LINGENFELTER

PERFORMANCE ENGINEERING

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

PN L300090607

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

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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
- 3/16” & 1/4” drill bits
- Metric wrench set
- Standard and metric socket set (standard and deep)
  - 7/16” socket
  - 7 mm socket
  - 10 mm socket
- 5mm and 8mm hex (Allen) wrench
- Torque wrench
- Pliers
- Small hammer
- Center punch tool
- Razor blade
- Phillips head screwdriver
- Pry tool or flat head screwdriver
- E5 and E6 inverted Torx socket
- Silver Sharpie or similar paint pen
- Heat gun
- Electrical tape
- Wire stripper
- Wire cutter
- Pin depressor tool or small flat head screw driver
- ECM calibration tools (OPTIONAL)

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:

- A version that uses the AC clutch to control the operation of the auxiliary fans (PN L300080607).
- This 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.

This fan kit requires reprogramming of the production engine control module (ECM) in order for the vehicle to be able to control the fans.

1. Using a 10 mm socket wrench, disconnect the negative (-) battery cable from the terminal on the battery. If you have two (2) batteries disconnect them both. Cover the cable end(s) with electrical tape so accidental connection to the battery does not occur.

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

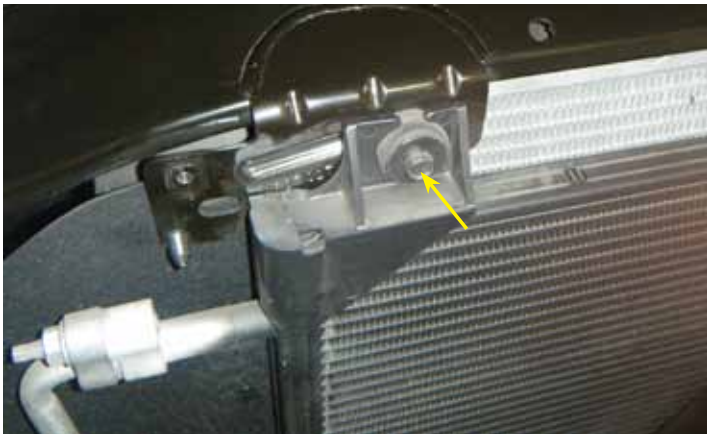
3. Remove the radiator support cover from the vehicle. Set aside to be re-installed later.

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

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. Remove the eight (8) bolts on the upper radiator support and then remove the upper radiator support brackets on each side.

9. Remove both headlights from the vehicle. Be careful not to scratch the lens or break the plastic brackets. Three (3) bolts secure each headlight assembly.

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

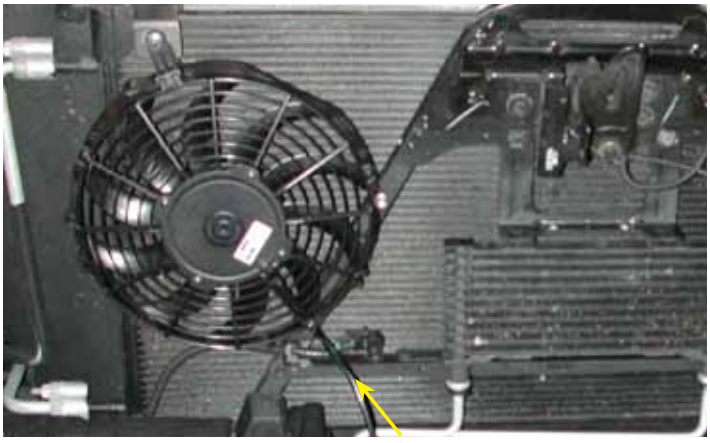
11. Locate the power steering cooler on the driver side of the radiator assembly. Using a 10mm socket wrench, remove the bolt shown that holds the top of the power steering cooler in place. Save this bolt for the next step. Do not remove the cooler.

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.

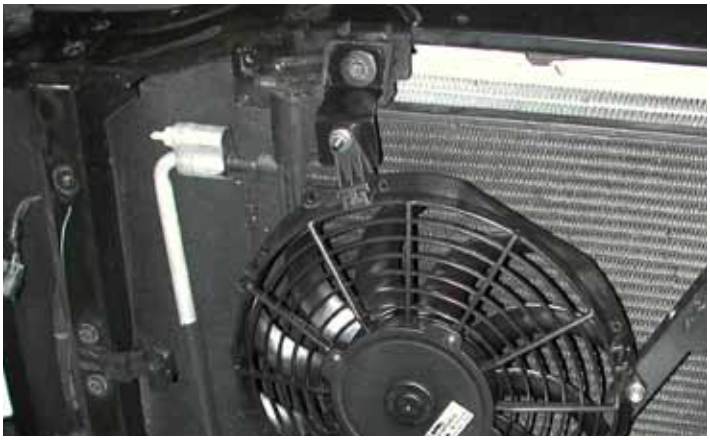
Note the position of the mounting tab in relation to the wiring harness. Using a 7/16” socket, secure the fan to the bracket with one of the 1/4-20 Spin Lock nuts.

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).

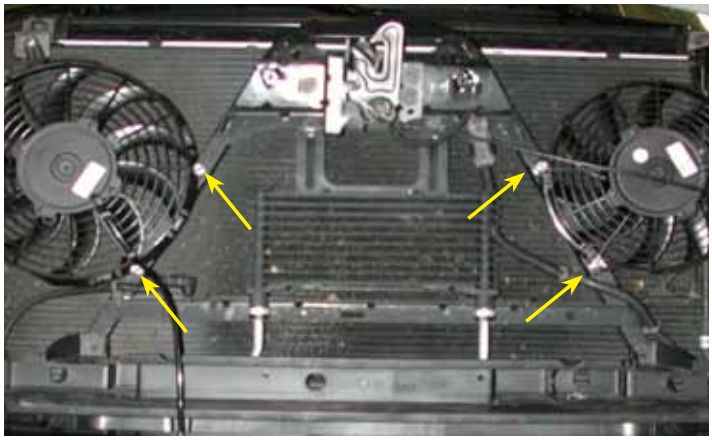


15. Install the remaining plastic fan mounting tab onto the 255 mm (10”) fan.

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.

Confirm that the fuse and relay center on your vehicle has the following fuses and relays (see page 16 for the GM fuse and relay diagrams):

- Fan Low relay
- Fan Control relay
- Fan High relay
- Fuse 57, 40 amp, Fan 1
- Fuse 60, 40 amp, Fan 2

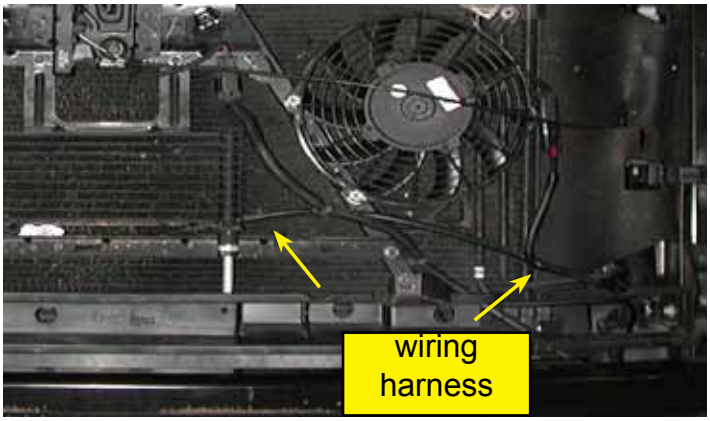
20. Un-clip the gray locking tabs securing the underhood fuse block. Remove it from the base by folding the gray retaining bars together while lifting straight up until the panel detaches from the connectors in the base. At this point move the gray retaining bars away from each other and continue to lift until the fuse panel is free from the base.

21. This is the new wiring harness to the fans. It will be grounded in two (2) places. See page 16 for the full wiring diagram of the fan system.

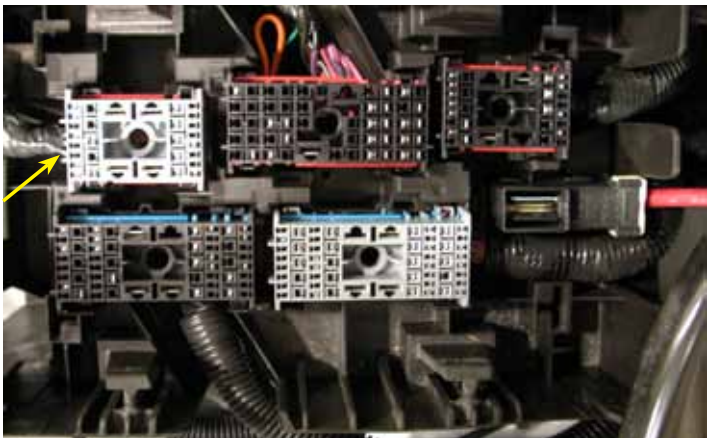
22. Connect the wiring harness to the fans.

Fan 1 is the driver side fan (225 mm) or 9 in.
Fan 2 is the passenger side fan (255 mm) or 10in.

23. Connect the ground wire from the fan 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.



24. Route the wiring for the fans through the radiator support and along the front of the truck. Zip tie the harness along the way to hold it in place.



25. Image of fuse block base and connectors with the fuse panel removed.

The yellow arrow shows the position of the X1 connector that will be removed in the following steps.

26. Bring the fan harness wires that you routed past the radiator in the previous step up to the fuse and relay block on the driver side. Secure the harness in place with Zip ties.

27. Using a pin depressor tool or a small screwdriver, remove connector X1 from the fuse block base (see fuse block diagram on page 15 for connector numbers).

Connector X1 is the gray connector in the left (passenger side) front corner of the fuse block base as shown in step 25.

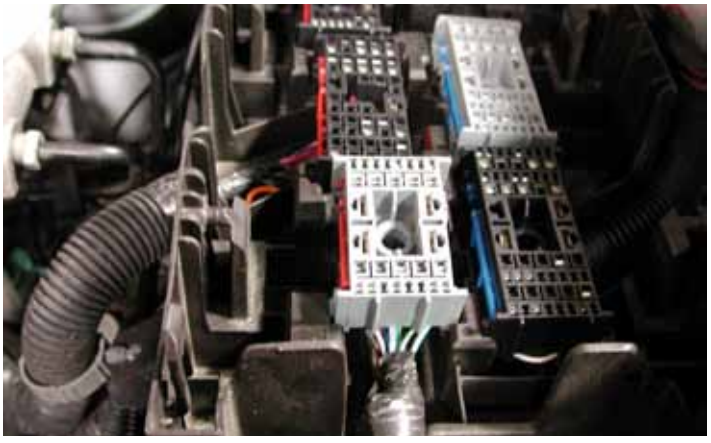
28. Remove the terminal retainers (red plastic clips) from both sides of the connector.

29. Snap the wiring harness terminals into the proper connector cavities.

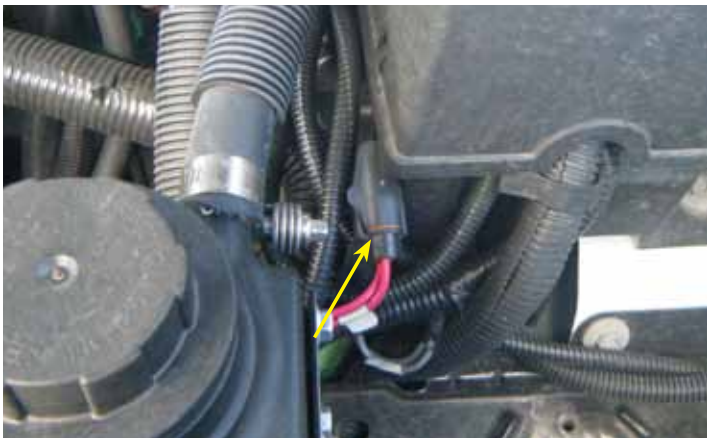
- C1 gray wire
- C2 yellow wire
- D1 red wire
- D2 black wire

See page 16 for the diagram of the cavities. Keep in mind the image at the top of page 16 is the underside of the fuse panel so it is a reverse image. The image of connector X1 is as viewed from the top.

30. Re-install terminal retainer clips on the X1 connector.



31. Snap connector X1 back into the base of the fuse block.



32. Mount the fuse holders in the wiring harness to the side of the base of the fuse block. Carefully drill 1/4” holes and secure the fuse panels with the supplied push-lock fasteners. 15 amp blade type automotive fuses are already installed in the fuse holders.

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

34. Route the 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.

35. Connect the ground wire from the fan harness to the stud and re-install the factory nut.

36. Re-install the fuse panel onto the fuse block base. With the gray retaining bars spread apart, carefully move the bars back together while pressing the fuse panel into the fuse block base. At this point you should be able to engage the fuse panel into the connectors in the fuse block base. Continue to press down while moving the retaining bars back apart until the fuse panel is latched in place.

37. Re-install the underhood fuse block cover.

38. Re-install the upper radiator cover.

NOTE: 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.

39. Re-install the headlights.

40. Re-install the front fascia on the vehicle using the stock hardware.

41. Re-install the radiator support cover on the vehicle using the stock hardware.

42. REPROGRAM THE VEHICLE

This fan kit requires reprogramming of the production engine control module (ECM) in order for the vehicle to be able to control the fans. You can reprogram the vehicle using several methods:
• EFILive programming tool (available from LPE) with LPE supplied calibration file.
• GM dealer reprogramming tools with LPE supplied calibration file.

43. If you are programming the vehicle with these programming tools you can skip steps 44-48 and go directly to step 49.

You can also send the engine control module (ECM) to LPE for reprogramming.

If you are removing the ECM to send to LPE for programming, make sure the battery is still disconnected before removing the ECM.

44. With the battery disconnected, remove the ECM (Engine Control Module) from the vehicle.

The ECM is located on the driver side, just below the fuse box and behind the production fan assembly.

45. To disconnect the engine harness from the module, first release the orange locking tab and then move the connector release arm forward to release the connector.

46. Disconnect both connectors from the ECM.

47. Remove the module from the vehicle and ship to LPE.

Contact LPE prior to shipping the ECM to LPE for proper shipping instructions. Be sure to provide the VIN and any other important information regarding the vehicle.

48. When you receive the ECM back from LPE, re-install it in the vehicle, making sure the battery cable is still disconnected.

49. Re-connect the battery (or batteries) with a 10mm socket wrench.

50. If you are programming the vehicle using a programming interface, program the vehicle with the LPE supplied calibration files now (contact LPE for programming files).

SKIP this step if you sent the module to LPE for programming.

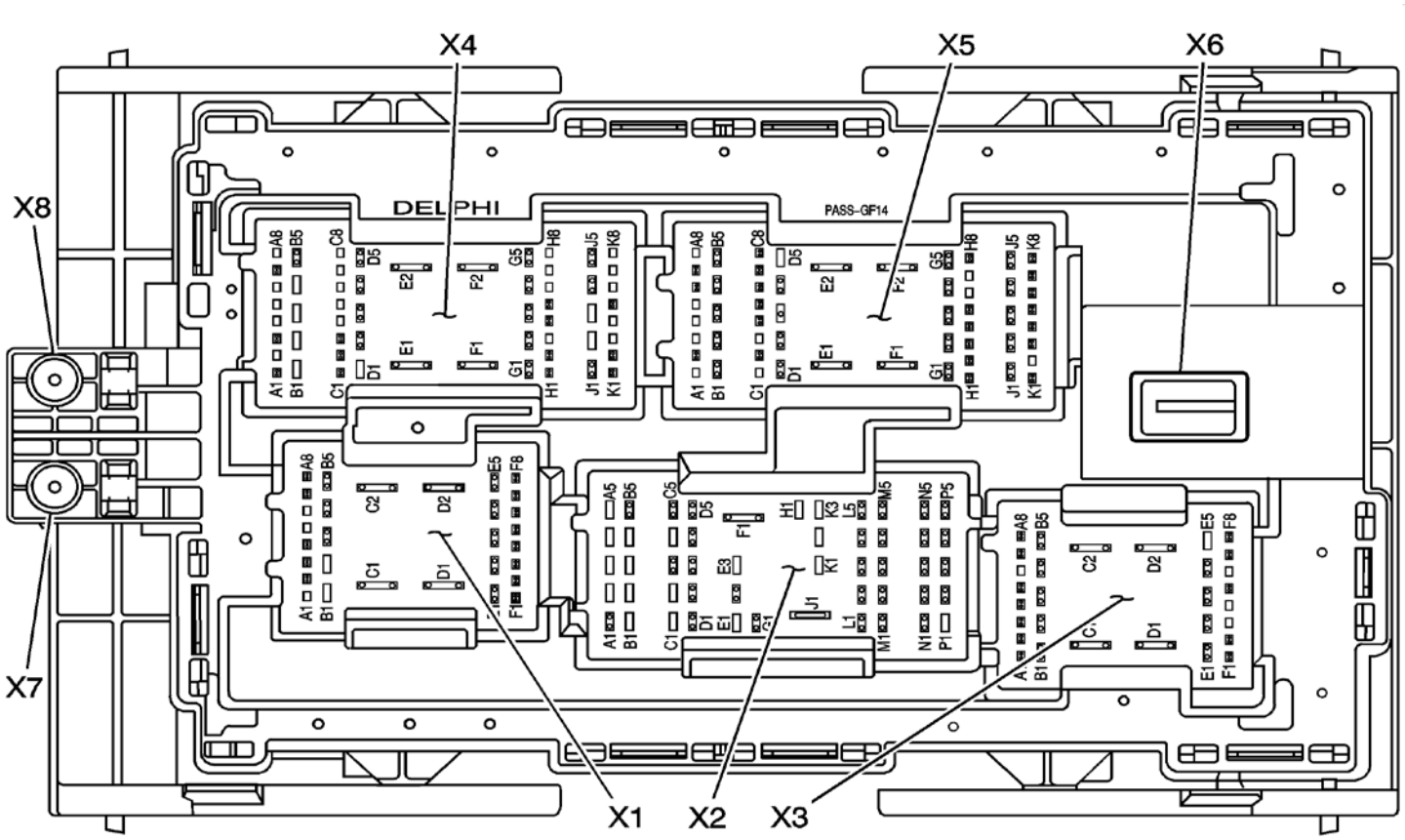
51. Install the supplied diagnostic port (DLC port) cover onto the DLC port in the driver foot well. Secure the strap that retains the DLC cover to the vehicle.

This cover is meant to notify dealerships and other service facilities that this vehicle has custom programming installed for the auxiliary fan system and it should not be programmed with the stock GM calibration files when being serviced.

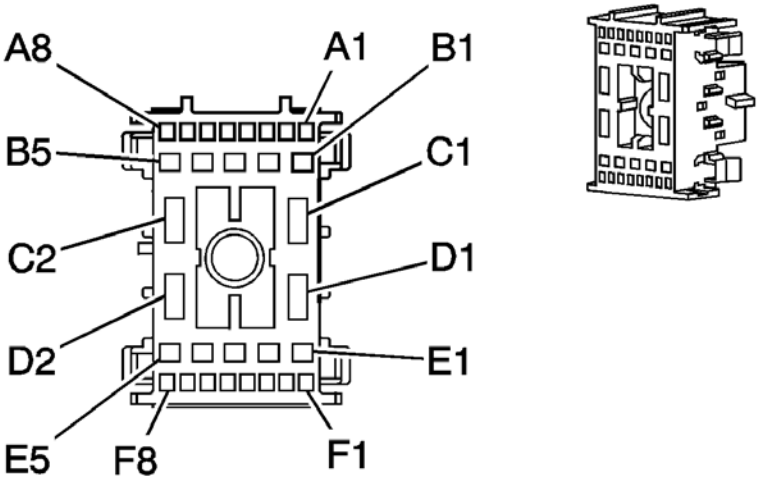
52. You have completed the installation process. The auxiliary fans are now controlled by the production ECM and will be triggered by engine coolant temperature and also by AC system pressure. At higher vehicles speeds the ECM will also disable the fans.

The GM fan diagnostic codes and information for electric fan equipped trucks now apply to these auxiliary fans. Handheld scan tools and other devices will be able to enable the fans.

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 panel in the vehicle once you have removed this panel from the vehicle):

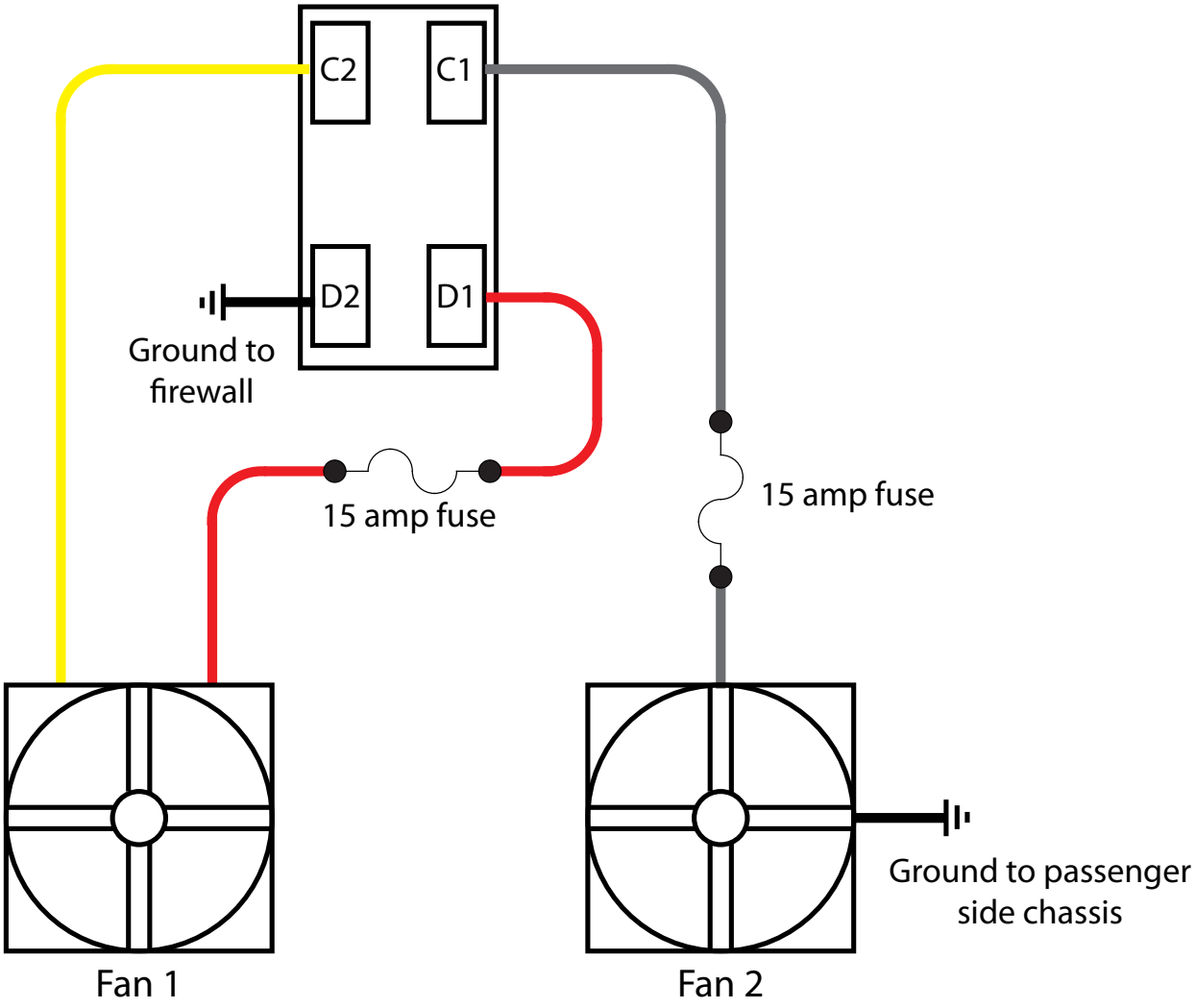


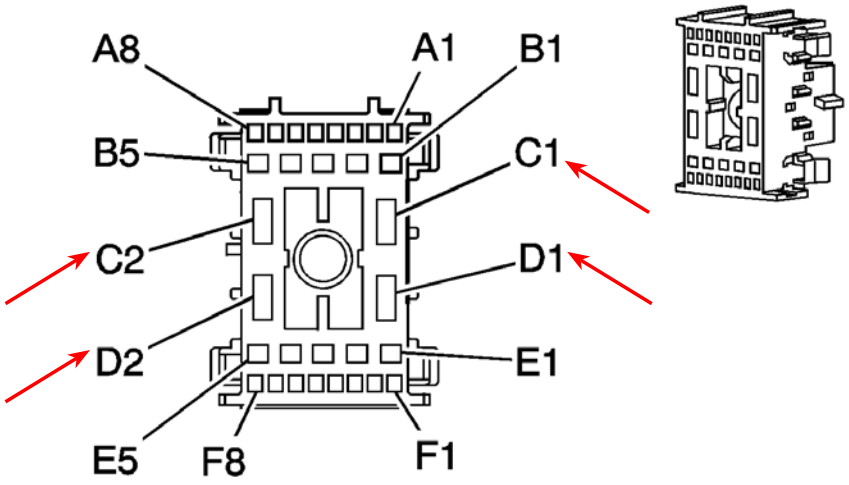
Connector X1:



Top view

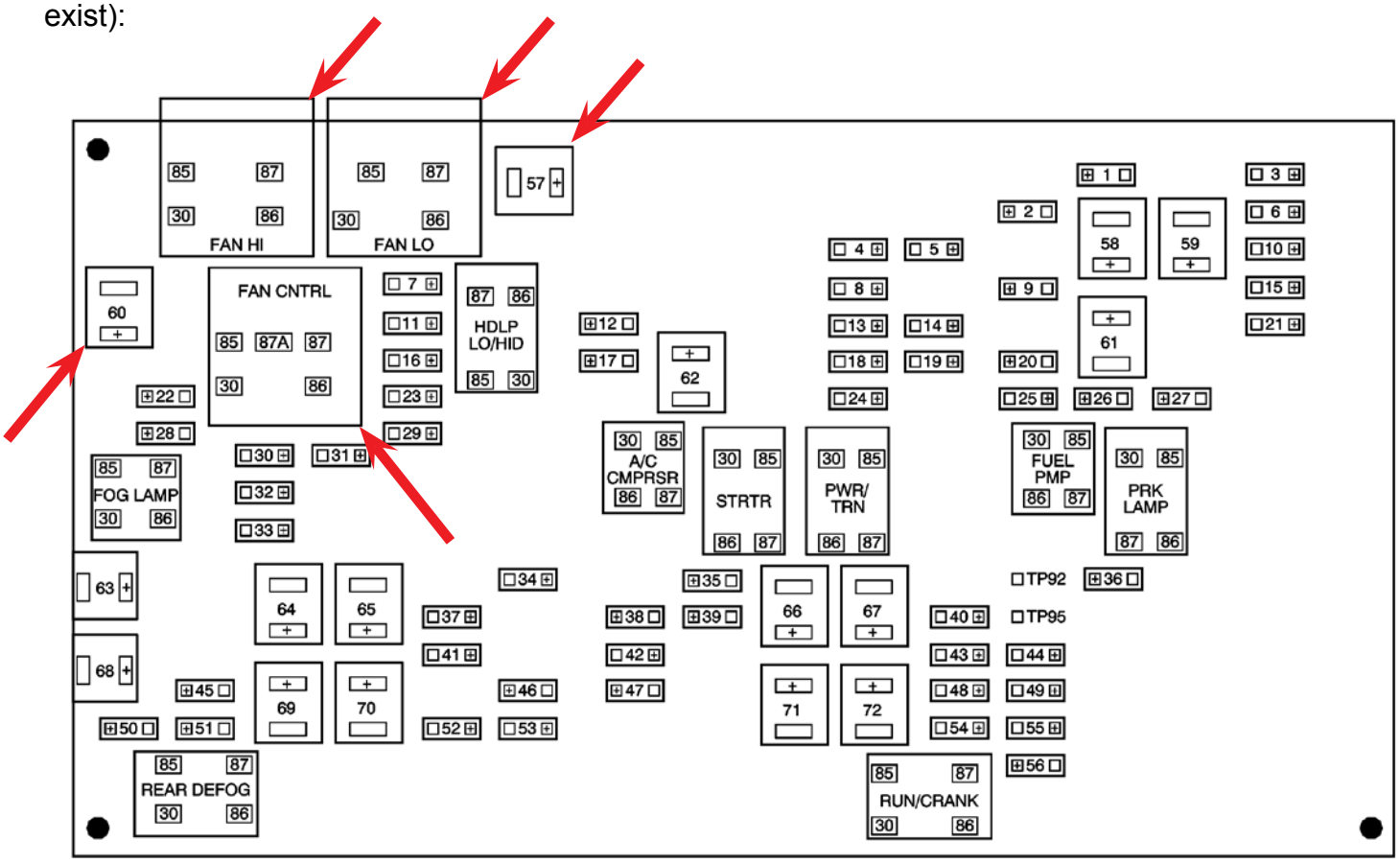
ECM Controlled Twin Fan Wiring Diagram



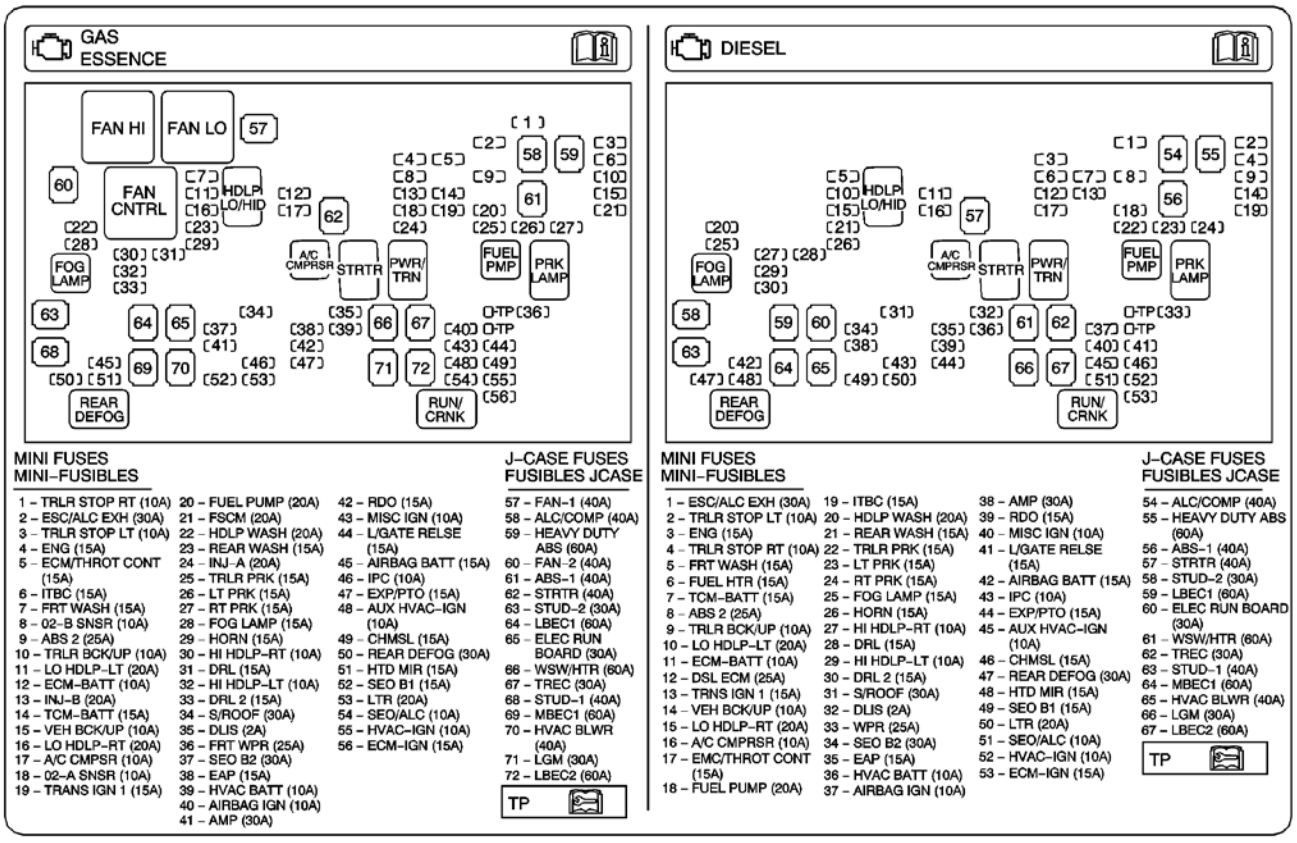


Top view

Fuse panel top view (arrows indicate the factory 40 amp fan fuses and relays that should already exist):



Fuse panel decal:



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 aux fan harness, ECM control	L480210607
1	Spal 225 mm fan with WeatherPak connector	30100381li
1	Spal 255 mm fan with WeatherPak connector	30100374li
2	Fan mounting tab	30130032
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 Spinlock nut	34292
2	Push fastener	AV12567
6	ZIP TIE, 7.5", BLACK	
1	OBD II diagnostic port cover kit	L450110095
1	Installation instructions	
1	Lingenfelter decal	L920010000

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

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