

Service Bulletin No 001A

Stuck fuel level float.

The failure of the fuel gauge is either a stuck fuel level float inside the fuel tank or the electronic pickup sensor on installed top of the gauge's dial.

Without accurate information on the level of fuel in the tank, running out of fuel is common result. Improperly maintained diesel fuel will cause corrosion inside the tank including the rails that guide the float. Excessive tank corrosion should be an indicator to clean the float assembly, see photos.

The use of Biodiesel fuel or fuel contaminated with water is the primary cause leading to tank and float corrosion.

Additional potential causes for a stuck float are:

- A bouncy ride to the installation site could stick the float at the time of site commissioning.
- Incorrectly sized float assembly as supplied from the fuel tank manufacturer. (Polar is now running 100% inspection)

Note:

Starting in 1ST quarter of 2025 Polar will move away from using the float type fuel level gauges in the UL142 tanks and move to the use of solid state gauges that function on measuring the weight of a column of fuel inside the tank. The gauges are stainless steel with solid state electronics and are 1% to 3% accurate.

An upgrade kit will be available (for reasonable charge) to change out the float to the solid state gauge.

Knowing exactly how much diesel fuel is in the Tank and the rate of fuel consumption during generator operation is important for:

1. Accurate and reliable fuel level measurement is an important tool to have in scheduling refueling especially in a disaster where resource to refuel is limited:
 - a. Knowing exactly how much fuel is in the tank
 - b. And the rate of fuel consumption
 - c. When and how much fuel was put into the tank
2. Other advantages of accurate fuel level measurement:
 - a. Detect fuel theft
 - b. Detect fuel leaks
 - c. Determine if the engine requires service or repair due to poor fuel consumption.

Biodiesel should not be used in a standby generator because the fuel can sit in the tank for months or even years causing a great deal of corrosion. Please visit this link for the free report: <https://www.mdpi.com/2673-3994/5/1/2>

Autos and trucks using biodiesel have modifications to allow its use, however if the vehicle is to be stored for any period of time it's highly recommended to drain the vehicle tank and flush tank, fuel lines, and engine with a good non biodiesel.

Biodiesel can cause corrosion in metals, especially copper and carbon steel, due to the presence of water, free fatty acids, and other components. Please see photos of corrosion and contamination forming on the float type level sensor:

- Water: Biodiesel is more hygroscopic than diesel and can absorb more water. Water then causes corrosion by condensing on metal parts after the temperature increases, or by generating hydrolytic reactions that create organic acids.
- Free fatty acids: Biodiesel can contain free fatty acids that can corrode engines.
- Oxidation: The oxidation of components in biodiesel, oxygen, and active atom oxygen can create metal oxides that corrode metals.
- Residual catalyst: Residual catalyst, such as sodium or potassium, can degrade metals.
- Bacterial growth: Bacterial growth can degrade metals.

Water in the fuel tank will grow all kinds of **Microbes (bacteria & fungus)** which develop in the **water-diesel interface**. These microbes produce acids as a by-product of their day-to-day existence which can exacerbate corrosion of metal.

Biodiesel and diesel fuel with water contamination will prevent reliable starting in cold weather due to gelling.



See the corrosion caused by the diesel on the aluminum fitting, the two outer steel rods, and the single center brass rod.





In the center of the photo is the brass float turned black in from the diesel and some material formed on top of the float, possibly aluminum corrosion falling from the cap or substance formed from the biodiesel?

