

4039T Engine

S11,CONT,L4 -19-17FEB93

RG6613 -UN-03FEB93

## ENGINE OPTION CODES

J O H N   D E E R E

11/05/94

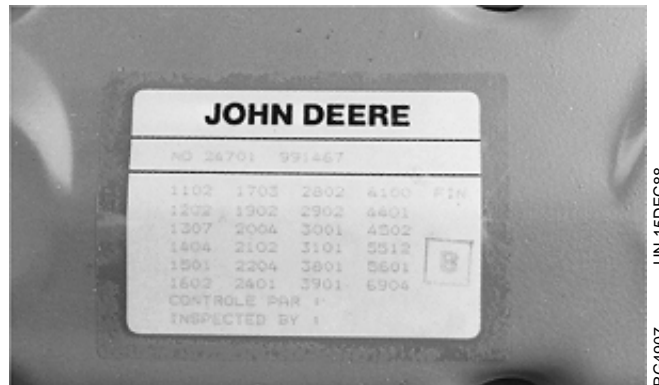
**Commande:** 182838760    **Base code:** 147AA    **Load:** 654150

-        18   1101- 1202- 1301- 1406- 1501- 1603- 1701-  
 1902- 2004- 2109- 2204- 2403- 2802- 2902- 3001- 3115-  
 3519- 3601- 3703- 3901- 4005- 4199- 4398- 4499- 4599-  
 4603- 4708- 47AA 4802- 4901- 5001- 5101- 5299- 5525-  
 5601- 5906- 6206- 6699- 6903- 7699- 9801-

**Controle par (inspected by):**

\*\*\*

Saran Option Code Label



Dubuque Option Code Label

In addition to the serial number plate, OEM engines have an engine option code label affixed to the rocker arm cover. These codes indicate which of the engine options were installed on your engine at the factory. When in need of parts or service, furnish your authorized servicing dealer or engine distributor with these numbers.

On Saran-built engines, the engine option code label includes an engine base code. This base code must also be recorded along with the option codes. At times it will be necessary to furnish this base code to differentiate two identical option codes for the same engine model.

The first two digits of each code identify a specific group, such as alternators. The last two digits of each code identify one specific option provided on your engine, such as a 12-volt, 55-amp alternator.

If an engine is ordered without a particular component, the last two digits of that functional group option code will be nines (99). The following list shows only the first two digits of the code numbers. For future reference such as ordering repair parts, it is important to have these code numbers available. To ensure this availability, enter the third and fourth digits shown on your engine option code label in the spaces provided on the following page.

**NOTE:** Your engine option code label may not contain all option codes if an option has been added after the engine left the producing factory.

# Safety

## RECOGNIZE SAFETY INFORMATION

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

Follow recommended precautions and safe operating practices.



DX,ALERT -19-03MAR93

T81389 -UN-07DEC88

## UNDERSTAND SIGNAL WORDS

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

DANGER or WARNING safety signs are located near specific hazards. General precautions are listed on CAUTION safety signs. CAUTION also calls attention to safety messages in this manual.



DX,SIGNAL -19-03MAR93

TS187 -19-30SEP88

## FOLLOW SAFETY INSTRUCTIONS

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

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

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

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



DX,READ -19-03MAR93

TS201 -UN-23AUG88

# Fuels, Lubricants, and Coolant

## DIESEL FUEL

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

In general, diesel fuels are blended to satisfy the low temperature requirements of the geographical area in which they are marketed. Recommended standard grades are shown on the temperature charts.

In North America, diesel fuels meeting Military Specification VV-F-800E are preferred. In most European countries, diesel fuel is specified to EN 590. If diesel fuel specified to ASTM D975 is used or EN 590 is not available, the fuel must meet the following properties:

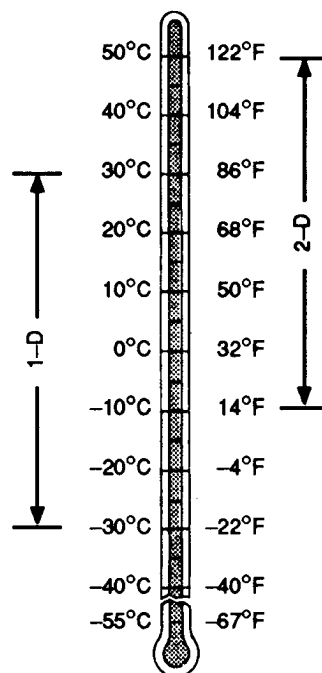
- Cetane Number 40 minimum.  
Cetane number greater than 50 is preferred, especially for temperatures below  $-20^{\circ}\text{C}$  ( $-4^{\circ}\text{F}$ ) or elevations above 1500 m (5000 ft).
- Cold Filter Plugging Point (CFPP) below the expected low temperature OR Cloud Point at least  $5^{\circ}\text{C}$  ( $9^{\circ}\text{F}$ ) below the expected low temperature
- Sulfur content:
  - Sulfur content should not exceed 0.5% Sulfur content less than 0.05% is preferred.
  - If diesel fuel with sulfur content greater than 0.5% sulfur content is used, reduce the service interval for engine oil and filter by 50%
  - DO NOT use diesel fuel with sulfur content greater than 1.0%
- Lubricity
  - Fuel lubricity must pass the BOCLE scuffing test at 3300 gram minimum load level.
  - If fuel of low or unknown lubricity is used, add John Deere All-Season Diesel Fuel Conditioner at specified concentration.

Bio-diesel fuels with these properties and meeting an appropriate specification may be used as an alternative to petroleum-based diesel fuel.

Arctic fuels (such as Military Specification VV-F-800E, Grade DF-A) may be used at temperatures below  $-30^{\circ}\text{C}$  ( $-22^{\circ}\text{F}$ ).



**CAUTION: Handle fuel carefully. Do not fill the fuel tank when engine is running. DO NOT smoke while you fill the fuel tank or service the fuel system.**



North America ASTM D975

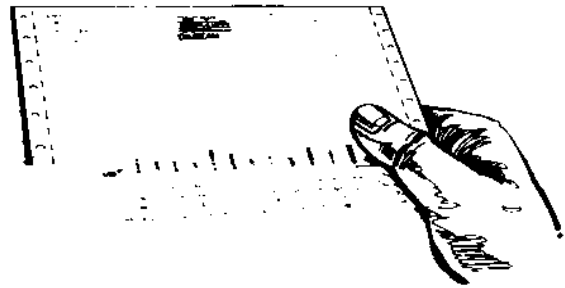
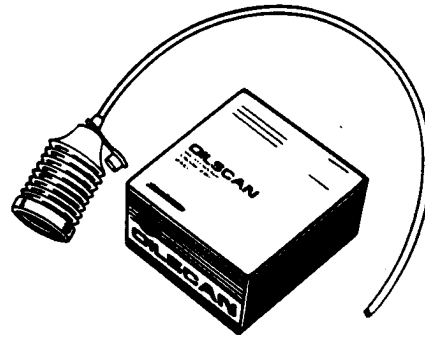
TS1611 -UN-31JAN94

## OILSCAN® AND COOLSCAN™

OILSCAN and COOLSCAN are John Deere sampling programs to help you monitor machine performance and identify potential problems before they cause serious damage.

Oil and coolant samples should be taken from each system prior to its recommended change interval.

Check with your John Deere dealer for the availability of OILSCAN and COOLSCAN kits.



DX,OILSCAN -19-16APR92

-UN-15JUN89

T6828AB

-UN-18OCT88

T6829AB

## ALTERNATIVE AND SYNTHETIC LUBRICANTS

Conditions in certain geographical areas may require lubricant recommendations different from those printed in this manual. Some John Deere 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 listed in this manual.

DX,ALTER -19-01FEB94

# Engine Operating Guidelines

## INSTRUMENT (GAUGE) PANEL

All controls and gauges are optional equipment for John Deere OEM Engines. They may be provided by the equipment manufacturer instead of John Deere. The following information applies only to those controls and gauges provided by John Deere.

**IMPORTANT:** Any time an electric gauge or meter does not register correctly, replace it with a new one. Do not attempt to repair it.

Following is a brief description of the components on the John Deere instrument (gauge) panel:

**A—Electric Hour Meter**—Indicates the operating hours of the engine while key switch is in the “ON” position. The hourmeter should be used as a guide for scheduling periodic service.

**B—Coolant Temperature Gauge**—Indicates the engine coolant temperature.

**C—Tachometer**—Indicates engine speed in revolutions per minute (rpm).

*NOTE: A combination tachometer and hour meter is also an available option. See your authorized servicing dealer or engine distributor.*

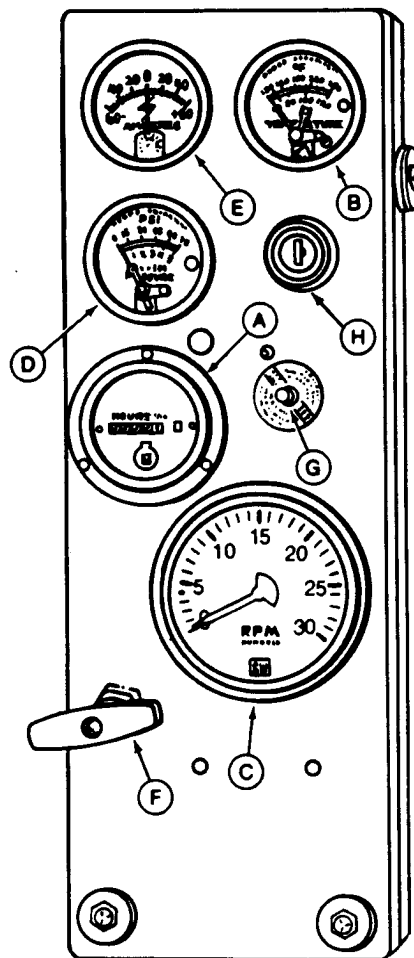
**D—Oil Pressure Gauge**—Indicates engine oil pressure.

**E—Ammeter**—Indicates charging current within electrical system.

**F—Hand Throttle**—Controls engine speed.

**G—Reset (Safety) Switch**—Overrides safety shutdown switch when depressed and held in during engine startup. Hold button in until engine oil pressure is at a safe operating level.

**H—Key Switch**—The four position key switch controls the electrical system.



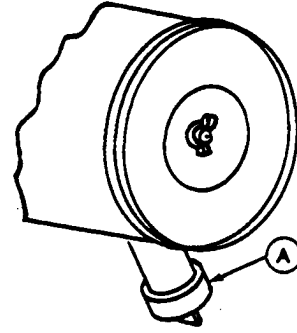
- A—Electric Hour Meter
- B—Coolant Temperature Gauge
- C—Tachometer
- D—Oil Pressure Gauge
- E—Ammeter
- F—Hand Throttle
- G—Reset Switch
- H—Key Switch

RG4477A -UN-11FEB93

5. If the air cleaner has an automatic dust unloader valve (A), squeeze the unloader valve on air cleaner assembly to clear away any dust buildup.

If equipped with restriction indicator gauge, check gauge to determine if air cleaner needs to be serviced.

**IMPORTANT:** Maximum air intake restriction is 6.22 kPa (0.06 bar) (1.0 psi) (25 in. H<sub>2</sub>O). A clogged air cleaner element will cause excessive intake restriction and a reduced air supply to the engine.



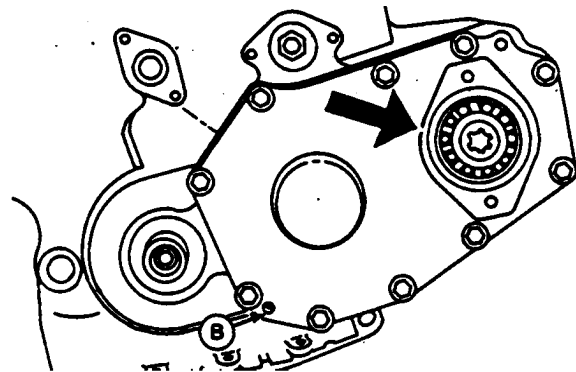
S11,OMPC,R -19-03JUL86

-UN-20DEC88  
RG4676

## AUXILIARY GEAR DRIVE LIMITATIONS

**IMPORTANT:** When attaching an air compressor, hydraulic pump, or other attachment to be driven by the auxiliary gear drive (engine timing gear train at front of engine), power requirements of the accessory must be limited to:

- **Left-Hand Auxiliary Gear Drive:**
  - 30 kW (40 hp) Continuous Operation
  - 37 kW (50 hp) Intermittent Operation
- **Right-Hand Auxiliary Gear Drive:**
  - 11 kW (15 hp) Continuous Operation
  - 19 kW (26 hp) Intermittent Operation



Left-hand auxiliary drive



Right-hand auxiliary drive

RG18293,2 -19-22FEB93

-UN-14DEC88  
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CD30354

## STOPPING THE ENGINE

1. Pull PTO clutch lever (arrow) rearward (away from engine) to disengage clutch.

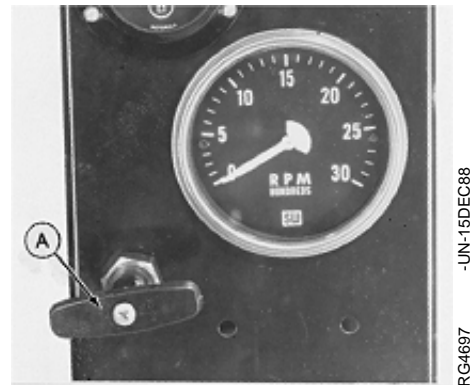
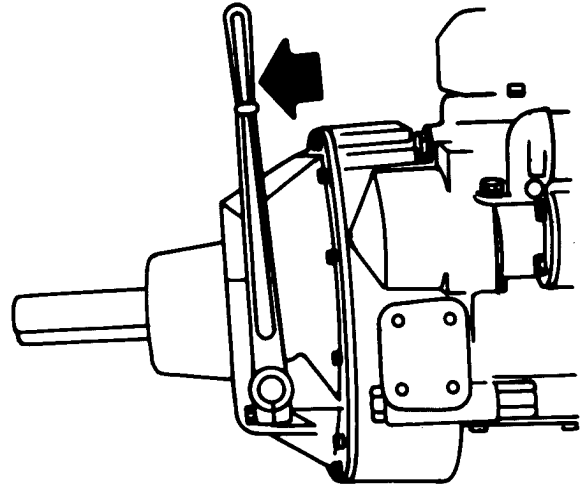
2. Move the throttle lever (A) to slow idle on standard (mechanical) governor engines.

**IMPORTANT:** Before stopping an engine that has been operating at working load, idle engine at least 2 minutes at 1000—1200 rpm to cool hot engine parts.

Engines in generator set applications, where the governor is locked at a specified speed and no slow idle function is available, should be unloaded and idled for at least 2 minutes at high idle.

3. Turn key switch to “OFF” position to stop the engine. Remove ignition key.

**IMPORTANT:** Make sure that exhaust stack cap (rain cap) is installed when engine is not running. This will prevent water and dirt from entering engine.



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S11, OMOE, AW -19-09JUN94

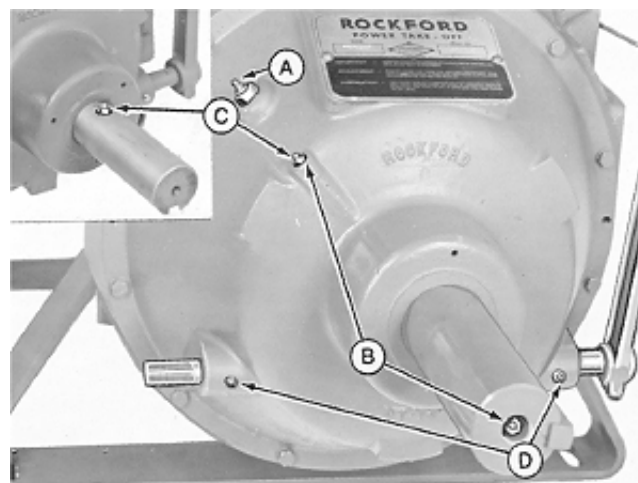


# Lubrication and Maintenance/100 Hour

## LUBRICATE PTO CLUTCH SHAFT BEARINGS

Apply one or two shots of John Deere Multipurpose Lubricant or its equivalent at clutch drive shaft bearing fittings (B or C). DO NOT over-lubricate to avoid getting oil on clutch facings.

**IMPORTANT:** Lubricate release bearing fitting (A) daily or at 10 hour intervals for continuous operation. (See Prestarting Checks Section.) Lubricate shaft fittings (D) at 600 Hours or 1-Year intervals. (See LUBRICATE PTO CLUTCH SHAFT BEARINGS in 600 Hour/1-Year Service Section.)



R27548 -UN-15DEC88

- A—Release Bearing Grease Fitting
- B—Fittings for Side-Loaded Drive
- C—Fittings for In-Line Drive
- D—Lever Shaft Fittings

S11,OMLM,C -19-09AUG94

## SERVICING FIRE EXTINGUISHER

A fire extinguisher (A) is available from your authorized servicing dealer or engine distributor.

Read and follow the instructions which are packaged with it. The extinguisher should be inspected at least every 100 hours of engine operation or once a month. Once extinguisher is operated, no matter how long, it must be recharged. Keep record of inspections on the tag which comes with the extinguisher instruction booklet.



RW4918 -UN-15DEC88

S11,OMLM,AP -19-22FEB93

## FAN AND ALTERNATOR BELTS TENSION OR REPLACEMENT

Low belt tension causes slippage resulting in excessive cover wear, burn spots, overheating, or "slip and grab", causing belt breakage.

High belt tension causes belt heating and excessive stretch, as well as damage to drive components such as pulleys and shafts. V-belts should ride on the sides of standard pulleys not on the bottom of the groove.

Standard V-Belt tension can be checked with JDG529 Tension Gauge (arrow) or equivalent gauge.

**NOTE:** On engines with dual belts, check tension of front belt only.

1. Inspect belts for cracks, fraying, or stretched out areas. Replace if necessary.
2. Using either JDG529 Tension Gauge (arrow) or belt tension tester (A) and straightedge (B), check tension of warm belts:

- For standard V-Belt, an 89 N (20 lb force) applied halfway between pulleys should deflect belt by 19 mm (3/4 in.).
- For Poly V-Belt, a 130 N (30 lb force) applied halfway between pulleys should deflect belt by 13 mm (1/2 in.).

3. If adjustment is necessary, loosen alternator bracket cap screw (C) and nut (D) on mounting bolt. Pull alternator frame outward until belts are correctly tensioned.

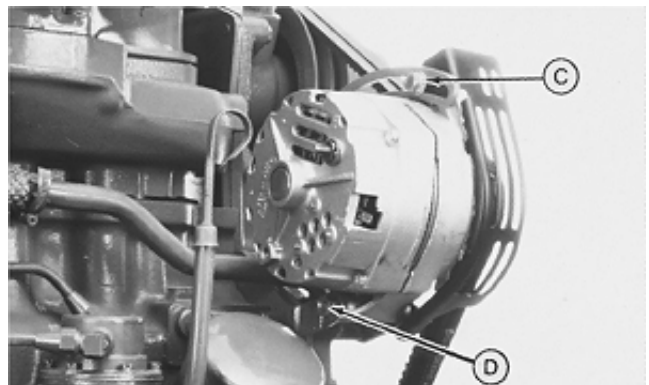
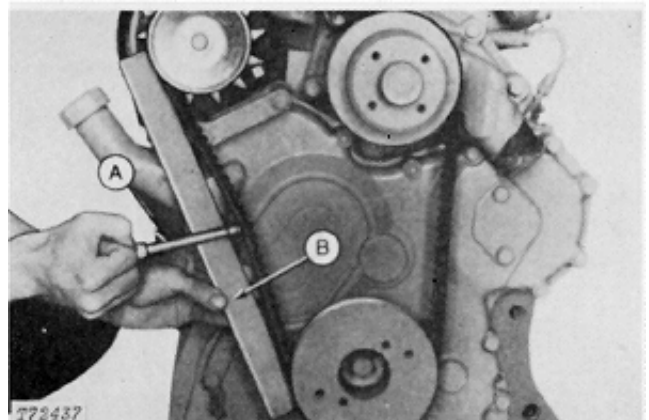
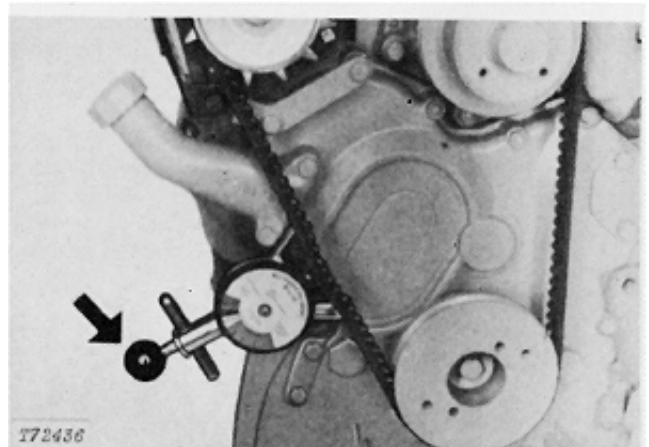
**IMPORTANT:** Do not pry against the alternator rear frame. Do not tighten or loosen belts while they are hot.

4. Tighten alternator bracket cap screw and nut firmly.
5. After a new or used belt has run for 10 minutes, recheck belt tension.

### Standard V-Belts

	Tension New Belt	Tension Used* Belt
Single Belt	578—622 N (130—140 lb force)	378—423 N (85—94 lb force)
Dual Belt	423—467 N (95—104 lb force)	378—423 N (85—94 lb force)

\* Belts are considered used after 10 minutes of operation.

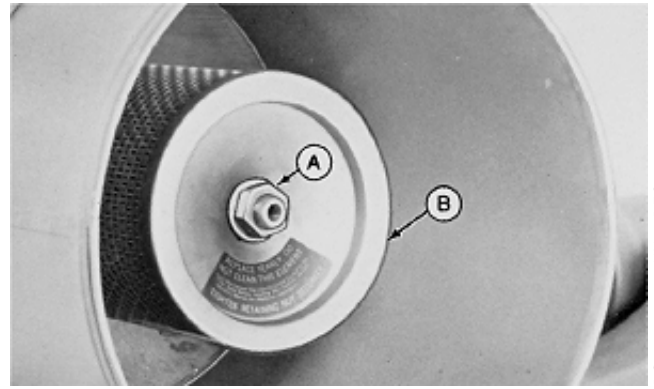


- A—Tension Tester  
B—Straightedge  
C—Alternator Bracket Cap Screw  
D—Nut on Mounting Bolt

**IMPORTANT:** Thoroughly clean all dirt from inside of canister before removing secondary element.

5. Remove retaining nut (A) and secondary element (B). Replace secondary element with new element immediately to prevent dust from entering air intake system.

6. Install new primary element and tighten wing nut securely. Install cover assembly and tighten retaining wing nut securely.



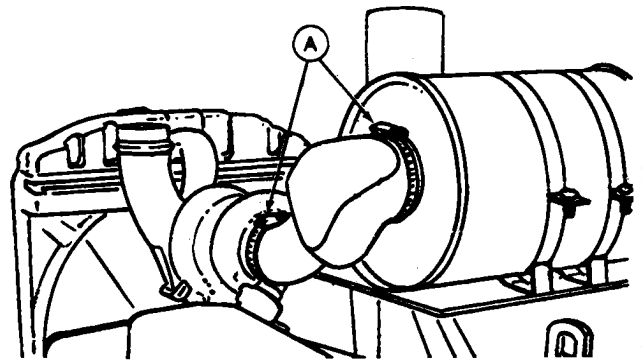
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S55,OMLM,S -19-21DEC89

## CHECK AIR INTAKE SYSTEM

1. Check the clamps (A) on the piping which connect the air cleaner to the engine. Tighten the clamps as necessary. This will help prevent dirt from entering the air intake system through loose connections causing internal engine damage.

2. If engine has a rubber dust unloader valve, inspect the valve on bottom of air cleaner for cracks or plugging. Replace as necessary.



RG4689 -UN-20DEC88

S11,OMLM,DS -19-10MAY91

## FLUSH COOLING SYSTEM AND REPLACE THERMOSTATS

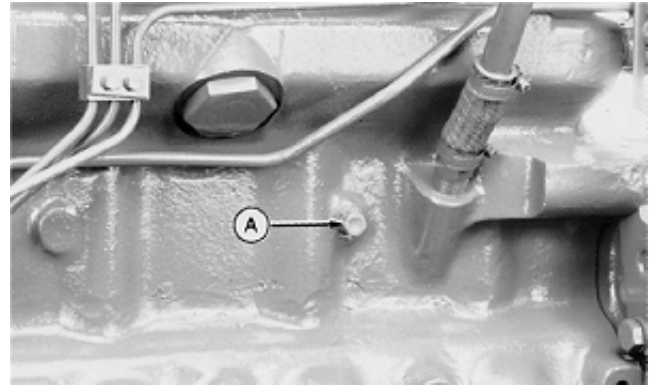
**CAUTION:** Explosive release of fluids from pressurized cooling system can cause serious burns.

Shut off engine. Only remove filler cap when cool enough to touch with bare hands. Slowly loosen cap to first stop to relieve pressure before removing completely.



Drain old coolant, flush the entire cooling system, replace thermostats, and fill with recommended clean coolant.

1. Slowly open the engine cooling system filler cap or radiator cap to relieve pressure and allow coolant to drain faster.
2. Open radiator drain valve. Drain all coolant from radiator.
3. On left side of engine, open drain valve or remove drain plug (A) from engine block. Drain all coolant from engine block.
4. Close all drain valves after coolant has drained.
5. Fill the cooling system with clean water. Run the engine about 10 minutes to stir up possible rust or sediment.
6. Stop engine and immediately drain the water from system before rust and sediment settle.
7. After draining water, close drain valves and fill the cooling system with clean water and TY15979 John Deere Heavy Duty Cooling System Cleaner or an equivalent cleaner such as Fleetguard® RESTORE™. Follow manufacturer's directions on label.
8. After cleaning the cooling system, fill with water to flush the system. Run the engine about 10 minutes, then drain out flushing water.



*Fleetguard® is a registered trademark of Cummins Engine Company.*

*RESTORE™ is a trademark of Fleetguard.*

S11,OMLM,DV1 -19-11AUG94

## ADDING COOLANT



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

Shut off engine. Only remove filler cap when cool enough to touch with bare hands. Slowly loosen cap to first stop to relieve pressure before removing completely.



**IMPORTANT:** • Never pour cold liquid into a hot engine, as it may crack cylinder head or block. **DO NOT** operate engine without coolant for even a few minutes.

- John Deere TY15161 Cooling System Sealer may be added to the radiator to stop leaks. **DO NOT** use any other stop-leak additives in the cooling system.
- Air must be expelled from cooling system when system is refilled. Loosen temperature sending unit fitting at rear of cylinder head or plug in thermostat housing to allow air to escape when filling system. Retighten fitting or plug when all the air has been expelled.

Add coolant to radiator until coolant touches bottom of filler neck. (See **RECOMMENDED ENGINE COOLANT** in Fuels, Lubricants, and Coolant Section for determining appropriate coolant.)

Certain geographical areas may require special antifreeze or coolant practices. If you have questions, consult your authorized servicing dealer or engine distributor for the latest information and recommendations.

S11,OMLM,DZ1 -19-09AUG94

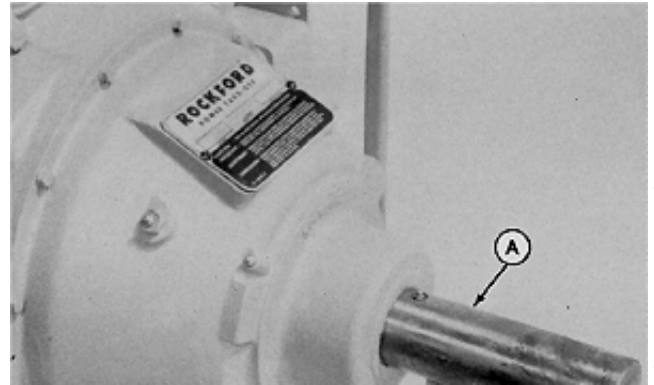
TS281 -UN-23AUG88

## POWER TAKE-OFF (PTO) CLUTCH

**⚠ CAUTION:** Entanglement in rotating driveline can cause serious injury or death. Keep shield on PTO drive shaft (A) between the clutch housing and the engine driven equipment at all times during engine operation. Wear close fitting clothing. Stop the engine and be sure PTO driveline is stopped before making adjustments.

Proper performance of the power take-off unit will be related to the care it is given. Lubricate it periodically and keep the clutch properly adjusted. (See Lubrication and Maintenance/250 Hour Section.)

If the power take-off does not work properly after adjustment and lubrication, contact your authorized servicing dealer or engine distributor.



S11,OMSE,U -19-09AUG94

TS198 -UN-23AUG88

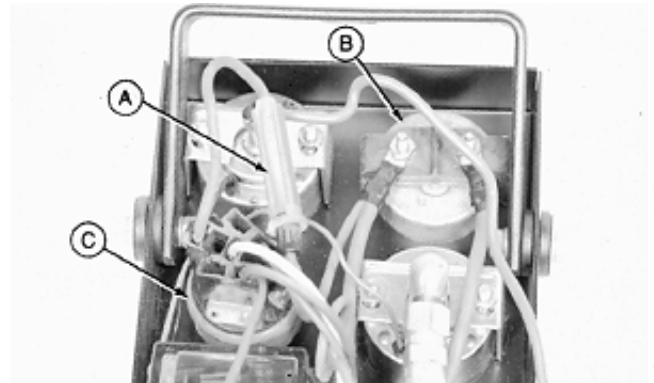
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## CHECK FUSES

The following instructions apply to engines equipped with a John Deere instrument panel.

### On North American Sourced Instrument (Gauge) Panels:

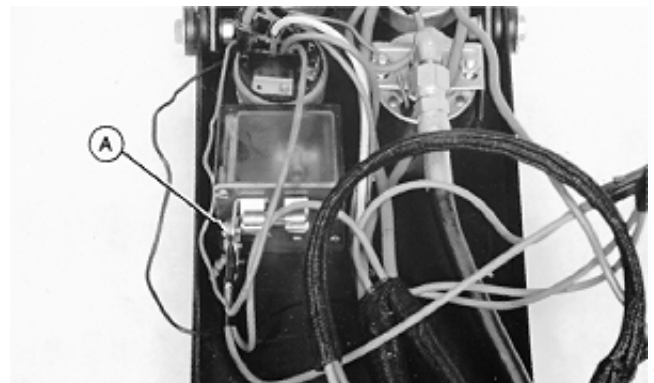
1. Check the fuse (A) between the ammeter (B) and key switch (C) located on back side of instrument panel. If defective replace with an MDL-25 fuse.



S11,OMSE,AA -19-17FEB93

RG4493 -UN-14DEC88

2. Check the fuse (A) mounted on the bottom of the magnetic safety switch. If defective, install an equivalent 14-amp fuse.



S11,OMSE,W -19-26JUL93

RG4496 -UN-14DEC88

## DIAGNOSING ELECTRICAL SYSTEM MALFUNCTIONS

Symptom	Problem	Solution
<b>Undercharged System</b>	Excessive electrical load from added accessories.	Remove accessories or install higher output alternator.
	Excessive engine idling.	Increase engine rpm when heavy electrical load is used.
	Poor electrical connections on battery, ground strap, starter or alternator.	Inspect and clean as necessary.
	Defective battery.	Test battery.
	Defective alternator.	Test charging system.
<b>Battery Uses Too Much Water.</b>	Cracked battery case.	Check for moisture and replace as necessary.
	Defective battery.	Test Battery.
	Battery charging rate too high.	Test charging system.
<b>Batteries will not charge</b>	Loose or corroded connections.	Clean and tighten connections.
	Sulfated or worn-out batteries.	See your authorized servicing dealer or engine distributor.
	Loose or defective alternator belt.	Adjust belt tension or replace belts.
<b>Starter will not crank</b>	PTO engaged.	Disengage PTO.
	Loose or corroded connections.	Clean and tighten loose connections.
	Low battery output voltage.	See your authorized servicing dealer or engine distributor.
	Faulty start circuit relay.	See your authorized servicing dealer or engine distributor.
	Blown fuse (MDL-25)	Replace fuse.

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