

AfterSales Diagnostic sheet



MAS002246

BOL 20-05

From: Aftersales Dept.
To: Maserati Network
Auburn Hills, MI | August 5, 2020

Vehicle vibration during acceleration

Issue: Excessive vibration during vehicle acceleration

Models: M157/M156/M161 with All-Wheel Drive transmission (AWD)

Issue description: During acceleration from a standstill, excessive vehicle vibrations are reported. In some cases a vibration from the chassis is reported.

Conditions:

- Engine warm or cold doesn't affect the symptom.
- Issue appears mainly at low engine rpm.
- Issue is noticed more when driving on a slight uphill.

DTC: No specific DTC related to the complaint.

Before proceeding with the replacement of any component, a BOL report as a Support Request is required.

Troubleshooting:

- 1) Save a scan report of DTCs and Parameters for ECM, TCM and AWD modules.
- 2) Take pictures (as shown in Fig.1) of the sidewalls of all 4 tires.



Figure 1: Sample picture of the sidewall of the tire. It is very important to clearly make the tires size visible.

- 3) Verify the level and the quality of the AWD Transfer Case oil by taking a sample of the oil from the Transfer Case.
Specify whether abnormalities can be found, namely whether:
 - a. There is contamination of metal debris.
 - b. The oil color is normal.
 - c. The oil smell is normal or burnt.
- 4) Perform the Active Diagnosis Calibrate Clutch of the AWD (All-Wheel Drive) Module as shown in **Error! Reference source not found..**

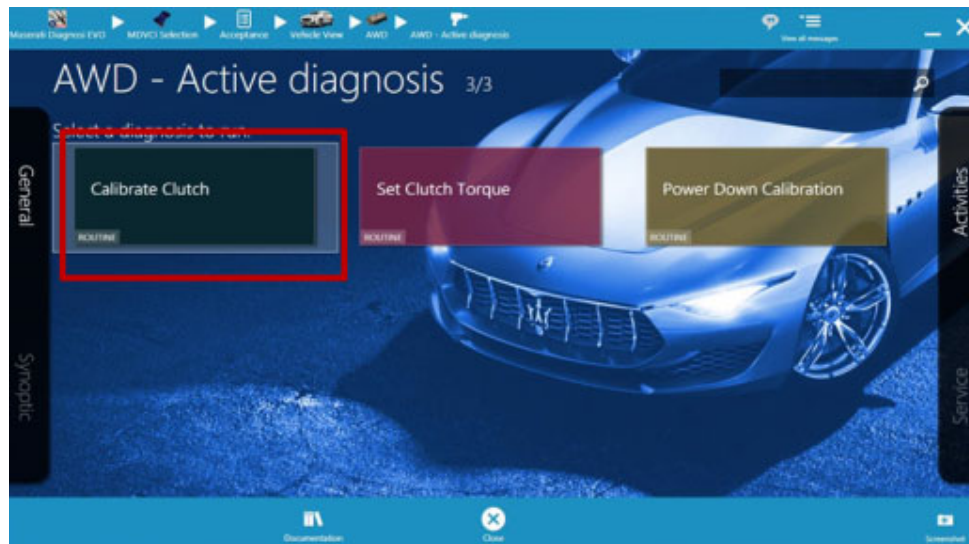


Figure 2: Active diagnosis of the AWD module.

- 5) In the following screen, please select the settings below and shown in **Error! Reference source not found.:**

- d. Routine info: *Completed*
- e. Failure reason clutch: *No failure*

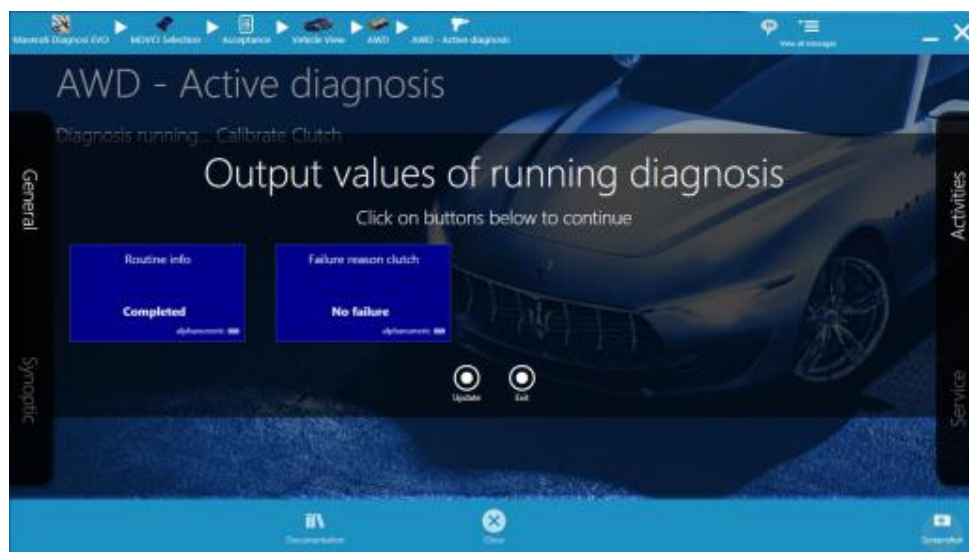


Figure 3: settings of the Active diagnosis *Calibrate Clutch*.

After that, please repeat the road test in order to attempt to replicate the Customer's complaint. Report whether the issue continues to exist or not.

If the issue persists go to the next step

- 6) Disconnect the electrical connector for the AWD Module, as shown in Figure 4 (case of Levante).

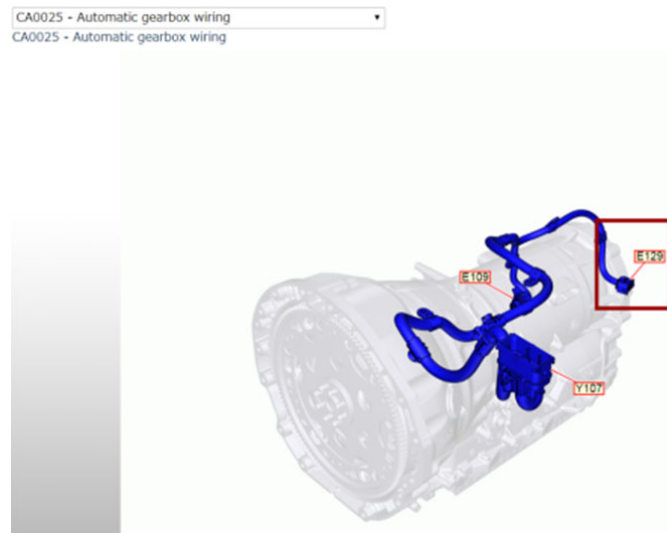


Figure 4: connector E129-B is the electrical connector of AWD (All-Wheel Drive) control module in case of Levante. TechDoc Version 209.

As an alternative, the same result can be obtained by removing the Fuse F53 in the FDU (Front Distribution Unit) as per Wiring Diagram FE0001 – Power supply distribution, page 2. The wiring diagram is shown in Figure 1.

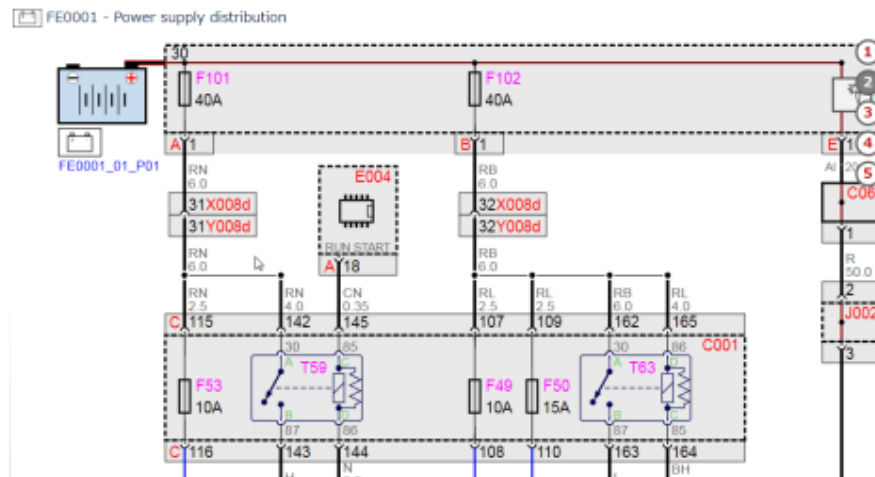


Figure 5: wiring diagram for the power supply fuse of the AWD (All-Wheel Drive) control module. TechDoc version 194.

Test drive the Vehicle again to check whether, in the same condition of the Customer's complaint, the issue has been resolved or not and report findings in the BOL report.

If the issue persists, reconnect the power supply to the AWD module and go to the next step.

- 7) Perform the Active Diagnosis Reset Adaption Parameters of the TCM module.
This Active Diagnosis resets the Clutch Filling Counters and the Clutch Filling Pressure in the TCM, as shown in the Group ENGINEERING PARAMETERS of TCM Base Diagnosis Parameters, as shown, for Clutch A, in Fig. 6.



Figure 6: Clutch Filling Counters in the ENGINEERING PARAMETERS in the TCM module.

After the Active Diagnosis Reset Adaption Parameters, the parameters listed in **Error! Reference source not found.** will reset to 0 mBar, 0 counts and 0 ms respectively.

- 8) Warm the engine up until the gearbox temperature reaches 50°C.

In order to perform the adaptations, please accelerate from a standing stop with light throttle application from 1st to 7th gear.

The conditions regarding adapted Clutch, torque and turbine/engine speed are shown below in Table 1.

Table 1: conditions regarding Clutch adaption.

Shift	Clutch	Torque-range	Speed-range (turbine/ engine)
1-2	E	50-100 Nm	1000-2000 rpm
2-3	C	50-150 Nm	
3-4	D	50-150 Nm	
4-5	C	100-200 Nm	
5-6	E	100-200 Nm	
6-7	A	150-250 Nm	

Exception: Clutch B is adapted during the 6th-5th coasting downshift under light braking.

These adaptations should be carried out a minimum of 6 times.

After the completion of this adaption, please make sure that the Clutch X (i.e. from A to E) – filling counter reaches a minimum of 5.

Please attach TCM DTCs and Parameters after the transmission adaption.

- 9) If the problem has not been resolved, perform an acquisition of the TCM Parameters as listed below.

In particular, please highlight the time (in seconds from the counter) when the vibration/jerking occurs.

- f. TCM –Transmission Turbine Speed
- g. ECM_V6 – Engine Speed

- h. TCM – Actual crankshaft torque
- i. TCM – Target Crankshaft Torque
- j. TCM –Transmission Output shaft Speed
- k. TCM – Vehicle Speed Calculated By Output Shaft Speed
- l. TCM – Accelerator Pedal Position
- m. TCM - State Of Torque Converter Clutch
- n. TCM – Current Gear

In order to perform the acquisition from different ECUs, please refer to the instructions in Maserati Technical Bulletin: MAS002102 - BOL 20-01 - Parameter acquisition from different control units.

Considerations: Please submit clear pictures of the sidewalls of all 4 tires installed on the vehicle. The purpose of these is to make sure that the correct tire sizes are installed on the vehicle.

Please attach pictures of the steps described in the Troubleshooting section.

Before proceeding with the replacement of any component, a BOL report as a Support Request is required.

For more detailed and up-to-date information concerning the wiring diagram, please refer to Knowledge On-Line documentation.

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