

Turbocharger Installation

- 1) Ensure the turbocharger is receiving filtered oil. (quality paper style element)
- 2) Ensure the turbocharger has an appropriate size oil feed line.
- 3) Oil return must be a minimum of 5/8" ID or larger.
- 4) ALWAYS use water coolant lines if applicable.
- 5) Make sure there is adequate clearance (1"+) between the turbocharger and vehicle frame or structure.
- 6) Compressor discharge must have at least one flexible coupling.

Common Turbocharger Complaints and/or Failures

Turbocharger is leaking oil and/or smoking. Generally installation related as noted below.

- 1) Inadequate oil return.
- 2) Make sure turbo is mounted high enough to allow oil to gravity feed back to the engine.
- 3) Oil return to be minimum of 5/8" ID.
- 4) Do not use hose fitting with tight radius bends.
- 5) Excessive crankcase pressure can pressurize the oil drain. Add oil breather tank with a minimum of 5/8" ID lines and large breather. PCV valves must be for use on boosted applications.
- 6) Use properly sized air inlet and filter. Check for dirty air filter. Restricted inlet can cause compressor side oil leak. When the inlet is restricted, oil can pull past the compressor side seal.

Turbocharger Lubrication

Turbochargers rely on clean, filtered oil with sufficient volume and pressure.

- 1) Number 1 cause of failure is due to dirty or contaminated lubrication.
- 2) Use a quality paper element to filter oil. Stainless steel mesh filters typically do not have an appropriate filtering capacity.
- 3) Use a remote mounted oil filter with a dedicated turbocharger oil feed line.
- 4) If using an inline dedicated turbocharger oil filter, service at regular intervals to avoid oil starvation.
- 5) Use a pressure location closest to the outlet (filtered) side of the oil filter.
- 6) Oil filter sandwich plates are not recommended as they do not filter properly which can lead to turbocharger failure.
- 7) It is not recommended to use oil feed line restrictors on journal bearing turbochargers. Leaking or smoking is typically caused by other underlying issues. If ever other area has been addressed, only then would a restrictor (.065"-.090") be considered.
- 8) Most single journal bearing turbochargers should use a 3/4" ID or -4AN oil feed line.

Turbocharger Oil Return Line

Probably one of the most overlooked area of a turbocharger installation. Oil return is critical to a proper installation.

- 1) Mount the turbo as high as possible to aid in gravity feed back to the engine. If the return line goes back to the oil pan, it must enter above the oil level.
- 2) Minimum size for oil return is 5/8" ID or -10AN. Use free flowing fittings with a minimum of sharp turns.

Turbocharger Coolant Lines

If the turbocharger has water coolant lines, they must be used. (T3 and GT35) If they are not used, the turbocharger will fail due to excessive heat.

Turbocharger Installation Clearance and Mounting

Any contact of the turbocharger to a structural surface can cause side loading. Side loading is external stress on the turbocharger housing which in turn can cause rotating components to come in contact with the housing causing failure.

- 1) Maintain at least 1" of clearance to structural, body panels or other solid mounted chassis components.
- 2) Use flexible couplers to reduce the chance of side loading.
- 3) Mount the turbocharger at the turbine housing (hot side) inlet flange or the center housing.