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technical manual

NEES 210™
NEES 220™

Nett Emissions Eliminator System

Addendum 1
Dual Fuel
Propane/NG Setup

Dual Fuel Air Fuel Ratio Controller Setup

Overview

The NEES 210/220™ digital air-to-fuel (A/F) ratio controller for gaseous fuelled, carbureted genset engines is typically used with only one fuel, however it can be used to control the air/fuel ratio on Dual Fuel Propane/Natural Gas engines with a few minor modifications.

The following components will need to be purchased:

1. Bosch Relay
   This part is available at automotive supply warehouses.
2. Black Elbow with Orifice for second fuel regulator
   Nett PN 119438
3. Solenoid valve to control second regulator
   Nett PN 119427
4. Vacuum "T" connector to divert mixer supplied vacuum to both solenoids
   This part is available at automotive supply warehouses.
5. Electrical wire, terminals.
   This part is available at automotive supply warehouses.

Directions

1. Setup the engine to run slightly rich of Stoichiometric on both fuels with no controller installed.
2. Install 2 solenoid valves (Nett PN 119427), so that there is a solenoid valve for each fuel regulator.
3. Take the Blue Wire (from Pin 7 on the NEES ECU), and run it to one terminal on each solenoid (it is suggested that the additional wire you use to do this also be blue to simplify trouble shooting). The solenoids are not polarity sensitive, so either terminal can be used.
4. Install a wire from the second terminal on the solenoid controlling the Natural Gas regulator to Pine 87A on the Bosch Relay.
5. Install a wire from the second terminal on the solenoid controlling the Propane regulator to Pin 87 on the Bosch Relay.
6. Install a wire from Pin 86 of the Bosch Relay to Ground, and a wire from Pin 85 of the Bosch Relay to the 12 Volt Positive wire connected to the Electrical Fuel Shut Off on the Propane side of the fuel system.

All other connections should be made according to the instruction manual for the NEES 210. The changes made affect the blue and red wires shown in the original directions that control the single solenoid. The blue wire is now connected to both solenoids. Turning on the Electric Fuel Shut Off on the Propane side energizes the Bosch Relay, and switches current to the Solenoid used by the Propane Regulator, if there is no power to the Bosch Relay, the Solenoid controlling the Natural Gas side is operated.

Pin 30 and Pin 87a are connected when no power is applied to the relay to energize the switch. When power is applied across pin 85 and 86 the coil will break this connection and connect pin 87 to pin 30. The energizing power is supplied from the electric fuel solenoid valve that must be activated to open the propane fuel line.

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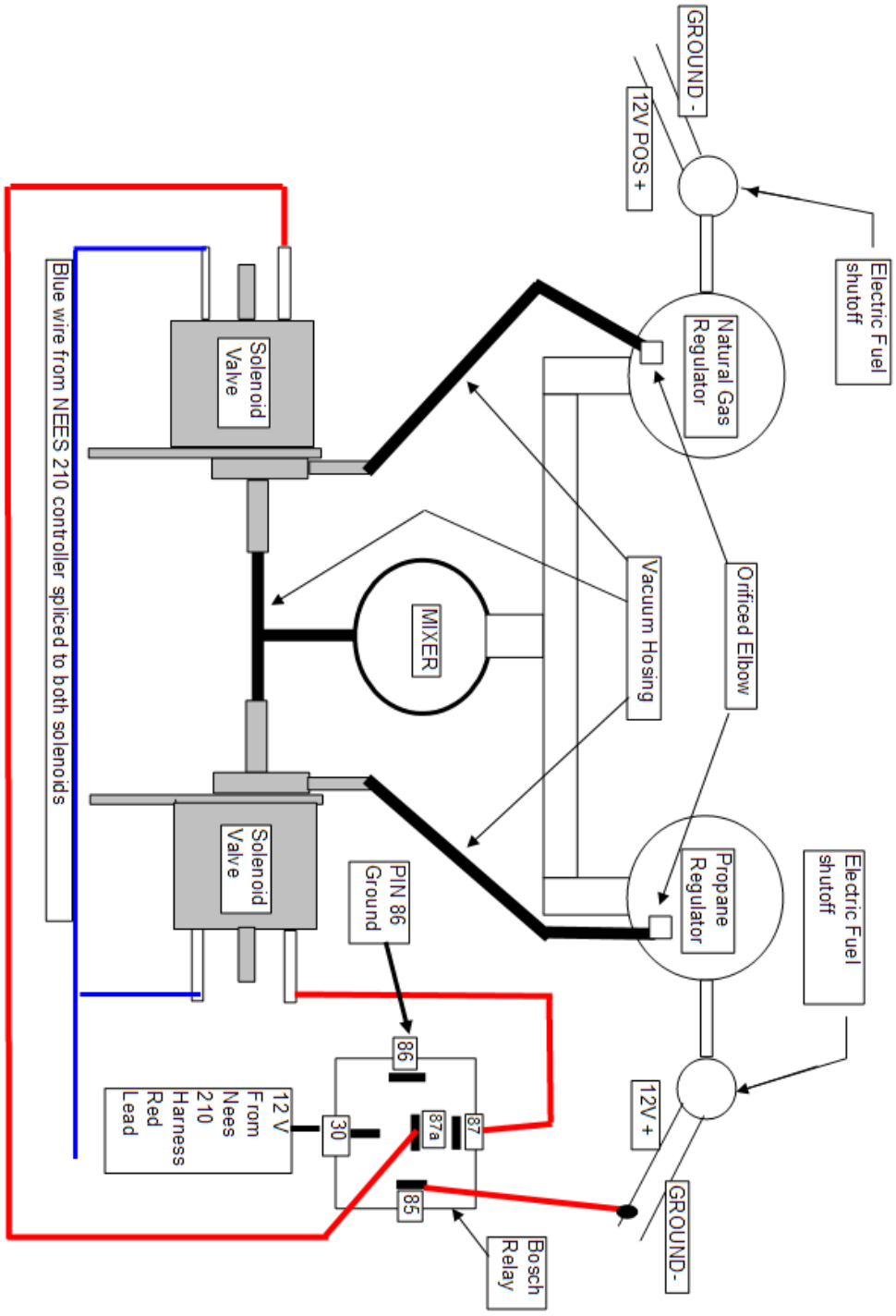

Figure 1. NEES 210/220™ Duel Fuel Layout