

Installation literature for KERMATDI Long Runner intake manifold kit for MK4 ('99.5-2006 Golf/Jetta) VW TDI; engine code ALH or BEW.

Thank you for your purchase of the LRI. Testing has shown a dramatic reduction of exhaust gas temperature and smoke emission on modified cars as well as improved power and turbo response.

You have taken advantage of the introductory release KERMA LRI offering. Please read and fully comprehend these instructions prior to beginning work or discarding packing material. Please understand that this kit is incompatible with factory exhaust gas recirculation (EGR), EGR cooler, and closed loop positive crankcase ventilation (PCV). EGR and closed loop PCV are emissions control devices. Removal of these components will result in a check engine light. Removal of these components may cause your vehicle to fail an emissions test. Open ventilation of crank case gasses will result in an oily odor which may permeate the cabin while stopped or traveling at low speeds.

Removal of EGR system components and conversion of your vehicle to open PCV are not covered in these instructions.

A safe and clean work environment, quality tools, patience, mechanical skill, and general good sense are required with any motor vehicle modification endeavor. Understand that coverage of the above is out of the scope of this install guide.

This kit is tailored to stock turbos and 'drop in' turbo upgrades such as: KP39, VNT15, VNT17, VNT17/22, VNT17/26, and S7. This kit is meant for stock diameter air mass meter (MAF) housings. Installation of the LRI on ALH or BEW engines when not installed in the original VW MK4 chassis or with MAF diameters and turbos not listed may be possible but is not covered in this install guide.

Pack list:

- Long runner intake manifold
- Intake manifold gasket
- 'Z' shaped silicone hose
- Short, straight silicone hose
- 90\* short silicone hose
- 90\* long legged silicone hose
- Straight aluminum sectional turbo inlet pipe with support tab
- 90\* aluminum sectional turbo inlet pipe
- qty 5 - 30075 hose clamps
- 30075 hose clamp or 30065 (depending on turbo selection).
- M10x1.5 axle bolt (with triple square head)
- qty 2 - M10 copper sealing washers
- Vacuum/tandem pump to brake booster plastic pipe from VAG TDI engine code BRM
- qty 2 - M12 vertical motor mount bolts

Design overview:

The LRI provides additional charge air momentum and mass balancing between the cylinders compared to the stock cast manifold. The turbo inlet pipe resides inboard of the curved runners and ducts the air downward smoothly to the turbo. This is in contrast to the stock design where the turbo inlet pipe takes a convoluted path behind the manifold down to the compressor inlet of the turbo.

Installation:

**The installer accepts all liability for THEIR actions while servicing, modifying, or repairing their car.**

- Begin by removing the factory turbo inlet plumbing which guides air from the air mass meter (MAF) to the compressor cover inlet of the turbocharger.
- Remove stock EGR cooler and plumbing as well as stock intake manifold from cylinder head. The EGR cooler is cooled by engine coolant, and as such coolant lines will need to be removed and rerouted. The EGR ports on the exhaust manifold and the EGR valve (if installed) must be blocked.
- Clean the gasket mating surface on the cylinder head where the intake manifold was installed. Debris on this surface will result in boost leaks and oil seepage. We recommend sparingly using brake parts cleaner and a green Scotch Brite abrasive pad. Be aware that the introduction of excessive amounts of brake parts cleaner or foreign objects in any quantity to the intake ports may result in engine damage.
- Raise vehicle. Properly and safely support for under-car servicing.
- Support the engine from below using a floor jack with a block of wood placed between the jack and oil pan as though you were performing a timing belt service.
- Remove bolt securing the power steering fluid reservoir to the engine mount. This is to allow access to the 2 M12 vertical motor mount bolts which secure the engine mount on the timing belt side of the motor.
- Remove 2 M12 motor mount bolts. This will allow the engine to be lowered sufficiently in order to maneuver the LRI into place.
- Discard the 2 M12 motor mounts bolts you just removed.
- Slowly lower the jack such that the engine is approximately 2" lower than it's home position.
- Install the LRI onto the cylinder head using the new intake manifold gasket. The bulged face of the gasket faces the cylinder head. The 6 M8 (6mm Allen head) intake manifold bolts' torque spec is 15ftlbs. Start threads by hand before tightening. Tighten the inboard bolts first, then work outwards. Recheck torque after all 6 have been tightened.
- Raise the engine back up such that the motor bracket is just barely in contact with the motor mount.
- Install the new M12 vertical motor mount bolts to secure the engine bracket to the mount. Torque spec is 74ftlbs. Again, start both bolts by hand before tightening. Be aware that the motor mount bores through which the bolts pass are elongated side to side. Good practice is to pivot the engine such that these bolts are evenly spaced in these elongated bores. This ensures driveline alignment which is true to the chassis.
- Reinstall the mounting bolt for the power steering fluid reservoir. Torque spec is 7ftlbs.
- Remove the stock vacuum/tandem pump vacuum pipe from both the pump and the brake booster.
- Slide the straight aluminum portion of the new turbo inlet pipe through the space between the LRI's plenum and the individual runners from the battery-side of the manifold.
- Affix by hand, but do not tighten, the straight section of the turbo inlet pipe's support tab to the LRI plenum using the M10 bolt. A M10 crush washer goes on both sides of the support tab.
- Affix the 90\* silicone to the compressor cover inlet. Orient the other end of the silicone roughly vertical. Secure with a hose clamp. Snug the clamp, but do not fully tighten. A dab of soapy

water facilitates a smooth insertion into the silicone. Snug a clamp to secure the silicone to the turbo, but do not fully tighten.

- Install the short silicone onto the short legged end of the 90\* aluminum section of the turbo inlet pipe. Snug a clamp, but do not fully tighten.
- Guide the long legged end of the 90\* aluminum turbo inlet pipe section into the 90\* silicone you just installed while also guiding the short legged end with attached silicone coupler through the space between the runners and the LRI plenum.
- Mate the two aluminum sections of the turbo inlet pipe together inside the runners using the short silicone coupler. Again, snug the clamps, but do not fully tighten.
- Install new vacuum/tandem pump to brake booster pipe taking care to prevent interference between the turbo inlet pipe sections and the booster pipe itself.
- Attach the 'Z' shaped silicone between the MAF and the straight section of the turbo inlet pipe.
- Adjust the position of the 3 silicone sections and 2 aluminum sections of the turbo inlet pipe such that there is no binding or contact between the turbo inlet pipe and the LRI.
- Tighten M10 bolt to 15ftlbs.
- Trim long legged silicone hose to couple the upper intercooler hose to the LRI plenum. This hose ships with liberal length to allow for various intercooler plumbing options.
- Tighten all hose clamps to approximately 60inlbs.
- Lower vehicle & take a test drive.
- Make further fine adjustments to eliminate rattles.

**Photos of installed LRI kit from Beta test/fitment vehicle.**















