VARIATIONS IN TRANSISTOR IGNITION WIRING HARNESSES

By Dave Fiedler

The purpose of the Transistor Ignition (TI) Wiring Harness, quite simply, is to join the three (3) TI components (distributor, amplifier, and coil) together electrically and to provide a power feed to the circuit. The TI harness, in all applications, was a separate harness that was independent of the main engine wiring harness. All six (6) TI wiring harnesses used from 1964 thru 1971 were basically constructed the same, including resistance wires (two different values) built into the harness. Other similarities are the basic layout of the harness and the material used in their construction (including the wrapping tape).

The main differences are the total length of the harness, the manner in which power is supplied from the ignition switch, and the mating connector for the amplifier.

The TI wiring harness "functions" in the following manner. When the ignition switch is turned to the "start" position, power (+12v) is fed to the system through a wire in the harness that connects to the "R" terminal of the starter solenoid. The reason for this power source is to obtain the highest voltage available for cold starting. Once the engine is running and the ignition key is released to the "run" position, due to the construction of the wiring harness, the power source is simultaneously changed to feed from the ignition switch. Between the ignition switch and the amplifier is a length of resistance wire that drops the voltage to the amplifier to approximately 5 volts. This reduced voltage is necessary for amplifier durability. The critical factor in amplifier life is temperature. The greater the voltage and current draw, the greater the amount of heat generated. Therefore, resistance wire is used in the harness design so the system works in a voltage range tolerable for the amplifier electrical components.

The second length of resistance wire connecting the amplifier to the ignition coil and to ground, is used to limit the current draw through the coil. In 1964 and 1965 this resistance wire was located between the negative side of the coil and the ground, and in 1966 through 1971 it was between the positive side of the coil and the amplifier. This explains the difference in the voltage values (3.5 versus 6 volts) at the positive coil terminal in the GM published *"Breakerless Ignition System Trouble Diagnosis Procedures"* (refer to 1964-65 Diagnosis and 1966-71 Diagnosis).

Now, let's look in detail at the differences between the various TI wiring harnesses. Using the 1964 harness (GM part number 2987104) as a baseline, I will describe the changes...

The **1964** harness had a total length of 88.5-inches and picked up ignition switch power from a pink wire at the firewall. It also used only one ground wire that connected the negative side of the coil to the amplifier housing.

In **1965** (GM harness number 2988817), the only change made was the total length, which grew to 93.5-inches. This was done to accommodate two (2) amplifier locations, depending on various vehicle options.

In **1966-67** (GM harness number 6289482), the total length was the same as in 1965, however another ground wire was added because the amplifier was now (as in '66) mounted to a fiberglass panel. The extra ground wire connected the amplifier attachment bolt to the radiator core support which was metal and grounded. This extra loop to ground was continued for all subsequent years.

In **1968** there were two (2) wiring harnesses used because of a change in amplifiers in January of 1968. Early-1968 harnesses (GM number 6295077) had a total length of 107-inches and the connector for early-style amplifier (GM number 1115005). Late-1968 harnesses (GM number 6295260) were changed to a total length of 106-inches and had provisions for connecting the later amplifier (GM number 1115343). Also in late-1968 harnesses, and all subsequent harnesses, the ignition power feed came directly from the back of the ignition switch through the use of a special two-wire extension.

In **1969 through 1971**, the harness (GM number 6297596) was virtually identical to the late-1968 version except that it was shortened to 101-inches.

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