

# London Double Decker Bus Lighting Kit

Here is the instructions document for the LEGO London Double Decker LED lighting kit. Please read and follow the steps carefully to ensure this lighting kit is installed properly.

## Package contents:

- 10x White 30cm Dot Lights
- 2x White 15cm Dot Lights
- 4x White Strip Lights
- 1x 6-Port Expansion Board
- 1x 12-Port Expansion Board
- 1x 30cm Connecting Cable
- 4x 15cm Connecting Cables
- 1x Flat Battery Pack (requires 2x CR2032 batteries)
- 2x Adhesive Squares

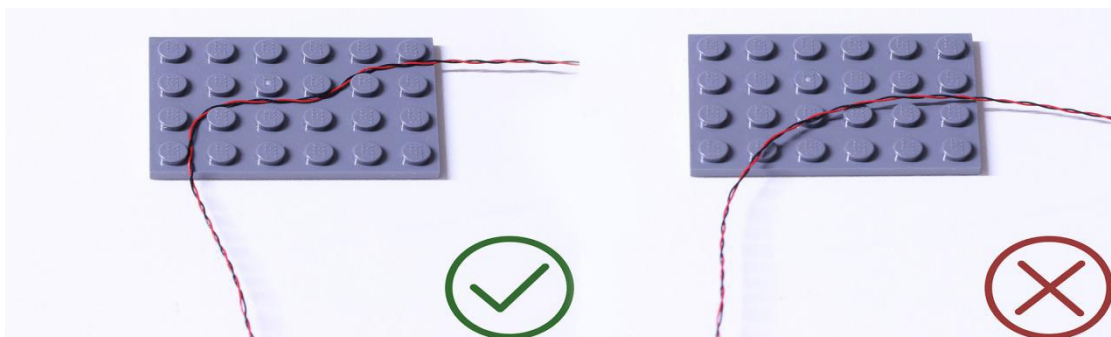
## Plate Pieces:

- 4x Plate 1x6 (for mounting striplights)
- 4x Plate 1x1 (trans red)
- 2x Plate 1x1 (trans orange)
- 1x Round Plate (trans clear)
- 1x Plate 2x4 (black)

## Note:

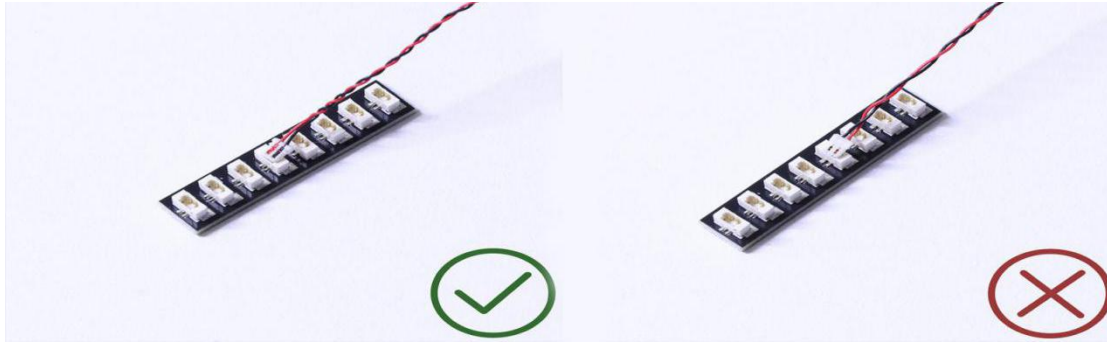
Place wires on the surface or under the LEGO building blocks.

The wire can be placed between the building blocks or under the block, but they should be placed between the studs correctly.

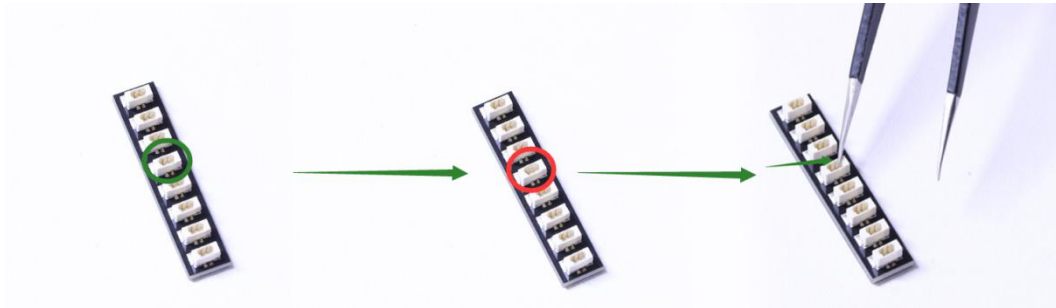


Insert the connectors to the ports.

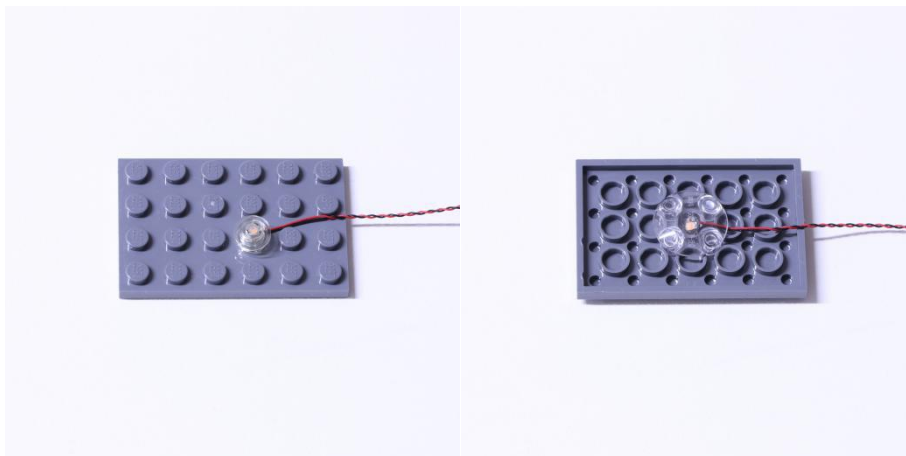
Be careful when you are operating, there's only one correct way to insert, make sure the expansion board is upward, find the soldered "=" sign on the left of the port. When you are inserting, the side which the wires can be seen should be faced to the "=" sign and if you feel hard to insert, please stop, and don't force it, for that may result in bent pins inside the port or overheating of the expansion board.



At this point, use the tweezers to straighten the bent pins.

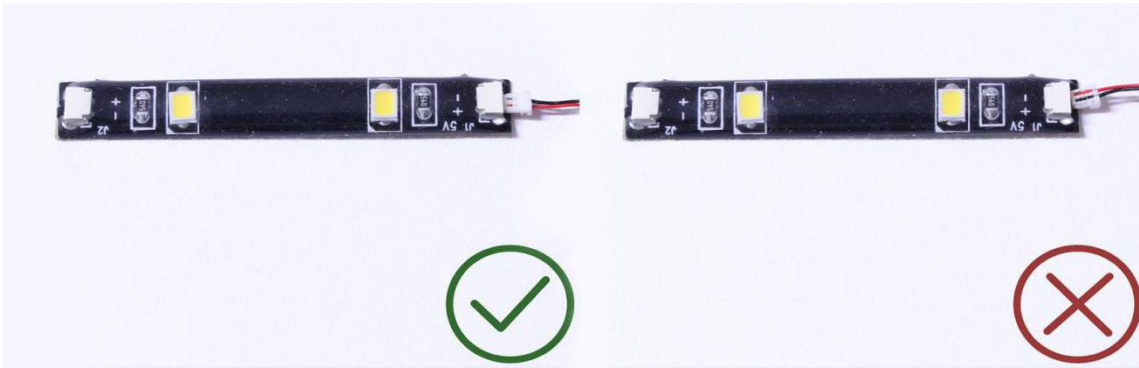


When installing dot lights, make sure they are correctly placed (Yellow LED package is exposed). You can put them either on the top of the studs or between studs.

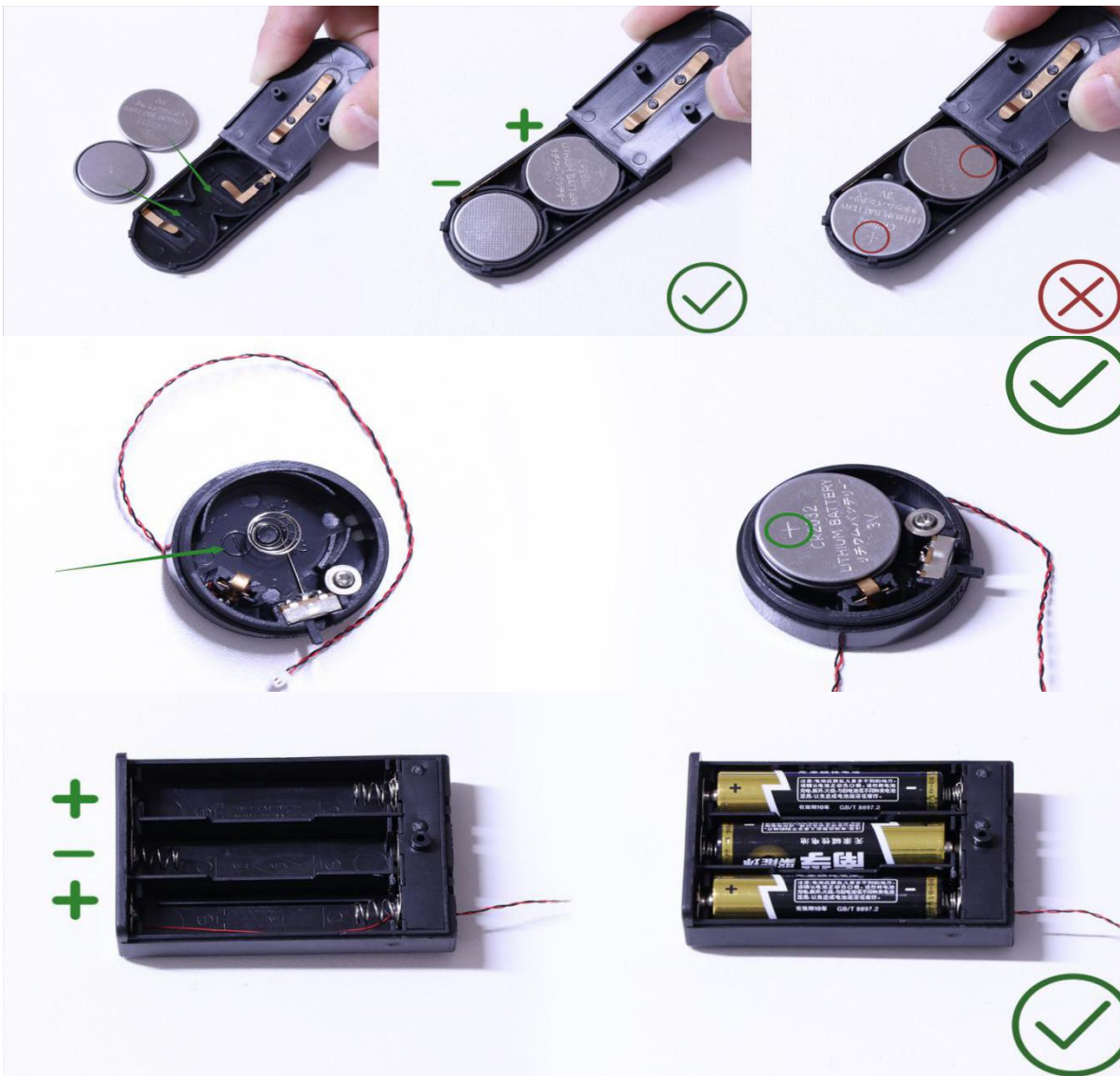


### Connecting cable connectors to Strip Lights

Take extra care when inserting connectors to ports on the Strip Lights. Connectors can be inserted only one way. With the Strip Light facing up, ensure the side of the connector with the wires exposed is facing down. If a plug won't fit easily into a port connector, don't force it. Doing so will damage the plug and the connector.



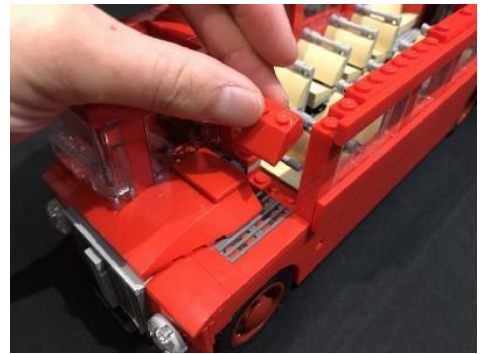
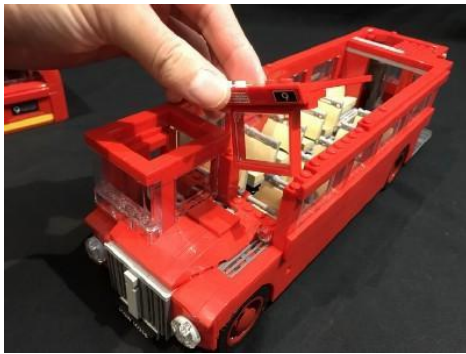
Finally, please pay attention to the positive and negative terminals of the battery when installing the battery case.



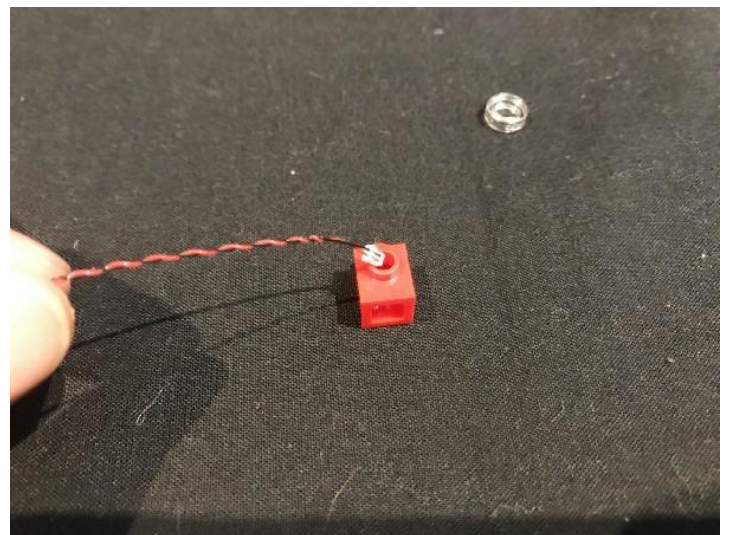
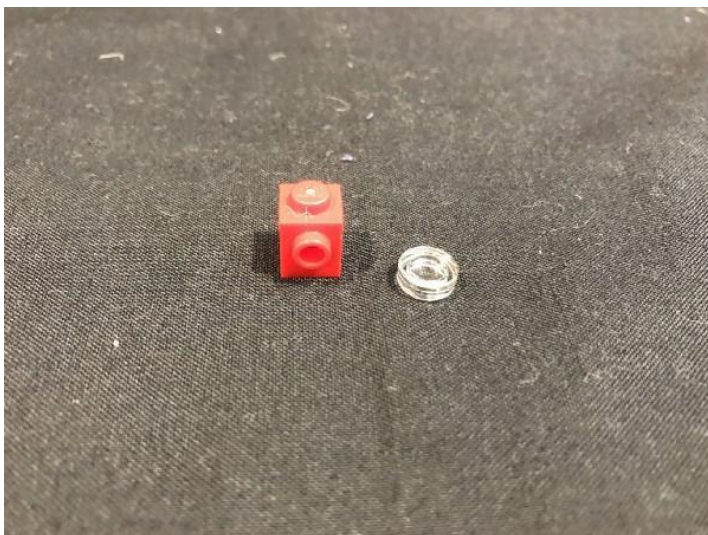
OK, Let's Begin!

1.) Start by removing the top level of the bus, then remove the following the pieces above the engine so that we can install the first light.



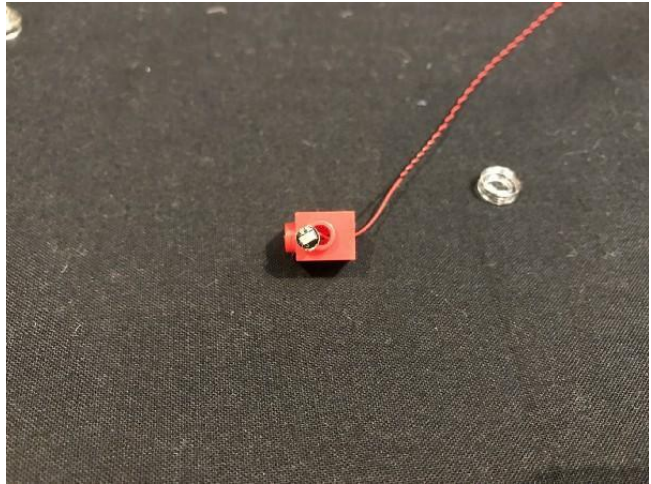
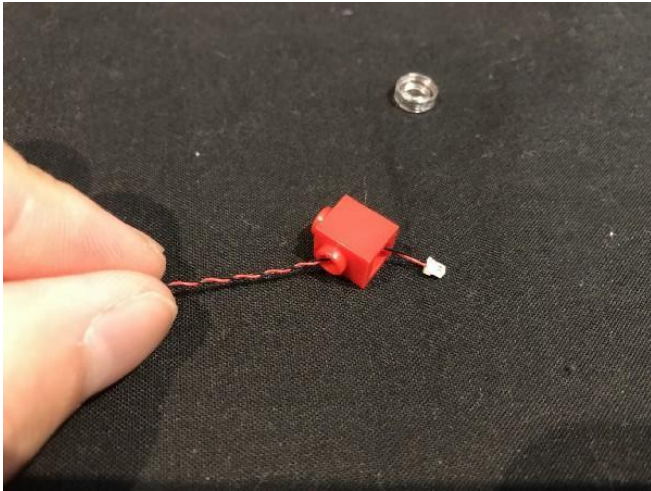


2.) Remove and discard the trans clear tile then take a White 30cm Dot Light and thread the connector side through the front hole of the 1x1 red brick.

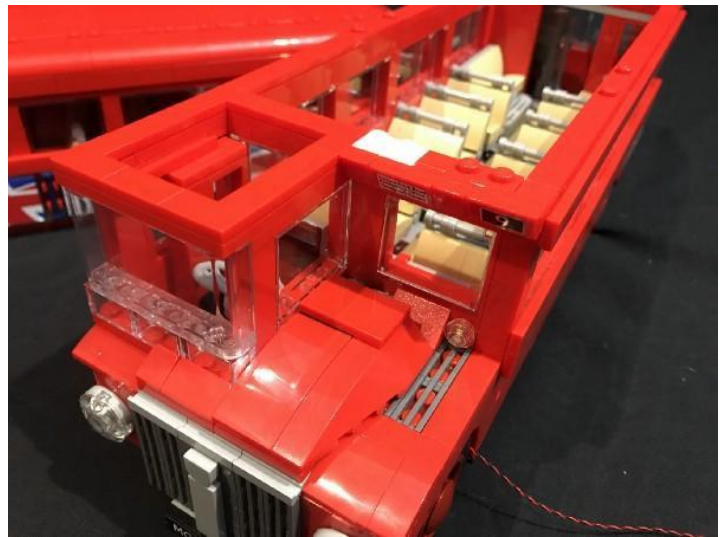
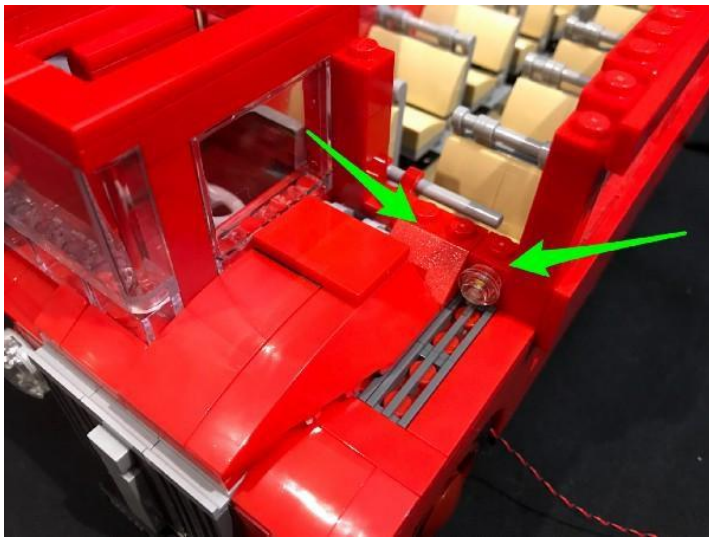
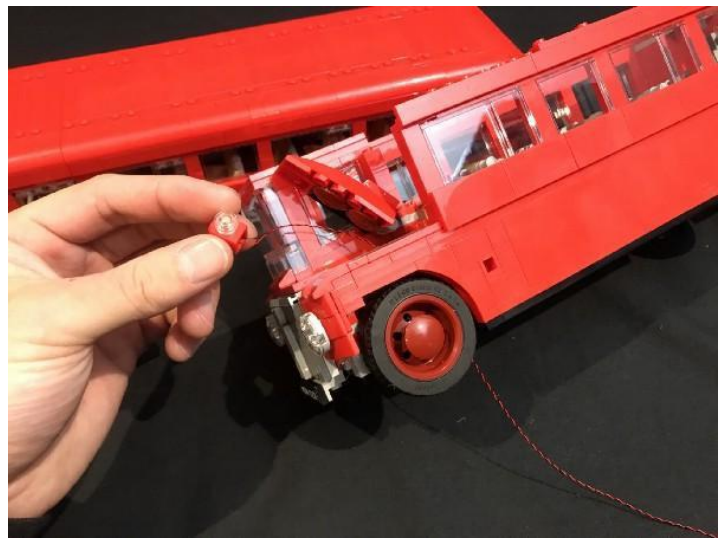
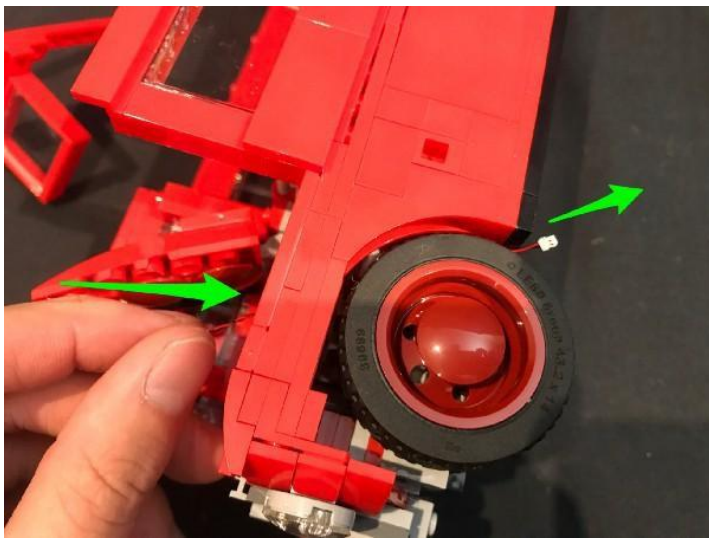
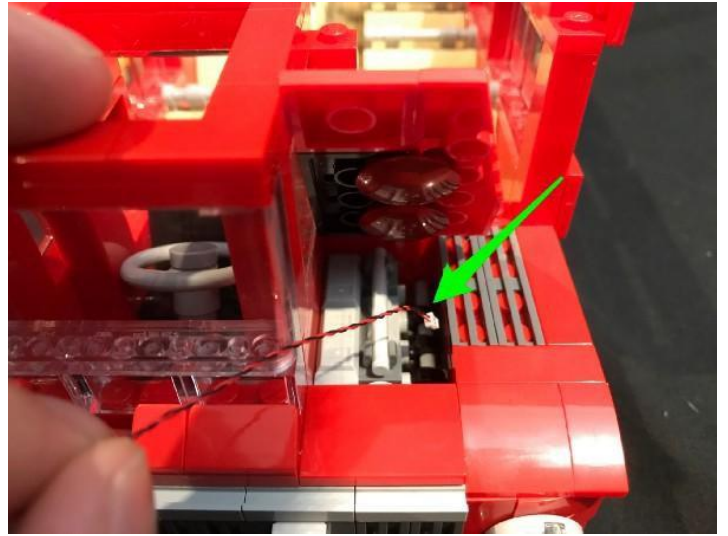
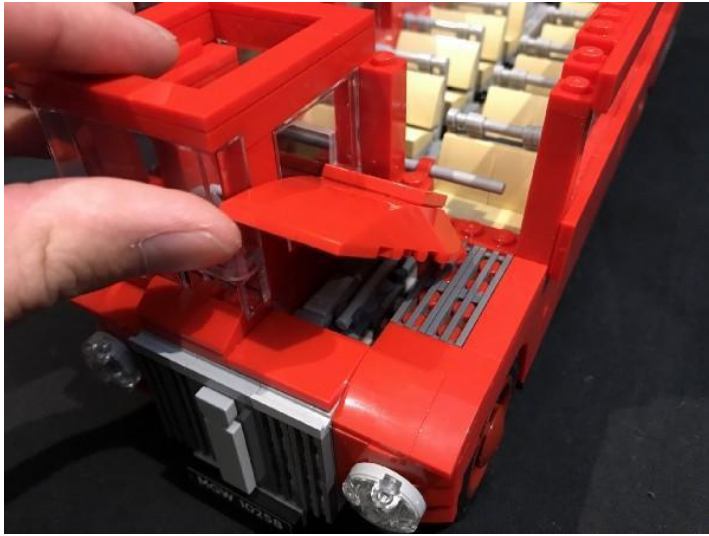


Thread the cable all the way through until the Dot Light is right up against the front of the brick. Secure the Dot Light in place by connecting the provided LEGO 1x1 trans clear round plate over the top.





3.) Lift up the engine bonnet and then take the connector side of the Dot Light cable we just installed and thread it through the space which leads underneath and outside the back of the left wheel. Pull the cable all the way out from underneath the bus and then reconnect the brick with dot light installed followed by the piece on the left of it as well as the window section.

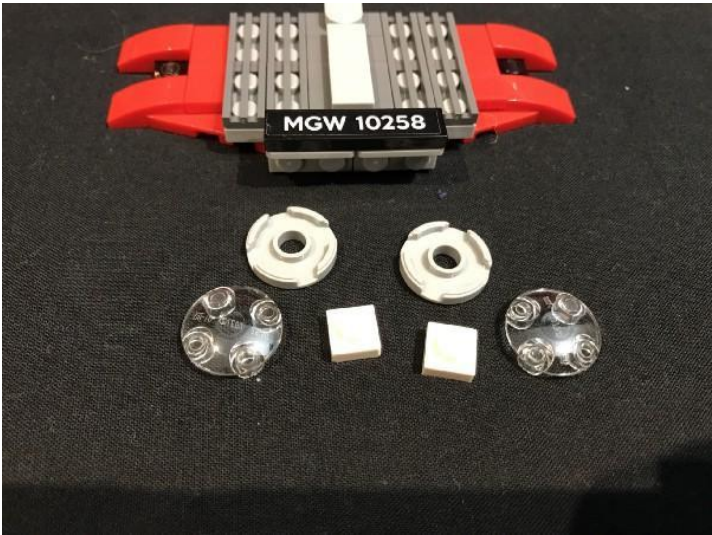
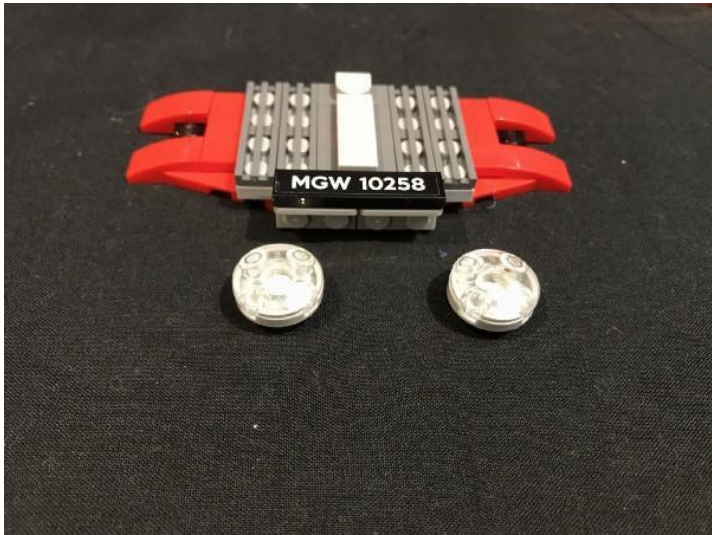


4.) We will now install the two head lights. First disconnect the whole front section by using your finger to lift it out from underneath the front of the bus.



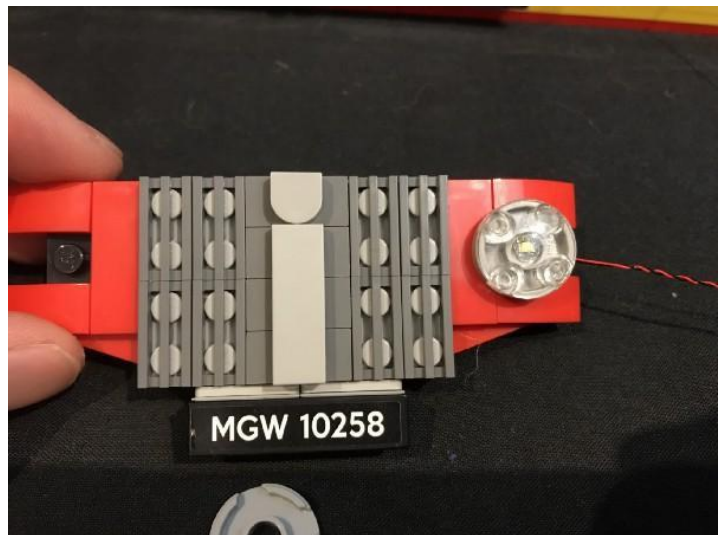
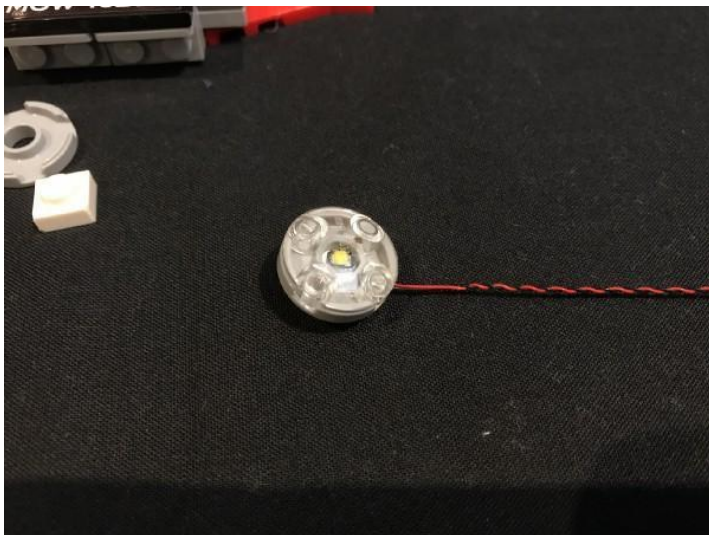
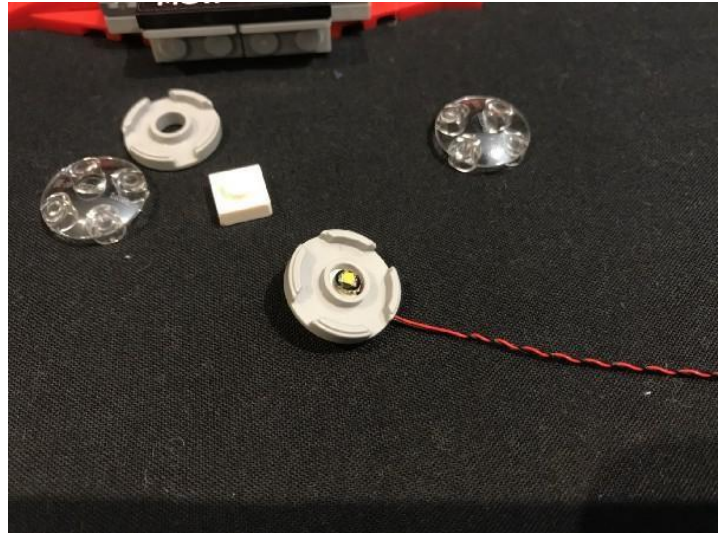
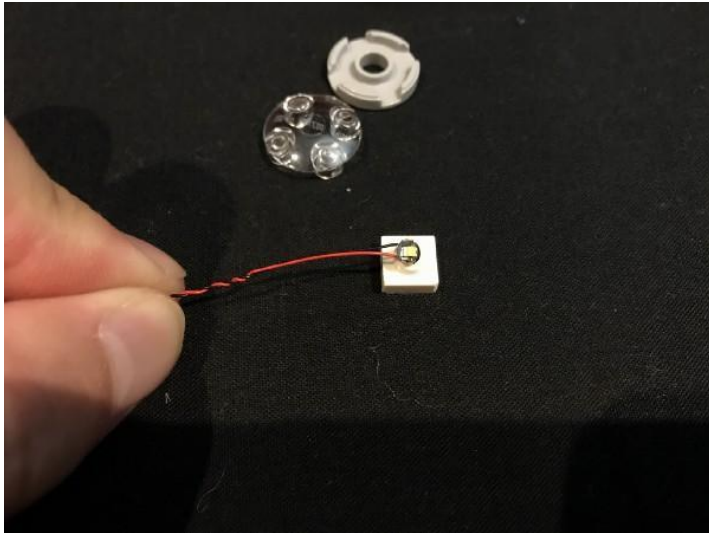


Disassemble pieces as per below

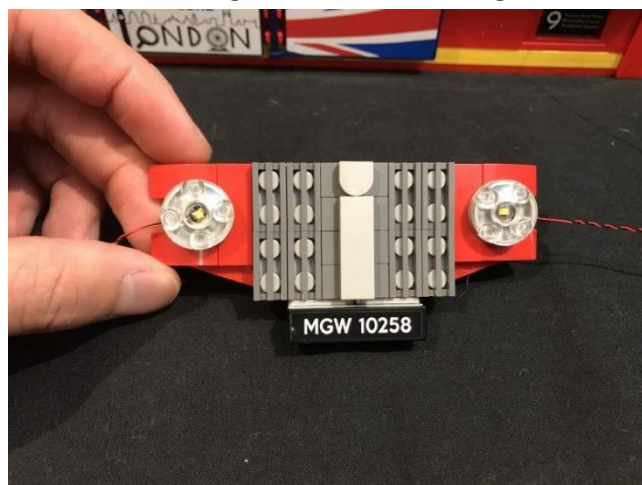




5.) Take a White 30cm Dot Light and then place it directly over the stud of one of the white 1x1 plates. Secure the light in place by reconnecting the light grey round piece over the top, followed by the trans clear piece, then reconnect this head light to the front section. Ensure the cable is facing outward.

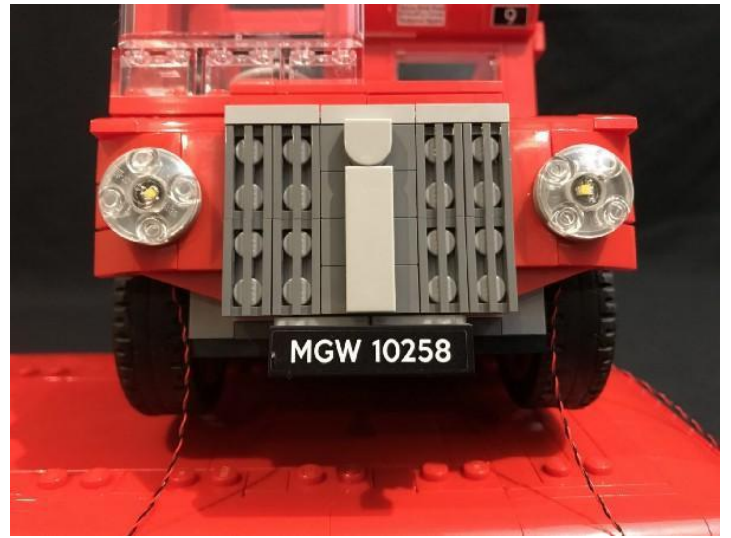
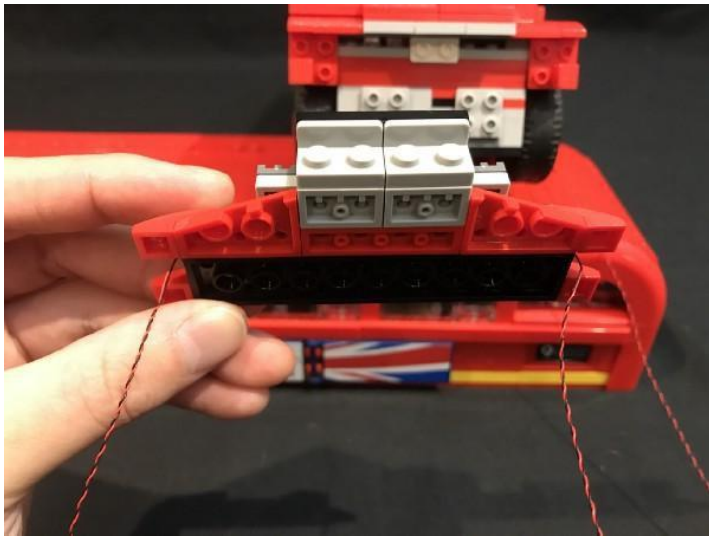


Repeat this step to install another White 30cm Dot Light to the other headlight

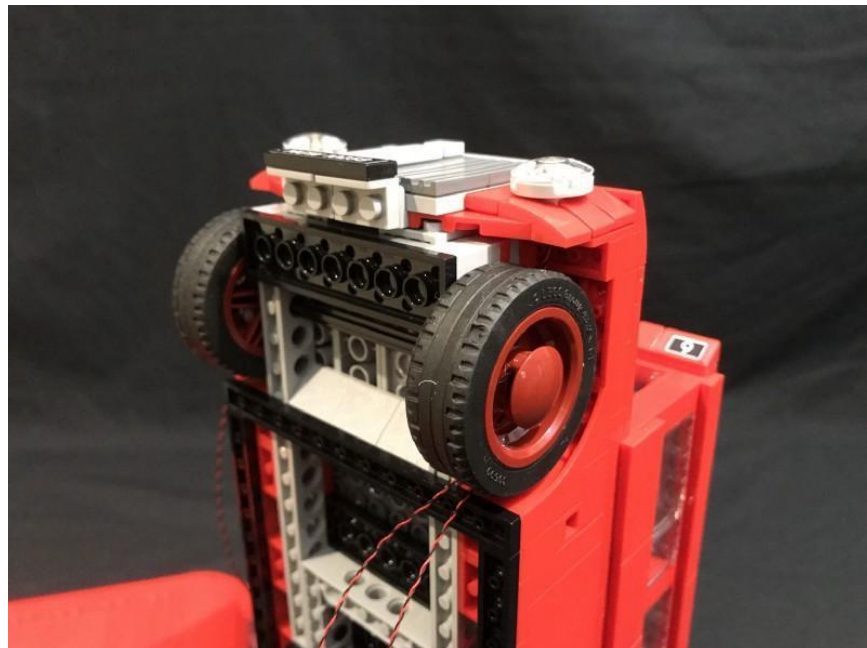
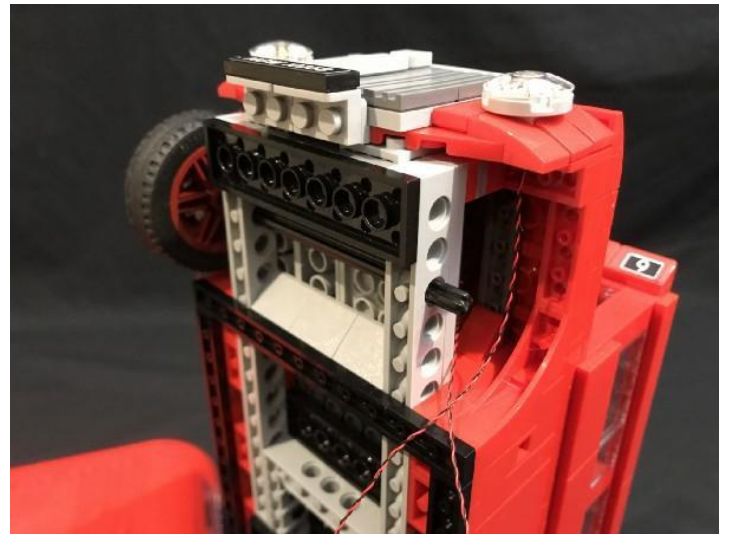
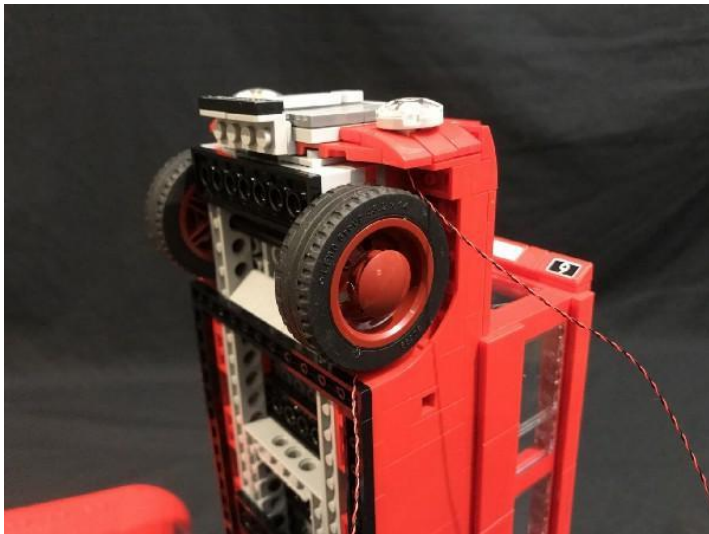


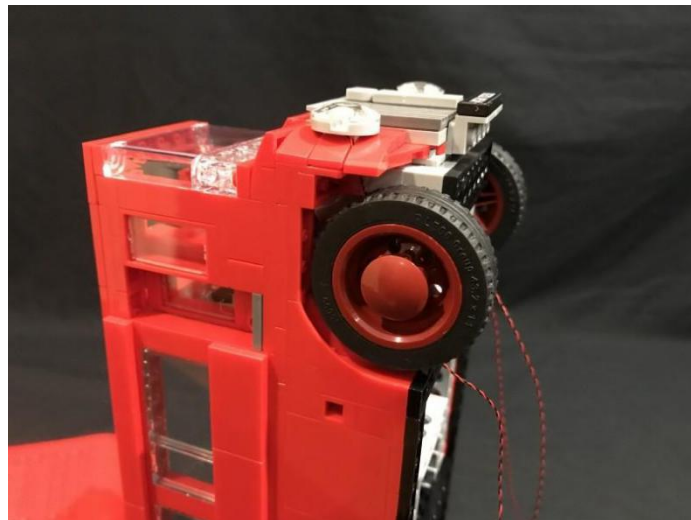
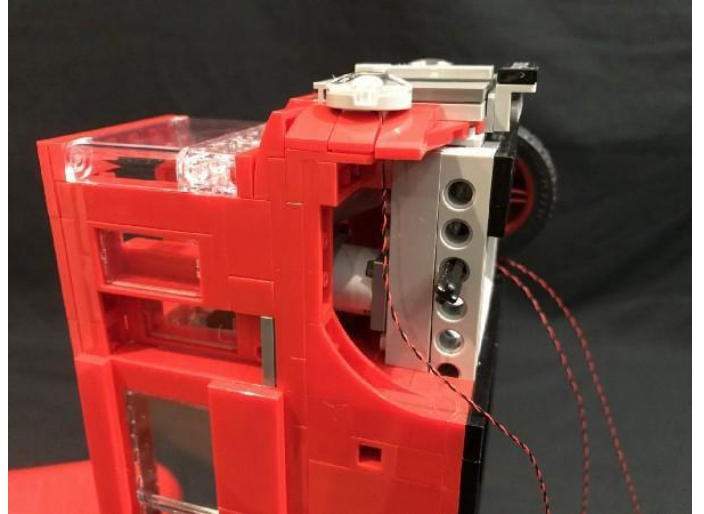
Tuck both cables behind before reconnecting the front section back to the bus.



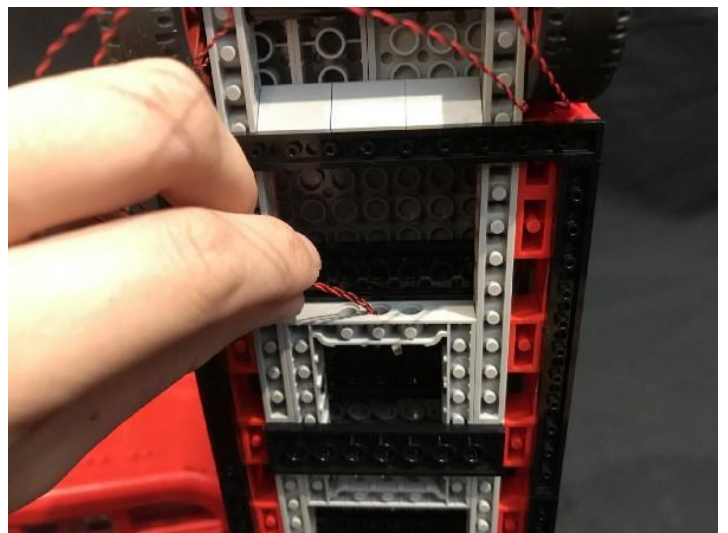
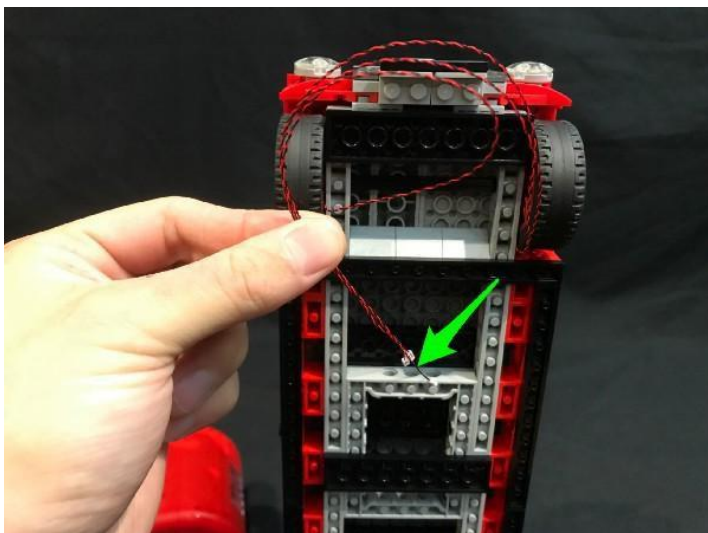


6.) Remove each of the front wheels before bringing each cable behind and toward the back of the bus.

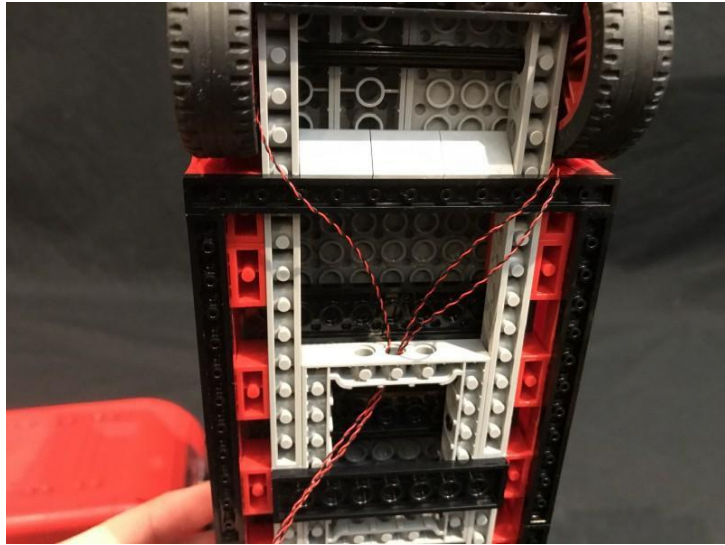




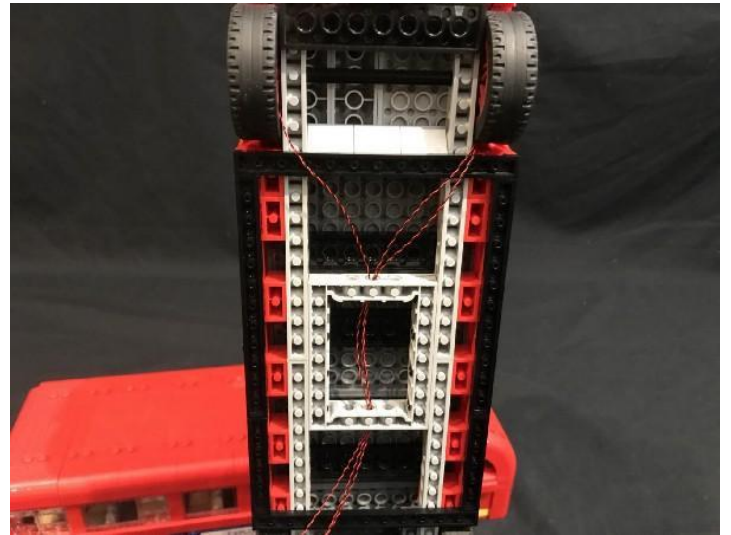
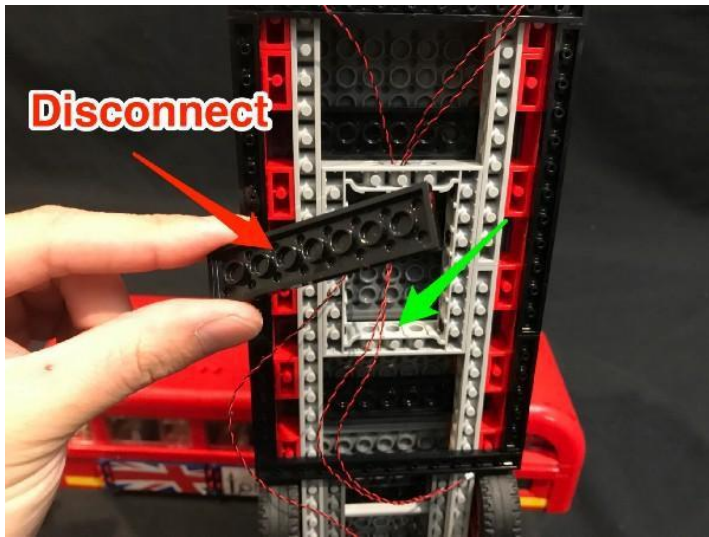
7.) Flip the bus over and take the 3 Dot Light cables and thread them through the centre hole of the light grey brick underneath.



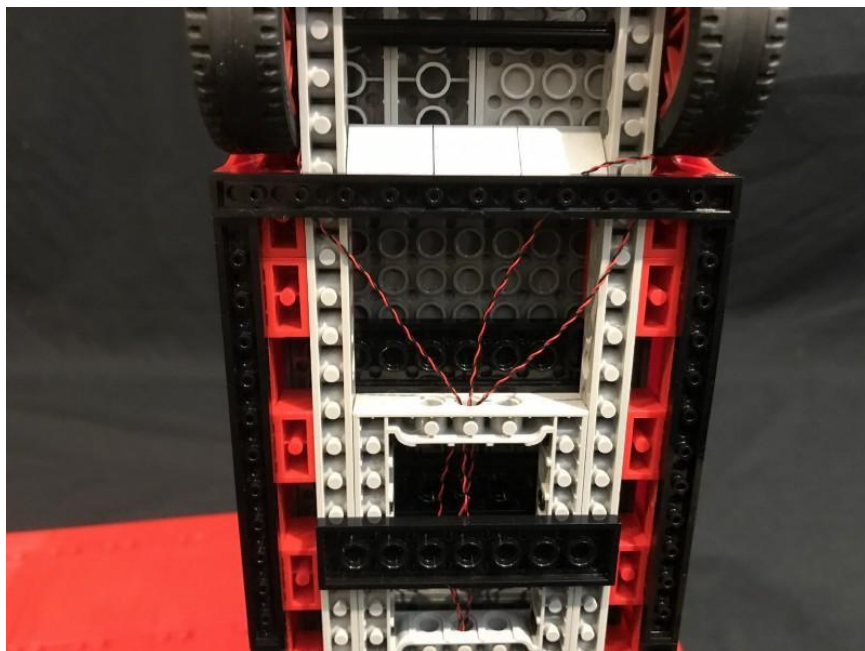




Disconnect the Black 2x8 plate and then thread the 3 cables through the hole of the next light grey brick.

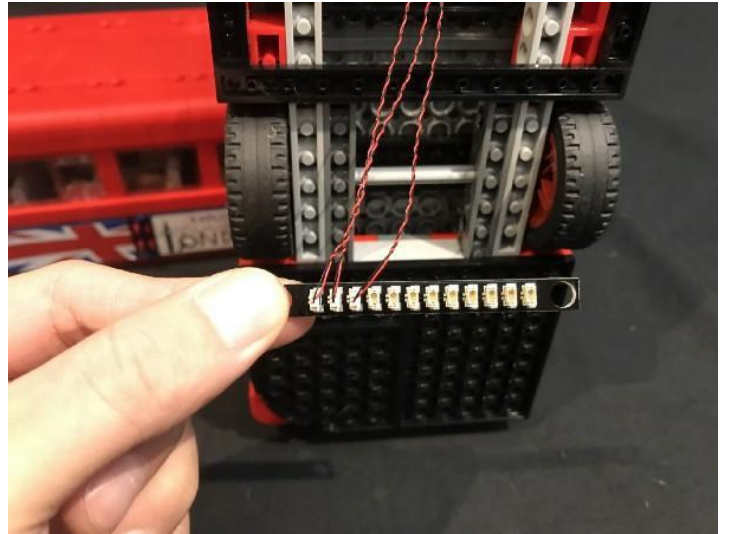
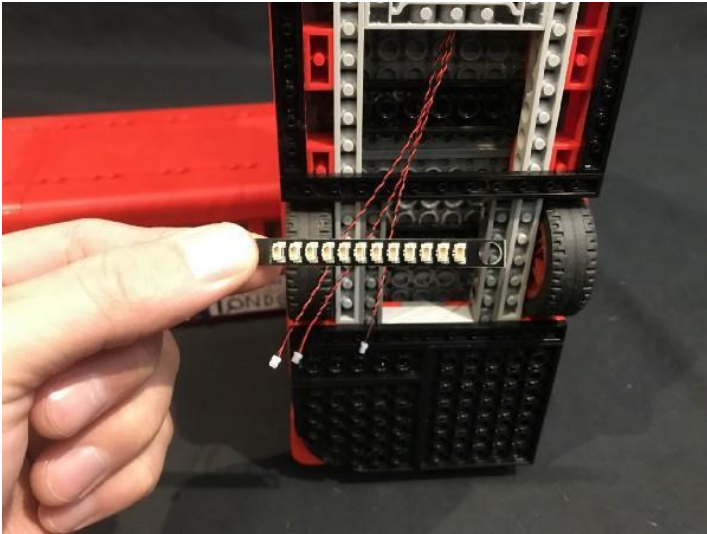


Reconnect the black 2x8 plate.

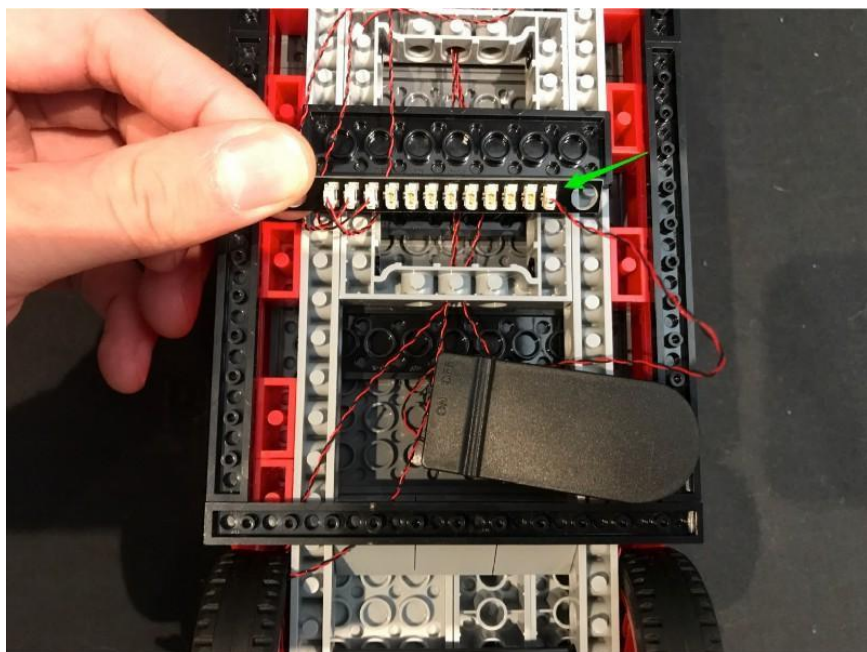


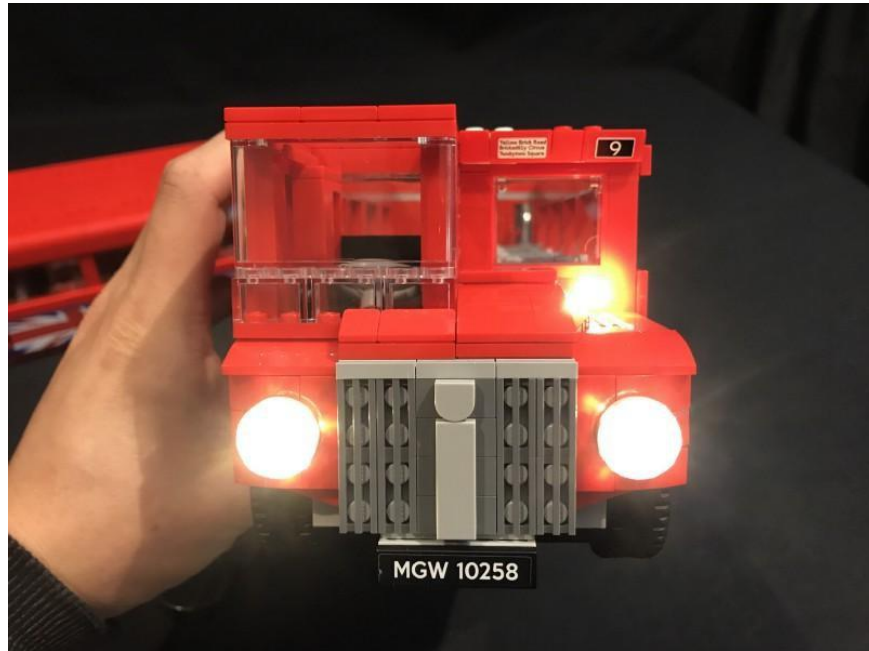
8.) Take the 12-Port Expansion board and then connect the 3 Dot Light cables to the first available ports.



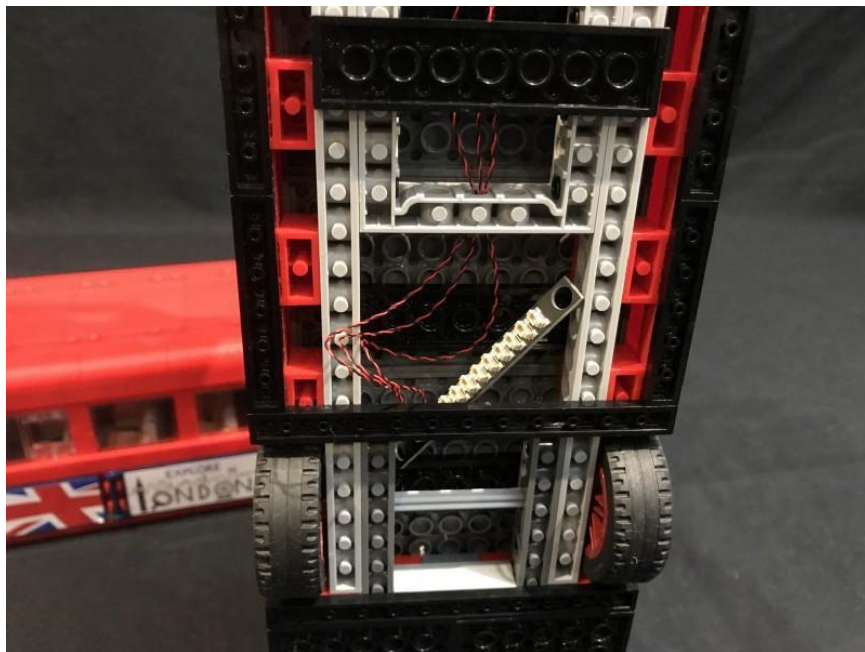


Take this time to test the lights we have installed so far. To do so, take the Flat Battery pack and insert 2x CR2032 batteries to it. Connect the battery pack cable into the expansion board, turn on and verify all is working OK.





Once you have verified all is working OK, disconnect the battery pack and tuck the expansion board in underneath as per below



9.) We will now install lights to the back of the bus. Disconnect the following sections and then locate the below provided transparent coloured LEGO plates and have them ready.

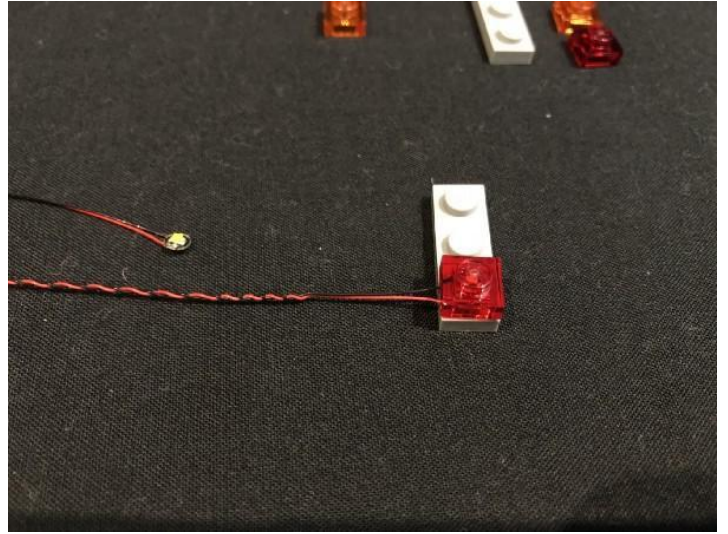
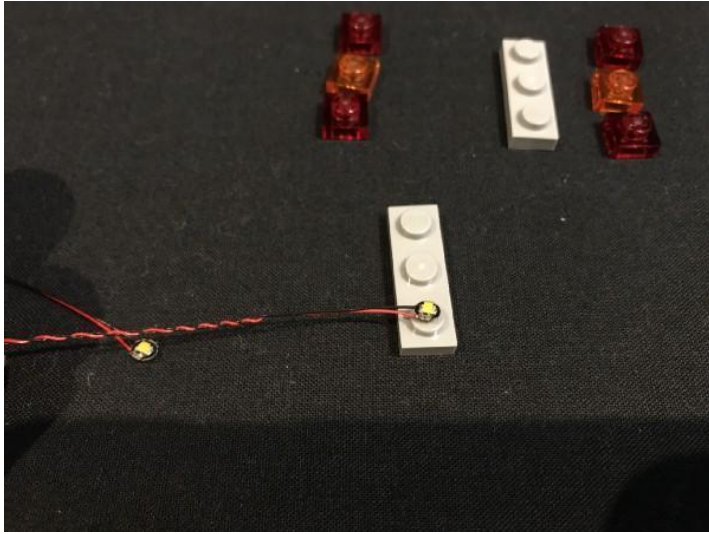




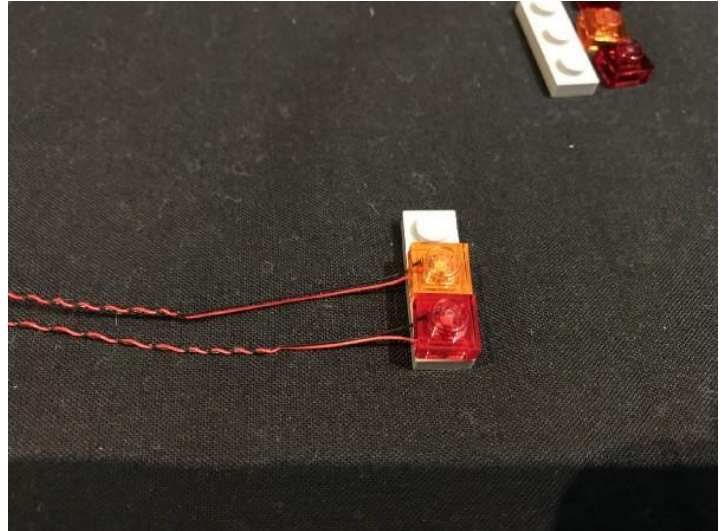
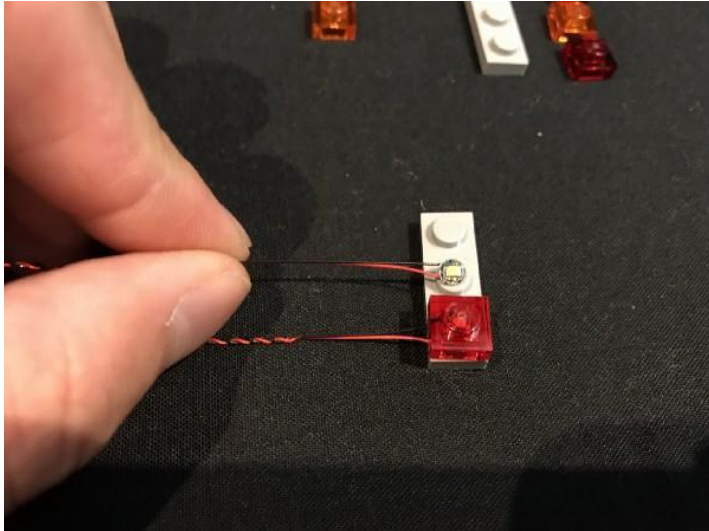
Remove and discard the kat trans coloured tiles from the light grey plate as per below.



10.) Take a White 30cm Dot Light and place it directly over the top of the bottom stud of one of the grey plates. Secure it in place by connecting a provided trans red plate.

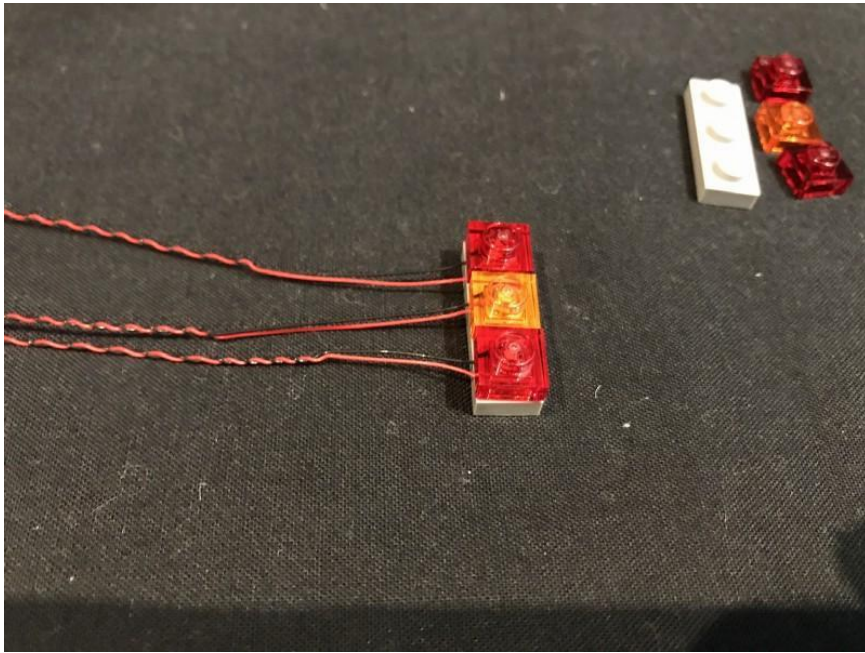


Repeat this step to install another White 30cm Dot Light over the middle stud except secure it in place using a provided trans orange plate.



Repeat again to install another White 30cm Dot Light over the top stud, this time securing using a provided trans red plate.





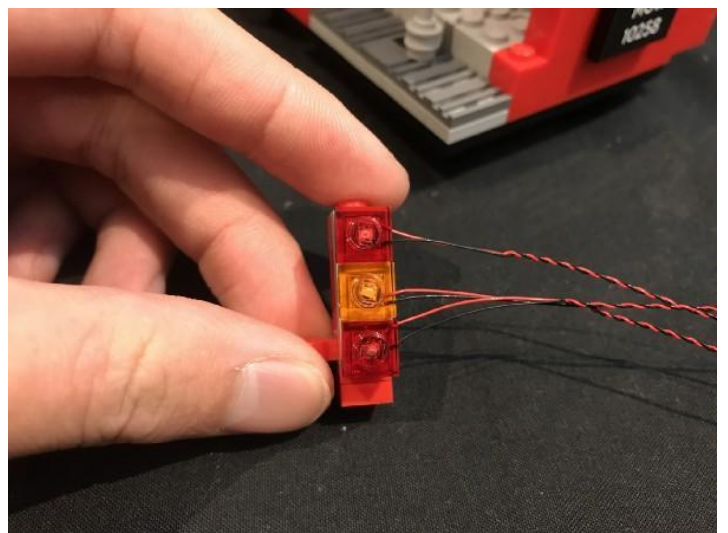
Repeat this step to install another 3x White 30cm Dot Lights to the other tail light section using provided trans red and orange plates.



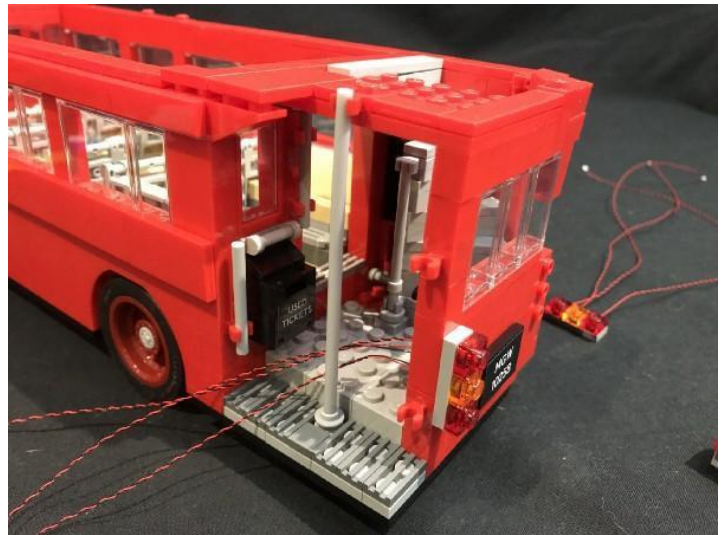
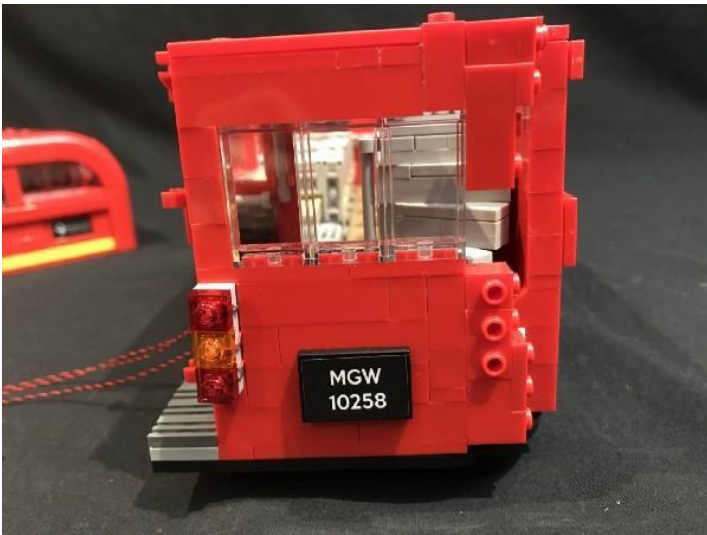
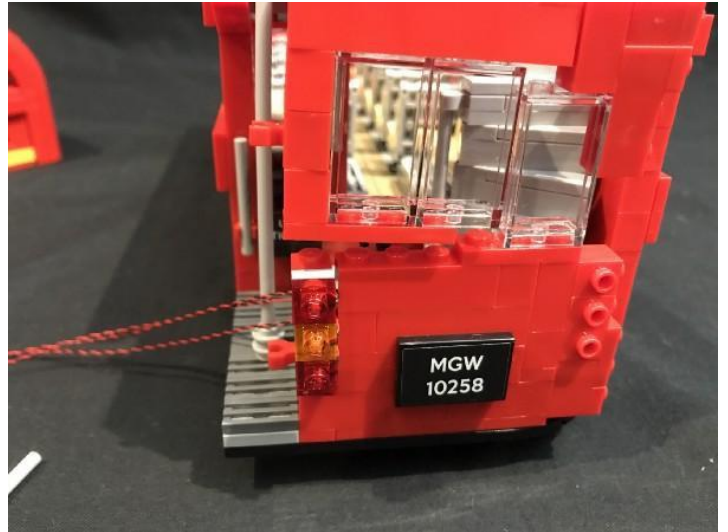
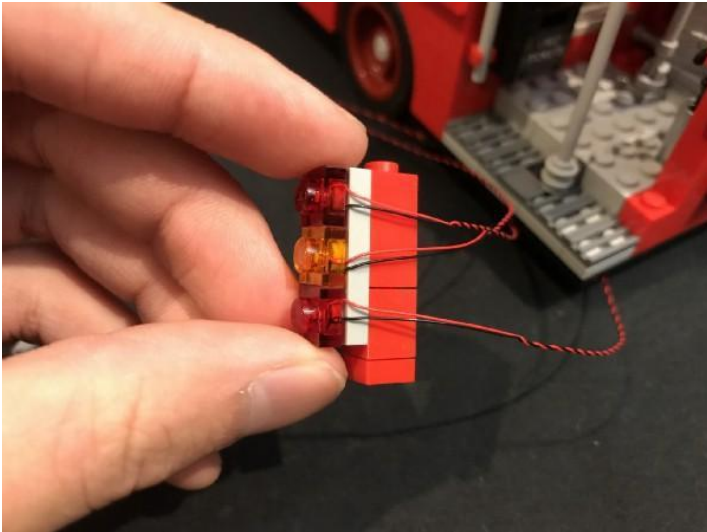
11.) Remove the following sections from the back left of the bus.



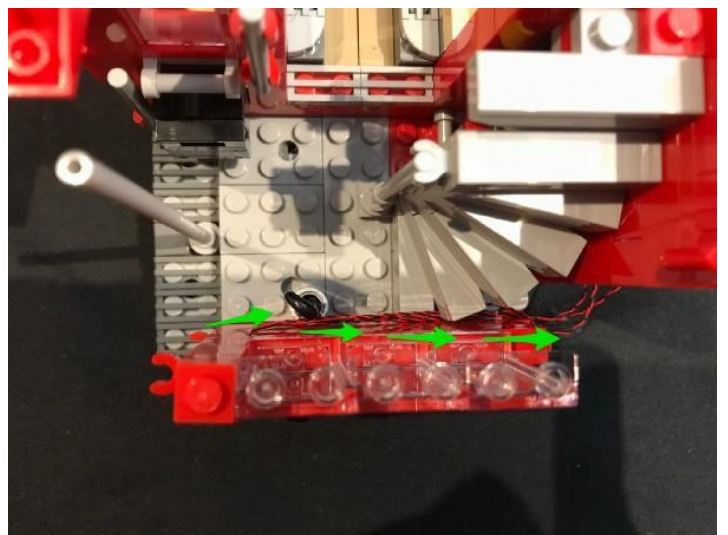
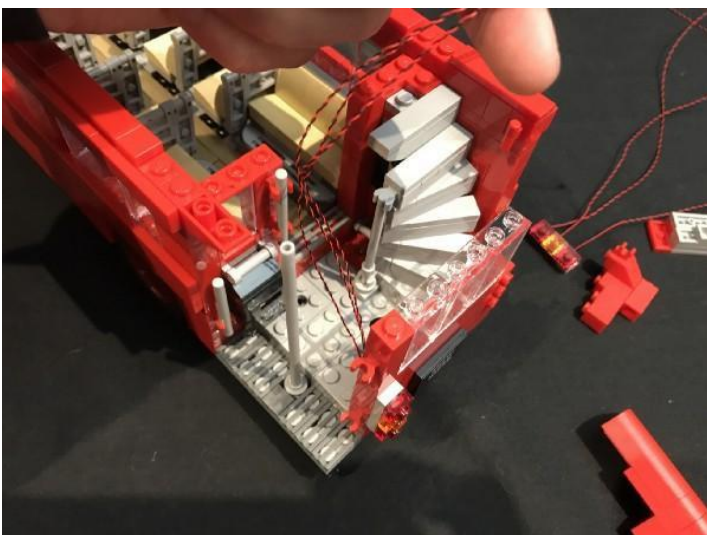
12.) Take one of the tail light sections and then reconnect it to the set of red bricks, ensuring the cables are facing the right. Fold the cables over the right side before reconnecting this section back to the back left of the bus as per below.





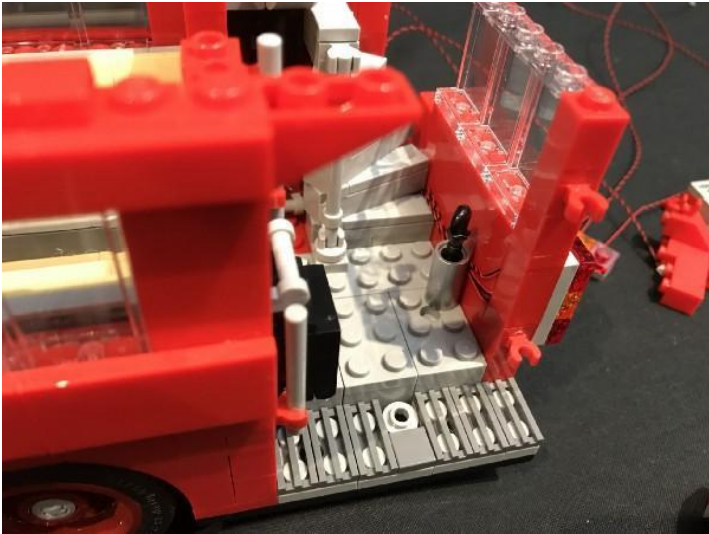


Remove the top section of the bus and then pull the 3 cables over to the right along the back wall and tuck them in behind the umbrella. Pull the cables all the way to the right and then tuck them in underneath the stairs.

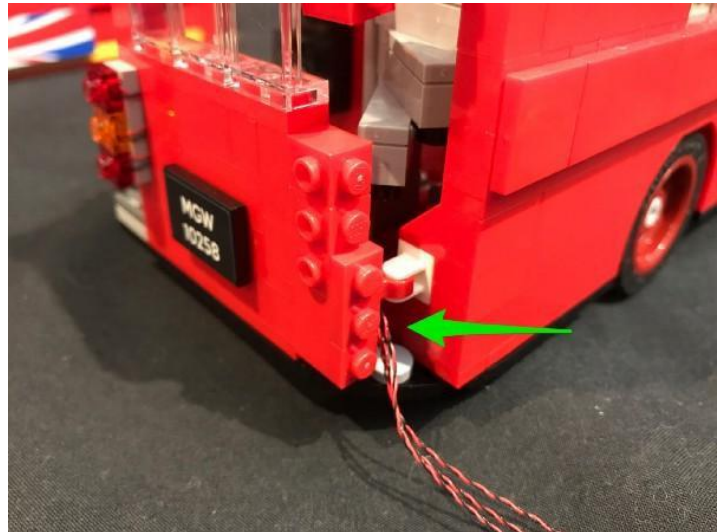
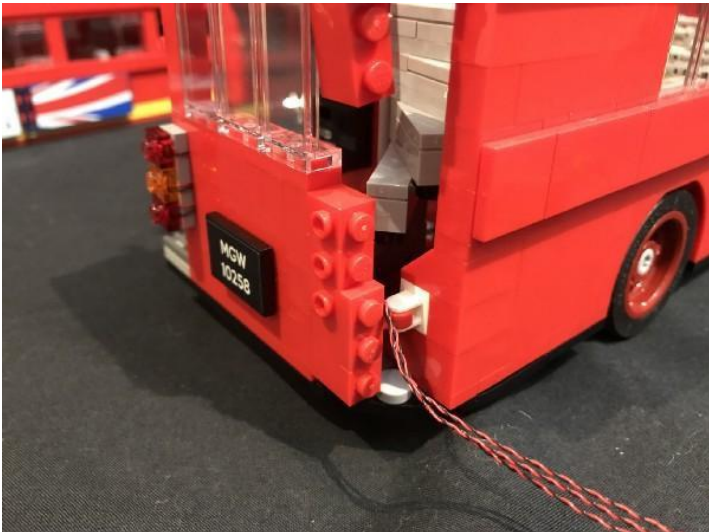


Reconnect the top section we removed earlier.

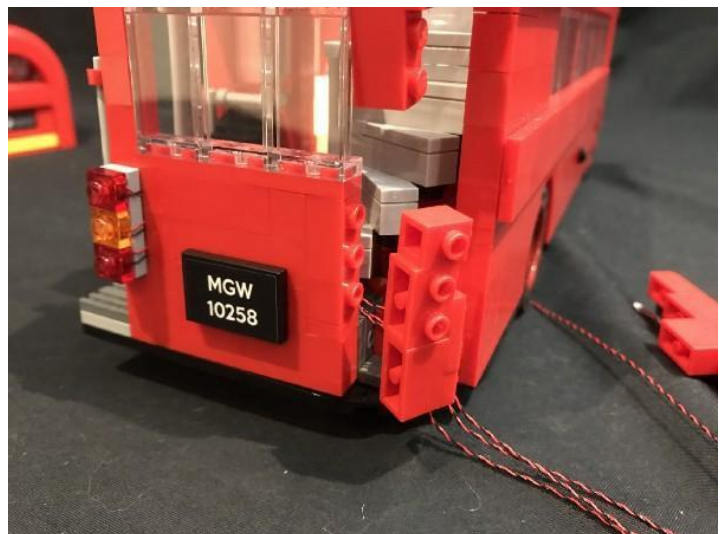
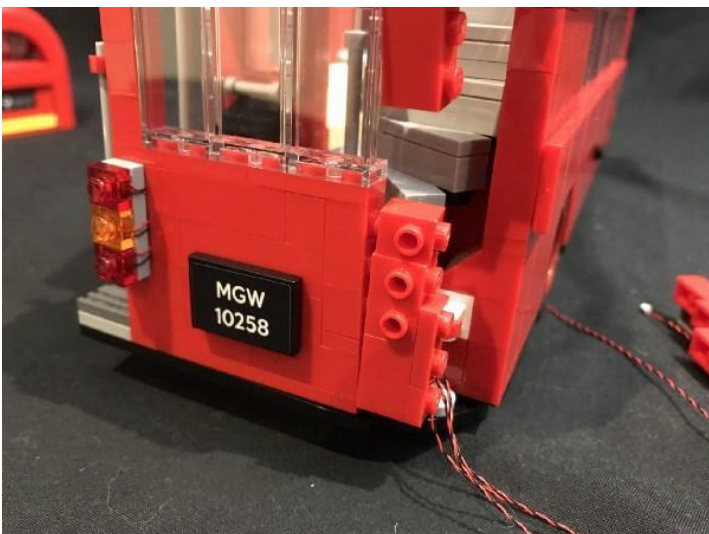




Bring the 3 cables down underneath by threading through the lower space of the right corner.

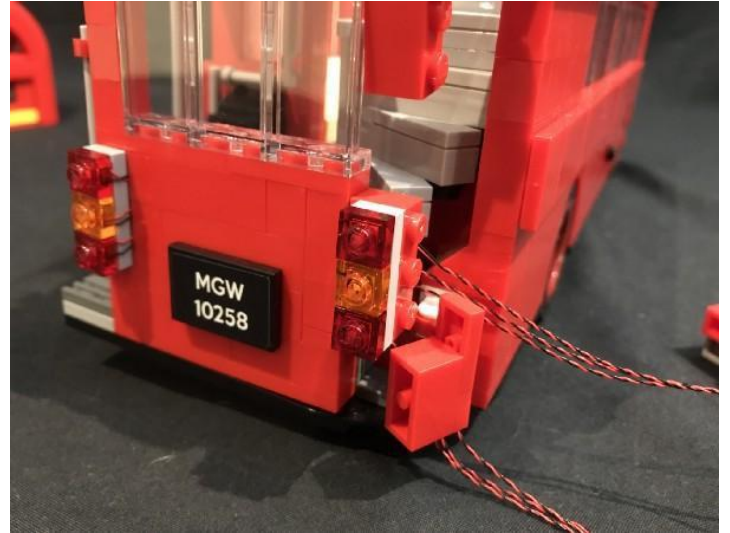
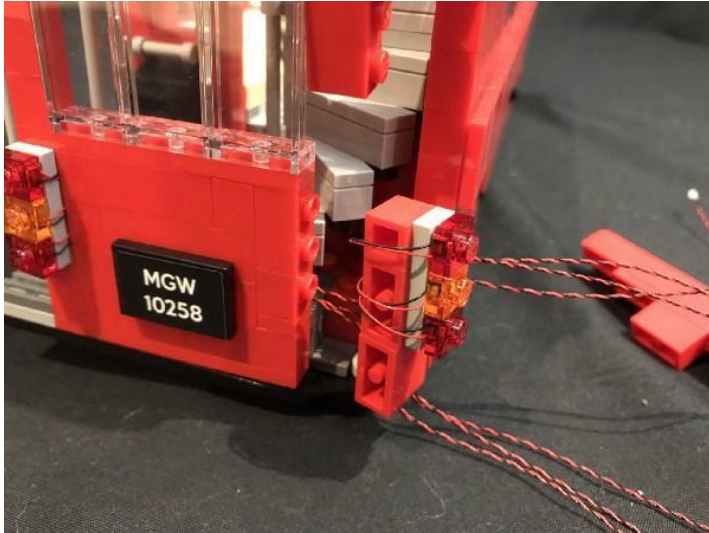


13.) Disconnect the following section of bricks from the back of the right side of the bus as per below.





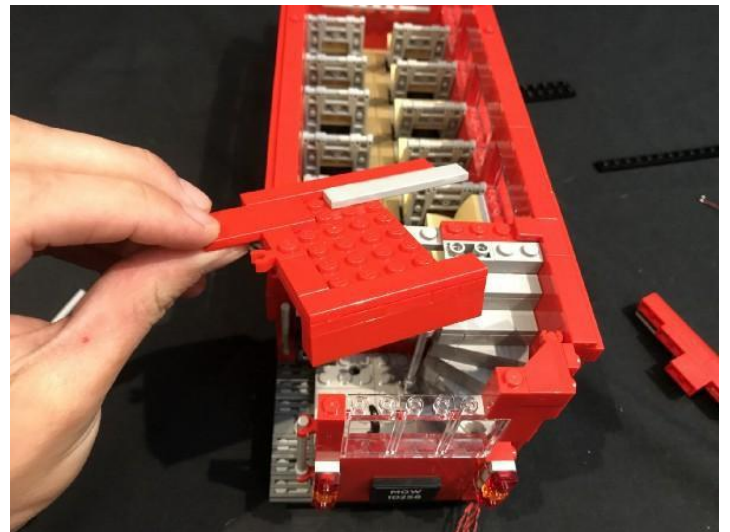
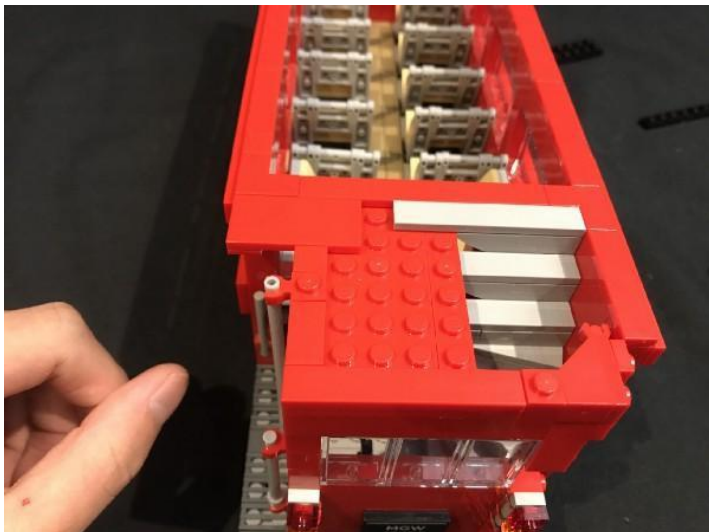
Reconnect the right set of tail lights ensuring the cables are facing toward the left. Fold the cables across the left and then tuck them in behind before reconnecting this section back.



Bring the 3 cables from the right tail lights down underneath by threading through the lower space of the right corner.

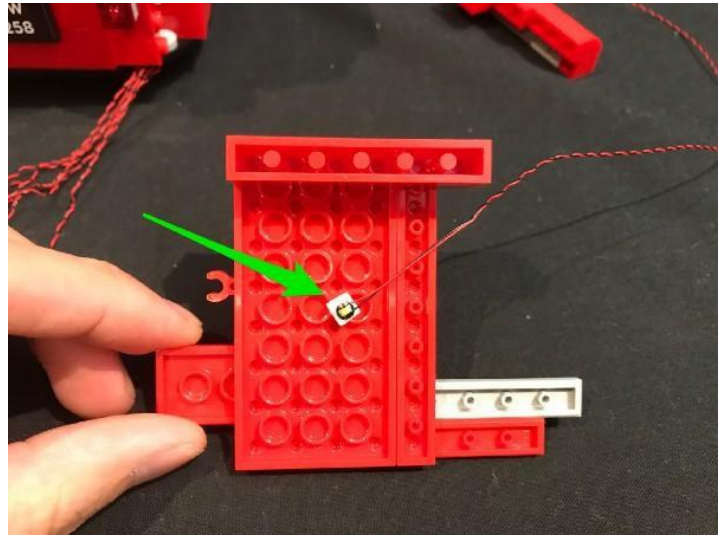
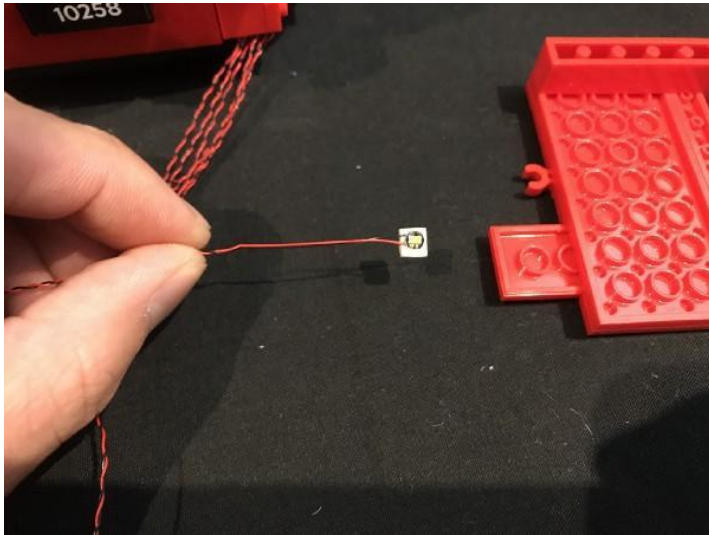


14.) Remove the top section of the bus again so that we can install a light underneath.

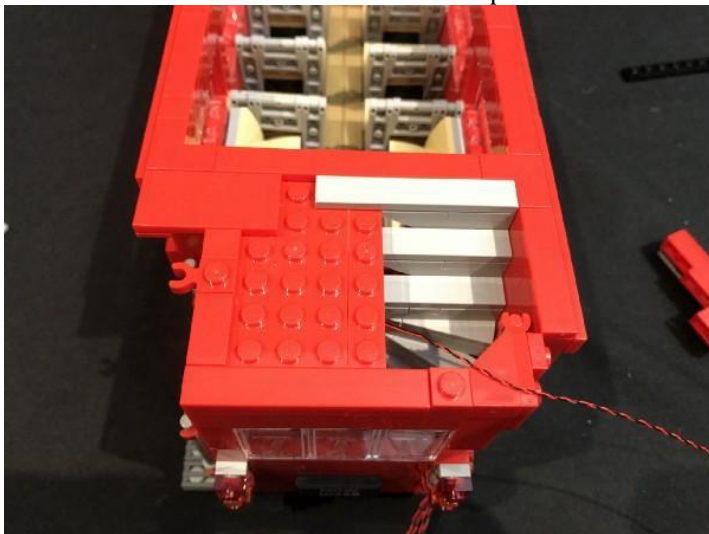


Take a White 30cm Dot Light and stick it underneath this section in the following position using

an adhesive square. Ensure the cable is facing the same way as per below (diagonal top right)

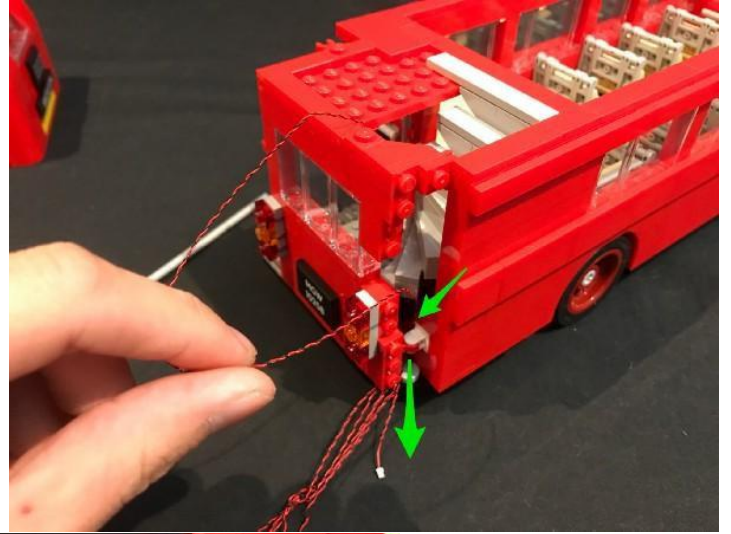
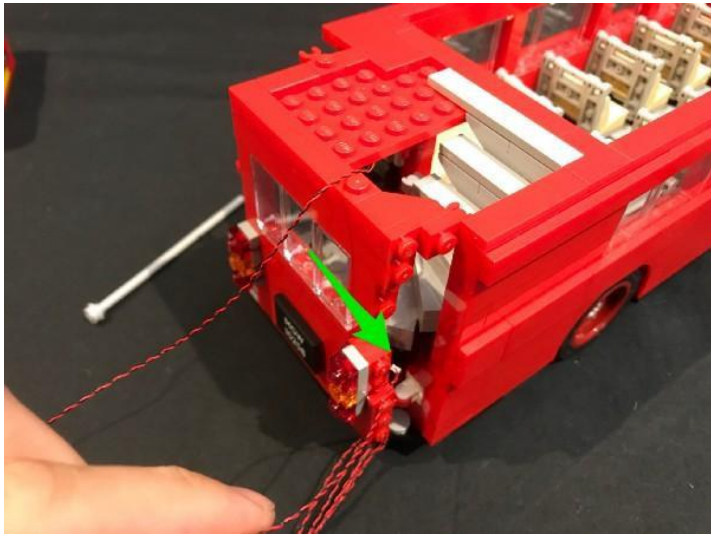


Reconnect the top section.



Pull the cable across toward the back right and then thread it back into the bus and then out the bottom spacing, just like how we threaded the previous 3 cables. Pull the cable all the way down and ensure the cable is laid in between studs above.





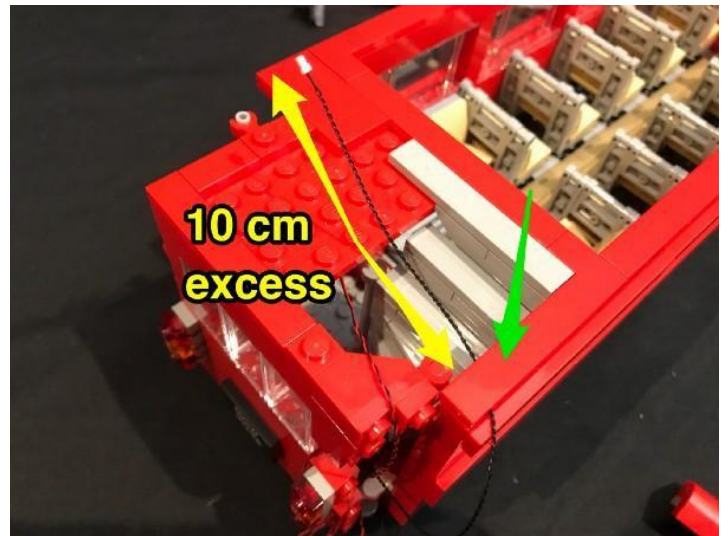
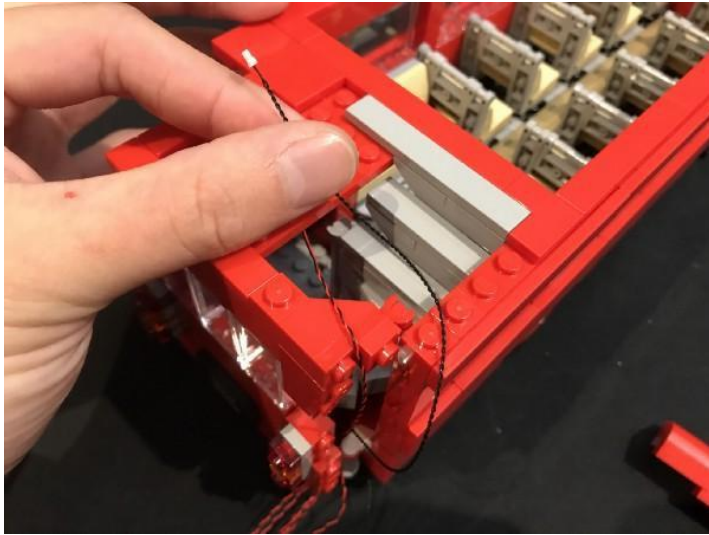
15.) Take a 30cm Connecting Cable and then thread it through the inside of the bus and then out through the bottom space.



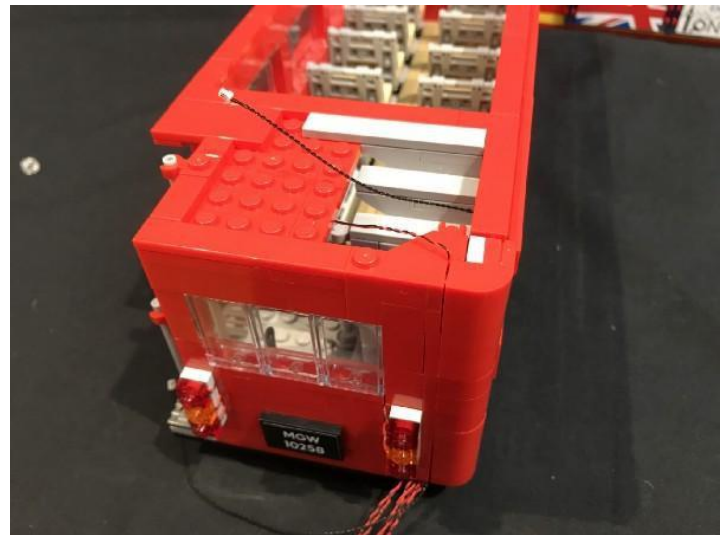
Pull the top side of the cable above and the secure in place underneath the red tile. Ensure you



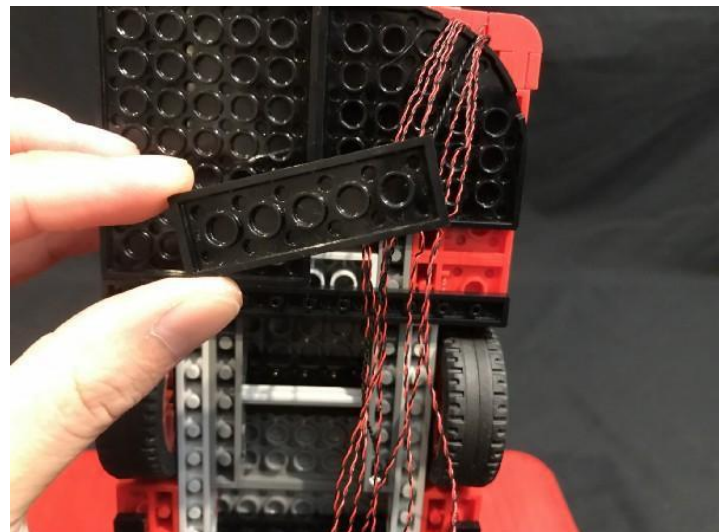
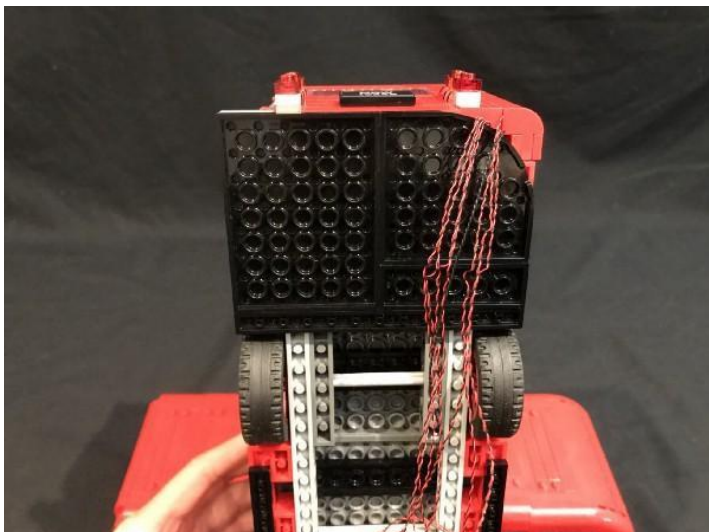
leave about 9-10cm of excess cable between the plate and the connector.



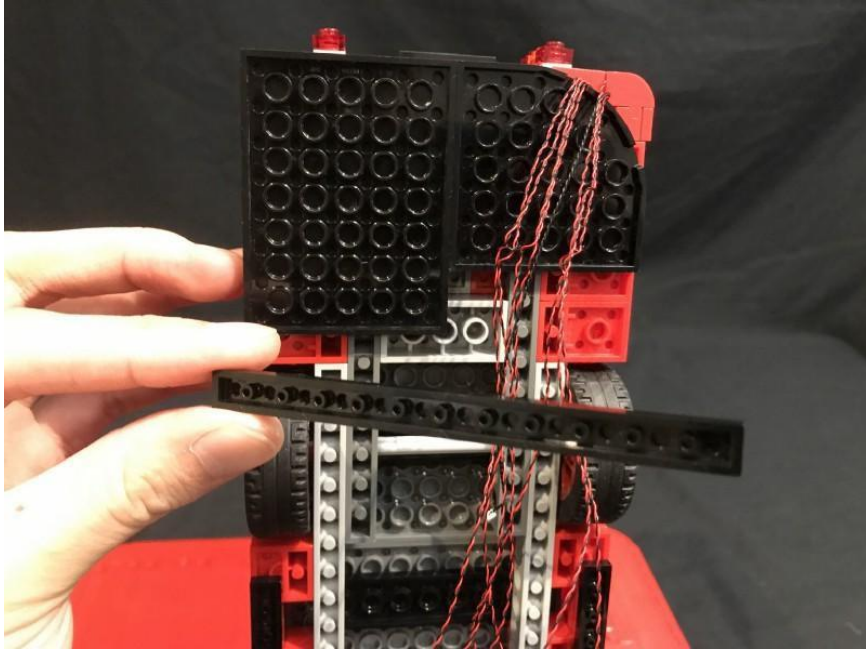
Pull the cable down all the way down from underneath and then reconnect the corner section we removed earlier.



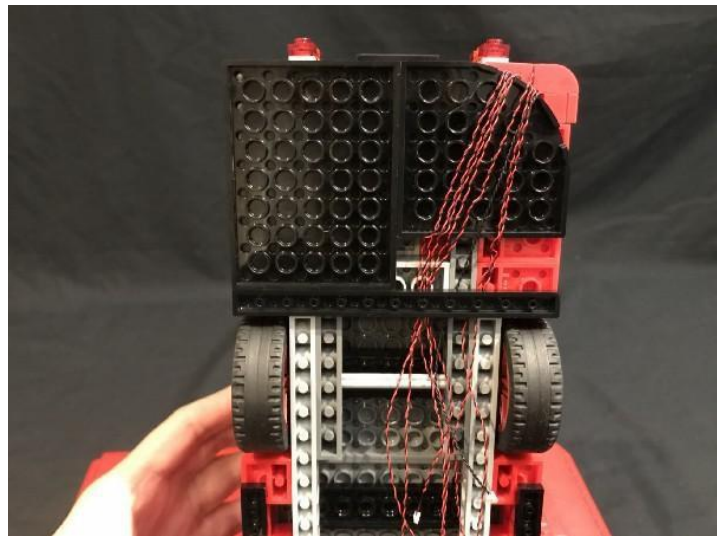
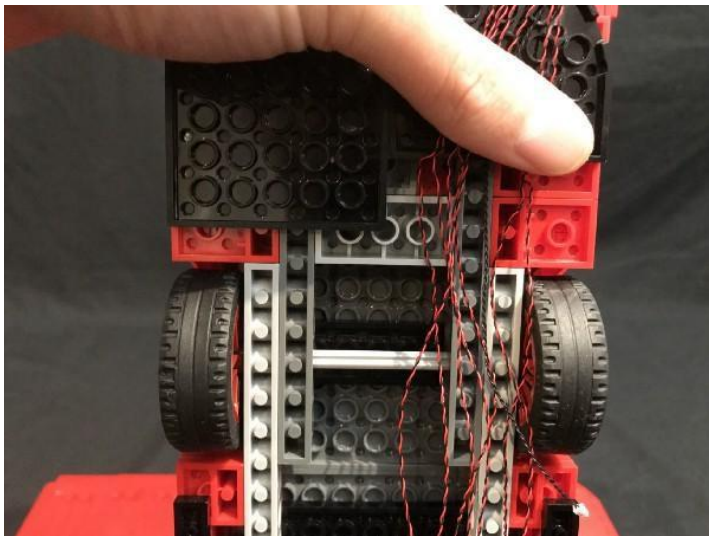
16.) Lift the back of the bus up and then pull all 8 cables toward the left and then down underneath. Remove the black 2x8 plate as well as the black 1x12 plate.





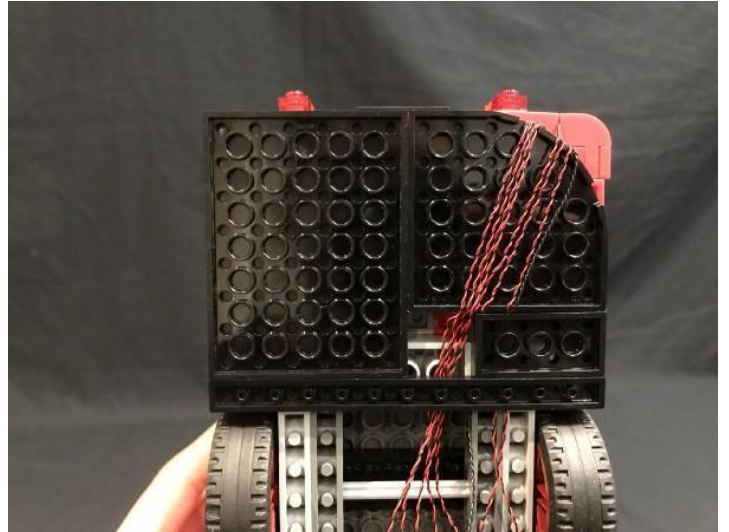


Spread the cables out so that we can reconnect the black 1x12 plate. We need to spread the cables out in order for them to all lay evenly between the studs of the 1x12 plate.

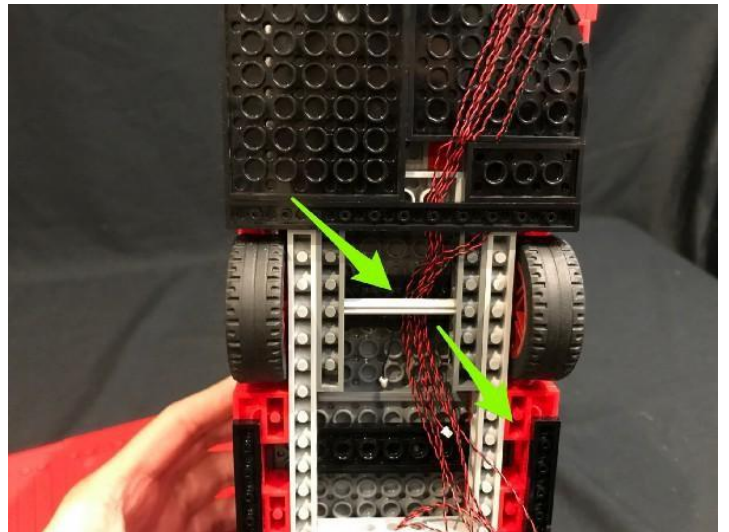
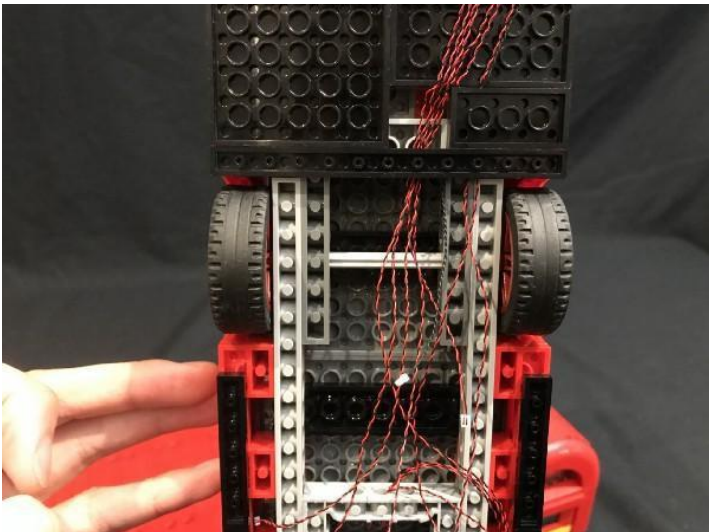
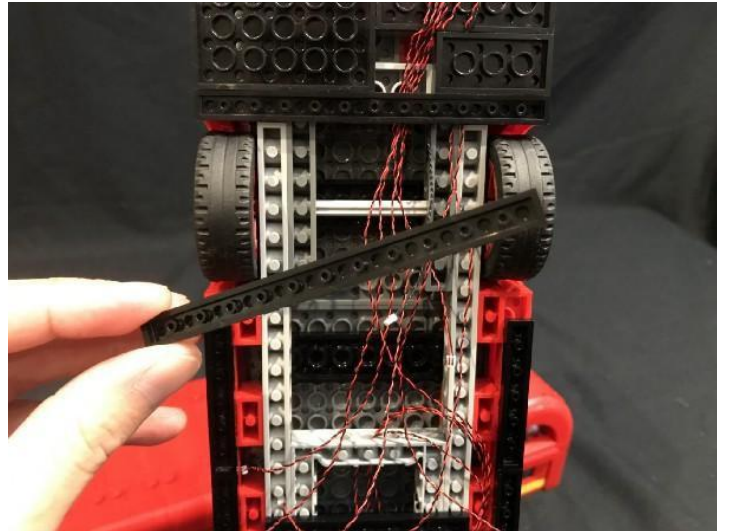
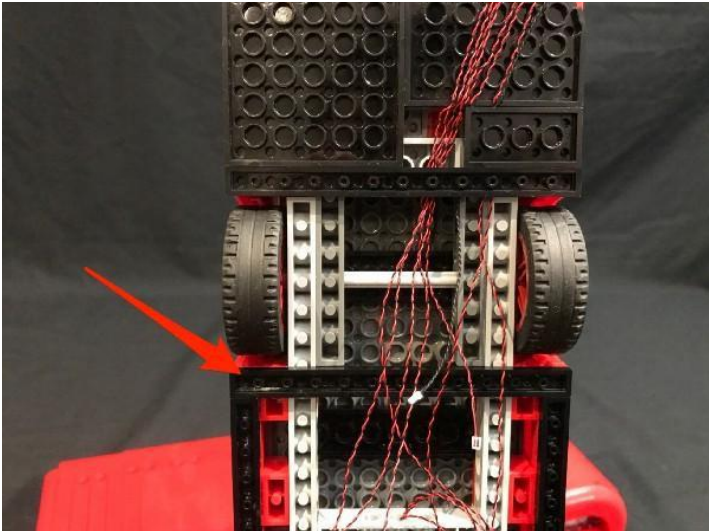


Using the provided Black 2x4 Plate, secure some of the cables on the right by connecting this plate underneath in the following position. (We will use the 2x8 plate we removed earlier from this section to secure cables later)



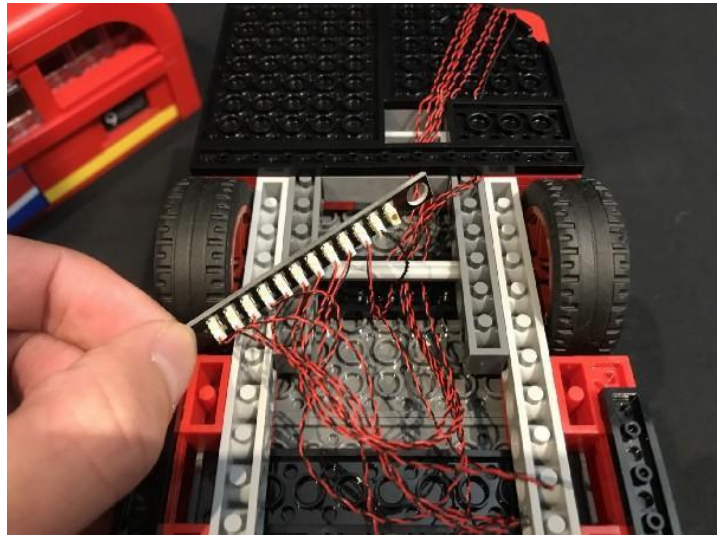
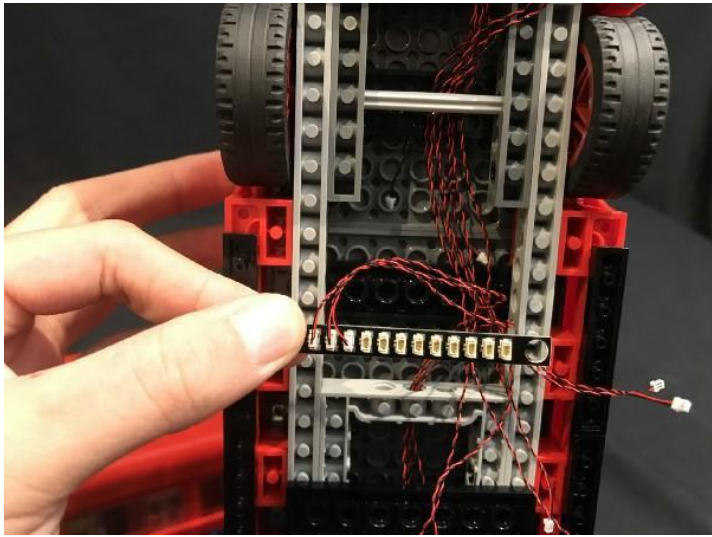


17.) Remove the next black 1x12 plate along and then tuck and pull all cables underneath the wheel axle and out the other side.

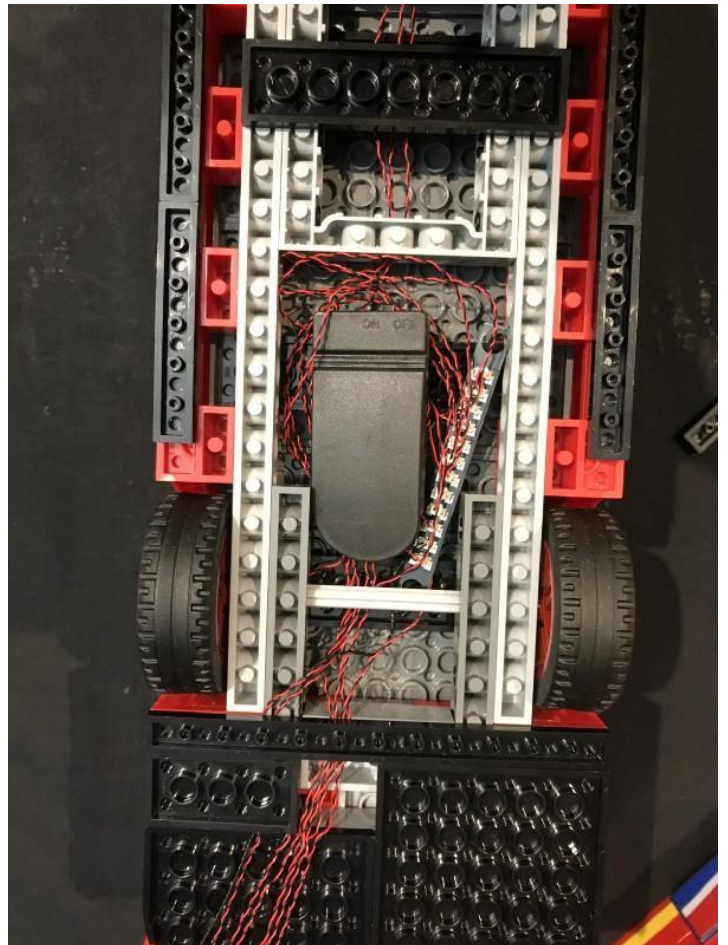
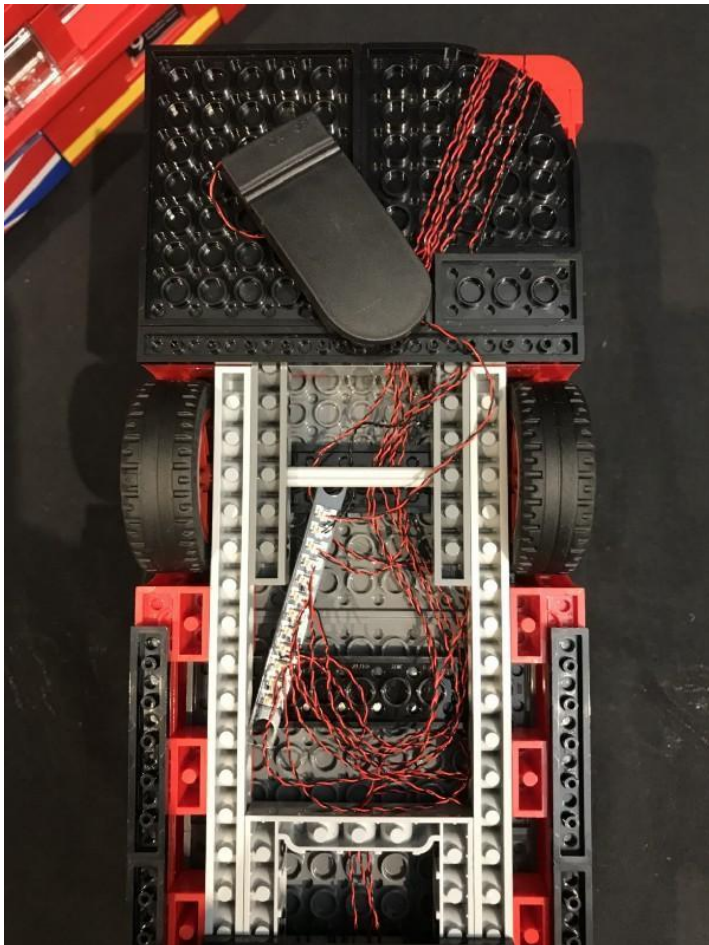
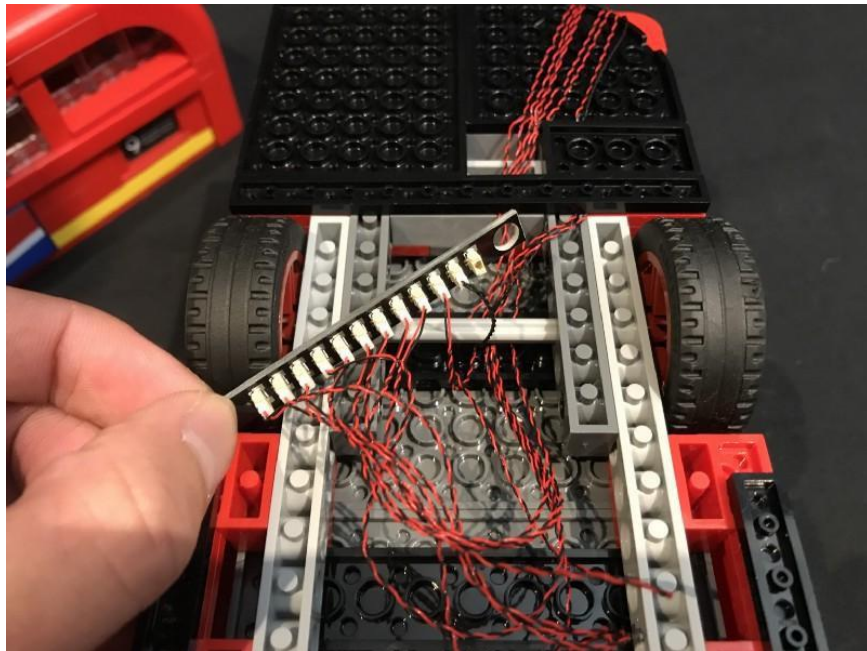


18.) Connect all 8 cables to the 12-port expansion board.



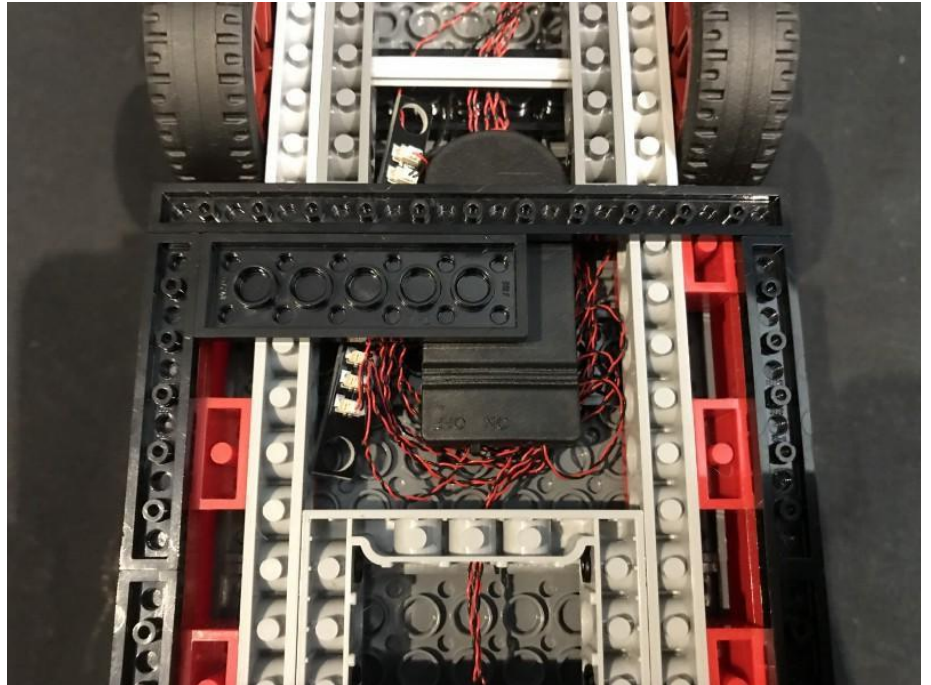
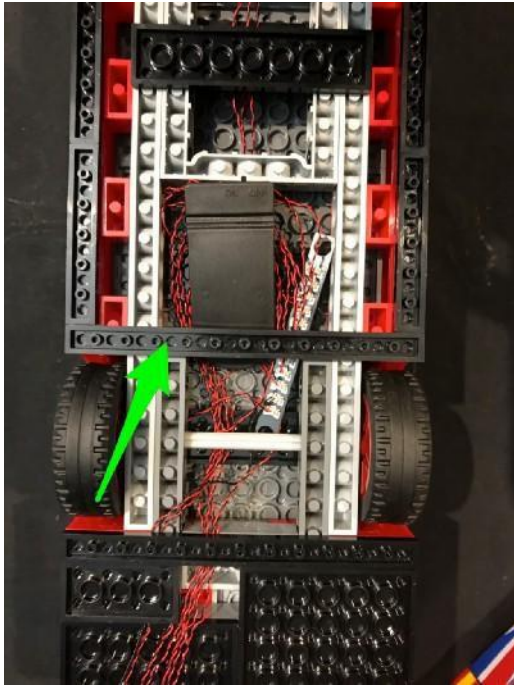


Connect the Flat Battery Pack to the remaining port of the expansion board and then tuck everything neatly underneath in the following space.





Reconnect the black 1x12 plate we removed earlier over the top to secure cables and battery pack. Take the black 2x8 plate we removed earlier and then connect it to the following position to secure the remaining part of battery pack and cables.



Take this time to verify all the lights we have installed so far are working ok by turning the battery pack 'ON'.



19.) We will now move onto installing lights to the upper level. First remove the roof followed by the front indicator light sections.



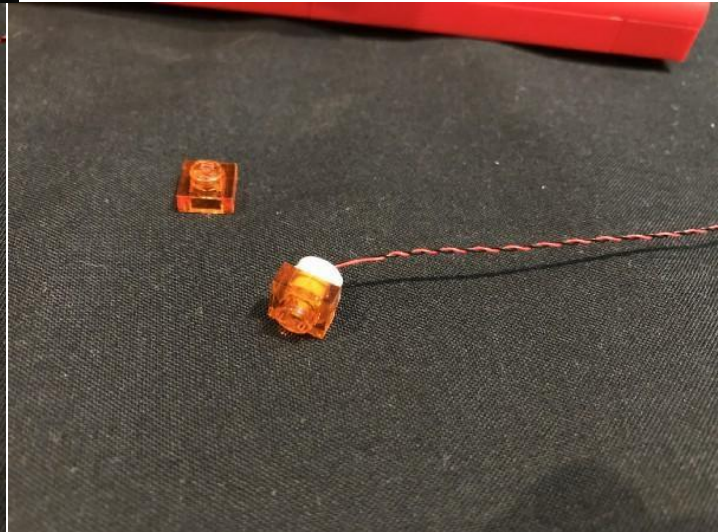
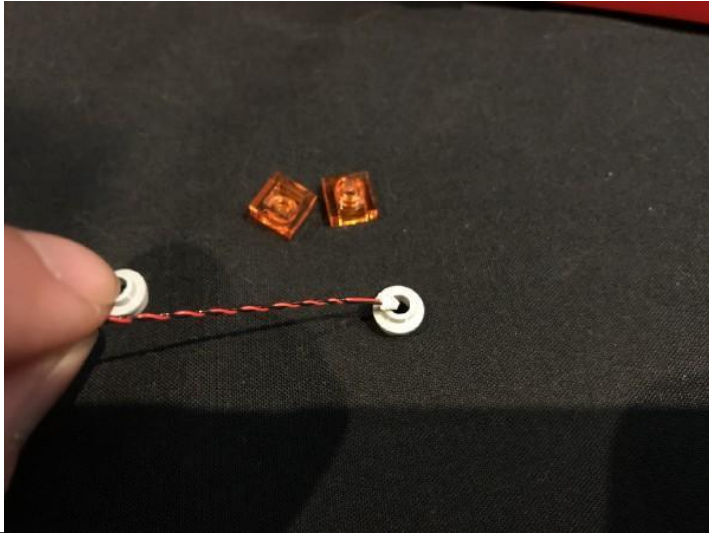
Disassemble the front indicator light sections as per below



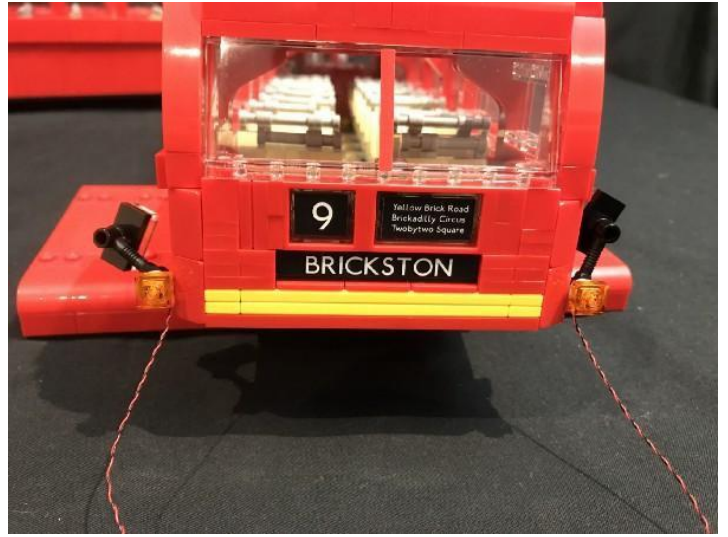


20.) Take a White 15cm Dot Light and thread the connector side through the hole on top of the light grey stud. Thread all the way through until the Dot Light is right up against the edge and then secure it in place by reconnecting the trans-orange plate over the top.

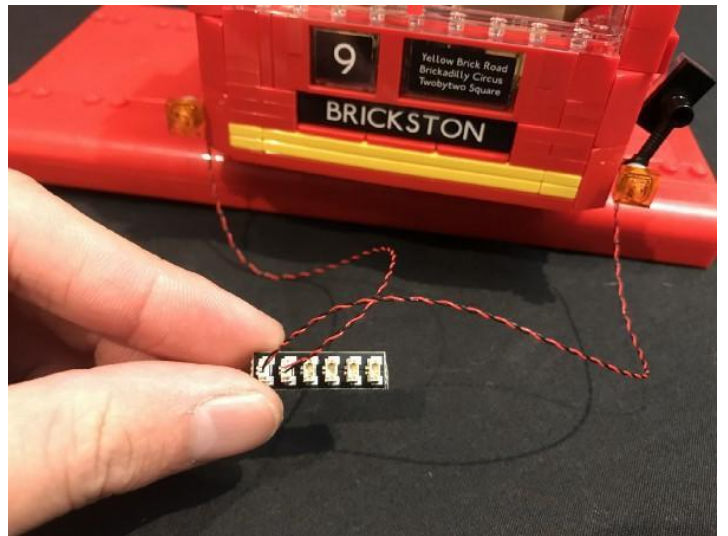
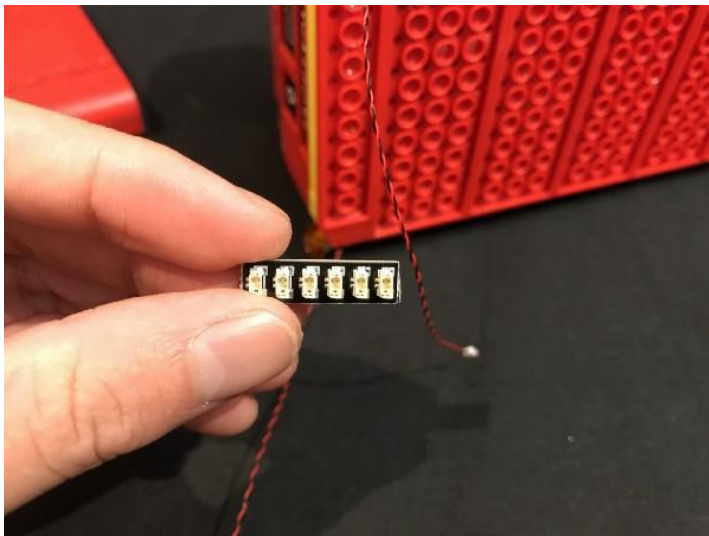
Note: We are reconnecting the trans orange plate a different way than the original. Connect the plate on top of the grey plate rather than on the bottom.



Repeat this step to install another White 15cm Dot Light to the other indicator light before reconnecting both to the front of the bus.

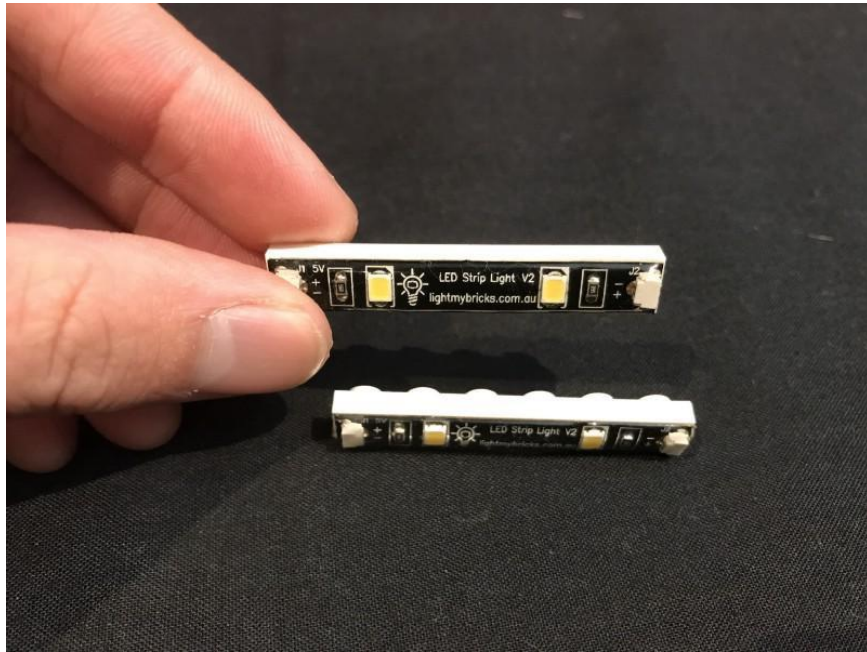


21.) Take the 6-port Expansion Board and then connect the two Dot Lights we just installed to the spare ports.

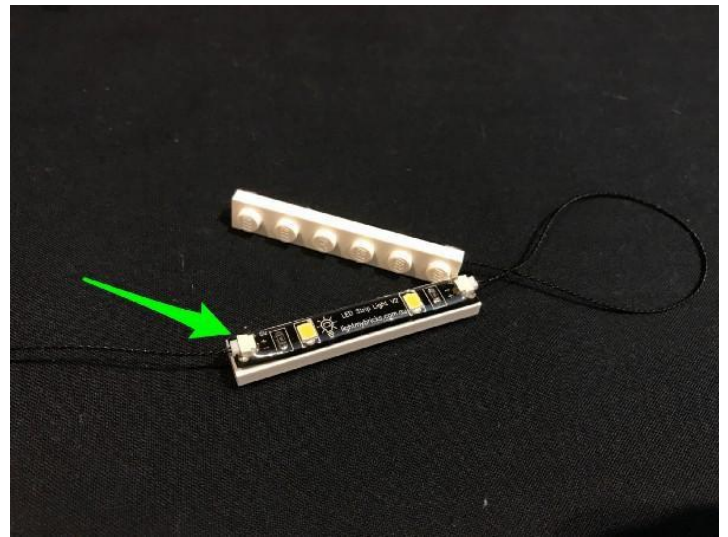
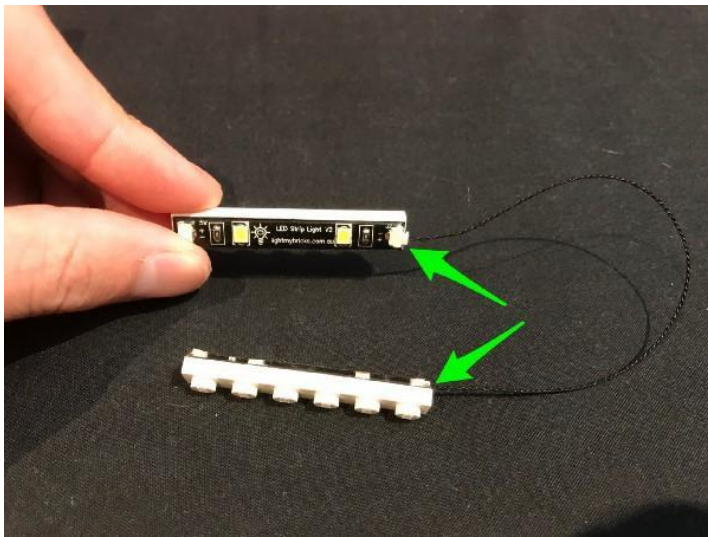


22.) Take 2x White Strip Lights and stick them to the bases of 2x provided LEGO 1x6 Plates.

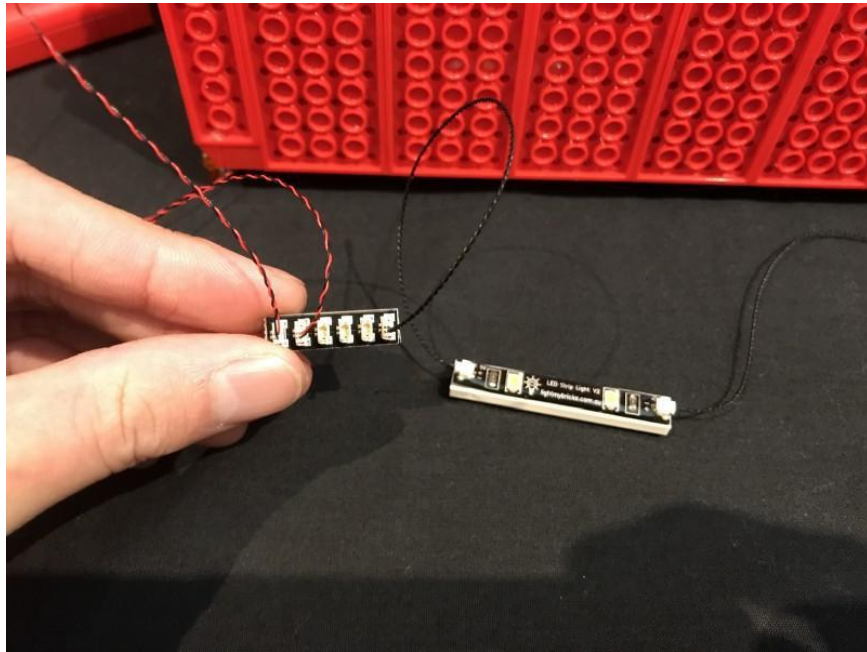




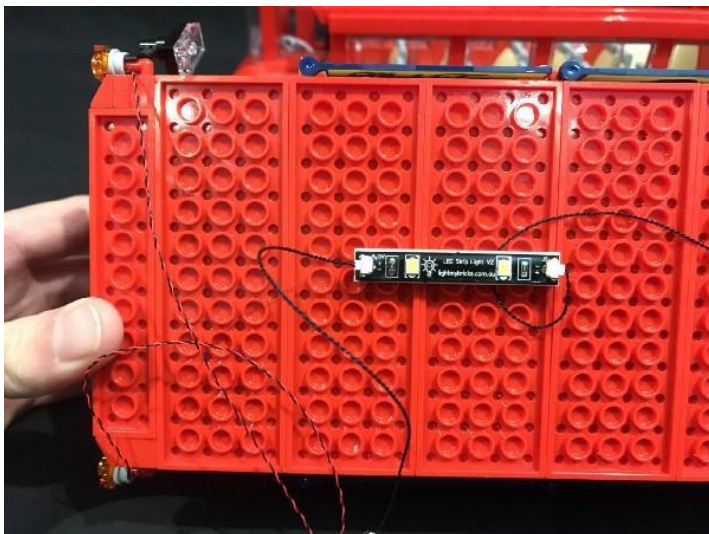
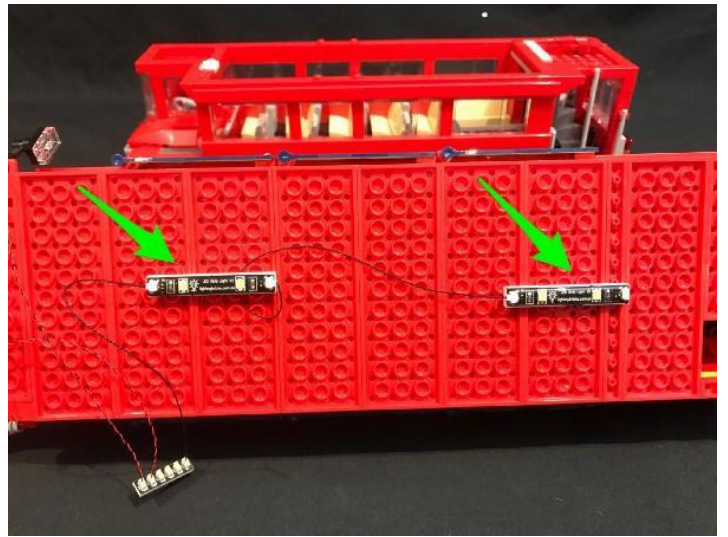
Take a 15cm Connecting cable and connect it in between each Strip Light. Take another 15cm Connecting cable and connect it to the other end of one of the Strip Lights.



Connect the other end of this 15cm cable to the 6-port expansion board.

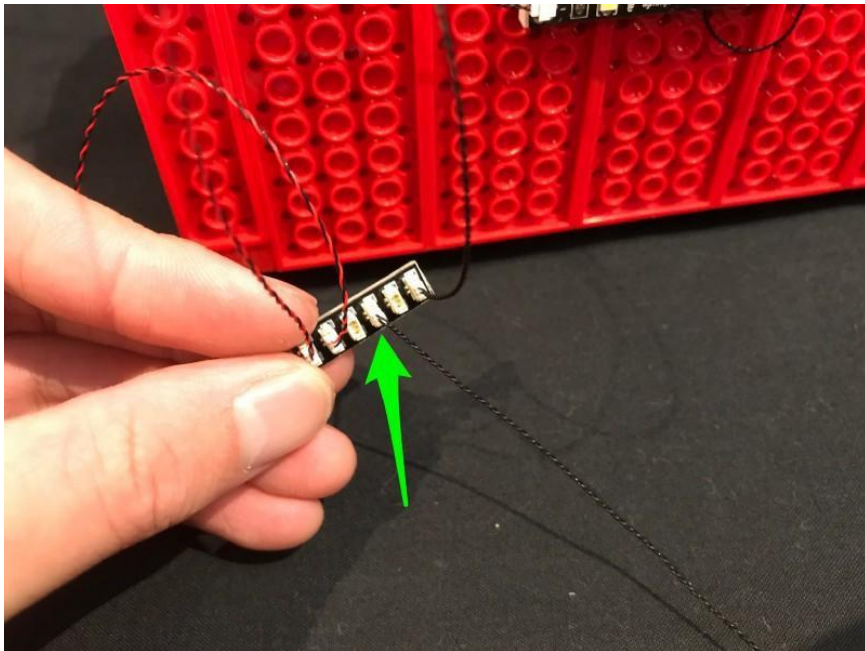


23.) Lift the upper level and turn it over so we can access underneath. Connect the 2x Strip Lights to the following positions.

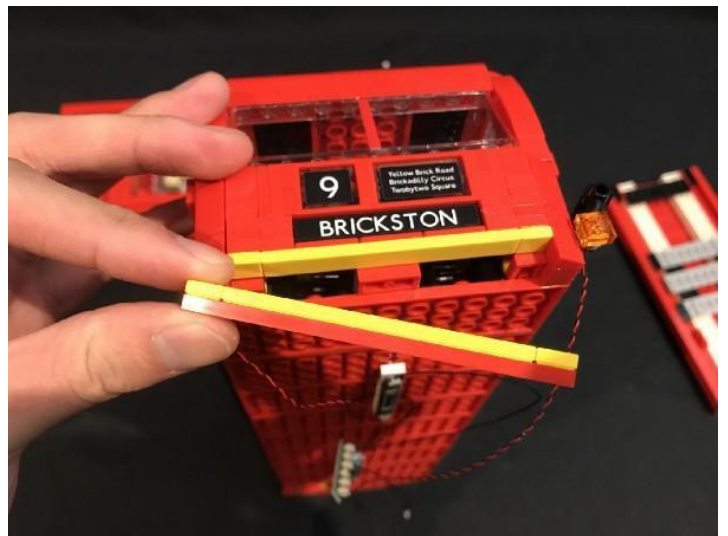


Take another 15cm Connecting Cable and connect it to a spare port on the 6-port Expansion Board.





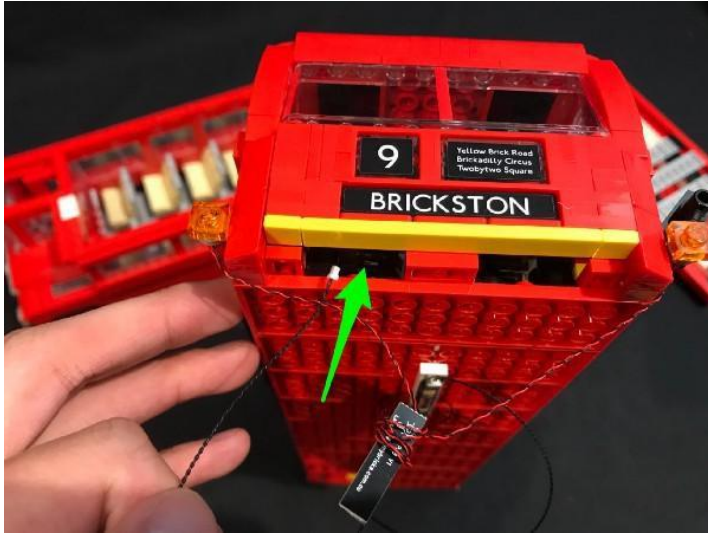
24.) Remove the following section from the front of the bus.



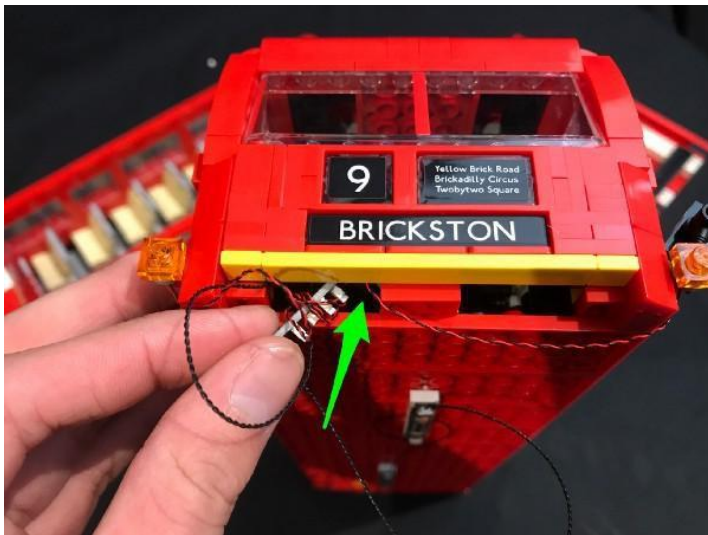
Take the 6-port expansion board and wind the dot light cables around the board to eliminate excess cables.



Take the other end of the 15cm cable we connected in previous step and thread it through the space which leads to the inside of the upper level. Pull the cable up from underneath.

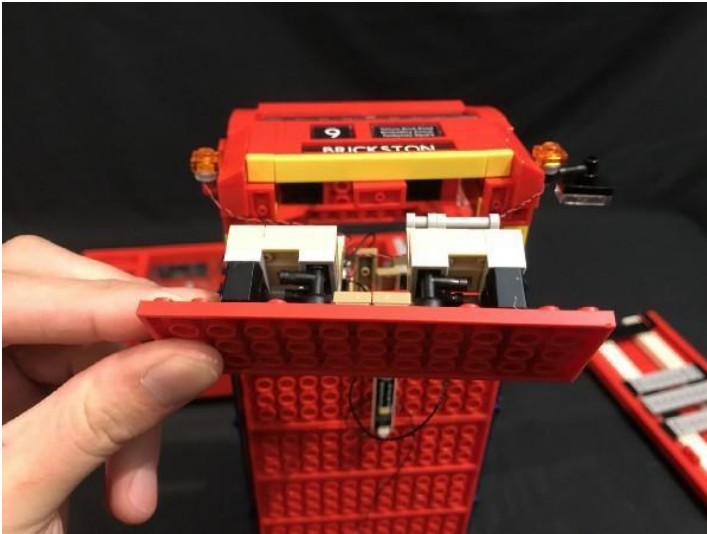


Thread the expansion board up the same space.

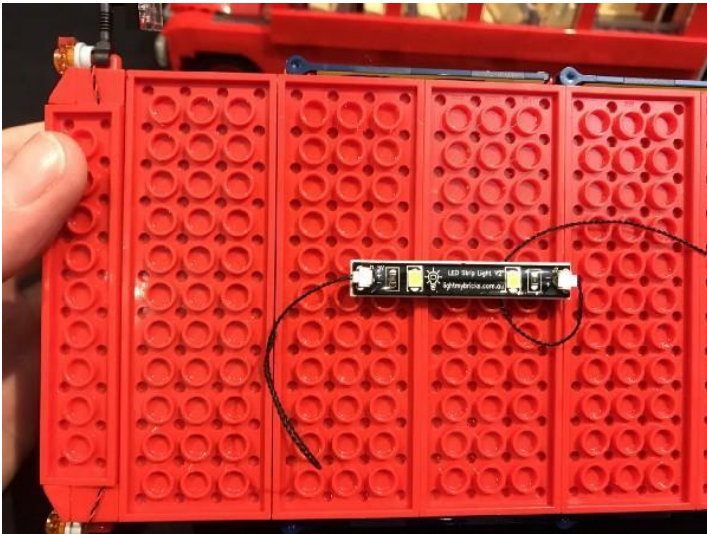


25.) To eliminate excess cable from the 15cm cable between the strip light and expansion board, first remove the next plate underneath and then reconnect over the top as per below

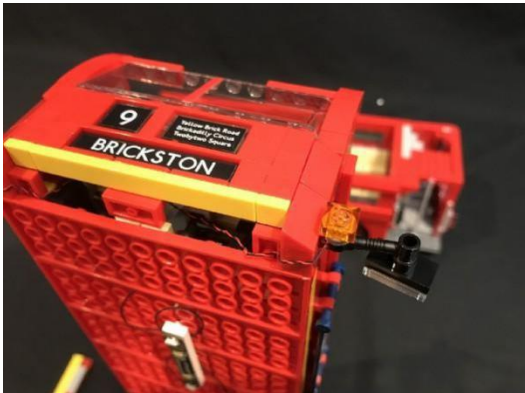


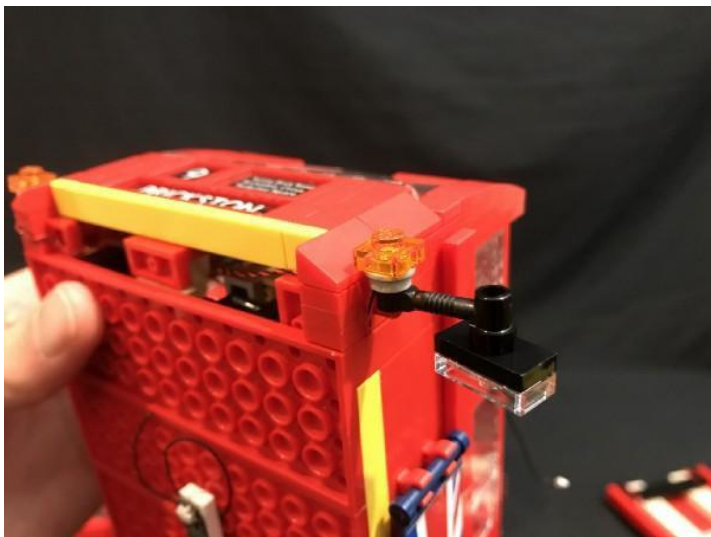
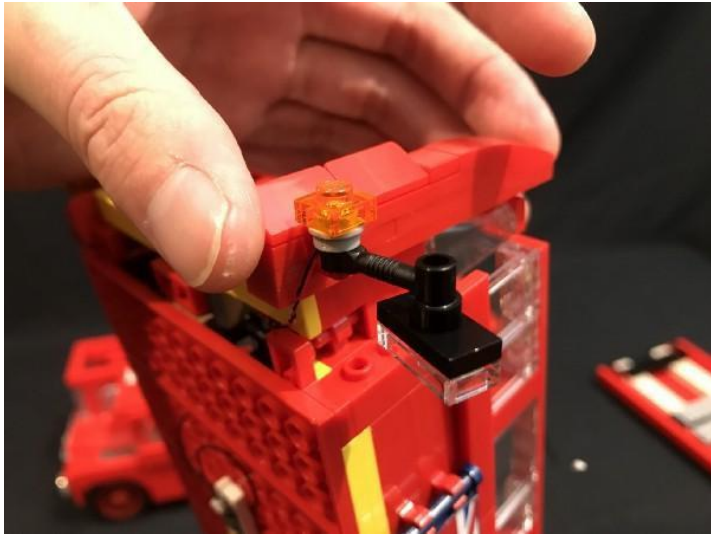


You can also eliminate excess cable by looping them underneath the LEGO plates as per below.

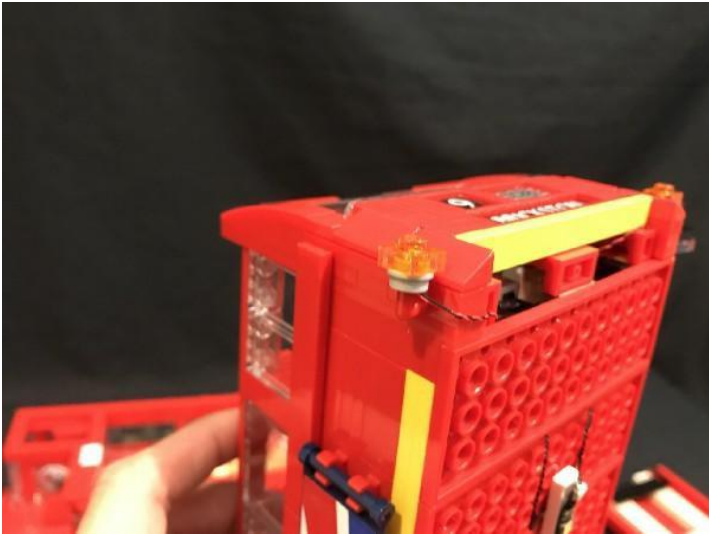


26.) Tuck the cables from the indicator lights in between sections by disconnecting, laying cables behind, and reconnecting





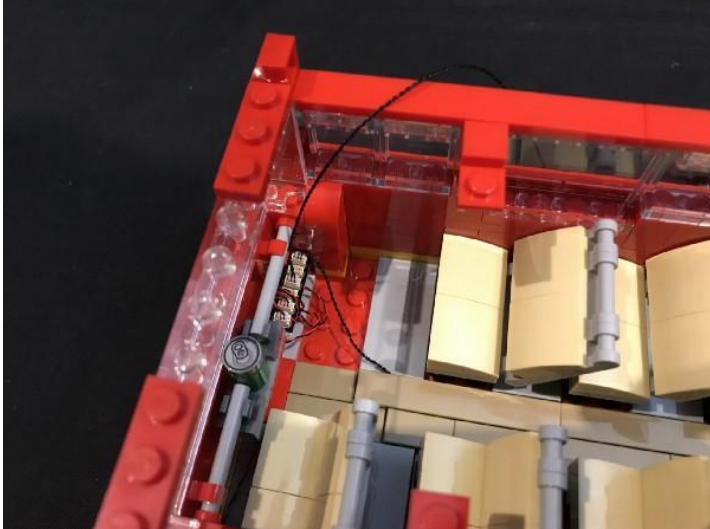




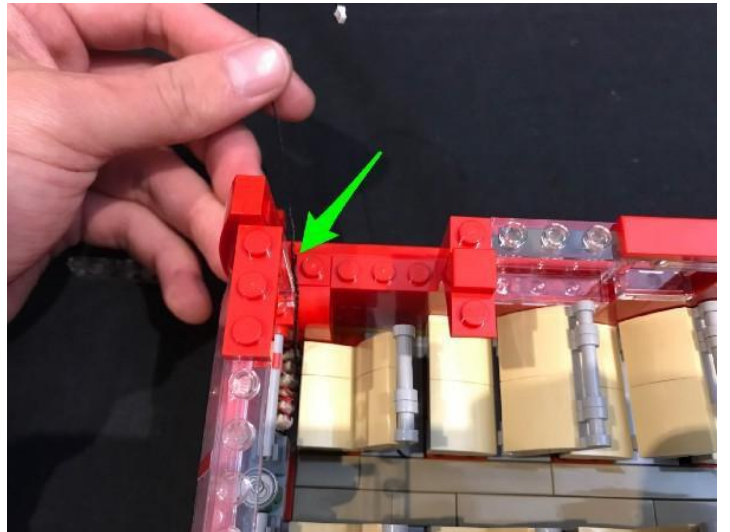
Once all cables are neatly tucked in and hidden, reconnect the front base section we removed earlier



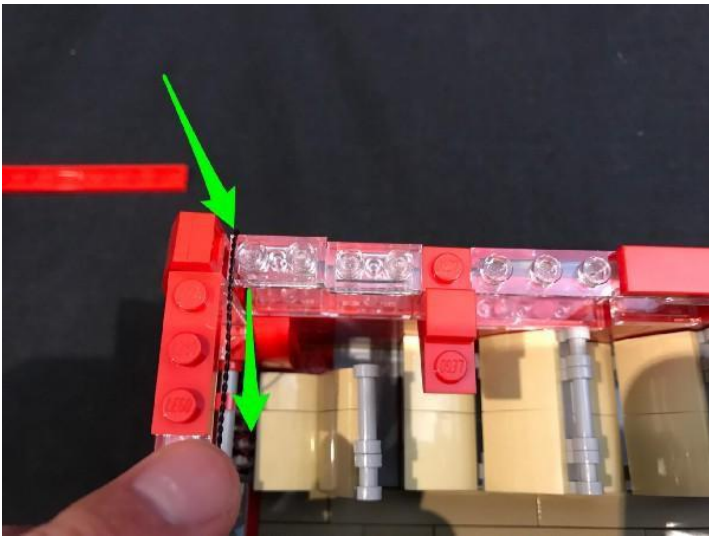
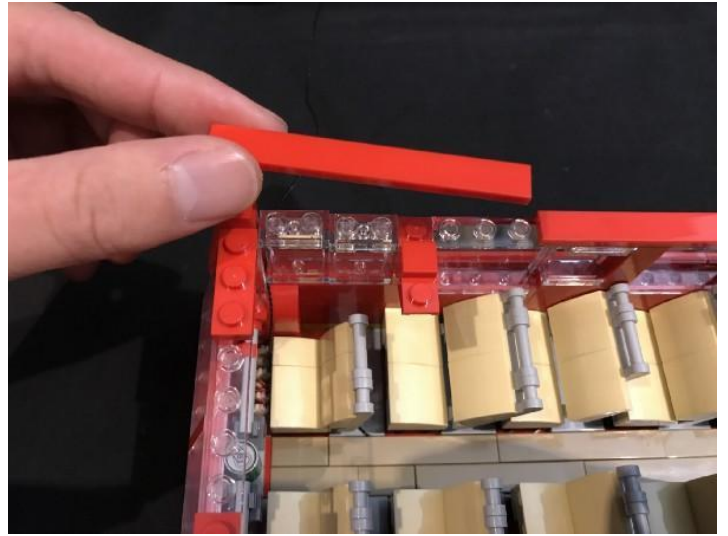
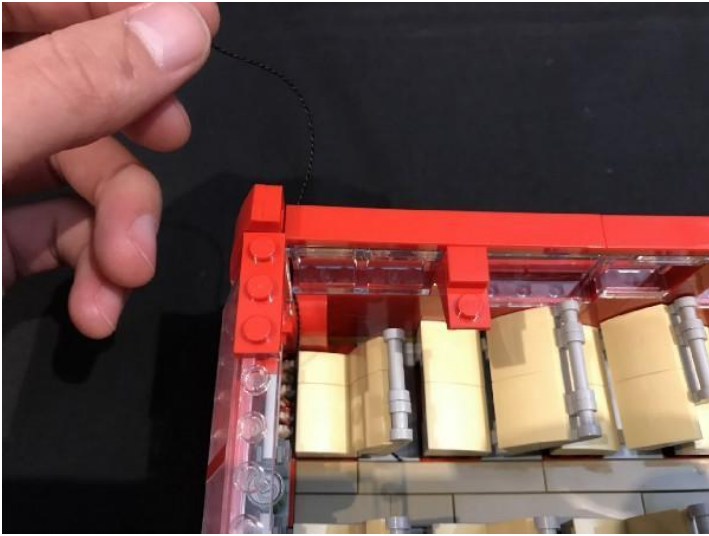
27.) Remove the front roof section as well as the front seat. Tuck the expansion board in below before reconnecting the front seat.



28.) We will now lay the spare 15cm cable up the corner of the window. First remove the following sections before laying the cable underneath in between studs, and reconnecting sections.



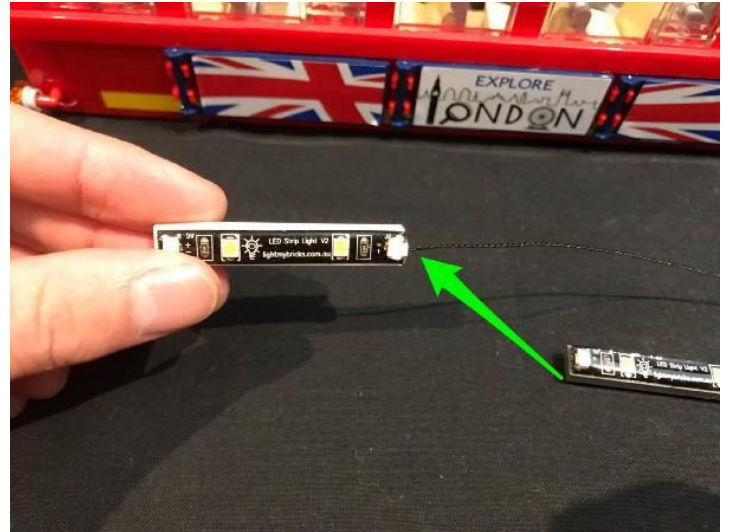




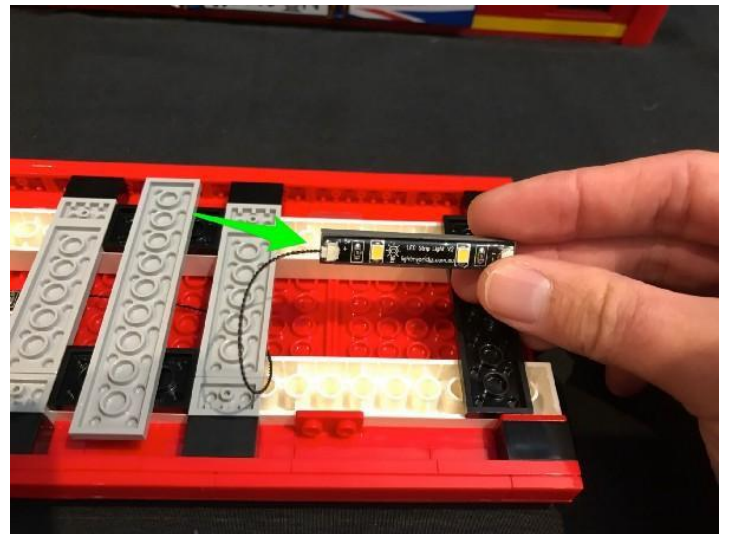
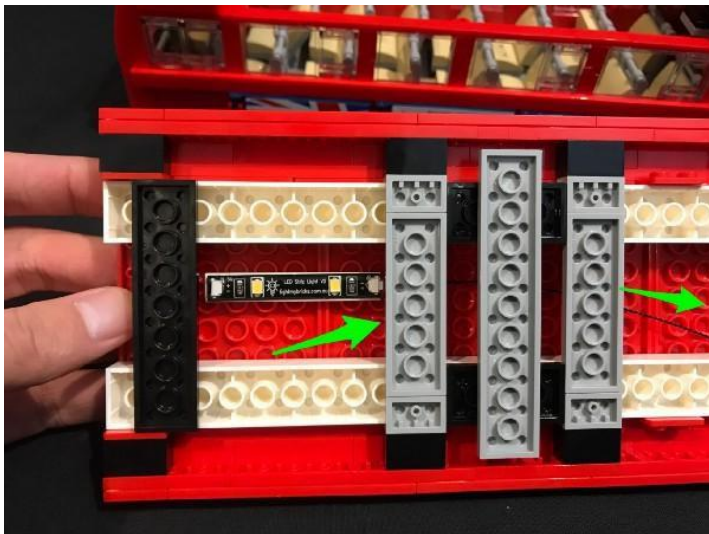
Reconnect the front roof section ensuring the 15cm cable is still accessible.



29.) Take the remaining two White Strip Lights and stick them to the bases of two provided LEGO 1x6 Plates. Take the remaining 15cm Connecting Cable and connect it to one of the Strip Lights.



Mount the Strip Light with cable connected to the roof of the Bus in the following position. Thread the other end of the cable across and underneath the grey plates to then connect to the other White Strip Light.

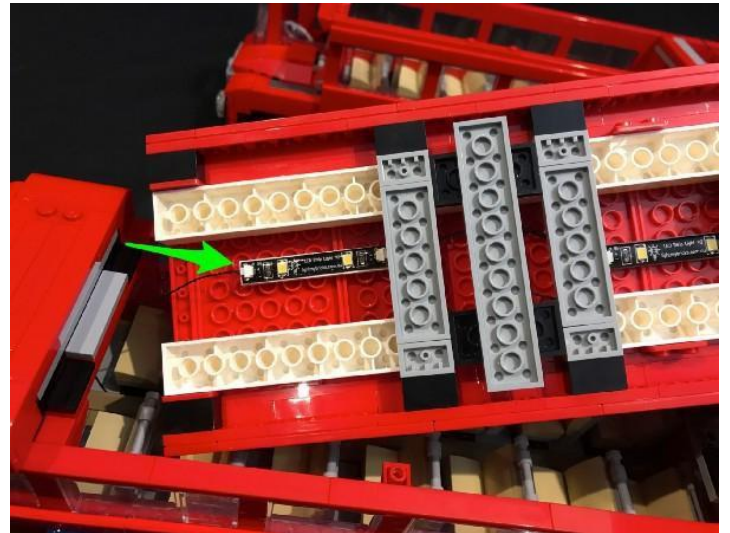


Mount the remaining Strip Light as per below





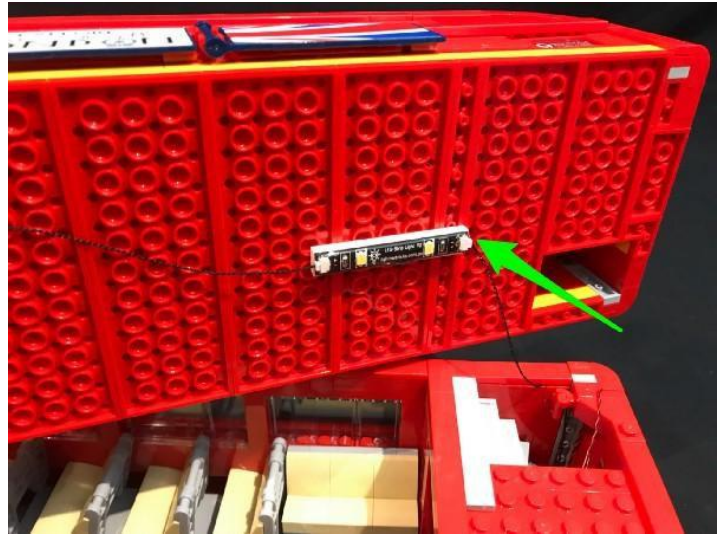
Remove the black 2x8 plate to allow you to connect the other end of the 15cm cable from the level below to the Strip Light.



Reconnect the Roof of the bus to original position.



30.) Take the entire upper level over the bottom level of the bus and then locate the other end of the spare 30cm cable near the stair case. Connect this into the Strip Light closest to it before securely reconnecting the upper level to bottom level.



This finally completes installation of the London Double Decker Bus Lighting Kit. You can now turn your on your battery pack by accessing the switch from underneath the Bus. Turn "ON" and ENJOY!