Installation Instructions for:

Radix-M1

Supercharger System

2003 - 2006
Chevrolet Silverado1500 & GMC Sierra 1500
Light Duty Sport Trucks

Step-by-step instructions for installing the best in supercharger systems.

Magnuson Products Inc
1990 Knoll Drive, Ventura, CA 93003
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magnusonproducts.com * magnacharger.com

Use distilled or de-ionized water

89-89-59-003 Rev C

INSTALLATION MANUAL

Magna Charger
Radix Non-Intercooled Supercharger System
GM 4.8 & 5.3 liter engines

We encourage you to read this manual thoroughly before you begin work, for a few reasons:

A quick parts check to make certain your kit is complete (see shipper parts list in this manual). If you discover shipping damage or shortage, please call our office immediately.

Take a look at exactly what you are going to need in terms of tools, time, and experience.

Review our limited warranty with care.

Make sure to have 91or higher octane fuel in the tank.

When unpacking the supercharger kit **DO NOT** lift the supercharger assembly by the black plastic bypass actuator. This is *pre-set* from the factory and can be altered if used as a lifting point!

Tools Required


Safety glasses


Metric wrench set


1/4” drill bit


1/4”, 3/8”, & 1/2” drive metric socket set (standard and deep)


8mm hex (Allen) wrench


3/8” and 1/2” drive foot pound and inch pound torque wrenches


Belt tensioner wrench or 1/2” breaker bar


7/32” socket


Drill and 5/16” drill bit


Phillips and flat head screwdrivers


Fuel quick disconnect tools (included in kit)


E5 inverted Torx socket


Small or angled 3/8” drill motor


Drain pan


Compressed air

Important

Our Magna Charger kits are designed for **stock 4.8 and 5.3 liter engines in light duty sport trucks** with stock components in good mechanical condition only, which will not be used for towing or any other heavy duty applications. Installation on 6.0 liter, SUV, 2500 series vehicles, worn or damaged engines is not recommended and may result in engine failure, for which we are not responsible. Magna Charger is not responsible for the engine or consequential damages.

Aftermarket engine re-calibration devices that modify fuel and spark curve (i.e.. programmers) are not recommended and may cause engine damage or failure. If you have any questions, call us!

Caution: Relieve the fuel system pressure before servicing fuel system components in order to reduce the risk of fire and personal injury. After relieving the system pressure, a small amount of fuel may be released when servicing the fuel lines or connections. In order to reduce the risk of personal injury, cover the regulator and fuel line fittings with a shop towel before disconnecting. This will catch any fuel that may leak out. Place the towel in an approved container when the job is complete, and of course, no smoking.

Magna Charger strongly recommends the following:

- ☐ Clean your engine compartment before starting any engine disassembly.
- ☐ You must have a clean fuel filter - check and replace as needed before installation.
- ☐ You must have a clean air filter - this system comes with a new air filter for your convenience.
- ☐ OE type/Stock spark plugs and stock plug gap is recommended.
- ☐ Start with and use only 91 octane fuel or higher.
- ☐ Drive belt is a Gates #K061120.

After you finish your installation and road test your vehicle, please fill out and mail the limited warranty card, so we can add you to our files (this is important for your protection).

Please remember to follow all safety rules that apply when working, including:

- Wear eye protection at all times.
- Do not work on a hot engine.
- Be careful around fuel - use shop towels to catch any spills and dispose of towels properly.

1. Exercise extreme caution and common sense when working around gasoline. Extinguish all open flame or other sources of ignition and be sure to perform the following steps in an area with adequate ventilation. Personal protection in the form of eye protection and fuel resistant gloves are strongly recommended.

2. On the right (passenger) side of the intake manifold, locate the fuel pressure test port. CAUTION! The fuel in the system is under pressure! Relieve the pressure in the fuel system by depressing the check valve with a screwdriver and collecting the fuel with a shop towel.

3. Relieve the pressure in the fuel tank by removing the fuel filler cap.

4. With a 8mm wrench disconnect the (-) negative battery cable. Make sure the cable is far enough away from the battery that it does not accidentally touch the battery and make connection during the installation. (Wrap negative cable connector with electrical tape.)

5. With a cool engine remove the radiator cap. (Be careful not to remove the cap if the engine is still hot.)

6. Open radiator petcock and drain coolant into a clean drain pan. Save coolant for reuse later on.

7. Remove the plastic sight shield bolt using a 10mm socket wrench.

8. Lift plastic shield from top of engine.

9. Using a 8mm nut driver loosen the two large hose clamps holding the air cleaner duct assembly.

10. Remove the duct assembly by lifting it out. Sight shield and duct assembly will not be reused.

11. Unplug the electrical connector to the MAF sensor.

12. Firmly grasp the air intake box and pull up removing it from the vehicle.

13. To prevent foam from escaping, insert the black plastic plug supplied in the hole located in the upper edge of the right (passenger) side wheelwell.

14. Locate the can of expansion foam in your kit. Follow the directions on the back of the can. Insert the end of the straw into the hole and dispense the foam into the hole for 10 to 12 seconds. In the existing hole that is just to the rear of the slot that the coolant tank sits in, again dispense the foam into the hole for 10 to 12 seconds. You will not need the entire can. Do not attempt to over fill the fender. (Note: do not disturb foam for 8 hours.) Noise levels will be drastically reduced when foam has set.

15. Using a long pair of pliers, remove the coolant hoses from the bottom of the throttle body.

16. Remove the PCV vent hose from the throttle body or intake manifold on passenger side. (Depending on year.)

17. Using a 10mm socket wrench, remove the three bolts that fasten the cover support bracket from the top of the intake manifold.

18. Open the large electrical harness retainer clip, then using a 10mm socket wrench remove the bolts holding the plastic wire harness retainer to the intake manifold.

19. Disconnect the following electrical and hose connections from the intake manifold area.

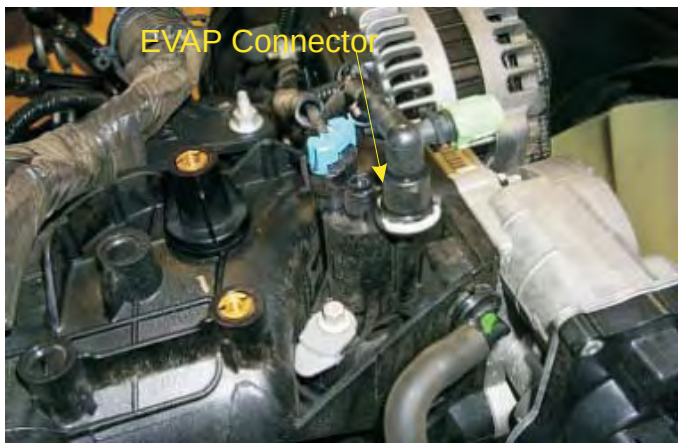
20. Disconnect the eight fuel injector connections by gently pulling up on the gray plastic release trigger on the connector and then pulling firmly on the connector itself.

21. Disconnect Electrical Throttle Control (ETC) connector from the throttle body by removing the gray plastic locking tab first, then squeeze and pull free the ETC connector itself.

22. At the rear of the of the intake manifold disconnect the Manifold Absolute Pressure (MAP) sensor connector by gently raising the gray plastic retaining clip and then pull free the connector itself.

23. Disconnect the engine knock sensor connector and steel-mounting clip from the intake manifold by prying it free with a small screwdriver. Next, gently raise the black plastic retaining clip and then pull free the connector from the harness.

24. Disconnect the evaporative purge solenoid EVAP connector by raising the black plastic retaining clip and then pull free the connector itself.



25. Lift the electrical harness from the top of the engine and set off to the side.

26. Remove the power brake hose from the control valve. (Some vehicles have hydraulic assist and do not have this hose.)

27. With the fuel line disconnect tool supplied, remove the fuel line from the fuel rail. Caution! The system may be under pressure. Avoid open flame or other sources of ignition.

28. Disconnect the EVAP vent tube from the solenoid by squeezing the retainer, then release the tube from the solenoid. Follow the same procedure on the other end of the EVAP vent tube and remove the tube from the vehicle.

29. Remove the Positive Crankcase Vent (PCV) vacuum hose from the intake manifold on driver side.

30. Using a 8mm socket wrench remove the ten intake manifold bolts.

31. Carefully remove the intake manifold assembly and set aside.

32. Using a vacuum cleaner, remove any dirt or debris from the intake port area. (Be careful not to get any dirt in the intake ports.)

33. Cover the intake ports with tape or clean rags to keep dirt and objects from entering the engine. (Remember, be clean.)

34. Using a 15mm wrench, remove the steel bracket from the rear of the driver side cylinder head. This will not be reused.

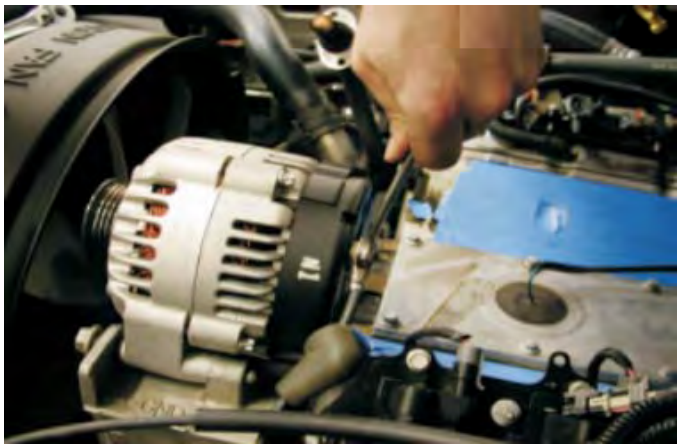
35. Using a 10mm socket wrench remove the two coolant vent pipe bolts.

36. Remove the vent pipe assembly. (Make sure that the O-ring gaskets did not stick to the cylinder heads, if so remove them.)

37. Using a 15mm tensioner wrench or breaker bar, remove the stock serpentine belt from the vehicle. The belt will not be reused.

38. Using a 15mm socket wrench remove the three bolts holding the factory belt tensioner to the bracket and remove the tensioner.

39. Using a 10mm wrench disconnect the battery positive terminal from the back of the alternator.



40. With a 15mm socket wrench remove the two bolts holding the alternator to the alternator bracket. Remove the alternator.

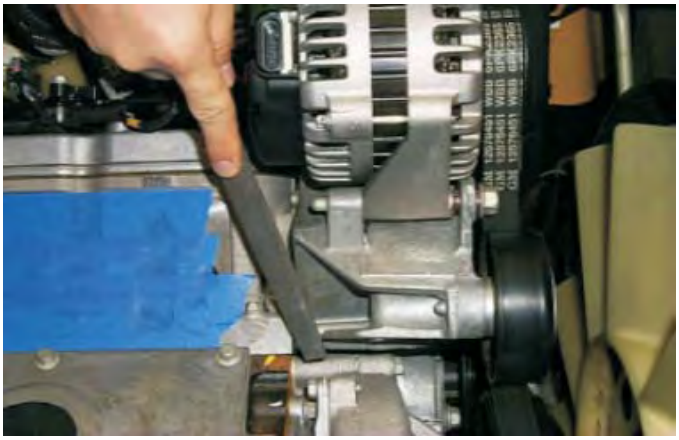
41. Remove the long oil filler neck from the valve cover by rotating it 180 degrees counter clock-wise and pulling it out.

42. Install the short oil filler neck supplied by inserting it into the valve cover and rotating it 180 degrees clock-wise. Transfer the oil fill cap from the long neck to the new short one.

43. Take the new supplied coolant vent pipe and test fit to the front of the cylinder heads. Check for clearance between the pipe and the alternator bracket as shown.

44. Use a felt tip marker and mark the alternator bracket were the coolant vent pipe hits as shown.

45. Using a file or die grinder, remove material from the alternator mounting bracket marked in the previous step. Once clearance is achieved, recheck with the new vent pipe. Ensure that the vent pipe does not touch the alternator bracket.



46. Using the stock bolts removed in step 35 install the new coolant vent pipe supplied. Ensure that the O-ring seals are installed correctly. Torque the bolts with a torque wrench and 10mm socket to 106 lb-in.

47. Using the new supplied 16” x 3/8” PCV vacuum hose, connect one end to the PCV valve as shown and lay the other end of the hose off to the driver side, out of the way. (To be connected in a later step.)

48. Install the intake manifold gaskets supplied onto the supercharger manifold. Ensure that the gaskets are fully seated into the reliefs in the manifold.

49. Remove the stock MAP sensor from the stock intake manifold by pulling back on the two tabs and lifting the sensor out. Ensure that the orange MAP sensor seal is not damaged, as it will be used.

50. Put some lubricant on the MAP sensor seal and press the MAP sensor into the provided hole in the supercharger manifold as shown.

51. Using a 4mm allen wrench, install the MAP sensor retaining clip with the provided 6mm button head screw as shown.

52. Remove the power brake hose and clamp from the stock intake manifold.

53. Install the power brake hose and clamp removed in the previous step to the large hose barb on the rear of the supercharger inlet manifold. Remove the cap from the remaining barb for the PCV hose to be installed in a later step.

54. Remove the stock fuel pressure regulator from the fuel rail by disconnecting the vacuum hose, pulling off the spring clip and pulling the regulator out. Be careful not to lose any of the small O-rings on the regulator.

55. Make sure that the two O-rings and the screen filter is complete as shown.

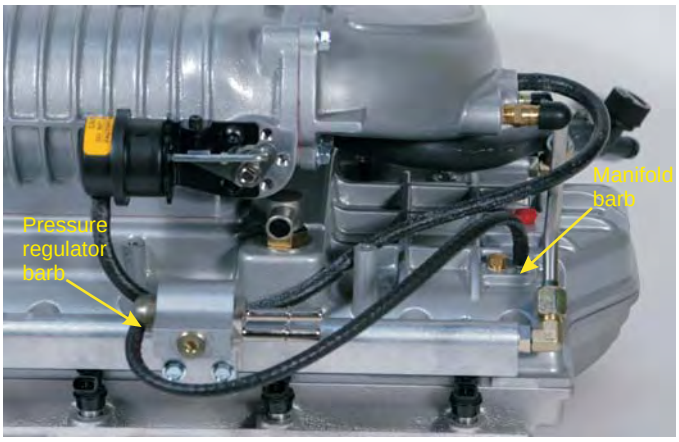
56. Using a small amount of grease or oil lubricate the two O-rings on the fuel pressure regulator and push it into the new supplied fuel manifold as shown.

57. Using a pair of C-clip pliers install the new supplied C-clip into the fuel manifold as shown. (Make sure that the clip seats into the machined grove in the manifold.)

58. Apply a small amount of grease to the new supplied fuel manifold O-ring and set in the machined recessed area on the new driver side fuel rail as shown.

59. Install the assembled fuel manifold to the driver side fuel rail using the two new supplied 6mm bolts. Using a 10mm socket wrench torque the bolts to 106 lb-in. (Be careful not to pinch the O-ring.)

60. Using the small 3/16" hose supplied, connect one end to the small barb on the pressure regulator. Connect the remaining end of the hose to the barb at the left rear of the supercharger manifold.



61. Using a 10mm socket wrench remove the stock throttle body from the stock intake manifold. Next, using a #5 internal Torx socket remove the three mounting studs from the stock intake manifold.

62. Install the three studs removed in the previous step into the new supercharger inlet manifold using a #5 internal Torx socket and wrench.

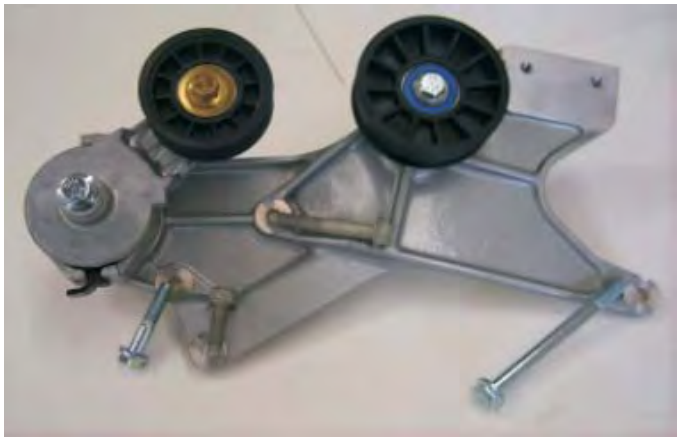
63. Remove the EVAP solenoid from the stock manifold with a 10mm socket wrench.

64. Lubricate the O-ring with the supplied grease.

65. Mount EVAP solenoid on front of intake manifold.

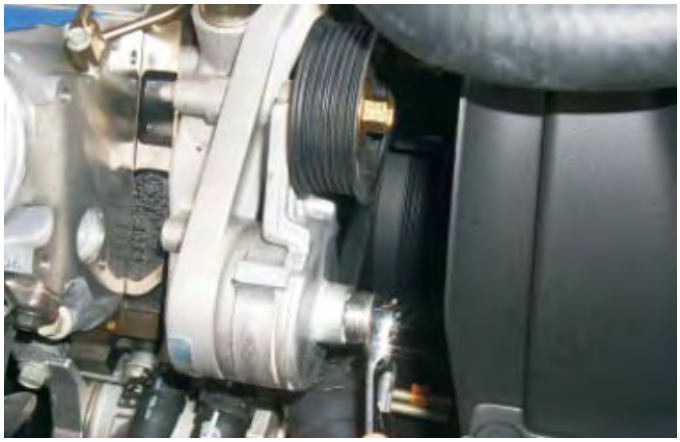
66. Remove the one bolt directly below the alternator and factory GM idler with a 15mm socket wrench.

67. Here is the new tensioner support bracket and hardware. The new bracket will locate in the original tensioner location. Note: The different fasteners and their locations.

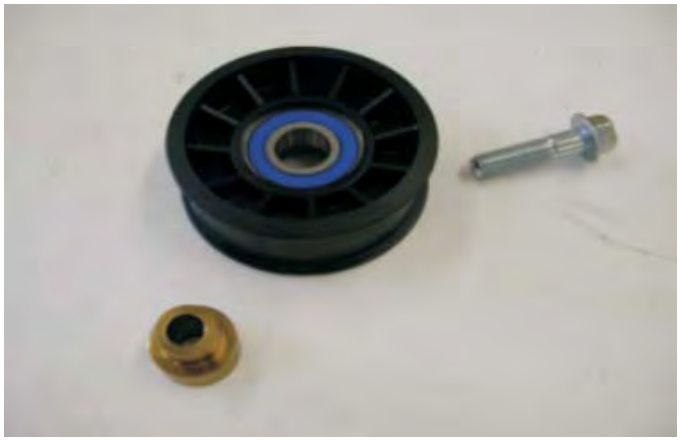


68. In the original tensioner location, install the new tensioner support bracket. Torque all mounting fasteners to 40 lb-ft.

69. Install the tensioner and it's mounting bolt on the new mounting bracket. Torque the tensioner mounting bolt to 50 lb-ft.



70. Install the 90mm idler and spacer on the idler support bracket. Torque the mounting bolt to 40 lb-ft.



71. Spray silicone or some mild soap and water solution on cylinder head surface to lubricate. This makes the intake manifold slide around a little to help line up the holes. (Do not use anything that will damage the intake gaskets such as petroleum based products, etc.)

72. Using an assistant, carefully lower manifold assembly into place, being careful not to damage gaskets.

73. Remove the 10 spilt looms that support the fasteners. Start all ten bolts by hand.

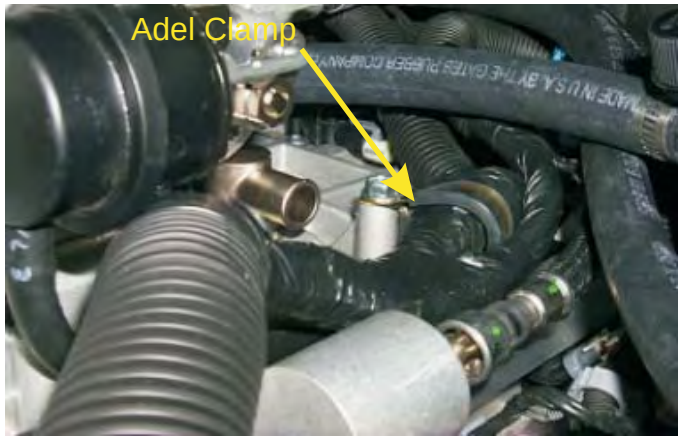
74. Torque all 10 bolts gradually and evenly to a torque of 89 in-lbs.

75. Push the fuel line connector on to the fuel manifold. Ensure that the fuel line is pushed all the way on. Pull on the connector to check that it is secure, you should not be able to remove the connector unless you use the removal tool.

76. Using supplied gasket, mount throttle body using stock nuts and torgue them to 89in-lbs.

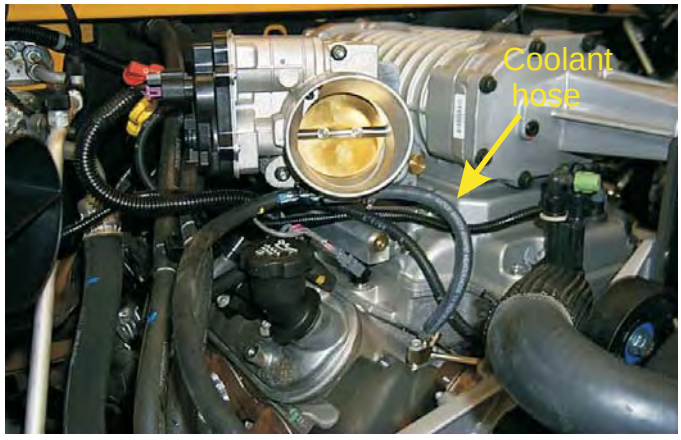
77. Remove the wiring harness from the original bracket.

78. Route the wiring harness over the left side fuel rail and attach it to the supercharger manifold as shown, using the Adel clamp and bolt supplied.



79. Plug in the electrical connectors for the following components, the Fuel Injectors, Electronic Throttle Control, Map Sensor, Knock Sensor and EVAP Solenoid.

80. Attach one end of the ¼" coolant hose supplied to the new steam vent pipe and the other end to the barb on the bottom of the throttle body with the clamps supplied. Attach the original steam vent hose and clamp from the radiator to the remaining barb on the bottom of the throttle body. Refill the cooling system with either the coolant you removed in step 6 or with fresh coolant. Securely tighten the reservoir cap.



81. Mount the nose support and torque the fasteners 15-17 ft-lbs.

82. Reinstall the EVAP tube on the EVAP solenoid at the front of the supercharger manifold. Route the tube under the supercharger nose and along the inside of the left fuel rail to the EVAP connection between the cylinder head and the firewall.

83. Install the Radix information sticker on the black plastic radiator cover below the GM factory-warning sticker.

84. Install alternator on the stock bracket and torque the fasteners to 40 ft-lb.

85. Reattach the battery cable to the alternator terminal.

86. Using belt routing decal, install belt. Please double check your routing before moving to the next step.

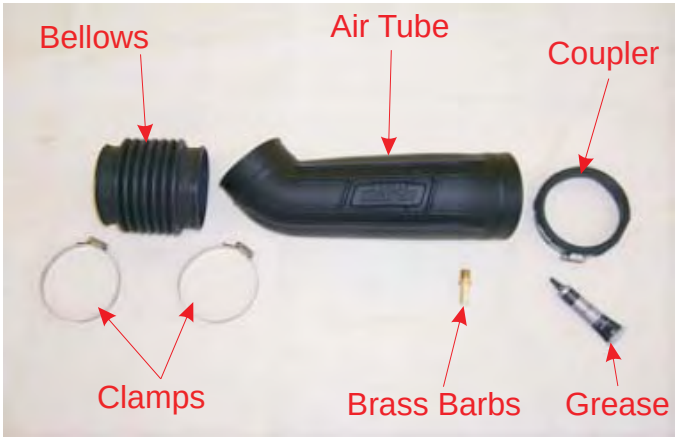
87. Using a screwdriver, remove the four screws that secure the top cover to the base of the air box assembly.

88. Remove and discard the stock paper air filter.

89. Remove the stock air box gasket and replace it with the new gasket supplied with the K&N air filter.

90. Install K&N air filter and reassemble the air box assembly. Reinstall the completed unit on the vehicle.

90. Here is the air tube and it's components.



92. Assemble the bellows and coupler to the air tube. Note: The position of the clamp screws. The screws must be facing up so that you can install the assembly on the vehicle.

93. Install the brass barb into the threaded port in the bottom of the air tube with a 14mm wrench. Do not over tighten!

94. Using some of the O-ring grease supplied, apply a light coating of grease on the inside of the coupler.

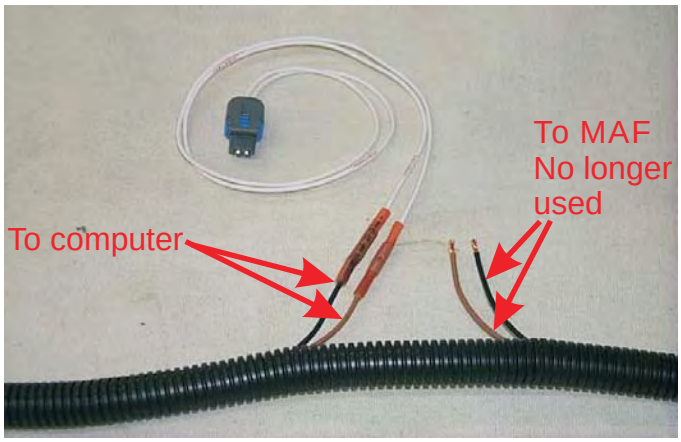
95. Push the bellows end of the air tube assembly on to the air box first, and then install the remaining end with the coupler on to the throttle body. Tighten all clamp screws securely.

96. Attach the PCV hose from the right (passenger) side valve cover to the brass barb on the bottom of the air tube. Connect the PCV hose from step 47 to the remaining barb next to the power brake hose connection on the back of the inlet manifold. Connect the power brake hose to the control valve shown in step 26.

97. Locate MAF cable, pull back flex loom approximately 8 inches. Separate the tan & black wires from this harness.

98. Cut the tan & black wires approximately 1" from the MAF connector.

99. Using the new IAT harness and crimp/shrink connectors supplied, connect either white wire of the new harness to the tan wire and the black wire that run to the vehicles computer. <u>The wires to the MAF will no longer be used.</u> Strip about ¼" of insulation from the ends of the black and tan wires to the computer and the IAT harness, then crimp the connectors on. Using a heat gun or blow dryer set on HIGH; shrink the insulation on the connectors so that it contracts around the wires completely. <u>You must shrink the insulation, as crimping the connectors alone is not enough to secure them!</u>



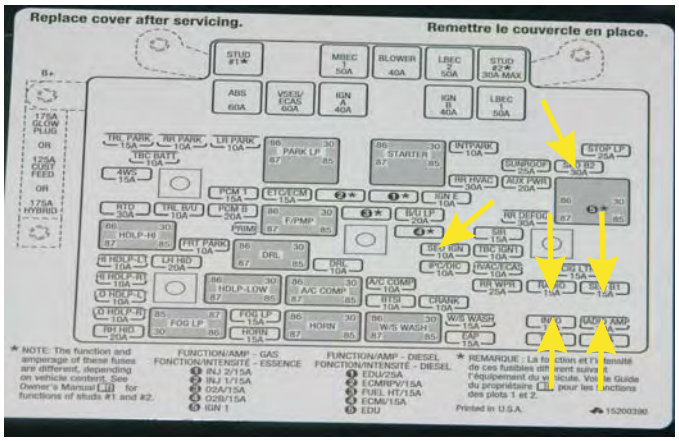
100. Plug the IAT harness into the IAT sensor located under the supercharger nose.

WARNING! Before downloading the new software into your vehicles compute (PCM), make sure to turn off all power consuming accessories: heater, A/C, radio, dome light, etc. Turn off the daytime running rights by applying the emergency brake or by turning the head lamp switch counter-clockwise. Follow the steps below to remove all recommended fuses and any additional power fuses from all aftermarket add-on accessories i.e.: stereo amplifiers, DVD players, TV monitors, MP3 players and anti-theft equipment. Keep all doors closed during programming. Never remove the programming cable during programming and always follow the instructions on the handheld unit display. Failure of any of the above instructions can cause a "NO RESPONSE" from the PCM or permanent damage to the vehicle PCM.

111. Ensure vehicle is off and the keys are out of the ignition. Locate the interior fuse panel inside the driver door as shown.

112. Remove the 10 AMP “SEO ACCY" fuse in the top middle section of the fuse box as shown.

113. Remove the cover from the "Exterior Fuse Panel" located under the hood on the drivers (left) side. Remove the six fuses labeled SEO B1, SEO IGN, INFO, SEO B2, RADIO and RADIO AMP. Download the Micro Tuner following the instructions that came with the Micro Tuner.



114. Vehicle Programing Instructions For the Micro Tuner:

IMPORTANT! To ensure trouble-free programming of your vehicle's computer:
*** Make sure the vehicle's battery is sufficiently charged.**
*** Turn off all accessories & close doors to prevent unnecessary drain on the battery.**
*** Do not attempt to program your vehicle while a battery charger is connected.**
*** Improper battery voltage will result in failure of the programming process.**
*** Do not disconnect the cable or turn off the ignition during programming.**
*** Reconnect battery ground (-) cable.**

A. Connect the supplied cable to the 9-pin connector at the top of the handheld unit. Use the thumbscrews to secure the cable to connector.

B. Connect the other end to your ALDL connector located under the dash near the steering column. Make sure this connection is seated all the way in and that it is secure. You do not want this cable coming out of the connector during programming.

C. Turn the ignition key to the on or run position <u>but do not start the vehicle.</u>

D. To begin programming your vehicle, you must press the YES button.

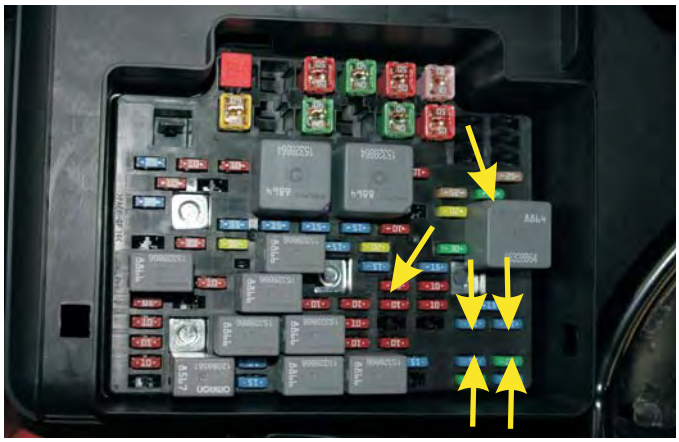
E. You only need to press the YES button once to start the programming cycle. The programming process only takes about a minute.

***DO NOT DISTURB THE CABLE OR TURN THE IGNITION OFF DURING THIS TIME! IF THE PROGRAMMING IS DISRUPTED YOUR COMPUTER WILL NOT START OR RUN YOUR VEHICLE!**

F. The handheld unit will inform you that the programming process has completed and to turn the ignition off and disconnect the cable. <u>Only at this time should the ignition be turned off and the cable removed.</u>

In the event that the vehicle needs to be returned to its original calibration, follow the directions as described above. The handheld unit will prompt you that you have already modified the vehicle's computer. Select YES to return you vehicle's computer back to the stock calibration. Wait for the handheld to finish, then disconnect cable as described above.

115. Once programing is completed, ensure the vehicle is off and the keys are out of the ignition. Install the fuses back into their correct locations and reinstall the covers.



116. Start the vehicle for 5 seconds and shut off, once again check for fuel leaks and fan-supercharger belt alignment.

117. Test drive vehicle for the first few miles under normal driving conditions, listen for any noises, vibrations, engine missfire or anything that does not seem normal. The supercharger does have a slight whining noise under boost conditions, which is normal. Check coolant reservoir level.

118. After the initial test drive gradually work the vehicle to wide open throttle runs, listen for any engine detonation (Pinging). If engine detonation is present let up on the throttle immediately. Most detonation causes are low octane gasoline still in the tank. If you have questions about your vehicles performance, please check with your installation facility or call Magna Charger at (805) 289-0044, Monday through Friday, 8am to 4:30pm.

Ventura, CA (November 21, 2002) Magna Charger, manufacturer of superchargers and supercharger systems for foreign and domestic vehicles, was presented the prestigious award at the annual Specialty Equipment Market Association Show (SEMA) in Las Vegas, Nevada.

Sponsored by General Motors Corporation, the 2002 SEMA Design Award for the "Most Innovative Product" was awarded to Magna Charger and recognized by the all-star team of judges for their outstanding and innovative design achievement. The criteria used by the judges included innovation, technical achievement, quality and workmanship.

The award was presented for the Radix® Intercooled supercharger system, designed for the Chevrolet, GMC and Cadillac, 4.8L, 5.3L and 6.0L General Motors Trucks and SUV's including the new H2.

Please enjoy your "Magna Charged" performance responsibly.