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# K1200LT Tip-Over Wing LED Marker Light Kit Wiring Details

## Introduction

This document explains the theory behind how the Tip-Over Wing LED Marker Light Kit is wired to your BMW. This may help you troubleshoot your system in case your LEDs are not operating as they're supposed to.

## How they're supposed to work

Your marker lights should be on when ever any other lights on your bike are on. Then, when you turn on your turn signals, the marker lights should flash alternately with the front turn signals. When flashing, they should go from on to completely off.

## Why they flash

It's actually quite clever how they work (unfortunately, I can't take credit for figuring this out). The hot wire (red) from the marker lights is connected to the wire feeding either the parking light in the head light or the front running lights (depending on the model year of your bike). The negative wire (black) from the marker lights is connected to the hot wire feeding the front turn signal (on each side of the bike). **Neither wire is connected directly to ground!**

When the bike's lights are on, the current flows from the parking (or running light) wire, through the red wire to the positive side of the LEDs. The negative lead on the LEDs (the black wire), is, as stated above, connected to the hot turn signal wire. This is the clever part—*the LEDs are grounded through the filament of the turn signal bulb*. This arrangement turns the LEDs on when the bikes lights are on.

However, when you turn on your turn signal, the black wire now "sees" 12 volts (actually, when the bike is running it's closer to 13.8 volts) and is no longer grounded—so the LEDs turn off. Consequently, when the turn signal is on, the LEDs are off, and vice versa. This is why the LEDs "wig-wag" with the turn signals.

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