Calculating Internal Transmission Ratios And MPH

Since we get many questions regarding transmission gear ratios, a table of values for EV-80 transmissions is shown below along with an explanation of how the actual numbers are determined. The internal ratio (in any gear) is a combination of the speed gear ratio and the main drive gear ratio. The numbers below are the numbers of teeth on each mating pair of gears.

GEAR	Main Drive	Speed Gear	Overall Ratio*	% RPM Drop	MPH per 1000 RPM
1 (STK)	32 / 17	31 / 18	3.24	32	6.81
1 (CLOSE)	32 / 17	25 / 16	2.94	25	7.50
2	32 / 17	27 / 23	2.21	27	9.99
3	32 / 17	23 / 27	1.60	23	13.79
4	32 / 17	19 / 29	1.23	19	17.94
5	32 / 17	(DIRECT DRIVE)	1.00	---	22.07

* Over gear ratios for '94 and later transmissions are different from listed numbers!

To calculate the internal gear ratio in 1st gear for example, multiply 32 / 17 times 25 / 16;

(32 / 17 x 25 / 16) = 2.94

To calculate the internal gear ratio in 2nd gear for example, multiply 32 / 17 times 27 / 23;

(32 / 17 x 27 / 23) = 2.21

To calculate the internal gear ratio in 3rd gear for example, multiply 32 / 17 times 23 / 27;

(32 / 17 x 23 / 27) = 1.60

To calculate the internal gear ratio in 4th gear for example, multiply 32 / 17 times 19 / 29;

(32 / 17 x 19 / 29) = 1.23

To calculate MPH per 1000 engine RPM: (assuming a 25 inch diameter rear wheel and a stock 3.37 final drive ratio);

(25 x 3.14159) / 12 x (1000 / (3.37 x 60) x (3.0 / 4.4) = 22.07 MPH per 1000 ENGINE RPM (in 5th gear)

To calculate MPH per 1000 engine RPM: (assuming a 25 inch diameter rear wheel and a 2.76 final drive ratio);

(25 x 3.14159) / 12 x (1000 / (2.76 x 60) x (3.0 / 4.4) = 26.95 MPH per 1000 ENGINE RPM (in 5th gear)

To calculate MPH per 1000 engine RPM: (for a 25 inch diameter rear wheel and any final drive ratio);

(25 x 3.14159) / 12 x (1000 / (FDR x 60) x (3.0 / 4.4) = 74.34 / FDR

Or, MPH per 1000 engine RPM = 74.34 /FDR

To calculate MPH per 1000 engine RPM in 3rd gear: Divide MPH in 5th gear by the speed ratio; 1.60

(22.07 / 1.60) = 13.8 MPH per 1000 ENGINE RPM (in 3rd gear)