Installation of Lane Gate v3 & v3.1 LEFT chip

Compare your Lane Gate Left board to this picture. If it has the v3 or v3.1 designation, these are the correct instructions for installation. If not, you'll find instructions for all other versions on the Support page at digitalracingsolutions.com. Versions 3 and 3.1 are the same except for changes in the manufacturing process.	

The DRS Lane Gate "Left" chip is for Carrera D124/D32 lane changers where cars can move from the right lane to the left lane only. That includes models #30343 Straight Type, #30363 Left Curve - Out to In, and #30364 Right Curve - In to Out.

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

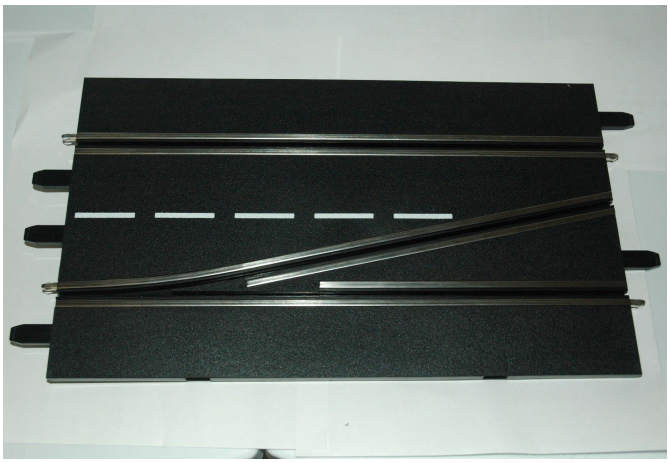
Warning!

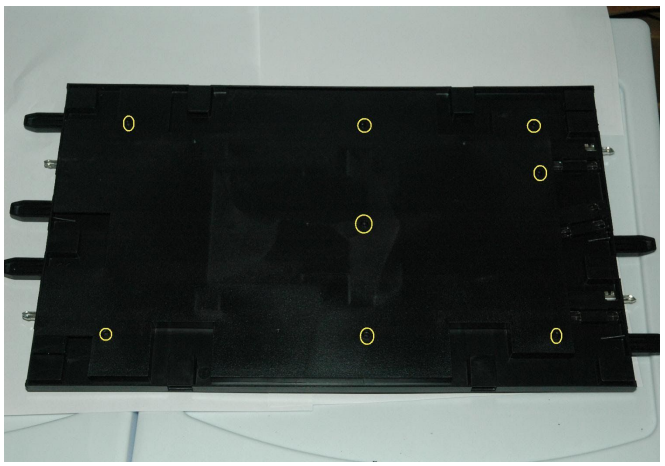
The process of disassembling and modifying your lane changer will void its warranty. You are advised to thoroughly test any new lane changer to verify it works properly while it is still under warranty.

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

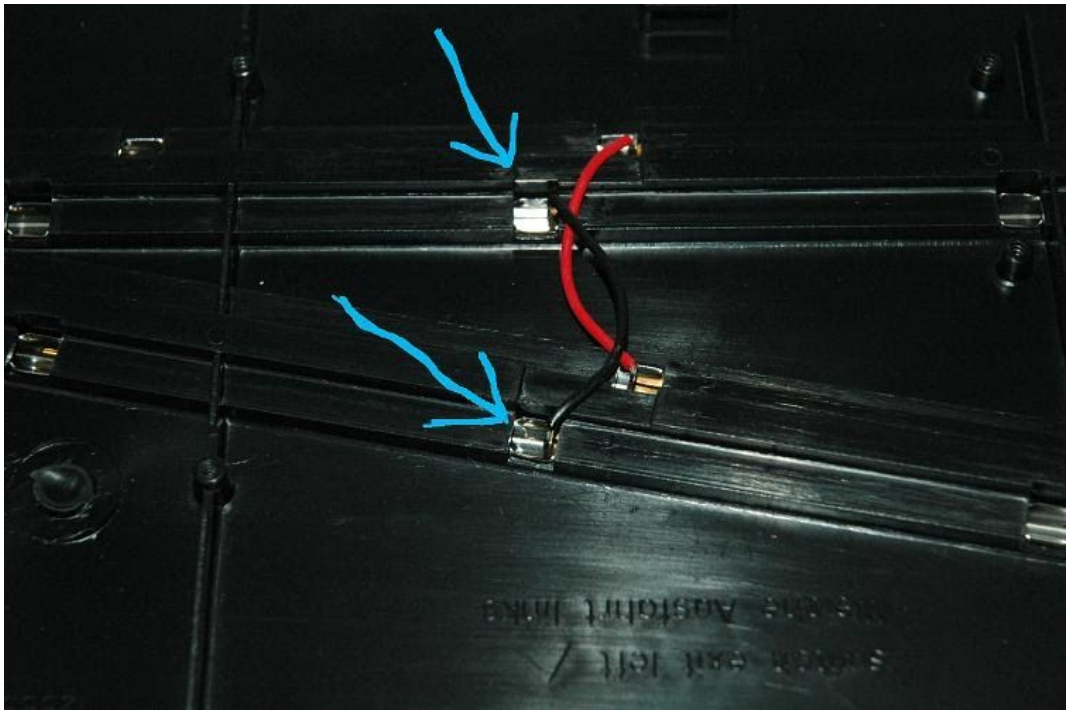
1. Begin with the exit half. This is the section that does not have the sensor and flipper.

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

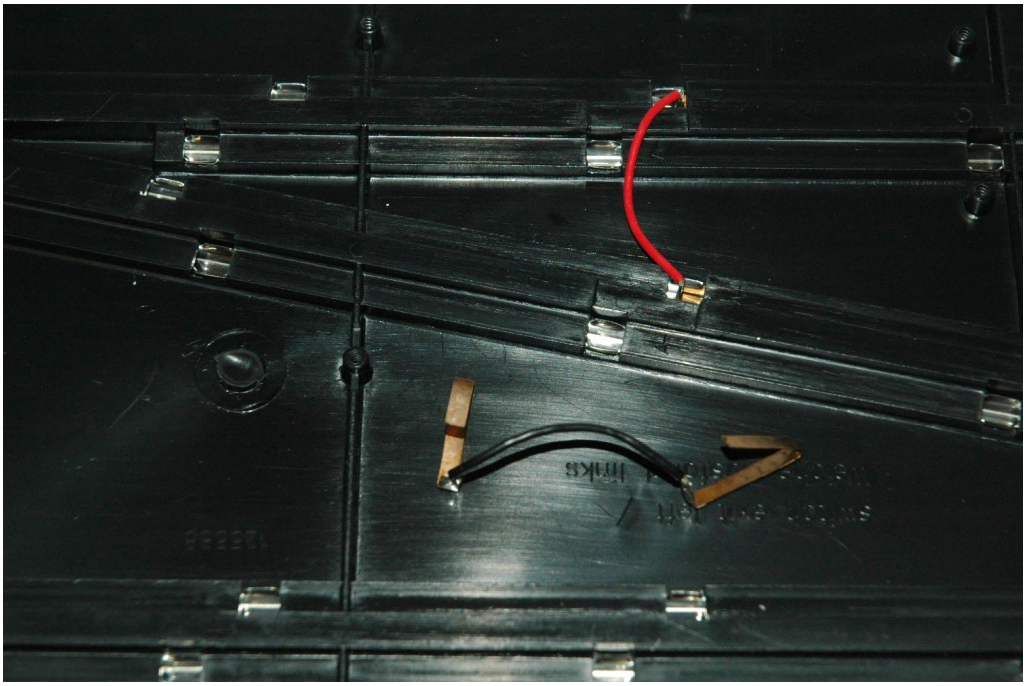




3. Isolate the short inside rail by removing the jumper wire as shown. It is usually a black wire.

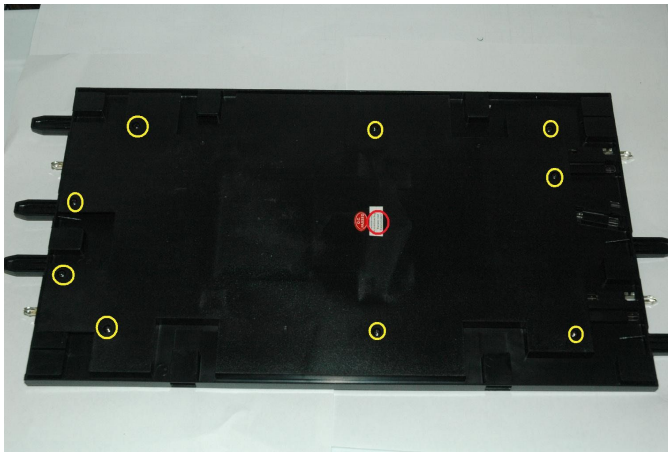


4. After removing the jumper, re-install the back cover plate. You are done modifying the exit half.

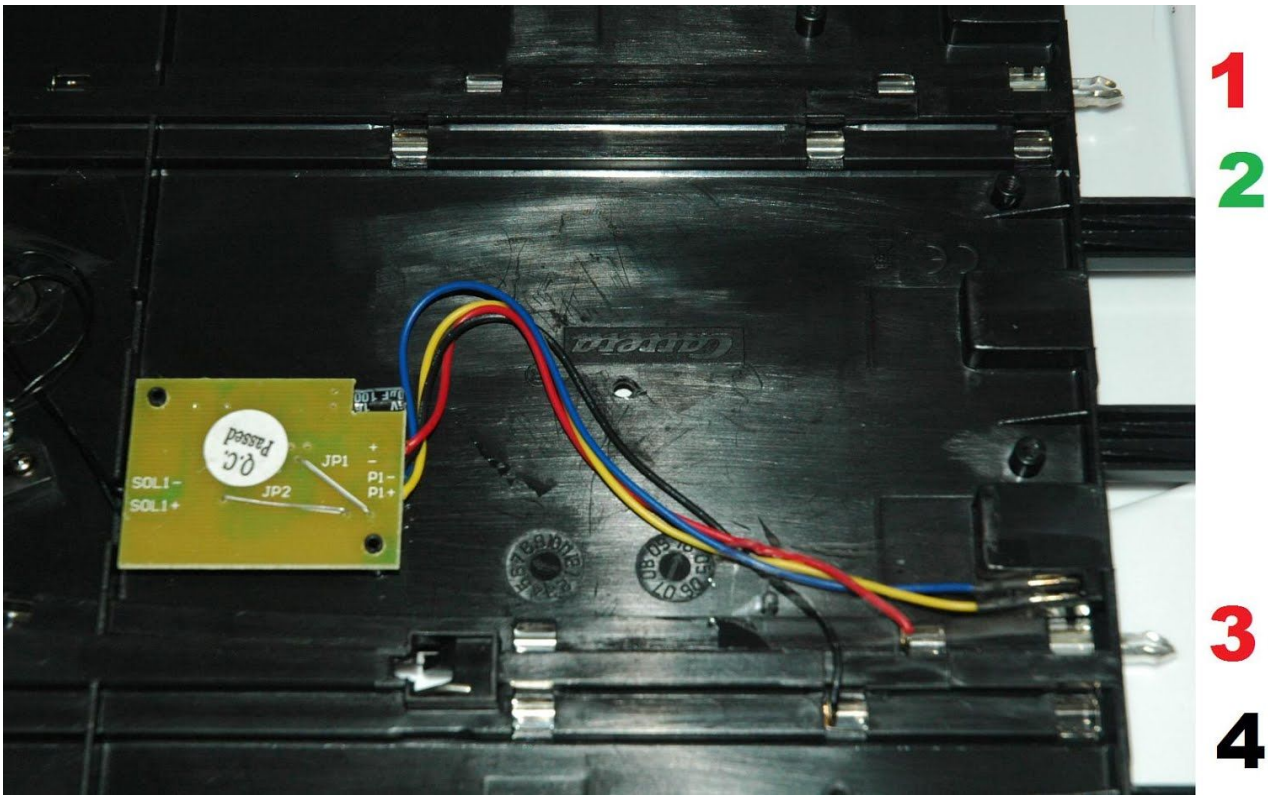


5. Now take the entry section and start by removing its back plate, held by 8-10 screws.

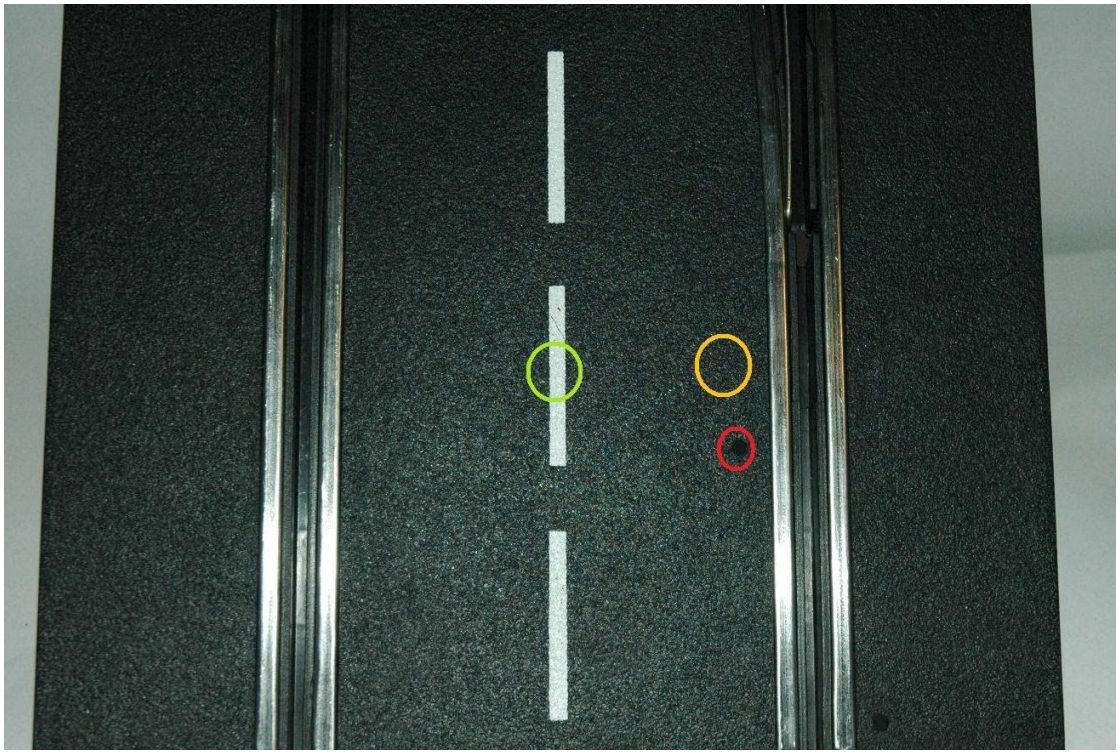
6. A torx T9 security screw is hidden under the white label.



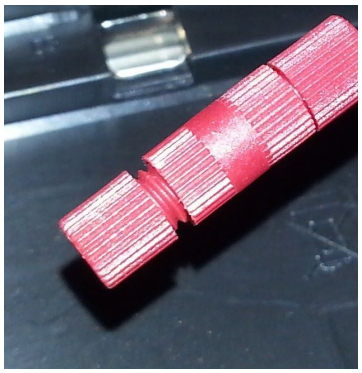
7. Rotate the section so that the IR sensor (with blue/yellow wires) is at bottom right. The numbers on the right side of the picture help identify each of the track rails. The factory red (+) wire may be located in rail #1 or #3 and either position is acceptable. The factory black (-) wire must go to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



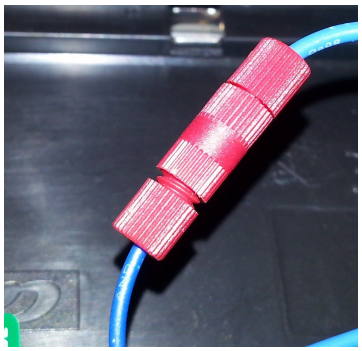
8. Determine where you want to locate the indicator LED. For easiest installation, LED would be in the centerline of track, at the middle of the 2nd white stripe. If you prefer, it can be close to the inside rail. Hold wiring out of harm's way and drill a 3mm or 7/64" hole, drilling from the "top" surface 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 track section (red circle is bad).



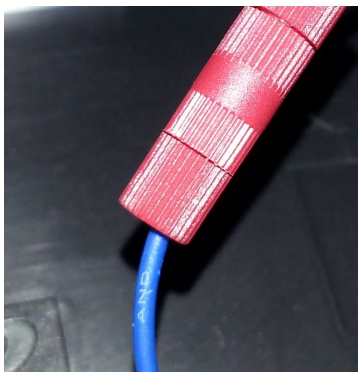
A quick “How-To” on Posi-Lock splices included with the Lane Gate [easy] products.



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 note the colors of the pigtail provided to fill in the chart below.

	Color	Connects to
A		Blue wire from sensor by rail #3
B		Rail #1 or Rail #3 (can use either)
C		Rail #2
D		Rail #4
E		Blue wire from "P1-" on the factory board

10. Align LED with hole. Secure Lane Gate chip with hot glue or tape.

11. Locate the factory wires to the IR sensor. Cut the blue 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 [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 install cover.

14. **Test your modified LEFT lane changer <u>before</u> 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. <u>Do not</u> 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. The green LED on the lane changer should light up. Place a car ahead (to the right) of the lane changer in the near lane (the detection zone). The LED should go out. ID a second car and place it in the far 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 light up. 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 LEFT chip in a LEFT lane changer, following the LEFT directions?
You might have reversed the lane power connections: red to #1 or #3, black to #4.
Is the "C" wire connected to the proper rail? "C" must connect to #2.

No LED, no noise, no nothing:

Chip is not getting power. "D" wire needs to be on outer rail of switched lane #4.

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

Detection zone is not isolated. Remove jumper from the exit section (steps 3 & 4)

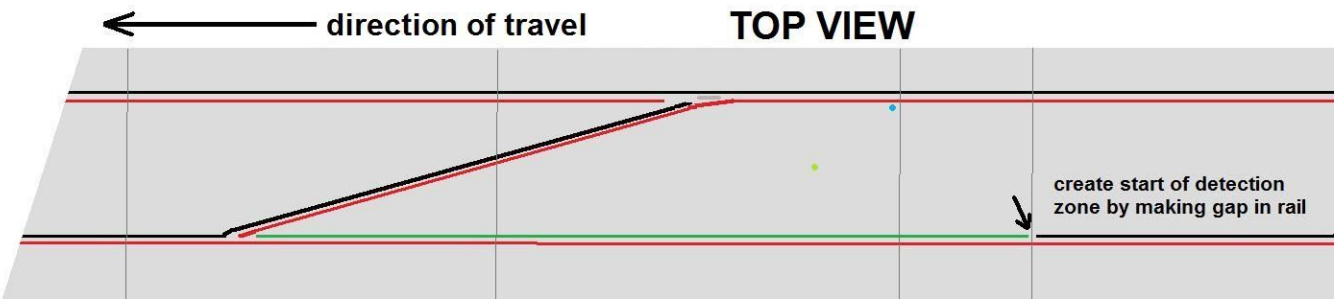
Lane changer flipper no longer works, but LED turns on/off as described in testing.

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 left 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 (#2 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. 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 rail inside of the detection zone will defeat the anti-collision circuit. Likewise, creating the isolated rail means the track is no longer a continuous loop, so power taps/jumpers will most likely be needed in some spots.

17. All done!