



# AURORA PLUS

ASSEMBLY/INSTALLATION  
INSTRUCTION MANUAL



AURORA 7500 PLUS COMPOUND TURBO KIT

2007½ - 2012 RAM 6.7L C.R. CUMMINS DIESEL



# AURORA PLUS

Installation Manual v1.4:  
 p/n: 202-972-2326  
 Aurora 7500 Plus Turbo Kit  
 2007½ - 2012 Ram 2500/3500 · 6.7L CR Cummins



**NOTE:** This compound turbocharger system requires the installation of head studs.

**Please read all instructions before attempting installation.**

## BILL OF MATERIALS

1. Aurora 7500 Turbo 202-701-1000
2. Exhaust Transfer Pipe 202-041-2326
3. Downpipe, Upper Section 205-025-2326
4. Downpipe, Lower Section 205-026-2326
5. Air Inlet Elbow 206-017-2272
6. Coolant Transfer Line 105-023-2326 (Only for 2007½-09)
7. Turbo Coolant Supply Line 202-071-2326
8. Turbo Oil Drain Tube 202-048-2362
9. Turbo Oil Supply Line 202-028-2326
10. Turbo Support Mount (2-piece) 202-053-2326
11. Intermediate Charge Tube, Silicone 202-040-2326
12. ATS Sealed Intake System 206-900-2272:

- Air Box Base
- Air Box Lid
- Air Filter
- (1) Worm Drive Hose Clamp
- "L" Mounting Bracket
- ATS Hardware Kit (see Figure 4)

*Large Parts Kit (Fig. 1)*



**BILL OF MATERIALS (cont.)**

13. SS-88 Worm Drive Hose Clamp
14. EGR Deleted Turbo Support Bracket 202-084-2326
15. ET-72 5.5" Worm Drive Hose Clamp
16. (2) 4.4" V-Band Clamp
17. 4.5" T-Bolt Clamp 94100-0450
18. 3.5" T-Bolt Clamp 94100-0350
19. 4" to 4.5" ID Exhaust Reducer
20. 4.5" Exhaust Clamp
21. 4" Exhaust Clamp
22. Adhesive Backed Heat Barrier 12" x 24" 13575
23. (4ft) 3/4" Rubber Hose
24. T6 Gasket
25. Oil Drain Gasket
26. Dipstick Tube Mount (non-EGR) 202-076-2326
27. 1/8NPT to JIC-4 Fitting
28. Standoff, Coolant Transfer Line 202-074-2326
29. Dipstick Tube Spacer 202-075-2326
30. Coolant Line Blockoff (2007.5-08, non-EGR) 105-005-2326
31. Coolant Line Blockoff (2009, non-EGR) 105-005-2344
32. (2) AC Receiver Dryer Spacer 202-073-2326
33. (2) EGR Deleted Support Bracket Standoff 202-072-2326
34. Factory Coolant Line Spacer (2009 Vehicles)
35. 90° M16-JIC-8 Fitting 8M16F8OMXS
36. (10) 7" Zip Ties
37. [Hardware Kit 202-001-2326:](#)



**Small Parts Kit (Fig. 2)**



**Hardware Kit (Fig. 3)**

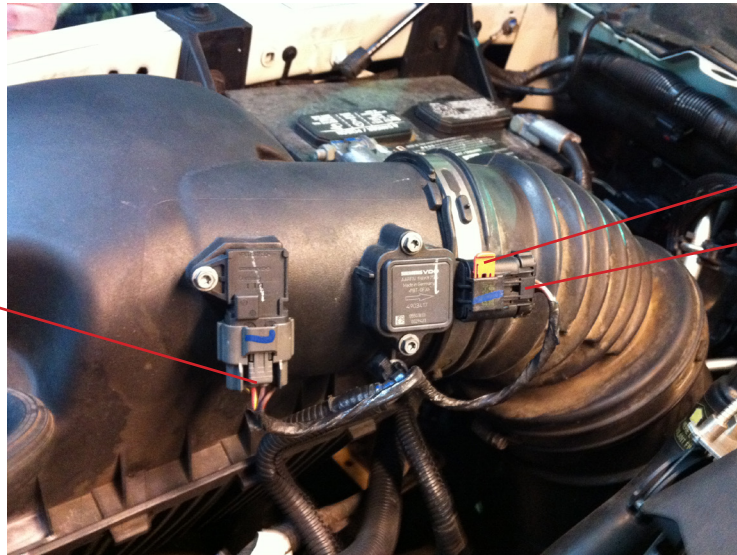
- (2) M10- 1.5 x 50mm Stud
- (4) M10- 1.5 Flange Nut
- (2) M10- 1.5 x 55mm Full Thread Cap Screw
- (4) M10- 1.5 x 20mm Flange Head Cap Screw
- (5) M8- 1.25 x 20mm Serrated Flange Bolt
- (5) M8- 1.25 Nut
- (5) M8 Lock Washer
- (2) M8- 1.25 x 25mm Flange Head Cap Screw
- (2) M8- 1.25 Nylock Flange Nut
- (1) M8- 1.25 x 45mm Cap Screw
- (2) M8- 1.25 x 40mm Cap Screw
- (2) M8 Flat Washer
- (1) M6- 1.0 x 16mm Flange Head Cap Screw
- (2) M6- 1.0 Nut
- (2) #10- 24 x 5/8" Stainless Steel Button Head Cap Screw

**ATS Airbox Hardware Kit (Fig. 4)**



## INSTRUCTIONS

1. Park the vehicle on level ground and apply the parking brake.
2. Disconnect the negative (-) battery terminals and secure them away from the battery.
3. Disconnect the intake air temperature (IAT) sensor and mass air flow (MAF) from the engine harness.



Squeeze this tab and pull

Slide the locking clip up  
Squeeze this tab and pull

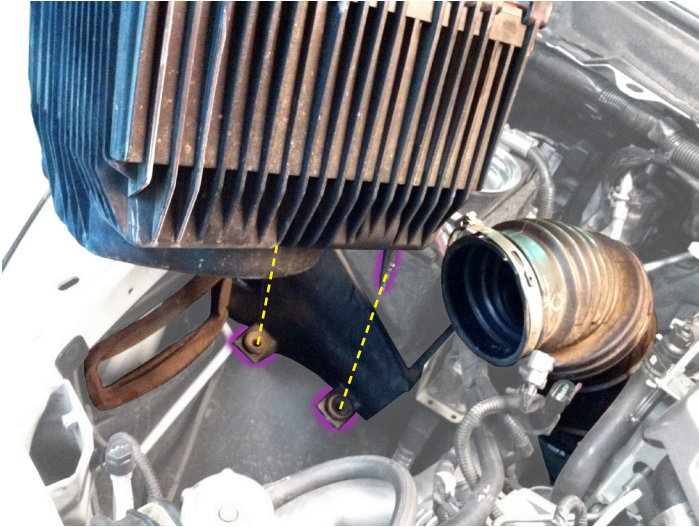
4. Remove the factory intake air box and intake elbow down to the turbo.



Unbolt the front of the factory air box using a 10mm socket or wrench and lift it out of the engine compartment.

Loosen the hose clamp on the backside of the cover, unsnap the (2) clips retaining the top of the air box and slide it out toward the passenger side of the engine bay.

Set it aside.



The factory air box has 2 tapered pins that plug into the two grommets shown.



Disconnect the crankcase vent tube from the valve cover by moving the spring clamp show off the barb on the valve cover.



Remove the bolt holding the crankcase breather tube to the block.



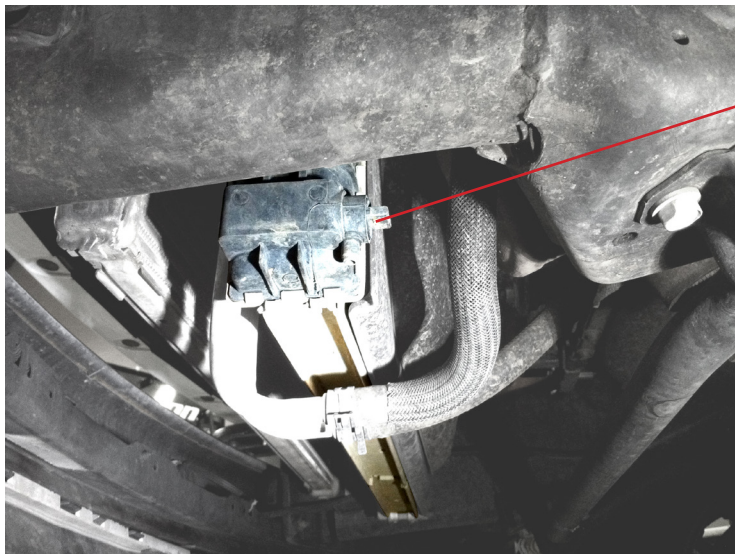
Loosen the hose clamp holding the intake tube to the factory turbocharger.  
Remove the crankcase breather tube and intake tube as shown

- 5. Remove the passenger side battery. This will make it much easier to install the new Aurora turbo and will be replaced later in the installation. The battery tray will also serve as a handy tool tray.

Remove this bolt and plastic clamp.



- 6. Drain approximately 3 gallons of coolant from the radiator using the petcock located on the driver side bottom of the radiator.



Turn the petcock counter-clockwise approximately 1.5 turns. Be careful not to remove it completely because it is difficult to re-install.

7. Remove the passenger side inner fender. There are 8 hex head screws holding the inner fender in place. Remove these using an 8mm socket. There is also a connector attached to the fender using a plastic push pin. Remove this connector, remove the inner fender and set it aside. This will allow easy access to many components later in the installation.
8. Remove the coolant supply line to the factory turbocharger. Some coolant will inevitably drain out. Placing a couple of rags below the line will help soak up any extra coolant. Keep the banjo fitting and washers that bolt into the turbo, these will be reused.

Remove the upper banjo bolt first

Remove the lower banjo bolt second

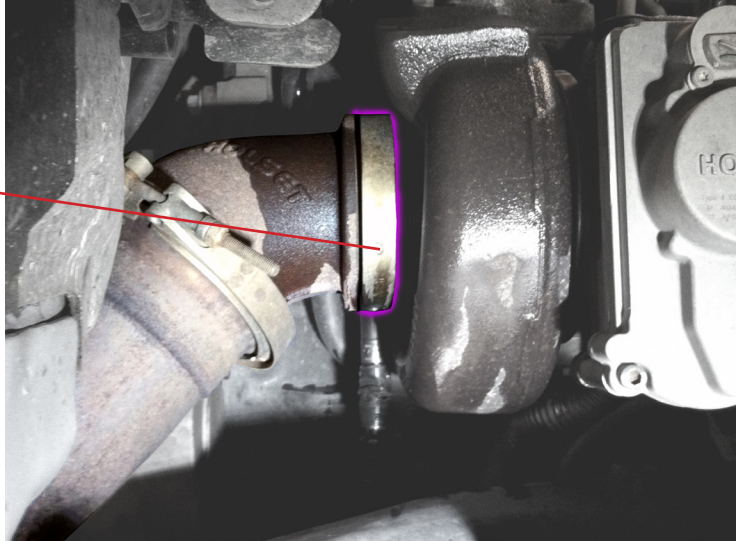


9. Remove the factory downpipe. There is a mount for the downpipe attached to bell housing of the transmission. Instead of fighting with the grommet, just remove the bolts holding the bracket in place and replace the bolts without the bracket.



Cut the downpipe approximately 5-1/2" from the cross member shown.

Disconnect this v-band clamp, set it aside, it will be reused later



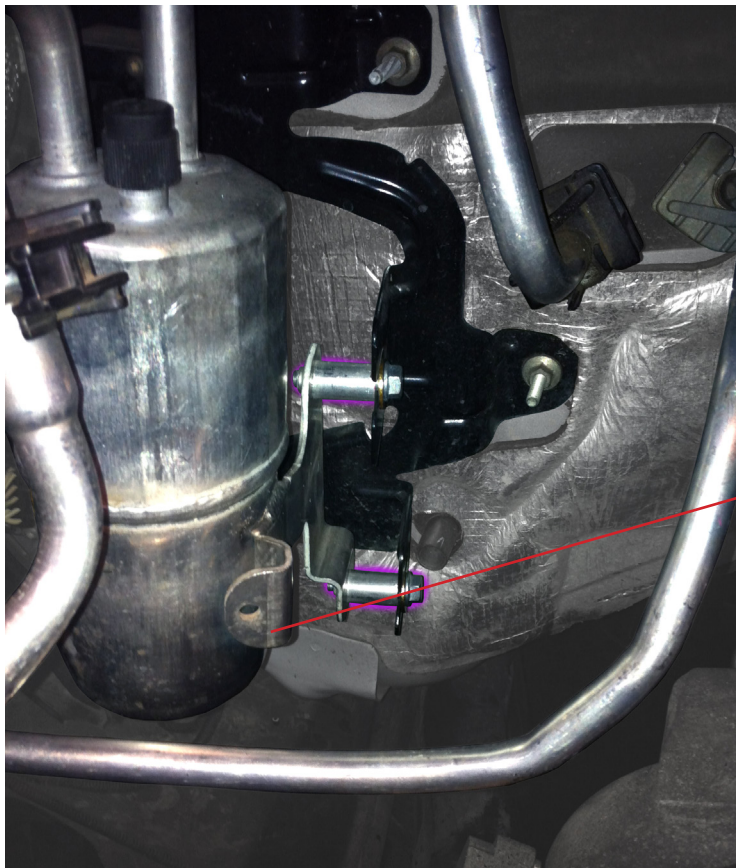
- The AC receiver dryer and lines will require minor bending to clear the new turbocharger and plumbing. Install the spacers (#32, Figure 2, Small Parts Kit), between the receiver dryer and the mounting bracket.

Remove the two bolts holding the receiver dryer to the sheet metal bracket.

Carefully bend the lines to make enough room for the aluminum spacers.

Bolt the receiver dryer to the bracket with the spacers in place M8-1.25 x 40mm bolts and M8 flat washers.

Bend the front receiver dryer mount toward the receiver dryer to avoid interference with the downpipe.



Bend toward receiver dryer



11. 2007½-2009 Vehicles are equipped with two different EGR systems. If equipped with the early style EGR system, continue at Step 12. If equipped with the late style EGR system, skip to Step 15.



**Early EGR System**  
with Solid Tube

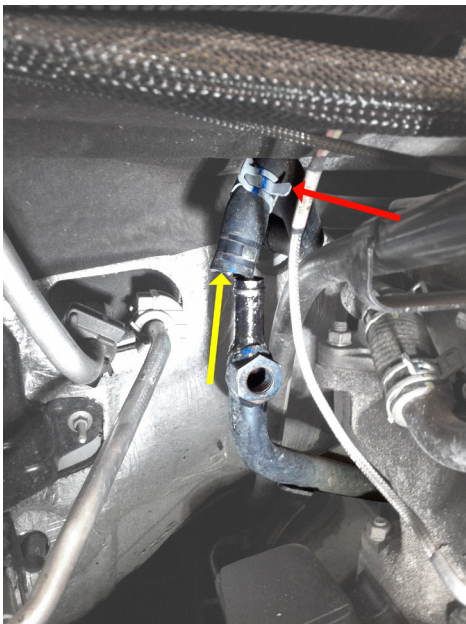
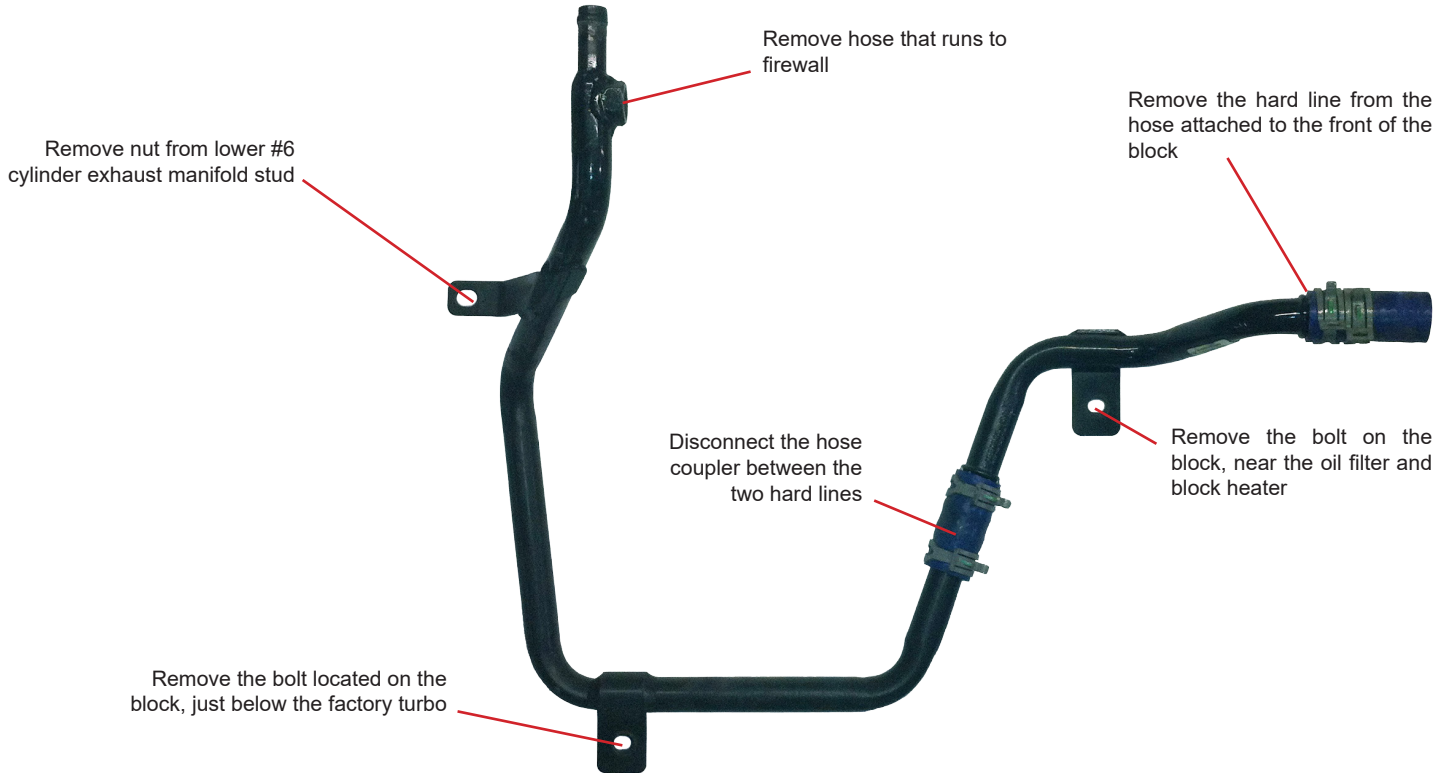


**Late EGR System**  
with Braided Section

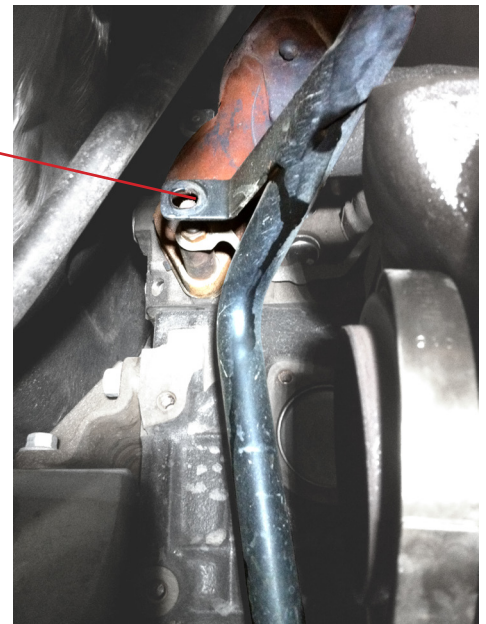


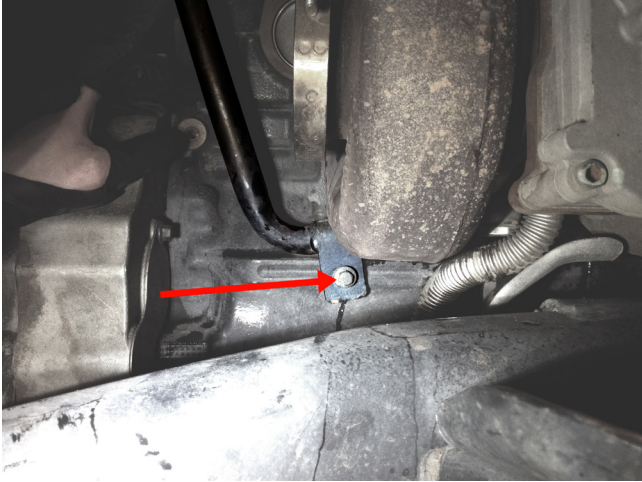
# WARNING! Steps 12-16 are for 2007½ - 2008 ONLY

- 12. Early EGR systems (2007.5-2008) require remove of solid coolant supply line running from the front of the engine, below the factory turbo and to the firewall. This will be replaced the coolant line supplied in the kit.

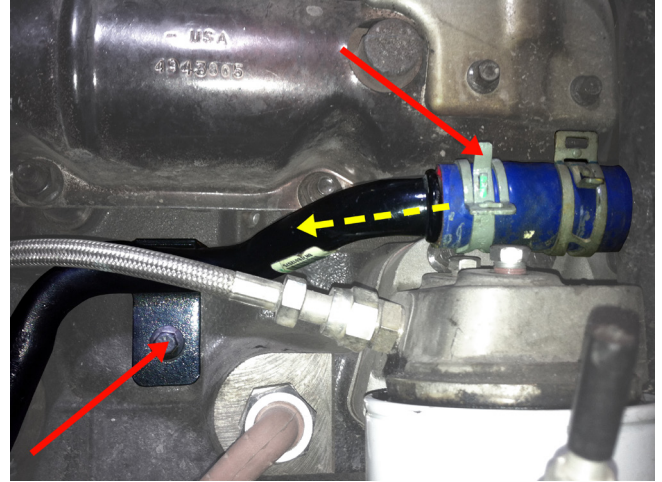


Remove the lower nut on the #6 exhaust manifold stud.



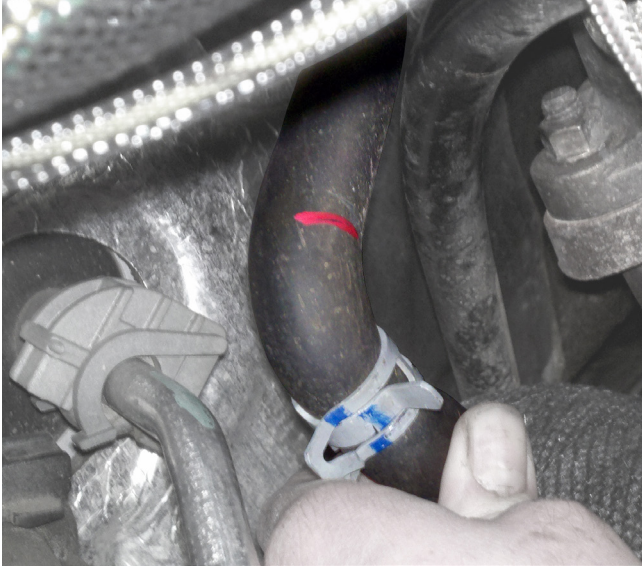


Remove the bolt securing the lower portion of the coolant line. It is located on the passenger side of the engine block, just below the factory turbocharger.



The front portion of the coolant line is located above and behind the oil filter. To remove this piece, remove the clamp shown and the bolt securing it to the engine block.

13. Cut the coolant line coming off the firewall, just above the bend.



Cut just behind bend. Keep the clamp as it will be reused later.



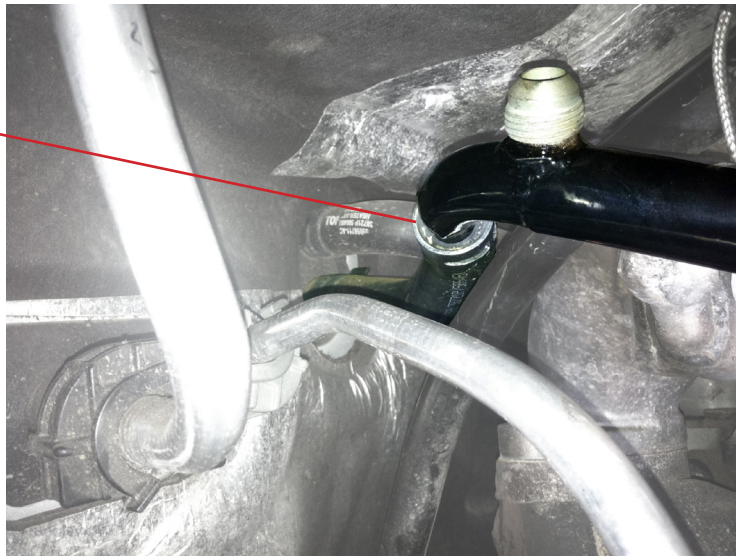
- 14. Install the new coolant transfer line (#6, Figure 1 Large Parts Kit) using the stainless steel spacer (#28, Figure 2 Small Parts Kit) and the M8-1.25 x 30mm flange head bolt included in the kit. When complete, skip to Step 17.

Install the stainless steel spacer between the mounting tab and the mounting hole on the EGR bracket

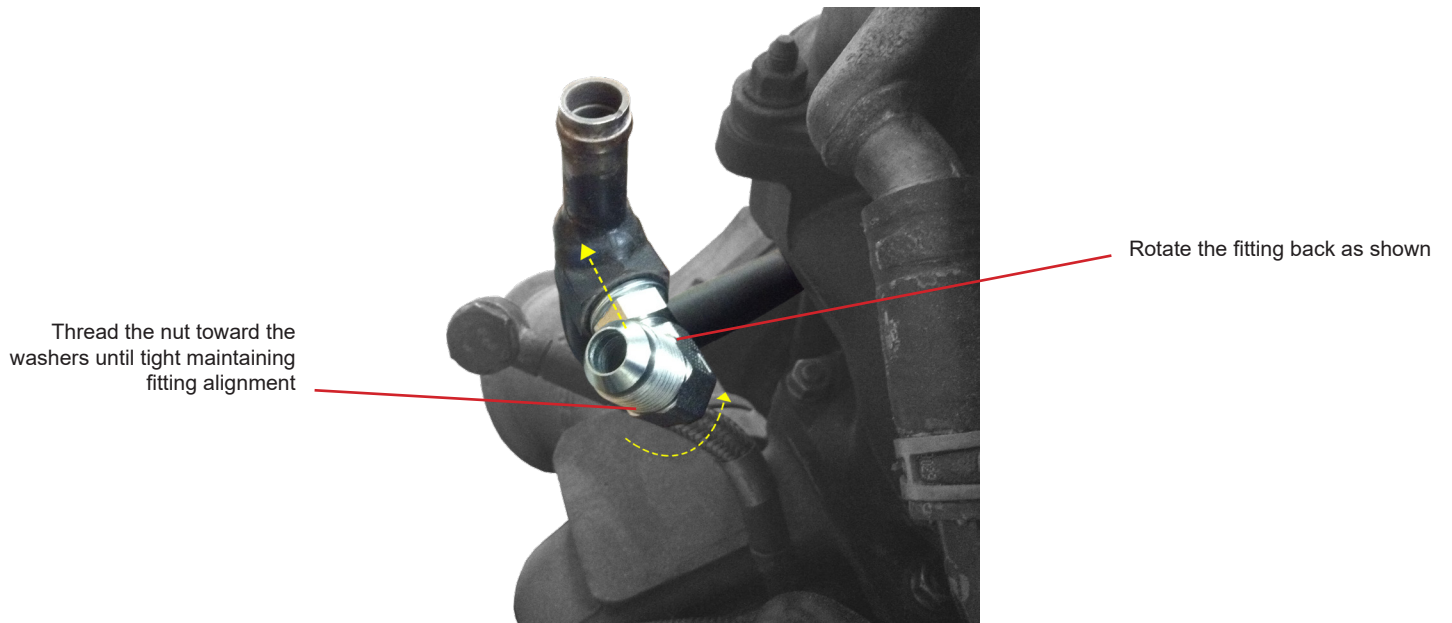


Reuse the factory clamp

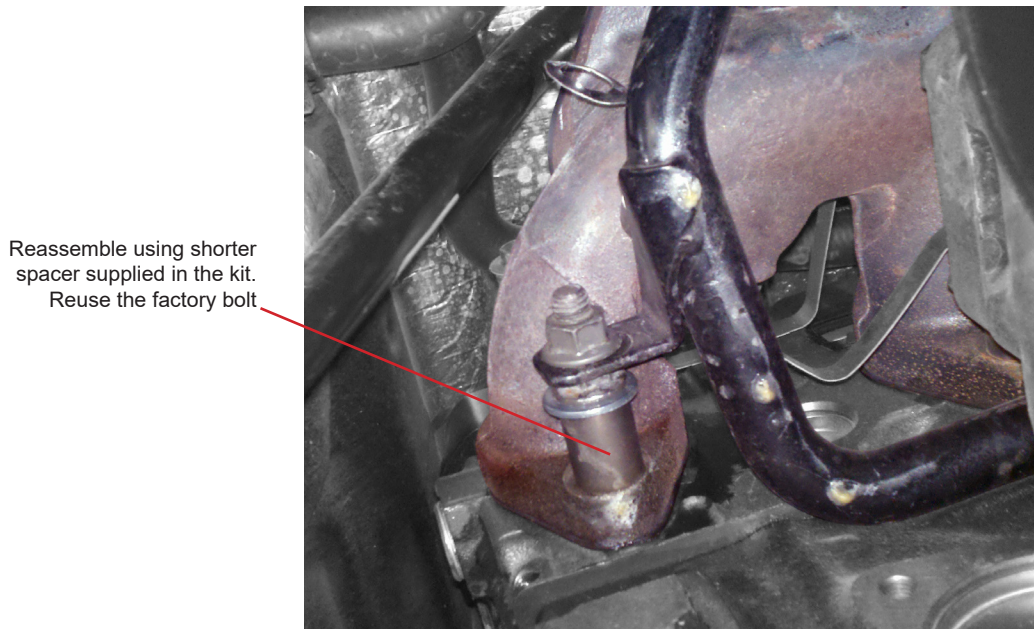
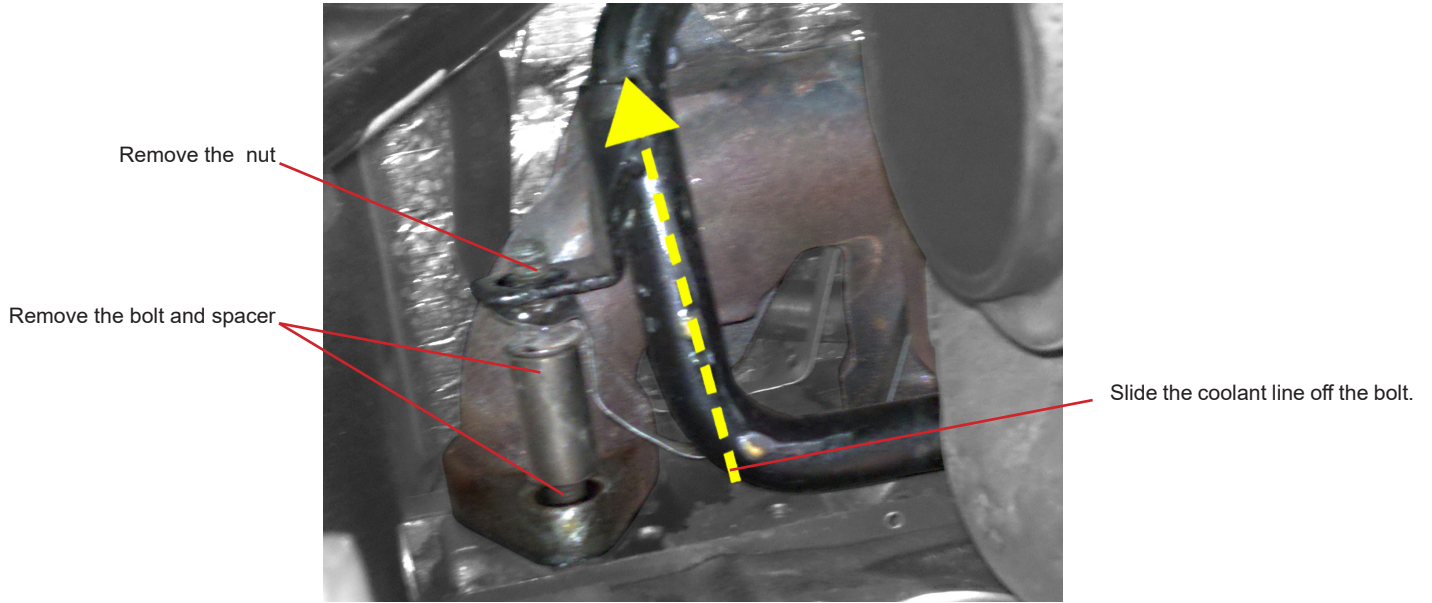
Reuse the factory spring clamp



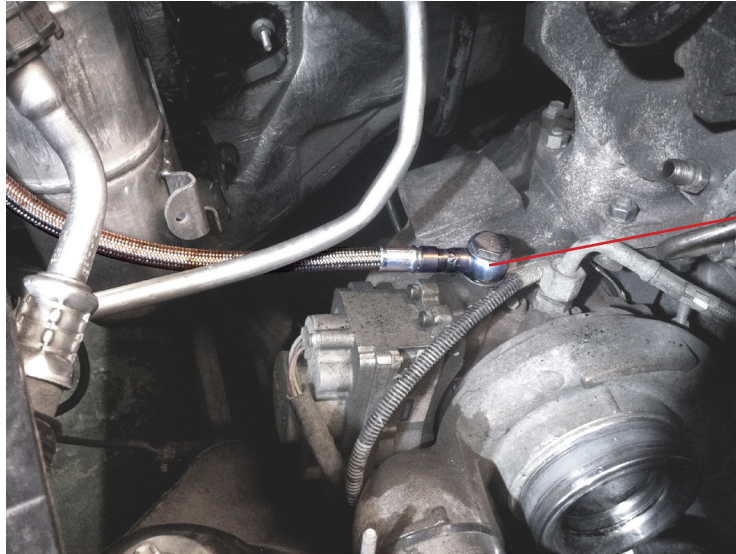
15. For trucks equipped with the late EGR system, install the 90° M16-JIC-8 Fitting (#35, Figure 2 Small Parts Kit) in place of the banjo bolt on the factory coolant transfer line.



16. Remove the factory spacer on the lower #6 exhaust manifold stud. Replace it with the shorter spacer (#34, Figure 2 Small Parts Kit) supplied in the kit.



17. Install the new turbo coolant supply line (#7, Figure 1 Large Parts Kit) to the factory turbo oriented as shown.

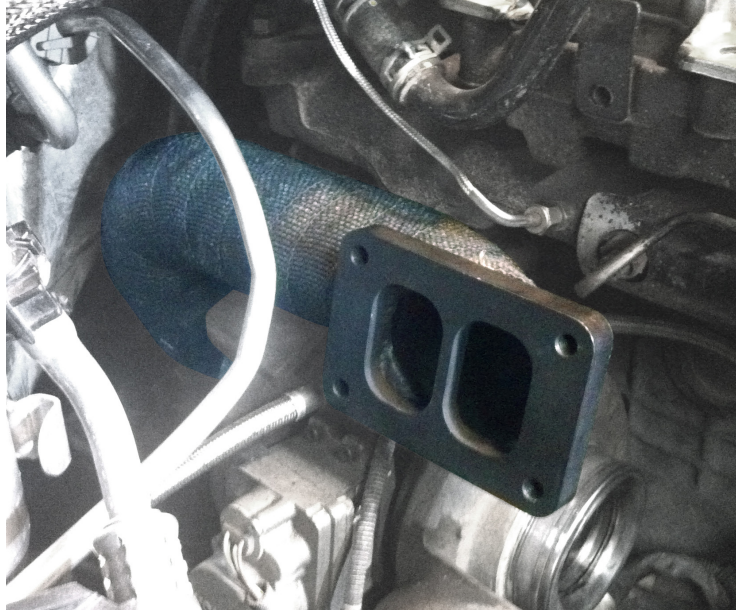


Reuse factory banjo bolt and washers

18. Install the dipstick spacer (#29, Figure 2 Small Parts Kit) between the stud and mounting bracket for the dipstick tube.



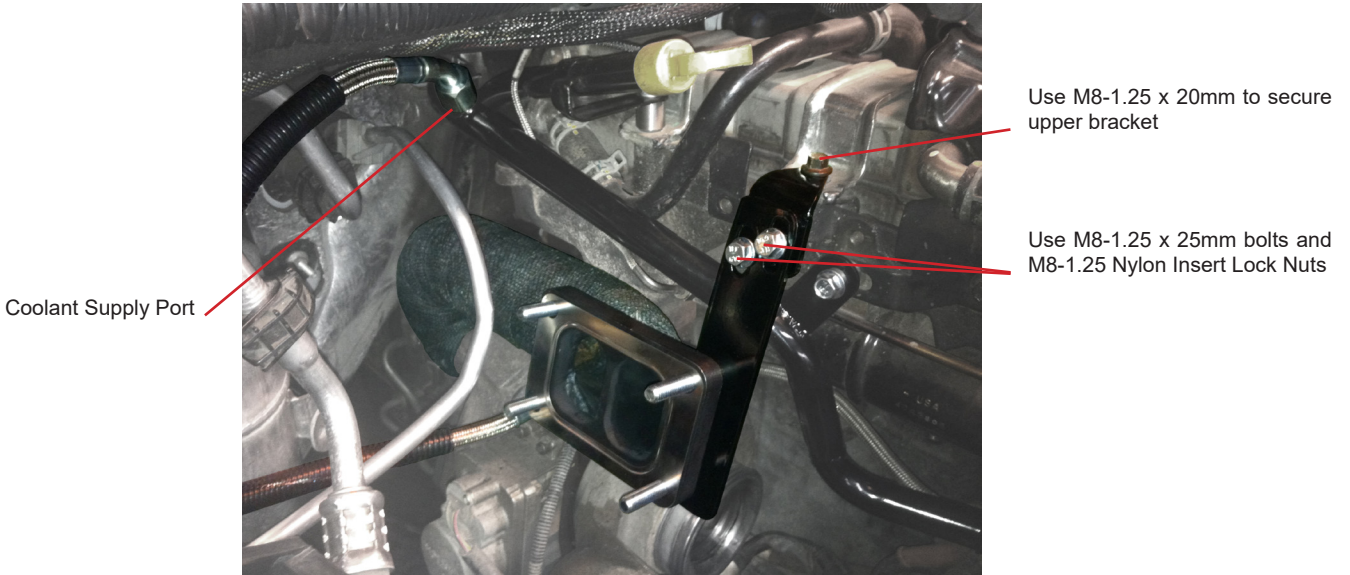
- 19. Loosely, install the wrapped hot pipe (#2, Figure 1 Large Parts Kit) to the discharge of the factory turbocharger using the factory clamp.



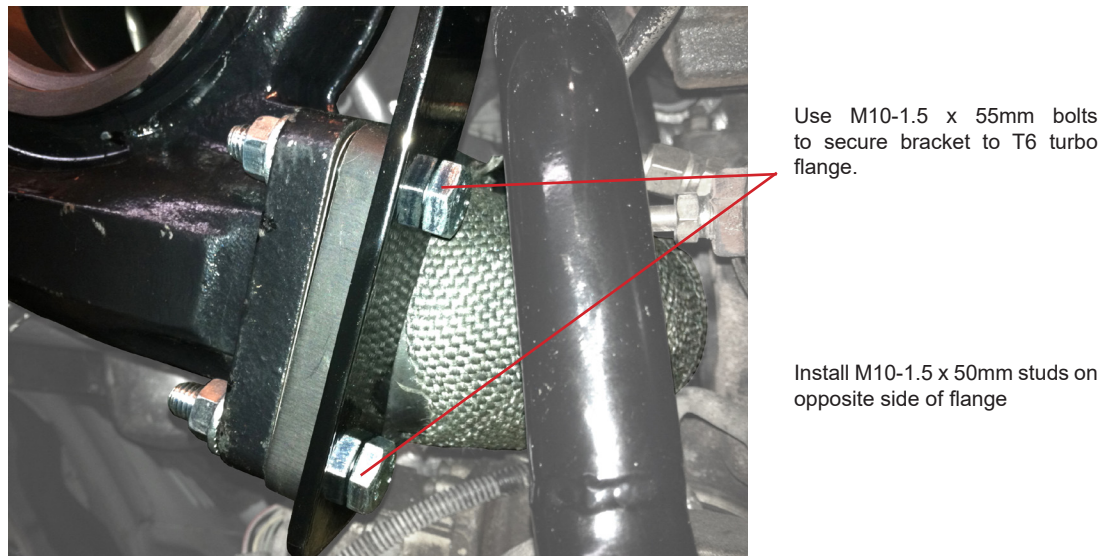
Reuse factory clamp. Leave loose for adjustment.



20. Install the loose end of the turbo coolant supply line to the new coolant transfer line or new fitting depending on the truck.



21. Loosely install the turbo support mount (#10, Figure 1 Large Parts Kit) and turbo mounting hardware as shown.



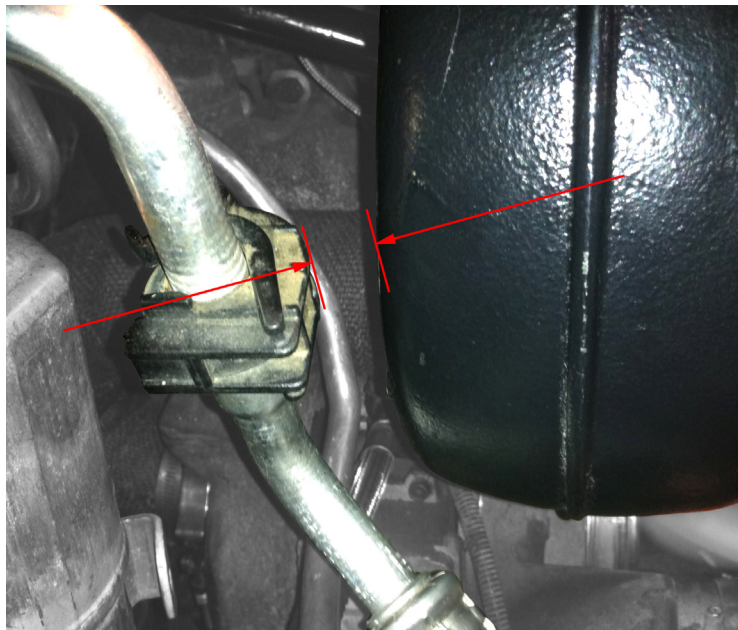
22. Rotate the hot pipe as close to the engine block as the turbo support mount will allow. Tighten the clamp on the stock turbine discharge.
23. Separate the turbine housing from the turbocharger assembly by removing the v-band clamp securing the bearing housing to the turbine. Be careful not to damage the turbine wheel when separating the pieces.

24. Install the turbine housing on the hot pipe, securing the hardware hand-tight.



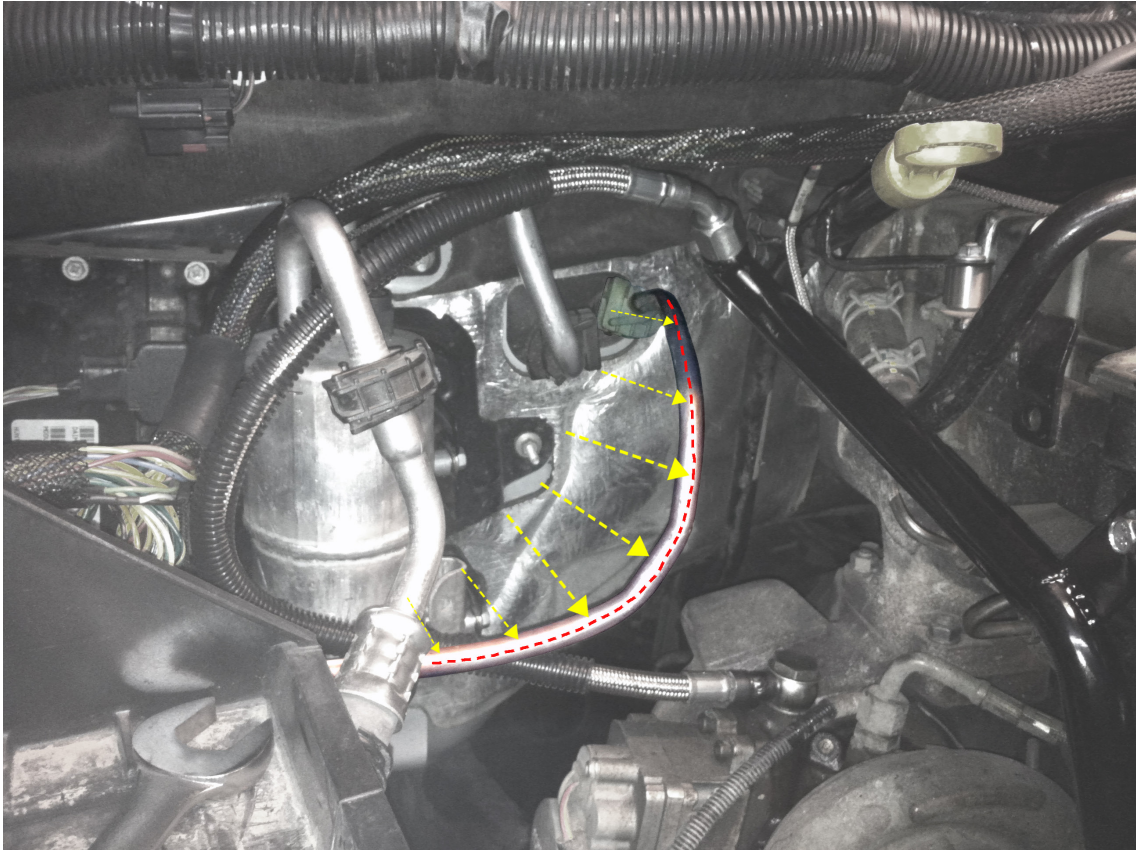
Slide turbine housing over bolts and studs. Install M10-1.5 flange nuts hand tight to secure turbine housing location

25. Install the upper portion of the downpipe (#3, Figure 1) using the clamp one of the v-band clamps (#16, Figure 1 Large Parts Kit) included in the kit. This will be used to check clearance of the AC lines around the downpipe and turbine housing.
26. The large AC line running under the battery tray requires a minimum of 3/4 inch of clearance between the plastic clamp and the turbine housing. This will prevent damage to the air conditioning system.



3/4" minimum gap

27. The smaller of the AC lines must be bent to run between the turbine housing and downpipe. Bending the AC lines will likely require removing and reinstalling the downpipe and turbine housing several times.

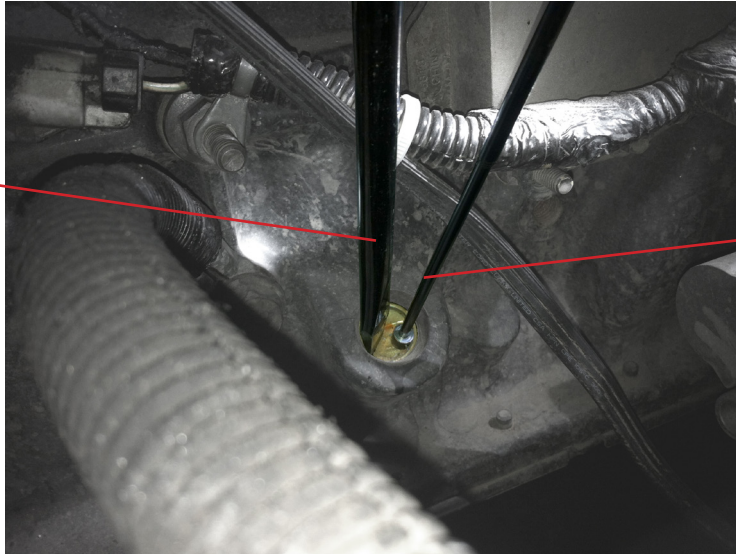


Bend the small line so it the downpipe can pass between the firewall and the AC line.  
***Maintain at least 3/4" clearance between the turbine housing***

28. When the AC lines are properly adjusted, install the turbine on the hot pipe and torque the nuts to 32 ft-lbs.
29. Remove the oil filter. This will allow much easier access to the oil drain freeze plug.

30. Remove the freeze plug as shown. Removing the oil filter will greatly improve accessibility to the freeze plug.

Using a flat blade screwdriver or punch, gently tap on the outer rim of the freeze plug to rotate it in the block



Place an extendable magnet on the freeze plug. This will ensure that if the plug is accidentally hit into the block, it can be caught with the magnet so it doesn't drop into the oil pan



With the freeze plug rotated inside the block, keep the extendable magnet attached to the freeze plug.

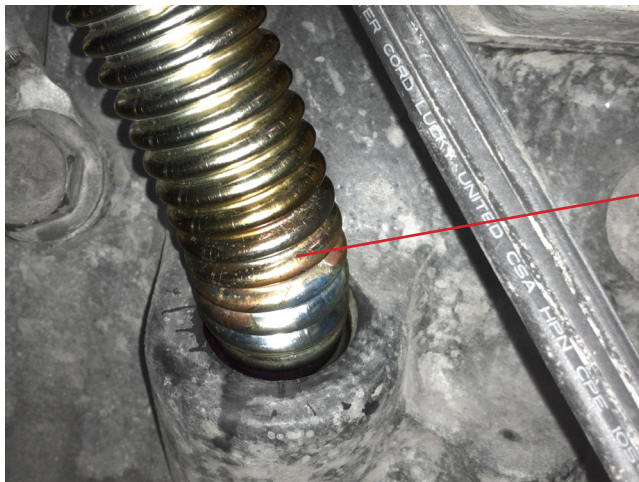


**NOTE:** Be sure to clean around the freeze plug and remove all debris from the cup of the freeze plug to ensure nothing drops into the oil pan.



Using a pair of needle nose pliers, grab the freeze plug and pull it out of the block

31. Remove the freeze plug as shown. Removing the oil filter will greatly improve accessibility to the freeze plug.



Push drain tube into freeze plug until o-rings are completely seated in freeze plug bore

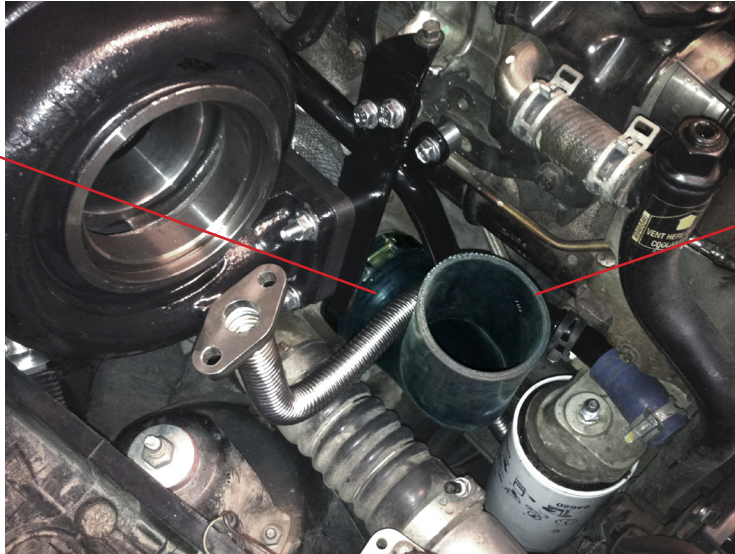
Make sure the flange is aligned with the turbine housing. This makes attaching the drain line to the bearing housing much easier.



Bend the line so it passes below the coolant transfer line and above the inlet to the stock turbocharger

- 32. Reinstall the oil filter.
- 33. Install the charge air hose (#11, Figure 1 Large Parts Kit) on the factory compressor housing. Leave the 4.5" clamp (#17, Figure 1 Large Parts Kit) loose.

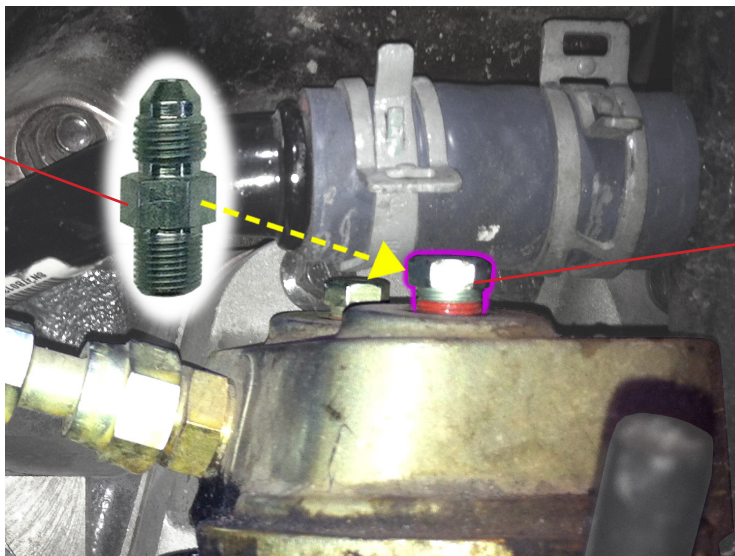
Make sure the turbo oil drain tube clears over the top of the charge air hose  
Adjust as necessary



Rotate the hose until it nearly touches the coolant transfer line

- 34. Remove the plug from the oil filter housing. Replace this plug with the oil supply line fitting (#27, Figure 2 Small Parts Kit) included in the kit.

Replace with the fitting shown



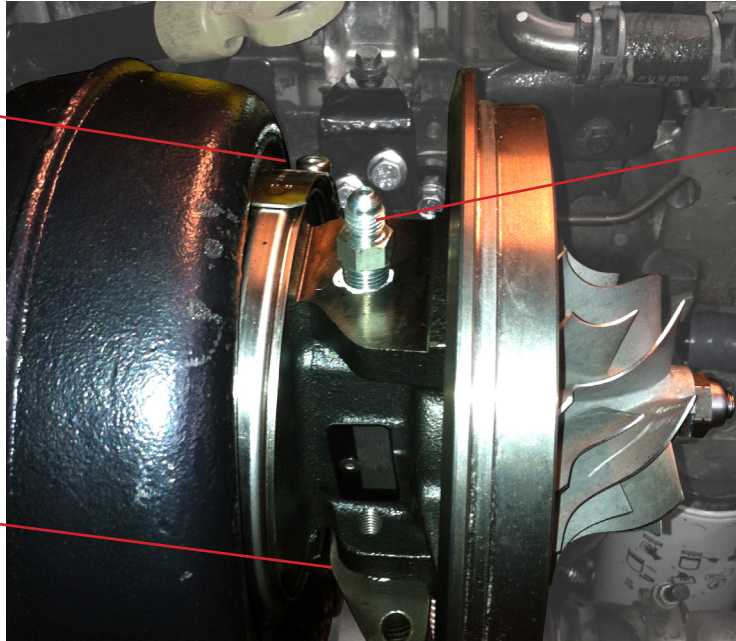
Remove this plug

35. Disconnect the bearing housing from the compressor housing by removing the clamp.
36. Reinstall the bearing housing into the turbine housing in the truck. Orient the bearing housing so the supply and return ports are vertical.

Align bearing housing so fitting is oriented vertically

Align bearing housing so fitting is oriented vertically

Install drain tube using the new oil drain gasket and M10-1.5 x 20mm flange head cap screws provided

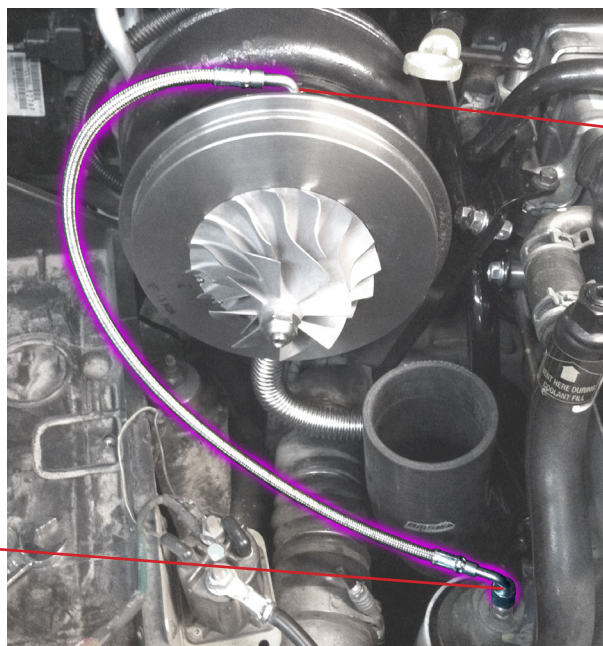


37. Connect the drain tube to the bearing housing using the oil drain gasket (#24, Figure 1 Large Parts Kit) and M10-1.5x20mm hardware provided.
38. Connect the oil supply line (#19, Figure 1 Large Parts Kit) to the oil filter housing and bearing housing as shown.

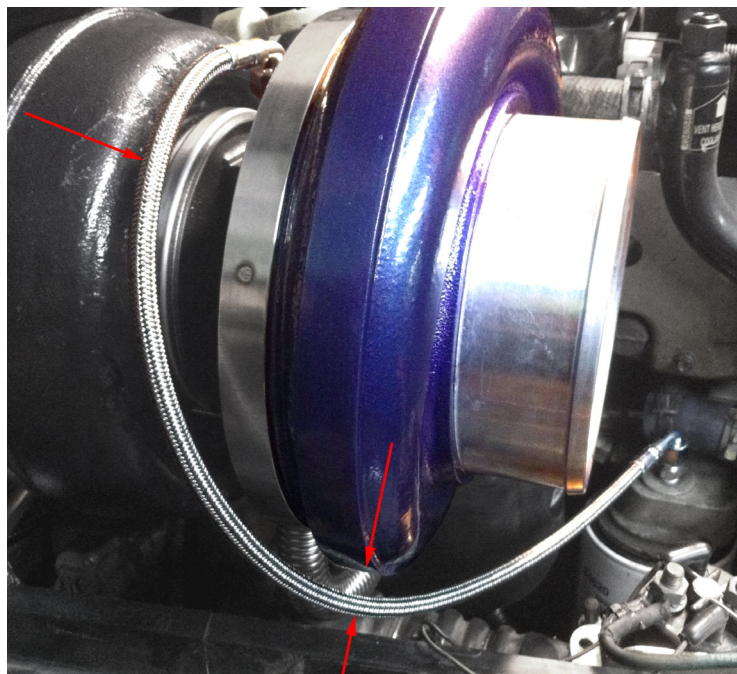
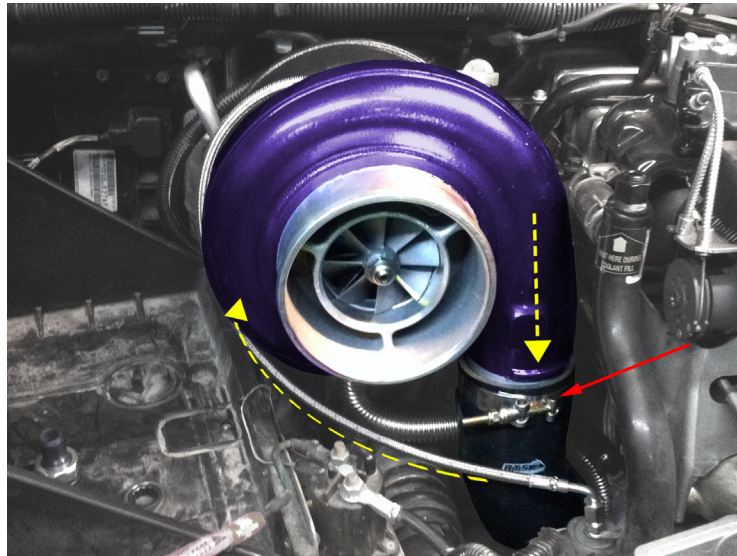
Install oil supply line onto the fitting in the top of the bearing housing

Install opposite end onto the fitting installed into the oil filter housing

**If the fitting doesn't come close to lining up, flip the line around and try again**



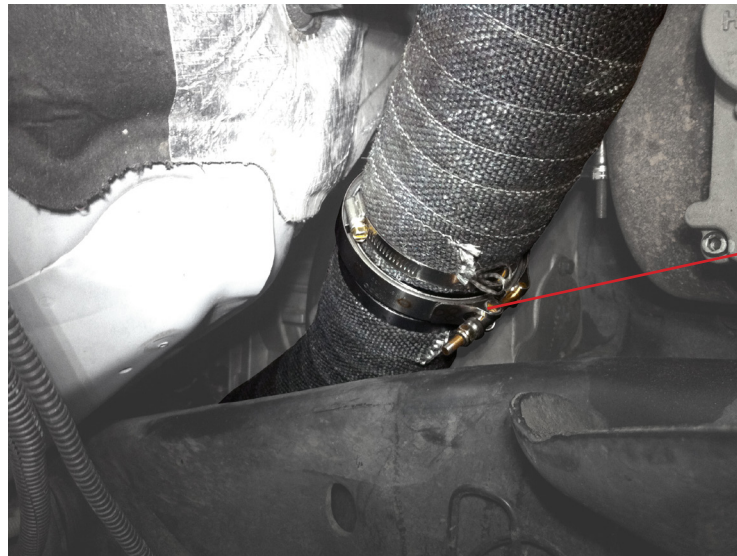
39. Insert the outlet of the compressor housing into the charge air hose and carefully reinstall on the bearing housing. Lightly tighten the clamp between the compressor housing and bearing housing so the housing can spin but not rattle. Adjust the clocking of the compressor until the charge air hose is properly aligned on the outlet of the compressor. Tighten the charge air hose clamps and bearing housing-compressor clamp when done.



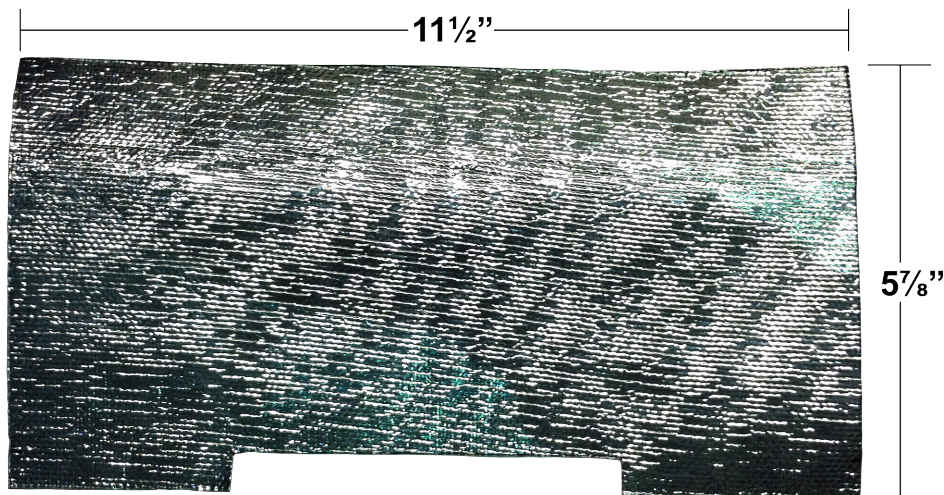
Adjust the oil supply line so it is away from the turbine housing and will not touch the compressor housing.

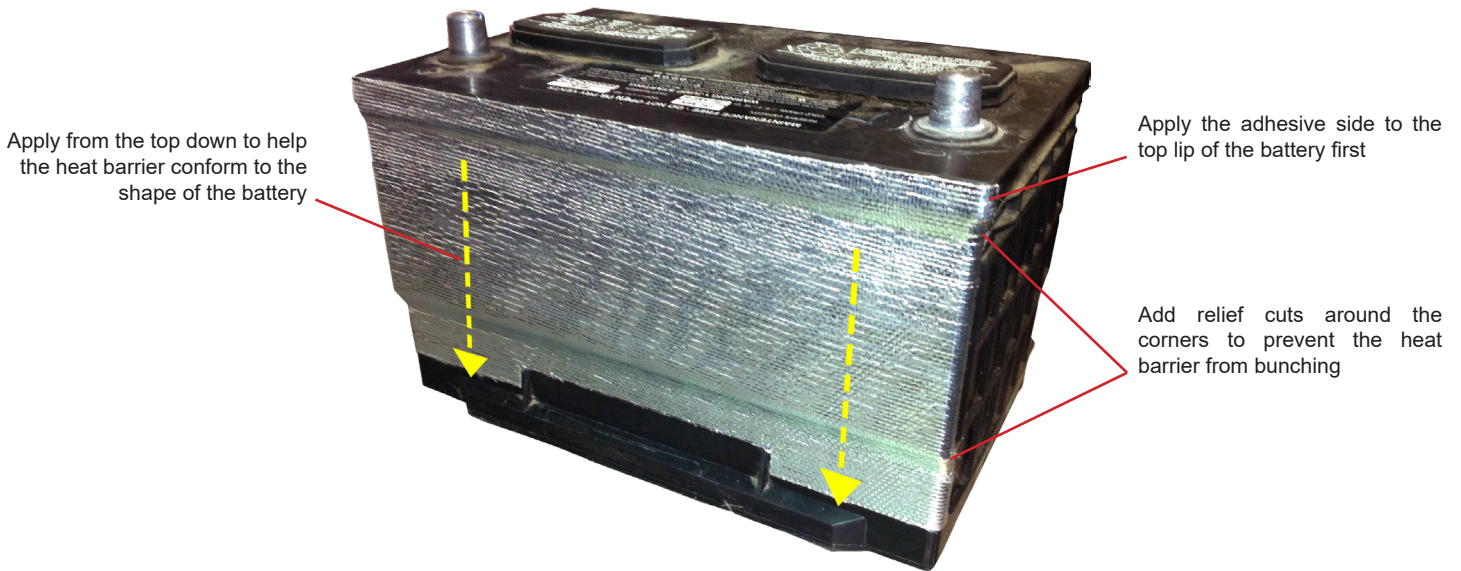


40. Reinstall the upper portion of the new downpipe. Leave the upper clamp slightly loose to allow for adjustment.
41. Install the lower portion of the new downpipe (#4, Figure 1 Large Parts Kit) between upper portion of the downpipe and the factory exhaust. Adjust as necessary to ensure the downpipe has clearance around the frame rail. After adjustment is complete, tighten all the clamps.

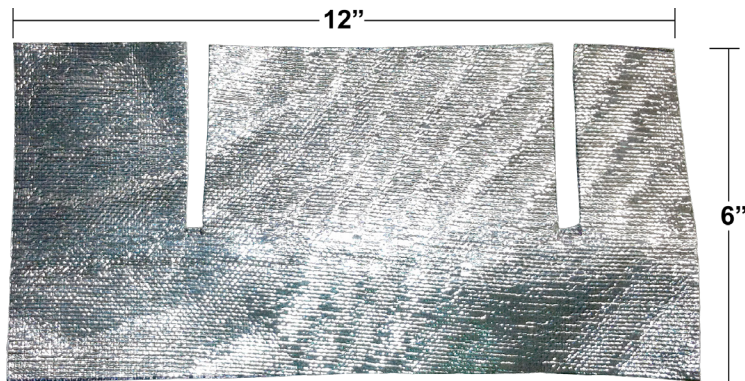


42. Using the exhaust coupler (#19, Figure 1 Large Parts Kit) and exhaust clamps (#20, 21, Figure 1 Large Parts Kit) provided, connect the lower portion of the downpipe to the stock exhaust.
43. Remove the factory wrap from around the battery.
44. Locate the adhesive backed heat barrier (#22, Figure 1 Large Parts Kit) included in the kit. This will be used to protect various parts of the truck from the added heat of the new turbocharger. Measure the front of the battery and cut a piece that will fit. For a stock sized battery, approximately  $11\frac{1}{2}''$  x  $5\frac{7}{8}''$  will fit and give a bit extra to wrap around the corners. For other batteries, they will require measurement.





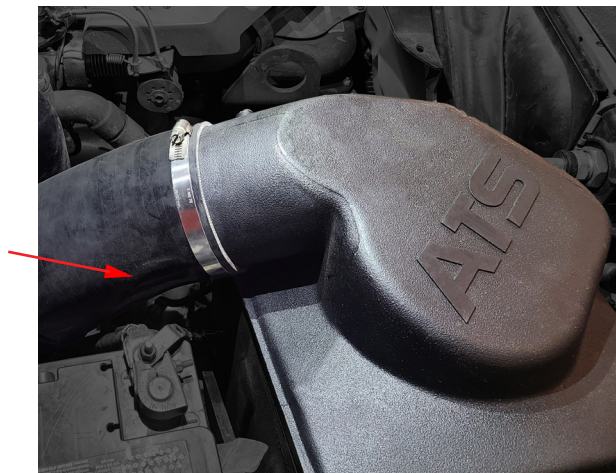
- 45. Measure and cut another section to fit the side of the battery closest to the firewall. For a stock battery, this will be approximately 8" x 6½" to provide overlap for the corners.
- 46. To protect the wiring running along the top of the cowl, cut a section approximately 12" x 6". There are harness attachment points which require cutouts as show.



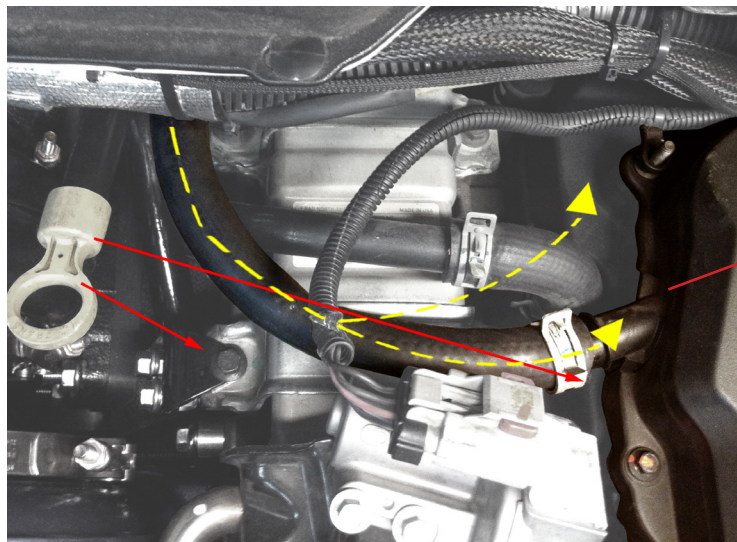
47. Cut a section approximately 7" x 4". Wrap this around the negative battery cable about 2" away from the terminal clamp. Orient the long side of the heat barrier along the length of the cable.
48. Reinstall the battery in the battery tray but do not connect the terminals.
49. Install the new air filter (#X, Figure 1 Large Parts Kit) over the round connection on the lid.



50. Install the vent hose into the rubber intake. Install a worm drive clamp onto rubber intake and then install rubber intake onto turbocharger inlet.



51. Install a worm drive clamp on the other end of the rubber intake and insert the ATS air box top into rubber intake.
52. Carefully insert the air filter into the lower part of the air box at an angle. Rotate the lid into the silicone coupler and under the barb for the radiator overflow tube. Bolt down the lid using the hardware provided and tighten the clamps.
53. Reinstall the overflow tube on the barb of the radiator.
54. Using the factory clamp, attach the 3/4" hose to the breather barb on the valve cover. Route the hose along the transmission dipstick tube using the zip ties provided.



Slide under radiator overflow barb

55. Refill the cooling system with approved coolant.
56. Reconnect the positive battery terminal. To clear the new intake system, rotate the terminal toward the front of the truck.
57. Reconnect the negative battery cables.
58. Start the truck and check for coolant/oil leaks or vibrations. Allow it to idle for 2-3 minutes without revving the engine. This will allow the oil to reach the bearings of the new turbo. If leaks are found, make sure clamps/bolts/fittings are tight.
59. If no leaks are present, reinstall the passenger side inner fender.
60. Drive conservatively for about 100 miles to allow some break-in time on the turbocharger. After the 100 miles, let her rip.

#### **TROUBLESHOOTING:**

Thank you for purchasing the Aurora 7500 Plus Compound Turbo Kit. This manual is to assist you with your installation and operation of the unit. Please use the contact information to the left for assistance with any questions regarding this installation. If you are installing the unit for a customer, please pass this manual on to your customer for future reference.

### LIMITED WARRANTY STATEMENT:

ATS Diesel Performance warrants the original purchaser that any parts purchased shall be free from defects in material and workmanship. ATS Diesel Performance is the warrantor of this product, in the event this product is purchased from a distributor or retailer other than ATS Diesel Performance the customer must contact ATS Diesel Performance for any warranty concerns, not the purchasing dealer. A defect is defined as a condition that would render the product inoperable. This warranty does not cover deteriorating of plating, paint or any other coating. ATS liability is limited to the repair or replacement, at ATS's option, of any warrantable product returned prepaid with a complete service history and proof of purchase to the factory. A valid proof of purchase is a dated bill of sale. Repaired or replaced, product will be returned to the customer, freight collect on a like-for-like part number basis. Accepted warranty units, which have been replaced, become the sole property of ATS.

A Return Product Authorization number obtained in advance from an ATS customer service representative must accompany products returned for warranty determination. ATS will be the final authority on all warranty decisions.

This warranty shall not apply to any unit which has been improperly stored or installed, subjected to misapplication, improper operating conditions, accidents, or neglect; or which has been improperly repaired, altered or otherwise mistreated by the owner or his agent.

This warranty shall terminate at the end of 12 months in service with the original user. Labor cost incurred by the removal and replacement of an ATS product, while performing warranty work, will be the responsibility of the vehicle owner; in no case does the obligation of ATS Diesel Performance exceed the original purchase price of the product as indicated on the original bill of sale.

Except as set forth in this warranty, ATS disclaims any implied warranty, including implied warranties of merchantability and fitness for a particular purpose. ATS also disclaims any liability for incidental or consequential damages including, but not limited to, repair labor, rental vehicles, hotel costs or any other inconvenience costs. This warranty is in lieu of all warranties or guarantees, either expressed or implied, and shall not extend to any customer or to any person other than the original purchaser residing within the boundaries of the continental US or Canada.



**NOTE:** 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: [suggestions@atsdiesel.com](mailto:suggestions@atsdiesel.com)



### CONTACT US

**ATS Diesel Performance, Inc.**  
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# NOTES



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# PATENTED INNOVATION MEANS MORE POWER TO THE GROUND.

ATS WARRANTY  
5yr/500k



**ATS DIESEL PERFORMANCE**  
**ATS DIESEL PERFORMANCE PATENTED FIVE STAR TORQUE CONVERTER**

- PATENTED VISKUS CLUTCH DRIVE SYSTEM FOR INCREASED EFFICIENCY
- BILLET COVER WITH PATENTED SQUARE-TAB DRIVE
- SQUARE-TAB CONSTRUCTION (NOT ROUND)
- VISKUS DISC CQC LASER CUT CLUTCH PLATES
- BILLET PISTON WITH PATENTED FLANK DRIVE TAB DESIGN
- PROPRIETARY ATS EXCLUSIVE CLUTCH FORMULATION W/ UNIQUE BONDING TECHNOLOGY
- REDESIGNED SPRING DAMPENER SUPPORTS INCREASED TORQUE LOADS
- 4340 HARDENED TURBINE SPLINES PROVIDE LONGEVITY AND RELIABILITY
- FULLY WELDED TURBINE AND IMPELLER VALVES
- CQC STATOR WITH HIGH-FLOW WINDOWS INCREASE OIL FLOW, PROVIDING INCREASED EFFICIENCY
- FULL ROLLER BEARING CONSTRUCTION BETWEEN HIGH-LOAD AREAS
- 4340 CQC CLUT PUMP DRIVE HUB LOCKED INTO IMPELLER HOUSING
- PLASMA WELDED FOR UNBURSTED STRENGTH

**ATS DIESEL PERFORMANCE**  
 ATSDiesel.com



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