



SPEED, INC.

Detroit Speed, Inc.
 Electric Headlight Door Kit
 1963-67 Corvette
 P/N: 122005

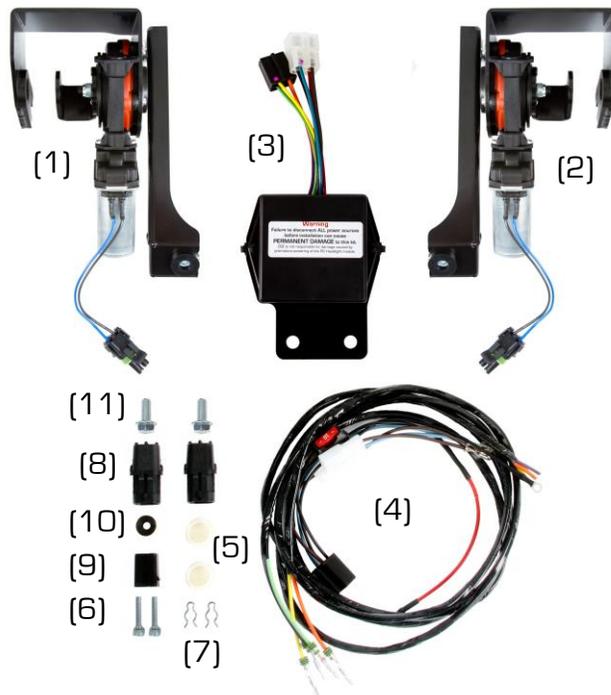


Figure 1

Item	QTY	Description
1	1	Driver's side actuator assembly with brackets and pitman arm
2	1	Passenger's side actuator assembly with brackets and pitman arm
3	1	Headlight door control module with mounting bracket
4	1	Harness assembly
5	2	Pivot bushing
6	2	Rubber mount screw
7	2	Hairpin clip
8	2	Weatherpack two-terminal connector
9	1	Packard two-terminal connector
10	1	Rubber grommet
11	2	5/16"-18 x 3/4" Flange Head Hex Cap Screw
N/A	10	Nylon wire tie

Thank you for your purchase of Detroit Speed's C2 Headlight Door Kit. This kit replaces the stock electric actuators on 1963-67 Corvettes. Not cutting, drilling, or any permanent modifications of vehicle is required to install this system. When installed, this kit will operate the headlight doors smoothly and reliably. The expensive, failure prone, and heavy original electric motors will no longer be a problem.

Many convenience features are integrated into this system. When the headlight switch is pulled to the "park" position, the park lamps illuminate. The headlights stay off and the headlight doors remain closed. When the switch is pulled to the "headlamps" position, the park lights stay on, the headlight doors open, and the headlamps illuminate. When the switch is pushed back to the "park" position, the headlamps turn off, but the headlamp doors remain open. This is useful to clean or service the headlamps since the doors will be open and the lenses cool. When switched to the "off" position, the park lights go out and the headlight doors close.

The separate switch that is used to raise and lower the headlight doors on the original system is no longer needed. The original headlight door warning/indicator lights will remain fully functional after the DSE Electric Headlight Door Kit is installed.

The module that is included with the DSE Electric Headlight Door Kit has a unique integrated failsafe protection mode. The module is designed to protect itself from damage due to a short circuit in your wiring system. If a short exists, the module will click continuously. This means a short has been detected and the module has entered into its failsafe mode. For the system to operate again, correction of the short circuit is required followed by resetting the module. To reset the module, remove the fuse from the main power wire for 10 seconds and then reinstall the fuse. If the clicking reoccurs, the short has not been repaired and needs further investigation.

The actuators are pressure sensitive to reduce the chance of personal injury or damage to vehicle in the event that something is caught in the door during operation. If the door comes in contact with a foreign object, it will stop its operation. The lights will need to be cycled on and off to reset the mechanism. **NOTE: The pitman arms on the actuators will not be able to be moved by hand as that could cause permanent damage to the actuators.**

DSE has gone to great lengths to provide you with the highest quality, best engineered product available with straightforward installation requiring minimal modification to your vehicle.

IMPORTANT: This kit is designed to work with properly installed and adjusted headlight doors. This system will not work correctly with doors that bind or do not have the stops adjusted properly. The doors must open and close without binding or resistance. Because the system is pressure sensitive, binding or sticking door assemblies will cause the actuators to stop prematurely. DSE suggests lubricating all pivot points.

Installation Instructions:

1. The new headlight kit will be connected to the existing 30 Amp circuit breaker for the original electric headlight door system that is located under the dash in the driver's side A-pillar/ kick panel area as shown in Figure 2. This circuit breaker will need to be located and the original headlight door system power wire will need to be disconnected leaving the battery feed connected to the circuit breaker. There are several circuit breakers in this area that look the same so you will need to disconnect the circuit to determine which one is the correct circuit breaker. Disconnect the battery and look at the circuit breakers under the dash to try to determine from the wire routing which one is connected to the headlight door system. Disconnect one of the wires from the circuit breaker and wrap the exposed terminal with electrical tape to keep it from accidentally shorting out to a ground source. Make sure that the poles on the circuit breaker cannot make a ground connection as well. Reconnect the battery and see if the original headlight door motors still operate. If they don't, proceed to step two. If they do, disconnect the battery and reconnect the removed terminal. Repeat this process on another circuit breaker until the correct circuit breaker is identified.

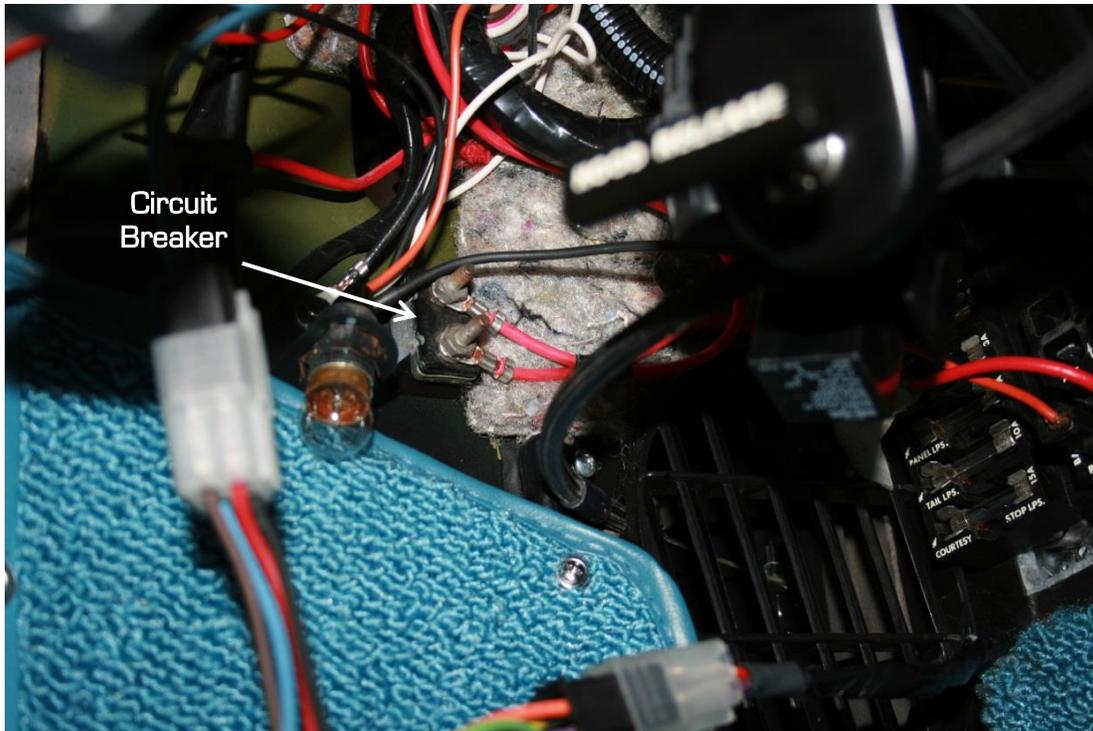


Figure 2

2. Once the original electric headlight door system circuit breaker is identified, the correct wire needs to be disconnected. The power supply and circuit feed wires on the breaker look the same so use a test light to determine if the correct wire was disconnected. When the correct wire is disconnected there should be power on both poles of the disconnected circuit breaker and no power on the disconnected wire. If you have the right wire disconnected, proceed to step three. If there is power on the disconnected wire and no power on the circuit breaker poles, the wrong wire is disconnected. Disconnect the battery, reconnect the removed wire, and disconnect the other wire from the circuit breaker. Reconnect the battery and retest.
3. The new system will connect to the pole on the circuit breaker where the original electric headlight door system circuit feed wire was disconnected in a later step. Tape up or shrink wrap the exposed terminal from the original wiring harness that was removed and tie the wire up out of the way. Disconnect the battery.
4. While it is not required, it is highly recommended to remove the hood for this installation. With the hood in place, access is extremely limited to remove the OEM motors, to install the new DSE motors, and to route the new wiring harness. Have someone assist you to carefully remove the hood from the vehicle taking care not to damage the paint.
5. Disconnect the original headlight motor wiring connectors, this will consist of one two-wire plug (Figure 3 Item A) and a separate ground wire (B) attached to the motor housing. Remove the motor support bracket rubber mount screws (C) that are located in the header panel. Remove the hairpin retainer clips (D) from the motor support studs. Turn the knurled knob (E) on the inboard side of the motors until the gear seems to turn freely, this will remove any preload from the motors. Remove the motor assemblies by sliding them off the pivot shafts towards the center of the car. It may be necessary to gently wiggle the motor assemblies to release tension between the motors and the pivot shafts. With the motor assemblies removed, ensure that the plastic bushings that are located between the motor brackets and the headlamp door pivot shafts (the same bushing that is supplied in the kit (identified as item 5 in Figure 1) are in the brackets. If they did not stay in the motor brackets when removed, remove them from the headlight door pivot shafts or they will interfere with the installation of the new motors.

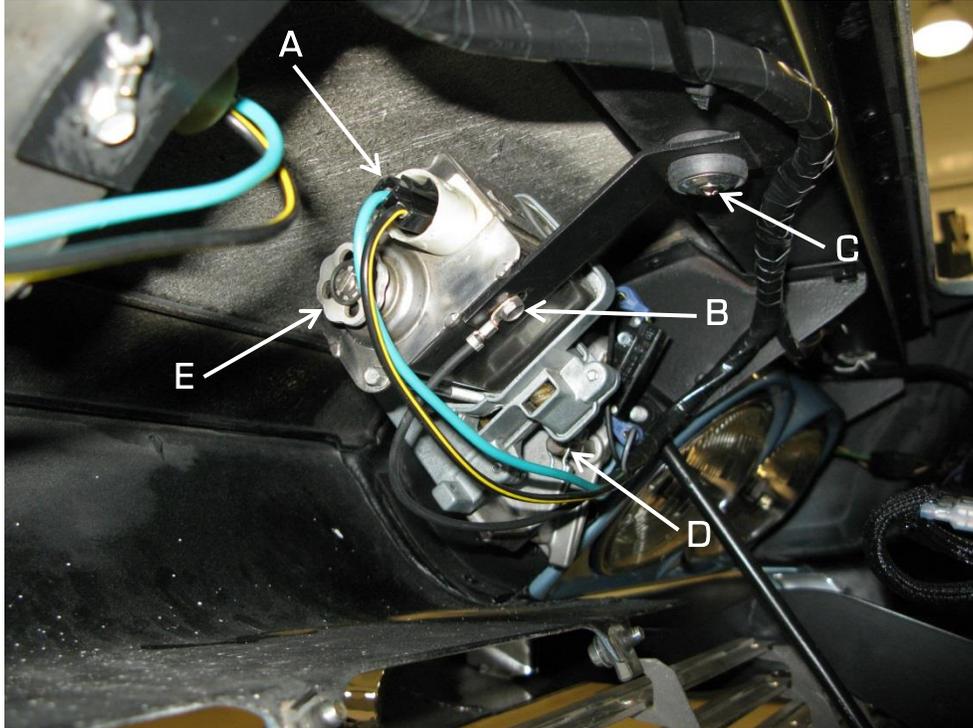


Figure 3

6. Identify the driver's side actuator assembly (Item 1) from Figure 1 and install a pivot bushing (Item 5) into the mounting bore. Install the assembly onto the driver's side headlight door pivot shaft. Rotate the headlight door open until the rectangular part of the shaft can be inserted into the rectangular hole in the motor pitman arm. Line up the slot in the motor bracket with the hairpin clip shaft and slide the actuator assembly in place. Install a hairpin clip (Item 7) on the shaft and a rubber mount screw (Item 6) into the rubber mount, attaching it in the same location as the original motor. See Figure 3. Repeat this procedure to install the passenger's side actuator assembly (Item 2). **NOTE: Do not attempt to move the pitman arms on the actuators by hand as this could cause permanent damage to the actuators.**

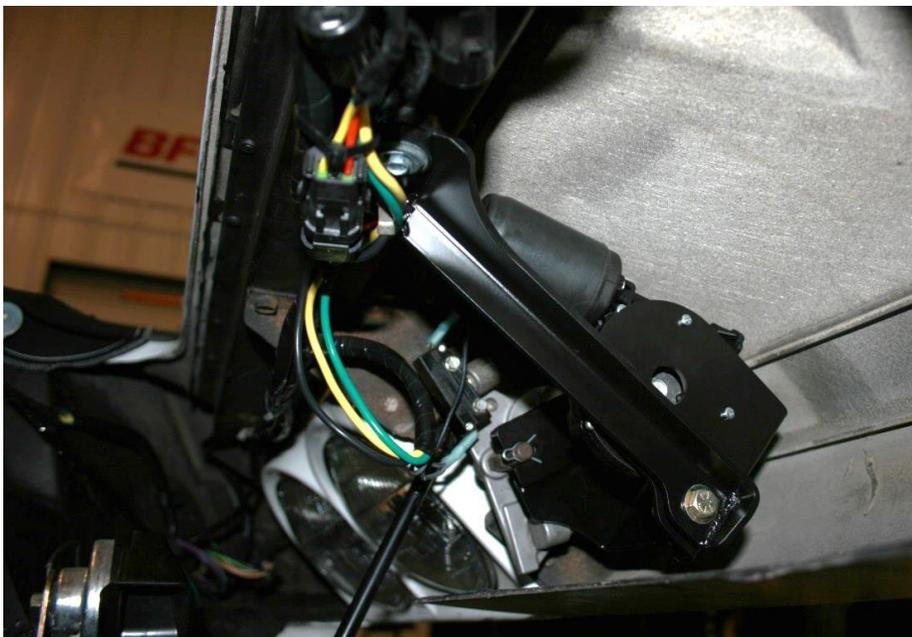


Figure 4

7. Tighten the rubber mount screws to 20 in-lbs. There are spherical washers on the bolts that attach the actuator brackets to the support brackets that contain the rubber mounts which will compensate for any misalignment between the components. Allow the brackets to “float” in place and tighten the ¼”-28 bolts to 80 in-lbs.

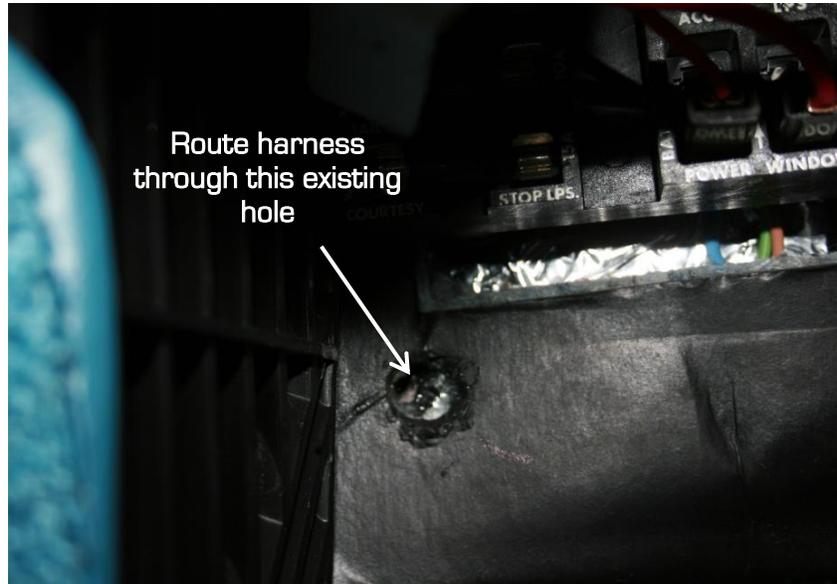


Figure 5

8. Remove the left lower firewall insulation retaining plug from the firewall. It is located inside the vehicle just below the bottom left corner of the fuse block (the carpet may need to be pulled back slightly to gain access). See Figures 5 & 6. The new headlight harness will be routed through this existing hole.

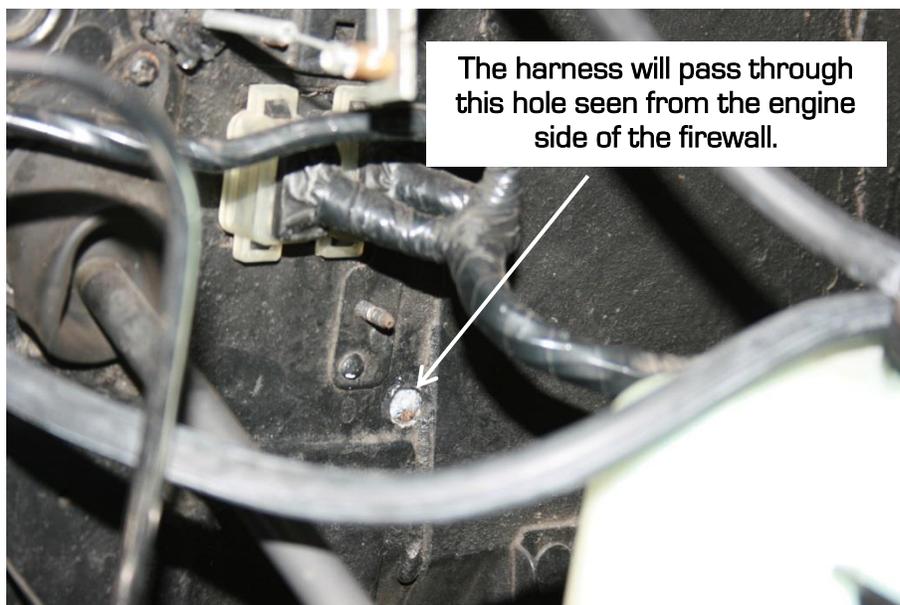


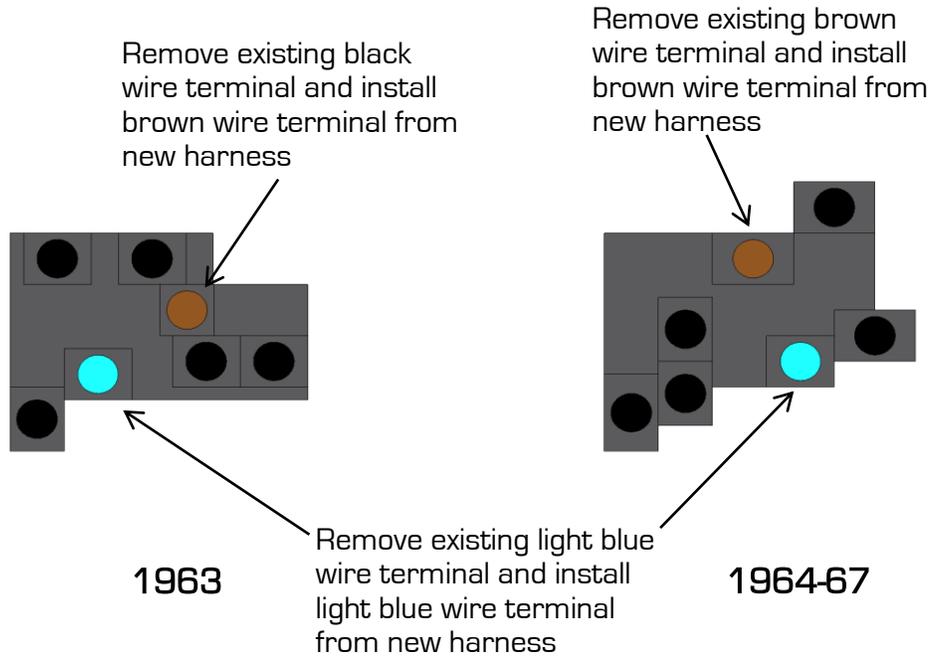
Figure 6

9. The terminated ends of the new headlight harness (Item 4) that do not have connectors on them connect to the headlight door actuators. Tape these terminals with masking tape to make it easier to route the harness. See Figure 7. Feed the taped ends through the firewall in the hole where the insulation plug was removed and route the harness out to the headlight door actuators routing it along with the original engine and body wiring harnesses.



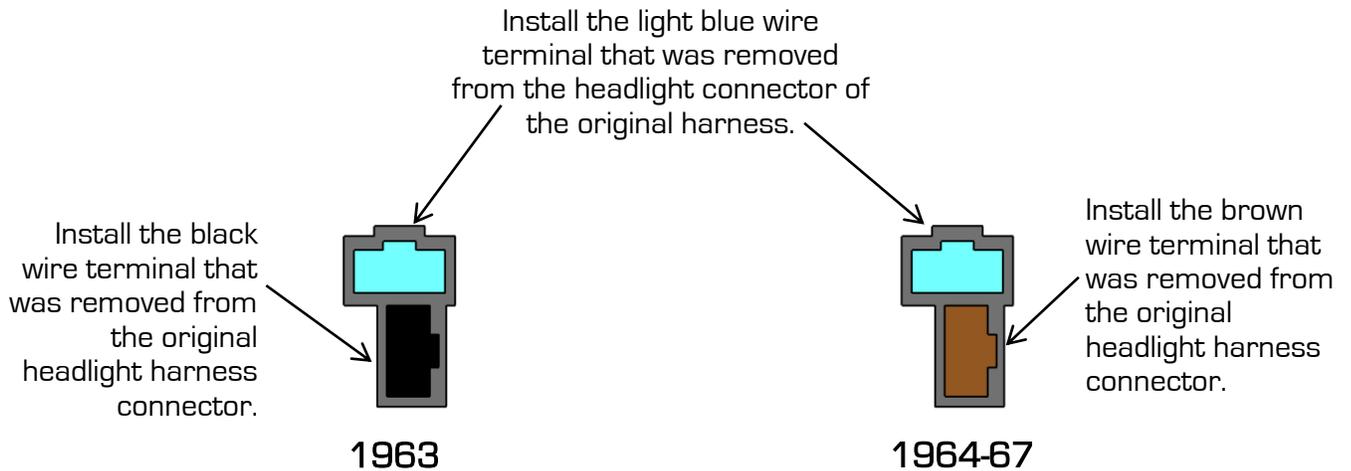
Figure 7

10. Remove the masking tape from the terminal ends and insert them into the supplied weatherpack connectors (Item 8). On the connector body, the cavities are labeled "A" and "B." On the driver's side, the yellow wire should be inserted into the cavity labeled "A" and the orange wire into cavity "B". On the passenger's side, insert the purple wire into cavity "A" and the green wire into the cavity labeled "B." Terminals should "snap" into place. Once the terminals are installed, snap the cover over the wires.
11. Connect the wiring harness to the headlamp door actuators. The connector with the yellow and orange wires connects to the driver's side actuator and the connector with the purple and green wires connects to the passenger's side actuator.
12. Remove the headlight switch knob by pulling it out of the switch while holding down the release button on the top of the switch behind the dash. Remove the headlight switch retaining nut using a large screwdriver or other suitable tool. Drop the headlight switch down from behind the dash and unplug the switch connector.
13. Locate the blue wire as seen in Figure 8 on the next page. Remove the terminal from the connector using a terminal removal tool or a small flat blade screwdriver. The blue wire is the 12 volt headlamp feed. Insert the terminal of the blue wire on the new headlight harness into the headlight connector location where the original blue wire was removed. **NOTE:** The instrument panel brown wire can also be used for a power wire as shown in Figure 10 on page 8.
14. Locate the brown wire on 1964-67 models or the black wire on 1963 models as shown in Figure 8. This wire connects to the rear park/tail lamps. Since the original wiring configuration for 1963-67 Corvettes did not illuminate the front park lamps when the headlights are on, the controller must be connected to the rear park lamps in order to cycle properly. Over the years many of these cars have been modified where owners have connected the front park lamp feed to a different terminal on the switch to keep the front park lamps on when the headlights are illuminated. There may be more than one brown or black wire in the connector so be sure to remove the correct one. Remove the terminal from the headlight switch connector using a terminal removal tool or a small flat blade screwdriver. Insert the terminal of the brown wire on the new headlight harness into the headlight connector location where the original rear park/tail lamp wire was removed.



End View (Harness Side)
Figure 8

15. Install the wire terminals which were just removed from the original headlight harness connector into the included black two terminal female Packard connector (Item 9) cavities as shown in Figure 9. Plug this connector into the white two-terminal connector on the new harness. Make sure that the wire colors correspond with each other (light blue to light blue, brown or black to brown).



End View (Harness Side)
Figure 9

HEADLIGHT DIAGRAM

1963-67 Corvette

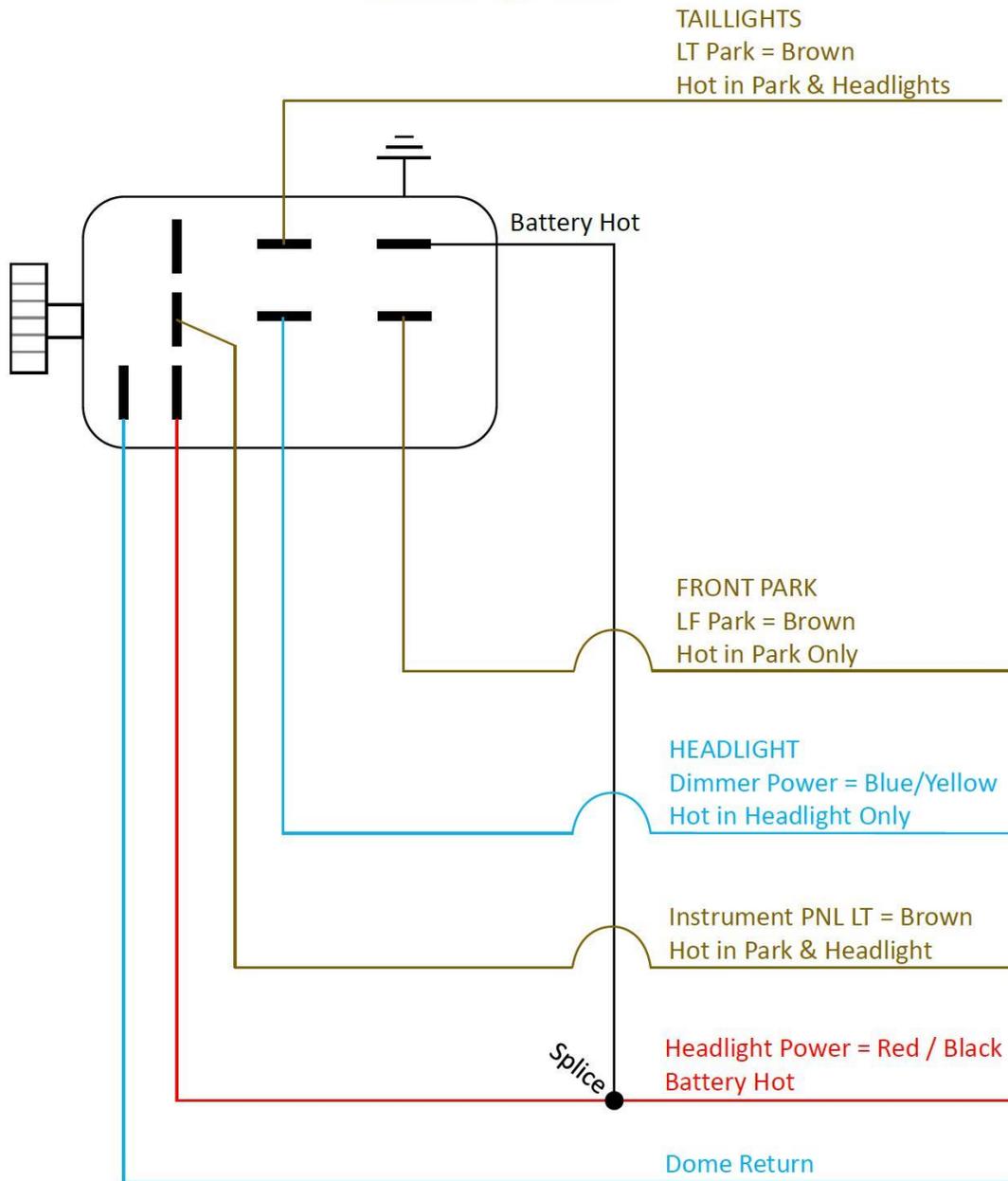


Figure 10

NOTE: Make sure that the LT Park and the LF Park terminals are looped together so that the park lights will be on with the headlights.

16. Plug the headlight switch connector back into the headlight switch. Do not install the switch back into the dash at this time. Install the headlight knob back into the unmounted switch.

17. Connect the red wire with the ring terminal on it on the new headlight harness to the pole on the original headlight door system circuit breaker where the original headlight door system feed wire was disconnected in steps one and two.
18. Connect the black wire with the ring terminal on it on the new headlight harness to a suitable ground. Some vehicles have an existing ground connection behind the driver's side kick panel. Make sure to remove any paint or corrosion to ensure that a good ground connection is made.
19. Plug the headlight door control module into the two remaining connectors on the new headlight wiring harness under the dash.
20. Double check all of the wiring connections to make sure that they are correct, and reconnect the battery. The system will cycle when the battery is reconnected. Test the operation of the system. If the system is operating correctly proceed to the next step. If not, check all of your wiring connections again and refer to the troubleshooting guide at the end of these instructions.
21. Once the operation of the system has been verified, disconnect the battery again.
22. Remove the headlight switch knob and reinstall the headlight switch into the dash. Install the headlight switch retaining nut and install the headlight switch knob.

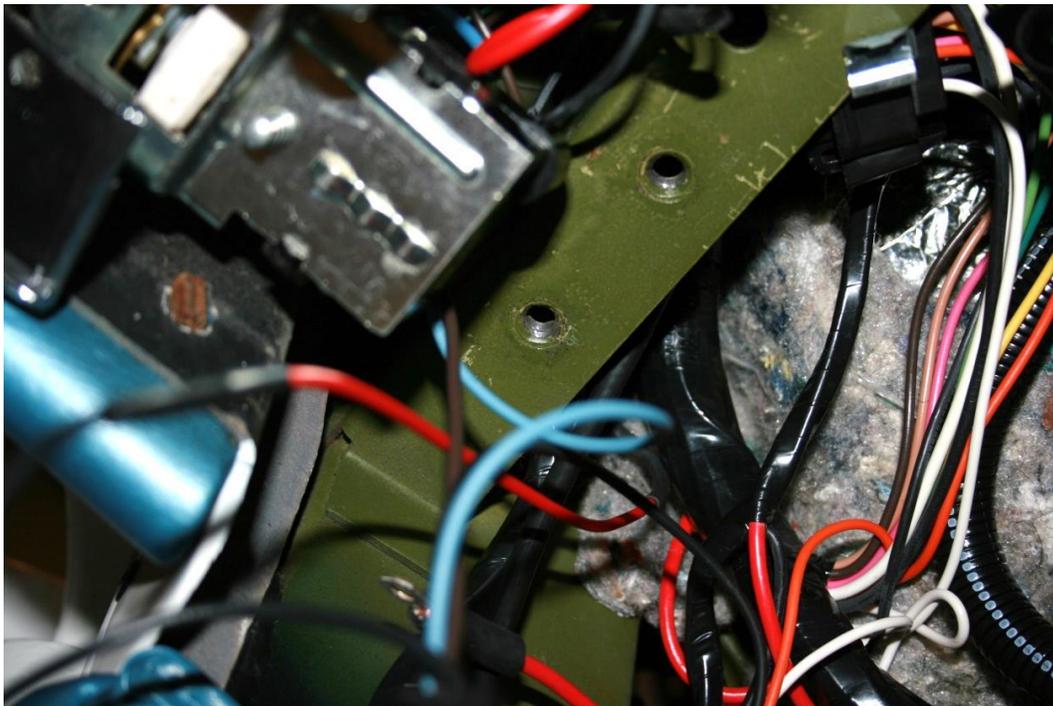


Figure 11

23. The DSE Electric Headlight Door Kit Control Module bracket is designed to be mounted to the two threaded holes on the far left side of the dash just above the driver's side kick panel as shown in Figure 11. If the vehicle has the hood release cable bracket mounted in these holes, remove the two bolts that hold the hood release cable bracket. Install the headlight door control module mounting bracket under the hood release cable bracket and reinstall the bolts as shown in Figure 12. If the hood release cable is not mounted through these holes, use the included 5/16"-18 x 3/4" Flange Head Hex Cap Screws to mount the module in the position shown in Figure 12.

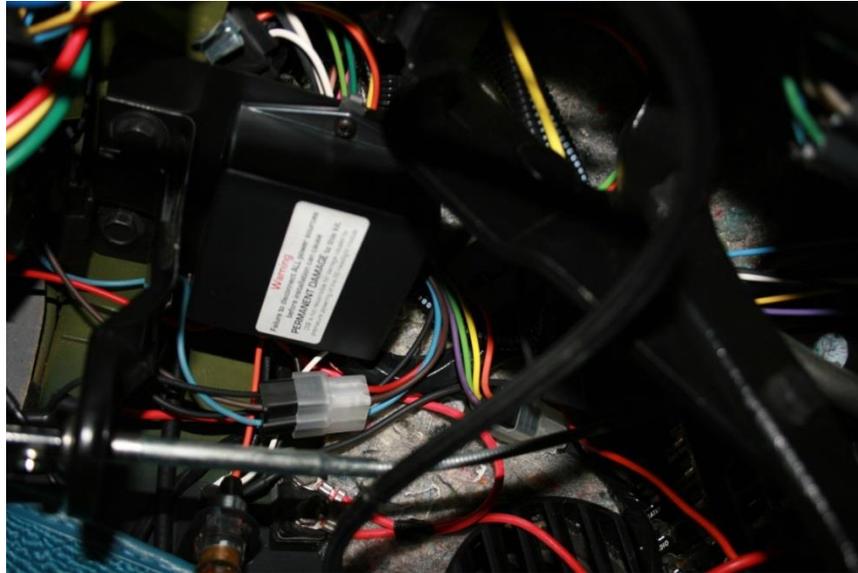


Figure 8

24. Secure the new wiring harness under the dash, in the engine compartment, and at the front of the vehicle with the included tie straps. Tie up the old headlight motor wiring harness at the front of the vehicle.
25. Split the supplied rubber grommet (Item 10) with a razor blade and install it around the harness where it passes through the firewall as shown in Figure 13. Use a small flat blade screwdriver to maneuver it into position.

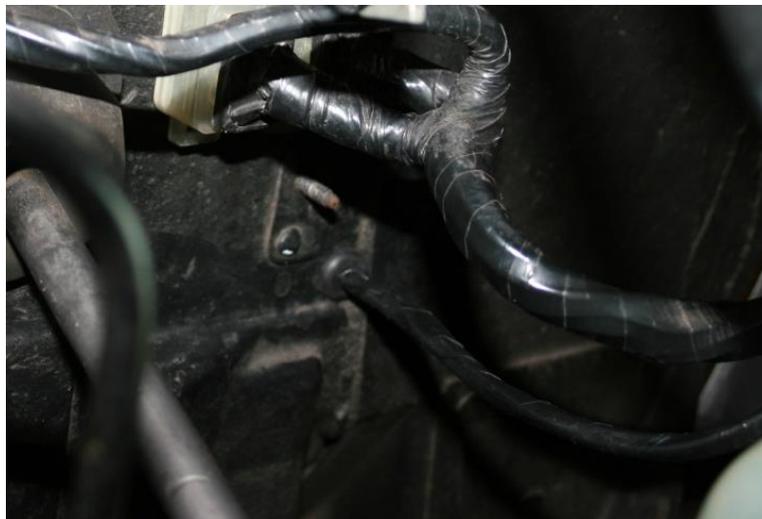


Figure 9

26. Reconnect the battery and install the hood.
27. Enjoy your new DSE Electric Headlight Door Kit!

If you have any questions, please call Detroit Speed at (704) 662-3272.

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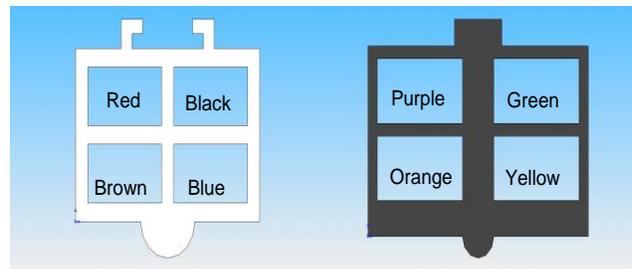
Headlight Switch Position	Wire Color				Door Operation	Light Operation
	Red	Black	Brown	Blue		
Off	+ 12 V	Ground (- 12V)	0 V	0 V	None	None
Park	+ 12 V	Ground (- 12V)	12 V	0 V	None	Park
Headlight	+ 12 V	Ground (- 12V)	12 V	12 V	Door Opens	Headlights*
Park (after headlights on)	+ 12 V	Ground (- 12V)	12V	0 V	None (Door remains open w/ headlights off)	Park
Off	+ 12 V	Ground (- 12V)	0 V	0 V	Door Closes	None

* Park lights will turn off when headlights are on.

Condition	Cause
Module clicks continuously.	The module has entered into its failsafe mode. The module enters into this mode when it detects a short in the system. To correct, determine and repair the short that exists in the system. To return the module to its normal function, remove the 10 amp fuse for 10 seconds and reinstall the fuse. The system should go through its "power up" cycle. If it does not or the clicking continues, a short still exists in the vehicles electrical system and requires further investigation.
Doors only open or close partially.	Most issues with door operation are due to headlight door assemblies that have too much resistance, binding, or are out of adjustment. To check for correct operation of the module and actuators, disconnect the linkages from the pitman arms. With nothing attached to the motor pitman arm, have another person cycle the switch from off, to park, to headlight, and then back to off. The actuators should turn approximately one complete revolution in one direction, stop, and then turn one revolution in the opposite direction. If the actuators operate as described, intermittent problems are most likely due to doors that have too much resistance opening and/or closing.
One door opens faster/slower than the other.	One door has more/less resistance than the other. Lubricate pivot points and adjust the tension of fasteners at pivots points.
Doors do not operate at all.	Make sure the battery voltage is over 11.5 V. A low battery condition can result in inoperable doors. Check all connections. Make sure fuse is not blown and doors are not binding.
One or both doors close when the headlight switch is turned on. Door(s) open when the headlight switch is turned off.	On the driver's side, make sure the yellow wire is inserted into cavity "A" and the orange wire into cavity "B" of the supplied connector body. The purple wire should be inserted into cavity "A" and the green wire into cavity "B" of the supplied connector body for the passenger side. If the wires are terminated properly and the problem still exists, reversing the wires on the offending actuator(s) will solve the problem.
Doors do not go through "power up" cycle.	Check voltages at red, black, blue, and brown wires as described in above chart. If voltages are consistent with the chart, try disconnecting and reconnecting the red wire. If the doors do not operate or do not attempt to operate at this point, double check that the actuator harness is plugged into the module and the actuators. Check continuity between the actuator wires at the module pigtail and at the actuator connector.

Module Connector Pin-out (back of connector)

Red Wire	Constant 12V Battery Voltage
Black Wire	Ground
Brown Wire	Park Lamp Feed
Blue Wire	Headlight Feed
Orange Wire	LH Actuator +
Yellow Wire	LH Actuator -
Green Wire	RH Actuator +
Purple Wire	RH Actuator -



* looking from back side of connector

*If none of these suggestions solve your particular issue, please call Detroit Speed at (704) 662-3272.