



Preliminary Information

PIC6299A Intermittent Tachometer Fluctuation While Driving

Models

Brand:	Model:	Model Years:	VIN:		Engine:	Transmissions:
			from	to		
Chevrolet	Camaro	2016 - 2018	All	All	All	All
Chevrolet	Corvette	2014 - 2018	All	All	All	All
Involved Region or Country		North America				
Condition		<p>Some customers may complain that the tachometer has erratic operation or that it flares between 1,000 - 7,000 rpm. The engine RPM's will remain constant and drivability is not affected during this concern. This is strictly a gauge issue and is in no way related to engine performance. This condition is not dependent on engine speed, vehicle speed, or the current gear in which the vehicle is operated in. Technicians will also notice that with the scan tool, the Engine RPM parameter in the Instrument Panel Cluster (IPC) and Head Up Display (HUD) will remain constant, even when the concern is happening.</p> <p>The tach signal that is displayed by the IPC / HUD on these cars originates from the Camshaft Position Sensor (CMP). This sensor reports to the Engine Control Module (ECM). The ECM then sends a signal out on a dedicated Replicated Camshaft Signal circuit, directly to the IPC. The IPC interprets this signal and displays an accurate engine speed signal. A problem may arise when Electromagnetic Interference (EMI) makes its way into this circuit. This will cause the IPC to interpret phantom engine speed counts that are not actually present. As a result, the IPC / HUD tachometer reading may appear to be jumping wildly or acting very erratic. The interference can be caused by any aftermarket accessories, depending on what it may be, and where the wiring harness is installed in the vehicle. Some other known sources of interference are the anti lock brake solenoids and the engine active fuel management actuators. If this Replicated Camshaft Signal circuit has been routed incorrectly and now passes by one of these components, this may induce interference into the circuit and cause the concern. Another common cause of this symptom would be any number of poor grounds on the vehicle.</p> <p>Depending on previous service work, some technicians may notice that the concern is no longer present after a new IPC has been installed into the vehicle. This will be true as long as the new cluster had not been SPS programmed yet. The base software in these clusters allows the IPC to read the tachometer signal from the ECM over serial data. Not until the cluster is SPS programmed does it look to the Replicated Camshaft Signal for the tach signal. In similar fashion, the scan tool is NOT obtaining the engine RPM signal from this Replicated Camshaft Signal circuit. It takes the information from serial data. This is why the concern may be present and the scan tool reads a consistent, accurate, engine RPM reading. This may lead a technician to believe that the IPC is faulty and require replacement.</p>				
Cause		This concern may be caused by either a poor IPC ground path or electrical interference on the Replicated Camshaft Signal circuit.				

Correction: For CAMARO models ONLY:

If this concern is encountered, dealership technicians are to inspect the following areas on the vehicle:

IMPORTANT: Just because a ground connection is "tight" or the ground cable will not rotate under the fastener, this does not mean the ground is making a good connection. There may paint under the cable eyelet, glue from the cable manufacturing process, etc., that may still be preventing the circuit from making a good connection to ground.

- 1) Closely inspect the large ground cable that runs from G103 to the engine block. This cable attaches to the core support underneath the negative jump post stud on the right hand side of the vehicle. It attaches at the engine near the generator. This fastener may be loose on the engine block, causing a poor system ground.
- 2) G201 - IPC Ground - This is located inside the passenger compartment, underneath the RH kick panel trim.

- 3) G102 - This ground is located in the engine compartment, on the RH side of the radiator support.
- 4) G103 - This ground is located in the engine compartment on the radiator support, near the under hood fuse block.
- 5) G130 - This is the ECM ground located on the rear side of the LH cylinder head (V8), the RH cylinder head (V6), or the rear of the cylinder head (I4).
- 6) If no obvious ground issues have been found, inspect circuit 121 that runs from the ECM to the IPC for any connection issues. This circuit has several inline connectors. Make any repairs as needed.

If the previous locations have been inspected and the concern remains, dealership technicians are advised to call the GM Technical Assistance Center (TAC) for additional direction.

For CORVETTE models ONLY:

IMPORTANT: Just because a ground connection is "tight" or the ground cable will not rotate under the fastener, this does not mean the ground is making a good connection. There may paint under the cable eyelet, glue from the cable manufacturing process, etc., that may still be preventing the circuit from making a good connection to ground.

- 1) First, check for any aftermarket accessories that are wired into the vehicle. Remove any that are found and reevaluate the concern. Then, review the service history on the vehicle to see if any procedure was performed that required any ground connection be removed (engine or battery replacement, for example.)
- 2) Closely inspect the IPC ground, G202, which is located in the RH kick panel area.
- 3) Verify circuit 3633, which is the Replicated Camshaft Signal circuit that runs between the ECM and the IPC. Check for any poor connections in this circuit.
- 4) Check G100, which is the ECM ground. This can be found on the RH side of the engine block.
- 5) Verify the connections at both ends of the battery negative cable. Make sure they are clean and fully torqued to spec.
- 6) If the locations listed above have been inspected and no issues have been found, take a jumper wire and run it between the IPC ground terminal and the negative post of the battery. If the concern stops, there is still a faulty ground path on the vehicle.

Warranty Information

Because the repair may be one of several mentioned, use the labor op most closely related to the actual repair performed.

Version History

Version	2
Modified	Created on 7/31/17 12/19/17 - Updated to include Corvette

