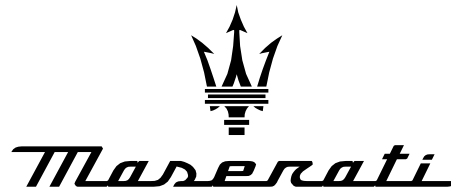


**Diagnostic Sheet**

FROM: Maserati TSO

TO: Maserati Network



PERSONAL SERVICE LAB

MASTERS OF CARE

# Grecale - Steering Rack Diagnostic Guide

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This Diagnostic Sheet serves as a guide and provides additional diagnostic info for possible steering rack anomalies on Grecale models.

**MODELS:** M182 Grecale (All MY).

**SECTION:** Complete steering rack unit

First, check whether the vehicle was included in the update required by RU 736 (replacement of front comfort struts). If so, confirm that it was performed or proceed with the procedure and test the vehicle. If the problem persists, continue with the following diagnostic sheet.

This diagnostic sheet is composed of two main sections:

## Section 1: Generic mechanical checks:

- 1.1 Noise by steering on a not-moving and moving vehicle - Rattle noise/Squeak noise
- 1.2 Hard steering

## Section 2: Generic electric/electronic checks:

- 2.1 The vehicle tends to drift from the imposed trajectory and/or there is lack of correct realignment of the steering wheel.
- 2.2 The Electric Power Steering lack of assistance and the fault lamp is ON
- 2.3 The Electric Power Steering lack of assistance and the fault lamp is OFF

### 1.1 Noise by steering on a not-moving and moving vehicle - Rattle noise/Squeak noise

Vehicle steady on level ground. Parking brake applied. Foot off the brake.

- Slowly turn the steering wheel left and right until it stops. Listen for a “clunking” or “creaking” noise
- Repeat this process 5 times

If the noise occurs at least once, before replacing the steering box, check the tightening of the mechanical parts (rods, suspensions and steering box to the mechanical frame):

- If all the tightening checks are OK, replace the steering rack

If the noise does not occur with steady vehicle, follow the checks with moving vehicle:

- Perform tests on light cobblestones at speeds between 15 and 25 km/h

If the noise occurs, before replacing the steering box, check the tightening of the mechanical parts (rods, suspensions and steering box to the mechanical frame):

- If all the tightening checks are OK, replace the steering rack

## 1.2 Hard Steering

- Verify that there is no excessive effort when turning the steering wheel with the engine running (if possible, compare with another vehicle)
- Check the EPS warning lights and provide a vehicle scan report
- Check tire pressure and condition
- Inspect the suspension and mechanical components for any blockages or damage (vehicle on a lift)
- Check the wheel alignment, which must be into the nominal range
- If the previous checks are OK but the warning light is still on and the steering effort is high, replace the steering gear.

## 2.1 Vehicle tends to drift from the imposed trajectory and/or there is lack of correct realignment of the steering wheel.

### Possible causes

- Wrong wheel alignment (toe, camber, caster)
- Irregular tire pressure or wear
- Mechanical play in the steering column or steering gear tie rods (check vehicle torque on the axle)
- Incorrect calibration of the torque sensor or EPS position (check DTC and provide a vehicle scan report)
- Mechanical failure of the steering rack (also a possible source of noise)

## 2.2 The Electric Power Steering lacks assistance and the fault lamp is ON

### Possible causes

- EPS system fault detected and logged in the ECU (check DTCs and provide a vehicle scan report)
- Power supply problem (blown fuse, faulty and/or loose ground)
- Low voltage: Check alternator output and battery voltage ( $\geq 12.4$  V at rest,  $\geq 13.5$  V when charging)

- Faulty EPS motor, ECU, or torque sensor (check DTCs and provide a vehicle scan report)
- Check Overheat protection mode activated

### 2.3 Electric Power Steering lacks assistance and the fault lamp is OFF

#### Possible causes

- Intermittent or transient fault not detected by the control unit (no DTC)
- Partial loss of power due to poor contact in the connectors; verify the contact.
- Software/calibration problem

#### Important Notes:

If, during the previous checks you have identified an issue that you are not able to fix OR an issue of a different origin not connected to the steering rack, open a BOL for Technical Support attaching a video with evidence of the complaint and a vehicle scan report.

If all analysis and diagnostic steps are completed with negative results but the anomaly persists, replacement of the electric steering box is necessary.

Please do not hesitate to contact us if you have any questions.

Best regards,

TECHNICAL SERVICE OPERATIONS