

## GENERAL DESCRIPTION

The spark-ignition system for a gasoline engine provides each spark plug with a precisely timed high-voltage charge to ignite the air/fuel mixture in the combustion chamber. The system also makes adjustments to the ignition timing in response to changes in engine speed and load.

The diesel engine by comparison has no ignition system, but rather an ignition assist system. To start a cold engine, the glow plugs pre-heat the combustion chamber to assist combustion. Once the engine starts running and becomes warm, normal diesel compression-ignition takes over, air and fuel being ignited by the heat of compression.

### 1.1 Electronic Ignition System

The basic ignition system used on vehicles covered by this manual is a transistorized coil ignition with Hall sender (TCI-h), as shown in Fig. 1-1. The Hall sender in the distributor is the electronic equivalent of breaker points, but it has no moving parts and does not wear out. The ignition control unit, based on the signal from the Hall sender, switches the 12-volt ignition coil primary circuit to discharge the high-voltage spark. Vacuum and centrifugal advance mechanisms in the distributor adjust the ignition timing in response to engine load and speed.

### 1.2 Knock Sensor System

TCI-h ignition with knock sensor differs from the basic TC system with the addition of an engine knock sensor and knock sensor control unit (Fig. 1-2). With this system, the distributor has no vacuum or centrifugal advance mechanisms. All adjustments to ignition timing are done electronically. The knock sensor system detects pre-ignition or detonation (commonly called knock or ping), and adjusts ignition timing electronically to eliminate it. The system also makes the timing advance adjustments which are necessary at higher engine speeds.

### 1.3 Digifant Ignition System

The Digifant ignition system is also TCI-h with knock control, however, all ignition functions including the knock sensor system are combined with the fuel injection control function in the Digifant electronic control unit. Ignition timing is based on engine load, engine speed, ignition quality, and coolant temperature.

Digifant I, installed on California cars (engine code RV) beginning in 1991, does not have an ignition control unit. Instead, the Hall sender signal is monitored by the Digifant I control unit. The control unit then sends a signal to the ignition coil power stage, which switches power to the coil.

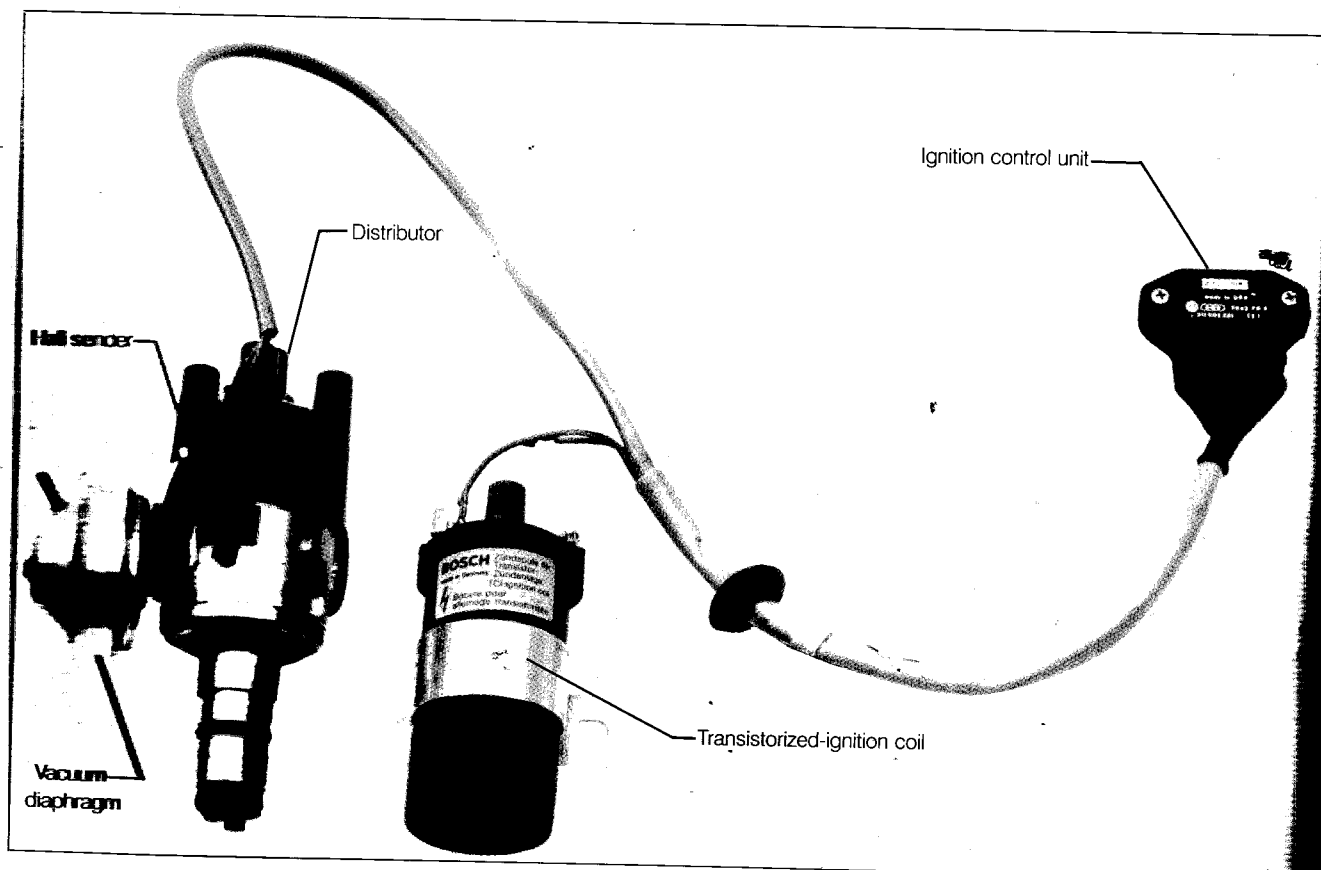


Fig. 1-1. Components of basic Transistorized Coil Ignition with Hall sender (TCI-h).