



advanced FLOW engineering

Instruction Manual P/N: 46-20298-B

BladeRunner – 2-1/2” Hot Side Intercooler Tubes

Make: Ford Model: F-150 Raptor Year: 2017-2020 Engine: V6 – 3.5L(tt)

Make: Ford Model: F-150 Year: 2018-2020 Engine: V6 – 3.5L(tt)



- Please read the entire instruction manual before proceeding.
- Ensure all components listed are present.
- If you are missing any of the components, call customer support.
- Ensure you have all necessary tools before proceeding.
- Do not attempt to work on your vehicle when the engine is hot.
- Disconnect the negative battery terminal before proceeding.
- Retain factory parts for future use.

Label	Qty.	Description	Part Number
A	1	Hot Side Intercooler Tube Driver Side Upper	05-60768B
B	1	Hot Side Intercooler Tube Driver Side Lower	05-60769B
C	1	Hot Side Intercooler Tube Passenger Side	05-60770B
D	1	Coupling, Silicone Reducer: 2-1/2"x1-3/4"ID x 15 Deg	05-61084
E	1	Coupling, Silicone Reducer: 2-1/2"x1-3/4"ID x 35 Deg	05-61085
F	3	Coupling, Silicone Hump: 2-1/2"ID x 5-1/2"L	05-60610
G	2	Clamp, 032 (1-9/16" -2-1/2")	03-50016
H	8	Clamp, 044 (2-5/16" - 3-1/4")	03-50019
I	2	Plug, 1/8" NPT	03-50029

Installation will require the following tools:

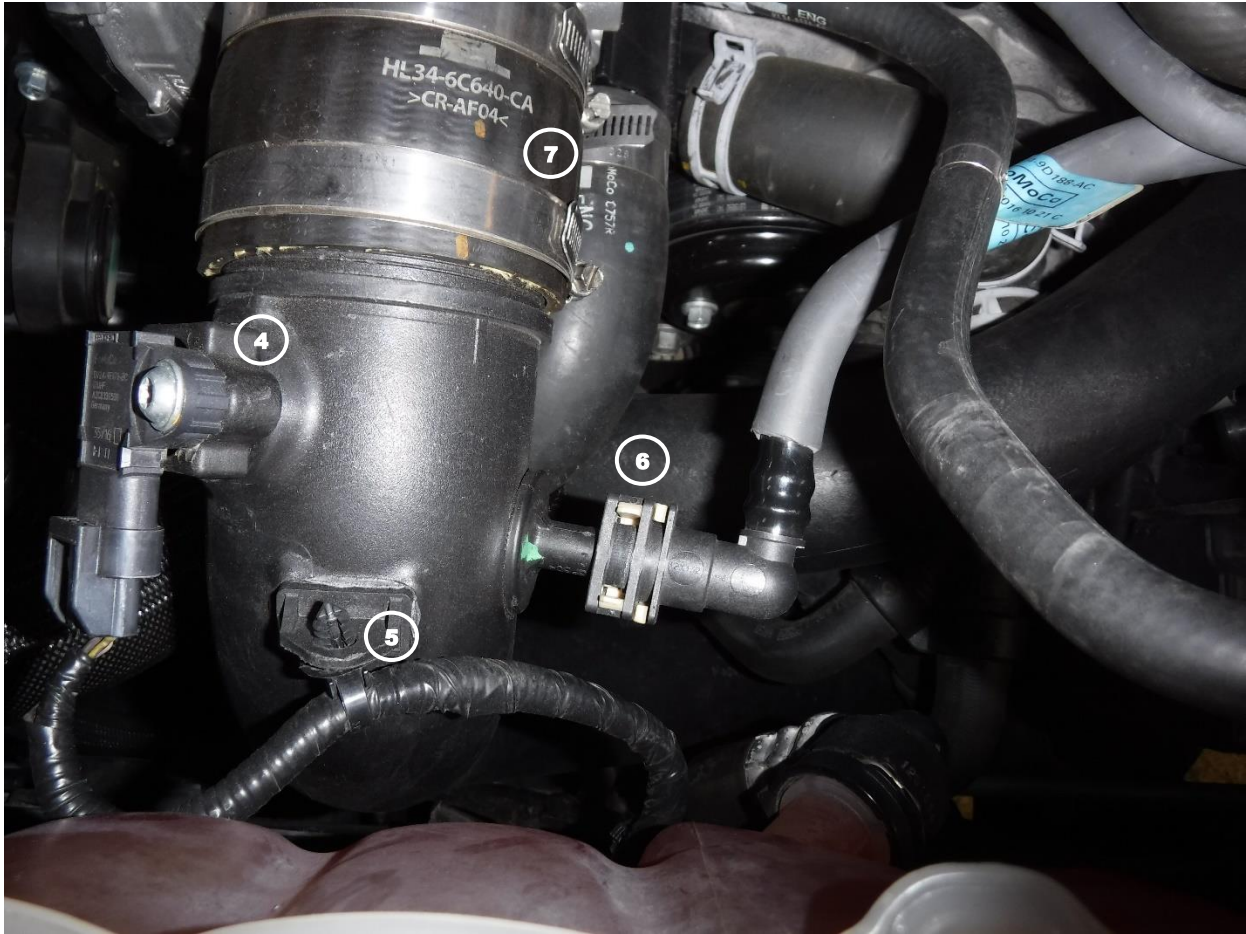
7mm socket, 8mm socket, 10mm socket, 13mm socket, 15mm socket, 5mm allen wrench, 6" extension, ratchet, pick, thread sealant, grease

Note: Legal in California for use on race vehicles only. The use of this device on vehicles used on public streets or highways is strictly prohibited in California and others states that have adopted California emission regulations





1. Park vehicle on level ground and engage the parking brake.
2. Disconnect the negative battery cable.
3. Remove the two (2) nuts ① securing the engine cover to the engine then remove the engine cover from the vehicle
4. Disconnect the temperature sensor ② from the intake tube
5. Loosen the three (3) clamps ③ to the air intake tube y-bridge and remove it from the vehicle.



6. Disconnect the electrical connection (4) from the cold side intercooler tube.
7. Unclip the wire harness (5) from the cold side intercooler tube.
8. Disconnect the vent from the cold side intercooler tube (6) and turbo inlet tube by squeezing the retaining clip and pushing it through to release it, then gently pull it off the fitting and remove it from the vehicle.
9. Loosen the clamp at the cold side intercooler tube coupling to the throttle body (7) then separate the coupling from the throttle body.

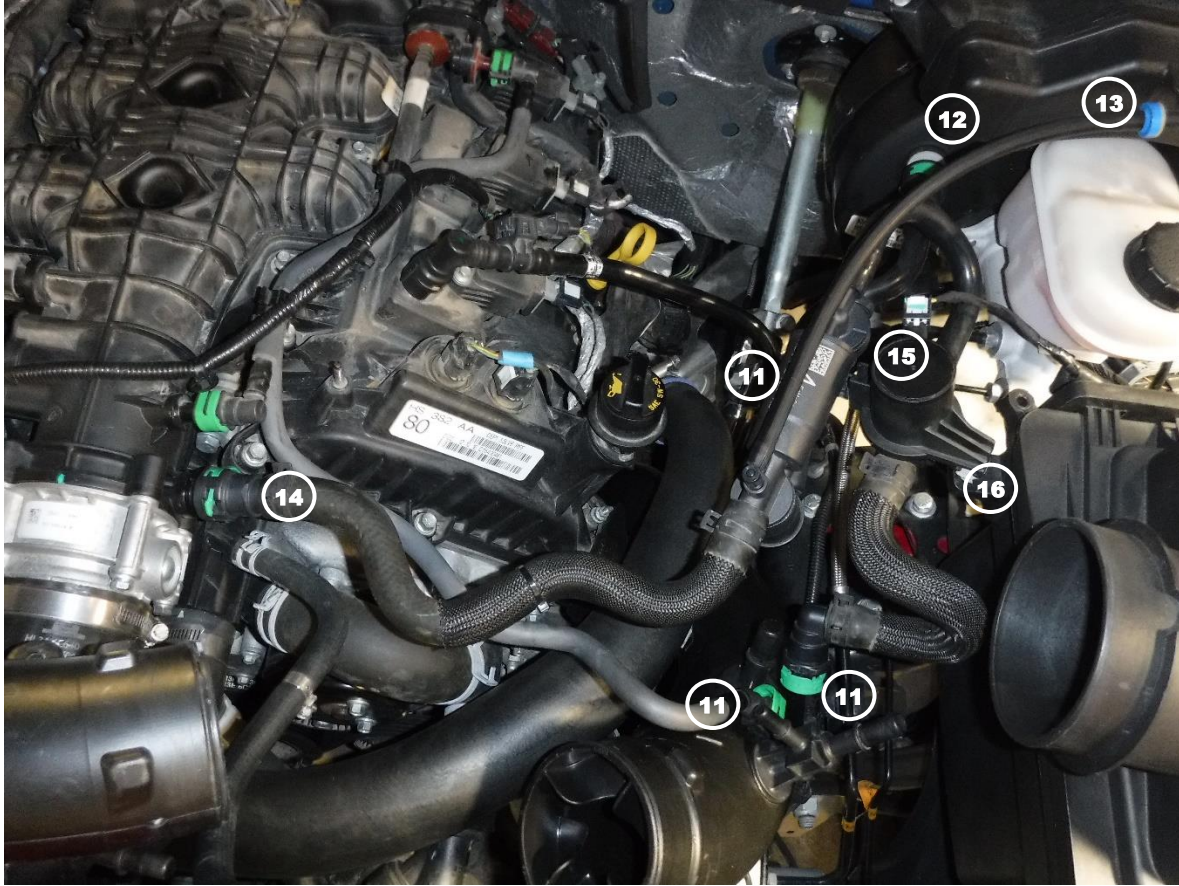


10. If equipped, remove the six (6) bolts securing the skid plate to the vehicle and remove the skid plate from the vehicle.
11. Disconnect the pressure relief valve tube (8), located on the driver side of the vehicle right above the intercooler tube connection, by twisting it a $\frac{1}{4}$ turn counter-clock wise, then gently pull it back to separate it from the canister. Twist the entire tube out of the way.
12. Use a small screwdriver to remove the wire retaining clip (9) at the lower cold side intercooler tube connection located on the driver side of the vehicle.
13. Pull the lower tube connection apart and remove the cold side intercooler tube from the top of the vehicle.

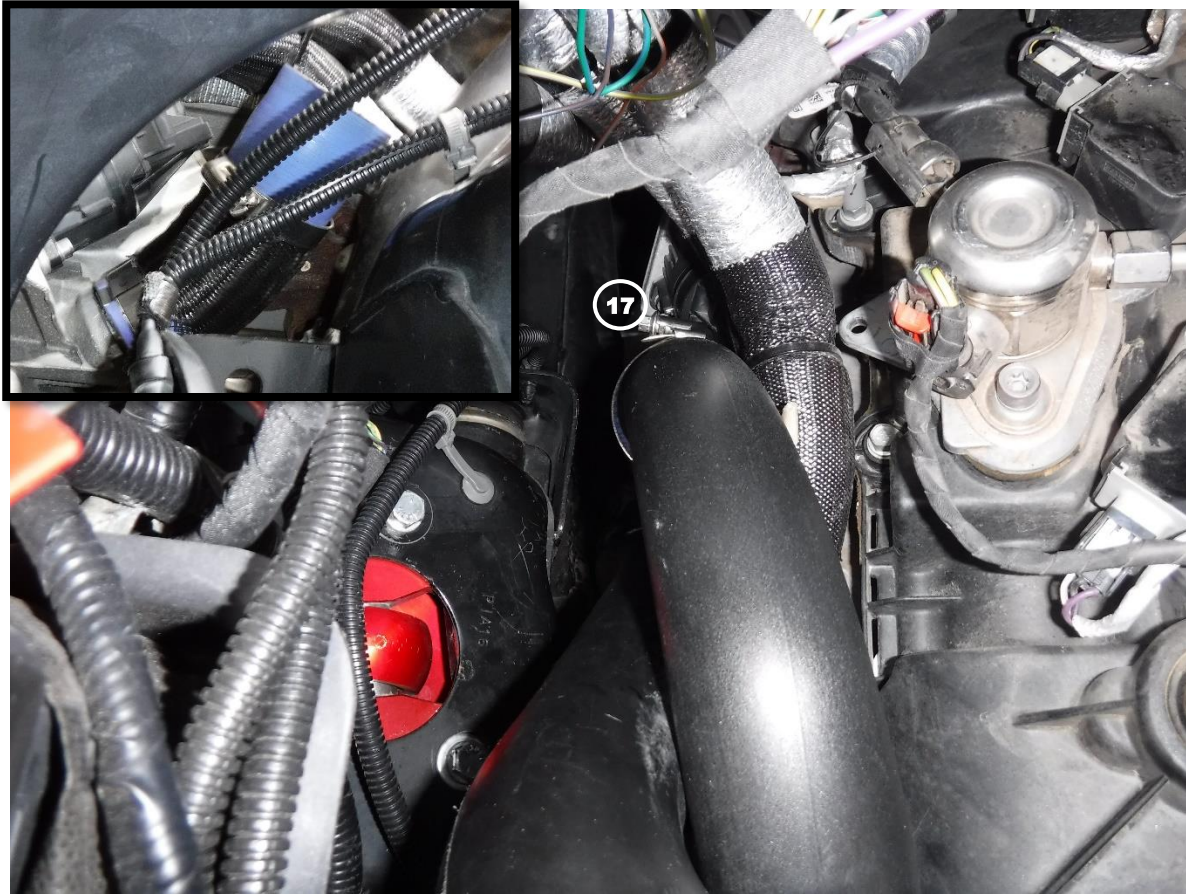


14. Loosen the clamps securing the hot side intercooler tubes (10) to the intercooler on the passenger side of the vehicle.

15. Disconnect the hot side intercooler tubes from the couplings.



16. Release the three (3) retaining clips that are connected to the driver side turbo inlet tube (11) by sliding the clips back then pulling them off the fittings.
17. Release the retaining clip that is connected to the brake booster (12) by sliding the clip back then pulling it off the fitting.
18. Disconnect the vacuum hose (13) at the connection behind the brake master cylinder leading from the EVAP solenoid.
19. Disconnect the electrical connection (14) from the EVAP solenoid.
20. Release the final retaining clip that is connected to the engine (15) by sliding the clip back then pulling it off the fitting.
21. Lift the EVAP solenoid out of its mount on the air box (16) and remove the EVAP solenoid, including hoses, from the vehicle.



22. Loosen the clamp (17) securing the hot side intercooler tube to the turbo coupling on the passenger side of the vehicle and disconnect it from the coupling.

Note: It may be necessary to lubricate the intercooler tube mounting grommet in order to remove the tube from the vehicle.

23. Carefully remove the hot side intercooler tube from the passenger side of the vehicle
24. Loosen and the clamp securing the factory intercooler tube coupling to the turbo, then remove the coupling from the vehicle.



25. Rotate the vent tube (18) from the turbo inlet tube out of the way.
26. Loosen the clamp (19) securing the hot side intercooler tube to the turbo coupling on the driver side of the vehicle and disconnect it from the coupling.

Note: It may be necessary to lubricate the intercooler tube mounting grommet in order to remove the tube from the vehicle.

27. Carefully remove the hot side intercooler tube from the driver side of the vehicle.
28. Loosen and the clamp securing the factory intercooler tube coupling to the turbo, then remove the coupling from the vehicle.



29. Loosen the two (2) clamps securing the factory hot side intercooler couplings onto the intercooler on the passenger side of the vehicle.

30. Remove the two (2) factory hot side intercooler tube couplings from the vehicle.



Note: Be sure to thoroughly clean all oil residue off of the connections before installing the supplied aFe couplings onto the vehicle

31. Install the two (2) 2-1/2" x 5-1/2"L aFe hump couplings (20) along with two (2) supplied 2-5/16" – 3-1/4" clamps onto the hot side intercooler connections and tighten the clamps.
32. Install two (2) of the 2-5/16" – 3-1/4"L clamps onto the ends of the couplings (21) from the previous step, do not tighten clamps yet.



33. Install the 2-1/2" x 1-3/4" x 15° aFe reducer coupling (22) onto the driver side turbo along with one of the supplied 1-9/16" -2-1/2" clamps , do not tighten the clamp yet.
34. Install one of the 2-5/16" – 3-1/4" clamps onto the end of the coupling (23) from the previous step, do not tighten the clamp yet.

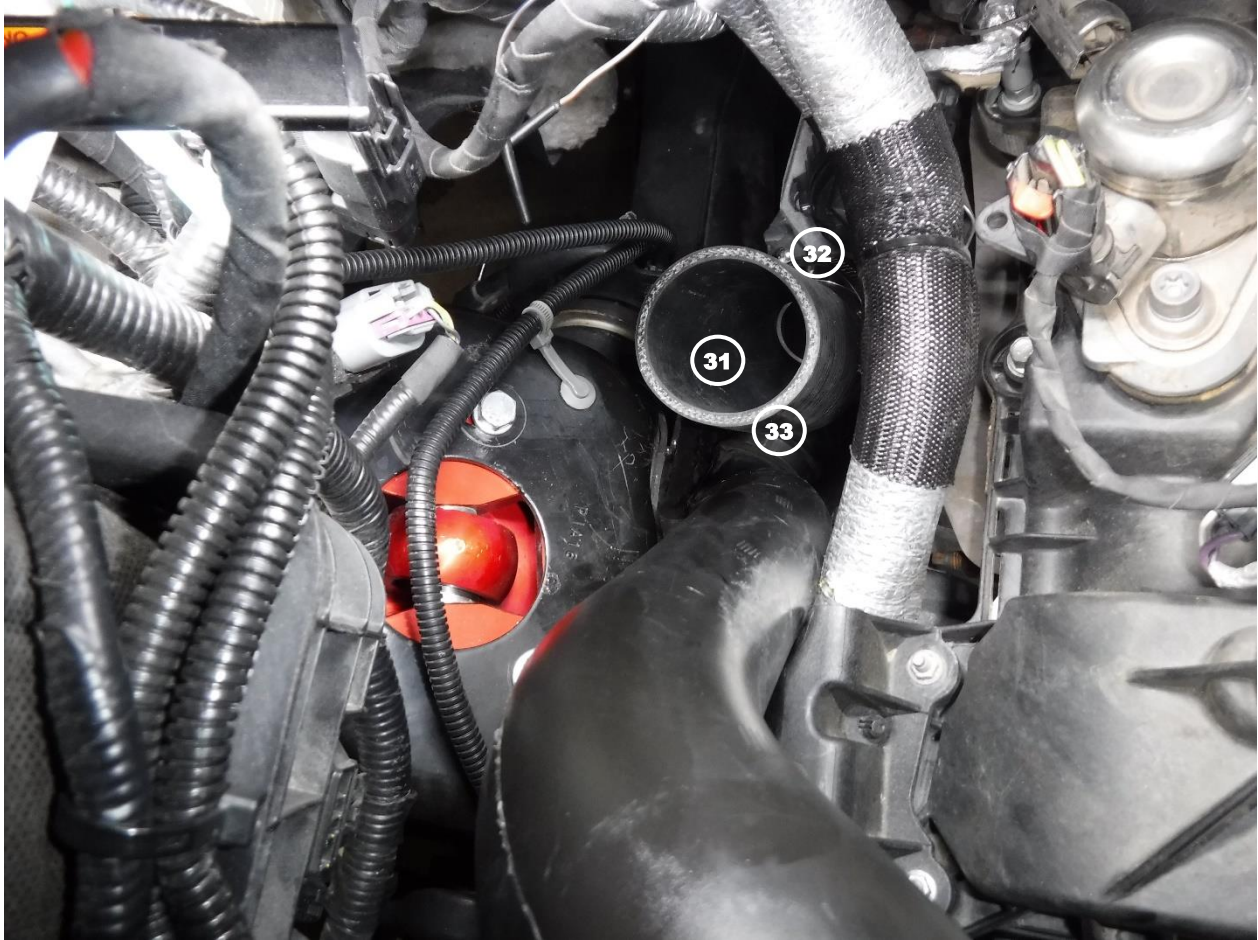


35. Install the last 2-1/2" x 5.5"L aFe hump coupling (24) onto the less angled side of the smaller intercooler tube along with one of the 2-5/16" – 3-1/4" clamps on each end of the coupling, (25) do not tighten the clamps yet.
36. Install the tube from the previous step into the lower aFe hot side intercooler coupling (26) from step 31, do not tighten the clamps yet.



Note: Be sure to use thread sealant on the plug or sensor to prevent any leaking

37. If you are not using any aftermarket sensors, install the supplied 1/8" NPT plug (27) into the threaded fitting on the aFe driver side upper hot side intercooler tube.
38. Install the driver side upper hot side intercooler tube into the vehicle by first starting the tube into the lower coupling (28), then lining up the turbo coupling (29), and finally inserting the peg into the mounting grommet (30)

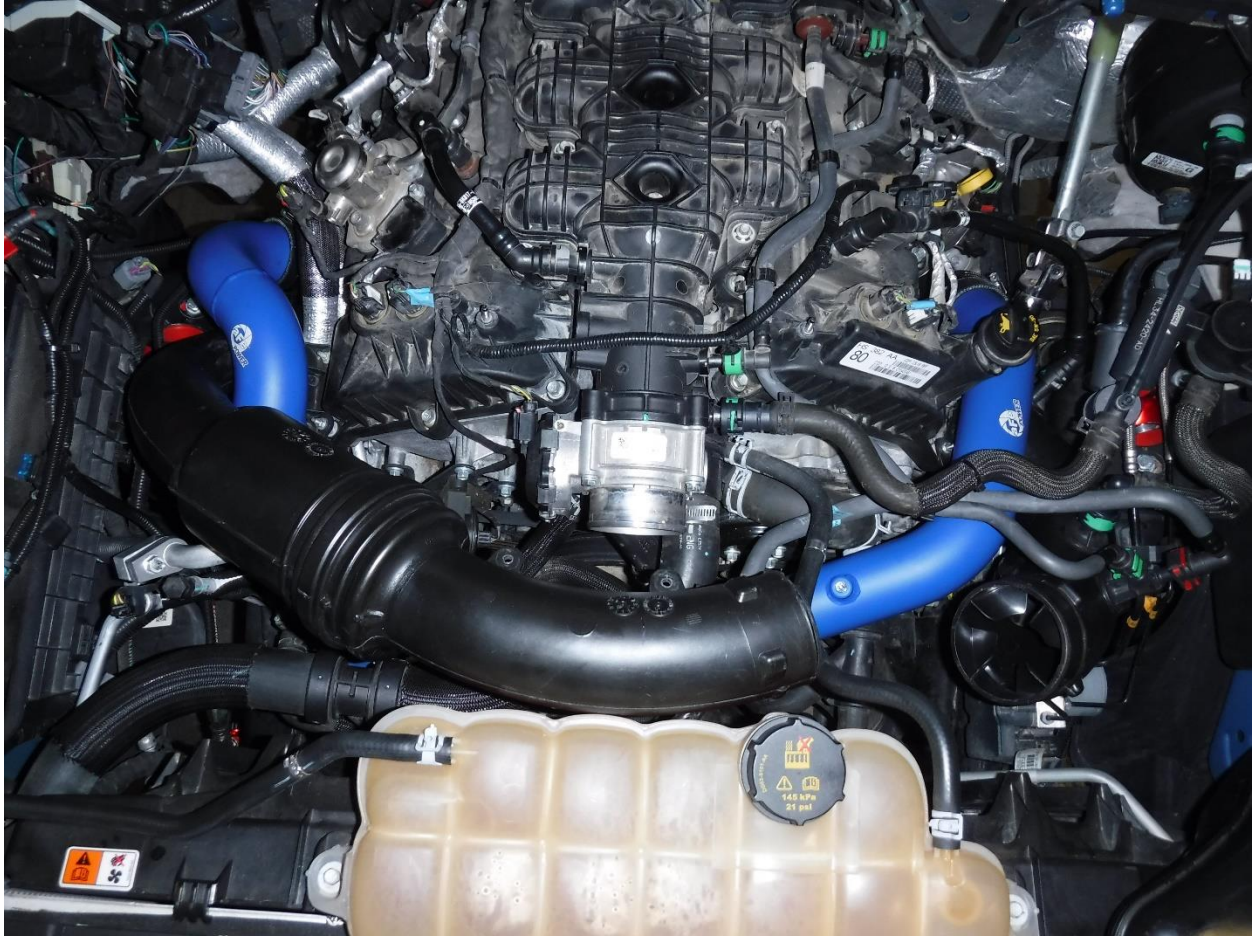


39. Install the 2-1/2" x 1-3/4" x 30° aFe reducer coupling (31) onto the passenger side turbo along with one of the 1-9/16" -2-1/2" clamps (32) do not tighten the clamp yet.
40. Install one of the 2-5/16" – 3-1/4" L clamps onto the end of the coupling (33) from the previous step, do not tighten the clamp yet.



Note: Be sure to use thread sealant on the plug or sensor to prevent any leaking

41. If you are not using any aftermarket sensors, install the supplied 1/8" NPT plug (34) into the threaded fitting on the aFe driver side upper hot side intercooler tube.
42. Carefully maneuver the aFe passenger side hot side intercooler tube into the vehicle and connect it to the upper intercooler coupling from Steps 31 and the turbo coupling (35) from the previous step.
43. Ensure the peg goes into the mounting grommet (36) all the way.



44. Ensure the aFe hot side intercooler tubes are not touching anything and tighten all of the clamps.
45. Reinstall the EVAP solenoid and connections into the vehicle.
46. Reconnect the vacuum hoses.
47. Ensure all retaining clips are secured.



Note: Be sure to thoroughly clean all oil residue off of the connections before installing the supplied aFe couplings onto the vehicle

48. Reinstall the cold side intercooler tube (37) back into the vehicle.
49. Reconnect the electrical connector (38) and harness (39)
50. Reinstall the breather hose (40) into the vehicle and secure the retaining clips.
51. Ensure the cold side intercooler tube is not touching anything and tighten all of the clamps (41)



52. Reinstall the intake tube y-bridge and tighten the clamps (42)
53. Reconnect the temperature sensor (43) to the intake tube.
54. Reinstall the engine cover (44)
55. Reconnect the negative battery cable.
56. Install is now complete.

Note: Be sure to check all connections after 50-100 miles.