

Installation of Lane Gate Double v4

These instructions apply to version 4 (v4). Compare yours to the image at right. Instructions for all other versions are found on the Support page at digitalracsolutions.com. It is for use only in the Carrera Digital D124/132 model #30347 lane changer.

The different revisions reflect changes in how the boards are manufactured. All versions of Lane Gate Double are compatible with dual-mode tracks when wired appropriately.



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)

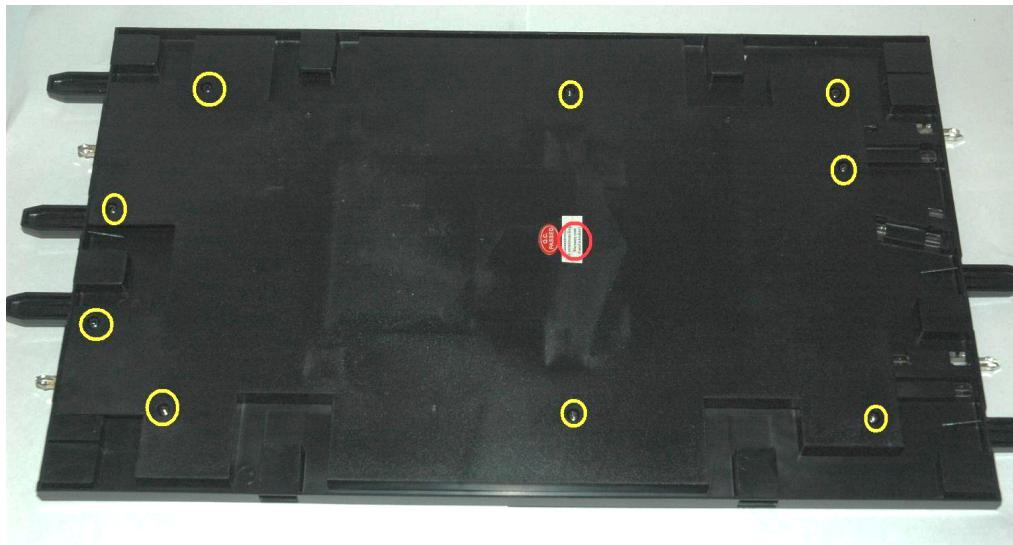
Tools optional: Drill and small drill bit (1.5-3mm or 1/16-7/64")

Low-temp hot glue gun

Warning!

Disassembling and modifying your lane changer will void its warranty from Carrera. Please test any new lane changer to verify it works properly while it is still under warranty, before modifying it.

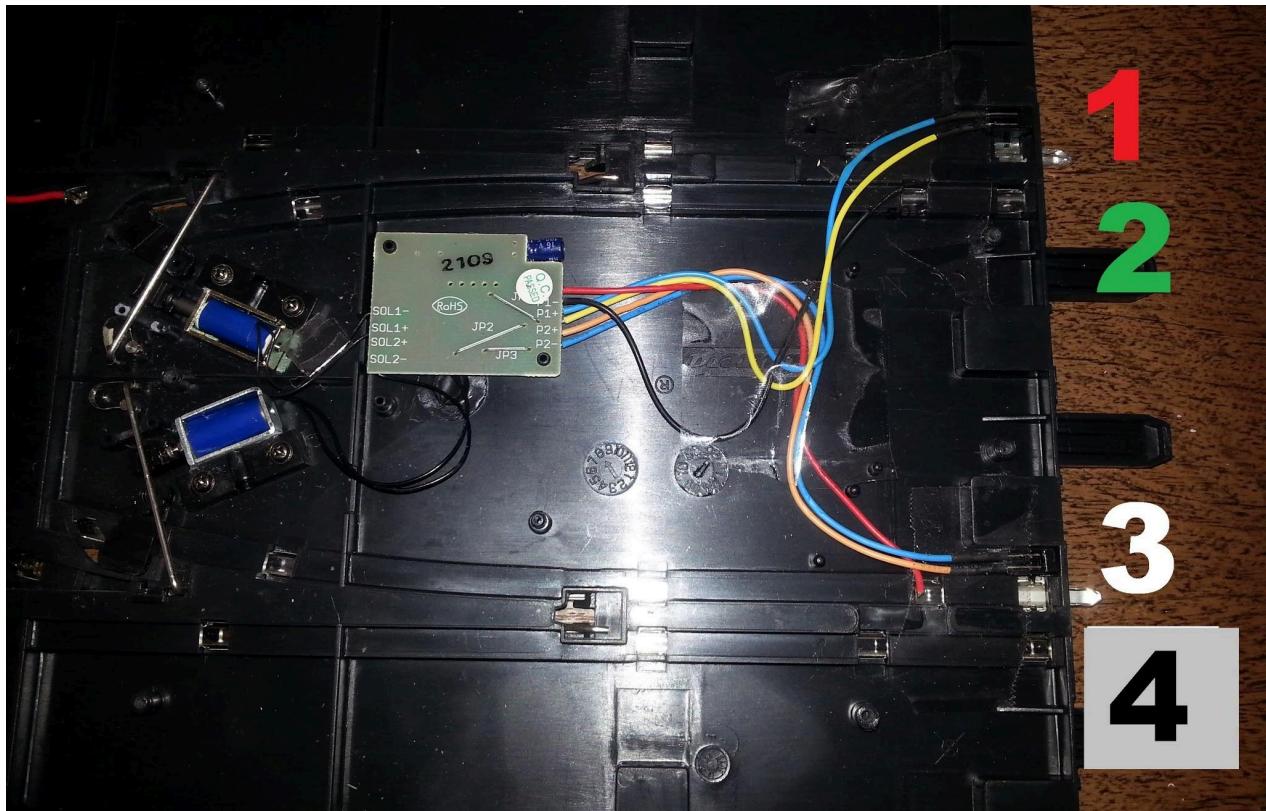
1. Take the flipper section of the Double lane changer and place it upside down with the sensors on the right. Remove the rear cover by taking out all (8 or 10) of the visible philips head screws and the 1 security torx screw under white label).



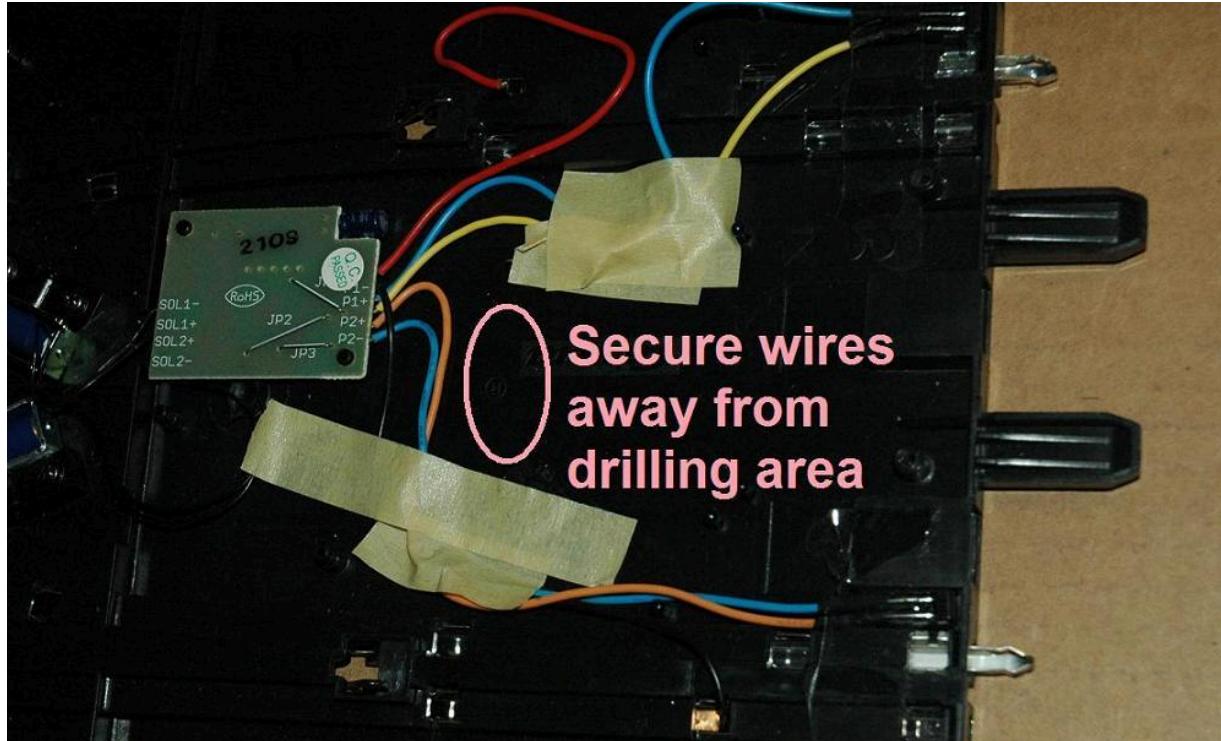
2. Remove the two short jumpers that connect to the inside rails closest to the track centerline. In the picture, these are the red jumper of the bottom lane and the black jumper of the top lane.



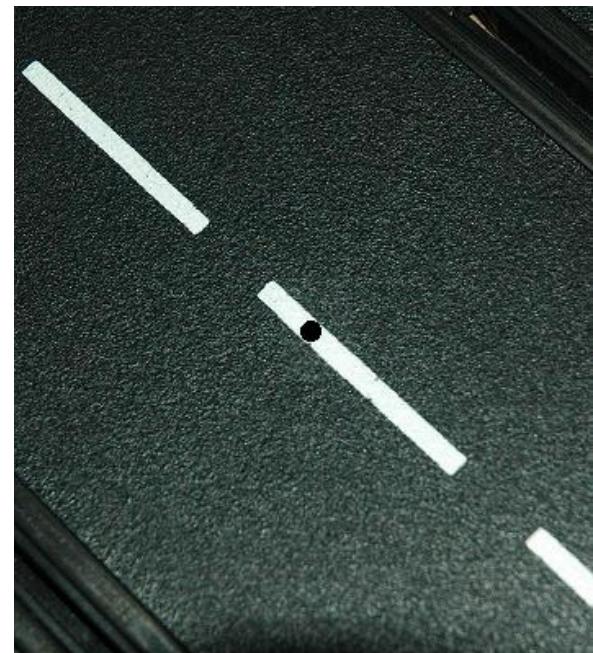
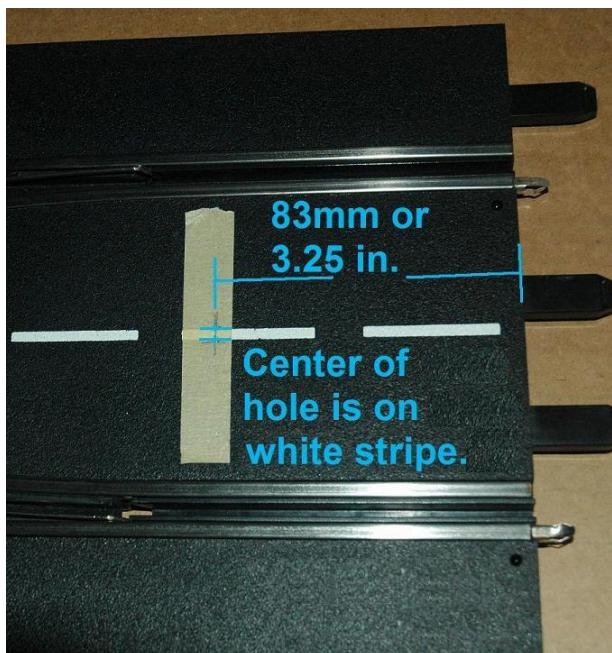
3. The numbers on the right side of the picture help identify each of the track rails. The factory red (+) wire needs to be located in rail #1. If it is in rail #3, move it to #1. The factory black (-) wire must go to rail #4. If it is in rail #2, move it to rail #4. In the image below, both of these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



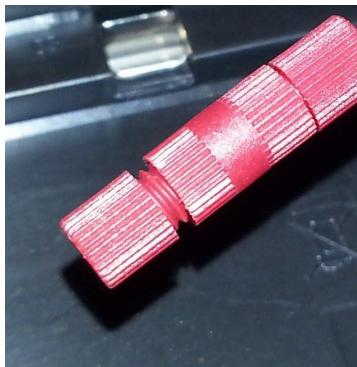
4. The Lane Gate Double will mount between the lanes. Examine your track section and cover plate for ribs, posts, or flanges that might restrict where you will locate the chip. For optional visual feedback from the Lane Gate, you'll need to drill a hole on the centerline of the track. There are two small 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.



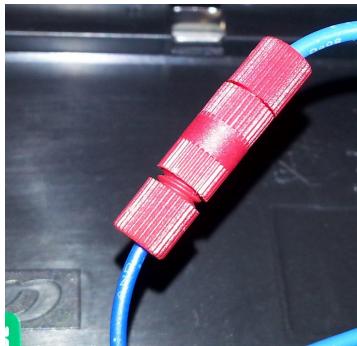
Measure, mark, and drill from the top of the track. Use a 3mm or 7/64" drill bit. End result should look like:



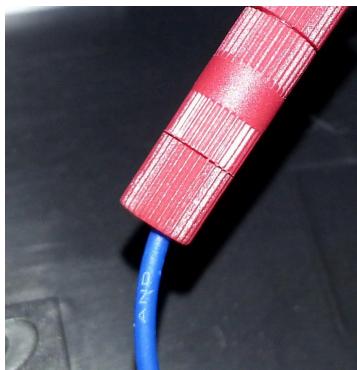
A quick “How-To” on Posi-Lock splices included with the Lane Gate [easy] products.



Unscrew the open end of the splice 2 turns.



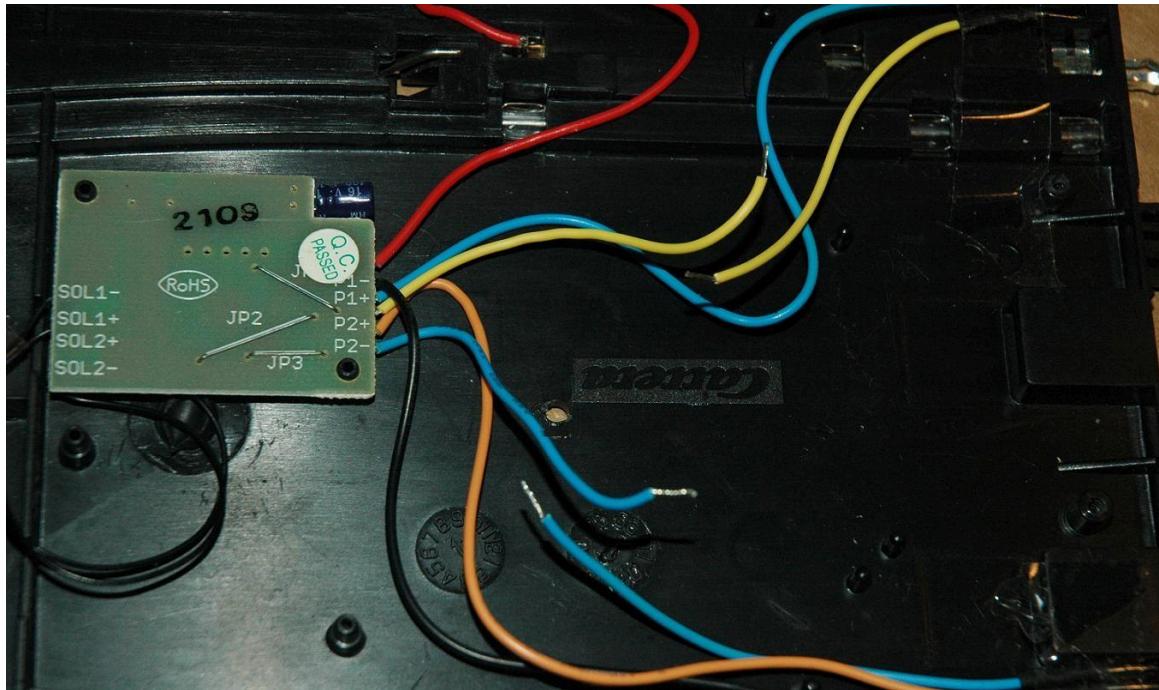
Push the bare wire into the end until it stops.



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.



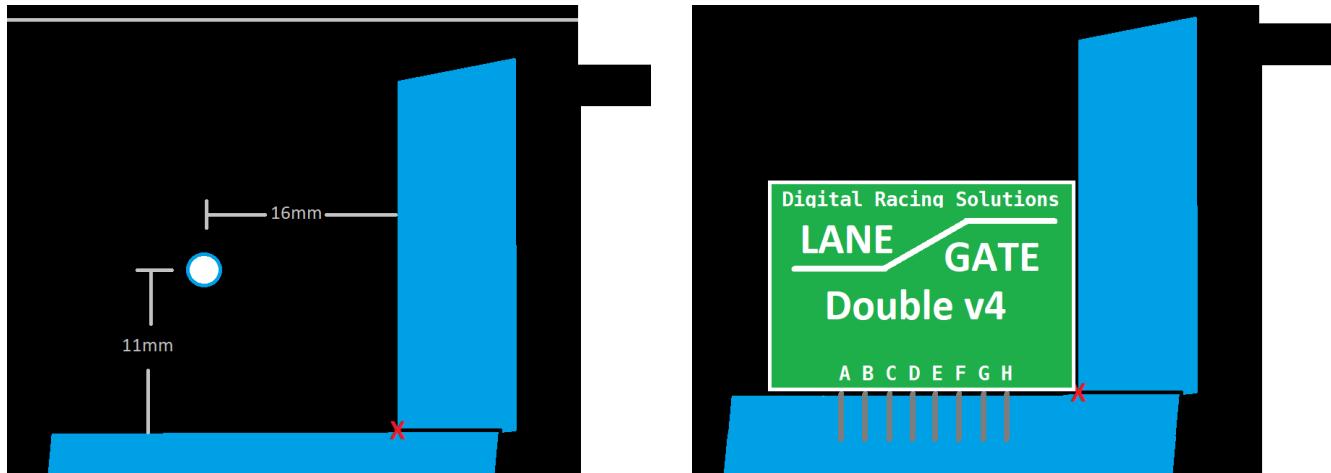
6. The color of the wires in the 8-wire pigtails of the Lane Gate Double is random. The important detail of each wire is its position/letter (A-H), which is printed on the edge of the Lane Gate board.

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

	Color	Connects to
A		Yellow wire from "P1+" on factory board
B		Blue wire from "P2-" on the factory board
C		Rail #1 (for digital only). For dual-mode, see page 8.
D		Rail #2
E		Rail #3
F		Rail #4 (for digital only). For dual-mode, see page 8.
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.

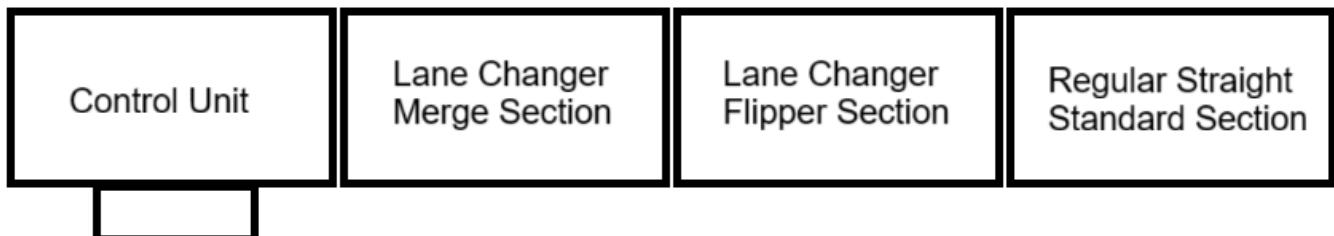
TECH: For the [tech] product, you can repurpose the clips from the jumpers removed in step 2, or piggyback the wires onto the clips that are wired to the factory board.

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. Sort out any installation issues **before** placing it in your layout.

It is important to test in an isolated manner that does not include the rest of your track layout. The test setup is four track sections. From right to left (same direction as the race circuit) begin with one full regular straight section, then the lane change flipper section, then the merge section, and lastly your Control Unit or Black Box section. Do not connect any additional track.



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. One LED should turn off when the car is put in that position. ID a second car and place it in the far lane, beside the first car. The other LED should now also be off. 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 and one LED should turn on. 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. Check that wires C & F were placed correctly.

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?

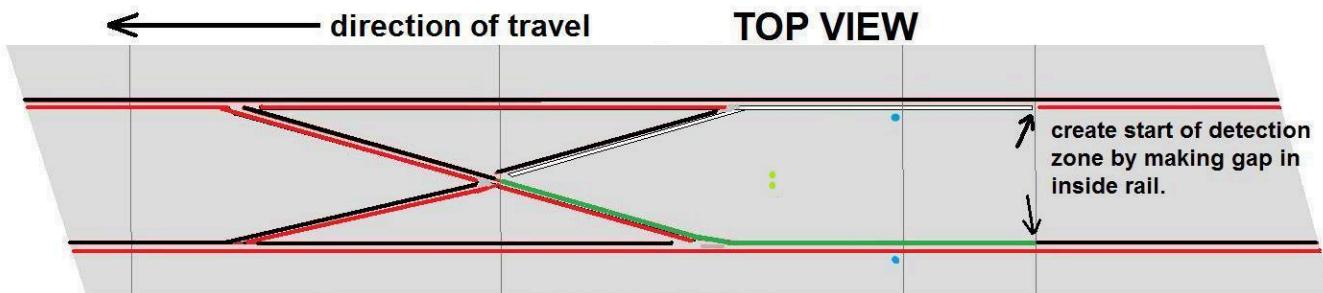
Lane changer flipper no longer works, but LED turns on/off as described in testing.

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.

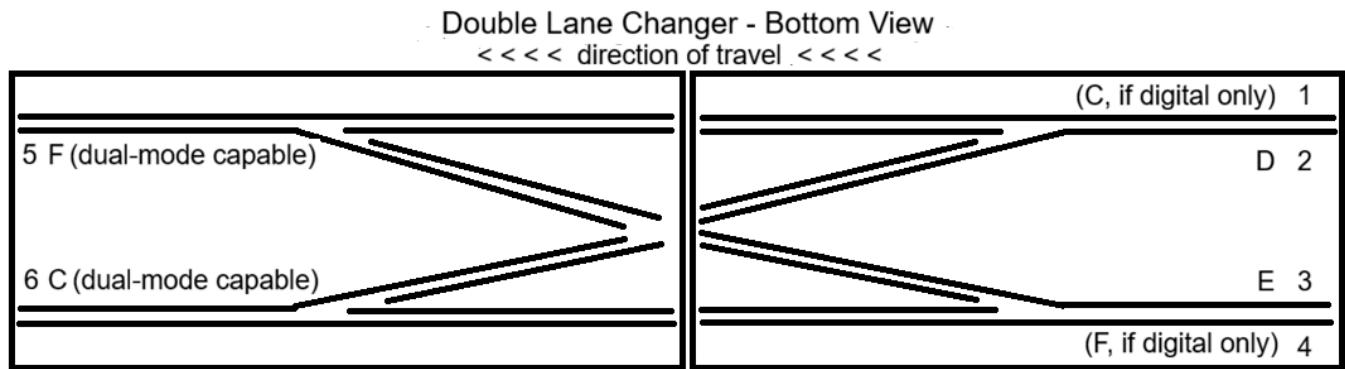


12. Creating the isolated rails means the track rails are no longer a continuous loop, so power taps/jumpers may need to be added. Choose their location carefully. Do not place a power tap on the isolated rails inside of the detection zone.

13. All done!

Modified installation process for dual-mode compatibility

Although designed for digital use, Lane Gate Double will work with dual-mode tracks. Lane changers are effectively disabled in analog mode, so 'compatibility' means Lane Gate Double does not interfere with nor will it be damaged by analog track use when installed properly. For dual-mode compatibility two connections need to be made in the merge/exit section as shown below.



Wire C must be extended and connected to rail #6 in the exit section.

Wire F must be extended and connected to rail #5 in the exit section.