

**Installation Manual**

ARP Head Studs

P/N 247-4202 425's

P/N 247-4204 625's



'03-'18 5.9L/6.7L CUMMINS

# ARP HEAD STUDS

## Installation Instructions

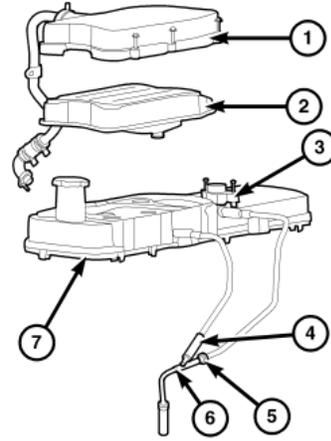
Dodge Cummins 5.9L & 6.7L 24V	ARP 425's	247-4202
Dodge Cummins 5.9L & 6.7L 24V	ARP 625's	247-4204

**PLEASE READ ALL INSTRUCTIONS BEFORE BEGINNING INSTALLATION**

# ARP 5.9L & 6.7L Cummins Head Stud Installation

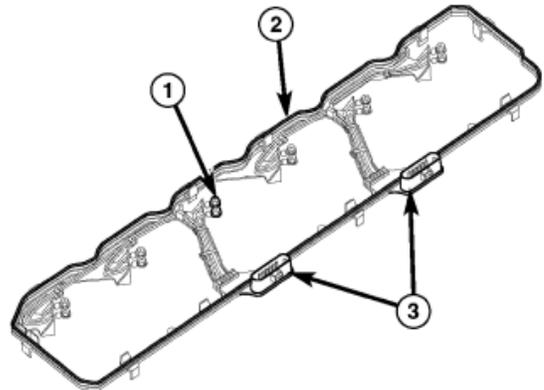
*Glacier Diesel Power, Inc.*

1. Remove the oil fill cap, CCV filter cover (item 1), and CCV filter (item 2).
3. Disconnect the breather tube and the lube oil drain tube from breather.
4. Remove the six cylinder head cover (item 7) bolts and the cover.



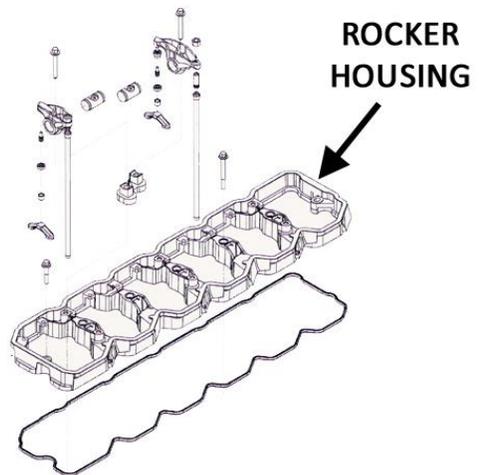
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5. Disconnect the external rocker housing injector harness electrical connectors (item 3).
6. Remove the injector harness nuts (item 1). There are two 8mm bolts per injector, be sure you take pictures, label or write down each wires color code and location.
7. Remove the integrated injector harness assembly (item 2).



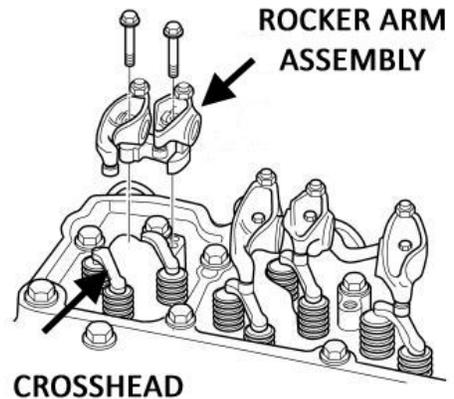
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8. Remove rocker housing (spacer) and gasket. There are seven bolts down the middle of the housing.



- Lay out a large piece of cardboard and number sections 1 thru 6. These will correspond to the cylinder numbers you remove parts from.

- Remove the rocker arm assemblies and cross heads. There is one 10mm bolt per rocker. Remove both bolts and lift the rocker pair off as one unit. Place each assembly on the cardboard in the position that corresponds to the cylinder number.

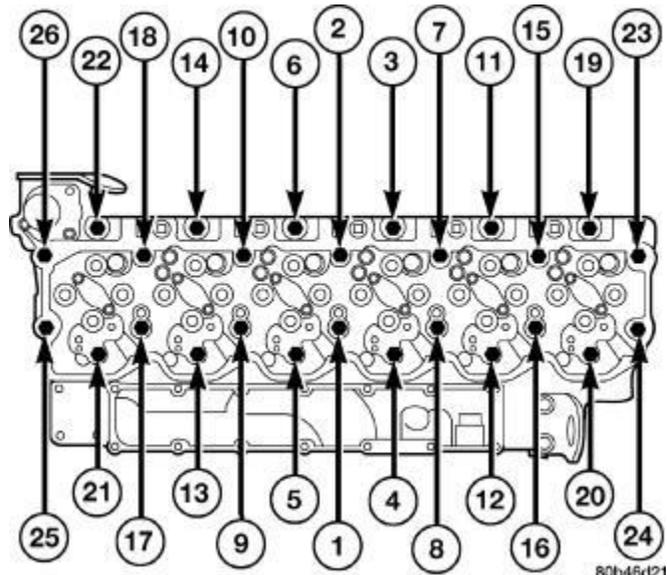


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Now you are ready to start installing the new head studs.

**NOTE:** In the next series of steps you will be replacing **one** bolt at a time with a new ARP Head Stud and bringing the new stud back to stock torque. **Do not** increase torque levels at this time. **Do not attempt** to replace all bolts at one time.

Your goal is to maintain torque on the cylinder head until all stock bolts have been replaced with ARP studs one at a time.



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- Starting with number 1, the center bolt.
- Remove the stock head bolt.
- Using finger pressure, thread an ARP stud into the block until the stud lightly bottoms out. Back the stud out 1/2 turn. Make a mark on the top of the stud to verify that the stud does not turn back in and bottom when installing the nut and washer
- Using the supplied ARP Lube lightly coat the protruding threads of the new stud.
- Lightly coat both sides of one washer and the contact face of one nut.
- Install this washer and nut on the stud. Screw the nut down until contact is made, while verifying that the stud has not turned and bottomed out in the block.
- Torque the new stud to 100 ft/lbs.
- Go back and repeat steps 12 thru 17 until all 26 stock head bolts have been replaced with studs and torque to 100 ft/lbs.

19. Now, following the torque sequence on the previous page begin bringing the studs up to final torque in incremental steps. For 425's we typically come up to final torque in 10 ft/lb increments. For 625's we use 15 ft/lb increments.

### **ARP Recommended Final Torque Values**

P/N 247-4202 425's Final Torque **125** ft/lbs  
P/N 247-4204 625's Final Torque **150** ft/lbs

In actual practice many installers go to 135 ft/lbs on the 425's and 160 ft/lbs on the 625's.

**Use the increased values at your own risk!**

20. Once all studs are at final torque value you can begin the ARP recommended pre-stretch cycling procedure.
21. Following the torque sequence, one stud at a time, fully loosen and re-torque each stud to final value. Repeat this sequence a total of 4 times. It's time consuming but well worth it.

### **Reassembly**

22. Reinstall the rocker arm assemblies and crossheads. Refer to step 10 if needed. Torque the bolts down to 27 ft/lbs.
23. Due to the longer protrusion of the studs there is one small area of the rocker housing that must be relieved by grinding or cutting. If this procedure is not followed the rocker housing will not seat properly and you will have an oil leak at the back of the head.



24. Reinstall the rocker housing and torque the seven 10mm bolts to 18 ft/lbs. Start with the center bolt and work your way out.
25. Reinstall the integrated injector harness assembly.
26. Reinstall the injector harness nuts. There are (2) 8mm nuts per injector. Be sure you are putting the wires back correctly. **Be very careful to not over-tighten the nuts.** Finger tight and another 1/4-1/2 turn is more than enough. 13 in/lbs is the specification, but just **snug** is much safer. The injector studs are small and if broken off will require the entire injector to be replaced.
27. Reinstall the cylinder head cover (6) bolts and torque down to 18 ft/lbs and reconnect the breather tubes.
28. Reinstall the CCV filter and plastic valve cover. Torque cover bolts to 89 in/lbs.
29. Installation complete!
30. See pages 6-7 if valve lash adjustment is needed.

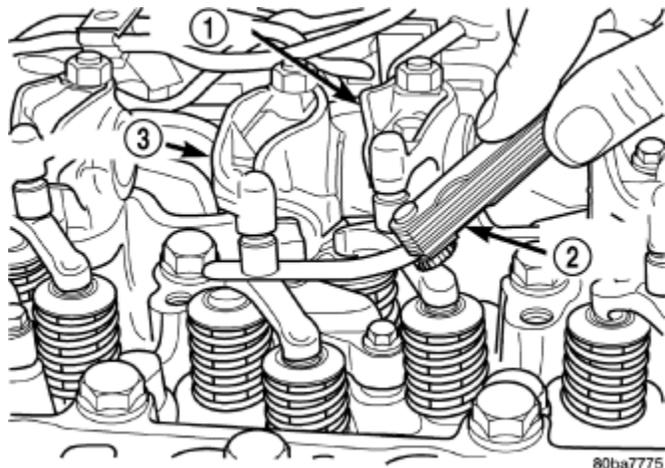
We hope this installation guide was helpful and easy to follow. If you have any problem or questions please contact Glacier Diesel Power at 509-993-4923. Thank you for your business and we look forward to helping you with your future performance and accessory needs.

Sincerely,

Richard Martin  
GDP

# CR VALVE LASH ADJUSTMENT AND VERIFICATION

**NOTE:** To obtain accurate readings, valve lash measurements AND adjustments should only be performed when the engine coolant temperature is less than 60° C (140° F).



The 24–valve overhead system is a “low-maintenance” design. Routine adjustments are no longer necessary, however, measurement should still take place when troubleshooting performance problems, or upon completion of a repair that includes removal and installation of the valve train components or injectors.

1. Disconnect battery negative cables.
2. Remove cylinder head cover.
3. Using the crankshaft barring tool #7471–B, rotate crankshaft to align damper TDC mark to 12:00 o'clock position.
  - a. If both number one cylinder rocker levers are loose, continue to next step.
  - b. If both number one cylinder rocker levers are not loose, rotate crankshaft 360 degrees.
4. With the engine in this position, valve lash can be measured at the following rocker arms: **INTAKE 1–2–4 / EXHAUST 1–3–5**. Measure the valve lash by inserting a feeler gauge between the rocker arm socket and crosshead. Refer to valve lash limit chart below for the correct specifications. If the measurement falls **within** the limits, adjustment/resetting **is not** necessary. If measurement finds the lash **outside** of the limits, adjustment/resetting **is** required.

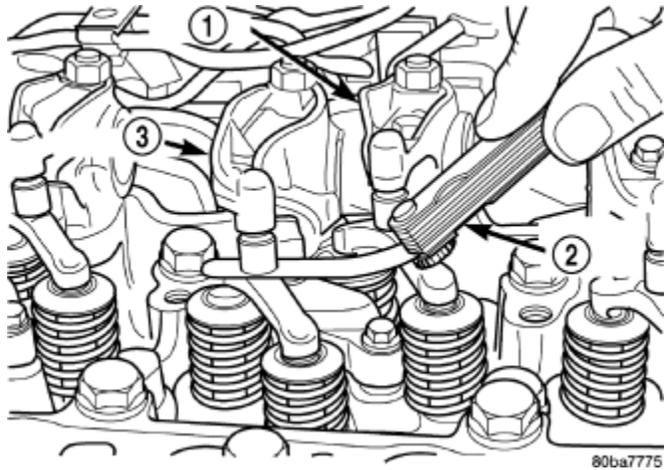
<b>VALVE LASH LIMIT CHART</b>	
<b>INTAKE</b>	<b>EXHAUST</b>
0.152 mm ( 0.006 in.) MIN.	0.533 mm (0.021 in.) MIN.
0.381 mm (0.015 in.) MAX.	0.863 mm (0.034 in.) MAX.

**NOTE:** If measured valve lash falls within these specifications, no adjustment/reset is necessary. Engine operation within these ranges has no adverse affect on performance, emissions, fuel economy or level of engine noise.

5. If adjustment/resetting is required, loosen the lock nut on rocker arms and turn the adjusting screw until the desired lash is obtained:

- **INTAKE** 0.254 mm (0.010 in.)
- **EXHAUST** 0.660 mm (0.026 in.)

Tighten the lock nut to 24 N·m (18 ft. lbs.) and recheck the valve lash.



6. Using the crankshaft barring tool, rotate the **crankshaft** one revolution (360°) to align the damper TDC mark to the 12 o'clock position.

7. With the engine in this position, valve lash can be measured at the remaining rocker arms: **INTAKE 3-5-6 / EXHAUST 2-4-6**. Use the same method as above for determining whether adjustment is necessary, and adjust those that are found to be outside of the limits.

8. Install the cylinder head cover.

9. Connect the battery negative cables.