INSTALLATION-SERVICE INSTRUCTIONS

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PART NUMBERS :

CAL...MW gear ratio calculator

DESCRIPTION :

PRIMARY APPLICATIONS :

Determining proper rear end gear ratios for drag race and oval track applications

OPERATION OVERVIEW :

Three known factors are required to calculate a rear end gear ratio.

*1) **Tire diameter.** If you don't know the tire diameter but know the roll out or circumference simply divide the tire circumference by 3.1416. This gives you the most accurate tire diameter. Often it is better to calculate the diameter rather than use the tire mfg information. Example: A 14 x 32 drag slick should be 32" diameter, but with the tire mounted and inflated it might have a 104" roll out. When you divide 104" by 3.1416 you get 33.10". That extra inch can make a big difference when choosing a gear ratio.*

*2) **Speed.** For drag racing applications this would be the desired mile per hour through the traps. Oval track applications it is the top speed during a lap, not total lap speed but the highest mile per hour at any point of a lap.*

*3) **Engine R.P.M.** For both drag race and oval track this would be the desired engine r.p.m. at the desired mile per hour.*
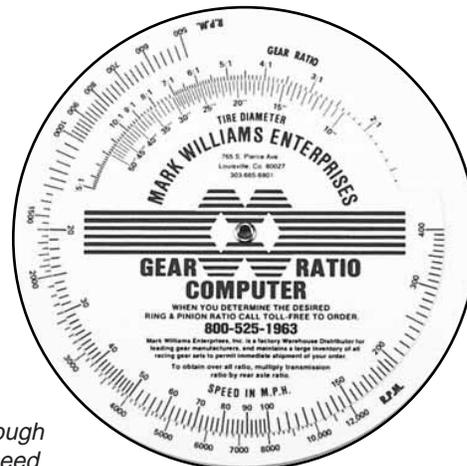
To use the calculator, align the desired speed with the desired engine r.p.m. then locate the tire diameter being used on the tire diameter scale. The point that the tire diameter lines up with the gear ratio scale will be the ratio needed. This number may not be an available ratio so it may be necessary to move up or down to the closest available ratio. See examples below.

Examples

Drag race

Tire Diameter..................................32"
Desired Top Speed........................150 mph
Desired Engine R.P.M...................7200 rpm
Calculated Gear Ratio..................4.50 ratio

With this example the calculated ratio of 4.50 is not available. The closest available ratios would be either a 4.30 or a 4.56. With most drag racing applications it is usually safe to go to the next highest numerical ratio (unless calculation was done with the engine rpm at it's max) since drag cars do have to deal with tire growth. In this case the 4.56 ratio would be the choice.

Oval Track

Tire Diameter..................................28"
Desired Top Speed........................80 mph
Desired Engine R.P.M...................6800 rpm
Calculated Gear Ratio.................7.00 ratio

Again with this example the calculated ratio of 7.00 is not available and there is not a ratio close enough to use. This is where the transmission ratios come into play. To be able to get the desired result of a 7.00 final drive ratio the transmission will have to be run in a gear other than high. To find out what gear that will be, take the calculated ratio of 7.00 and divide it by the ratios in the transmission. For this example the third gear ratio in a four speed trans is 1.46.

Divide 7.00 by 1.46 = 4.93 ratio

As before the 4.93 is not an available ratio. The closest ratios would be either 4.86 or 5.00.

***Note:** Not all ratios are the same between makes of rear ends.Check the latest Mark Williams catalog to see what ratios are available for the type rear end being used.*