Installation Manual v1.0:
MST Turbo Kit
(2003-2007) 5.9L Dodge

Please read all instructions before installation.

Figure 1: MST Kit Contents

Figure 2: MST Hardware Kit

Please make sure all of the components are in the MST Turbo kit. A complete corresponding list of parts can be found on pages 12 and 13.
Removing the Factory Components:

1. Set parking brake.
2. Chock wheels.
3. Disconnect batteries by removing both negative (-) terminals. Secure the negative (-) terminals away from batteries.
4. Disconnect the IAT (Intake Air Temperature) sensor and intake tube from the stock turbo.
5. (04.5-07 Trucks) On the front of the stock turbo is a round black component, which is connected to the engine harness. This component is the Wastegate control solenoid. Disconnect the Wastegate control solenoid from the engine harness. Install the jumper provided in the kit to prevent the computer from setting the check engine light.
6. Remove the factory air box. Remove the grommet from the factory front air box mount and install it into the ATS air box mounting bracket.
7. Remove the stock turbo-to-intercooler charge pipe.
8. Remove the rubber boot on the intercooler inlet.
9. Disconnect the factory oil feed line from the top of the factory turbo and the oil drain from the bottom of the factory turbo. Retain the bolts.
10. Disconnect the exhaust by removing the v-band clamp that holds the exhaust elbow to the turbine housing.
11. Remove the four nuts securing the heat shield to the manifold.
12. Cut and remove the bracket securing heater hose to the manifold stud. Be sure not to cut the heater hose.
13. Using a pair of side cutters, remove the safety straps from the back four manifold bolts.
14. With the factory turbo still in place, remove the 12 manifold bolts to remove the stock turbo and manifold as one piece. Place the assembly on a workbench or equivalent sturdy work surface.
15. With the turbo/manifold assembly on the workbench, remove the four nuts securing manifold to turbo flange and separate the turbo and manifold. The four nuts can be very difficult to loosen. Use penetrating oil on stud threads before attempting to loosen nuts.
Modifying the Factory Turbo:

1. The factory turbo cartridge must be clocked (or turned) in order to be correctly mounted in the new location. To do this, the alignment pins inside the turbo must be removed. To access the pins, the turbine and compressor housings must be removed from the turbo cartridge.

2. Remove the wastegate valve actuator by removing the e-clip that retains the rod on the lever and the two nuts that hold the actuator on the compressor housing.

3. Remove the turbine housing by loosening the v-band clamp on the cartridge.

4. Remove the alignment pins using a set of vise-grip pliers and loosely reinstall the turbine housing and clamp.

5. While wearing safety glasses, remove the compressor housing by using a large set of internal snap-ring pliers (adequate snap-ring pliers are available through ATS).

6. Remove the compressor alignment pin from the cartridge rim.
7. Reinstall the compressor housing and locate the discharge as shown in the picture below.

8. Remove the two 10mm studs using a set of vise-grip pliers.

9. Drill out the threaded holes using a 7/16” drill bit. Once the holes are drilled, slide the studs through the holes to make sure the holes are large enough to clear a 10mm stud.

10. (04.5-07 5.9L Trucks) Remove the Wastegate gate solenoid from the front of the compressor housing. Take the o-rings off of the solenoid and install
them onto the ATS solenoid plug. Install the Wastegate solenoid plug into the compressor housing.

11. Remove the oil feed fitting located on the top of the cartridge. Install the provided 11/16” to JIC-4 fitting.

12. Make sure the Wastegate control rod is aligned correctly as shown on page 3. If the control rod is aligned correctly, then tighten the v-band clamp to secure the turbine housing to the cartridge.

Installing the ATS MST Compound System

1. Remove the plug from the auxiliary oil drain port located on the side of the engine block just above the oil pan on the passenger side. Use a hammer and a flat tip punch to turn the plug by tapping it on one side. Do not hit the plug in the center. Once turned, grab the exposed plug edge with a set of vise-grip pliers and remove it from the engine block.

2. Once the factory turbo and ATS manifold are installed, there is not enough room to get the MST installed in the proper location without removing the battery. To avoid removing the battery, set the MST charger into the passenger side of the engine compartment. Rest the turbo on the frame in a secure position.

3. Place the ATS manifold onto a work bench. Install the factory turbo on the ATS manifold using the provided turbo flange gasket (figure 2, #32). The factory turbo does not provide much clearance for the inner-rear nut. Install this nut first by holding the turbo off of the manifold and turning the nut as the turbo is slid onto the studs.
4. Modify the factory exhaust-manifold-heat-shield by trimming off the section behind the first two sets of manifold bolts so that it can be reinstalled with the ATS exhaust manifold.

5. Install the ATS manifold and factory turbo assembly onto the engine block using the gaskets provided (figure 1, #22) in the kit and the trimmed heat-shield.

6. Remove the alignment pins from the factory exhaust elbow and install the pins into the ATS MST compound exhaust elbow (figure 1, #11).

7. Install the compound exhaust elbow onto the factory turbo by aligning the pins and holes. Use the factory v-band clamp to secure the exhaust elbow in place.

8. Once the exhaust elbow is in place, use four 10mm studs, flange nuts, serrated washers, and the graphite gasket supplied in the kit to connect the MST turbo to the exhaust elbow. Use a small amount of heavy grease to hold the gasket in place while lifting the MST up to the exhaust elbow.

9. Using three bolts, attach the supplied heat shield (figure 1, #13) to the rear of the exhaust elbow.

10. Connect the short drain tube removed from the factory turbo to the MST oil drain and insert the drain tube into the rear oil drain port in the block.
11. Route the supplied long drain tube (figure 1, #18) from the front oil drain port up to the factory turbo charger. Try to route the drain tube as close to the engine block as possible to make room for the intake tube.

12. Install the intake tube as show in the picture above using the clamps provided. Use the 4” coupler (figure 1, #6) provided to connect the compact 90° boot (figure 1, #2) and the 4” intake tube (figure 1, #3).

13. Remove the factory oil feed fitting from the side of the oil filter housing and one of the plugs from the top of the oil filter housing.

14. Install the supplied 14mm to -4 JIC (#26, Figure 2) oil feed fitting into the side of the filter housing and the 1/8NPT to -4 JIC (#24, Figure 2) oil feed fitting into the top of the filter housing.

15. Install the supplied short oil feed line (#20, Figure 1) from the filter housing to the oil feed fitting on the MST. Route the oil feed lines away from the exhaust manifold.

16. Replace the oil feed fitting on the factory turbo with the 12mm to -4 JIC (#25, Figure 2) oil feed fitting provided in the kit.
17. Install the supplied long oil feed line (#19, Figure 1) from the fitting on top of the filter housing to the oil feed fitting on the factory turbo. Route the oil feed line away from the exhaust manifold and turbine housing.

18. Using the T-bolt clamps provided install the intermediate hose (#5, Figure 1) that connects the outlet of the MST to the inlet of the factory charger. Make sure both clamps are tight.

19. Install the 2.75" to 3" reducer hose (figure 1, #9) on to the outlet of the factory charger using the original T-bolt clamp.

20. On 2007 trucks the engine lift mount will have to be replaced with bracket provided in the kit to make room for the turbo-to-intercooler charge pipe.

21. Install the 2-bend silicone elbow onto the intercooler inlet. The picture below shows the correct orientation. The A/C line that is connected to the A/C compressor and the condenser must be routed on the driver's side of the 2-bend silicone elbow.

22. Install the charge tube (figure 1, #7) with the longer (3.5") leg connected to the 2-bend elbow and the shorter (3.0") leg connected to the reducer boot on the factory charger.

23. Install the ATS air box (figure 1, #1) by setting the enclosure into the mounts on the battery tray. Reach through the opening in the base of the
enclosure and pull the compact 90° boot onto the air box enclosure then

tighten the clamp to secure it in place.

24. Use the 6mm x 25mm bolt supplied in kit to secure the air box mount to

the fender support through the grommet removed from the factory air box.

25. Route the radiator overflow line through the air box grommet and

reconnect it to the radiator fill spout.

26. Install the IAT sensor into the side of the ATS air box using the #10 sheet

metal screws provided.

27. Install the air filter (figure 1, #12) provided in the kit.

28. Connect the exhaust system to the MST turbine housing using the factory

components.

29. Double check all T-bolt clamping points to make sure the clamps are

secure.
Adjusting the MST Turbo Charger

The MST is pre-adjusted at ATS for optimal performance and should not require any changes. This section describes how the dual-spring system functions.

The outer (primary) spring controls the exhaust pressure during spool-up. The inner (secondary) spring regulates the exhaust pressure that is waste gated. Tightening the primary spring will increase the response of the turbo to a point, but will decrease overall efficiency if over tightened. Tightening the secondary spring will increase overall boost. The primary and secondary springs are set for optimal performance by ATS. The ATS adjustments are shown below.
Have Any Questions?

Thank you for purchasing the MST Turbo kit. Please check our website at http://www.atsdiesel.com for technical support and other performance products such as the 5-Star™ torque converter, ATS High Performance Valve Body and ATS High Performance Transmission along with our full line of power enhancers. Please call or e-mail our Technical Service Department, 8:00am to 5:30pm Mountain Standard Time, Monday through Friday.

Contact Information

Toll Free: 800-949-6002
Local: 303-431-7973
Fax: 303-431-01135
Website: www.ATSDiesel.com
Email: info@ATSDiesel.com

We strive to make our instructions as clear and complete as possible. To achieve this, our instructions are under constant construction. We encourage you to visit our Technical Support Website (http://www.atsdiesel.com/ATSWebsite/Technical.asp) to check for the most up-to-date manuals and diagrams as well as other information. If you have any suggestions as to how we can improve this installation manual, let us know at mailto:Suggestions@ATSDiesel.com.
Bill of Materials

1. MST Air Box Enclosure 2272-202-030
2. 4" 90° Compact Rubber Boot 90CB40
3. 4" Reinforced Silicone Intake Tube 2272-202-027
4. 3" 2-Bend Elbow 2272-202-025
5. Silicone Intermediate Hose 2272-202-004
6. 4" Intake Tube Connector (4in OD X .065 X 4")
7. CR Charge Pipe (turbo to intercooler) 2272-202-006A
8. V-Band Clamp for Exhaust Flange 3535399
9. 2.75" to 3.00" Reducer Boot 2272-202-017
10. Aurora 4000 MST Turbo Assembly 2272-202-401
11. MST Compound Exhaust Elbow 2272-202-042
12. Air Filter 24-91006
13. Heat Shield, MST Exhaust Elbow 2272-202-043
14. (4) 4.5" Worm Drive Hose Clamp ET-72
15. 4.5" T-Bolt Clamp 94100-0450
16. 3.5" T-Bolt Clamp 94100-0350
17. 3.25" T-Bolt Clamp 94100-0325
18. 22" Flexible Drain Tube 3934084
19. 17" Oil Feed Line 2164-202-028
20. 11" Oil Feed Line 2272-202-046
21. 3-Piece 24V Manifold M59-24
22. (6) Gasket, Exhaust Manifold Flange 3946275
23. (3) M8-1.25 x 16 Flange Bolts
24. Oil Feed Fitting 1/8NPT to JIC-4 4FTX-S
25. (2) Oil Feed Fitting 30J041215R
26. Oil Feed Fitting 30J041415R
27. (8) M10-1.5 Flange Hex Nuts
28. (2) Gasket, Oil Drain Flange 3937706
29. (4) 10mm Serrated Belleville Washer 93501A031
30. (8) M10-1.5 x 1.5” Studs
31. Gasket, MST Turbo Flange (Graphite) 2272-202-041
32. Gasket, Exhaust Manifold Turbo Flange 3919369

Not Pictured:
1. (2007+ Only) Engine Lift Bracket 5086831AA
2. (2) #10 x 3/4” Sheet Metal Screws
3. Wastegate Solenoid Plug-Cap 2272-202-003
4. Wastegate Solenoid Harness Jumper 2272-202-010
5. 6mm-1.0 x 25mm Hex Head Flange Bolt
6. Optional: Internal Snap Ring Pliers 5449A98
8. ATS Warranty [www.atsdiesel.com/warranty]