

DINAN SUPERCHARGER KIT INSTALLATION INSTRUCTIONS

D860-3310	1995 M3 (5-speed) Stage 1
D860-3320	1995 M3 (5-speed) Stage 2
D860-3330	1995 M3 (auto) Stage 1
D860-3340	1995 M3 (auto) Stage 2

Thank you for purchasing a Dinan Engineering Supercharger System. We have worked hard to design a system that works well and is relatively simple to install. If for some reason you find something in the installation instructions to be unclear or incorrect, please call Matt Taylor at Dinan Engineering (650) 962-9401. Any questions regarding tuning or running problems should be directed to our engineering department. Your cooperation is appreciated.

Special tools required :

* Professional Quality Belt Tension Gauge

A 9/16" Flex Head Wrench (wrench with a 9/16" pivoting socket head)

* We suggest using a Kent-Moore #BT33-73G Dial Gauge. If you cannot locate one locally and wish to purchase one from Dinan, we will sell you one at our cost (about \$90.00). When ordering the Belt Tension Gauge use the Dinan part # D671-0381. Incorrect belt tension can cause belt slippage, squealing, low boost, belt breakage and wear to Supercharger and Tensioner bearings

Before beginning the actual installation of the Supercharger kit, you should gather the necessary information described below and call us so that we may provide you with the correct software for your vehicle. **Warning: Make sure all plastic covers for battery + connections in ECU area are in place before removing the ECU. The ECU will be permanently damaged if it touches a "hot" connection even for a split second.**

IDENTIFY YOUR MOTRONIC ECU (ELECTRONIC CONTROL UNIT)

If your car was manufactured on 1/95 or later, it is probably an EWS protected car. The EWS system prevents anyone who does not have your specifically coded key from starting your car. EWS keys typically have a rounded pentagon shape with a large round button for the built in light. You will also notice that when you insert the key in the ignition switch that the ignition switch is surrounded by a raised plastic collar rather than the older flat collar design.

If you determine that your car is an "EWS" car, then you must send us your Motronic ECU so that we may use your individually coded chip to create a Supercharger chip for your car. Enclosed in the Supercharger kit is an "ECU Chip Information" form. Please fill out form and tape it to the ECU before shipping. Enclosed are two "DO NOT X-RAY" stickers. Affix these stickers to the package to be shipped. These stickers are generally used only with international shipping, but cannot hurt when shipping within the U.S. Send the ECU to Dinan.

If your car is not an EWS protected model, you will need to remove and open your Motronic ECU using the following instructions.

CARS EQUIPPED WITH STAGE 2, 3, or 4 PERFORMANCE CHIP AND FUEL PRESSURE REGULATOR: Vehicles that have had two or more engine tuning performance upgrades such as High Flow Airbox, Cold Air Intake, HighFlow Throttle Body etc. should have Stage 2, 3, or 4 Performance Chips in the ECU depending on which modifications you have. If your car is equipped with one of these chips then you will also have a Hi Pressure Fuel Pressure Regulator mounted to the fuel injector rail. You must remove this regulator and replace it with a stock fuel pressure regulator. Do not attempt to run the supercharged engine with the Hi Pressure Fuel Pressure Regulator! If you are unsure whether you have a Stage 2, 3 or 4 chip in your ECU then you can check the chip number. These chips will have the prefix D903- and the final number will be a 2,3 or 4.

NOTE:

STATIC ELECTRICITY - Your Performance Chip, as well as the internal circuitry of your car's ECU, can be easily damaged by naturally produced static electricity. Just prior to opening your ECU or handling your Performance Chip, it's a good idea to discharge any static buildup in your body or clothing by briefly touching a large, grounded metal object such as a cold water faucet, metal desk, countertop, etc. Try to touch an uninsulated - i.e., clean and unpainted part to make good contact.

REMOVING ELECTRONIC CONTROL UNIT (ECU) FROM VEHICLE

1. See Figure 1(b). Open hood; note that the black soundproofing material located on the passenger side of the firewall behind the positive connection to the battery (marked "+"). This soundproofing is fastened to the firewall with reusable plastic rivets. With a pocket-sized screwdriver, remove these rivets by prying the center section out from its outer body. (Once the rivet's center section protrudes halfway from the rivet body, the whole rivet will fall out of its hole.) Use care not to drop or lose these rivets.
2. Fold down the soundproofing material to gain access to the black plastic cover behind it. Remove the four Phillips screws and tilt the cover forward - this unhooks it from the channel at the bottom of the cover. Disengage the wiring harness from this cover; set the cover aside.
3. The Motronic control unit is located on the bottom of the ECU compartment. Remove wiring harness by lifting the metal clasp on the connector. Remove the two Phillips screws and the clamps that retain the ECU. (*Note:* there are both right and left side clamps; note their positions for later reassembly.) Slide the ECU straight out of its compartment. Take ECU to your workbench.

AT THE WORKBENCH

4. Place the ECU on your workbench with its part number label facing upward. Some ECUs may have their covers retained with four T-20 Torx screws; if present, remove them and set them aside.
5. Place ECU on your workbench with its part number label facing downward. Examine Fig. 3. Using a pocket screwdriver, pry the six locking tabs (securing the ECU's cover) slightly upward; pry each tab just enough until there's room for the small screwdriver blade to fit. Use a small screwdriver to finish prying the tabs upward until they are almost straight, and can clear the ECU's base. Remove and set aside the metal ECU cover.
6. On the printed circuit (PC) board, locate the socketed chip (see Fig. 4) which can be identified by its plastic "H" shaped retaining clip that locks the chip to its socket and is elevated higher than any other chip on the PC board.
7. See Fig 5. Remove the "H" shaped retaining clip by inserting the pocket screwdriver into one of the small slots in the retaining clip and prying toward the other slot. The retaining clip will pop up on the side in which the screwdriver is inserted; use a fingertip to hold the side up while you insert the screwdriver in the other slot to free the opposite side of the clip. Lift the retaining clip off the chip and set it aside.
8. On the lid of the ECU that you removed there will be at least two stickers with various numbers and other data. There is a label with a bar code on it and a label that has the VIN number as the first number. Just above the barcode is listed the Motronic ECU number. It should be either 0-261-200-413 or 0-261-203-506. Look at the label with the VIN number on it and write down all the numbers that appear on this label. You also need to look on the bottom of the ECU. If there is a similar label with a VIN type number on it, you need to write these numbers down also and note that they were on the bottom of the ECU. Once the ECU is open and the stock chip is located, you will notice a Silver label with two rows of numbers, write these down.

Call Dinan's engineering department at (650) 962-9401 with your ECU numbers and your chip number. We will in turn ship you the correct chip for your car.

Do not attempt to run the engine with a chip other than a Dinan Supercharger Chip.

AUTOMATIC TRANSMISSION CARS ONLY:

If you had previously purchased a Dinan Transmission Chip for your car, you will need to remove the Dinan Transmission Chip and reinstall the BMW stock chip following the directions that were included with the Dinan Chip. The additional power with the Supercharger drives the torque convertor to slip a little more causing the transmission to shift at a higher RPM, which is what the Dinan Transmission chip does for you. Using a Dinan Transmission chip in combination with the Supercharger kit will result in harmful over-revving and will allow the engine to hit the rev limiter during full throttle operation which will greatly decrease the acceleration rate.

INSTALLING SUPERCHARGER CHIP:

Once you have received the proper chip for your car, go ahead and install chip then reinstall ECU.

9. Before removing the original chip, observe its orientation; examine how it is seated in its socket. Remove the chip from its socket by inserting the blade of the pocket screwdriver between chip and socket; pry upward gently. Then alternately pry each end of the chip upward - continue prying until the chip is completely loosened. (Caution: Be careful - pry the chip from the socket, not the socket from the PC board! This is an easy way to ruin an expensive ECU.) As you remove the chip, try not to handle its pins - grasp the chip by its body. Set chip on the metal ECU cover to protect it from possible static damage.
10. Carefully open the black antistatic container that holds your new chip. Observe the small "divot" on one end of the Performance Chip. You'll also see a corresponding "divot" on one side of the socket. The chip must be inserted so that both "divots" are located on the same side. After removing the new chip from its protective container, partially insert one row of pins into one side of the socket. With two fingers, push gently on the other side of the chip until the other row of pins lines up with the socket; then push down on the chip. Use care in applying firm but gentle pressure to the chip during insertion; avoid flexing (and damaging) the PC board and ensure that the chip is fully seated. Caution: Use care not to bend any pins! Visually verify that all the chip's pins are in their corresponding socket holes, and that all socket holes are filled with pins. Fig. 6 illustrates chip & socket "divots".
11. Reinstall the chip retaining clip (removed in Step #7 above) it merely snaps into place. Reinstall cover on the ECU, using the pliers to bend the cover locking tabs back into place. If necessary, reinstall the four screws removed in Step #4.
12. REINSTALLATION: Reinstall ECU into computer compartment in vehicle. Reinstall ECU clamps, ensuring each clamp properly positioned (the left and right clamps are *not* identical). Reverse the above removal

procedures (Steps 3, 2 and 1) to complete the reinstallation. Return any soundproofing material to its original position.

SUPERCHARGER KIT INSTALLATION

13. Open trunk and remove tray from right side of trunk to expose battery. Disconnect negative battery cable.
14. Notice the long plastic cover that runs lengthwise over the center of engine. This is the injector cover. Use a small standard screwdriver to pop out the two plastic caps on cover to reveal the two mounting bolts. Remove bolts and cover.
15. Remove oil filler cap from valve cover. Pop out the two plastic caps from valve cover plastic cover. Remove the two nuts and plastic cover.
16. Reinstall oil filler cap.

REMOVE AIR FILTER BOX / AIRFLOW METER ASSEMBLY

17. Remove the two nuts that mount the air filter box and cruise control cable actuator to the two fenderwell mounting tabs. NOTE: Some cars were not originally equipped with cruise control.
18. Loosen the hose clamp that secures the flexible intake boot to the throttle body.
19. Disconnect the throttle preheat thermostat from the air filter box. Leave the hoses connected to thermostat.
20. Unplug the large electrical plug from the air flow meter. Pull the wire harness from out of the retaining clip on air flow meter and leave plug over on fenderwell for now.
21. Disconnect the cold air inlet boot from air filter box.
22. Pull the two hoses from the underside of flexible intake boot. Remove the angled coupler from end of idle control hose.
23. Remove air filter box/air flow meter assembly from car.
24. Disconnect the electrical plug from cruise control actuator and pull the actuator over toward the right rear of engine compartment and leave it laying there for now.
25. On Stage II Kits Only: Now is a good time to install the High Flow Throttle body.

26. Remove the large plastic radiator inlet cover that covers the top of radiator. Check to see that the rubber seal piece stays in place under cover.
27. Remove the plastic alternator cooling duct from alternator.

REMOVE LEFT SIDE (DRIVER'S) HEADLIGHT ASSEMBLY

28. Disconnect the three electrical connectors from the left side headlight assembly.
29. Use a 19mm wrench to hold the plastic threaded mounting bushings for headlight assembly while you remove the mounting screws. If you do not hold them in place they will spin and the whole assembly will be much harder to reinstall. The two threaded mounting bushings at the bottom of assembly are best reached using a thin 19mm (3/4") wrench.
30. Carefully remove headlight assembly.
31. Remove the cold air inlet boot from car, notice the locking clip.

REMOVE LOWER ENGINE SPLASH GUARD

32. Remove radiator cap.
33. Raise car. Remove the two plastic covers that are at each end of the lower engine splash guard. These covers are held in place using screws and plastic rivet connectors.
34. Now remove the large center splash guard. There is a long narrow divider piece that fits in splash guard, if this piece falls out during removal slide it back in place to simplify reinstallation.
35. Place drain barrel under the radiator and remove the radiator drain plug.
36. Reinstall drain plug and tighten once radiator is fully drained.

RADIATOR REMOVAL

37. Disconnect both radiator hoses from engine.
38. Lower car. Use a 32mm (1-1/4") wrench to remove the engine fan, tap the wrench with a small hammer. *This is a left hand thread!*
39. Disconnect the electrical plugs from the side of radiator and coolant overflow bottle.
40. Place a drain pan under radiator.

41. Remove the coolant reservoir from fan shroud. Remove coolant bleed screw. Squeeze the two locking tabs together and remove the small mounting cover. Disconnect reservoir hose.
42. Disconnect the long coolant reservoir hose that routes through bottom of fan shroud at the bottom of coolant reservoir. Remove the reservoir hose from the mounting clips in bottom of shroud. Remove shroud while pulling reservoir hose through hole in shroud.
43. The two radiator holddown brackets are easy to remove if you know the trick for getting them unlocked. Use a narrow standard screwdriver about 5mm wide and insert the tip in the small opening at the center of bracket (see arrow). Hold screwdriver up and tilt the screwdriver forward about 10°- 20° then push the tip straight into bracket. The top of bracket will pop up, this may take some gentle wiggling of screwdriver. Lift up brackets.
44. Carefully lift out the radiator. Be sure to save the rubber mounts.

Automatic Transmission Cars: Disconnect the transmission cooler from radiator.

REMOVE CHARCOAL CANISTER

45. Remove the 90° tank vent hose fitting from the top of the charcoal canister. Pull hard and it will come out.
46. Remove the fuel vapor purge hose from top of charcoal canister and slide the purge valve rubber mount from the tang on charcoal canister. Leave purge valve hanging for now.
47. Disconnect electrical plug from vapor purge valve.
48. Unbolt and remove charcoal canister with vent hose. It will be relocated to the space behind the right side (passenger) strut tower in a later step.

Now is a good time to install the Vanos Collar using the enclosed instructions.

INSTALLING HIGH FLOW FUEL INJECTORS

Warning! Do not smoke while doing the following steps!

49. Locate the two wire harnesses that lead to the ignition coils. Remove the four nuts that secure the two harnesses to the valve cover using two thin metal mounting plates.
50. Remove the two nuts that mount the injector wire housing to the injector fuel rail.

51. Lift up on the injector wire housing to unplug the wire plugs from the injectors. You may need to gently pry the wire housing away from the injectors using a standard screwdriver.
52. Use a compressed air nozzle to blow any dirt and debris from injectors.
53. Remove the two bolts that secure the injector fuel rail to the intake manifold.
54. Unplug the PCV "snap in" fitting from the valve cover and pull the hose and fitting forward out of the way.
55. Remove the fitting from hose. The original PCV hose will not be reused.
56. Have some rags ready from the next few steps since quite a bit of gasoline will be coming out from the fuel rail.
57. Loosen the hose clamp from the fuel inlet nipple at front of fuel rail and remove hose while you have a rag wrapped around hose.
58. We like to leave the fuel rail in the car since the rear hose clamp is a pain to get to, although you may want to remove it from the car.
59. Carefully pry up on the fuel injector rail to pull the injectors out of intake manifold. Occasionally an injector will stick in the manifold and pull out of the fuel rail so have a rag ready to soak up the fuel.
60. Use needle nose pliers to remove the retaining clip on #1 injector. Pull out injector and catch the fuel with a rag. Repeat this process with the remaining injectors working your way back until all are removed.
61. Locate the High Flow Injectors and hardware. Apply a thin film of grease to the rubber o-rings on each end of the injectors to prevent damage to the o-rings during installation. NOTE: Most spray type lubricants do not work in the presence of gasoline.
62. Starting from #6 injector, install injector then clip for each injector. Align each injector so the plugs are all lined up. The center flat part of the retaining clips should line up with the electrical plugs to prevent them from being knocked off during and after wire housing reinstallation.
63. Carefully line up all injectors in their respective runner holes and push down firmly on fuel rail to seat all injector o-rings into holes.
64. Reinstall the two fuel rail holddown bolts.
65. Reconnect the fuel inlet hose to fuel rail using the #4 hose clamp from kit.

66. Double check the electrical plugs on each injector to make sure they are still lined up.
67. Reconnect the PCV hose fitting in valve cover.
68. Reinstall the injector wire housing, push down firmly over each injector plug to fully seat the connectors.
69. Reinstall the two nuts that secure wire housing.
70. Reinstall the four nuts that secure the ignition coil wire mounting plates.

REMOVE BELTS

71. Pop the small black plastic cover off of the center of the idler pulley for the AC (air conditioning) belt.
72. Use an 8mm allen driver on a ratchet to turn the nut in AC idler pulley clockwise. This will remove the tension on the belt. Remove belt.
73. Locate the "tension idler pulley" for main serpentine belt. This pulley is below the oil filter housing and below the "stationary idler pulley". Turn the allen head bolt or hex head bolt that is in the center of the tension idler pulley clockwise to remove the tension on serpentine belt. Slide the belt off of the power steering pump pulley, then forward off pulley. Release tension on idler pulley and allow belt to slide up front side of power steering pulley. Try to keep the belt in proper position on all of the other pulleys, this will make Supercharger/Bracket assembly installation much easier. Now would be a good time to replace the serpentine belt which will be more difficult to install after Supercharger is in place.

INSTALLING SUPERCHARGER DRIVE PULLEY

74. Locate the Supercharger Drive Pulley and hardware. This pulley mounts inside the cars original crank pulley.
75. Unbolt and remove the AC drive pulley from the inside of the crank pulley.
76. Use a rag to thoroughly wipe out inside of crank pulley.
77. Blow out inside of crank pulley with compressed air to remove any remaining dirt.
78. Install Supercharger Drive Pulley using the six 8mm x 25mm 12.9 allenhead bolts, six 8mm flat washers and six 8mm wave washers. Use some red loctite on the threads of each bolt. Bolt torque is 25 ft. lbs. and should be done in a criss cross pattern.
79. Reinstall AC belt.

80. Replace the cover on AC idler pulley.

INSTALL CHECK VALVE AND MISCELLANEOUS HOSE CLAMPS

81. Locate the Check Valve and miscellaneous hose clamps from kit.
82. Notice the small hose that mounts under the PCV hose then connects to the underside of the intake manifold. This is the PCV purge hose. Cut this hose about 2" behind the plastic clip that holds the fuel hose, PCV hose and PCV purge hose under the #1 intake runner.
83. Install the 1/4" Check Valve in the PCV purge hose with the side of Check Valve marked VAC towards the intake manifold! Double check that you can blow air through the hose into intake manifold but you can't suck any. This Check Valve allows normal scavenging from the PCV hose during idle and part throttle driving, yet prevents the purge hose from being "boosted" during full throttle operation. Make sure that the hose ends are securely on the check valve.
84. Notice the large curved hose that runs between the idle control valve and the intake manifold. This hose often has no hose clamp on the manifold end of hose. Use the 20-32 hose clamp from kit to secure this hose if necessary. Check to make sure there is a hose clamp on the other end of this hose also.
85. Use the two #4 hose clamps to secure the 8mm hose that runs from the throttle body to the fuel vapor purge valve. The purge valve has a built in check valve (notice arrow).

REMOVE ORIGINAL AIRBOX MOUNTING TABS

86. Use a fiberglass cutting disc on a die grinder to cut both of the original airbox mounting tabs off of the left side wheelwell. Cut them about 1/8" from wheelwell leaving the base of the mounting tabs still on wheelwell.
87. Use a die grinding bit to deburr the remaining pieces of mounting tabs.
88. Use a clean rag to wipe off all chips and dust from the remaining mounting tab bases, and use some appropriate colored touch up paint to cover the bare metal surfaces.

INSTALLING THE AIR FILTER AND BRACKET

89. Locate the Air Filter Bracket and hardware. The Air Filter is to be mounted in the triangular space at the front of the left side wheel well. First you must relocate the horn which is mounted to the framerrail on earlier models. On later models the inboard horn is mounted to a C-shaped bracket.

90. Disconnect wire harness from horn and remove horn. Remove the C-shaped bracket where applicable.
91. Use a die grinder with fiberglass disc to cut off the horn mounting tab that is mounted to the top side of frame rail. Cut off tab from the two base pieces. Be very careful to not cut any wires.
92. Sand off any sharp edges; and use some touch up paint to cover any bare metal.

RELOCATE HORN

93. Notice the screw that goes through the lower half of the aluminum bumper to hold the foglight. Remove the screw.
94. Reconnect the wire harness to horn.
95. Mount the horn to bumper using the foglight screw. Position horn so it is out of the way of the area where the Air Filter is to be mounted. Slide Air Filter down into space to check for clearance.

MOUNTING FILTER BRACKET

96. Place the Air Filter in the space you made. There should be about 1/8" or more between Air Filter surface and all other items. Rotate horn on bracket if necessary.
97. Set the Air Filter Bracket over the Air Filter. It will be mounted using four 1/4" bolts and four 1/4" Thread-Sert type fasteners.
98. Position the bracket for best fit then use a scribe to mark the four mounting holes on the metal surfaces. Be sure to hold the Bracket still while marking holes.
99. Remove Filter and Bracket from car.
100. Use a center punch and hammer to carefully mark the center of each hole to be drilled. Make sure you get them well centered.
101. Use a small pilot drill (about 3/32") to drill out each of the four holes. Make sure you don't drill through anything under the wheelwell panel.
102. Finish drilling out each hole using a 3/8" drill bit or Unibit.
103. Deburr the holes.

104. Use the Thread-Sert tools to install the Thread-Serts. The Thread-Sert tools are a combination of four pieces which include a hex tool, 1/4" x 1-1/4" bolt, 3/16" allen wrench and stamped out 1/2" hex wrench.

THREAD-SERT INSTALLATION

- a. Place the 1-1/4" long bolt through the smooth end of tool.
- b. Screw on one Thread-Sert sleeve with the large end of Thread-Sert against serrated end of hex tool and finger tighten bolt.
- c. Push the small end of Thread-Sert into one of the 3/8" holes you drilled until it is in the hole up to the lip on sleeve.
- d. Tighten the bolt while holding the hex tool using the allen wrench and 1/2" wrench. Tighten firmly.
- e. Remove bolt and repeat process with remaining holes.

Disregard the above steps if you have a "Nut-Sert" install tool.

105. Mount bracket to the car with Air Filter in position using four 1/4" x 1/2" bolts and four 6mm wave washers. Do not over tighten these bolts and do not use any Loctite on bolt threads!
106. Place a rag over Air Filter Inlet to prevent dirt and foreign objects from entering Air Filter.

THROTTLE THERMOSTAT RELOCATION

107. The water heating of the throttle body is controlled by a "throttle preheat thermostat". You will need to relocate this thermostat in the lower center splash guard you previously removed. See Fig. 7 for the new location and the holes to be marked and drilled in splash guard.
108. Look at the left end of the center splash guard. Scribe a straight line as shown.
109. Measure 6-1/2" from lower right corner as shown and scribe a straight line as shown.
110. Scribe a second mark 13/16" from the first mark for the 9/32" hole.
111. Use the sharp tip of scribe to make two centering marks for each hole, push scribe straight in.
112. Drill both holes with 1/8" pilot holes.
113. Use a 9/32" drill bit to drill the small hole.

114. Use a hole saw or Unibit to drill the 1" hole.
115. Deburr the holes. Don't mount the thermostat yet. This will be done after the splash guard is installed.

LENGTHEN THROTTLE THERMOSTAT HOSES

116. Locate Throttle Thermostat Relocation Hardware. Place drain pan under the left side of engine.
117. Hold the Throttle Thermostat up with the brass thermal element pointing forward, similar to its original mounted position. The thermostat should still be connected to the throttle body via two small hoses. Notice where the hoses point straight forward for a long section then curve upwards to meet the thermostat.

Cut the lower thermostat hose at the forward end of the straight section just before it curves upward.

118. Cut the upper throttle thermostat hose even with where you cut the lower hose.
119. Use the two 17-1/2" long pieces of 3/8" hose, two 3/8" barbed hose couplers and four 10-16 hose clamps from kit to lengthen the throttle thermostat hoses.
120. Route the two water hoses forward and down toward where the thermostat will be mounted in the lower splash guard. Use the two original hose clamps to secure the hoses to thermostat with the brass thermal element pointing to the left side of car and level with floor. Leave the throttle thermostat unmounted for now.

INSTALL TURBOTRONICS 10 (T10)

121. Locate the Turbotronics 10 package from kit. This circuit piece modifies the signal from the airflow meter to attain correct calibration with the High Flow Injectors. The T10 is installed in the main wire housing that is mounted over the rear of the engine.

Automatic Transmission Cars: The T-11 can be installed at the same time as the T-10. See the wiring diagram with T-11 unit.

122. Remove the rubber moulding strip that sits above the main wire housing.
123. Remove the two Phillips head screws that secure the main wire housing to the body of car. You will need to pull up the plastic cover a little on one side to expose screw head. Pull the wire housing forward and down a

- little. Use a small standard screwdriver to pop open the locking clips on the forward side of wire housing.
124. Open the wire housing enough to expose the wires inside without unlocking the clips on the rear of wire housing.
 125. Find the electrical plug you previously removed from the airflow meter. Follow the airflow meter wire harness to where it enters the wire housing. You should see a small gray-yellow wire inside wire housing that comes from the airflow meter harness. Pull this wire away from the surrounding wires.
 126. Cut the gray-yellow wire leaving enough slack for each cut end to be pulled out of wire housing.
 127. Strip about 1/4" insulation off each cut wire end.
 128. Use wire crimpers to connect the T10 inline circuit on the gray-yellow wire. Pull firmly on the wires to test the connections.
 129. Fold the T10 over in the wire housing and close up housing. Snap the lock clips in place but don't reinstall the wire housing yet.

RELOCATE CHARCOAL CANISTER

130. Locate Charcoal Canister Relocation Hardware. See Fig. 8 for mounting the Charcoal Canister Mounting Bracket to the Charcoal Canister. Use two 6mm x 16mm bolts, four 6mm flat washers and two 6mm nylock nuts to secure Bracket to canister.
131. The Charcoal Canister gets mounted to the "battery tray" sheet metal at the rear of engine compartment next to the battery "+" connection. The M3 and 325i don't actually mount their batteries here but the 318i does.
132. Find the hole in battery tray with the 6mm nut welded to the other side. Mount the Charcoal Canister Bracket to this hole using one 6mm x 16mm bolt and 6mm wave washer through the hole nearest to the end of Bracket base. Rotate the Charcoal Canister until it is parallel with the sheet metal panel at rear of engine compartment. See Fig. 8. Tighten bolt.
133. Use a scribe to mark the remaining mounting hole onto the battery tray.
134. Remove Charcoal Canister from car.
135. Center punch the hole you marked in battery tray.
136. Drill hole with small pilot drill.
137. Drill out hole to 3/8" using Unibit or drill bit.

138. Install the Thread-Sert just as you did for the Air Filter Bracket.
139. Use the 1/4" x 1/2" bolt with 6mm wave washer and the 6mm bolt and wave washer to mount Charcoal Canister temporarily. The canister may need to be removed again after you determine the mounting location of Cruise Control Cable Actuator.

RELOCATE CRUISE CONTROL CABLE ACTUATOR

140. Locate Cruise Control Relocation Hardware. Disconnect the cruise control cable from the throttle linkage. This is best done by first pushing the white plastic cable end holder back through the rectangular hole. Now remove the cable end holder from cable. Pull the cable threaded adjuster out of the rubber grommet. Now push the rubber grommet rearward out of its hole and pull the cable assembly out of the hole.
141. Cut the wire tie above brake booster that secures cable. NOTE: On cars manufactured on 9-94 or later BMW made the "battery tray" deeper with a step in it so it needs one different mounting bracket and different mounting instructions. For simplicity we include the instructions and brackets for both versions in each kit.

CARS MANUFACTURED BEFORE 9-94

142. See Fig. 9 for attaching the mounting brackets to the cable actuator. Use two 6mm x 16mm bolts, four 6mm x 20mm flat washers and two 6mm nylock nuts to connect brackets to cable actuator. Tighten the nuts with the brackets sitting flat against a flat work bench.
143. Use Fig. 9 to position the cable actuator between the charcoal canister and the strut tower. You may need to reposition the mounting brackets slightly to get the four mounting holes for brackets sitting flat on battery tray where no holes or slots are. You may want to temporarily disconnect the BMW Program test plug from its mounting tab to gain more working space.
144. Use a scribe to mark the two mounting holes for the bracket closest to engine.
145. Remove the cable actuator and center punch the two marked holes.
146. Drill holes and install two Thread-Serts as you did previously.
147. Mount the cable actuator in car using two 1/4" x 1/2" bolts and two 6mm wave washers.

148. Check position of cable actuator and mark the two remaining mounting holes with scribe.
149. Remove cable actuator from car.
150. Remove charcoal canister from car.
151. Center punch and drill holes.
152. Install Thread-Serts.
153. Permanently install charcoal canister.
154. Permanently install cable actuator.
155. Reinstall the BMW Program test plug if it was removed.

CARS MANUFACTURED 9-94 AND LATER

156. See Fig. 10 for attaching the mounting brackets to the cable actuator. Use two 6mm x 16mm bolts, four 6mm x 20mm flat washers and two 6mm nylock nuts to mount the brackets. Tighten the nuts with the brackets sitting flat against a flat work bench.
157. Use Fig. 10 to position the cable actuator between the charcoal canister and the strut tower. You may need to reposition the mounting brackets slightly to get the mounting brackets to sit flat on mounting surface and keep the cable actuator from hitting charcoal canister and strut tower. The mounting bracket that is closest to the fenderwell rests on the narrow flat section on top of wheelwell. The end of this bracket is even with the slight step or seam at the edge of battery tray. You may want to temporarily remove the BMW Program test plug from the tab on strut tower to gain more room.
158. Use a scribe to mark the two mounting holes for the bracket closest to the fenderwell.
159. Remove the cable actuator and center punch the two mounting holes.
160. Drill holes and install two Thread-Serts as you did previously.
161. Mount the cable actuator using two 1/4" x 1/2" bolts and two 6mm wave washers.
162. Check position of cable actuator and mark the two remaining mounting holes.
163. Remove cable actuator from car.

164. Center punch and drill the two mounting holes.
165. Install Thread-Serts.
166. Permanently mount the charcoal canister if you removed it.
167. Permanently install the cable actuator.
168. Reinstall the BMW Program test plug if you had removed it.

ROUTING CRUISE CONTROL CABLE

169. The cable for the cruise control should be routed under the main wire housing and between the firewall and the two large wire harnesses that run down from wire housing. Run cable along under side of wire housing then down to throttle body. It is very important to run the cable on the firewall side of the two wire harnesses coming down from wire housing. The cable must not be allowed to touch the top of engine or the normal movement of the engine will eventually chafe through the cable and cause damage.
170. Reconnect the cable to the throttle linkage.

LENGTHEN CRUISE CONTROL WIRE HARNESS

171. Locate the Cruise Control Wire Harness from kit. This will lengthen the existing wires so the cruise control electrical plug may reach the cable actuator in its new location. This harness should have two pieces of 1/2" shrink tubing already on it.
172. Cut the original cruise control wire harness about 3" from plug.
173. Strip about 3/4" of the outer sleeve off each cut end of harness.
174. Strip about 1/4" of insulation off of each wire.
175. Connect the new harness to the plug according to the colors. These colors should match the colors of your wires. Give each wire a test pull to ensure that your crimp connections are secure. Later model cars will have a Red-Brown wire and a Brown-Orange wire. Connect the Dinan Brown wire to the BMW Brown-Orange wire. Connect the Dinan Blue-Brown wire to the BMW Red-Brown wire.
176. Slide one piece of 3/4" shrink tube over the wire connectors you just crimped. Shrink tube should cover about 5/8" of the rubber boot.
177. Use heat gun or cigarette lighter to shrink the tubing onto the connectors.

178. Slide one of the pieces of 1/2" shrink tube halfway over the end of the shrunken 3/4" shrink tube.
179. Shrink the 1/2" shrink tube. **Do not connect new harness to original yet!**

ROUTING CRUISE CONTROL HARNESS

180. Connect the cruise control electrical plug to the cable actuator. Slide the piece of 1/2" shrink tube up to the "unconnected" end of harness. Route the harness under the actuator toward the metal shield near engine with two plastic harness clips for the BMW Program test harness. Push the Cruise Control Harness into the two clips on top of the existing harness. Run the harness along side of the battery "+" connection cable, then along next to the cruise control cable and behind the two down pointing harnesses until you come out at the brake booster. Route the harness under the main engine harness then under the main engine wire connector. Run harness across the lower front of fuse box toward the existing harness along the inner fenderwell. Place the Cruise Control Harness under the fenderwell harness in the clips toward cut end of original cruise control harness. The Cruise Control Harness will be wire tied up to the main wire housing after the charcoal canister lengthening hoses are installed. If you routed the Cruise Control Wire Harness correctly it should be the correct length to meet the cut end of original wire harness. If it is a little too long or short you can give or take slack up next to the fuse box. Temporarily remove the Cruise Control Harness from the fenderwell clips to gain slack for connecting ends.
181. Slide the remaining piece of 3/4" shrink tube over harness.
182. Make your connections just as you did for other end of harness in respect to color matching.
183. Shrink the 3/4" shrink tubing over the connectors and exposed wires.
184. Slide the piece of 1/2" shrink tube halfway over the shrunken piece of 3/4" tube.
185. Shrink the piece of 1/2" shrink tube.
186. You may want to use some electrical tape to wrap the Cruise Control Harness tightly against the fenderwell harness for a few inches to give it a neater appearance.
187. Put the wire harnesses back into the fenderwell clips.

CONNECTING HOSES FOR CHARCOAL CANISTER

188. Locate the long piece of 6mm hose and two #3 hose clamps.
189. Connect the 6mm hose to the small nipple on the charcoal canister, use one #3 hose clamp to secure hose. Route this hose next to the cruise control harness over to the brake booster. Run the hose over the brake booster check valve and down to the fuel vapor purge valve.

190. Connect the 6mm hose to purge valve using one #3 hose clamp.
191. Notice the hard plastic fuel tank vent hose that connects to the 90° fitting you previously removed from the charcoal canister, this hose is usually blue. Cut this hose about 1-1/2" from the bend of the 90° tank vent hose fitting.
192. Connect the long piece of 8mm hose to the 90° fitting using a #4 hose clamp to secure hose over the cut piece of vent hose.
193. Reinstall the tank vent hose 90° fitting back into the charcoal canister.
194. Route the 8mm hose along next to the 6mm hose over to the other cut end of fuel tank vent hose.
195. Connect the 8mm hose to cut end of vent hose using a #4 hose clamp.
196. Locate the Charcoal Canister Vent Hose from kit. This is the remaining hose with some bends in it. Connect the end of vent hose with the tighter bend to the vent nipple on charcoal canister. Some silicone spray will ease the installation. Route the other end through the hole in fenderwell.

REINSTALL WIRE HOUSING

197. Use two 8" wire ties to wrap together the charcoal canister hoses, cruise control harness, battery "+" cable and other harness at the passenger side of firewall.
198. Notice the recessed section at the bottom of the wire housing that gives extra clearance for removing the injector cover. Use the two 14" wire ties to secure the charcoal canister hoses, cruise control harness and cable to the bottom rear of wire housing. The wire ties should hold the hoses, etc., high above the engine to prevent contact with valve cover and injector cover.
199. There is a large flexible wire boot coming out of the top rear of wire housing on driver's side of wire housing. Use one 8" wire tie to connect the hoses, harness and cable to this boot to keep them up above the engine.
200. Use the two original Phillips head screws to remount the wire housing to car. Lift the wire housing then push rearward for proper fit.
201. Wire tie the charcoal canister hoses to the battery "+" cable next to the brake booster.

REROUTING THE AIRFLOW METER WIRE HARNESS

202. Locate the airflow meter wire plug you removed from the airflow meter previously. Follow this wire harness back until it meets the larger wire harness at firewall. Carefully slice open the large wire harness sleeve to allow you to pull the airflow meter wire harness wires out and toward the rubber boot on wire housing. Stop when you get about 1" from rubber boot. Be sure to avoid cutting any wires.
203. Use some electrical tape to tightly wrap up both wire harnesses with the airflow harness breaking off from the larger harness next to the rubber boot.
204. Reroute the airflow harness down and forward next to the charcoal canister hoses. Wire tie the airflow harness and charcoal canister hoses together to the brake master cylinder.
205. Run the airflow harness down and forward past the original charcoal canister mounting tab then up and around strut tower for now. Loosely wire tie the airflow harness to the charcoal canister mounting tab.
206. Reinstall a wire tie in the plastic fastener on firewall above brake booster and secure all the wire harnesses.
207. Reconnect wire plug for fuel vapor purge valve.
208. Wire tie vapor purge valve to the wire harness at the front of ABS unit.

SUPERCHARGER / BRACKET INSTALLATION

209. Look at the oil filter housing on engine, notice the housing mounting bolt that is just below the filter cavity and a little toward the rear of car. Remove this bolt.
210. Locate the small engine lifting bracket at the top front of the engine. The upper bracket mounting bolt also helps mount the Vanos cam timing actuator. Remove this bolt.
211. Look down at the hydraulic tensioner assembly for the serpentine engine belt. This assembly consists of a pulley wheel, pressurized shock absorber and a pivot bolt with bearings. Remove the pivot bolt only, remove the flat washer from inside of tensioner along with bolt. There must be no belt tension before removing the pivot bolt. The belt should have been removed from only the power steering pulley in a previous step. Try not to move the tensioner assembly or the belt from their positions.

212. There is an idler pulley that is mounted above the tensioner pulley. Remove the plastic bolt cover from center of pulley. Remove the long 10mm bolt that mounts this idler pulley. These four bolt holes will be mounting points for the Supercharger/Bracket Assembly.
213. Locate the 10mm x 180mm bolt, one 8mm x 125mm bolt, one 10mm wave washer, one 8mm wave washer, one spacer bushing #1, and one spacer bushing #2. Double check to make sure that the flat washer is not in the tensioner pulley pivot bearing assembly. Removal of this flat washer is critical for proper mounting of Supercharger Bracket.
214. Place 8mm wave washer on the 8mm x 125mm bolt, insert this bolt through the lower mounting hole in Main Brace from the Supercharger Pulley side of bracket toward the compressor side of bracket. Slide the bushing #1 onto bolt.
215. Place the 10mm wave washer on the 10mm x 180mm bolt, insert this bolt through the upper mounting hole in Main Brace the same direction as the first bolt. Slide the bushing #2 onto bolt then the idler pulley with the pulley toward Main Brace.
216. Carefully guide the Supercharger/Bracket assembly into place with the 8mm bolt going into the tensioner pulley pivot hole, and 10mm bolt into the mounting hole for idler pulley, the bushings and idler pulley must remain in place during installation. Serpentine belt must remain under the idler pulley just as it was in the original form. Gently start the mounting bolts by hand while supporting Supercharger to prevent cross threading bolts in the aluminum. Alignment pin for idler pulley must line up with hole. Tighten bolts until the wave washers are nearly flat.
217. Place one 8mm wave washer and one 8mm flat washer on the 8mm x 45mm bolt. Insert this bolt into the hole in Compression Brace and through the Vanos cam timing actuator. Tighten until the wave washer starts to flatten.
218. Check the clearance between the Supercharger compressor housing and alternator at closest point. There should be very little clearance here but they should not be touching each other. Also check clearance between Supercharger Bracket and alternator pulley and belt. There should be at least a 1/16" gap here.
219. Check the clearance between the Supercharger and the wheelwell it should be no closer than 1/2".
220. If either of these clearances are incorrect you will need to push or pull a little on the assembly to shift it in the mounting bolts. If this does not provide sufficient clearance then you may need to loosen the bolts between the Braces and Supercharger Bracket for further adjustment.

If your vehicle is equipped with a 140 amp alternator you will have to use a diegrinder to remove some material from alternator housing. You should try to keep the chips from going inside the alternator and cover the surrounding area to prevent chips from going everywhere else. Remove as little material as possible to gain sufficient clearance.

221. When you are satisfied with the clearance you can now tighten the bolts. The torque for the large 10mm bolt is 35 ft. lbs. The torque for the smaller 8mm bolts is 20 ft. lbs.
222. Connect the ground wire that originally went to the Vanos mounting bolt to the threaded hole in Compression Brace using the 6mm x 10mm bolt and wave washer.

REINSTALL SERPENTINE BELT

223. Use an 8mm allen driver on ratchet to turn the bolt in tensioner pulley clockwise to release the tension on serpentine belt. Now slide belt back in place back over the power steering pulley. Double check to see that the belt is properly seated in all of the pulleys.
224. Reinstall the plastic cap that covered the bolt head for tensioner pulley.
225. Reinstall the AC belt if you haven't already.
226. Replace plastic cap for AC tensioner pulley.

INSTALL ANGLED BRACE

227. Locate the Angled Brace, 8mm x 112mm bolt and one 8mm wave washer. The end of Angled Brace with the small bushing connects to the oil filter housing using the 8mm x 112mm bolt and wave washer. The other end of Angled Brace will mount to the Supercharger Bracket using the same bolt that mounts the Supercharger Belt Tensioner Assembly. Finger tighten bolt for now.
228. Use the 2 -1/2" long 3/8" bolt, two 10mm wave washers and 3/8" nylock nut to connect the Angled Brace to the Supercharger Bracket. This bolt should come from the front of Supercharger Bracket and go through the top slot of Belt Tensioner Assembly then through the top hole in Angled Brace. The upper leg of Angled Brace must sit flat against the Supercharger Bracket. The lower end of Angled Brace must not touch oil filter housing. If it touches filter housing, use file or die grinder to remove the necessary metal from housing.
229. Tighten the 2 -1/2" long 3/8" bolt until the wave washers are slightly squished, this will allow the Belt Tensioner Assembly to slide in channel.

230. Tighten the 8mm allen head bolt that mounts the Angled Brace to the oil filter housing. Torque 20 ft. lbs.
231. Check to make sure Tensioner Assembly slides up and down without interference
232. Slide the Belt Tensioner Assembly up as high as it will go.

INSTALL SUPERCHARGER DRIVE BELT

233. Locate the Supercharger Drive Belt. Route the belt around the Supercharger Drive Pulley then around the Supercharger Pulley. Slip the belt under the lower side of Tensioner Pulley.
234. Use the 8mm tensioner bolt to adjust the belt tension. Adjust tension to 150 lbs according to Belt Tension Gauge.
235. Tighten both of the Tensioner Assembly holddown bolts. We prefer to use a 9/16" flex head wrench to tighten the lower holddown bolt.
236. Tighten the 8mm tensioner bolt a little to keep it from vibrating out

INSTALL SUPERCHARGER DISCHARGE PIPE

237. Locate the Supercharger Discharge Pipe and hardware. The Discharge Pipe mounts between the Supercharger and throttle body. Place the 2-3/4" to 3", 110°Hose on the throttle body, notice that the throttle end of hose has an internal shoulder and locking rib. Aim this hose at the discharge elbow on Supercharger. Don't clamp hose yet.
238. Remove the tape or cap from discharge elbow of Supercharger.
239. Place the 2-3/4" to 2-7/8", 20°Hose on the discharge elbow of Supercharger with one #44 hose clamp. Aim the 2-3/4" end of 20°hose directly at the open end of 110°Hose. Slide the end of Discharge Pipe without the angled nipple into the 20°Hose with the angled nipple pointing down and toward the rear of car. Remove the 110°Hose from throttle body and place this hose on end of Discharge Pipe. Place 110°Hose back on throttle body and adjust it for good fit. Carefully adjust the 20°Hose on Supercharger to fit squarely on the Supercharger discharge elbow and Discharge Pipe. The 20°Hose should sit on discharge elbow with the hose shoulder even with end of discharge elbow. When you are satisfied with fit go ahead and tighten hose clamp on 20°Hose to secure it to Supercharger.
240. Remove the 110°Hose and discharge pipe from car.
241. Place a hose clamp on open end of 20°Hose.

242. The hose from the idle control valve will connect to the hose nipple on Discharge Pipe using the 16-25 hose clamp. It is easier to get the hose connected to Discharge Pipe before it is installed since there is very little room for your hands after the pipe is installed. Leave this hose clamp slightly loose for now.
243. Now you can permanently install the Discharge Pipe using the remaining #44 hose clamps. Attention: The hose clamp on the 110°Hose at the throttle body must have the clamping screw on the firewall side of throttle body. If the clamp screw is on the forward side of the throttle body, it will interfere with the throttle linkage possibly allowing only partial opening of throttle or worse the throttle could stick wide open! Try to position the Discharge Pipe so that the idle control hose is about 3/4" from throttle linkage at closest point. Check position of idle control hose and readjust if necessary. When you are satisfied with the fit of all hoses tighten all the clamps.

INSTALL INLET PIPE

244. Locate the Supercharger Inlet Pipe and hardware.
245. Remove the tape or cap that is covering the inlet throat of the Supercharger Compressor Housing. Connect the 3" to 3-1/2" 112° silicone hose to the Supercharger inlet throat using the #56 hose clamp. The smaller end of the 112°Hose points over the top of the fender and should be at least 5/16" from strut tower. The bottom edge of the hose end should be about 2-1/4" up from the seam between wheel well and strut tower at closest point. Don't fully tighten hose clamp yet.
246. Place the #48 hose clamp on the open end of 112°Hose with the screw on the Supercharger side of hose. Slide the end of Inlet Pipe with the welded on fitting into the open end of 112°Hose. The Inlet Pipe points forward toward the Air Filter. The bottom edge of the forward end of Inlet Pipe should be about 1-3/8" above wheelwell at closest point. Push Inlet Pipe into 112°Hose until there is about 1/16" clearance between Supercharger and Inlet Pipe at the "inside bend". Loosely tighten hose clamp.

INSTALL AIR FILTER ELBOW PIPE

247. Locate the Air Filter Elbow Pipe and hardware. Insert the welded straight end of Elbow Pipe into Air Filter. Position the hose clamp into notched section of Bracket hole so that it can be loosened or tightened after the headlights are reinstalled. Point the open end of Elbow Pipe directly at the open end of Inlet Pipe. Tighten the hose clamp.

INSTALLING THE AIRFLOW METER

248. Locate the Airflow Meter Mounting hardware. Connect the two rubber flex hoses to the airflow meter as shown in photo. NOTE: The flow arrow on airflow meter must point rearward toward the Supercharger or the car will run extremely poor if it runs at all! Keep this flow arrow in mind when mounting the flex hoses.
249. Place the remaining two hose clamps on the Inlet Pipe and Elbow Pipe to be installed after airflow meter is installed.
250. Place the inlet end of airflow meter assembly onto the Air Filter Elbow Pipe. Use your fingers to compress the flex hose at outlet end of airflow meter assembly while pushing forward a little to compress other flex hose. Slip the outlet flex hose onto the Supercharger Inlet Pipe. If this does not seem to work for you just remove the Inlet Pipe from the 112° Hose then install the airflow meter assembly. You must then reposition the Inlet Pipe.
251. The electrical connection on the airflow meter points toward the top edge of fender.
252. Double check the air flow direction of airflow meter.
253. Fully close hood and look in through the headlight assembly hole to check for clearance between Inlet Pipe and the hood insulation. There should be about 1/2" clearance at closest point. Also check the clearance between airflow meter wire plug and hood.
254. When you are satisfied with the fit of the Inlet Pipe and airflow meter, tighten all of the hose clamps.
255. Connect the airflow meter wire connector to airflow meter. There should be enough slack in the airflow meter harness to insert the wire harness in the harness retaining clip on lower front of airflow meter.
256. Reinstall the alternator cooling duct on alternator and secure it using the original hose clamp.

INSTALL PCV HOSE ASSEMBLY

257. Locate the PCV Hose Assembly and hardware. The larger end of hose connects to the hose nipple on Inlet Pipe. The smaller end of hose connects to the PCV fitting on valve cover. Route the straight section of hose over the alternator cooling duct in the space between the Supercharger and the Supercharger Bracket. Try to center the filter in the space.

258. Install the PCV Hose Assembly using the two 10-16 hose clamps.

Important: This Supercharger System has been carefully tuned to work with the original catalytic converter(s). If the car is run without the catalytic converter(s) in place, this will result in a dangerously lean condition at higher RPM's which can damage engine and reduce power. Raising the boost pressure will have the same effects and may reduce the life of the Supercharger.

Failure to comply with these instructions or intended alteration will also void the warranty of the Supercharger System against defects or failures. Clean air is good for everyone so do your share and maintain all smog control systems as instructed.

Also keep in mind that changes made to the engine such as high performance cam shafts and some exhaust changes such as tuned headers will generally cause a leaning effect to engine. If you are determined to alter the engine in such a manner, it is highly advisable to contact the engineering staff at Dinan Engineering.

Stage II Kits: Now is a good time to install the Dinan Freeflow Exhaust System.

MODIFY AND INSTALL RADIATOR AND COVERS

259. Remove the upper hose from radiator. Cut 3/8" off of the short curved end of hose. This will prevent the hose from rubbing on the Supercharger Bracket.
260. See Fig. 11 for modifying the radiator fan shroud. Remove shroud from radiator.
261. Measure and mark the shroud to cut out the 1-1/2" long notch. Use a die grinder with a bit for aluminum or plastic for best results.
262. Mark and drill the two 3/16" holes.
263. Cut out the top center piece of shroud just to the inside of the two seams.
264. Clean and deburr the cut surfaces.
265. Place shroud back on radiator and insert the two plastic rivet connectors but not the lock pins for connectors.
266. Use a scribe and mark for a cut out in the top lip of radiator that lines up with the 1-1/2" long cut out you made in shroud. This cutout should be the same shape and the same size as the shroud cutout. The cutout should go down to the corner where the lip meets the top of radiator. The two combined cutouts allow the small coolant purge hose to be routed over the top of radiator away from the fan.

267. Drill two 3/16" holes in the bottom half of the same top lip on radiator you marked for the cutout. Each hole should correspond to the holes you drilled in shroud. These holes will allow you to use two wire ties to connect the top of fan shroud to radiator. When you drill these holes correctly you will not be in danger of drilling through the core tubes on radiator. Be careful anyway!

REINSTALL RADIATOR AND SHROUD

268. Permanently install radiator in car.
Automatic Transmission Cars: Remount the transmission cooler to the radiator.
269. Temporarily slide shroud into place on radiator and check clearance between fan shroud and Supercharger Drive Pulley. Also check clearance between fan shroud and Belt Tensioner and Belt. There should be about 1/2" clearance at these items, if not remove shroud and trim to correct clearance.
270. Install fan shroud in car while pulling the coolant reservoir hose through hole in fan shroud. Do not install wireties yet.
271. Locate the new Coolant Purge Hose and two #4 hose clamps.
272. Remove the original coolant purge hose if you haven't already done so. The new hose will be the same but will be softer and more flexible for the new routing.
273. Install the coolant reservoir while connecting the hose at bottom and the slightly bent end of Coolant Purge Hose. The other end of Coolant Purge Hose now runs over the top of fan shroud then down to the top "channel" on radiator top. Reinstall holddown cover and bleed screw.
274. Use the two wire ties to connect the shroud to the radiator while also holding purge hose. Gently tighten wire ties to prevent pinching hose.
275. Reconnect wire plug for coolant level sensor on reservoir.
276. Reinstall radiator hoses.
277. Reconnect coolant temperature sensor wire plug on radiator.

MODIFY RADIATOR INLET COVER

278. See Fig. 13 for cutting a notch in the radiator inlet cover that covers the top of radiator. This notch is for the new Coolant Purge Hose to go through.

- 279. Mark and cut out the notch as shown using die grinder.
- 280. Clean and deburr the cut surfaces.

INSTALL FAN ASSEMBLY

- 281. Mount Fan Extender on water pump flange. (Left hand thread)
- 282. Install the new Fan Assembly on Fan Extender.
- 283. Measure the gap between the front edge of fan blades and the aluminum lip at top of radiator. This gap should be at least 1/2". Check the clearance between the front of Supercharger Drive Pulley and fan blades this should be about 1/2". Do not start the car if you have less than 1/2" clearance between fan and radiator!
- 284. Apply the **ATTENTION!** fan sticker to the painted support panel next to the left side radiator holddown bracket.

INSTALL SUPERCHARGER COOLING HOSE ASSEMBLY

The Supercharger Cooling Hose supplies fresh cooler air from in front of the radiator to help cool the inside of Supercharger. This cooling air is necessary for preventing Supercharger failure due to excessive heat build up.

- 285. See Figure 14 for cutting out a slot in the long divider plate that slides into the lower splashguard. Mark cut out and use fiberglass cutting disc to remove piece. You can reinstall the lower splashguard after you have the car running and have broken in the Supercharger Drive Belt.
- 286. Locate the Supercharger Cooling Hose Assembly. If the Filter is not already connected to the Cooling Hose then connect the two and secure the Hose with the clamp provided. If the Filter is not yet oiled go ahead and oil it using the red oil in the small tube that comes with Filter. Use only about half the oil from the tube for this small filter. Rotate Filter around while oiling then let oil "wick" into the gauze.
- 287. Route the open end of hose up from bottom of car, behind leftside tank on radiator and through the space in front of the coolant reservoir hose next to frame rail. Run hose up, then back toward the fitting on Supercharger. Remove tape or cap from fitting on Supercharger. Connect hose to fitting. Route filter forward under radiator tank and into the painted nose panel piece in the space behind front lower grill. The filter can sit in the splashguard or rest against the front grill for maximum cooling effect. You will probably need to cut out a corner of the rubber shroud flap in front of radiator bottom for hose clearance.

288. Wire tie hose in a few places for support. The upper section of hose should arc up then straight down in front of the Supercharger pulley at least 1-1/2" away from pulley.

REINSTALL THE LEFT SIDE HEADLIGHT ASSEMBLY

289. Place the headlight assembly in its space and reconnect all wire connectors for bulbs.
290. Use the original screws to mount headlight assembly while holding the threaded mounting bushings with 19mm wrench. Check for an even fit all around headlight assembly.
291. You can leave the lower center splash guard off the car until after you have run the car on a few test drives in case you need to check for leaks, noises or readjust belt. But if you are going to drive the car you must mount the lower side covers that also support the plastic inner wheelwell liners. Mount both side covers using the original screws but don't install the rivet fasteners yet.
292. Wire tie the throttle thermostat up out of way for now.

REFILL COOLING SYSTEM

293. The cooling system should now be intact and ready for coolant. Fill the reservoir up with 50/50 mix coolant and water. Loosen the large plastic bleed screw a little until coolant leaks out at bleeder. Tighten screw.
294. Pressure test cooling system.
295. Replace any coolant that might have settled in engine.
296. Reinstall reservoir cap.
297. Reconnect the negative battery cable and replace the tray piece.

STARTING ENGINE

298. Before starting engine, keep in mind that the Supercharger bearings are supposed to have approx. 30 minutes of idling time before the engine sees any revving. Start engine. Listen for strange noises and check for leaks. While engine is warming up, you may need to add coolant so watch the level carefully. When cooling systems is properly purged of air pockets and warmed up there will be a tiny steady stream of coolant coming out of a small hole in coolant reservoir filler neck. A quiet whining is a normal sound for the Supercharger.
299. Tighten coolant pressure cap when coolant level is up to correct level with engine fully warmed up.
300. Make sure there are no fuel leaks around injectors and fuel hoses on engine.

SUPERCHARGER DRIVEBELT BREAK-IN

The six rib belt that drives the Supercharger is designed to last for many miles but first it must be properly broken-in to prevent belt damage. Allow the engine to idle for about 30 minutes total before test driving vehicle. Shut off engine and let it cool for about 30 minutes to one hour with the hood up.

301. Retension the belt to 150 lbs. You will notice that the belt tension went down quite a bit from idling for 30 minutes . This is due to the belt seating in the pulleys.
302. Drive car for at least 2 hours. Keep the RPM's below 5,000 for this break-in period, but be sure to give it full throttle several times.
303. Let engine cool for at least 30 minutes with the hood up.
304. Now tension belt to 120 lbs.
305. The normal operating tension for the Supercharger belt is 100-120 lbs. Belt tension and condition should be checked every major service (15,000 miles).
306. If you wish to check the boost level of Supercharger, you may tee into the vacuum hose for fuel pressure regulator for your boost gauge connection. You will notice that the boost makes a gradual climb to its maximum level of 6.5 PSI at around 6500 RPM. You may find it surprising that so much power is created by such low pressures. This impressive power gain is due to an efficient Supercharger system, Dinan's superior tuned engine management software and an engine with incredible power potential!
Note: High altitude cars will have a proportionally lower boost level due to the lower inlet pressure.

If for some reason your engine does not see 6.5PSI boost then there is a problem. Look for any possible leaks between Supercharger discharge and the engine's intake manifold. A slipping Supercharger drive belt will also decrease boost. If you cannot remedy the problem call Dinan Engineering for further assistance.

307. Remove the lower side covers in preparation for installing the lower engine splashguard, if they had been reinstalled.
308. Use the 6mm x 16mm bolt, two 6mm wave washers and one 6mm nylock nut to mount the throttle thermostat to the lower splashguard with the thermal sensor pointing toward the left side of car.
309. Reinstall the lower splashguard and side covers.
310. Reinstall plastic cover for valve cover.

311. Reinstall injector cover over center of engine.

SOME RECOMMENDATIONS

It is very important that you always run premium fuel in your supercharged vehicle to prevent harmful engine detonation. Power will also be lost as the detonation control system retards the ignition timing in its attempt to control detonation.

After about 500 miles check the tightness of all of the hose clamps you installed from kit.

BMW recommends that you change the engine oil in your car every 7500 miles. We at Dinan along with most car enthusiasts think that this is too long between changes. We suggest cutting this duration in half or 3750 miles to properly protect your investment. Also check the Supercharger drive belt tension and condition of belt periodically. Keep up all of your scheduled maintenance and enjoy your Dinan Supercharger System!

Keep in mind that the air filter is now lower than before. You must never drive through deep puddles or through flooded streets! Play it safe and never drive through any water deeper than about 6". A big gulp of water in the intake can bend or break engine connecting rods and possibly break the crankshaft or engine block!

FILTER REPLACEMENT SCHEDULE

You should replace the filters shown below every Major #2 service (30k miles)

--D413-0060,--- DINAN PCV HOSE FILTER

--D401-0302,---DINAN SUPERCHARGERCOOLING HOSE FILTER

--D401-0300,---DINAN ENGINE AIR FILTER

INSTALLER : Please leave this page and or the complete Installation Instructions with customer.