

EXHAUST MANIFOLDS AND TURBOCHARGERS (N54 ENGINE)

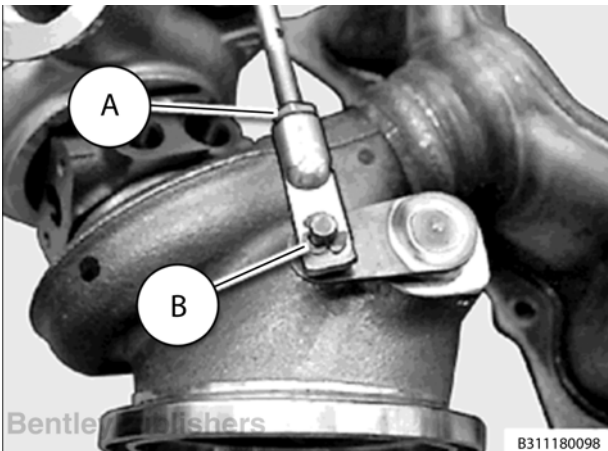
The N54 engine is equipped with two exhaust manifolds each with an integral turbocharger. A pre-catalytic converter is attached downstream of each turbocharger. Should the pre-catalyst need replacing, it is removable and available separately. See **Exhaust Components** in this repair group.

Turbocharger wastegate noise, checking for wear (N54 engine)

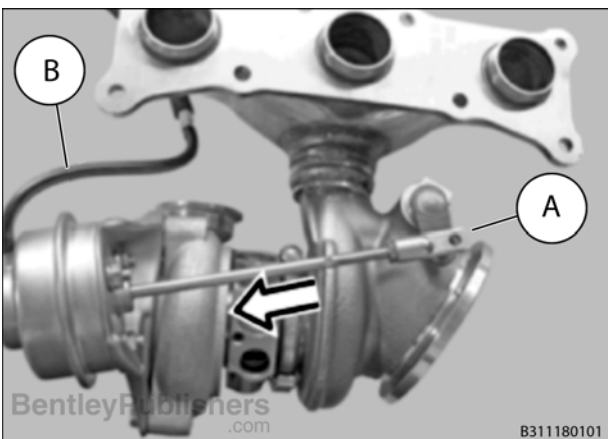
A metallic noise from the exhaust system near the engine or turbocharger area can occur during deceleration from approx. 3,500 rpm or at high engine speed without a drive gear being engaged.

In this situation, the wastegate valve does not completely close, resulting in a clanking metallic noise between the wastegate valve and its seating surface.

Do not replace turbocharger or adjust the wastegate actuator control rod initially. Reprogram DME with latest software using BMW scan tool. If after programming, the noise is no longer present, take no further action. If the noise is still present, check wastegate actuator adjustment and wastegate valve wear



- Remove exhaust turbo charger to be checked. See **Exhaust manifold and turbocharger (N54 cylinders 1- 3)**, or **(N54 cylinders 4-6)**, removing and installing in this group.
- ◀ Loosen lock nut (A). Remove locking clip (B) and disconnect actuator rod from wastegate arm.

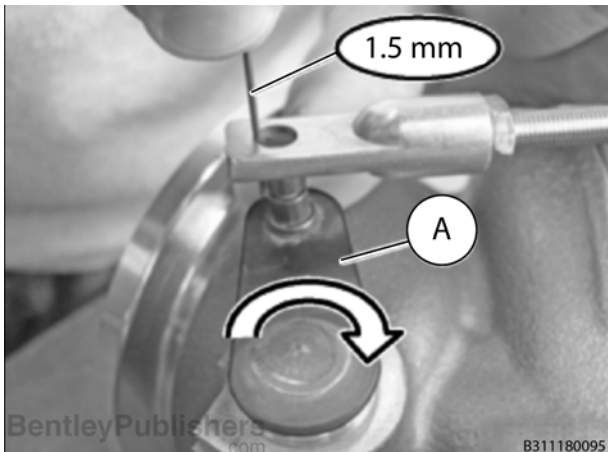


- ◀ Connect vacuum pump to wastegate actuator (B). Apply approximately -200 mbar of pressure to retract waste gate actuator rod (A).

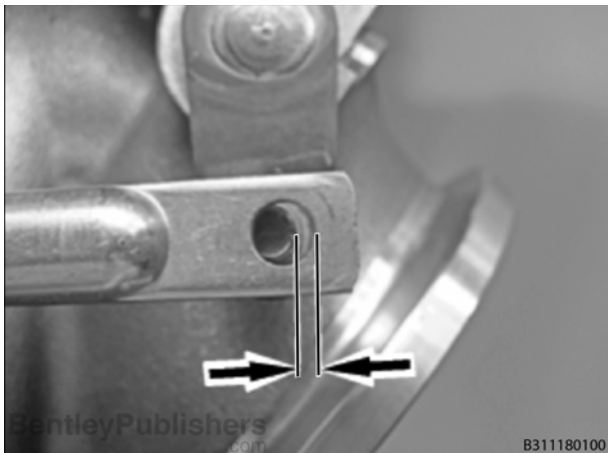
NOTE —

- Wastegate actuator must fully retract with -200 mbar of pressure or actuator is faulty.

Turbocharger wastegate noise, checking for wear (N54 engine)

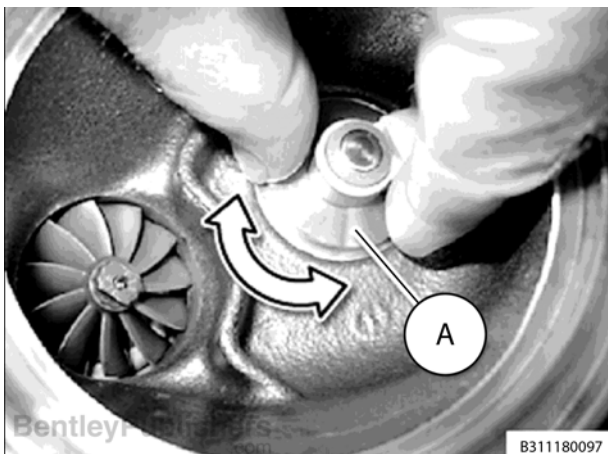


- Fully close wastegate valve (A) by hand in direction of arrow. In this position, use a 1.5 mm drill bit to check overlap between wastegate lever arm and actuator rod hole.



- If difference (arrows) is greater than 1.5 mm, replace turbocharger. If gap is less than 1.5 mm, actuator rod may adjusted if necessary.

- Place wastegate actuator rod back on wastegate arm without locking clip to perform next check.



- Working inside turbocharger at wastegate valve:
 - Check adjustment of wastegate by rotating valve (A).
 - Valve face must sit flush against valve seat with light resistance when rotating valve.
 - If valve does not sit flush against valve seat (no resistance or excessive resistance to rotation), an adjustment must be made to the actuator rod.
- Adjust actuator rod by turning rod end a maximum of one half turn in either direction. After adjusting, place actuator rod back onto wastegate arm and recheck wastegate valve adjustment inside turbocharger for light resistance when rotating valve.
- When adjustment is completed, tighten lock nut on wastegate actuator rod while counterholding rod end. Reinstall wastegate actuator locking clip on wastegate arm. Verify wastegate actuator does not bind during operation.
- Reassemble engine clear ECM fault memory, and check turbocharger boost pressure control system using BMW scan tool.

Tightening torques

Lock nut to wastegate actuator rod end	7 Nm (62 in/lb)
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