



# Technical Service Information

## 3L30 (180C TRIMATIC)

### NO TCC APPLICATION

**COMPLAINT:** Diagnosing a “No TCC” condition on a 1989 to 1998 GEO Tracker or Suzuki Sidekick with a 1.6L engine and the 3L30 (180C) due to the complexity of the TCC control system.

**CAUSE:** Any one or more of the TCC control system components such as the TCC Solenoid, the Governor Pressure Switch, the Transmission Relay, the ECM, a missing Feed Pipe O-Ring or a Converter Clutch Control Valve problem, etc., can be the cause of the above complaint.

**CORRECTION:** The internal adaptation and description of the components used to control converter clutch apply can be seen in Figures 1 and 2. The bottom pipe coming from the valve body is band release pressure otherwise known as third gear oil. This ensures that the vehicle will never have TCC until 3rd gear. When the solenoid is energized this oil is routed through the upper pipe to the pump cover (Figure 3 and 4) where it strokes the converter clutch control valve into the lock up position.

In addition to the solenoid receiving 3rd gear oil, a governor pressure switch is utilized to time control (*via speed*) a voltage supply to the solenoid. In the example shown in Figures 1 and 2, it can be noticed that the pressure switch is rated to close at 43.5 psi. Also notice that the solenoid is permanently grounded. Putting this together with considering a properly operating system, 3rd gear is typically reached by approximately 35 miles per hour. This means the solenoid will have received 3rd gear oil before governor pressure is high enough to close the switch (*The idea is to prevent a converter clutch apply on top of the 2-3 shift*). Once governor pressure increases enough to close the switch (*40 mph or above*), voltage is supplied to the “already grounded” solenoid. Once energized, third gear oil is allowed to pass through the solenoid and stroke the converter clutch control valve in the pump (See the partial hydraulics in Figures 5 and 6).

Figures 7 through 10 are typical wiring diagrams which reveal the external electronics controlling the voltage supply to the transmission. Using a 1995 Suzuki Sidekick as an example, the Main Relay can be located under the dash, while the Transmission Relay is located in the right side of the engine compartment forward of the battery as seen in Figure 11. These relay locations are very similar with the GEO Tracker as well as the ECM being located under the dash, high left of the steering column.

The wiring diagrams in Figures 7 through 10 indicate that the voltage supply to the Transmission Relay coil comes from the Main Relay. The ECM will ground the Transmission Relay after the vehicle is at operating temperature and the vehicle is moving. With the Transmission Relay coil energized, power from the Stop Lamp Switch is supplied to the transmission through a White Wire where it waits for the governor pressure switch to close at which time the solenoid becomes energized. It is noted in the wiring schematics that the Blue Wire is not used with 1991 and later vehicles.



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**CORRECTION** 1989 and 1990 vehicles had this wire returning to the ECM as “governor pressure switch feed  
*continued:* back” informing the ECM of the Governor Switch state, whether it closed or not. A code 42 could be produced with these vehicles if voltage on the Blue Wire to the ECM remains hot at all times indicating a short to power. For 1991 and later, the wire remains in the harness but does not connect to the ECM.

Mechanically there could be a defective solenoid, a malfunctioning governor pressure switch, the o-ring left off the pump end of the feed pipe, the bore plug which retains the convert clutch control valve is not sealing, the valve is stuck or the converter has failed.

Electronically a bad splice could occur in the voltage feed circuit from the Main Relay to the Transmission Relay, a defective Transmission Relay, wiring problems from the relay to the ECM or from the relay to the transmission, internal transmission wiring problems, a defective ECT sensor, Stop Lamp Switch, VSS, TPS, CMP or ECM.

The first step in diagnosing a no TCC is to check for any DTC's which may point you in an electrical direction. Another step would be to drive the vehicle at 45 miles per hour checking for voltage to appear on the white wire. The meter could be easily attached to the white wire from under the hood as there is a joint connector that can be located under the throttle body. While driving the vehicle voltage should become present. If voltage is never seen, an external electrical problem exists (Transmission Relay, Stop Lamp Switch, wiring, ECM, ECT, VSS, TPS or CMP). If voltage is observed, all the external electrical components are working. Plug the connector back in to the transmission and repeat the test checking the blue wire for voltage. If voltage is seen, there is an internal mechanical problem with the converter, the oil pipes or the solenoid (See Figures 12 and 13 for solenoid bench test procedures). If voltage is not seen on the blue wire, the governor pressure switch is defective.

In 1995, a bulletin was issued concerning a TCC Chuggle/Hunting condition that was caused by the governor pressure switch opening and closing during vehicle speeds between 40-45 mph. To correct this condition, a Time Delay Module kit was produced to be installed by the Transmission Relay under the hood. This module delayed the voltage supply to the transmission as an attempt to ensure that with increased vehicle speed, the governor pressure would also increase past the threshold of the governor pressure switch eliminating the open/close toggle. The part number for this Time Delay Module kit is **96041311**. The Time Delay Module has a red wire coming out of one terminal with an open terminal along side of it. The white wire coming out of the transmission relay is removed and connected to the open terminal on the Time Delay Module. The red wire is then placed into the Transmission Relay where the white wire was previously located. This places the module in series between the relay and the transmission. The module is then clipped onto the nearby A/C fan relay. Vehicles with A/C, the kit also includes a rubber holding fixture designed to slide onto a tab on the fuse box which the Time Delay Module can then be attached to.

Starting with late production 1995 Tracker and Sidekicks, the governor pressure switch was eliminated altogether giving TCC control entirely over to the PCM.

## NO TCC APPLICATION

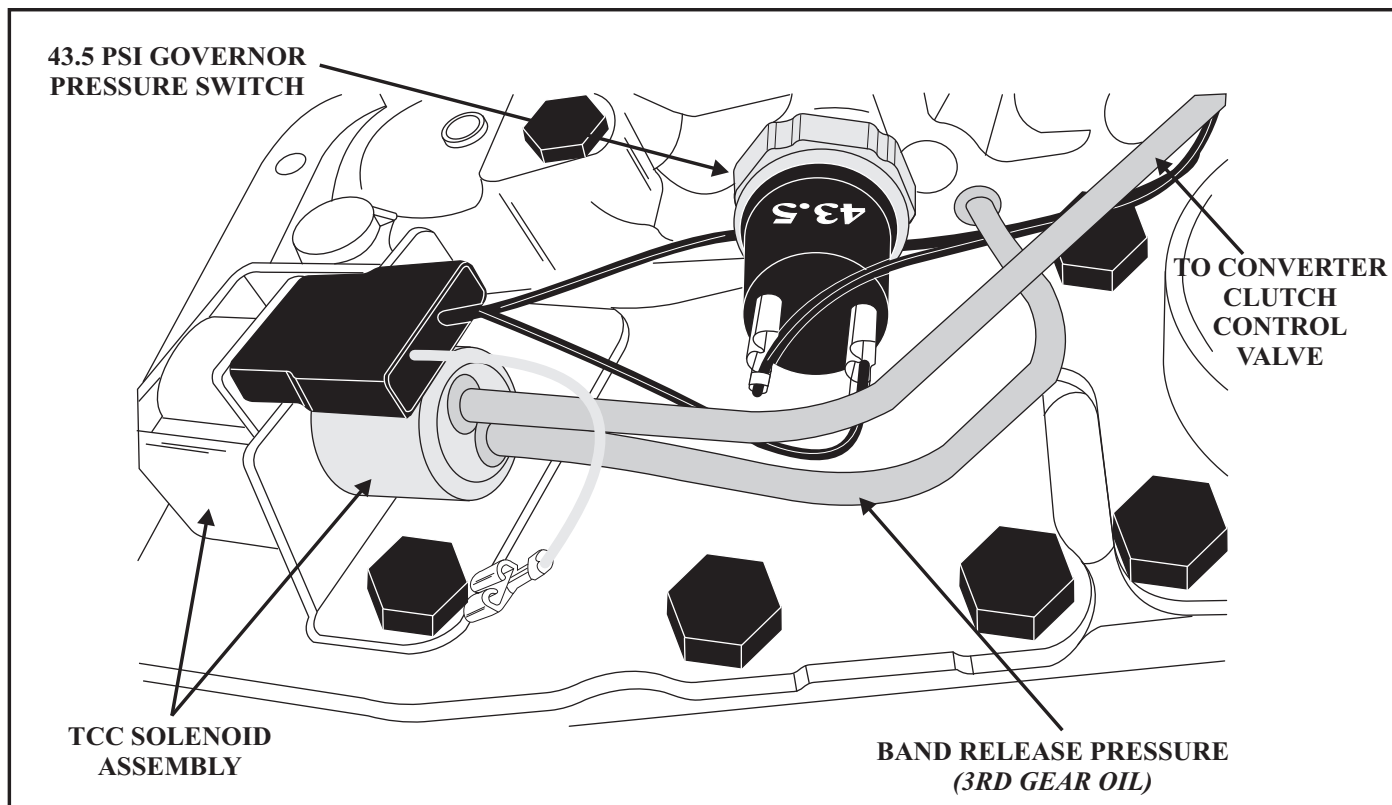


Figure 1

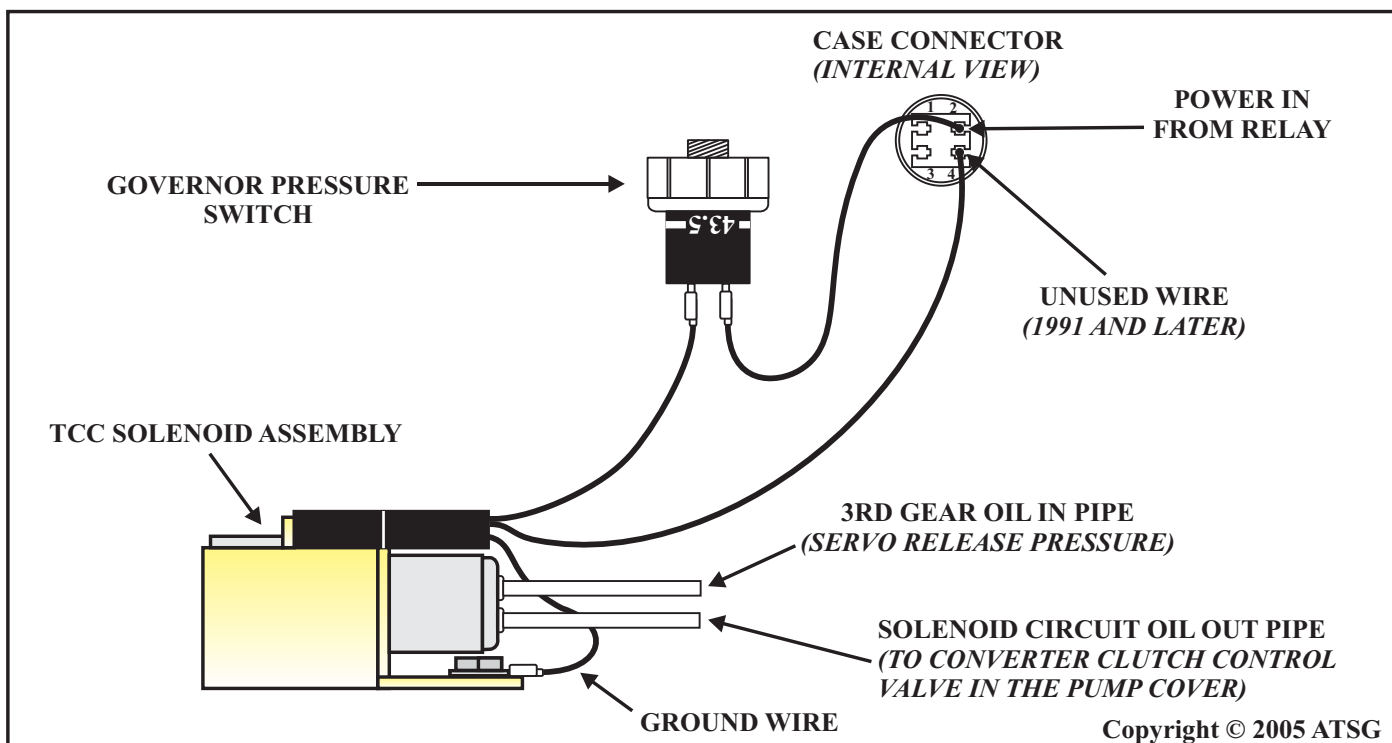


Figure 2

## NO TCC APPLICATION

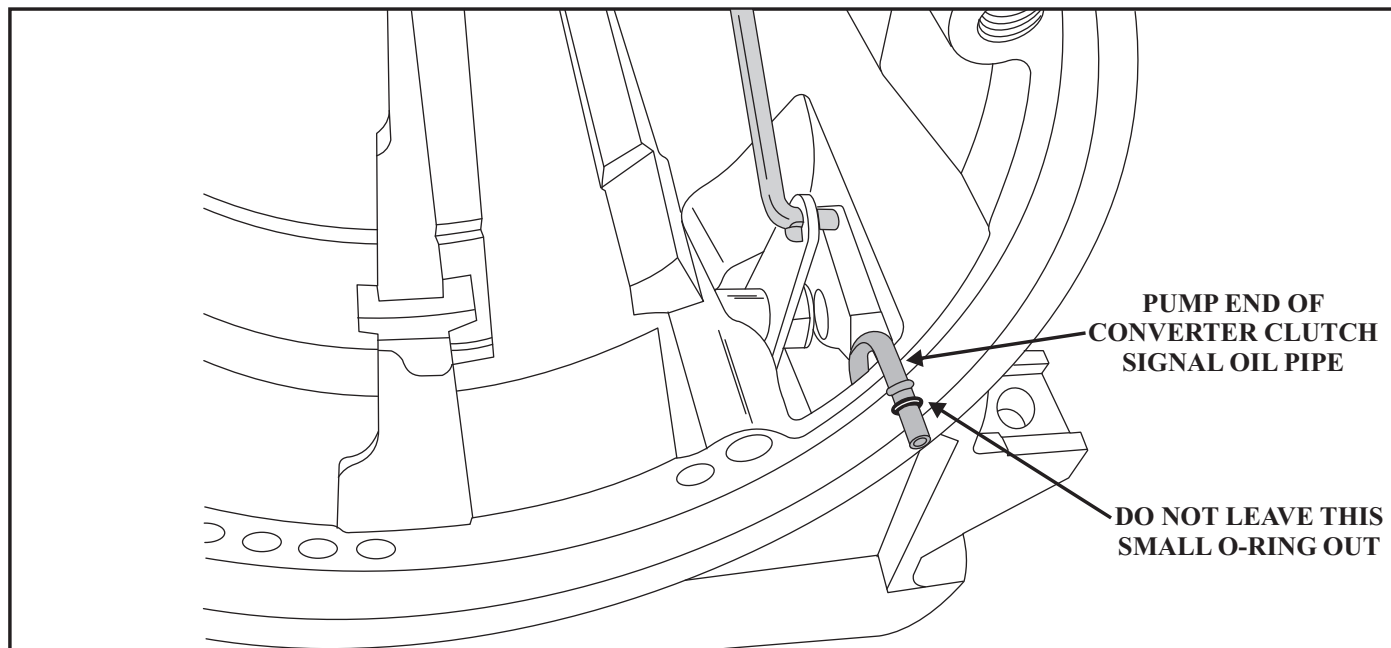


Figure 3

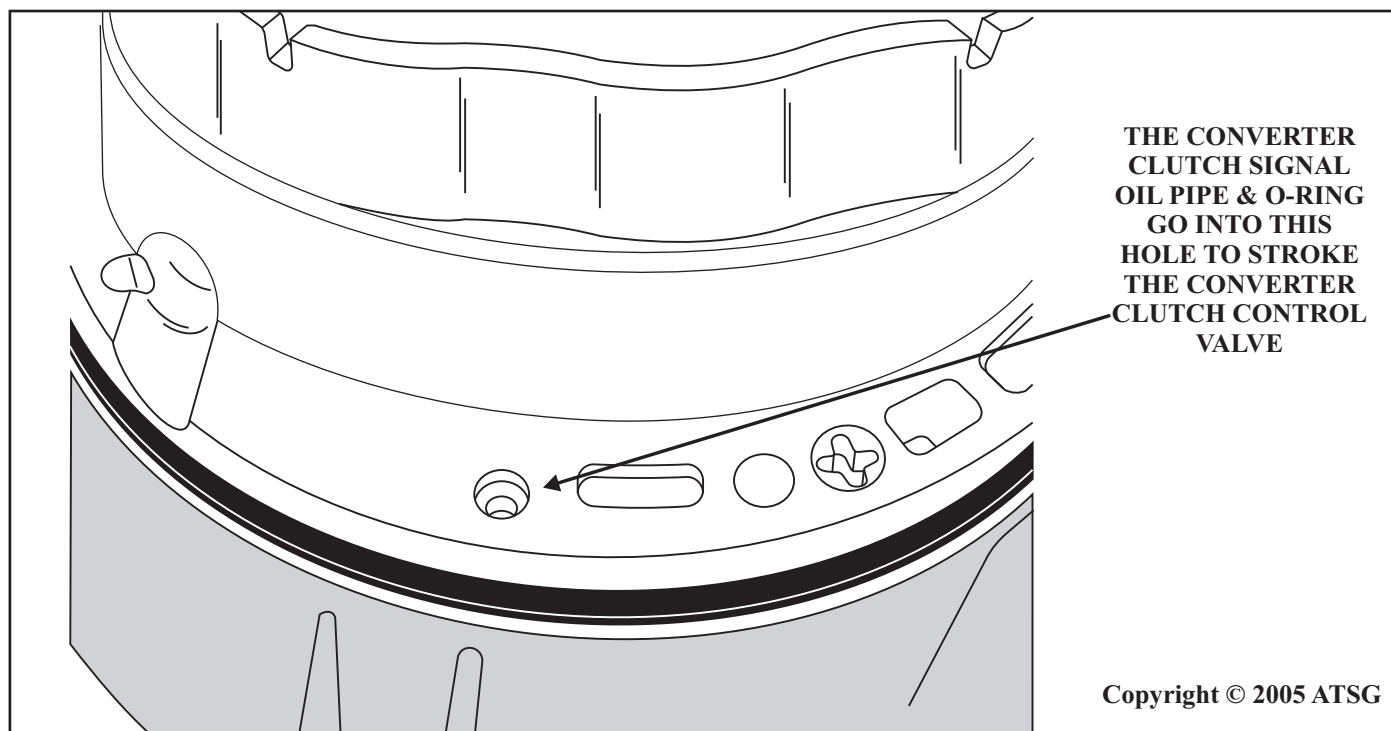


Figure 4

## NO TCC APPLICATION

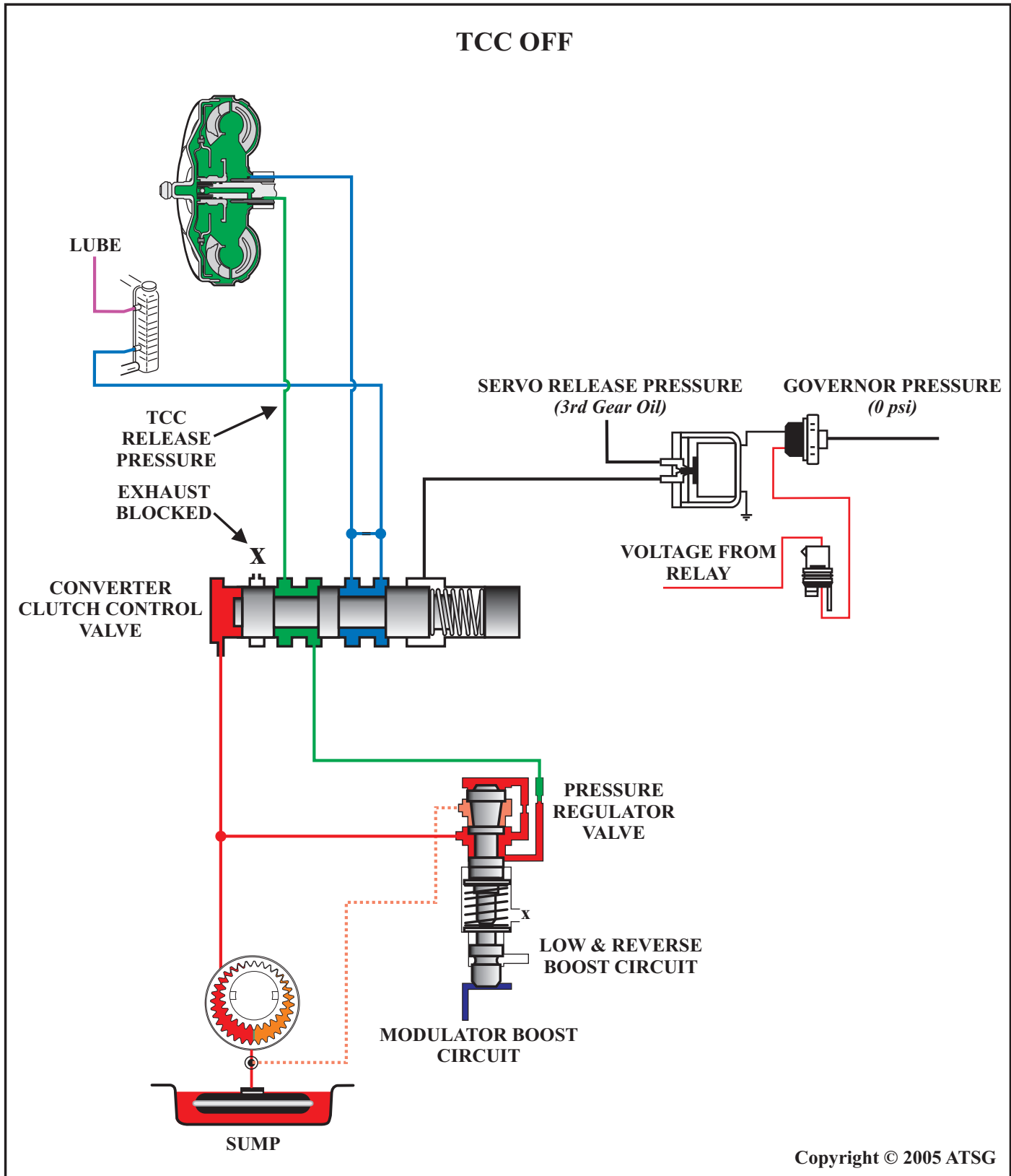


Figure 5

## NO TCC APPLICATION

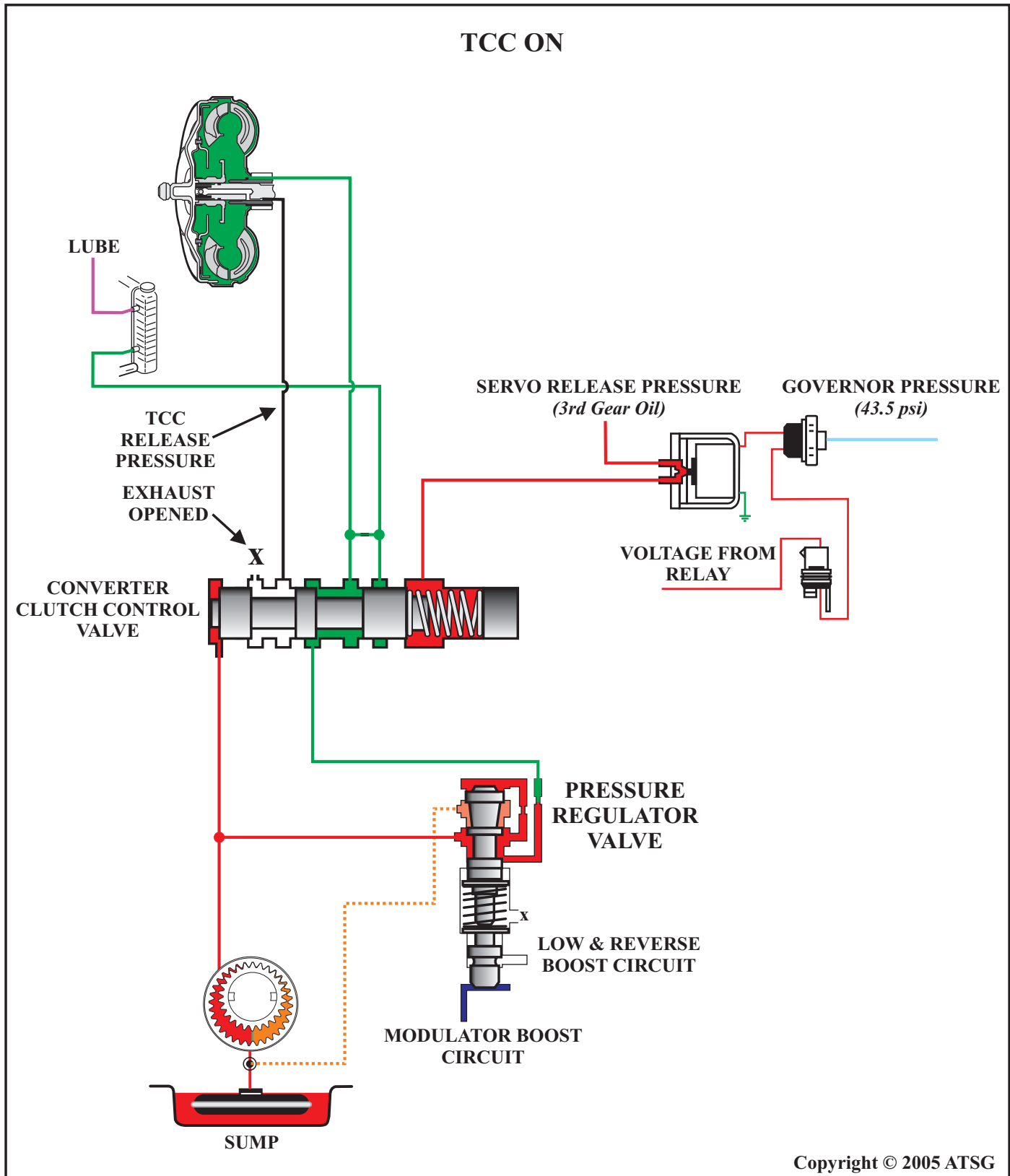


Figure 6

## NO TCC APPLICATION

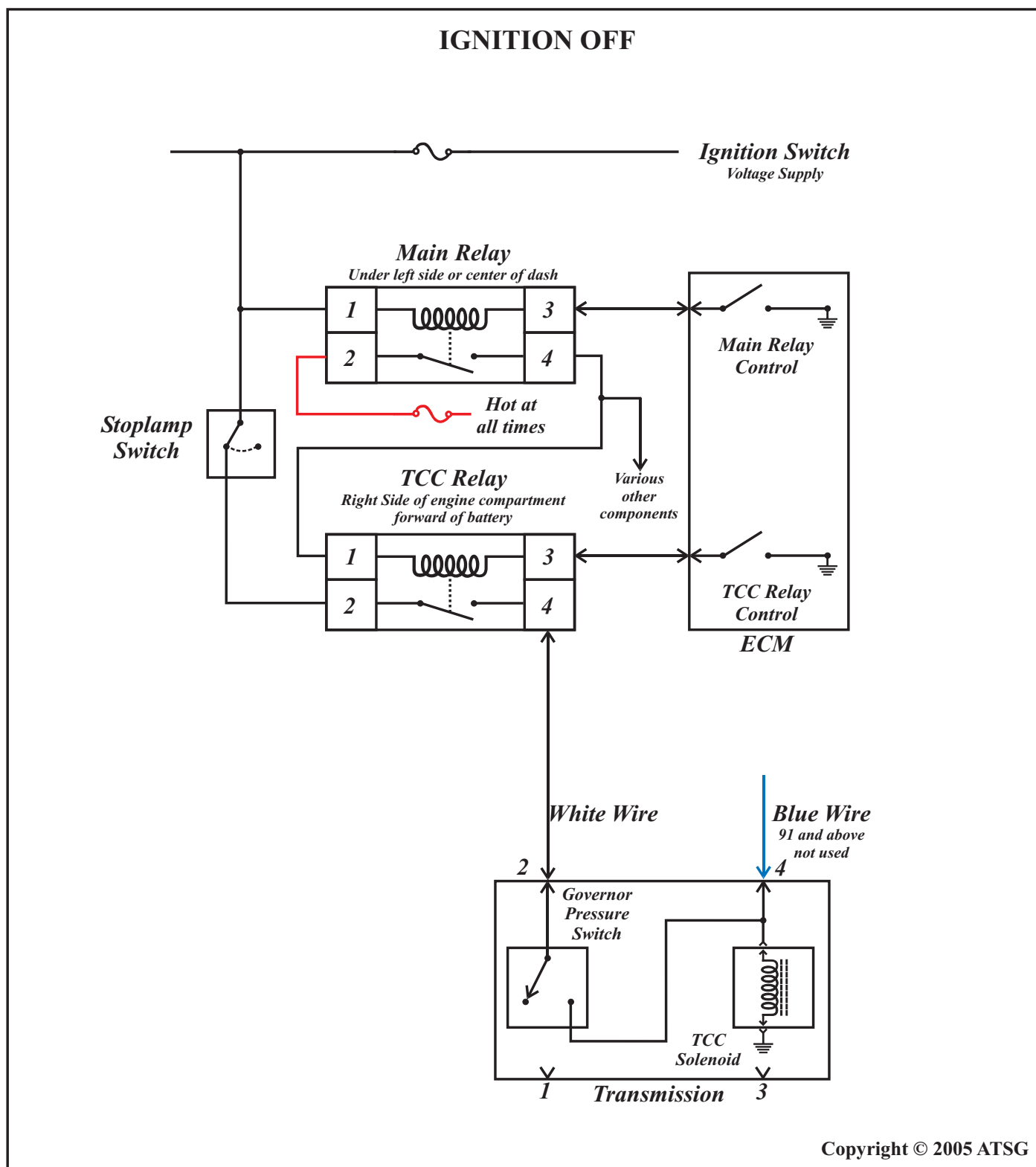


Figure 6

## NO TCC APPLICATION

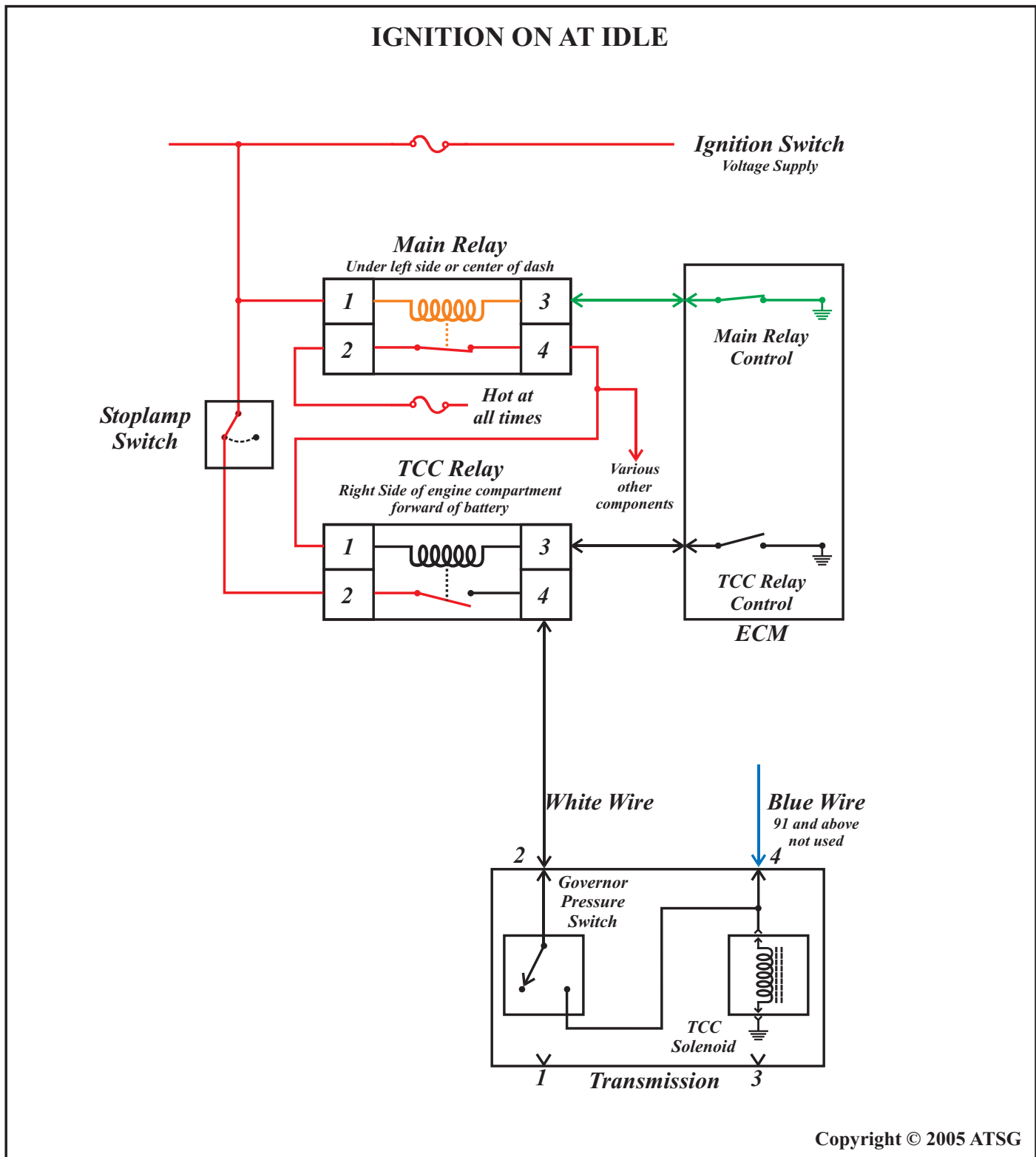
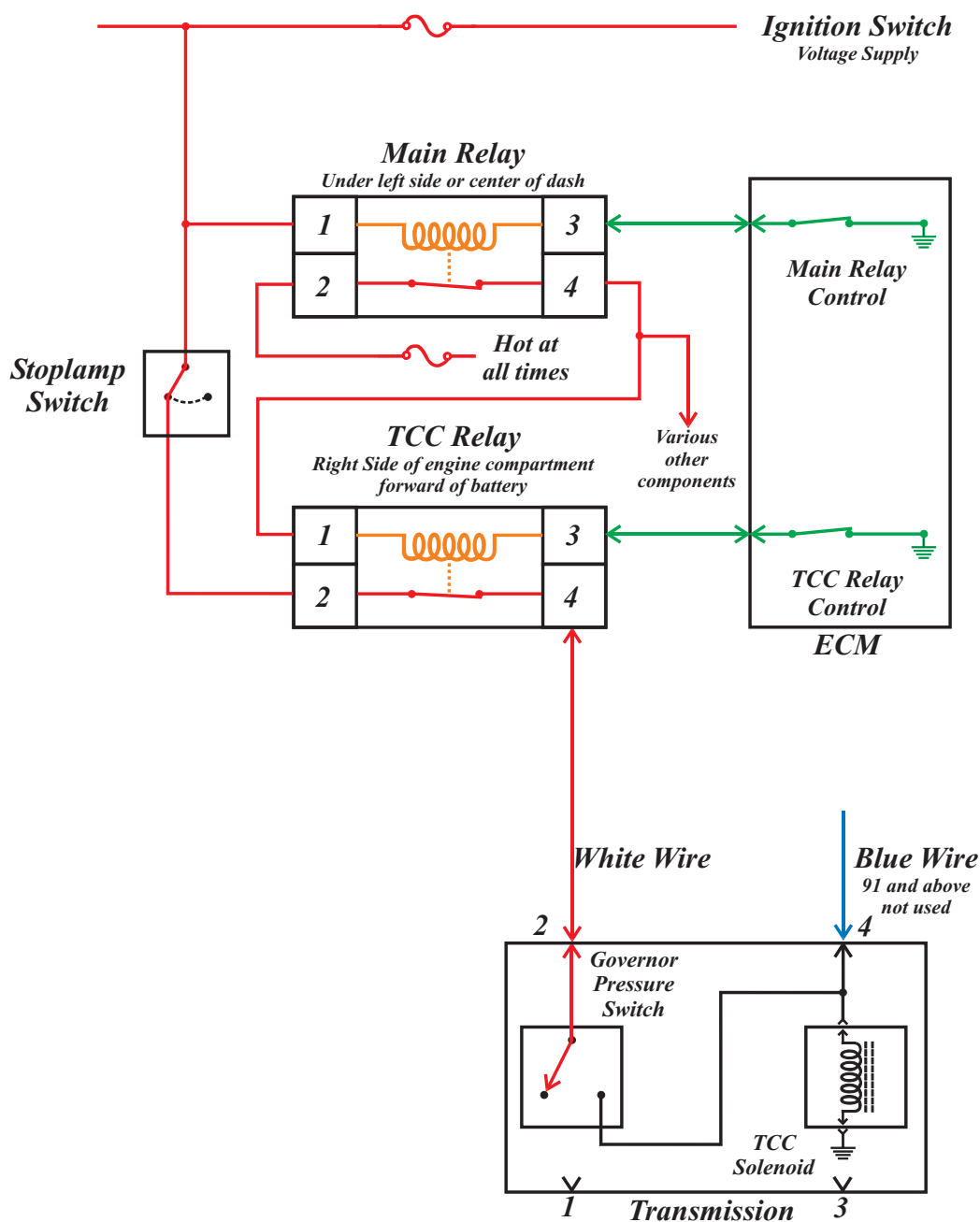


Figure 8



## NO TCC APPLICATION

**VEHICLE AT OPERATING TEMPERATURE  
AT APPROXIMATELY 40 MPH OR MORE.**

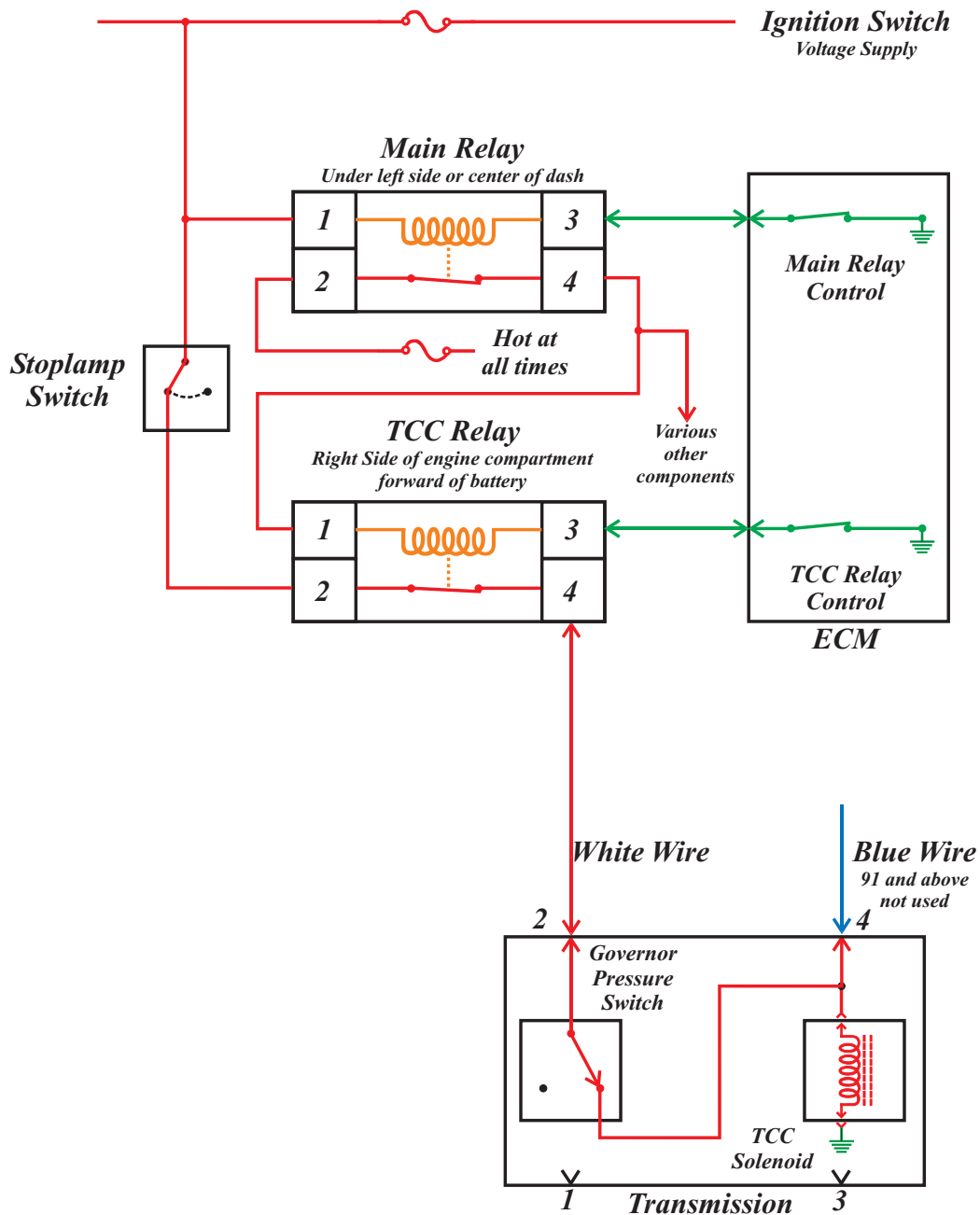


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Figure 9

## NO TCC APPLICATION

**VEHICLE AT PROPER OPERATING REQUIREMENTS  
AND THE GOVERNOR PRESSURE HAS CLOSED THE SWITCH.**



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Figure 10

## NO TCC APPLICATION

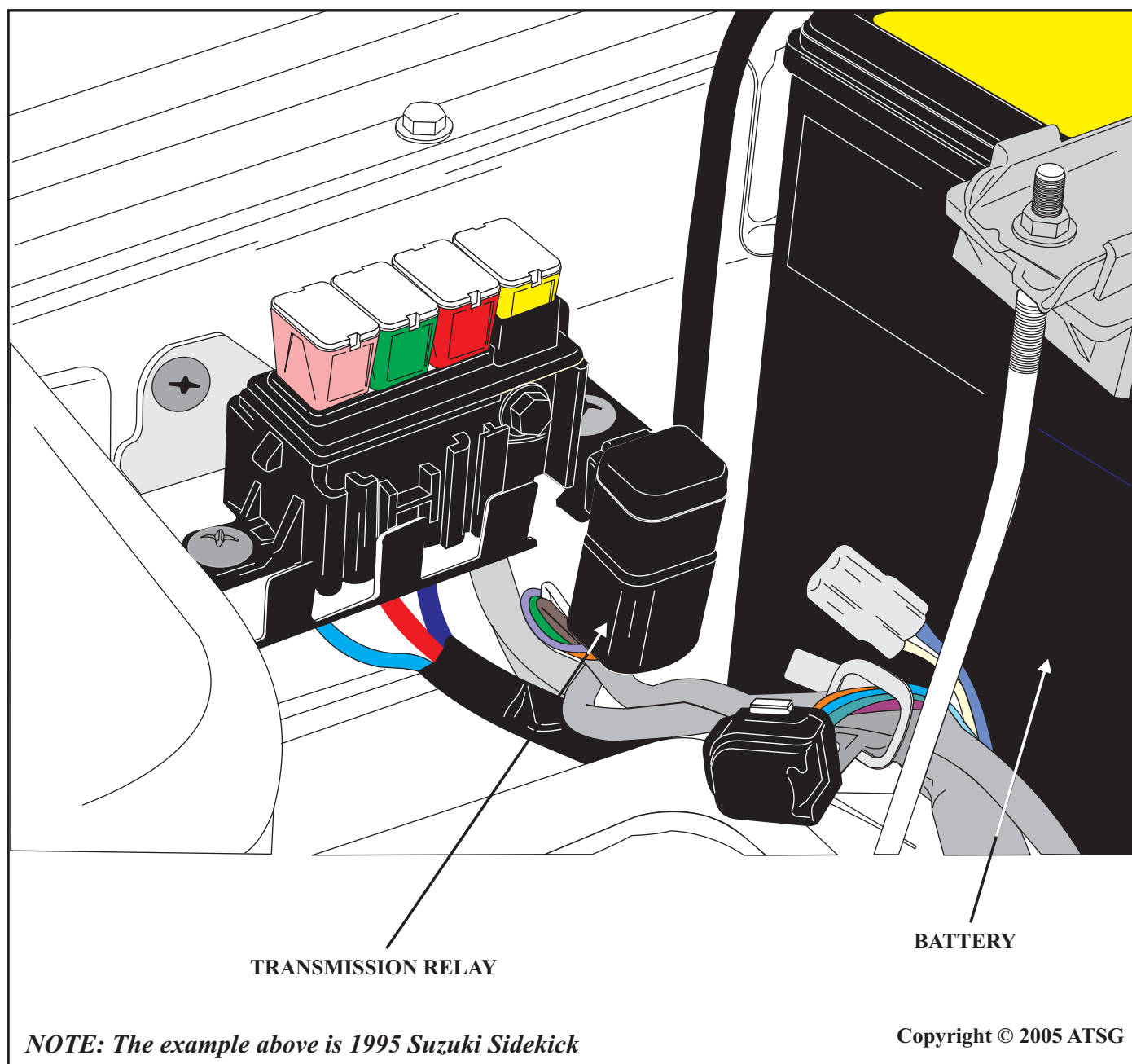


Figure 11

## TCC SOLENOID TEST

**WITH THE SOLENOID ENERGIZED, SQUEEZE FLUID INTO THE SOLENOID FLUID CHAMBER FROM AN OIL BOTTLE THROUGH THE UPPER PIPE HOLE WHILE THE LOWER PIPE HOLE IS BLOCKED**

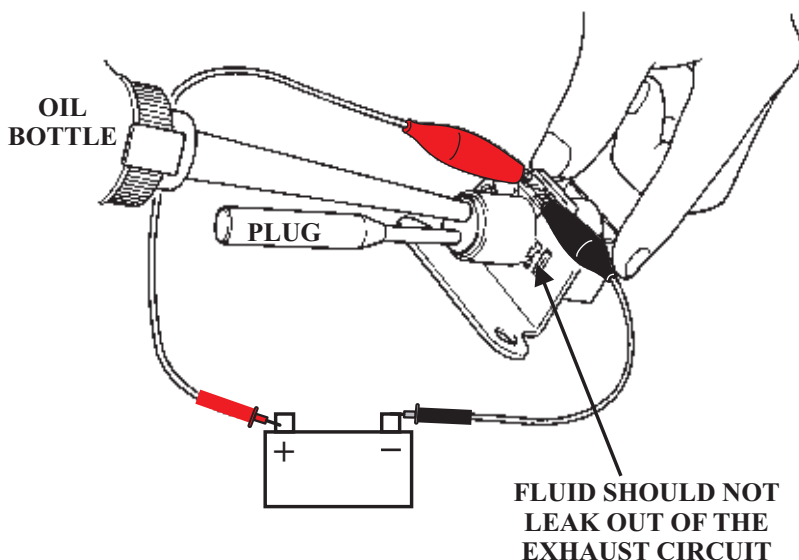
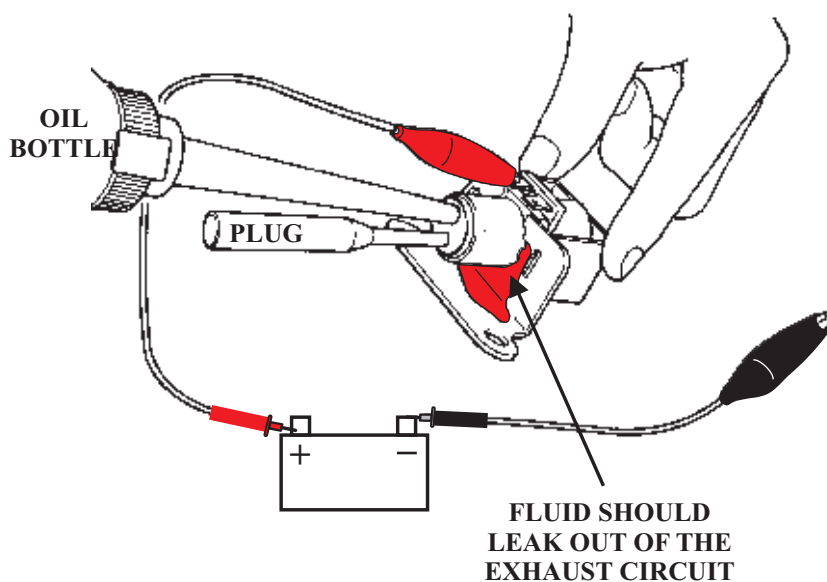


Figure 12

**WITH THE SOLENOID DE-ENERGIZED, SQUEEZE FLUID INTO THE SOLENOID FLUID CHAMBER FROM AN OIL BOTTLE THROUGH THE UPPER PIPE HOLE WHILE THE LOWER PIPE HOLE IS BLOCKED**



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Figure 13