

INSTALLATION INSTRUCTIONS

2002-2003 Ford Explorer/Mercury Mountaineer Supercharger System

Congratulations on choosing what we feel is the best supercharger kit on the market. Proper installation is the key to long and trouble free operation. Please read and understand thoroughly all of the instructions presented here. Every possible effort has been made to assure a quality and complete product. Please check the completeness and condition of your kit as received. If there are any missing or damaged parts, please call us. We will make every effort to remedy the situation in a timely manner.



1. Disconnect negative ground cable from battery. 2. Remove engine cover.



1.



2.

3. Remove P-TEC processor from underhood. A few electrical connectors and mounting brackets must be removed and unplugged to accomplish this. Put processor in a safe place for later service.

4. Loosen hose clamps at both ends of rubber tube between mass air sensor and throttle body.

5. Remove mass air sensor to throttle body tube.



4.



5.

6. Drain engine coolant from petcock valve on bottom of radiator.

7. Remove water outlet and upper radiator hose.

8. Remove thermostat and O-Ring from the Intake manifold.



7.



8.

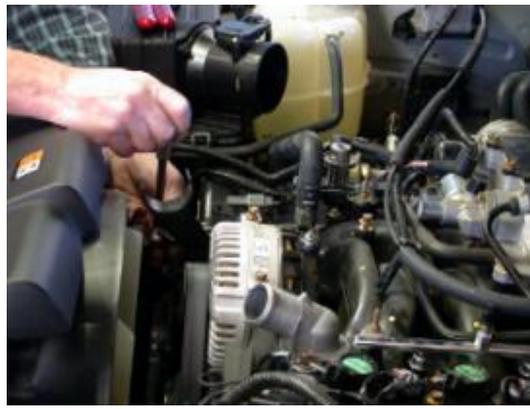
9. Remove bracket on top of alternator.

10. Remove upper radiator hose brace.

11. Remove accessory drive belt.



9.



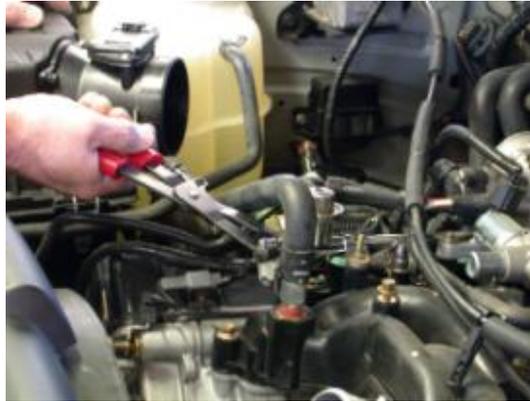
10.

12. Loosen 2 alternator bolts and remove alternator.

13. Disconnect heater hose from front of intake manifold.



12.



13.

14. Disconnect vehicle wiring harness connectors from ignition coils; throttle position sensor, idle air valve, EGR Pressure Transducer, temperature sensors, ignition coils, and fuel injector connections.

15. Disconnect vacuum hoses from intake manifold.

16. Disconnect throttle and cruise control cables and mounting bracket from intake manifold. The cables can now be easily detached from bracket with a pair of pliers.

17. Remove idle air valve and hose from vehicle.

18. Disconnect fuel line snap connector using special fuel line tool.

19. Remove PCV valve and hose as well as crankcase vent hose from vehicle.

20. Remove ignition coils.



19.



20.

21. Relieve fuel system pressure and disconnect spring lock couplings. A special tool is required for this.

22. Remove Intake Manifold bolts, including the ones retaining the water outlet (if not already done).

23. Loosen EGR tube retaining nut at EGR Valve and exhaust manifold. Remove EGR tube.

24. Remove Intake Manifold. Be careful not to damage the gaskets during removal. Remove gaskets. Vacuum any dirt or debris from the Intake Manifold flanges and cover with duct tape or equivalent to prevent tools or debris from falling in.



24.



25a.



25b.



26a.



26b.



26c.

25. Cut 2" off the EGR valve end of the EGR tube. You will be using this 2" stub later. (shown Sears 51252 tubing cutter)

26. Cut the EGR tube as shown in Figure 26a. Approx 1" from transducer tube.

27. Bend the small tubes approximately as shown (pic 26a) so they look like this: (pic 26b)

This is not a critical operation; it is performed to increase clearance to the wiring harness.

28. Install the modified EGR tube, along with the flexible stainless steel feed tube (supplied). Loosely tighten the fitting on the exhaust manifold.

29. Be sure to route the wiring loom away from the EGR tube. The tube gets HOT!

30. Remove the black woven insulation from the stock piece of (cut off) EGR tube and install it on the flex pipe. We supply some white insulation to add to the existing.



28. 30.

31. When you are sure you have the EGR feed tube properly routed, tighten all connections. Be sure to tighten them real good, since they are very hard to reach after the intake manifold is installed.

32. Attach the supplied throttle body to the new manifold using bolts from the old manifold



33. 35.



33. Transfer the Idle air control valve from the stock manifold to the new manifold using supplied bolts. Reuse the gasket as long as it is not damaged.

34. Transfer the heater outlet fitting from the old manifold to the new one. Use sealant.

35. Transfer the EGR Valve from the stock manifold to the new manifold with bolts and gasket provided. (Torque to 17-22 ft-lb.) Be sure to replace the gasket to assure proper functioning. The 2" stub can also be installed now, as shown in picture.

36. Transfer one fuel rail bolt from the old manifold to the rear of the new manifold (pass side). Be sure to retain the phenolic spacer supplied to insulate the fuel rails from the manifold. Can be seen in photo 35.



37. 38a.



37. Transfer fuel pressure test valve (Schraeder valve) from old fuel rail to new fuel rail (driver side). Use Teflon tape.

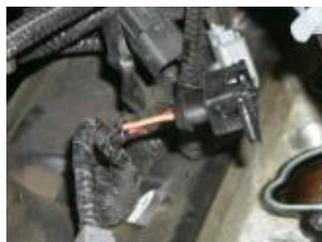


Figure 38b,c,d.

38. The electrical connectors on the fuel injectors are different for the new injectors, so the connectors all need to be changed. This can be easily accomplished when the manifold is off the vehicle. A good quality pair of crimp connector pliers (shown above) makes this an easy

task. Be sure to keep the polarity of the wires (relative to injector) as they were.

39. Re-install the intake manifold gaskets on to the cylinder heads. Make sure they have not been damaged in any way. (Protective tape or equivalent must be removed now)

40. Set the Intake manifold / Supercharger assembly onto the engine. Be sure not to damage the gaskets during this procedure. The wiring harness may need to be lifted slightly at the rear of the engine to allow it back into the proper position. This is best performed with a person on each side of the vehicle to gently guide it into place.

41. Install the intake manifold bolts supplied (9 hex flange) and tighten in a crisscross pattern. Repeat this procedure until all bolts are snug and then torque to 17-22 ft-lbs.



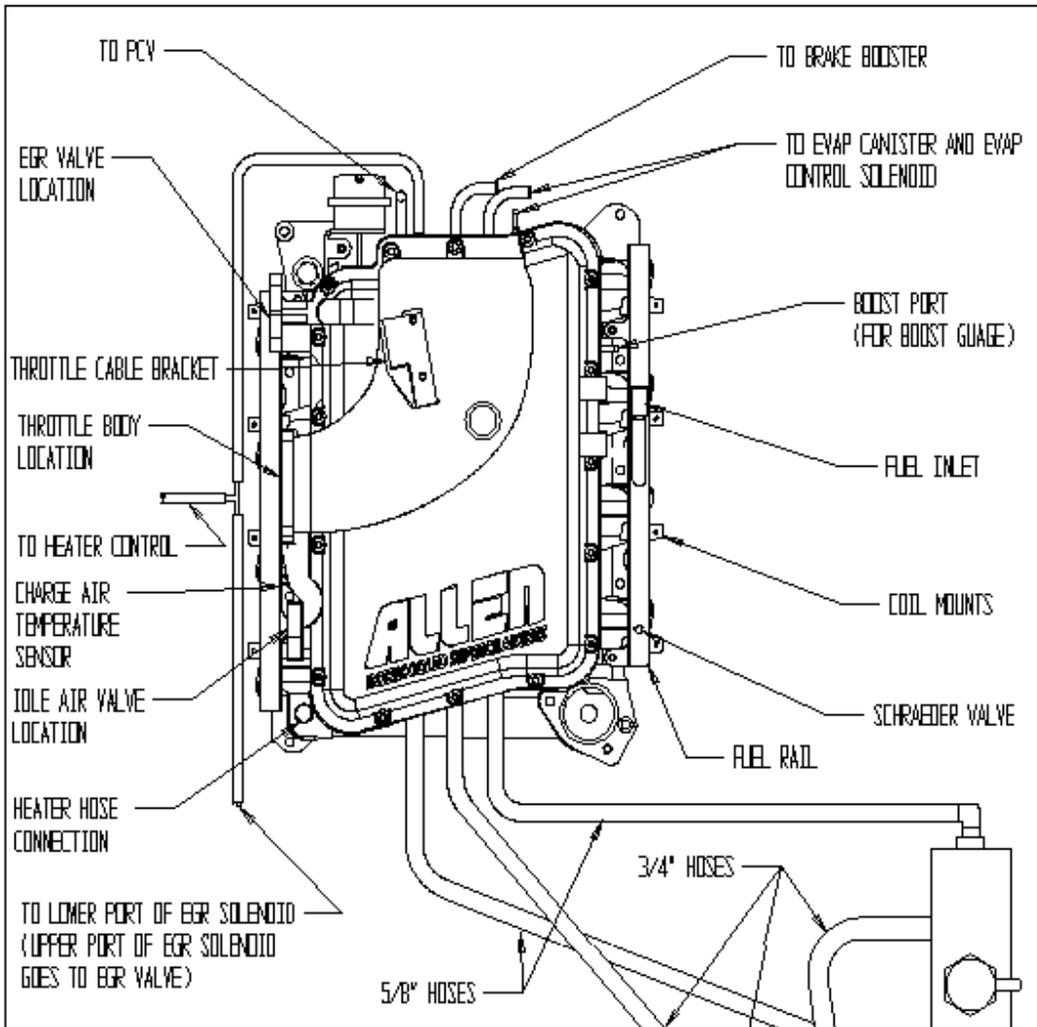
42. Completed EGR feed tube.

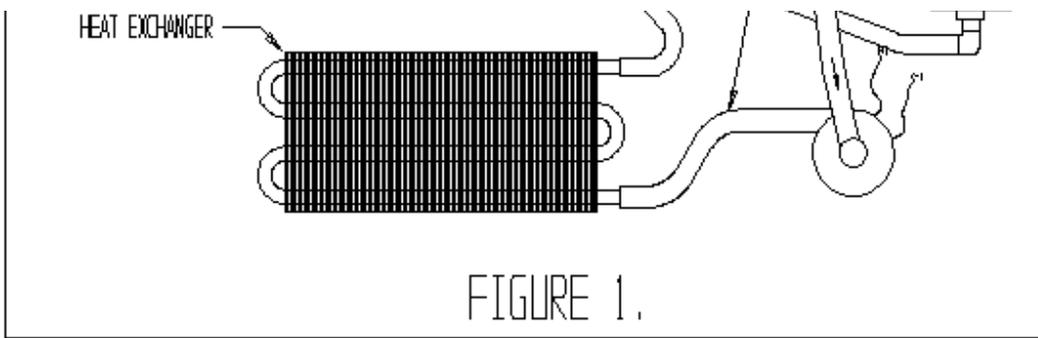
42. Connect feeder tube fitting to EGR Valve and tighten. There may be some slight alignment of the flexible stainless steel tube required before this is achievable.

43. Re-install ignition coils and retaining bolts, and tighten.

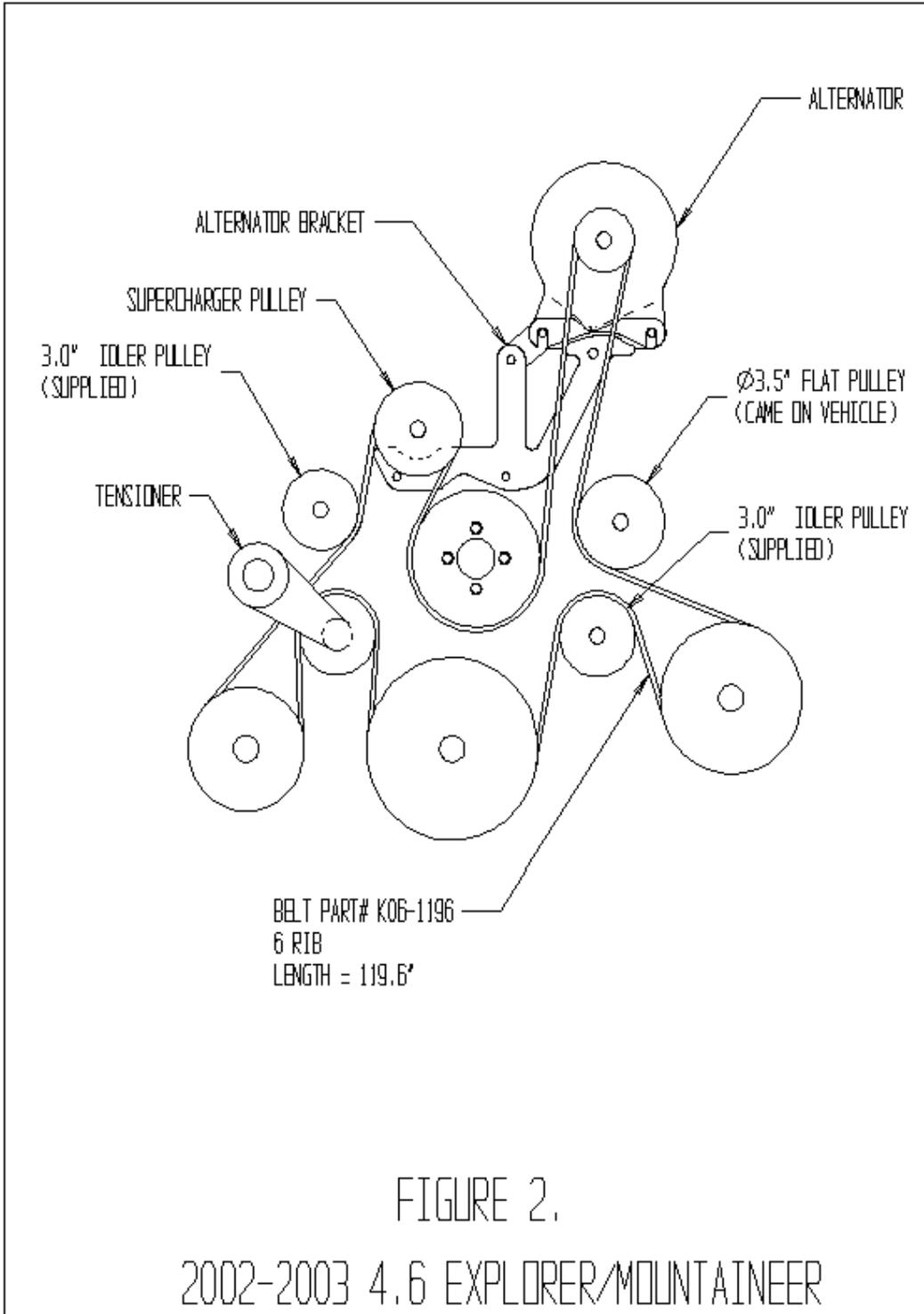
44. Plug in electrical connectors for the ignition coils, fuel injectors, throttle body, idle air control valve, etc.

45. Re-connect heater hose to front of manifold.





46. Attach the vacuum hoses as specified in the hose routing diagram. (figure 1)



47. The belt routing for the supercharger is different than stock. Remove both idlers from the driver side front of the engine. Reinstall the

lower idler to the top position. Install supplied 3" pulley on lower position (driver side) and the other supplied 3" pulley just above tensioner. Torque to 17-22 ft-lb. using stock hardware.

48. Install thermostat, o-ring and supplied thermostat housing outlet. Be sure the spacers are installed to assure proper O-ring crush. Tighten nuts. The thermostat housing outlet needs to aim toward the passenger side of the vehicle.



49.



50.

49. Install alternator bracket onto front of engine (where alternator came off). Hand tighten bolts.

50. Install Drive housing clamp and tighten bolts 7-10 ft-lbs. Do not over-tighten. This pulls the bracket into the proper location. Now, torque 8mm alternator mount bolts to 17-22 ft-lbs.

51. Install alternator and retain with stock bolts. Reconnect the wires to the alt if disconnected.

52. Study the belt routing diagram, and install the supplied drive belt as specified.

53. Using supplied hose, connect the hose from PCV valve to the driver side 3/8" vacuum tube. (See Figure 1)



54.



55.

54. The wires for the inlet air temperature sensor need to be lengthened. Supplied in the kit are color-coded wires and crimp connectors as well as black corrugated split loom. We recommend soldering and shrink-tubing the connections if possible. Connect the wire to the new temperature sensor located in the plenum. On 2002 vehicles the temperature sensor is integral with the mass air meter. This requires a new plug and the outer 2 wires need to be cut and spliced from the MAF meter. If you cut and splice downstream from the MAF it looks much cleaner.

55. Re-attach the throttle and cruise control cables and return spring.

56. Snap the fuel line connector into the rear of the driver side fuel rail.



57.



61.

57. Remove the black plastic "air chamber" from the side of the mass air flow sensor to throttle body tube. Install the supplied aluminum plug into the remaining hole in the air inlet tube. Put on hose clamp.

58. Reinstall rubber air inlet tube from the mass air flow sensor to throttle body. Tighten clamps.

59. Re-attach formed rubber hose from air inlet to idle air valve. This may require some trimming!
60. Connect valve cover breather hose from driver side valve cover to air inlet tube with 5/8" hose..
61. Mount the Intercooler coolant tank on the battery tray, as shown.
62. Now the alternator bracket can be tightened to 17-22 ft-lbs.



63a.



63b



63c



64.

63. Remove grille, mark as shown and grind for heat exchanger clearance. Install Heat exchanger as shown in 63c



64.

64. Mount the electric water pump in the supplied bracket and attach it to the frame of the vehicle in a suitable location.

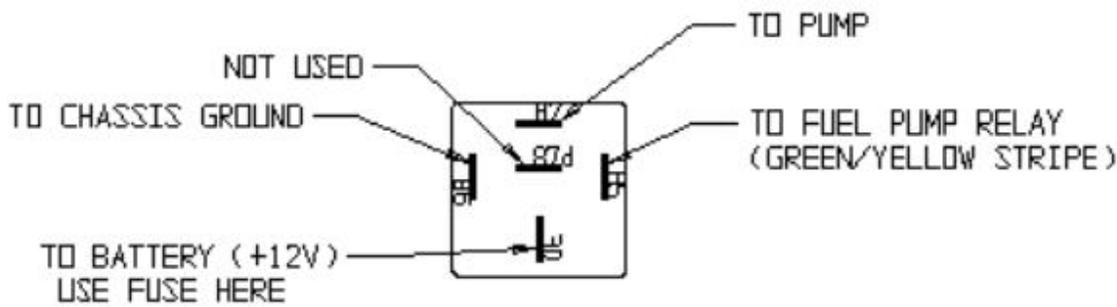


65.

65. Mount the relay using the supplied self tapping screw. Clean the paint off around the hole and loop the relay black ground wire

using a loop crimp connector, sandwiching it between the relay and inner fender well.

WATER PUMP ELECTRICAL SCHEMATIC



66. Connect the wires as shown in the schematic, routing the wires away from any heat source or moving parts. Rout the wire from terminal #30 on the relay to the (+) side of the battery. Be sure to use the fuse in this wire.



66.



67.

67. Rout the wire from terminal 85 on the relay to fuel pump relay, or one of the power wires on a fuel injector. (injector recommended).

68. Close the petcock on the radiator. Re-fill engine cooling system and re-install cap. Close the petcock first!

69. Fill the Intercooler water tank with coolant (50/50 Water/Glycol mixture). It will be necessary to burp the water pump system. Install the Intercooler Radiator Cap.

70. If the Re-Flashed computer has returned, you can install it now.

71. The negative battery cable can now be reconnected.

72. Find the appropriate wire to energize the relay. The fuel pump relay makes a good candidate as it will only run for 2.5 seconds when the accessories are on. It is a green wire with a yellow tracer. Check with a VOM to be sure you have the correct wire before connecting. The wire should have 12 volts for 2.5 seconds after the key is turned on, and then no voltage. Or you can use the power wire on one of the fuel injectors. (easier)

73. Install the alternator brace and secure with stock fastener on alt and supplied bolt on manifold.

74. Check for any stray tools or spare parts, which may hinder the starting of the vehicle.

75. The vehicle should be started and all connections checked for leaks or loose connections. Be sure everything has adequate clearance and is properly tightened.

76. Run the coolant pump for a few minutes verifying that the coolant is circulating. Check the fluid level and top off if required. When properly filled, you will be able to see coolant circulating when looking into the tank. Then install coolant cap.

If by chance the Check Engine light is illuminated, recheck all your connections and vacuum routing. Once the problem is located reset the engine's computer by disconnecting the negative (-) battery cable for a couple of minutes.

78. You're done!

Dear Customer:

Thank you for your recent purchase of the Allen Engine Development Inc. supercharger kit for your 200_ Ford Explorer or Mercury Mountaineer.

Your Kit serial # _____

Calibration Code _____

Date purchased _____

Warranty period _____

Please keep this in your records in the event of a warranty claim.

Revision	Date	Approved By	Description
1.00	2-1-03	SMG	First release
1.01	10-10-03	SMG	HE brackets, belt rout, hose rout, new pump power on source, egr trans pics