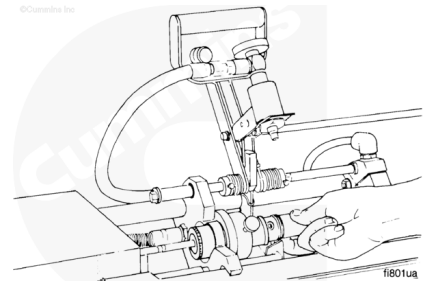


(/qs3/pubsys2/xml/en/manual/4310591/4310591-titlepage.html)

## Trainings ▾

## General Information

**Note :** Calibration requires special equipment and **must** be done at a Cummins® Authorized Repair Location.



## Preparatory Steps

### **⚠ WARNING ⚠**

**Batteries can emit explosive gases. To reduce the possibility of personal injury, always ventilate the compartment before servicing the batteries. To reduce the possibility of arcing, remove the negative (-) battery cable first and attach the negative (-) battery cable last.**

- Disconnect the battery cables. See equipment manufacturer service information.
- Remove the crankcase breather tube. Refer to Procedure 003-001 in Section 3.  
(/qs3/pubsys2/xml/en/procedures/09/09-003-001-tr.html)



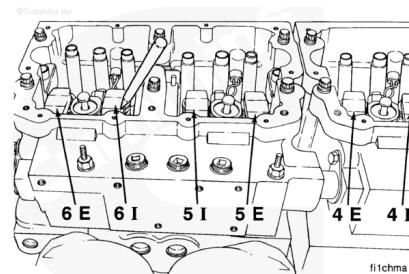
- Remove the rocker lever cover. Refer to Procedure 003-011 in Section 3. (</qs3/pubsys2/xml/en/procedures/09/09-003-011-tr.html>)
- Remove the engine brakes. Refer to Procedure 020-024 in Section 20. (</qs3/pubsys2/xml/en/procedures/09/09-020-024-tr.html>)
- Remove the rocker lever assemblies (CELECT™ **only**). Refer to Procedure 003-009 in Section 3. (</qs3/pubsys2/xml/en/procedures/09/09-003-009-tr.html>)

## Remove

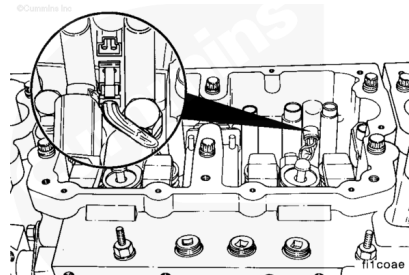
### CELECT™

**Note :** Excessive crosshead wear can result if the crossheads are **not** installed in their original locations. The larger hole on the underside of the crosshead **must** be oriented toward the exhaust side of the engine.

Remove the crossheads. Make sure to mark them appropriately so they can be installed in the same location and orientation during the installation procedure.



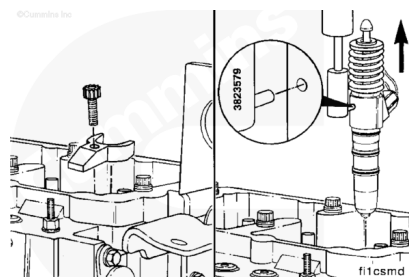
Disconnect the injector solenoid leads from the pass-through connector in the rocker lever housing.



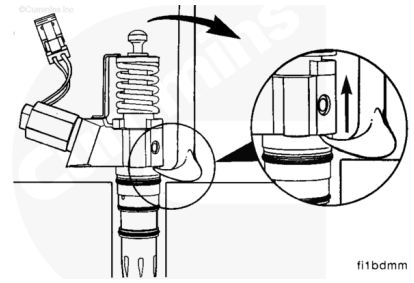
Remove the injector hold-down clamp capscrew.

Remove the injector and hold-down clamp.

Use injector puller/installer, Part Number 3823579, to remove the CELECT™ injectors. Insert the pin of the tool into the hole provided in the body of the injector. The hole faces the exhaust side of the engine.



If the injector puller mentioned above is **not** available, carefully use a pry bar. Pry upward on the injector against the cylinder head.



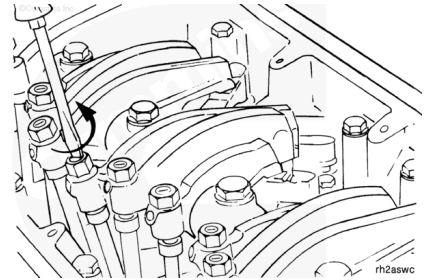
## STC

**Note :** Mark the position of the push rods as they are removed. Due to wear patterns on the cam follower sockets and adjusting screws, the push rods **must** be installed in the same positions from which they are removed.

Loosen the locknut and turn out the adjusting screw on each injector and valve rocker lever.

Some push rods are under compression due to the valves being open. Rotate the crankshaft **clockwise** with the accessory drive pulley to relieve the spring tension.

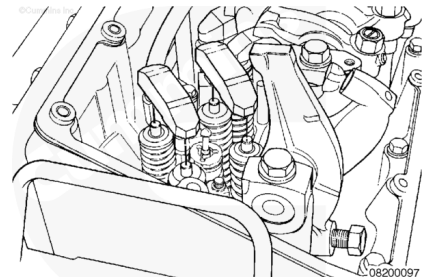
Hold the push rod with one hand to prevent it from falling into the engine. Loosen each adjusting screw and remove the push rod.



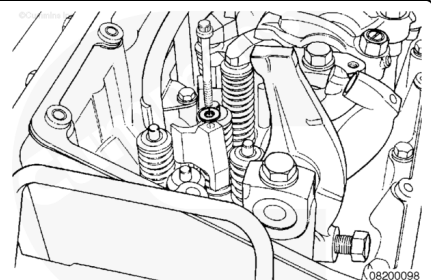
**Note :** Do **not** remove the links from step timing control injectors.

Rotate the injector and valve rocker levers up on each cylinder.

Remove the crossheads. Mark the position and orientation of the crossheads as they are removed. Due to wear patterns, they **must** be installed in the same positions from which they are removed.

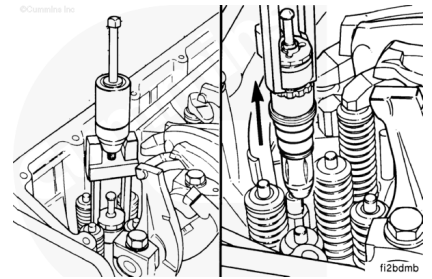


Loosen the injector hold-down capscrew and remove the hold-down clamp.



Use injector puller/installer service tool, Part Number 3823579, to remove the injectors.

Take the injectors to a Cummins® Authorized Repair Location for calibration.



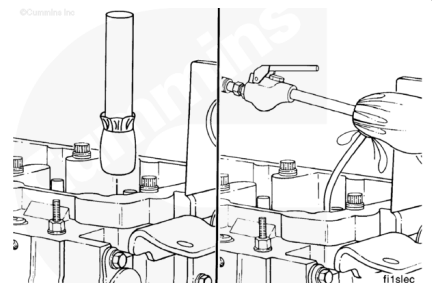
## Clean

### ⚠ CAUTION ⚠

**To reduce the possibility of damage to the injector sleeves, do not use anything metal to scrape the copper injector sleeves.**

Use a clean wooden stick with a clean cloth wrapped around the end to remove all the carbon from the copper injector sleeves in the cylinder head.

Use chip removing unit, Part Number 3823461 or ST-1272-11, to remove the carbon from the top of the piston.

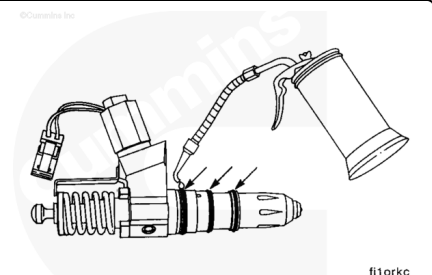


## Install

### CELECT™

When installing injectors for reuse, new o-rings **must** be installed on the injector.

**Note :** The CELECT™ Plus injectors require three different injector o-rings. The traditional black, brown, and black with white dot colors have been changed to red, white, and blue respectively. The coloring is a Teflon® casting; the o-ring material has **not** been changed. There is no change in part numbers for these



o-rings. The old colors will be present until existing stock is depleted. It is okay to mix the black and the red o-ring, the brown and the white o-ring, or the black with the white dot and blue o-ring.

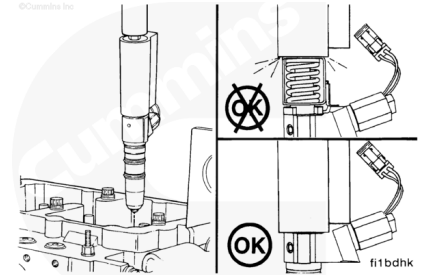
- Top - red
- Middle - white
- Bottom - blue.

Lubricate the o-rings with lubricating oil just before installation.

### **⚠ CAUTION ⚠**

**To reduce the possibility of injector damage, do not strike the top stop spring cage when installing CELECT™ Plus injectors.**

Use the CELECT™ Plus injector puller/installer, Part Number 3823579, to install the injector into the cylinder head injector bore with the injector solenoid valve facing the intake side of the engine.

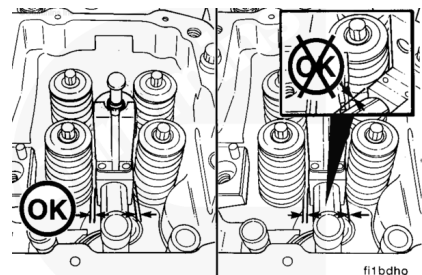


### **⚠ CAUTION ⚠**

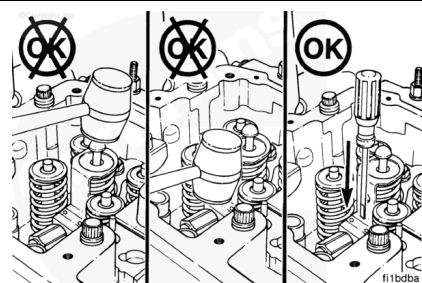
**Do not strike or pry on the solenoid. Otherwise, injector damage will occur.**

After partial installation of the injector, take precautions to center the solenoid valve between the valve springs. Avoid contact with the spring coils. If the injector is contacting a valve spring, use a screwdriver to position the injector again.

Continue driving the injector into the bore. Use the injector puller/installer, Part Number 3823579.

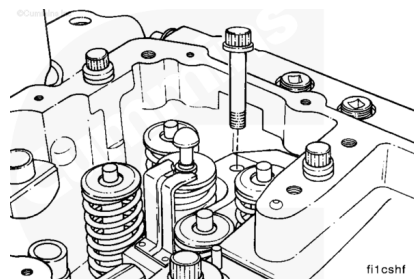


If an injector puller/installer, Part Number 3823579, is **not** available, a screwdriver can be used to install the injector by putting the screwdriver on the injector body at the base of the injector solenoid and striking the screwdriver with a soft mallet. **Do not** strike on the injector solenoid or on the top stop spring cage.



### ⚠ CAUTION ⚠

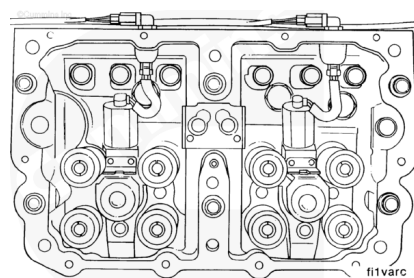
The injector must be fully seated before installing the hold-down clamp. The hold-down clamp can not pull the injector into the bore. Engine damage can occur if the injector is not fully seated.



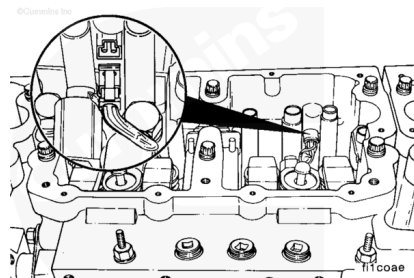
Install the hold-down clamp capscrew.

**Torque Value:** 41 n•m [ 30 ft-lb ]

Take care to route the injector solenoid leads to avoid contact with the valve and injector push tubes.

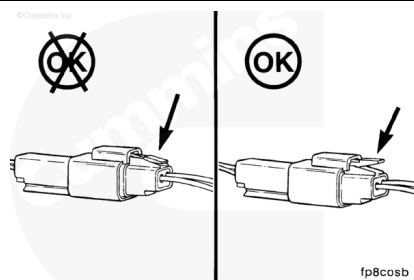


Connect the injector solenoid leads to the pass-through connector in the rocker housing. Push the lead into the connector until a "snap" is heard.

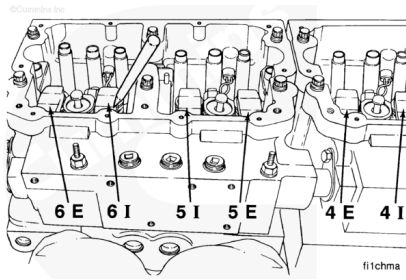


Check the wire connector to make sure the connector is properly locked in position.

If the wire connector will **not** lock into position properly, refer to the CELECT™ Plus Fuel System Troubleshooting and Repair Manual, Bulletin 3666130.

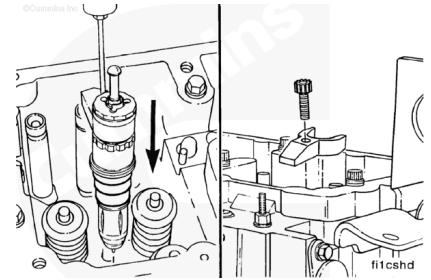


Install the crossheads into their original location to prevent excessive wear.

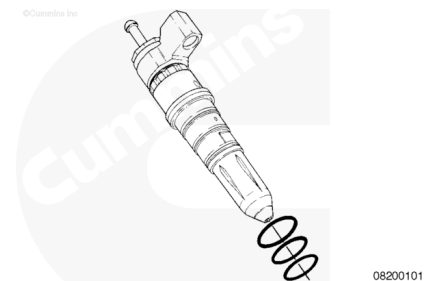


## STC

Install a set of new injectors. Use the 8-qt 10-hole cup configuration that was removed from the engine. This will make sure the injectors will **not** have any unseen cavitation damage internal to the injector cup at the time of kit installation.



Install three new o-rings over the injector and into the retaining grooves. Do **not** twist the o-rings.



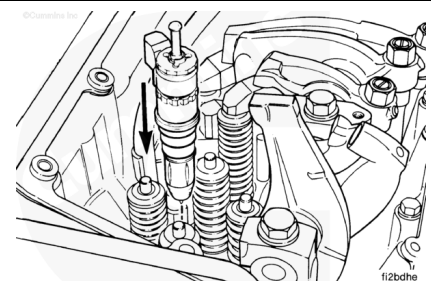
Lubricate the o-rings with clean engine oil just before installation.



Check the bores in the cylinder head for burrs or sharp edges that can damage the o-rings. Repair damaged injector bores.

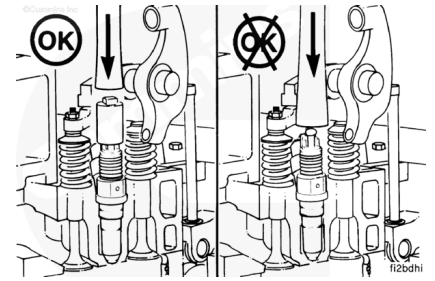
Install new o-rings on the step timing control oil manifold connections.

Align the injector with the oil manifold connections and install the injector into the cylinder head injector bore.



### ⚠ CAUTION ⚠

**Make sure to place the instrument used to install the injectors on the top cap of the injector, not on the plunger or link. The plungers will be damaged.**

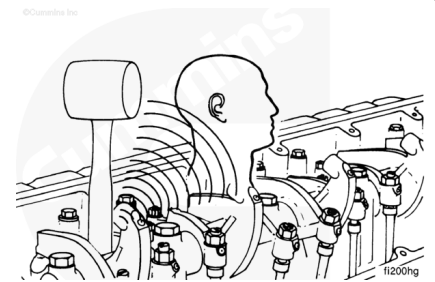


Install a 27 mm [1-1/16 in] deep well socket over the top link of the injector. The socket **must** rest completely on the top surface of the injector top cap to avoid bending the inner part of the top cap.

Use a clean, blunt instrument to seat the injector in the bore.

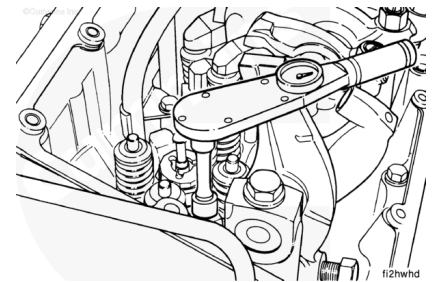
A snap will be heard and felt as the injector is seated.

If the injector does **not** seat, remove it and check the o-rings for damage. Replace any damaged o-rings.



### ⚠ CAUTION ⚠

**The injector must be fully seated before installing the hold-down clamp. The hold-down clamp can not pull the injector into the bore. Engine damage can occur if the injector is not fully seated.**



Install the injector hold-down clamp and capscrew.

**Torque Value:** 54 n•m [ 40 ft-lb ]

Install the crossheads on the valves.

**Note :** The crossheads **must** be installed in the same positions from which they were removed.

Rotate the rocker levers down, and install the push rods and push tubes.

**Note :** It is necessary to bar the engine over and install the push rods and push tubes as camshaft position



allows.

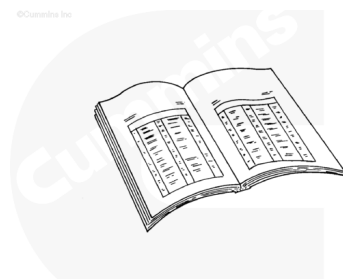
Make sure the push rods are properly seated in the cam follower sockets.

Turn the adjusting screw for each rocker lever in until it is properly seated in the push rod socket.

## Finishing Steps

### **⚠ WARNING ⚠**

**Batteries can emit explosive gases. To reduce the possibility of personal injury, always ventilate the compartment before servicing the batteries. To reduce the possibility of arcing, remove the negative (-) battery cable first and attach the negative (-) battery cable last.**



ck800wa

- Install the rocker lever assemblies CELECT™ **only**). Refer to Procedure 003-009 in Section 3. (</qs3/pubsys2/xml/en/procedures/09/09-003-009.html>)
- Set the valves and injectors. Refer to Procedure 003-004 in Section 3. (</qs3/pubsys2/xml/en/procedures/09/09-003-004-tr.html>)
- Install and adjust the engine brakes. Refer to Procedure 020-024 in Section 20. (</qs3/pubsys2/xml/en/procedures/09/09-020-024-tr.html>)
- Install the rocker lever cover. Refer to Procedure 003-011 in Section 3. (</qs3/pubsys2/xml/en/procedures/09/09-003-011-tr.html>)
- Install the crankcase breather tube. Refer to Procedure 003-001 in Section 3. (</qs3/pubsys2/xml/en/procedures/09/09-003-001-tr.html>)
- Connect the battery cables. See equipment manufacturer service information.

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**Last Modified: 06-Sep-2016**

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