

**Procedure:****Installation for the GenII - Stage II Turbo Upgrade for the Longitudinally Mounted 1.8T VW Passat and Audi A4 Model Years 1997 to 2002**

Warning: Check local laws before adding turbo components to your vehicle. Some states prohibit the addition of an aftermarket turbo system on emissions controlled vehicles.

**Parts Checklist (Bill Of Materials):**

- 1) Garrett/Honeywell GT25/T28 Ball Bearing Turbocharger with internal wastegate.

Pre-assembled onto the turbocharger unit is the following:

- 2) Exhaust Manifold Adapter Plate
- 3) CNC Inlet Adapter - 44mm outer diameter (1/4" thick) to fit stock inlet pipe
- 4) CNC Outlet Adapter - 50mm outer diameter to fit
- 5) 2 Coolant Banjo Fittings (14mm)
- 6) 2 Coolant Hoses (10")
- 7) Oil inlet fitting
- 8) 8mm Studs (11), 8mm nuts (11)
- 9) 8mm $\times$ 6mm Studs (2), 8mm $\times$ 6mm nuts (2)
- 10) 6mm bolts (3)
- 11) 10mm studs (3)
- 12) 10mm Washers and copper locknut set (3)
- 13) KO3 Turbo $\times$ Manifold Gasket
- 14) T25 Gasket
- 15) Oil Return Gasket

Plus the following on separately

- 16) High Rate Fuel Pressure Regulator
- 17) EPROM, MK4, 18T Stage II

**Some notes regarding this turbo upgrade:**

1. This upgrade is designed to be an easy to install package that makes good power, but is discreet in its packaging, does not stir up the engine, and maintains a “stock” appearance.
2. This upgrade is designed to keep a lot of the stock components already on the turbo 1.8T engine such as the exhaust manifold; inlet pipe, pressure pipes, and oil return line.
3. This upgrade does not alter or remove any emissions related components.

**Installation Instructions:****Installation Tip #1:**

It is strongly recommended that penetrating oil be applied to ALL nuts and bolts in the turbo->exhaust track prior to attempting to remove. Exhaust components on turbo vehicles endure a lot of heat cycling and can be prone to seizing. To avoid the breaking of exhaust nuts and bolts during removal, allow the penetrating oil to penetrate well before beginning disassembly.

**A. Drain fluids from engine**

1. Unscrew oil drain plug on oil pan and drain oil pan – just like a regular oil change.
2. Replace oil drain plug and tighten.
3. Replace oil filter with new unit.
4. Disconnect lower coolant hose into engine and drain coolant from engine.

**B. Remove piping work connected to stock turbo**

1. Disconnect turbo inlet pipe from side of turbo.
2. Disconnect 90 degree rubber hose from turbo outlet nozzle.
3. Unbolt catalytic from turbo but do not remove from vehicle.
4. Unbolt 3 bolts holding turbo to manifold, but leave suspended at original location.

**C. Remove oil and coolant lines connected to stock turbo**

1. Unbolt oil drain line at the turbo and the oil pan and remove from vehicle.
2. Unbolt the coolant line from turbo leading to passenger side of engine bay. Cut coolant line at rubber section near front side of engine bay.
3. Unbolt the coolant line from turbo leading to back of engine block and unbolt from back of engine block under the turbo.

New coolant lines and fittings supplied will run to both locations.

4. Unbolt the oil feed line from stock turbo, but do not disconnect from oil filter housing. The stock oil feed line will screw right into the new GT28-R turbo with the supplied fitting.

**D. Remove stock turbo prepare for new turbo for installation**

1. Remove stock turbo from vehicle.
2. Remove any remaining gasket and ensure the turbo mounting surface on manifold is clean.
3. Prepare new turbo for installation. New turbo should already have the all adapting components pre-assembled. Double check the following are secure and torqued:
  - a. 4 studs and nuts from turbo to adapter plate to go to manifold.
  - b. Air inlet adapter and 2 bolts securing to turbo.
  - c. 3 bolts securing turbo outlet adapter to outlet end of turbo.
  - d. 2 6mm->8mm studs connected to bottom of oil drain hole.
  - e. Oil inlet fitting is tight and ready for the stock oil feed line.
  - f. Coolant fittings, lines, and banjo bolts are attached and torqued to turbo.

**E. Bolt up the GT28-R Turbocharger**

1. Place GT28-R turbo (pre-assembled as per above) up against manifold.
2. Drive 10mm studs one at a time into turbo adapter plate thru top of manifold.
3. Place supplied 3 bolt gasket between turbo assembly and manifold.
4. Place 3 10mm washers in place and hand start 10mm copper nuts threads have clearly started.
5. Torque coppers nuts to 35 ft/lbs and ensure flatness and proper seating of the two surfaces.

**F. Run new oil and coolant lines to and from the GT28-R Turbocharger**

1. Oil Feed – We've built a custom fitting that allows the stock oil feed line to be attached to the GT28-R turbo. Everything stays in stock location.
2. Oil Return - The original oil return line and flange will bolt right up to the oil drain hole on the GT28-R turbo. Bolt the oil line to the bottom of the turbo first, then install turbo and bolt to the oil pan.
3. Coolant to turbo – The line connected to the turbo with the long hose has a barbed fitting that meets up with the cut hose on the front side of the engine. Just slide in and clamp.
4. Coolants out of turbo – The line connected to the turbo with the short hose go to the back of the engine block. Connect the extra banjo fitting and bolt supplied to the engine block and slip the end of hose on. Push-lock hose does not require clamp.

**Installation Tip #2:**

Ensure that the oil and water lines never make direct contact with any part of the turbine, exhaust, manifold, or exhaust piping otherwise immediate rupture of the hoses will result.

**G. Reconnect the piping work**

1. Slip the stock inlet pipe onto the side of the turbo and secure with clamp.
2. Reconnect the 90 degree rubber elbow at the compressor outlet and clamp down.  
Trim 1.5" from the neck of the rubber elbow (the part that connects to the compressor outlet)
3. Re-install original catalytic converter

**H. Startup Preparation**

1. Have new Stage II EPROM soldered in by qualified professional.  
ECU box can be found by removing windshield wipers then the rain tray/cowling under the windshield.
2. Replace stock fuel pressure regulator from fuel rail and supplied adjustable unit.
3. Fill engine with proper amount of oil and coolant.
4. Check dipstick and coolant reservoir for proper levels.
5. Check to make sure there are no leaks present and continue with startup procedure if all of the above has been met.

**I. Startup Procedure**

1. Disconnect coil wire from all four ignition coils on top of valve cover.
2. Crank ignition start continuously for 30 seconds to circulate some oil into the turbo bearing housing
3. Reconnect all four ignition coil wires.
4. Crank ignition again to start engine.
5. When engine starts, allow 10 minutes of idle while monitoring the oil and water temps.
6. If water and oil temps appear normal, and there are no leaks, take car for test drive.
7. While on initial drive, watch boost gauge to ensure that boost does not go higher than 15 – 16 psi.

**Design and Manufacturing**

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8. Fueling is preset, but dyno tuning and adjusting fuel pressure might be necessary for fine tuning for optimum air fuel ratio.

End of Install