



Immobilizer Theory

SYSTEM OVERVIEWS

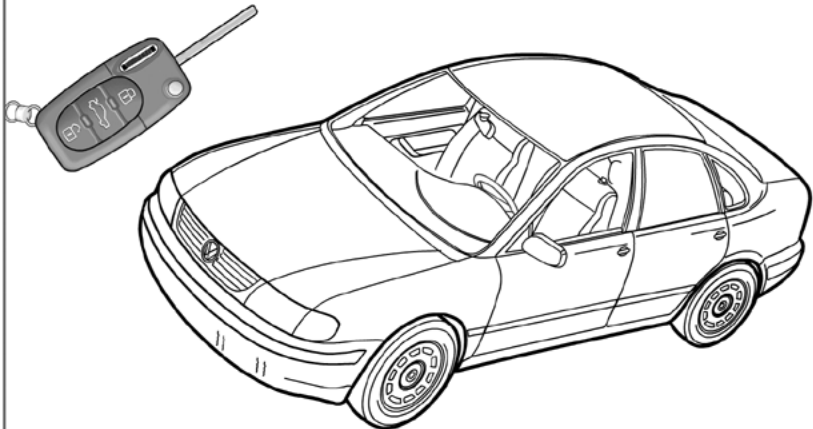




- The **Immobilizer** system is a theft-deterrent that checks for an authorized vehicle key before allowing the engine to be started.
- Model year 2000 and 2001 Golf, Jetta and New Beetle are equipped with **Immobilizer II**. All other vehicles in U.S and Canada equipped with the **Immobilizer** system use **Immobilizer III**.
- The **Immobilizer** system's main components are:



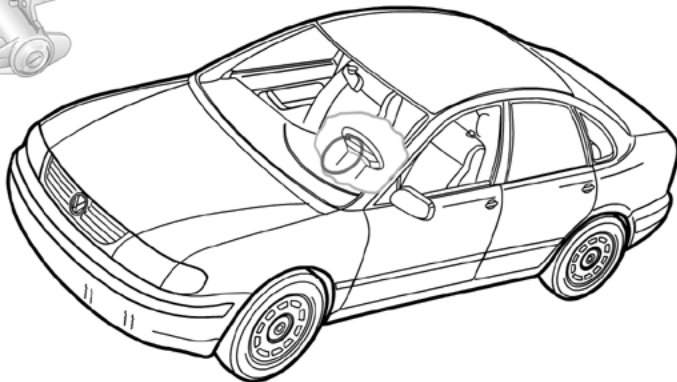
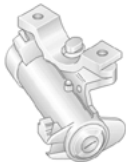
▶ The **Vehicle Key**, which contains an electronic transponder.





▶ **The Induction Coil of Anti-Theft Immobilizer in the Ignition Lock Cylinder.**

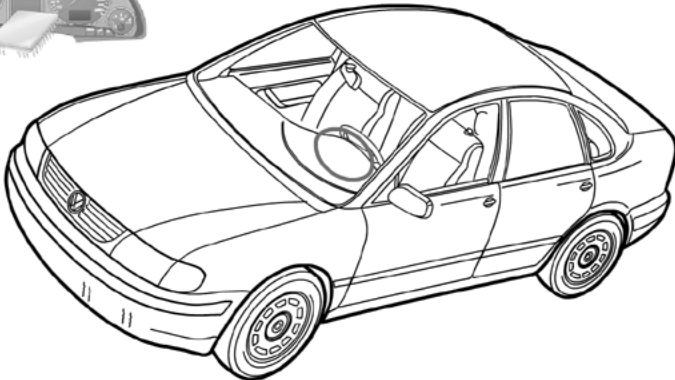
- Located on the steering column.





▶ The Immobilizer Control Module.

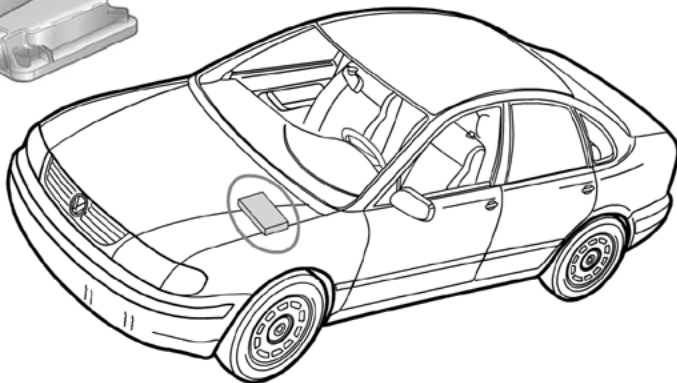
- Located in the instrument cluster on Golf, Jetta, New Beetle and Passat models.
- Located under the left side of the instrument panel for Cabrio and Eurovan models.





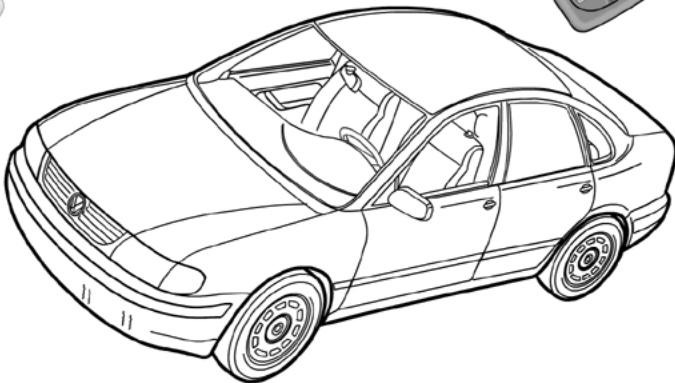
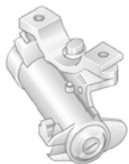
▶ **The Engine Control Module (ECM).**

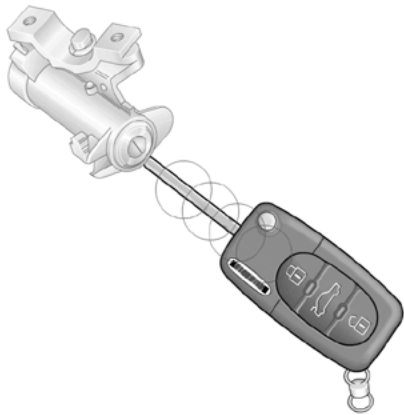
- Located in **E-Box** in fresh air plenum, driver's side.



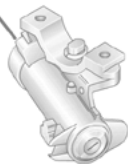
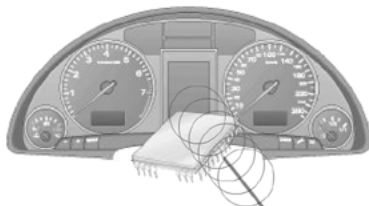


- ▶ The **Immobilizer** authentication process begins with the **Vehicle Key** and **Induction Coil of Anti-Theft Immobilizer**.

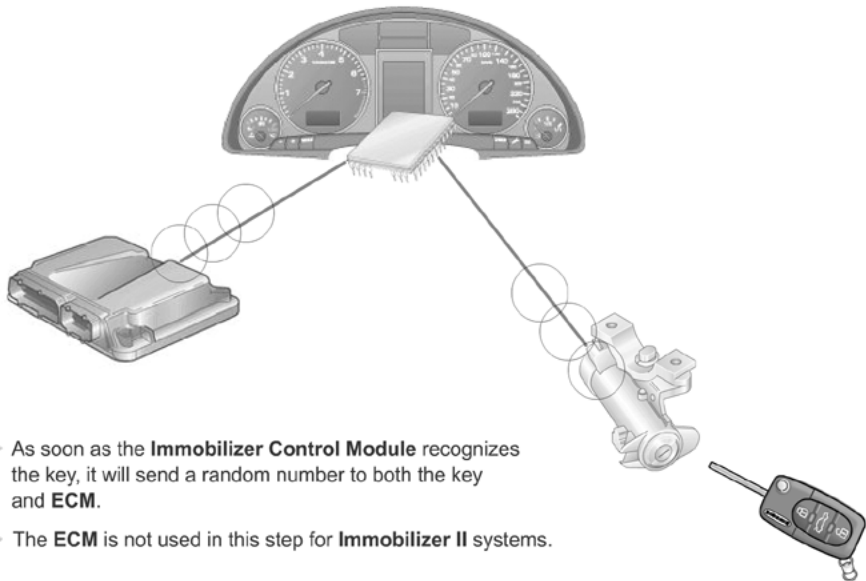




▶ When the **Vehicle Key** is inserted into the **Ignition Cylinder**, a signal is sent from the **Induction Coil of Anti-Theft Immobilizer** that energizes the electronic transponder in the key. The electronic transponder in the key responds to the **Induction Coil of Anti-Theft Immobilizer** with a signal.

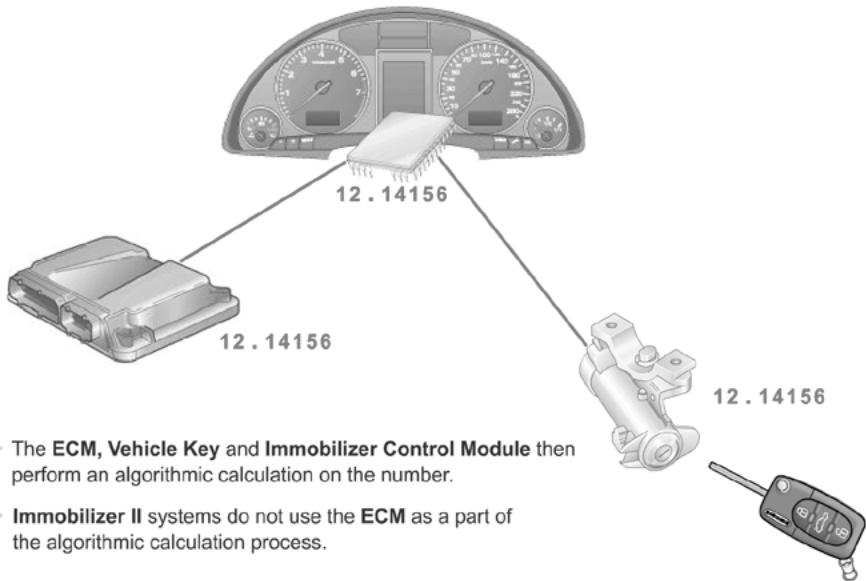


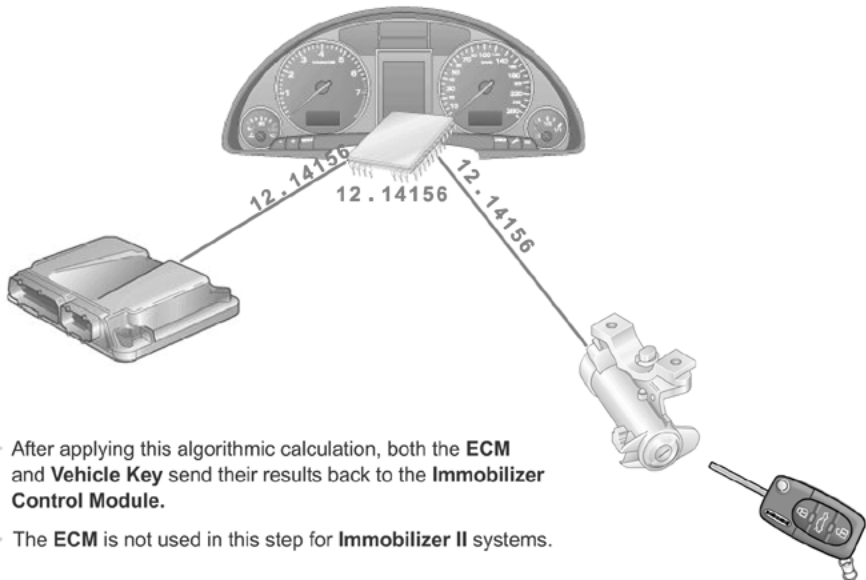
▶ Once the **Induction Coil of Anti-Theft Immobilizer** in the **Ignition Cylinder** receives the signal, it is then sent to the **Immobilizer Control Module**. This step only recognizes the key as coded to the vehicle.



▶ As soon as the **Immobilizer Control Module** recognizes the key, it will send a random number to both the key and **ECM**.

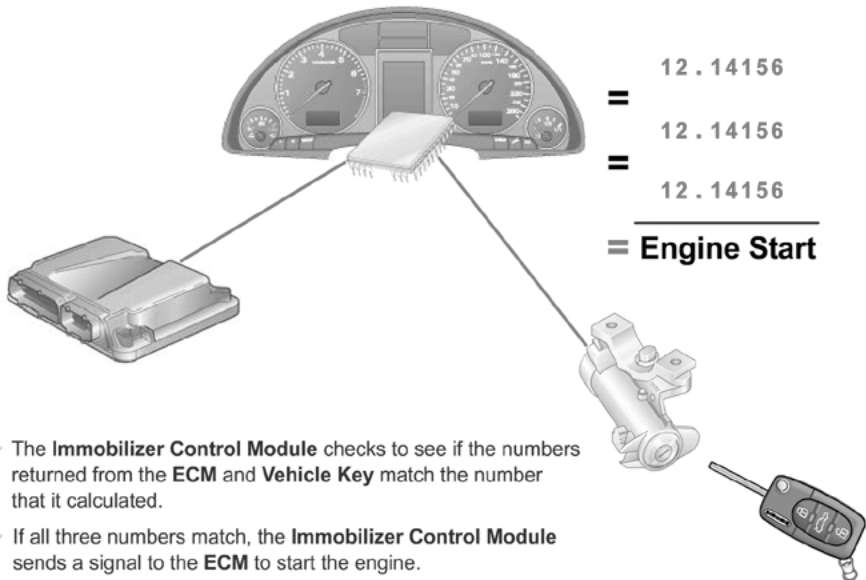
▶ The **ECM** is not used in this step for **Immobilizer II** systems.





▶ After applying this algorithmic calculation, both the **ECM** and **Vehicle Key** send their results back to the **Immobilizer Control Module**.

▶ The **ECM** is not used in this step for **Immobilizer II** systems.



▶ The **Immobilizer Control Module** checks to see if the numbers returned from the **ECM** and **Vehicle Key** match the number that it calculated.

▶ If all three numbers match, the **Immobilizer Control Module** sends a signal to the **ECM** to start the engine.



▶ The **Immobilizer** authentication happens so quickly that the driver does not notice the slightest hesitation between the time the **Vehicle Key** is turned and the engine starts.

Overview complete.