Installation of Lane Gate RIGHT v3.x chip

Compare your Lane Gate Right board to this picture. If it has a Right v3.1, v3.2, or v3.2a designation, these are the correct instructions for installation. Instructions for all other versions are found on the Support page at digitalracingsolutions.com. All 3.x versions install in the same way. The different revisions reflect changes in how the boards are manufactured. All versions of Lane Gate Right are compatible with dual-mode tracks when wired appropriately.	

The DRS Lane Gate “Right” chip is for D124/D132 lane changers where cars can move from the left lane to the right lane only. That includes models #30345 Straight Type, #30362 Left Curve - In to Out, and #30365 Right Curve - Out to In

Tools required: #0 Phillips screwdriver
T9 Torx driver for security screw (or small flat blade)
Wire cutter/stripper
Tape or low-temp hot glue gun
Optional - drill and drill bit (3mm or 7/64”)

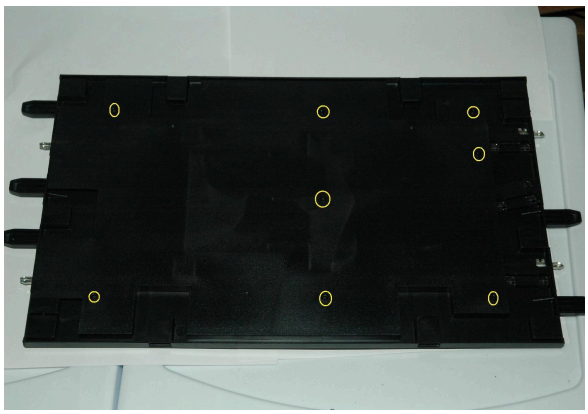
Warning!

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

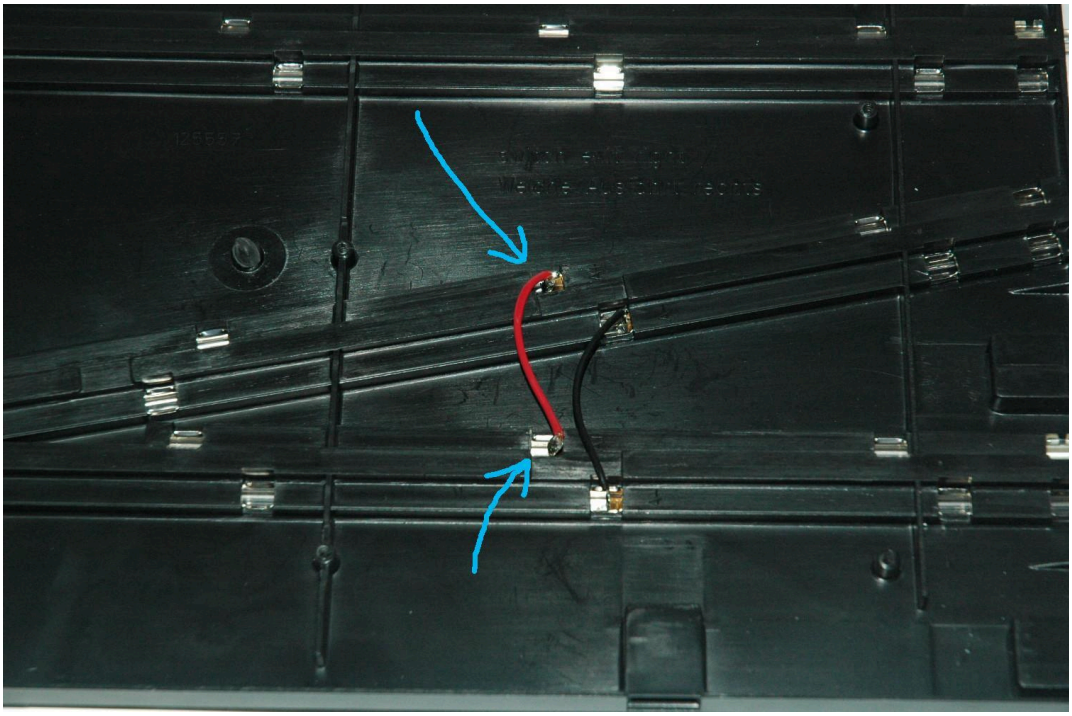
Ready? Let’s get started. Both track sections of the lane changer need to be worked on.

1. Begin with the merge half. This is the section that does not have the sensor and flipper.

2. Remove the back cover plate. Some have 8 screws, others have 10, but all are visible.



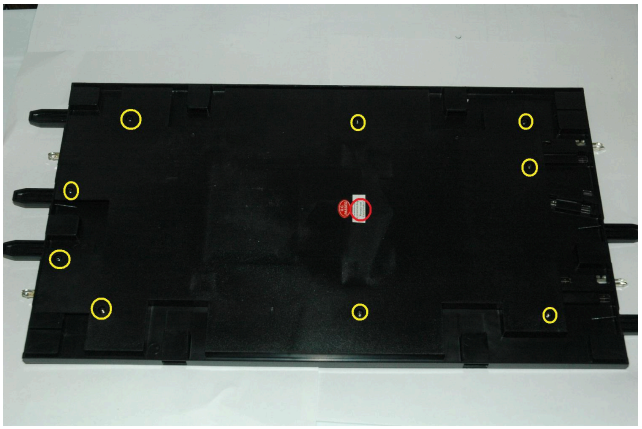
3. Isolate the inside rail of the destination lane by removing the jumper wire as shown. It is usually a red wire. On curved lane changers that have a long and short half for each jumper, remove only the short red half.



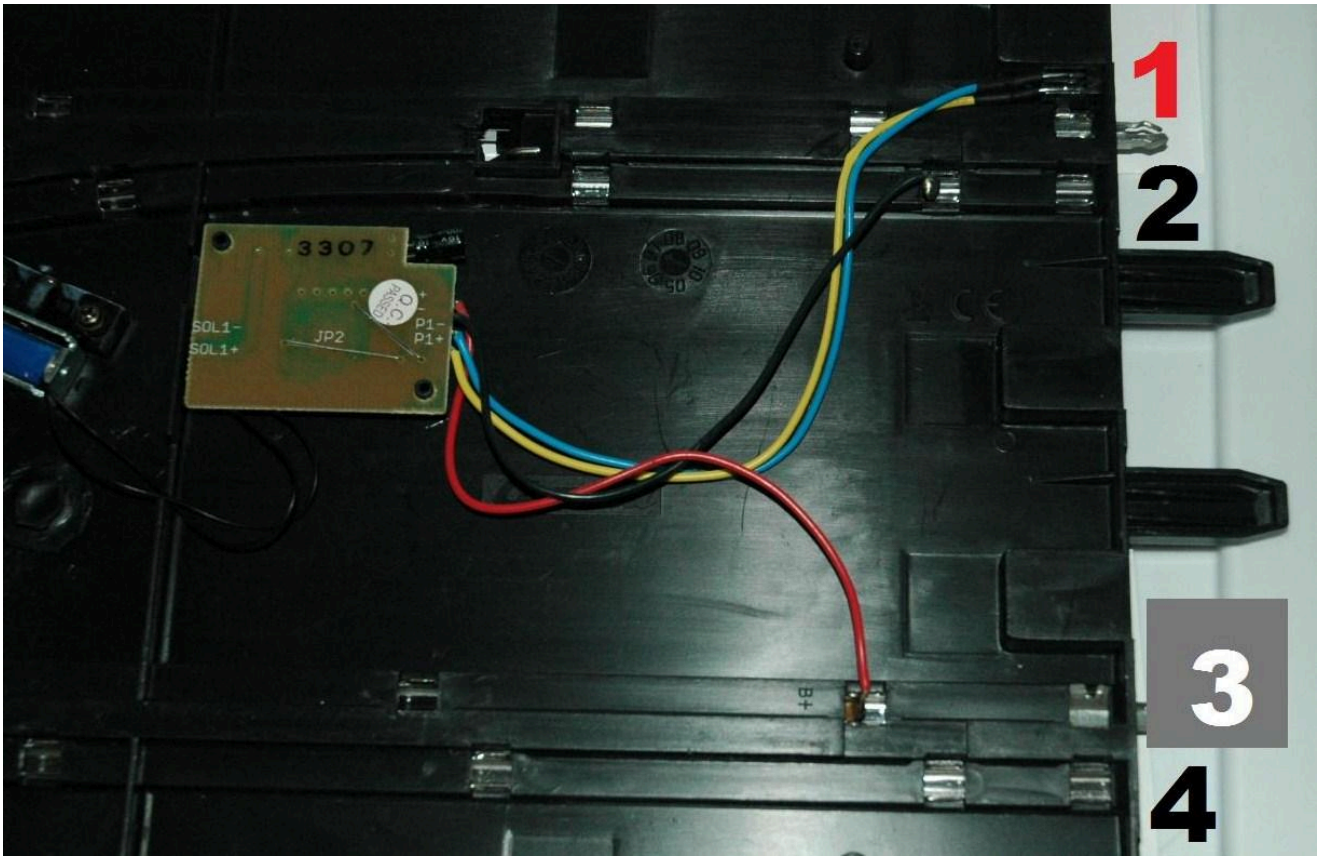
4. For digital tracks, we're done modifying the exit section so go ahead and re-install the back cover plate. If you are planning for dual-mode use, leave the cover off and set this section aside.

5. Now take the flipper section and start by removing its back plate, held by 8-10 screws.

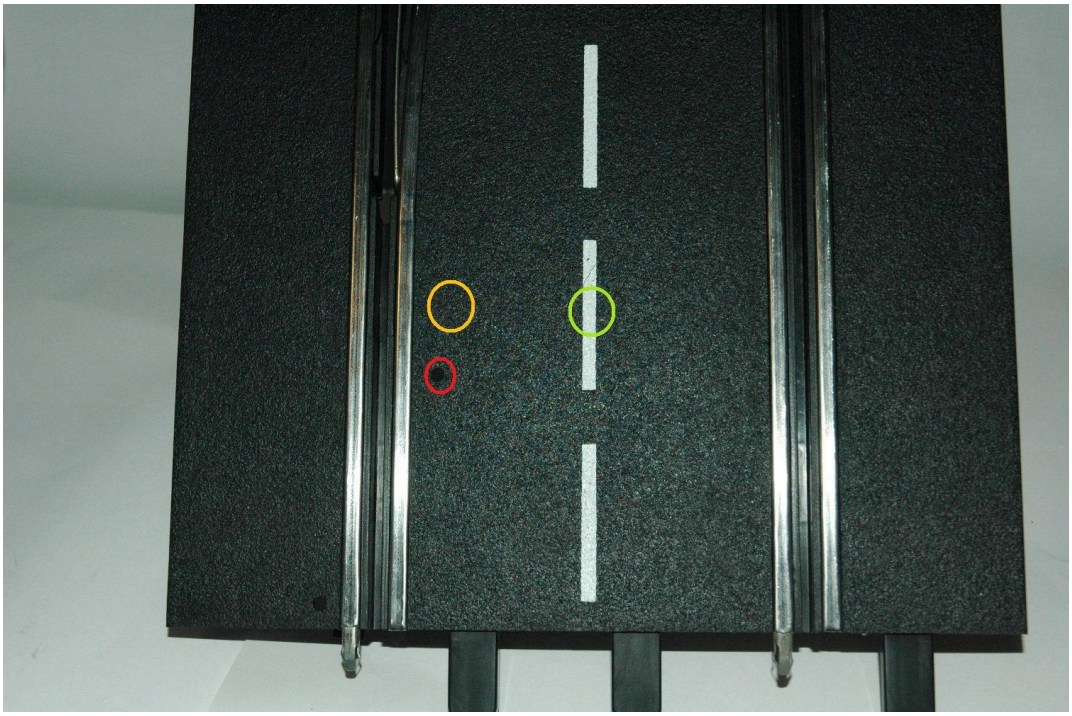
6. A torx T9 security screw is hidden under the white label.



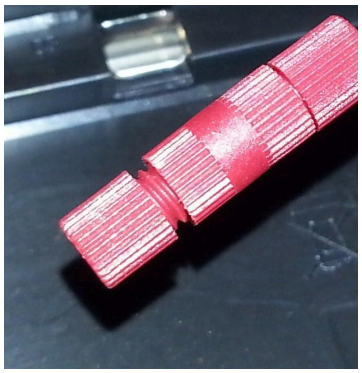
7. Place the section so that the IR sensor (with blue/yellow wires) is at top right. The numbers on the right side of the picture help identify each of the track rails. The factory black (-) wire may be located rail #2 or #4 and either position is acceptable. The factory red (+) wire must go to rail #1. If in rail #3 as shown below, move it to rail #1.



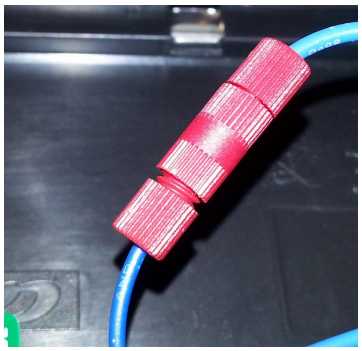
8. You can skip step 8 if you don’t need or want to see the Lane Gate LED indicator.
Determine where you want to locate the indicator LED. For easiest installation, LED would be in the centerline of track, at the middle of the 2nd white stripe. If you prefer, it can be close to the inside rail. Hold wiring out of harm’s way and drill a 3mm or 7/64” hole, drilling from the “top” surface on the track (makes a neater hole). Green circle shows the easiest location. Yellow circle location is OK as an option, but do not go closer to the rail or closer to the end of the track section (red circle is bad).



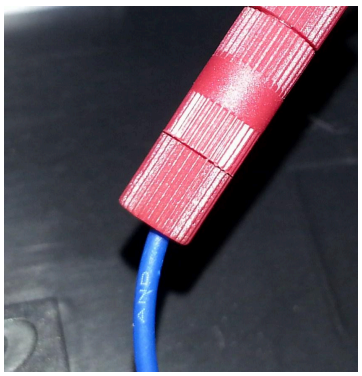
A quick “How-To” on Posi-Lock splices included with the Lane Gate [easy] products.



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.

9. The color of the wires in the 5-wire pigtail of the Lane Gate Left is random. The important detail of each wire is its position/letter (A-E), 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 the factory board
B		Rail #1 (works for digital only). For dual-mode, see page 8.
C		Rail #3
D		Rail #2 or Rail #4. Can use either for digital. Must be Rail #4 for dual-mode.
E		Yellow wire from sensor by Rail #1

10. Align LED with hole (if you drilled one). Secure Lane Gate chip with hot glue or tape.

11. Locate the factory wires to the IR sensor. Cut the yellow wire at its middle. Strip 3/16” from each cut end.

12. Connect each pigtail wire according to the chart from step 9.

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

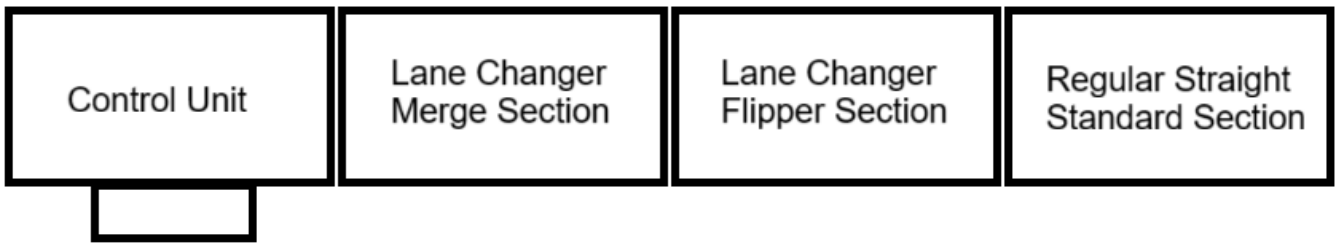
TECH: For the [tech] product, you can repurpose the clips from the jumper removed in step 3, or piggyback the wires onto the clips that are wired to the factory board.

When all connections have been made, connect the 5-wire pigtail to the Lane Gate Left board if it is not already attached. Be sure that the color coding matches up with the letters on the Lane Gate Left board per the chart you made in step 6.

13. Secure loose wiring with tape or hot glue and replace the cover.

14. **Sort out any installation issues <u>before</u> 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 section with the newly installed Lane Gate, then the modified exit section, and lastly your Control Unit or Black Box section. <u>Do not</u> connect any additional track.



Turn on the Black Box or Control Unit. The LED on the lane changer should be on. Place a car ahead (to the right) of the lane changer in the far lane (the detection zone). The LED should turn off. ID a second car and place it in the near lane, adjacent to the first car. 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 should turn on. Drive the second car and again try to change lanes. The flipper should function normally when the LED is on.

TROUBLESHOOTING

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

Are you sure you used a RIGHT chip in a RIGHT lane changer, following the RIGHT directions?
You might have reversed the switch lane connections: “B” to #1, “D” to #2 or #4.
Is the “C” wire connected to the proper rail? “C” must connect to #3.

No LED, no noise, no nothing:

Chip is not getting power. Check placement of Wires B & D.
Did you happen to install the Lane Change section facing the wrong direction?

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

The detection zone is not isolated. Remove jumper from the exit section (steps 3 & 4)
This also happens if you assemble the test sections with the Control Unit on the approach end.

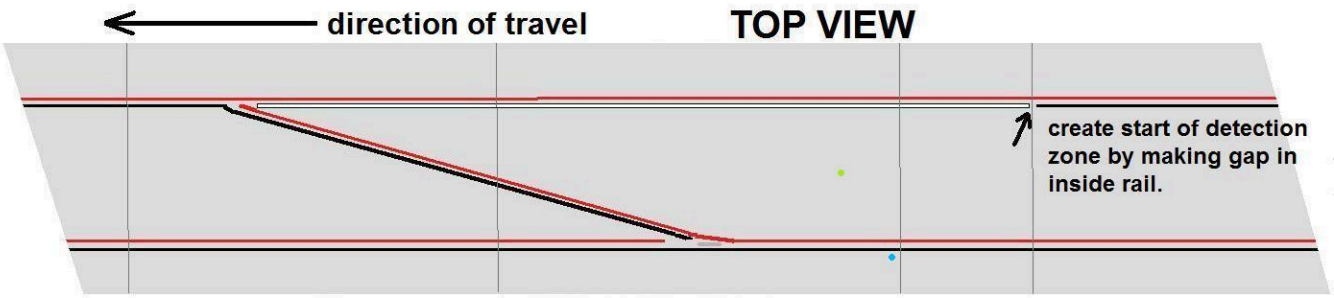
Lane changer flipper no longer works, but LED turns on/off as described in testing.

Double check step 12. “A” and “E” are likely swapped.

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

This is achieved by isolating the inside rail of the right lane as it approaches the lane changer. The modification you made to the exit section in step 3 took care of isolating one end. On the approach end, this requires making a gap on the inside rail of the target lane (#3 shown in step 7).

Depending on how long of a detection zone you want, this could be as simple as removing the joiner prong from the inside rail 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 rail of a track section.

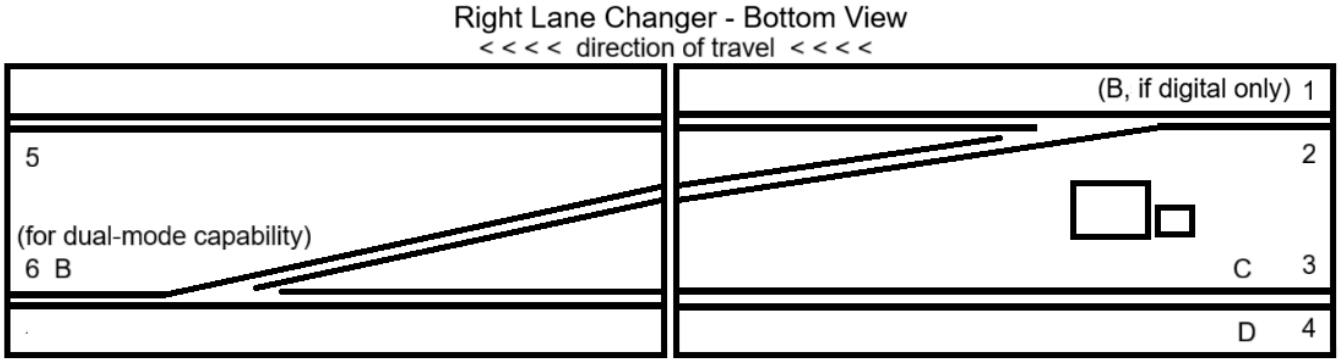


16. Creating the isolated rails means the track rails are no longer a continuous loop, so power taps/jumpers may need to be added. Choose their location carefully. Do not place a power tap on the isolated rails inside of the detection zone.

17. All done!

Modified installation process for dual-mode compatibility

Although designed for digital use, Lane Gate Right will work with dual-mode tracks. Lane changers are effectively disabled in analog mode, so ‘compatibility’ means Lane Gate Right does not interfere with nor will it be damaged by analog track use when installed properly. For dual-mode compatibility one connection must be made in the merge/exit section as shown below.



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

Wire D must go to rail #4.