

banks

with Installation Instructions
Owner's Manual

**Banks
Techni-Cooler®
Charge Air Cooler
Assembly**

**2003 to 2007 Dodge 5.9L Cummins (24-valve)
ISB Pickup Trucks**

USE WITH SYSTEM P/N 25980, 25981

Gale Banks Engineering
546 Duggan Avenue • Azusa, CA 91702
(626) 969-9600 • Fax (626) 334-1743

Product Information & Sales: (800) 438-7693

bankspower.com

BANKS

Also Available from Banks Power

03-07 Dodge 5.9L



Banks iQ System (P/N 61148-61149)

- 5" touchscreen interface that can control the Banks Diesel Tuner on the fly.
- Interchangeable gauge display, read and clear codes, monitor engine diagnostics, log data, time your vehicles runs and much more.

Banks Monster® Exhaust System Single (P/N 48640-48643, 48700, 48701, 48708) Duals (P/N 48702-48707, 48709) Sport (P/N 48777-48780)

- Increases exhaust flow, cuts backpressure, lowers exhaust gas temperatures (EGTs) and increases power.

Banks Ram-Air Intake System (P/N 42145)

- Increases your airflow over stock.
- Adds power, improves fuel economy, lowers EGTs and reduces smoke.

Banks Ram-Air Intake Super-Scoop (P/N 42190-42191)

- Adds cooler denser air to the Ram-Air Intake housing, further increasing fuel economy, reducing smoke and lowers EGTs.

Banks Monster-Ram (P/N 42765-42766)

- Increased flow from intercooler
- Raises boost without increasing backpressure at the turbine

Big Hoss Intake Manifold System (P/N 42747)

- Increases flow and provides more uniform air distribution to the engine for more available power at a given boost level.

Banks Exhaust Brake (P/N 55222-55229)

- Increases the stopping power of your truck and extends the service life of your brakes

Banks SmartLock (P/N 55270)

- Reduces wear on transmission
- Locks Torque Converter and raises trans-line pressure
- Works with Banks Exhaust Brake

Boost and Pyro Gauges (P/N 64507)

- Keep your engine safe by monitoring vital engine parameters.

Banks Billet Torque Converter (P/N 72515)

- Higher torque capacity over stock
- Lockup clutch is slip-resistant so transmission fluids stay cooler and transmission life is prolonged.

Banks Bullet (P/N 66522-66523)

- Adds power safely to your vehicle
- Displays critical engine functions
- Engine safeguards
- Change power levels on-the-fly

Banks Diesel Tuner EconoMind w/switch (P/N 63725, 63793, 63795, 64507) EconoMind w/iQ (P/N 63807, 63808, 63817, 63818)

Six-Gun w/switch (P/N 61022, 63797)

Six-Gun w/iQ (P/N 63809, 63819)

- Adds power safely to your vehicle
- Engine and transmission safeguards
- Change power levels on-the-fly

Thermocouple

- Add a temperature limiting function to your Diesel Tuner .

Banks Speed-Loader (P/N 62981)

- Furthers the power output of the Banks Six-Gun and provides EGT limiting safety.

Banks BigHead® Actuator (P/N 24331)

- Achieves a higher peak boost over stock and gives you precise boost control that gives you crisp acceleration and more mid-range pulling power.

Banks Stinger Systems (P/N 49692-49699, 49708-49711, 49716-49721)

Contains:

- Ram-Air Intake system
- Monster Exhaust (single or dual)
- EconoMind Tuner w/ Banks iQ
- Big Head Wastegate Actuator

Banks PowerPack Systems (P/N 49700-49707, 49712-49715, 49722-49727)

Contains:

- Ram-Air Intake system
- Monster Exhaust (single or dual)
- EconoMind Tuner w/ Banks iQ
- Big Head Wastegate Actuator
- Monster-Ram
- Techni-Cooler System

Banks Six-Gun Bundle (P/N 49728-49735, 49744-49747, 49752-49757)

Contains:

- Ram-Air Intake system
- Monster Exhaust (single or dual)
- Six-Gun Tuner w/ Banks iQ
- Big Head Wastegate Actuator

Banks Big Hoss Bundle (P/N 49736-49743, 49748-49751, 49758-49763)

Contains:

- Ram-Air Intake system
- Monster Exhaust (single or dual)
- Six-Gun Tuner w/ Banks iQ
- Big Head Wastegate Actuator
- Monster-Ram
- Techni-Cooler System

**For More Information please call (888) 635-4565
or Visit us online @ www.bankspower.com**

General Installation Practices

Dear Customer,

If you have any questions concerning the installation of your Banks Techni-Cooler, please call our Technical Service Hotline at (888) 839-2700 between 7:00 am and 5:00 pm (PT). If you have any questions relating to shipping or billing, please contact our Customer Service Department at (888) 839-5600.

Thank you.

1. Before starting work, familiarize yourself with the installation procedure by reading all of the instructions.
2. Throughout this manual, the left side of the vehicle refers to the driver's side, and the right side to the passenger's side.
3. Disconnect the negative (ground) cable from the battery (or batteries, if there are two) before beginning work.
4. Route and tie wires and hoses a minimum of 6" away from exhaust heat, moving parts and sharp edges. Clearance of 8" or more is recommended where possible.
5. When raising the vehicle, support it on properly weight-rated safety stands, ramps or a commercial hoist. Follow the manufacturer's safety precautions. Take care to balance the vehicle to prevent it from slipping or falling. When using ramps, be sure the

front wheels are centered squarely on the topsides. When raising the front of the vehicle, put the transmission in park (automatic) or reverse (manual), set the parking brake, and block the rear wheels. When raising the back of the vehicle, be sure the vehicle is on level ground and the front wheels are blocked securely. **Caution! Do not use floor jacks to support the vehicle while working under it. Do not raise the vehicle onto concrete blocks, masonry or any other item not intended specifically for this use.**

6. During installation, keep the work area clean. Do not allow anything to be dropped into intake, exhaust, or lubrication system components while performing the installation, as foreign objects will cause immediate engine damage upon start-up.

Tools Required:

- Drive ratchet
- Ratchet extensions
- Inch and metric deep sockets
- Torx & Allen bits
- Flat blade screwdriver

Highly recommended tools:

- Torque wrench
- Silicon lubricating spray

Intercooler Assembly Installation

1. Disconnect the negative battery cables from both batteries

2. Disconnect the Inlet Air Temperature/ Pressure Sensor connector located on the air box cover. The connector is shown in **Figure 1**.

3. Remove the nut that fastens the air filter housing to the radiator cross brace.

4. Loosen the hose clamp that secures the air inlet duct to the turbocharger inlet. Disconnect the inlet duct from the turbocharger.

5. Remove the air box and inlet duct as an assembly. The air box is held in place with re-usable push-in fasteners and can be pulled out vertically.

6. Remove the passenger side boost tube. The boost tubes are the charge air ducting that route air from the turbocharger to the Charge Air Cooler (CAC) and from the CAC to the intake manifold.

7. Cover the turbocharger inlet and outlet with a clean rag to prevent foreign debris from entering these locations.

8. Remove the bolt the holds the engine oil dipstick to the intake. Save the bolt for re-use.

9. Remove the electric heater wire harness from the stock intake by pulling the plastic pin out. Remove the wire harness brackets that are mounted on the intake by removing the nut and washer.

10. Unbolt and remove the 4 bolts at the base of the stock intake. Remove the stock intake from the vehicle. Cover the intake manifold opening with a clean rag to prevent any foreign debris from entering the engine through the heater block.

11. Remove the driver side boost tube.

12. Remove the two upper radiator attachment bolts.

13. Remove the two upper CAC attachment bolts.

14. Remove the 4 bolts (2 per side) that retain the upper radiator cross brace, then remove the upper radiator cross brace. The brace is shown in **Figure 2**.

Figure 1. Location of the Inlet Air Temp/ Pressure Sensor



Figure 2. Upper Radiator Cross Brace

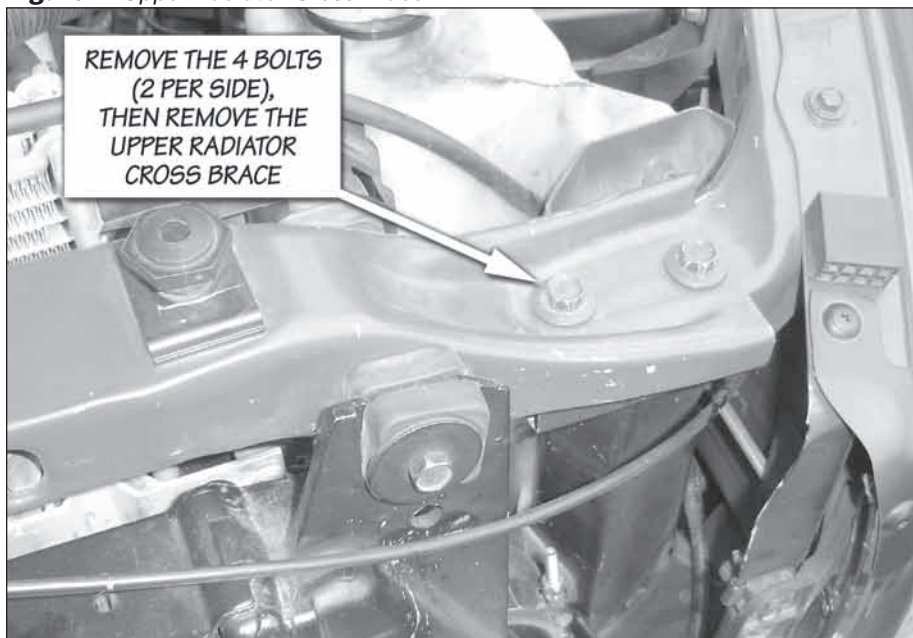
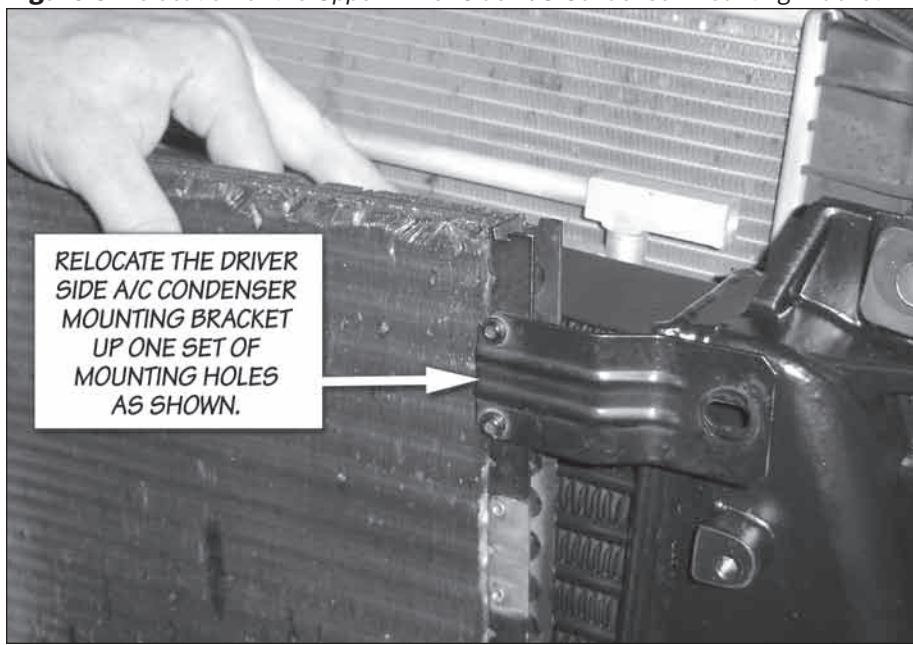


Figure 3. Relocation of the Upper Driver Side A/C Condenser Mounting Bracket



15. Remove the hex head bolts that attach the lower two A/C condenser mounting brackets to the CAC. Remove the torx head bolts that fasten the lower two mounting brackets to the A/C condenser. Discard the stock lower mounting brackets, but retain the torx head bolts for re-use.

16. Remove the hex head bolt that attaches the upper passenger A/C condenser mounting bracket to the CAC.

17. Swing the A/C condenser upward as shown in **Figure 4**, then out away from the vehicle as shown in **Figure 5**.

Caution: Minimize the amount of stress to the A/C condenser fluid lines to prevent damage.

An assistant could be helpful to hold the A/C condenser while the stock CAC is being removed and the Banks Techni-Cooler is being installed.

18. Remove the stock CAC from the vehicle.

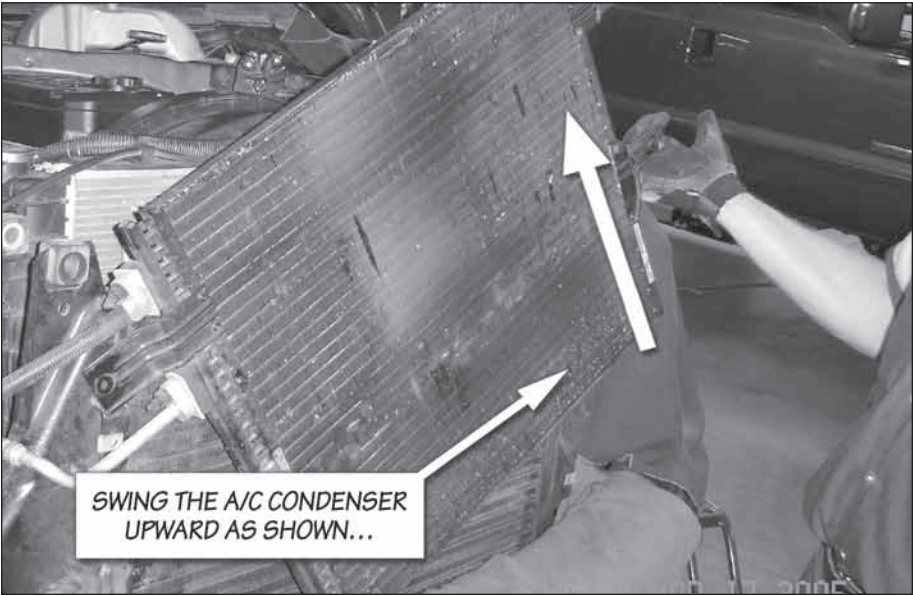
19. Remove the lower saddle mount rubber bushings from the stock CAC and install them on the Banks Techni-Cooler.

20. Remove the upper rubber isolators from the stock CAC and install them on the Banks Techni-Cooler.

21. Install the Banks Techni-Cooler in the vehicle.

22. Place the A/C condenser back in front of the Techni-Cooler. For 2003 to 2005 models, Install the $\frac{5}{16}$ " bolts and washers supplied with the Banks Techni-Cooler system to fasten the top two A/C condenser mounts to the Techni-Cooler. Relocate the upper driver side condenser mounting bracket as shown in **Figure 3**. Keep the bolts loose to aid in the alignment of the lower two mounting brackets.

Figure 4. A/C Condenser Removal Procedure



Install the lower two A/C mounting brackets supplied with the Banks system. Use the torx head screws that were previously removed from the vehicle to fasten the brackets to the A/C condenser. Use the supplied $\frac{5}{16}$ " bolts and washers supplied with the Banks system to fasten the A/C condenser mounts to the Techni-Cooler.

23. For 2006 Models, remove all of the factory brackets from the condenser, retain the torx head bolts for reassembly. The Banks condenser brackets are stamped such that "R.U." means Right (Passenger Side) Upper and that the "R.U." is visible when the condenser is installed. Install the R.U. and L.U. brackets onto the condenser and assemble the condenser to the banks intercooler using the $\frac{5}{16}$ " button head bolts and washers provided.

Install the R.L and L.L brackets onto the condenser such that the intercooler boss and condenser holes align.

24. Tighten the $\frac{5}{16}$ " bolts at each of the A/C mounting brackets and torque to 19 ft-lbs.

25. Tighten the torx head bolts on both of the lower and the upper A/C mounting brackets.

26. Install the upper radiator cross brace. Leave the bolts loose to aid in the alignment of the cross brace with the radiator and Techni-Cooler.

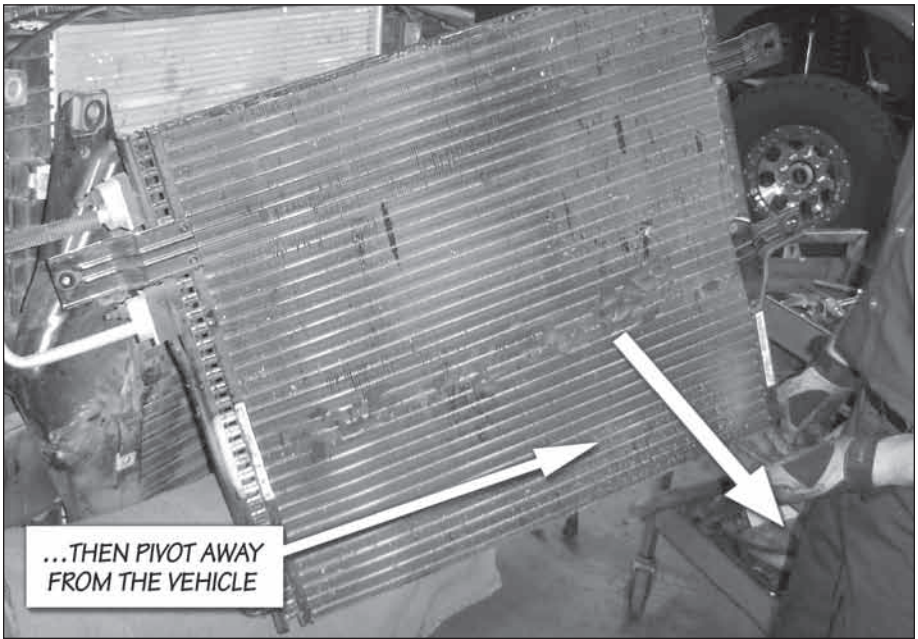
27. Loosely install the upper CAC mounting bolts.

28. Loosely install the upper radiator mounting bolts.

29. Tighten the radiator cross brace bolts and torque to 21 ft-lbs

30. Tighten the upper CAC mounting bolts and torque to 8 ft-lbs (96 in-lbs).

Figure 5. A/C Condenser Removal Procedure



31. Tighten the upper radiator mounting bolts and torque to 8 ft-lbs (96 in-lbs).

32. Install the passenger side boost tube. The passenger side uses a 2.75 inch diameter straight hose at the turbocharger connection, and a 3.5 inch diameter hump hose at the CAC connection. The passenger side tube is most easily installed by placing the 2.75 inch straight hose as it will normally reside on the boost tube when installed on the vehicle. Then slide the 3.5 inch diameter hose all the way onto the boost tube. Install the boost tube in the vehicle, make the attachment to the turbocharger, then slide the 3.5 inch diameter hose towards the Techni-Cooler to complete the installation. *Note: Applying a silicon lubricating spray to inside of the hoses will temporarily assist in sliding the hose on the boost tube.* Install the hose clamps on the passenger side boost tube as

shown in **Figure 6** to avoid clearance issues. The clamps should be tightened to 5 ft-lbs (60 in-lbs).

33. Install the driver side boost tube. The driver side tubes uses a 3.5 inch diameter straight hose at the intake manifold and a 3.5 inch diameter hump hose at the CAC. The orientation of the hose clamps should be as shown in **Figure 7** to avoid clearance issues. Keep the hose clamps loose until the High Ram is installed. Cover the opening of the boost tube to prevent foreign objects from entering the boost tube during the installation.

34. Remove the three wires on the electric heater block at the intake manifold, then remove the heater block. Save the fasteners for re-use. **Caution: Cover the opening in the intake manifold with a clean rag to prevent foreign objects from entering the engine.**

Figure 6. Orientation of the Passenger Side Hose Clamps to Avoid Clearance Issues.

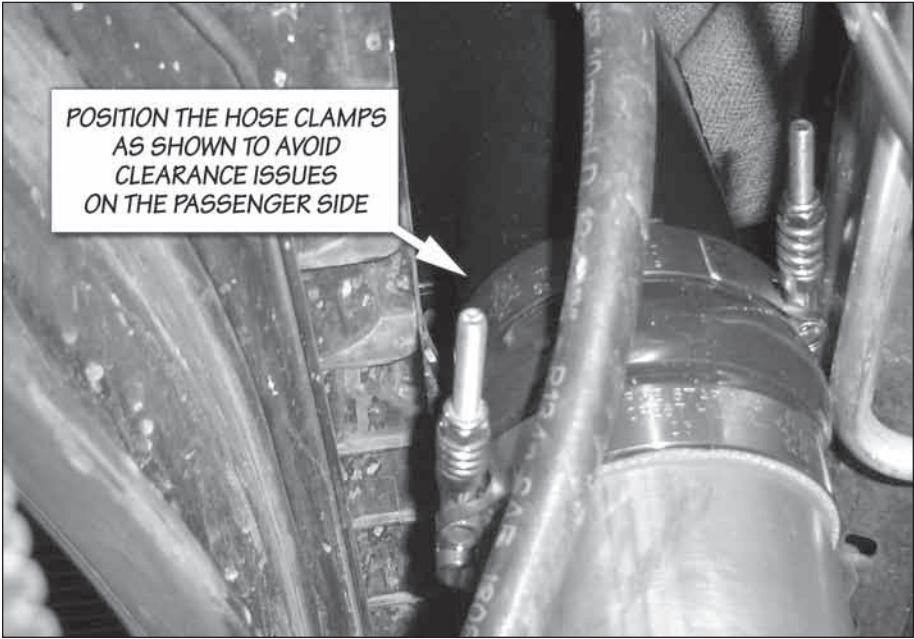
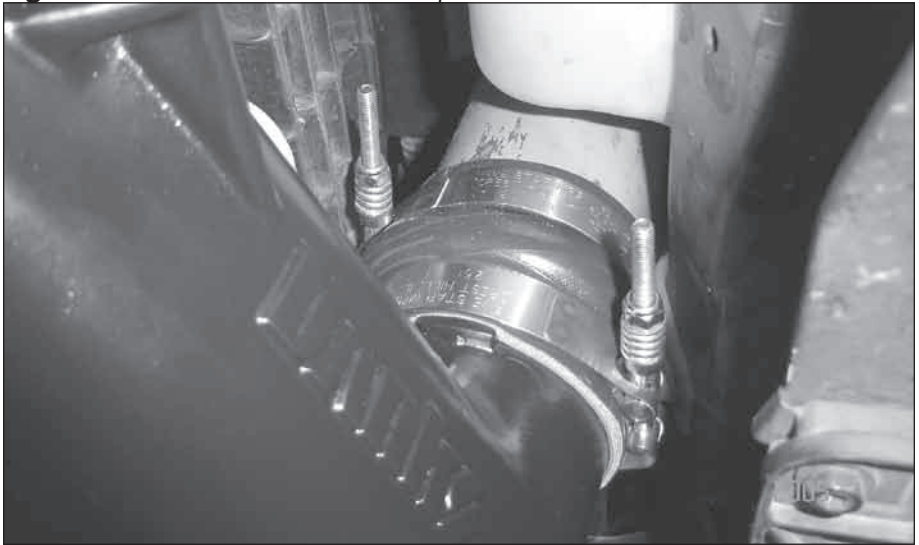


Figure 7. Orientation of the Hose Clamps on the Driver Side.



35. Completely remove the stock gaskets from both sides of the heater block and intake manifold. Take care not to scratch or gouge any of these surfaces when removing the gasket material.

36. Remove the rag that was used to cover the intake. Reinstall the electric heater block onto the intake manifold with one of the supplied gaskets. Reattach the three electrical connections to the heater element.

37. Caution: The High Ram studs have different threads on each end. Make sure the M8 ends go into the engine intake manifold.

The shorter studs are placed inboard closest to the valve cover. Apply the supplied thread locking compound to the M8 threaded end of the studs. Hand tighten the studs to the intake manifold.

38. Using the two $\frac{5}{16}$ "-24 nuts supplied, tighten the studs into the intake by threading both nuts onto the stud, then tighten the nuts against each other with two $\frac{1}{2}$ " open end

wrenches. Tighten and torque the stud to 3-5 ft-lbs by turning the top nut. Remove the nuts from the stud by using two open end wrenches to loosen the nuts in relation to each other. Repeat the process for each stud. The process is shown in **Figure 8**.

39. If your vehicle is NOT equipped with a factory ground strap on the intake heater, install the supplied ground strap from the intake heater to the engine. Put a 6-mm washer onto the bottom intake heater stud, leaving the factory heater nut installed. Next, install the smaller diameter ground strap terminal over the stud and retain with a 6-mm washer and nut. Route the other end of the ground strap to the threaded section on the engine and retain with a SAE washer and M8-1.25x 16 bolt. See **Figure 8**.

40. Slide the supplied intake gasket over the four studs, then slide the High-Ram over the studs.

41. Install the supplied Stat-O-Seal washers on the two driver side (longer) studs. Driver side studs are longer than

passenger side studs. The washers should be installed in a twisting motion to prevent tearing their sealing element. Install the supplied $\frac{5}{16}$ " flat washer on all studs, then fasten with the supplied $\frac{5}{16}$ -24 nylock nuts. The nuts should be tightened to 12 ft-lbs (144 in-lbs). An exploded view of the High-Ram assembly is shown in **Figure 9**.

42. Gently bend the engine oil dipstick tube to its mounting location on the High Ram as shown in **Figure 9**.
9. Secure the dipstick tube with the factory bolt that was previously removed.

43. Remove rag that was used to cover the boost tube opening. Make the connection between the driver side boost tube and the High-Ram. Tighten all the driver side hose clamps to 5 ft-lbs (60 in-lbs).

44. Re-install the air box and inlet tube assembly. Secure the air box at the radiator cross brace with the factory nut that was previously removed. Re-connect the Air Inlet Temperature/ Pressure sensor at the air box cover. Re-connect the air inlet duct to the turbocharger inlet. Tighten the hose clamp at the turbocharger inlet to 8 ft-lbs (96 in-lbs).

45. Re-connect the negative battery cables

46. Clean an area that is easily visible on the upper radiator core support with a non-oil based solvent, such as Acetone, Mineral Spirits, Denatured Alcohol or Lacquer Thinner. Allow to dry and then attach the Banks E.O. sticker to the upper radiator core support.

Figure 8. High-Ram stud installation.

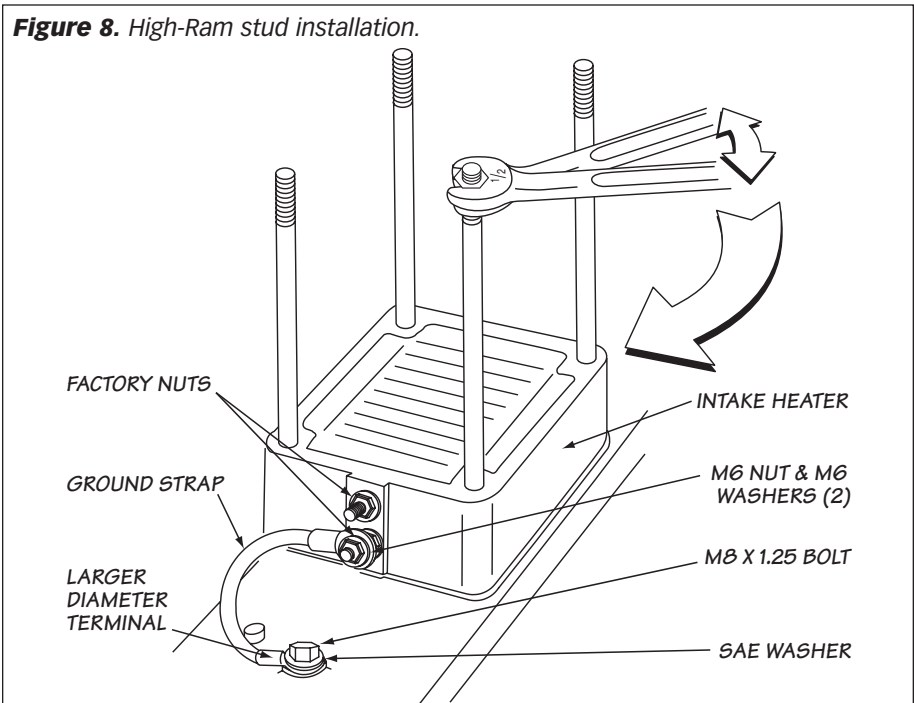
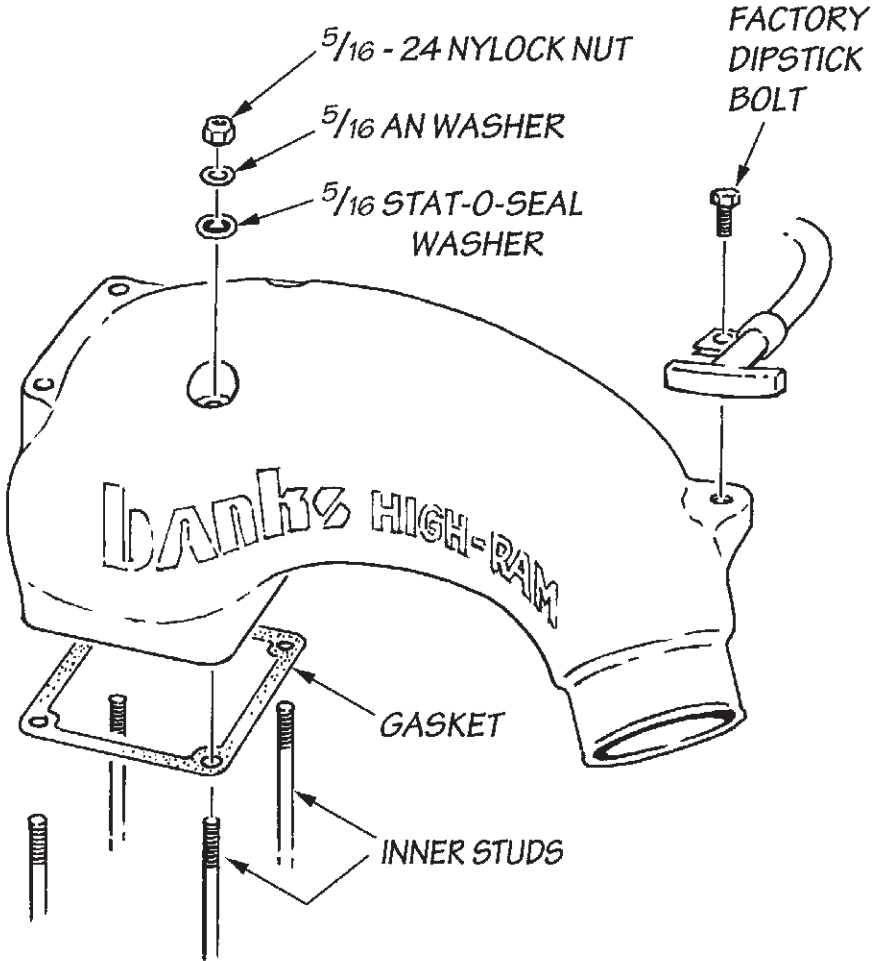


Figure 9. Exploded view of the High-Ram assembly



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