



## P1640 · Volkswagen

### Internal Control Module EEPROM Error

P1640 on a Volkswagen means the engine control module (ECM) has detected an internal fault while reading or writing its own electrically erasable programmable read-only memory (EEPROM), which stores adaptation values, immobilizer data and fault memory. The ECM runs a self-test on this non-volatile memory at key-on and during operation, and it sets P1640 when the checksum or read/write verification fails.

| SYSTEM     | CODE TYPE           | SEVERITY | FIX DIFFICULTY | AREA                         |
|------------|---------------------|----------|----------------|------------------------------|
| Powertrain | Volkswagen specific | Medium   | Professional   | Computer and output circuits |

### Symptoms you may notice

- Engine warning light illuminated on the dashboard, often with no other noticeable symptoms.
- Intermittent no-start condition because the immobilizer data stored in the EEPROM cannot be verified.
- Rough running or poor fuel economy if adaptation values have been corrupted or reset to defaults.
- Multiple unrelated fault codes stored in other modules because the ECM cannot reliably save or retrieve its memory.
- Loss of learned throttle and idle adaptation values, causing erratic idle after battery disconnect or reflash.
- In rare cases the engine may stall or fail to start at all when the EEPROM error is active.

### Common causes, most likely first

- 1 Internal failure of the ECM's EEPROM chip or its supporting circuitry, which is the most common cause on older Volkswagen models.
- 2 Voltage spikes or a weak battery during cranking that corrupt the EEPROM contents or interrupt a write cycle.
- 3 Water intrusion or corrosion in the ECM connector or housing, leading to unstable power and ground feeds to the module.
- 4 A failed or poorly performed ECM software flash or coding session that left the EEPROM in an inconsistent state.
- 5 Aftermarket tuning or 'chip tuning' that rewrote EEPROM data without correct checksums.
- 6 Poor ground connections at the engine or chassis that cause the ECM to see voltage transients during memory writes.
- 7 A defective ignition switch or relay that drops power to the ECM mid-write, corrupting the EEPROM.



## How to diagnose and fix it

- 1 Scan all modules with a Volkswagen-compatible scan tool and record every fault code before clearing anything, because P1640 often appears alongside communication or voltage codes.
- 2 Check battery voltage and perform a load test; a weak battery is a frequent trigger for EEPROM corruption and must be ruled out first.
- 3 Inspect the ECM connector and harness for corrosion, water ingress, loose pins and chafed wires, and verify good grounds at the engine and chassis.
- 4 Clear the code and drive the vehicle through a complete key-on/key-off cycle to see whether P1640 returns immediately or only intermittently.
- 5 If the code returns, check for any available ECM software update or reflash from Volkswagen that addresses EEPROM handling before condemning the module.
- 6 Perform a guided fault-finding session with a factory-level tool (ODIS or VCDS) to read the ECM's internal memory status and adaptation values.
- 7 If the EEPROM fault is confirmed internal and all external causes are eliminated, replace and code the ECM, then adapt the immobilizer.

## What P1640 really means before replacing the ECM

- P1640 is frequently a stored 'ghost' code left behind after a low-voltage event such as jump-starting or a dying battery, and it may never return once the voltage issue is corrected.
- Many technicians replace the ECM unnecessarily when the real fault is a corroded ground strap or a failing voltage regulator that corrupts EEPROM writes intermittently.
- On some Volkswagen models this code can be set by an aftermarket radio or alarm installation that disturbed the CAN bus or power feeds to the ECM.
- A failed EEPROM does not always prevent the engine from running; the ECM may fall back to default adaptation values, so the car can drive normally while the code is stored.
- Clearing P1640 without addressing the root cause often leads to a repeat visit, because the EEPROM will corrupt again if the underlying voltage or connection fault remains.

## Can I keep driving with P1640?

You can usually continue driving if the engine runs normally and the light is the only symptom, but avoid repeated short trips and any jump-starting until the battery and charging system are checked. If the engine cranks but will not start or stalls, stop driving and have the vehicle diagnosed, because the immobilizer data may be corrupted.



## Tools that help

- Volkswagen-compatible scan tool (VCDS or ODIS)
- Digital multimeter with min/max recording
- Battery load tester
- ECM connector pin removal tools
- Wiring diagram for the ECM power and ground circuits

## Reading P1640

- P** Powertrain: engine, transmission and emissions.
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- 1** Manufacturer-specific code (Volkswagen): its meaning depends on the make.
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- 6** Computer and output circuits.
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- 40** The exact fault within that area.

## Often seen with

**P1570** Control Unit Locked · **P1570** IMRC Circuit High · **P1570** Cruise Control System Traction Control Active · **P1570** Cruise Control System Traction Control Active · **P0601** Internal Control Module Memory Checksum Error · **P0602** Control Module Programming Error · **P0604** Internal Control Module RAM Error · **P0606** PCM Processor Fault

## See it working

Watch the animated explainer [How a Wideband Air-Fuel Sensor Works](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/volkswagen-p1640/>

