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SUBJECT: Chrysler SMEC/SBEC No Start

Misdiagnosis of the Chrysler Auto Shutdown Relay (ASD) circuit can often lead to unnecessarily replacing the SMEC (Single Module Engine Controller) or SBEC (Single Board Engine Controller) computer. Technicians should always check the ASD circuit before condemning the SMEC or SBEC as the cause of the no start condition. The following is a breakdown of the ASD circuit for a SMEC and a SBEC controller.

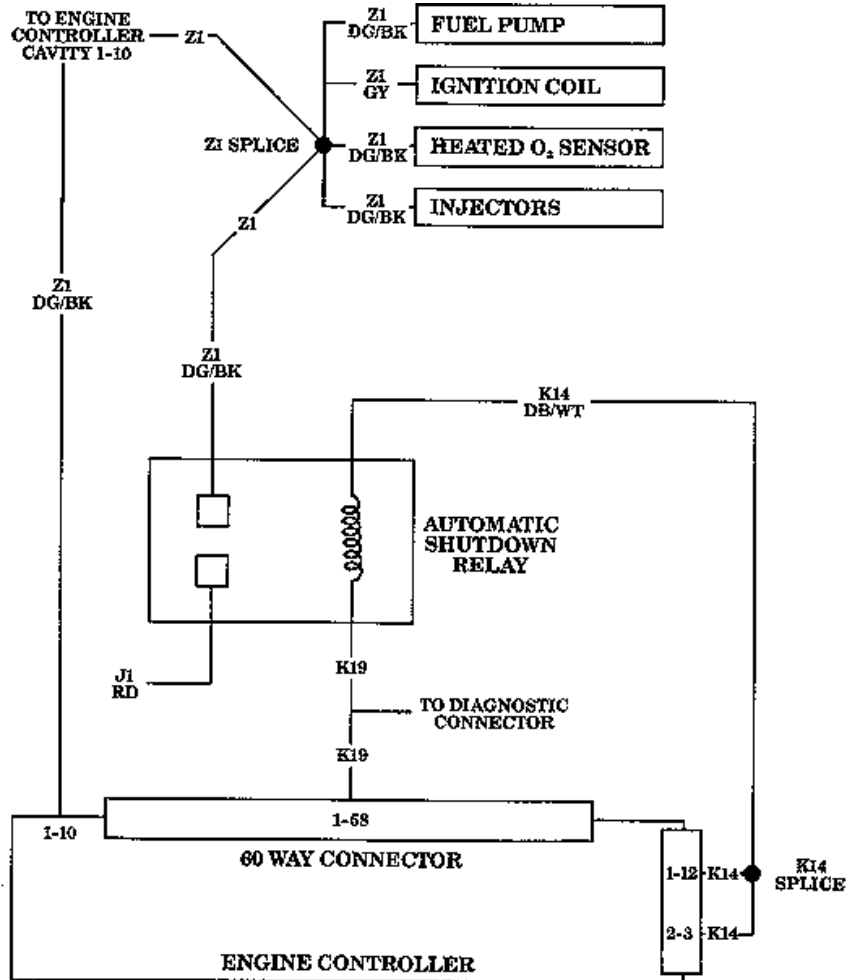
SMEC AUTOMATIC SHUTDOWN RELAY CIRCUIT

In this circuit, the Automatic Shutdown Relay (ASD) is used by the engine controller to supply voltage to the following components:

- Fuel Pump
- Fuel Injectors
- Ignition Coil
- O2 Sensor Heating Element

The SMEC operates the ASD relay through a single ground path. The feed side of the relay coil is powered by the ignition switch through the K14 circuit. The ASD relay contacts are normally open and will close when the SMEC provides a ground path from pin 1-58 of the SMEC through the K19 circuit. The relay's contacts are fed battery voltage constantly on the J1 circuit. The switched or controlled side of the relay is called the Z1 circuit. The ground path is provided for 1 second once the ignition is turned to the "run" position or **as long as the SMEC receives a crank or run signal**. If the engine

were running, the SMEC would maintain the coil ground allowing continuous operation



of the ASD relay. As soon as the controller sees there is no RPM input, it will unground the relay which in turn removes power from Z1. This is very important to understand

Fig. 1

since many technicians turn the ignition switch on and go looking for voltage at the positive side of the coil. If the relay is operating correctly, there will be no voltage at the coil and the chase is on!

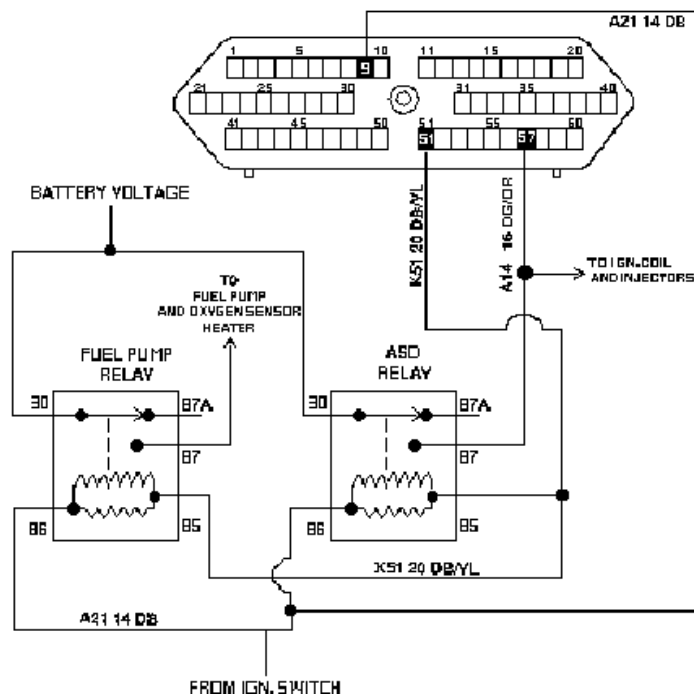
SBEC AUTOMATIC SHUTDOWN RELAY CIRCUIT

On Chrysler SBEC systems, it is important to note that a fuel pump relay has been added to the circuit. In this circuit, the Automatic Shutdown Relay (ASD) is used by the engine controller to supply voltage to the following components:

- Fuel Injectors
- Ignition Coil
- O2 Sensor Heating Element
- Alternator

The SBEC operates the ASD relay and fuel pump relay through a single ground path. The feed side of the relay coil (pin 86) is powered by the ignition switch. The ASD relay contacts are normally open and will close when the SBEC provides a ground path from pin 51 of the SBEC to terminal 85 of the ASD relay. Terminal 30 of the ASD relay is fed battery voltage

Fig. 2



and the switched side of the relay (pin 87), provides the voltage supply to the appropriate components once the relay is grounded by the SBEC. The ground path is provided for 1 to three seconds once the ignition is turned to the “run” position or **as long as the SBEC receives a crank or run signal**. If the engine were running, the SBEC

as the fuel pump relay. If the SBEC senses the RPM signal has stopped, it will remove the ground from the ASD relay which will cause the relay contacts to open and remove voltage from the circuit. This is very important to understand since many technicians turn the ignition switch on and go looking for voltage at the positive side of the coil. If the relay is operating correctly, there will be no voltage at the coil, therefore the technician will automatically condemn the engine controller.