Diesel Exhaust Fluid (DEF) — For Use In Selective Catalytic Reduction Equipped Engines

Diesel exhaust fluid (DEF) is a high purity liquid that is injected into the exhaust system of engines quipped 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 following API symbol or the AdBlue™ name on the container.

RG23664 —UN—28JUN13

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

AdBlue is a trademark of VDA, the German Association of the Automotive Industry.

ZE59858,0000060 -19-28JUN13-1/1

Storing Diesel Exhaust Fluid (DEF)

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

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

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

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

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

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

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

It is preferred to store DEF out of extreme ambient temperatures. DEF freezes at –11 C (12 °F). Exposure to temperatures greater than 30 °C (86 °F) can degrade DEF over time.

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 temperature between -5—30 °C (23—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.

ZE59858,0000061 -19-28JUN13-1/1

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.

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, 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 prior to 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.

RG22487A —UN—19AUG13

DEF Symbol

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).

If DEF has been added to the fuel tank or other fluid compartment, contact your John Deere dealer immediately to determine how to clean and purge the system to prevent damage. **Do not operate engine until system is properly purged of DEF.**

The operator must maintain appropriate DEF levels at all times. Check the DEF level daily and refill the tank as needed. The filling port is identified by a blue colored cap embossed with the DEF symbol.

ZE59858,0000062 -19-19AUG13-1/1

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. Part number JDG11594 is a digital tool providing an easy to read concentration measurement. Part number JDG11684 is a 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% to 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.

ZE59858,0000063 -19-28JUN13-1/1

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.

ZE59858,0000064 -19-28JUN13-1/1

John Deere Break-In Plus™ Engine Oil — Interim Tier 4, Final Tier 4, Stage IIIB, and Stage IV

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 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 -19-15JUN10-1/1

Determining Tractor Engine Type

IMPORTANT: To determine with which engine type tractor is equipped, see Record Engine Serial Number in Identification Numbers Section of this Operator's Manual.

Correct engine oil specification and oil change interval is determined by a number of factors. One important consideration is the type of engine aftertreatment installed. To determine engine type, see Record Engine Serial Number in Identification Numbers Section of this Operator's Manual.

RX32825,0000003 -19-19MAR13-1/1

Diesel Engine Oil—FT4/Stage IV and IT4/Stage III B Engines???

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 CJ-4
- ACEA Oil Sequence E9
- ACEA Oil Sequence E6

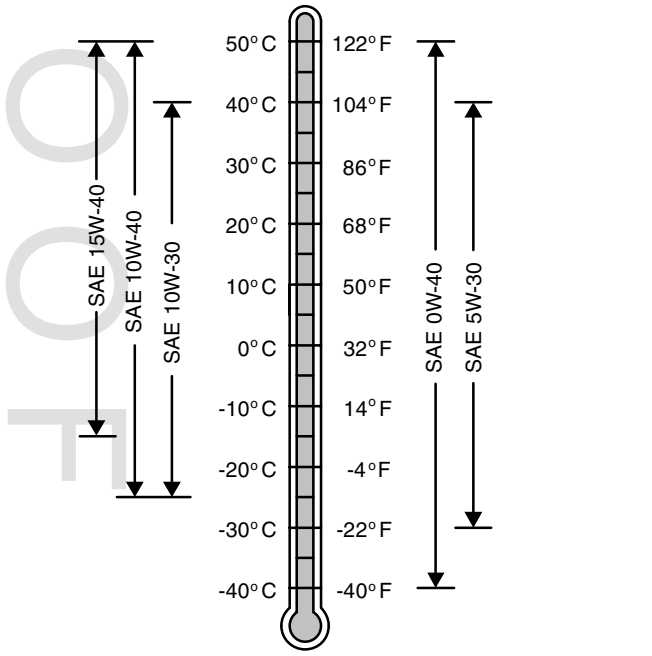
DO NOT use engine oil containing more than 1.0% sulfated ash, 0.12% phosphorus, or 0.4% sulfur.

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.

IMPORTANT: Use only ultra low sulfur diesel (ULSD) fuel with a maximum sulfur content of 15 mg/kg (15 ppm).

Plus-50 is a trademark of Deere & Company



Oil Viscosities for Air Temperature Ranges

TO84419,00001AB -19-06SEP13-1/1

Engine Oil and Filter Service Intervals—Final Tier 4 and Stage IV and Interim Tier 4 and Stage III B Engines

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.

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 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.

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.**

Approved Oil Types:

- John Deere Plus-50™ II.
- “Other Oils” include API CJ-4, ACEA E9, and ACEA E6.

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

Plus-50 is a trademark of Deere & Company

TO84419,00001AC -19-27NOV12-1/1

Diesel Engine Oil—Tier 2 and Stage II Engines

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

John Deere Plus-50™ II oil is preferred.

John Deere Plus-50™ is also recommended.

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

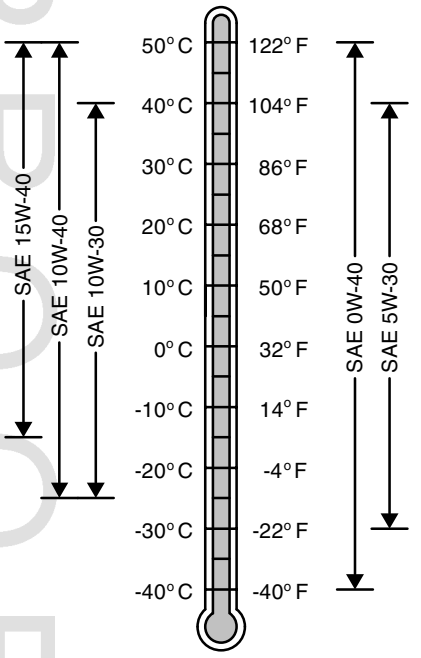
- John Deere Torq-Gard™
- API Service Category CJ-4
- API Service Category CI-4 PLUS
- API Service Category CI-4
- API Service Category CH-4
- ACEA Oil Sequence E9
- ACEA Oil Sequence E7
- ACEA Oil Sequence E6
- ACEA Oil Sequence E5
- ACEA Oil Sequence E4
- ACEA Oil Sequence E3

Multi-viscosity diesel engine oils are preferred.

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

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

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



Oil Viscosities for Air Temperature Ranges

TO84419,00001AD -19-19MAR13-1/1

Engine Oil and Filter Service Intervals—Tier 2 and Stage II Engines

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 diesel fuel. Actual service intervals also depend on operation and maintenance practices.

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 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.

- Use of diesel fuel with sulfur content less than 500 mg/kg (500 ppm) is RECOMMENDED.
- Use of diesel fuel with sulfur content 500—5000 mg/kg (500—5000 ppm) REDUCES the oil and filter change interval.
- BEFORE using diesel fuel with sulfur content greater than 5000 mg/kg (5000 ppm), contact your John Deere dealer.

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.**

Approved Oil Types:

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

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 500 mg/kg (500 ppm).*
- *Use of John Deere Plus-50™ II or John Deere Plus-50 oil.*
- *Use of an approved John Deere oil filter.*

Engine Oil and Filter Service Intervals	
Fuel Sulfur	Less than 500 mg/kg (500 ppm)
Plus-50 Oils	500 hours
Other Oils	250 hours
Fuel Sulfur	500—5000 mg/kg (500—5000 ppm)
Plus-50 Oils	400 hours
Other Oils	150 hours
Fuel Sulfur	5000—10 000 mg/kg (5000—10 000 ppm)
Plus-50 Oils	250 hours
Other Oils	125 hours
Oil analysis may extend the service interval of "Other Oils", to a maximum not to exceed the interval for Plus-50 Oils.	

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

DX,ENOIL12,T2,EXT -19-21JUN10-1/1

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

Preferred coolants

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 John Deere 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.

Other Coolants

Other ethylene glycol or propylene glycol base coolants may be used if they meet one of the following specifications:

- Pre-mix coolant meeting ASTM D6210 requirements
- Coolant concentrate meeting ASTM D6210 requirements in a 40% to 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. Distilled, 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.

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.

COOL-GARD is a trademark of Deere & Company

ZE59858,0000079 -19-01JUL13-1/1

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. Distilled, 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.

ZE59858,000007E -19-02JUL13-1/1

Operating in Warm Temperature Climates

John Deere engines are designed to operate using glycol base engine coolants.

Always use a recommended glycol base 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 will occur when water is used as the coolant, even when coolant conditioners are added.

Drain cooling system and refill with recommended glycol base engine coolant as soon as possible.

ZE59858,000007D -19-01JUL13-1/1

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.

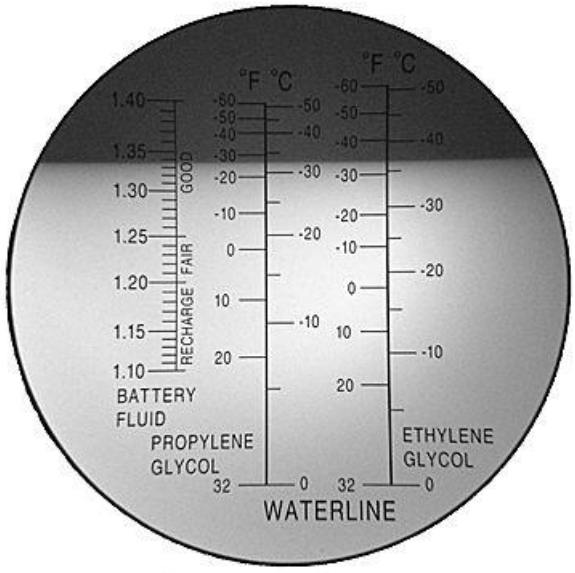
A coolant refractometer is available through your John Deere dealer under the SERVICEGARD™ tool program. Part number 75240 provides an economical solution to accurate freeze point determination in the field.

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 coolant) being tested.

RG23673 —UN—01JUL13

SERVICEGARD Part Number 75240



RG23674 —UN—01JUL13

Image with a drop of 50/50 coolant placed on the refractometer window

SERVICEGARD is a trademark of Deere & Company

ZE59858,000007A -19-01JUL13-1/1

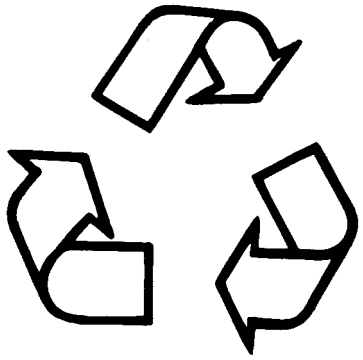
Disposing of Coolant

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 John Deere engine distributor or servicing dealer.



TS1133 —UN—15APR13

Recycle Waste

RG,RG34710,7543 -19-09JAN07-1/1

John Deere COOL-GARD™ II Coolant Extender

Some coolant additives gradually deplete during engine operation. For COOL-GARD™ II pre-mix and COOL-GARD II Concentrate, replenish coolant additives between drain intervals by adding COOL-GARD II Coolant Extender.

COOL-GARD II Coolant Extender should not be added unless indicated by COOL-GARD II Test Strips. These test strips provide a simple, effective method to check the freeze point, additive levels, and pH of your engine coolant.

Test the coolant solution at intervals of 12 months and whenever excessive coolant is lost through leaks or overheating.

IMPORTANT: Do not use COOL-GARD II Test Strips with COOL-GARD II PG.

COOL-GARD II Coolant Extender is a chemically matched additive system for use with all COOL-GARD II coolants.

COOL-GARD is a trademark of Deere & Company

COOL-GARD II Coolant Extender is not intended for use with nitrite-containing coolants.

IMPORTANT: Do not add a supplemental coolant additive when the cooling system is drained and refilled with any of the following:

- **John Deere COOL-GARD II**
- **John Deere COOL-GARD II PG**

The use of non-recommended supplemental coolant additives can result in additive drop-out, gelation of the coolant, or corrosion of cooling system components.

Add the recommended concentration of COOL-GARD II Coolant Extender. DO NOT add more than the recommended amount.

DX,COOL16 -19-15MAY13-1/1

Transmission and Hydraulic Oil

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

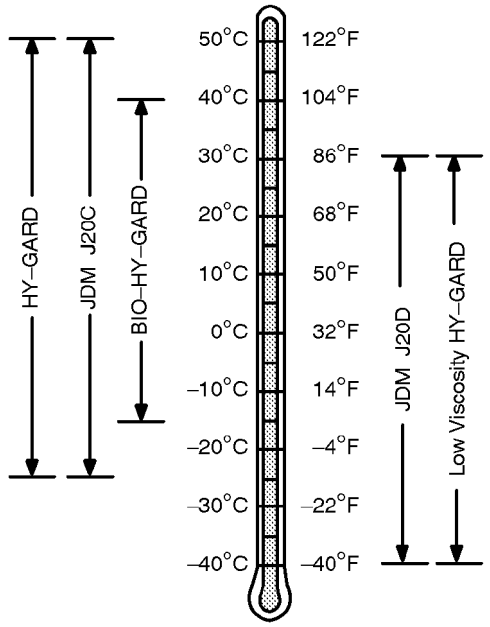
The following oils are preferred:

- 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]



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.

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

Use Correct Viscosity Front PTO Oil in Cold Weather

CAUTION: Avoid personal injury. Keep PTO area clear of bystanders. PTO shaft or attached implement may rotate prior to engine start in cold weather.

When air temperatures are expected to drop below -5° C (23° F), use John Deere™ Low Viscosity HY-GARD™ oil in the self contained front PTO reservoir.

Other oils can be used if they meet John Deere™ Standard JDM J20D.

John Deere is a trademark of Deere & Company
Hy-Gard is a trademark of Deere & Company

TO84419,00001B8 -19-27NOV12-1/1

Transmission Recalibration

Your tractor's transmission is factory filled with John Deere™ Hy-Gard™ oil.

When changing transmission/hydraulic oil from one viscosity to another, transmission electronic control unit must be recalibrated in order to maintain smooth shifting characteristics. See your John Deere™ dealer.

John Deere is a trademark of Deere & Company
Hy-Gard is a trademark of Deere & Company

TO84419,00001B9 -19-06FEB13-1/1

Gear Oil

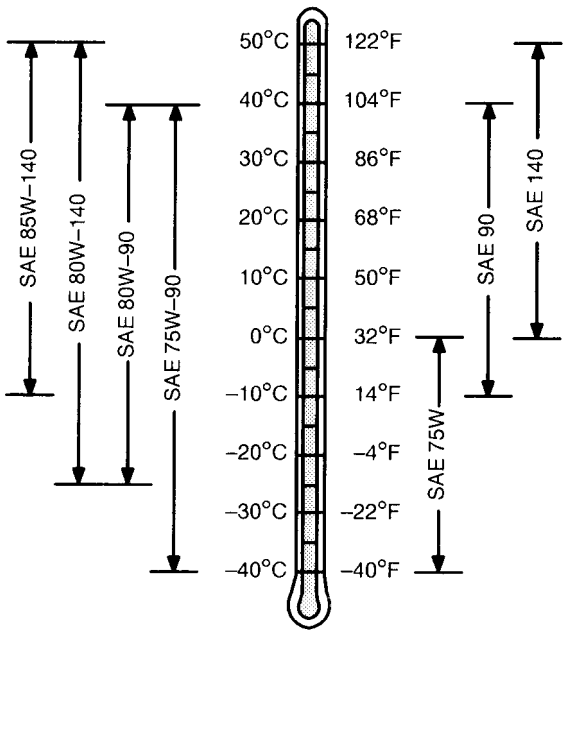
Use oil viscosity based on the expected air temperature range during the period between oil changes.

The following oils are preferred:

- John Deere GL-5 Gear Lubricant
- John Deere EXTREME-GARD™

Other oils may be used if they meet the following:

- API Service Category GL-5



Oil Viscosities for Air Temperature Ranges

EXTREME-GARD is a trademark of Deere & Company

DX,GEOIL -19-14APR11-1/1

Grease

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

John Deere SD Polyurea Grease is preferred.

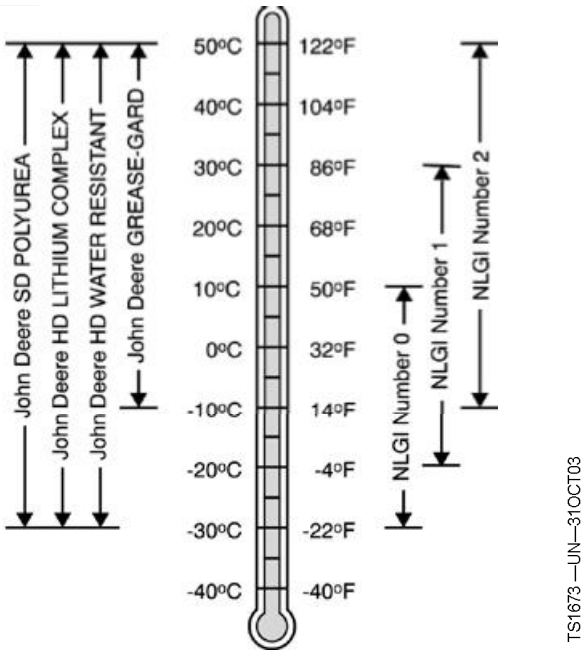
The following greases are also recommended:

- John Deere HD Lithium Complex Grease
- John Deere HD Water Resistant Grease
- John DeereGREASE-GARD™

Other greases may be used if they meet the following:

- NLGI Performance Classification GC-LB

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



Greases for Air Temperature Ranges

GREASE-GARD is a trademark of Deere & Company

DX,GREA1 -19-14APR11-1/1

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

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 both conventional and synthetic lubricants.

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

DX,ALTER -19-11APR11-1/1

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

Perform Break-In Checks

IMPORTANT: Initial break-in service interval of a new or rebuilt wet sleeve engine with John Deere™ Break-In Plus™ oil must last at least 100 hours to assure surface mating of rings and liners has had an opportunity to occur. 100 hour minimum interval applies to all new or rebuilt engines. Maximum service interval is the same as service interval recommended for your engine in Engine Oil and Filter Service Intervals of Fuel, Lubricants and Coolant section of this Operator Manual. To confirm which engine your tractor is equipped with, see Record Engine Serial Number in Identification Numbers section of this Operator's Manual.

For subsequent oil changes, see Engine Oil and Filter Service Intervals for your engine located in Fuels, Lubricants, and Coolant Section of this Operator's Manual.

Engine is ready for normal operation. During first 100 hours of operation:

- Operate engine at heavy loads without reaching sustained maximum load
- Avoid idling engine longer than 5 minutes. If engine will idle longer than 5 minutes, stop engine
- Closely observe coolant temperature during operation
- Check engine air intake system hoses and clamps. See 500 Hour Service section of this Operator's Manual.
- Check for fluid leaks
- Tighten wheel, wheel weight and axle bolts after **3 HOURS**, after **10 HOURS**, and **DAILY** for first week of operation (see 500 Hour Service section of this Operator's Manual)

Daily or Every 10 Hours

IMPORTANT: If engine oil must be added prior to first normal oil change, use John Deere™ Break-In Plus™ engine oil.

Perform normal daily or 10 hour services. See Daily or 10 Hour Service section of this Operator's Manual.

For first 100 hours of tractor operation, perform these additional services daily or every 10 hours:

- Drain water separator. See As Indicated Service section of this Operator's Manual.
- Check coolant level. See As Indicated Service section of this Operator's Manual.
- Lubricate rear and front (if equipped) hitch components. See 250 Hour Service section of this Operator's Manual.
- Inspect tires for cuts or punctures. See 50 Hour Service section of this Operator's Manual.

At 100 Hours

- Change front PTO oil and filter (if equipped). See 1500 Hour Service section of this Operator's Manual.

After service is performed, reset appropriate service interval hours display to zero (see Add or Edit Service Interval in CommandCenter™ section of this Operator's Manual).

RX32825,0000747 -19-30AUG13-1/1

Observe Service Intervals

IMPORTANT: Recommended service intervals are for average conditions. Service MORE OFTEN may be required if tractor is operated under adverse conditions.

When looking for details on any service listed in this section, go to either Table of Contents or Index of this Operator's Manual. Look for same interval listed in left-hand column of service tables on following pages.

Perform all services at hourly intervals indicated. Record service performed in Lubrication and Maintenance Records section.

When scheduled services at any hourly level are performed, also perform all subordinate hourly level of this Operator's Manual services as shown below. Other charts in this section list specific main and subordinate services.

Main Service	**Subordinate Services**:						
	10 Hours	50 Hours	250 Hours	500 Hours	1000 Hours	1500 Hours	2000 Hours
50 Hours	X	—					
250 Hours	X	X	—				
500 Hours	X	X	X	—			
1000 Hours	X	X	X	X	—		
Annual	No Subordinate Services Required						
1500 Hours	X	X	X	X		—	
2000 Hours	X	X	X	X	X		—
4500 Hours	X	X	X	X		X	
5000 Hours	X	X	X	X	X		
6000 Hours	X	X	X	X	X	X	X

TO84419,0000072 -19-29AUG13-1/1

Service Interval Chart—*Daily or 10 Hour, 50 Hour, 100 Hour, 250 Hour, 500 Hour and 1000 Hour*

Item	Daily or 10 Hours	50 Hours	250 Hours	500 Hours	1000 Hours
Check Engine Oil Level	•				
Check Transmission-Hydraulic Oil Level	•				
Lubricate MFWD King Pins, Tie Rod Ends, Axle Pivot Fittings and U-Joints [a]	•			•	
Lubricate TLS™ Plus External Fittings and U-Joints (If Equipped) [a]	•		•		
Inspect Tires		•			
Lubricate Rear Hitch [b]		•	•		
Lubricate Front Hitch (If Equipped) [b]		•	•		
Check Manual Brakes [c]			•		
Check Neutral Start System			•		
Check Transmission PARK System			•		
Check Swinging Drawbar			•		
Check Front PTO Housing Oil Level (If Equipped)			•		
Lubricate Cab Suspension (If Equipped)				•	
Check MFWD or Plus Axle Housing Oil Level			•	•	
Check MFWD or TLS™ Plus (If Equipped) Wheel Hub Oil Level			•	•	
Change Engine Oil and Filter [d]				•	
Drain Fuel Tank Sump				•	
Service Severe Duty Water Separator (If Equipped)				•	
Tighten Wheel and Wheel Weight Bolts				•	
Inspect Air Intake System				•	
Clean Dual Beam Radar Sensor (If Equipped)				•	
Replace Fuel Filters				•	
Replace Fuel Tank Vent Filter [e]					•
Replace Cab Fresh Air and Recirculation Filters [f]					•
Test Coolant and Add Coolant Conditioner [f]					•
Check Cab Suspension Accumulator Charge Pressure (If Equipped) [f,g]					•
Clean MFWD Axle Breather [e]					•

[a]Normal lubrication at 250 hours. If used in extremely wet conditions, lubricate daily or every 10 hours.
[b]Normal lubrication at 250 hours. If used daily, lubricate every 50 hours.
[c]If tractor not equipped with electronic back-up pump.
[d]Perform oil change in accordance with Change Engine Oil and Filter in Fuel, Lubricants and Coolant section of this Operator's Manual.
[e]Interval may vary according to operating conditions.
[f]Perform service every 1000 hours or annually - whichever comes first.
[g]See your John Deere™ dealer.

TLS is a trademark of Deere & Company

TO84419,0000073 -19-29AUG13-1/1

Service Interval Chart—*Annual, 1500 Hours, 2000 Hours, 3000 Hours, 4500 Hours, 5000 Hours and 6000 Hours*

Item	Annual	1500 Hours	2000 Hours	3000 Hours	4500 Hours	5000 Hours	6000 Hours
Service Batteries [a] and Connections	•						
Test Coolant and Add Coolant Conditioner [b]	•						
Inspect Seat Belts	•						
Replace Cab Fresh Air and Recirculation Filters [b]	•						
Check TLS™ Plus Accumulator Charge Pressure (If Equipped) [c]	•						
Check Cab Suspension Accumulator Charge Pressure (If Equipped) [d]	•						
Inspect Primary and Secondary Engine Air Filters [e]	•						
Inspect Fan Belt Tensioner		•					
Change MFWD or TLS™ Plus Axle Housing Oil		•					
Change MFWD or TLS™ Plus Wheel Hub Oil		•					
Lubricate Draft Link Support Shaft Bushing		•					
Change Front PTO Housing Oil and Filter (If Equipped) [f]		•					
Change Transmission, Hydraulic and Axle Oil and Filters		•					
Clean Hydraulic System Sump Screen		•					
Replace Open Crankcase Ventilation Filter **(6.8 L Engines Only)** [g]		•					
Adjust Engine Valve Clearance **(T2/Stage II Engines Only)**[g,c]			•				
Adjust Engine Valve Clearance **(FT4/Stage IV Engines Only)** [g,c]				•			
Replace Diesel Exhaust Fluid (DEF) Dosing Unit Filter **(FT4/Stage IV Engines Only)** [g,h]					•		
Replace Diesel Exhaust Fluid (DEF) Tank Filter **(FT4/Stage IV Engines Only)** [g,h]					•		
Replace Transmission Drive Shaft Damper[c]					•		
Replace Trailer Air Brake Air Dryer Filter (If Equipped)						•	
Replace Engine Crankshaft Damper[c]						•	
Drain, Flush, and Refill Engine Cooling System[i]							•
Replace Cooling System Thermostats and Radiator Cap							•

[a] *For replacement batteries, follow manufacturer's recommendations.*
[b] *Perform service every 1000 hours or annually - whichever comes first.*
[c] *See your John Deere™ dealer.*
[d] *Perform service every 1000 hours or annually - whichever comes first. See your John Deere™ dealer.*
[e] *Interval may vary, according to operating conditions.*
[f] *Normal service interval is 1500 hours. However, change oil and filter after first 100 hours of tractor operation.*
[g] *To confirm which engine your tractor is equipped with, see Record Engine Serial Number in Identification Numbers section of this Operator's Manual.*
[h] *Replace after first year of tractor operation, and every THREE years thereafter.*
[i] *INITIAL change interval is 6 years or 6000 hours, provided cooling system is topped off using only John Deere™ Cool-GARD™ II and premix and coolant is tested at recommended intervals. SCHEDULED interval (2 years or 2000 hours) can be extended up to 6 years or 6000 hours depending on coolant used and if coolant is tested at recommended intervals. See Drain Intervals for Diesel Engine Coolant in Fuel, Lubricants and Coolant section of this Operator's Manual.*

TO84419,0000074 -19-05SEP13-1/1

Perform As Indicated Service

As Indicated services should be performed when an appropriate indicator light is illuminated or Diagnostic Trouble Code (DTC) is displayed (see Diagnostic Trouble Code section of this Operator's Manual). Other services without a specified hourly service interval may be found in As Required Service section of this Operator's Manual.

TO84419,0000038 -19-16AUG13-1/1

Replace Primary and Secondary Engine Air Filters

IMPORTANT: Inspect filters annually or when a related diagnostic trouble code appears. Replacement interval may vary due to operating conditions. Replace secondary engine air filter at every second primary filter change.

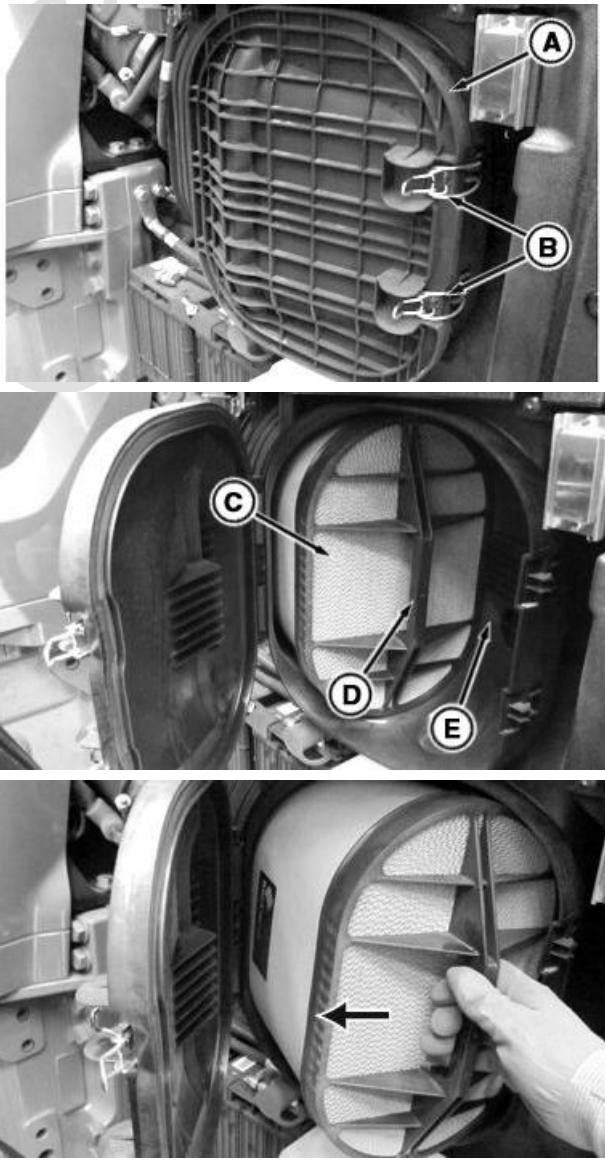
If diagnostic trouble code indicates plugged engine air filter, replace primary filter and inspect or replace secondary filter.

1. Remove battery compartment cover.
2. Unfasten two clamps (B) and open filter cover (A).
3. Pull handle (D) towards front of tractor to release primary air filter from raised retainer (E).
4. Remove primary air filter (C)..
5. Clean dirt from inside of canister and cover.

IMPORTANT: If either filter is dirty, replace it. Do not attempt to clean filters.

6. Remove primary air filter.

A—Cover
B—Clamps
C—Primary Air Filter
D—Handle
E—Retainer



RXA0134187 —UN—25JUL13
RXA0134188 —UN—25JUL13
RXA0134189 —UN—25JUL13

Pull Handle to Remove Primary Air Filter

Continued on next page

TO84419,0000075 -19-29AUG13-1/2

7. To protect air intake system, only remove secondary filter far enough from canister to allow inspection. Pull on handle (B) to slide top part of secondary filter (A) out first. Inspect secondary filter.

IMPORTANT: Failure to properly install primary and secondary filters will cause damage to engine. When installing primary air filter, make sure filter is properly seated behind raised retainer.

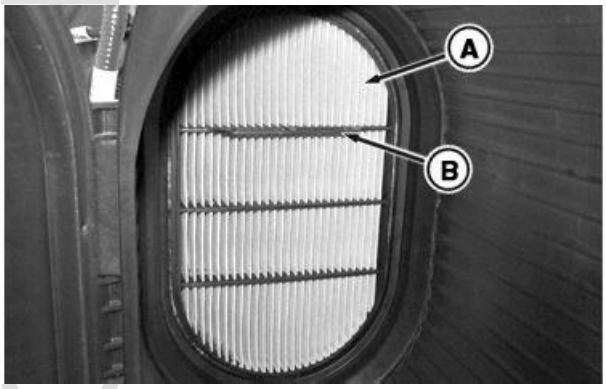
Replace secondary filter every second primary air filter change or if secondary filter is found to be damaged or excessively dirty.

8. If secondary filter is found to be in good condition and has been replaced at last primary filter change, reinsert it into filter canister. Then install new primary filter. Replace filter and battery covers.

IMPORTANT: Install new secondary filter immediately to prevent dust from entering air intake system.

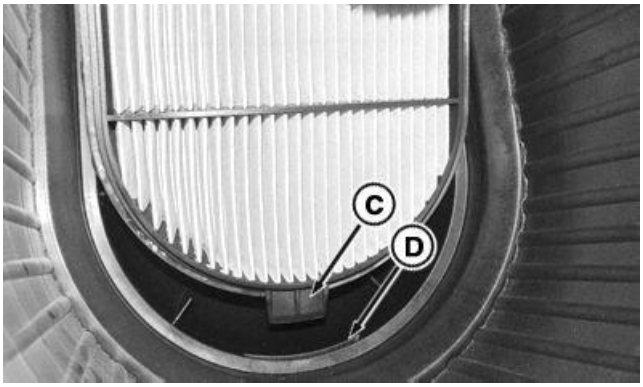
9. If secondary filter is damaged or excessively dirty, or if the primary filter has been replaced once before without replacing secondary filter, remove and discard secondary filter.
10. To install secondary filter (A), place tab (C) in slot (D).
11. Firmly press around edge of secondary filter to properly seat filter against filter housing.
12. Install new primary filter.
13. Close filter cover and fasten cover clamps.
14. Reinstall battery compartment cover.

A—Secondary Filter
B—Handle
C—Tab
D—Slot



RXA0134190 —UN—25JUL13

RXA0134191 —UN—25JUL13



RXA0134192 —UN—25JUL13

TO84419,0000075 -19-29AUG13-2/2

Check Coolant Level

Coolant level is monitored electrically. When coolant is low a diagnostic trouble code will appear on CommandCenter™. Check coolant level manually and refill system as necessary.

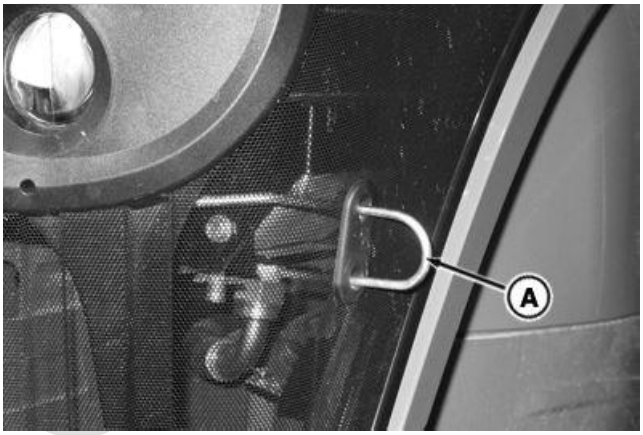
1. Pull hood release (A) and raise hood.
2. Check coolant level on side of deaeration tank. Level should be at or above Min Cold (B). If level is low, before adding coolant, check for any signs of leakage. Repair if necessary.

IMPORTANT: Do not open deaeration tank cap (D) when engine is warm. Doing so will add air to coolant system.

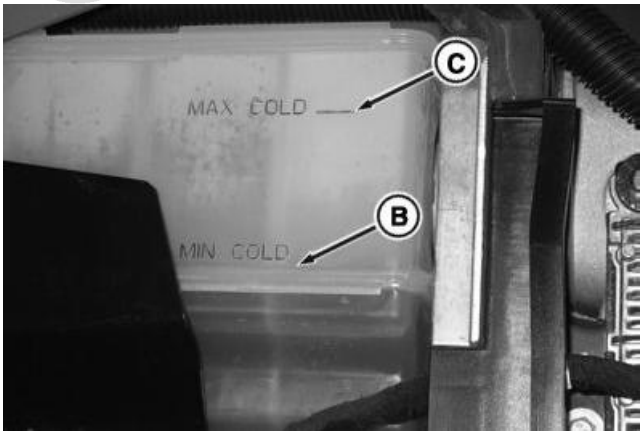
NOTE: If coolant level is low, but there is no sign of an external leak, there may be an internal coolant leak. Contact your John Deere™ dealer.

3. Wait until engine is cool. Remove deaeration tank cap and add coolant as specified in Heavy Duty Diesel Engine Coolant in Fuel, Lubricants and Coolant section of this Operator's Manual. Do not fill above Max Cold line (C). Reinstall deaeration tank cap.
4. Close and secure hood.

A—Hood Release
B—Min Cold
C—Max Cold Line
D—Deaeration Tank Cap

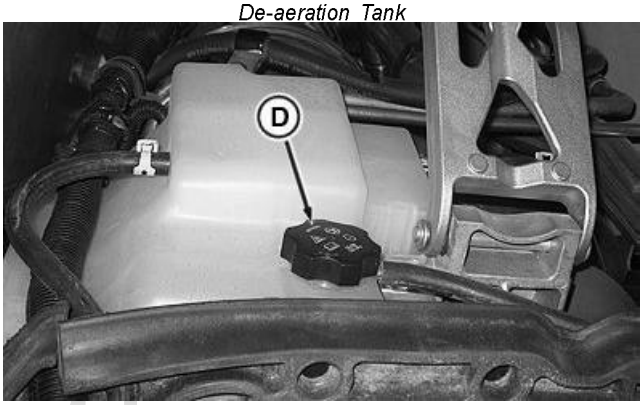


RXA0133488 —UN—02JUL13



RXA0133489 —UN—02JUL13

De-aeration Tank



RXA0133490 —UN—02JUL13

CommandCenter is a trademark of Deere & Company
John Deere is a trademark of Deere & Company

TO84419,0000076 -19-29AUG13-1/1

Replace Diesel Particulate Filter (DPF)

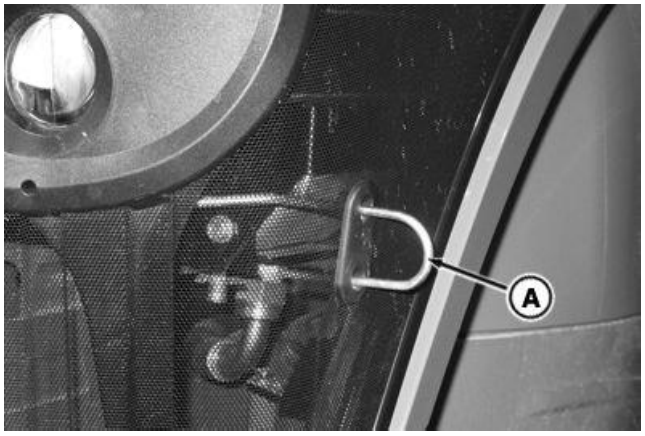
When exhaust filter and warning light indicators are illuminated on display, contact your John Deere™ dealer to replace diesel particulate filter within 250 hours.

Contact your John Deere™ dealer to replace diesel particulate filter.

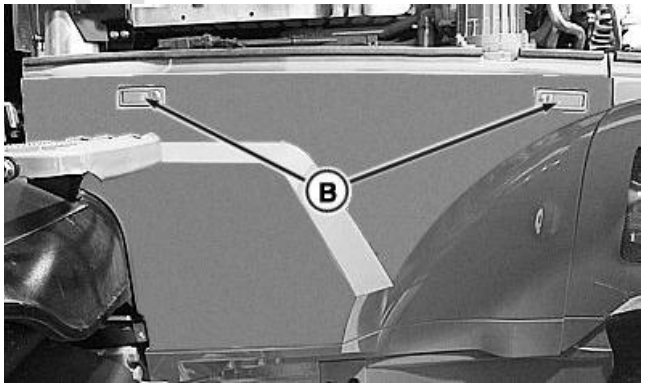
John Deere is a trademark of Deere & Company

TO84419,0000077 -19-29AUG13-1/1

Drain Water Separator

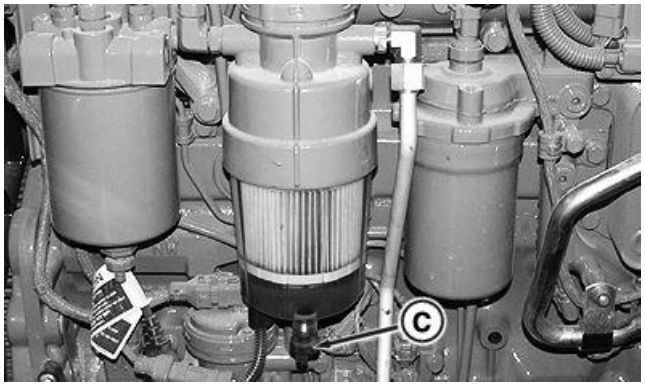


RXA0133488 —UN—02JUL13



RXA0134208 —UN—29JUL13

Right Rear Side Shield



RXA0134240 —UN—31JUL13

Water Separator Drain Valve—6.8 L Shown

RXA0109392 —UN—10SEP10

Water Separator Drain Valve—9.0 L Shown

A—Hood Release **B—Latch Buttons** **C—Drain Valve**

NOTE: Water Separator removes water that has been accumulated in your fuel. If excessive water is found, draining of the fuel tanks may be required.

1. Pull hood release (A) and raise hood.
2. Depress latch buttons (B) to remove right rear side shield.
3. Open drain valve (C) and drain accumulated water. Close drain valve.
4. Reinstall side shield and securely close hood.

RX32825,00006F9 -19-30AUG13-1/1

Perform As Required Service

As Required services should be performed when tractor performance indicates that service is needed. Conditions that indicate an As Required service is needed are described under appropriate headings below. Other services without a specified hourly service interval may be found in As Indicated Service section of this Operator's Manual.

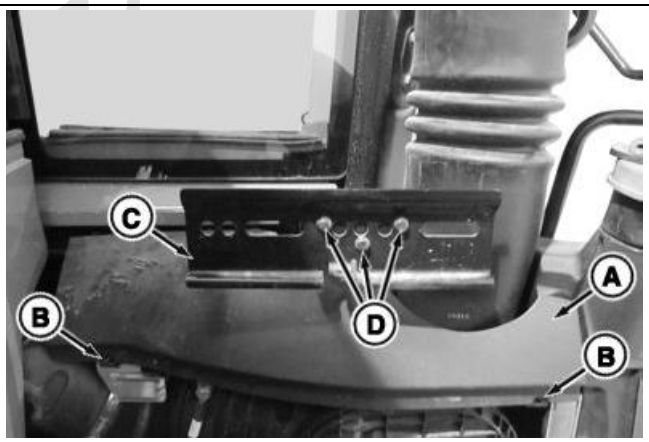
RX32825,000005E -19-25JUL13-1/1

Service Engine Air Filter Precleaner System

IMPORTANT: Do not remove engine air filters while servicing precleaner system.

NOTE: Service interval may vary due to operating conditions. If engine air filters clog prematurely, intake precleaner components may be dirty. Inspect and clean or replace precleaner components.

1. Disconnect battery ground (-) cable.
2. Remove battery compartment cover.
3. Remove two screws (B) holding aspirator hose cover (A). Remove aspirator hose cover.
4. Remove three screws (D) holding tool box support bracket (C). Remove tool box support bracket.



RXA0134280 —UN—20AUG13

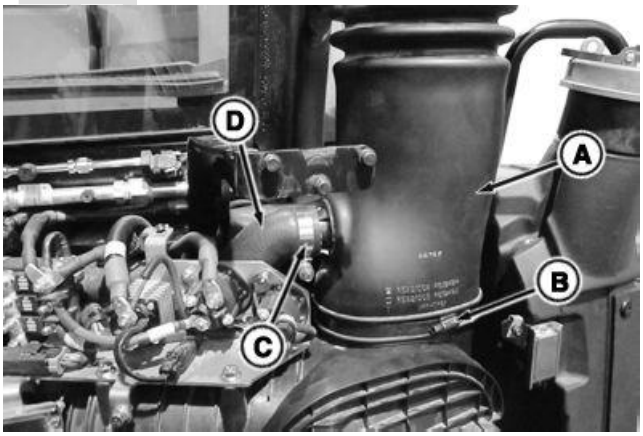
A—Aspirator Hose Cover
B—Aspirator Hose Cover Screws
C—Tool Box Support Bracket
D—Tool Box Support Bracket Cap Screws

Continued on next page

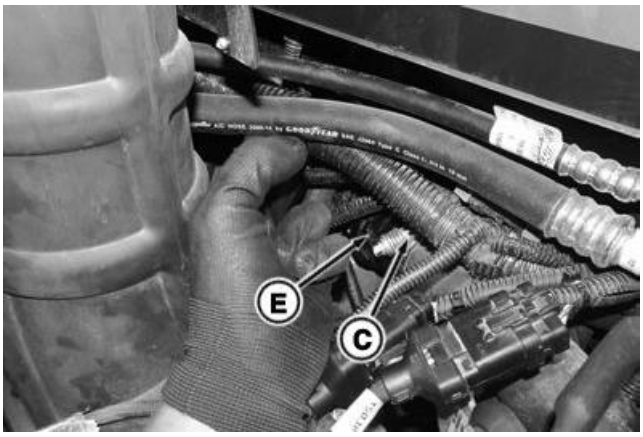
TO84419,0000079 -19-03SEP13-1/4

5. Loosen clamp (B) holding precleaner assembly (A) to air cleaner canister.
6. Loosen clamps (C) securing aspirator hose (D) to aspirator check valve (E) and aspirator hose to precleaner assembly (A).
7. Remove aspirator hose (D).

A—Precleaner Assembly
B—Precleaner Clamp
C—Aspirator Hose Clamps
D—Aspirator Hose
E—Aspirator Check Valve



RXA0134281 —UN—20AUG13



RXA0134282 —UN—20AUG13

TO84419,0000079 -19-03SEP13-2/4

8. Remove six cap screws (A) holding precleaner to support bracket and lift precleaner assembly from air cleaner canister.

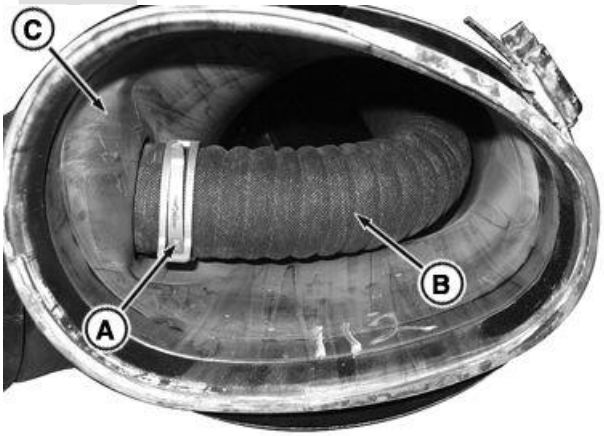
A—Precleaner Mounting Cap Screws

RXA0134283 —UN—21AUG13

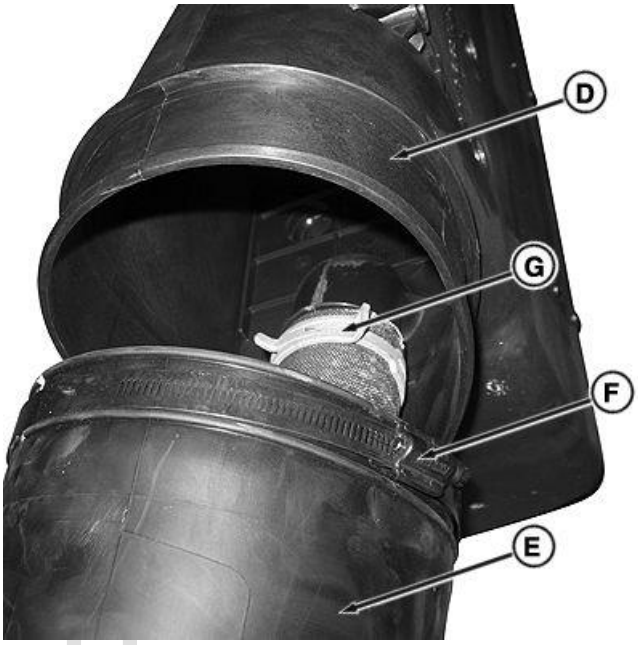
Continued on next page

TO84419,0000079 -19-03SEP13-3/4

9. Remove lower aspirator hose clamp (A) to remove aspirator hose (B) from precleaner extension tube (C).
10. Loosen clamp (F) holding precleaner (D) to extension tube (E).
11. Remove upper aspirator hose clamp (G) to separate aspirator hose from precleaner. Remove precleaner from extension tube.
12. Inspect components for damage. Replace as necessary.
13. Clean dust from aspirator tubes using compressed air, not to exceed 500 kPa (5 bar) (75 psi).
14. Thoroughly wash precleaner and precleaner extension tube in warm [maximum 65.5 °C (150 °F)] water mixed with a small amount of commercially available non-detergent car wash product. Rinse in clean water. Thoroughly dry before reinstallation.
15. Check aspirator check valve internal flap for freedom of movement. If flap does not move easily, remove check valve assembly and clean or replace as necessary.
16. Inspect aspirator hoses for damage or cracking. Replace as necessary.
17. Reassemble all components in reverse order of disassembly. Tighten according to specifications:



RXA0134284 —UN—21AUG13



RXA0134285 —UN—21AUG13

A—Lower Aspirator Hose Clamp
B—Aspirator Hose
C—Precleaner Extension Tube
D—Precleaner
E—Precleaner Extension Tube
F—Precleaner to Extension Tube Hose Clamp
G—Upper Aspirator Hose Clamp

Item	Measurement	Specification
Precleaner Mounting Cap Screws (H)	Torque	25 N·m (18.5 lb.-ft.)
Aspirator Hose Clamps (C)	Torque	10 N·m (7.4 lb.-ft.)
Precleaner Clamp (D)	Torque	6.5 N·m (4.8 lb.-ft.)
Precleaner to Extension Tube Hose Clamp (N)	Torque	6.5 N·m (4.8 lb.-ft.)

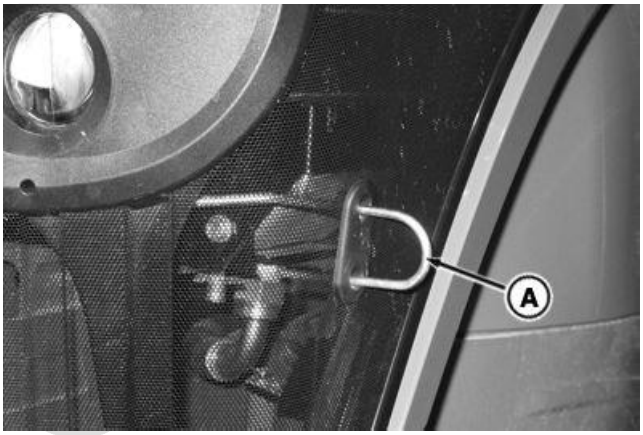
TO84419,0000079 -19-03SEP13-4/4

Clean Radiator, Coolers, and Air Conditioning Condenser

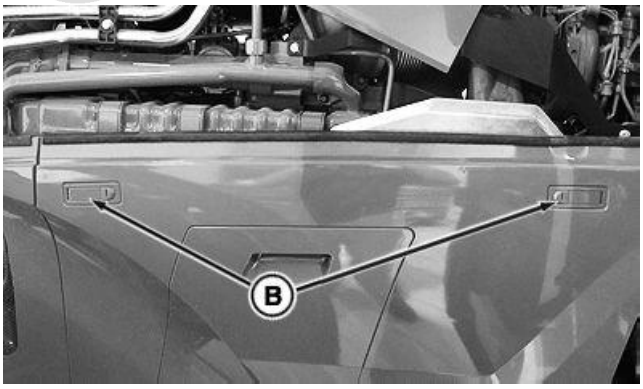
If tractor coolant temperature is excessive, or if debris is seen to be accumulating on cooling system components, clean components to help reduce excess temperatures.

1. Stop engine and remove key.
2. Clean grille and side screens using a brush.
3. Pull hood release (A) and raise hood.
4. Depress latch buttons (B) to remove left rear side shield.
5. Depress latch button (C) to remove left front side shield.

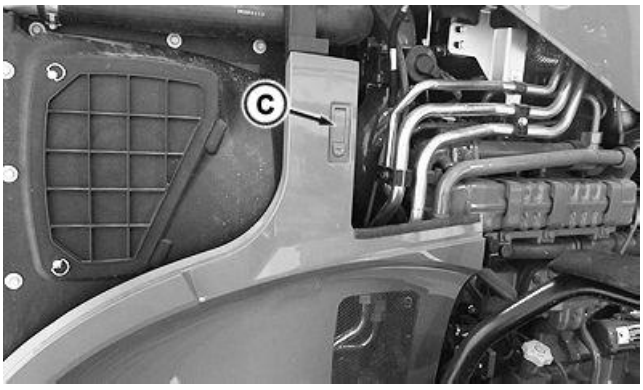
A—Hood Release
B—Left Rear Latch Buttons
C—Left Front Latch Button



RXA0133488 —UN—02JUL13



RXA0134193 —UN—25JUL13



RXA0134230 —UN—29JUL13

Continued on next page

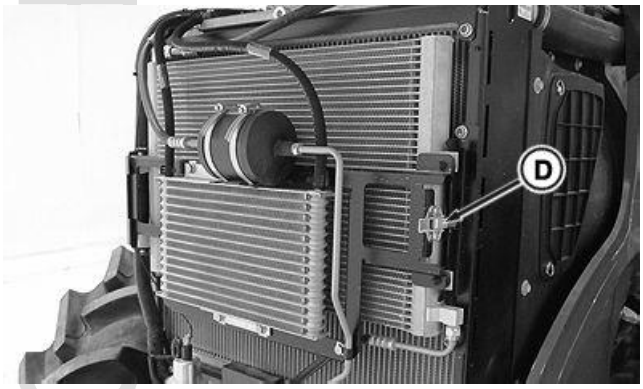
TO84419,000007A -19-29AUG13-1/2

6. Release latch (D) on left side of A/C condenser and pivot condenser and cooler forward and left.

IMPORTANT: Directing pressurized water at electronic/electrical components or connectors, bearings and hydraulic seals, fuel injection pumps or other sensitive parts and components may cause product malfunctions. Reduce pressure, and spray at a 45 to 90 degree angle.

Directing pressurized air at electronic/electrical components or connectors, may cause buildup of static electricity and product malfunctions.

7. Use compressed air or water to clean air conditioning condenser, hydraulic oil cooler, and engine coolant radiator. Straighten any bent fins.
8. Reposition and secure components, shields, and hood.



RXA0134241 —UN—31JUL13

D—Air Conditioning Condenser Latch

TO84419,000007A -19-29AUG13-2/2

Check Engine Compartment for Debris

IMPORTANT: Accumulated crop residue inside engine compartment can reduce engine and cooling system performance. If tractor has been operated in field conditions which might have caused debris accumulation, inspect and clean engine compartment as necessary.

1. Shut engine off and allow time for engine to cool.
2. Open side shields and raise engine hood.

IMPORTANT: Never steam clean or pour cold water on an injection pump that is operating or hot. Pump could seize.

Directing pressurized water at electronic/electrical components or connectors, bearings and hydraulic seals, fuel injection pumps or other sensitive parts and components may cause product malfunctions. Reduce pressure, and spray at a 45 to 90 degree angle.

Directing pressurized air at electronic/electrical components or connectors, may cause buildup of static electricity and product malfunctions.

3. Remove any crop residue or debris from around and in engine compartment, especially around potential hot spots such as turbocharger, exhaust manifold, and muffler.
4. Reinstall side shields and close and latch hood.

TO84419,000003D -19-16AUG13-1/1

Check Air Conditioning System

CAUTION: Avoid possible injury. Improper servicing may cause refrigerant to penetrate eyes and skin or cause burns.

IMPORTANT: R-134a refrigerant must be used in air conditioning system. Service requires special equipment and procedures. See your John Deere™ dealer.

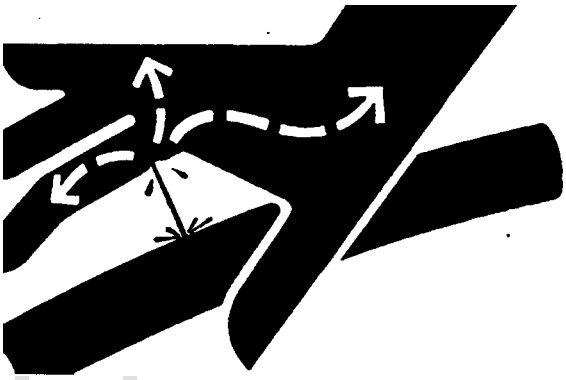
NOTE: Some oil seepage from compressor shaft seal is normal.

Perform following checks if air conditioning system will not cool, or cooling is intermittent:

- Confirm system does not function correctly. Access HVAC page on CommandCenter™ (see Generation 4 CommandCenter™ Hvac Settings in Operator Station section of this Operator's Manual). Set fan increment bar (A) to highest speed. Access Set Temperature page (B) and set temperature to coldest setting (C). Operate engine at 2000 rpm. Check air vents to confirm cold air is not present.
- Inspect and clean cab air filters. Replace filters if necessary. See Clean or Replace Cab Air Filters in this section of this Operator's Manual.
- Clean grille and radiator. See Clean Radiator, Coolers and Air Conditioning Condenser in this section of this Operator's Manual.
- Check air vents for cold air flow.

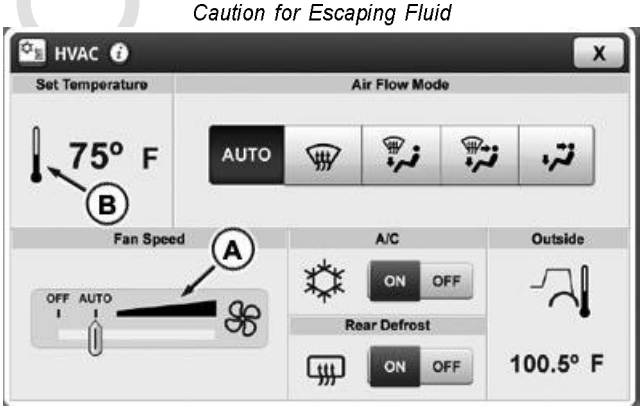
If problems persist, see your John Deere™ dealer.

A—Fan Increment Bar
B—Set Temperature Module
C—Decrease Temperature Softkey



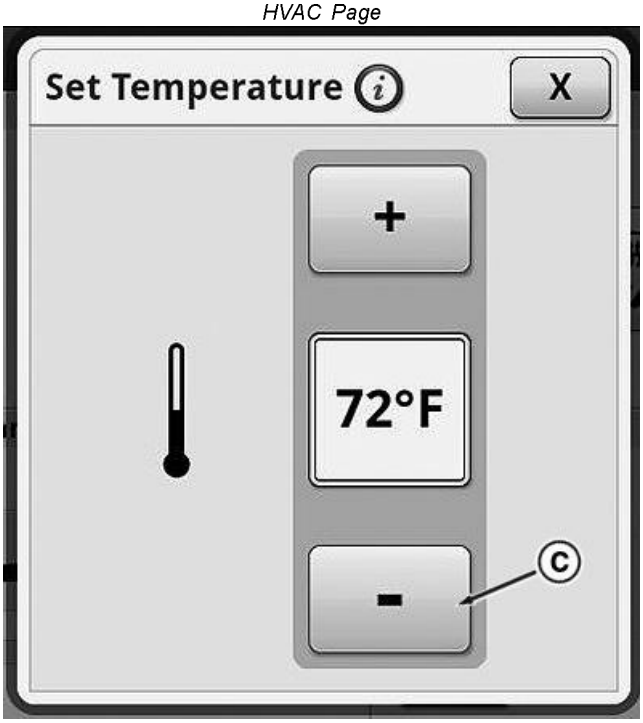
X9811 —UN—23AUG88

Caution for Escaping Fluid



RXA0134229 —UN—29JUL13

HVAC Page



RXA0131825 —UN—02APR13

Set Temperature Page

John Deere is a trademark of Deere & Company
CommandCenter is a trademark of Deere & Company

TO84419,000007B -19-29AUG13-1/1

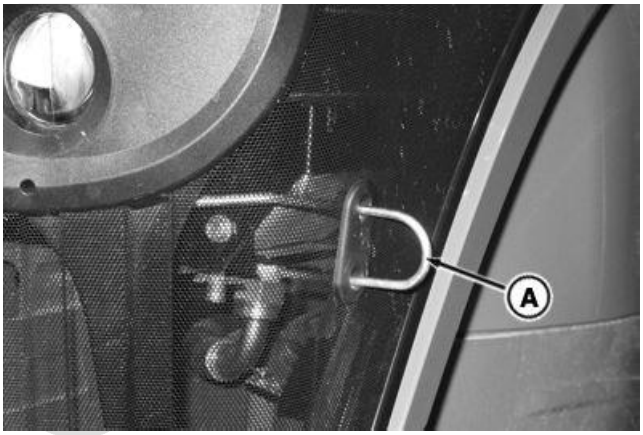
Replace Fan Belt

If fan belt is damaged or breaks, replacement is necessary.

IMPORTANT: Fan drive belt is equipped with an automatic belt tensioner which does not require adjustment. Regular inspection of tensioner is required. See Inspect Fan Belt Tensioner in 1500 Hour Service section of this Operator's Manual.

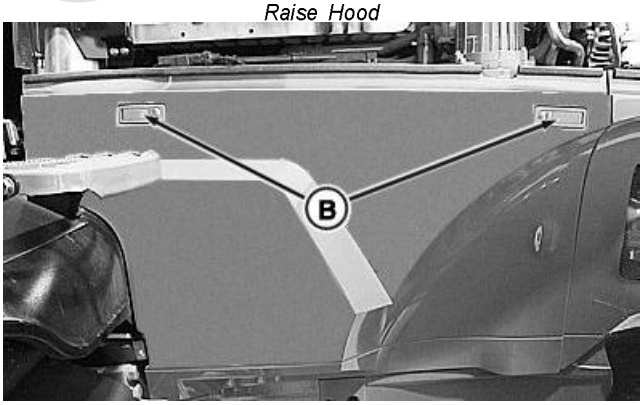
1. Pull hood release (A) and raise hood.
2. Depress latch buttons (B) and remove right rear side shield.
3. Disconnect vistronic fan drive harness connector
4. Release tension on belt using 1/2 in. drive ratchet or breaker bar (C) on belt tensioner (D).
5. While continuing to apply pressure with breaker bar (C), remove belt from tensioner pulley (D).

A—Hood Release
B—Left Rear Latch buttons
C—1/2 in. Drive Breaker Bar
D—Belt Tensioner



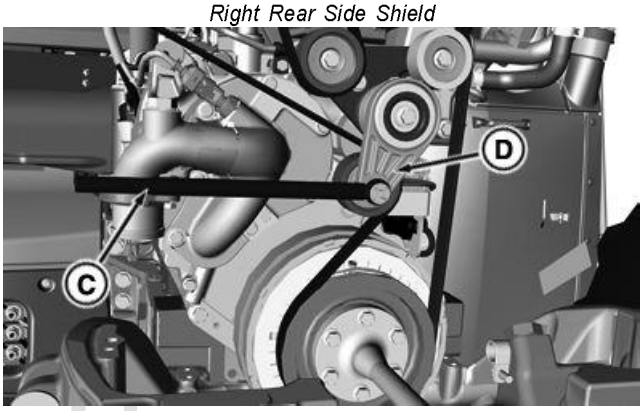
RXA0133488 —UN—02JUL13

Raise Hood



RXA0134208 —UN—29JUL13

Right Rear Side Shield

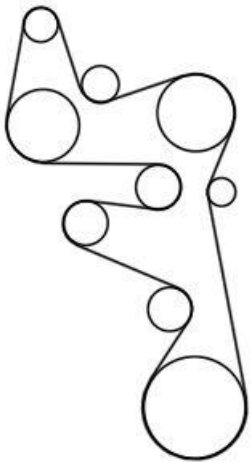


RXA0135222 —UN—23AUG13

Continued on next page

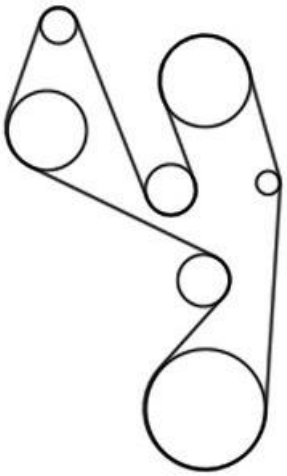
TO84419,000003E -19-28AUG13-1/2

6. Relax tension and completely remove belt.
7. Install new belt on all pulleys, except tensioner pulley. See fan belt layout diagram for correct belt routing.
8. Using breaker bar, release tension on tensioner pulley and position belt over pulley.
9. Slowly relax force on breaker bar.
10. Reinstall vistronic fan drive harness connector
11. Install right rear side shield.
12. Close and secure hood.



6.8L Fan Belt Layout

RXA0134221 —UN—29JUL13



9.0L Fan Belt Layout

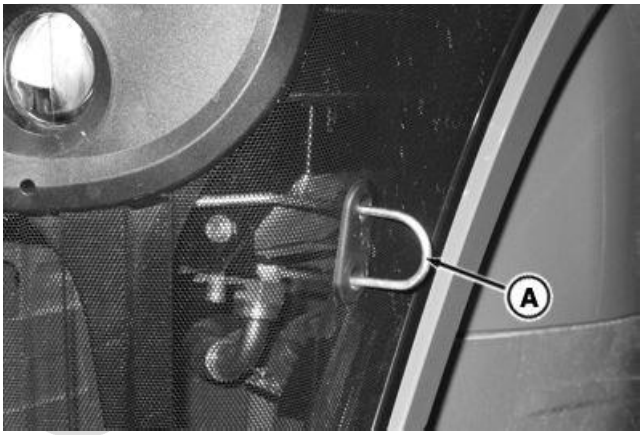
RXA0134220 —UN—29JUL13

TO84419,000003E -19-28AUG13-2/2

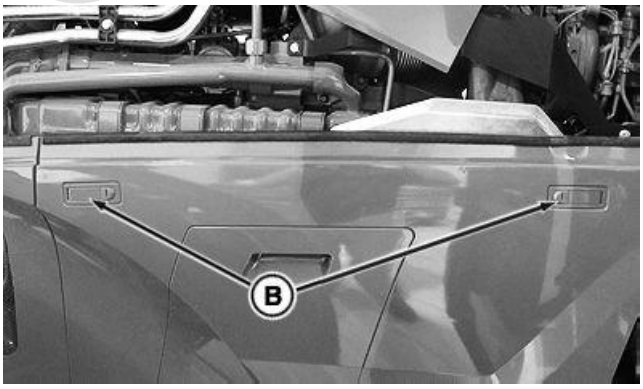
Check Engine Weep Hole

1. Pull hood release (A) and raise hood.
2. Depress latch buttons (B) to remove left rear side shield.
3. Depress latch button (C) to remove left front side shield.

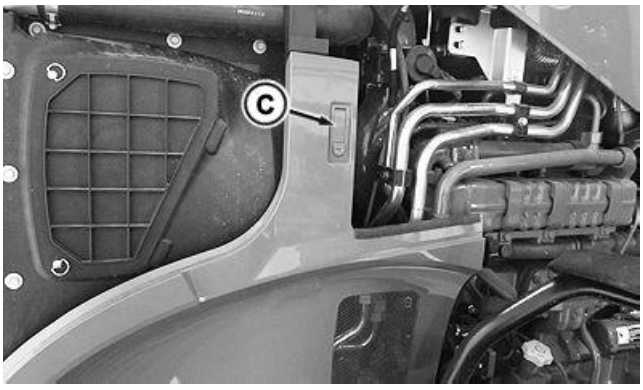
A—Hood Release
B—Left Rear Latch Buttons
C—Left Front Latch Button



RXA0133488 —UN—02JUL13



RXA0134193 —UN—25JUL13



RXA0134230 —UN—29JUL13

Continued on next page

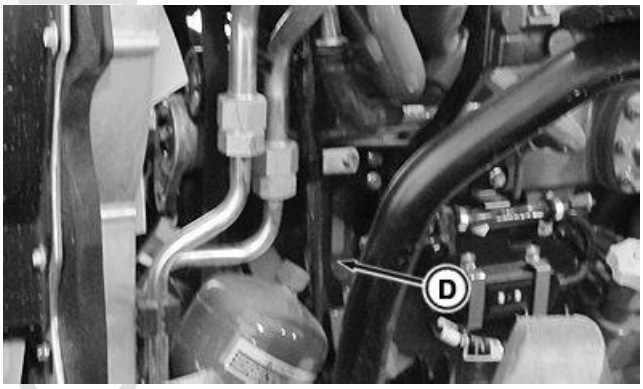
TO84419,000003F -19-16AUG13-1/2

4. Inspect weep hole (D) for oil or coolant leakage.
5. Close and secure hood and reinstall side shields.

If leakage is detected, see your John Deere™ dealer to replace complete coolant pump assembly (repair parts are not available).

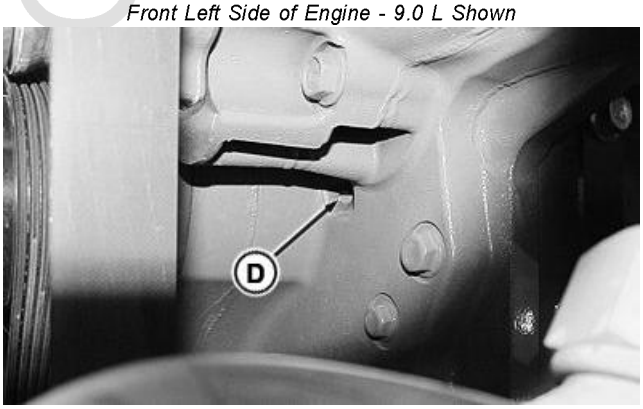
- Oil leakage indicates a damaged rear seal.
- Coolant leakage indicates a damaged front seal.

D—Weep Hole



RXA0134196 —UN—25JUL13

Front Left Side of Engine - 9.0 L Shown



RXA0134197 —UN—25JUL13

Engine Weep Hole - 9.0 L Shown

John Deere is a trademark of Deere & Company

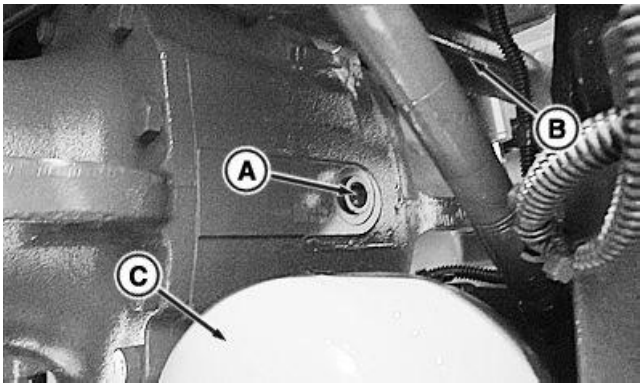
TO84419,000003F -19-16AUG13-2/2

Check MFWD or TLS™ Plus (If Equipped) Axle Housing Oil Level

1. Park tractor on level ground.
2. Remove fill/check plug (A). Oil level should be just below plug hole.
3. If oil level is low, add oil until level is correct. Use John Deere™ Hy-Gard™ oil as specified in Transmission and Hydraulic Oil in Fuel, Lubricants and Coolant section of this Operator's Manual.
4. Apply pipe sealant with TEFLON®, or equivalent, to threads of fill/check plug (A).
5. Install fill/check plug. Tighten to specifications.

Specification	
Plugs-to-Axle Housing—Torque	70 N·m (52 lb.-ft.)

TEFLON is a trademark of DuPont Co.



RXA0134206 —UN—29JUL13

Left-Hand Side

A— Fill/Check Plug
B— Tie Rod
C— TLS™ Plus Accumulator

TO84419,0000065 -19-21AUG13-1/1

Check MFWD or TLS™ Plus (If Equipped) Wheel Hub Oil Level

1. Park tractor on level ground.
2. Maneuver tractor forward or backward until words OIL LEVEL - HY-GARD (A) or OIL LEVEL (C) cast into wheel hub are horizontal.
3. Remove drain/fill plug (B). Oil level should be just below plug hole.

IMPORTANT: Use correct lubricant. Wheel hubs with brakes must be filled with John Deere™ Hy-Gard™ oil as specified in Transmission and Hydraulic Oil in Fuel, Lubricants and Coolant section of this Operator's Manual.

Wheel hubs without brakes are filled with John Deere™ GL-5 Gear Lubricant as specified in Gear Oil in Fuel, Lubricants and Coolant section of this Operator's Manual. .

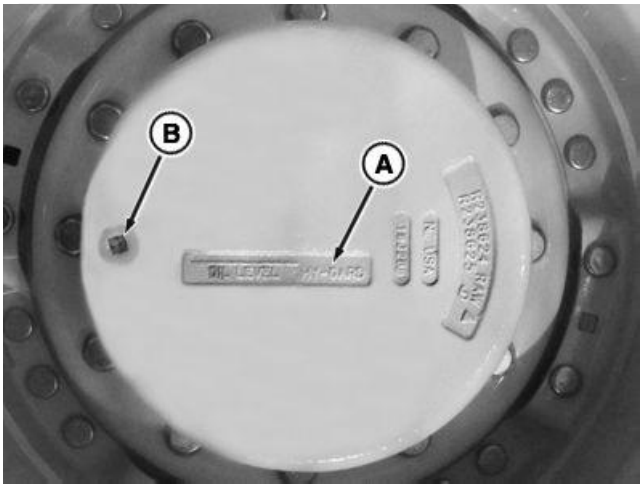
4. If oil level is low, add oil through drain/fill hole. Add correct oil depending upon whether tractor is equipped with front brakes. If tractor is equipped with front brakes, words cast into front hubs will read OIL LEVEL - HY-GARD. Fill front brake hub with John Deere™ Hy-Gard™ oil.

   If only words OIL LEVEL are cast into front hubs, tractor is not equipped with front brakes. Use John Deere™ GL-5 Gear Lubricant.

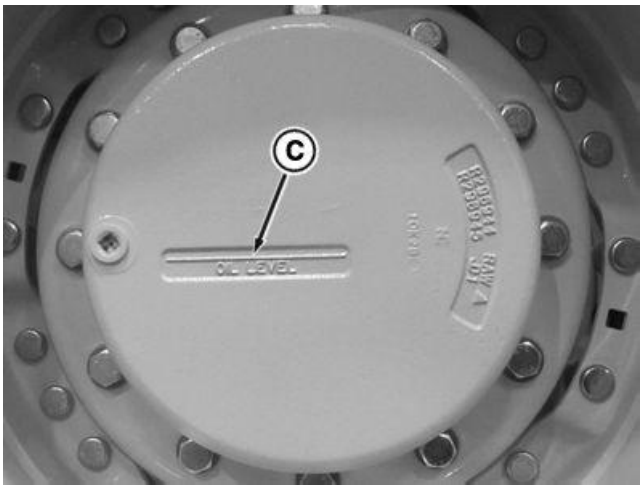
NOTE: See Gear Oil or Transmission and Hydraulic Oil in Fuel, Lubricants and Coolant section of this Operator's Manual.

5. Apply pipe sealant with TEFLON®, or equivalent, to threads of drain/fill plug.
6. Install drain/fill plug and O-ring. Tighten to specifications.

Specification	
Plug-to-Hub—Torque	70 N·m (52 lb.-ft.)



RXA0134236 —UN—29JUL13



RXA0129807 —UN—26NOV12

A—Oil Level - HY-GARD
B—Drain/Fill Plug
C—Oil Level

7. Repeat procedure with other wheel hub.

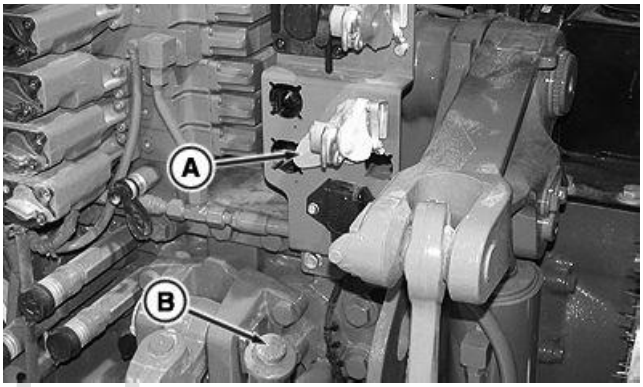
TO84419,0000066 -19-21AUG13-1/1

Bleed Trailer Hydraulic Brakes (If Equipped)

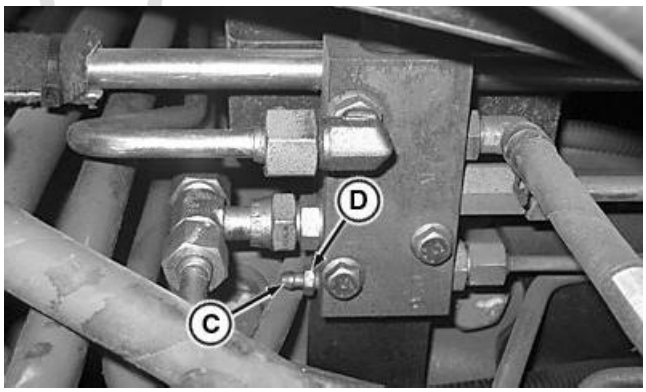
NOTE: An assistant is needed to perform this procedure.

1. Remove cap and connect a hose to trailer brake connection (A). Place other end of hose into hydraulic oil filler tube (B).
2. Loosen bleed valve nut (D).
3. Connect a hose onto bleed valve connection (C). Place other end of hose into hydraulic oil filler tube (B).
4. Start engine.
5. At slow idle, depress brake pedals for approximately 2 minutes.
6. Tighten bleed valve nut (D) with brake pedals depressed.
7. Shut off engine and remove key.
8. Remove hoses and install hydraulic oil filler tube cap.

A—Trailer Brake Connection
B—Hydraulic Oil Filler Tube
C—Bleed Valve Connection
D—Bleed Valve Nut



RXA0134228 —UN—26JUL13



RXA0111305 —UN—14OCT10

TO84419,000007C -19-29AUG13-1/1

Bleed Trailer Air Brakes (If Equipped)

NOTE: An assistant is needed to perform this procedure.

Trailer air brakes are equipped with **automatic** bleed valves. Automatic bleed valves will vent an air/oil/water mixture multiple times during normal operation of tractor.

First person will stand by rear hitch and manually push in red trailer air brake coupler (A). Second person will feel if bleed valves (B) cycle. Bleed valves (B) are located on bottom of trailer brake air tanks. The air tanks are located in front of right rear axle.

CAUTION: To avoid injury, be sure all people are clear of tractor.

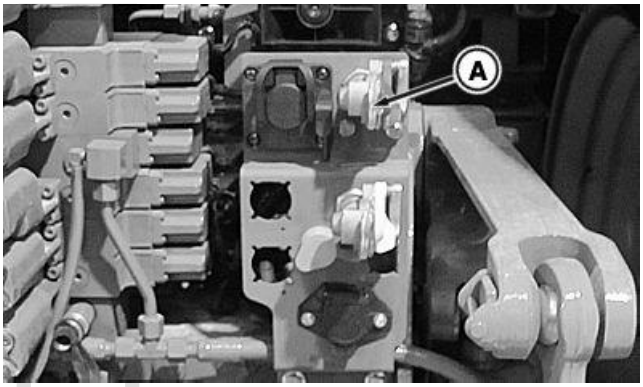
1. Start tractor.
2. Wait 1 minute for air tanks to build up pressure.

   NOTE: Continuous release of air will not allow trailer air brakes to bleed. Coupler must be cycled in an on/off process.

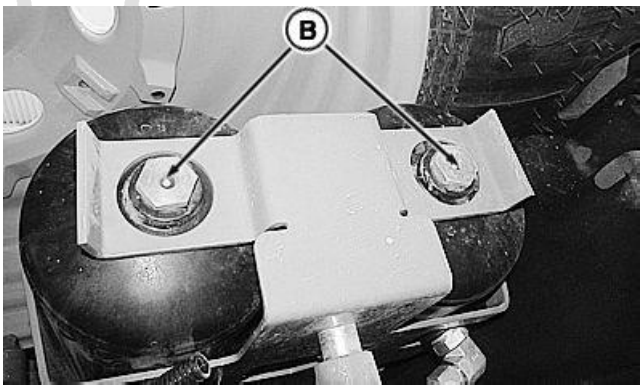
3. Person 1 repeatedly cycles red trailer air brake coupler (A) on and off.
4. Person 2 places hand below bleed valves, (B) and feel for a release of air, water or oil.

Bleed valves cycle randomly. If they do not operate first time, wait 10 minutes and try this process again. If no venting is observed, contact your John Deere™ dealer.

John Deere is a trademark of Deere & Company



RXA0134198 —UN—25JUL13



RXA0134199 —UN—25JUL13

A—Red Trailer Air Brake Coupler

B—Bleed Valves

TO84419,000007D -19-29AUG13-1/1

Cleaning 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.

IMPORTANT: 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.

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.

If foreign material or fluid has been added to the DEF tank, drain the DEF tank, flush, and fill with new DEF.

If DEF quality is in question, pull a sample out of the DEF tank and place into a clear container. 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. DEF in this condition should not be used.

1. Remove drain plug (if equipped), and drain or siphon bad DEF from DEF tank.

NOTE: Cleaning can take place with DEF tank installed or removed.

2. Clean DEF tank with new DEF.

   DEF must pass visual, smell, and concentration checks before the engine can be ran. See Diesel Exhaust Fluid (DEF) – For Use In Selective Catalytic Reduction (SCR) Equipped Engines in the Fuels, Lubricants, and Coolants Section for more information.

3. Drain or siphon DEF tank.

NOTE: Repeat steps 2—3 until DEF tank has been cleaned.

4. Change DEF dosing unit filter.
5. Install drain plug in DEF tank, if removed. Install DEF tank, if removed.
6. Fill DEF tank with new DEF.
7. Check DEF concentration with DEF refractometer, such as JDG11594 or JDG11684. The correct DEF concentration is 31.8% — 33.2%. See your authorized dealer for more information.
8. If DEF is not within specification, does not appear clear, or does not have a slight ammonia smell, contact your authorized dealer.

DX,DEF,CLEANTANK -19-12JUL13-1/1

Check Engine Oil Level

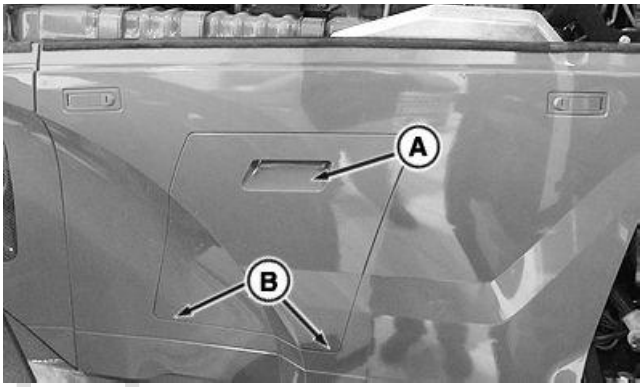
1. Park tractor on level ground. Stop engine and remove key.
2. Remove engine access panel. Pull outward, using hand grip recess (A). Magnets secure top of panel. Lift panel from alignment tabs at bottom (B).

IMPORTANT: Do not operate engine with oil level below "ADD" mark on dipstick.

NOTE: Fully tighten filler cap to check oil. Oil level at top of crosshatch area on dipstick is considered FULL.

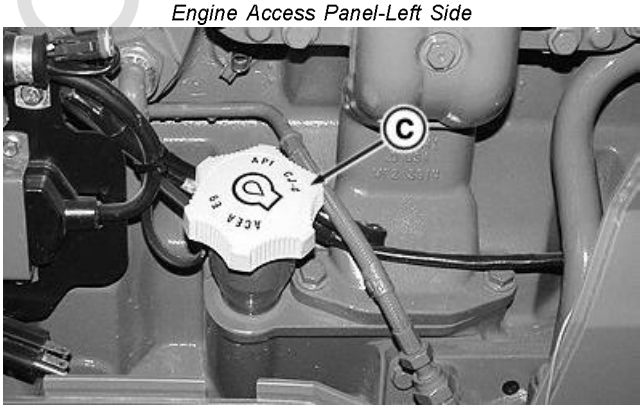
3. Dipstick is attached to filler cap (C). Remove cap and clean dipstick. Retighten cap, then remove and check oil level on dipstick (D). Oil level should be between "ADD" mark and top (E) of crosshatch area on dipstick.
4. If needed, remove cap and add oil recommended in Fuel, Lubricants and Coolant section of this Operator's Manual.
5. Reinstall engine access panel.

A—Hand Grip Recess
B—Alignment Tabs
C—Filler Cap
D—Dipstick
E—Top of Crosshatch



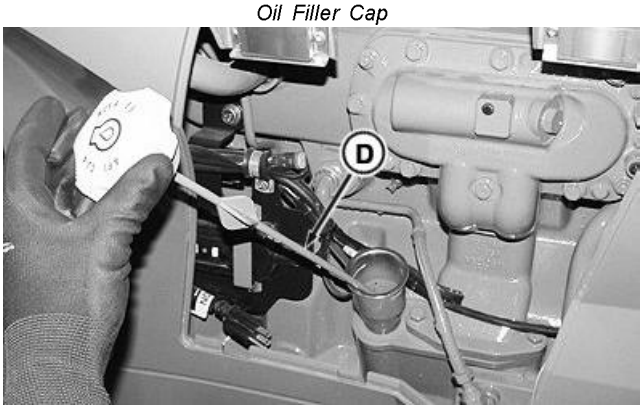
RXA0134202 —UN—13AUG13

Engine Access Panel-Left Side

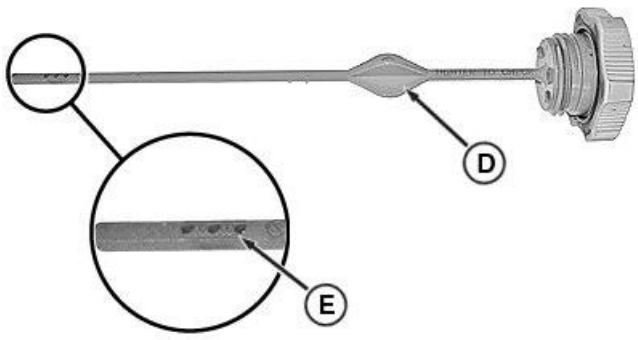


RXA0134278 —UN—13AUG13

Oil Filler Cap



RXA0134279 —UN—13AUG13



RXA0109390 —UN—16AUG10

Oil Dipstick

TO84419,0000041 -19-16AUG13-1/1

Check Transmission-Hydraulic Oil Level

IMPORTANT: During operation, with engine running, oil level will vary and may be much above maximum operating level or below normal operating range. Check transmission-hydraulic oil level only after tractor has not been running for at least one hour.

NOTE: Check transmission-hydraulic oil level with tractor parked on level ground and hitch lowered.

1. If tractor has been running, shut off engine and wait at least one hour before checking oil level.
2. Check oil level in sight glass (A) at rear of tractor.

IMPORTANT: Overfilling transmission-hydraulic oil can result in decreased operating efficiency. Except when operating in side-hill or high volume applications, keep oil level at or slightly below top of normal operating range. Never fill system above maximum operating level.

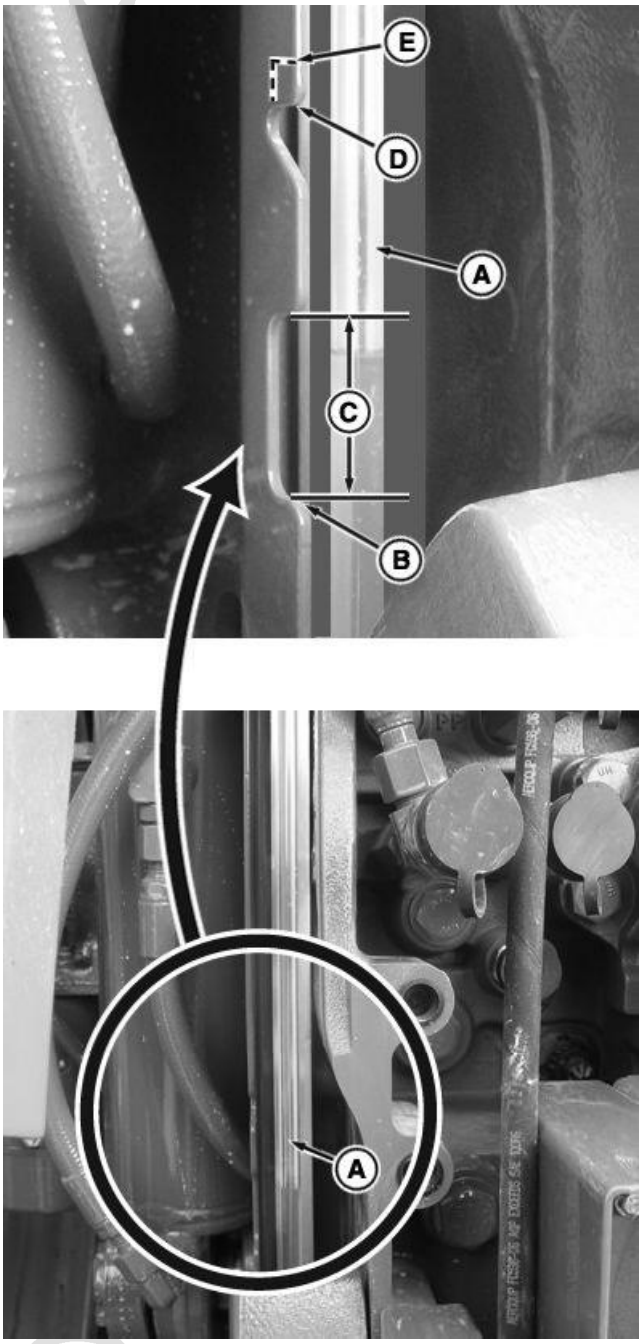
NOTE: Oil level may need to be adjusted based on expected operating conditions. See special operating condition instructions below.

3. If transmission-hydraulic oil level is at or below add oil indication (B), slowly add oil to reach top of normal operating range indicator (C). Use oil as specified in Transmission-Hydraulic Oil in Fuel, Lubricants and Coolant section of this Operator's Manual. From add oil level, adding approximately these amounts of oil will bring oil level to top of normal operating range.

Transmission	Without Optional Auxiliary Oil Reservoir	With Optional Auxiliary Oil Reservoir
CommandQuad™	20 L (21 qt.)	22 L (23 qt.)
IVT™/AutoPowr™	16 L (17 qt.)	18 L (19 qt.)
e23™	16 L (17 qt.)	18 L (19 qt.)

IMPORTANT: Examine oil level indicator. If tractor is not equipped with optional auxiliary oil reservoir, maximum operating level indication will be as shown (D). If tractor has optional oil reservoir installed, maximum operating level indicator will be higher (E).

For Side-Hill Applications or High Oil Volume Requirements: To prevent low oil levels, additional oil may be required when operating on side hills or when using implements which require large volumes of oil to function. Oil level should be at or slightly below maximum operating level (D or E).



RXA0133301 —UN—19JUN13

A—Transmission-Hydraulic Oil Sight Glass
B—Add Oil
C—Normal Operating Range
D—Maximum Operating Level (Without Optional Auxiliary Oil Reservoir)
E—Maximum Operating Level (With Optional Auxiliary Oil Reservoir)

TO84419,00001CE -19-28AUG13-1/1

Lubricate MFWD or TLS™ Plus Kingpins, Tie Rod Ends, Steering Cylinder, Axle Pivot and Panhard Rod

IMPORTANT: Normal service is every 500 hours. If used in extremely wet conditions service daily or every 10 hours. See Lubricate MFWD or TLS™ Plus Kingpins, Tie Rod Ends, Steering Cylinder, Axle Pivot and Panhard Rod in 500 Hour Service section of this Operator's Manual.

TO84419,0000042 -19-16AUG13-1/1

Lubricate MFWD or TLS™ Plus U-Joints

IMPORTANT: Normal service is every 500 hours. If used in extremely wet conditions service daily or every 10 hours. See Lubricate MFWD or TLS™ Plus U-Joints in 500 Hour Service section of this Operator's Manual.

TO84419,0000043 -19-16AUG13-1/1

50 Hour Service

Perform This and Other Scheduled Services

When scheduled service at any hourly level is performed, also perform all subordinate hourly level services. See Observe Service Intervals in Maintenance and Service Intervals Section of this Operator's Manual for table listing main and subordinate service intervals.

TO84419,0000211 -19-25JUL13-1/1

Inspect Tires

IMPORTANT: Keep tires at recommended pressure to insure maximum performance. See inflation pressure tables in Front Wheels, Tires, and Treads and in Rear Wheels, Tires, and Treads section of this Operator's Manual.

Inspect tires for cuts or breaks and repair. Adjust and maintain tire pressure according to recommended pressure charts for optimum field performance. Check pressure of each tire at least once a week. If tires contain liquid ballast, use a special air-water gauge, and measure with valve stem positioned at bottom.

RX32825,00006FC -19-27MAR13-1/1

Lubricate Rear Hitch

IMPORTANT: Normal service is every 250 hours. If used daily, service every 50 hours. See Lubricate Rear Hitch in 250 Hour Service section of this Operator's Manual.

RX32825,00006FD -19-23APR13-1/1

Lubricate Front Hitch (If Equipped)

IMPORTANT: Normal service is every 250 hours. If used daily, service every 50 hours. See Lubricate Front Hitch (If Equipped) in 250 Hour Service section of this Operator's Manual.

RX32825,00006FE -19-18DEC12-1/1

Perform This and Other Scheduled Services

When scheduled service at any hourly level is performed, also perform all subordinate hourly level services. See Observe Service Intervals in Maintenance and Service Intervals Section of this Operator's Manual for table listing main and subordinate service intervals.

TO84419,0000211 -19-25JUL13-1/1

Lubricate Rear Hitch

IMPORTANT: Normal service is every 250 hours. If used daily, service every 50 hours.

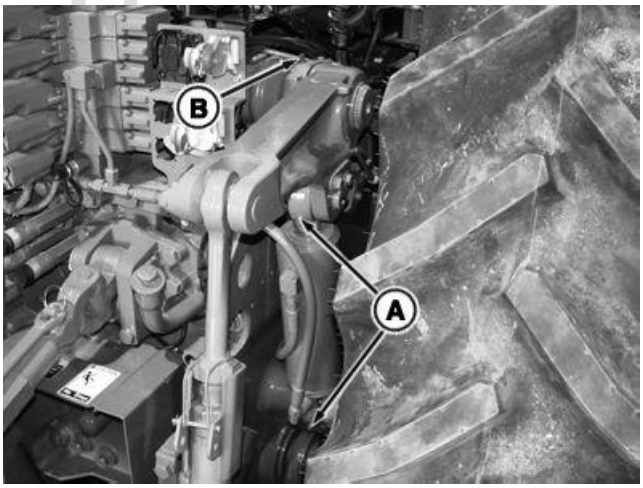
Lower hitch before lubricating hitch components.

Lubricate lift cylinders (A), rockshaft (B), and lift arms (C) located on both sides of tractor.

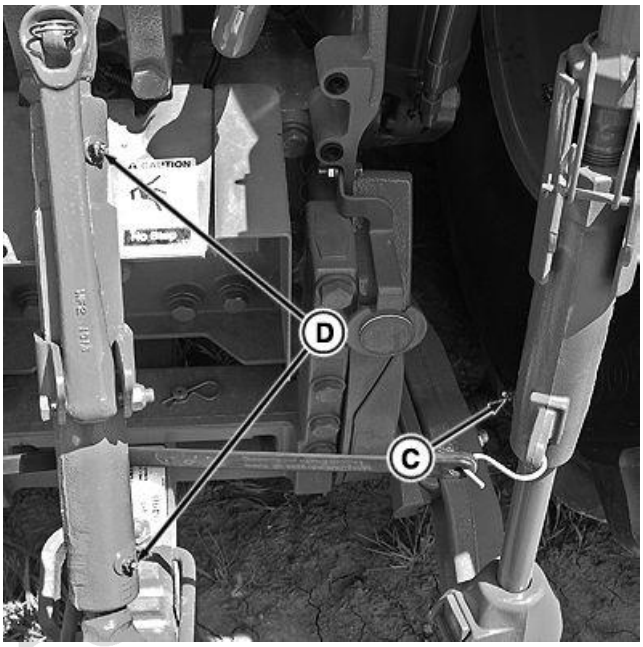
Lubricate mechanical center link (D).

Use John Deere™ SD Polyurea grease or other grease as specified in Fuel, Lubricants, and Coolant section.

A—Lift Cylinders
B—Rockshaft
C—Lift Arms
D—Center Link



RXA0134286 —UN—20AUG13



RXA0118612 —UN—13JUL11

John Deere is a trademark of Deere & Company

RX32825,0000701 -19-19AUG13-1/1

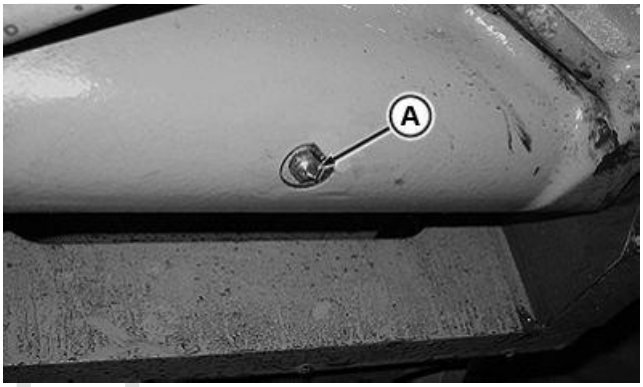
Lubricate Front Hitch (If Equipped)

IMPORTANT: Normal service is every 250 hours. If used daily, service every 50 hours.

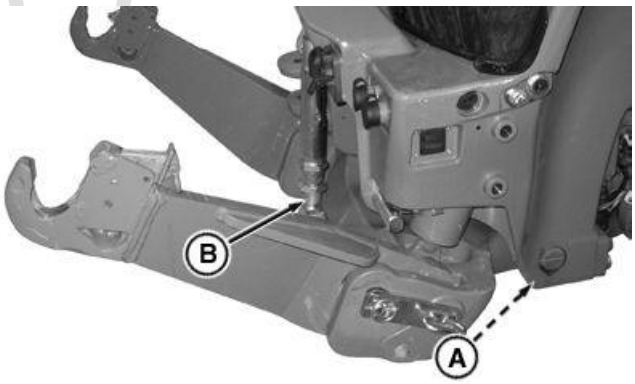
Grease main pivot point through grease fitting (A) underneath front hitch, and threads on center link (B).

Use John Deere™ SD Polyurea grease or other grease as specified in Fuel, Lubricants, and Coolant section.

A—Pivot Point Grease Fitting **B—Center Link Threads**



RXA0110637 —UN—03SEP10



RXA0110655 —UN—03SEP10

John Deere is a trademark of Deere & Company

RX32825,0000702 -19-18DEC12-1/1

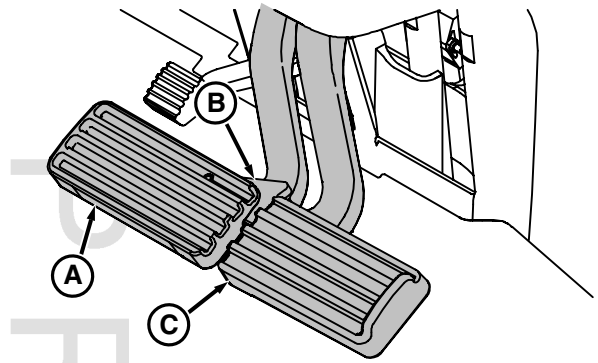
Check Manual Brakes

IMPORTANT: Any noticeable pedal drift downward from initial point of resistance (solid pedal) indicates brake leakage. See your John Deere™ dealer.

NOTE: Solid pedal feel occurs when brake pedal feels like it has stopped moving, even when it is pushed harder. A solid pedal feel should occur after pedal has traveled 102—127 mm (4—5 in.) without any type of trailer brake, and 127—152 mm (5—6 in.) with trailer brakes. Brake valve will emit a squeak just before solid pedal point is reached.

With engine stopped, check manual brakes for correct function:

1. Position latch bar (B) to allow brake pedals to operate separately.
2. Pump left brake pedal (A) and right brake pedal (C) individually. Pedals should have a solid feel. If pedals do not feel solid, have your John Deere™ dealer bleed brakes.
3. Check to make sure pedals do not settle to end of stroke within 10 seconds after being applied. If leakage exceeds this rate or if one pedal settles faster than the other, see your John Deere™ dealer.
4. With brake pedals not locked together, press both pedals simultaneously. Solid pedal should be obtained at approximately same pedal height on both pedals. If height varies more than 51 mm (2 in.), have your John Deere™ dealer bleed brakes.



RXA0068386 —UN—27AUG03

A—Left Brake Pedal **C—Right Brake Pedal**
B—Latch Bar

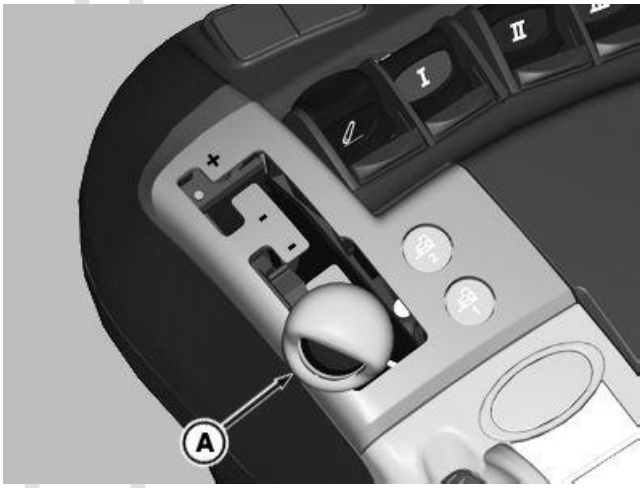
John Deere is a trademark of Deere & Company

TO84419,0000081 -19-29AUG13-1/1

Check Neutral Start System

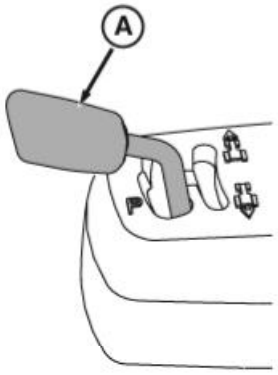
CommandQuad™ or e23™ Transmission Left-Hand Reverser

RXA0130962 —UN—14FEB13



e23™ Transmission Right-Hand Reverser

RXA0130963 —UN—14FEB13



IVT™ /AutoPowr™ Left-Hand Reverser

RXA0130964 —UN—14FEB13

IVT™/AutoPowr™ Right-Hand Reverser

RXA0130965 —UN—14FEB13

⚠ CAUTION: Avoid personal injury. Make sure that everyone is clear of tractor.

1. Park tractor on level ground.
2. Fully depress clutch and brake pedals.
3. Shut off tractor.
4. Move reverser lever (A) to any position **except** NEUTRAL or PARK position.

NOTE: Engine should start in NEUTRAL or PARK position only (depending upon transmission type).

5. Attempt to start engine. If engine starts in any position other than NEUTRAL or PARK (depending upon transmission type), neutral start system should be repaired. See your John Deere™ dealer **immediately**.

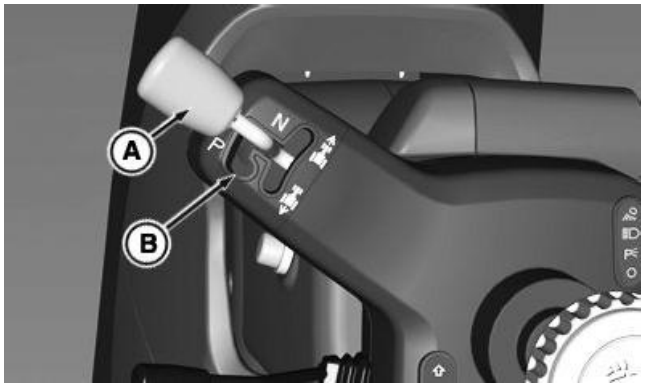
Transmission and Reverser Lever Options	Tractor Starts In
CommandQuad™ Left-Hand Reverser	Park ONLY
e23™ Transmission Left-Hand Reverser	Park or Neutral
e23™ Transmission Right-Hand Reverser	Park or Neutral
IVT™/AutoPowr™ Left-Hand Reverser	Park or Neutral
IVT™/AutoPowr™ Right-Hand Reverser	Park ONLY

Transmission Reverser Lever Position to Allow Tractor to Start

CommandQuad is a trademark of Deere & Company
IVT is a trademark of Deere & Company
AutoPowr is a trademark of Deere & Company
John Deere is a trademark of Deere & Company

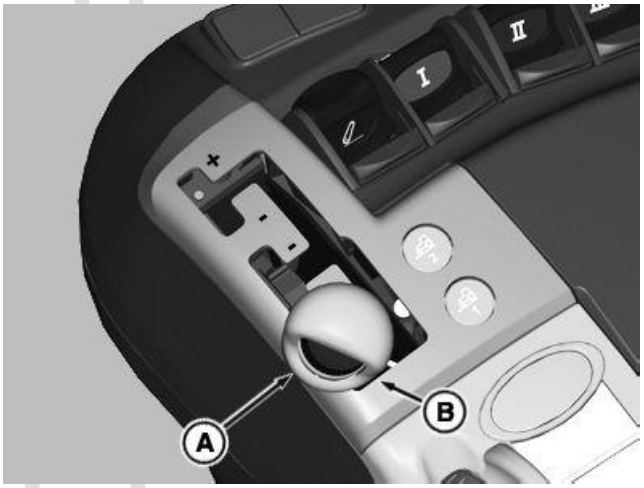
RX32825,0000725 -19-17APR13-1/1

Check Transmission PARK System



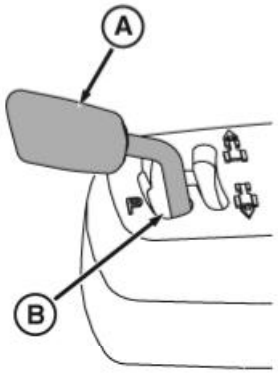
CommandQuad™ or e23™ Transmission Left-Hand Reverser

RXA0130966 —UN—14FEB13



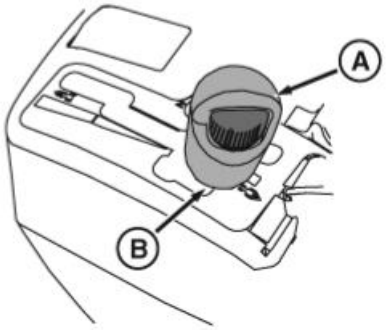
e23™ Transmission Right-Hand Reverser

RXA0130967 —UN—14FEB13



IVT™ /AutoPowr™ Left-Hand Reverser

RXA0130968 —UN—14FEB13



IVT™/AutoPowr™ Right-Hand Reverser

RXA0130969 —UN—14FEB13

⚠ CAUTION: Avoid personal injury. Make sure that everyone is clear of tractor.

1. Position tractor on a 30% incline [1 m (3.3 ft.) vertically for every 3 m (9.8 ft.) horizontally] with front of tractor facing downward.
2. Move reverser lever (A) to PARK position (B).
3. If tractor does not hold stationary on incline with reverser lever in PARK position, transmission should be repaired **immediately** by your John Deere™ dealer.

TO84419,0000046 -19-16AUG13-1/1

Check Swinging Drawbar for Wear

CAUTION: Parts that have reached or exceeded their wear limit must be replaced with new parts.

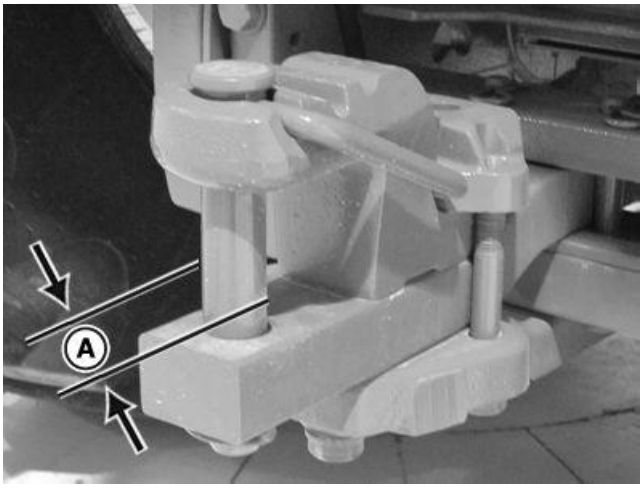
1. Check diameter (A) of pin.

Specification	
Swinging Drawbar, *Pin—Wear limit or* minimum diameter	29.5 mm 1.16 in.

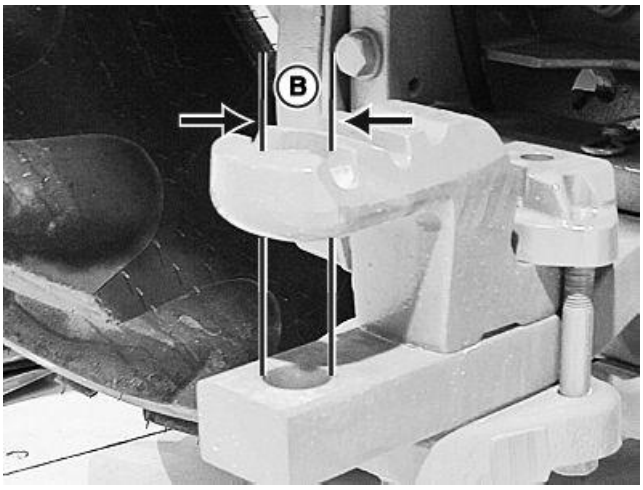
2. Check diameter (B) of upper and lower pin receiver hole.

Specification	
Upper and lower receiver holes (measured in direction of travel)—Wear limit or maximum permitted diameter	35.0 mm (oval) 1.38 in. (oval)

A—Pin Diameter **B—Receiver Hole Diameter**



RXA0134205 —UN—25JUL13



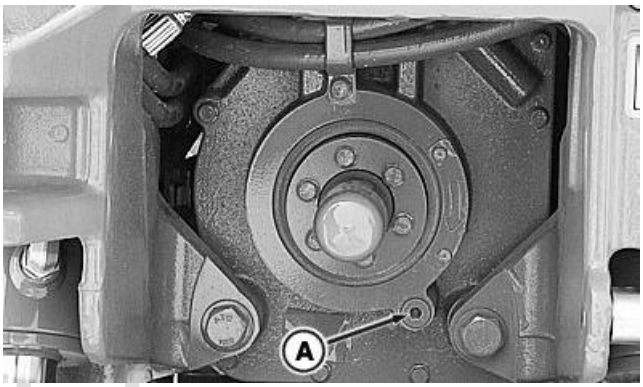
RXA0134204 —UN—25JUL13

TO84419,0000064 -19-21AUG13-1/1

Check Front PTO Housing Oil Level (If Equipped)

1. Park tractor on level surface.
2. Remove plug (A). Oil level should be just below plug hole.
3. If low, add oil until level is correct. See Fuel, Lubricants, and Coolant section in Operator's Manual.
4. Install plug.

A—Check/Fill Plug



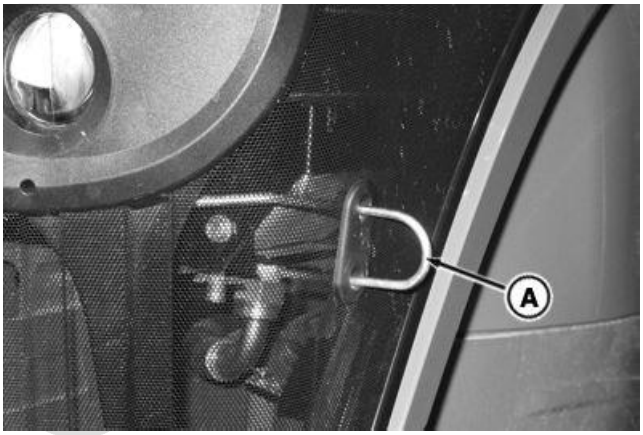
RXA0134207 —UN—25JUL13

TO84419,0000080 -19-29AUG13-1/1

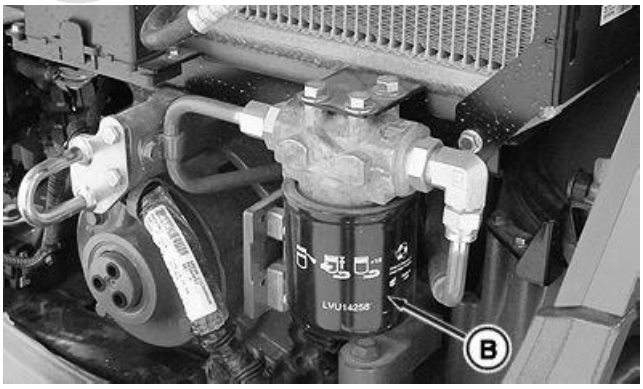
Change Front PTO Oil Filter (If Equipped)

1. Pull hood release (A) and raise hood.
2. Remove filter (B).
3. Lubricate new filter seal with clean hydraulic oil.
4. Install filter until seal contacts surface. Hand tighten additional 1/2 turn.
5. Start tractor and operate front PTO. After a few minutes of operation, stop tractor and check oil level at fill plug. Add more oil if necessary.

A—Hood Release **B—Front PTO Oil Filter**



RXA0133488 —UN—02JUL13



RXA0135227 —UN—30AUG13

TO84419,0000093 -19-30AUG13-1/1

Perform This and Other Scheduled Services

When scheduled service at any hourly level is performed, also perform all subordinate hourly level services. See Observe Service Intervals in Maintenance and Service Intervals Section of this Operator's Manual for table listing main and subordinate service intervals.

TO84419,0000211 -19-25JUL13-1/1

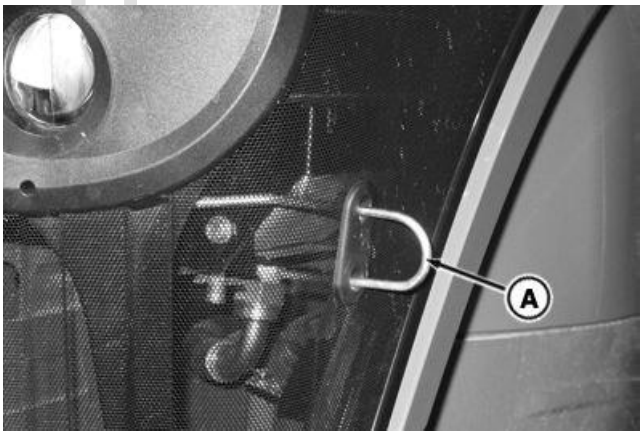
Change Engine Oil and Filter—6.8 L Engine

IMPORTANT: Sulfur content should not exceed 0.10%. Sulfur content less than 0.10% is preferred. See Engine Oil and Filter Service Intervals in Fuel, Lubricants and Coolant section of this Operator's Manual for your engine.

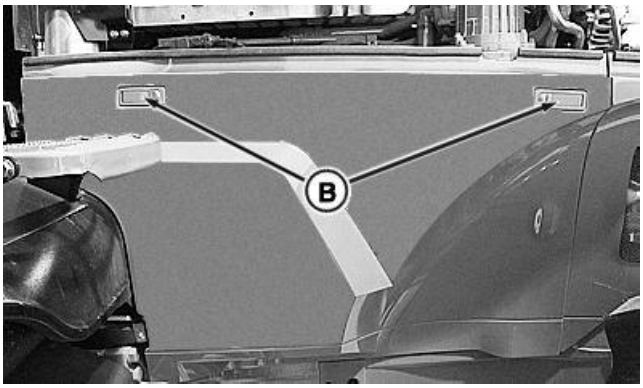
NOTE: Initial break-in service interval of a new or rebuilt wet sleeve engine with Break-In Plus must go at least 100 hours to assure surface mating of rings and liners has had opportunity to occur. 100 hour minimum applies to all new or rebuilt engines. Maximum service interval are the same as service interval recommendations listed in Engine Oil and Filter Service Intervals in Fuel, Lubricants and Coolant section of this Operator's Manual for your engine. To determine which engine your tractor is equipped with, see Record Engine Serial Number in Identification Numbers section of this Operator's Manual.

For subsequent oil changes, see Engine Oil and Filter Service Intervals for your engine located in Fuel, Lubricants, and Coolant Section of this Operator's Manual.

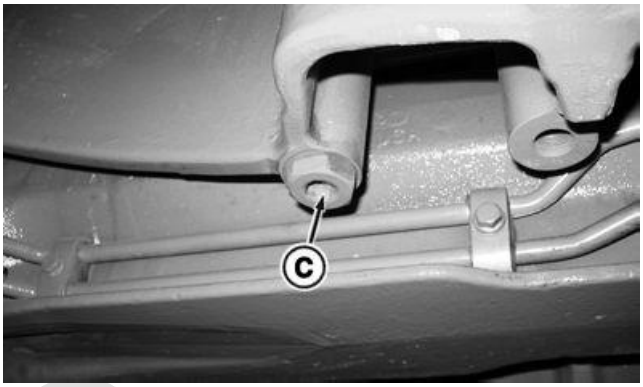
1. Operate engine for approximately 5 minutes to warm oil.
2. Stop engine and remove key.
3. Pull hood release (A) and raise hood.
4. Depress latch buttons (B) to remove right rear side shield.
5. Remove engine access panel.
6. Remove engine fill cap (at dipstick).
7. Put a large catch pan below engine drain plug (C).
8. Remove plug to drain oil while engine is warm.



RXA0133488 —UN—02JUL13



RXA0134208 —UN—29JUL13



RXA0116170 —UN—06MAY11

A—Hood Release
B—Latch Buttons
C—Engine Oil Drain Plug

Continued on next page

TO84419,0000082 -19-29AUG13-1/2

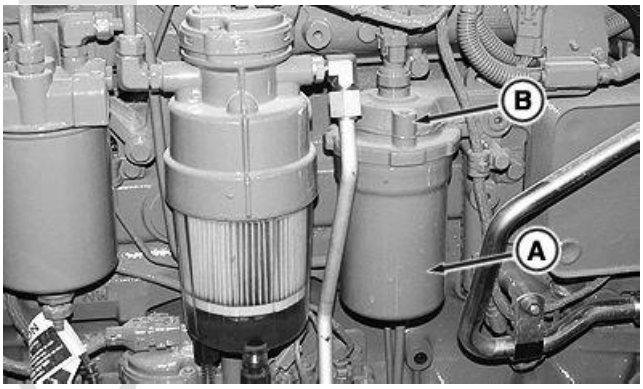
9. Using an oil filter wrench, remove oil filter (A) from oil filter housing (B).
10. Dispose of used oil and oil filter in accordance with local laws and ordinances.
11. Lubricate new filter seal with clean oil.
12. Insert oil filter (A) until gasket contacts oil filter housing (B) surface. Hand tighten additional 1/2 turn.
13. Install drain plug after oil has been drained from crankcase. Tighten to specification.

Specification	
6.8 L Engine Oil Drain Plug—Torque	102 N·m (75 lb.-ft.)

IMPORTANT: Do not overfill engine. Excess oil can cause loss of efficiency.

14. Refill crankcase at engine fill cap with seasonal viscosity grade oil. See Engine Oil in Fuel, Lubricants and Coolant section of this Operator's Manual.

Specification	
6.8 L Crankcase—Capacity	24.5 L (26 qt.)



RXA0134234 —UN—29JUL13

A—Oil Filter **B—Oil Filter Housing**

15. Check for correct oil level using dipstick.
16. Close and secure hood and reinstall right rear side shield.
17. Start engine and check for leaks.
18. Stop engine. Recheck oil level. Add oil if necessary.

TO84419,0000082 -19-29AUG13-2/2

Change Engine Oil and Filter—9.0 L Engine

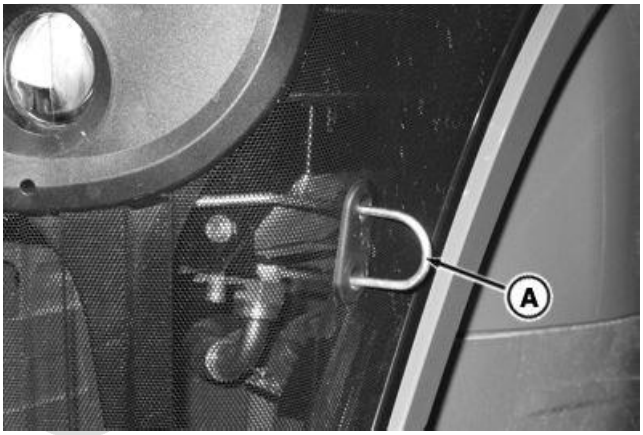
IMPORTANT: Sulfur content should not exceed 0.10%. Sulfur content less than 0.10% is preferred. See Engine Oil and Filter Service Intervals in Fuel, Lubricants and Coolant section of this Operator's Manual for your engine.

NOTE: The initial break-in service interval of a new or rebuilt wet sleeve engine with Break-In Plus must go at least 100 hours to assure the surface mating of the rings and liners has had an opportunity to occur. The 100 hour minimum applies to all new or rebuilt engines. The maximum service interval are the same as the service interval recommendations listed in Engine Oil and Filter Service Intervals in this section of this Operator's Manual for your engine. To determine which engine your tractor is equipped with, see Record Engine Serial Number in Identification Numbers section of this Operator's Manual.

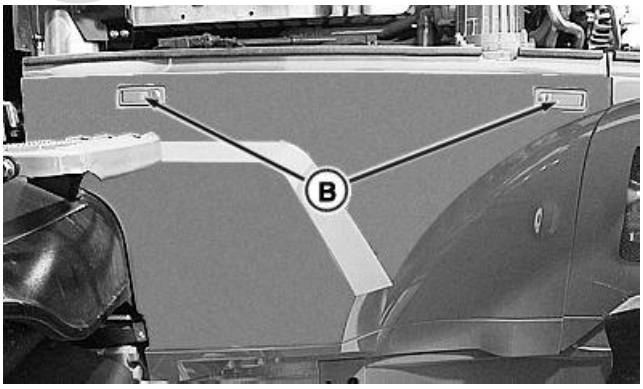
For subsequent oil changes, see Engine Oil and Filter Service Intervals for your engine located in the Fuels, Lubricants, and Coolant Section of this Operator's Manual.

1. Operate engine for approximately 5 minutes to warm oil.
2. Stop engine and remove key.
3. Pull hood release (A) and raise hood.
4. Depress latch buttons (B) to remove right rear side shield.
5. Remove engine access panel.
6. Remove engine fill cap (at dipstick).
7. Put a large catch pan below engine oil drain plug (C).
8. Remove plug to drain oil while engine is warm.

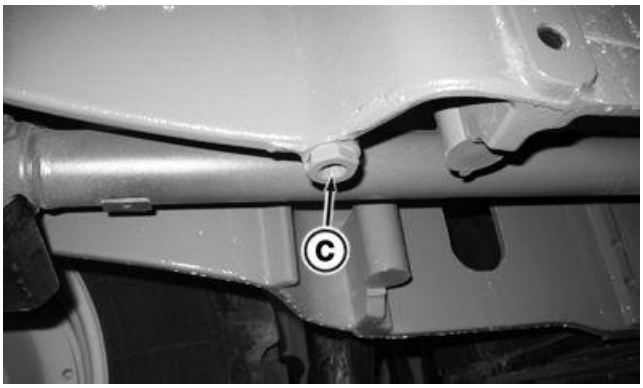
NOTE: Do not remove plug on oil filter housing base. Oil will automatically drain back into crankcase when filter is removed.



RXA0133488 —UN—02JUL13



RXA0134208 —UN—29JUL13



RXA0116168 —UN—06MAY11

A—Hood Release
B—Latch Buttons
C—Engine Oil Drain Plug

Continued on next page

TO84419,0000083 -19-29AUG13-1/2