3.6L STAGE 2 TURBO KIT

INSTALLATION MANUAL

2012-2018

prodigy.com
PERFORMANCE

TURBOCHARGER INSTALLATION GUIDE

TABLE OF CONTENTS

VEHICLE APPLICATIONS

2012 – 2018 JEEP JK WRANGLER & UNLIMITED ALL TRIM LEVELS INCLUDED

INFO AND REQUIREMENTS

- Prodigy Performance warrants all products against defects in materials or workmanship for 1 year from date of purchase. No warranty is provided or extended regarding vehicle or its components. This is a high performance modification designed to dramatically increase the engine output. Results may vary. Operate vehicle responsibly.
- Designed and sold for Off-road use only.
- Minimum 2" suspension lift is required.
- If vehicle is already equipped with a computer flash device it must be completely returned to its stock configuration.
- High quality top-tier fuel with a minimum octane rating of 91 must be used at all times. If ANY fuel is used other than the ***minimum 91 octane*** severe engine damage will result.
- Read ALL instructions prior to beginning the installation.
- Verify inventory packing list contents prior to beginning installation. This will ensure a smooth installation process and minimize aggravation.
- Professional installation is recommended. Failure to install the components correctly can result in severe damage to the vehicle and potentially personal injury. If at any time you are unsure about a step in this installation, please do not take any chances or make any assumptions. Call Prodigy Performance Toll Free at 1-855 TURBO JEEP.

INSTALLATION TIME

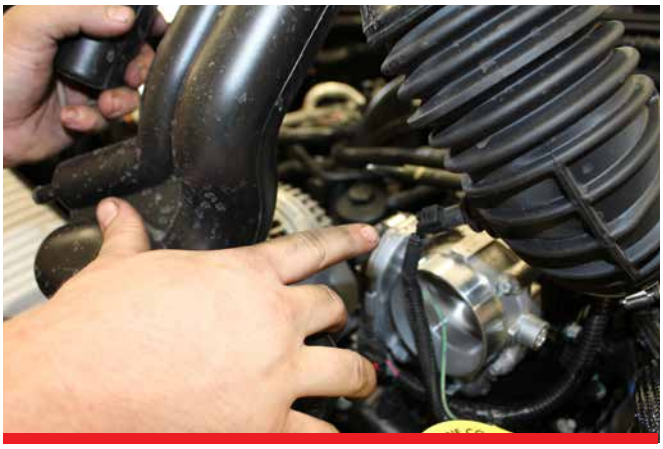
- 12 Hours

STEP 1 INTAKE AND COOLING SYSTEM PREPARATION

In this step we will be removing the factory intake system from the vehicle and preparing the cooling system.

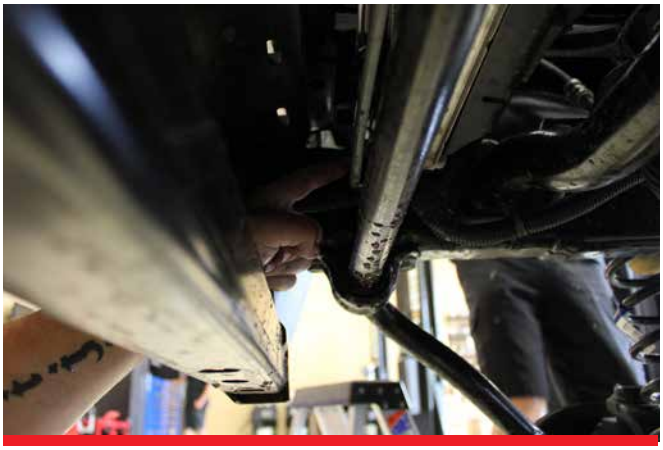
DISCONNECT NEGATIVE BATTERY TERMINAL BEFORE BEGINNING THE INSTALL PROCESS!

A. Remove entire factory air intake system including lower box portion under air filter.



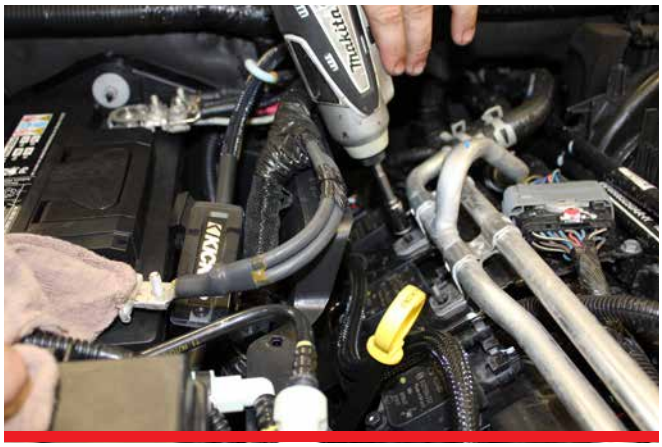
B. Remove intake air temperature sensor for later use.

C. Remove lower front shield.



D. Drain coolant at petcock on passenger lower side of radiator and save in clean container for later use.

STEP 1 INTAKE AND COOLING SYSTEM PREPARATION



E. Remove aluminum coolant pipe assembly from passenger side of engine.

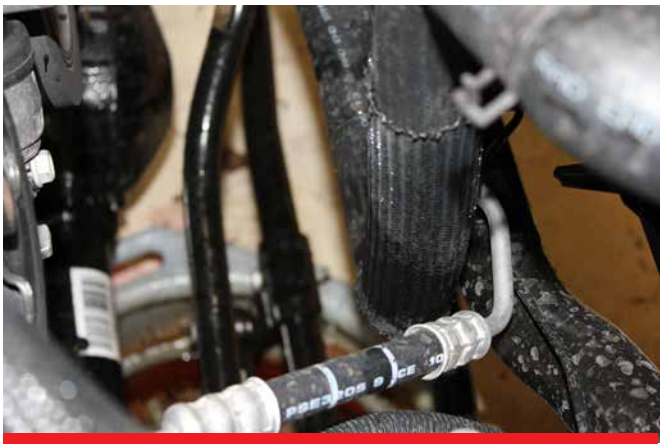
STEP 1 INTAKE AND COOLING SYSTEM PREPARATION

F. Using the box end of a wrench, gently rotate the coolant fitting upwards towards alternator as shown.

G. Remove lower radiator hose from radiator. Slide clamp back as shown and use as a guide to shorten hose length.

H. Using a long blade cut the hose then reinstall hose back on radiator. It will now have a new orientation and allow more room between engine and cooling fan assy.

STEP 1 INTAKE AND COOLING SYSTEM PREPARATION

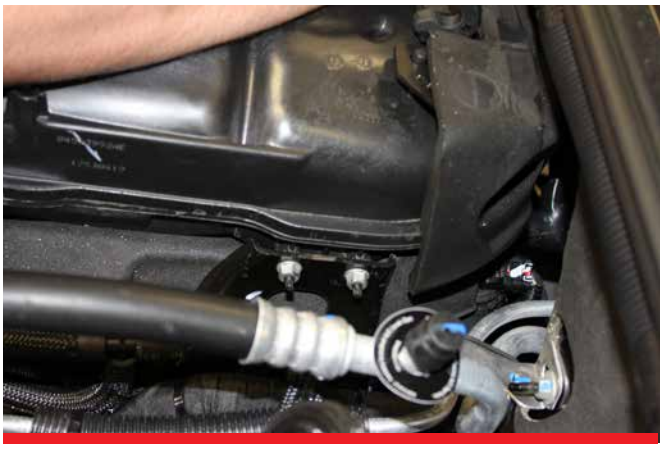


I. Slide abrasive sheath forward to protect it from components it comes in contact with at lower portion.

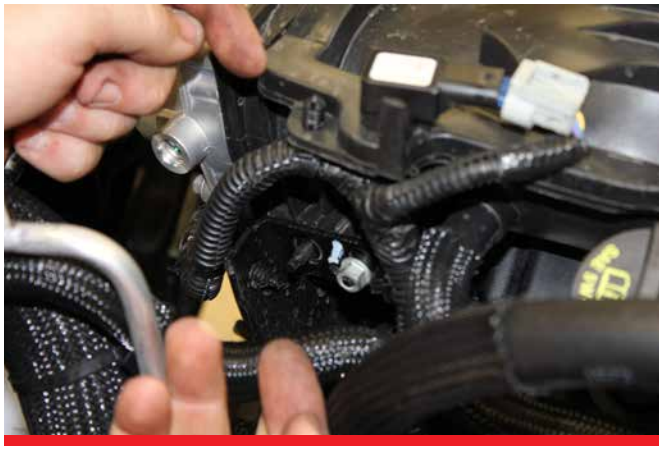
STEP 2 INTAKE PLENUM AND INTAKE MANIFOLD

In this step we will be removing the intake plenum and intake manifold from the vehicle.

Note: *Fuel liquid and vapor will be present during this step. Take necessary precautions and clean up immediately if spill occurs.*



A. Remove nuts from brackets on both sides and bolts down center of manifold.

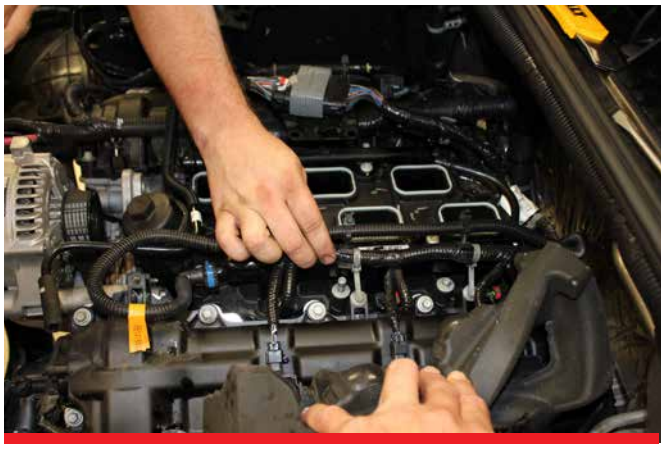


B. Disconnect electrical connectors from sensors and throttle body.

C. Disconnect hoses from plenum.

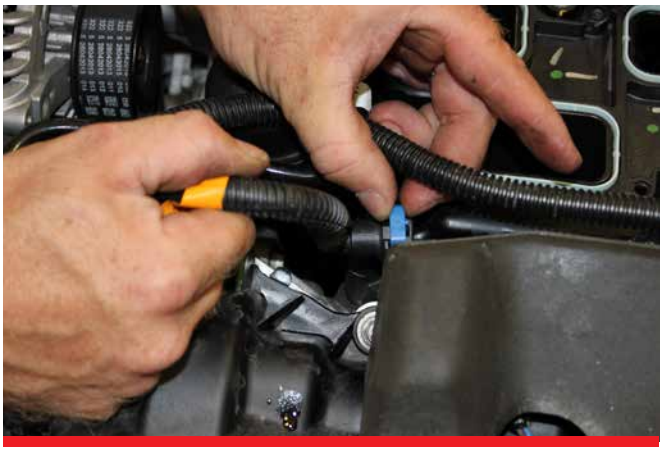
D. Remove intake plenum.

STEP 2 INTAKE PLENUM AND INTAKE MANIFOLD



E. Remove 8 bolts and disconnect electrical connectors to fuel injectors.

F. Loosen vehicle fuel cap to relieve pressure in fuel tank.

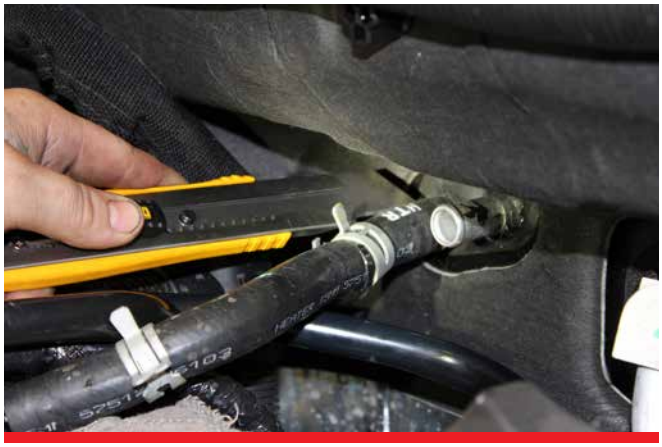


G. Remove safety tab on fuel supply connection.

H. Carefully remove wire harness hold downs.

I. Remove lower intake manifold.

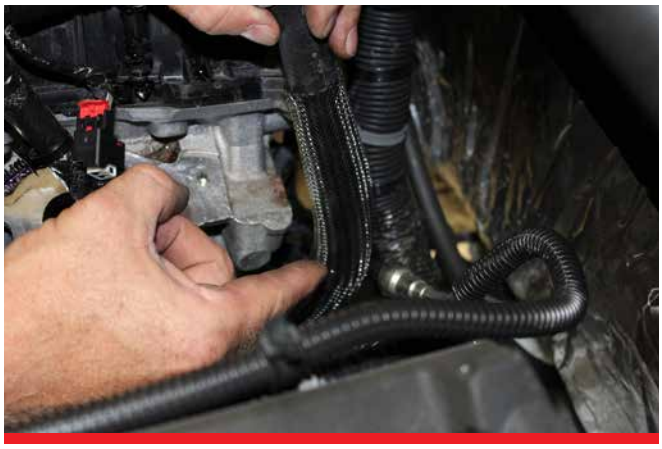
STEP 2 INTAKE PLENUM AND INTAKE MANIFOLD

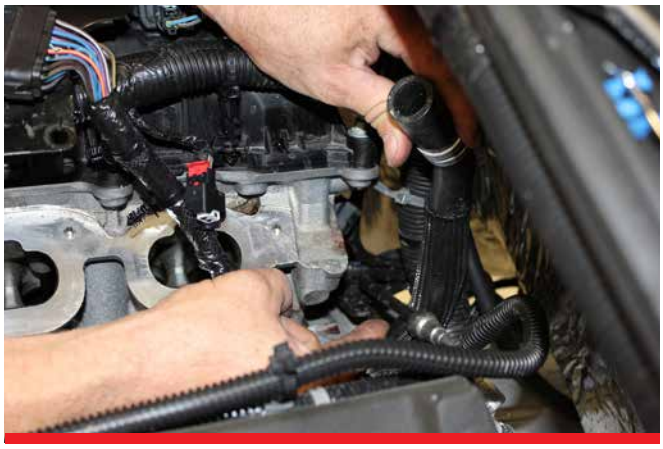


J. Remove and discard heater hose connections at heater core. Slide back clamps and use a razor knife to slit the hose open. Peel hose away from pipes being careful not damage heater core aluminum.

STEP 3 TURBOCHARGER LUBRICATION

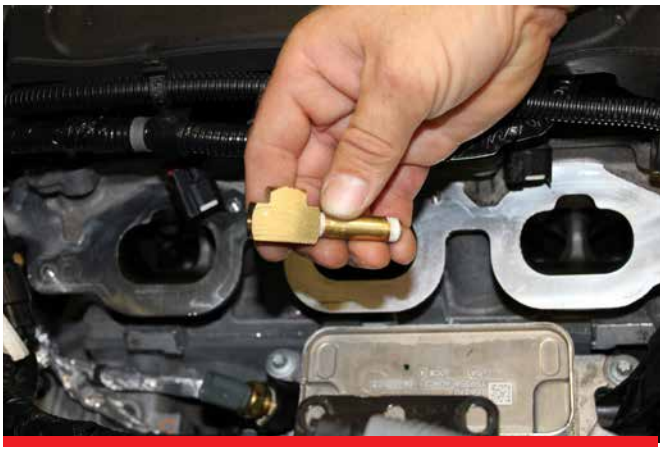
In this step we will be installing a T fitting between the oil pressure sensor and the engine. This will provide lubrication to the turbocharger.





A. Route cooling hose behind fuel line as shown.

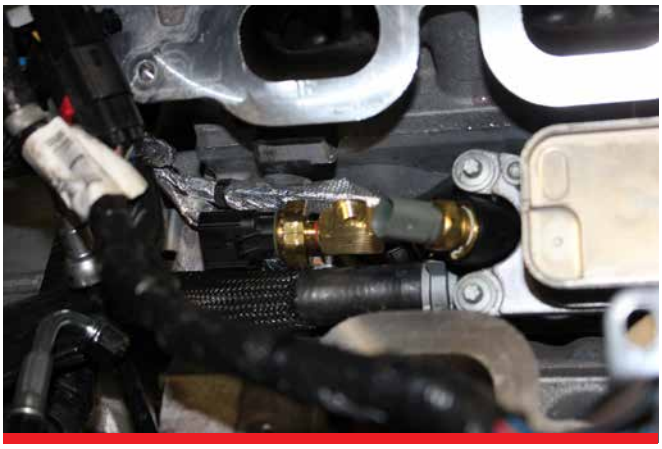
B. Disconnect 2 electrical connectors and remove oil pressure sensor.

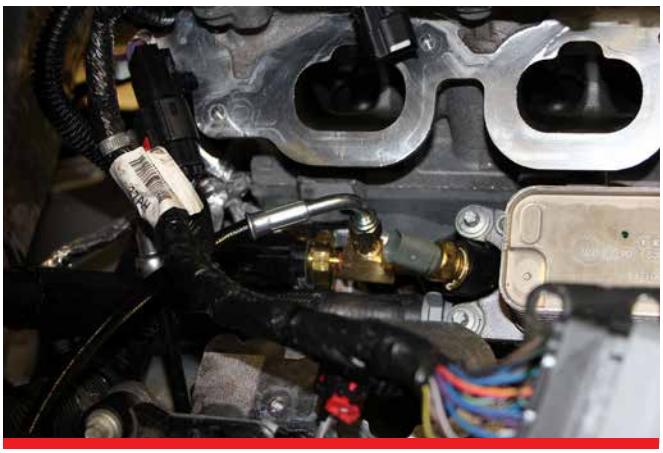


C. Apply Teflon tape to extension on both sides and insert into T-fitting as shown.

D. Install extension and T-fitting where oil pressure switch was removed and tighten.

STEP 3 TURBOCHARGER LUBRICATION





E. Install and tighten oil pressure sensor to T-fitting as shown.

F. Apply Teflon tape to supplied #4 fitting, install and tighten.

G. Route supplied oil feed line, attach and tighten as shown.

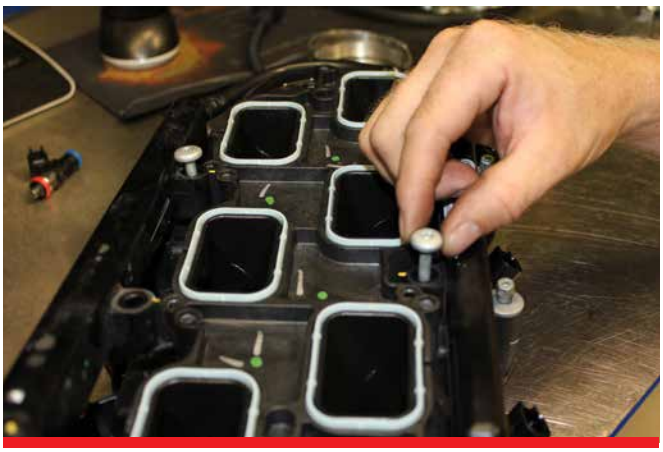
H. Reconnect electrical connectors to sensors.

STEP 4 FUEL INJECTORS

In this step we will be installing the precision matched higher flow rate injectors.

A. Turn manifold upside down to drain any remaining fuel. Clean up fuel spill immediately to avoid fire hazard.

B. Remove o-rings seals from manifold assy. to avoid contact with fuel, as they will change shape and no longer be usable.



C. remove the torx bolts that secure the fuel rails to the intake manifold.

D. remove the fuel rail from the manifold.

E. Remove the injectors form the manifold or fuel rail as some may stick in the rail during removal.

F. Lubricate injector orings and install in manifold.

G. Carefully reattach fuel rail to injectors and manifold.

H. Tighten fuel injector rail torx fasteners.

I. Reinstall oring seals on both top and bottom of intake manifold.

STEP 5 RE-INSTALL THE LOWER INTAKE MANIFOLD

In this step we will be reinstalling lower intake manifold to the engine.

A. Clean mating areas with rag to ensure a good seal for the o-rings.

B. Carefully reinstall manifold using caution not to disturb orings.

C. Reinstall fuel feed line and safety lock.

STEP 6 RE-ROUTING OF PCV LINES

In this step we will be .....

A. A. Remove the factory PCV lines shown . This shows their orientation in the vehicle.

B. B. Remove the 3 hose ends as shown here.

C. C. These are the original parts we will be using. Discard the other components.

D. D. Attach the hose end to the tube as shown

STEP 6 RE-ROUTING OF PCV LINES

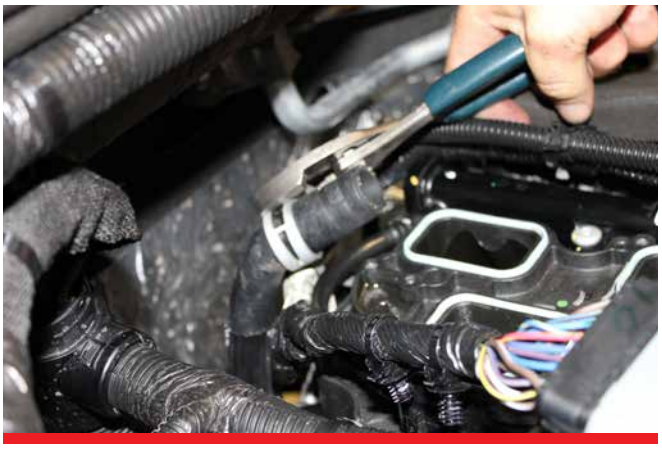
In this step we will be .....

E. Attach the supplied pre-assembled hose as shown.

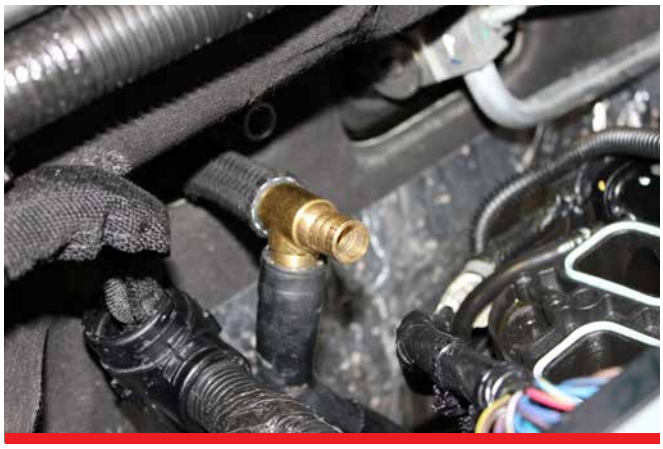
F. F. Attach to the supplied air filter hose as shown. This will connect to the fitting on the air filter.

STEP 7 HEATER HOSES

in this step we will be installing the heater hoses. The driver side heater hose goes to straight to the fitting near the alternator. The passenger side hose uses a T-fitting and goes to the hose under the manifold and around to the hose on front lower portion of engine.



A. Remove clamp from hose end near lower intake manifold.



B. Install hose with supplied clamp on bottom leg of heater hose assy.

C. Install supplied heater hose to fitting near alternator and attach to driver side heater core tube.

D. Attach supplied 55" hose to factory hose near lower radiator hose using supplied hose mender and clamps.

E. Route the 55" hose up and around passenger side of engine. This hose will be attached to T-fitting later and will need to be carefully re-routed at areas near exhaust pipes.

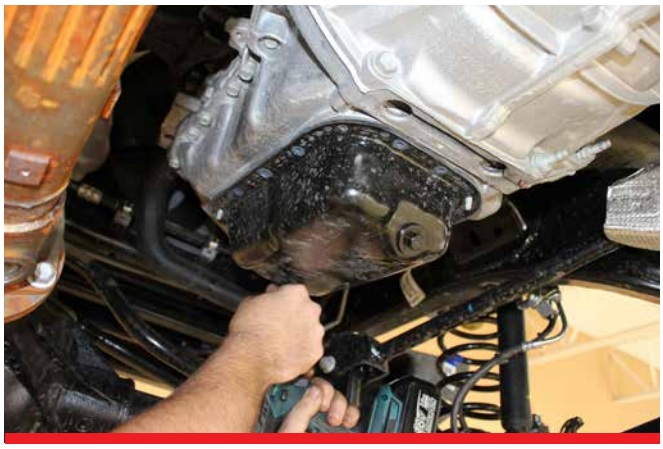
STEP 8 TURBOCHARGER AIR FILTER

in this step we will be making room for the tubrbocharger and the air filter. The filter will be installed and changed for regular maintenance.

A. Access the air box support. Remove the front bolt near the power steering resorvoir. A portion of the air box support will be carefully trimmed and removed as shown in the pictures below.

STEP 9 TURBO OIL DRAIN

In this step we will be preparing the oil pan for a turbo oil drain.



A. Drain the engine oil from the vehicle and tighten the drain plug.

B. Remove the oil pan bolts.

C. Remove oil pan from the engine.

Note: *The oil pan is attached with sealant and will need to be pried off for removal.*

D. Clean oil residue from oil pan.

Note: *A wire wheel works well.*

E. Using a hole saw, drill a 7/8" hole as shown. Clean any burrs so surface is flat.

Note: Do not drill directly under the pan bolt holes as it will cause the fitting to interfere with bolt installation.

STEP 9 TURBO OIL DRAIN

F. Apply sealant between the nylon washer and the pan surfaces.(both sides)

G. Attach oil drain fitting as shown with washers and sealant on both sides between washers and oil pan.

H. Secure fitting to oil pan. Clean residue with dry rag.

I. Clean engine oil pan mating surface with razor blade.

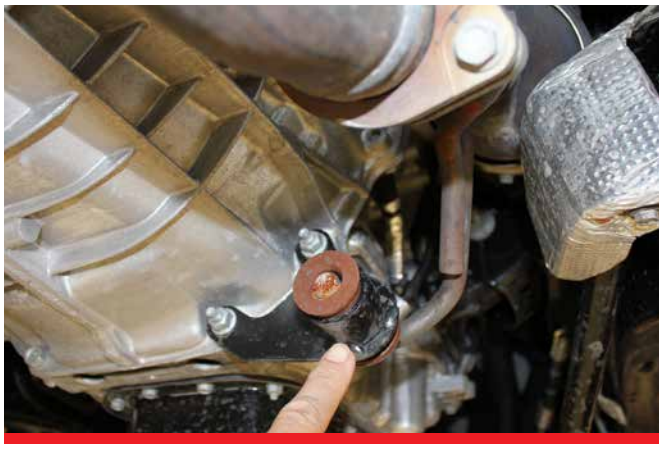
J. Apply sealant to oil pan surface going around inside of bolt holes.

STEP 9 TURBO OIL DRAIN

K. Reinstall oil pan to vehicle.

STEP 10 REMOVE THE FACTORY EXHAUST

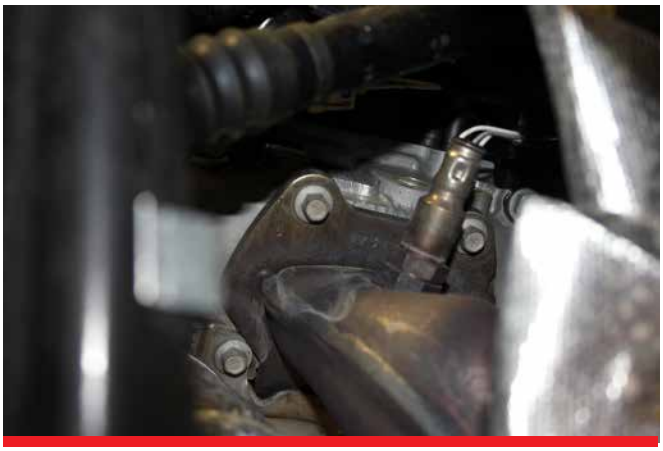
In this step we will be removing the factory exhaust.



A. Remove exhaust hanger.

B. Remove fasteners from right and left sides.

C. Locate 4 oxygen sensor connectors and disconnect.

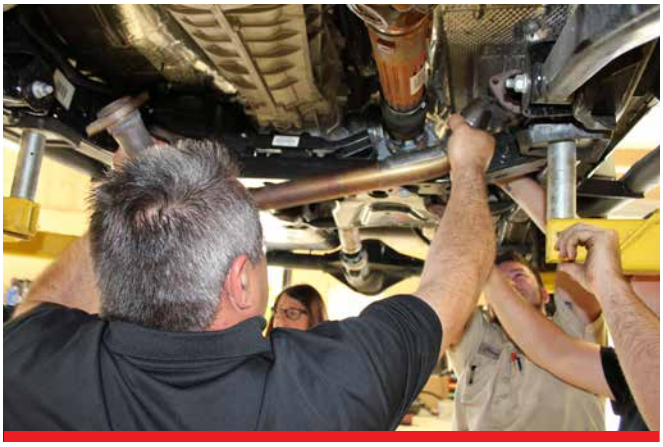


D. The cat equipped pipes are a wedged flange design. Remove the top 2 bolts and just loosen the lower 2.

E. Remove left and right cat equipped pipes.

Note: carefully twist and wiggle, they will come out!

STEP 10 REMOVE THE FACTORY EXHAUST



F. Ok, here is the fun part. Remove the Y pipe from the vehicle by loosening the 15mm clamp nut and getting some help from your friends. These are usually a bit stuck. Use some rust penetrant, twist and pull. You'll get it.

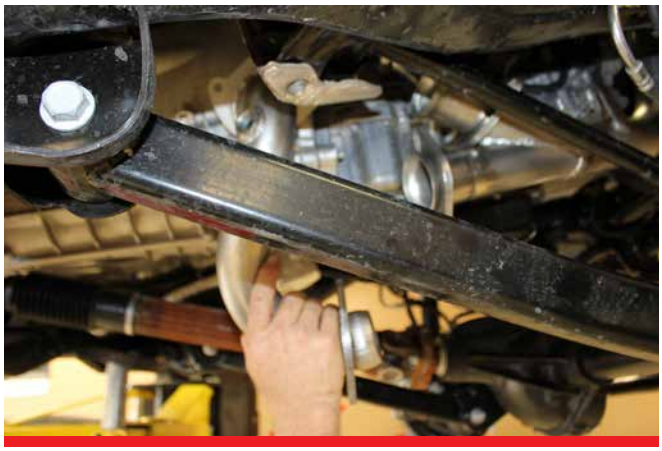
STEP 11 INSTALLING THE WASTEGATE AND TURBO PIPING

In this step we are going to install the wastegate and turbo piping. All the exhaust must go to the turbocharger and then back out to the factory exhaust under the driver's seat.

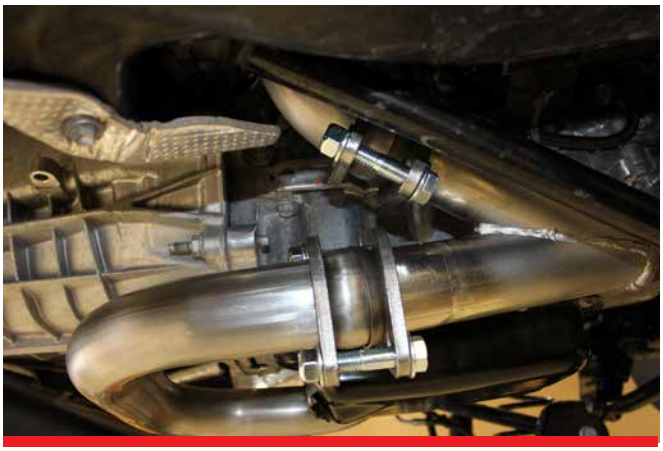
Note: *DO NOT TIGHTEN EXHAUST UNTIL ALL PARTS ARE CONNECTED. The pipes are CNC bent and welded in large jig fixtures for consistency.*

A. Install wastegate to turbo feed pipe using V-band clamp but do not tighten all the way. It will need to be rotated as it meets the downpipe later.

B. Install this pipe from underneath



C. Attach passenger pipe to engine and turbo feed pipe.

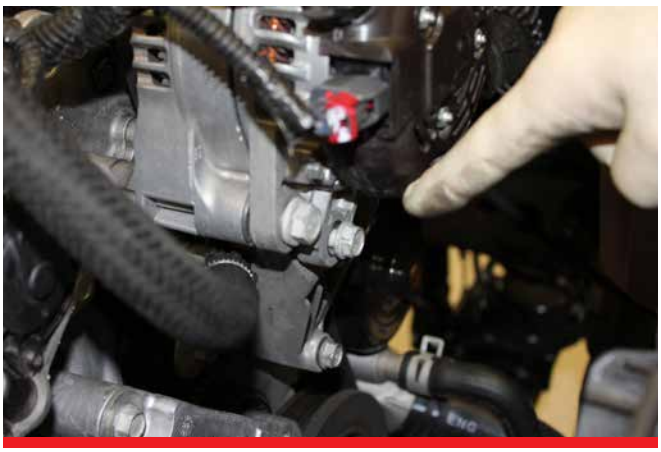


D. Install crossover pipe to driver side and turbo feed pipe.

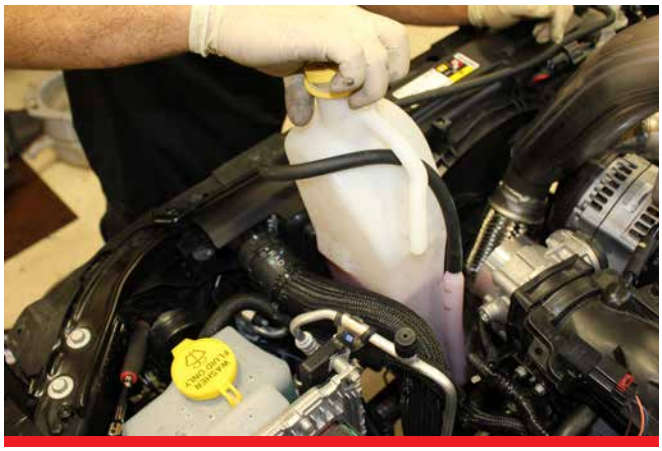
STEP 11 INSTALLING THE WASTEGATE AND TURBO PIPING

E. Position flanges so they do not interfere with suspension articulation.

F. Install catalytic converter equipped extension pipe to factory exhaust under driver's seat

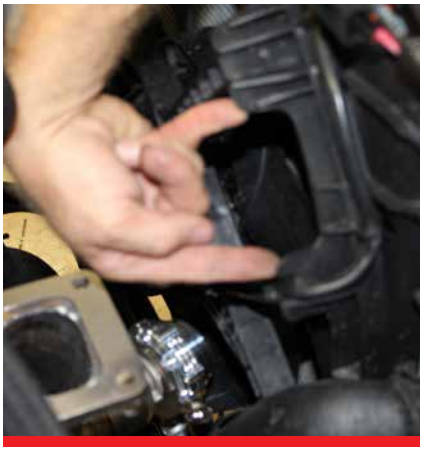


G. Loosen 2 bolts under alternator. The downpipe brackets will attach here.

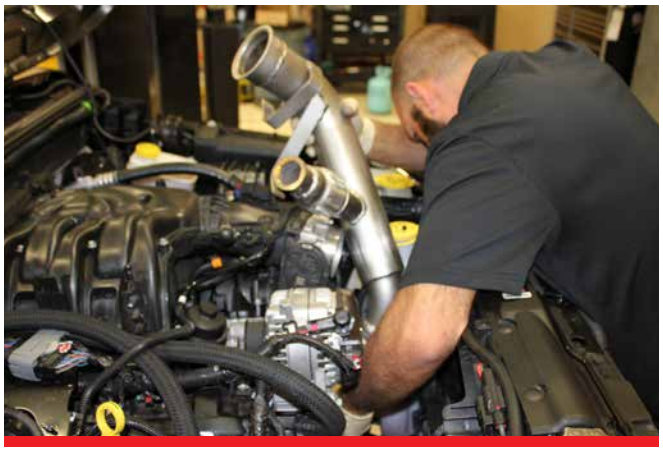


H. Remove coolant reservoir

STEP 11 INSTALLING THE WASTEGATE AND TURBO PIPING



I. Trim cooling fan shroud as shown.



J. Install downpipe and attach to bracket and extension pipe but do not tighten.

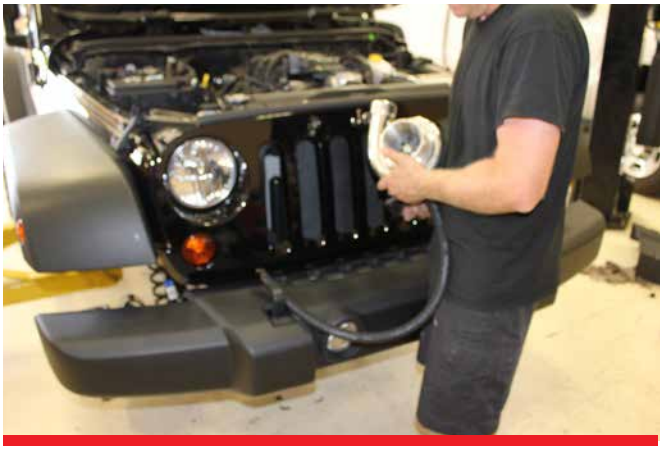
K. Position flange so it does not interfere with driveshaft articulation.

STEP 12 ADDING THE FLANGES TO THE TURBO

In this step we are going to add the flanges to the turbo and rotate for proper orientation. The turbo charger is made of three sections. The Center, the Turbine housing (black side) and the Compressor housing (silver side).

A. Using the supplied components, attach the flanges to the turbo center section. The smaller one is the oil feed and the larger is the oil drain.

B. If necessary loosen the housings bolts and rotate to achieve the desired orientation. The rectangular turbo flange should be flat, the oil feed will feed directly from the top and the compressor discharge opening will also be straight up.



C. Attach the oil drain hose to the turbocharger at this time.

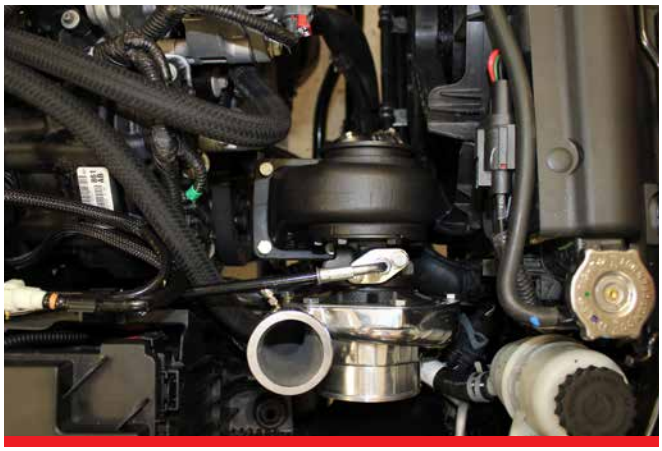
STEP 13 INSTALLING THE TURBOCHARGER TO THE EXHAUST PIPING

In this step we will be installing the turbocharger to the exhaust piping, adjusting and tightening all exhaust pipes.

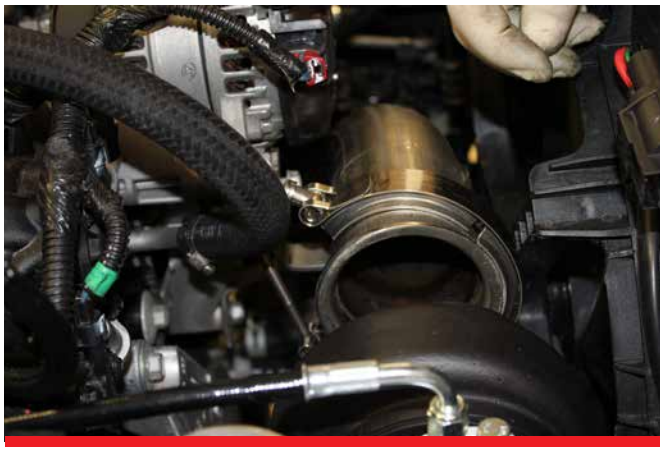
A. Feed the drain hose down as you lower the turbocharger on the flange.

B. Using a long extension snug the turbocharger to the flange but do not tighten completely

C. Carefully route and attach the oil feed line to the top of the turbocharger. This stainless steel braided line is coated to protect the surrounding components from abrasion.



D. Take the time to route the heater hose away from all exhaust and come up the passenger side as shown.

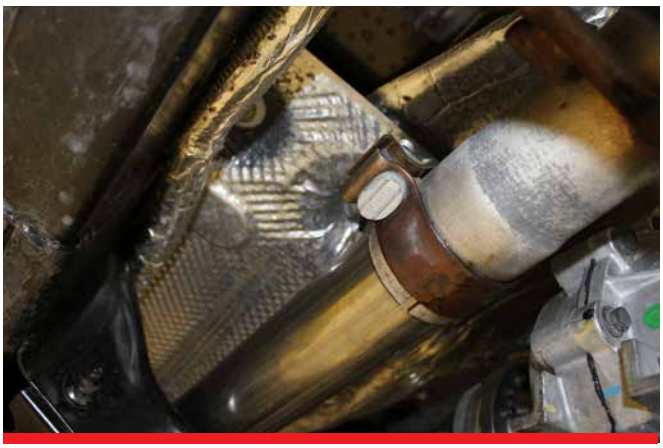


E. Attach downpipe to turbocharger using V-band clamp.

STEP 13 INSTALLING THE TURBOCHARGER TO THE EXHAUST PIPING

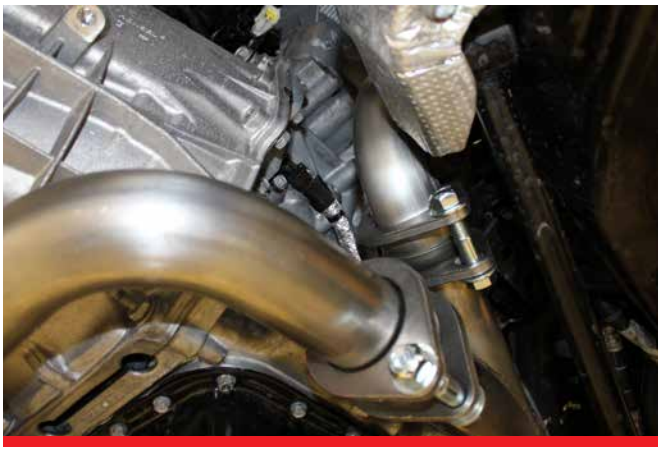
F. Tighten exhaust bolts at engine cylinder heads (both sides).

G. Tighten turbocharger to flange. Make sure air filter does not contact surrounding plastic when tight.



H. Tighten the downpipe to the catalytic converter equipped extension housing

I. Tighten factory exhaust clamp.



J. Tighten all ball flanges making sure their orientation does not interfere or contact any components.

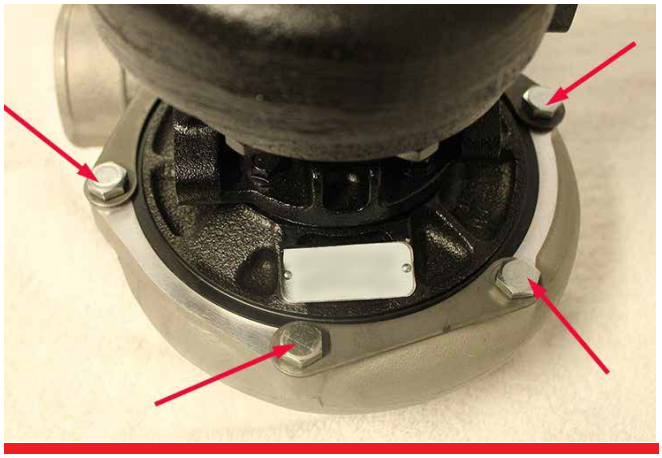
STEP 13 INSTALLING THE TURBOCHARGER TO THE EXHAUST PIPING

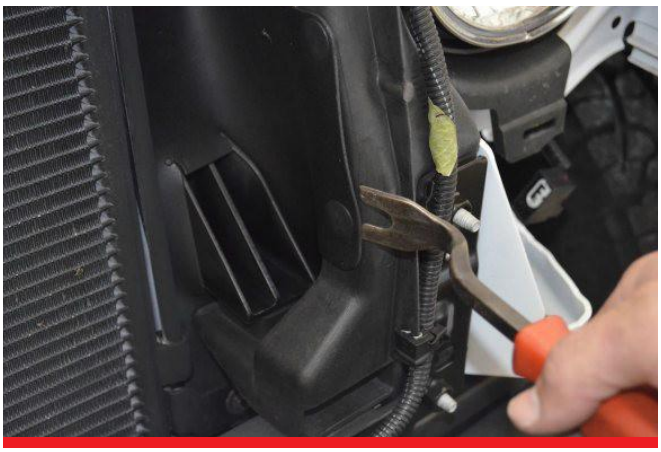
K. Attach oil drain hose to oil pan. ***Make sure you hold base of fitting so it does not rotate while tightening.***

STEP 14 INTERCOOLER – MANUAL TRANSMISSION EQUIPPED ONLY

Note: *Proceed to step 5 if equipped with automatic transmission*

In this step we will clearance the core support and install the intercooler.





A. Loosen bolts that attach compressor housing to turbocharger (this will allow the compressor housing to rotate).

B. Route wire harness near p/s reservoir up for increased clearance .

C. Remove air diverters and discard. We found this type of tool works well.

STEP 14 INTERCOOLER – MANUAL TRANSMISSION EQUIPPED ONLY

D. Clearance core support on both passenger and driver side for silicone hoses as shown.

STEP 14 INTERCOOLER – MANUAL TRANSMISSION EQUIPPED ONLY

e. Align the two tabs at the top of the intercooler, to the available factory hardware on your Jeep.

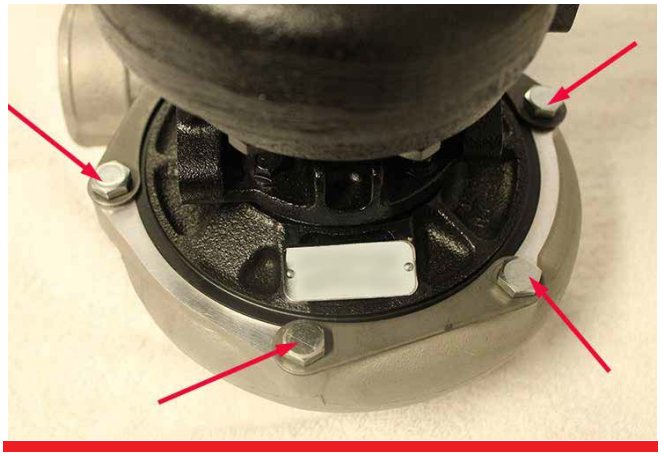
f. Install and attach silicone hose on passenger side with clamps to intercooler but do not tighten.

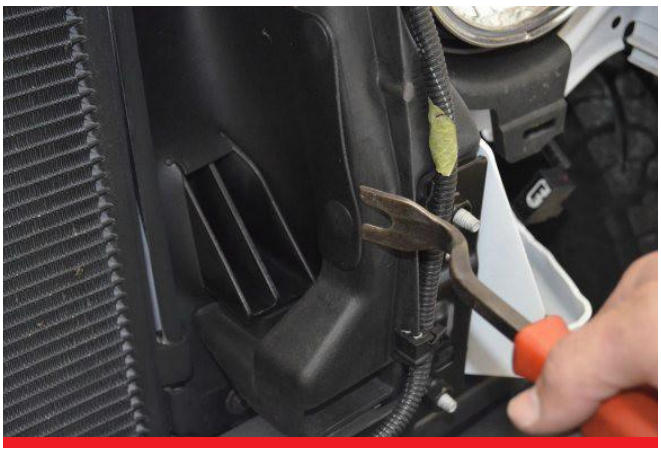
g. Rotate compressor housing down and connect to silicone hose on passenger side with supplied clamps (inlet of intercooler).

h. Tighten silicone hose at compressor housing and inlet side of intercooler.

STEP 15 INTERCOOLER – AUTOMATIC TRANSMISSION EQUIPPED ONLY

In this step we will clearance the core support, install the intercooler and transmission cooler.





A. Loosen bolts that attach compressor housing to turbocharger (this will allow the compressor housing to rotate).

B. Route wire harness near p/s reservoir up for increased clearance.

C. Remove the factory transmission cooler and feed pipe assembly.

D. Remove air diverters and discard.

E. Remove factory transmission cooler and disconnect pipes under driver side headlamp.

STEP 15 INTERCOOLER – AUTOMATIC TRANSMISSION EQUIPPED ONLY

In this step we will clearance the core support, install the intercooler and transmission cooler.

F. Clearance core support on both passenger and driver side for silicone hoses as shown.

STEP 15 INTERCOOLER – AUTOMATIC TRANSMISSION EQUIPPED ONLY

G. Install supplied trans cooler as shown. Be sure to put foam spacer between trans cooler and a/c condenser to avoid abrasion under driver headlamp.

h. Route hoses to existing transmission feed tubes and secure with clamps

i. Align the two tabs at the top of the intercooler, to the available factory hardware on your Jeep.

j. Install and attach silicone hose on passenger side with clamps to intercooler but do not tighten

k. Rotate compressor housing down and connect to silicone hose on passenger side with supplied clamps (inlet of intercooler)

M. Tighten silicone hose clamps at compressor housing and inlet side of intercooler

N. Install modified p/s bracket to reservoir

O. Tighten compressor housing bolts

STEP 16 COOLANT RESERVOIR

In this step we will install a new coolant reservoir.

A. **Remove the Fan Assembly**
B. **Install the reservoir with bracket as shown**

C. **Reinstall Fan Assembly**

STEP 17 POWER STEERING

In this step we will be replacing the high pressure power steering hose from the pump to the gear box. This is done to provide adequate clearance for the intercooler charge pipe on the driver side.

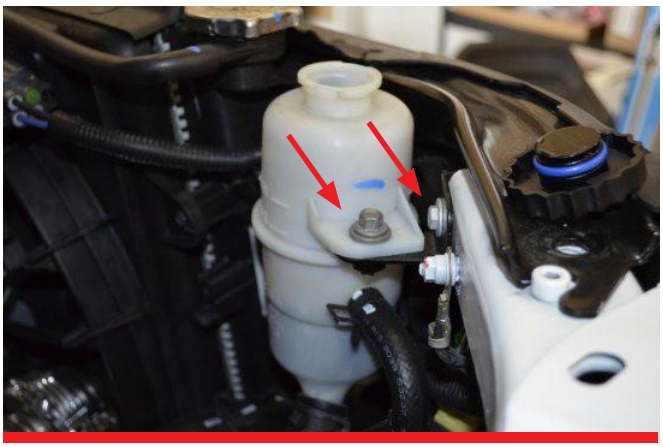
A. Remove power steering high pressure hose from P/S pump to gear box.

B. Install provided power steering adapter fittings in both the gear box and the p/s pump.

C. Install provided high pressure power steering hose in the same location as old hose was removed.

STEP 18 POWER STEERING RESERVOIR

In this step we will be modifying the power steering reservoir to make room for the front mounted intercooler.



A. Remove the bracket that holds the power steering reservoir to the radiator core support.

B. Modify bracket as shown in illustrations using diagonal cutting pliers.

B. Modified bracket

B. Modified bracket

STEP 18 POWER STEERING RESERVOIR

C. Attached modified bracket to mounting stud in front of original location as shown.

D. Modify reservoir using diagonal cutting pliers as shown.

E. Do not attach reservoir to bracket at this time. This will give you room to route intercooler hose.

STEP 19 CHARGE PIPE

In this step we will install the charge pipe and vacuum hoses

A. Install shorter 2.5"-2.5" 90 degree silicone hose to driver side of intercooler

B. Gently manipulate a/c line to allow room for charge pipe

C. Install blowoff valve on charge pipe. ***Make sure you install rubber seal between pipe and base of BOV!***

D. Install longer 2.5"-2.5" 90 degree silicone hose between charge pipe and outlet side of intercooler.

E. Install 2.5" – 3" 90 degree silicone hose to charge pipe and throttle body

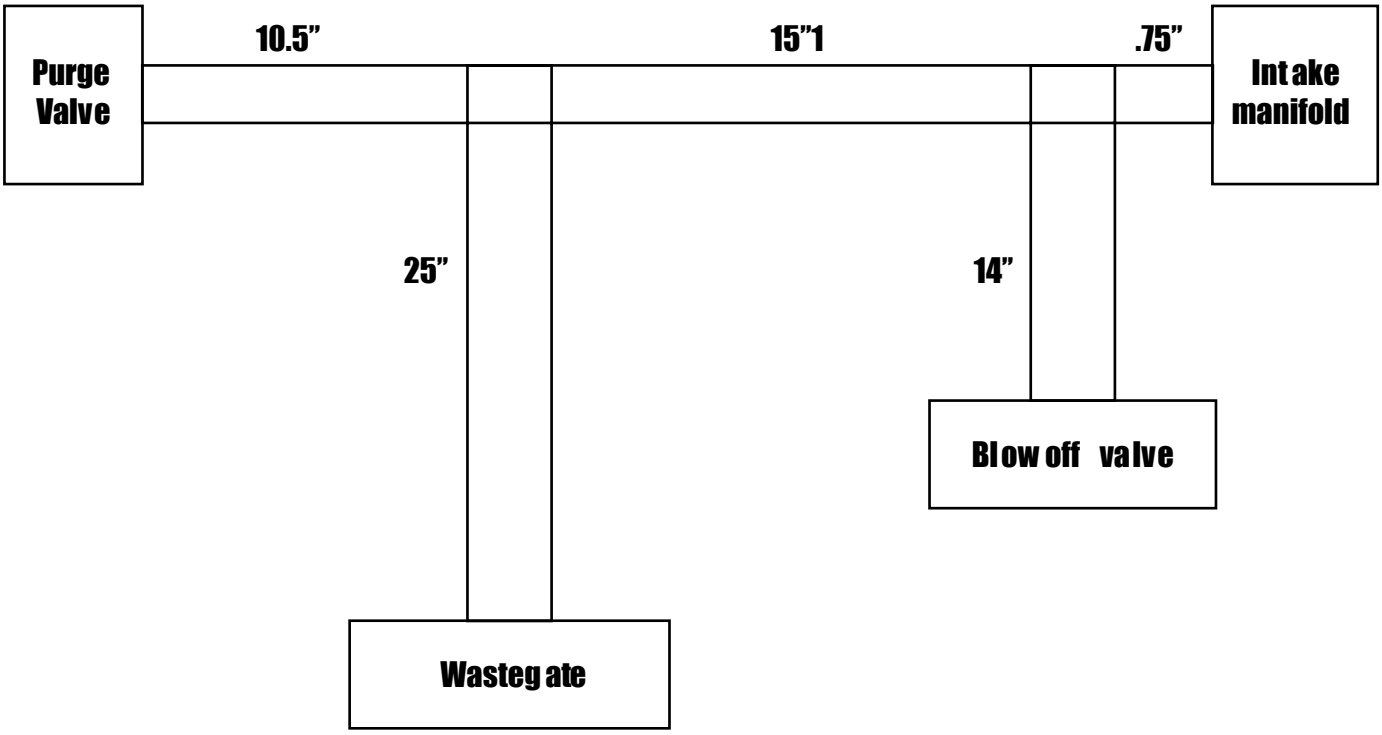
F. Install supplied vacuum hose assembly to blowoff valve, intake manifold, wastegate and purge control valve per diagram. (Route away from any direct contact with heat source) Use zip ties where necessary. (add pic of diagram here)

STEP 20 ATTACHING THE WASTEGATE TO THE DOWNPIPE

In this step we will be attaching the wastegate to the downpipe and installing the wastegate sensing line.

A. Attach the wastegate to the downpipe using the supplied clamp.

B. Install wastegate vacuum hose assembly as show in diagram.



STEP 21

PURGE THE TRAPPED AIR AND FILL THE COOLING SYSTEM

In this step we are going to purge the trapped air and fill the cooling system.

A. Remove the air bleed fitting on the thermostat housing.

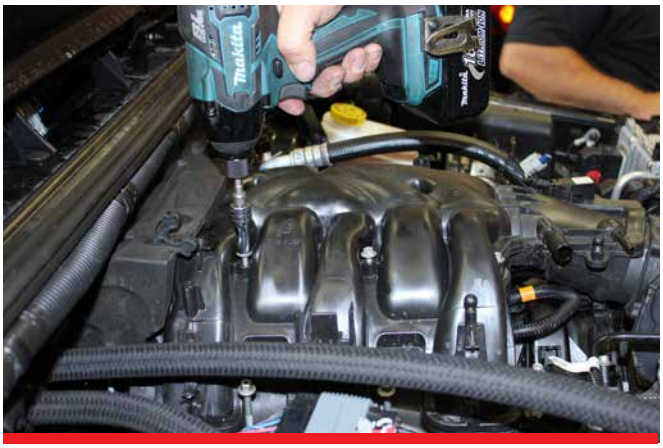
B. Fill cooling system until coolant runs from fitting and then close quickly.

C. Top off cooling system and put radiator cap back on.

STEP 22 REINSTALL THE INTAKE PLENUM

In this step we are going to reinstall the intake plenum, charge pipe and tidy things up

A. Attach all o-rings on the lower intake manifold.



B. Attach intake plenum.

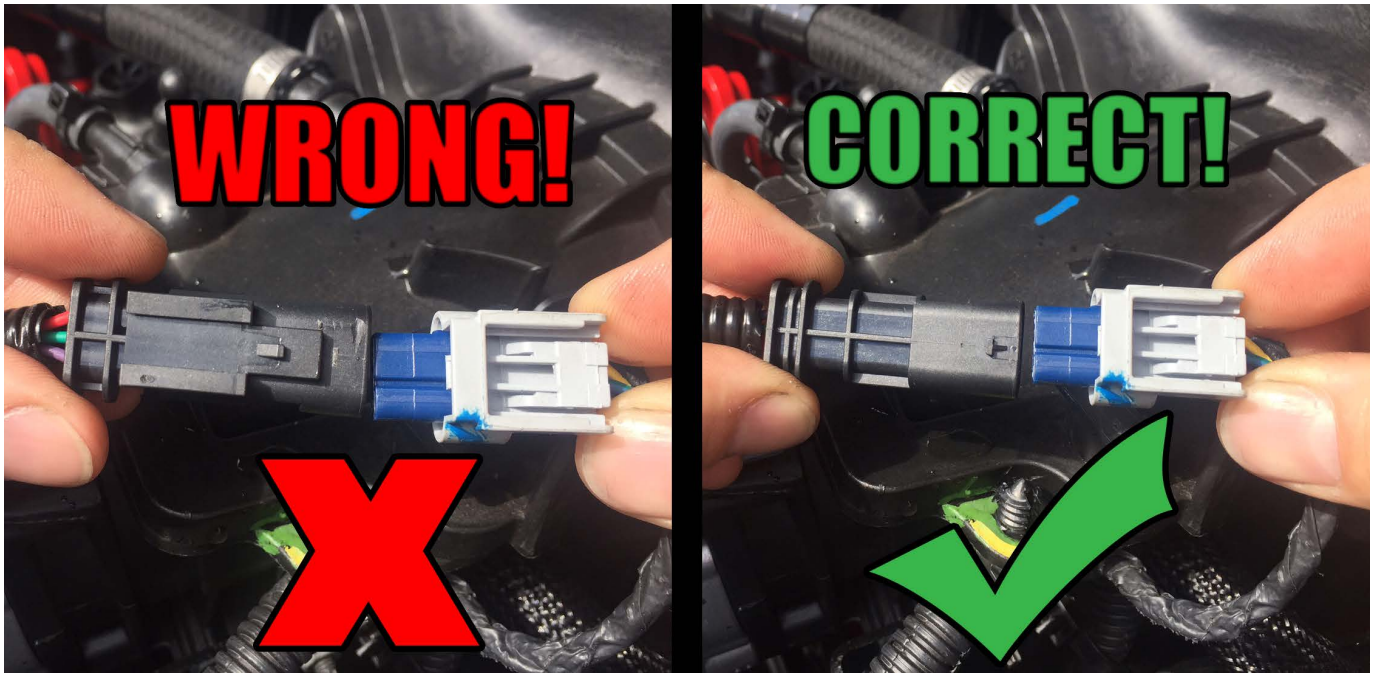
C. Reattach brackets.

D. Remove factory map sensor.

STEP 22 REINSTALL THE INTAKE PLENUM

E. Install supplied 3bar map sensor using provided harness adaptor.

F. MAP Sensor adaptor



STEP 23 INSTALL THE UPPER CHARGE PIPE

A. Install throttle body silicone and intake air temperature sensor in pre-punched hole on underside of hose going to throttle body

B. Re-install the O2 sensors

On **driver side** the white sensor is in the front position and the black sensor goes behind the cat converter

On the **passenger side** the black sensor is in the front position and the white sensor goes behind the cat converter.

MAKE SURE THEY ARE IN THE PROPER POSTIONS! Use the 32" O2 extensions included with your kit. Route the passenger side over the top of the transmission and the driver side along the frame rail. Use zip ties to secure as necessary.

STEP 24 INSTALL PROGRAMMING

In this step you will be installing a new tune to the engine computer and programming the vehicle to work with the turbo system. You will also be able to use the tool to calibrate tire size, gear ratio etc.

IMPORTANT!! BE CAREFUL NOT TO DISTURB VEHICLE DURING THE FLASHING PROCESS.

A. Visit www.hptuners.com/downloads/ and download the latest VCM

B. Suite Create your account at www.hptuners.com/my-account

C. Connect your MPVI2 device to your computer via supplied USB cable

D. Open VCM Editor, go to “Help” and select “Resync Interface”

May need to disconnect and reconnect device

Wait 15 seconds or so and “Host” light will flash blue in color briefly

E. Message states “2 Credits Added”

F. Press "OK" to ReSync

G. Connect MPVI2 to Vehicle's OBD. Turn Key to “RUN" position (2 clicks forward)

H. “Read Vehicle” by pressing the icon with the green arrow pointing up on the tool bar

I. Save the file read. When prompted use provided credits to license file and email it to tuning@prodigyperformance.com

J. Upon receiving the Prodigy Tune file, save it to your computer

K. Open the provided tune file using the VCM Editor

L. “Write Vehicle” with the new file by pressing the icon with the red arrow pointing down

STEP 25 COMPLETION

A. Check all fittings.

B. Check all hoses.

C. Cycle key from off to on 3 times.

D. Check for fuel leaks.

E. Start vehicle and run for 10 seconds.

F. Check again for leaks (Fuel, Coolant, Oil, etc.).

G. Idle vehicle until cooling fans come on, top off cooling system and install radiator cap.

H. Test drive vehicle under light acceleration for one mile and verify installation success.

I. Allow 50 miles of light to moderate driving before engaging vehicle in wide open throttle.

J. No abnormal noises, vibrations, sensations should be present.

K. Contact Prodigy Performance at **855-TURBOJEEP** with any questions or concerns after analyzing first..