



# Service Bulletin

File in Section: -

Bulletin No.: PIC5202E

Date: February, 2013

## PRELIMINARY INFORMATION

**Subject:** Tire Vibration at Speeds Above 70 MPH

**Models:** 2009 - 2013 Chevrolet Corvette

**This PI was superseded to update recommended field and model years. Please discard PIC5202D.**

The following diagnosis might be helpful if the vehicle exhibits the symptom(s) described in this PI.

### Condition/Concern

Some customers may note a slight vibration in the steering wheel at 72-78 mph. The tires are known to flat spot when parked and this condition may be present until the tires warm up. This condition should clear after 30 minutes of driving.

### Recommendation/Instructions

**Important:** Drive the car for 30 minutes prior to beginning diagnosis.

**Important:** Unless there is a concern with the vehicle pulling or drifting, a wheel alignment is not necessary.

Verify the complaint and complete the Vibration Worksheet found in the latest version of bulletin 03-00-91-001.

Vibration felt in seat or steering wheel?

- Does the steering wheel move?
- Does the seat or console area move while driving?
- At what speed does the vibration begin?
- Does the vibration increase, decrease or stay the same as speed is increased?
- At what speed does the vibration diminish?

**Vibration felt in the seat and all through the car? Concentrate on the rear tires first.**

1. Inspect all tires for signs of damage, cuts, bulges or excessive wear in tire tread or side wall areas and note any damage.
2. Is the tread evenly worn across the complete tire?
  - If signs of bumpy or uneven wear, tire may need to be replaced due to improper balance or tire pressure. This is not a warrantable concern.
  - If signs of excessive wear on tread, tires may need to be replaced. This is not a warrantable concern.
  - Inspect for signs of loose or worn suspension components such as sway bar bushings or sway bar links.
3. Verify the last service date on the balance and Road Force Variation (RFV) equipment. This equipment should be tested and calibrated every 90 days or more.

**Note:** When removing wheel weights use only a plastic tool to prevent damage to the wheel paint.

4. If tires are serviceable - check balance and re-balance the tires as necessary.
5. Record the Road Force Variation (RFV) of each tire after driving the car for at least 30 minutes to remove flat spots. The acceptable RFV value for Corvette is 15 lbs.
  - Rotate (match mount) the tire on the rim to attempt to achieve a RFV of 10 lbs. or less.
  - If unable to achieve less than 10 lbs., remove tire from the rim and measure wheel run out.

**Important:** For Corvette it is only acceptable to measure rim run out with the tire dismounted, measuring run out only on the bead seat. Reference published information in SI on "Tire and Wheel Assembly Run out Measurement - Off Vehicle."

- Maximum aluminum wheel radial run out - measured off-vehicle, tire dismounted: 0.762 mm (0.030 in)

- Maximum aluminum wheel lateral run out - measured off-vehicle, tire dismantled: 0.762 mm (0.030 in)
  - If wheel is within specification try another set of wheels off of a known good vehicle.
6. If vibration is gone after swapping known good tire, replace that tire to achieve 10 lbs. or less of RFV.

### **Vibration is felt in the steering wheel only? Concentrate on the front tires.**

**Note:** When removing wheel weights use only a plastic tool to prevent damage to the wheel paint.

1. Verify condition of tires and wheels:
  - Is the tread evenly worn across the complete tire?
  - If signs of bumpy or uneven wear, tire may need to be replaced due to improper balance or tire pressure. This is not a warrantable concern.
  - If signs of excessive wear on tread, tires may need to be replaced. This is not a warrantable concern.
  - Check for signs of loose or worn suspension components such as sway bar bushings or sway bar links.
2. Verify the last service date on the balance and Road Force Variation (RFV) equipment. This equipment should be tested and calibrated every 90 days or more.
3. If tires are serviceable - check balance and re-balance the tires as necessary.
4. Record the Road Force Variation (RFV) of each tire after driving the car for at least 30 minutes to remove flat spots. The acceptable RFV value for Corvette is 15 lbs.
  - Rotate (match mount) the tire on the rim to attempt to achieve a RFV of 10 lbs. or less.
  - If unable to achieve less than 10 lbs., remove tire from the rim and measure wheel run out.

**Important:** For Corvette it is only acceptable to measure rim run out with the tire dismantled, measuring run out only on the bead seat. Reference published information in SI on "Tire and Wheel Assembly Run out Measurement - Off Vehicle."

- Maximum aluminum wheel radial run out - measured off-vehicle, tire dismantled: 0.762 mm (0.030 in)
  - Maximum aluminum wheel lateral run out - measured off-vehicle, tire dismantled: 0.762 mm (0.030 in)
5. Inspect for signs of corrosion between back of wheel and rotor face. Clean all surface between mating surfaces, reassemble and road test for vibration. Note any change.
  6. Remove rotor and inspect for corrosion between back of rotor and hub face, clean any corrosion.
  7. Reassemble rotor to hub and tighten lugs to secure. Mark one wheel stud and the rotor location for use later as a reference point.
  8. Using dial indicator, record lateral run out on back of rotor about 4mm from the outer edge.
  9. Rotate rotor to determine run out. If greater than .001 inch, index rotor around studs to find the lowest amount of run out.
    - Repeat process for opposite side.
    - If wheel is within specification try another set of wheels off of a known good vehicle.
    - If vibration is gone after swapping known good tire, replace tire to achieve 10 lbs. or less of RFV.

If after performing the procedures above, a slight vibration still exists, reference the Customer Information section below; this is considered a normal characteristic of the vehicle.

### **Customer Information**

Please communicate to the customer this condition is a normal operating characteristic of their vehicle. It will not impact the designed performance or reliability of the vehicle.

Please share this information with the customer, including a copy of this message.

### **Warranty Information**

The correction for this concern may be one of several repairs described above. For vehicles repaired under warranty, please use the appropriate warranty labor operation based on the original cause in addition to well documented straight time, when necessary.

Please follow this diagnostic or repair process thoroughly and complete each step. If the condition exhibited is resolved without completing every step, the remaining steps do not need to be performed.