

SUBJECT: REPLACEMENT BULBS FOR MINI BULBS TYPE

OVERVIEW OF THE NEWSLETTER: IDENTIFICATION OF MODELS AND TYPES OF MINI BULBS, INSTALLATION PROBLEMS ENCOUNTERED WITH MINI BULBS

1) NUMBERING OF ORIGINAL OR AFTERMARKET EQUIPMENT BULBS

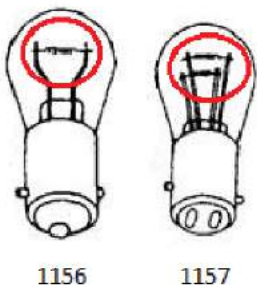
Bulbs of the mini bulb type are generally numbered on the base or on the glass they are composed of:



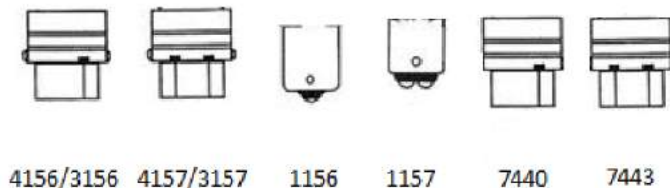
2) TYPES OF BULBS

There are two types of bulb intensity, single filament and double filament. A single filament bulb is usually used for position lights or reversing lights. However, it may also be used as a single-function turn signal bulb. The second type of bulb, with two filaments, is more commonly used as position/brake/position/turn signal lights. The filaments of the double filament bulbs have two types of intensities, a "Low Side" and "High Side". The "Low Side" when found in a double filament bulb is the weak filament, usually used for position lights or reversing lights. The "High Side" is the powerful filament, usually used as a turn signal light or brake light. When we are in possession of a single filament bulb, the "Low Side" circuit is the circuit used.

Here is an example of the two types of bulbs (here we have an 1156 bulb (single filament) and a 1157 bulb (double filament)) the "filaments" are the elements circled in red below:



The bulb bases generally used for position lights, brakes, turn signals are as follows:



3) DETECTING DEFECTIVE BULBS

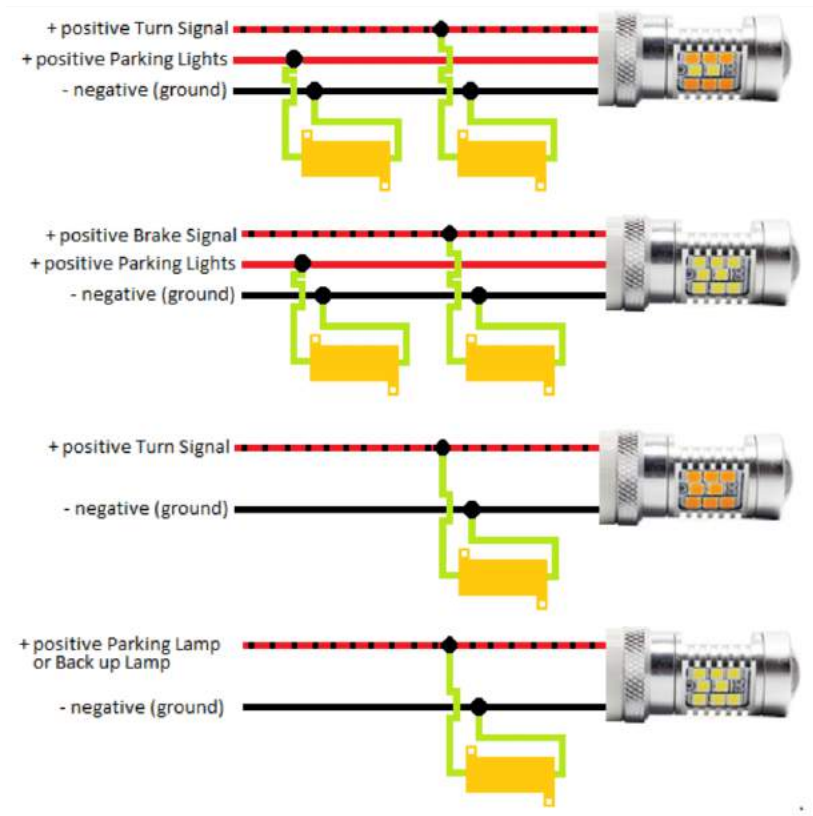
Some vehicles have a defective bulb detection system. In some cases, it is an anomaly signal such as those presented below. In other cases, instead of a signal, it is a message telling you to replace the bulb XXXXX and this message is usually displayed in the dashboard of the vehicle. Why do I have this signal or message? The verification system performs a resistance test on the original bulbs. If the message is displayed, it is possible that you end up with an electrical problem, that your replacement bulb is not in the original specification or simply that you have a bulb to replace (ex: burnt bulb). However, when replacing halogen bulbs with LED, the resistance of the LED bulb does not match the original specifications. It is therefore necessary to add a resistor on the circuit of the replaced bulb to simulate a halogen bulb. (See the resistance chart of the ODX bulbs to find out what resistance you will need when replacing it if the specific vehicle is equipped with a detection system).



HOW TO CONNECT THE RESISTOR WHEN WE HAVE A DEFECTIVE LIGHT DETECTOR?

A universal resistance for ODX mini bulbs is easy to install. Just connect it in parallel to the desired circuit to ensure its proper functioning.

You must connect a resistor between the positive current and the negative current of the circuits of the installed ODX LED bulb on each of its circuits. Here are the wiring diagrams for possible connections:





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4) LED TURN SIGNALS

When an LED bulb is used as a turn signal, it is necessary to install a suitable bypass system in order to keep the correct flashing sequence. If such a system is not used, the turn signal bulb will tend to flash much faster than originally (also called "Hyperflash"). It is also possible that in some cases, the bulb simply will not blink. The workarounds currently available are:

- Adapted relay flashing
- Resistors

An adapted flashing relay is the best option on the market since the relay does not emit any heat and minimizes the drained current on the vehicle. However, there are only a few models available and they tend to be integrated into the manufacturer's computer in recent years, rendering them irreplaceable.

A resistor is the other option (the most common one) to solve this problem. It will drain the same intensity of current as the halogen bulb. The blinking circuit will therefore work as it originally did. The resistance (chosen for its type of bulb) is no nuisance and no danger for the electrical circuit of the manufacturer. The advantage of resistance is that it is compatible with 100% of vehicles.



5) WHAT IS A MINI BULB RESISTOR?

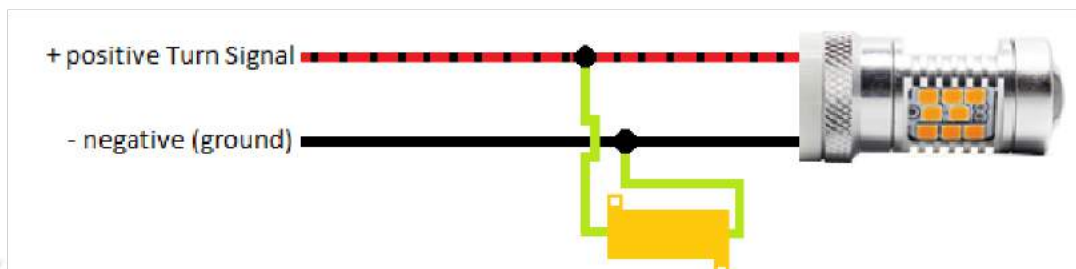
A resistor, when paired with the LED bulb, simulates the same current as the original halogen bulb. It is therefore important to use the required resistance for your bulb model when an error message is displayed or when using an LED bulb as a turn signal. (Check the resistance chart for the model you need).

HOW TO CONNECT THE RESISTOR TO A TURN SIGNAL?

A universal resistor for ODX mini bulbs is easy to install. Just connect it in parallel to the desired circuit to ensure its proper operation.

INSTALLATION ON A SINGLE INTENSITY CIRCUIT:

You must connect the resistor between the positive current and the negative current of the turn signal circuit on each single-intensity LED bulb installed. Here is an electrical diagram of its connection:



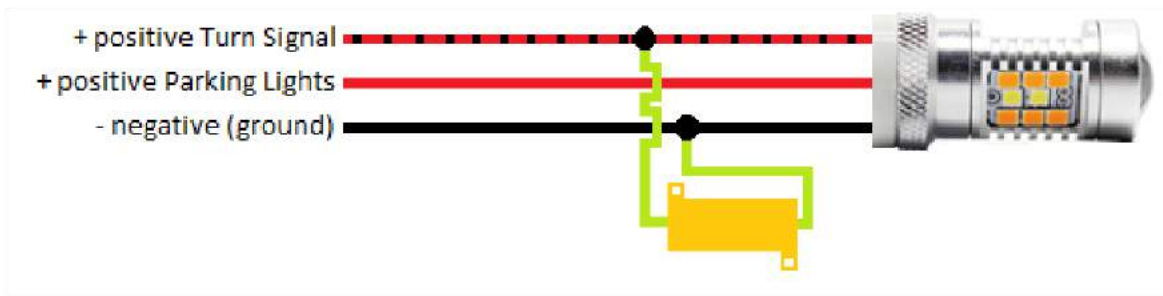


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5) WHAT IS A MINI BULB RESISTOR? CONTINUED...

INSTALLATION ON A DOUBLE INTENSITY CIRCUIT

Using a multimeter or electrical diagram, identify the sequential positive signal of the turn signal's electrical circuit. You must first turn on the ignition switch (Key on), then just turn on the turn signal on the vehicle and connect your multimeter in 20vDC mode to the manufacturer's wires to detect the circuit. You must connect the resistor between the positive current and the negative current of the flashing circuit on each LED bulb installed. Here is an electrical diagram of its connection:



6) HOW DOES THE CHART

The resistance chart tells you which resistor to use depending on the type of bulb required:

- The red arrow determines the type of bulb to use (here we have for example a 7443 bulb with two filaments).
- The black arrow shows the "Low side" resistance column.
- The blue arrow shows the "High side" resistance column.

Here's an example on how to select a resistor:


For a 7443-type bulb (red arrow), we would need a RESIST10-39UNI resistor for the parking lights (purple arrow) and a RESIST10-10UNI resistor for the turn signal (green arrow).

TYPE D'AMPOULE	RESISTOR	
	RES. Low Side (Parking / Flasher)	RES. High Side (Flasher / Brake)
921	RESIST25-25UNI	NA
194	RESIST25-25UNI	NA
7440	RESIST10-10UNI	NA
7443	RESIST10-39UNI	RESIST10-10UNI
1156	RESIST50-50UNI	NA

ODX

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7) VALUE CHART FOR AVAILABLE ODX RESISTORS

		
TYPE D'AMPOULE	RES. Low Side (Parking / Flasher)	RES. High Side (Flasher / Brake)
921	RESIST25-25UNI	NA
194	RESIST25-25UNI	NA
7440	RESIST10-10UNI	NA
7443	RESIST10-39UNI	RESIST10-10UNI
1156	RESIST50-8UNI	NA
3156	RESIST50-8UNI	NA
1157	RESIST25-25UNI	RESIST50-8UNI
4157/3157	RESIST25-25UNI	RESIST50-8UNI
1157 Switchback	RESIST10-39UNI	RESIST50-6UNI
7443 Switchback	Not needed	RESIST50-8UNI
4157/3157 Switchback	Not needed	RESIST50-6UNI
7440 Ambre	RESIST10-10UNI	NA
1156 Ambre	RESIST50-8UNI	NA
4156/3156 Ambre	RESIST50-8UNI	NA
<p>Charter for the use of resistors with ODX type mini bulbs. Take note that the resistances can reach an operating temperature of 200 degrees Celsius when left in the vacuum and a temperature of 60 degrees Celsius when bolted to a mechanical part of the vehicle chassis. Make sure that the resistor is installed in a place that can tolerate these normal operating temperatures without damaging a component near it.</p>		