

House Number Sign

Issues and Maintenance

Contents

LED vs. Incandescent Bulbs	2
Pros and Cons of LED Bulbs.....	2
Deciding If LED Bulbs will Work for You.....	2
Choice of LED Bulb	3
Retrofitting the Lamp Sockets	4
Step 1 – Remove Lamp Assembly from Wall	5
Step 2 – Detach the Power Wires	5
Step 3 – Remove the Old Sockets	6
Step 4 – Insert the New T10 Sockets	6
Step 5 – Connect the Wiring	7
Step 6 – Re-Mount the Assembly on the Wall	9

LED vs. Incandescent Bulbs

Pros and Cons of LED Bulbs

The advantage of LED bulbs is that they draw less current, produce more light, and last longer than incandescent bulbs.

The disadvantage of LED bulbs is that they require a minimum amount of voltage before they will turn on at all – whereas incandescent bulbs just get dimmer and dimmer as the voltage goes down.

Deciding If LED Bulbs will Work for You

There are two deciding factors to determine if you can reliably use LED bulbs: the voltage being supplied to the lamps and circuit resistance of the sockets due to age and wear.

The voltage can be measured across the wires coming out of the wall (behind the house number sign) with a voltmeter on the AC voltage scale. I was expecting around 24VAC (because of the two 12VAC incandescent lamps used in the sign) but actually only measured about 19VAC. This is likely due to the age of the transformer in the house – or possibly some poor connections in the house wiring.



The bulbs I chose (see following section) require around 7.5V before they will turn on. Since there are two bulbs in series, there must be at least 15V (7.5V x 2) available in order to turn the LED bulbs on.

If your transformer is providing less voltage than this, you will need to either replace the transformer, or find other bulbs that turn on with lower voltages.

Assuming your transformer is providing enough voltage, but you are still having problems where the LED bulbs are not reliably on 100% of the time, it is likely that the wiring and/or bulb sockets need to be replaced due to age and corrosion. Please see the section [below](#) for more details.

Choice of LED Bulb

I chose the following bulbs, although these are by no means the only option. There are probably hundreds of T10 12V LED bulbs available on the market.

Marsauto 194 LED Light Bulb 6000K 168 T10 2825 5SMD LED Replacement Bulbs for Car Dome Map Door Courtesy License Plate Lights (Pack of 10)



Available at Amazon here:

[Amazon.com: Marsauto 194 LED Light Bulb 6000K 168 T10 2825 5SMD LED Replacement Bulbs for Car Dome Map Door Courtesy License Plate Lights \(Pack of 10\) : Automotive](https://www.amazon.com/Marsauto-194-LED-Light-Bulb-6000K-168-T10-2825-5SMD-LED-Replacement-Bulbs-for-Car-Dome-Map-Door-Courtesy-License-Plate-Lights-Pack-of-10-Automotive/dp/B07K8Z8Z8Z)

These bulbs require around 7.5V before they will turn on.

Retrofitting the Lamp Sockets

Over time the contacts on the lamp sockets oxidize and bend causing the connections with the bulbs to get worse and worse – eventually failing completely. This is true whether you are using incandescent or LED bulbs.

You should be able to use just about any T10 lamp sockets (but your installation may vary because of the socket shape) but for my installation I used the following

uxcell 50 Pcs DC 12V Red Black T10 Light Bulb Socket Harness Wire Connector for Car



These are available at Amazon here: [Amazon.com Link](#) for \$21.99 for a bag of 50 pieces.

If you live near me, let me know and I will be happy to give you the sockets as I have a bag full of them now.

Step 1 - Remove Lamp Assembly from Wall

Remove the two screws and then slide the silver lamp assembly out the back of the assembly as shown below.



Step 2 - Detach the Power Wires

Unscrew the 2 screws holding the power wires. Make sure that the wires don't touch each other after you remove them from the assembly or they will short out.



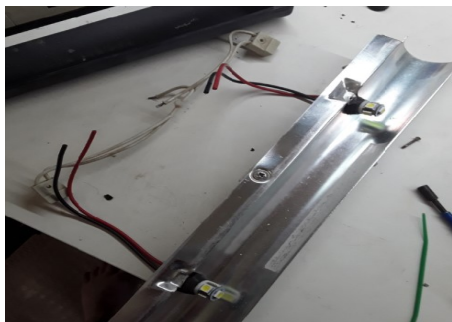
Step 3 - Remove the Old Sockets

Using a small nut driver, remove the 2 nuts & bolts holding the old socket in the assembly.



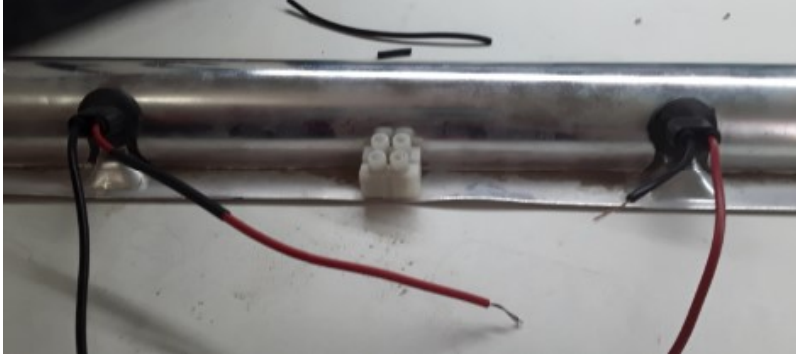
Step 4 - Insert the New T10 Sockets

Insert the new T10 Sockets into the same holes that the old sockets were just removed from. Push them 'down' so that the sheet metal slides into the 'groove' in the socket. Then, using a screw driver, bend the mounting tab down to secure the T10 socket into the sheet metal as shown below.

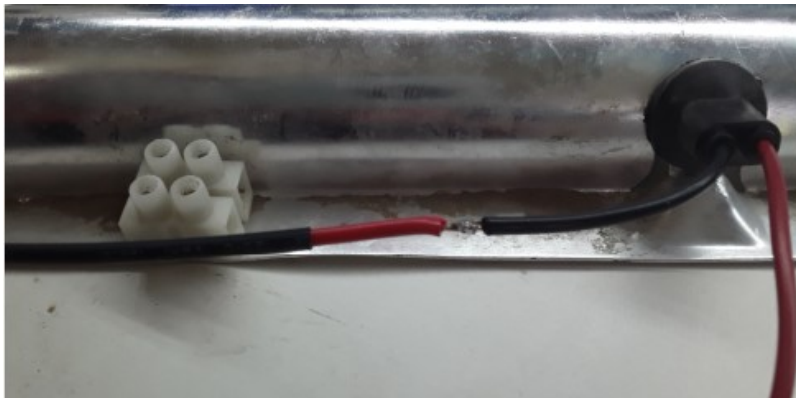


Step 5 - Connect the Wiring

You now need to connect the wiring. I used soldering (which is the most secure method) to connect the wires but you are free to use other methods such as wire nuts, etc. Trim the red wire from one socket and the black wire from the other socket so that they meet away from the center connector.



Slide a piece of heat shrink over the longer wire and push it as far as possible from the wire joint. Then solder the two wires together.



Slide the heat shrink back over the solder joint and, using a hot air gun (or hair dryer) force it to 'shrink' over the solder joint. Cut the remaining two wires to length so they fit into the center connector, and then 'tin' the bare copper ends with some solder.



Insert the two tinned ends of wire into the right side of the center connector (as shown below) and tighten the connector screws tightly.



Step 6 - Re-Mount the Assembly on the Wall

Using some fine grain sandpaper, clean any existing corrosion from the wires coming out of the wall.



Loop the exposed copper wires a few times so they will hold better in the connector.



Reconnect the wires to the center connector of the assembly and tighten the screws firmly so that the connections are good. Slide the silver lamp assembly back into the black street number sign, and fasten the whole thing back onto the wall using the same screws you removed in the first step.

