

**(I-00300)**

**BD Engine Brake LIMITED WARRANTY STATEMENT**

BD Engine Brake (the "Seller") warrants the following product(s):

All products manufactured or rebuilt by the Seller are to be free from defects in material or workmanship, which includes but is not limited to Turbochargers, Exhaust and Intake manifolds, Exhaust brakes, Intercoolers, Flex Plates, Transmissions, Torque Converters, Oil pans, Fuel pumps and systems, Electronic monitors and control systems. The Seller warrants to the original buyer of the product (the "Buyer") that it will repair or replace, free of charge, any product which has a defect in material or workmanship within the warranty period described below. Copy of original invoice is required to qualify for warranty.

A defect is defined as a condition within the product that would render the product inoperable under normal conditions of use and service. The Seller's responsibility under this Warranty is limited to the repair or replacement, at the Seller's option, of any warrantable product returned prepaid with complete service history and proof of purchase. A valid proof of purchase is a dated bill of sale or receipt.

A Return Material Authorization (RMA) number, obtained in advance from a customer service representative of the Seller and the dated bill of sale or receipt, must accompany any product returned by the Buyer for warranty determination. The Seller will be the final authority on the approval of all warranty claims hereunder. The issuance of a RMA number does not represent an approval of a warranty claim. BD reserves the right to return or replace Warranty Approved items freight Prepaid. While warranty denied or rejected, claims will be returned freight collect. Accepted warranty products, which have been replaced, will become the sole property of BD.

Until the Seller has approved a warranty claim, the Buyer will be responsible for all costs. Replacement parts and the labor costs incurred by the removal and replacement of the product while performing warranty work will be the responsibility of the Buyer. In no case does the obligation of the Seller exceed the original purchase price of the product as indicated on the original bill of sale or receipt. Under no circumstances will the Seller be liable for any travel time incurred in diagnosis for defects, or any other contingent expenses.

Only once the claim is approved, and depending on if the warrantable product is eligible, labor costs will be considered for the removal and replacement if an eligible part at an hourly rate of \$100.00 per hour. The end user may be responsible for the difference between the BD warranty labor rate and the authorized service dealer's labor rate. BD recommends the end user negotiate these conditions before the service is performed. As well the end user may be responsible for additional freight charges from FOB Abbotsford, BC / Washington.

To the extent permitted by law, the Buyer hereby waives all rights other than those expressly set out herein and acknowledges that this warranty sets out the Buyer's exclusive remedies with respect to products covered by it. This warranty shall not be extended, amended or varied except by written instrument signed by the Seller and the Buyer. If the buyer replaces the product from the Seller with another from another manufacturer, the Buyer-Seller warranty contract is void and the RMA Claim will be terminated. Any claim for remuneration will be rejected.

The Seller will administer warranty requests on products sold by the Seller and not manufactured by the Seller by forwarding claims made by a Buyer under the manufacturer's warranty to the manufacturer. The final disposition of such claims will be made by the manufacturer and ruled by the laws of British Columbia, Canada.

Customer assumes risk in purchasing product with in 30 days may return the product for exchange of other BD products or services only. No cash refunds are available.

The installation of BD aftermarket parts may void the OE warranty. BD is not responsible for OE warranties or how they are administered. Residents of the U.S.A. can reference the Magnuson-Moss warranty act that protects the consumer on the installation of aftermarket parts, please research this act to base your decisions accordingly.

In the case the warranty is denied, BD at its discretion, may offer to refurbish (where applicable) the product at discounted rate for the end user.

**Please refer to Warranty time limitation per product.**

**NOT COVERED UNDER THIS WARRANTY**

This warranty is limited to the original purchaser of the product and is not transferable to subsequent owners. Specifically excluded from this warranty are failures of products caused by misuse, misapplication, negligence of the Buyer, accidents, modification, abuse, improper storage, installation, repair or operation, use of unauthorized parts or other mistreatment of the Buyer or his agent. Any competitive use, sled pulling, drag racing will void warranty on product. A sheared or twisted shaft, broken planetary gear sets, burned clutches, broken drive hubs, sun gear damage, cracked housings are not covered. Damage caused from debris in oil contaminated coolers, improper fluids and filters or damage caused from fuel or air contamination, Biodiesel, low fluid levels are also not covered. This warranty does not cover deterioration of plating, paint or any other coating, linings or parts that are subject to normal wear and tear, such as light bulbs, fuses, bearing wear, seal wear, etc.

**In the case of BD transmissions, a BD torque convertor must be installed at the time of installation of the transmission. Use of a 3<sup>rd</sup> party or OE convertor may invalidate the transmission warranty.**

If product is not installed by a trained and authorized BD dealer, installation facility must prove it is properly tooled and has certified training to have installed or to carry out repair of product.

The Seller also disclaims any liability for incidental or consequential damages including but not limited to, repair labor, rental vehicles, hotel cost or any other inconvenience cost. To the extent permitted by law, this warranty is in lieu of all other warranties or guarantees, either expressed or implied, included the implied warranties of merchantability and fitness for a particular purpose and shall not extend to any Buyer or to any person other than the original purchaser residing within the boundaries of the continental U.S. or Canada. As well the seller is not responsible or obligated to update previously manufactured parts that are currently under the above warranty.

**NOTE THAT THIS GUARANTEE WILL BE VOID IF THE USER BREACHES THE CONDITIONS IN THE SECTION LABELED "NOT COVERED UNDER THIS WARRANTY" AND IS ONLY APPLICABLE ON THE PRODUCTS THE SELLER MANUFACTURES.**

**DISCLAIMER OF LIABILITY**

Other than as expressly set forth herein, the Seller, together with its distributors, jobbers and dealers shall in no way be responsible for the product's proper use and service. In no event shall the Seller be liable for any special, incidental, indirect or consequential damages of any kind or nature, whether or not the Buyer was advised of the possibility of damage, arising or resulting from the use or performance of the product, and the Buyer hereby waives any and all such claims.

The Buyer acknowledges that he/she/it is not relying on the Seller's skill or judgment to select or furnish goods suitable for any particular purpose and that the Seller has no liability that will extend beyond the scope of the limited warranty contained herein, and the Buyer hereby waives all remedies or liabilities, expressed or implied, arising by operation of law or otherwise, (including, without limitation, any obligations of the Seller with respect to fitness for any particular purpose; merchantability; and special, incidental, indirect or consequential damages) or whether or not occasioned by the Seller's negligence.

The Seller disclaims any warranty and expressly disclaims any liability for personal injury or damages related to the Buyer's use of the product. The Buyer acknowledges and agrees that the disclaimer of any liability for personal injury is a material term for this Agreement and the Buyer agrees to indemnify the Seller and hold the Seller harmless from any claim related to the product and its use or performance. Under no circumstances will the Seller be liable for any damages, liabilities, costs or expenses incurred as a result of by reason of the use, performance or sale of the product, including without limitation, any damages, liabilities, costs or expenses incurred by reason of the Buyer's negligence related to those uses of the product as a result of the removal of the speed limiter.

The Seller assumes no liability regarding the improper installation or misapplication of the product. It is the installer's responsibility to check for proper installation, and, if in doubt, contact the manufacturer.

Limited Warranty Details			
Product Name	Parts (Months/Miles) <sup>1</sup>	Labor (Months/Miles) <sup>1,2</sup>	Notes
Torque Converters	36/ 150,000	12/12,000	No Race abuse covered
Transmissions (TowMaster & TorqueMaster)	36/ 150,000	12/ 24,000	No Race abuse or broken shafts covered. Remote filter required for inspection with a cooler flow rate in GPM at Oil/Air transmission cooler outlet. Freight provision allowed.
Transmissions (RoadMaster)	24/ 100,000	12/ 24,000	
Rebuild/Repair Transmission	12/ 24,000	12/ 24,000	Defined as "Cost of Repair" or repaired units that fall outside of the retail warranty period.
Race Transmissions	12/ 24,000	Not Eligible	
Valve / Accumulators Bodies	12/ 24,000	12/ 24,000	
Transmission Pans	36/ 150,000	Not Eligible	
Flex Plates	36/ 150,000	Not Eligible	
Injectors (Mechanical) & Injection Pumps	12/ 24,000	12/ 24,000	VP44/P7100 Race Pumps 90 days parts/No labor coverage
Performance Injector Nozzles (Common Rail)	Not Eligible	Not Eligible	
Common Rail Injectors	24 Months	Not Eligible	Manufacturing and material defects are only covered. Cracks caused by high fuel pressure are not covered. High Return flow not covered after 12 months on Performance Injectors. For No Hassle Eligibility, see <a href="https://us.bddiesel.com/pages/extended-warranty">https://us.bddiesel.com/pages/extended-warranty</a>
	24 Months + No Hassle	Not Eligible	
Performance Tuners and Chips	Manufacturer <sup>3</sup>	Not Eligible	
BD Electronic Modules (TSB, VVB, etc)	24/ 48,000	Not Eligible	
Intake / Exhaust Manifolds	36/ 75,000	Not Eligible	
Exhaust Up pipes	12/24,000	Not Eligible	Surface rust not eligible.
Exhaust Kits	Manufacturer <sup>3</sup>	Manufacturer <sup>3</sup>	
Hoses / Clamps	12/ 24,000	Not Eligible	
BD Xtruded Transmission Cooler	12/ 24,000	Not Eligible	
Manual Transmission Clutches	Manufacturer <sup>3</sup>	Manufacturer <sup>3</sup>	
Short Shifters	12/ 24,000	Not Eligible	
Engine / Head Stud kits	Manufacturer <sup>3</sup>	Manufacturer <sup>3</sup>	
Positive Air Shutoff / Electronic Positive Air Shutoff	24/ 24,000	Not Eligible	
Exhaust Brakes	24/ 24,000	12/ 24,000	
Gauges and Mounts	Manufacturer <sup>3</sup>	Manufacturer <sup>3</sup>	
Screamer Turbos	24 Months	Not Eligible	24 Month warranty effective for sales after 11/01/2024
Performance/OEM Turbos	12 Months	Not Eligible	
Remanufactured ISX Turbos	90 Days	Not Eligible	See I-00437 for more details. For 1045880, see OEM Turbos.
Auxiliary Fuel Pumps	12/ 12,000	Not Eligible	
BD FICM	12 Months	Not Eligible	
Fuel Control Plate/Pin (VE & P7100)	24 Months	Not Eligible	
Distributed Product (Not Manufactured by BD)	Manufacturer <sup>3</sup>	Manufacturer <sup>3</sup>	
Replacement Components	12 Months	Not Eligible	
Transmission Rebuild/Build It Kits	12 Months	Not Eligible	Material Defects Only
Steering & Suspension Parts (Track Bar, Caster kit, Steering Stabilizer, Bars and links)	Limited Lifetime (12 months if not registered)	Not Eligible	Must register online within 30 days of purchase to be eligible. See website <a href="https://warranty.bddiesel.com/limited-lifetime/">https://warranty.bddiesel.com/limited-lifetime/</a> for details. Excludes normal wear & tear (boots, bushings, joints, bearings) and improper use.
Venom/FlowMAX Fuel Lift Pump Kit	Limited Lifetime (12 months if not registered)	Not Eligible	Must register online within 30 days of purchase to be eligible. See website <a href="https://warranty.bddiesel.com/limited-lifetime/">https://warranty.bddiesel.com/limited-lifetime/</a> for details. Excludes normal wear/service items (hose, filters) and improper use.

A Return Material Authorization (RMA) number, obtained in advance from a customer service representative of the Seller and the dated bill of sale or receipt, must accompany any product returned by the buyer for warranty determination.

<sup>1</sup> Warranty is based on whichever occurs first (Months or Mileage).

<sup>2</sup> Prior approvals must be given to qualify for labor reimbursement.

<sup>3</sup> As per Manufacturer's warranty

Updated 10/21/2024



**General Policy**

All core returns must be,

- like for like, no mixed models
- drained of all fluids (\$50 Charge)
- be returned in the original packaging
- Part Disassembled
- No junkyard cores (core must have been removed from vehicle)
- No fire damage
- Free of excessive Rust or Water Damage

Returned cores that fail to follow the above conditions will be disallowed and scrapped or returned at the customer's expense. Freight and removal damage are not covered. BD Diesel reserves the right to adjudicate cores as it sees fit and may deviate from its policy.

**BD FUEL INJECTION CORE ACCEPTANCE POLICY**

Model	Deduction	No Credit
P7100 Injection Pump	<ul style="list-style-type: none"> <li>• AFC Housing Damaged (25% Deduction)</li> <li>• Governor Housing Damaged Front or Back (25% Deduction)</li> </ul>	<ul style="list-style-type: none"> <li>• Contaminated/Bio Diesel</li> <li>• Damaged Camshaft on 911/913 pumps.</li> <li>• Main Body Damaged</li> </ul>
Bosch VE Pump	<ul style="list-style-type: none"> <li>• AFC Housing Damaged (25% Deduction)</li> <li>• Cold Advanced Housing Damaged (50% Deduction)</li> <li>• Governor housing damaged front or back (25% deduction)</li> <li>• Main Body Damaged (50% Deduction)</li> </ul>	<ul style="list-style-type: none"> <li>• Contaminated/Bio Diesel</li> <li>• Seized Head (Does not turn)</li> </ul>
CP3		<ul style="list-style-type: none"> <li>• Contaminated/Bio Diesel</li> <li>• Seized (Does not turn)</li> <li>• Catastrophic Shaft Failure (Frost Plugs Damaged or Missing)</li> <li>• Front Cover Damaged</li> </ul>
VP44	<ul style="list-style-type: none"> <li>• Damaged Electronics (50% Deduction)</li> </ul>	<ul style="list-style-type: none"> <li>• Contaminated/Bio Diesel</li> <li>• Seized Head (Does not turn)</li> </ul>
Common Rail Injectors	<ul style="list-style-type: none"> <li>• Solenoid melted or destroyed, stretched terminals (25% Deduction)</li> <li>• 5.9/6.7 Broken Solenoid Terminal Divider (No Deduction)</li> </ul>	<ul style="list-style-type: none"> <li>• Contaminated/Bio Diesel</li> <li>• Damaged Body</li> </ul>
Mechanical Injectors		<ul style="list-style-type: none"> <li>• Contaminated/Bio Diesel</li> <li>• Damaged Body</li> </ul>

**BD TURBOCHARGER CORE ACCEPTANCE POLICY**

Turbo Model/ Application	Deduction	No Credit
Cummins ISX VGT Air or Electronic Actuated	<ul style="list-style-type: none"> <li>• Damaged Electronics (50% Deduction)</li> <li>• Missing Clamps (25% Deduction)</li> <li>• Missing Parts or Actuators (50% Deduction)</li> <li>• Turbine Wheel Separation (50% Deduction)</li> </ul>	<ul style="list-style-type: none"> <li>• Knock Off Models (Not Genuine)</li> <li>• Part Disassembled</li> </ul>
Caterpillar (Ball Bearing) Models		<ul style="list-style-type: none"> <li>• Knock Off Models (Not Genuine)</li> <li>• Wheel Separation</li> </ul>
Caterpillar (Standard Turbocharger) 704604-9007, 704604-9011		<ul style="list-style-type: none"> <li>• Knock Off Models (Not Genuine)</li> <li>• Turbo with 3 support Webs</li> </ul>

Detroit Diesel VGT	<ul style="list-style-type: none"> <li>• Damaged Electronics (50% Deduction)</li> </ul>	<ul style="list-style-type: none"> <li>• Knock Off Models (Not Genuine)</li> <li>• Wheel Separation</li> </ul>
Ford 6.4 Powerstroke	<ul style="list-style-type: none"> <li>• Missing Parts or Actuators (50% Deduction)</li> </ul>	<ul style="list-style-type: none"> <li>• Knock Off Models (Not Genuine)</li> <li>• Part disassembled</li> <li>• Wheel Separation</li> </ul>
Ford 6.7 Powerstroke	<ul style="list-style-type: none"> <li>• Missing Parts or Actuators (50% Deduction)</li> </ul>	<ul style="list-style-type: none"> <li>• Wheel Separation</li> </ul>
GM 6.6 L5P	<ul style="list-style-type: none"> <li>• L5D Version (due to incorrect compressor cover) (25% Deduction)</li> <li>• Missing Parts or Actuators (50% Deduction)</li> </ul>	<ul style="list-style-type: none"> <li>• Knock Off Models (Not Genuine)</li> <li>• Wheel Separation</li> </ul>
Dodge Cummins 6.7 HE351VG/HE300VG	<ul style="list-style-type: none"> <li>• Missing Parts or Actuators (50% Deduction)</li> </ul>	<ul style="list-style-type: none"> <li>• Knock Off Models (Not Genuine)</li> </ul>
Standard Turbochargers (All Models, Non VGT)	<ul style="list-style-type: none"> <li>• Damaged Electronics (50% Deduction)</li> <li>• Missing Clamps (25% Deduction)</li> <li>• Missing Parts or Actuators (50% Deduction)</li> </ul>	<ul style="list-style-type: none"> <li>• Knock Off Models (Not Genuine)</li> <li>• Wheel Separation</li> </ul>

The above criteria apply to customer core returns. The following criteria will apply for core purchases.

Deduction	No Credit
<ul style="list-style-type: none"> <li>• Cracked or Damaged due to freight</li> <li>• Damaged Electronics</li> <li>• Missing Parts or Actuators</li> <li>• Heavily Damaged Wheels and/or Shaft</li> <li>• Missing Clamps</li> <li>• Turbine Wheel Separation</li> <li>• Heavily Modified Turbochargers</li> </ul>	<ul style="list-style-type: none"> <li>• Knock Off Models (Not Genuine)</li> </ul>

## BD TRANSMISSION/TORQUE CONVERTOR CORE ACCEPTANCE POLICY

Model	Deduction	No Credit
Transmissions	<ul style="list-style-type: none"> <li>• Cracked Overdrive housings (\$100 Deduction)</li> <li>• 68rfe Cracked Case (25% Deduction)</li> <li>• Part disassembled (50% Deduction)</li> <li>• Missing Transmission Shipping Crate (\$200 Deduction)</li> <li>• Missing TC/Transmission bracket (\$50 Deduction)</li> </ul>	<ul style="list-style-type: none"> <li>• Cracked Case (Except 68rfe)</li> </ul>
Torque Convertors	<ul style="list-style-type: none"> <li>• Hub and Impeller damaged. (50% Deduction)</li> </ul>	<ul style="list-style-type: none"> <li>• Excessive corrosion</li> <li>• Part disassembled</li> </ul>
Valve Bodies	<ul style="list-style-type: none"> <li>• Missing electronics (25% Deduction)</li> </ul>	<ul style="list-style-type: none"> <li>• Excessive corrosion</li> <li>• Part disassembled</li> </ul>

## GENERAL CORE ACCEPTANCE POLICY

Model	Deduction	No Credit
EGR Cooler		<ul style="list-style-type: none"> <li>• Brackets broken</li> </ul>

Please note that all cores have a time eligibility restriction. Please see BD Terms & Conditions for further details. [https://cdn.bddiesel.com/downloads/bd\\_terms\\_general.pdf](https://cdn.bddiesel.com/downloads/bd_terms_general.pdf)



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# Ram 5.9L Fuel Injector

## Stock Replacement Fuel Injectors

<b>1715503</b>	<b>2003-2004 Ram Pick Up</b>	<b>Standard</b>
<b>1725503</b>	<b>2003-2004 Ram Pick Up</b>	<b>Premium</b>
<b>1714503</b>	<b>2003-2004 Ram Pick Up Stock Plus</b>	<b>Standard</b>
<b>1724503</b>	<b>2003-2004 Ram Pick Up Stock Plus</b>	<b>Premium</b>
<b>1715505</b>	<b>2004.5-2007 Ram Pickup</b>	<b>Standard</b>
<b>1725505</b>	<b>2004.5-2007 Ram Pickup</b>	<b>Premium</b>
<b>1714505</b>	<b>2004.5-2007 Ram Pickup Stock Plus</b>	<b>Standard</b>
<b>1724505</b>	<b>2004.5-2007 Ram Pickup Stock Plus</b>	<b>Premium</b>

Premium line injectors are built with new Bosch solenoids, nozzles and control valves

**PLEASE READ ALL INSTRUCTIONS BEFORE INSTALLATION**

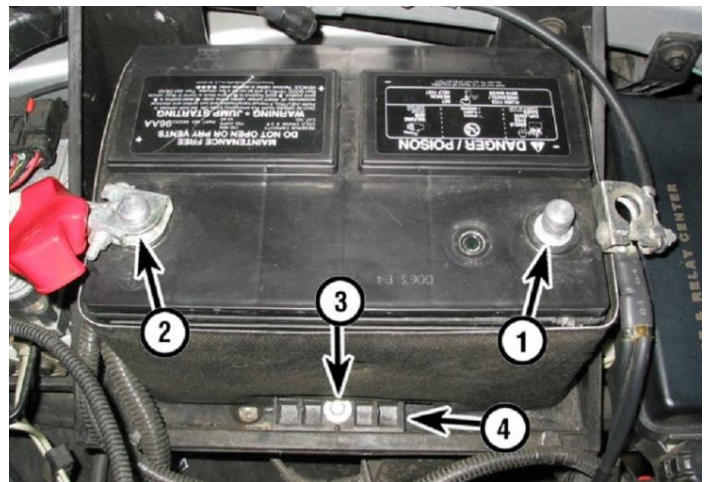
## **Suggested Items**

<b>1050155</b>	<b>2003-2005 Ram Pickup, Injector Install Kit</b>
<b>1050156</b>	<b>2006-2007 Ram Pickup, Injector Install Kit</b>

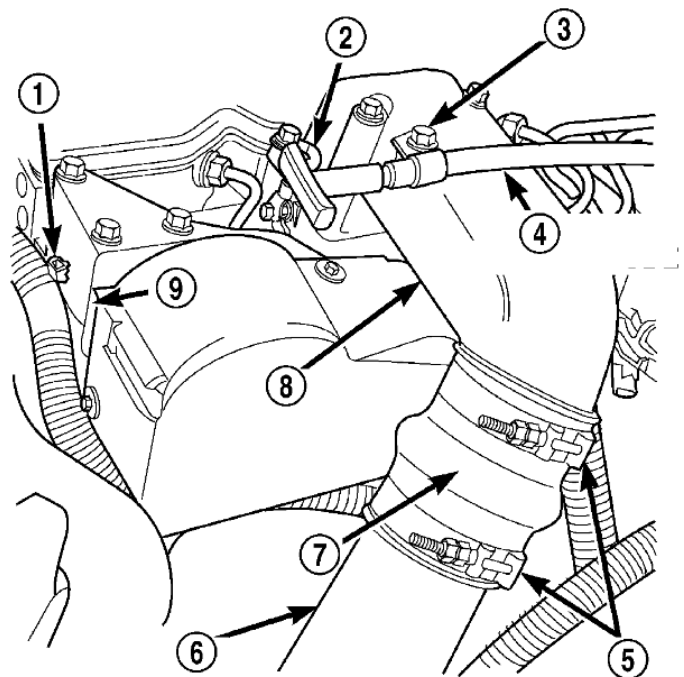
The kits above contain new high-pressure fuel lines, intake gaskets, valve cover gaskets, and supply tubes. While this kit is not necessary, it is strongly recommended to ensure optimal performance and longevity of your motor.

## **Removal**

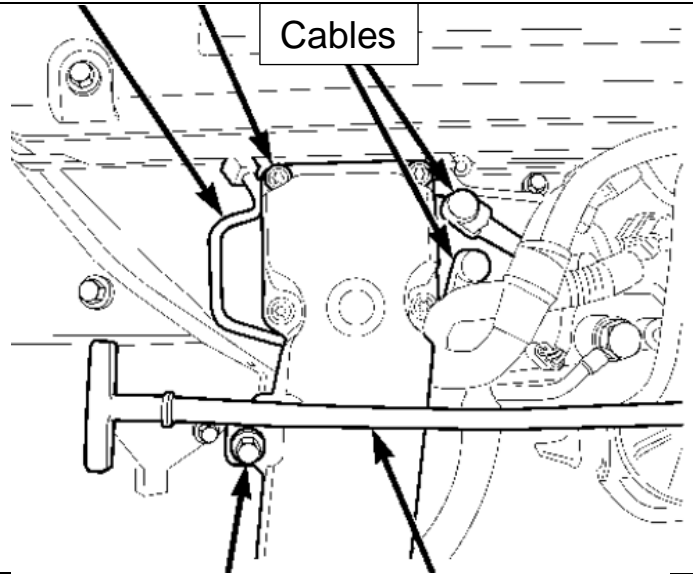
1. Disconnect both negative battery cables from both batteries. Cover and isolate ends of cables.



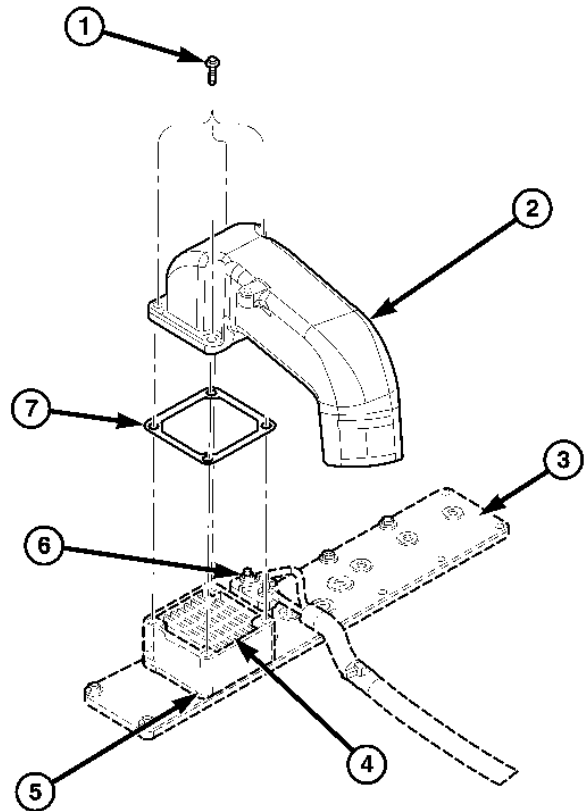
2. Remove the charge air cooler outlet tube (6) from the air inlet housing (8).



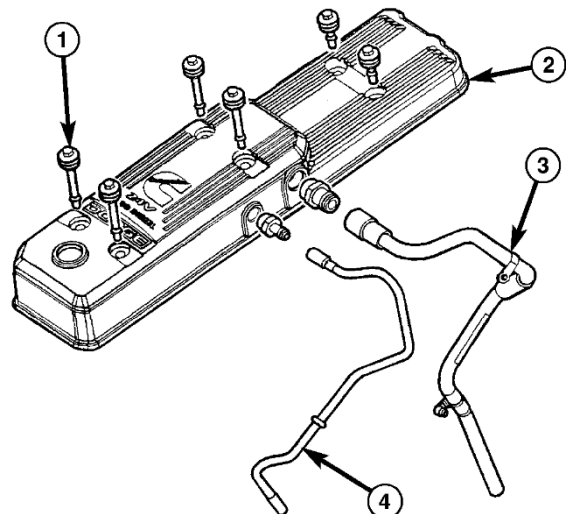
3. Remove the engine oil dipstick tube mounting bolt.
4. Remove dipstick support at fuel filter housing. Position dipstick tube to the side.
5. Disconnect the air grid heater power cables at the cable mounting studs.



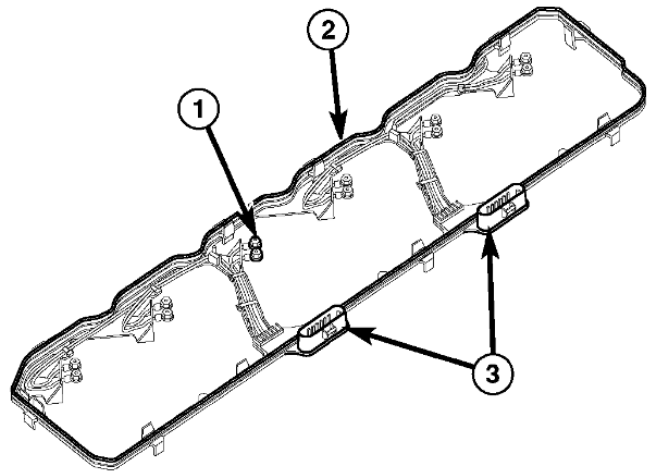
6. Remove wiring harness clips, engine oil dipstick tube bracket from air inlet connection and fuel filter housing, and the four housing mounting bolts (1).
7. Remove heater element assembly.



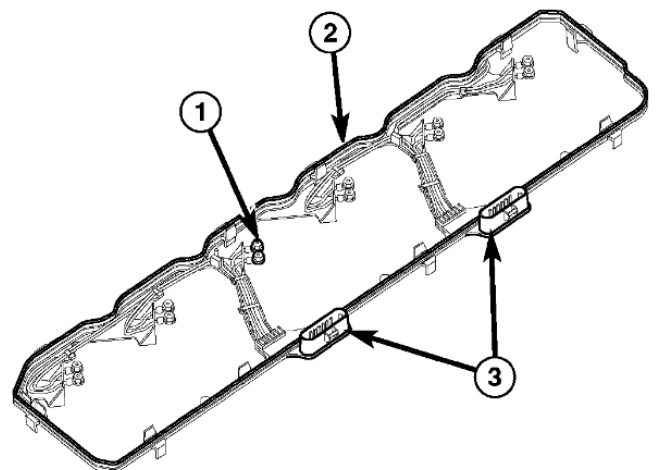
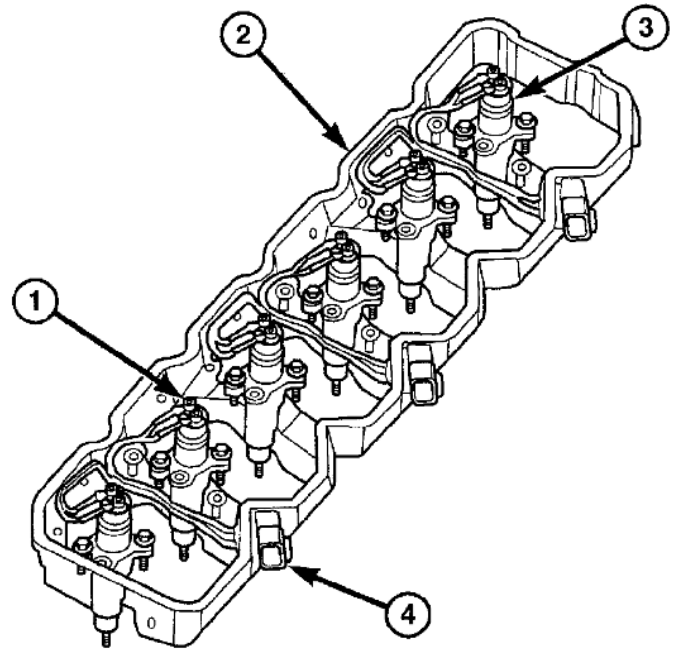
8. Remove breather assembly (3) and tubes (4).
9. Remove valve cover (2).



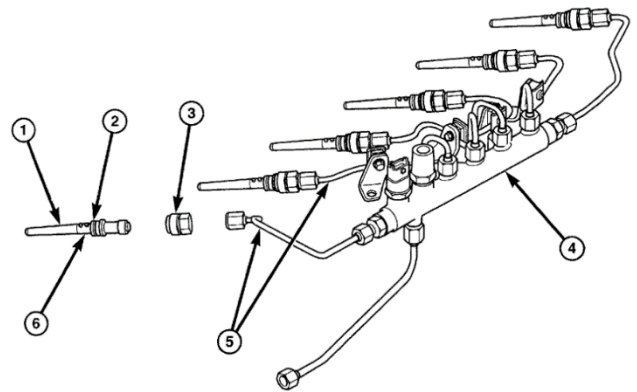
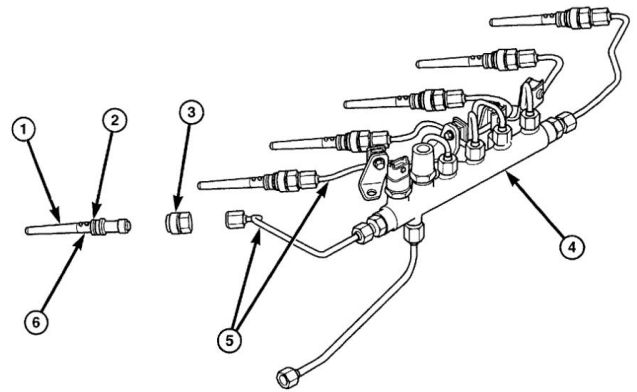
10. Remove all 12 fuel injector wire harness nuts (1) securing integrated wiring harness to all 6 fuel injectors. (2006-2007 MY gasket pictured)



11. Disconnect engine wiring harness at electrical connectors  
(MY 2003-2005, top, item 4)  
(MY 2006-2007, bottom, item 3)



12. Remove necessary high pressure fuel lines (5) connecting the necessary fuel injector rail to high pressure connector.



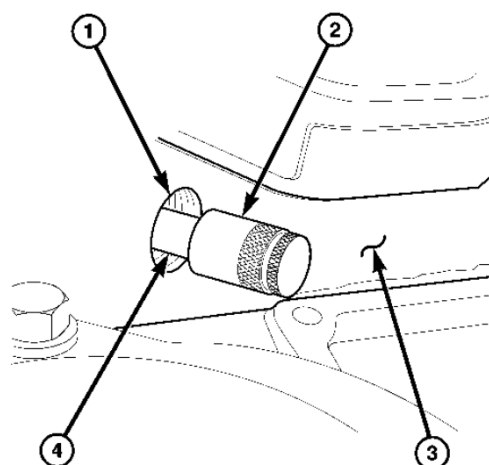
13. A connector retainer (nut, 3, outlined in red) is used on each connector tube. Remove this nut(s) by unthreading from cylinder head.





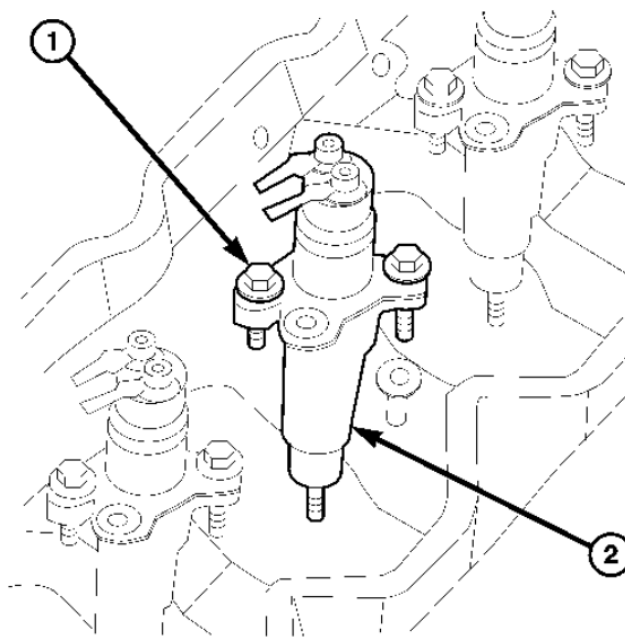
Cummins Tool #9015

14. Using special high-pressure connector removal tool #9015 remove necessary high-pressure connector(s) from cylinder head. Tool #9015 threads onto connector tube. Use tool to pry connector tube(s) from cylinder head.



15. Remove all exhaust rocker arm assembly(s).

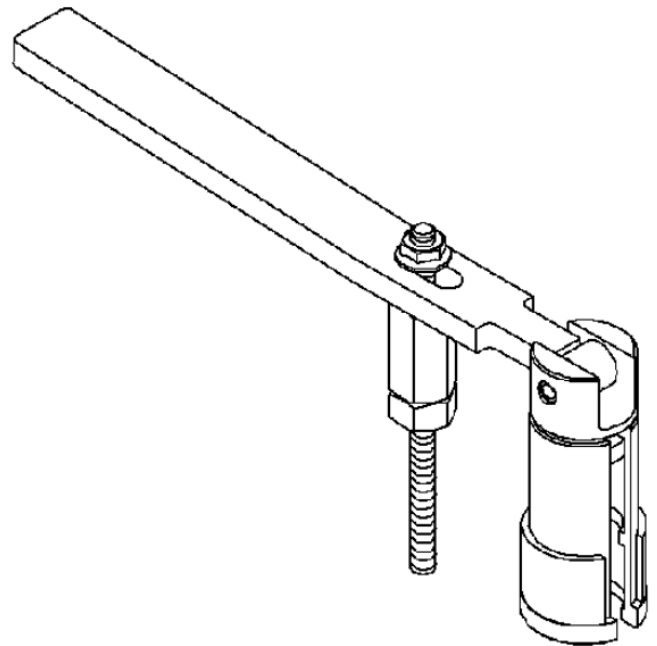
16. Remove 2 fuel injector hold down clamp bolts (1) at each injector being removed.



## Cummins TOOL #9010

### USING TOOL #9010:

1. Special Tool #9010 is equipped with 2 clamshell clamps, a sliding retainer sleeve to retain the clamshell clamps, a 2-piece mounting stud, and a pivoting handle. **Do not attempt to remove the fuel injector with any other device. Damage to injector will occur.**
2. The rocker housing is bolted to the top of cylinder head. The mounting stud from tool #9010 was meant to temporarily replace a rocker housing mounting bolt. Remove the necessary rocker housing mounting bolt. These mounting bolts are located at the center of each of the 5 rocker housing support bridges.
3. Install and tighten 2-piece mounting stud to rocker housing. If removing the No. 6 fuel injector, separate the 2-piece mounting stud. Install lower half of mounting stud to center of rocker housing bridge. Install upper half of mounting stud to lower half.
4. Position tool handle to mounting stud and install handle nut. Leave handle nut loose to allow a pivoting action.

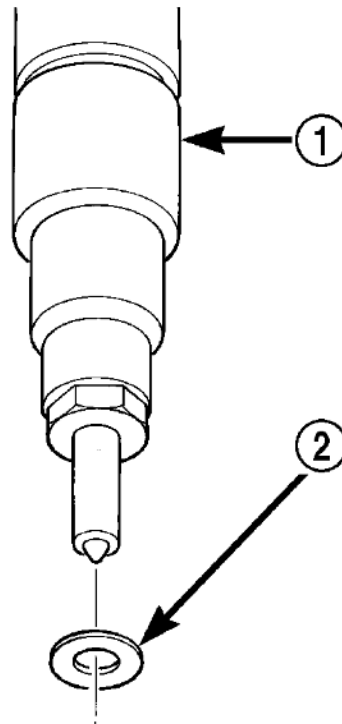


5. Position lower part of clamshell halves to sides of fuel injector (wider shoulder to bottom). The upper part of clamshell halves should also be positioned into machined shoulder on the handles pivoting head.
6. Slide the retainer sleeve over pivoting handle head to lock clamshell halves together.
7. Be sure handle pivot nut is loose.
8. Depress handle downward to remove fuel injector straight up from cylinder head bore.

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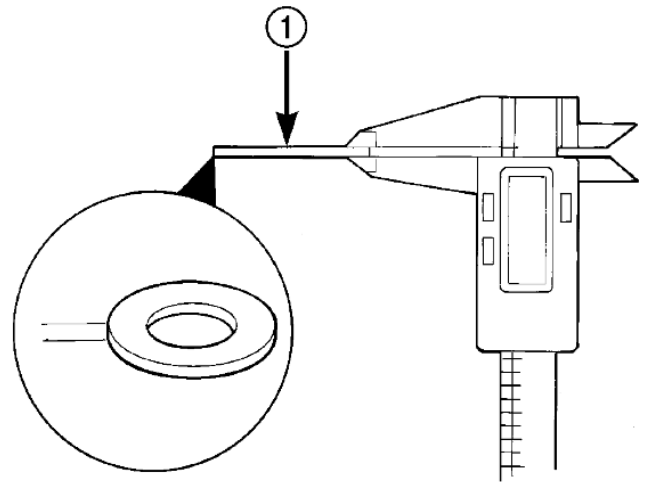
17. Inspect to ensure the copper washer (2) did not remain inside the injector bore. Remove washer from bore if left behind.

**NOTE:** Ensure the injector bore is clean, and no residue is remaining in the bore prior to installation of the injector.

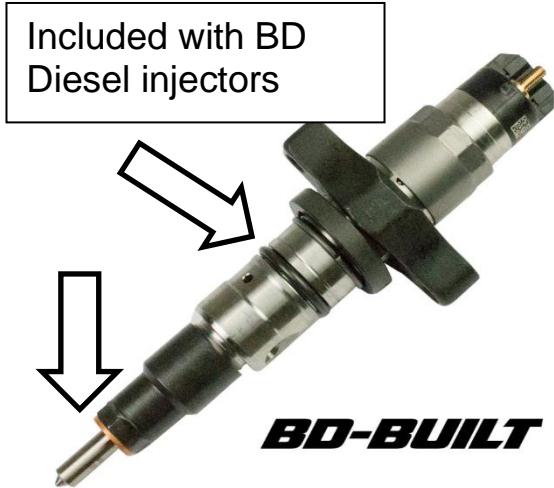


# Installation

1. The bottom of fuel injector is sealed to cylinder head bore with a copper sealing washer (shim) (1) of a certain thickness. See Figure. A new shim (1) with correct thickness must always be reinstalled after removing injector. Measure thickness of injector shim (1). **See Figure. Shim Thickness: 1.5 mm (.060")**



2. Install new shim (1) (washer) to bottom of injector. Apply light coating of clean engine oil to washer. This will keep washer in place during installation.
3. Install new O-ring to fuel injector. Apply small amount of clean engine oil to O-ring and injector bore.



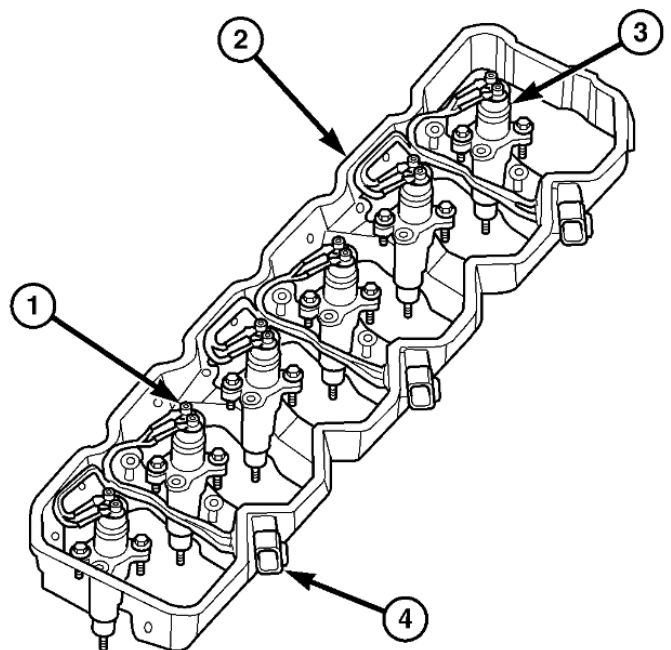
4. Install injector into cylinder head with male (high-pressure) connector port facing the intake manifold. Push down on fuel injector mounting flange to engage O-ring and seat injector.



## Tightening Sequence

Please following the following tightening sequence closely. Failure to follow these instructions will result in engine damage.

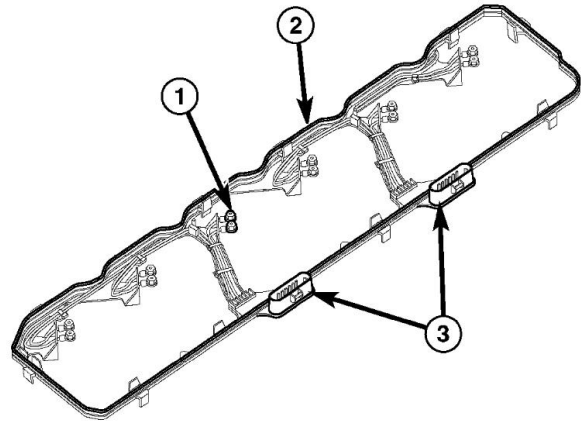
1. Install fuel injector hold down clamp (mounting flange) bolts. Be sure the clamp is perpendicular to the injector body. **Do a preliminary tightening of these bolts to 5 N.m (44 in. lbs.) torque. This preliminary tightening insures the fuel injector is seated and centered.**
2. After tightening, relieve bolt torque, but leave both bolts threaded in place.
3. Install high-pressure connector and retaining nut. Do a preliminary tightening to **15 N.m (11 ft. lbs.) torque.**
4. Alternately tighten injector holddown bolts to **10 N.m (89 in. lbs.) torque.**
5. Do a final tightening of the high-pressure connector and retaining nut. Tighten to **50 N.m (37 ft. lbs.) torque. Be sure to use a secondary back-up wrench on the connector nut (fitting) while torquing fuel line fitting.**



**NOTE:** If not replacing the connector tubes, replace the connector tube O-rings.

6. Install integrated gasket

7. Connect injector solenoid wires and nuts (1) to top of injectors. Tighten connector nuts to **1.25 N.m (11 in. lbs.) torque. Be very careful not to overtighten these nuts as damage to fuel injector will occur.**



8. Install exhaust rocker arm assemblies. **36 N.m (27 ft. lbs)**

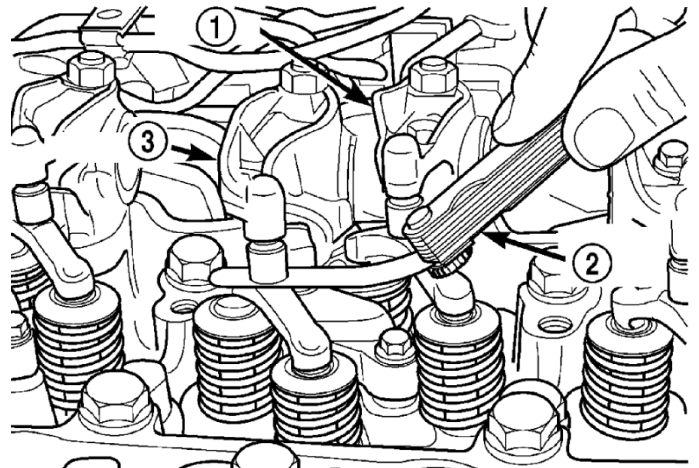
9. Set exhaust valve lash to tolerances:

2003-2004.5:

INTAKE	EXHAUST
0.006 in MIN	0.015 in MIN
0.015 in MAX	0.030 in MAX
0.010 in Optimal	0.020 in Optimal

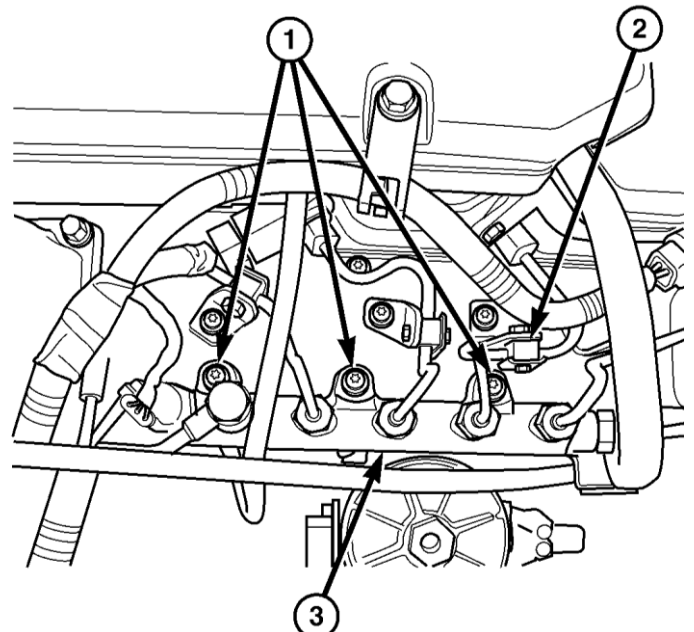
2005-2007:

INTAKE	EXHAUST
0.006 in MIN	0.021 in MIN
0.015 in MAX	0.034 in MAX
0.010 in Optimal	0.026 in Optimal

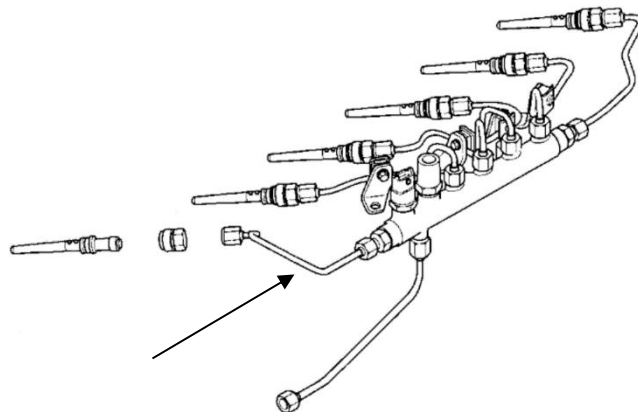


10. Install valve cover, tighten to **24 N.m (18 Ft. Lbs)**

11. Position and install fuel line support clamp (2) bolts or nut, tighten finger tight.



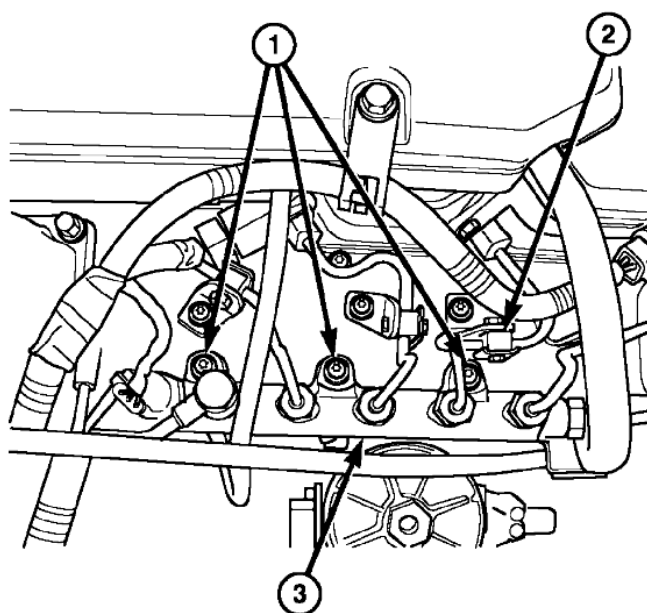
12. Position proper fuel line to proper injector on engine, tighten fittings hand tight at both ends of the line.



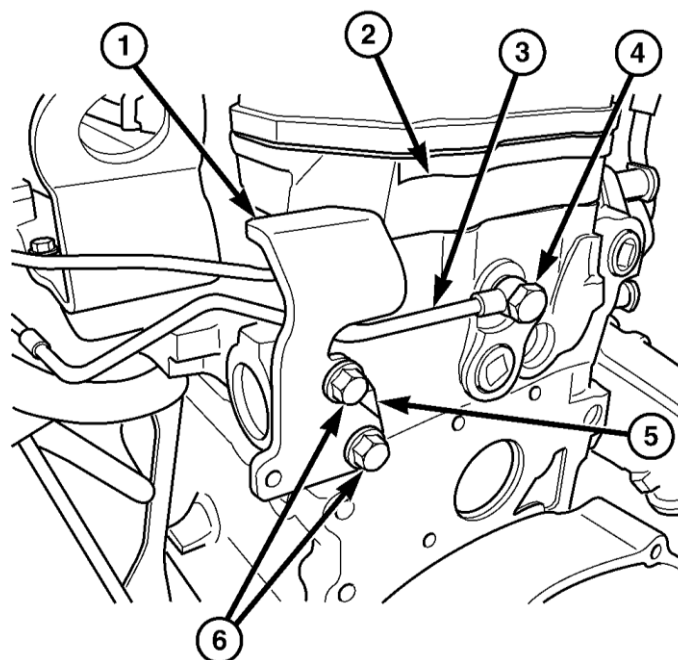
13. Tighten fuel line at cylinder head. Torque nut to **30 N.m. (22 ft. lbs.)**

14. Tighten fuel lines at fuel rail. Torque nut to **37 N.m. (27 ft. lbs.)**

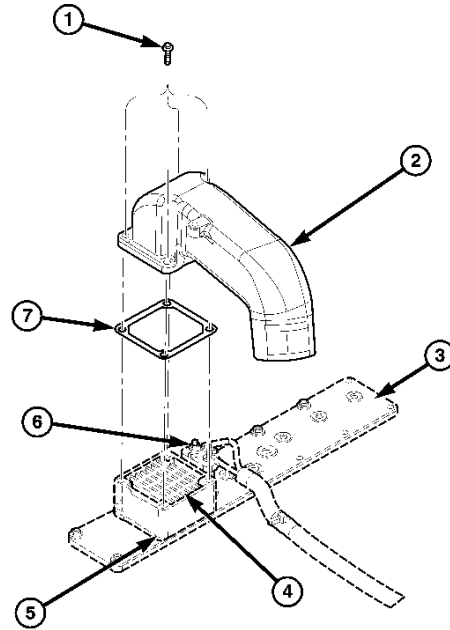
15. Tighten clamp support to intake manifold cover (2). Torque nut to **24 N.m (18 ft. lbs.)**



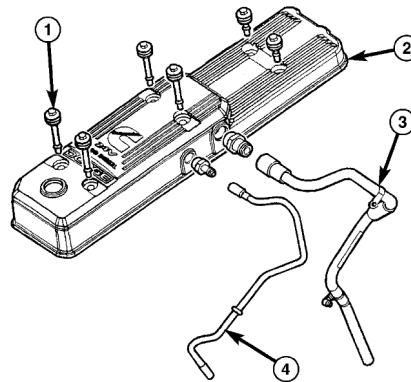
16. Tilt metal bracket upwards and tighten 2 bolts at the rear of cylinder head to **43 N.m. (32 ft. lbs.)**



17. Install the air intake using 2 new gaskets for the heater element (7) (Cummins Part number: 3969988) and tighten 4 housing bolts (1) to **24 N.m. (18 ft. lbs.)**



18. Install breather assembly.  
19. Connect rubber connector hose and intake tube to air intake housing. Tighten clamp bolts to 11 N.m. (100 in. lbs.)



20. Replace fuel filter(s).  
21. Connect both negative battery terminals to both batteries.



22. Prime fuel system by turning the key to CRANK position and quickly releasing the key to ON position before engine starts. This will allow the fuel transfer pump to run for approximately 25 seconds. Repeat 3 more times to fill the fuel filter.

23. Crank engine, if the engine does not start after 25 seconds, turn key to OFF position and leave for at least 5 seconds. Repeat previous step.



Once all components have been reinstalled, be sure to check all connection points are tight and inspect for leaks.

