

15. TRANSISTORIZED IGNITION SYSTEM

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15. TRANSISTORIZED IGNITION SYSTEM

DESCRIPTION

In this system, the distributor breaker point "ON" and "OFF" signals are transformed to transistor switching action inside the igniter, to turn "ON" and "OFF" the primary current. The features of this system are:

1. Improves the engine starting and low speed performance because of the capability of maintain higher secondary voltage in the low speed range.
2. Improves the durability of the distributor breaker points.

OPERATION

1. At Breaker Point "ON" (when points are closed)

- Since the current flows as shown in the diagram, there is current flowing through the primary side of the ignition coil.

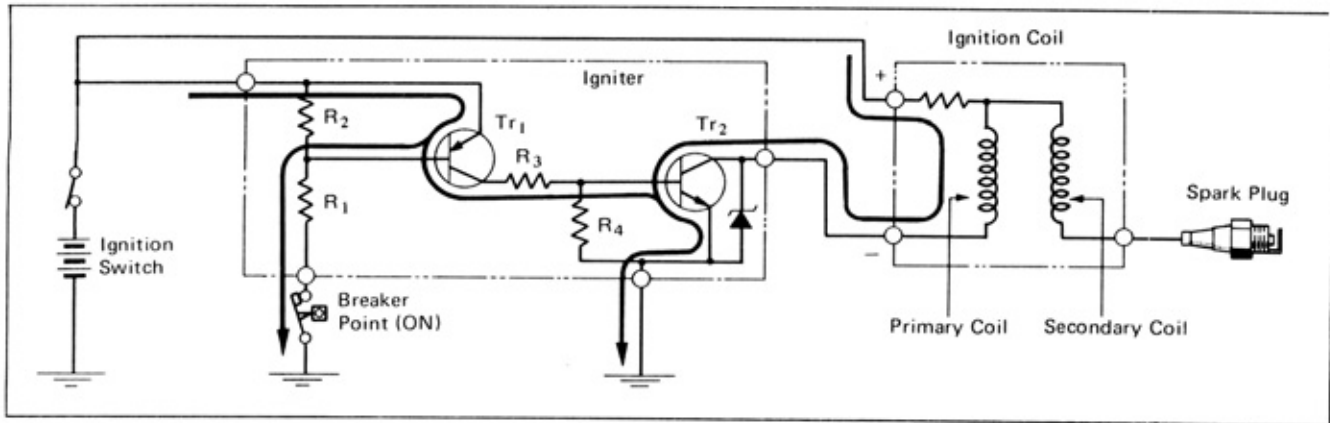


Fig. 15-1 Transistorized Ignition System Operation

2. At Breaker Point "OFF" (when point are open)

- Since there is no current flowing through the igniter, the ignition coil primary current will be turned off.
- At the instant the primary current is turned off, high voltage is induced in the ignition coil secondary side, to generate spark in the spark plug.
- Only a very small current flowing through R_1 will flow through the breaker points so that the arc loss at the points will be infinitesimal.

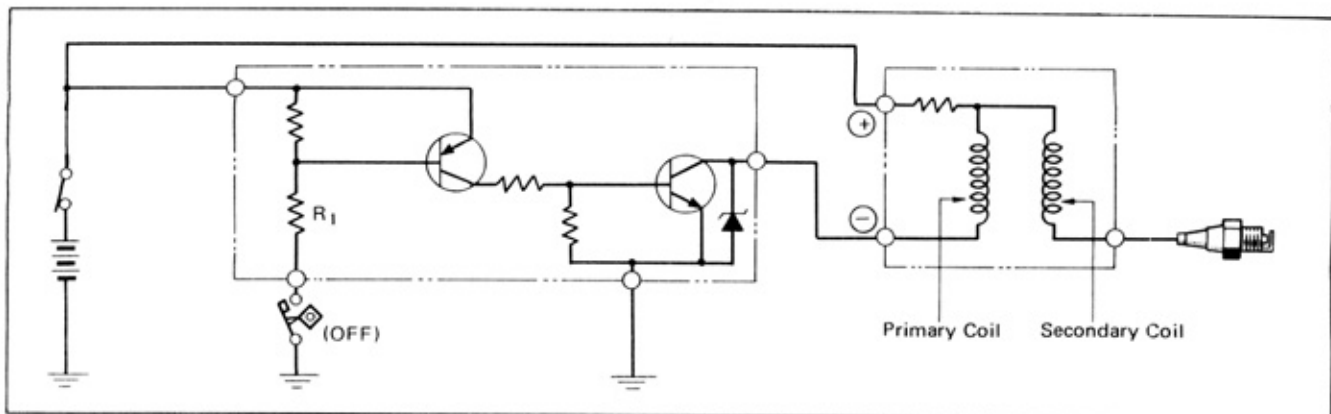
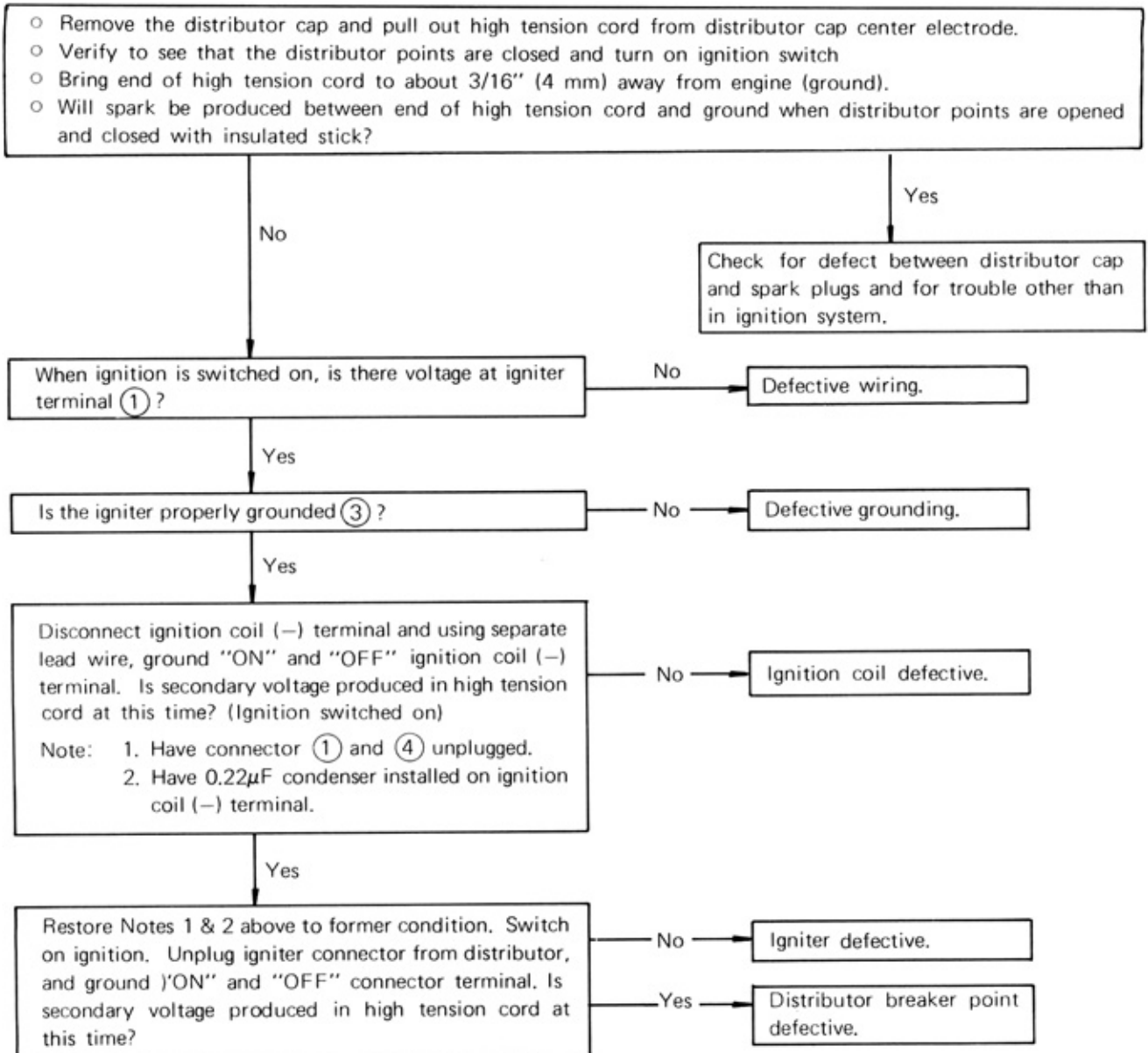


Fig. 15-2 Transistorized Ignition System Operation

INSPECTION PROCEDURE

If the cause for poor engine operation and defective starting is believed to be in the transistorized ignition system, check the system in the sequence outlined below.



INSPECTION METHODS

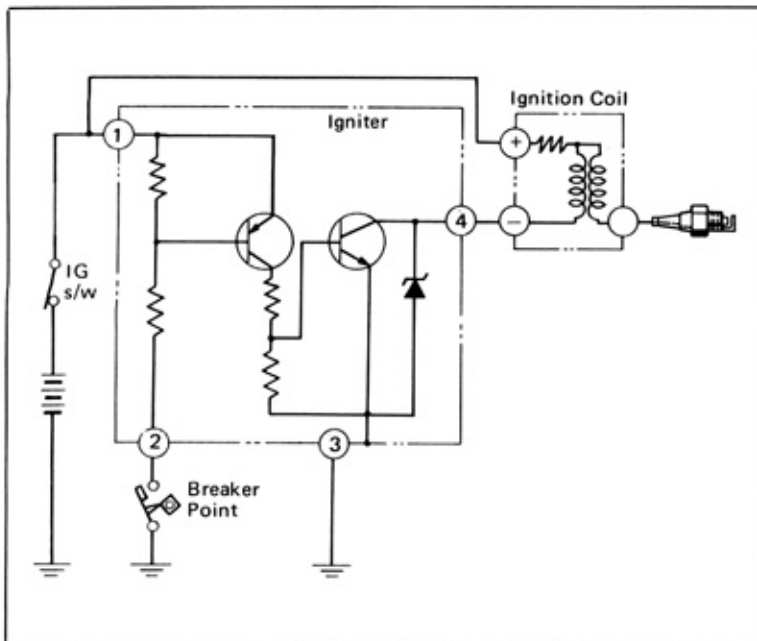


Fig. 15-3 System Circuit Diagram

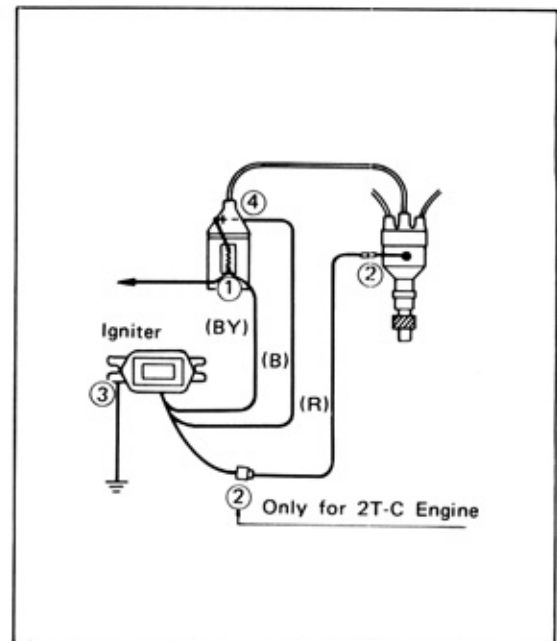


Fig. 15-4 System Wiring Diagram (except for 2F)

In case "no secondary voltage is produced" in the "Inspection Procedure" section, check by methods described below.

1. Igniter Power Source Voltage Inspection

- Check up between battery and ignition coil ① part. With the ignition switched on, check to see that there is voltage (V_1) at terminal in the ① part shown in Fig. 15-6.

Note
When measuring the voltage, have the connector plugged in.

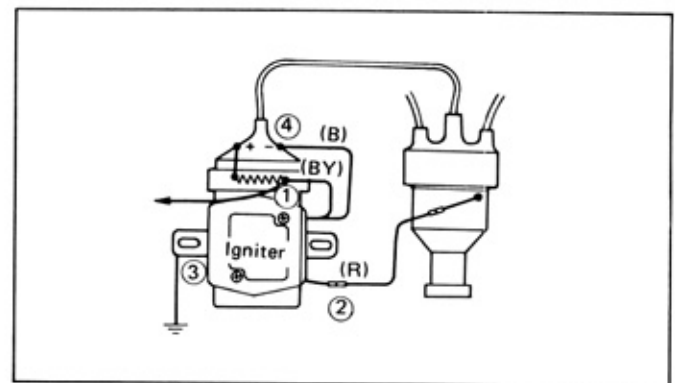


Fig. 15-5 System Wiring Diagram (for 2F)

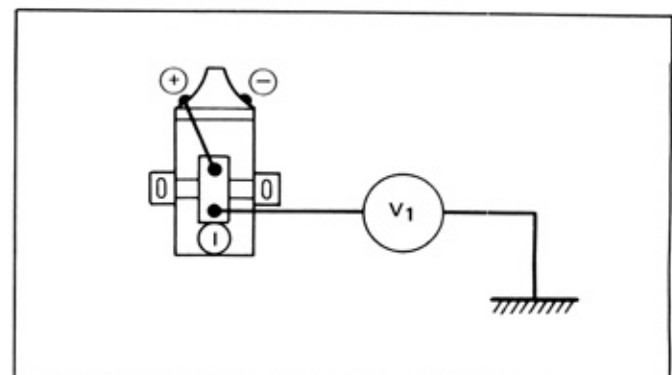


Fig. 15-6 Ignition Coil Inspection

2. Ignition Coil Inspection

- (1) Inspection while on vehicle
 - 1) Unplug the connector from the igniter.
 - 2) Attach a condenser (0.22 μ F) to the (-) terminal.
 - 3) Switch on the ignition.
 - 4) Connect a lead wire to the (-) terminal and ground it "ON" and "OFF" as illustrated.
 - 5) At this time, check the high tension cord to see if secondary voltage is produced. If not produced, make unit inspection.

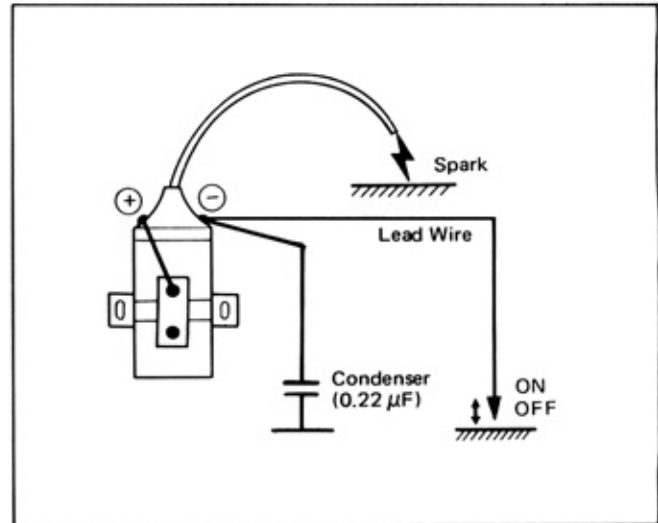


Fig. 15-7 Ignition Coil Inspection

- (2) Unit inspection.

Using a circuit tester and megger, measure the resistances of the various parts. If defective, replace the ignition coil.

 - 1) Primary coil resistance
 - 1.3 to 1.5 ohms – 2T-C, 20R
 - 1.3 to 1.6 ohms – 4M, 2F
 - 2) Secondary coil resistance
 - 6.5 to 10.5 Kilo-ohms – 2T-C, 20R
 - 9.5 to 14.5 Kilo-ohms – 4M, 2F
 - 3) Insulation resistance between terminal and case.
 - 10 megohm minimum
(Measured with 500V megger)
 - 4) External installed resistance
 - 1.3 to 1.7 ohms

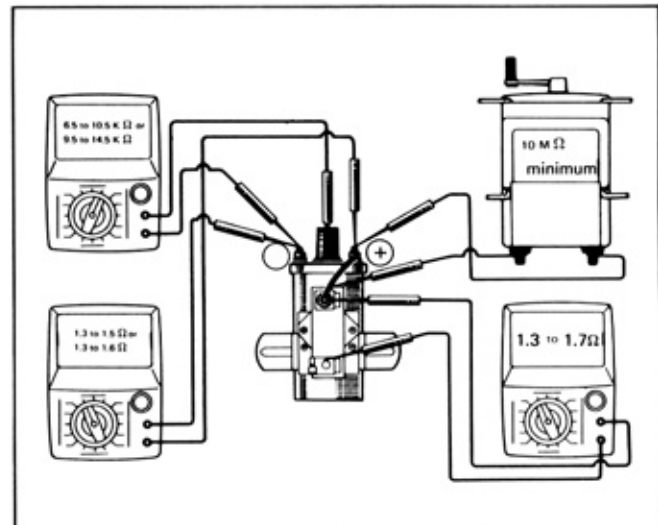


Fig. 15-8 Ignition Coil Resistance Inspection

3. Distributor Inspection

- 1) Disconnect the wiring from the igniter.
- 2) Switch on the ignition.
- 3) Ground "ON" and "OFF" the wiring disconnected in 1) above.
- 4) Check to see that secondary voltage is produced in the high tension cord at this time. (Condenser not required)
- 5) Secondary voltage is not produced → Igniter defective.
Secondary voltage is produced → Distributor breaker point defective.

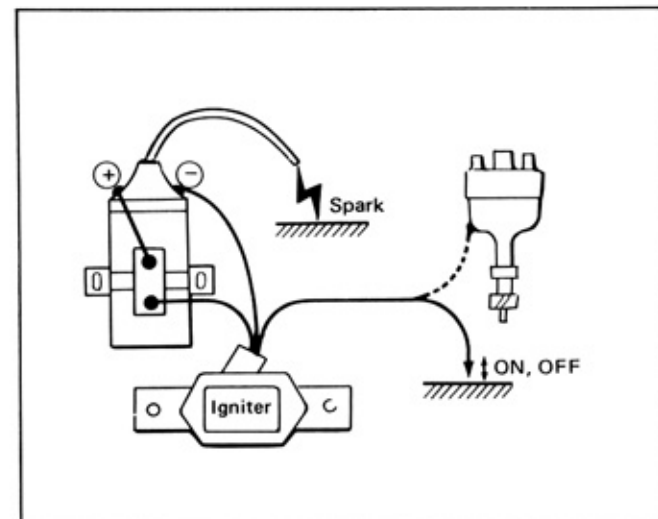


Fig. 15-9 Distributor Inspection

PRECAUTION ON USAGE AND HANDLING

1. Be sure not to make mistakes in the connections or battery polarities. Any incorrect connections will damage the igniter as the semiconductors used are electrically unidirectional.
2. Do not disconnect the battery terminals while the engine is running. This could produce injurious sparks that will have danger of damaging the transistors.
3. When washing the vehicle, do not allow water to get on the igniter unit.
4. If by chance the igniter should break down, the vehicle can still be used in emergency by making the connections shown in the following diagram and installing a condenser.

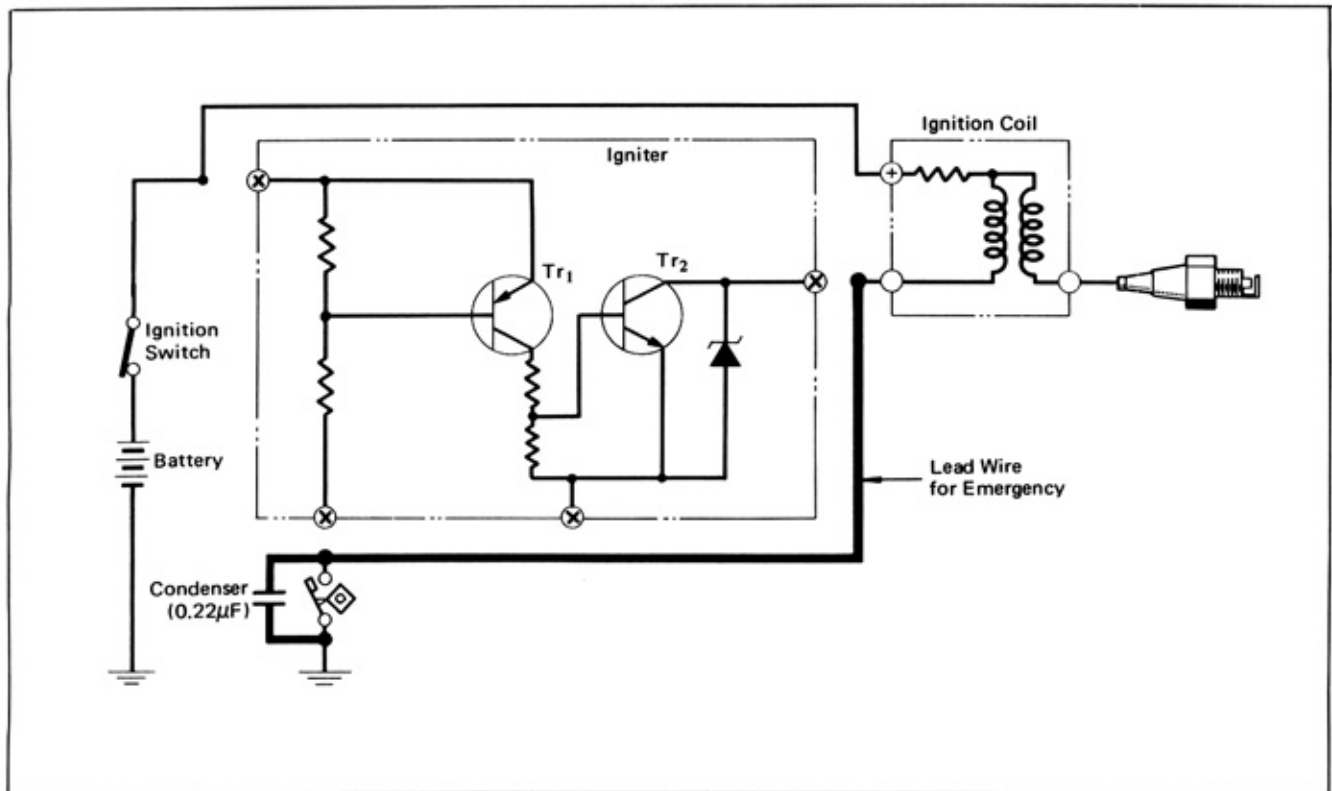


Fig. 15-10 Emergency Measure in Case of Igniter Trouble

5. In case a tachometer is to be connected to the system, connect the tachometer (+) terminal to the ignition coil (-) terminal.

Caution:
Do not connect to the distributor side.

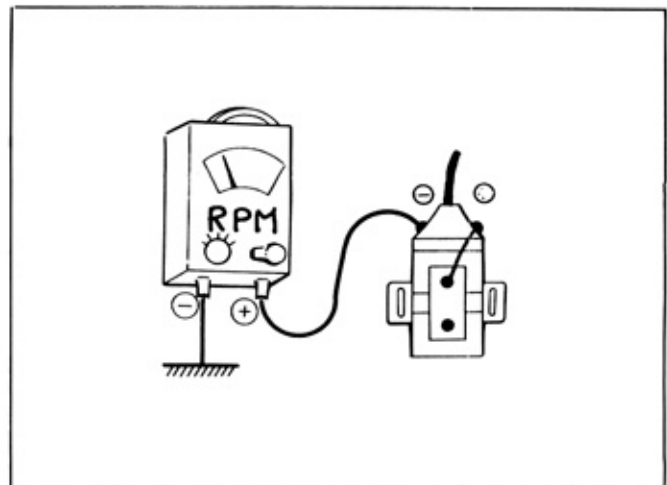


Fig. 15-11 Tachometer Connection Method

