

Use and maintenance manual

John - Deere
POWERTECH
4.5L & 6.8L
4045 and 6068
OEM Diesel Engines

Réf. constructeur : OMRG25204

Réf. GPAO : 33522039401

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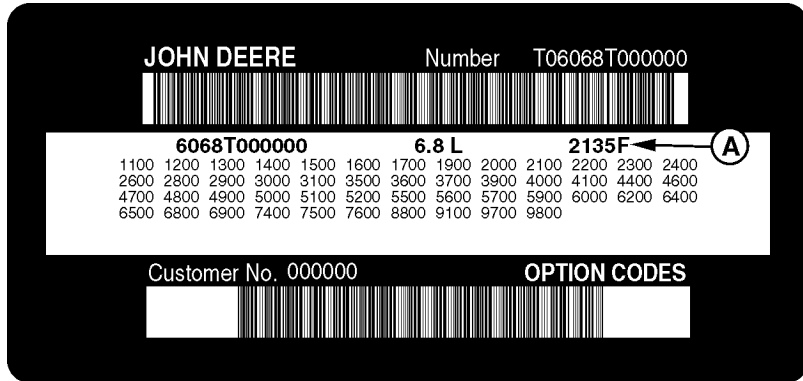
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Engine Option Codes



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.

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.

If option code label is lost or destroyed, consult your servicing dealer or engine distributor selling the engine for a replacement.

The engine option code label includes an engine base code (A). This base code must also be recorded along with the option codes.

Engine Base Code: _____

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.

NOTE: These option codes are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

If an engine is ordered without a particular component, the last two digits of that functional group option code will be 99, 00, or XX. The list on the next page 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.

Remove Paint Before Welding or Heating

Avoid potentially toxic fumes and dust.

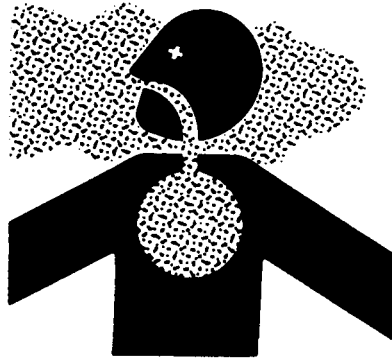
Hazardous fumes can be generated when paint is heated by welding, soldering, or using a torch.

Remove paint before heating:

- Remove paint a minimum of 76 mm (3 in.) from area to be affected by heating.
- If you sand or grind paint, avoid breathing the dust. Wear an approved respirator.
- If you use solvent or paint stripper, remove stripper with soap and water before welding. Remove solvent or paint stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating.

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

Dispose of paint and solvent properly.



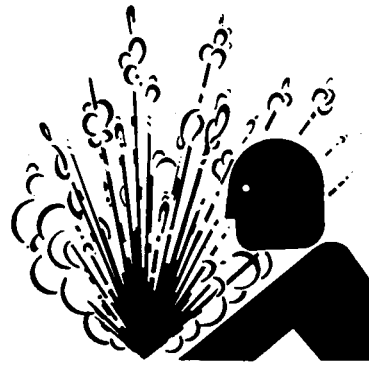
TS220 -JUN-23AUG88

DX,PAINT -19-22OCT99-1/1

Service Cooling System Safely

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.



TS281 -JUN-23AUG88

DX,RCAP -19-04JUN90-1/1

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 oils.

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

DX,ALTER -19-15JUN00-1/1

Lubricant Storage

Your equipment can operate at top efficiency only when clean lubricants are used.

Use clean containers to handle all lubricants.

Whenever possible, 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 -19-18MAR96-1/1

VDO Instrument (Gauge) Panel (Except North America)

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 instrument (gauge) panel:

A—Oil Pressure Gauge - The oil pressure gauge indicates engine oil pressure.

B—Coolant Temperature Gauge - The coolant temperature gauge indicates coolant temperature.

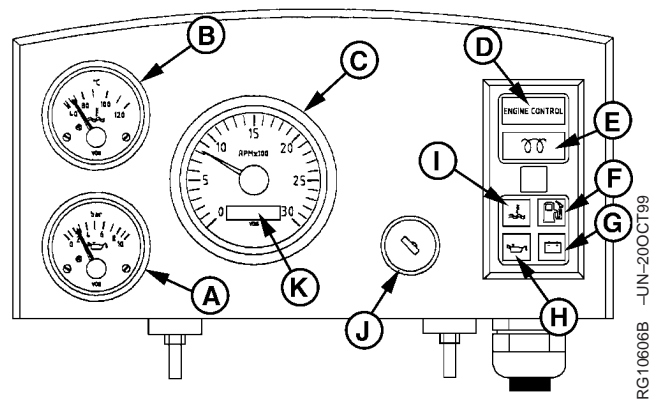
C—Tachometer - The tachometer indicates engine speed in hundreds of revolutions per minute (rpm).

The engine control system consists of the following:

D—Engine Control Light - The engine control light illuminates after the engine has started and oil pressure is up to specification. The light indicates that the engine protection circuitry is activated.

E—Preheater Light -The preheater light illuminates when the key is turned to the bulb test position (position I). It should go off after approximately five seconds. When the key switch is held in position II, the engine preheater is energized and the preheater light illuminates.

F—Fuel Level Light - The fuel level light illuminates when the key is turned to the bulb test position (position I). It should go off after approximately five seconds. After the engine is running, if the engine runs out of fuel, the light will illuminate and protection circuitry will stop the engine. The fuel level light will remain on indicating the engine was stopped due to the fuel tank being empty.



- A—Oil Pressure Gauge
- B—Coolant Temperature Gauge
- C—Tachometer
- D—Engine Control Light
- E—Preheater Light
- F—Fuel Level Light
- G—Battery Light
- H—Oil Pressure Light
- I—Coolant Temperature Light
- J—Key/Start Switch
- K—Hour Meter

RG10606B -JUN-20OCT199

Changing Engine Speed—Standard (Mechanical) Governor

To increase engine speed, turn handle (A), if equipped, to the horizontal position and pull out until desired engine speed is obtained. Turn the handle in either direction to lock throttle position. The handle is pushed inward to decrease engine speed.

NOTE: On engines without handle, use throttle lever to control engine speed.



North American Instrument Panel Shown

RG112991 -UN-11SEP00

RG, RG34710, 5561 -19-20MAY96-1/1

Avoid Excessive Engine Idling

Prolonged idling may cause the engine coolant temperature to fall below its normal range. This, in turn, causes crankcase oil dilution, due to incomplete fuel combustion, and permits formation of gummy deposits on valves, pistons, and piston rings. It also promotes rapid accumulation of engine sludge and unburned fuel in the exhaust system.

Once an engine is warmed to normal operating temperatures, engine should be idled at slow idle

speed. Slow idle speed for this engine is 850 rpm at factory. If an engine will be idling for more than 5 minutes, stop and restart later.

NOTE: Generator set applications where the governor is locked at a specified speed may not have a slow idle function. These engines will idle at no load governed speed (high idle).

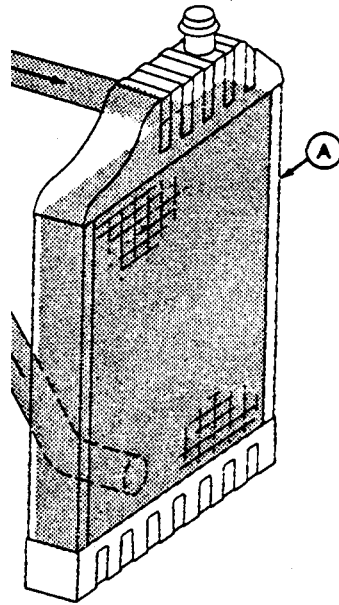
RG, RG34710, 5562 -19-20MAY96-1/1

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

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

2. Check the coolant level when engine is cold. Coolant level should be at bottom of filler neck. Fill radiator (A) with proper coolant solution if level is low. (See ADDING COOLANT in Service As Required Section.) Check overall cooling system for leaks.

NOTE: Refer to your vehicle's operator's manual for recommendations for non-John Deere supplied accessories.



Continued on next page

RG4675 -JUN-14DEC88
DPSG,OUOE003,20 -19-06JAN99-2/5

TSS281 -JUN-23AUG88

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

Avoid the hazard by:

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

If you spill acid on yourself:

1. Flush your skin with water.
2. Apply baking soda or lime to help neutralize the acid.
3. Flush your eyes with water for 10–15 minutes. Get medical attention immediately.

If acid is swallowed:

1. Drink large amounts of water or milk.
2. Then drink milk of magnesia, beaten eggs, or vegetable oil.
3. Get medical attention immediately.



TS203 -JUN-23AUG88

In freezing weather, run engine at least 30 minutes to assure thorough mixing after adding water to battery.

If necessary to replace battery(ies), replacements must meet or exceed the following recommended capacities at -18°C (0°F):

Specification	
12 Volt Standard Duty Starter.....	640
Cold Cranking Amps	
12 Volt Heavy Duty Starter Cold.....	800
Cranking Amps	
24 Volt Standard Duty Starter.....	570
Cold Cranking Amps	

Adding Supplemental Coolant Additives (SCA's)

After 500 hours or 12 months of engine operating time, recharge your engine coolant with the recommended amount (see label on container) of TY16004 or TY16005 Liquid Coolant Conditioner.

IMPORTANT: TY16004 or TY16005 Liquid Coolant Conditioner is a non-chromate inhibitor and should be used only with low silicate, ethylene-glycol base antifreeze. It does not protect the cooling system from freezing.



RG7276 -UN-05DEC97

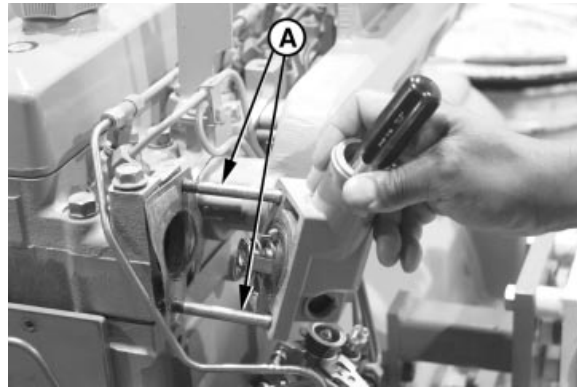
Liquid Coolant Conditioner

RG, RG34710, 5582 -19-20MAY96-1/1

To Install Thermostats

IMPORTANT: Install manifold gasket so that smaller (round) holes are at lower left and upper right corners of manifold (matching studs A).

1. Clean all gasket material from thermostat cover and housing mounting surfaces.
2. Using guide studs (A) to keep gasket in place, install a new gasket on cylinder head.
3. Install thermostat(s) with jiggle wire facing up in the 12 o'clock position.
4. Using a screwdriver to hold thermostat(s) in place, install thermostat(s) and water manifold/thermostat cover.
5. Tighten cover cap screws to 70 N•m (52 lb-ft).
6. Lubricate new O-ring with PT507 Multi-Purpose Grease. Install seal (B) in thermostat cover.



RG7614A -UN-06NOV97



RG7921B -UN-13NOV97

DPSG, RG34710,112 -19-05NOV99-4/5

7. Install water manifold/thermostat cover-to-water pump tube (C). Tighten clamps.
8. If not already done, fill cooling system and check for leaks.

IMPORTANT: Air must be expelled from cooling system when filling. Loosen temperature sending unit fitting at rear of cylinder head or plug in thermostat housing to allow air to escape when filling system. Tighten fitting or plug when all air has been expelled.



RG8115B -UN-15JAN98

DPSG, RG34710,112 -19-05NOV99-5/5

Replacing Radial Seal Air Cleaner Filter Element

IMPORTANT: ALWAYS REPLACE primary air cleaner element when air restriction indicator shows a vacuum of 625 mm (25 in.) H₂O, is torn, or visibly dirty.

NOTE: This procedure applies to John Deere 2-stage radial seal air cleaner kits. Refer to manufacturers' instructions for servicing air cleaners not supplied by John Deere.

1. Unlatch and remove dust cup/cover (A) of air cleaner.
2. Move end of filter (B) back and forth gently to break seal.
3. Pull filter (B) off outlet tube and out of housing.
4. Thoroughly clean all dirt from inside housing and from outlet bore.

IMPORTANT: Remove secondary (safety) element (C) ONLY for replacement. DO NOT attempt to clean, wash, or reuse secondary element. Replacement of secondary element is usually necessary ONLY when primary element has a hole in it.

5. To replace secondary element (C), pull filter element out gently. Immediately replace secondary element with new element to prevent dust from entering air intake system.
6. Install new primary filter element. Apply pressure by hand at outer rim of filter.

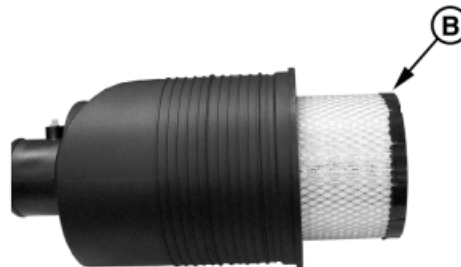
IMPORTANT: Do NOT use latches on cover to force filter into air cleaner. Using cover to force filter will damage cleaner housing.

7. Close housing with dust unloader valve aimed down and latch latches.



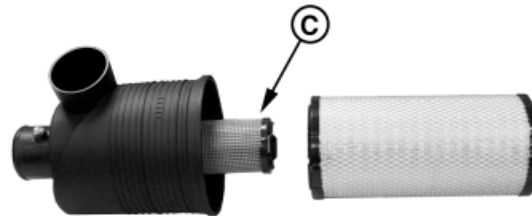
Dust Cup/Cover

RG11321A -UN-08SEP00



Primary Filter Element

RG11322A -UN-08SEP00



Secondary Filter Element

RG11327A -UN-08SEP00

- A—Dust Cap/Cover
- B—Primary Filter Element
- C—Secondary Filter Element

Engine Wiring Diagram Legend (North America)

A1 — Speed Control Unit	P6 — Ammeter
B1 — Magnetic Speed Sensor	R1 — Resistor (48 ohm) ³
B2 — Coolant Temperature Sensor	S1 — Key Switch
B3 — Oil Pressure Sensor	S2 — Magnetic Safety Switch—North American
F1 — Starting Circuit Fuse (14 amp)	Auto Override Module—European (Saran)
F3 — Fuse (Early Models) ¹	W1 — Ground on K1 Starter Relay Mounting Stud
G1 — Battery	Y1 — Starter Solenoid
G2 — Alternator	Y2 — Fuel Shut-off Solenoid
H1 — Coolant Temperature Indicator Lamp	BLK — Black
H2 — Oil Pressure Indicator Lamp	BLU — Blue
H3 — Alternator Indicator Lamp	BRN — Brown
K1 — Starter Relay	DK BLU — Dark Blue
M1 — Starter Motor	GRN — Green
P1 — Coolant Temperature Gauge	ORG — Orange
P2 — Oil Pressure Gauge	PUR — Purple
P3 — Crankcase Oil Level Switch/Gauge	RED — Red
P4 — Tachometer ¹	YEL — Yellow
P5 — Hourmeter (Early Models) ²	

¹ P4 tachometer has a built-in hourmeter. On some earlier engines, a separate hourmeter (P5) and fuse (F3) were used.

² P4 tachometer has a built-in hourmeter. On some engines, a separate hourmeter (P5) and fuse (F3) are used.

³ Later harnesses have two parallel 100 ohm resistors for the alternator.

Storage

Engine Storage Guidelines

1. John Deere engines can be stored outside for up to three (3) months with no long term preparation IF COVERED BY WATERPROOF COVERING.
2. John Deere engines can be stored in a standard overseas shipping container for up to three (3) months with no long term preparation.
3. John Deere engines can be stored inside, warehoused, for up to six (6) months with no long term preparation.
4. John Deere engines expected to be stored more than six (6) months, long term storage preparation MUST BE taken. (See PREPARING ENGINE FOR LONG TERM STORAGE, later in this section.)
5. For John Deere engines not yet installed in machines, run a line from a container of AR41937 Nucle Oil to the fuel transfer pump intake, and another line from the fuel return manifold to the tank, so that Nucle Oil is circulated through the injection system during cranking.

RG, RG34710,5610 -19-20MAY96-1/1

Use AR41785 Engine Storage Kit

See your John Deere servicing dealer or engine distributor for an AR41785 Engine Storage Kit. Closely follow instructions provided with this kit.

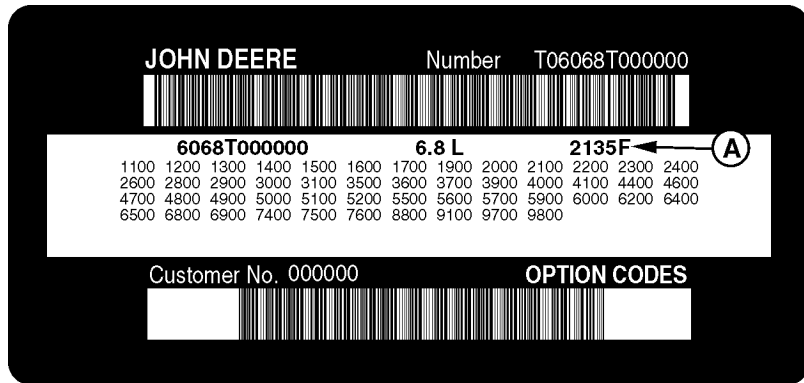
**IMPORTANT: Inhibitors can easily change to gas.
Seal or tape each opening immediately
after adding inhibitor.**



T85452 -UN-06DEC88

RG, RG34710,5611 -19-20MAY96-1/1

Engine Crankcase Oil Fill Quantities



RG10603A -UN-15JUN00

Option Code Label

Each engine has a 13-digit John Deere engine serial number. The first two digits identify the factory that produced the engine:

- “CD” indicates the engine was built in Saran, France
- “PE” indicates the engine was built in Torreon, Mexico
- “T0” indicates the engine was built in Dubuque, Iowa

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.

To determine the option code for the oil fill quantity of your engine, refer to the engine option code label affixed to the rocker arm cover. The first two digits of the code (19) identify the oil pan option group. The last two digits of each code identify the specific oil pan on your engine.

The following table lists engine crankcase oil fill quantities:

Continued on next page

RG, RG34710, 5617 -19-20MAY96-1/4

Service as Required

- Service air cleaner.
- Replace poly-vee belts.

Hours									
Date									
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RG, RG34710, 5627 -19-20MAY96-1/1

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