Isolated Ground vs TAD Standard Ground Panel.

This document is to try to help you, and hopefully give you a brief understanding of the difference between the two types of electrical systems. Our TAD panels are designed for standard ground electrical systems and can be fitted to a wide range of engines, however, engine configurations vary, therefore it is not possible to detail step by step installation instructions for all engines. This document is designed to give you an overview. If during the course of installation you have a question, you can email for tech assistance to tadinc@inna.net Subject line PANEL HELP we will do our best to answer you as quickly as possible, leave a contact number in the email. We recommend a qualified marine electrician be present to carry out the installation or at least inspect the work prior to connecting and testing new panel system.

Before embarking on electrical work on the engine disconnect battery/s to completely isolate the engine of battery power.

It is assumed you have received this because your engine has an Isolated ground system. This type of system is essential to aluminum and steel boats to reduce electrolysis. It is more common than not to find standard ground (1wire) systems than the (2 wire) isolated ground system. If your boat is aluminum or steel, it is recommended you retain the isolated ground system, and NOT replace it with a standard ground panel.

The main difference between the two systems is the engines electrical components each have their own dedicated ground supply's. Instead of grounding to the block as with a standard ground, each component has it's own ground wire running back to a ground source independent of the engine block.

For example, with an isolated ground system, your switches and senders will have 2 terminals one of the 2 wires normally black or brown is a dedicated ground wire which goes to an isolated ground terminal block connector along with other grounded components. The starter, alternator and other engine electrical accessories such as cold start, stop solenoid and starter relays also have separate

independent ground wires all of which connect to a ground source independent of the engine block.

The main difference between the above mentioned Isolated Ground System and a Standard Ground Panel System such as the one TAD supply's (Most commonly found) is the electrical components as listed above, all receive a ground from the engine block which is connected to the Negative battery terminal.

You may have several relays, these are designed to reduce voltage drop which can occur when your panel is more than 15 feet from the engine. Normally, one relay is for the starter, one for the cold start and one for stop control. If your panel is less than 15 feet, voltage drop is minimal, therefore relays are not essential. However, even at 15 feet or less, it is recommended to utilize the relays, especially if they are already in place.

Over 15 feet it is essential that they be utilized. When connecting the relays for the Standard ground panel, the main difference will be the ground source. This will now come from the engine block. You can use the relay mounting bolts as a ground, be sure to clean the surfaces thoroughly removing paint and dirt to a shiny clean surface. Be sure to use dielectric grease on these and all electrical connections and surfaces.

Switches and senders. You will replace the 2 wire senders and switches with the one wire case ground switches and senders supplied. Terminology is important, the switches operate the alarm system and the senders operate the gauge functions. The wiring diagram supplied with your new panel will give you a color code for these connections.

You will require a main engine ground wire. Leave the main battery ground wire normally connected to the rear of the starter motor in place, we suggest a # 3/0 - 4/0 wire from the main ground post of the starter motor to one on the 3 starter motor mounting bolts, now the block is grounded and all your switches, senders, relays, starter and alternator get a ground contact through the engine block. This will be your main source of ground for all the engine components. As with all the ground connections, make a good clean shiny connection with a liberal amount of dielectric grease.

Alternator. Your alternator will have a dedicated ground wire, normally black sometimes brown that currently goes back to the isolated ground source. You can utilize the same wire, just shorten it and connect to one of the alternator bracket mounting bolts. Again, ensure you have a good clean connection. This ground wire must be no smaller than the size of the main ground and positive output wires currently being used by the alternator. Under sizing that wire could be a fire hazard.

All grounding surfaces on the engine must be cleaned and free of rust or paint. Only ground to clean shiny surfaces. Use Dielectric grease on all surfaces and connections. including the panel connector plugs. Remember, most electrical problems on boats are due to bad or faulty ground connections.
If in doubt ask. An incorrect connection can cause serious damage.