

ENG-16, Turbocharger Replacement (Including Tips on K27 Turbocharger Installation)

Introduction

Replacing the turbocharger on a 951 is not extremely difficult. However, it is very tedious because there are a lot of components that must be removed to get to the turbocharger. This procedure will provide you with the instructions necessary to remove and install the turbocharger.

If you are installing a turbocharger other than a factory replacement (K26-6 or K26-8) there are some things which you should know. First, if the new turbocharger has a larger diameter compressor inlet than the factory unit (i.e. K27), the stock rubber inlet plenum boot will have to be modified and some type of adapter will be needed to connect it to the new turbocharger. Second, if the new turbocharger has a larger compressor housing than the factory unit (i.e. K27), the cooling water outlet line (hard pipe), will have to be reshaped (bent), to clear the housing of the new turbocharger. This may also cause the temperature sensor to come in contact with the bottom of the intake manifold in which case a low profile detector will be required. Lastly, you should ensure that the turbocharger you buy is a good match for your current setup. It may require a new set of chips for the DME and KLR to take full advantage of the new turbo's capability. All the things I've mentioned above are things your turbocharger supplier SHOULD tell you. However, when I purchased my K-27 a number of years ago, my supplier didn't even know that the things I mentioned above were problems. Below is a series of questions you should ask your supplier before purchasing any turbocharger.

Turbocharger Questions

1. How do I know if this turbocharger is a good match for my current setup?
2. Are there any modifications or fabrication required to install the turbocharger?
3. Do I need a new set of chips to use this turbocharger or to get the best performance from this turbo? If so, where can I get the chips?
4. Is there any additional equipment I need to get the best performance out of the turbocharger?

Other Procedures Needed

- [AF-01](#), Air Filter Housing and Air Flow Sensor - Removal and Installation
- [BOLT-01](#), Allen Head and Cheesehead Bolt Removal
- [FUEL-02](#), Fuel Injector and Fuel Rail Removal and Installation
- [FUEL-09](#), Intake Manifold Removal and Installation
- [COOL-02](#), Coolant System Draining, Filling, and Venting

<u>Parts Needed</u>	
944 111 205 03	Turbocharger Outlet Flange Seal Ring
944 111 205 04	Turbocharger Inlet Flange Seal Ring
944 111 205 03	Turbocharger Outlet Pipe to Cat Pipe Flange Seal Ring
999 707 043 00	Turbocharger Supply Line O-Ring (top of turbocharger)
900 174 058 40	Turbocharger Oil Discharge O-Ring (between bottom of turbo and motor mount bracket)
999 707 043 00	Turbocharger Oil Inlet Flange O-Ring (top of turbocharger bearing housing)
N 013 814 8	Turbocharger Oil Supply Line Banjo Bolt Seal Rings (2 Needed)

Tools

- Jack stands or ramps
- 10 mm open end wrench
- 10 mm socket, ratchet, and 6" extension
- 12 mm socket
- 13 mm socket and ratchet
- 15mm combination wrench
- 15 mm socket
- 17 mm socket and ratchet or 17mm wrench
- 19 mm open end wrench
- Thin head 24 mm or 15/16" open end wrench
- 5 mm Allen head socket or hex key
- Long 6 mm Allen head socket / Long 6 mm hex key
- Medium flat tip screwdriver
- Flat tip jeweler's screwdriver or straight probe
- Phillips head screwdriver
- Catch Rags
- Drain Pans

Removal

1. Disconnect the battery negative lead.
2. Place the car on jack stands or ramps.
3. Using [AF-01](#), remove the air filter housing and air flow sensor.
4. Loosen the clamps on either end of the intercooler outlet pipe (going to the throttle body). Disconnect the two hoses on either side of the intercooler discharge pipe and remove the pipe from the car.
5. Remove the rubber inlet plenum boot from the turbocharger inlet.
6. Using [FUEL-02](#), remove the fuel rail and injectors.
7. Using [FUEL-09](#), remove the intake manifold.
8. Remove the belly pan.
9. Using [COOL-02](#), drain the coolant system.
10. Remove the alternator air supply flexible hose.
11. Remove the turbocharger cooling pump as follows:
 - a. Disconnect the turbocharger cooling pump electrical connector (located along the shock tower near the cooling pump).
 - b. Loosen the 10 mm nut at the strut tower which holds the upper cooling pump bracket and a hold down strap for the air conditioning lines.
 - c. On the back side of the master cylinder heat shield that holds the bottom of cooling pump bracket in place. Using a 10 mm wrench loosen the bolt. You'll need to remove the bolt by turning it with your fingers to keep from dropping it. If you have a magnet, have it handy in case you lose your grip on the bolt. Slide the bracket off the top stud.
 - d. Disconnect the coolant hoses from the cooling pump and remove it from the car.
12. (Optional) Remove the master cylinder heat shield. The turbo can be removed and installed without removing the heat shield. However, it is a much simpler job if you take a little extra time to remove the heat shield.
13. Loosen the heat shield between the turbocharger and the engine block. This will allow you enough remove to loosen and remove the banjo bolt (19 mm) for the turbocharger oil supply line. Be careful not to drop the banjo bolt seal rings when removing the banjo bolt.
14. Remove the two bolts (15 mm) attaching the other end of the oil supply
15. Disconnect the supply and return cooling lines from the turbocharger.
16. Disconnect the flange for the turbocharger supply from the exhaust system.
17. Under the car, remove the heat shield for the steering shaft universal joint.
18. Loosen the four bolts that mount the steering rack to the front cross-member. This will allow you to lower the power steering rack slightly to provide access to the lower turbocharger mounting bolt.
19. Remove the bolts from the triangle flange on the turbocharger outlet pipe (above the O₂ sensor). Also remove the M8 bolt that attaches the flange to the engine block.

20. On the underside of the motor mount bracket, you'll find the two Allen head bolts that hold the turbocharger to the motor mount bracket. Using a stubby 6 mm socket, short 6 mm hex key, or 6 mm ball head hex socket, remove the two Allen head bolts. It is VERY IMPORTANT that you "wake up" the Allen head bolts ([BOLT-01](#)) before you attempt to remove them. If you do not, there is a very good chance that you'll strip the heads on the bolts. You may also find it necessary to disconnect the motor mount bolt and jack the engine up on that side to get enough clearance for proper engagement of the hex head tool into the head of the Allen bolt.
21. You should now be able to lift the turbocharger out of the car. Remember a short length of the outlet pipe will remain attached to the turbo when it comes out of the car.

Installation

1. Install the turbocharger exhaust side outlet pipe on the turbo. Make sure you replace the flange seal ring.
2. Place a new o-ring in the groove on top of the motor mount (turbo oil outlet seal).
3. Install a new seal ring in the groove on the turbocharger hot side inlet flange. A small amount of bearing grease applied to the ring will hold it in place while installing the turbocharger.
4. Carefully set the turbocharger in place on top of the motor mount. Be careful not to move the turbo around too much while setting it in place. It is possible to move the o-ring out of the groove and subsequently crush or cut the o-ring when tightening the mounting bolts.
5. Install the two turbocharger mounting bolts from the bottom of the motor mount bracket.
6. Install the heat shield for the steering universal joint.
7. Install and tighten the turbocharger inlet flange bolts.
8. Install the turbocharger oil supply line. Be sure to install a new o-ring at the turbocharger flange and new seal rings for the banjo bolt at the balance shaft housing.
9. Install the mounting bolts for the balance shaft housing heat shield.
10. Install and tighten the mounting bolt which attaches the turbocharger down pipe triangle flange to the block.
11. Install the cooling water supply line and turbocharger cooling pump.
12. Install the master cylinder heat shield.
13. Attach the turbocharger cooling pump to the master cylinder heat shield.
14. Install the turbocharger inlet plenum boot.
15. Install the turbo cooling water outlet line and plug in the turbo coolant temperature sensor.

16. Install the down pipe triangle flange bolts.
17. Using [FUEL-09](#), install the intake manifold.
18. Using [FUEL-02](#), install the fuel injectors and fuel rail.
19. Using [AF-01](#), install the air flow sensor and air filter housing.
20. Fill and vent the cooling system using [COOL-02](#).

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