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BD Iron Horn Series

Dodge 5.9L T4 Turbo Kit

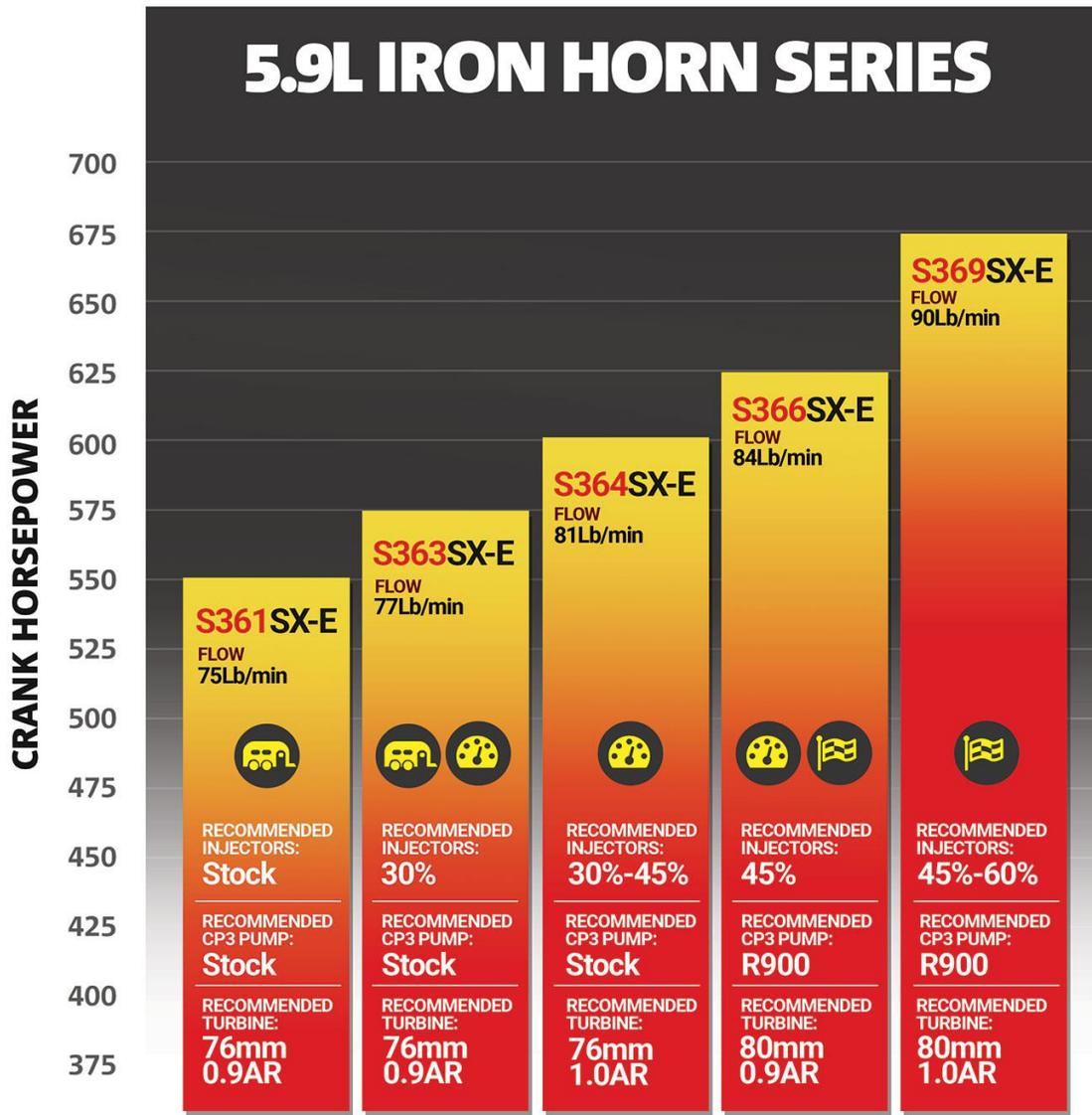
1045169 - 1045179

Dodge 2003-2007

PLEASE READ ALL INSTRUCTIONS BEFORE INSTALLATION

2003-2004 Model year trucks:

A 2004.5-2007 downpipe is required, such as FLOPRO Part # 20811 and OEM V-band Part # 52121285AA



BD Part Number	Compressor Wheel Inducer Size	Turbine Wheel/ Housing AR Ratio
1045169*	64.5mm	76mm - 1.0AR
1045170*	61mm	76mm - .91AR
1045171	64.5mm	76mm - .91AR
1045172*	63mm	76mm - .91AR
1045173	63mm	80mm - .91AR
1045174	64.5mm	80mm - .91AR
1045175	64.5mm	80mm - 1.0AR
1045176*	66mm	80mm - .91AR
1045177	66mm	80mm - 1.0AR
1045178	69mm	80mm - .91AR
1045179*	69mm	80mm - 1.0AR

* BD's recommended turbine sizes

Please be aware that non-wastegated turbochargers are extremely sensitive to overspeed failures. Turbocharger must be sized correctly to match our horsepower and boost goals. Do not exceed the recommended turbo wheel speed. Compressor outlet pressure can be used to estimate turbo wheel speed. A boost leak will cause higher wheel speeds at a given boost pressure. The below table is rated at a maximum rpm of 3000.

Whether you are towing, at high altitude, or at WOT, high Exhaust Gas Temperature (EGT) is a sign you are operating outside the intended purpose of the turbocharger.

Engine: Dodge Cummins 5.9L ISB			
Turbocharger	Max Compressor Outlet Pressure	Max Shaft Speed	Max Crank Horsepower
S361/76	38 psi	133,000 RPM	550
S363/76	40 psi	133,000 RPM	575
S364.5/76	43 psi	133,000 RPM	600
S366/80	45 psi	126,000 RPM	625
S369/80	50 psi	126,000 RPM	675

Overspeed can result in turbine wheel separation, worn/damaged journal bearings, thrust damage, and split compressor wheels. Using a correctly sized turbocharger will reduce the chances of failure.

- Note you can always overspeed a turbocharger. Play it safe, there are no warranties for overspeed.
- Factory intercooler can have a 5psi pressure drop, i.e. 45psi manifold pressure = 50 psi compressor outlet pressure.
- All out testing is done at the standard RPM range of the engine. If you exceed this RPM, your turbo speed will also increase.
- Extended injector duration will contribute to high EGT's and turbo over speed.



Kit Contents:

Please check to make sure that you have all the parts listed in this kit **before** you start the disassembly of your truck.

Turbo Kit				
Turbo	1462431	1453105	1405100	1405101
				
<i>Turbo</i>	<i>Stud; M10x25mm</i>	<i>Drain; Oil</i>	<i>Clamp; Exh Elbow</i>	<i>Exh Elbow</i>
Qty: 1	Qty: 4	Qty: 1	Qty: 1	Qty: 1
148062		1453152	FT-110120342	
				
<i>Gasket; Oil Drain</i>		<i>Fitting; 1/4MNPTxORFS (-6)</i>	<i>Bolt; Hex 3/8"-16x3/4</i>	
Qty: 1		Qty: 1	Qty: 2	
1453240	1045987-T4		1045986-T4	
				
<i>Wastegate Connector</i>	<i>T4 Manifold Kit</i>		<i>T4 Gasket Kit</i>	
Qty: 1	Qty: 1		Qty: 1	

Introduction

The BD Turbo kit is an economical solution to have a S300 kit on your Cummins. This kit includes a non-wastegated T4 Turbocharger, and a high-performance manifold. The kit retains the stock intake. This is great for those looking to upgrade their stock turbo without breaking the bank.

Pre-Installation Inspection

When replacing a turbocharger BD recommends the following precautions are taken:

- Replace or clean the air filter.
- Change the engine oil and filter.
- Inspect Intake and CAC passages for debris, and clean if necessary.

In the case of a previous failure also include the following steps:

- Inspect CAC for debris and cleanout if necessary.
- Inspect engine oil for debris. Flush system if debris was present.

Ensuring that these steps are followed will prolong the life of your new turbocharger.

Required Tools

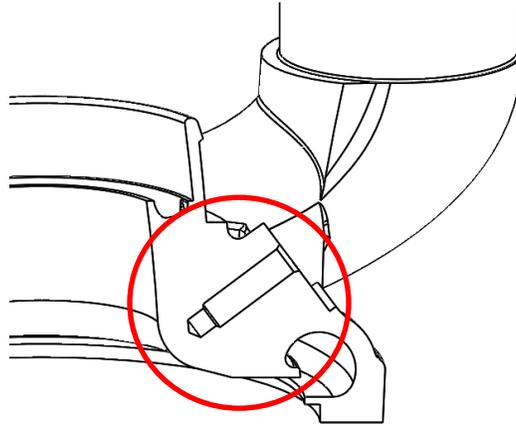
- 7mm-22mm Metric Socket and Wrench Set
- 5/16"-9/16" Socket and Wrench Set
- Hose Clamp Plier
- Torque Wrench

Optional Accessories

- | | |
|--------------------------------|-------------------|
| • BD Flow-Max fuel lift pump | 1050305D/1050310D |
| • Throttle Sensitivity Booster | 1057730/31/32 |
| • X-Intake Elbow | 1041555 |

ATTENTION

- 2003-2004 Model year trucks require an aftermarket downpipe such as the **FLOPRO # 20811**
- Please note that speed sensor port on the compressor cover is **NOT** drilled through.

**Removal**

VEHICLE SHOULD BE SAFELY SECURED BEFORE INSTALLATION.

1. Disconnect batteries and raise vehicle.
2. Disconnect the IAT sensor.



3. Remove the intake hose using a 7mm socket.



4. Remove the passenger side inner fender well with a 5/16" socket.

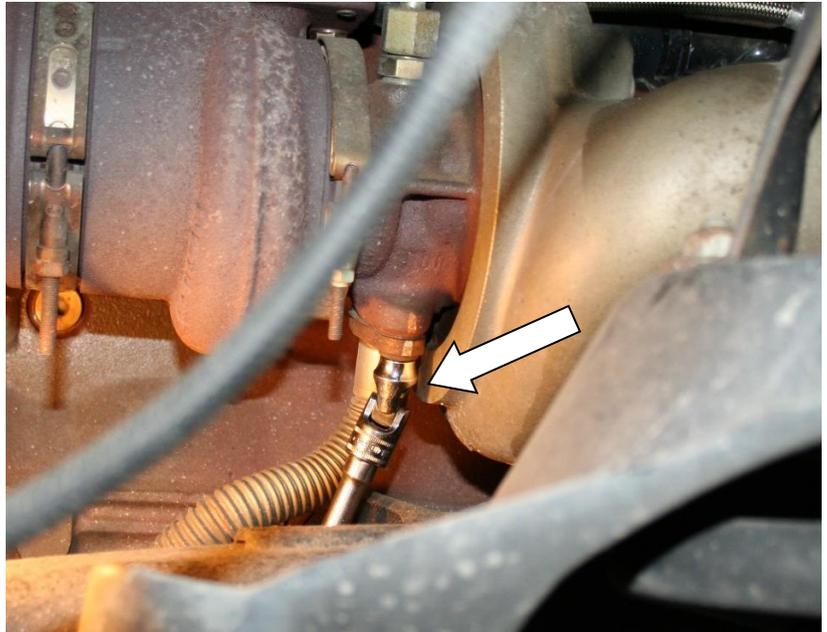


5. Remove the exhaust cast elbow v-band clamp from the back of the turbo with a 7/16" socket.



6. Remove the turbo oil drain line with a 10mm socket. Remove the oil drain out of the engine block.

****Note:** Some models require you to loosen gear clamps to remove the oil drain hose.



7. Cut the heater pipe bracket to assist in releasing the manifold.



8. Remove turbo oil feed from the turbo.



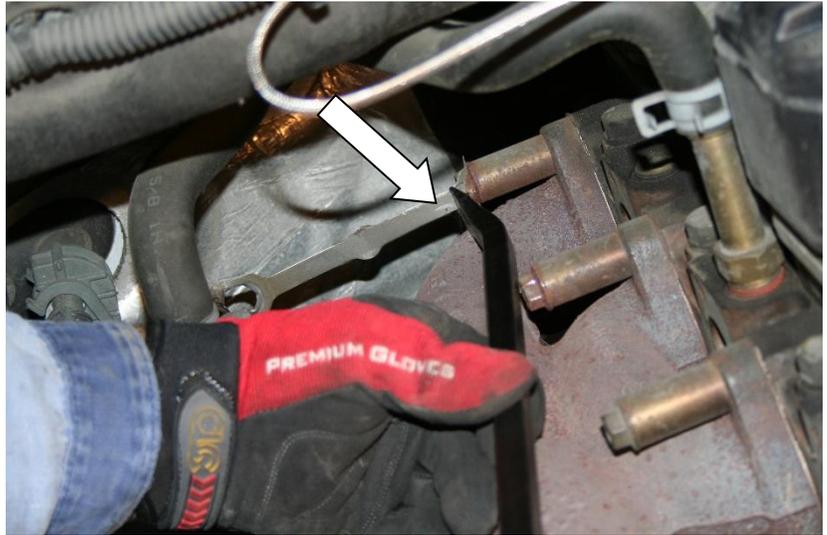
9. On 05-07 trucks, you will need to disconnect the wastegate solenoid connector.



10. Remove the passenger side intercooler hose band clamp with a 7/16" socket.



11. Pry off the metal lock from rear manifold bolts, remove the heater pipe bracket from the bracket.



12. Remove the manifold heat shield with a 15mm socket.

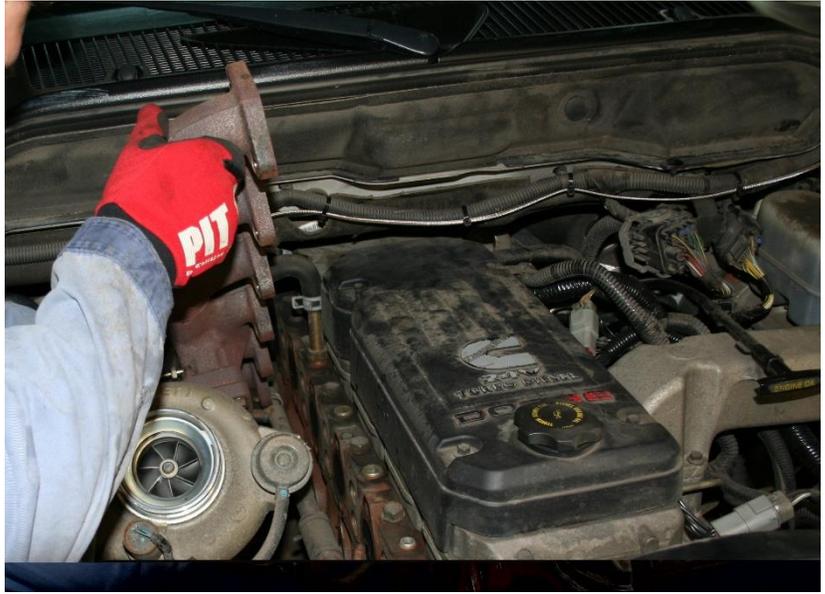


13. Remove the remaining manifold bolts using a 13mm socket.



14. Remove the turbo/manifold assembly from the engine compartment.

CAUTION: The turbo/manifold assembly is very heavy. You may require help to lift it out safely.

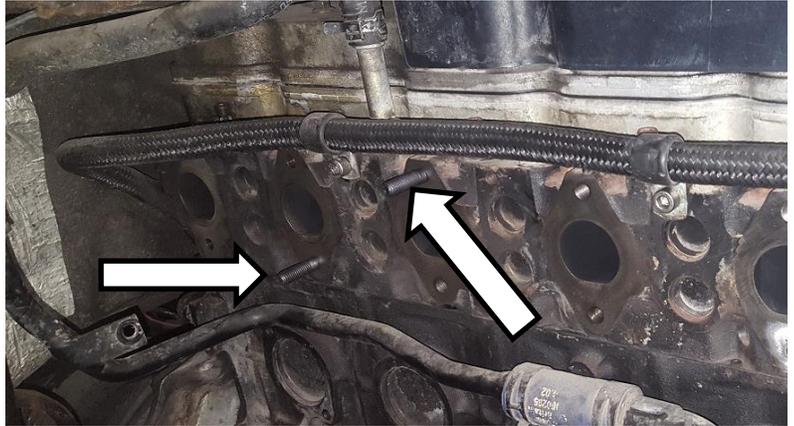


Installation



VEHICLE SHOULD BE SAFELY SECURED BEFORE INSTALLATION.

1. Install 2 30mm M10 studs supplied with the manifold kit in the top position of cylinder 4 and bottom position of cylinder 5. Make sure the mating surface between the manifold and cylinder heads is clean.



2. Install 4 supplied 25mm M10 studs onto the T4 flange. Use the 1/8NPT plugs to block the port on the manifold if not being used.

****Note:** Discard 4 extra 30mm stud supplied with the manifold kit.



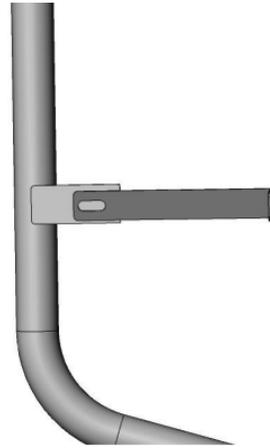
3. Install the BD Manifold using the supplied gaskets.



4. Install the coolant line bracket (1405998) as shown.



5. Drill a 5/16" hole on the cut off factory coolant bracket and use the provided hardware to secure the brackets together.
6. Tighten manifold, starting from the center and moving in an outward pattern, tighten the manifold nuts and bolts to **35 ftlbs.**



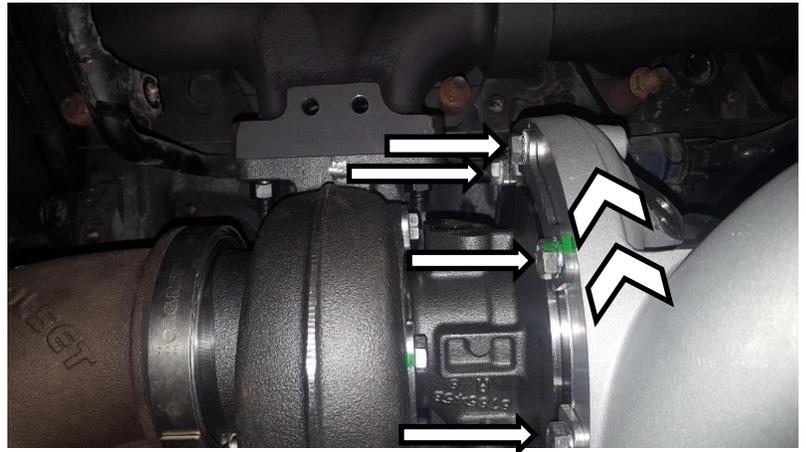
7. Secure the turbo charger to the manifold with the supplied nuts.
8. Torque turbo flange to **32 ftlbs. Important! Improper torque of flange can lead to exhaust leak, gasket failure and flange damage.**
9. Secure the provided exhaust elbow (1405101) to the turbo charger with the supplied clamp (1405100).



10. Check that there is approximately 1/4" clearance between turbo and shock tower. Clock turbo if required, see step 10.



11. To clock turbo loosen all 8 bolts on turbo compressor housing and rotate the housing clockwise till there is approximately 1/4" gap between the housing and the shock tower.



12. Install the supplied (1453152) oil supply fitting onto the turbocharger with a light amount of thread sealant.

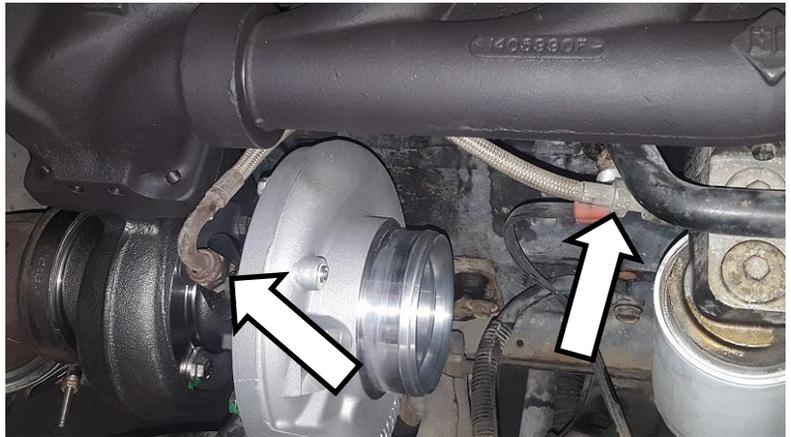
****NOTE:** This is a tapered fitting, do not overtighten fitting, it will lead to cracked CHRA.



13. Install the supplied corrugated oil drain (Not shown in picture).
Shape to fit. Ensure continuous down flow for the oil



14. Install the oil supply line (reuse OE line).



15. Connect the CAC pipe and boot to the turbo charger. Tighten clamps.



16. Connect the exhaust to the downpipe. Tighten clamp.



17. Install the intake tube and airbox.
Connect the IAT sensor.
18. Reinstall the inner fender well.
19. Connect batteries.



Troubleshooting

Error Code	Solution
P0234	Install a BD boost fooler (1515935, 1515936) or consult with your preferred aftermarket tuning provider
P0236	Clean air filter. If problem persists, consider installing a set of performance fuel injectors or consult with your preferred aftermarket tuning provider.
P0243	Check that wastegate fooler is present, undamaged, and has a good connection.