RiderWest

BMW K1200LT LED Trunk Mounted Tail and Turn Signal Light Kit

This kit includes all the necessary parts to add three LED strips to the lower section of the trunk—just below the lid. The long, strip goes all the way around (three sides) and is the tail light (it has red LEDs). The two shorter strips have amber LEDs and go from the center of the back of the trunk around to the sides—each one acting as a turn signal.

Thought these instructions may appear to be very long, in many cases, it takes longer to explain what to do than to actually do it. And, there are a lot of photos!

 **TIP** It's a good idea to read a section all the way through and study the photos before you start drilling or cutting so you know what to expect.

If you have any questions about this kit, contact support@riderwest.com. You can download a full color version of this document from www.riderwest.com.

Contents

What you get

Check all the parts that came with your kit before you begin. Your kit should contain:

- (1) 120cm (about 48") Black, 12 volt, LED strip with red LEDs
- (2) 60cm (about 24") Black, 12 volt, LED strips with amber LEDs
- (2) 66" Pieces of zip wire (one red/black, one with clear insulation)
- (1) 4" Piece of zip wire
- (2) 4" Piece of black tubing
- (4) Piggy-back adaptors, crimp-type
- (1) Female connectors, crimp-type
- (4) Female, fully insulated connectors, crimp-type
- (4) Male, fully insulated connectors, crimp-type
- (5) Cable ties, Black, 8"
- Detailed instructions (what you're reading now)

What you need

To install this kit, you need the following tools and supplies:

- T-25 Torx wrench (from the LT's toolkit—for removing the panel under the trunk)
- 5mm Allen wrench (from the LT's toolkit—for removing '05 and later taillights, the trunk, the panel under the trunk, and the passenger seat)
- 10mm socket (from LT toolkit—for removing '04 and earlier taillights)
- Crimping tool (for standard, automotive-type crimp connectors)
- Needle-nose pliers (for grabbing stuff)
- Long, thin blade screwdriver for releasing the tabs when removing the trunk liner
- Diagonal cutter (or some other cutter to trim the amber LED strips)
- Alcohol to clean the lip where the LED strips attach
- Drill with 3/16" drill bit
- Masking or blue painter's tape (for marking things)
- Small amount of silicone caulk (optional)

Abbreviated Instructions

If you're familiar with wiring and how to take apart your bike (and, hopefully, how to put it back together), you can use this outline to install this kit. If you're unsure of any step, see the detailed instructions for help.

1. Remove passenger seat.
2. Remove trunk liner and trunk.
3. Remove panel under the trunk.
4. Remove taillight assembly (or you can let it hang by the wiring harness).
5. Drill a 3/16" hole in the top of the taillight housing.
6. Run the wires from the taillight housing to the passenger seat area.
7. Connect wires to taillight:
    a. Black to any ground
    b. Red to either taillight
    c. Gold **with** white stripe to the left turn signal
    d. Gold **without** white stripe to the right turn signal
8. Replace taillight assembly.
9. Test the wires using one of the LED strips.
10. Replace panel under trunk.
11. Replace trunk and liner.
12. Attach LED strips—long strip (120cm, red LEDs) above the two short strips (60cm, amber LEDs)—trim short LED strips so they meet in the center of the trunk.
13. Connect wires from LED strips to wires from taillight assembly.
14. Test lights.
15. Replace passenger seat.
16. Show off your new lights (i.e., go for a ride).

Section 1: Removing Passenger Seat and Trunk

Start by removing the passenger seat (and back rest if you have one).

1. Open the left saddlebag and pull the release for the driver's seat. Raise the driver's seat up.

2. Using either a 5mm Allen wrench or a Torx key (depending on the model year of your bike), remove the two bolts holding the passenger seat in place (see arrows in Figure 1). If you have a back rest installed, remove it also. Now slide the passenger seat forward and lift off. Note the wire for the heated seat—disengage the connector and put the seat somewhere safe.

Figure 1: Bolts holding on passenger seat (and back rest on this bike).

3. Disconnect the two wiring harness connectors (see Figure 2) that run to the trunk (three if you have a 2005 or later LT—see Figure 3). Remove the wires going to the trunk from their retaining clips so they are free when you remove the trunk.

Figure 2: Two wiring harness connectors shown disconnected (pre-2005 model LT).

Figure 3: Third connector for 2005 or later model LTs (it's the small connector below the larger one).

4. Open the trunk lid. Remove the bolt holding the support strap for the lid (see Figure 4). Once the bolt is removed, support the lid to reduce pressure on the strap and removed the strap from the short tube on which it's hooked. **CAUTION:** Do not let the strap snap back into the spring mechanism—you'll never get it out. Slowly let the strap retract toward the spring loaded mechanism in the lid.

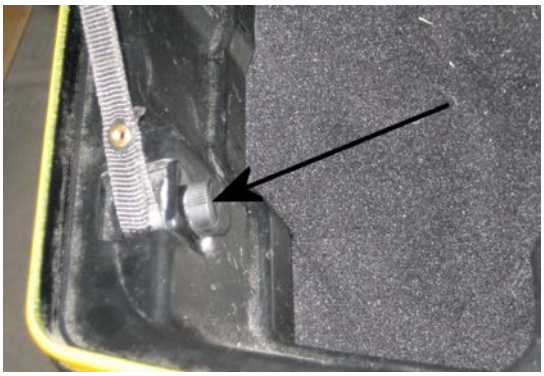

Figure 4: Bolt that holds the support strap for the trunk lid.

5. Open the lid carefully and support it on a helmet or other object (or have a helper support it) so you don't damage the hinges.

6. Release the two tabs that hold the front of the liner (see Figure 5). The tab must be pushed toward the back of the bike to release. Don't worry if you break them—most bikes I've seen have one or more broken tabs (including mine). The rest of the liner is held in with Velcro. Lift out the liner.

Figure 5: Releasing the tabs holding the trunk liner in.

7. Mark (with tape) the holes containing bolts on the panel under the trunk (see Figure 6). The two sets of holes allow you to adjust how far forward the trunk is. If your trunk is forward and you want to move it back, during this installation is a good time to do it. The holes marked in Figure 6 are used when the trunk is mounted in the back position.

Figure 6: Holes marked with tape on panel under trunk.

8. Remove the four bolts in the panel as well as the two Torx screws near the front of the panel (see Figure 7), work the panel forward to disengage the tabs at the rear, then remove the panel and set it aside.

Figure 7: Location of front Torx screws in panel under trunk (left side of bike).

Section 2: Removing the Taillight Assembly

1. Remove the rear taillight assembly by removing the two bolts that secure it. Access the bolts (one per side) by opening each saddlebag doors. The bolts are in the rear, vertical edge of the saddlebag. Figure 8 shows a bolt for 2004 and earlier LTs (use a 10 mm socket), and Figure 9 shows a bolt for 2005 and later LTs (use a 5 mm Allen wrench).

Figure 8: Taillight assembly bolt for 2004 and earlier LTs (10mm socket).

Figure 9. Taillight assembly bolt for 2005 and later LTs (5mm Allen wrench).

2. Carefully remove the taillight assembly and either let it hang if you think you can work on it without scratching it or your bike, or, unplug the taillight wiring connector and lay the taillight assembly out of the way (you really don't want to step on it).

Section 3: Running the Wires

1. Drill a 3/16" hole on the top, right side of the taillight area (see Figure 10). If you hold the taillight assembly in position, but not all the way in, you can see a space in the top of the taillight assembly—this is where you want the hole to come out (see Figure 11).

Figure 10: Determining where to drill the hole for the wires.

Figure 11: Determining where to drill the hole for the wires.

2. Refer to Figure 12 (the back of the bike is toward the left). Push both long pieces of zip wire through the hole you just drilled so that there is about 18" of wire in the taillight area (see Figure 13). Run the wire under the antenna bracket, under the nuts for mounting the trunk, along the frame tubing, and then under the frame tubing toward the center of the bike.

Figure 12: Routing wires from taillight area to under the passenger seat.

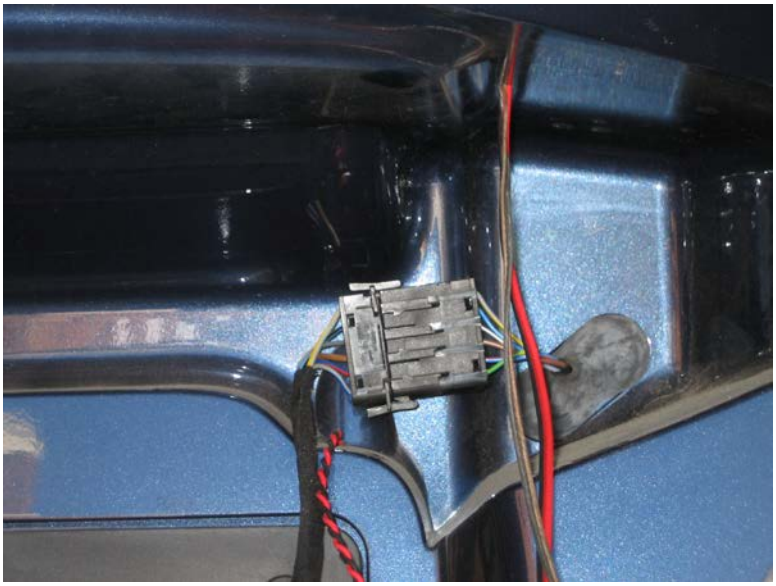

Figure 13: Wires poking through inside of taillight area.

3. Secure the wires to the frame tubing using two of the enclosed cable ties (see Figure 14). Be sure to route the wires along the bottom of the tubing so they don't get pinched when you replace the passenger seat.

Figure 14. Secure the wires to the bottom of the frame tubing with cable ties.

Section 4: Wiring the Taillight Assembly

There are several options for connecting the wires—for example, you can use any brown wire for the ground connection and either taillight socket for the LED running light connection. If you know what you're doing, use the piggyback adapters

to connect the wires as follows (if you need more guidance, follow the detailed instructions):

- Connect the BLACK wire to any ground (brown wire).
- Connect the RED wire to either taillight hot wire (you need to replace the BMW connector on the wire with the ¼" female connector provided).
- Connect the **Gold wire with white stripe** to the LEFT turn signal hot wire.
- Connect the **Gold wire without white stripe** to the RIGHT turn signal hot wire.

Detailed Wiring Instructions

1. Remove the brown wire from the right turn signal socket (see Figure 15)—this will be your ground connection for all three LED strips. Note to which tab the brown wire connects on the socket.

2. Remove the blue wire from each turn signal socket (see Figure 15).

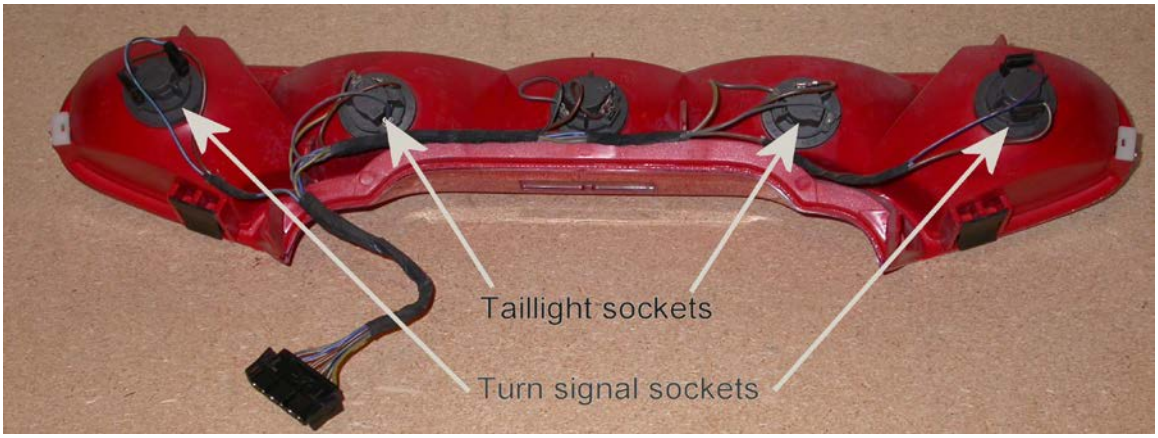

Figure 15: Taillight and turn signal sockets.

3. Remove the wire connected to terminal number #58 on one of the taillight sockets (see Figure 16). Note that the tab on the taillight socket is a little smaller than the tabs on the turn signal sockets.

   NOTE: Some early model bikes don't have numbers on the sockets. If your sockets don't have numbers, you want the taillight wire (*not the brake light wire*). To locate the correct wire, temporarily reconnect the taillight assembly, turn on your taillights, and remove one of the wires and see if the taillight goes out. It should be the gray wire with the blue stripe.

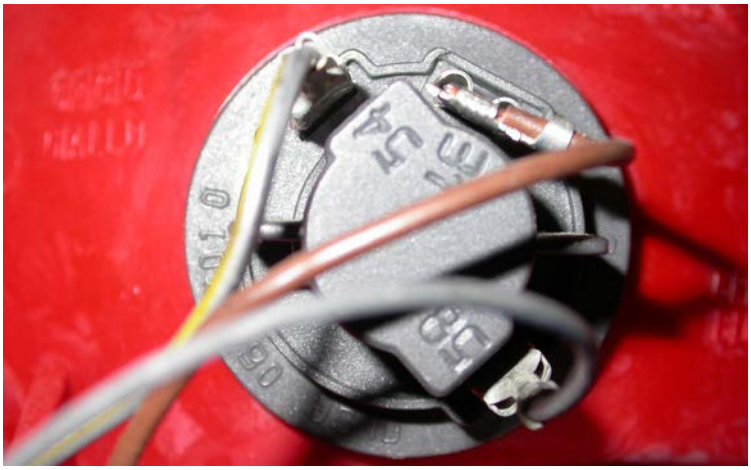

Figure 16: Taillight socket terminal numbers.

4. Cut off the small connector on the wire that used to go to the taillight socket, strip ¼" of insulation off the wire, and crimp on the supplied female connector (see Figure 17).

Figure 17: Standard ¼" push-on, female crimp connector.

5. Separate each zip wire for several inches—you can separate them more as needed when you're connecting the wires below.

6. Attach a piggyback connector (see Figure 18) to the end of each zip wire (strip off ¼" of insulation, insert wire into a piggyback adapter, and crimp).

Figure 18. Piggyback adapter.

7. Hold the taillight assembly in place (if you completely removed it) and connect the four new zip wires as follows (separate them as necessary). **Note:** The Gold wire *with* white stripe will be referred to as **GOLD/W** from now on. The Gold wire *without* the stripe will be referred to as **GOLD**.

    a. Connect the **BLACK** wire to the tab where the brown wire went on the right turn signal socket. Connect the brown wire to the piggyback adapter.

    b. Connect the **RED** wire to the tab from which you removed the taillight hot wire. Connect the taillight hot wire to the piggyback adapter.

c. Connect the **GOLD/W** wire to the tab for the LEFT turn signal hot wire. Connect the left turn signal hot wire to the piggyback adapter.

d. Connect the **GOLD** wire to the tab for the RIGHT turn signal hot wire. Connect the right turn signal hot wire to the piggyback adapter.

8. Reconnect the BMW connector from the wiring harness if you disconnected it to work on the taillight assembly.

9. Carefully tuck all the wires behind the taillight assembly and push the assembly into place being careful to engage the plastic tab at the top. Also, be careful not to pinch any wires. **Don't put the bolts back yet.**

Section 5: Testing the Wires

Before securing the taillight assembly with its bolts, test the wires that will connect to the new LED trunk lights.

1. Strip ¼" of insulation off of the ends of the zip wires lying where the back seat goes.

2. Take one of the LED strips (any one will work) and strip ¼" of insulation off the ends of both wires.

3. Twist the clear wire (no red stripe) onto the **BLACK** wire coming from the taillight area.

4. Twist the clear wire with the red strip (clear/red) onto the **RED** wire coming from the taillight area.

5. Position the remaining zip wires so they don't short out against the frame.

6. Turn on your key—the LED strip should light up (see Figure 19).

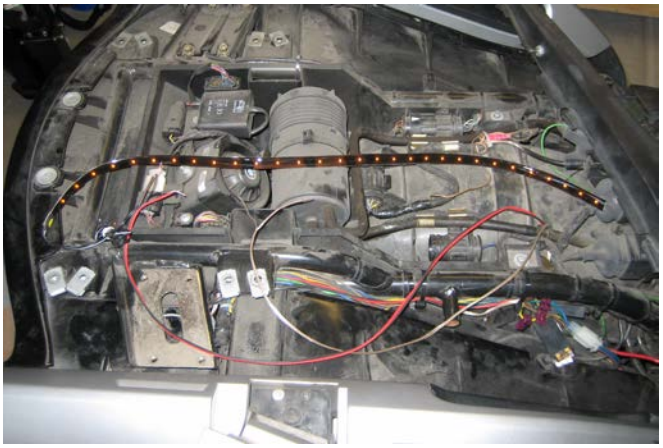

Figure 19. Using one of the amber LED strips to test the wires.

7. Leave the clear wire connected to the black zip wire and move the clear/red wire to the **GOLD/W** zip wire. Turn on your left turn signal—the LED strip should blink.
8. Finally, move the clear/red wire to the **GOLD** zip wire, and turn on your right turn signal. Again, the LED strip should blink.
9. Make sure your factory taillights and turn signals work (that no connectors are loose).
10. When everything works like it's supposed to, replace the bolts that hold in the taillight assembly. Don't over-tighten the bolts.
11. If you want, apply a little caulking to the hole going into the taillight area (to keep moisture and dirt out).

Section 6: Replace the Trunk

1. Move the zip wires out of the way and replace the panel that goes under the trunk—secure with the four bolts that go directly under the trunk and the two Torx screws that go toward the front of the panel. Note how the panel hooks into the area right above the taillight. **Reminder:** If you plan on moving the trunk forward or backward, this is the time to decide—use the appropriate holes.
2. Place the trunk into position (a helper is good to have to hold the lid of the trunk while you work). Secure with the four bolts.
3. Replace the trunk liner—be sure to snap in the clips (if you still have them). Make sure the liner is all the way down.
4. Reconnect the strap that holds the lid open and put in the bolt.
5. Reconnect the two (or three) connectors for the wires going to the trunk (see the figures in Section 1). Replace the wires into their retaining clips.

Section 7: Attach the LED Strips

The LED strips go around the three visible sides of the trunk, just under the lip of the trunk top. The long red strip (48"—120cm) one goes on first, followed by the two amber 24"—60cm strips below it. The wires go between the trunk and the passenger seat. If your strips have little color dots, remove them before you begin—it's easier now than later.

IMPORTANT It's been reported that, if the LED strips are very warm when installed, they could stretch, causing the strips to overlap more than just a little. We suggest keeping the LED strips at room temperature before installing them.

1. Clean the lower lip of the trunk with alcohol so the LED strips will stick.
2. Close to top of the trunk leaving the latch open.
3. Without peeling the adhesive backing off—position the long LED strip (48") on the left side of the trunk so the end with the wires is as high and forward as possible without interfering with the movement of the trunk top (see Figure 20). Work the trunk up and down to find the right spot. It's helpful to have someone hold the strip while you position it.

Figure 20. Locating the starting point for the upper LED strip.

4. Mark the forward position of the strip with tape (see Figure 21).

Figure 21. Marking the starting point for the upper LED strip with tape.

5. With the trunk closed and the latch closed, start peeling the adhesive backing off, a little at a time, starting at the end with the wires (see Figure 22).

Figure 22. Applying the upper LED strip.

6. Work your way around the trunk, keeping the strip up against the trunk top. The end without the wires should terminate on the right side, just under where the top meets the bottom half of the trunk (see Figure 23). You may have to open the trunk to stick on the last inch or so.

Figure 23. Ending point for the upper LED strip on the right side.

7. Unwrap the wire from the LED strip and lay it across the hinge to keep it out of the way (see Figure 24).

Figure 24. Lay the wire across the hinge to keep it out of the way. Note that the wires in the photos are black and black with white stripe while your wires are clear and clear with red stripe.

8. Locate the center of the trunk—a level works pretty well for this, though I found that the BMW emblem was not perfectly square (see Figure 25).

Figure 25. Locating the center of the trunk.

9. Mark the center with a piece of tape (in Figure 26, the left edge of the tape represents the center line for the trunk). This is where you want the two short LED strips to meet—you'll be trimming them slightly to make them fit.

Figure 26. Locating the center of the trunk.

10. Position one of the short (24") LED strips under the starting point of the top LED strip on the left side of the trunk (see Figure 27).

Figure 27. Positioning the left turn signal LED strip.

11. Move the top of the trunk up and down to find the most forward spot where the strip will not interfere with the trunk. Mark this starting point with a piece of tape (see Figure 28).

Figure 28. Marking the starting position for the left turn signal LED strip.

12. Have someone hold the strip in place (or tape it) and make sure it lines up pretty close to the center mark on the back of the trunk. The idea here is that you don't want to be so far forward on the end with the wires that you come out too far too the left of the center line. A little over is better—later you can trim the LED strip a little bit. Adjust your starting point as necessary.
13. Open the trunk.
14. Peel back a small portion of the adhesive backing, starting at the end with the wires and attach the LED strip to the trunk, up tight under the first strip, working your way around toward the center of the trunk (see Figure 28).

Figure 29. Attaching the left turn signal LED strip.

15. When you get to the center, leave the backing on the last few of inches (see Figure 30).

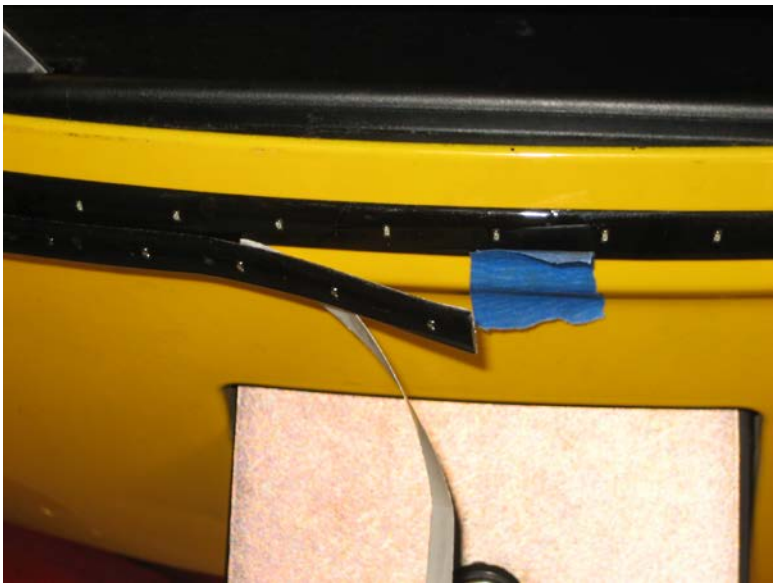

Figure 30. Aligning the end of the LED strip with the center mark.

16. Repeat this procedure with the right side turn signal strip.

17. When you get to the center, fit the two ends so they meet as close to the center as possible. You can trim (with a suitable cutter, such as a diagonal cutter) a small amount off the ends without damaging the LED strip (see Figure 31). **NOTE:** DO NOT CUT THE STRIP BETWEEN LEDS.

Figure 31. Trimming the right-side LED strip.

18. Remove the tape marking the center line, peel off the remaining backing, and stick the ends of the LED strips in place.

Section 8: Add the Tubing

1. On the left side of the trunk you have two wires (four conductors), one from each LED strip. On the right side you should have one wire (two conductors).
2. On the left side, straighten out the wires and run both wires into one of the 4" pieces of tubing (see Figure 32). It's a little tricky getting the wires through the tubing, but possible. It may be easier if you strip the ends and twist all the wires together before feeding them into the tubing.

Figure 32. Adding the protective tubing to the wires.

3. In a similar fashion, add the remaining piece of tubing to the wire on the right side of the trunk.

Section 9: Secure the Wires from the LED Strips

1. Run the wires from the LED strips over the hinges (the protective tubing rests on the hinge) and down toward the rear seat area.
2. Close the trunk.

3. Route the wire from the right side LED strip under the clip holding the wire coming from the volume/mute controls (see Figure 33). Continue running the wire along the BMW wire catching the next clip and continuing all the way to the right and catching the clip on the far right (see Figure 34). It may be easier to remove the BMW wire, put in the thin LED wire, and then replacing the BMW wire into the clip. The BMW wire will hold the thin LED wire in place.

Figure 33. Routing the wire for the right-side LED strip.

4. Run the wires for the left side LED strips down toward the BMW wiring harness. Fasten the wires to the cable with a cable tie.
5. Fit the wire from the right-side LED strip under the clip as shown in Figure 34 . Use another cable tie to secure the left-side LED strip to the BMW wire, also shown in Figure 34.

Figure 34. Routing and securing the wire from the right and left LED strips.

6. Check the movement of the trunk to make sure the wires are not subject to abrasion or excess tension. Adjust as necessary.

Section 10: Testing the LED Strips and Finishing Up

1. Open the trunk and, from the front side of the trunk (where the passenger sits) bring all the wires (from the LED strips and the two zip wires coming from the taillight) through the opening between the top and bottom of the trunk area (see Figure 35). **Note:** Some LED strips come with slightly shorter wires and may not reach conveniently into the trunk.

Figure 35. Bring the wires into the trunk so it's easy to work on them.

2. Pull the shorter of the LED wires straight (the one from the right-side of the trunk, and cut the other LED strip wires to the same length. Strip ¼" of insulation off of all 10 conductors.

3. Twist the **three clear** ground wires from the LED strips together and crimp on a fully insulated male connector.

4. Crimp the fully insulated connectors to the wires coming from the taillight as follows:

    a. **BLACK** wire: Female
    b. **RED** wire: Male
    c. **GOLD/W** wire: Male
    d. **GOLD** wire: Male

5. Because the wires attached to the LED strip are very thin, you need to make them thicker so you can securely crimp on a connector. Separate the short piece of zip wire supplied and strip ¼" from one end of one of the pieces and twist the strands together.

6. Twist the strands together for each clear/red coming from the LED strips. Now twist the short piece of zip wire together with one of thin clear/red LED wires (see Figure 36).

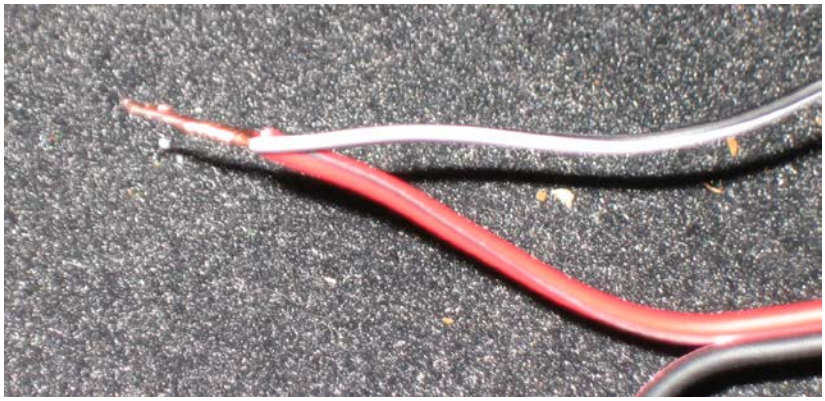

Figure 36. Using the zip wire to make the LED wires thicker.

7. Trim the zip wire as shown in Figure 37.

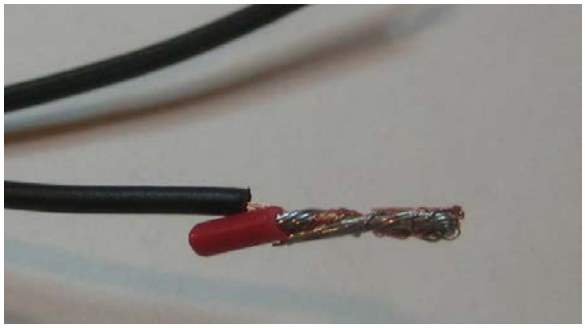

Figure 37. Trimming the zip wire.

8. Crimp a fully insulated female connector onto the clear/red wire.

9. Repeat this procedure for each of the two remaining clear/red wires coming from the LED strips.

10. For testing purposes, partially plug the male connector on the three LED ground wires into the female connector on the BLACK zip wire.

11. Turn on your bike's key.

12. To identify which clear/red wire comes from which LED strip, in turn, partially plug in the female connector on each clear/red wire into the male

connector on the RED zip wire. If you want, mark each connector as appropriate: with a T (tail light), L (left turn signal), or R (right turn signal).

13. When you know which wire is which, connect them as follows:
    a. The wire from the RED led strip (taillight) to the **RED** wire.
    b. The wire from the LEFT turn signal LED strip to the **GOLD/W** wire.
    c. The wire from the RIGHT turn signal LED strip to the **GOLD** wire.
14. Test all your lights, including the ones in the taillight assembly to make sure everything works as it should. If you find a problem, correct it.
15. Once everything is perfect, turn off your key and push all the connectors firmly together (make sure the tabs on the male ends engage properly).
16. Route the zip wires neatly along any convenient wire or tube under where the passenger seat goes (secure with a cable tie), and then push the zip wires under the same clip you used for the right-side LED wire (see Figure 38).

Figure 38. Routing the zip wires under the passenger seat.

17. Tuck all the wires into the recess to the right of the trunk wires connector, as shown in Figure 38.
18. Replace the passenger seat (and back rest if you have one). Don't forget to plug in the connector for the heated seat.
19. Double check that everything is working as it should.
20. Go for a ride to show off your new lights.