Recalibrating GM Speedometers

According to virtually every survey ever initiated on the subject of automobiles, new wheels and tires are at the top of everyone's list when it comes to altering their regular ride. The majority of these high-dollar pieces are selected as much for their ability to fill a wheelwell as provide traction; as a consequence, they are quite a bit larger than their original-equipment counterparts. While such an increase provides numerous side benefits, it's not without its disadvantages -- primarily in the area of speedometer error.

Like the rest of your street machine, the stock speedometer was designed to work in conjunction with other stock units. It's been calibrated to produce reasonably accurate information on vehicle speed by using the circumference of the original tire. Change that size, and you alter the information being processed.

The easiest (albeit most expensive) way to rectify this situation is to find a professional facility and have the speedo recalibrated using your new rims and rubber. Unfortunately, calibration shops aren't prolific, and enthusiasts oftentimes don't have the spare change. So, most of us are stuck using trial-and-error methods to come up with the correct speedometer gears. Patrick Coxe may have solved that time-consuming dilemma. He's developed what appears to be an accurate means of determining correct speedometer gears needed for a given combination of axle ratio and tire diameter. What's more, this can be accomplished by using readily available GM gears!

According to Coxe, the formula for determining proper transmission tailshaft and speedometer drive gears for any application consists of multiplying the rear axle by 20.2, and dividing that number by the tire diameter. Then, simply look up a ratio number on the accompanying charts (large and small tailshaft gear versions) which most closely corresponds with the derived number. By installing the recommended gears, you should be within a few percent of the correct calibration (odometer-wise).

For example, you have changed your Camaro's axle ratio to 3.31:1, and installed 245/60HR14 radials (25.6 inches in diameter). Multiplying 3.31 x 20.2, and dividing by 25.6, you obtain the value 2.61. Looking in the chart, you find the closest match (assuming a small drive gear and tailhousing) is an eight-tooth tailshaft gear and a 21-tooth speedometer drive gear.

Install the recommended gears, and check for correct odometer reading over a marked distance. Any errors will most likely come from poor estimation of tire diameter, so you may want to measure it. If the odometer readings are correct but the speedometer readings are not, the problem lies in the speedometer calibration and the speedo will need to be repaired.

If you want to fine-tune the ratio more closely, or compensate for speedometer error (at the expense of odometer accuracy), simply adjust the derived number by the percentage of error and look up the new gear combination. This is like the old trial-and-error method -- except you will be able to make a more accurate adjustment by changing both gears to obtain the desired correction.•

SMALL SPEEDOMETER GEAR AND TAILHOUSING CHART

TRANS GEAR	SPEEDO GEAR	RATIO
7	17	2.43
7	18	2.57
7	19	2.71
7	20	2.86
7	21	3.00
7	22	3.14
7	23	3.29
7	24	3.43
8	17	2.12
8	18	2.25
8	19	2.38
8	20	2.50
8	21	2.62
8	22	2.75
8	23	2.88
8	24	3.00
8	25	3.13
9	17	1.89
9	18	2.00
9	19	2.11
9	20	2.22
9	21	2.33
9	22	2.44
9	23	2.56
9	24	2.67

9T Saginaw + ST-10 only

G. M. Speedo Info
7T Steel Drive 1.860 O.D.
8T Steel Drive 1.860 O.D.
Will mesh with 18T-22T (Grey) Driven Gear

8T Steel Drive 1.750 O.D.
7T Steel Drive 1.750 O.D.
Will mesh with 22T (Green) 23T (Black)/24T (Yellow) 25T (Orange)