

Installation of Lane Gate Double v4

These instructions apply only to version 4 of the Lane Gate Double. Compare yours to the image at right. Instructions for all other versions are found on the Support page at digitalracingsolutions.com.

The DRS Lane Gate Double v4 chip is for use only in the Carrera Digital D124/132 model #30347 lane changer.

To use on dual-mode tracks, see the dual-mode supplemental info (page 8).



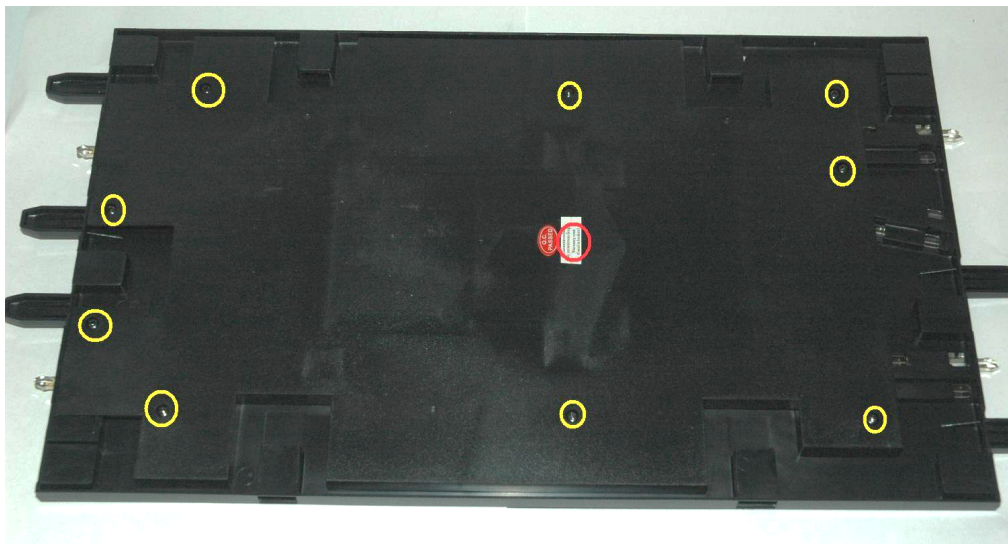
Tools required: #0 Philips screwdriver
T9 Torx driver for security screw (or small flat blade)
Wire cutter/stripper
Masking tape (for marking during installation)
Packing tape (not needed if using hot glue to secure board)

Tools optional: Drill and small drill bit (1.5-3mm or 1/16-7/64")
Low-temp hot glue gun

Warning!

The process of disassembling and modifying your lane changer will void its warranty. You are advised to thoroughly test any new lane changer to verify it works properly while it is still under warranty.

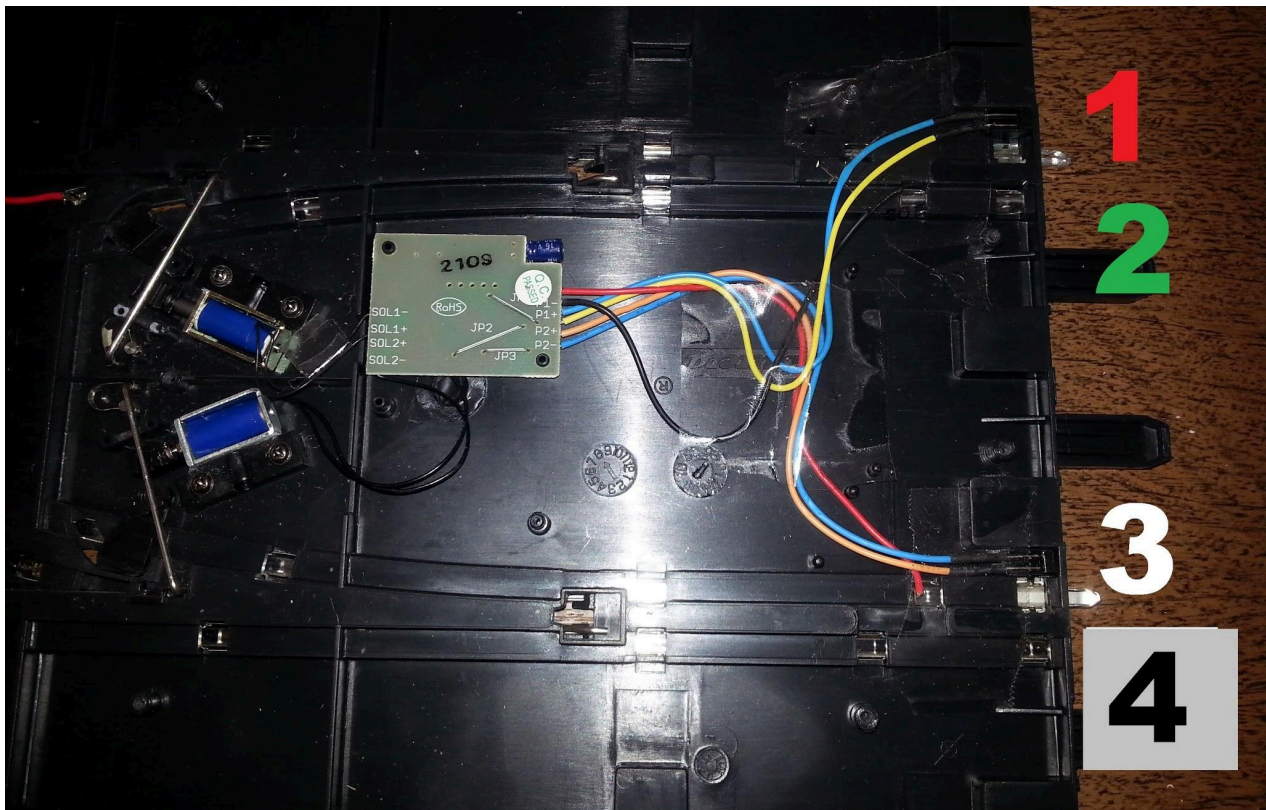
1. Take the entry section of the Double lane changer and place it upside down with the sensors on the right. Remove the rear cover by taking out all (8 or 10) of the visible philips head screws and the 1 security torx screw under white label).



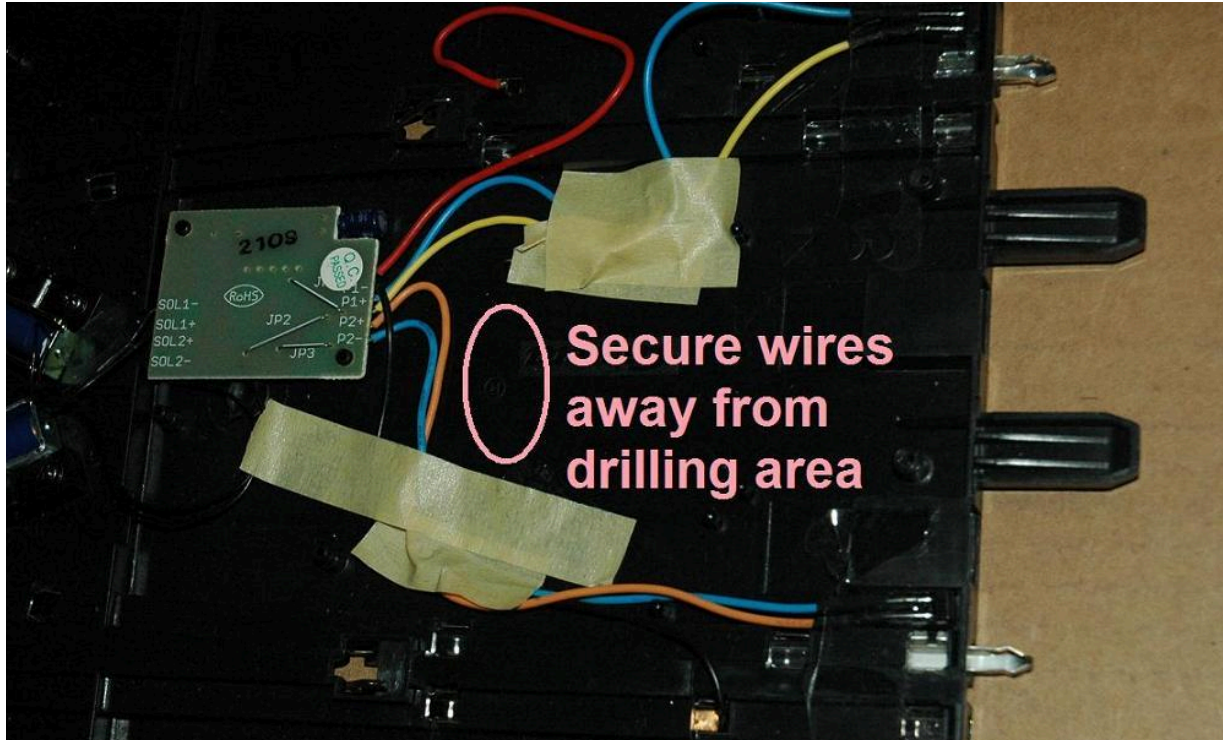
2. Remove the two short jumpers that connect to the inside rails closest to the track centerline. In the picture, these are the red jumper of the bottom lane and the black jumper of the top lane.



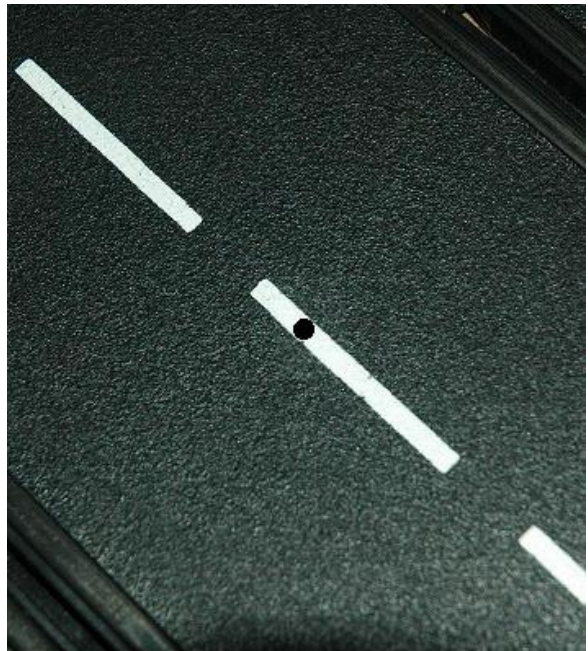
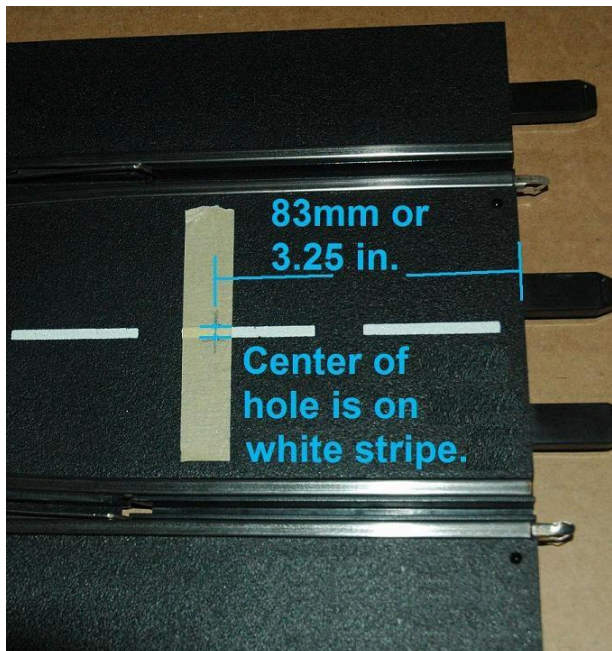
3. The numbers on the right side of the picture help identify each of the track rails. The factory red (+) wire needs to be located in rail #1. If it is in rail #3, move it to #1. The factory black (-) wire must go to rail #4. If it is in rail #2, move it to rail #4. In the image below, both of these wires need to be moved.



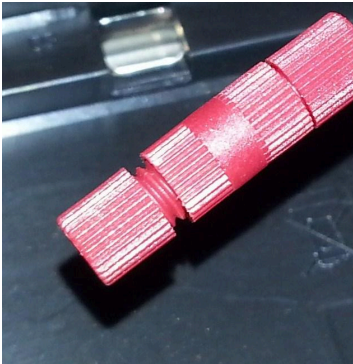
4. The Lane Gate Double will mount between the lanes. Examine your track section and cover plate for ribs, posts, or flanges that might restrict where you will locate the chip. For optional visual feedback from the Lane Gate, you'll need to drill a hole on the centerline of the track. There are two small LEDs which are quite bright. The ideal location is 83mm (3.25") from the end. Secure all wiring away from the hole location as shown. This picture also shows the red and black wires from step 3 now moved to the proper rails.



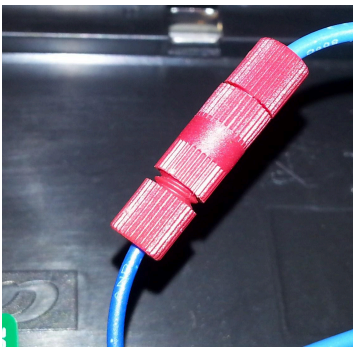
Measure, mark, and drill from the top of the track. Use a 3mm or 7/64" drill bit. End result should look like:



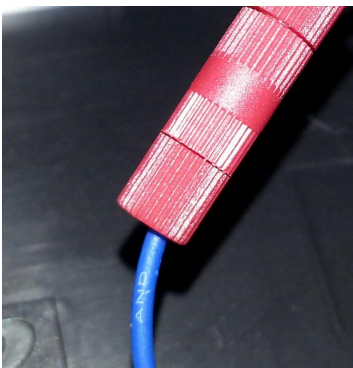
A quick “How-To” on Posi-Lock splices included with the Lane Gate [easy] products.



Unscrew the open end of the splice 2 turns.



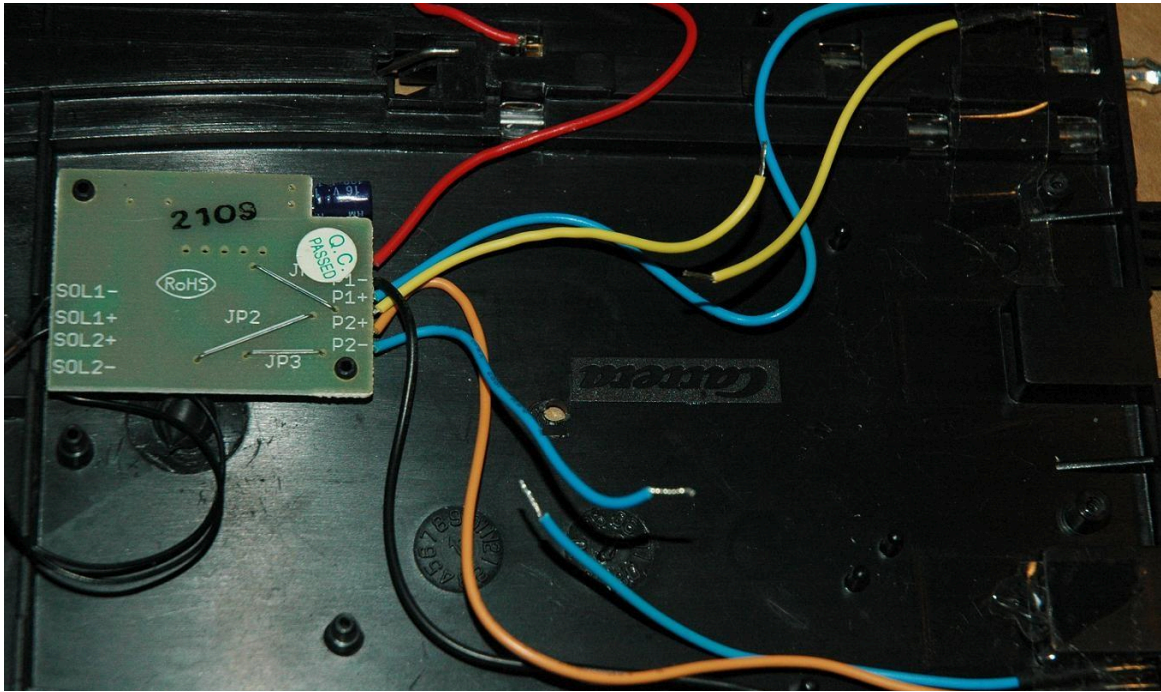
Push the bare wire into the end until it stops.



Tighten the end and pull gently on the wire to verify it is secure.

For Lane Gate [tech] products, wires can be spliced using small crimp connectors or simply soldered together.

5. Locate the factory wires (typically yellow and blue) going to the IR sensor at upper right. Cut the yellow wire at its middle. For the sensor at lower right (typically orange and blue wires) cut the blue wire at its middle. Strip about 3/16" insulation from each cut end.



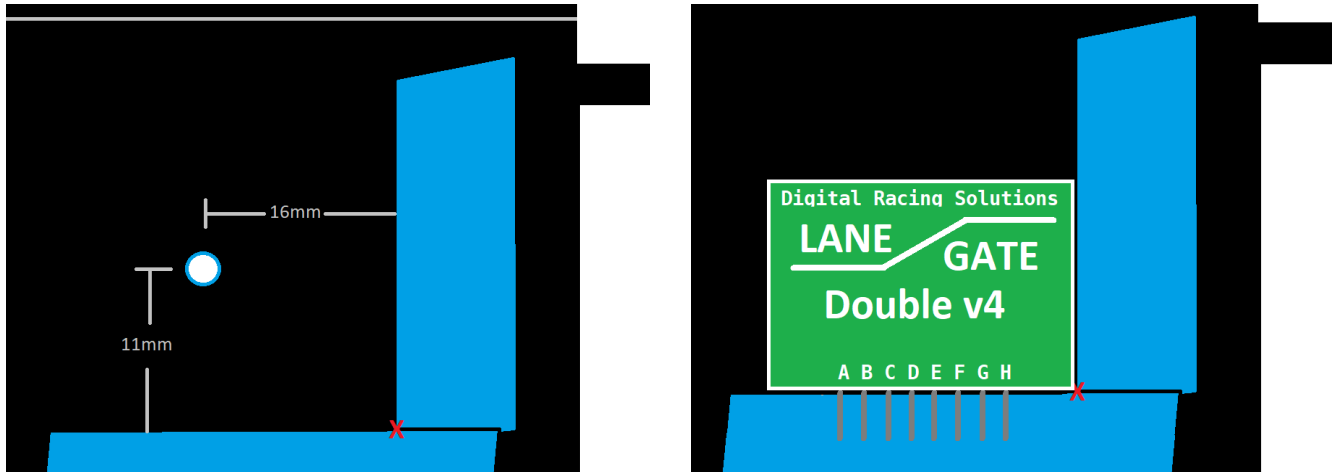
6. The color of the wires in the 8-wire pigtail of the Lane Gate Double is random. The important detail of each wire is its position/letter (A-H), which is printed on the edge of the Lane Gate board.

Take a moment to fill out the left side of the chart below, with the colors of your pigtail.

	Color	Connects to
A		Yellow wire from "P1+" on factory board
B		Blue wire from "P2-" on the factory board
C		Rail #1
D		Rail #2
E		Rail #3
F		Rail #4
G		Yellow wire from sensor by rail #1
H		Blue wire from sensor by rail #3

7. On the underside of the track, mark a point 16mm to the right and 11 mm down from the hole. This is where the corner of the Lane Gate board needs to be for the LEDs to align with the hole made in step 4. Use a couple strips of masking tape to mark the edges.

Use packing tape or hot glue to secure the Lane Gate board, oriented so that the connector is on the side closest to rail #3. We like putting a dab of hot glue in the drilled hole. The LEDs are quite bright and the glue creates a diffused lens to reduce glare, with the added benefit of preventing debris from falling through the hole later on.



8. Connect each pigtail wire according to the chart from step 6.

EASY: The [easy] product has clips that slip into the rails.

TECH: For the [tech] product, you can repurpose the clips from the jumpers removed in step 2, or piggyback the wires onto the clips that are wired to the factory board.

When all connections have been made, connect the 8-wire pigtail to the Lane Gate board if it is not already attached. Be sure that the color coding matches up with the letters on the Lane Gate board.

9. Secure loose wiring with tape or hot glue, then replace the back cover.

10. Test your modified DOUBLE lane changer before placing it in your layout.

After Lane Gate installation, test your work by connecting the newly modified lane changer to the right of your Black Box or Control Unit. Place one straight section to the right of the lane changer. Do not connect any additional track to the right of the straight section during initial testing. By having no other track on the approach end of the lane changer, isolation of the detection rail is guaranteed.

Turn on the black box or control unit. Both LEDs on the lane changer should light up. Place a car ahead (to the right) of the lane changer in the near lane. The LED in the far lane should go out.

ID a second car and place it in the far lane, beside the first car. The LED in the near lane should go out. Drive the second car and try to change lanes. The flipper should not move. Reset the second car to its original position. Remove the first car. The LED in the far lane should light up. Drive the second car and again try to change lanes. The flipper should operate normally when the LED is on. Repeat the test for the other lane and flipper.

TROUBLESHOOTING

No LEDs and buzzing noise or black box/control unit power fault?

On the 8-wire connector, wires are identified by terminal letter, not color.

Double check that each wire goes to its designated connection on the lane changer.

No LEDs, no noise, no nothing:

Chip is not getting power. Wire "C" needs to be on rail #1. Wire "F" needs to be on rail #4.

LED always on, does not go out when there is a car in the detection zone:

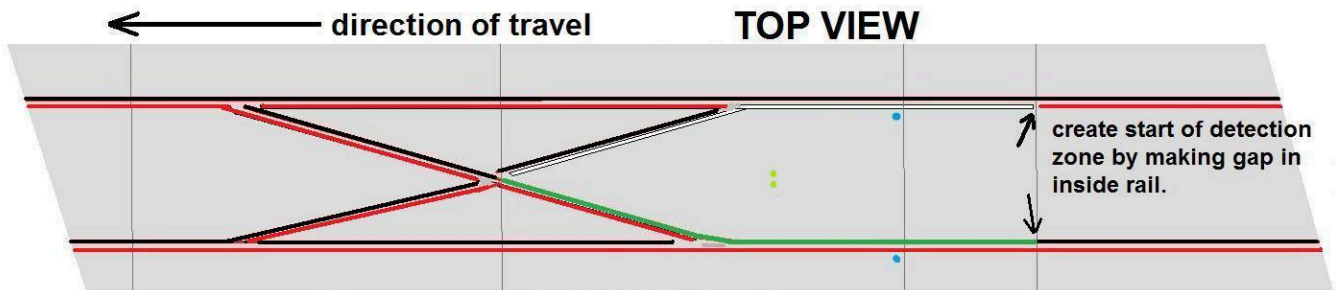
Detection zone is not isolated. Did you remove the jumpers as shown in step 2?

Lane changer flipper no longer works, but LED turns on/off as described in testing.

Double check that wires A,B,G,H are where they belong. Make sure A&G or B&H aren't swapped.

The most common wiring error is not placing the factory power wires where needed in step 3.

11. Now that the installed Lane Gate chip has been verified, a "detection" zone needs to be created which is achieved by isolating the inside rails of each lane ahead of the lane changer. This will require making a gap in the #2 and #3 rails. Depending on how long of a detection zone you want, this could be as simple as removing the joiner prongs from the inside rails at a section joint. Another option is to use a $\frac{1}{4}$ or $\frac{1}{3}$ track section ahead of the lane changer and do the prong isolation on the approach end of it. The most extreme option is to use a coping saw to cut the inside rails of a track section.

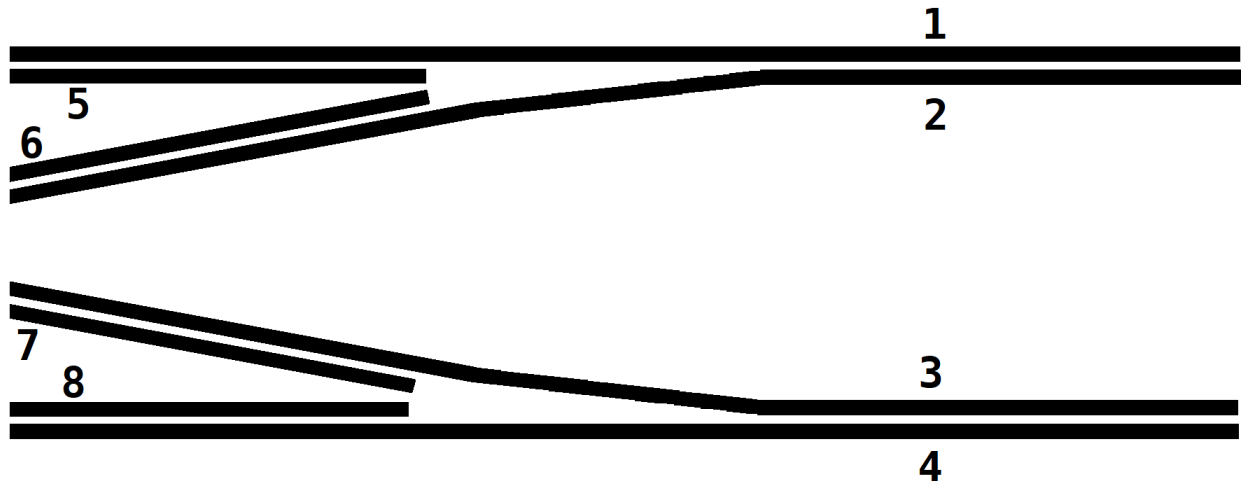


12. Creating the isolated rails means the track rails are no longer a continuous loop, so power taps/jumpers may need to be added. Choose their location carefully. Do not place a power tap on the isolated rails inside of the detection zone.

13. All done!

How to modify LG installation for DualMode compatibility

Rails of lane changer entry section as viewed from the bottom.
A Double has all 8 rails. A Left has no 5&6. A Right has no 7&8.



**Disconnect LG wire from #1, move to #8.
(does not apply to Right lane changers)**

**Disconnect LG wire from #4, move to #5.
(does not apply to Left lane changers)**

**Stock LG harness will need wire(s)
extended about 5cm (2") to reach.**