

## Safari Speedometer Reading Is Not Correct

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While traveling last year I noticed that the speed displayed on my speedo and the Mag Intellidrive computer differed from that shown on my GPS unit. The GPS was about 2 MPH higher. I also noted that the mileage indicated less than that I had registered with other vehicles for the same trip and also my map program.

I found a formula in a Cat publication:

### Vehicle Speed Calibration:

The value (Pulses per Mile, PPM) of this parameter is used by the ECM to convert the vehicle speed signal into miles per hour (or kilometers per hour). The value is calculated using tire revolutions per mile, rear axle ratio and the number of teeth on the transmission chopper wheel. This parameter is programmed by the OEM.

$$\text{PPM} = M \times R_a \times N$$

Example:  $31,200 = 502 \times 3.90 \times 16$

M = Tire revolutions per mile. This information is available from the tire manufacturer.

R<sub>a</sub> = Rear Axle Ratio. This is typically found on the housing of the rear axle, or on the specification sheet for the vehicle

N = Number of chopper teeth on the transmission drive shaft where the magnetic pickup is mounted. The value is typically 16, but may be 11.

Available:

All electronically controlled on-highway engines

Advantages:

Proper calculation of the Vehicle Speed Calibration parameter is essential for proper cruise control and speedometer (if controlled by the ECM) operation, and accurate Fleet and Driver Trip Data.

Using this formula, I calculated my PPM as  $541(9R \times 22.5) \times 4.78$  (rear)  $\times 16$  (Allison) = 41376.

I have a Pocket Tec with a Cat connector that lets me read the engine computer. I found it had been programmed at 42217 PPM. I reset it with my Pocket Tec and now all the speeds agree. The speedo gets a signal from the ECM so it automatically was corrected.

I talked with Rob Rissberger of Monaco and he stated they got the 42217 number from Allison. Rob was previously with Magnum Chassis prior to the Monaco takeover. Note: Rob did not care to hear about the problem or the fix, typical and sad attitude.

The good news is that using the correct PPM, my fuel mileage calculation will be higher.