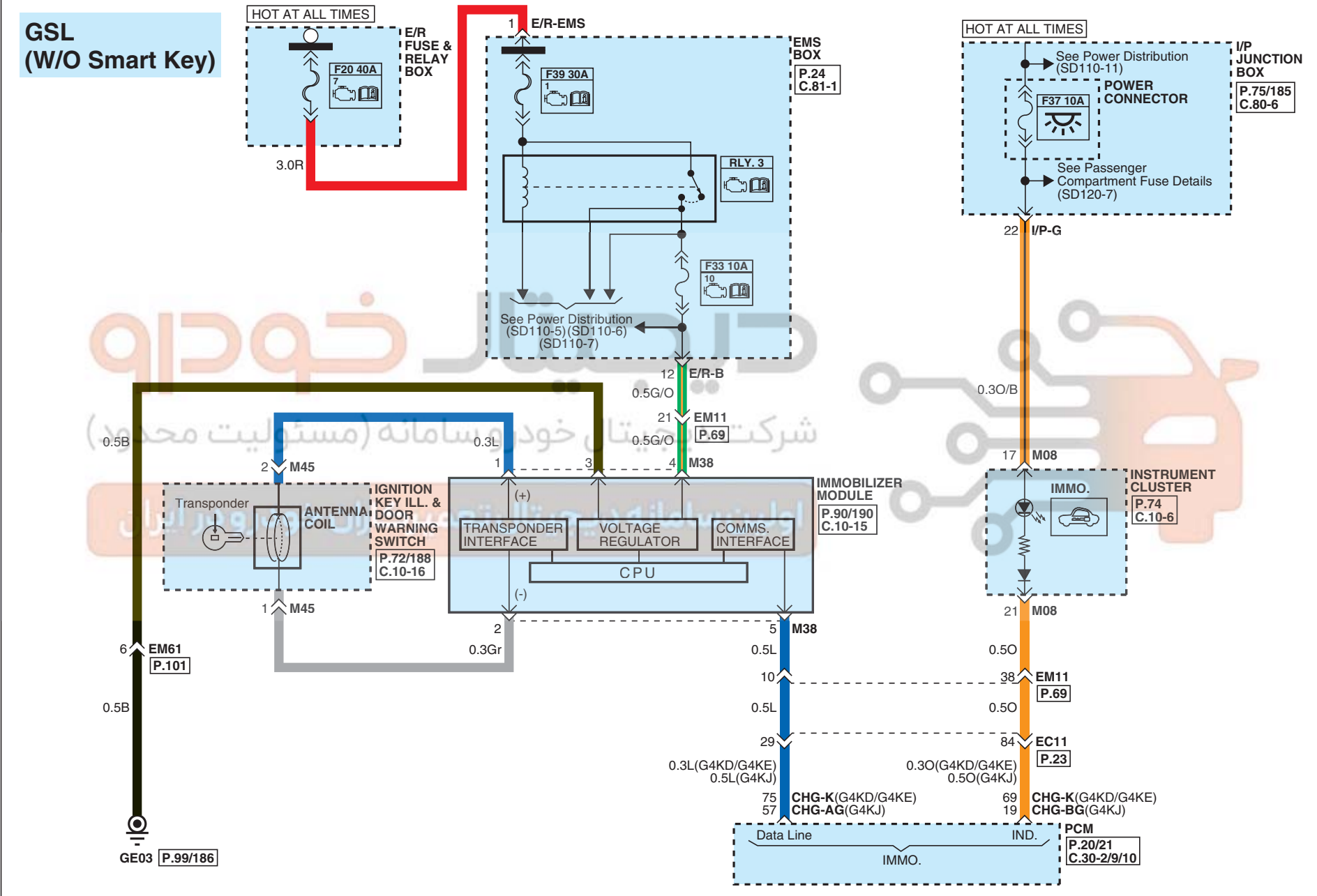


Immobilizer System (1)

SD954-1



SD954-2



Immobilizer System

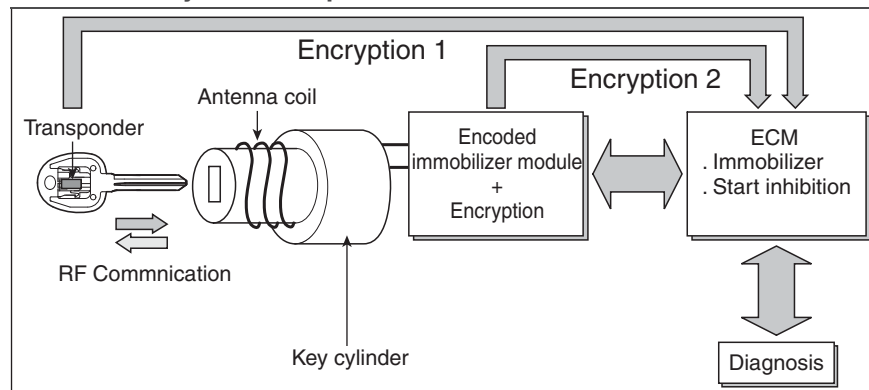
Service Tips (1)

Circuit Description

The immobilizer system will disable the vehicle unless the proper ignition key is used. In addition to the currently available anti-theft systems such as car alarms, the immobilizer system aims to drastically reduce the rate of auto theft.

- The immobilizer system consists of a passive challenge - response (mutual authentication) transponder located in the ignition key, an antenna coil located in door warning switch, a encoded immobilizer module, an indicator light and the ECM.
- The immobilizer module communicates to the ECM via a dedicated communications line. Since the vehicle engine management system is able to control engine mobilization, it is the most suitable unit to control the immobilizer system.
- When the key is inserted in the ignition and turned to the ON position, the antenna coil sends power to the transponder in the ignition key. The transponder then sends a coded signal back through the immobilizer module to the ECM.
- If the proper key has been used, the ECM will energize the fuel supply system. The immobilizer indicator light illuminates, indicating that the immobilizer module has recognized the code sent by the transponder.
- If the wrong key has been used and the code was not received or recognized by the ECM the indicator light will blink.

• Immobilizer System Components



• Function of immobilizer components

1. TRANSPONDER (Built-in keys)

The transponder has an advanced encryption algorithm. During the key teaching procedure, the transponder will be programmed with vehicle specific data. The vehicle specific data are written into the transponder memory. The write procedure is once only; therefore, the contents of the transponder can never be modified or changed.

2. Antenna coil

The antenna coil has the following functions.

- The antenna coil supplies power to the transponder.
 - The antenna coil receives signal from the transponder.
 - The antenna coil sends transponder signal to the immobilizer module.
- It is located directly in front of the steering handle lock.

3. Immobilizer module

The immobilizer module carries out communication with the built-in transponder in the ignition key.

This wireless communication runs on RF (Radio frequency).

The RF signal from the transponder, received by the antenna coil, is converted into signal for serial communication by the immobilizer module. And, the received signal from the ECM are converted into an RF signal, which is transmitted to the transponder by the antenna coil.

The immobilizer module does not carry out the validity check of the transponder or the calculation of encryption algorithm. This device is only an advanced interface, which converts the RF data flow of the transponder into serial communication to the ECM and vice versa.

4. ECM

The ECM carries out a check of the ignition key using a special encryption algorithm, which is programmed into the transponder as well as the ECM simultaneously. Only if the results are equal, the engine can be started. The data of all transponders, which are valid for the vehicle, are stored in the ECM.

Immobilizer System

Service Tips (2)

MEMO

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران

