SERVICE BULLETIN

Original Issue Date: **5/94**
Model: **20-180ROZJ**
Market: **Standby**
Subject: **Diesel Fuel with Low Sulfur Content**

Regulations requiring low-sulfur fuel for diesel engines have raised questions about the effects of low-sulfur fuel on rotary fuel injection pump component wear.

The best protection against fuel injection pump component failure is finding out what type of fuel is used and selecting a supplier which provides the correct type of fuel. Ask the supplier if the fuel is treated with a conditioner. Find out what type of conditioner or additives are used. The user should then evaluate the situation with the information found.

Engine manufacturer information is supplied to generator distributors when available. John Deere supplied the following information.

John Deere Diesel Engines

Applies To:

Generator set models 20-180ROZJ using 300- and 400-series engines with distributor (rotary) type fuel injection pumps.

General Information:

Regulations by the Environmental Protection Agency (EPA) mandate that all diesel fuels for on-highway use after October 1, 1993 must have a low sulfur content. California regulations will require low sulfur fuel for all diesel engines. Current fuels have a sulfur level of about 0.29% while new fuels will have 0.05% sulfur maximum. **Diesel fuel used off-highway (farm machinery, stationary engines, construction equipment, etc.) can use the current fuel formulations and is identified by a blue dye.** On-highway fuels with low sulfur will not change dye colors. All diesel-powered trucks must use the low sulfur fuel, even if they do not go on-highway.

Those fuels that have sulfur removed by a process that affects lubricity could cause internal fuel injection pump wear. The amount of sulfur that is removed from the fuel is highly dependent upon the sulfur content in the base crude oil. Sulfur content from different oil refineries can differ and could change as crude oil sources change.

Fuel quality could degrade faster during storage since sulfur is a natural anti-oxidant. Oxidation causes gum and deposit formation contributing to restriction of the fuel through the filters, injectors, and in-line pumps. Field experience will determine the need for diesel fuel conditioners in maintaining typical fuel storage practices. Diesel fuel conditioner part no. 336210 does contain the anti-oxidant and corrosion inhibitors and would work in this situation.

California Air Resource Board (CARB) requires fuel producers and marketers to meet the sulfur levels, and reduce the aromatic components from roughly 30% to 10%.

Use alternative levels of aromatic compounds if equivalent emissions are demonstrated. In most cases, all California fuels have lower aromatic content. Reduced aromatics could further reduce the fuel lubricity.

Complaint or Symptom:

- **S** Premature rotary fuel injection pump wear or failure
- **S** Engine speed instability
- **S** Injector/injection nozzles plugging
- **S** Hard starting
- **S** Low power
- **S** Engine smoke

Routing	Service Manager	Sales Manager	Parts Manager	Technician No. 1	Technician No. 2	Technician No. 3	Return This to
Initial Here							

Problem:

Reduction of diesel fuel lubrication properties. This reduction is caused by hydroprocessing to remove sulfur and/or aromatic compounds during the refining process.

Solution:

When possible use existing fuel formulations with sulfur for engines used off-highway. No additives are required to provide good performance and engine reliability with this fuel. However, many local fuel distributors will not carry both low and regular sulfur diesel fuels.

If the local fuel distributor supplies only low sulfur fuel, order and use diesel fuel conditioner, part no. 336210. It provides lubricating properties along with other useful benefits, such as cetane improver, anti-oxidant, fuel stabilizer, corrosion inhibitor, and others. Use the conditioner with low sulfur fuels. Nearly all other diesel fuel conditioners improve only cold weather flow and stabilize long-term fuel storage. They do not contain the lubrication additives needed by rotary fuel injection pumps.

At this time, no lubrication test specification is available to determine if the fuel requires an additive. The additive will prevent the symptoms listed previously, but once the symptoms appear, only an injection pump overhaul will solve the problem. If the symptoms are prevalent in your area, request (arctic) hardened fuel injection components at the time of overhaul.

NOTE

John Deere and the fuel injection pump manufacturer will not cover warranty claims for premature fuel injection system failures caused by low lubricity diesel fuel..