



## PROPER GEARING

Proper gearing and drive ratio selection is very important for best race performance as well for the proper functioning of the electronic package. The drive ratio is determined by the pinion gear as well as the main spur gear choose to run in your car's transmission. Below are simple methods how to determine your car's drive ratio:

### 2WD cars:

Spur gear divided by pinion gear

The differential gear (53t) / motor pinion (10t) has a drive ratio of 5.3

or

$$53/10 = 5.30$$

### 4WD cars:

You need to know your 4WD car's internal drive ratio. You would need to obtain this from the car manufacturer. *You may determine this by dividing the counter gear or centre pulley by the diff gear or pulley.*

Spur gear divided by pinion gear multiplied by the internal drive ratio

The spur gear (26t) / motor pinion (11t) and the result multiplied by internal drive ratio of 3.5

or

$$(26/11) \times 3.5 = 8.27$$

### In Summary:

A gear ratio resulting in a lower number is referred to as a 'long' gear ratio and a gear ratio resulting in a higher number is referred to as a 'short' gear ratio. Typically a longer gear ratio would result in a higher top speed however will provide slower acceleration. A shorter gear ratio would result in a faster acceleration, however will provide a lower overall top speed (see chart below).

Note: gear ratio is different from the final drive ratio, which takes it a step further by using the gear ratio and taking into account the tires diameter, which obviously may vary quite a bit. As a general rule of thumb a smaller wheel diameter will result in a shorter drive ratio and a bigger wheel diameter will result in a longer drive ratio.

It is **IMPORTANT** to select proper gear ratio for best performance and durability !

Inappropriate gear ratio leads to unnecessary stress to ESC and motor, which may lead to inefficiency and ultimately lead to malfunction or damage

Safe ranges of gear ratio is as follows:

AWD (shaft driven) should be greater than 6.50

AWD (belt driven) should be greater than 7.00

RWD should be greater than 4.00

LONGER  
Gear Ratio

HIGHER TOP SPEED  
SLOWER ACCELERATION



SHORTER  
Gear Ratio

LOWER TOP SPEED  
QUICKER ACCELERATION

\*For higher speed, pick a motor with a higher Kv constant, whilst respecting the safe ranges of gear ratios

**Run Smart & Enjoy your Race more !**