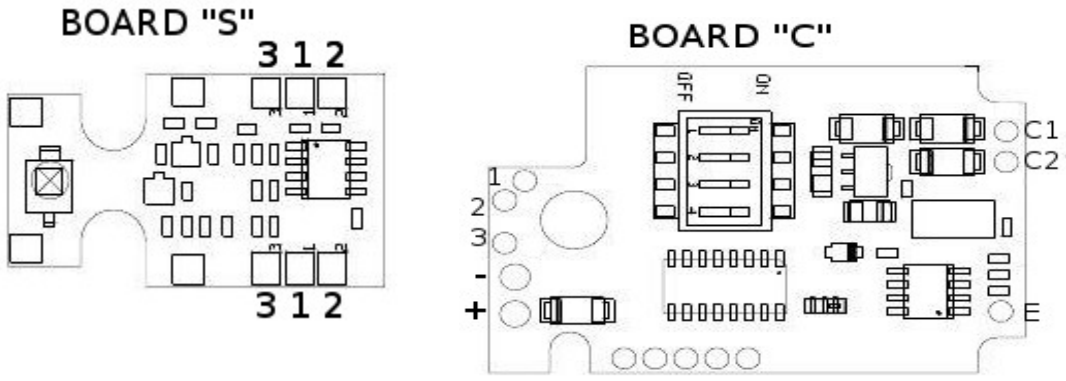
As mentioned in the *O2 lane changer* manual, it is possible to leave in place the original lane changer (Ninco, Carrera) and install it along the O2 unit.

Regarding the Ninco Digital system, it is necessary to build the wire connection shown in *Picture 4*.

Proceed performing the following steps:

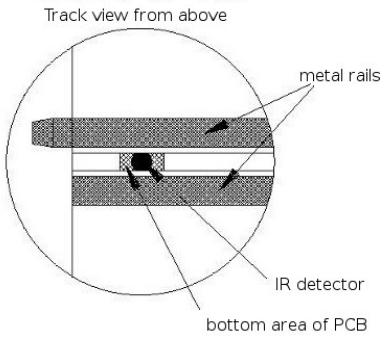
1. remove the bottom cover from the lane changer piece of track (from now on LC);
2. unsolder only the cables of the coil from the original Ninco Digital lane changer board;
3. keep all the other electrical connection of the Ninco Digital lane changer board to the LC;
4. oXigen C, S and Ninco Digital boards must be joined with the provided cables. Board S has two sets of pins that can be used, depending on the 'hand' (right, left) of installation in the LC, numbered from 1 to 3



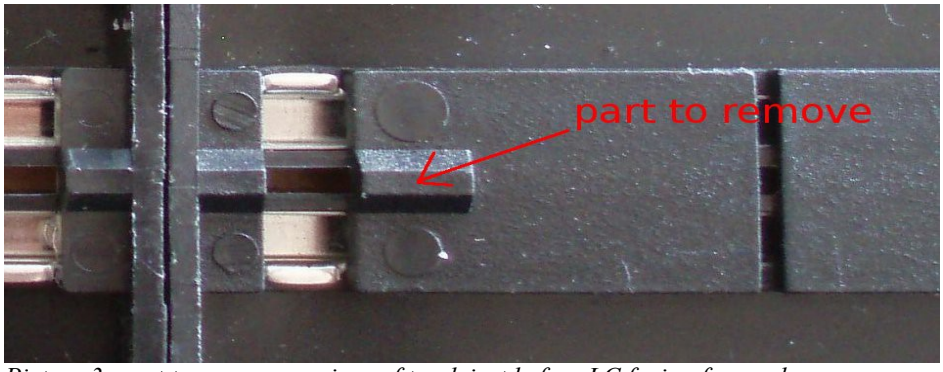
Picture 1: oXigen lane changer boards

Board 'C'	To
Pad '1'	Pad '1' Board 'S'
Pad '2'	Pad '2' Board 'S'
Pad '3'	Pad '3' Board 'S'
Pad '-'	Track ground rail (in general, right rail, but may vary depending on your system)
Pad '+'	Track live rail (in general, left rail, but may vary depending on your system)
Pad 'C1'	1st coil terminal (coat on coil wire has to be removed)
Pad 'C2'	2nd coil terminal (coat on coil wire has to be removed)
Pad 'E'	Pad 'TR1' (just closed to 'J3') Ninco Digital lane changer board

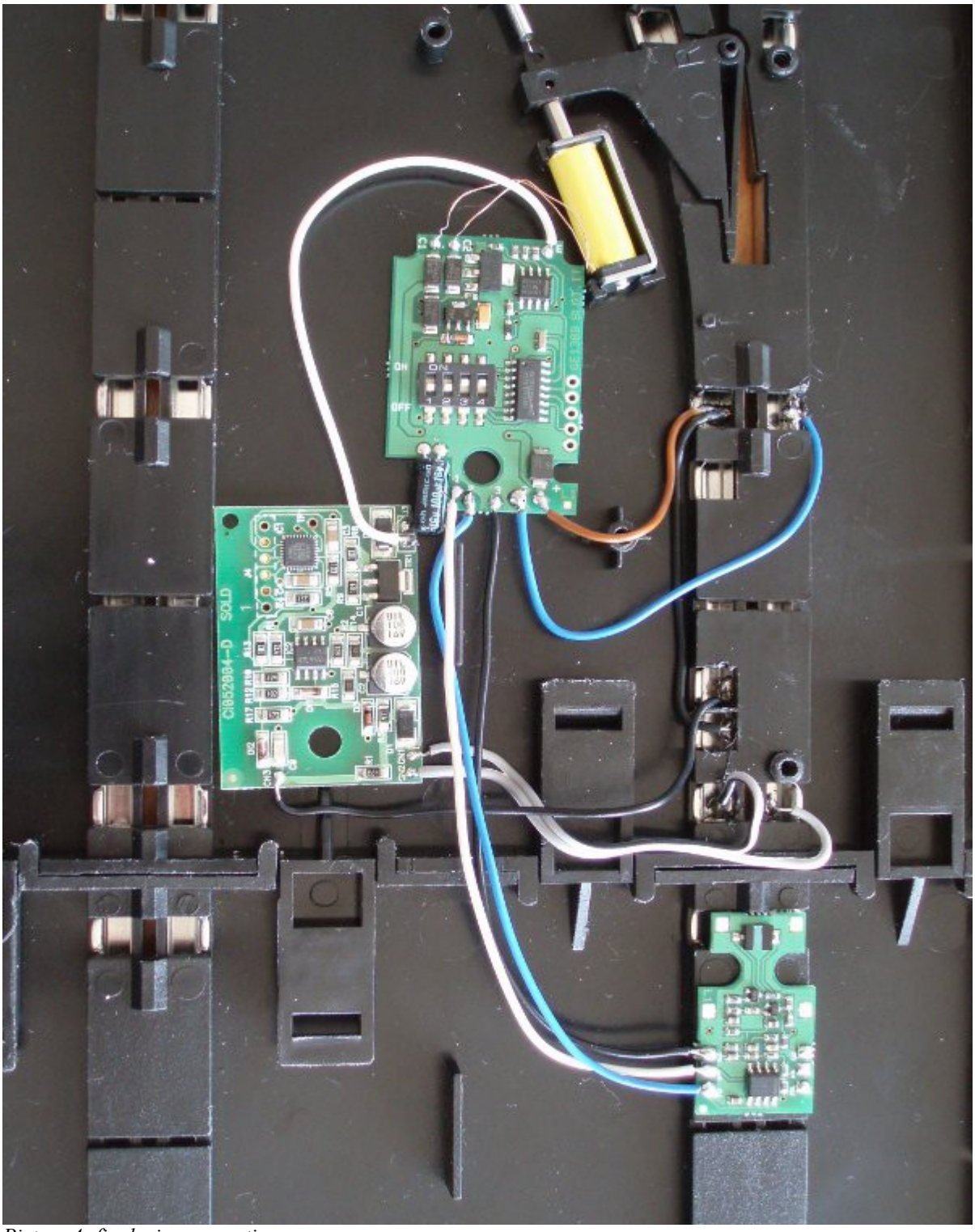
5. glue the board 'S' so that the sensor area of the sensor chip (the “black dot”), on the bottom side of the board, is placed between rails, at the end of the piece of track just before the LC facing forward, according to the following Picture 2. Note: it is necessary to remove the plastic part indicated in Picture 3, so that board 'S' adheres perfectly with the LC surface.



Picture 2: oXigen board 'S' mounting



Picture 3: part to remove on piece of track just before LC facing forward



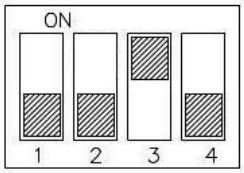
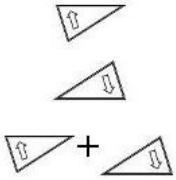
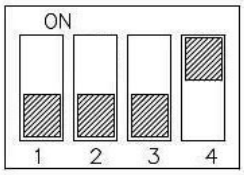
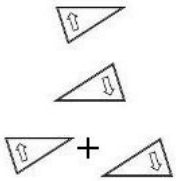
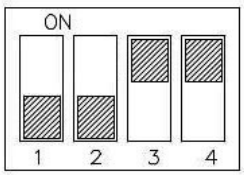
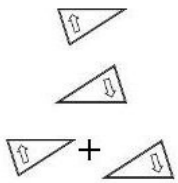
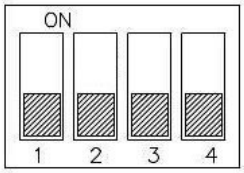
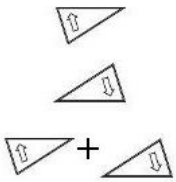
Picture 4: final wire connection

Setup

To make oXigen and Ninco Digital working side by side, the dip-switches numbered 1 and 2 on board 'C' have to be both on OFF position, whereas the positions of the dip-switches numbered 3 and 4 apply only to oXigen system (with Ninco Digital the lane changer is always active).

oXigen working mode

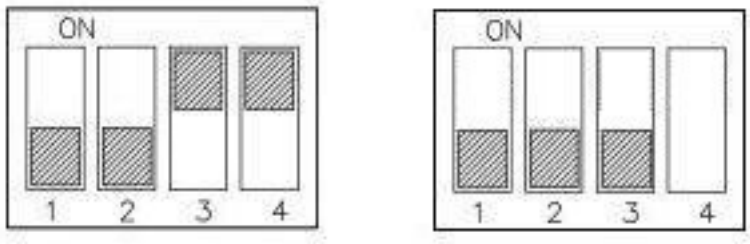
oXigen can do a 'Selective Lane Changing' that is, change left or right depending on which button is pressed on SCP controller. The oXigen driver for the lane changer reacts when a 'up' or 'down' button is pressed according to positions of dip-switches numbered 3 and 4 as shown in the table below.

dip switch	arrow buttons on SCP1	explanation
	 NO LANE CHANGE CHANGE LANE CHANGE LANE	3=on, 4=off: change lane when 'down', or both buttons, are pressed
	 CHANGE LANE NO LANE CHANGE CHANGE LANE	3=off, 4=on: change lane when 'up', or both buttons, are pressed
	 CHANGE LANE CHANGE LANE CHANGE LANE	3=on, 4=on: change in any case when any of the buttons are pressed. SSD compatible mode
	 NO LANE CHANGE NO LANE CHANGE NO LANE CHANGE	lane changer is disabled

Picture 5: dip switch setup for oXigen working mode

Ninco working mode

In Ninco working mode, the 'Selective Lane Changing' is not available because Ninco controllers don't support it. The only possible configurations are LC enabled or LC disabled as reported in picture below.



Picture 6: LC enabled (left) – LC disabled (right)

Appendix

In case of double LC (X type), it is necessary to use two oXigen driver circuits, one for each coil. Reported below the wire connections of the two oXigen driver circuits to Ninco Digital lane changer board for double LC.

1st Board 'C'	To
Pad '1'	Pad '1' Board 'S'
Pad '2'	Pad '2' Board 'S'
Pad '3'	Pad '3' Board 'S'
Pad '-'	Track ground rail (in general, right rail, but may vary depending on your system)
Pad '+'	Track live rail (in general, left rail, but may vary depending on your system)
Pad 'C1'	1st coil terminal (coat on coil wire has to be removed)
Pad 'C2'	2nd coil terminal (coat on coil wire has to be removed)
Pad 'E'	Pad just closed to 'J4' Ninco Digital lane changer board

2nd Board 'C'	To
Pad '1'	Pad '1' Board 'S'
Pad '2'	Pad '2' Board 'S'
Pad '3'	Pad '3' Board 'S'
Pad '-'	Track ground rail (in general, right rail, but may vary depending on your system)
Pad '+'	Track live rail (in general, left rail, but may vary depending on your system)
Pad 'C1'	1st coil terminal (coat on coil wire has to be removed)
Pad 'C2'	2nd coil terminal (coat on coil wire has to be removed)
Pad 'E'	Pad just closed to 'J5' Ninco Digital lane changer board