6.8L Compressed Natural Gas Engine (PowerTech™)

OPERATOR'S MANUAL

POWERTECH 6.8 L 6068 Compressed Natural Gas Engine

OMRG27896 ISSUE 03AUG21 (ENGLISH)

CALIFORNIA

Proposition 65 Warning

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

If this product contains a gasoline engine:

⚠ WARNING

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

The State of California requires the above two warnings.

Additional Proposition 65 Warnings can be found in this manual.

John Deere Power Systems

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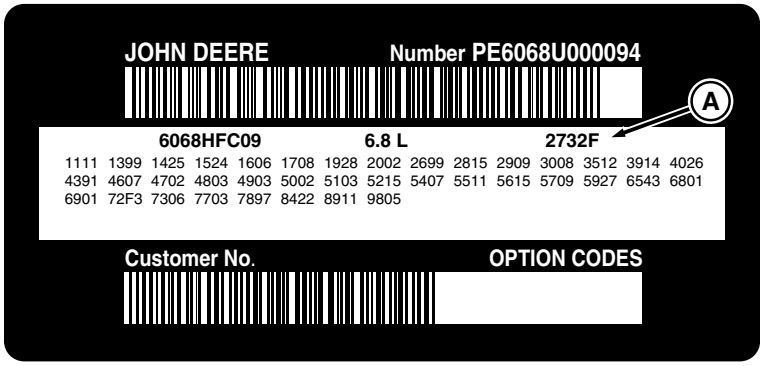
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Engine Option Codes



RG24026 —UN—05AUG13

Option Code Label Example

A—Engine Base Code (example)

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.

The engine option code label includes an engine base code (A). 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 24 volt, 120 amp alternator.

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 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.

An additional option code label may also be delivered (in a plastic bag attached to the engine or inserted in the machine documentation). It is recommended to place this label either on this page of the operators manual or in the Engine Owner's Warranty booklet under Option Codes.

The machine manufacturer may have placed the label in a specific accessible area (inside the enclosure or close to a maintenance area).

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.

Record your engine Base Code (A) in the spaces provided below for easy reference.

Engine Base Code (A): _____

Option Codes	Description	Option Codes	Description
10_____	Paint Protection	56_____	Paint
11_____	Rocker Arm Cover	57_____	Water Pump Inlet
12_____	Oil Filler	58_____	Power Take Off
13_____	Crankshaft Pulley	59_____	Oil Cooler/Oil Filter
14_____	Flywheel Housing	60_____	Add-On Fan Drive Pulley
15_____	Flywheel	61_____	After Treatment Device/Muffler
16_____	Fuel Injection System	62_____	Alternator Mounting
17_____	Air Inlet	63_____	Low-Pressure Fuel Lines
18_____	Air Cleaner	64_____	Exhaust Elbow
19_____	Oil Pan	65_____	Turbocharger
20_____	Water Pump	66_____	Temperature Switch
21_____	Thermostat Cover	67_____	Engine Sensors

Continued on next page

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Natural Gas Recommendations

NOTE: Dry natural gas is a mixture of methane, ethane, propane, butane, and other inert gases. Dry natural gas is also referred to as Commercial Pipeline Natural Gas.

Dry natural gas that meets SAE J1616 Fuel Quality Specification is recommended for use in John Deere Natural Gas engines.

Maximum Propane Content	5 percent
Maximum Butane Content	1 percent
Maximum Hydrogen Sulfide (H_2S)	10 ppm
Minimum Octane Rating	118
Minimum Heat Value	33.72 kJ/L (905 BTU/cu ft)

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Engine Break-In Oil

New engines are filled at the factory with John Deere ENGINE BREAK-IN OIL. During the break-in period, use John Deere ENGINE BREAK-IN OIL as makeup oil when oil level falls BELOW the add mark.

Change the oil and filter after the first 2,500 miles of operation of a new or rebuilt engine.

After engine overhaul, fill the engine with John Deere ENGINE BREAK-IN OIL.

If John Deere ENGINE BREAK-IN OIL is not available, use a natural gas engine oil as specified later in this manual during the first 2,500 miles of operation.

After the break-in period, always use natural gas engine oils as recommended in this manual.

IMPORTANT: DO NOT use engine oils meeting API CF-4 performance levels during the first 2,500 miles of operation of a new or rebuilt engine. This oil will not allow the engine to break-in properly.

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Natural Gas Engine Oil

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

SAE 15W-40 oil is preferred.

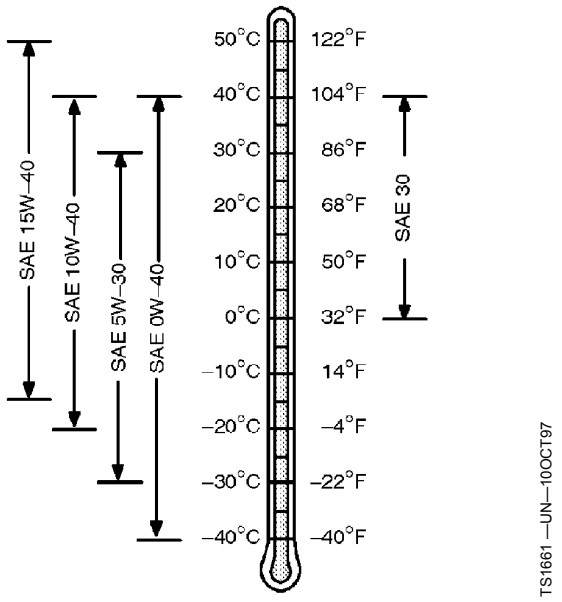
The use of heating devices may permit extension of the lower temperature limits, but requires special precautions. See your engine servicing dealer for recommendations.

The service interval for oil and filter changes is 12 months or 12,500 miles, whichever occurs first.

Oils meeting the following specifications are recommended:

API Service Classification CG-4 with 0.4 to 0.6% sulfated ash content.

Other oils claiming natural gas engine oil performance may be used, but the drain interval is reduced to 12 months or 10,000 miles, whichever occurs first. Ashless natural gas engine oils are not allowed.



Engine Oil Temperature Ranges

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Warming the Engine

Allow engine to warm up before resuming normal operation.

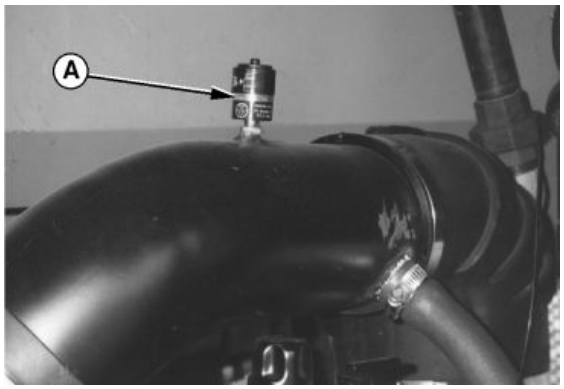
The Electronic Control Unit (ECU) will not allow full power until engine is warmed up to 160°F (71°C).

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Checking Air Intake System

1. Check clamps on piping that connects the air cleaner to turbocharger. Tighten clamps as necessary. This will help prevent dirt from entering the air intake system, causing internal engine damage.
2. Test air restriction indicator (A) for proper operation. Replace indicator as necessary.
3. Refer to vehicle operator's manual for further instructions on servicing the air filter.

A—Air Restriction Indicator



RG7292A —UN—16MAR98

Air Restriction Indicator

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Checking Cooling System

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.

1. Check entire cooling system for leaks. Tighten all clamps securely.
2. Thoroughly inspect all cooling system hoses. Replace hoses when hard, flimsy, or cracked.

IMPORTANT: Air must be expelled from cooling system when system is refilled. Loosen plug in side of thermostat housing to allow air to escape when filling system. Retighten plug when all the air has been expelled.



TS281 —UN—15APR13

Service Cooling System Safely

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Checking Effectiveness of Coolant Solution

When your coolant has accumulated 12 months or 12,500 miles of operation, or anytime the concentration of coolant solution is in question, the effectiveness of your engine coolant should be evaluated by obtaining a coolant sample.

Maintaining the correct coolant conditioner concentration (SCAs) and freeze point is essential in your cooling system to protect against liner pitting, corrosion, and freeze-ups due to incorrect coolant dilution.

A coolant strip test kit provides a simple, effective way to check freeze point and molybdate/nitrite levels.

For a more thorough evaluation of your coolant, CoolScan™ is a John Deere sampling program to help you monitor the effectiveness of your engine's coolant solution and identify potential problems before they cause serious damage.

CoolScan is a trademark of Deere & Company.



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Coolant Sampler Tool

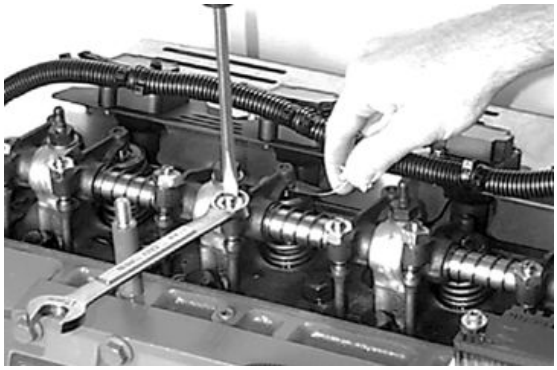
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5. If valves need adjusting, use following valve clearance adjustment specifications. Loosen the locknut on rocker arm adjusting screw. Turn adjusting screw until feeler gauge slips with a slight drag. Hold the adjusting screw from turning with screwdriver and tighten locknut to 27 N·m (20 lb-ft.) Recheck clearance again after tightening locknut. Readjust clearance as necessary.

Specification	
Intake Valve Adjustment—Valve Clearance (Cold)	0.36 mm (0.014 in.)
Exhaust Valve Adjustment—Valve Clearance (Cold)	0.46 mm (0.018 in.)

6. Replace rocker arm cover and crankcase ventilator tube.



RG8855 —UN—16MAR98

Adjusting Valves

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Valve Adjusting Sequence

NOTE: Firing order is 1-5-3-6-2-4.

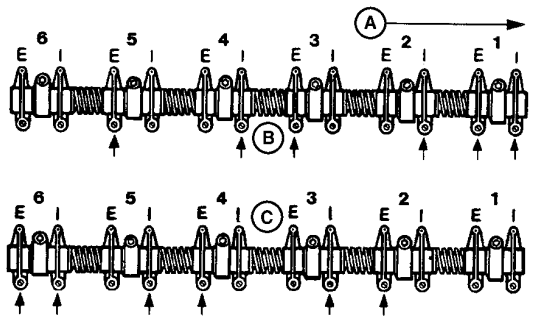
Lock No. 1 piston at TDC compression stroke (B).

Adjust valve clearance on No. 1, 3, and 5 exhaust valves and No. 1, 2, and 4 intake valves.

Rotate flywheel 360°. Lock No. 6 piston at TDC compression stroke (C).

Adjust valve clearance on No. 2, 4, and 6 exhaust valves and No. 3, 5, and 6 intake valves.

A—Front of Engine
B—No. 1 TDC Compression Stroke
C—No. 6 TDC Compression Stroke



RG8934 —UN—16MAR98

Valve Adjusting Sequence

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Service as Required

- Replace belts
- Service air cleaner elements
- Add coolant

Miles									
Date									
Miles									
Date									
Miles									
Date									

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