 fl oz) household ammonia in 4 L (1 gal) water.

IMPORTANT: Do not overfill the battery cells.

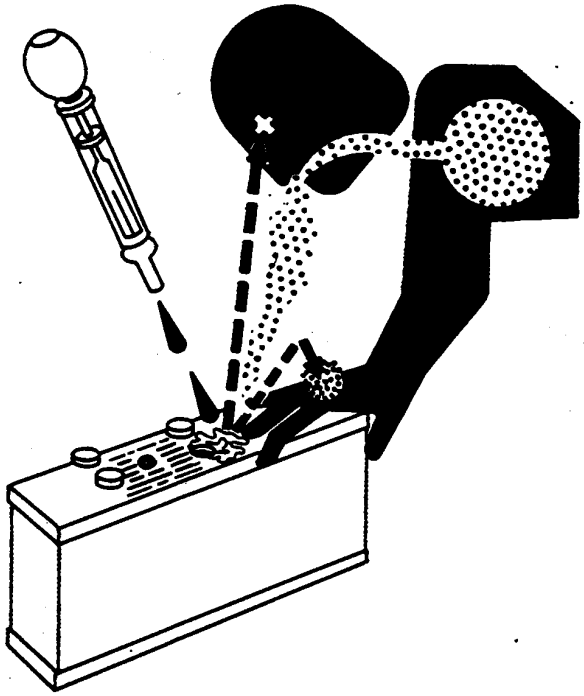
Check the specific gravity of electrolyte in each battery cell.

See an authorized John Deere dealer for SERVICEGARD™ battery and coolant tester. Follow directions included with the tester.



TS204 —UN—15APR13

Exploding Battery Gas



TS203 —UN—23AUG88

Battery Electrolyte



T85402 —UN—10NOV88

Battery and Coolant Tester

Continued on next page

TX,SERV,BATT,CARE -19-02APR20-1/2

A fully charged battery will have a corrected specific gravity reading of 1.260. If the reading is below 1.200, charge the battery.

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TX,SERV,BATT,CARE -19-02APR20-2/2

Using Battery Charger

CAUTION: Prevent possible injury from exploding battery. Do not charge a battery if the battery is frozen or it may explode. Warm battery to 16°C (60°F) before charging.

Turn off charger before connecting or disconnecting it.

IMPORTANT: Do not use battery charger as a booster if a battery has a 1.150 specific gravity reading or lower.

Disconnect battery ground (-) clamp before charging batteries in the machine to prevent damage to electrical components.

A battery charger may be used as a booster to start engine.

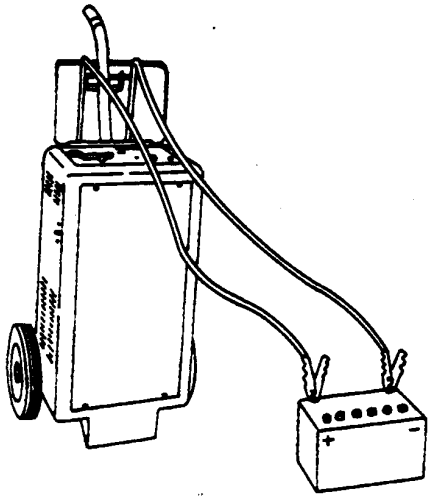
Ventilate the area where batteries are being charged.

Stop or cut back charging rate if battery case feels hot or is venting electrolyte. Battery temperature must not exceed 52°C (125°F).



TS204 —UN—15APR13

Prevent Battery Explosions



N36890 —UN—07OCT88

Charger

OUT4001,0000239 -19-13JAN16-1/1

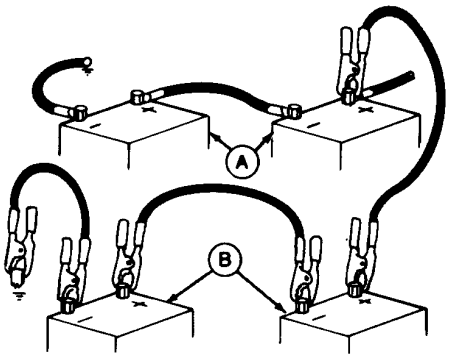
Using Booster Batteries—24-Volt System

Before boost starting, machine must be properly shut down to prevent unexpected machine movement when engine starts.

CAUTION: An explosive gas is produced while batteries are in use or being charged. Keep flames or sparks away from the battery area. Make sure the batteries are charged in a well-ventilated area.

IMPORTANT: The machine electrical system is a 24-volt negative (-) ground. Connect two 12-volt booster batteries together as shown for 24 volts.

1. Connect one end of the positive (+) cable to the positive (+) terminal of the machine batteries (A) and the other end to the positive (+) terminal of the booster batteries (B).
2. Connect one end of the negative (-) cable to the negative (-) terminal of the booster batteries. Connect the other end of the negative (-) cable to the machine frame as far away from the machine batteries as possible.
3. Start engine.



T7233JN —UN—21MAY90

Booster Batteries, 2-Battery Application

A—Machine Battery (2 used) **B—Booster Battery (2 used)**

4. Immediately after starting engine, disconnect the end of the negative (-) cable from the machine frame. Then disconnect the other end of the negative (-) cable from the negative (-) terminal of the booster batteries.
5. Disconnect positive (+) cable from booster batteries and machine batteries.

OUT4001,0000238 -19-09MAR17-1/1

Replacing and Removing Batteries

CAUTION: Avoid personal injury from battery acid. Sulfuric acid in battery electrolyte is poisonous. Acid is strong enough to burn skin, burn holes in clothing, and cause blindness if splashed into eyes. Always remove grounded (-) battery clamp first and replace clamp last.

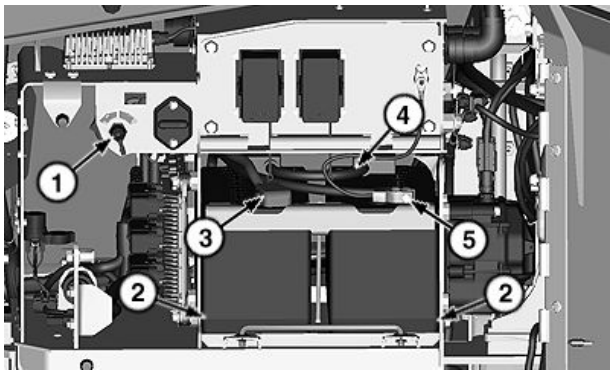
Your machine has two 12-volt batteries (2) with negative (-) ground connected in series to provide 24 volts.

Use only batteries which meet the following specifications:

BATTERY SPECIFICATIONS		
BCI Group	**Cold Cranking Amps 0°F (-18°C)**	**Reserve Capacity**
31	950	190

CAUTION: Prevent possible injury from exploding battery. Always remove grounded (-) battery clamp first and replace it last.

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 rear service door to access batteries (2).
5. Turn battery disconnect switch (1) to OFF position.
6. Disconnect and remove intermediate battery cable (4) connecting both batteries in series.
7. Remove nuts and hold-down frames, then remove positive (+) battery cable (3).
8. Disconnect negative (-) battery cable (5).



TX1175810 —UN—28OCT14

Batteries and Battery Disconnect Switch

1— Battery Disconnect Switch
2— Battery (2 used)
3— Positive (+) Battery Cable
4— Intermediate Battery Cable
5— Negative (-) Battery Cable

9. Lift and remove both batteries from machine.
10. Clean battery terminal posts and cable clamps with a stiff brush.
11. Apply lubricating grease around base of terminal posts.
12. Install batteries making sure they are level.
13. Connect negative (-) battery cable to rear battery and positive (+) battery cable to front battery.
14. Install hold-down frame.
15. Install intermediate battery cable to connect both batteries in series.
16. Turn battery disconnect switch to ON position and close service door.

MB60223,00003BD -19-22JAN20-1/1

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.

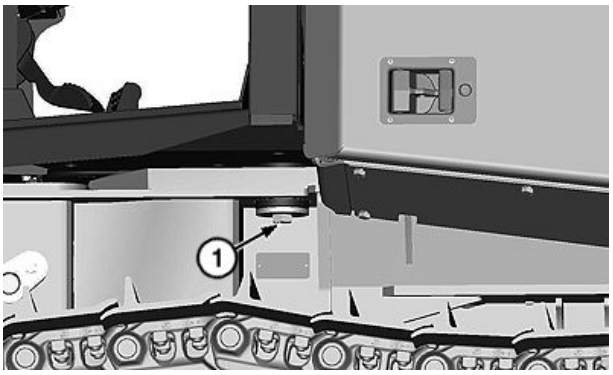
The protection offered by ROPS will be impaired if ROPS is subjected to structural damage, is involved in an overturn incident, or is in any way altered. A damaged ROPS should be replaced, not reused.

When installation of equipment on a machine necessitates loosening or removing ROPS, mounting bolts must be tightened to specification.

Cap Screw Torque—Specification	
Front Operator's Station	
Cap Screw—Torque	320 N·m 235 lb.-ft.
Rear Operator's Station	
Cap Screw—Torque	320 N·m 235 lb.-ft.

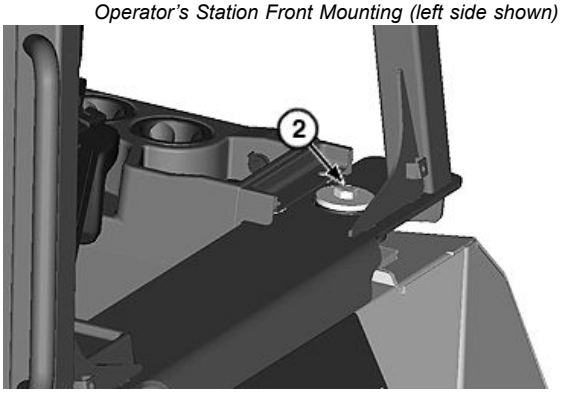
1— Front Operator's Station Cap Screw (2 used)

2— Rear Operator's Station Cap Screw (2 used)



TX1175860 —UN—29OCT14

Operator's Station Front Mounting (left side shown)



TX1175861 —UN—29OCT14

Rear Operator's Station (right side shown with console removed)

CN93077,000046E -19-12DEC14-1/1

Track Shoe Cap Screw Torque

Track shoe cap screw torque should be periodically checked. If unit is operated with loose track shoes, the cap screw holes in the shoes and links will wallow out and it may be difficult to keep the track shoes tight. Loose shoes can also cause hardware malfunction and loss of track shoes.

If the cap screws do not meet the minimum torque specifications, remove the shoes and clean the mating surfaces of the shoes and links before tightening the cap screws.

Specification	
550K Track Shoe Cap Screw Minimum Torque (9/16 in.)—Torque	305 N·m 225 lb.-ft.
550K and 650K Track Shoe Cap Screw Minimum Torque (5/8 in.)—Torque	380 N·m 280 lb.-ft.

Replacing Track Shoe Hardware

NOTE: Replacement hardware should be lubricated and tightened using torque-turn method.

Lubricate cap screw threads and bearing surface of cap screw head.

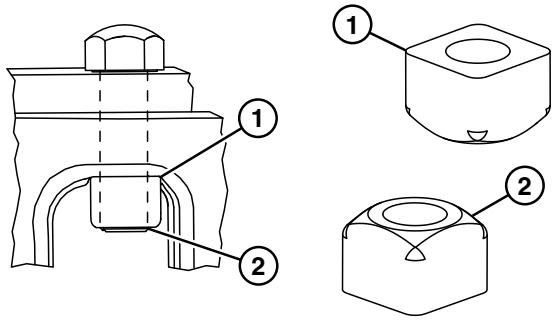
IMPORTANT: DO NOT use impact wrench to start track shoe cap screws to avoid cross-threading.

Use only the torque-turn method described below when assembling new track shoe hardware.

Install all track shoe nuts with rounded edges (1) against the link and chamfered edges (2) away from the link. Be sure nut is properly positioned in the link so there is full contact area between the nut and the link.

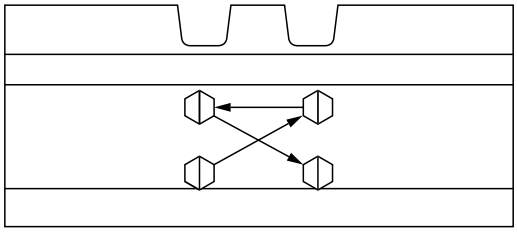
Tighten cap screws to torque specification using a criss-cross pattern. Then repeat torque pattern again.

Tighten cap screws using torque-turn method.



TX1176202 —UN—10NOV14

Track Shoe Cap Screw Positioning



TX1176204 —UN—10NOV14

Track Shoe Cap Screw Torque Pattern

1— Rounded Edge **2— Chamfered Edge**

Track Shoes—Specification	
550K Track Shoe Cap Screw (9/16 in.)—Torque	88 N·m 65 lb.-ft.
Torque Turn	1/3 turn (120°)
550K and 650K Track Shoe Cap Screw (5/8 in.)—Torque	190 N·m 140 lb.-ft.
Torque Turn	1/3 turn (120°)

Continued on next page

Track Shoe Cap Screw Torque—Master Link

Lubricate cap screw threads and bearing surface of cap screw head using TY24811 John Deere NEVER-SEEZ® Lubricant or equivalent.

IMPORTANT: DO NOT use impact wrench to start master shoe cap screws to avoid cross-threading.

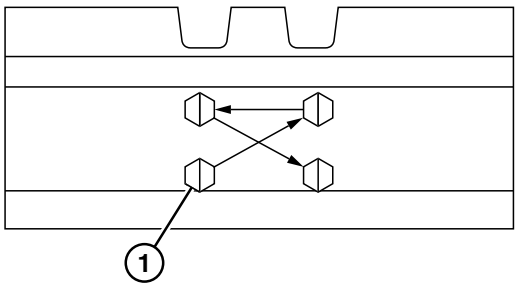
Use only the torque-turn method described below when assembling master track shoe. This method provides the optimum tightness level for this critical area.

Install master shoe on master links and start cap screws by hand to avoid cross-threading.

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

Specification	
550K Master Link Cap Screw (9/16 in.)—Torque	88 N·m 65 lb.-ft.
Torque Turn	1/2 turn (180°)

NEVER-SEEZ is a registered trademark of Emhart Chemical Group



TX1176206 —UN—10NOV14

Master Link Cap Screw

1— Crisscross Sequence

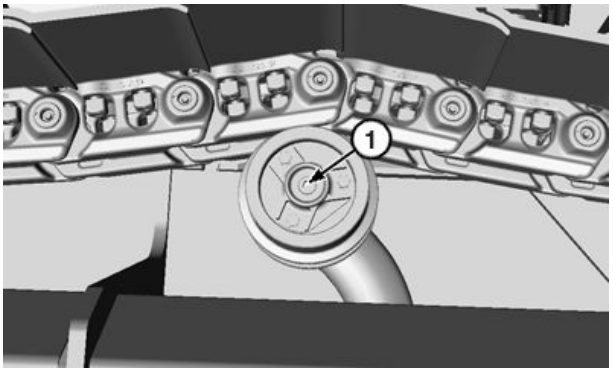
550K and 650K Master Link Cap Screw (5/8 in.)—Torque	190 N·m 140 lb.-ft.
Torque Turn	1/2 turn (180°)

CN93077,000048A -19-12DEC14-2/2

Checking Carrier Roller Oil Level

1. Remove plug (1) from carrier roller. Oil must flow from hole.
2. Add oil as necessary. See Track Rollers, Front Idler, and Carrier Roller Oil. (Section 3-1.)
3. Install plug.

1— Plug



TX1103293A —UN—09DEC11

Carrier Roller

ER93822,0000012 -19-31JUL17-1/1

Checking Idlers and Rollers for Oil Leakage

Check carrier rollers, front idlers, and track rollers for leaks. If any leaks are found, see an authorized John Deere dealer.

AM40430,0000019 -19-07NOV16-1/1

Welding Near Electronic Control Units

IMPORTANT: Do not jump-start engines with arc welding equipment. Currents and voltages are too high and may cause permanent damage.

1. Disconnect the negative (-) battery cable(s).
2. Disconnect the positive (+) battery cable(s).
3. Connect the positive and negative cables together. Do not attach to vehicle frame.
4. Clear or move any wiring harness sections away from welding area.
5. Connect welder ground close to welding point and away from control units.



TS953 —UN—15MAY90

6. After welding, reverse Steps 1—5.

DX,WW,ECU02 -19-14AUG09-1/1

Welding on Machine

CAUTION: Avoid potentially toxic fumes and dust. Hazardous fumes can be generated when paint is heated by welding, soldering, or using a torch. Do all work outside or in a well-ventilated area. Dispose of paint and solvent properly.

When sanding or grinding painted surfaces, avoid breathing the dust. Wear an approved respirator. When using 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.

IMPORTANT: Have only a qualified welder perform this job. Connect welder ground clamp close to each weld area so electrical current does not pass through any bearings, articulation joints, or pivot points. Remove or protect all parts that can be damaged by heat or weld splatter.

1. Remove paint before welding or heating.
   - When sanding or grinding paint, avoid breathing the dust.
   - Wear an approved respirator. When using 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.

IMPORTANT: Electrical current traveling from the welder through the machine electrical system may damage the machine electrical system, including battery and control units. Disconnect battery positive and negative cables before welding on machine.

2. Disconnect the negative (-) battery cables.
3. Disconnect the positive (+) battery cables.
4. Cover, protect, or move any wiring harness sections away from welding area.

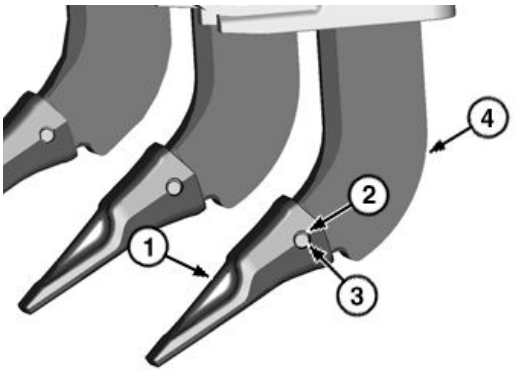
For any repairs, see an authorized John Deere dealer.

VD76477,00005A0 -19-21JUL17-1/1

Replacing Ripper Teeth—If Equipped

1. Drive out pin (3).
2. Remove tooth (1) from shank (4).
3. Install new retainer (2) if worn or damaged.
4. Install new tooth and shank guard.
5. Install pin.

1— Tooth
2— Retainer
3— Pin
4— Shank



TX1175891 —UN—29OCT14

Ripper Teeth

CN93077,000047C -19-12DEC14-1/1

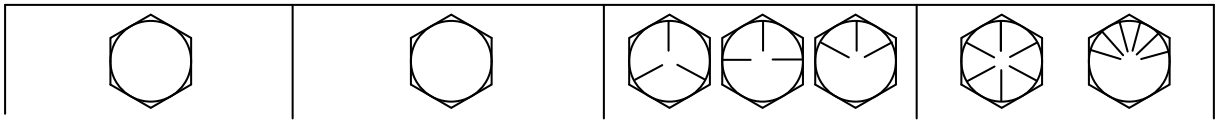
Hardware Torque Specifications

Check cap screws and nuts to be sure they are tight. If hardware is loose, tighten to torque shown on the following charts unless a special torque is specified.

TX,90,FF1225 -19-15MAR93-1/1

Unified Inch Bolt and Screw Torque Values

TS1671 —UN—01MAY03



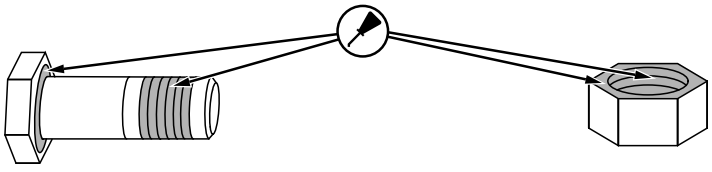
Bolt or Screw Size	SAE Grade 1[a]				SAE Grade 2[b]				SAE Grade 5, 5.1 or 5.2				SAE Grade 8 or 8.2			
	Hex Head[c]		Flange Head[d]		Hex Head[c]		Flange Head[d]		Hex Head[c]		Flange Head[d]		Hex Head[c]		Flange Head[d]	
	N·m	lb·in	N·m	lb·in	N·m	lb·in	N·m	lb·in	N·m	lb·in	N·m	lb·in	N·m	lb·in	N·m	lb·in
1/4	3.1	27.3	3.2	28.4	5.1	45.5	5.3	47.3	7.9	70.2	8.3	73.1	11.2	99.2	11.6	103
													N·m	lb·ft	N·m	lb·ft
5/16	6.1	54.1	6.5	57.7	10.2	90.2	10.9	96.2	15.7	139	16.8	149	22.2	16.4	23.7	17.5
									N·m	lb·ft	N·m	lb·ft				
3/8	10.5	93.6	11.5	102	17.6	156	19.2	170	27.3	20.1	29.7	21.9	38.5	28.4	41.9	30.9
					N·m	lb·ft	N·m	lb·ft								
7/16	16.7	148	18.4	163	27.8	20.5	30.6	22.6	43	31.7	47.3	34.9	60.6	44.7	66.8	49.3
	N·m	lb·ft	N·m	lb·ft												
1/2	25.9	19.1	28.2	20.8	43.1	31.8	47	34.7	66.6	49.1	72.8	53.7	94	69.3	103	75.8
9/16	36.7	27.1	40.5	29.9	61.1	45.1	67.5	49.8	94.6	69.8	104	77	134	98.5	148	109
5/8	51	37.6	55.9	41.2	85	62.7	93.1	68.7	131	96.9	144	106	186	137	203	150
3/4	89.5	66	98	72.3	149	110	164	121	230	170	252	186	325	240	357	263
7/8	144	106	157	116	144	106	157	116	370	273	405	299	522	385	572	422
1	216	159	236	174	216	159	236	174	556	410	609	449	785	579	860	634
1-1/8	305	225	335	247	305	225	335	247	685	505	751	554	1110	819	1218	898
1-1/4	427	315	469	346	427	315	469	346	957	706	1051	775	1552	1145	1703	1256
1-3/8	564	416	618	456	564	416	618	456	1264	932	1386	1022	2050	1512	2248	1658
1-1/2	743	548	815	601	743	548	815	601	1665	1228	1826	1347	2699	1991	2962	2185

The nominal torque values listed are for general use only with the assumed wrenching accuracy of 20%, such as a manual torque wrench.
DO NOT use these values if a different torque value or tightening procedure is given for a specific application.
For lock nuts, for stainless steel fasteners, or for nuts on U-bolts, see the tightening instructions for the specific application.

Replace fasteners with the same or higher property class. If higher property class fasteners are used, tighten these to the strength of the original.

- Make sure that fastener threads are clean.
- Apply a thin coat of Hy-Gard™ or equivalent oil under the head and on the threads of the fastener, as shown in the following image.
- Be conservative with the amount of oil to reduce the potential for hydraulic lockup in blind holes due to excessive oil.
- Properly start thread engagement.

TS1741 —UN—22MAY18

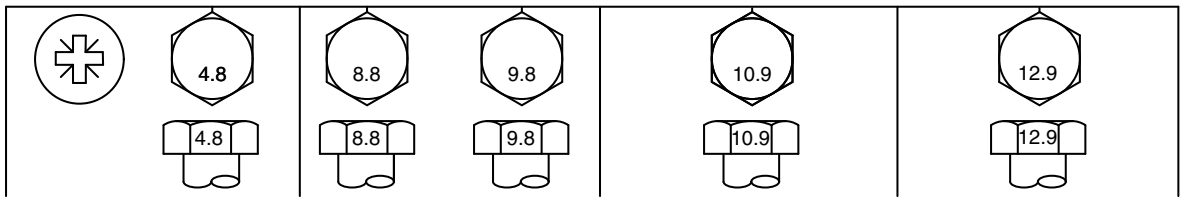


[a]Grade 1 applies for hex cap screws over 6 in (152 mm) long, and for all other types of bolts and screws of any length.
[b]Grade 2 applies for hex cap screws (not hex bolts) up to 6 in (152 mm) long.
[c]Hex head column values are valid for ISO 4014 and ISO 4017 hex head, ISO 4162 hex socket head, and ISO 4032 hex nuts.
[d]Hex flange column values are valid for ASME B18.2.3.9M, ISO 4161, or EN 1665 hex flange products.

DX,TORQ1 -19-30MAY18-1/1

Metric Bolt and Screw Torque Values

TS1742 —UN—31MAY18



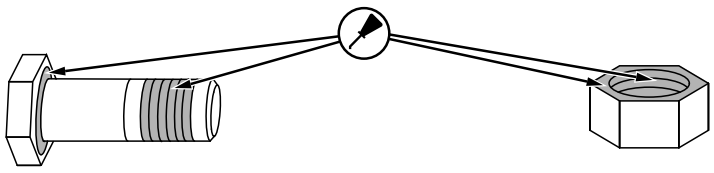
Bolt or Screw Size	Class 4.8				Class 8.8 or 9.8				Class 10.9				Class 12.9			
	Hex Head[a]		Flange Head[b]		Hex Head[a]		Flange Head[b]		Hex Head[a]		Flange Head[b]		Hex Head[a]		Flange Head[b]	
	N·m	lb·in	N·m	lb·in	N·m	lb·in	N·m	lb·in	N·m	lb·in	N·m	lb·in	N·m	lb·in	N·m	lb·in
M6	3.6	31.9	3.9	34.5	6.7	59.3	7.3	64.6	9.8	86.7	10.8	95.6	11.5	102	12.6	112
									N·m	lb·ft	N·m	lb·ft	N·m	lb·ft	N·m	lb·ft
M8	8.6	76.1	9.4	83.2	16.2	143	17.6	156	23.8	17.6	25.9	19.1	27.8	20.5	30.3	22.3
			N·m	lb·ft	N·m	lb·ft	N·m	lb·ft								
M10	16.9	150	18.4	13.6	31.9	23.5	34.7	25.6	46.8	34.5	51	37.6	55	40.6	60	44.3
	N·m	lb·ft														
M12	—	—	—	—	55	40.6	61	45	81	59.7	89	65.6	95	70.1	105	77.4
M14	—	—	—	—	87	64.2	96	70.8	128	94.4	141	104	150	111	165	122
M16	—	—	—	—	135	99.6	149	110	198	146	219	162	232	171	257	190
M18	—	—	—	—	193	142	214	158	275	203	304	224	322	245	356	263
M20	—	—	—	—	272	201	301	222	387	285	428	316	453	334	501	370
M22	—	—	—	—	365	263	405	299	520	384	576	425	608	448	674	497
M24	—	—	—	—	468	345	518	382	666	491	738	544	780	575	864	637
M27	—	—	—	—	683	504	758	559	973	718	1080	797	1139	840	1263	932
M30	—	—	—	—	932	687	1029	759	1327	979	1466	1081	1553	1145	1715	1265
M33	—	—	—	—	1258	928	1398	1031	1788	1319	1986	1465	2092	1543	2324	1714
M36	—	—	—	—	1617	1193	1789	1319	2303	1699	2548	1879	2695	1988	2982	2199

The nominal torque values listed are for general use only with the assumed wrenching accuracy of 20%, such as a manual torque wrench.
DO NOT use these values if a different torque value or tightening procedure is given for a specific application.
For lock nuts, for stainless steel fasteners, or for nuts on U-bolts, see the tightening instructions for the specific application.

Replace fasteners with the same or higher property class. If higher property class fasteners are used, tighten these to the strength of the original.

- Make sure that fastener threads are clean.
- Apply a thin coat of Hy-Gard™ or equivalent oil under the head and on the threads of the fastener, as shown in the following image.
- Be conservative with the amount of oil to reduce the potential for hydraulic lockup in blind holes due to excessive oil.
- Properly start thread engagement.

TS1741 —UN—22MAY18



[a]Hex head column values are valid for ISO 4014 and ISO 4017 hex head, ISO 4162 hex socket head, and ISO 4032 hex nuts.
[b]Hex flange column values are valid for ASME B18.2.3.9M, ISO 4161, or EN 1665 hex flange products.

DX,TORQ2 -19-30MAY18-1/1

Miscellaneous—Operational Checkout

Operational Checkout

Operational checkouts are accomplished in three conditions:

- Switched Power OFF, Engine OFF
- Switched Power ON, Engine OFF
- Switched Power ON, Engine ON

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

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

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

No special tools are necessary to perform the checkout.

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

CN93077,0000476 -19-22JUN17-1/59

Diagnostic Trouble Code (DTC) Check

CN93077,0000476 -19-22JUN17-2/59

Display and Clear Trouble Codes	Always check for diagnostic trouble codes and correct them before performing the operational checkout. Check for active and stored diagnostic trouble codes (DTCs). Diagnostic trouble codes can be displayed by using one of the following methods: • Standard Display Monitor (SDM) • Service ADVISOR™ Diagnostic Application *LOOK: Are diagnostic trouble codes present?*	**YES:** Correct all diagnostic trouble codes before proceeding. **NO:** Go to next check.

Service ADVISOR is a trademark of Deere & Company

CN93077,0000476 -19-22JUN17-3/59

Operational Checks—Switched Power OFF, Engine OFF Checks

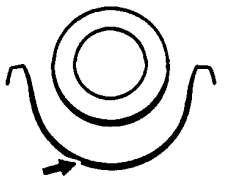
CN93077,0000476 -19-22JUN17-4/59

Grouser Wear, Bent Track Shoe, and Loose Hardware Checks	Inspect for worn grousers, bent track shoes, and loose shoe hardware. **IMPORTANT: Hardware must be tight. Excessive grouser wear weakens track shoes and may result in track shoes bending.** *LOOK: Are grouser bars in good condition, are track shoes straight, and is hardware tight?*	**YES:** Go to next check. **NO:** If shoe hardware is loose, remove shoe and clean joint before tightening. If worn or bent, replace.

Continued on next page

CN93077,0000476 -19-22JUN17-5/59

Sprocket Wear Check



T6484AY —UN—19OCT88

Sprocket Wear

Inspect drive sprocket for excessive root wear.

NOTE: Do not evaluate sprocket by condition of tooth tip. Tooth tip wear does not affect sprocket operation if it does not extend into the bushing contact area. Reverse drive side wear is generally more than forward drive side wear.

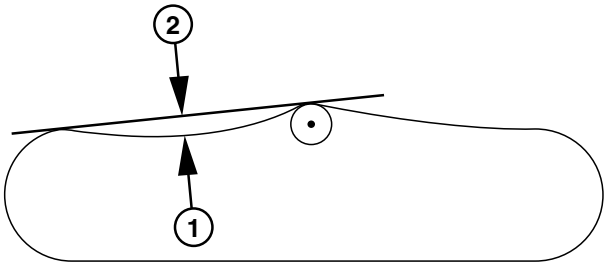
LOOK: Is sprocket in good condition?

YES: Go to next check.

NO: Replace sprocket.

CN93077,0000476 -19-22JUN17-6/59

Track Sag, Roller and Idler Leakage Checks



TX1005542 —UN—28MAR06

Track Sag

1— Chain
2— Measuring Point

Rotate track until a track chain pin is located directly above front carrier roller.

Measure track sag between points (1) and (2).

Inspect rollers and front idler.

LOOK: Is track sag between 45—57 mm (1.75—2.25 in.)?

YES: Go to next check.

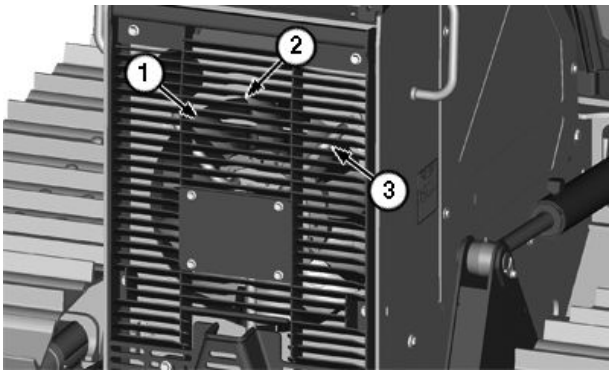
NO: Adjust track sag. See Check and Adjust Track Sag. (Section 3-3.)

LOOK: Are rollers and idlers free of oil seepage?

NO: Repair or replace roller or idler.

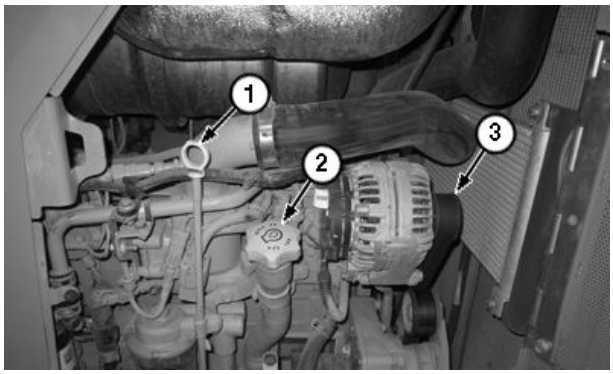
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CN93077,0000476 -19-22JUN17-7/59

Fan Check	 TX1179467A —UN—09DEC14 *Cooling System Fan* **1— Fan Blade (10 used)** **2— Fan Shroud** **3— Fan Guard**	
	Visually inspect fan blades (1) for damage. *LOOK: Are fan blades free of any nicks or bends?*	**YES:** Go to next step in this check. **NO:** If blades are bent, replace fan. If fan blades are nicked, repair blades.
	NOTE: If fan is installed backwards, approximately 50% of its capacity is lost. Check fan for correct installation. *LOOK: Is cupped portion of fan blades toward grille?*	**YES:** Go to next check. **NO:** Remove fan and reinstall with cupped portion of fan blades toward grille.
	Visually inspect fan shroud (2) and fan guard (3) for damage. *LOOK: Is the fan guard free of damage?*	**YES:** Go to next step in this check. **NO:** Repair or replace fan guard.
	Inspect fan guard mounting hardware. *LOOK/FEEL: Is all fan guard mounting hardware tight?*	**YES:** Go to next check. **NO:** Tighten hardware.

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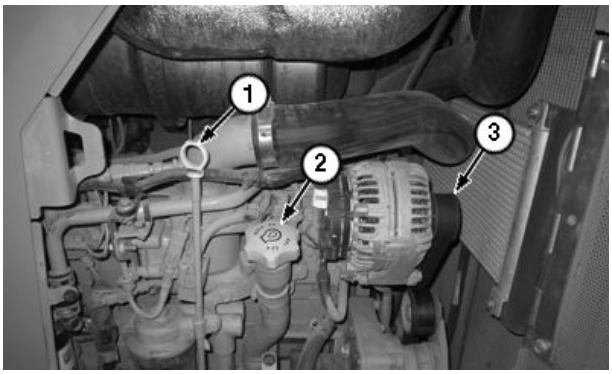
CN93077,0000476 -19-22JUN17-8/59

Engine Oil Level Check	 TX1179620A —UN—09DEC14 *Right Engine Compartment* **1— Dipstick** **2— Fill Port Cap** **3— Belt** *NOTE: If oil level is high, check for fuel or coolant in oil. If there is fuel in oil, oil will have a fuel smell. See your authorized dealer for procedures and sampling equipment. For more information, see Fluid Sampling Test Ports—If Equipped. (Section 4-1.)* *SMELL: Does engine oil have fuel smell?* *LOOK: Does engine oil contain coolant?* *LOOK: Does engine oil appear milky or grainy?*	**YES:** Replace oil. See Drain and Refill Engine Oil and Replace Filter. (Section 3-7.) **NO:** Go to next step in this check.
	Open right engine compartment door. Remove dipstick (1). Check oil level and condition. *LOOK: Is engine oil below minimum mark?*	**YES:** Add oil. See Check Engine Oil Level. (Section 3-4.) **NO:** Go to next step in this check.
	LOOK: Is engine oil above maximum mark?	**YES:** Remove engine oil drain plug and drain oil to proper level. **NO:** Go to next check.

Continued on next page

CN93077,0000476 -19-22JUN17-9/59

Belt Check



TX1179620A —UN—09DEC14

Right Engine Compartment

1— Dipstick
2— Fill Port Cap
3— Belt

Inspect condition of belt (3).

FEEL/LOOK: Are belt and pulleys free of oil or grease?

LOOK: Is inside surface of belt free of any cracks?

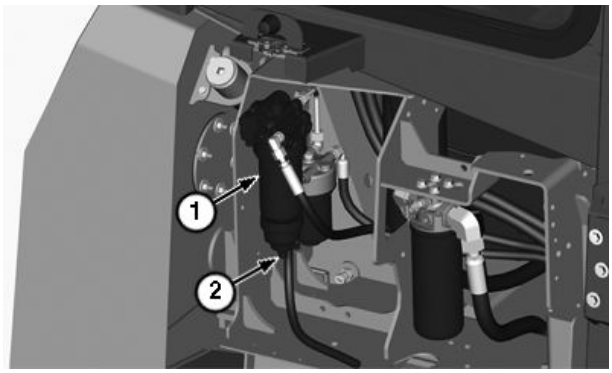
NOTE: If operator has been reporting squealing sound during engine shutdown, replace belt.

YES: Go to next check.

NO: Replace belt. See Inspect or Replace Belt and Check Automatic Belt Tensioner. (Section 3-3.)

CN93077,0000476 -19-22JUN17-10/59

Fuel Water Separator Check



TX1179623A —UN—09DEC14

Primary Fuel Filter

1— Primary Fuel Filter
2— Drain Valve

Open right rear service compartment door.

Place drain hose from primary fuel filter (1) into container.

Open drain valve (2) on bowl, and drain fuel for several seconds or until water and sediment are removed.

Close drain valve.

LOOK: Does fuel flow from drain valve?

FEEL/LOOK: Does drain valve seal when closed?

YES: Go to next check.

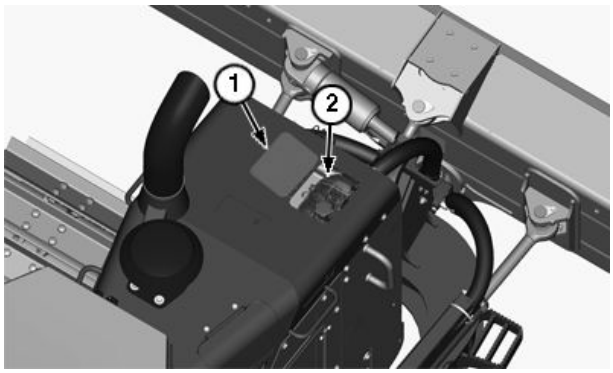
NO: Clean or replace drain valve.

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CN93077,0000476 -19-22JUN17-11/59

Radiator/Heater Hoses and Clamps Check	Inspect all radiator and heater hoses for cracks or leaks. Inspect all hose clamps. *LOOK: Are the radiator and heater hoses in good condition?* *LOOK: Are hose clamps tight and perpendicular to the hose?* **IMPORTANT: Make sure hose clamps are perpendicular to hoses. Crooked clamps can cause damage and leaks.**	**YES:** Go to next check. **NO:** Replace damaged hoses or straighten and tighten clamps.

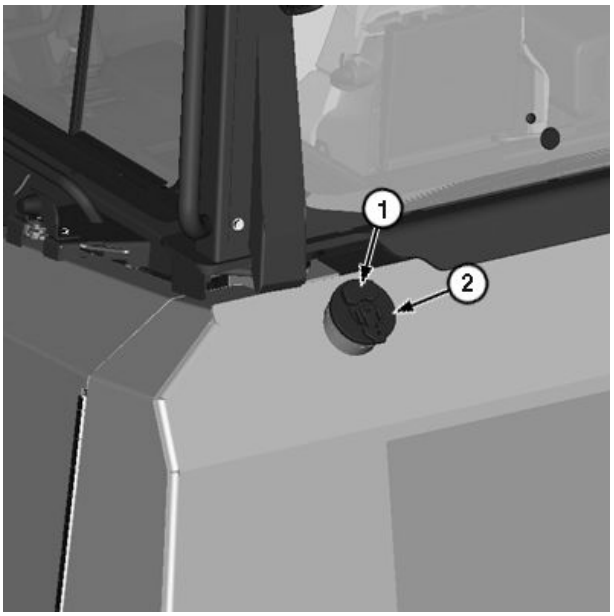
CN93077,0000476 -19-22JUN17-12/59

Coolant Level and Condition Check	**IMPORTANT: Overfilling surge tank will cause aeration and coolant will be expelled from overflow hose when engine reaches operating temperature. Do not overfill surge tank; coolant must be between maximum cold and minimum cold marks on surge tank.**  TX1179643A —UN—09DEC14 *Surge Tank* **1— Surge Tank Access Panel** **2— Surge Tank** Open surge tank access panel (1). Inspect coolant level and coolant condition in surge tank. *LOOK: Is coolant at correct level in the tank?* *LOOK: Is coolant clean, and not oily, foamy, or rusty?*	**YES:** Go to next check. **NO:** If coolant level is low, add coolant. Drain, flush, and replace coolant if coolant is rusty, oily, or foamy. See Drain and Refill Engine Cooling System. (Section 3-12.)

Continued on next page

CN93077,0000476 -19-22JUN17-13/59

Fuel Cap Check



TX1099742A —UN—04JAN12

Fuel Cap

1— Vent Valve Assembly
2— Fuel Cap

Remove fuel cap (2).

NOTE: Air "hiss" from tank is normal when cap is removed.

Inspect fuel cap seal.

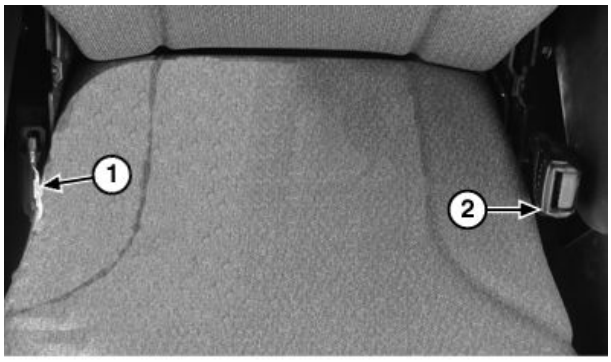
LOOK: Is seal on fuel cap in good condition and is vent valve assembly (1) open?

YES: Go to next check.

NO: Clean vent, replace seal, or replace fuel cap.

Continued on next page

CN93077,0000476 -19-22JUN17-14/59

Seat Belt Check	 TX1083766A —UN—27OCT10 *Seat Belt* **1— Seat Belt** **2— Seat Belt Lock** Pull seat belt (1) all the way out and inspect seat belt for damage. *LOOK: Is seat belt in good condition, free of cuts?* *LOOK: Is seat belt buckle in good condition?*	**YES:** Go to next check. **NO:** Replace seat belt.
	Install seat belt in seat belt lock (2). *LOOK/FEEL: Does seat belt retract and lock in place?*	**YES:** Go to next check. **NO:** Replace seat belt lock.

CN93077,0000476 -19-22JUN17-15/59

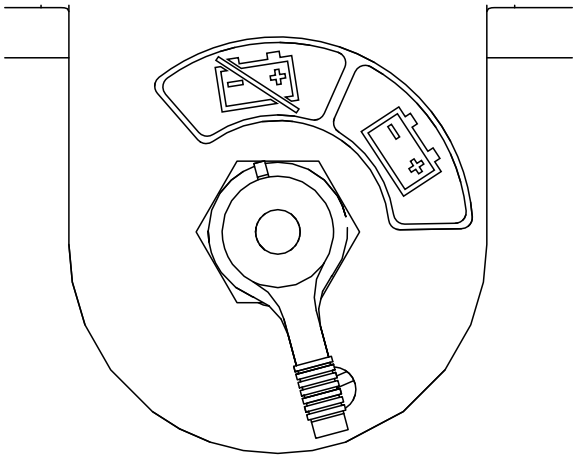
Cab Door and Window Seals Check	Open and close door and windows. Inspect seals. *LOOK: Do door and windows contact seals evenly?* *LOOK: Are seals in position and in good condition?*	**YES:** Go to next step in this check. **NO:** Adjust door and windows to close against seals properly. Replace seals 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.

CN93077,0000476 -19-22JUN17-16/59

Operational Checks—Switched Power ON, Engine OFF

Continued on next page

CN93077,0000476 -19-22JUN17-17/59

Battery Disconnect Switch Check	*NOTE: Battery disconnect switch is located inside of the left rear service door.*	
	 TX1158186 —UN—17APR14 *Battery Disconnect Switch in OFF Position*	
	Turn battery disconnect switch OFF.	
	Press engine start switch on SSM.	**YES:** Switch is malfunctioning. Repair battery disconnect switch.
	LOOK: Do monitor indicator lights illuminate?	**NO:** Go to next check.
		CN93077,0000476 -19-22JUN17-18/59

Battery Disconnect Switch Check (continued)	Turn battery disconnect switch ON.	
	Press engine start switch on SSM. Do not start engine.	**YES:** Go to next check.
	LOOK: Do monitor indicator lights illuminate?	**NO:** Repair battery disconnect switch.
		CN93077,0000476 -19-22JUN17-19/59

Battery Check	Display battery voltage on monitor. See Standard Display Monitor (SDM) Functions. (Section 2-1.)	**YES:** Go to next check.
	LOOK: Does battery voltage read a minimum of 24 volts?	**NO:** Check for loose connection on battery terminals. If battery connection is OK, check and recharge batteries. See Check Battery Electrolyte Level; Clean and Tighten Terminals. (Section 3-7.) Check voltage on each battery before recharging. If one battery will not hold a charge, replace all batteries.
	Continued on next page	CN93077,0000476 -19-22JUN17-20/59

Horn Check



TX1180157A —UN—09DEC14

Transmission Control Lever (TCL)

1— Horn Switch

Press horn switch (1).

LISTEN: Does horn activate?

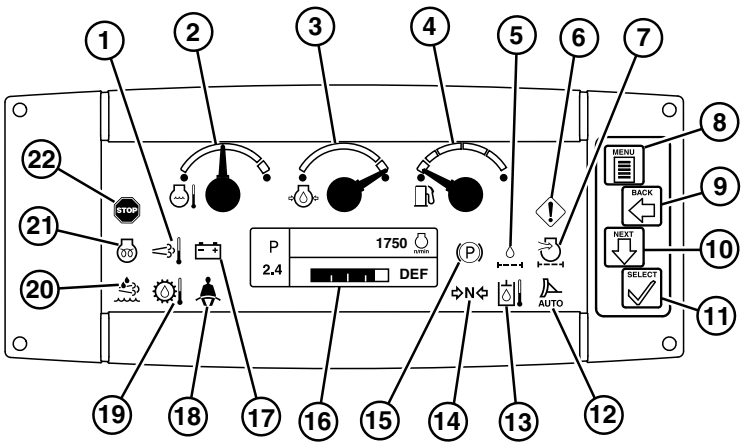
YES: Go to next check.

NO: See an authorized John Deere dealer.

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CN93077,0000476 -19-22JUN17-21/59

Indicator and Gauge Check



TX1170825 —UN—24SEP14

Indicators (SDM)

1— Exhaust Filter Cleaning Indicator
2— Engine Coolant Temperature Gauge
3— Engine Oil Pressure Gauge
4— Fuel Level Gauge
5— Engine Oil Filter Restriction Indicator
6— Caution Indicator
7— Engine Air Filter Restriction Indicator
8— MENU Button
9— BACK Button
10— NEXT Button
11— SELECT Button
12— Auto Blade Indicator (if equipped)
13— Hydraulic Oil Temperature Indicator
14— Return-to-Neutral Indicator
15— Park Brake Indicator
16— Display
17— Engine Alternator Voltage Indicator
18— Fasten Seat Belt Indicator
19— Transmission Oil Temperature Indicator
20— Diesel Exhaust Fluid (DEF) Indicator
21— Wait-to-Start Indicator
22— STOP Indicator

Place transmission control lever (TCL) in neutral position.

Pull park lock levers to LOCKED (up) position.

Press engine start switch on SSM.

LOOK: Do all indicators turn on for 3 seconds?

LOOK: Do all three gauges move to far right position, then move to center position?

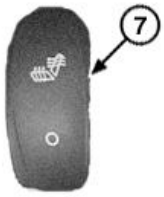
LOOK: After 3 seconds, do gauges move to their normal runtime positions?

YES: Go to next check.

NO: See an authorized John Deere dealer.

Continued on next page

CN93077,0000476 -19-22JUN17-22/59

Seat Control Checks	 TX1083892A —UN—29OCT10 *Air Suspension Seat*  TX1083894A —UN—29OCT10 *Seat Heater Switch*	
	1— Headrest **2— Lumbar Adjustment** **3— Backrest Adjustment** **4— Height Adjustment** **5— Tilt Adjustment** **6— Fore-and-Aft Adjustment** **7— Seat Heater Switch**	**YES:** Go to next step in this check.
	Operate all seat adjustments (1—6). *FEEL/LOOK: Do seat adjustments move seat to desired positions?*	**NO:** Inspect linkage and repair. **NO:** See an authorized John Deere dealer.
	Operate the seat heater switch (7). *FEEL: Does the seat warm up?*	**YES:** Go to next check. **NO:** See an authorized John Deere dealer.

Continued on next page

CN93077,0000476 -19-22JUN17-23/59

Drive Lights Check



TX1180466A —UN—11DEC14

Drive Lights Switch

1— Drive Lights Switch
2— Left LED
3— Right LED

Press drive lights switch (1).

LOOK: Is the left LED (2) illuminated? Are only the front drive lights illuminated?

Press drive lights switch.

LOOK: Is the right LED (3) illuminated? Are only the rear drive lights illuminated?

Press drive lights switch.

LOOK: Are the left and right LEDs illuminated? Are the front and rear drive lights illuminated?

YES: Go to next check.

NO: See an authorized John Deere dealer.

Continued on next page

CN93077,0000476 -19-22JUN17-24/59

Work Lights Check



TX1180467A —UN—11DEC14

Work Lights Switch

1— Work Lights Switch
2— Left LED
3— Right LED

Press work lights switch (1).

LOOK: Are the left and right LEDs (2 and 3) illuminated? Are the front and rear work lights illuminated?

YES: Go to next check.

NO: See an authorized John Deere dealer.

Continued on next page

CN93077,0000476 -19-22JUN17-25/59

Front Wiper Check



TX1180468A —UN—11DEC14

Front Wiper Switch

1— Front Wiper Switch
2— LED

Press front wiper switch (1).

Observe wiper.

LOOK: Does wiper run at a constant speed?

LOOK: Does LED (2) illuminate?

Turn switch OFF.

LOOK: Does wiper return to park position?

YES: Go to next check.

NO: See an authorized John Deere dealer.

Continued on next page

CN93077,0000476 -19-22JUN17-26/59

Wiper Speed Check



TX1180469A —UN—11DEC14

Wiper Speed Switch

1— Wiper Speed Switch
2— Left LED
3— Middle LED
4— Right LED

Press wiper speed switch (1). One LED illuminated.

LOOK: Does wiper operate in low-speed intermittent mode?

Press wiper speed switch. Two LEDs illuminated.

LOOK: Does wiper operate in medium-speed intermittent mode?

Press wiper speed switch. Three LEDs illuminated.

LOOK: Does wiper operate in high-speed continuous mode?

YES: Go to next check.

NO: See an authorized John Deere dealer.

Continued on next page

CN93077,0000476 -19-22JUN17-27/59

Rear Wiper Check



TX1180470A —UN—11DEC14

Rear Wiper Switch

1— Rear Wiper Switch
2— Low-Speed LED
3— Medium-Speed LED
4— High-Speed LED

Press rear wiper switch (1). One LED illuminated.

LOOK: Does wiper operate in low-speed intermittent mode?

Press wiper speed switch. Two LEDs illuminated.

LOOK: Does wiper operate in medium-speed intermittent mode?

Press wiper speed switch. Three LEDs illuminated.

LOOK: Does wiper operate in high-speed continuous mode?

Turn switch OFF.

LOOK: Does wiper return to park position?

YES: Go to next check.

NO: See an authorized John Deere dealer.

Continued on next page

CN93077,0000476 -19-22JUN17-28/59

Front and Rear Washer Motor Check



TX1180471A —UN—11DEC14

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.

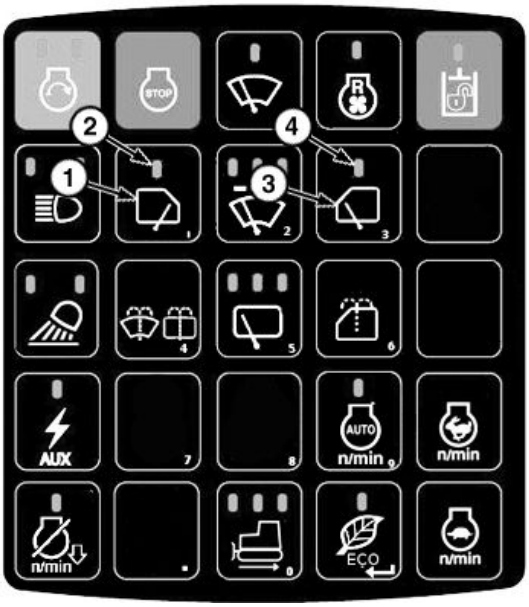
NO: Washer fluid reservoir may be empty. Check washer fluid. See Check and Fill Windshield Washer Fluid. (Section 3-3.)

See an authorized John Deere dealer.

Continued on next page

CN93077,0000476 -19-22JUN17-29/59

Left and Right Door Wiper Check



TX1180472A —UN—11DEC14

Door Wiper Switch

1— Left Door Wiper Switch
2— LED
3— Right Door Wiper Switch
4— LED

Press left door wiper switch (1).

LOOK: Does LED (2) illuminate?

LOOK: Does left wiper run at a constant speed?

Press left door wiper switch again.

LOOK: Does wiper return to park position?

Press right door wiper switch (3).

LOOK: Does LED (4) illuminate?

LOOK: Does right wiper run at a constant speed?

Press right door wiper switch again.

LOOK: Does wiper return to park position?

YES: Go to next check.

NO: See an authorized John Deere dealer.

Continued on next page

CN93077,0000476 -19-22JUN17-30/59

Left and Right Door Washer Motor Check



TX1180473A —UN—11DEC14

Door Washer Switch

1— Door Washer Switch

Press door washer switch (1) on SSM.

LOOK: Do left and right door washers operate?

LOOK: Do left and right door wipers continue to operate?

YES: Go to next check.

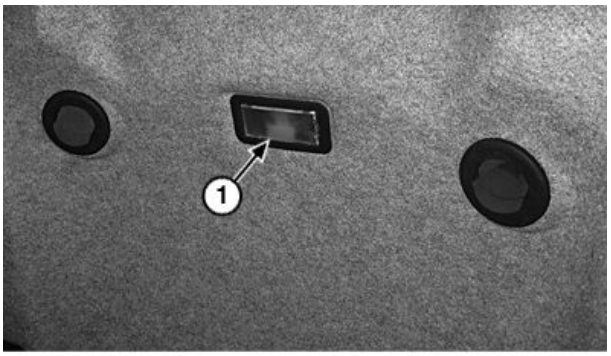
NO: Washer fluid reservoir may be empty. Check washer fluid. See Check and Fill Windshield Washer Fluid. (Section 3-3.)

See an authorized John Deere dealer.

Continued on next page

CN93077,0000476 -19-22JUN17-31/59

Cab Interior Light Check



TX1083995A —UN—02NOV10

Cab Interior Light

1— Cab Interior Light

Press on cab interior light (1) to turn on light.

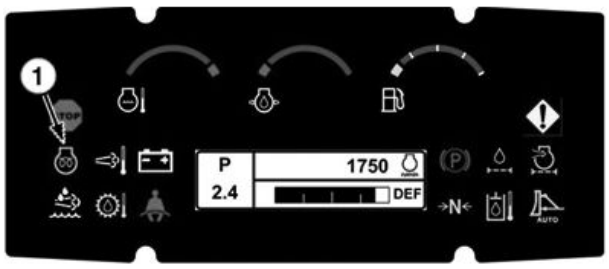
LOOK: Does cab interior light turn on?

YES: Go to next check.

NO: See an authorized John Deere dealer.

CN93077,0000476 -19-22JUN17-32/59

Glow Plug Check



TX1180362A —UN—09DEC14

Wait-to-Start Indicator

1— Wait-to-Start Indicator

Cycle switched power.

With switched power on, observe wait-to-start indicator (1).

LOOK: Does wait-to-start indicator come on then go off when engine is ready to start?

YES: Go to next check.

NO: Check glow plugs. See an authorized John Deere dealer.

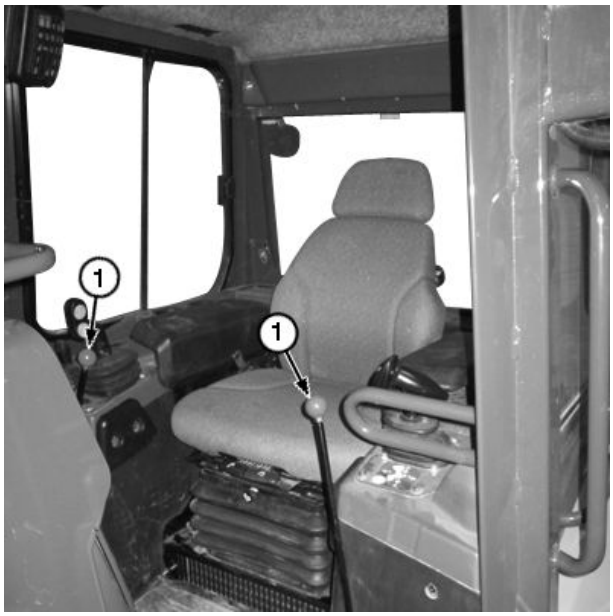
CN93077,0000476 -19-22JUN17-33/59

Operational Checks—Switched Power ON, Engine ON

Continued on next page

CN93077,0000476 -19-22JUN17-34/59

Start Circuit Check



TX1180162A —UN—09DEC14

Park Lock Levers



TX1180474A —UN—11DEC14

Engine Start Switch

1— Park Lock Lever (2 used)
2— Engine Start Switch
3— Left LED
4— Right LED

Move park lock levers (1) to UNLOCKED (down) position.

Press and release engine start switch (2) to turn switched power ON. The left LED (3) will illuminate.

After display monitor has initialized, press and hold engine start switch.

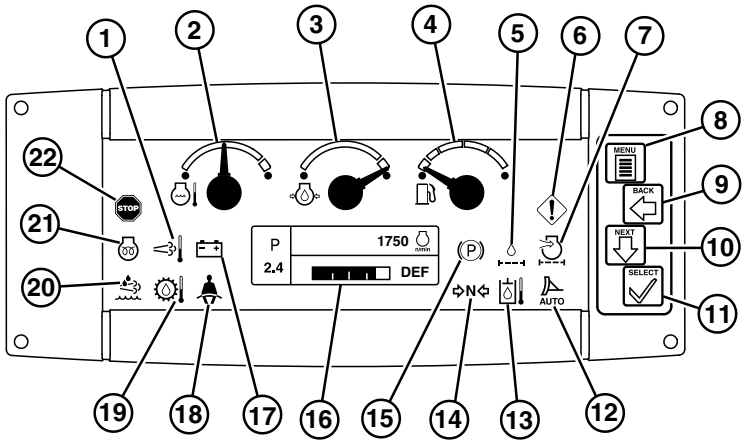
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	LISTEN/FEEL: Does starter motor engage?	**YES:** If starter engages, start circuit is shorted. See an authorized John Deere dealer.
	LOOK: Does right LED (4) illuminate?	**NO:** Go to next step in this check.
	Move park lock levers to LOCKED (up) position and press engine start switch to start.	
	LISTEN/FEEL: Does starter motor engage?	**YES:** Go to next check.
	LOOK: Does right LED illuminate?	**NO:** If starter does not engage, start circuit is shorted. See an authorized John Deere dealer.

Continued on next page

CN93077,0000476 -19-22JUN17-36/59

Monitor Check With Engine Running



TX1170825 —UN—24SEP14

Indicators (SDM)

1— Exhaust Filter Cleaning Indicator
2— Engine Coolant Temperature Gauge
3— Engine Oil Pressure Gauge
4— Fuel Level Gauge
5— Engine Oil Filter Restriction Indicator
6— Caution Indicator
7— Engine Air Filter Restriction Indicator
8— MENU Button
9— BACK Button
10— NEXT Button
11— SELECT Button
12— Auto Blade Indicator (if equipped)
13— Hydraulic Oil Temperature Indicator
14— Return-to-Neutral Indicator
15— Park Brake Indicator
16— Display
17— Engine Alternator Voltage Indicator
18— Fasten Seat Belt Indicator
19— Transmission Oil Temperature Indicator
20— Diesel Exhaust Fluid (DEF) Indicator
21— Wait-to-Start Indicator
22— STOP Indicator

After bulb check with engine running, check the following:

NOTE: Park brake indicator will stay illuminated due to machine being in park.

LOOK: Do all indicators except park brake indicator (15) turn off?

LOOK: Does display show engine speed?

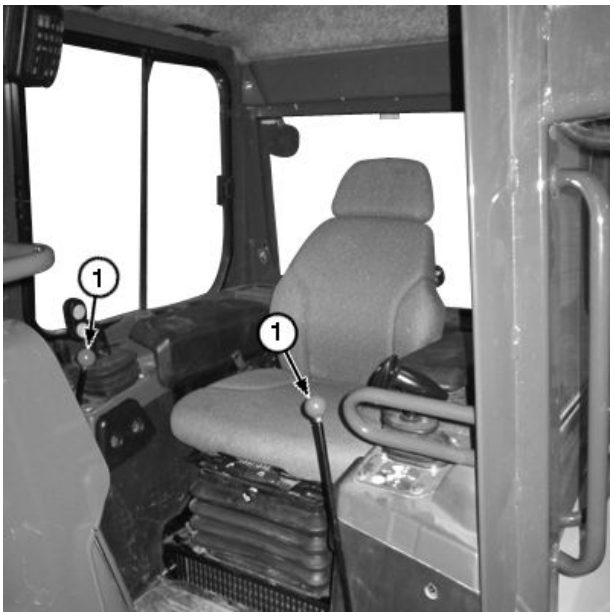
YES: Go to next check.

NO: See an authorized John Deere dealer.

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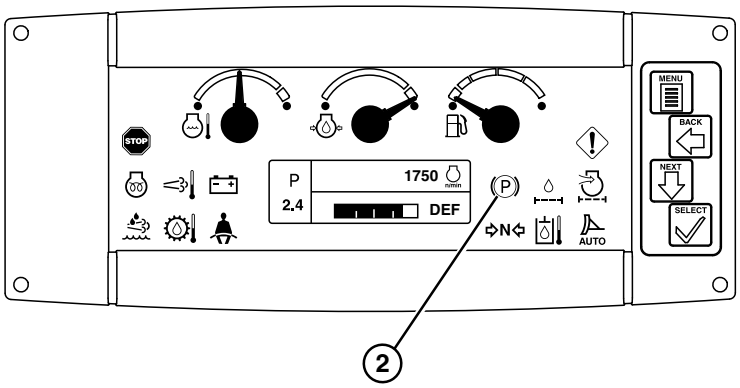
CN93077,0000476 -19-22JUN17-37/59

Park Lock Lever Switch Check



TX1180162A —UN—09DEC14

Park Lock Levers



TX1172765 —UN—24SEP14

Park Brake Indicator (SDM)

1— Park Lock Lever (2 used)
2— Park Brake Indicator

Move transmission control lever (TCL) to neutral.

CAUTION: Avoid possible injury from unexpected machine movement. Machine may move when park brake is released.

Observe park brake indicator (2) on standard display monitor (SDM) as park lock levers (1) are moved to UNLOCKED (down) position.

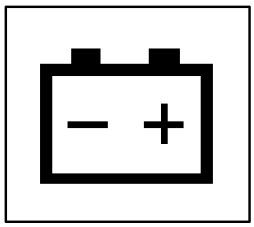
LOOK: Does park brake indicator go off when park lock levers are in the UNLOCKED (down) position?

YES: Go to next check.

NO: If park brake indicator remains on, See an authorized John Deere dealer.

Continued on next page

CN93077,0000476 -19-22JUN17-38/59

Alternator Output Check	 TX1000662 —UN—23NOV05 *Voltage Indicator* Run engine at slow idle. *LOOK: Is voltage indicator off?*		**YES:** Go to next check. **NO:** Increase engine speed to fast idle; if light is still on, check and charge batteries. See an authorized John Deere dealer.

Continued on next page

CN93077,0000476 -19-22JUN17-39/59

Engine Speed Control Switch Check



TX1180475A —UN—22JAN15

Engine Speed Control

1— Engine Speed Decrease Switch
2— Engine Speed Increase Switch

Run engine and press engine speed decrease switch (1) once to run engine at slow idle.

LOOK: Is engine speed at approximately 900 rpm?

Press engine speed increase switch (2) once to run engine at fast idle.

LOOK: Is engine speed at approximately 2350 rpm?

Press and hold engine speed decrease switch to ramp idle to slow idle.

LOOK: Is engine speed at approximately 900 rpm?

LISTEN: Does engine speed change proportionally?

Press and hold engine speed increase switch to ramp idle to fast idle.

LOOK: Is engine speed at approximately 2350 rpm?

LISTEN: Does engine speed change proportionally?

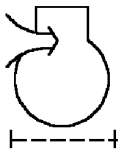
YES: Go to next check.

NO: See an authorized John Deere dealer.

Continued on next page

CN93077,0000476 -19-22JUN17-40/59

Air Filter Restriction Check



TX1000024 —UN—04NOV05

Air Filter Restriction Indicator

Run engine at fast idle with park lock levers in LOCKED (up) 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.)

CN93077,0000476 -19-22JUN17-41/59

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 LOCKED (up) position.

Open right engine door and disconnect engine coolant temperature sensor (B5208). See an authorized John Deere dealer.

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

CN93077,0000476 -19-22JUN17-42/59

Reversing Fan Circuit Check (if equipped)



TX1180476A —UN—11DEC14

Reversing Fan Switch

1— Reversing Fan Switch
2— LED

Run engine at slow idle.

Press reversing fan switch (1).

LISTEN/LOOK: Does hydraulic cooling fan reverse direction?

LOOK: Does LED (2) come on?

YES: Go to next check.

NO: See an authorized John Deere dealer.

Continued on next page

CN93077,0000476 -19-22JUN17-43/59

Hydraulic Enable Solenoid Check



TX1180477A —UN—11DEC14

Hydraulic Enable Switch

1— Hydraulic Enable Switch
2— LED

Press hydraulic enable switch (1) to hydraulics locked (LED [2] off).

Run engine at slow idle.

Move blade control lever to each function position.

LOOK: Do all hydraulic functions not operate?

Press hydraulic enable switch to unlocked (LED on).

Move blade control lever to operate each function.

LOOK: Do all hydraulic functions operate correctly?

YES: Go to next check.

NO: See an authorized John Deere dealer.

CN93077,0000476 -19-22JUN17-44/59

Park Brake Circuit Check

CAUTION: Avoid possible injury from unexpected machine movement. Moving park lock levers will stop machine abruptly. Wear seat belt at all times when operating machine.

Fasten seat belt.

Run machine at fast idle. Press transmission control lever (TCL) to forward.

Move park lock levers to LOCKED (up) position.

LOOK/FEEL: Does machine stop and park brake indicator illuminate immediately?

Move TCL back to neutral and move park lock levers to UNLOCKED (down) position.

Run machine slowly in forward.

Return TCL to neutral and measure time required for park brake indicator to illuminate.

LOOK/FEEL: Does machine stop and park brake indicator illuminate after approximately 7 seconds?

YES: Go to next check.

NO: See an authorized John Deere dealer.

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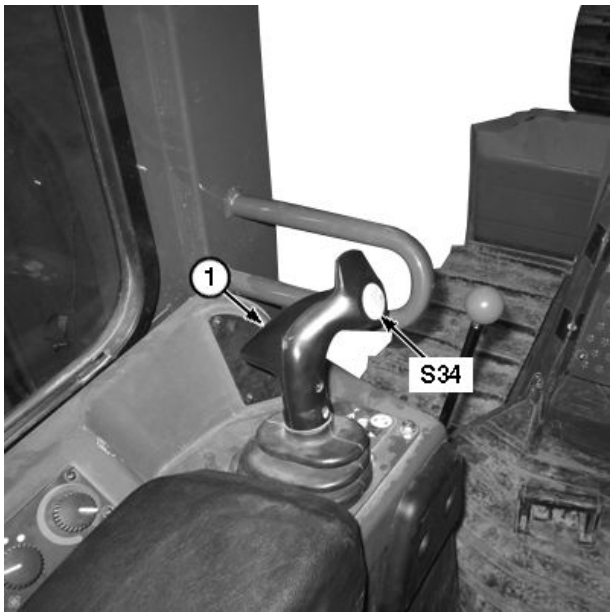
CN93077,0000476 -19-22JUN17-45/59

Park Brake Valve Leakage Check	Warm hydrostatic oil. Adjust engine speed control to slow idle with park lock levers in the LOCKED (up) position. Observe charge pressure reading on standard display monitor (SDM). See Diagnostics—Transmission Readings, SDM. (Section 2-3.) *LOOK: Does pressure drop as park lock levers are moved to UNLOCKED (down) position, then return to original value?* Fully depress decelerator/brake pedal, then release. *LOOK: Does pressure drop as decelerator/brake pedal is released, then return to original value?*	**YES:** Go to next step in this check. **NO:** Pressure value does not return to original value. Isolate park brakes and brake valve to locate leakage. See an authorized John Deere dealer.
	LOOK: Do tracks creep or move with park lock levers in UNLOCKED (down) position?	**YES:** Tracks move in neutral. Inspect park brake valve. See an authorized John Deere dealer. **NO:** Go to next check.

Continued on next page

CN93077,0000476 -19-22JUN17-46/59

Transmission Control Lever (TCL) Check



TX1180167A —UN—09DEC14

Transmission Control Lever (TCL)

1— Transmission Control Lever (TCL)
S34— Transmission Speed Control Switch

CAUTION: Prevent possible injury from machine movement. Make sure there is adequate room and be aware of bystanders.

Set transmission speed to 2.0.

Set engine speed to specification.

Specification

Engine—Speed.....1500 rpm

Move transmission control lever (TCL) (1) from neutral to forward, neutral to reverse, and then forward to reverse.

LOOK: Does machine operate smoothly in forward and reverse?

YES: Go to next check.

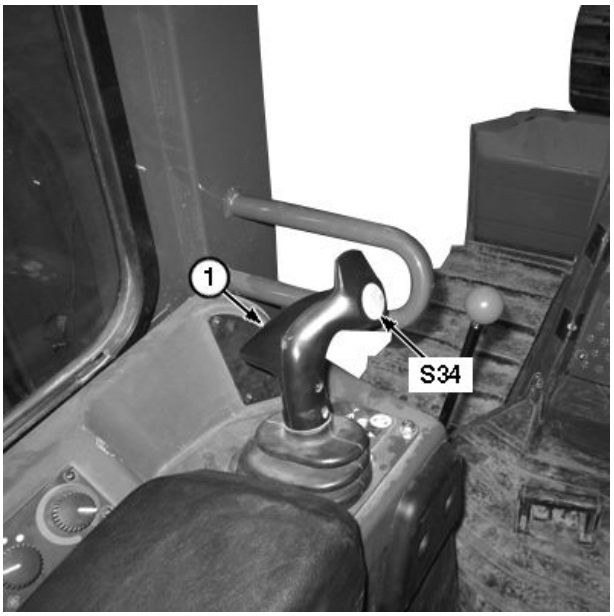
NO: See an authorized John Deere dealer.

NOTE: Transmission control lever shift rate can be set to operator preference. Low has a slower reaction time and high has a quicker reaction time. See Setup—Preferences, SDM. (Section 2-3.)

Continued on next page

CN93077,0000476 -19-22JUN17-47/59

Transmission Control Lever (TCL) Speed Change Check



TX1180167A —UN—09DEC14

Transmission Control Lever (TCL)

1— Transmission Control Lever (TCL)
S34— Transmission Speed Control Switch

CAUTION: Prevent possible injury from machine movement. Make sure there is adequate room and be aware of bystanders.

Run engine at fast idle with blade raised.

Move park lock levers to UNLOCKED (down) position.

Move transmission control lever (TCL) (1) to forward and drive machine.

Move TCL to neutral.

Move TCL to reverse and drive machine.

Move TCL to neutral.

LOOK/FEEL: Does TCL stay in selected position in forward, neutral, and reverse?

YES: Go to next step in this check.

NO: See an authorized John Deere dealer.

Move transmission control lever (TCL) (1) to forward and drive machine.

Press top button of transmission speed control switch (S34) to increase speed.

Press bottom button of transmission speed control switch to decrease speed.

LOOK/FEEL: Does machine move faster or slower when speed control buttons are pressed?

YES: Go to next check.

NO: See an authorized John Deere dealer.

Continued on next page

CN93077,0000476 -19-22JUN17-48/59

Decelerator/Brake Pedal and Park Brake Check	**CAUTION: Prevent possible injury from machine movement. Perform this check in an open area away from other people and machinery.** **CAUTION: Prevent possible injury from sudden machine stops. Wear seat belt while operating machine.** Fasten seat belt. Move park lock levers to UNLOCKED (down) position. Depress decelerator/brake pedal until spring resistance is felt. Adjust engine speed to fast idle and transmission speed to 3.0. Move transmission control lever to forward position. Release decelerator/brake pedal. *LOOK: Does machine accelerate smoothly to maximum speed?* *NOTE: Decelerator/brake response time can be set to operator preference. See Setup—Preferences, SDM. (Section 2-3.)*	**YES:** Go to next check. **NO:** Adjust decelerator/brake pedal. See an authorized John Deere dealer.

Continued on next page

CN93077,0000476 -19-22JUN17-49/59

Decelerator Mode Check



TX1180478A —UN—11DEC14

Decelerator Mode Switch

1— Decelerator Mode Switch
2— LED

NOTE: Decelerator mode switch has two settings. Engine mode will both slow engine and reduce machine ground speed. Transmission mode will reduce machine ground speed but will not slow engine speed.

Engine Mode

Run engine at slow idle.

Depress decelerator/brake pedal.

CAUTION: Prevent possible injury from machine movement. Perform this check in an open area away from other people and machinery.

Move park lock levers to UNLOCKED (down) position.

Press decelerator mode switch (1) to enable engine mode (LED off).

Move transmission control lever (TCL) to forward.

Increase engine to fast idle.

Slowly release decelerator/brake pedal.

LOOK: Does engine speed increase as machine speed increases?

LOOK: Is LED (2) off?

Transmission Mode

Run engine at slow idle.

Depress decelerator/brake pedal.

CAUTION: Prevent possible injury from machine movement. Perform this check in an open area away from other people and machinery.

Move park lock levers to UNLOCKED (down) position.

Press decelerator mode switch to enable transmission mode (LED on).

Move TCL to forward.

Increase engine to fast idle.

Slowly release decelerator/brake pedal.

Continued on next page

CN93077,0000476 -19-22JUN17-50/59

	LOOK: Does engine speed remain the same as machine speed increases? *LOOK: Does LED illuminate?*	**YES:** Go to next check. **NO:** See an authorized John Deere dealer.

CN93077,0000476 -19-22JUN17-51/59

Tracking and Maximum Speed Check



TX1180478A —UN—11DEC14

Decelerator Mode Switch

1— Decelerator Mode Switch
2— LED

NOTE: Track sag must be at specification and machine must be driven on a level surface for all tracking checks.

Press decelerator mode switch (1) to enable engine mode (LED off).

Operate engine at fast idle.

Set transmission speed to 3.0.

Depress decelerator/brake pedal fully.

Move park lock levers to UNLOCKED (down) position.

Move TCL to forward.

Slowly increase engine speed from slow to fast idle by slowly raising the decelerator/brake pedal.

Depress decelerator/brake pedal fully.

Move TCL to reverse.

Slowly increase engine speed from slow to fast idle by slowly raising the decelerator/brake pedal.

LISTEN/LOOK: Does machine speed increase as engine speed increases? *LISTEN/LOOK: Does machine reach full speed at high idle?*	**YES:** Go to next step in this check. **NO:** See an authorized John Deere dealer.
FEEL/LOOK: Is tracking straight at all speeds?	**YES:** Go to next check. **NO:** See an authorized John Deere dealer.

Continued on next page

CN93077,0000476 -19-22JUN17-52/59

Reverse Ratio Check



TX1180479A —UN—11DEC14

Reverse Ratio Switch

1— Reverse Ratio Switch
2— Left LED
3— Middle LED
4— Right LED

Run engine at fast idle.

NOTE: The reverse ratio has three settings. The left LED (2) is 100%, the left and middle LEDs (3) is 115%, and the left, middle, and right LEDs (4) is 130%.

Press reverse ratio switch (1) three times so left, right, and middle LEDs are illuminated.

Push transmission control lever (TCL) to forward.

Pull TCL to reverse.

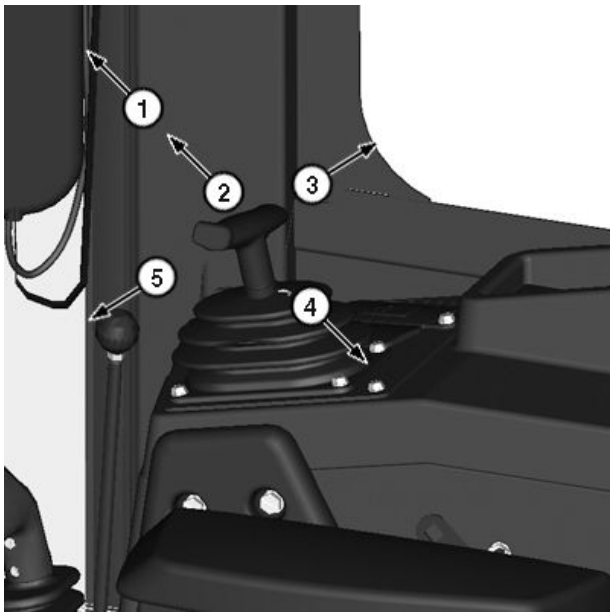
LOOK/FEEL: Does machine operate faster in reverse than forward?

YES: Go to next check.

NO: See an authorized John Deere dealer.

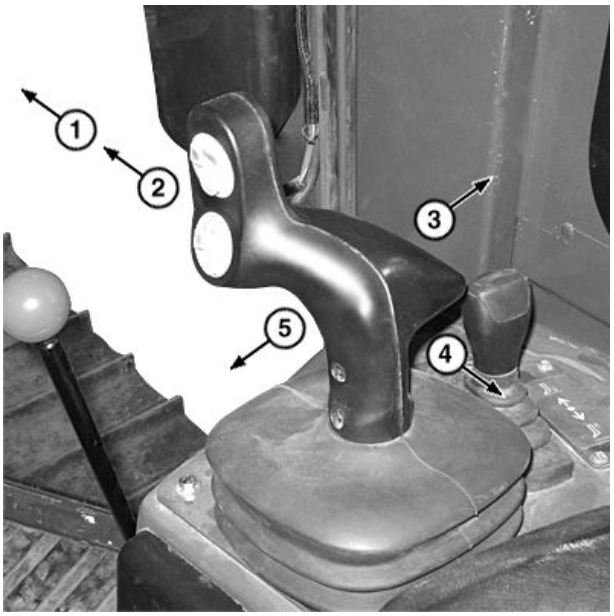
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CN93077,0000476 -19-22JUN17-53/59

Blade Control Lever and Hydraulic Controls Check (non IGC machines)	 TX1099746A —UN—04JAN12 *Blade Control Lever Functions* **1— Blade Float** **2— Blade Down** **3— Blade Tilt Right** **4— Blade Lift** **5— Blade Tilt Left** Operate engine at slow idle. Move control lever to positions (2—5) and release. *LOOK/FEEL: Does blade control lever move to all positions (2—5) easily and return to neutral when released?*	**YES:** Go to next step in this check. **NO:** See an authorized John Deere dealer.
	Operate engine at slow idle. Slowly move blade control lever to all positions except blade float detent. *LOOK/FEEL: Do all blade functions operate smoothly, without hesitation?*	**YES:** Go to next step in this check. **NO:** See an authorized John Deere dealer.
	Operate engine at slow idle. Raise front of machine off ground by fully lowering blade. Push blade control lever into float detent position. *LOOK: Does front of crawler lower to ground?* *LOOK/FEEL: Does blade control lever lock into blade float position?*	**YES:** Go to next check. **NO:** If front of crawler does not lower to ground, See an authorized John Deere dealer. If blade control lever does not lock into blade float position, See an authorized John Deere dealer.

Continued on next page

CN93077,0000476 -19-22JUN17-54/59

Blade Control Lever and Hydraulic Controls Check (IGC machines)	 TX1181042A —UN—17DEC14 *Blade Control Lever (BCL) Functions* **1— Blade Float** **2— Blade Down** **3— Blade Tilt Right** **4— Blade Lift** **5— Blade Tilt Left** Press hydraulic enable switch to locked position (LED off) to disable hydraulic controls. Move control lever to positions (2—5) and release. Move control lever to blade float (1) position. *LOOK/FEEL: Does blade control lever move to all positions (1—5) easily and return to neutral when released?*	**YES:** Go to next step in this check. **NO:** If blade control lever does not operate smoothly, See an authorized John Deere dealer.
	Operate engine at slow idle. Press hydraulic enable switch to unlocked position (LED on). Slowly move blade control lever to all positions except blade float detent. *LOOK/FEEL: Do all blade functions operate smoothly, without hesitation?*	**YES:** Go to next step in this check. **NO:** See an authorized John Deere dealer.
	Operate engine at slow idle. Raise front of machine off ground by fully lowering blade. Push blade control lever into float detent position. *LOOK: Does front of crawler lower to ground?* *LOOK/FEEL: Does blade control lever return to neutral but blade float remains activated?*	**YES:** Go to next check. **NO:** See an authorized John Deere dealer.

Continued on next page

CN93077,0000476 -19-22JUN17-55/59

Cycle Time Check

NOTE: Procedure must be performed on level surface.

Use the SDM or Service ADVISOR™ diagnostic application to read engine speed and hydraulic oil temperature.

Specification

Hydraulic Oil—Temperature	57—66°C (135—150°F)
Engine—Speed	Fast Idle
Blade Raise—Cycle Time	2.3 sec.
Blade Power Down—Cycle Time	2.7 sec.
Blade Tilt Left—Cycle Time	1.3 sec.
Blade Tilt Right—Cycle Time	1.5 sec.
Blade Angle (IGC)—Left —Cycle Time	3.0 sec.
Blade Angle (IGC)—Right—Cycle Time	3.1 sec.

Are cycle times at or below specifications?

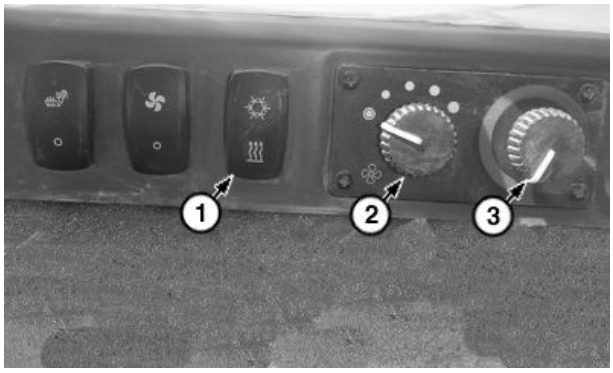
YES: Go to next check.

NO: See an authorized John Deere dealer.

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CN93077,0000476 -19-22JUN17-56/59

Air Conditioner Check



TX1169032 —UN—13AUG14

Temperature Controls

1— Air Conditioner Switch
2— Blower Control Dial
3— Temperature Control Dial

Operate engine at fast idle.

Press air conditioner switch (1) to ON position.

Turn blower control dial (2) to maximum and temperature control dial (3) to cold position.

Wait for any warm air in duct system to dissipate.

FEEL: Is air from ducts cool?

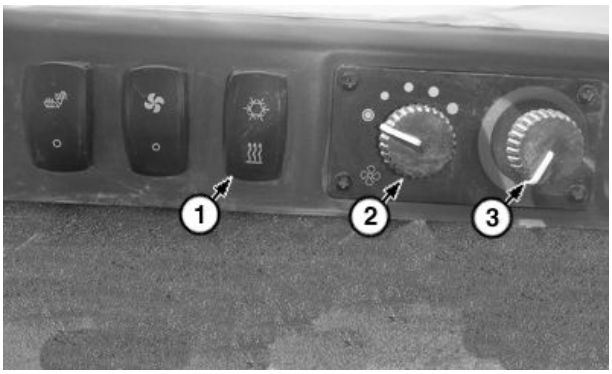
YES: Go to next check.

NO: See an authorized John Deere dealer.

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CN93077,0000476 -19-22JUN17-57/59

Heater Blower Motor Check



TX1169032 —UN—13AUG14

Temperature Controls

1— Air Conditioner Switch
2— Blower Control Dial
3— Temperature Control Dial

Turn blower motor control dial (2) to maximum and temperature control dial (3) to hot position.

FEEL: Is air from ducts warm?

YES: Go to next check.

FEEL: Does air exit all ducts from roof?

NO: See an authorized John Deere dealer.

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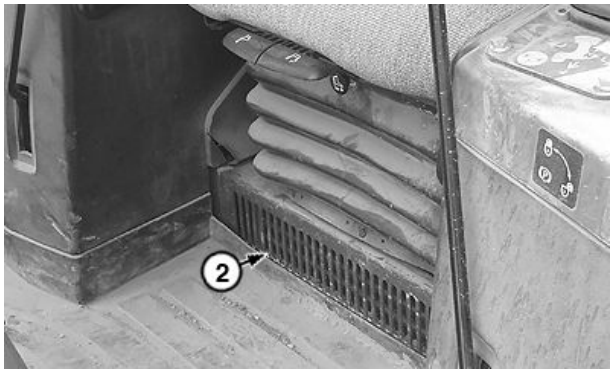
CN93077,0000476 -19-22JUN17-58/59

Under Seat Heater Check



TX1169034 —UN—13AUG14

Under Seat Heater Switch



TX1169035 —UN—13AUG14

Under Seat Heater Vent

1— Under Seat Heater Switch
2— Under Seat Heater Vent

Press under seat heater switch (1) to ON position.

FEEL: Does warm air exit from under seat heater?

YES: Operational checkout is complete.

NO: See an authorized John Deere dealer.

CN93077,0000476 -19-22JUN17-59/59

Troubleshooting Procedure

NOTE: Troubleshooting charts are arranged from the simplest to verify, to least likely, more difficult to verify. When diagnosing a problem, use all possible means to isolate the problem to a single component or system. Use the following steps to diagnose problems:

Step 1. Operational Checkout Procedure

Step 2. Troubleshooting Charts

Step 3. Adjustments

Step 4. See your authorized John Deere dealer.

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

Engine

Symptom	Problem	Solution
Engine Will Not Crank	Park lock levers not in up (LOCKED) position	Move park lock levers to up (LOCKED) position.
	Battery cables making poor connection	Clean and tighten battery terminals.
	Battery disconnect switch is in the OFF position	Turn battery disconnect switch to the ON position. See Battery Disconnect Switch. (Section 2-2.)
	Starter	Repair or replace starter.
	Low battery power	Charge or replace battery.
Engine Cranks But Will Not Start Or Hard To Start	No fuel	Add correct fuel. Bleed air. See Bleed Fuel System. (Section 4-1.)
	Fuel shutoff valve is closed	Open fuel shutoff valve.
	Incorrect fuel	Drain fuel tank and refill with correct fuel.
	Fuel filters restricted	Replace filters. Bleed air.
	Water in fuel tank	Check, drain, and refill.
	Low battery power	Charge or replace battery.
	Slow cranking speed (poor electrical connection)	Clean and tighten battery and starter connections.
	Fuel filter not installed correctly	Install new filter and O-ring. Ensure proper O-ring seal. Bleed air.
Engine Knocks, Runs Irregularly, Or Stops	Contaminated fuel	Drain fuel tank. Change primary fuel filter. Bleed air. Add clean fuel.
	Air filters restricted or dirty	Replace filter elements. See Replace Primary and Secondary Engine Air Filter Elements. (Section 3-3.)
	Fuel filters restricted	Replace filters. Bleed air.
	Air in fuel system	Bleed air from fuel system. See Bleed Fuel System. (Section 4-1.)

Continued on next page

Symptom	Problem	Solution
	Fuel filter not installed correctly	Install new filter and O-ring. Ensure proper O-ring seal. Bleed air.
Engine Does Not Develop Full Power	Air filters restricted or dirty	Replace filter elements. See Replace Primary and Secondary Engine Air Filter Elements. (Section 3-3.)
	Fuel filters restricted	Replace filters. Bleed air.
	Incorrect fuel	Drain fuel tank and refill with correct fuel.
	Contaminated fuel	Drain fuel tank. Change primary fuel filter. Bleed air. Add clean fuel.
	Diesel exhaust fluid empty	Refill diesel exhaust fluid (DEF) tank. See Refilling Diesel Exhaust Fluid (DEF) Tank. (Section 3-1.)
	Fuel filter not installed correctly	Install new filter and O-ring. Ensure proper O-ring seal. Bleed air.
	Exhaust filter restricted	See your authorized dealer.
	Worn engine	See your authorized dealer.
Engine Emits Excessive White Exhaust Smoke	Cold engine	Run engine until warm. *NOTE: When starting engine in cold temperatures, it may take up to 2 minutes for white exhaust smoke to clear.*
	Incorrect fuel	Drain fuel tank and refill with correct fuel.
	Exhaust filter is cracked or damaged	See your authorized dealer.
Engine Emits Excessive Black or Gray Exhaust Smoke	Engine overloaded	Reduce load on engine.
	Incorrect fuel	Drain fuel tank and refill with correct fuel.
	Air filters restricted or dirty	Replace filter elements. See Replace Primary and Secondary Engine Air Filter Elements. (Section 3-3.)
	Exhaust filter is cracked or damaged	See your authorized dealer.

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Symptom	Problem	Solution
Engine Idles Poorly	Poor fuel quality	Drain fuel and replace with quality fuel of the proper grade.
	Air in fuel system	Bleed air from fuel system. See Bleed Fuel System. (Section 4-1.)
	Air filters restricted or dirty	Replace filter elements. See Replace Primary and Secondary Engine Air Filter Elements. (Section 3-3.)
	Fuel filters restricted	Replace filters. Bleed air.
	Exhaust filter restricted	See your authorized dealer.
	Fuel filter not installed correctly	Install new filter and O-ring. Ensure proper O-ring seal. Bleed air.
	Diesel exhaust fluid empty	Refill diesel exhaust fluid (DEF) tank. See Refilling Diesel Exhaust Fluid (DEF) Tank. (Section 3-1.)
Excessive Fuel Consumption	Engine overloaded	Reduce load on engine.
	Air filters restricted or dirty	Replace filter elements. See Replace Primary and Secondary Engine Air Filter Elements. (Section 3-3.)
	Poor fuel quality	Drain fuel and replace with quality fuel of the proper grade.
	Leaks in fuel supply system	Locate source of leak and repair as needed.
	Exhaust filter restricted	See your authorized dealer.
Engine Coolant Temperature Above Normal	Engine overloaded	Reduce load on engine.
	Air filters restricted or dirty	Replace filter elements. See Replace Primary and Secondary Engine Air Filter Elements. (Section 3-3.)
	Lack of coolant in cooling system	Fill cooling system to proper level.
	Radiator core dirty	Clean radiator as required.
	Engine overloaded	Reduce load on engine.
	Low crankcase oil level	Fill crankcase to proper oil level.

Continued on next page

CN93077,000050E -19-12DEC14-3/4

Symptom	Problem	Solution
	Loose surge tank cap	Secure cap properly.
Excessive Oil Consumption	Poor fuel quality	Drain fuel and replace with quality fuel of the proper grade.
	Air filters restricted or dirty	Replace filter elements. See Replace Primary and Secondary Engine Air Filter Elements. (Section 3-3.)
	Worn engine	See your authorized dealer.
Engine Oil Pressure Low	Low crankcase oil level	Fill crankcase to proper oil level.
	Excessive oil temperature	See your authorized dealer.
	Incorrect engine oil	Drain crankcase and refill with correct oil.
	Worn engine	See your authorized dealer.
Engine Oil Pressure High	Incorrect engine oil	Drain crankcase and refill with correct oil.

CN93077,000050E -19-12DEC14-4/4

Electrical System

Symptom	Problem	Solution
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-amp 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.

Continued on next page

Symptom	Problem	Solution
	Battery cables making poor connection	Clean and tighten battery terminals.
	Broken battery posts	Wiggle posts by hand. If posts wiggle or turn, replace batteries.
Noisy Alternator	Worn drive belt	Replace belt.
	Pulley misaligned	Adjust alternator mount.
	Alternator bearing	Loosen alternator belts. Turn pulley by hand. If any roughness is felt, repair alternator.
	Worn pulleys	Replace pulleys and belt.
Charging Indicator Light On, Engine Running	Loose or corroded electrical connections on battery, ground strap, starter, or alternator	Inspect, clean, or tighten electrical connections.
No Monitor Panel Indicators Or Gauges Work	Fuse	Check display unit unswitched power 10-amp fuse (F1) and display unit switched power 5-amp fuse (F11). Replace if necessary.

CN93077,000050F -19-12DEC14-2/2

Hydraulic System

Symptom	Problem	Solution
Slow Hydraulic Functions	Cold oil	Warm oil up to operating temperature by operating hydraulic functions.
	Incorrect oil	Use correct oil. See Drain and Refill Hydraulic System Oil and Replace Filters. (Section 3-9.)
	Slow engine speed	Check fast idle/slow idle.
	Air in oil	Use correct oil. See Drain and Refill Hydraulic System Oil and Replace Filters. (Section 3-9.)
	Low hydraulic oil level	Check hydraulic oil level. See Check Hydraulic/Hydrostatic System Oil Level. (Section 3-4.)
No Hydraulic Functions	Hydraulics not enabled (IGC machines only)	Press hydraulic enable switch on sealed switch module (SSM).
	Low hydraulic oil level	Check hydraulic oil level. See Check Hydraulic/Hydrostatic System Oil Level. (Section 3-4.)
Excessive Pump Noise	Low hydraulic oil level	Check hydraulic oil level. See Check Hydraulic/Hydrostatic System Oil Level. (Section 3-4.)
Hydraulic System Overheats	Low hydraulic oil level	Check hydraulic oil level. See Check Hydraulic/Hydrostatic System Oil Level. (Section 3-4.)
	Operator holding blade functions over relief (system relief valve opening) causing excessive heat in hydraulic system	Instruct operator on correct operation of machine.
	Restriction in hydraulic line	Inspect lines for kinks and dents. Check for internal restrictions by feeling for excessive heat.
	Restricted oil cooler air flow	Inspect and clean cooler cores. See Inspect and Clean Cooling Package. (Section 3-3.)

CN93077,0000515 -19-13JAN15-1/1

Hydrostatic Transmission System

Symptom	Problem	Solution
Transmission Oil Overheats	Low hydrostatic transmission oil level	Check hydrostatic transmission oil. See Check Hydraulic/Hydrostatic System Oil Level. (Section 3-4.)
	Restricted oil cooler air flow	Inspect and clean cooler cores. See Inspect and Clean Cooling Package. (Section 3-3.)
Machine Will Not Move	Park lock levers not in down (UNLOCKED) position	Move park lock levers to down (UNLOCKED) position.
	Park brake problem	See your authorized dealer.
	Low hydrostatic transmission oil level	Check hydrostatic transmission oil. See Check Hydraulic/Hydrostatic System Oil Level. (Section 3-4.)
Machine Mistracks	Left and right track sag not adjusted the same	Adjust track sag. See Check and Adjust Track Sag. (Section 3-3.)

CN93077,0000516 -19-09DEC14-1/1

Air Conditioning System

Symptom	Problem	Solution
Air Conditioner Does Not Cool Interior of Cab	Restricted fresh air filter	Check and clean filter. See Inspect and Replace Cab Fresh Air and Recirculation Filter Elements. (Section 3-3.)
	Restricted recirculation air filter	Check and clean filter. See Inspect and Replace Cab Fresh Air and Recirculation Filter Elements. (Section 3-3.)
	Condenser fins clogged with debris	Clean condenser fins. See Inspect and Clean Cooling Package. (Section 3-3.)
	Compressor pulley worn	Replace pulley. See your authorized dealer.
	Refrigerant hose kinked, pinched, or collapsed	Reroute or re-index hoses, replace kinked or collapsed hoses.
	Heater or evaporator core fins clogged with dirt or dust	Clean heater or evaporator core fins.
	Blower motor malfunction or operating too slowly	Check motor speed. See your authorized dealer.
	Compressor clutch slipping or malfunction	Replace compressor. See your authorized dealer.
	Warm outside air leaking into cab	Inspect, repair, or replace door and window seals.
	Heater valve remaining open	Inspect electronic water valve. See your authorized dealer.
	System refrigerant (R134A) charge low	Inspect system for leaks.
	Evaporator fins frosting or freezing	See your authorized dealer.

Continued on next page

Symptom	Problem	Solution
Interior Windows Continue to Fog	Restricted fresh air filter	Check and clean filter. See Inspect and Replace Cab Fresh Air and Recirculation Filter Elements. (Section 3-3.)
	Air conditioning system off	Press and release air conditioner switch to turn ON air conditioner and place temperature control dial at midrange. See Heating and Air Conditioning System—If Equipped. (Section 2-1.)

CN93077,0000512 -19-16DEC14-2/2

Heater System

Symptom	Problem	Solution
Heater System Does Not Operate	Blower motor 15 A fuse (F21)	Replace fuse.
	Blower control dial	See your authorized dealer.
Heater Does Not Warm Interior Of Cab	Restricted fresh air filter	Check and clean filter. See Inspect and Replace Cab Fresh Air and Recirculation Filter Elements. (Section 3-3.)
	Restricted recirculation air filter	Check and clean filter. See Inspect and Replace Cab Fresh Air and Recirculation Filter Elements. (Section 3-3.)
	Heater hose kinked, pinched, or collapsed	Reroute or re-index hoses, replace collapsed hoses.
	Restricted heater core	See your authorized dealer.
	Heater valve remaining closed	Inspect electronic water valve. See your authorized dealer.
	Temperature control dial malfunction	See your authorized dealer.
Interior Windows Continue To Fog	Restricted fresh air filter	Check and clean filter. See Inspect and Replace Cab Fresh Air and Recirculation Filter Elements. (Section 3-3.)
	Air conditioning system off	Press and release air conditioner switch to turn ON air conditioner and place temperature control dial at midrange. See Heating and Air Conditioning System—If Equipped. (Section 2-1.)

CN93077,0000513 -19-16DEC14-1/1

Software Update

Symptom	Problem	Solution
Service ADVISOR™ Remote (SAR) Updates Not Operating Properly	Software updates not operating properly	Follow screen instructions on the display monitor. If problem persists, see an authorized John Deere dealer.

Service ADVISOR is a trademark of Deere & Company

OUT4001,00006CA -19-19MAY15-1/1

Prepare Machine for Storage

IMPORTANT: Avoid machine damage. Do not use biodiesel during machine storage. When using biodiesel blends, switch to petroleum diesel for long-term storage.

1. Before storage, operate engine on at least one complete tank of petroleum diesel fuel to purge the fuel system. Ensure that the fuel tank is full during storage to prevent water buildup due to condensation.

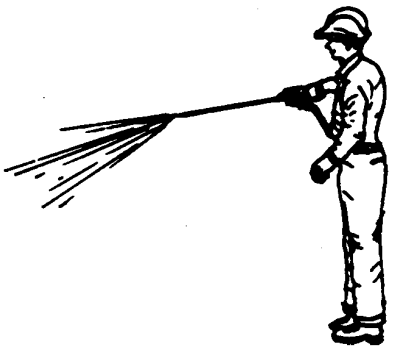
NOTE: For blends up to and including B20, it is recommended that biodiesel be used within 3 months of its manufacture. For blends greater than B20, it is recommended that the biodiesel be used within 45 days. The poor oxidation stability characteristic of biodiesel can result in long-term storage problems. John Deere does not recommend using biodiesel in engines powering standby applications or vehicles operating on a seasonal basis. Consult an authorized John Deere dealer or fuel supplier for additives to improve fuel storage and performance of biodiesel fuels. These additives must be added to the biodiesel close to its time of production for them to be effective.

2. Repair worn or damaged parts. Install new parts, if necessary, to avoid needless delays later.
3. Replace air cleaner elements.

IMPORTANT: High-pressure washing greater than 1379 kPa (13.8 bar) (200 psi) can damage freshly painted finishes. Paint should be allowed to air dry for 30 days minimum after receipt of machine before cleaning parts or machines with high pressure. Use low-pressure wash operations until 30 days have elapsed.

4. Wash the machine. Use low-pressure wash operations (less than 1379 kPa [13.8 bar] [200 psi]) until 30 days after receipt of machine have elapsed. Paint areas to prevent rust. Replace decals, where needed.
5. Apply oil to track chains. Run machine back and forth several times. Park machine on a hard surface to prevent tracks from freezing to ground.

LPS 3 Rust Inhibitor is a trademark of Illinois Tool Works



T5813AM —UN—09FEB89

Prepare Machine for Storage

6. Store machine in a dry, protected place. If stored outside, cover with a waterproof material.

IMPORTANT: LPS 3® Rust Inhibitor can destroy painted finish. DO NOT spray LPS 3 Rust Inhibitor on painted areas.

7. Retract all hydraulic cylinders, if possible. If not, coat exposed cylinder rods with LPS 3 Rust Inhibitor.
8. Place a DO NOT OPERATE tag on the right pilot control lever.
9. Lubricate all grease points.

NOTE: If the batteries are kept disconnected for more than 1 month or when the batteries are reconnected, contact an authorized John Deere dealer. Resetting of the monitor may be required.

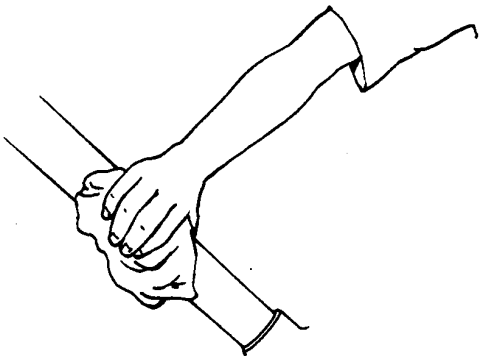
10. Turn battery disconnect switch to the OFF position. See Battery Disconnect Switch. (Section 2-2.)
11. Remove the batteries and store in a dry, protected place after charging fully. If not removed, disconnect the negative battery cable from the (-) terminal.
12. Add a fuel stabilizer additive and top off fuel tank with fuel to prevent condensation.
13. Drain water separator.
14. Remove keys and lock all covers and doors.

CN93077,0000374 -19-19OCT16-1/1

Monthly Storage Procedure

CAUTION: Prevent possible injury or death from asphyxiation. Engine exhaust fumes can cause sickness or death. Start engine ONLY in a well-ventilated area.

1. Drain water and sediment from fuel tank when air temperature is above freezing.
2. Remove LPS 3® Rust Inhibitor from cylinder rods with a cleaning solvent.



Clean Cylinder Rods

T6191AA —UN—18OCT88

LPS 3 Rust Inhibitor is a trademark of Illinois Tool Works.

VD76477,0000003 -19-04JAN13-1/2

IMPORTANT: Prevent possible engine damage. During cold temperatures, check fluidity of engine oil on dipstick. If the oil appears waxy and/or jelly-like rather than liquid, DO NOT attempt to start engine. Use external heat source to warm the crankcase until oil appears fluid.

3. Check all fluid levels. If low, check for leaks and add oil as required.
4. Check belts.
5. Check condition of all hoses and connections.
6. Check battery electrolyte level. Charge and install battery.
7. For machines with **tires**, check condition of tires and tire pressure.

   For machines with **tracks**, check condition of tracks and track sag.

   On crawler machines with non sealed-and-lubricated track chains, apply oil to the pin-to-bushing joints. Run machine back and forth several times.
8. Park machine on a hard surface to prevent tracks from freezing to ground.
9. Fill fuel tank.
10. Pre-lubricate turbocharger bearings, if equipped:

    a. Disconnect fuel shutoff fuse.

    b. Crank engine for 10 seconds.

    c. Connect fuel shutoff fuse.
11. Inspect engine compartment, and remove any foreign material that may have accumulated. Start engine and run until it reaches operating temperature. Run at 1/2 speed for 5 minutes. Do not run at fast or slow idle.

    - If engine does not start or runs poorly after starting, change fuel filters. Bleed fuel system.
12. Operate all controls, levers, seat adjustments, etc.



Check Oil on Dipstick

T6181AU —UN—18OCT88

CAUTION: Prevent possible injury from unexpected machine movement. Clear the area of all persons before running machine through the operation procedure.

13. Make sure the area is clear to allow for movement. Cycle all hydraulic functions several times. Check condition of all hoses and connections.
14. Park the machine with cylinder rods retracted, if possible. Shut engine off.
15. Apply LPS 3 Rust Inhibitor to exposed cylinder rod areas.

VD76477,0000003 -19-04JAN13-2/2

Preparing Engine for Long-Term Storage

IMPORTANT: Any time the engine is not used for over six months, the following recommendations for storing it and removing it from storage helps to minimize corrosion and deterioration.

NOTE: The following storage preparations are used for long-term engine storage up to 1 year. After that, the engine should be started, warmed up, and retreated for an extended storage period.

1. Change engine oil and replace filter. Used oil does not give adequate protection. Add 30 mL of rust preventive oil to the engine crankcase for every 1 L of engine oil, or 1 oz of rust preventative oil per 1 qt of engine oil. This rust preventive oil should be an SAE 10 oil with 1%—4% morpholine or equivalent vapor corrosion inhibitor, such as NOX RUST VCI-10 OIL from Daubert Chemical Company, Inc.
2. Replace air cleaner.
3. Draining and flushing of cooling system is not necessary if the engine is only stored for less than one year. However, for extended storage periods of a year or longer, it is recommended that the cooling system be drained, flushed, and refilled. Refill with appropriate coolant. See Diesel Engine Coolant (engine with wet sleeve cylinder liners). (Section 3-1.)
4. Prepare a solution of diesel fuel and rust preventive oil in a temporary container, add 78 mL of rust preventive oil per 1 L of diesel fuel, 10 oz of rust preventive oil per 1 gal of diesel fuel.
5. Remove existing lines and plugs as required. Run a temporary line from the temporary container to the engine fuel intake before the fuel filters, and another temporary line from the fuel return to the temporary container, so rust preventive oil solution is circulated through the injection system during cranking.

IMPORTANT: DO NOT operate starter more than 30 seconds at a time. Wait at least 2 minutes for starter to cool before trying again.

6. Crank the engine several revolutions with starter to allow rust preventive oil solution to circulate. Do not allow the engine to start.

   See an authorized John Deere dealer for the proper procedure for your application.
7. Remove temporary lines installed in Step 5 above, and replace any lines or plugs previously removed.
8. Loosen (or remove) and store fan and alternator poly-vee belt.
9. Remove and clean batteries. Store them in a cool, dry place and keep them fully charged.
10. Disengage the clutch for any driveline.
11. For extended storage periods of a year or longer, drain or siphon DEF fluid from DEF tank.
12. Clean the exterior of the engine with salt-free water and touch up any scratched or chipped painted surfaces with a good quality paint.
13. Coat all exposed bare metal surfaces with grease or corrosion inhibitor if not feasible to paint.
14. Seal all openings on engine with plastic bags and tape.
15. Store the engine in a dry protected place. If engine must be stored outside, cover it with a waterproof canvas or other suitable protective material and use a strong, waterproof tape.

CN93077,000042D -19-10AUG15-1/1

Removing Engine From Long-Term Storage

NOTE: The following storage removal procedure is used for long-term engine storage up to 1 year. After that, the engine should be started, warmed up, and retreated for an extended storage period.

Refer to the appropriate section for detailed services listed below or have an authorized servicing dealer or engine distributor perform unfamiliar services.

1. Remove all protective coverings from engine. Unseal all openings in engine and remove covering from electrical systems.
2. Remove grease from all exposed metal surfaces.
3. Remove the batteries from storage. Install batteries (fully charged) and connect the terminals.
4. Install fan and alternator poly-vee belt, if removed.
5. Fill fuel tank.
6. If drained, fill DEF tank with new DEF.

   If not drained, DEF must pass visual, smell, and concentration checks before the engine can be ran. See Diesel Exhaust Fluid (DEF)—Use in Selective Catalytic Reduction (SCR) Equipped Engines. (Section 3-1.)
7. Perform all appropriate prestarting checks. See Inspect Machine Daily Before Starting. (Section 2-2.)

IMPORTANT: DO NOT operate starter more than 30 seconds at a time. Wait at least 2 minutes for starter to cool before trying again.

8. Crank engine for 20 seconds with starter. Do not allow the engine to start. Wait 2 minutes and crank engine an additional 20 seconds to assure bearing surfaces are adequately lubricated.

   See an authorized John Deere dealer for the proper procedure for your application.
9. Start engine and run at low idle and no load for 15 minutes.
10. Shut engine off. Change engine oil and replace filter.
11. Warm up engine and check all gauges before placing engine under load.
12. On the first day of operation after storage, check overall engine for leaks and check all gauges for correct operation.

NOTE: If using BioDiesel blends after long-term storage, frequency of fuel filter plugging can increase initially.

CN93077,000042E -19-28MAY15-1/1

Miscellaneous—Machine Numbers

Record Product Identification Number (PIN)

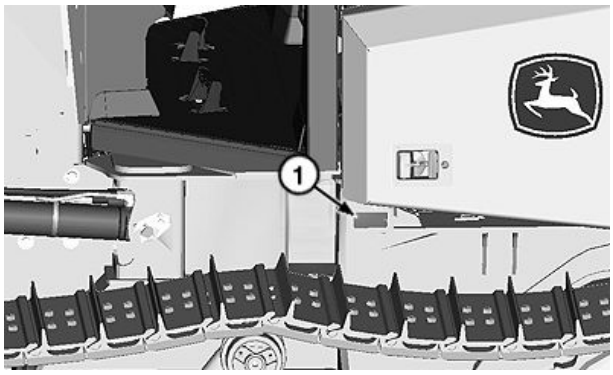
Purchase Date

Product Identification Number (PIN)

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

The PIN plate (1) is located on the left side of the machine, above the center of the tracks.

1— PIN Plate



TX1187692 —UN—11MAR15

Product Identification Number (PIN) Plate (650K shown)

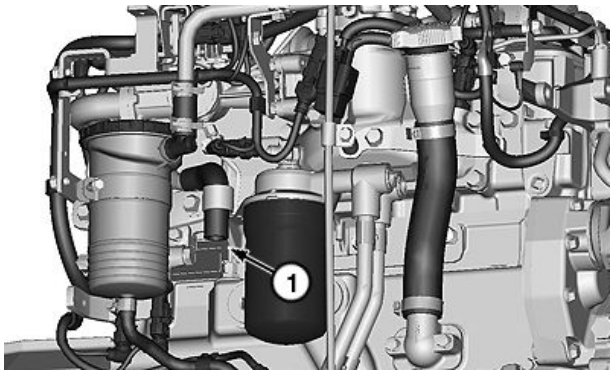
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Record Engine Serial Number

Engine Serial Number

The engine serial number plate (1) is located on the right side of the engine.

1— Engine Serial Number Plate



TX1179975 —UN—05DEC14

Engine Serial Number Plate

CN93077,000045C -19-05DEC14-1/1

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

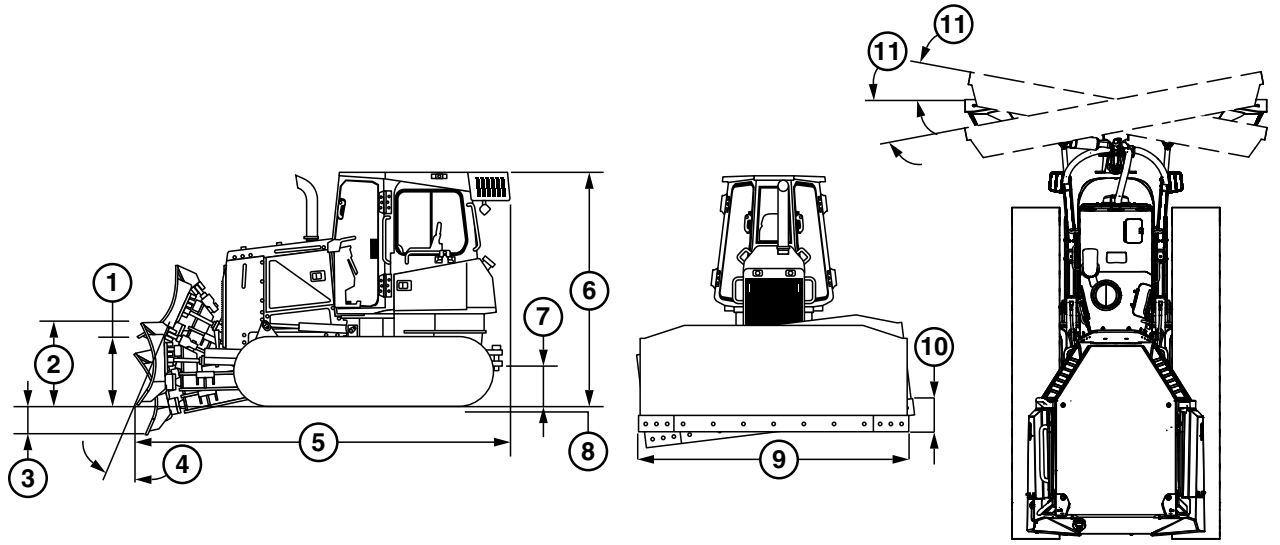
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Keep Machines Secure

1. Install vandal-proof devices.
2. When machine is in storage:
   - Lower equipment to the ground
   - Set wheels to widest position to make loading more difficult
   - Remove batteries
3. When parking indoors, put large equipment in front of exits and lock your storage buildings.
4. When parking outdoors, store in a well-lighted and fenced area.
5. Make note of suspicious activity and report any thefts immediately to law enforcement agencies.
6. Notify your John Deere dealer of any losses.

OUT4001,000063D -19-21JUN10-1/1

550K XLT Crawler Dozer Dimensions



TX1180566 —UN—12DEC14

TX1180566

Crawler Dozer Dimensions

NOTE: Specifications and design are subject to change without notice. Whenever applicable, specifications are in accordance with ISO and SAE standards. Except where otherwise noted, these specifications are based on a unit with roll-over protective structure (ROPS), full fuel tank, 79 kg (175 lb.) operator, 457 mm (18 in.) track shoes, and standard equipment.

Item	Measurement	Specification
1—Blade Lift Height	Length	772 mm 2 ft. 6 in.
2—Blade Height		
105-in. Blade	Height	955 mm 3 ft. 2 in.
115-in. Blade	Height	955 mm 3 ft. 2 in.
3—Blade Digging Depth	Length	523 mm 1 ft. 8 in.
4—Blade Cutting Edge Angle, Adjustable	Angle	52—60°
5—Overall Length With Standard Drawbar	Length	4128 mm 13 ft. 7 in.
5—Overall Length With Extended Drawbar	Length	4221 mm 13 ft. 10 in.
5—Overall Length With Winch and Fairland Rollers	Length	4807 mm 15 ft. 9 in.
6—Overall Height to Roof—ROPS or Cab	Height	2747 mm 9 ft. 0 in.

Continued on next page

CN93077,0000441 -19-17DEC14-1/2

Item	Measurement	Specification
7—Ground Clearance in Dirt	Depth	389 mm 1 ft. 3 in.
8—Tread Depth With Single-Bar Grouser	Depth	49 mm 0 ft. 2 in.
9—Blade Width		
105-in. Blade	Width	2667 mm 8 ft. 9 in.
115-in. Blade	Width	2921 mm 9 ft. 7 in.
10—Blade Tilt (uses tilt jack)		
105-in. Blade	Length	363 mm 1 ft. 2 in.
115-in. Blade	Length	399 mm 1 ft. 4 in.
11—Blade Angle	Angle	22.2°
Cast Reach		
105-in. Blade	Length	345 mm 1 ft. 2 in.
115-in. Blade	Length	465 mm 1 ft. 6 in.
Cut Reach		
105-in. Blade	Length	117 mm 0 ft. 5 in.
115-in. Blade	Length	234 mm 0 ft. 9 in.
Overall Width With Blade Angled		
105-in. Blade	Width	2469 mm 8 ft. 1 in.
115-in. Blade	Width	2705 mm 8 ft. 11 in.
Width Over Track		
105-in. Blade	Length	2007 mm 6 ft. 7 in.
115-in. Blade	Length	2007 mm 6 ft. 7 in.
SAE Capacity		
105-in. Blade	Capacity	1.8 cu. m 2.4 cu. yd.
115-in. Blade	Capacity	2.0 cu. m 2.6 cu. yd.

CN93077,0000441 -19-17DEC14-2/2

550K XLT Crawler Dozer Specifications

Item	Measurement	Specification
John Deere POWERTECH™ PWS 4045		
Engine	Type	Turbocharged With Charge Air Cooler
Bore and Stroke		106.5 x 127 mm 4.19 x 5.00 in.
Net Rated Power at 2200 rpm	Power	69 kW 92 hp.
Net Torque at 1400 rpm	Peak Torque	420 N·m 310 lb.-ft.
Displacement	Volume	4.5 L 275 cu. in.
Cylinders	Quantity	4
Batteries	Voltage	24 volt
Alternator—ROPS	Amperage	100-amp
Alternator—Cab	Amperage	100-amp
Transmission	Travel Speeds Forward and Reverse	0—8 km/h 0—5 mph
Hydraulic System	System Relieve Pressure	20 684 kPa 3000 psi
	Maximum Flow at Unloaded High Idle	80 L/min 21 gpm
Undercarriage		
Track Shoes (each side)	Quantity	42 (standard) 39 (maximum life)
Ground Contact Area With 457 mm (18 in.) Shoes	Area	21 479 sq. cm 3329 sq. in.
Track	Pitch	160 mm (standard) 6.3 in. (standard) 171 mm (maximum life) 6.7 in. (maximum life)
	Gauge	1549 mm 5 ft. 1 in.
Track Length on Ground	Length	2349 mm 7 ft. 8 in.
Ground Pressure	Pressure	39.9 kPa 0.4 bar 5.8 psi
Standard Grouser	Width	457 mm 1 ft. 6 in.

POWERTECH is a trademark of Deere & Company

CN93077,0000442 -19-18DEC14-1/1

550K XLT Crawler Dozer Weights

NOTE: Weights listed for optional equipment are not actual component weights.

SAE operating weight + optional equipment weights = total machine weight.

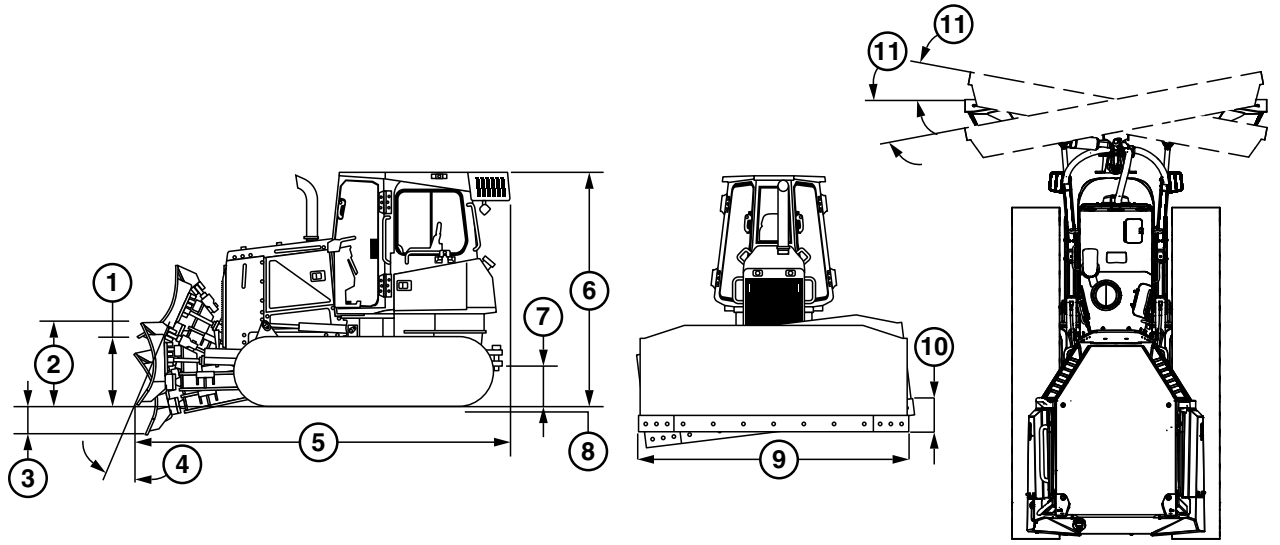
For example, to obtain machine weight with cab, add SAE operating weight and cab weight.

8908 kg + 306 kg = 9214 kg

Item	Measurement	Specification
SAE Operating Weight	Weight	8908 kg 19 642 lb.
Optional Equipment		
Cab With Pressurizer and Heater and Air Conditioner	Weight	306 kg 675 lb.
ROPS Canopy With Heater	Weight	39 kg 85 lb.
Front Counterweight	Weight	109 kg 240 lb.
Rear Counterweight	Weight	150 kg 330 lb.
C-Frame Assembly Without Blade	Weight	399 kg 879 lb.
105-in. Straight Blade	Weight	603 kg 1330 lb.
115-in. Straight Blade	Weight	628 kg 1385 lb.
Maximum Life Undercarriage	Weight	258 kg 569 lb.
Parallelogram Ripper	Weight	981 kg 2163 lb.
4000S Winch	Weight	652 kg 1437 lb.
Winch Fairlead, Four Roller	Weight	85 kg 187 lb.
Retrieval Hitch	Weight	23 kg 50 lb.
Extended Draw Bar	Weight	33 kg 72 lb.

CN93077,0000443 -19-16DEC14-1/1

550K LGP Crawler Dozer Dimensions



TX1180566

Crawler Dozer Dimensions

NOTE: Specifications and design are subject to change without notice. Whenever applicable, specifications are in accordance with ISO and SAE standards. Except where otherwise noted, these specifications are based on a unit with roll-over protective structure (ROPS), full fuel tank, 79 kg (175 lb.) operator, 610 mm (24 in.) track shoes, and standard equipment.

Item	Measurement	Specification
1—Blade Lift Height	Length	772 mm 2 ft. 6 in.
2—Blade Height		
115-in. Blade	Height	955 mm 3 ft. 2 in.
124-in. Blade	Height	894 mm 2 ft. 11 in.
3—Blade Digging Depth	Length	523 mm 1 ft. 9 in.
4—Blade Cutting Edge Angle, Adjustable	Angle	52—60°
5—Overall Length With Standard Drawbar	Length	4128 mm 13 ft. 7 in.
5—Overall Length With Extended Drawbar	Length	4221 mm 13 ft. 10 in.
5—Overall Length With Winch and Fairland Rollers	Length	4807 mm 15 ft. 9 in.
6—Overall Height to Roof—ROPS or Cab	Height	2747 mm 9 ft. 0 in.

Continued on next page

Item	Measurement	Specification
7—Ground Clearance in Dirt	Depth	389 mm 1 ft. 3 in.
8—Tread Depth With Single-Bar Grouser	Depth	49 mm 0 ft. 2 in.
9—Blade Width		
115-in. Blade	Width	2921 mm 9 ft. 7 in.
124-in. Blade	Width	3150 mm 10 ft. 4 in.
10—Blade Tilt (uses tilt jack)		
115-in. Blade	Length	399 mm 1 ft. 4 in.
124-in. Blade	Length	429 mm 1 ft. 5 in.
11—Blade Angle	Angle	22.2°
Cast Reach		
115-in. Blade	Length	287 mm 0 ft. 11 in.
124-in. Blade	Length	391 mm 1 ft. 3 in.
Cut Reach		
115-in. Blade	Length	56 mm 0 ft. 6 in.
124-in. Blade	Length	163 mm 0 ft. 5 in.
Overall Width With Blade Angled		
115-in. Blade	Width	2705 mm 8 ft. 11 in.
124-in. Blade	Width	2916 mm 9 ft. 7 in.
Width Over Track		
115-in. Blade	Length	2362 mm 7 ft. 9 in.
124-in. Blade	Length	2464 mm 8 ft. 1 in.
SAE Capacity		
115-in. Blade	Capacity	2.0 cu. m 2.6 cu. yd.
124-in. Blade	Capacity	1.9 cu. m 2.5 cu. yd.

CN93077,0000444 -19-17DEC14-2/2

550K LGP Crawler Dozer Specifications

Item	Measurement	Specification
John Deere POWERTECH™ PWS 4045		
Engine	Type	Turbocharged With Charge Air Cooler
Bore and Stroke		106.5 x 127 mm 4.19 x 5.00 in.
Net Rated Power at 2200 rpm	Power	69 kW 92 hp.
Net Torque at 1400 rpm	Peak Torque	420 N·m 310 lb.-ft.
Displacement	Volume	4.5 L 275 cu. in.
Cylinders	Quantity	4
Batteries	Voltage	24 volt
Alternator—ROPS	Amperage	100-amp
Alternator—Cab	Amperage	100-amp
Transmission	Travel Speeds Forward and Reverse	0—8 km/h 0—5 mph
Hydraulic System	System Relieve Pressure	20 684 kPa 3000 psi
	Maximum Flow at Unloaded High Idle	80 L/min 21 gpm
Undercarriage		
Track Shoes (each side)	Quantity	42 (standard) 39 (maximum life)
Ground Contact Area With 610 mm (24 in.) Shoes	Area	28 639 sq. cm 4439 sq. in.
Track	Pitch	160 mm (standard) 6.3 in. (standard) 171 mm (maximum life) 6.7 in. (maximum life)
	Gauge	1753 mm 5 ft. 9 in.
Track Length on Ground	Length	2349 mm 7 ft. 8 in.
Ground Pressure	Pressure	31.5 kPa 0.3 bar 4.6 psi
Standard Grouser	Width	610 mm 2 ft. 0 in.

POWERTECH is a trademark of Deere & Company

CN93077,0000445 -19-18DEC14-1/1

550K LGP Crawler Dozer Weights

NOTE: Weights listed for optional equipment are not actual component weights.

SAE operating weight + optional equipment weights = total machine weight.

For example, to obtain machine weight with cab, add SAE operating weight and cab weight.

9354 kg + 306 kg = 9660 kg

Item	Measurement	Specification
SAE Operating Weight	Weight	9354 kg 20 622 lb.
Optional Equipment		
Cab With Pressurizer and Heater and Air Conditioner	Weight	306 kg 675 lb.
ROPS Canopy With Heater	Weight	39 kg 85 lb.
Front Counterweight	Weight	109 kg 240 lb.
Rear Counterweight	Weight	150 kg 330 lb.
C-Frame Assembly Without Blade	Weight	399 kg 879 lb.
115-in. Straight Blade	Weight	628 kg 1385 lb.
124-in. Straight Blade	Weight	631 kg 1391 lb.
Maximum Life Undercarriage	Weight	258 kg 569 lb.
Parallelogram Ripper	Weight	981 kg 2163 lb.
4000S Winch	Weight	652 kg 1437 lb.
Winch Fairlead, Four Roller	Weight	85 kg 187 lb.
Retrieval Hitch	Weight	23 kg 50 lb.
Extended Draw Bar	Weight	33 kg 72 lb.

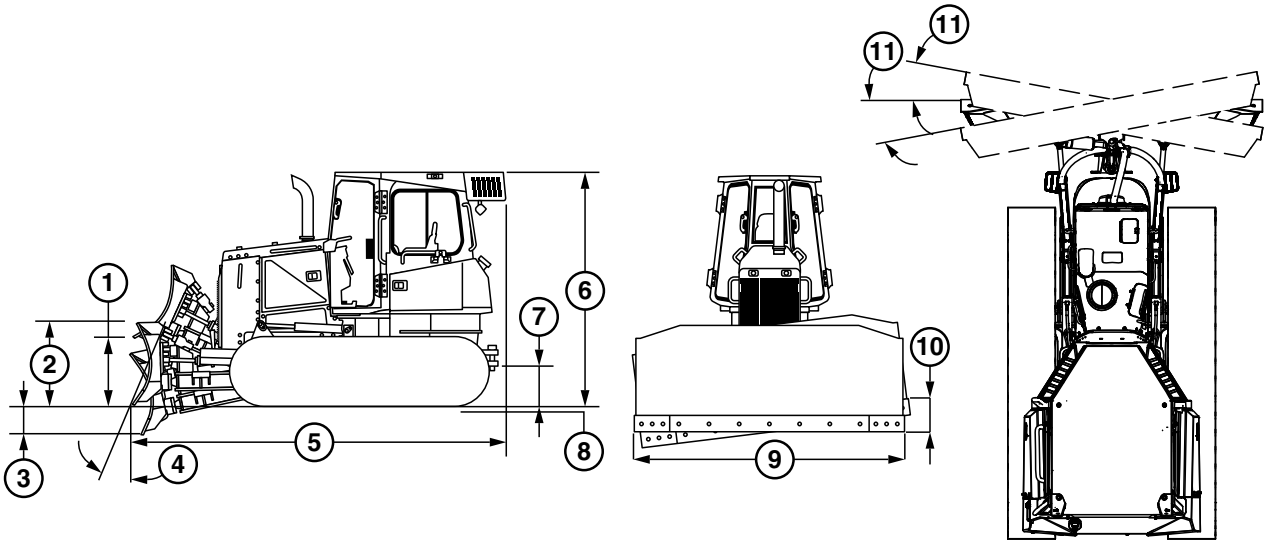
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550K XLT and 550K LGP Crawler Dozer Drain and Refill Capacities

Item	Measurement	Specification
Drain and Refill Capacities		
Cooling System With Recovery Tank	Capacity	22.6 L 6.0 gal
Fuel Tank	Capacity	234.0 L 61.9 gal
Diesel Exhaust Fluid (DEF) Tank	Capacity	11.8 L 3.1 gal
Engine Oil (including filter)	Capacity	15.1 L 4.0 gal
Final Drive	Capacity	8.5 L 2.3 gal
Hydraulic/Transmission Reservoir (including filters)	Capacity	87.8 L 23.2 gal
Winch Oil (if equipped)	Capacity	38.0 L 10.0 gal

CN93077,0000447 -19-18APR19-1/1

650K XLT Crawler Dozer Dimensions



TX1180566

Crawler Dozer Dimensions

NOTE: Specifications and design are subject to change without notice. Whenever applicable, specifications are in accordance with ISO and SAE standards. Except where otherwise noted, these specifications are based on a unit with roll-over protective structure (ROPS), full fuel tank, 79 kg (175 lb.) operator, 457 mm (18 in.) track shoes, and standard equipment.

Item	Measurement	Specification
1—Blade Lift Height	Length	818 mm 2 ft. 8 in.
2—Blade Height		
105-in. Blade	Height	1067 mm 3 ft. 6 in.
115-in. Blade	Height	955 mm 3 ft. 2 in.
124-in. Blade	Height	894 mm 2 ft. 11 in.
3—Blade Digging Depth	Length	500 mm 1 ft. 8 in.
4—Blade Cutting Edge Angle, Adjustable	Angle	52—60°
5—Overall Length With Standard Drawbar	Length	4179 mm 13 ft. 9 in.
5—Overall Length With Extended Drawbar	Length	4235 mm 13 ft. 11 in.
5—Overall Length With Winch and Fairland Rollers	Length	4807 mm 15 ft. 9 in.

Continued on next page

Item	Measurement	Specification
6—Overall Height to Roof—ROPS or Cab	Height	2758 mm 9 ft. 1 in.
7—Ground Clearance in Dirt	Depth	391 mm 1 ft. 3 in.
8—Tread Depth With Single-Bar Grouser	Depth	49 mm 0 ft. 2 in.
9—Blade Width		
105-in. Blade	Width	2667 mm 8 ft. 9 in.
115-in. Blade	Width	2921 mm 9 ft. 7 in.
124-in. Blade	Width	3150 mm 10 ft. 4 in.
10—Blade Tilt (uses tilt jack)		
105-in. Blade	Length	363 mm 1 ft. 2 in.
115-in. Blade	Length	399 mm 1 ft. 4 in.
124-in. Blade	Length	429 mm 1 ft. 5 in.
11—Blade Angle	Angle	22.2°
Cast Reach		
105-in. Blade	Length	345 mm 1 ft. 2 in.
115-in. Blade	Length	465 mm 1 ft. 6 in.
124-in. Blade	Length	569 mm 1 ft. 10 in.
Cut Reach		
105-in. Blade	Length	117 mm 0 ft. 5 in.
115-in. Blade	Length	233 mm 0 ft. 9 in.
124-in. Blade	Length	340 mm 1 ft. 1 in.
Overall Width With Blade Angled		
105-in. Blade	Width	2469 mm 8 ft. 1 in.
115-in. Blade	Width	2705 mm 8 ft. 11 in.
124-in. Blade	Width	2916 mm 9 ft. 7 in.
Width Over Track		
105-in. Blade	Length	2007 mm 6 ft. 7 in.

Continued on next page

CN93077,000044B -19-17DEC14-2/3

Item	Measurement	Specification
115-in. Blade	Length	2007 mm 6 ft. 7 in.
124-in. Blade	Length	2007 mm 6 ft. 7 in.
SAE Capacity		
105-in. Blade	Capacity	2.2 cu. m 2.9 cu. yd.
115-in. Blade	Capacity	2.0 cu. m 2.6 cu. yd.
124-in. Blade	Capacity	1.9 cu. m 2.5 cu. yd.

CN93077,000044B -19-17DEC14-3/3

650K XLT Crawler Dozer Specifications

Item	Measurement	Specification
John Deere POWERTECH™ PWS 4045		
Engine	Type	Turbocharged With Charge Air Cooler
Bore and Stroke		106.5 x 127 mm 4.19 x 5.00 in.
Net Rated Power at 2200 rpm	Power	78 kW 104 hp.
Net Torque at 1400 rpm	Peak Torque	475 N·m 350 lb.-ft.
Displacement	Volume	4.5 L 275 cu. in.
Cylinders	Quantity	4
Batteries	Voltage	24 volt
Alternator—ROPS	Amperage	100-amp
Alternator—Cab	Amperage	100-amp
Transmission	Travel Speeds Forward and Reverse	0—8 km/h 0—5 mph
Hydraulic System	System Relieve Pressure	20 684 kPa 3000 psi
	Maximum Flow at Unloaded High Idle	80 L/min 21 gpm
Undercarriage		
Track Shoes (each side)	Quantity	40
Ground Contact Area With 457 mm (18 in.) Shoes	Area	21 479 sq. cm 3329 sq. in.
Track	Pitch	171 mm 6.7 in.
	Gauge	1550 mm 5 ft. 1 in.
Track Length on Ground	Length	2349 mm 7 ft. 8 in.
Ground Pressure	Pressure	40.6 kPa 0.4 bar 5.9 psi
Standard Grouser	Width	457 mm 1 ft. 6 in.

POWERTECH is a trademark of Deere & Company

CN93077,000044C -19-18DEC14-1/1

650K XLT Crawler Dozer Weights

NOTE: Weights listed for optional equipment are not actual component weights.

SAE operating weight + optional equipment weights = total machine weight.

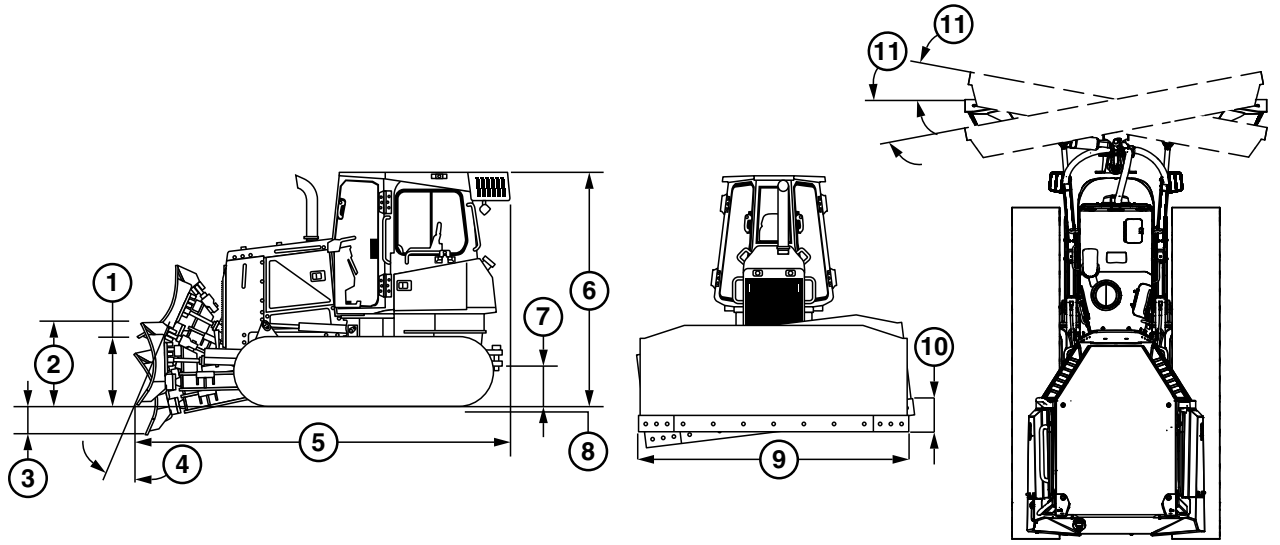
For example, to obtain machine weight with cab, add SAE operating weight and cab weight.

9049 kg + 306 kg = 9355 kg

Item	Measurement	Specification
SAE Operating Weight	Weight	9049 kg 19 949 lb.
Optional Equipment		
Cab With Pressurizer and Heater and Air Conditioner	Weight	306 kg 675 lb.
ROPS Canopy With Heater	Weight	39 kg 85 lb.
Front Counterweight	Weight	109 kg 240 lb.
Rear Counterweight	Weight	150 kg 330 lb.
C-Frame Assembly Without Blade	Weight	399 kg 879 lb.
105-in. Straight Blade	Weight	603 kg 1330 lb.
115-in. Straight Blade	Weight	628 kg 1385 lb.
124-in. Straight Blade	Weight	631 kg 1391 lb.
510 mm (20 in.) Track Shoes	Weight	83 kg 183 lb.
Maximum Life Undercarriage	Weight	182 kg 401 lb.
Parallelogram Ripper	Weight	981 kg 2163 lb.
4000S Winch	Weight	652 kg 1437 lb.
Winch Fairlead, Four Roller	Weight	85 kg 187 lb.
Retrieval Hitch	Weight	23 kg 50 lb.
Extended Rigid Draw Bar	Weight	33 kg 72 lb.

CN93077,000044D -19-16DEC14-1/1

650K LGP Crawler Dozer Dimensions



TX1180566

Crawler Dozer Dimensions

NOTE: Specifications and design are subject to change without notice. Whenever applicable, specifications are in accordance with ISO and SAE standards. Except where otherwise noted, these specifications are based on a unit with roll-over protective structure (ROPS), full fuel tank, 79 kg (175 lb.) operator, 710 mm (28 in.) track shoes, and standard equipment.

Item	Measurement	Specification
1—Blade Lift Height	Length	818 mm 2 ft. 8 in.
2—Blade Height		
115-in. Blade	Height	955 mm 3 ft. 2 in.
124-in. Blade	Height	894 mm 2 ft. 11 in.
128-in. Blade	Height	955 mm 3 ft. 2 in.
3—Blade Digging Depth	Length	500 mm 1 ft. 8 in.
4—Blade Cutting Edge Angle, Adjustable	Angle	52—60°
5—Overall Length With Standard Drawbar	Length	4179 mm 13 ft. 9 in.
5—Overall Length With Extended Drawbar	Length	4235 mm 13 ft. 11 in.
5—Overall Length With Winch and Fairland Rollers	Length	4807 mm 15 ft. 9 in.

Continued on next page

Item	Measurement	Specification
6—Overall Height to Roof—ROPS or Cab	Height	2758 mm 9 ft. 1 in.
7—Ground Clearance in Dirt	Depth	391 mm 1 ft. 3 in.
8—Tread Depth With Single-Bar Grouser	Depth	49 mm 0 ft. 2 in.
9—Blade Width		
115-in. Blade	Width	2921 mm 9 ft. 7 in.
124-in. Blade	Width	3150 mm 10 ft. 4 in.
128-in. Blade	Width	3251 mm 10 ft. 8 in.
10—Blade Tilt (uses tilt jack)		
115-in. Blade	Length	399 mm 1 ft. 4 in.
124-in. Blade	Length	429 mm 1 ft. 5 in.
128-in. Blade	Length	445 mm 1 ft. 6 in.
11—Blade Angle	Angle	22.2°
Cast Reach		
115-in. Blade	Length	236 mm 0 ft. 9 in.
124-in. Blade	Length	340 mm 1 ft. 1 in.
128-in. Blade	Length	569 mm 1 ft. 10 in.
Cut Reach		
115-in. Blade	Length	5 mm 0 ft. 0.2 in.
124-in. Blade	Length	112 mm 0 ft. 4 in.
128-in. Blade	Length	157 mm 0 ft. 6 in.
Overall Width With Blade Angled		
115-in. Blade	Width	2705 mm 8 ft. 11 in.
124-in. Blade	Width	2916 mm 9 ft. 7 in.
128-in. Blade	Width	3010 mm 9 ft. 11 in.
Width Over Track		
115-in. Blade	Length	2464 mm 8 ft. 1 in.

Continued on next page

Item	Measurement	Specification
124-in. Blade	Length	2464 mm 8 ft. 1 in.
128-in. Blade	Length	2464 mm 8 ft. 1 in.
SAE Capacity		
115-in. Blade	Capacity	2.0 cu. m 2.6 cu. yd.
124-in. Blade	Capacity	1.9 cu. m 2.5 cu. yd.
128-in. Blade	Capacity	2.2 cu. m 2.9 cu. yd.

CN93077,0000448 -19-17DEC14-3/3

650K LGP Crawler Dozer Specifications

Item	Measurement	Specification
John Deere POWERTECH™ PWS 4045		
Engine	Type	Turbocharged With Charge Air Cooler
Bore and Stroke		106.5 x 127 mm 4.19 x 5.00 in.
Net Rated Power at 2200 rpm	Power	78 kW 104 hp.
Net Torque at 1400 rpm	Peak Torque	475 N·m 350 lb.-ft.
Displacement	Volume	4.5 L 275 cu. in.
Cylinders	Quantity	4
Batteries	Voltage	24 volt
Alternator—ROPS	Amperage	100-amp
Alternator—Cab	Amperage	100-amp
Transmission	Travel Speeds Forward and Reverse	0—8 km/h 0—5 mph
Hydraulic System	System Relieve Pressure	20 684 kPa 3000 psi
	Maximum Flow at Unloaded High Idle	80 L/min 21 gpm
Undercarriage		
Track Shoes (each side)	Quantity	40
Ground Contact Area With 710 mm (28 in.) Shoes	Area	33 412 sq. cm 5179 sq. in.
Track	Pitch	171 mm 6.7 in.
	Gauge	1750 mm 5 ft. 9 in.
Track Length on Ground	Length	2349 mm 7 ft. 8 in.
Ground Pressure	Pressure	27.5 kPa 0.2 bar 3.98 psi
Standard Grouser	Width	711 mm 2 ft. 4 in.

POWERTECH is a trademark of Deere & Company

CN93077,0000449 -19-18DEC14-1/1

650K LGP Crawler Dozer Weights

NOTE: Weights listed for optional equipment are not actual component weights.

SAE operating weight + optional equipment weights = total machine weight.

For example, to obtain machine weight with cab, add SAE operating weight and cab weight.

9514 kg + 306 kg = 9820 kg

Item	Measurement	Specification
SAE Operating Weight	Weight	9514 kg 20 974 lb.
Optional Equipment		
Cab With Pressurizer and Heater and Air Conditioner	Weight	306 kg 675 lb.
ROPS Canopy With Heater	Weight	39 kg 85 lb.
Front Counterweight	Weight	109 kg 240 lb.
Rear Counterweight	Weight	150 kg 330 lb.
C-Frame Assembly Without Blade	Weight	399 kg 879 lb.
115-in. Straight Blade	Weight	628 kg 1385 lb.
124-in. Straight Blade	Weight	631 kg 1391 lb.
128-in. Straight Blade	Weight	694 kg 1530 lb.
510 mm (20 in.) Track Shoes	Weight	-344 kg -760 lb.
610 mm (24 in.) Track Shoes	Weight	-172 kg -380 lb.
Maximum Life Undercarriage	Weight	182 kg 401 lb.
Parallelogram Ripper	Weight	981 kg 2163 lb.
4000S Winch	Weight	652 kg 1437 lb.
Winch Fairlead, Four Roller	Weight	85 kg 187 lb.
Retrieval Hitch	Weight	23 kg 50 lb.
Extended Rigid Draw Bar	Weight	33 kg 72 lb.

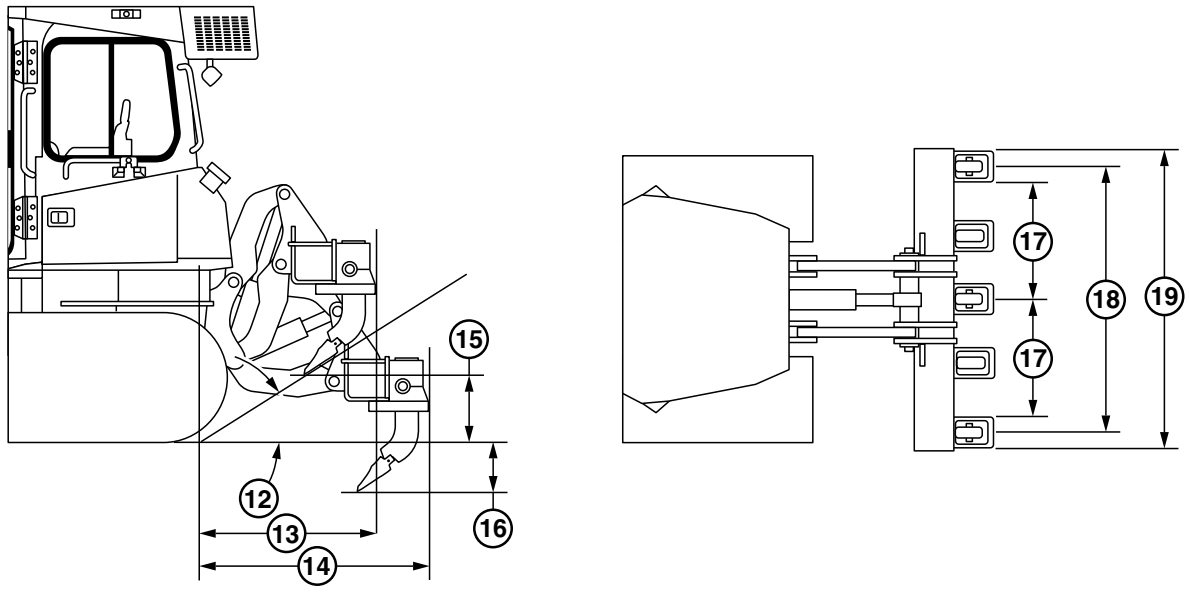
CN93077,000044A -19-16DEC14-1/1

650K XLT and 650K LGP Crawler Dozer Drain and Refill Capacities

Item	Measurement	Specification
Drain and Refill Capacities		
Cooling System With Recovery Tank	Capacity	22.6 L 6.0 gal
Fuel Tank	Capacity	234.0 L 61.9 gal
Diesel Exhaust Fluid (DEF) Tank	Capacity	11.8 L 3.1 gal
Engine Oil (including filter)	Capacity	15.1 L 4.0 gal
Final Drive	Capacity	8.5 L 2.3 gal
Hydraulic/Hydorstatic Reservoir (including filters)	Capacity	87.8 L 23.2 gal
Winch Oil (if equipped)	Capacity	38.0 L 10.0 gal

CN93077,000044E -19-18APR19-1/1

Parallelogram Ripper



TX1180634 —UN—12DEC14

TX1180634

Parallelogram Ripper

Parallelogram linkage with manual valve control and hydraulic float, tool bar, five ripper shanks.

Item	Measurement	Specification
12—Slope Angle (full raise)	Degrees	40°
13—Overall Length, Raised Position	Length	1015 mm 3 ft. 4 in.
14—Overall Length, Lowered Position	Length	1450 mm 4 ft. 9 in.
15—Maximum Clearance Under Tip	Clearance	508 mm 1 ft. 8 in.
16—Ripping Depth	Maximum Depth	508 mm 1 ft. 8 in.
17—Distance Between Shanks	Distance	806 mm 2 ft. 8 in.
18—Ripping Width	Width	1670 mm 5 ft. 6 in.
19—Overall Beam Width	Width	1830 mm 6 ft. 0 in.
Parallelogram Ripper	Weight	981 kg 2163 lb.

CN93077,000044F -19-11DEC14-1/1

4000S Winch

Maximum Cable Capacities	
Cable Size	**Winch Capacity**
15.88 mm (0.625 in.)	77.4 m (254 ft.)
19.05 mm (0.75 in.)	54.6 m (179 ft.)
22.23 mm (0.875 in.)	39.3 m (129 ft.)

CN93077,0000450 -19-11DEC14-1/1

Eurasian Economic Union

This information applies only to products which bear the EAC conformity mark of the Eurasian Economic Union member states.

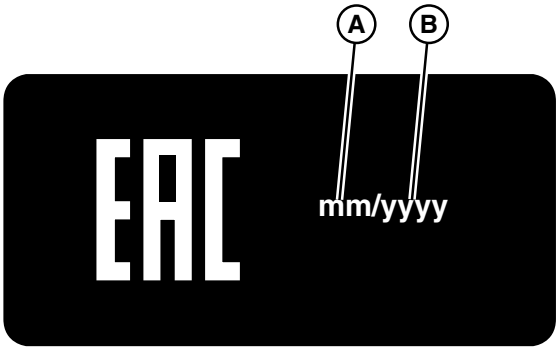
Manufacturer:
Deere & Company, Moline, Illinois U.S.A.

Name of the authorized representative in the Eurasian Economic Union:
Limited Liability Company
“John Deere Rus”

Address of the authorized representative:
142050, Russia, Moscow region, Domodedovo district, Domodedovo, Beliye Stolbi micro district, vladenye “Warehouse 104”, Building 2

For technical support, contact an authorized John Deere dealer.

Date of manufacture is denoted by the product marking on or near the serial number plate.



TX1252009 —UN—08FEB18

EAC Marking

A—Month of Manufacture **B—Year of Manufacture**

MB60223,0005008 -19-08FEB18-1/1

Machine Design Life

This machine is designed and manufactured to provide a long life of productive operation, however actual attainable life depends on a number of factors including the severity of working conditions and completion of recommended maintenance. (See the Service section of this manual.)

Periodically inspect and review the machine in conjunction with your John Deere dealer. The review may result in recommendations for service, component repair, remanufacture or replacement, or, if at the end of life, that the machine be removed from operation. (See separate decommissioning section of this manual for information on disposal and recycling of machine components.)

No machine should be operated if safety-related components are missing or in need of service. All missing or damaged safety-related components, including safety signs, should be repaired or replaced before operating.

DX,MACH,DESIGN,LIFE -19-14SEP15-1/1

Index

Page

A

Adjustment
Blade pitch 2-2-25
Blade pivot shim 3-7-8
Winch free spool drag 2-2-32
Aftertreatment system
Emergency SCR override 2-2-20
Air cleaner dust unloader valve
Check 3-3-6
Air conditioner check 4-2-40
Air conditioning system
Troubleshooting 4-3-10
Air filter restriction
Operational check 4-2-28
Air inlet cover 4-1-5
Air intake hoses
Check 3-8-4
Alternator
Operational check 4-2-26
Precautions 4-1-12
Antifreeze
Level 3-4-1
Attachments
Adding safely 1-3-5
Operating safely 1-3-5
Auto-idle
Switch 2-1-4
Auto-idle operation 2-2-9
Automatic belt tensioner
Check 3-3-2
Auxiliary control levers (if equipped) 2-1-7
Auxiliary fuel filter (if equipped)
Replace 3-7-3
Auxiliary fuel filter and water separator (if equipped)
Check and drain 3-3-3
Auxiliary power
Switch 2-1-4
Auxiliary power outlets 2-1-17
Avoid static electricity risk when fueling 1-2-6

B

Backover Accidents 1-3-3
Baffle
DEF
Replace 3-11-1
Diesel exhaust fluid (DEF)
Replace 3-11-1
Batteries
Using battery charger 4-1-14
Battery
Acid burns 3-7-6
Booster batteries 4-1-15
Clean and tighten 3-3-12
Disconnect switch 2-2-2

Page

Electrolyte level check 3-7-6
Explosion 3-7-6
Handling, checking, and servicing 4-1-13
Removal 4-1-16
Replacing 4-1-16
Terminals 3-7-6
Battery check 4-2-9
Battery disconnect switch check 4-2-9
Beacon light (if equipped)
Operation 2-1-20
Before starting work 2-2-1
Belt
Inspect 3-3-2
Operational check 4-2-5
Replace 3-3-2
Biodiesel fuel 3-1-3
Blade
Adjustment 3-7-8
Angling 2-2-24
Control lever check 4-2-39
Hydraulic controls check 4-2-38
Operation 2-2-24
Tilt 2-2-24
Blade control lever 2-1-6
Blade pitch
Manual blade pitch adjustment 2-2-25
Power pitch blade adjustment 2-2-25
Blade pivot shim adjustment 3-7-8
Blade release 2-2-15
Bleed fuel system 4-1-9
Bolt and screw torque values
Metric 4-1-23
Unified inch 4-1-22
Boost starting 4-1-15
Brake
Releasing park brake to tow the machine 2-2-35
Brake pedal check 4-2-34
Break-in engine oil
Interim tier 4, final tier 4, stage IIIB, stage IV, and stage V 3-1-9
Breather filter
Winch (if equipped) 3-8-2

C

Cab door
Operational check 4-2-8
Cab fresh air element
Inspect and replace 3-3-4
Replace 3-8-1
Cab interior light
Operational check 4-2-21
Cab recirculation filter element
Inspect and replace 3-3-4
Replace 3-8-1
Cab windows (if equipped) 2-1-19

Continued on next page

Page

Cab work light (if equipped)
Switch 2-1-4, 2-1-12
Cable specifications, winch 4-6-22
Cable, winch 2-2-29
Capacities
Drain and refill
550K LGP 4-6-9
550K XLT 4-6-9
650K LGP crawler dozer 4-6-20
650K XLT crawler dozer 4-6-20
Fuel tank 3-2-3
Carrier roller
Check oil level 4-1-19
CE Mark
Location 1-2-1
Charge air cooler
External cleaning 3-3-1
Clean
Winch hydraulic breather filter (if equipped) 3-8-2
Conformity marking ..... -8
Conformity symbol ..... -8
Control valves
Do not service 4-1-11
Coolant
Diesel engine
Engine with wet sleeve cylinder liners 3-1-12
Disposing 3-1-14
Heater 2-2-3
Level 3-4-1
Mixing with concentrate, water quality 3-1-13
Test 3-8-5
Testing freeze point 3-1-14
Warm temperature climates 3-1-13
Coolant condition
Operational check 4-2-6
Coolant in-line filter
Replace 4-1-1
Coolant level
Operational check 4-2-6
Cooling fan
Operational check 4-2-3, 4-2-28, 4-2-29
Cooling package
Clean cooler cores 3-3-1
Cooling system
Service safely 1-4-1
Cycle time check 4-2-40
Cylinders
Do not service 4-1-11

D

Daily inspection 2-2-1
Decelerator mode
Operational check 4-2-35
Switch 2-2-10
Decelerator mode switch 2-1-4
Decelerator/brake pedal 2-2-10
Decelerator/brake pedal check 4-2-34

Page

DEF
Baffle
Replace 3-11-1
Disposal 3-1-9
Dosing unit filter, changing 3-9-1
Storing 3-1-8
Suction filter
Replace 3-11-1
Tank
Clean 3-11-1
Tank, refilling 3-1-7
Testing 3-1-8
Use in SCR equipped engines 3-1-6
DEF dosing unit filter
Access 3-9-1
Changing 3-9-1
DEF tank breather
Replace 3-11-1
Diagnose malfunctions
Engine 4-3-2
Heater system 4-3-12
Troubleshooting procedure 4-3-1
Diagnostic
Controller info, SDM 2-3-8
Machine ID, SDM 2-3-9
Monitor, SDM 2-3-9
Preferences, SDM 2-3-11
Security, SDM 2-3-10
Diagnostics
Codes, SDM 2-3-6
Engine readings, SDM 2-3-7
JDLink readings, SDM 2-3-8
Machine readings, SDM 2-3-6
Software delivery, SDM 2-3-5
Transmission readings, SDM 2-3-7
Diesel
Capacity, fuel tank 3-2-3
Diesel engine oil
Interim tier 4, final tier 4, stage IIIB, stage IV, and stage V 3-1-10
Diesel engines, cold weather effect 3-1-5
Diesel exhaust fluid (DEF)
Baffle
Replace 3-11-1
Suction filter
Replace 3-11-1
Tank
Clean 3-11-1
Diesel exhaust fluid (DEF) tank breather
Replace 3-11-1
Diesel fuel 3-1-1
Sample 3-7-7
Specifications 3-1-2
Supplemental additives 3-1-4
Diesel fuel specifications 3-1-2
Diesel fuel, testing 3-1-4
Dimensions
550K LGP crawler dozer 4-6-5

Continued on next page

Page

550K XLT crawler dozer ... 4-6-1
650K LGP crawler dozer ... 4-6-15
650K XLT crawler dozer ... 4-6-10
Display unit
Emergency override menu ... 2-3-5
Dome light (if equipped) ... 2-1-14
Door latch (if equipped) ... 2-1-17
Door latches (if equipped)
Lubricating ... 4-1-8
Door washer
Operational check ... 4-2-20
Door wiper
Operational check ... 4-2-19
Dozer linkage, lubricate ... 3-4-4
Drain
Fuel tank ... 4-1-8
Fuel tank sediment ... 3-7-5
Drive lights
Operational check ... 4-2-13
Driving the machine ... 2-2-7

E

EAC Marking ... 1-2-1
ECO mode
Switch ... 2-1-4
Economy (ECO) mode operation ... 2-2-9
Effect of cold weather on diesel engines ... 3-1-5
Electrical
Troubleshooting ... 4-3-6
Emission system
Certification label ... -8
Emissions
Required language
EPA ... 3-1-1
Engine
Break-in ... 2-2-3
Cold weather warm-up ... 2-2-6
Coolant level ... 3-4-1
Damage ... 2-2-22
Diagnose malfunctions ... 4-3-2
Oil ... 3-4-2
Oil change ... 3-7-1
Serial number ... 4-5-1
Starting ... 2-2-4
Stopping ... 2-2-12
Switch
Start ... 2-1-4
Stop ... 2-1-4
Valve clearance, check and adjust ... 3-10-1
Warm-up ... 2-2-5
Engine air filter precleaner
Check and clean ... 3-3-11
Engine coolant
Disposing of ... 3-1-14
Sample ... 3-7-7
Engine cooling system
Drain and refill ... 3-12-1

Page

Engine fan
Operational check ... 4-2-28, 4-2-29
Engine oil
Break-In
Interim tier 4, final tier 4, stage IIIB, stage IV, and stage V ... 3-1-9
Diesel
Interim tier 4, final tier 4, stage IIIB, stage IV, and stage V ... 3-1-10
Operational check ... 4-2-4
Engine oil and filter service intervals
Interim tier 4, final tier 4, stage IIIB, stage IV, and stage V
0.12 L/kW or greater oil pan ... 3-1-11
Engine oil level
Check ... 3-4-2
Engine speed control switch
Operational check ... 4-2-27
Engine speed decrease
Switch ... 2-1-4
Engine speed increase
Switch ... 2-1-4
Eurasian economic union ... 4-6-22
Eurasian Economic Union Technical Regulations ... 1-2-1
European Union Directives Compliance ... 1-2-1
Exhaust filter ... 1-2-8
Ash removal ... 2-2-17, 3-3-11
Auto cleaning ... 2-2-16
Auto cleaning, SDM
Activation ... 2-3-3
Disable ... 2-3-3
Cleaning types ... 2-2-16
Emergency override
Activation ... 2-3-5
Information ... 2-2-16
Natural/passive cleaning ... 2-2-16
Parked cleaning ... 2-2-16
Parked cleaning, SDM
Activation ... 2-3-4
Restriction levels ... 2-2-16
Scheduled maintenance ... 3-3-11
Exhaust Filter, Safety
Safety, Exhaust Filter ... 1-4-3

F

Fan
Operational check ... 4-2-3
Filter
Engine ... 3-7-1
Fuel ... 3-7-2
Hydraulic ... 3-9-3
Hydrostatic charge oil ... 3-9-3
Open crankcase ventilation (OCV) ... 3-9-2
Winch breather (if equipped)
Clean or replace ... 3-8-2
Winch oil ... 3-8-3
Filter, winch, replace ... 3-7-4

Continued on next page

Page

Filters, Oil
Oil Filters ... 3-1-11
Final drive
Oil change ... 3-8-2
Oil level ... 3-6-1
Final drive oil
Sample ... 3-7-7
Final drives
Oil
Specifications ... 3-1-15, 3-1-17
Final fuel
Filter change ... 3-7-2
Final fuel filter
Change ... 3-7-2
Fire extinguisher ... 2-1-19
Fire prevention ... 1-2-6
Floor plate
Remove ... 4-1-3
Fluid analysis test kit ... 3-2-3
Fluid sampling test ports (if equipped) ... 4-1-10
FNR joystick
Operational check ... 4-2-33
Front and door window wiper speed (if equipped)
Switch ... 2-1-4
Front and rear drive lights
Switch ... 2-1-12
Front and rear window washer (if equipped)
Switch ... 2-1-4
Front idler
Oil specification ... 3-1-17
Front washer motor
Operational checkout ... 4-2-18
Front window wiper (if equipped)
Switch ... 2-1-4
Front wiper
Operational checkout ... 4-2-15
Fuel
Biodiesel ... 3-1-3
Capacity, fuel tank ... 3-2-3
Diesel ... 3-1-1
Handling and storing ... 3-1-2
Lubricity ... 3-1-2
Fuel cap
Operational check ... 4-2-7
Fuel Filters
Filters, Fuel ... 3-1-4
Fuel system, bleed ... 4-1-9
Fuel tank
Drain fuel ... 4-1-8
Drain sediment ... 3-7-5
Fuel tank breather
Replace ... 3-9-4
Fuel water separator
Operational check ... 4-2-5
Fuse
Location ... 4-1-6
Specifications ... 4-1-6

Page

G

Glow plug
Operational check ... 4-2-21
Grease
Multipurpose Extreme Pressure (EP) ... 3-1-18
Grease dozer linkage ... 3-4-4
Grille
Opening and closing ... 4-1-2
Grouser wear
Operational check ... 4-2-1

H

Hardware torque values
Metric ... 4-1-23
Unified inch ... 4-1-22
Heater
Coolant ... 2-2-3
Diagnose malfunctions ... 4-3-12
Engine block ... 2-2-3
Heater blower motor check ... 4-2-41, 4-2-42
Heater hoses and clamps
Operational check ... 4-2-6
Heater valve
Engine cooling system ... 3-12-1
Heating and air conditioning system (if equipped)
Operation ... 2-1-8
Horn ... 2-1-13
Horn check ... 4-2-10
Hoses and connections
Air intake ... 3-8-4
Hour meter ... 3-2-2
Hydraulic
Oil level ... 3-4-3
Hydraulic breather filter, winch (if equipped)
Clean or replace ... 3-8-2
Hydraulic control lever check ... 4-2-39
Hydraulic controls check ... 4-2-38
Hydraulic enable solenoid
Operational check ... 4-2-30
Hydraulic oil ... 3-1-16
Drain and refill ... 3-9-3
Hydraulic system
Oil cooler cleaning ... 3-3-1
Hydraulic system pressure release ... 2-2-14
Hydraulic troubleshooting ... 4-3-8
Hydraulics (if equipped)
Enable switch ... 2-1-4
Hydraulics enable (if equipped) ... 2-2-23
Hydrostatic
Oil level ... 3-4-3
Hydrostatic system
Releasing park brake to tow the machine ... 2-2-35
Hydrostatic transmission system
Troubleshooting ... 4-3-9

Continued on next page

Page

I

Identification
Manual ... -3
Idler
Front, oil specification ... 3-1-17
Idler and rollers
Check ... 4-1-19
Ignition off, engine off
Operational check ... 4-2-1
Indicator light
Operational check ... 4-2-11, 4-2-24
Injection
Nozzle ... 4-1-11
Pump ... 4-1-11
Instrument
Before starting check ... 2-2-2
Interior light
Operational check ... 4-2-21

J

JDLink ... 4-1-11
Jump starting ... 4-1-15

L

Left and right door washer
Operational check ... 4-2-20
Left and right door wiper
Operational check ... 4-2-19
Left door window wiper (if equipped)
Switch ... 2-1-4
Lever
Ripper control ... 2-2-27
TCL ... 2-2-7
Levers
Park brake ... 2-1-8
Lifting
Machine ... 2-2-34
Lights, drive
Operational check ... 4-2-13
Lights, work
Operational check ... 4-2-14
Loading
Machine on a trailer ... 2-2-33
Long-term storage
Preparing engine ... 4-4-3
Removing from ... 4-4-4
Lubricant
Mixing ... 3-1-18
Lubricant Storage
Storage, Lubricant ... 3-1-18
Lubricants
Specifications
Oil, final drives ... 3-1-15, 3-1-17
Lubricants, safety ... 3-1-15

Page

Lubricate
Door latches (if equipped) ... 4-1-8
Fittings, dozer linkage ... 3-4-4
Ripper (if equipped) ... 3-5-1
Lubricity of diesel fuel ... 3-1-2

M

Machine
Lifting ... 2-2-34
Serial number ... 4-5-1
Welding ... 4-1-20
Machine design life ... 4-6-22
Machine modifications
Avoid ... 1-2-4
Machine,inspect ... 1-2-4
Main menu
Codes, SDM ... 2-3-6
Controller info, SDM ... 2-3-8
Engine readings, SDM ... 2-3-7
Exhaust filter, SDM ... 2-3-3
JDLink readings, SDM ... 2-3-8
Job timer, SDM ... 2-3-2
Machine ID, SDM ... 2-3-9
Machine readings, SDM ... 2-3-6
Monitor, SDM ... 2-3-9
Preferences, SDM ... 2-3-11
Security, SDM ... 2-3-10
Software delivery, SDM ... 2-3-5
Transmission readings, SDM ... 2-3-7
Maintenance
Interval ... 3-2-1
Prepare machine ... 3-2-1
Required parts ... 3-2-6
Service intervals ... 3-2-4
Manual
Identification ... -3
Metric bolt and screw torque values ... 4-1-23
Mixing lubricants ... 3-1-18
Monitor
Codes, SDM ... 2-3-6
Controller info, SDM ... 2-3-8
Engine readings, SDM ... 2-3-7
Exhaust filter, SDM ... 2-3-3
JDlink readings, SDM ... 2-3-8
Job timer, SDM ... 2-3-2
Machine ID, SDM ... 2-3-9
Machine readings, SDM ... 2-3-6
Preferences, SDM ... 2-3-11
Security, SDM ... 2-3-10
Software delivery, SDM ... 2-3-5
Motors
Do not service ... 4-1-11
Multipurpose Extreme Pressure (EP) grease ... 3-1-18

Continued on next page

Page

N

Neutral start check 4-1-7

O

Oil
- Change final drive 3-8-2
- Engine
  - Interim tier 4, final tier 4, stage IIIB, stage IV, and stage V 3-1-10
- Final drive oil
  - Specifications 3-1-15, 3-1-17
- Hydraulic 3-1-16
- Hydraulic system sample 3-7-7
- Level final drive 3-6-1
- Replace hydraulic oil and filter 3-9-3
- Specification carrier roller 3-1-17
- Specification front idler 3-1-17
- Specification track roller 3-1-17
- Winch
  - Drain and refill 3-8-3

Oil change
- Engine 3-7-1

Oil level
- Hydraulic 3-4-3
- Hydrostatic 3-4-3

Open crankcase ventilation (OCV) filter
- Replace 3-9-2

Operating IGC system
- Topcon factory installation (if equipped) 2-2-26

Operating in water and mud 2-2-21
Operating on steep hills 2-2-22
Operating the machine
- Before starting work 2-2-1

Operating tips
- Operating in water and mud 2-2-21

Operation
- Exhaust filter, SDM 2-3-3
- Job timer, SDM 2-3-2

Operation qualification 1-2-3
Operational checkout 4-2-1
Operational checks
- Diagnostic trouble code (DTC) check 4-2-1
- Ignition on, engine off 4-2-8
- Ignition on, engine on 4-2-21

Operator conveniences 1-1-1
Operator's seat tilting procedure 4-1-4
Operator's station floor plate
- Remove 4-1-3

P

Park and Prepare for Service Safely
- Park and prepare for service safely 1-4-1

Park brake
- Operation 2-1-8

Page

Park brake check 4-2-34
Park brake circuit
- Operational check 4-2-30

Park brake valve leakage check 4-2-31
Park lock lever switch
- Operational check 4-2-25

Parking machine 2-2-12
Parts, moving
- Stay clear 1-2-4

Parts, required 3-2-6
Pedal
- Brake 2-2-10
- Decelerator 2-2-10

Periodic maintenance chart 3-2-1
Pins, metal
- Drive safely 1-4-2

PowerTech engine
- Adjust valve clearance 3-10-1

Pre-start inspection 2-2-1
Primary engine air filter element
- Replace 3-3-5

Primary filter
- Fuel 3-7-2

Primary fuel filter
- Change 3-7-2

Primary fuel filter and water separator
- Check and drain 3-3-3

Product Identification Number
- Location 1-2-1

Pumps
- Do not service 4-1-11

Q

Qualified emergency use
- SCR override option 2-2-20

Quick service
- Connectors 4-1-10

R

Radiator
- External cleaning 3-3-1
- Reversing fan
  - Switch 2-1-4

Radiator hoses and clamps
- Operational check 4-2-6

Radio
- Bluetooth 2-1-15
- SiriusXM radio 2-1-15
- Tuning radio 2-1-15
- Volume adjustment 2-1-15

Radio auxiliary outlet 2-1-17
Rear washer motor
- Operational checkout 4-2-18

Rear wiper
- Operational check 4-2-17

Continued on next page

Page

Recognize
Safety, information ... 1-2-2
Refueling, avoid static electricity risk ... 1-2-6
Regulator
Precautions ... 4-1-12
Replace
Winch hydraulic breather filter (if equipped) ... 3-8-2
Required parts ... 3-2-6
Reverse ratio
Operational checkout ... 4-2-37
Reverse ratio switch ... 2-1-4
Reverse speed
Switch ... 2-2-7
Reversing fan
Switch ... 2-1-4
Reversing fan (if equipped)
Operation ... 2-1-13
Switch ... 2-1-13
Right door washer
Operational check ... 4-2-20
Right door wiper
Operational check ... 4-2-19
Ripper
Control lever ... 2-2-27
Ripper (if equipped)
Lubricate ... 3-5-1
Tooth replace ... 4-1-21
Ripper, parallelogram
Specifications ... 4-6-21
Roll-over protective structure
Torque values ... 4-1-17
ROPS
Inspect ... 1-3-5
Maintain ... 1-3-5

S

Safety
Add cab guarding for special uses ... 1-2-3, 1-2-9
Avoid machine tip over ... 1-3-4
Clean debris from machine ... 1-2-9
Fire ... 1-2-7
Keep riders off machine ... 1-3-2
Operator's seat ... 1-3-1
Prevent unintended machine movement ... 1-3-1
Protective equipment ... 1-2-3
Signs
Crawler loader ... 1-5-1
Safety features ... 1-1-1
Safety hazards
Travel ... 1-3-5
Safety, high-pressure fluids
Avoid high-pressure fluids ... 1-2-5
Safety, information
Recognize ... 1-2-2
Safety, lubricants ... 3-1-15
Sag, track information ... 3-3-7

Page

Sample
Engine oil ... 3-6-1
SCR
System overview ... 2-2-18
SDM functions ... 2-1-1
Sealed switch module (SSM)
Functions ... 2-1-4
Seat
Adjustment ... 2-1-9
Air suspension ... 2-1-9
Seat heater (if equipped) ... 2-1-9
Under seat heater (if equipped) ... 2-1-10
Seat belt
Operational check ... 4-2-8
Seat control
Operational check ... 4-2-12
Seat heater (if equipped)
Seat ... 2-1-9
Seat tilting
Procedure ... 4-1-4
Secondary engine air filter element
Replace ... 3-3-5
Secondary exits ... 2-1-18
Serial number
Engine ... 4-5-1
Machine ... 4-5-1
Serpentine belt
Operational check ... 4-2-5
Service
Interval ... 3-2-1
Service ADVISOR Remote
Overview ... 2-2-21
Reprogramming ... 2-2-21
Terms and conditions ... -20
Service connectors
Quick ... 4-1-10
Service hour meter ... 3-2-2
Service intervals ... 3-2-4
Setting engine speed ... 2-2-8
Setting travel speed
Transmission control lever
Speed-in-grip switch ... 2-2-8
Shim
Blade pivot
Adjustment ... 3-7-8
Software update
Troubleshooting ... 4-3-12
Specification
Carrier roller oil ... 3-1-17
Front idler oil ... 3-1-17
Hardware torque ... 4-1-21
Specifications
550K LGP crawler dozer ... 4-6-7
550K XLT crawler dozer ... 4-6-3
650K LGP crawler dozer ... 4-6-18
650K XLT crawler dozer ... 4-6-13
Fuse ... 4-1-6

Continued on next page

Page

Oil
Final drives 3-1-15, 3-1-17
Parallelogram ripper 4-6-21
Sound 1-2-1
Vibration 1-2-1
Speed-in-grip controls 2-1-6
Speed-in-grip switch
Setting travel speed 2-2-8
Sprocket wear
Operational check 4-2-2
SSM
Functions 2-1-4
Standard display functions 2-1-1
Standard display monitor
Codes, SDM 2-3-6
Controller info, SDM 2-3-8
Engine readings, SDM 2-3-7
Exhaust filter auto cleaning, SDM 2-3-3
Exhaust filter, SDM 2-3-3
JDLink readings, SDM 2-3-8
Job timer, SDM 2-3-2
Machine ID, SDM 2-3-9
Machine readings, SDM 2-3-6
Main menu, SDM 2-3-2
Monitor, SDM 2-3-9
Parked cleaning, SDM 2-3-4
Preferences, SDM 2-3-11
Security, SDM 2-3-10
Software delivery, SDM 2-3-5
Transmission readings, SDM 2-3-7
Standard display monitor (SDM) 2-3-1
Standard display monitor (SDM) functions 2-1-1
Auto blade control indicator (if equipped) 2-1-1
Back button 2-1-1
Caution indicator 2-1-1
Diesel exhaust fluid (DEF) indicator 2-1-1
Display 2-1-1
Engine air filter restriction indicator 2-1-1
Engine alternator voltage indicator 2-1-1
Engine coolant temperature gauge 2-1-1
Engine oil pressure gauge 2-1-1
Exhaust filter cleaning indicator 2-1-1
Fasten seat belt indicator 2-1-1
Fuel level gauge 2-1-1
Hydraulic oil temperature indicator 2-1-1
Menu button 2-1-1
Next button 2-1-1
Oil filter restriction indicator 2-1-1
Park brake indicator 2-1-1
Return to neutral indicator 2-1-1
Select button 2-1-1
Stop engine indicator 2-1-1
Transmission oil temperature indicator 2-1-1
Wait to start indicator 2-1-1
Starting
Engine 2-2-4
Instrument check, before 2-2-2

Page

Steep hills
Operating 2-2-22
Steps
Use correctly
Handholds 1-3-1
Stopping
Engine 2-2-12
Machine 2-2-11
Storage
Machine 4-4-1
Monthly 4-4-2
Storing fuel 3-1-2
Suction filter
Diesel exhaust fluid (DEF)
Replace 3-11-1
Switch
Auto-idle 2-1-4
Auxiliary power 2-1-4
Cab work light (if equipped) 2-1-4
Decelerator mode 2-1-4
Economy (ECO) mode 2-1-4
Engine speed decrease 2-1-4
Engine speed increase 2-1-4
Engine start 2-1-4
Engine stop 2-1-4
Front and door window wiper speed (if equipped) 2-1-4
Front and rear window washer 2-1-4
Front window wiper 2-1-4
Hydraulic enable (if equipped) 2-1-4
Left door window wiper (if equipped) 2-1-4
Reverse ratio 2-1-4
Reversing fan 2-1-4
Window wiper (if equipped)
Front 2-1-4
Left door 2-1-4
Rear 2-1-4
Right door 2-1-4
Switch module
Functions 2-1-4
Switch, battery disconnect 2-2-2

T

Tank
Diesel exhaust fluid (DEF)
Clean 3-11-1
TCL
Forward speed
Switch 2-2-7
Lever 2-2-7
TCL with speed-in-grip 2-1-6
Test ports (if equipped)
Fluid sampling 4-1-10
Testing diesel fuel 3-1-4
Tests
Releasing park brake to tow the machine 2-2-35
Torque charts
Metric 4-1-23

Continued on next page

Page

Unified inch 4-1-22
Torque values
Roll-over protective structure 4-1-17
Towing
Releasing park brake to tow the machine 2-2-35
Track
Avoid damage 2-2-22
Roller oil specification 3-1-17
Track idler leakage
Operational check 4-2-2
Track roller
Operational check 4-2-2
Track sag
Check and adjust 3-3-8
General information 3-3-7
Operational check 4-2-2
Track shoe
Operational check 4-2-1
Track shoe torque 4-1-18
Tracking and maximum speed check 4-2-36
Trailer loading 2-2-33
Transmission
Damage 2-2-22
Oil cooler cleaning 3-3-1
Transmission control lever (TCL)
Speed 2-2-8
Transmission control lever (TCL) check 4-2-32
Transmission control lever (TCL) speed change
Operational check 4-2-33
Transmission start system
Check 4-1-7
Troubleshooting
Air conditioning system 4-3-10
Electrical system 4-3-6
Hydrostatic transmission system 4-3-9
Software update 4-3-12
Troubleshooting procedure 4-3-1

U

Under seat heater (if equipped)
Seat 2-1-10
Undercarriage
Extend life 2-2-22
Unified inch bolt and screw torque values 4-1-22

V

Valve lash adjustment 3-10-1

W

Warming engine 2-2-5

Page

Warranty
Non-road emissions control warranty statement--compression ignition
CARB ..... -11
EPA ..... -9
Washer
Operational check 4-2-20
Washer motor
Operational checkout 4-2-18
Water separator
Operational check 4-2-5
Weights
550K LGP crawler dozer 4-6-8
550K XLT crawler dozer 4-6-4
650K LGP crawler dozer 4-6-19
650K XLT crawler dozer 4-6-14
Welding repairs 1-4-2
Winch
Cable 2-2-29
Drag adjustment 2-2-32
Oil
Drain and refill 3-8-3
Operation 2-2-28
Winch breather filter (if equipped)
Clean or replace 3-8-2
Winch cable specifications 4-6-22
Winch filter
Replace 3-7-4
Window
Secondary exits 2-1-18
Window seal
Operational check 4-2-8
Window washers (if equipped)
Switch
Door 2-1-11
Front 2-1-11
Rear 2-1-11
Window wiper (if equipped)
Switch
Front 2-1-4
Left door 2-1-4
Rear 2-1-4
Right door 2-1-4
Windshield washer fluid 3-3-4
Windshield wipers and washers (if equipped)
Operation 2-1-11
Wiper
Operational check 4-2-15, 4-2-17, 4-2-19
Wiper speed
Operational check 4-2-16
Work and drive lights
Operation 2-1-12
Work lights
Operational check 4-2-14