

There Really is a Difference

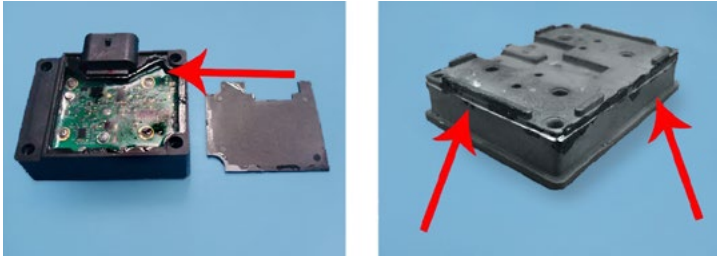
Flight Diesel PMD Identification markings:

- Made in the USA molded into cover
- A Globe image is molded into the cover
- 470002AD is molded into the body below the connector

Competitive benchmark comparison of an offshore produced, aftermarket version of our pump mounted driver (PMD) to an original Flight Diesel manufactured PMD, produced in the U.S.A.

Casing

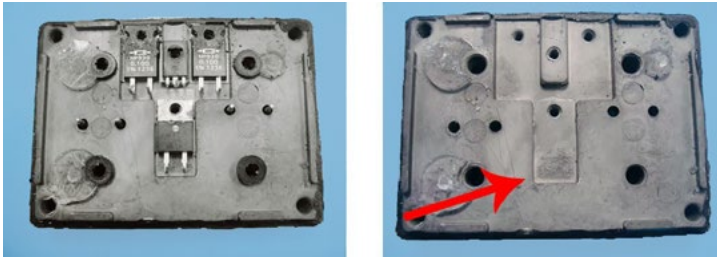
The poor quality of the lid seal of the offshore aftermarket version can be observed in its ease of removal and the use of super glue. The seal in between the heat sync and the casing is also inconsistent in their product. A poor seal could potentially allow moisture to collect inside the module, increasing the chances of corrosion. Components manufactured by Flight Diesel purely use automotive grade RTV sealant that is clamped and cured overnight.



The arrows in the pictures above indicate the use of super glue and inconsistency, respectively.

Heat Sink Surface Quality

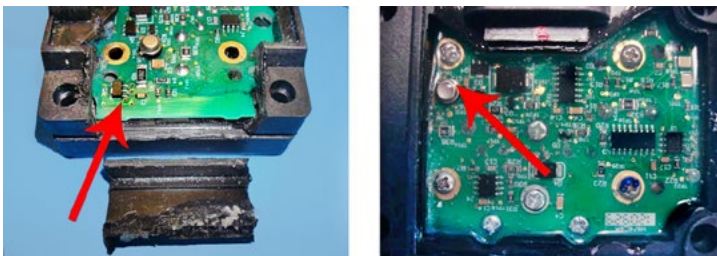
The critical surfaces of the heat sink in the offshore aftermarket version are not machined, and therefore do not consistently meet necessary specifications. The variability of the surface could potentially cause components to overheat due to ineffective heat dissipation. Burrs and rough surfaces may also penetrate through the insulation pads to the component exterior and cause shorts.



The arrow indicates the critical surface that requires machining and the components that are compromised.

Potting

Upon inspection of the offshore aftermarket version, voids in the potting material left areas of the circuit board exposed, allowing for potential water intrusion that can lead to corrosion. Our process involves two programmed applications of precisely measured potting that prevents voids from occurring.



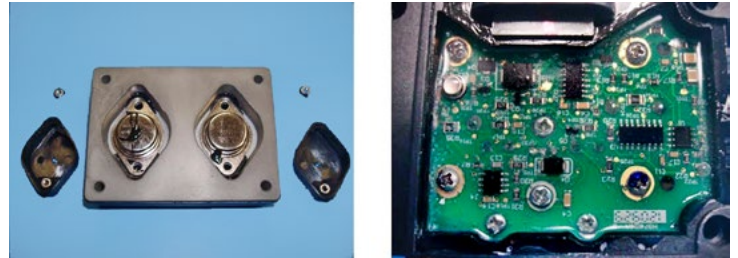
Void in potting.

Testing Quality

The offshore aftermarket version does not show evidence of in-circuit testing. Even if the component passes a functional test, electrical inconsistencies that would otherwise be detected during an in-circuit test, may still exist. The overall testing procedure of the offshore aftermarket version is unknown. Flight Diesel components are quality checked through a series of tests, including temperature tests and in-circuit tests. Our process is also approved by and meets OEM specifications.

Torque

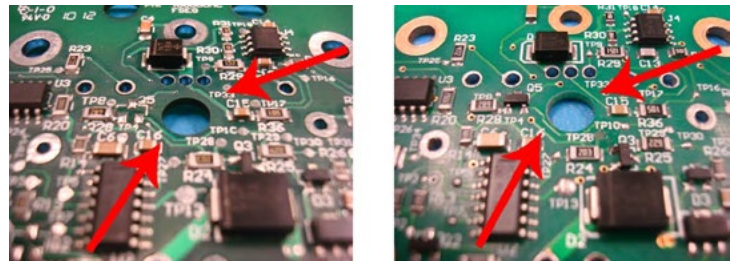
The screw torques of the offshore aftermarket version were inconsistent and varied significantly, in critical locations, across the several modules analyzed. Specifications exist for the screw torque to prevent loose contacts or damage to boards and connections. The PMDs manufactured here at Flight Diesel are all carefully torqued to OEM specifications to provide consistent quality. Another difference in the modules is that the offshore aftermarket version uses basic hex nuts, where as Flight Systems uses Keps-style nuts (hex nuts with external, toothed, free-spinning washers attached) that remain secure under harsh vibration conditions.



The pictures above show the screws that require specific torques.

Circuit Board Analysis

The differences in the clearance of the offshore version's circuit path routing have a greater potential to be damaged during the assembly process. The soldering quality is also questionable as evidenced in solder balls found under the potting due to improper soldering techniques.



The picture on the left represents an Flight Diesel PMD. The picture on the right represents the offshore aftermarket version. The arrows in the right picture indicate the poor circuit path design in comparison to the one on the left.

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Systems Electronics Group

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