LINGENFELTER

PERFORMANCE ENGINEERING

Installation Instructions for Lingenfelter 2007-2013 GM 2500 Suburban & Yukon XL Auxiliary Fan System (with AC clutch controlled fan output)

PN L300080607

Lingenfelter Performance Engineering
1557 Winchester Road
Decatur, IN 46733
(260) 724-2552
(260) 724-8761 fax
www.lingenfelter.com
Release date: 4 August 2016

Revision - 1.1

INSTALLATION MANUAL

We encourage you to read this manual thoroughly before you begin work. Make a quick parts check to make certain your kit is complete (see parts list at the end of this manual). If you discover shipping damage or shortage, please call our office immediately.

Tools and Materials Required

- Drill
- 1/8", 3/16" and 1/4" drill bits
- Metric wrench set
- Standard and metric socket set (standard and deep)
  - 7/16" socket
  - 7 mm socket
  - 10 mm socket
  - 13 mm socket
- 5mm and 8mm hex (Allen) wrench
- 3/8" and 1/2" drive foot pound and inch pound torque wrenches
- Pliers
- Small hammer
- Center punch tool
- Razor blade
- Phillips head screwdriver
- Pry tool or flat head screwdriver
- E5 and E6 inverted Torx socket
- Cutting tool (e.g. air saw, razor knife, etc.)
- Silver Sharpie or similar paint pen
- Heat gun
- Soldering iron (optional)
- Electrical tape
- Wire stripper
- Wire crimp tool
- Wire cutter
- Pin depressor tool or small flat head screw driver

The Lingenfelter Performance Engineering (LPE) auxiliary cooling fan system is designed to improve the performance of the air conditioning (AC) system under idling, stopped and low speed conditions on engine driven mechanical fan GM 2500 series Suburban and Yukon XL vehicles.

The system features two electric pusher fans that are packaged in front of the AC condenser to provide supplemental airflow across the AC condenser. In testing performed by LPE these fans have also shown to improve the stopped and low speed inlet air temperature heat soak that can cause reduced initial off the line vehicle performance.

Two versions of this auxiliary cooling fan system exist:

- This version that uses the AC clutch to control the operation of the auxiliary fans (PN L300080607).
- A version that has the vehicle's engine control module (ECM) control the fans directly. This version requires recalibration of the factory ECM programming (PN L300090607).

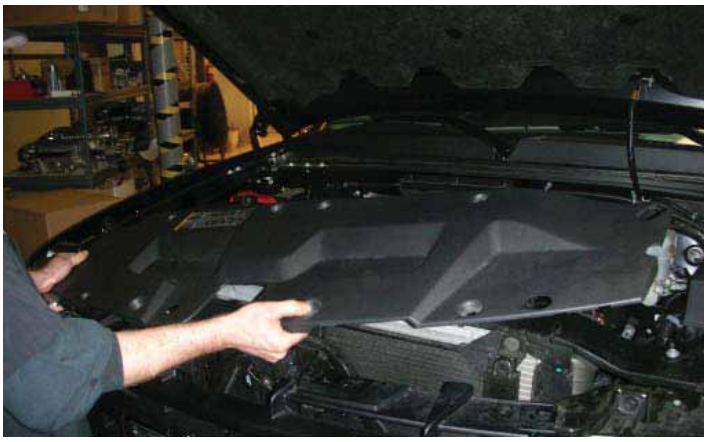
The fan diameters and motor sizes have been selected for these kits to be compatible with the production GM supplied alternators assuming that significant other electrical accessory loads have not been added to the system. If you need additional alternator output in order to provide for the electrical demands of these fans and other electrical components that have been added to the vehicle, please contact LPE for information on the available higher output alternators.

If you need additional cooling fan output LPE can provide systems with higher output fans that require the use of higher output alternators. Contact LPE with your specific requirements and we will design a system that meets your specifications.

Lingenfelter Performance Engineering also offers many other parts for these and other GM based vehicles so please feel free to contact us regarding any other possible GM vehicle related product needs you may have.

1. Using a 10 mm socket wrench, disconnect the negative (-) battery cable from the terminal on the battery. Cover the cable end with electrical tape so accidental connection to the battery does not occur during installation.

2. Using a pry tool or flat blade screwdriver, remove and save the eight plastic pushpins from the radiator support cover. The pushpins will be used to re-install the cover.



3. Remove the radiator support cover from the vehicle. Set aside to be re-installed later.

4. The front fascia and grill assembly are all one piece. Start by removing the bolts at the top of the grille.

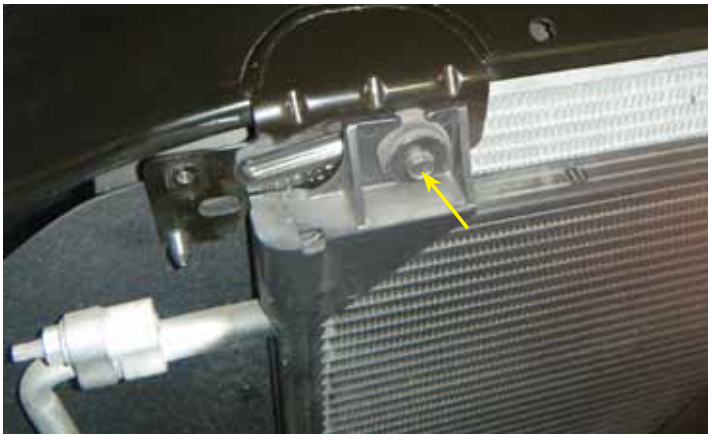
5. Next remove the two 7mm bolts and three push clips from both of the front inner fender wells.

6. Remove the two, one on each side, 10mm bolts securing the plastic fascia support brackets to the metal bumper support brackets.

7. Next remove the four bolts, two on each side, holding the fascia to the fenders.

8. With help from an assistant, carefully pull the front fascia loose from the vehicle and unplug the fog lights on each side. Set aside somewhere it will not get damaged.

9. Remove the headlights from the vehicle, being careful not to scratch the lens or break the plastic brackets. Two bolts secure each headlight assembly.



10. Remove the eight bolts on the upper radiator support bracket and then remove the upper radiator support bracket.

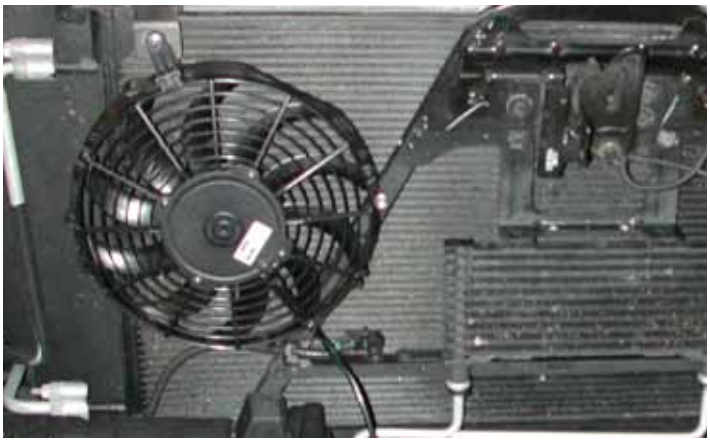
11. Locate the power steering cooler on the driver side of the radiator assembly. Using a 10mm socket wrench, remove the bolt shown that holds the top of the power steering cooler in place. Save this bolt for the next step. Do not remove the cooler.

12. Using a 10mm socket wrench, install the driver side fan bracket (L960160607) as shown on the driver side using the factory bolt.

13. This auxiliary fan kit includes two different size fans. A 225 mm (9”) diameter fan and a 255 mm (10”) fan. The smaller of the two fans will be mounted on the driver side of the vehicle. Install one of the plastic fan mounting tabs onto the 9” (225 mm) fan as shown.

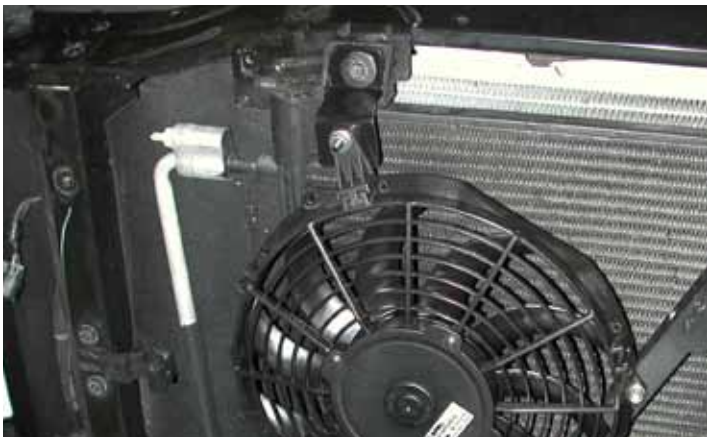
Note the position of the mounting tab in relation to the wiring harness. Using a 7/16” socket, secure the fan to the bracket with one of the 1/4-20 Spin Lock nuts.

14. The 255 mm (10”) fan, the larger of the two fans, will be mounted on the passenger side of the vehicle. Using a 10mm socket, remove the bolt that secures the passenger side upper corner of the AC condenser. Use the factory bolt you just removed to secure the passenger side fan bracket (L960150607).

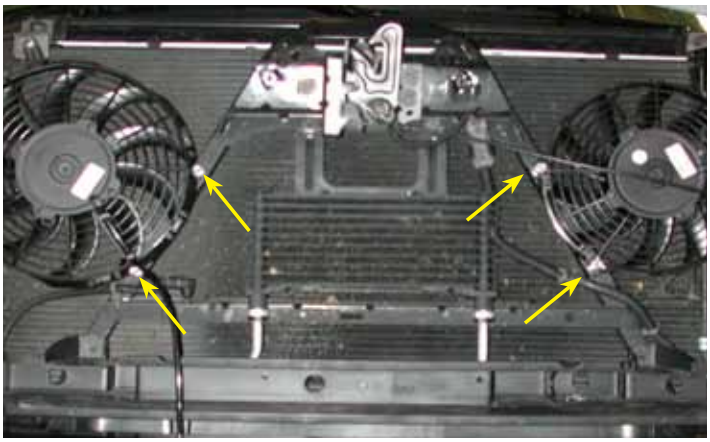


15. Install the remaining plastic fan mounting tab onto the 255 mm (10”) fan.

Note the position of the mounting tab in relation to the wiring harness. It should be roughly 180 degrees away from the harness as shown.



16. Using a 7/16” socket wrench, secure the fan and mounting tab assembly to the bracket using one of the supplied 1/4-20 Spin Lock nuts.



17. Mark with a center punch the location of where the fan shroud mounting holes overlap the factory front support structure as shown on the left (yellow arrows).

Using a 3/16” drill bit, carefully drill four holes (two per fan) into the “A” shaped frame. Only drill through the front face of the frame, do not drill all the way through the frame.

18. Secure the fans to the “A” frame using the supplied self tapping screws (AV12351 & AV12354). On the driver side use the longer 30mm screws along with the supplied 1/4” thick round spacers for the smaller 9” (225mm) fan. Install the spacers between the fan mounting feet and the holes in the “A” frame.

The fasteners shown in the images are silver for better visibility in the images and are not the self tapping fasteners supplied.

19. Remove the plastic cover from the main fuse and relay center.

20. Un-clip the gray locking tabs securing the fuse block and remove fuse block center.

21. Mount the supplied fuse block to the inside of the driver side front fender by drilling two holes (1/8” drill) through the fuse block mounting tabs. Be careful not to drill too far or you risk damaging the outer fender. Now using a Phillips head screw driver secure the fuse block to the vehicle with the two M4.2x1.41x20mm Phillips head self tapping screws.

22. Mount the relays to the left-hand side (driver side) of the upper fan shroud by drilling two 1/4” holes into the plastic shroud and securing with the supplied push-lock rivets.

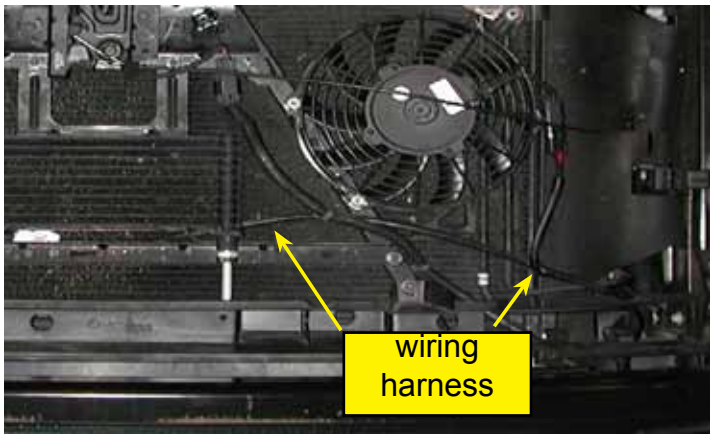
23. With the relays mounted, route the red power wires up and behind the windshield washer bottle and over to the 6 position fuse block.

24. Apply the fuse panel decal to the fuse panel cover as shown. Now connect the two red fan harness power wires to the fuse block you installed in step 21. The red wire with the #3 on it, labeled fan #1, goes into the #2 position on the fuse block (labeled Aux FAN1) and the other red power wire goes to the #1 fuse block position (labeled Aux FAN2).

NOTE - if you will be installing additional accessories using the supplied fuse block, the maximum fuse block capacity is 65 amps.

25. Install the two supplied 15 amp fuses into the fuse block in the two far right-hand positions.

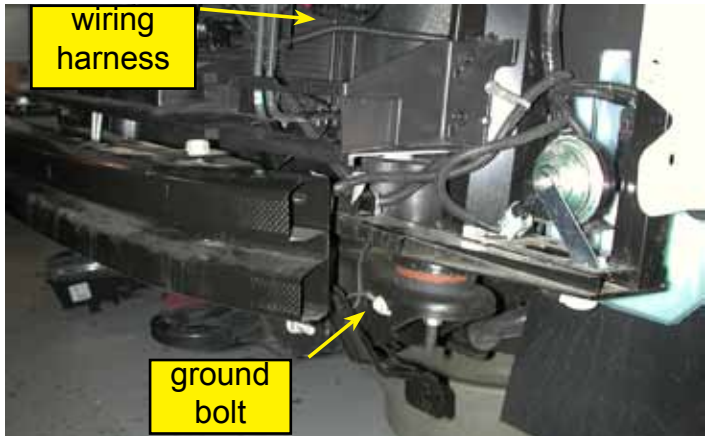
NOTE: Ignore the third fuse and wire shown in this image, this additional fuse is for the intercooler fluid circulation pump used in the supercharged vehicle applications.



26. Route the fan wiring harness around the radiator support on the driver side and along the front of the truck. Zip tie the harness along the way to hold it in place.

27. Connect the wiring harness to the fans.

Fan 1 is the driver side fan (225 mm).
Fan 2 is the passenger side fan (255 mm).

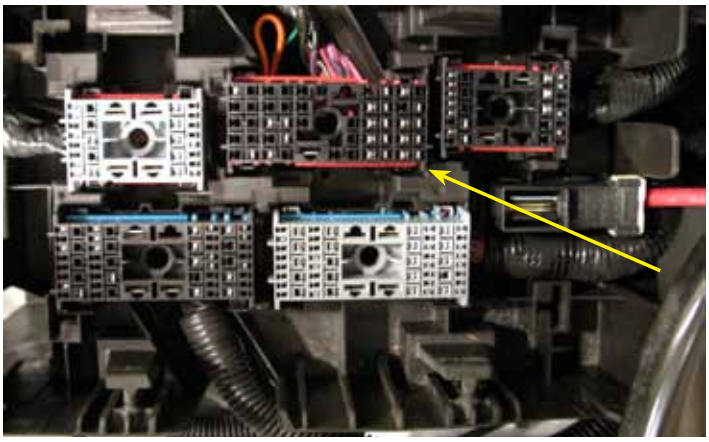


28. On the driver side, connect the ground wire from the fan #1 side of the harness to the frame of the vehicle on the driver side using the existing factory ground bolt found in front of the wheel well next to the end of the bumper beam as shown. Secure the harness in place with Zip ties.

29. On the passenger side, connect the ground wire from the fan # 2 side of the harness to the frame of the vehicle on the passenger side using the existing factory ground bolt found in front of the wheel well next to the end of the bumper beam as shown.

30. Route the portion of the fan wiring harness that includes the yellow/black ground wire and the orange trigger wire up past the ECM and to the fuse block. Secure in place with some Zip ties.

[MISSING IMAGE]



31. Image of fuse block and relay center with cover removed.

The arrow shows connector X2 (or C2) that will be needed in the following steps. Connector block X2 is the black connector on the left side (passenger side), one back from the front.

32. Using a pin depressor tool or a small screwdriver, remove connector X2 from fuse block (see fuse block diagram for connector numbers).

33. Remove the terminal retainers (red plastic clips) from front end of the connector as shown.

34. Pull the orange wire from the remaining bundle of wires in the fan relay harness. Pull the wire out so that it exits the plastic convoluted loom near the fuse relay center.

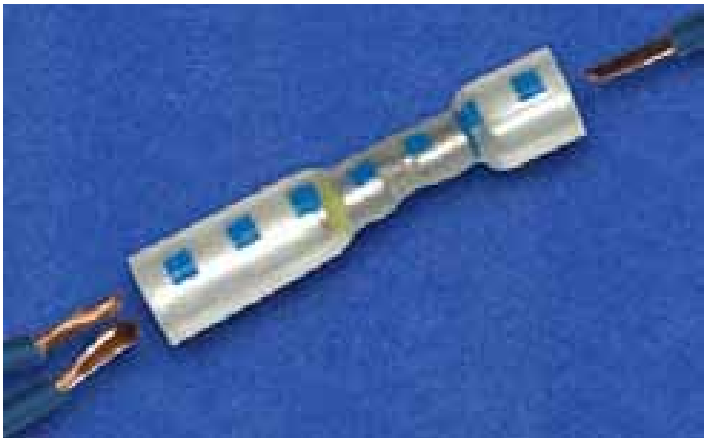
35. Now you will connect the orange wire *(from the fan relay harness)* to the dark green wire in connector #X2 (sometimes referred to as C2) pin D4. This wire is the AC compressor clutch supply voltage, circuit 59.

Refer to the connector end views on page 18.

36. Two primary ways exist to connect to this circuit:

• **Method A** - cut the wire and then splice the three wires using the supplied splice connector (#37-40, page 11)

• **Method B** - remove the terminal, strip back the insulation and solder in the spliced wire. (#41-44, page 12)



37. Method A (for method B, skip to step 41)

Cut the green wire that connects to pin D4 roughly 1-1/2” away from the terminal.
Strip back the insulation 5/8” on the harness side of the green wire and also the orange fan harness wire and insert the two wires into the larger side of the supplied crimp connector (PN DC-940010). Make sure that both wires are properly seated and crimp the connector using an insulated connector crimping tool.

38. On the terminal side of the green wire, strip back the insulation 5/16”.
Insert the wire into the smaller side of the connector, make sure the wire is properly seated and crimp the connector using an insulated connector crimping tool.

39. Apply heat evenly around the length of the tubing (including the crimp area) from the center out to the ends until the tubing fully recovers and the adhesive flows. During the heating process, separate the two wires in the larger end of the connector to allow the adhesive to flow in between the wires.

40. Remove from the heat and let cool.

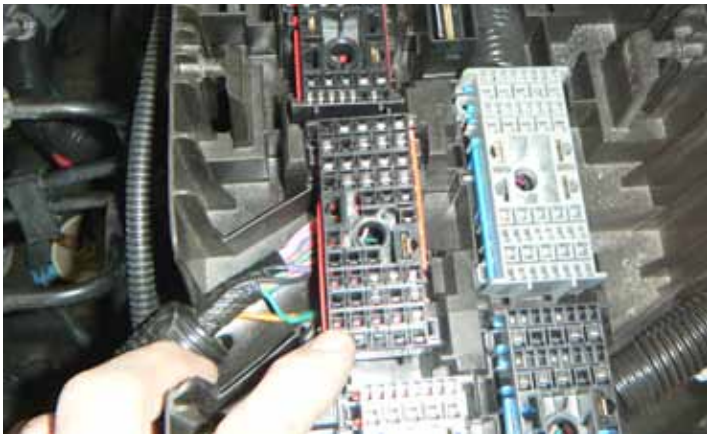
41. Method B (if using method A go to step 44)

Using a pick tool or a small screwdriver, remove the dark green wire from connector X2, pin D4 (refer to the connector end views on page 18). This is the AC compressor supply voltage wire, circuit 59.

42. Roughly 1-1/2” from the terminal, strip 1/4” section of insulation from the green wire. Cut the orange wire to length and then strip 3/8” of insulation from the end of the orange wire. Splice the orange wire to the green wire by wrapping the orange wire around the exposed section of the green wire and then solder the connection.

43. Slide the supplied heat shrink tube over the terminal end of the wire. Using a heat gun, shrink the tubing over the soldered splice connection.

44. Re-install the terminal into the connector X3, cavity D4.



45. Re-install terminal retainer clip on the X2 connector and install it into the fuse black and relay center base.

46. Re-install the fuse block onto the fuse block base.

47. Attach the main power wire from the supplied 6 position fuse block to the stud in the factory fuse box using the M8 nut. Tighten using a 13 mm socket.

Install the supplied 22” long section of 1/4” high temperature loom to the red wire between the supplied fuse block and the mounting stud.

Since not all vehicles come equipped with a M8 nut on the stud from the factory, a M8 nut has been provided in case one is not already there.

48. With a 10mm socket wrench, remove the nut securing the ground cable to the firewall.

49. Route the ring terminal equipped yellow/ black ground wire from the fan wiring harness back alongside the fuse block to the firewall and across the brake booster to the ground stud. Install the ring terminal onto the ground stud and then secure it in place with the factory nut.

50. Re-install the fuse and relay panel cover.

51. Re-install the upper radiator cover.

Ignore the intercooler heat exchanger shown in this image. The heat exchanger is from the supercharged vehicle applications but the fan kit is the same fan kit.

52. Re-install the headlights.

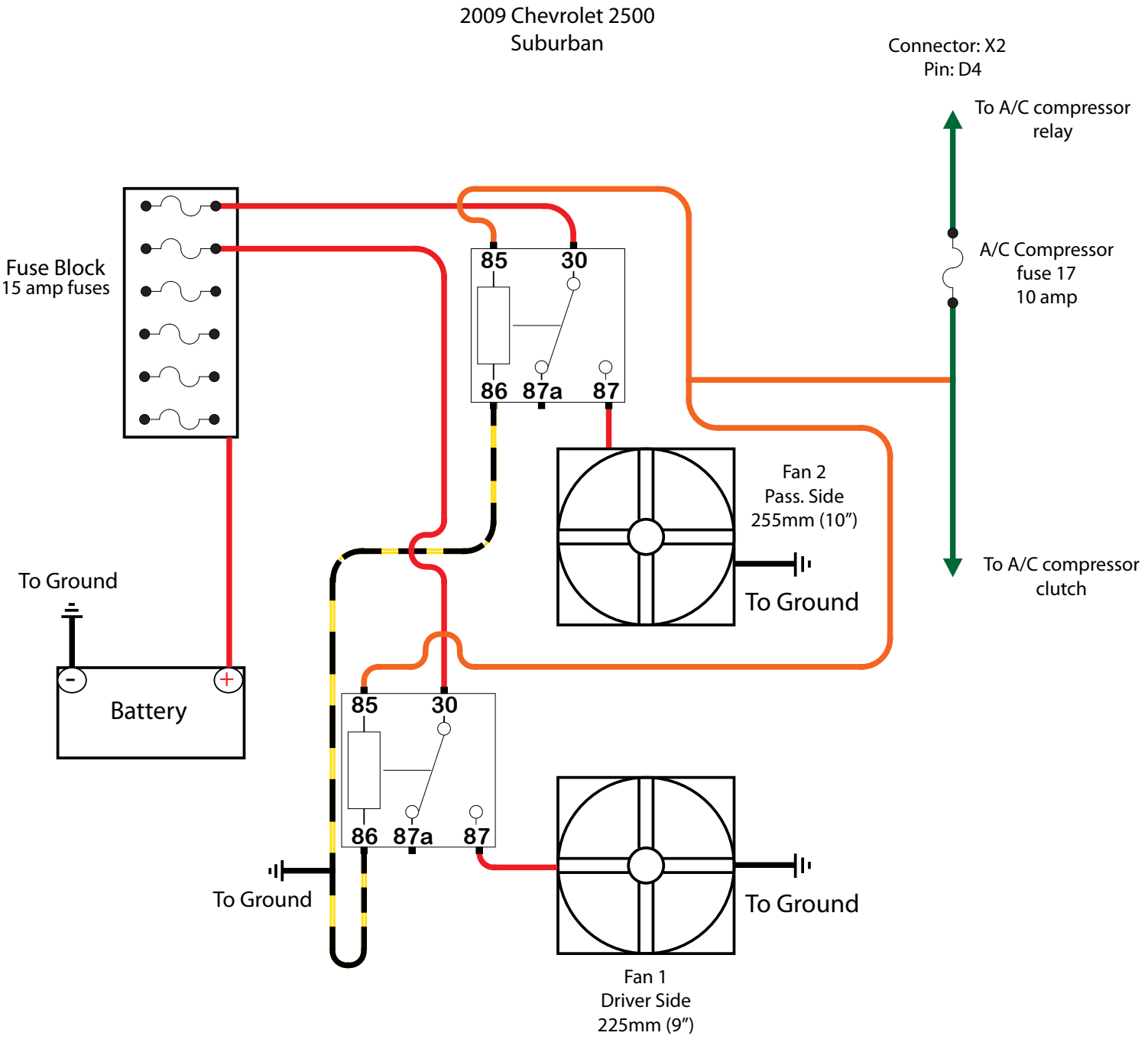
53. Reinstall the front fascia on the vehicle using the stock hardware.

54. Reinstall the radiator support cover on the vehicle using the stock hardware.

55. Re-connect the battery cable with a 10mm socket wrench.

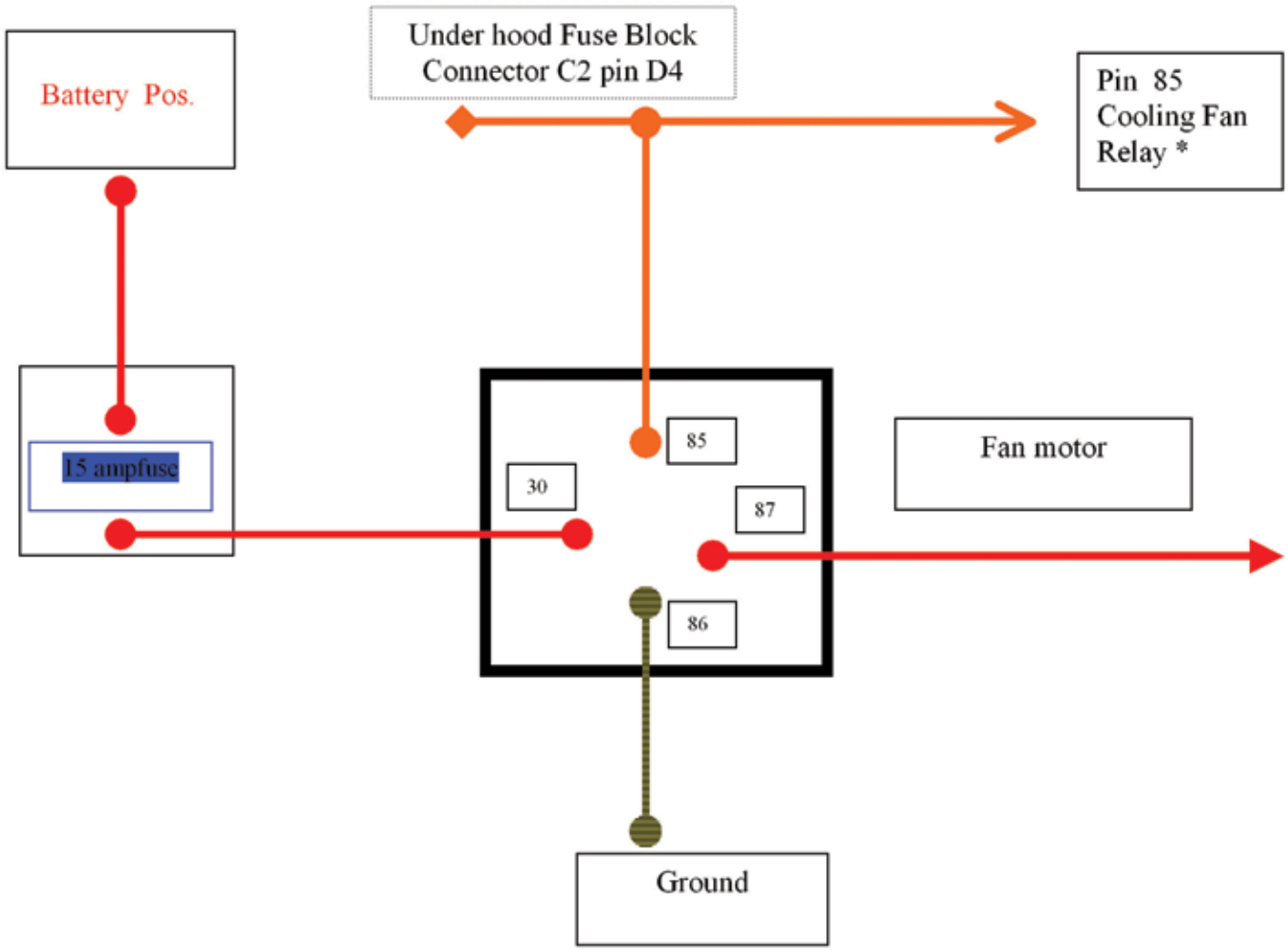
56. You have completed the installation. The auxiliary fans should now be in operation when ever the AC system is being operated.

2007-2013 2500 Suburban & Yukon XL aux fan harness, AC control (PN: L480110607)

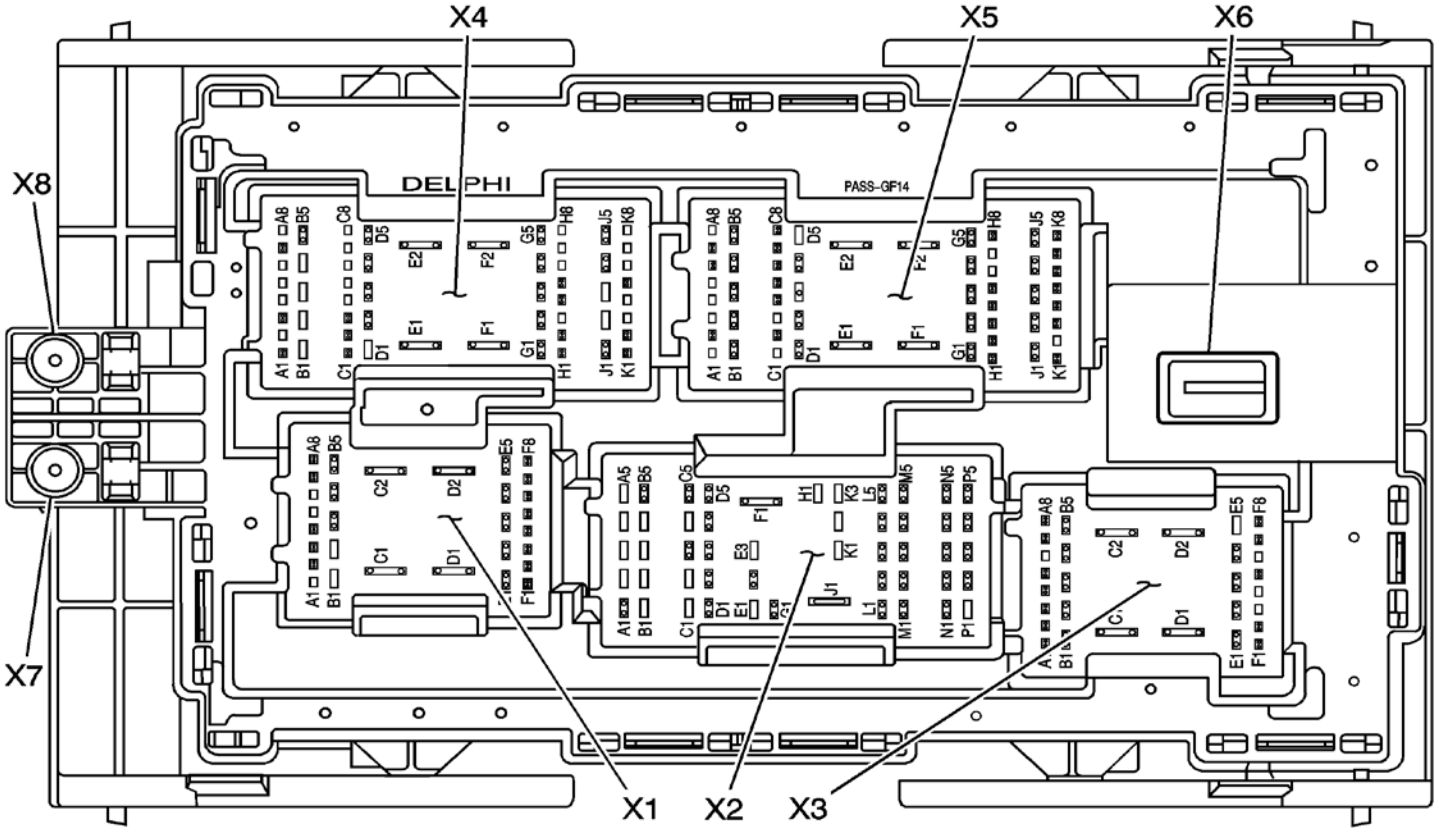


Quantity	Component	Part Number
1	6 gang fuse panel	DC-73803
2	*40 amp relay	L450100000

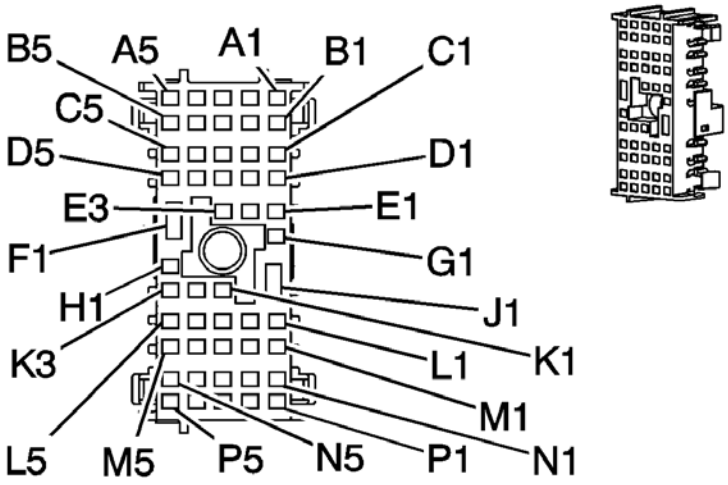
*a higher capacity relay may be required, please refer to the manufacturer for your specific product requirements


Battery Pos.
Under hood Fuse Block
Connector C2 pin D4
Pin 85
Cooling Fan
Relay *
15 ampfuse
85
30
87
86
Fan motor
Ground

Relay and fuse panel connector underview layout (NOTE - this is the underside of the fuse and relay connector so it is a mirror image of the mating connector panel in the vehicle once you have removed this panel from the vehicle):



Connector X2:



Parts List

Quantity	DESCRIPTION	Part #
1	Passenger side fan bracket, CK truck fan system	L960150607
1	Driver side fan bracket, CK truck fan system	L960160607
1	2007-2010 2500 Suburban & Yukon XL aux fan harness, AC control	L480110607
1	Spal 225 mm fan with WeatherPak connector	30100381li
1	Spal 255 mm fan with WeatherPak connector	30100374li
2	Fan mounting tab	30130032
1	6 gang fuse panel, 65 amp capacity	DC-73803
2	3/8" high temperature loom, 22 inches	1764
2	15 amp buss fuse (blue)	782-2184
1	6 gang fuse panel decal, white	L920050000
2	M4.2x1.41x20mm Phillips washer head self tapping screw	12060
2	Aluminum round spacer 5/8" OD, 1/4" Length, 1/4" Screw Size	92511A087
2	M6.3-1.81 x 20mm self tapping screw	AV12351
2	M6.3-1.81 x 30mm self tapping screw	AV12354
2	1/4-20 Spin Lock nut	34292
1	M8X1.25 flange nut	90701
6	Zip tie, 7.5", black	
1	16-14 AWG heat shrink tube	
1	In-line crimp connector, sealed, 16-14 awg (clear w blue)	DC-940010
2	Push fastener	AV12567
1	Installation instructions	
1	Lingenfelter decal	L920010000

This page is inteionally left blank.

NOTICES:

It is the responsibility of the purchaser to follow all guidelines and safety procedures supplied with this product and any other manufacture's product used with this product.

Lingenfelter Performance Engineering assumes no responsibility for damages resulting from accident, improper installation, misuse, abuse, improper operation, lack of reasonable care, or all previously stated reasons due to incompatibility with other manufacturer's products.

Lingenfelter Performance Engineering assumes no responsibility or liability for damages incurred from the use of products manufactured or sold by Lingenfelter Performance Engineering on vehicles used for competition racing.

It is the purchaser's responsibility to check the state and local laws and sanctioning body requirements pertaining to the use of this product for racing applications. Lingenfelter Performance Engineering does not recommend nor condone the use of its products for illegal street racing.

For additional product installation information and technical support, contact LPE or your LPE products distributor. You can also find technical support and usage discussions regarding this product and many other LPE products in our Internet forums:

http://www.lingenfelter.com/forum_lingenfelter/index.php

Follow us on Facebook!

http://www.facebook.com/home.php#!/lpehp

Lingenfelter Performance Engineering
1557 Winchester Road
Decatur, IN 46733
(260) 724-2552
(260) 724-0422 fax
www.lingenfelter.com