



INSTALLATION INSTRUCTIONS

**TURBOCHARGER SYSTEMS:
2002-2003 Nissan Spec V**

P/N 15173 (No Catalytic Converter)



READ THIS FIRST: Study these instructions completely before proceeding. Engine and/or turbocharger damage may occur if any component within these instructions is improperly installed. Turbonetics, Inc or any of its distributors cannot be held responsible for damages as a result of negligent or improper installation. This complete turbocharger system can be installed using common tools and automotive procedures, but installer must have a thorough knowledge of automotive engine operation and feel comfortable working on the vehicle. If in doubt, contact Turbonetics' technical support staff at 805-581-0333, between the hours of 8:00AM and 5:00PM PST, Monday through Friday.

Remove the turbocharger system from its carton and inspect for any obvious physical damage. All kit components are thoroughly inspected and carefully packaged prior to shipment from the factory. If any shipping damage is evident, contact your supplier and request that they process a claim with the shipper involved. Be sure to review the parts list on page 3 to verify that you have all necessary system components to proceed. If any components in the parts list are missing, contact Turbonetics' customer service staff.

Although this turbocharger system has been designed to use many of the factory emissions controls, it is not currently "smog" legal in California, and therefore recommended for "off road" use only. In other states, check local laws regarding aftermarket modification to emission controlled vehicles.

The information contained in this publication was accurate and in effect at the time the publication was approved for printing and is subject to change without notice or liability. Turbonetics reserves the right to revise the information presented herein or to discontinue the production of parts described at any time.

SAFETY REQUIREMENTS: It is recommended to follow these precautions.

- Always wear safety glasses & gloves.
- Turn the ignition switch to the OFF position & disconnect the battery.
- Always use properly rated jack stands when working under the vehicle.
- Prevent unexpected vehicle movement by using wheel chocks and/or parking brake.
- Operate the vehicle only in well ventilated areas.
- Do not smoke or use flammable items near or around the vehicle's fuel system.
- Keep hands, clothing and other objects away from moving parts when engine is running.

SUPPLIES: It is recommended to have the following items before beginning installation.

- Nissan factory service manual, for your model year Spec V
- A large table or bench, and plenty of adjacent available workspace
- Standard selection of automotive tools, primarily metric sizes
- An assortment of "zip ties" and/or thin-gauge steel wire
- The ability to securely lift the vehicle at least a few feet off the ground
- High temp. automotive RTV sealant
- NPT thread sealant
- Replacement engine oil and oil filter
- Hammer



TORQUE RECOMMENDATION: When removing and re-installing factory fasteners, refer to the Nissan service manual for torque values. When installing fasteners included in this kit, refer to the following chart:

Fastener Size	Torque (Pound-Feet)	Torque (Newton-Meters)
1/4" or 6mm	10	13
5/16" or 8mm	19	25
3/8" or 10mm	33	45
NPT fittings	2-3 turns past finger tight	

TURBOCHARGER SYSTEM PARTS LIST:

QTY	P/N	DESCRIPTION	P/N 15173
1	11022-BB	Turbocharger, E50 / Stg.3 / Ball Bearing	X
1	5-365	Air to Air Intercooler, Spearco	X
1	10781	Wastegate, Evolution	X
1	10843	Blow-off Valve, Raptor	X
1	11148	Hardware Kit, Nuts / Bolts / Fittings / Misc.	X
1	11149	Hardware Kit, Fuel Components	X
1	21431	Tube, Turbocharger to Intercooler - 1	X
	21432	Tube, Turbocharger to Intercooler - 2	X
1	21429	Tube, Intercooler to Throttle Body – 1	X
1	21430	Tube, Intercooler to Throttle Body – 2	X
1	21433	Tube, Air filter to Turbocharger	X
1	21434	Tube, Exhaust, Downpipe	X
1	21436	Manifold, Exhaust	X
1	31040	Heat Shield, Tangential T3 housing	X
1	31093	Safety Wire, Stainless – 0.035" Diam.	X
1	31089	Hose, Radiator	X
1	31080	Air Filter, AEM Dry-Flow, 3.0" Inlet	X
1	60186	Install Instructions	X
1	11103	ECU Return Box Kit	X



QTY	P/N	DESCRIPTION
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QTY	P/N	DESCRIPTION
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HOSES / CLAMPS PARTS LIST:

3	30128-4	Silicone Hose Coupling, 2.0"
1	30162-4	Silicone Hose Coupling, 3.0"
1	30172-4	Silicone Hose Coupling, 2.50"
1	30439-4	Silicone Trans. Hose – 2.50" to 2.75"
1	30380-4	Silicone Hump Connector, 2.50"
3 ft.	30827	Hose, Oil Drain – 5/8"

1	21458-4	Silicone 90' Elbow, 1.50"
2	30612	Hose Clamp – 1.50"
6	30275-200	T-Bolt Clamp – 2.0"
5	30275-250	T-Bolt Clamp – 2.50"
1	30275-275	T-Bolt Clamp – 2.75"
2	30275-300	T-Bolt Clamp – 3.00"

HARDWARE KIT# 11148 (NUTS / BOLTS / FITTINGS) PARTS LIST:

1	30133	Fitting, 3/8" NPT x 5/8" Hose, Straight
4	30306	Fitting, 1/8" NPT x 5/32" Hose, Straight
4	30307	Fitting, 1/8" NPT x 5/32" Hose, Elbow
1	30544	Fitting, 1/8" NPT x -3, Straight
1	30551	Fitting, 1/8" NPT x -3, Elbow
1	30562	Fitting, 1/8" NPT, M x M x F
1	30244	Fitting, 1/2" NPT x 5/8" Hose, Straight
1	30308	Fitting, T – 5/32" Hose
1	31038	Fitting, Adapter – 1/8" BSP to 1/8" NPT
2	30570	Hex Bolt, 5/16 -18 x 1.0" Lg.
2	31076	Hex Bolt, M8-1.25 x 30mm Lg.
4	30739	Hex Bolt, M8-1.25 x 25mm Lg.
3	30700	Hex Bolt, M8-1.25 x 20mm Lg.
2	30248	Hex Bolt, 1/4-20 x 5/8" Lg.
2	31003	Hex Bolt, M10-1.25 x 40mm Lg.
2	31071	Screw, M4-0.7 x 10mm, BHCS
9	30589	Flat Washer, 5/16" or M8
6	30804	Flat Washer, M10
1	30591	Flat Washer, 1/4" or M6
10	30593	Lock Washer, 5/16" or M8

9	30805	Lock Washer, M10
1	30586	Hex Nut, Nylon Lock
3	30653	Hex Nut, M8
8	30803	Hex Nut, M10-1.25
6	30806	Stud, M10-1.25 x 42mm Lg.
2	30860	Stud, M8-1.25 x 30mm Lg.
1	30862	Hex Plug for O2 Bung, M18-1.5
1	31067	Mount, Vibration Damping – Blk.
2	21428	Spacer, Round - Aluminum
1	21457	Bracket, Alternator Relocation
1	21447	Bracket, Oil Dipstick Relocation
1	21376	O2 Extension Bung
1	20259	Flange, Oil Drain – 1/2" NPT
1	30809	Tap, 3/8 NPT
1	20142	Gasket, Wastegate
1	30468	O-Ring, Blow off Valve
2	30612	Clamp, Hose, Liner Style #020
4	30817	Clamp, Hose, Worm Drive, 5/8"
1	10721	Oil Supply Hose, -3 x 36"
1	31007	Heat Shield Wrap – 1.5" Wide x 7.5" Long
4	2-43620	Cable Ties, Nylon (Black) – 8.5"
12	30542-BK	Hose, Vacuum, Silicone – 5/32"

HARDWARE KIT# 11149 (FUEL COMP'TS) PARTS LIST:

4	31022	Fuel Injector, Upgrade
1	31002	Fuel Pump

4	31079	Pig Tail Harness, Fuel Injector
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P/N 11022-BB



P/N 5-365



P/N 10781



P/N 10843



P/N 11148



P/N 11148



P/N 11147



P/N 21431



P/N 21432



P/N 21429



P/N 21430



P/N 21433





P/N 21434



P/N 31040



P/N 21436



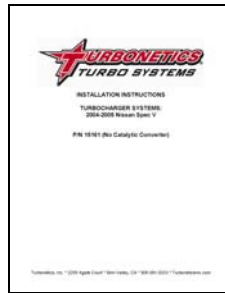
P/N 11103



P/N 31080



P/N 60186





PREREQUISITE STEPS: Before getting your hands dirty while under the hood, there is a prerequisite steps. See the following section for detailed instructions regarding ECU Removal & Shipping.

ECU REMOVAL & SHIPPING: Remove the ECU (Engine Control Unit) from the car, and ship it to Turbonetics to load the new engine management program, tuned specifically for your car with this turbo setup.

NOTE 1: You'll want to perform this step just before you are ready to start working on the car. When you receive your ECU back from Turbonetics, it will be re-programmed for a turbocharged engine and therefore will no longer work properly with your naturally aspirated "stock" engine. The included ECU return box kit (P/N 11103) includes a pre-paid Fedex shipping label for express shipping, so you can expect to receive your ECU back in 2-3 days.

NOTE 2: If, in the future, you choose to remove the turbocharger system (for example, before selling the car), it is possible to re-program your ECU back to naturally aspirated "stock" specs. At that time, contact Turbonetics' customer service staff for details.

1. Turn the ignition switch to the OFF position & disconnect the battery.
2. Locate the factory ECU on the upper passenger side firewall corner. Unplug the factory ECU harness. For the harness on the left side, lift the lever and push it towards the driver's side and pull the harness towards you. For the harness on the right side, squeeze the tab on the bottom and plug the harness towards you. Unbolt the two 10mm bolts and pull the factory ECU out towards you. **NOTE:** Some vehicles may have levers for both harnesses that connect to the ECU.

FIGURE A1



3. Once removed from the car, attach the Serial No. decal (P/N 31039) to the ECU in the location pointed out in FIGURE A2, and fill out the information on the label with a permanent black pen or thin-tip marker. **NOTE: All ECU's received with incomplete or illegible decals will be returned or discarded, so please print clearly and completely!**
 - First & Last Name (Who are you?)
 - Mailing Address (Where should we ship your ECU back to you?)
 - Phone Number (How can we contact you, if any problems arise?)
 - Model Year / Manufacturer Name / Model Name (For example: 2003 Nissan 350Z Touring)
 - Manufacture date of car (Located on driver side door jam; See FIGURE 9)
 - Transmission Type (Manual or Automatic)
 - V.I.N. number (Also located on driver side door jam; See FIGURE 9)



FIGURE A2



FIGURE A3



4. Package your ECU in the return box (P/N 31009), using the supplied foam packaging inserts (P/N 31011). Fill in your address on the Fedex return label (P/N 31038), and apply it to the outside of the box. Seal the box closed with the supplied Electronic Mat'l decal (P/N 31043).
5. Logon to www.Fedex.com or www.Kinkos.com to find the nearest Fedex package drop-off location, and ship your ECU return box to Turbonetics.



TIME TO GET YOUR HANDS DIRTY: With the prerequisite steps done, and the car parked for a few days (without an ECU), its time to start working under the hood. The steps from this point forward will progress smoother if you are prepared with the supplies listed on page 2, and although not necessary, the ability to lift the vehicle more than a few feet (i.e. a hydraulic lift) will make installation a lot easier. **NOTE:** The following steps dictating removal of factory parts are purposely generic; refer to the Nissan factory service manual for more detailed instructions and torque specs for all fasteners.

1. Lift the vehicle to a workable height and secure vehicle with jack stands.
2. Disconnect the battery and remove from vehicle.
3. Remove the 3 bolts that secure the plastic engine cover to the valve cover. SEE FIGURE 1

FIGURE 1



4. Remove the grill by unclipping the plastic retaining clips. SEE FIGURE 2

FIGURE 2



5. Remove the 8 plastic clips that hold the bumper in place.
6. Remove the plastic undercarriage cover on the passenger side. SEE FIGURE 3

FIGURE 3



7. Remove all fasteners that secures the front fascia. FIGURE 4

FIGURE 4



8. Unplug the lights. SEE FIGURES 5 & 6

FIGURE 5

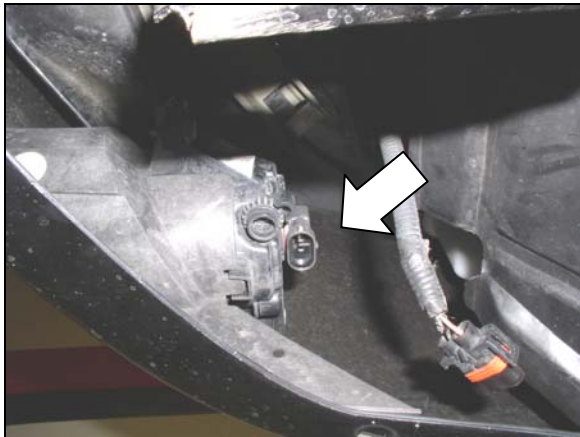


FIGURE 6



9. Remove the bolts that are behind the fenders that holds the front fascia

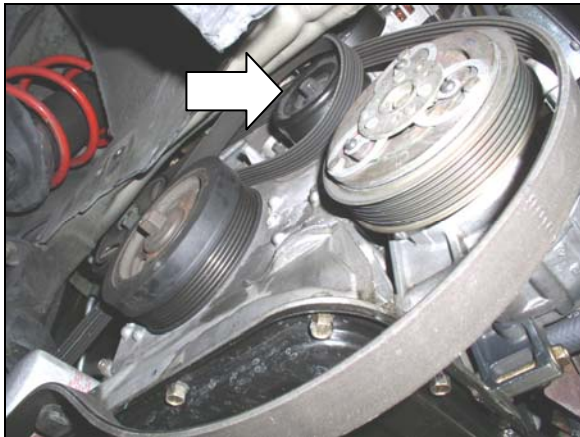
10. Remove the front fascia by pulling it forward. SEE FIGURE 7

FIGURE 7



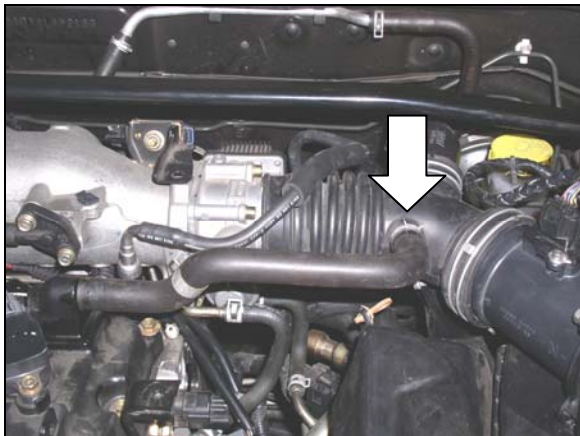
11. Using a 14mm open wrench, rotate the center hex bolt on the tensioner clockwise and remove the serpentine belt. SEE FIGURE 8

FIGURE 8



12. Unbolt the exhaust by unbolting the two 14mm bolts. Save the gasket, it will be used later on
13. Remove the valve cover breather hose by using a pair of pliers. Squeeze the two tabs on the hose clamps together and push the hose clamps back. SEE FIGURE 9

FIGURE 9



14. Loosen the hose clamp that secures the intake hose at the throttle body.

15. Unplug the mass air sensor and unbolt the 10mm bolt that is located next the driver's side fender that secures the factory air box to the frame and remove the air box. SEE FIGURE 10 & 11

FIGURE 10

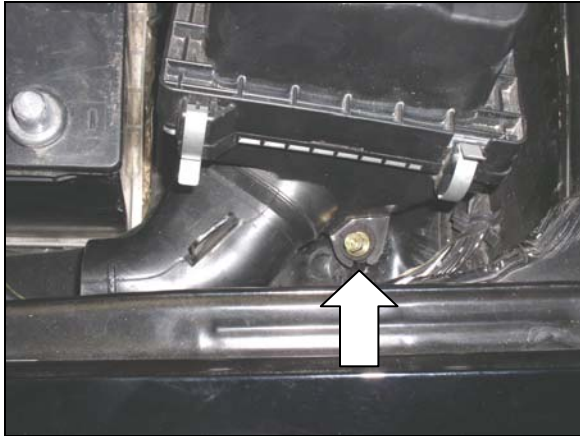


FIGURE 11



16. Unscrew the mass air sensor from the plastic tube and set it aside. It will be installed on the new supplied intake tube later on. SEE FIGURE 12 & 13

NOTE: Some vehicles may use security torx screws to secure the mass air sensor to the factory plastic tube.

FIGURE 12



FIGURE 13



17. Remove the intake resonator box located in the front of the driver's side tire. SEE FIGURE 14-16

FIGURE 14



FIGURE 15



FIGURE 16



18. Remove the coolant reservoir.

19. Unplug the wire harness from the alternator. Using a 12mm socket, remove the positive (+) cable from the alternator and use a 10mm socket to remove the negative (-) cable from the alternator bracket. SEE FIGURE 17 & 18

FIGURE 17

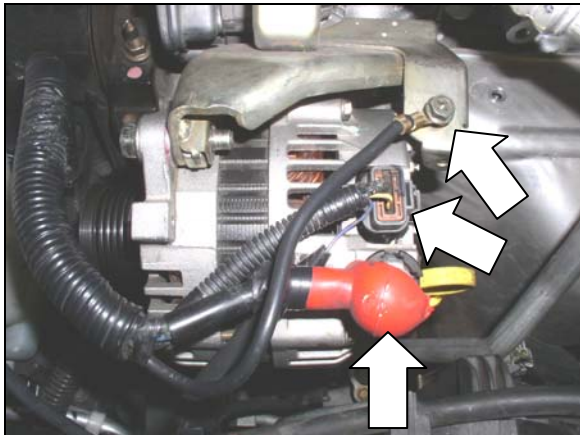
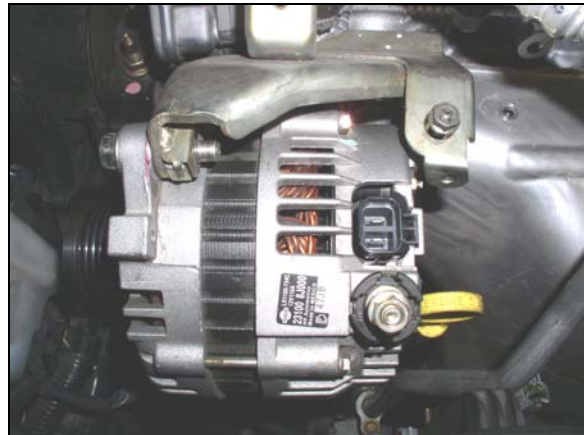


FIGURE 18



20. Using a 14mm socket, remove the upper and lower alternator mounting bolt. SEE FIGURE 19 & 20

FIGURE 19

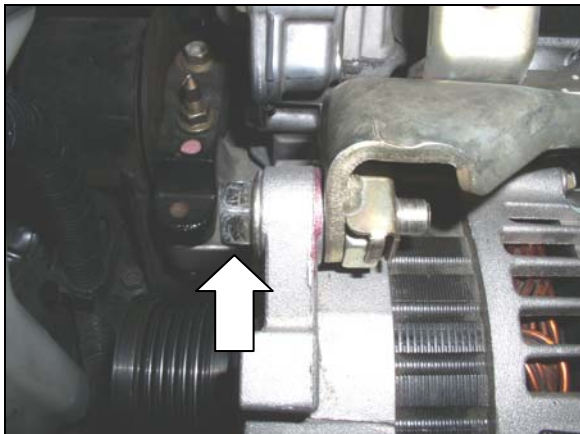
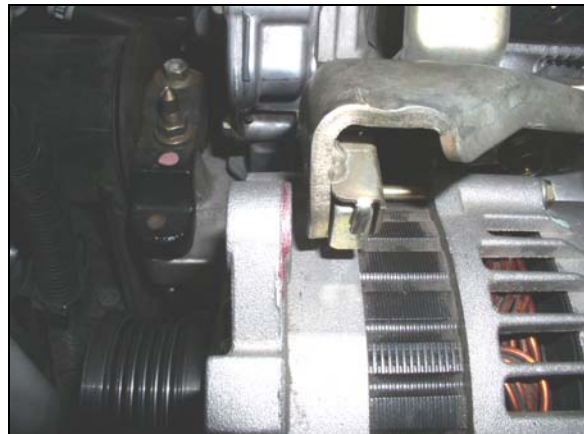


FIGURE 20





21. Move the alternator out of the way so that the two 14mm upper alternator mounting bolt can be accessed. Remove both bolts. SEE FIGURES 21 & 22

FIGURE 21

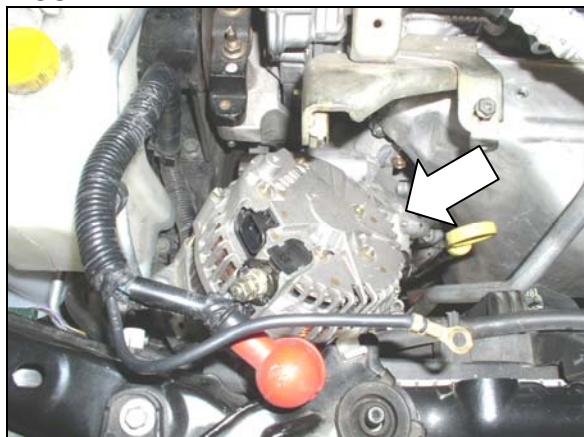
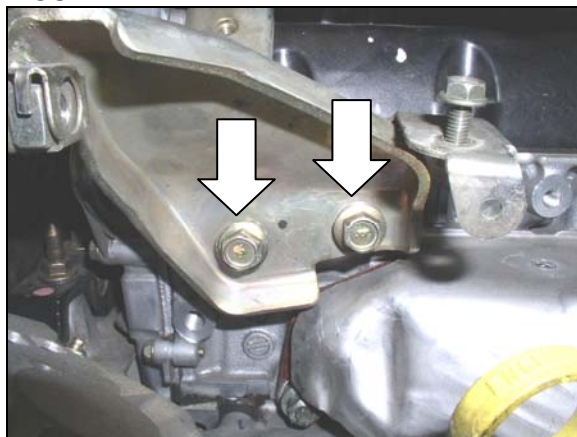
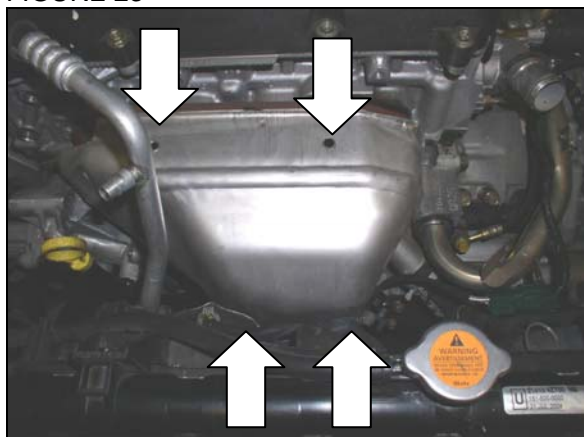


FIGURE 22



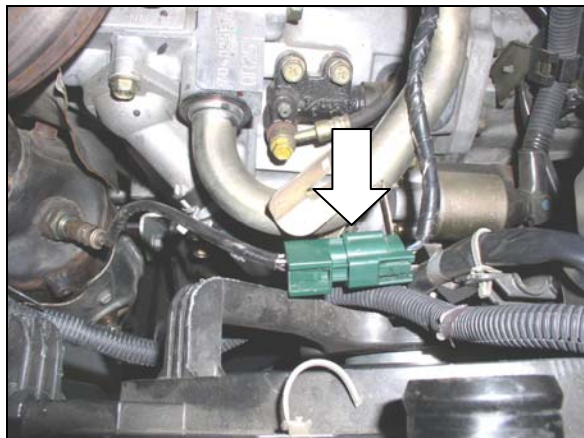
22. Once the upper bolts are removed, you can now remove the alternator from the engine and set it aside.
23. Remove the four 10mm bolts and remove the heat shield from the factory exhaust manifold. SEE FIGURE 23

FIGURE 23



24. Unplug O2 sensor(s) from the harness. Located behind the radiator mounted to the heater tube. On the '02-'03 vehicles, there are two O2 sensors to disconnect. SEE FIGURE 24

FIGURE 24





25. Unbolt the five 14mm bolts that secure the factory exhaust manifold to the engine and remove the manifold. SEE FIGURES 25-27

NOTE: On certain vehicles that has TSB done, you may have to remove the additional bracket that supports the factory exhaust manifold to the engine block by removing the 12mm bolt by the mid pan.

FIGURE 25



FIGURE 26

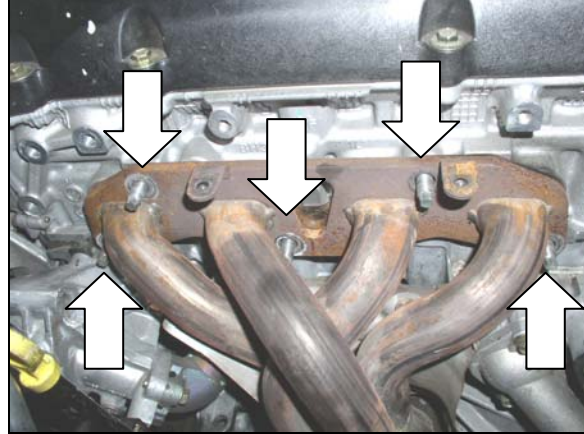
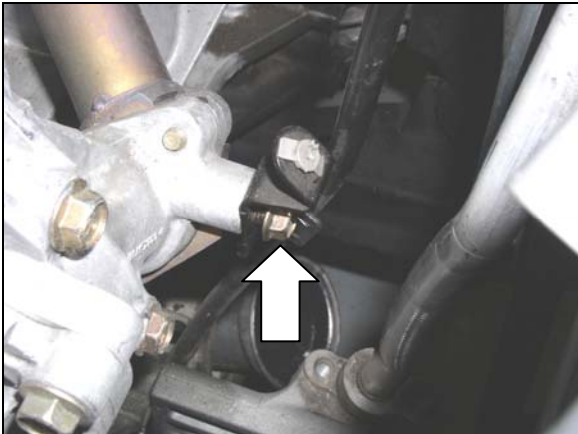


FIGURE 27



26. Remove the 12mm bolt that secures the dipstick tube to the block. SEE FIGURE 28

FIGURE 28



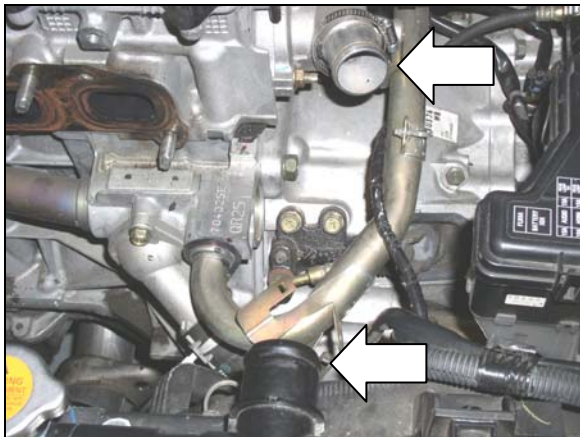
27. Loosen the drain plug on the bottom of the radiator and drain the coolant into a clean bucket. SEE FIGURE 29

FIGURE 29



28. Loosen both clamps on the upper radiator hose and remove. SEE FIGURE 30

FIGURE 30



29. Remove the factory strut tower brace bar by using a 17mm socket and a 17mm open wrench and unbolting the two bolts, one on each side. SEE FIGURES 31 & 32

FIGURE 31



FIGURE 32



INSTALLING THE FUEL PUMP & FUEL INJECTORS

1. Remove the back seat lifting the front part up and pull toward the front of the vehicle. SEE FIGURE 33

FIGURE 33



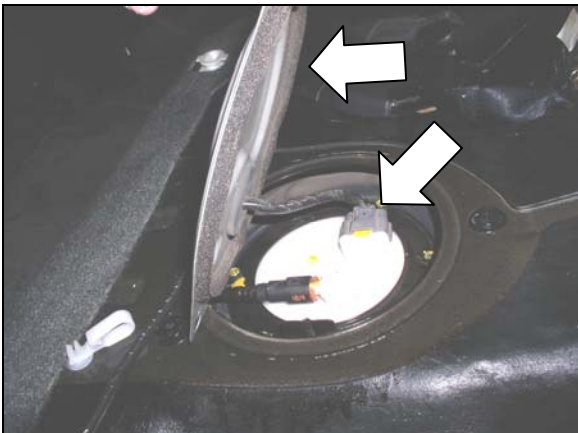
2. Turn the three plastic tabs and remove the fuel pump access cover. SEE FIGURE 34

FIGURE 34



3. Disconnect the plug from the fuel pump and set the cover aside. SEE FIGURE 35

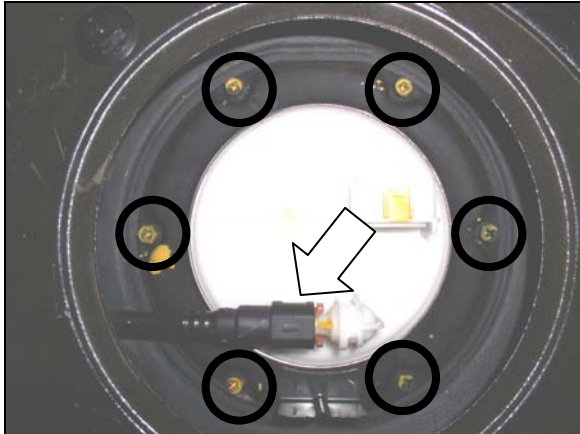
FIGURE 35



- Remove the fuel line by squeezing the tab on both sides and pull towards the front of the vehicle. SEE FIGURE 36

CAUTION: Fuel line is pressurized, wear eye protection and keep a shop rag over the line when removing. Fuel will squirt out once the line is removed.

FIGURE 36



- Using a Phillips screwdriver, remove the six screws that secure the cover to the tank. SEE FIGURE 36

- Remove the fuel pump assembly from the tank.

NOTE: Careful with the fuel level float when removing the assembly from the tank.

- Lay the assembly on a bench and cut the plastic zip tie. SEE FIGURES 37 & 38

FIGURE 37

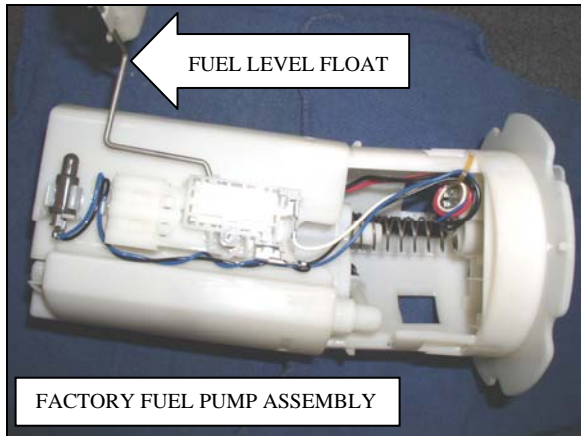
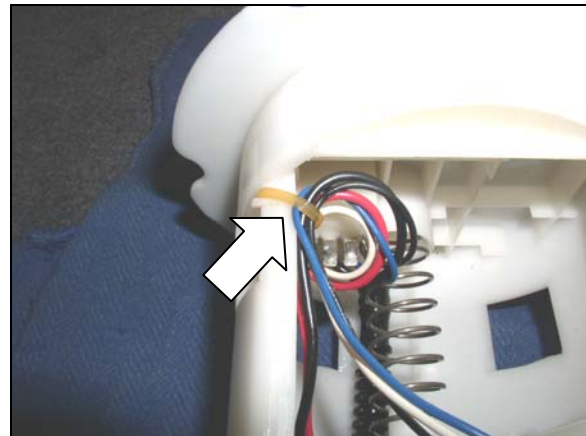


FIGURE 38



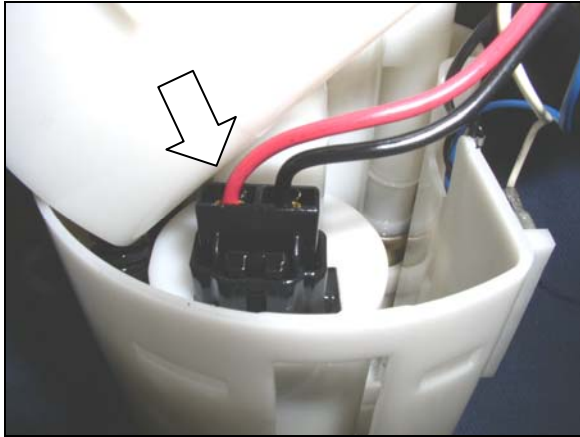
- Using a flat head screwdriver, carefully pop the bottom half of the sending unit by spreading the anti-slosh container apart. SEE FIGURE 39

FIGURE 39



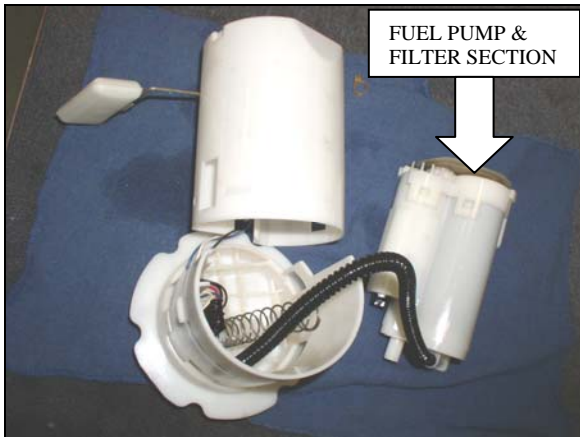
9. Unplug the fuel pump by depressing the tab and pulling away from pump. SEE FIGURE 40

FIGURE 40



10. Remove the factory fuel pump and filter section from the assembly. SEE FIGURE 41

FIGURE 41



11. Remove the bottom fuel pump securing cover to access the factory fuel pump by carefully prying the tabs. SEE FIGURE 42

NOTE: Careful not to break off the tabs when prying them.

FIGURE 42



12. Slowly slide the factory fuel pump out of the plastic housing and remove the rubber seal from the factory fuel pump. SEE FIGURE 43 & 44

FIGURE 43



FIGURE 44



13. Remove the two plastic tabs on the top of the new supplied fuel pump (P/N 31002), the four plastic tabs and the center pin on the bottom. SEE FIGURES 45-47

FIGURE 45

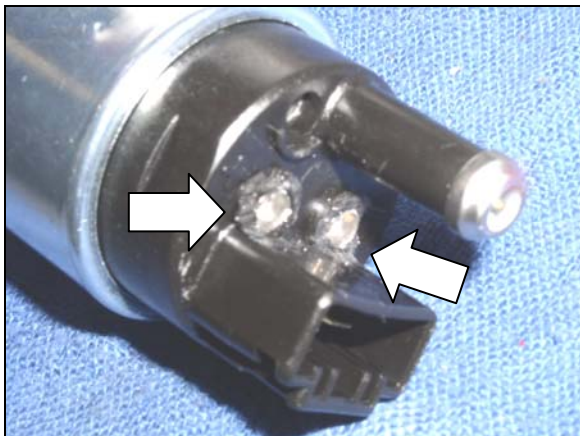
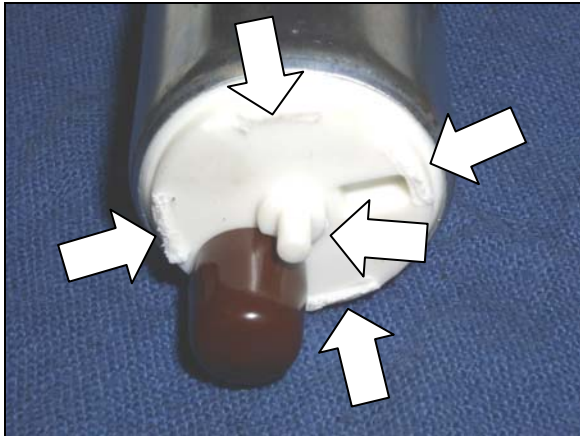


FIGURE 46



FIGURE 47



14. Trim the rubber seal from factory fuel pump as shown in FIGURE 48–49 and install onto the new fuel supplied fuel pump (P/N 31002). SEE FIGURE 50

FIGURE 48

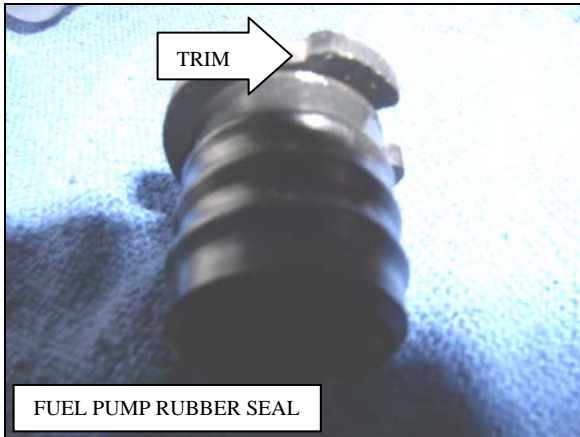


FIGURE 49

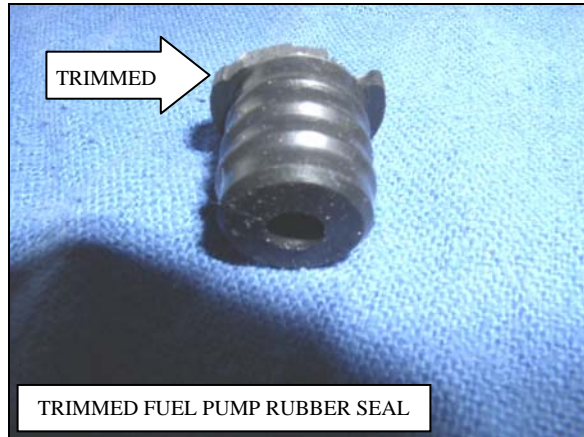
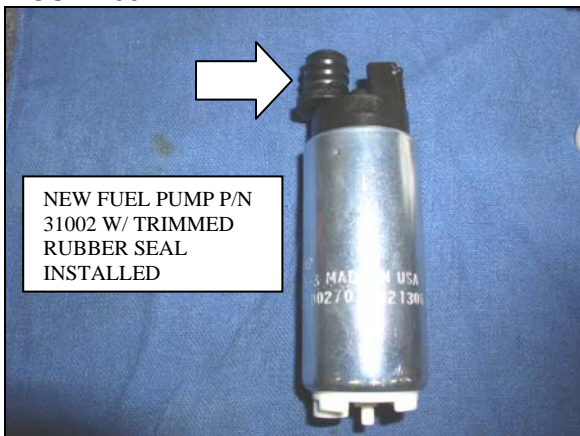


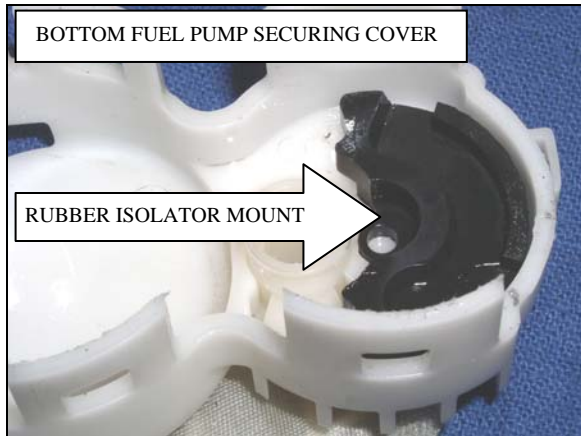
FIGURE 50



15. Remove the rubber isolator mount on the bottom of the fuel pump securing cover. SEE FIGURE 51

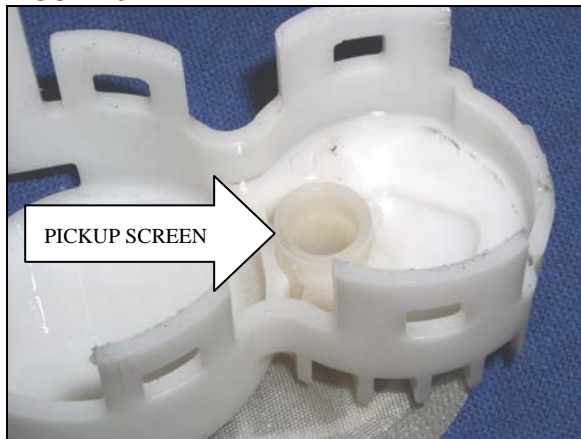
NOTE: The rubber isolator mount will not be used anymore.

FIGURE 51



16. Remove the pickup screen in the fuel pump securing cover out by prying the clips out of the way and pushing through the other side. SEE FIGURE 52

FIGURE 52



17. Using a 0.404" (Y) drill bit, enlarge the fuel inlet hole to the filter in the white plastic pump to filter housing. SEE FIGURE 53 & 54

NOTE: Make sure to clean all plastic chips thoroughly prior to re-assembling pump into the housing.

FIGURE 53

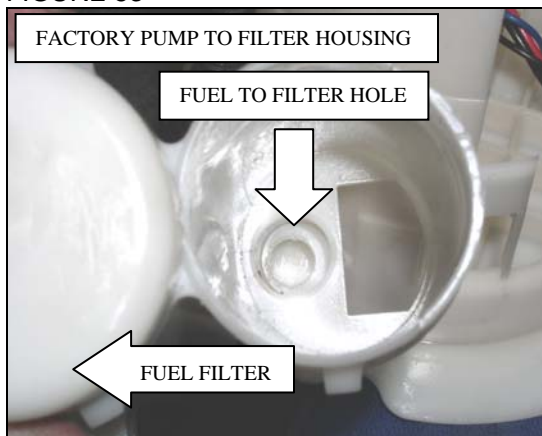
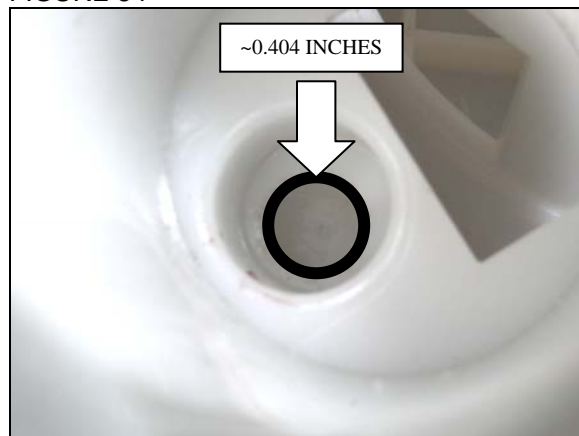


FIGURE 54



18. Place the new fuel pump back into the factory pump to filter housing. SEE FIGURE 55

FIGURE 55



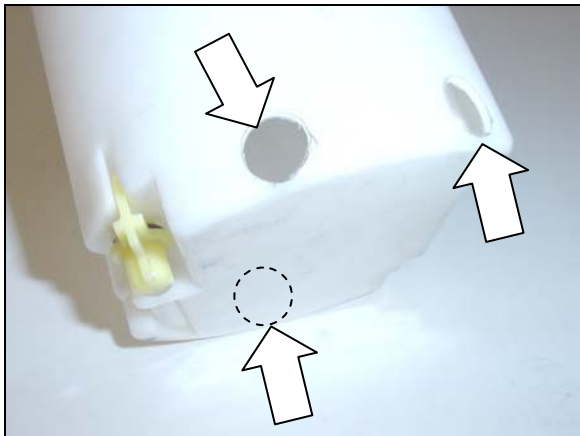
19. Remove the jet nozzle located on the bottom of the slosh container by squeezing the tab and pushing it through the container. You will not need this piece anymore. SEE FIGURE 56

FIGURE 56



20. Drill three 3/8" holes in the lower portion of the white plastic slosh container. SEE FIGURE 57

FIGURE 57



21. When re-installing the fuel pump assembly back into the pump to filter housing, be sure to re-install the pickup screen after you have re-installed the lower fuel pump securing cover. The pickup screen will not snap in, however, it will still reside snugly in the stock location.
22. Connect the fuel pump harness onto the new supplied fuel pump (P/N 31002) and re-install everything in reverse order.

INSTALLING THE INJECTORS

23. Remove the seven 12mm bolts that is located on the intake manifold and the two 12mm bolt on the driver's of the head near the throttle body. SEE FIGURES 58-61

FIGURE 58

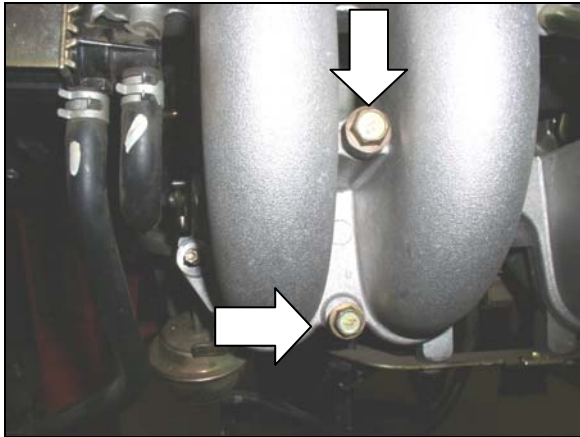


FIGURE 59

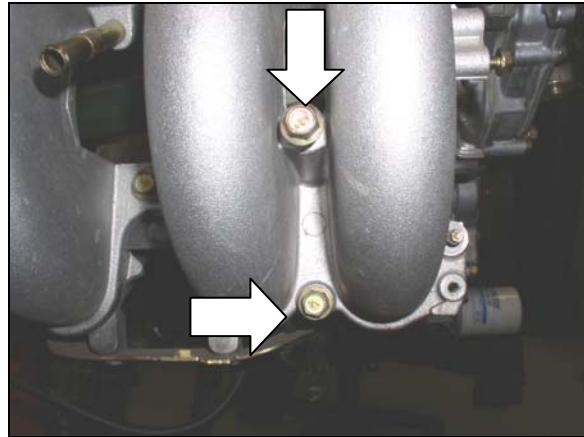


FIGURE 60

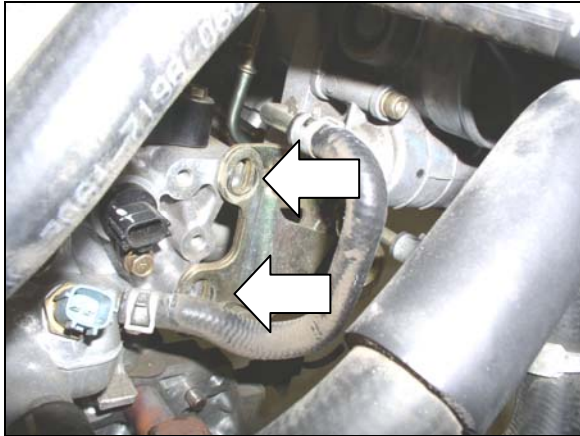
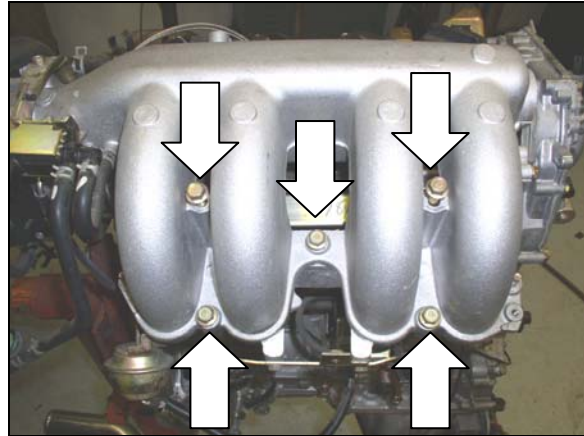
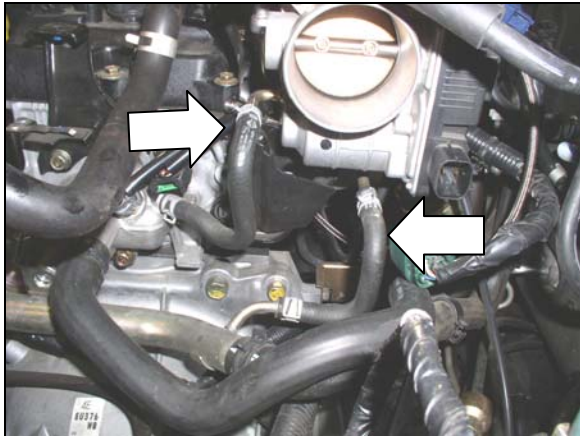


FIGURE 61



24. Remove the 2 coolant lines that connects to the throttle body. SEE FIGURE 62

FIGURE 62



25. Disconnect the 2 vacuum lines on the intake manifold. SEE FIGURE 63

FIGURE 63



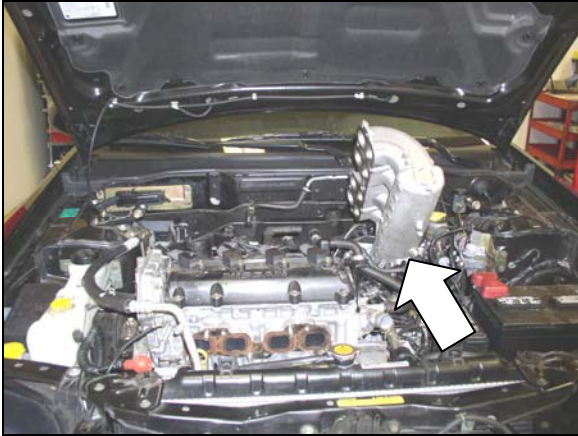
26. Unbolt the 2 bolts that secure the wiring harness to the intake manifold. SEE FIGURE 64

FIGURE 64



27. Remove the upper half of the intake manifold and set it aside. SEE FIGURE 65

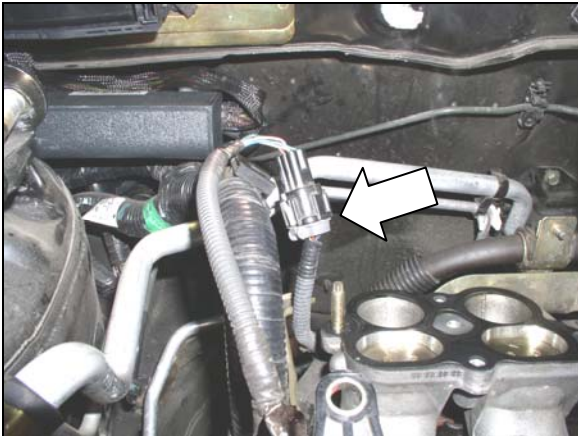
FIGURE 65



28. Remove the two 12mm bolts that secure the fuel rail to the engine, and remove the rail and the two black plastic spacers.

29. Disconnect the harness for the 4 injectors located on the passenger side of the intake manifold. SEE FIGURE 66

FIGURE 66



30. Carefully remove the fuel rail and the 4 stock injectors. SEE FIGURE 67
CAUTION: Fuel will squirt, use caution when removing the injectors.

FIGURE 67



31. Unplug the factory injector harness and remove from the vehicle and cut the factory injector plugs off the harness, leaving about a 1.50" wire in case you need to put the car back to stock in the future. SEE FIGURE 68 & 69 and DIAGRAM 1

DIAGRAM 1

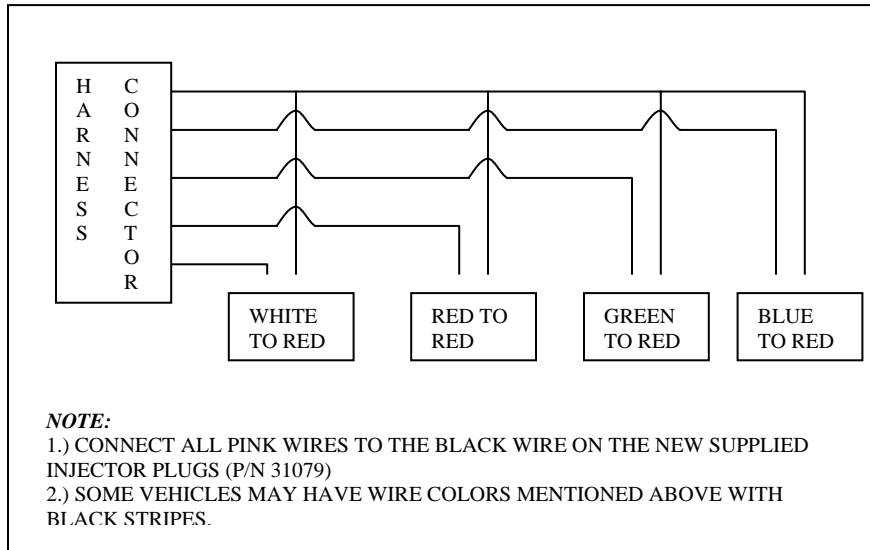


FIGURE 68

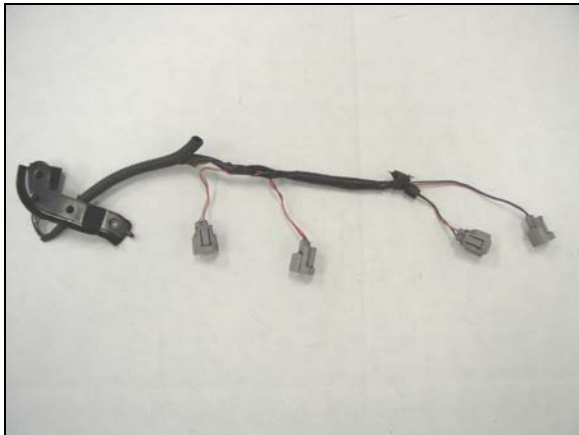
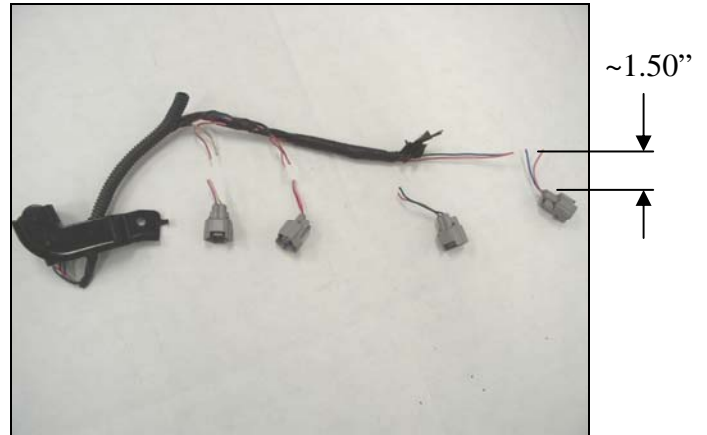


FIGURE 69



32. Splice the wires and using a pair of crimpers, crimp the new supplied injector pig tails (P/N 31079) to the factory injector harness making sure the polarity are correct. SEE FIGURES 70 & 71

FIGURE 70

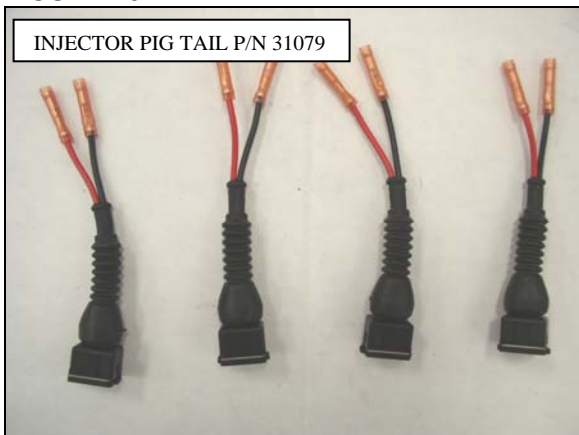


FIGURE 71



33. Apply a coat of grease to both o-rings on each injector and install the injectors to the fuel rail making sure no grease gets in the way where fuel will flow into the injector and out of the injector. Secure the injectors to the rail using the factory injector clips. SEE FIGURE 72 & 73

FIGURE 72



FIGURE 73



34. With the injectors all installed on the factory fuel rail, carefully install the fuel rail / injector assembly to the intake manifold making sure the two supplied fuel rail spacers (P/N 21428) are installed in place between the rail and the manifold. SEE FIGURES 74-76

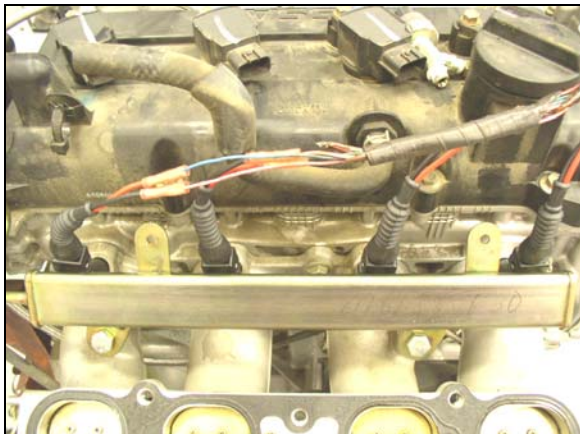
FIGURE 74



FIGURE 75



FIGURE 76





35. Using the new supplied bolts (P/N 31076), bolt the rail back onto the intake manifold.
36. Plug the factory injector harness back to the engine harness.
37. While the plenum is off, it is a good idea to also remove the small Philips screws that attach the butterflies in the intake plenum to the rotating rod and apply a small amount of Loctite to the threads of the screws and re-install.
38. Re-install the factory intake plenum

INSTALLING TURBO OIL FEED & DRAIN

1. Drain the engine oil and unbolt the oil pan from the engine block by removing the ten 10mm bolt that surrounds the pan. SEE FIGURES 77 & 78

FIGURE 77



FIGURE 78



2. Drill a 9/16" hole in the factory mid-pan at the location shown in FIGURE 79 & 80.

FIGURE 79

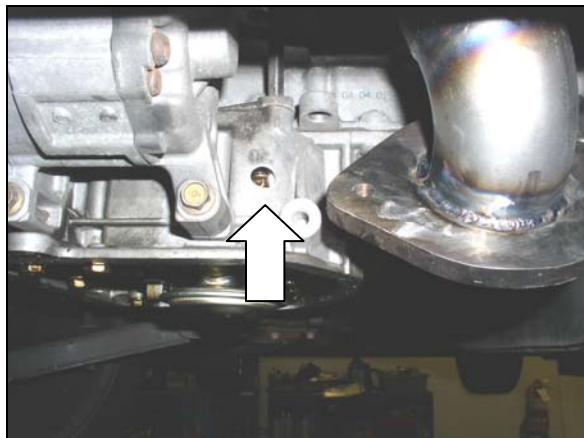
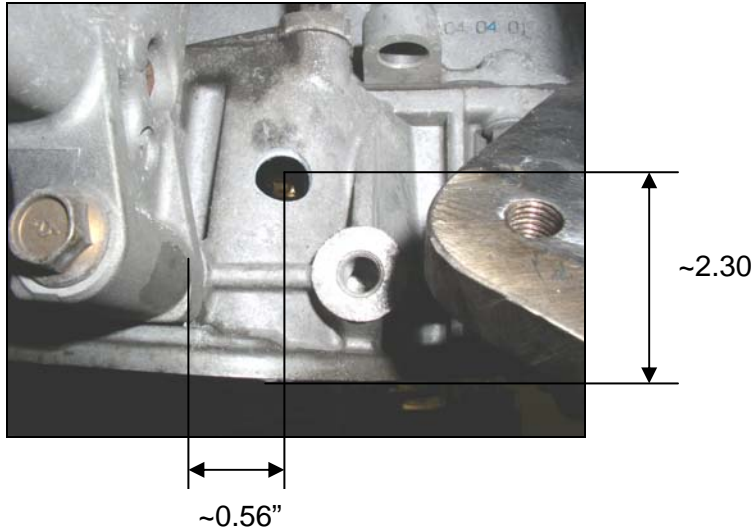


FIGURE 80



3. Tap the hole with the supplied 3/8"-18 NPT tap (P/N 30809) and install the supplied 3/8" x 5/8" barb brass fitting (P/N 30133). Apply a thin coat of liquid thread sealant on the threads of the brass fitting. SEE FIGURE 81 & 82

FIGURE 81

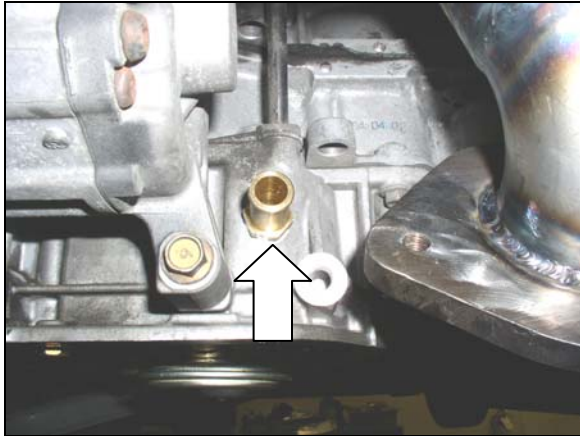
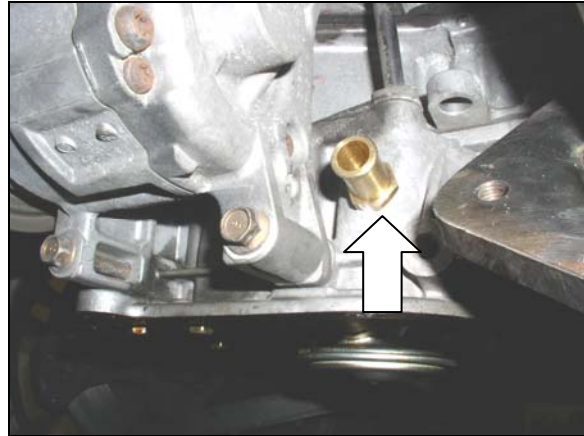


FIGURE 82



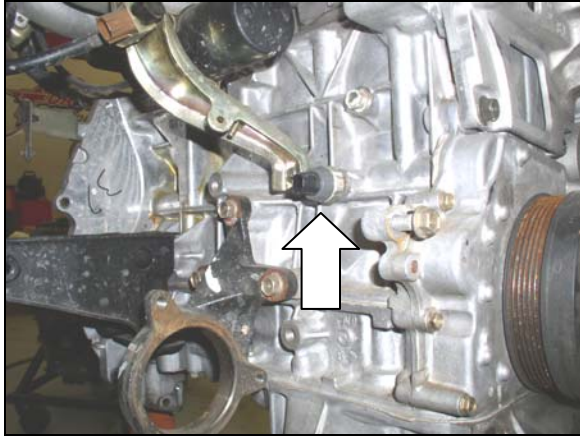
4. Clean the threads and the area around it **thoroughly** with carb / brake cleaner making sure there are not metal debris / chips.
5. Using a wire wheel, remove the old silicone from the mating flange on the oil pan.
6. Using a sharp razor, carefully scrape off any silicone on the mating flange on the engine block.
7. Using high temp. silicone, apply a small even bead in the groove around the flange on the oil pan.

NOTE: Do not over apply the silicone. Too much silicone might ooze into the oil causing it to get sucked into the oil pick up screen resulting in engine oil starvation.

8. Re-install the oil pan back onto the engine, making sure the pan is securely installed to prevent any oil leaks.

9. Disconnect the harness on the factory oil sending unit and remove the sensor using a 26mm socket.
SEE FIGURE 83

FIGURE 83



10. Applying a small amount of liquid Teflon to the threads of the fittings, install the supplied 1/8" BSP to 1/8" NPT adapter fitting (P/N 31088) to the supplied 1/8" NPT T-fitting (P/N 30562). Install the factory oil sending unit to one end of the T-fitting (P/N 30562) and install the straight -3AN to 1/8" NPT fitting (P/N 30544) to the other, side that is facing upward. SEE FIGURE 84 & 85

NOTE: It will be easier if you secure the T-fitting (P/N 30562) to a vise, and secure the oil sending unit to the fitting first. Remove the fitting from the vise and secure the adapter fitting (P/N 31038) to the vise and screw the T-fitting / oil sending unit assembly to the adapter fitting.

FIGURE 84

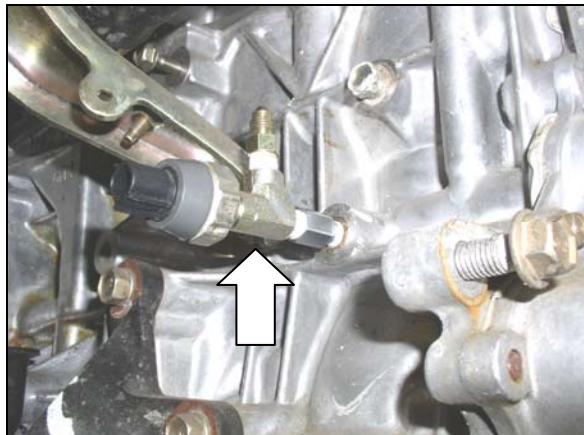


FIGURE 85



11. Install the complete fitting assembly back on to the engine making sure the -3AN fitting (P/N 30544) is facing upwards. SEE FIGURE 86

FIGURE 86



12. Install the supplied -3AN steel braided hose (P/N 10721) to the -3AN fitting (P/N 30544) on the T-fitting (P/N 30562) and route the line around the front of the engine out of the way of any wires. SEE FIGURE 87 & 88

FIGURE 87

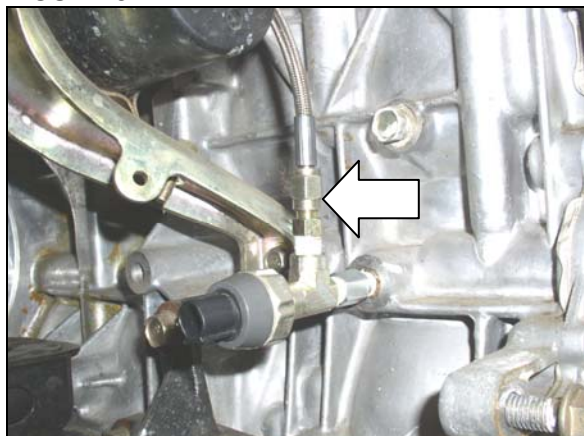
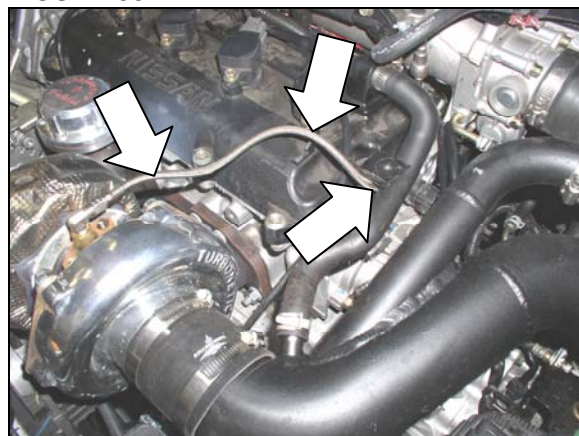


FIGURE 88



13. Plug the harness back on to the factory oil sending unit.

ASSEMBLING THE TURBO THE MANIFOLD

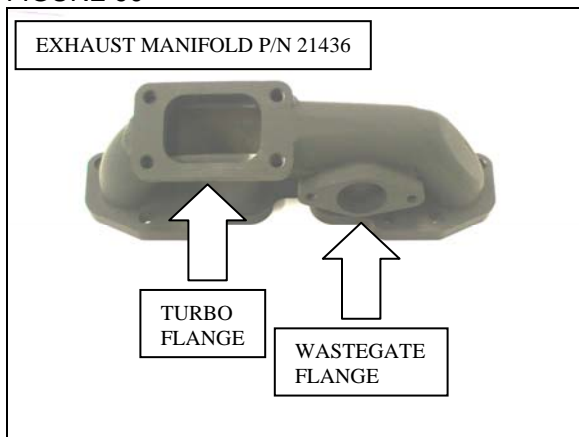
1. Install the oil drain flange (P/N 20259) to the oil drain section on the bearing housing, located in the center of the turbocharger. Secure the flange to the turbocharger with a gasket in the middle (P/N 30141) using the supplied M8-1.25 bolts x 25mm (P/N 30739) and the supplied M8 flat washer (P/N 30589). SEE FIGURE 89

FIGURE 89



2. Install the supplied brass fitting (P/N 30133) to the oil drain flange. SEE FIGURE 89
3. Install the four supplied M10-1.25 studs (P/N 30806) to the turbo mounting flange on the manifold. SEE FIGURE 90

FIGURE 90



4. Mount the turbocharger to the manifold and secure using two M10 flat washer (P/N 30804), a M10 lock washer (P/N 30805), and a M10 nut (P/N 30803).
5. Install the two supplied 10mm studs (P/N 30806) in the additional threaded hole in the cylinder head. This will allow the manifold to seal better to the head. SEE FIGURE 91 & 92

FIGURE 91



FIGURE 92



ATTACHING THE HEAT SHIELD TO THE TURBINE HOUSING

- Attached the supplied turbine heat shield (P/N 31040) to the turbine housing using the supplied safety wire (P/N 31093). Cut the safety wire in half using a pair of wire cutters. Take one of the two halves, loop it around and insert both ends into a cordless drill. Insert the loop into one of the retaining clips on the heat shield and spin the cordless drill. This will create a nice braid. Once the braid is completed, remove the end from the drill and loop it around the turbine housing and wrap it around the other heat shield retaining clip on the other side. Cut off excess material. Now do that for the second retaining clip on the heat shield. SEE FIGURE 93-96

FIGURE 93



FIGURE 94

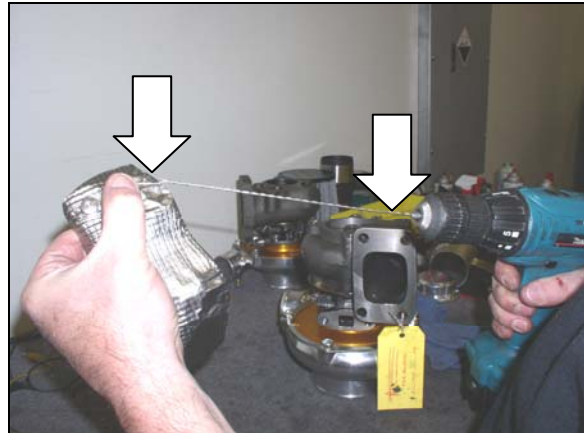


FIGURE 95

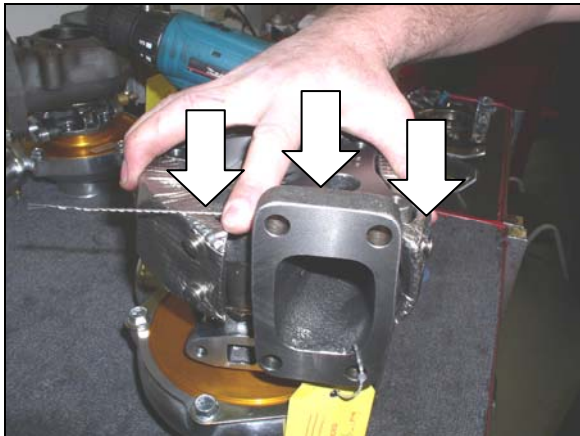


FIGURE 96



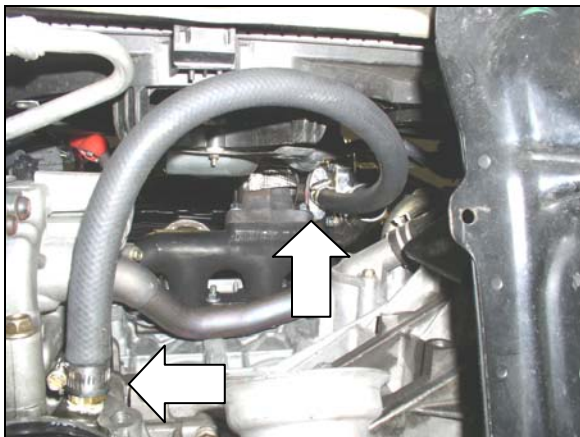
- Install the manifold / turbocharger assembly to the engine securing with the factory nuts and two supplied M10-1.25 hex nuts (P/N 30803) for the two additional studs you installed in the head earlier.. SEE FIGURE 97

FIGURE 97



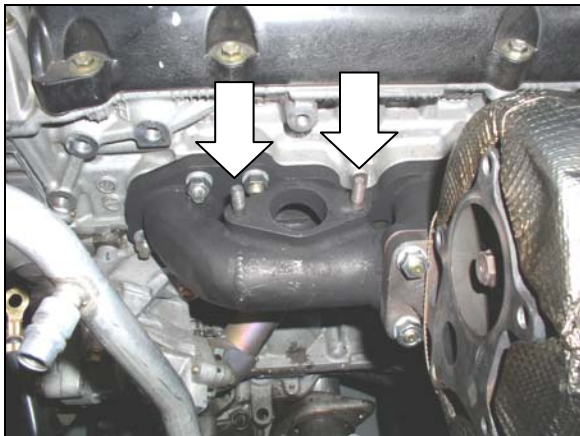
8. Cut the supplied 5/8" hose (P/N 30827) to about 24" long.
9. Install the 5/8" hose (P/N 30827) from the oil drain from the turbo to the fitting on the oil pan and secure using the two supplied hose clamps (P/N 30817). Make sure when you route the oil drain hose, it does not come in contact with any other items in that area. SEE FIGURE 98

FIGURE 98



10. Install the two supplied M8-1.25 x 30mm studs (P/N 30860) into the threaded hole in the wastegate mounting flange on the exhaust manifold. SEE FIGURE 99

FIGURE 99



11. Mount the Evolution wastegate (P/N 10781) to the exhaust manifold, and secure using two supplied M8 hex nuts (P/N 30653). SEE FIGURE 100

FIGURE 100



12. Re-install the O2 sensor into the new supplied downpipe (P/N 21434). Depending on your vehicle, if your second O2 sensor is in factory cat pipe, re-install it in the second bung on the new downpipe with the supplied O2 sensor extension bung (P/N 21376) in the middle. If your second O2 sensor is downstream in the exhaust system, then install the supplied O2 sensor plug (P/N 30862) in the second O2 sensor bung on the new downpipe, remove the O2 sensor in the exhaust system and install the supplied O2 sensor extension bung in the middle and re-install the O2 sensor. SEE FIGURES 101-103

NOTE: Remember to apply a thin coat of anti-seize to the threads of the O2 sensor prior to re-installing them.

FIGURE 101

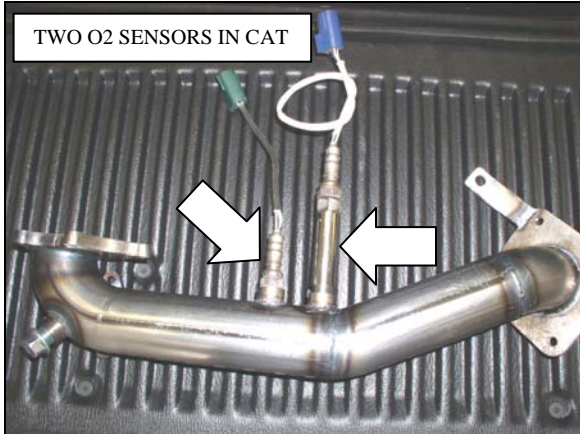


FIGURE 102

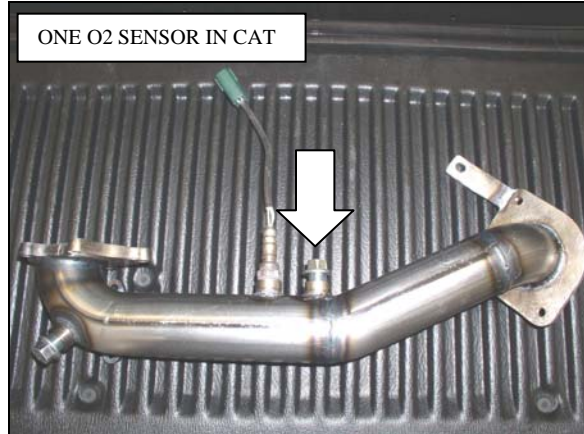
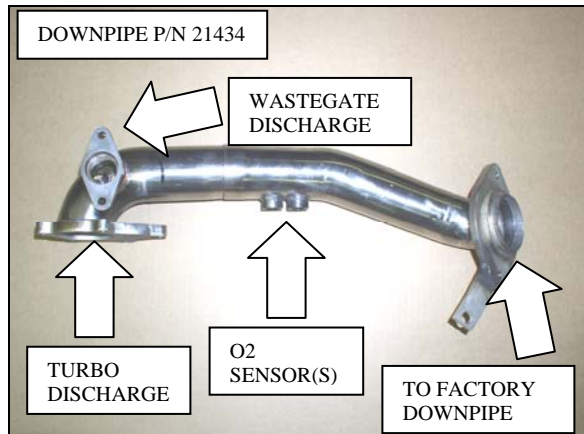
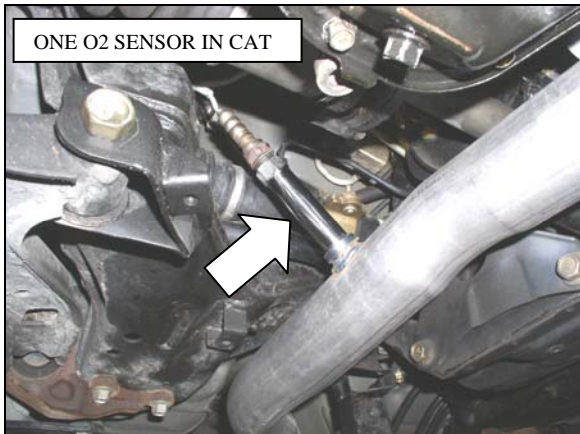


FIGURE 103





13. Apply a thin coat of high temp. silicone to the turbine discharge flange on the new supplied downpipe (P/N 21434) prior to bolting onto the turbocharger. Secure the downpipe to the turbo and wastegate using five M8-1.25 x 25mm bolts (P/N 30739) and five M8 lock washers (P/N 30589) for the turbine housing and two 5/16"-18 bolts (P/N 30570) and two 5/16" lock washers (P/N 30589) to the wastegate. Make sure to include a gasket between the wastegate and the flange that bolts to the wastegate on the new supplied downpipe. SEE FIGURE 104-106

NOTE: When installing the downpipe, hand thread all the bolts loosely first and then tighten once all the bolts are threaded in.

FIGURE 104



FIGURE 105

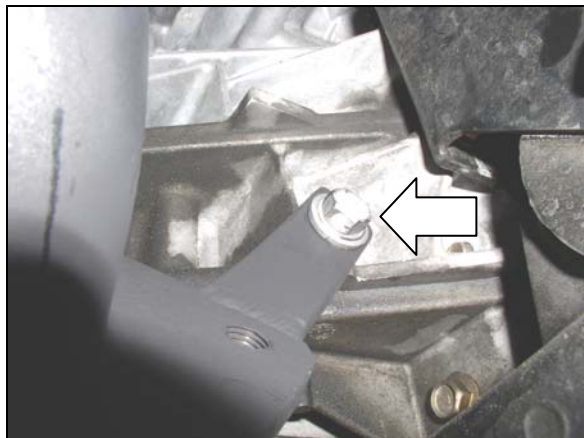


FIGURE 106



14. Using the factory bolt, secure the new supplied downpipe (P/N 21434) to the engine block. SEE FIGURE 107

FIGURE 107



15. Bolt the factory exhaust pipe to the new supplied downpipe (P/N 21434) using the factory spring loaded bolts. Do not forget to include the factory donut gasket in the middle. SEE FIGURE 108 & 109

FIGURE 108

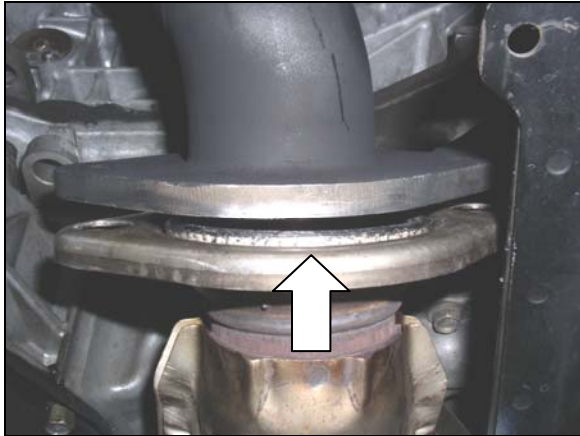
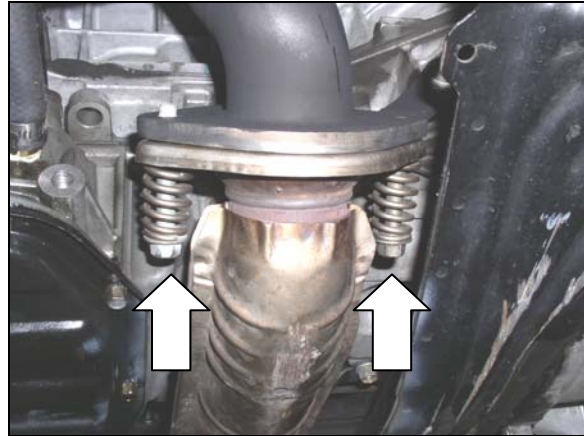


FIGURE 109



16. Install a 90 deg. 1/8" NPT to -3AN fitting (P/N 30551) to the brass oil filter on the turbo's bearing housing. Route the -3AN oil feed line (P/N 10721) over the valve cover and attach it to the -3AN fitting on the bearing housing. SEE FIGURES 110 & 111

FIGURE 110

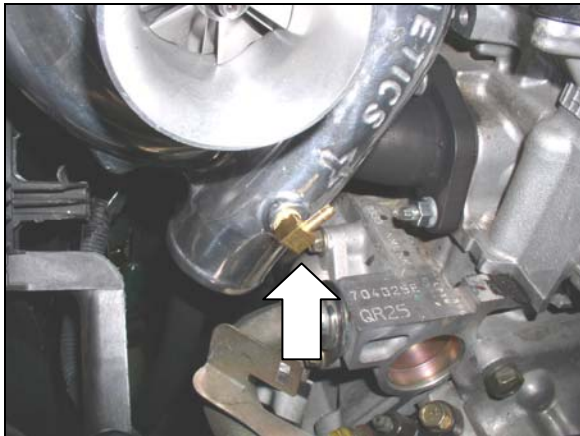


FIGURE 111



17. Install the supplied 90 deg. 1/8" NPT to 5/32" barb brass fitting (P/N 30307) into the threaded port on the turbo compressor housing. SEE FIGURE 112

FIGURE 112





18. Install the supplied straight 1/8" NPT to 5/32" barb brass fitting (P/N 30306) into the bottom port on the side of the wastegate (P/N 10781). SEE FIGURE 113

NOTE: Do not use any Teflon thread tape when installing the fittings.

FIGURE 113



19. Cut the supplied 5/32" silicone hose (P/N 30542-BK) to about 44 inches and connect one end of the hose to the brass fitting on the compressor housing and connect the other end to the fitting you just installed on the wastegate. SEE FIGURES 114 & 115

NOTE: Make sure the silicone hose is routed away from any hot parts. You could route it around the valve cover and the factory coil packs as shown in FIGURE 115.

FIGURE 114

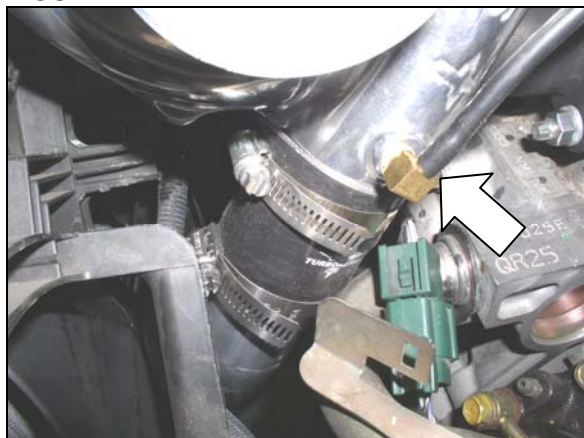
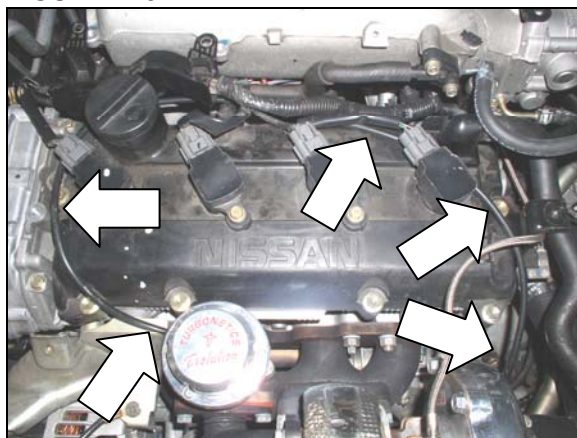


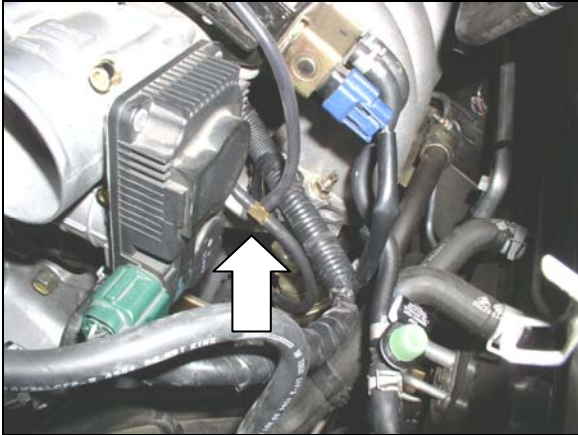
FIGURE 115



20. Reconnect the O2 sensor(s).

21. Cut the vacuum line in half 4" from the throttle body and install the supplied T-fitting (P/N 30308) in the middle. SEE FIGURE 116

FIGURE 116



22. Install the supplied oil dipstick relocation bracket (P/N 21447) to the factory oil dip stick mounting location using the factory bolt. Using a supplied M8 x 1.25 x 20mm bolt (P/N 30700), a M8 flat washer (P/N 30589), and a M8 hex nut (P/N 30653), bolt the oil dip stick to the new supplied oil dip stick relocation bracket. SEE FIGURE 117 & 118

FIGURE 117

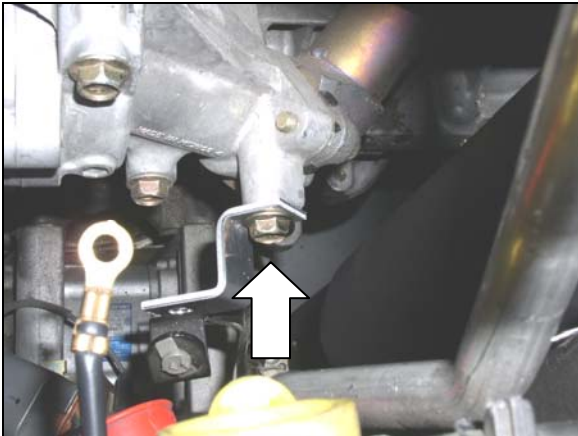
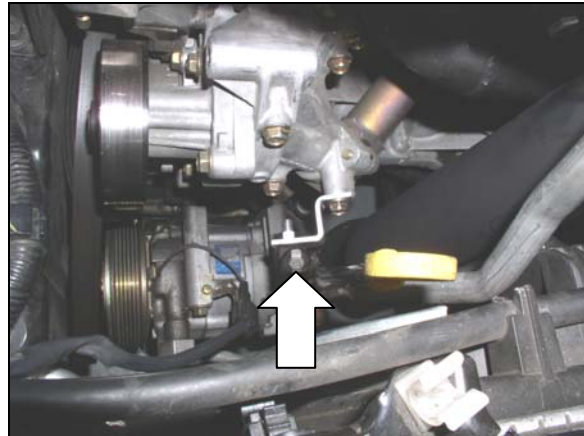


FIGURE 118



23. Cut the supplied heat wrap (P/N 31007) to length and adhere to the back portion of the alternator that is close to the exhaust manifold. SEE FIGURE 119 & 120

FIGURE 119



FIGURE 120





24. Re-install the alternator using the new supplied bracket (P/N 21457). Secure the spacer bracket (P/N 21457) with a supplied M10-1.15 x 40mm (P/N 31003) and a M10 lock washer (P/N 30805) to the factory alternator bracket. Using the factory alternator mounting bolt, M10 lock washer (P/N 30805), and a M10 hex nut (P/N 30803), secure the alternator to the new spacer bracket (P/N 21457). SEE FIGURE 121 & 122

FIGURE 121

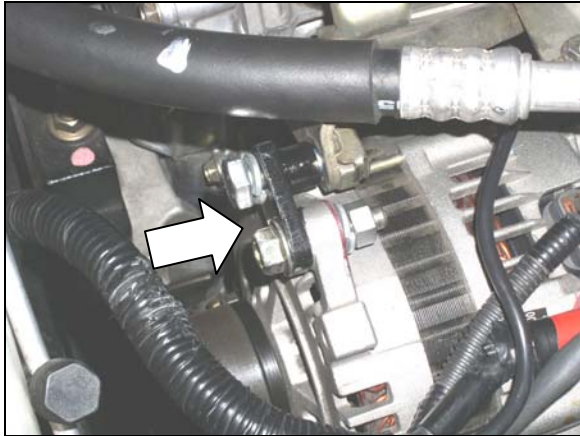


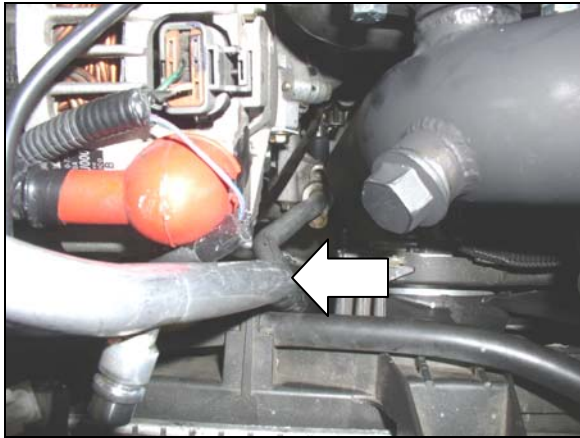
FIGURE 122



25. Re-install the serpentine belt in reverse order.

26. Carefully push the A/C line towards the alternator so it does not come in contact with the new downpipe. SEE FIGURE 123

FIGURE 123



INSTALLING THE INTERCOOLER & BOOST TUBES

1. Insert a M8-1.25 x 20mm (P/N 30700) into the 4th hole up from the bottom on the center hood latch support bar. SEE FIGURE 124

NOTE: It would probably be easier to use a small piece of duct tape to hold the bolt in place while you mount the intercooler.

FIGURE 124



2. Mount the intercooler (P/N 5-XXX) to the vehicle by lining up the hole on the top intercooler bracket to the bolt you just inserted in the center hood latch support bar and securing it with a M8 hex nut (P/N 30653) and a M8 flat washer (P/N 30589). SEE FIGURE 125 & 126

FIGURE 125

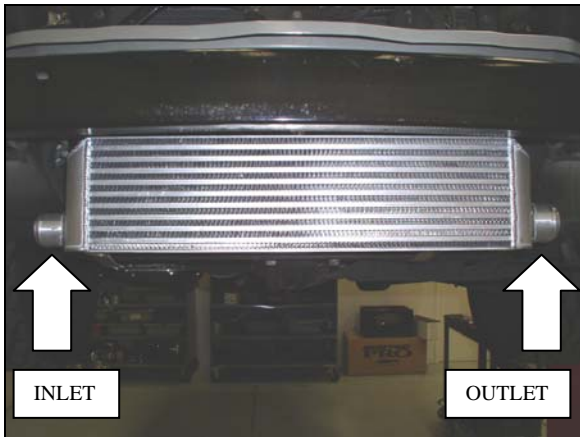
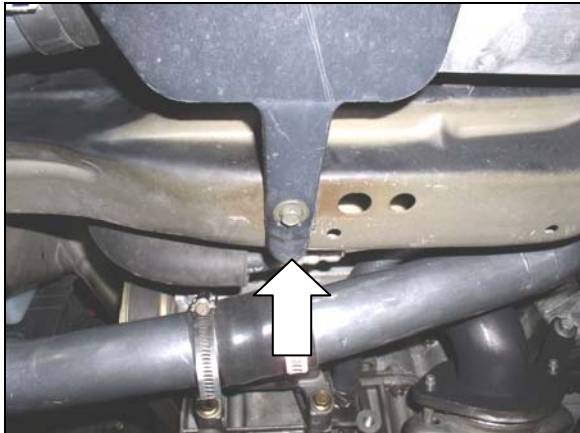


FIGURE 126



3. Secure the bottom intercooler brackets to the factory 10mm bolts on the bottom of the radiator support. SEE FIGURE 127

FIGURE 127



4. Install the turbo to intercooler pipe 1 (P/N 21431) to the turbo discharge loosely using a supplied 2.0" ID silicone hose (P/N 30128-4) and secure with couple 2.0" t-bolt clamps (P/N 30275-200). SEE FIGURE 128-130

FIGURE 128

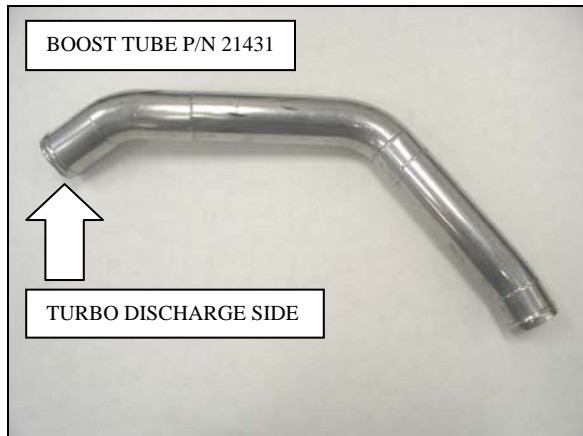


FIGURE 129

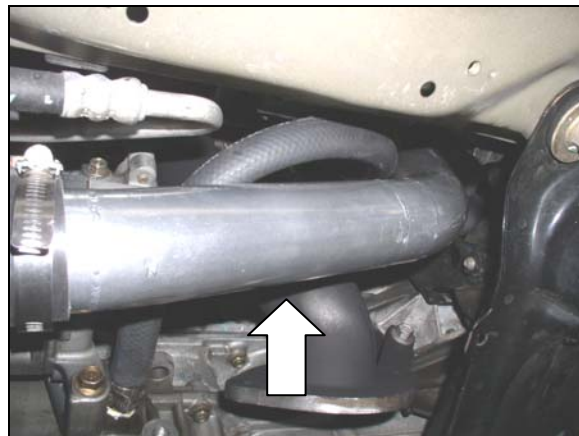
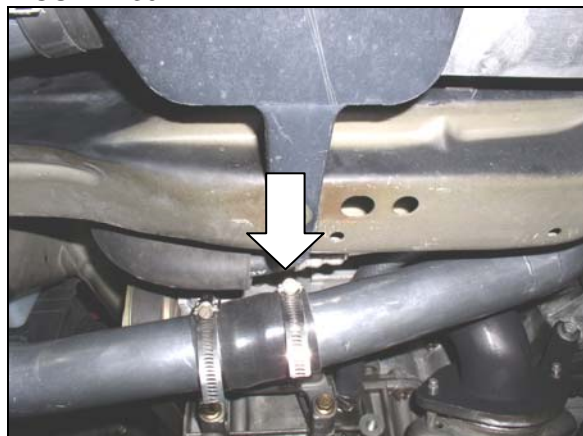


FIGURE 130



5. Using two supplied 2.0" ID silicone hose (P/N 30128-4) and four 2.0" t-bolt clamps (P/N 30275-200), install the U-shape boost tube P/N 21432 to the intercooler on one end and connect the other end to boost tube P/N 21431 loosely. Install the shorter side to the intercooler. SEE FIGURE 131 & 132

FIGURE 131

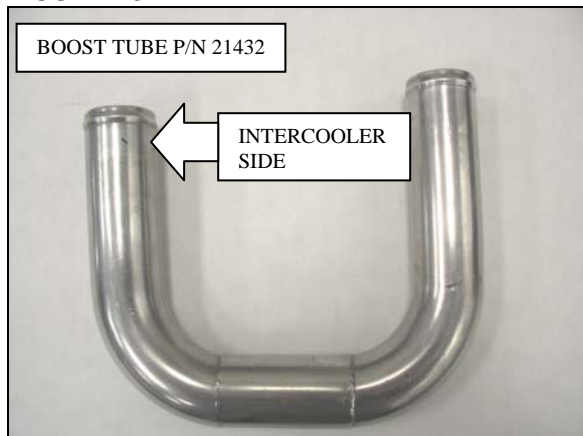


FIGURE 132



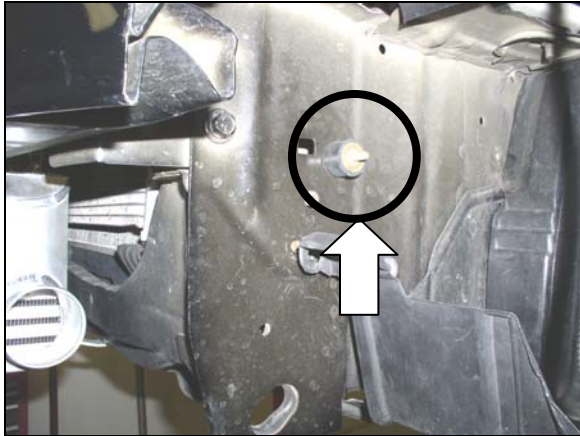
- Using a 2.50" OD hose saw, carefully located the area where the pipe will enter the plastic fender trim and cut a hole for boost tube P/N 21432. SEE FIGURE 133

FIGURE 133



- Tighten all hose clamps.
- Thread the rubber isolator (P/N 31067) into the driver's side inner fender as shown in FIGURE 134.

FIGURE 134



- Install intercooler to throttle body pipe 1 (P/N 21429) to the intercooler, with the other side up into the fender well using a supplied 2.50" ID silicone hose (P/N 30172-4) and two 2.50" t-bolt clamps (P/N 30275-250). Making sure the hole on the bracket is aligned with the stud on the rubber isolator installed in the previous step. Secure the pipe to the rubber isolator with a supplied 6mm x 1.0 nylon lock nut (P/N 30586) and a 6mm flat washer (P/N 30591). SEE FIGURES 135-137

NOTE: Install all hose clamps loose and mounting bolts / nuts loosely

FIGURE 135

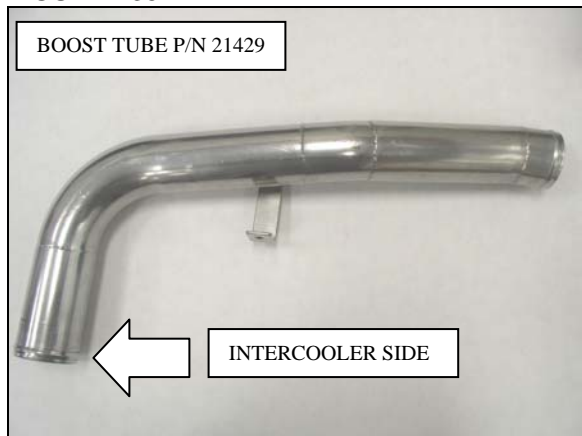


FIGURE 136

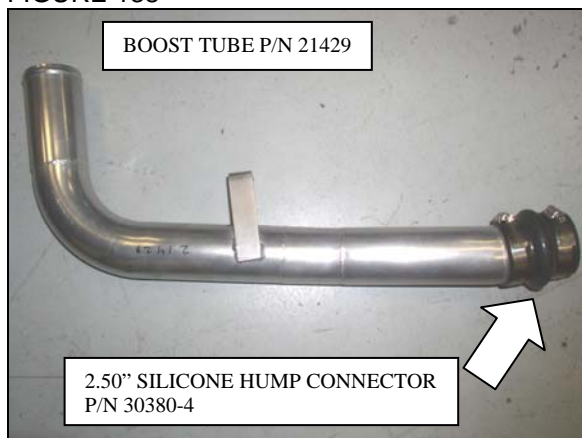


FIGURE 137



10. Install the supplied 2.50" silicone hump connector (P/N 30380-4) onto the other end of intercooler to throttle pipe 1 (P/N 21429) and secure using 2.50" t-bolt clamps (P/N 30275-250). SEE FIGURE 138

FIGURE 138



11. Using the supplied 2.50" – 2.75" ID silicone transition hose (P/N 30439-4), install intercooler to throttle body pipe 2 (P/N 21430) with one end attached to the throttle body and one end attached to intercooler to throttle body pipe 1. Secure using 2.50" t-bolt clamps (P/N 30275-250) and 2.75" t-bolt clamps (P/N 30275-275). SEE FIGURE 139 & 140

NOTE: Leave all hose clamps and mounting hardware loose. Tighten everything after the turbo to filter pipe is installed.

FIGURE 139

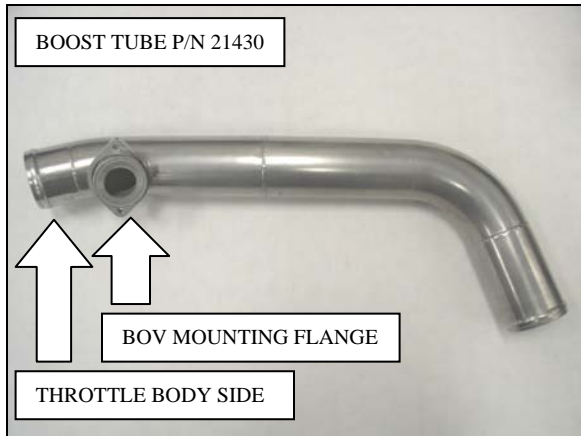
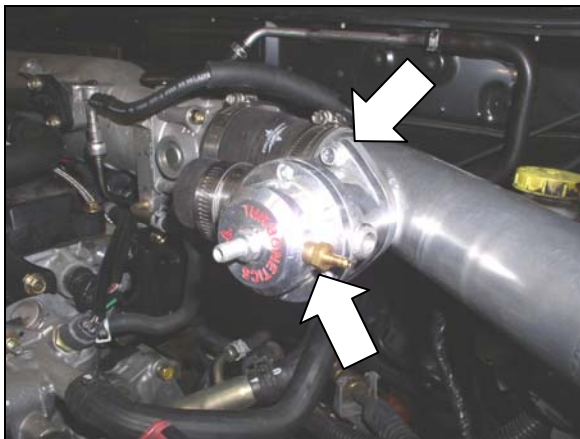


FIGURE 140



12. Keeping it loosely bolted, install the Raptor blow off valve (P/N 10843) onto the flange on intercooler to throttle body pipe 2 (P/N 21430) using the supplied 1/4-20 x 5/8" long hex bolts (P/N 30248). Make sure the discharge of the blow off valve is facing towards the throttle body. SEE FIGURE 141

FIGURE 141



13. Using a sharp knife or a hose cutter, trim both ends of the new supplied radiator hose as shown in the figures below. Install the radiator hose (P/N 31089) from the radiator to the engine and secure using the factory hose clamps. SEE FIGURES 142-145

FIGURE 142

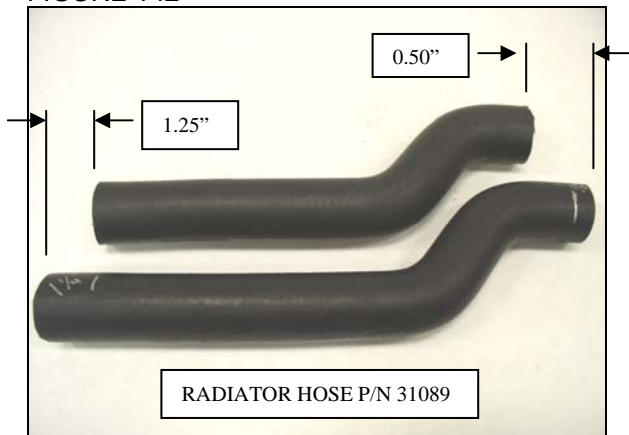


FIGURE 145

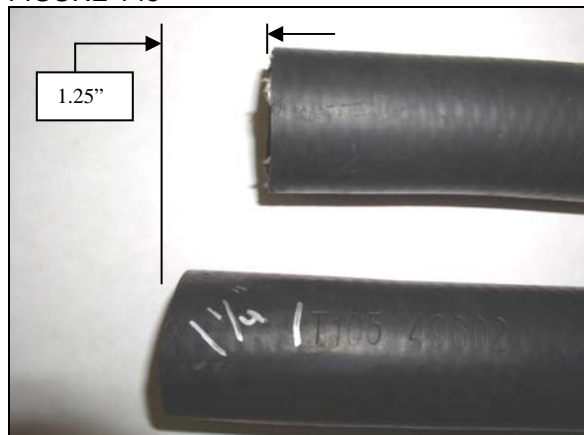


FIGURE 144

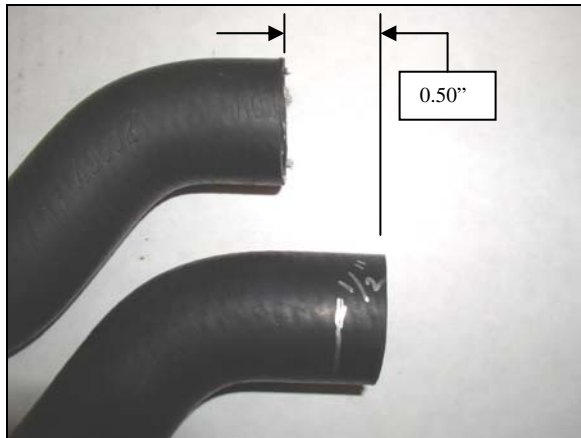


FIGURE 145



14. Install a 1/8" NPT x 5/32" barb straight brass fitting (P/N 30306) to the top port of the Raptor blow off valve (P/N 10843). SEE FIGURE 141

15. Install the mass air sensor to turbo to filter pipe (P/N 21433) and secure using supplied M4-0.7 screws (P/N 31071). SEE FIGURE 146 & 147

FIGURE 146

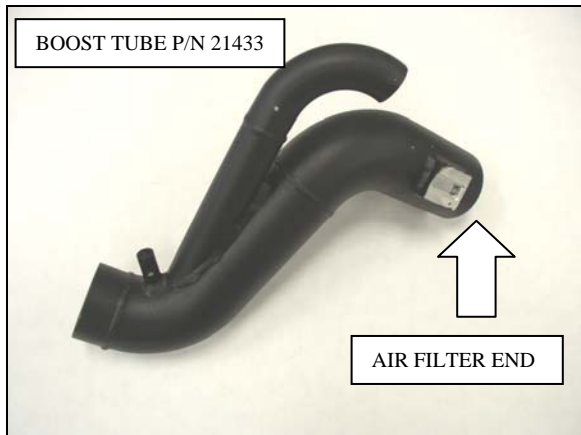
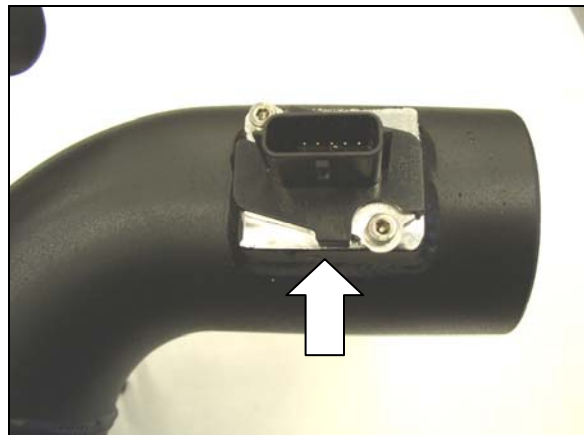


FIGURE 147



16. Install the AEM Dry-Flo air filter (P/N 31080) to the air mass sensor end of the turbo to filter pipe (P/N 21433). SEE FIGURE 148

FIGURE 148





17. Remove the 12mm bolt by the side of the radiator hose on the engine, install the other end of the turbo to filter pipe assembly to the inlet of the turbocharger using the supplied 3.0" ID silicone hose connector (P/N 30162-4) and secure using 3.0" t-bolt clamps (P/N 30275-300). Re-install and tighten the 12mm bolt to secure the turbo to filter pipe. SEE FIGURE 149 & 150

FIGURE 149

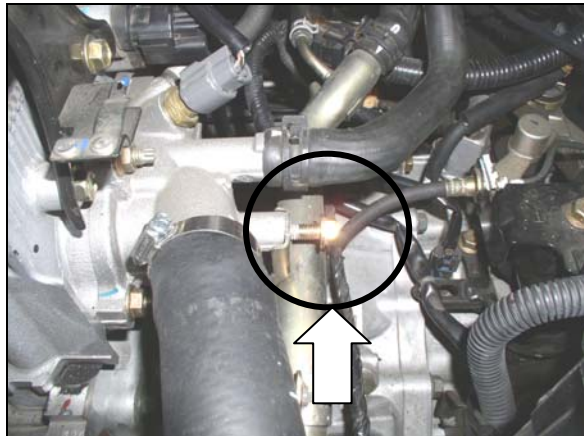


FIGURE 150



18. Re-install the factory breather hose from the valve cover to the breather port on the new supplied turbo to filter pipe (P/N 21433). Secure using the factory hose clamp. Using the supplied 1.50" silicone hose coupling (P/N 31072-4), attach the discharge of the blow off valve to the discharge port on the turbo to filter pipe (P/N 21433). SEE FIGURE 151-154

FIGURE 151



FIGURE 152



FIGURE 153



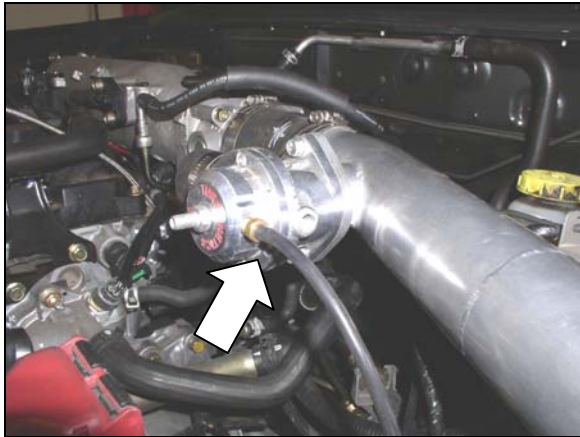
FIGURE 154





19. Tighten all hose clamps and mounting hardware for all the boost tubes from the intercooler to throttle body and the turbo to filter pipe.
20. Re-install strut tower brace.
21. Cut the supplied 5/32" silicone vacuum hose (P/N 30542-BK) to about 30 inches and connect one end of the hose to the fitting on the top port of the blow off valve and connect the other end to the t-fitting you installed earlier by the throttle body. SEE FIGURE 155

FIGURE 155



RE-INSTALLING THE PLASTIC TRIMS / FRONT FASCIA

1. Carefully set the factory plastic engine cover back onto the vehicle and mark the area that comes in contact with the wastegate. Draw the half circle and carefully trim away the plastic cover using a pair of plastic trim scissors or a sharp knife. Once you are done trimming the cover, use a 100 grit sand paper and carefully sand the area you just trimmed to give it a nice smooth finish.

CAUTION: When trimming with a knife, use extreme caution to not cut yourself, the plastic panel can be slippery. When sanding the cover, careful not to slip, the sandpaper will scratch other areas that you do not plan to sand. SEE FIGURES 156-158

FIGURE 156



FIGURE 157



FIGURE 158



2. Re-install the front bumper and grill in reverse order. SEE FIGURES 159-161

FIGURE 159



FIGURE 160

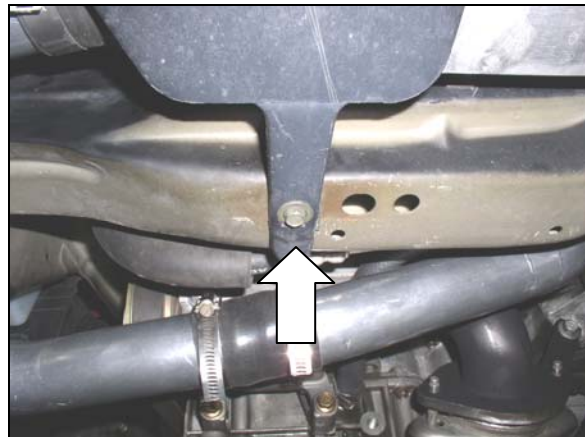
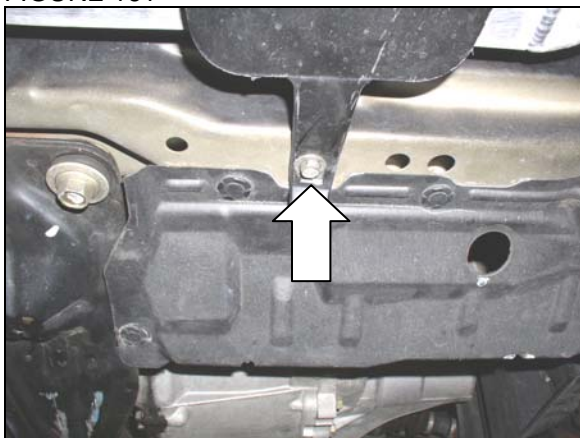


FIGURE 161





FINAL CHECKLIST

- Review these instructions to make sure that all fasteners, clamps & electrical connections have been installed & torqued correctly.
- Check that all hose routings are free of any kinks or near any hot or abrasive surfaces, that may cause wear over time. Adjust or reroute as necessary to provide adequate slack for engine movement.
- Refill all fluids (oil & power steering) to factory recommended levels.
- The use of synthetic oil (with the factory recommended oil weight) is strongly recommended, as it will prolong the life of the turbocharger. Regardless of factory recommended intervals, the addition of a turbocharger requires that the oil be changed every 3,000 miles.
- The use of premium octane unleaded fuel is required for proper engine performance and to reduce the possibility of internal engine damage from detonation.
- Cycle the ignition to the “ON” position several times to pressurize the fuel system & check for any leaks.
- Start the vehicle and check for any oil, power steering or air pressure leaks.
- **NOTE:** It is normal for the vehicle to emit some amount of white smoke & a strange odor for an hour or two of operation, as the oils within the exhaust pipes burn off.



TROUBLE SHOOTING GUIDE

Car Won't Start:

1. Check ECU harness and Unichip PnP harness to ensure all connectors are properly seated
2. Check injector harness to ensure good connection of pig tails
3. Check coil packs to verify good connection
4. Check fuel pump fuse
5. Check for codes and troubleshoot per code

Car runs poorly. Stuttering, stalling, misfiring:

1. Verify MAF is connected and wires are intact
2. Check boost level. If boost level is other than 8 PSI verify vacuum line fittings are in the correct ports on the BOV and wastegate. For the BOV the fitting should be in the upper most port closest to the red Turbonetics logo. The bottom port should be open. For the wastegate the fitting should be in the lower port furthest from the red Turbonetics logo. The upper port should be open.
3. Check for boost leak at or after MAF
4. Verify throttle body is operating properly
5. Ensure the O2 sensor extender provided from Turbonetics is installed on the second factory O2 sensor. The second O2 sensor is the one on the S pipe. The primary O2 sensor should be connected to the Turbonetics supplied downpipe with no extender.

ECU throwing codes (misfire):

1. Verify the spark plugs are not fouled and are gapped appropriately
2. Remove the injector harness and remove the supplied barrel splices from the supplied pigtails and solder the new injector pig tails to the factory injector harness
3. Verify the vacuum signal lines are going to the correct ports on the BOV and wastegate
4. Verify the O2 sensor extender provided by Turbonetics is installed on the second O2 sensor and not the Primary

ECU throwing codes (throttle position sensor):

1. Check Unichip PnP harness for proper installation
2. Remove Unichip PnP harness and connect ECU harness directly to stock ECU. After clearing the code with the motor off start the car and issue small throttle inputs. If code does not return contact Turbonetics Tech Support at 805-581-0333 to have a replacement PnP harness sent to you.
3. If 1 and 2 do not resolve issue first attempt to reset the idle air lean setting on the ECU. This needs to be done via the Nissan Consult 2 diagnostic computer. If resetting the idle air learn does not resolve the issue replace the throttle body/TPS sensor assembly

Car not building full boost:

1. Check for boost leaks
2. Verify boost signal line is in proper position on blow off valve (upper most port closest to logo)
3. Verify wastegate boost signal line is installed properly (lower port furthest from logo)
4. Check for exhaust leaks
5. Verify turbo shaft spins freely and has little to no shaft play. If compressor blade tips impact compressor housing inlet contact Turbonetics tech support at 805-581-0333 for a WA number to have the turbo rebuilt

Car running excessively rich:

1. Verify O2 extender is installed on secondary O2 sensor not the primary one.
2. Check fuel pressure



Car detonating under boost:

1. Check boost pressure
2. Check fuel pressure
3. Verify injectors are installed properly
4. Verify air fuel ratio on dyno

Car smoking when coming off boost:

1. Oil drain line not installed properly
2. Oil drain not above oil level
3. Turbo seal failed
4. Verify oil pressure

Maximum boost limits on stock motor:

1. The stock QR25DE has shown the ability to produce good power but the rod/stroke ratio results in very high piston speeds and the stock rods are marginal. Turbonetics does not recommend increasing boost pressure.
2. Tuning of the Unichip on a load based dyno will allow for increased power production at the standard 8 PSI pressure.
3. The addition of camshafts has shown significant gains in power production however increasing power output of the motor is at your own risk.



“NO FAULT / NO HASSLE” WARRANTY PROGRAM:

TURBONETICS will repair or replace, at our expense, any new TURBONETICS / Spearco products that fail, including products used in racing or competition applications, for a period of one year from the original date of purchase. All turbocharger and cartridge assemblies have a factory installed inline oil filtration device. This filter device must remain in place if any warranty is to be considered under the No-Fault / No-Hassle program. Electrical components that fail due to misuse are not covered under the No-Fault / No-Hassle Warranty Program.

Warranty is limited to TURBONETICS products and does not include progressive or subsequential damage and does not cover removal or installation labor or associated parts. No warranty is made for any other claims for special, indirect or consequential damages including but not limited to component removal or installation equipment downtime, prospective profits or other economic loss.

Warranty will not be granted for recurring damage, malfunction, or failure due to improper installation, misuse, unauthorized repair or alterations, or externally induced physical damage.

Warranty is non-transferable and must be processed via the original purchaser from TURBONETICS.

Remanufactured units, performance upgraded units, and O.E.M. replacement units are covered by a 90-day warranty or the O.E. warranty period.

TURBONETICS highly recommends that the installation of mechanical or electrical parts be performed by trained professionals. Improperly installed products may lead to unsafe and unreliable conditions.

RETURN POLICY:

Only unused and complete merchandise may be accepted for return subject to inspection and acceptance by TURBONETICS. No goods will be accepted without prior return authorization from TURBONETICS. Call for approval and RGA (Returned Goods Authorization) tracking number. No returns will be accepted without an RGA tracking number. No returns will be accepted after ninety (90) days from the original shipping date from TURBONETICS unless approved. All approved returns are subject to a 15% restocking charge – NO EXCEPTIONS. The original invoice must accompany the return. Accepted warehouse / distributor and open account returns will be issued credit only.

RETURNED GOODS AUTHORIZATION TRACKING NUMBER:

TURBONETICS will only accept product returns, repair orders / upgrades, and warranty requests that have been approved and are returned with a corresponding RGA (Returned Goods Authorization) tracking number.

Contact TURBONETICS for approval and the RGA number. Write the RGA number clearly on the outside of the package and include it inside the package. This is very important in allowing us to properly identify and process your request. Failure to comply with this requirement will result in the delay of processing or the product being returned to you.