Installation of Lane Gate Double v2

These instructions apply only to version 2 of the L/G Double. Please compare yours to the image at right. If you have a different version, the correct instructions can be found at digitalracingsolutions.com on the Support page.

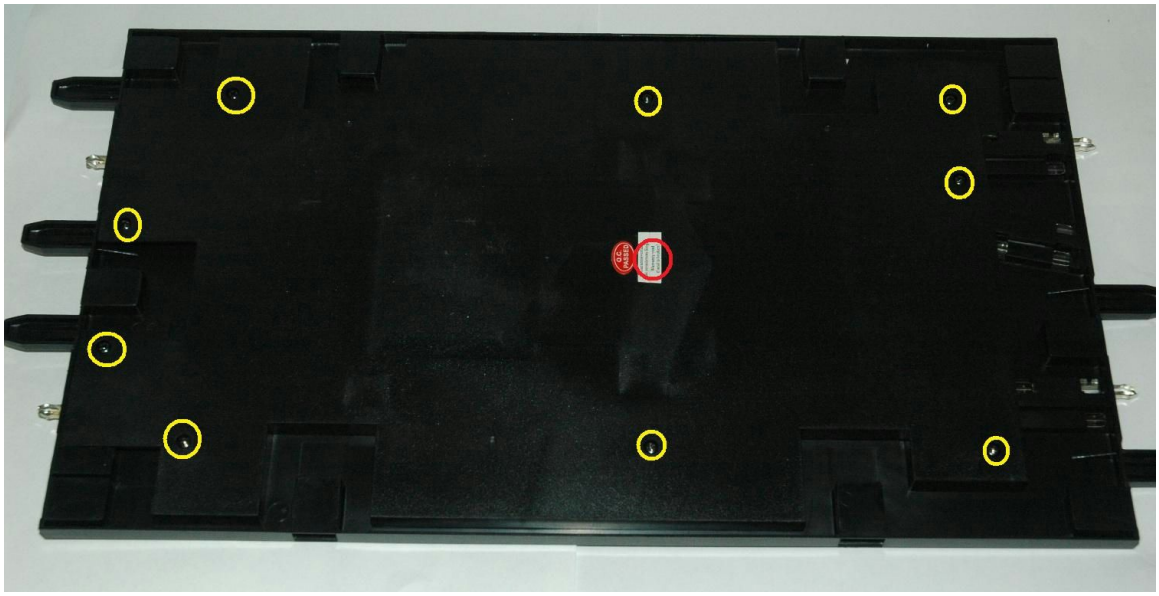
The DRS Lane Gate Double v2 chip is for use only in the Carrera Digital D124/132 model #30347 lane changer.

Tools required: #0 Philips screwdriver
T9 Torx driver for security screw (or small flat blade)
Wire cutter/stripper
Drill and drill bit (3mm or 7/64")
Masking tape (packing tape also works)
Tools optional: Low-temp hot glue gun

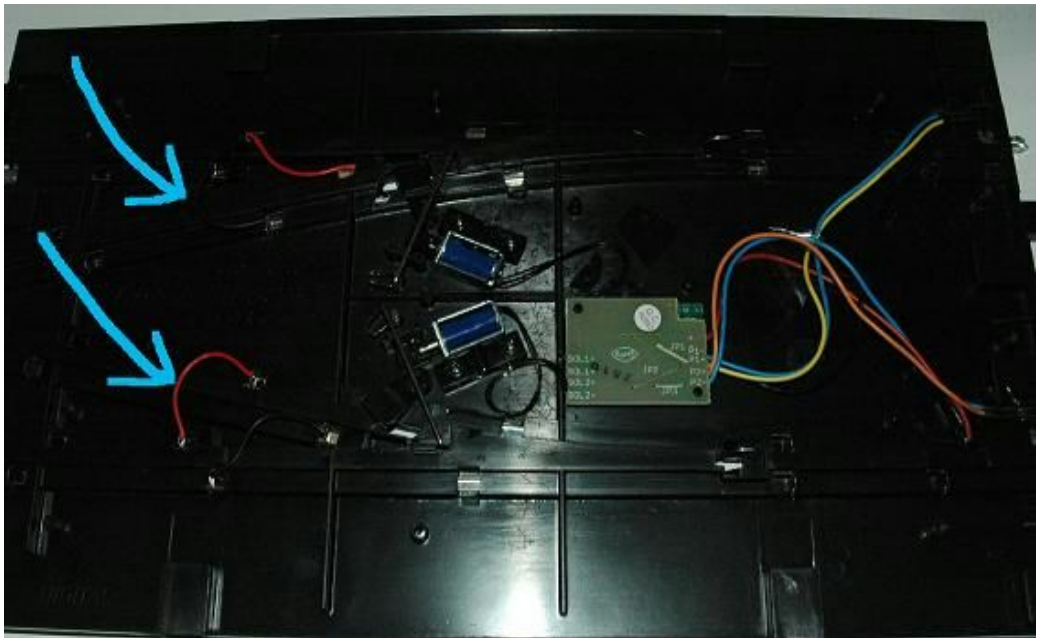
Warning!

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.

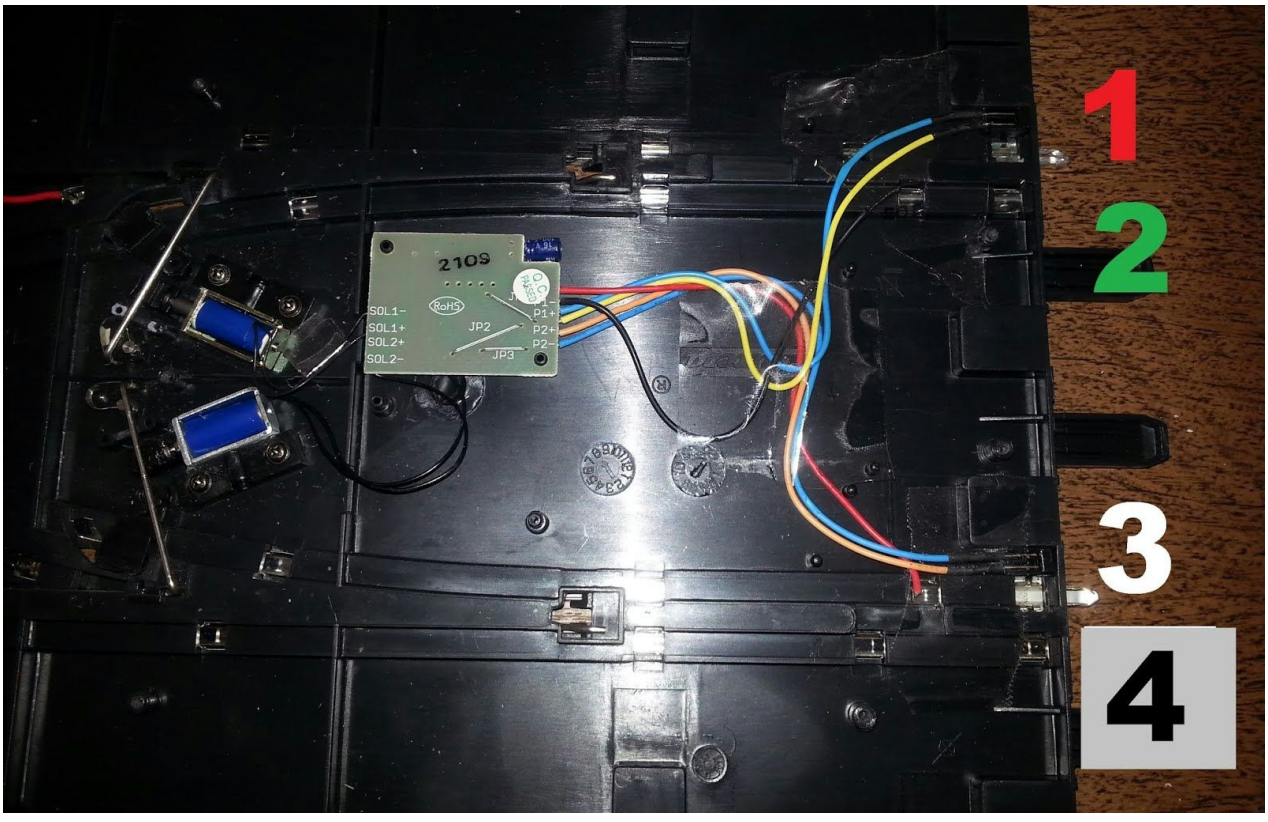
1. Take the entry section of the Double lane changer and place it upside down with the sensors on the right. Remove the rear cover (8-10 screws, 1 security torx screw under white label).



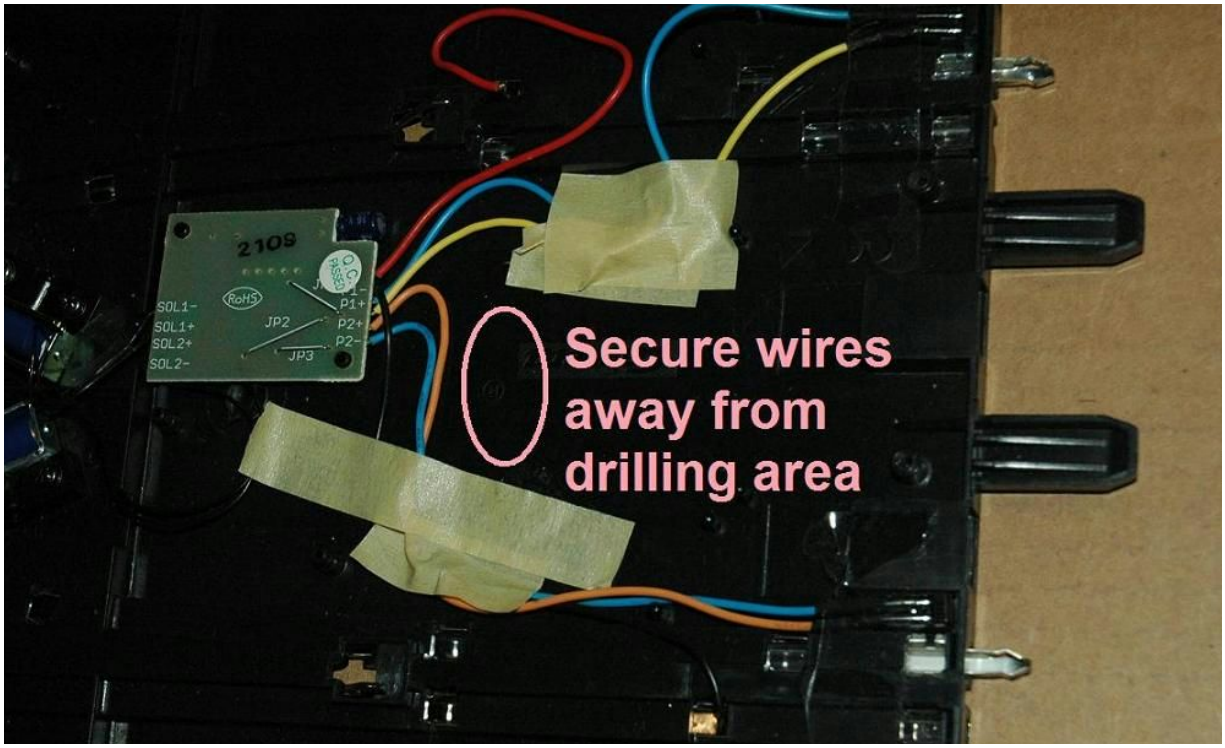
2. Remove the two short jumpers that connect to the inside rails closest to the track centerline. In the picture, these are the red jumper of the bottom lane and the black jumper of the top lane.



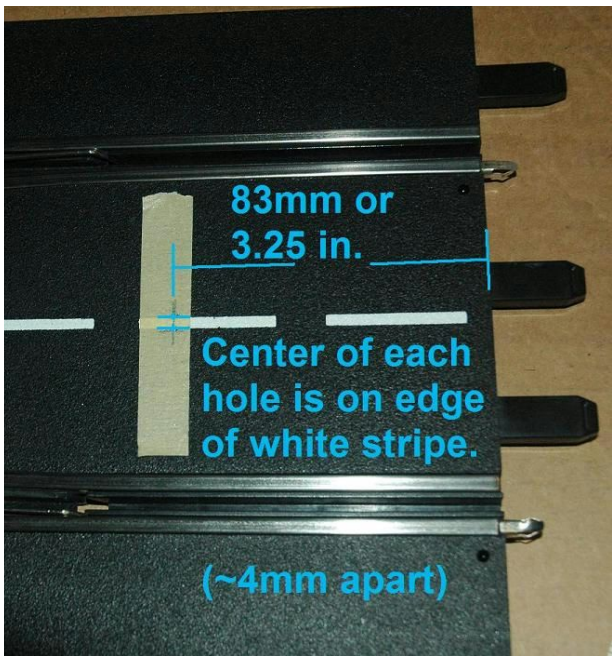
3. The numbers on the right side of the picture help identify each of the track rails. The factory red (+) wire needs to be located in rail #1. If it is in rail #3, move it to #1. The factory black (-) wire must go to rail #4. If it is in rail #2, move it to rail #4. In the image below, both of these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



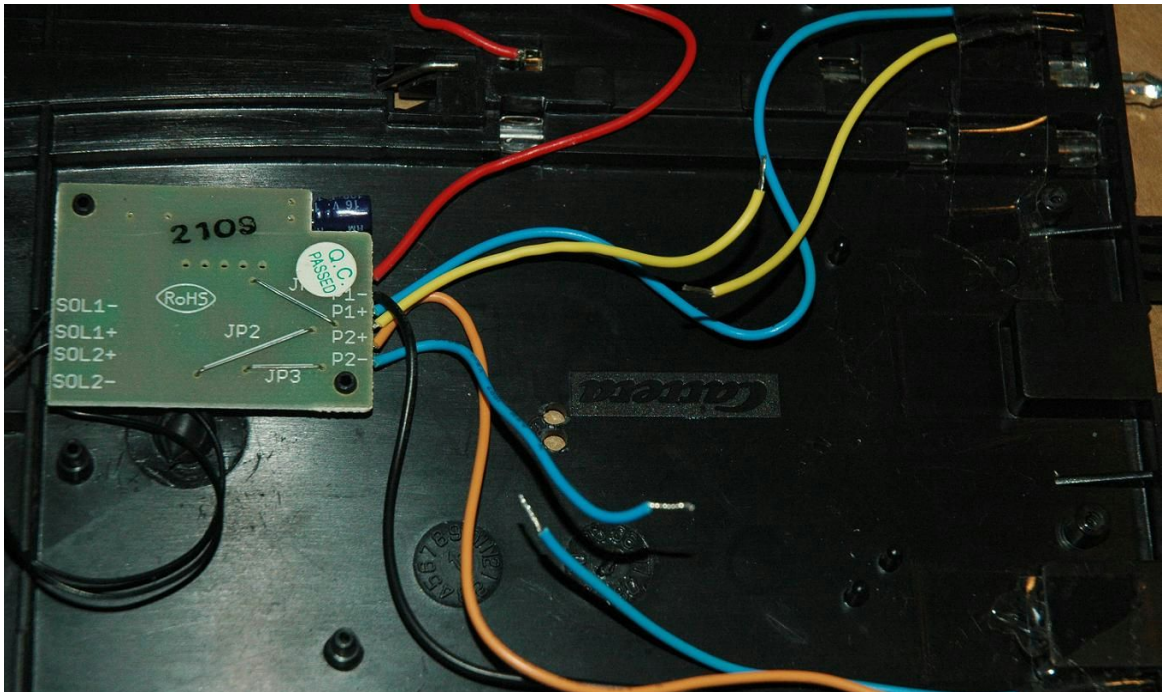
4. The Lane Gate Double will mount between the lanes. Examine your track section and cover plate for ribs, posts, or flanges that might restrict where you will locate the chip. You'll be drilling two small holes near the centerline of the track. For the sections we've seen, a good location is 83mm (3.25") from the end. Secure all wiring away from the holes' location as shown. This picture also shows the red and black wires from step 3 now moved to the proper rails.



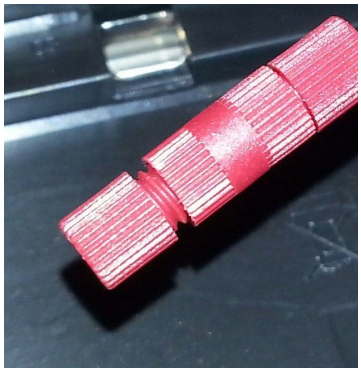
Measure, mark, and drill from the top of the track. Use 3mm or 7/64" drill bit. End result should look like:



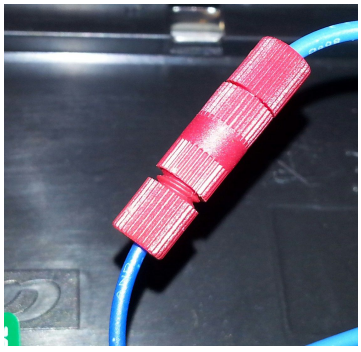
5. Locate the factory wires (typically yellow and blue) going to the IR sensor at upper right. Cut the yellow wire at its middle. For the sensor at lower right (typically orange and blue wires) cut the blue wire at its middle. Strip about 3/16” insulation from each cut end.



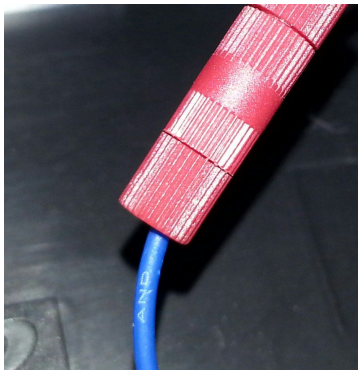
6a. A quick “How-To” on Posi-Lock splices.



Unscrew the open end of the splice 2 turns.

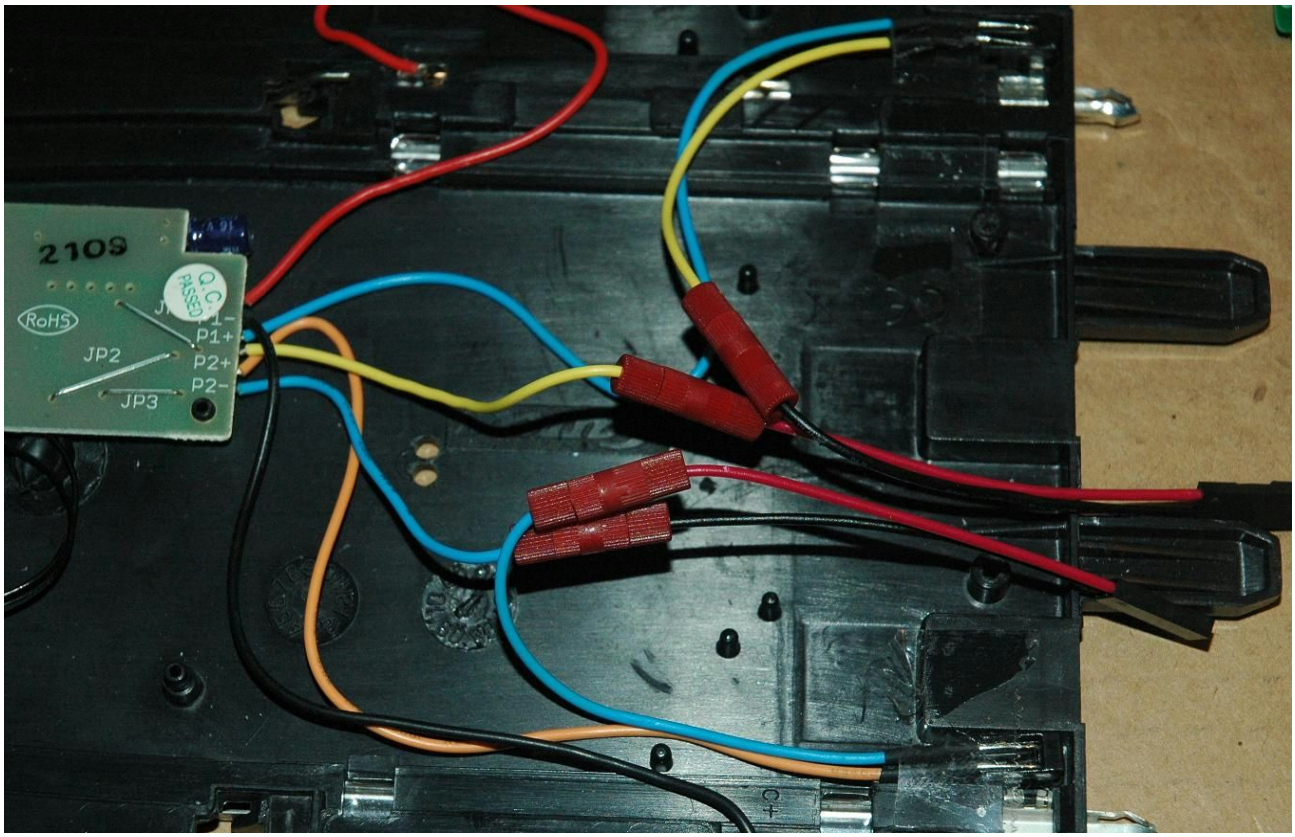


Push the bare wire into the end until it stops.

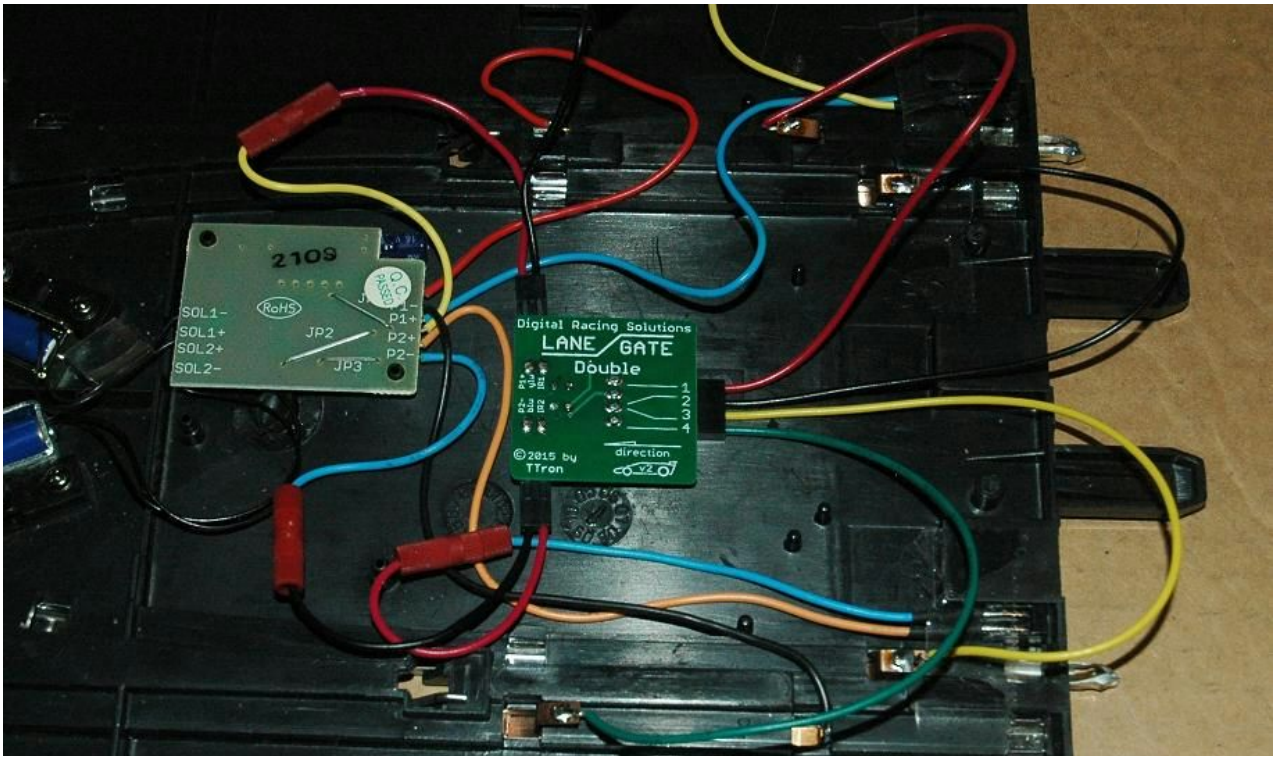


Tighten the end and pull gently on the wire to verify it is secure.

6b. The yellow wire from “P1+” on the factory board should be spliced to the red wire on the first 2-wire pigtail. Then splice the black wire to the remaining yellow wire (from the track sensor). Use the other pigtail on the blue wires. Black connects to blue from “P2-” on the factory board and red goes to the blue from the other IR sensor.



7. Plug the 2-wire connectors to the Lane Gate Double board as shown . Note their orientation. It matters!



8. The color of the wires in the 4-wire pigtail of the Lane Gate Double may vary. The important detail of each wire is its position/number, which is printed on the edge of the Lane Gate board. These numbers match the rail numbers shown in step 3. Connect the 4-wire pigtail to the Lane Gate board if it is not already attached. Place the Lane Gate chip so that its LEDs are in the new holes. Be sure the arrow on your Lane Gate is pointing in the proper direction (toward the solenoids). Secure chip with hot glue or tape. Place the clips of the four wires in the corresponding rails as shown above.

9. Secure loose wiring with tape or hot glue, then re-install 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 green 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 to 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 4-wire connector, wires are matched to rails by number, not color.
Double check that wires 1-4 do in fact go to rails 1-4.

No LEDs, no noise, no nothing:

Chip is not getting power. Wire #1 needs to be on rail #1. Wire #4 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?

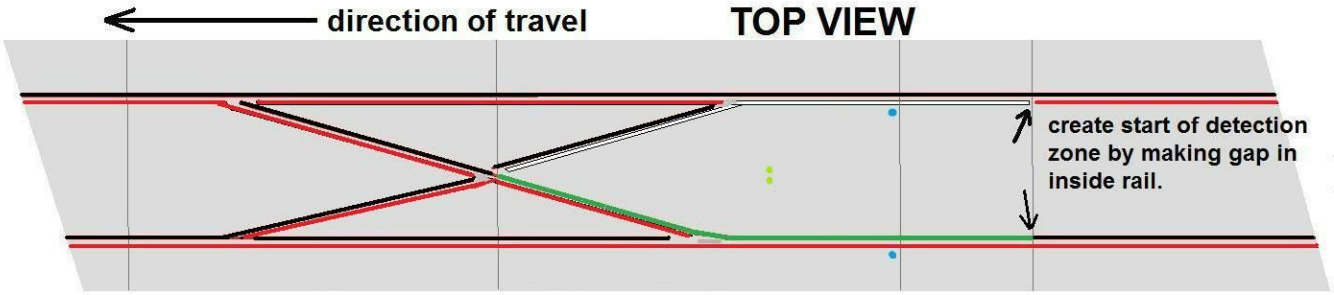
Lane changer flipper no longer works, but LED turns on/off as described in testing.

Double check step 7. Probably need to flip one of the 2-wire plugs.

11. Now that the installed Lane Gate chip has been verified, a “detection” zone needs to be created.

This 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 ¼ or ⅓ 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. When you add anti-collision to lane changers, it becomes important to have power taps in the right places. A power tap to the isolated rails inside of the detection zone will defeat the anti-collision circuit. Likewise, creating the isolated rails means the track is no longer a continuous loop, so power taps/jumpers will be most likely be needed in some spots.