

TECHNICAL INSTRUCTIONS
FOR
LIMITED SERVICE CAMPAIGN COF
EXHAUST GAS CONTROL ACTUATOR REPLACEMENT
CERTAIN 2011 – 2012 MODEL YEAR HIGHLANDER HV

UPDATED JULY 23, 2012

TECHNICAL INSTRUCTION UPDATE NOTICE:

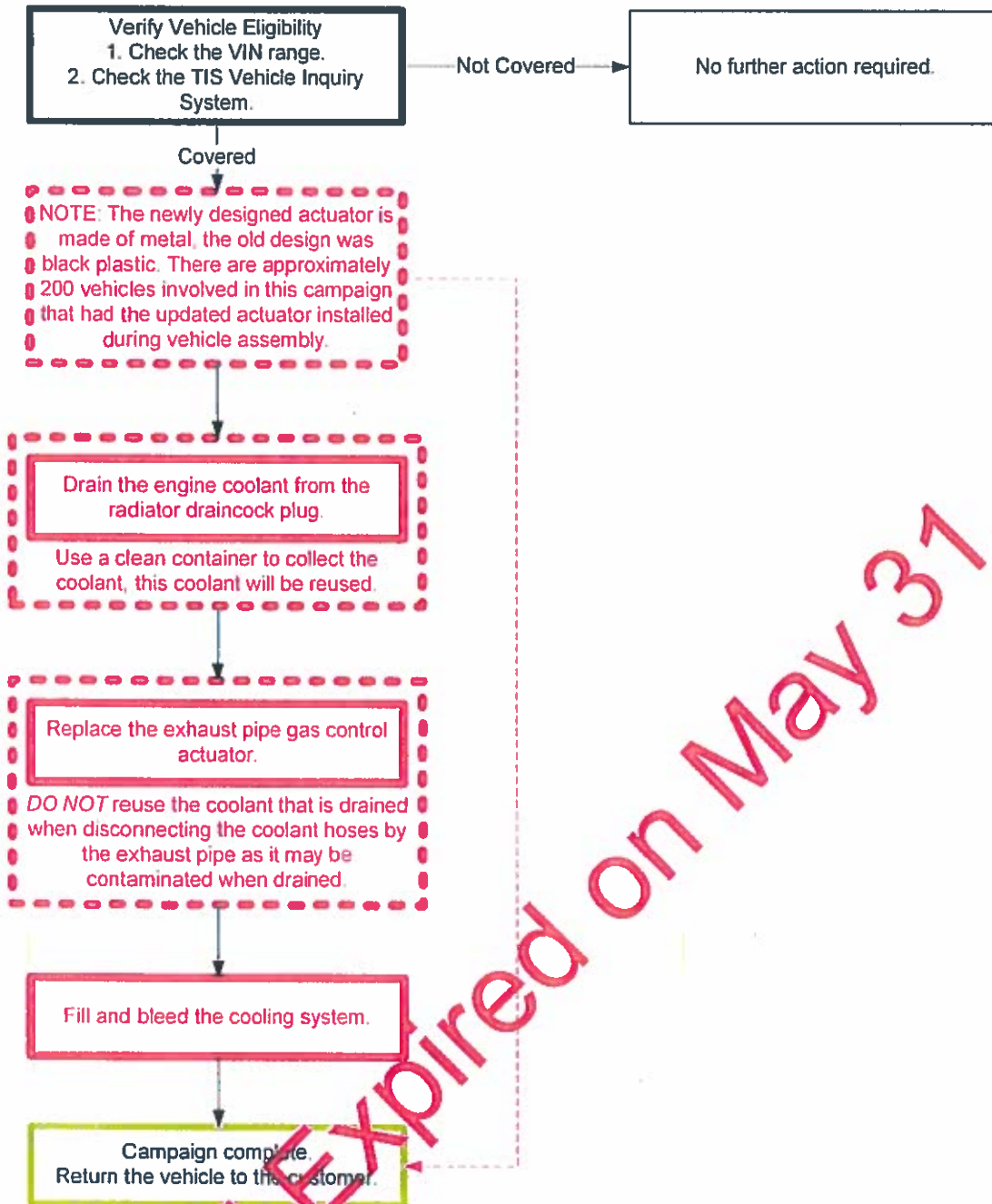
Updated 7/23/12

- The operation flow chart has been updated (SECTION I)

Previous versions of these Technical Instructions should be discarded.

COF Expired on May 31, 2015

I. OPERATION FLOW CHART



II. IDENTIFICATION OF AFFECTED VEHICLES

A. COVERED VIN RANGE

WMI	Year	VIN Range	
		VDS	Range
JTE	2011	BC3EH	2000105-2003975
		DC3EH	2000102-2003980
	2012	BC3EH	2003982-2007095
		DC3EH	2003983-2007094

NOTE:

- Check the TIS Vehicle Inquiry System to confirm the VIN is involved in this Limited Service Campaign, and that the campaign has not already been completed prior to dealer shipment or by another dealer.
- TMS warranty will not reimburse dealers for repairs conducted on vehicles that are not affected or were completed by another dealer.

III. PREPARATION

A. PARTS

Part Number	Part Description	Quantity
16492-21050	Radiator Draincock O-Ring	1
04001-88131	Actuator Set, Exhaust Pipe Gas Control Kit*	1
*The kit above includes the following parts:		
Part Number	Part Description	Quantity
17046-31070	Acuator Sub-Assy, Exhaust Pipe Gas Control	1
17402-31020	Pipe, Exhaust Bypass	1
17537-37010	Plate, Exhaust Pipe	1
90105-06335	Bolt (20mm)	3
17451-28040	Gasket, Exhaust Pipe	2

B. TOOLS & EQUIPMENT

- Standard hand tools
- Clean drain bucket
- Techstream

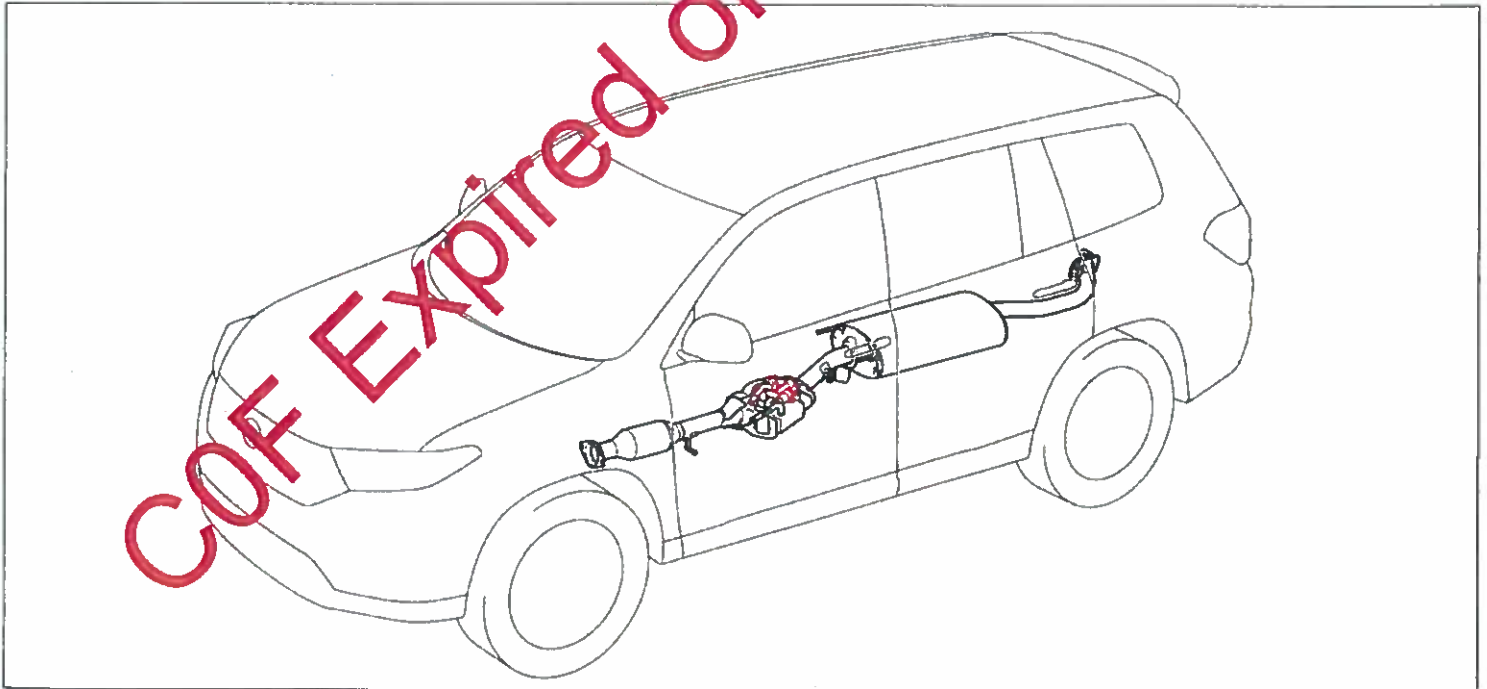
C. SUPPLIES



Part Name	Quantity
Toyota Genuine 50/50 Pre-Diluted SLLC	Approximately 1 quart

NOTE:

- The coolant drained from the radiator **MUST** be reused.
- Because some coolant will be lost when disconnecting the hoses by the exhaust pipe, a small amount of coolant will be needed.

IV. BACKGROUND

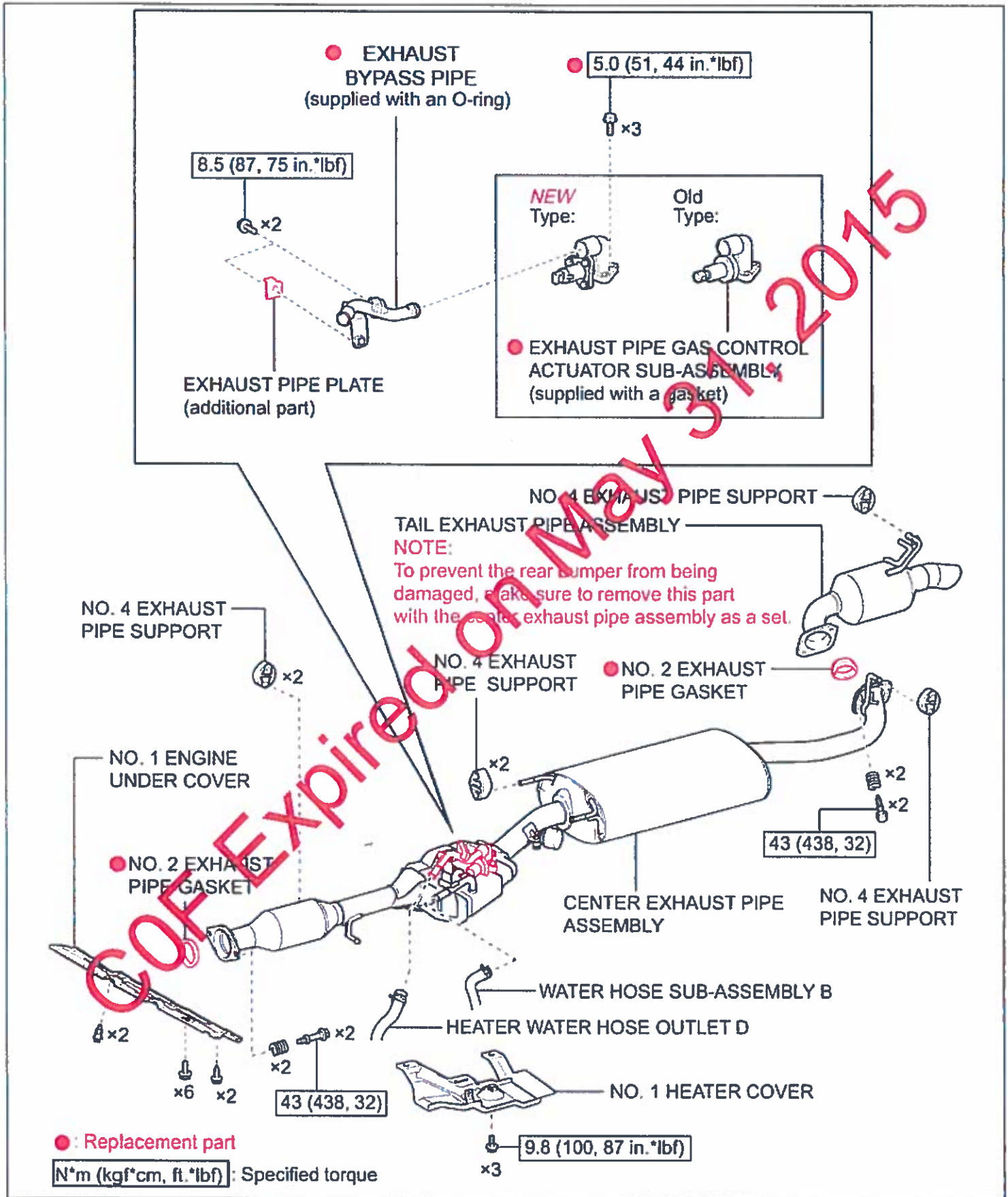


On certain 2011 and 2012 model year Highlander HV and certain 2012 model year Prius V vehicles, there is a possibility that the exhaust gas control actuator may develop a coolant leak. If a coolant leak occurs, the Water Temp Indicator Lamp* (), and Check Engine Lamp () will illuminate.

* For Highlander HV the Water Temp Indicator Lamp will illuminate when the needle for the engine coolant temperature gauge enters the red zone.

V. WORK PROCEDURE

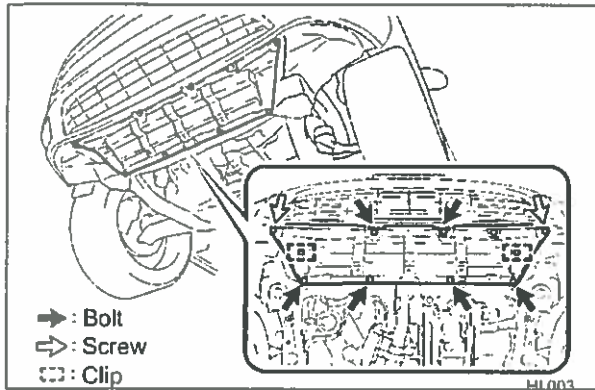
A. COMPONENTS



B. CENTER EXHAUST PIPE ASSEMBLY REMOVAL

1. CHECK FOR DTCs

- Check and record any DTCs and freeze-frame data that may be present.



2. DRAIN THE ENGINE COOLANT

- Remove the 6 bolts, 2 clips, 2 screws and the engine under cover.

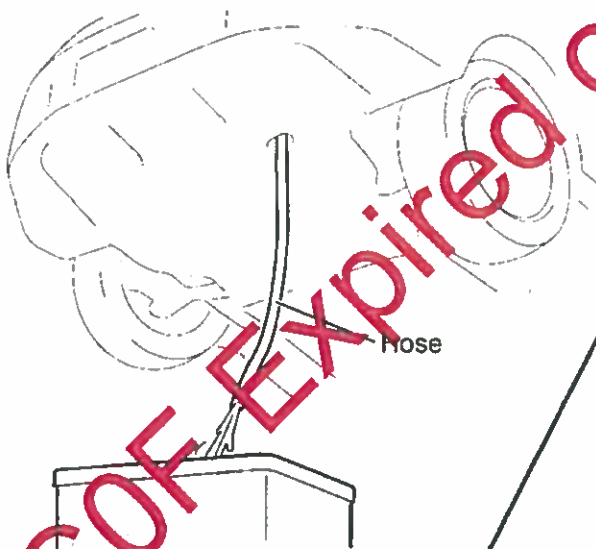
- Prepare a clean container.
- Connect a clean hose to the radiator draincock and drain the coolant into a clean container.
- When the coolant is drained completely, replace the draincock o-ring.

NOTE: Approximately 1.5 gallons of coolant will be drained.



- Confirm the cooling system is sufficiently cool before beginning any work.
- The coolant drained from the radiator **MUST** be reused, confirm that a clean container is used when draining the coolant.
- DO NOT** reuse any coolant that is drained when disconnecting the coolant hoses by the exhaust gas control actuator, this coolant may be contaminated when drained.
- DO NOT** mix the coolant drained from the radiator with the coolant drained from the hoses.

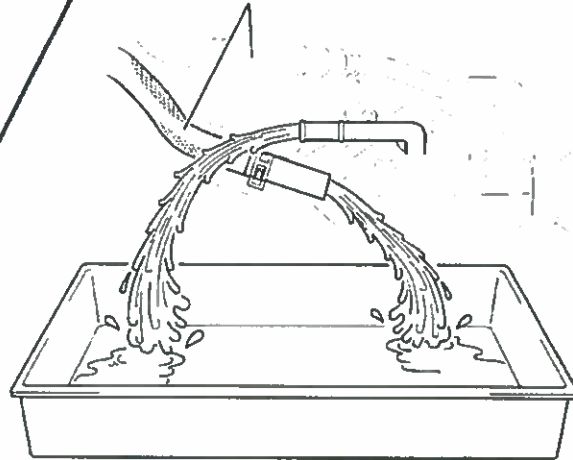
Radiator side



Reusable

Exhaust heat recirculation system side

Heater Water Hose

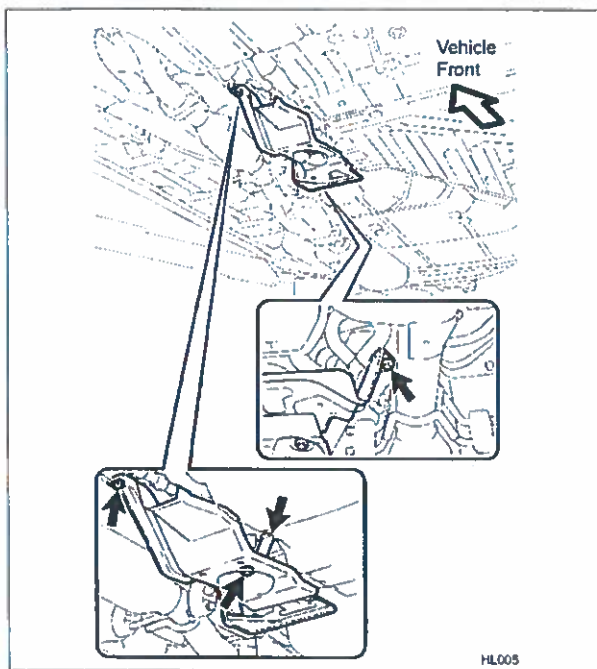


Non-reusable

HG005

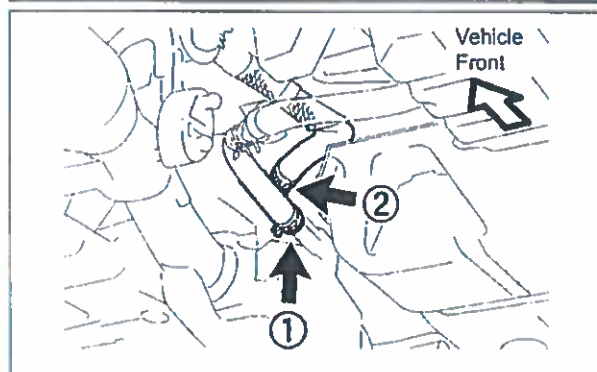
3. REMOVE THE No.1 HEATER COVER

- a) Remove the 3 bolts, disconnect the clamp and remove the cover.

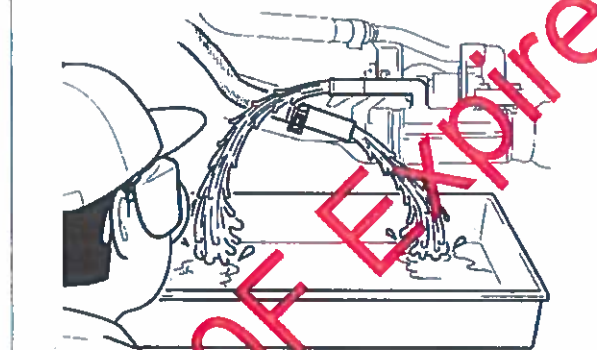


4. DISCONNECT THE EXHAUST HEAT RECIRCULATION HOSES

- a) Disconnect the 2 coolant hoses.



COOLANT DRAINS OUT.



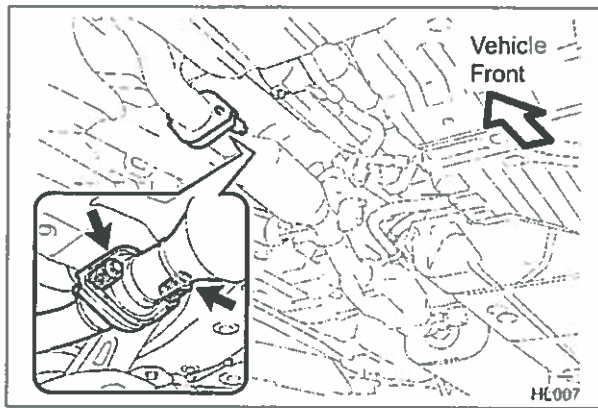
- b) Cover the hoses with bags to prevent coolant from dripping.

STOP

CONFIRM the cooling system is sufficiently cool before beginning any work.

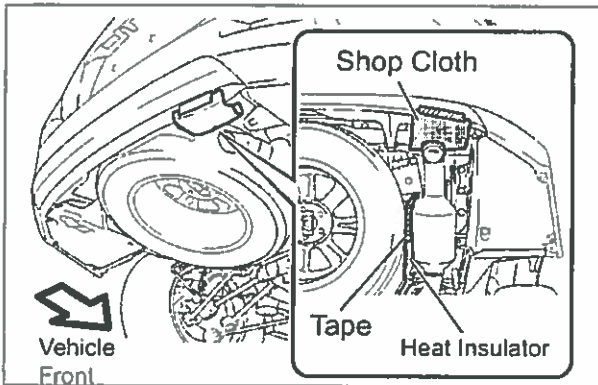
DO NOT reuse any coolant that is drained when disconnecting the coolant hoses by the exhaust gas control actuator, this coolant may be contaminated when drained.

- **DO NOT** mix the coolant drained from the radiator with the coolant drained from the hoses.



5. DISCONNECT THE FRONT OF THE CENTER EXHAUST PIPE ASSEMBLY

- a) Remove the 2 bolts and the 2 compression springs to disconnect the center exhaust pipe from the front No.3 exhaust pipe.



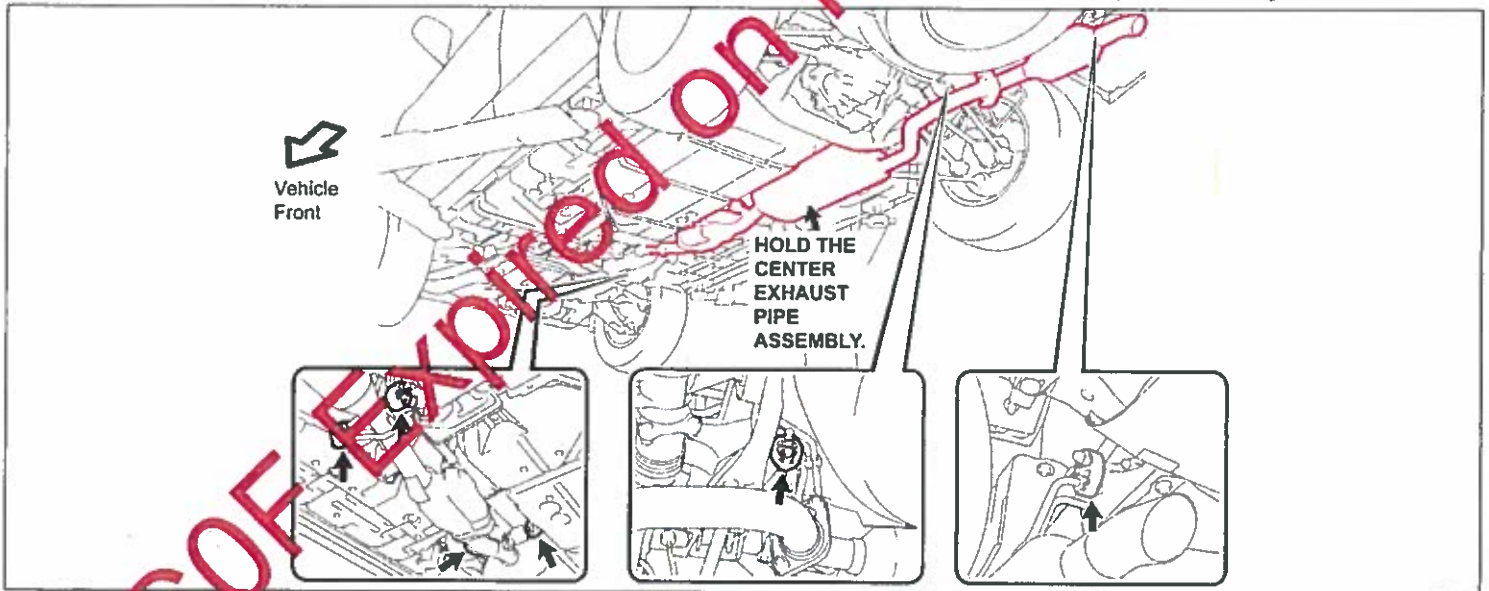
6. ATTACH A CLOTH TO THE UNDERSIDE OF THE BUMPER

- a) Attach a cloth to the underside of the bumper to protect the bumper during exhaust pipe removal.

7. REMOVE THE EXHAUST PIPE ASSEMBLY

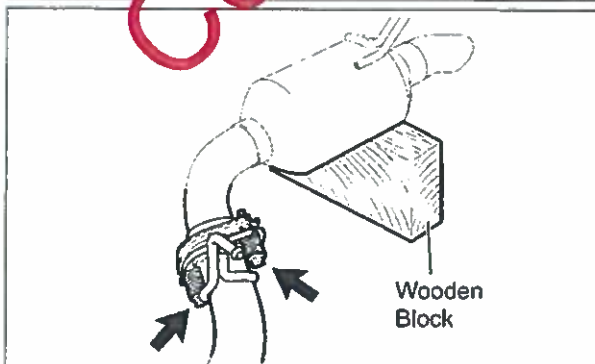
- a) Disconnect the 6 hangers and remove the exhaust pipe assembly.

NOTE: It may be necessary to work with an assistant to remove the exhaust pipe assembly.

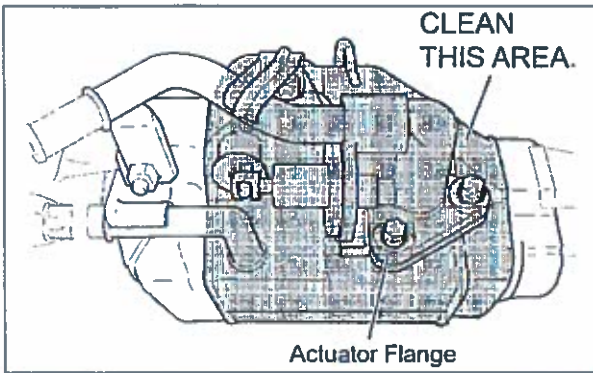


8. REMOVE THE TAIL EXHAUST PIPE ASSEMBLY

- a) Support the tailpipe assembly with a block of wood.
- b) Remove the 2 bolts and the 2 compression springs.



C. EXHAUST GAS CONTROL ACTUATOR REPLACEMENT

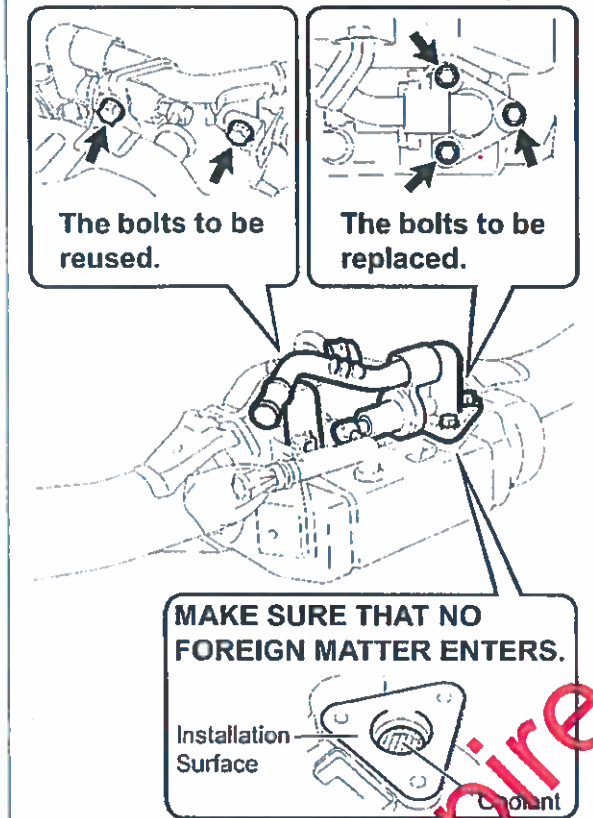


1. CLEAN THE AREA AROUND THE EXHAUST GAS CONTROL ACTUATOR SUB-ASSEMBLY

- a) Clean the area shaded in the illustration to prevent foreign material from entering the cooling system.

2. REMOVE THE EXHAUST GAS CONTROL ACTUATOR SUB-ASSEMBLY

- a) Remove the 5 bolts then the actuator and bypass pipe.



STOP

- Confirm that no foreign material enters the cooling system when the actuator is removed.
- DO NOT discard the 2 bolts that secure the bypass pipe, they will be reused.

3. CLEAN THE ACTUATOR CONTACT SURFACE

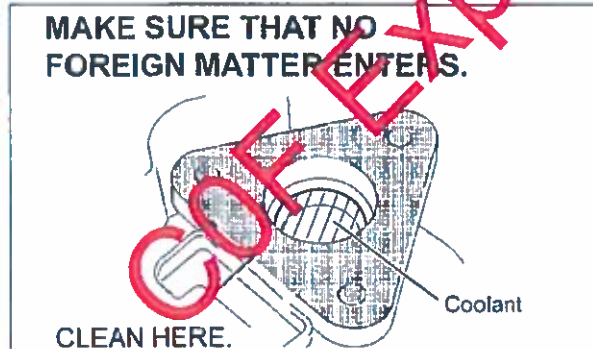
- a) Use a shop cloth to clean the contact surface.

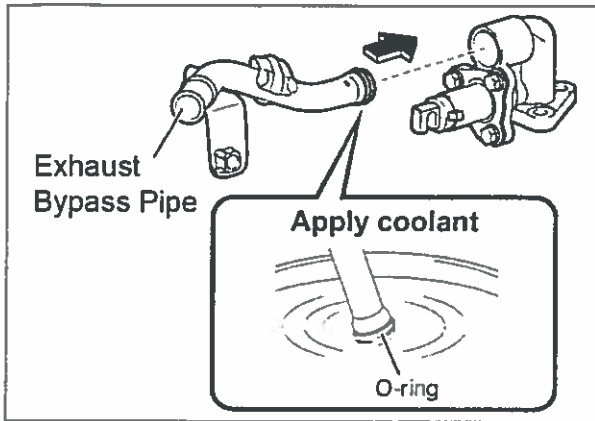
NOTE: Clean from the inside of the flange toward the outside edge to prevent foreign material from entering the cooling system.

4. ADD COOLANT UP TO THE EDGE OF THE FLANGE

- a) To limit the amount of air in the cooling system, add coolant.

NOTE: If a large amount of air enters the cooling system, the load on the water pump will increase.



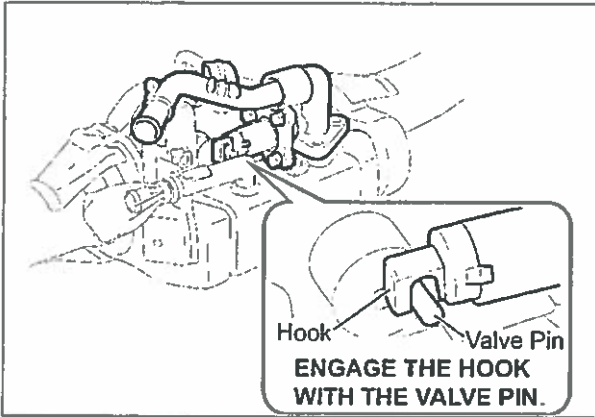


5. **CONNECT THE BYPASS PIPE TO THE EXHAUST PIPE GAS CONTROL ACTUATOR**

- a) Apply clean coolant to the o-ring on the *NEW* bypass pipe to ease installation.
- b) Insert the bypass pipe into the actuator as far as possible.

NOTE:

- **DO NOT** damage the o-ring or allow it to become contaminated before installation.
- Confirm the bypass pipe is installed completely, there may be a yellow mark on the new bypass pipe, **DO NOT** use this mark as an installation guide.

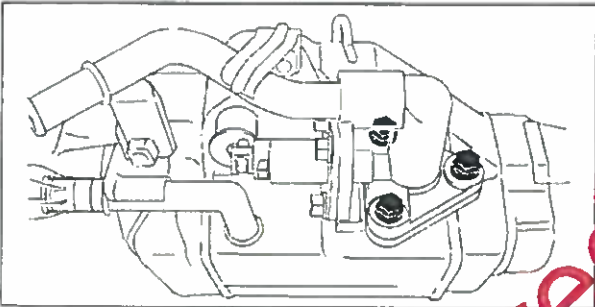


6. **LOOSELY INSTALL THE BYPASS PIPE AND ACTUATOR**

- a) Set the bypass pipe and actuator in place, confirm the actuator hook is engaged with the valve pin.

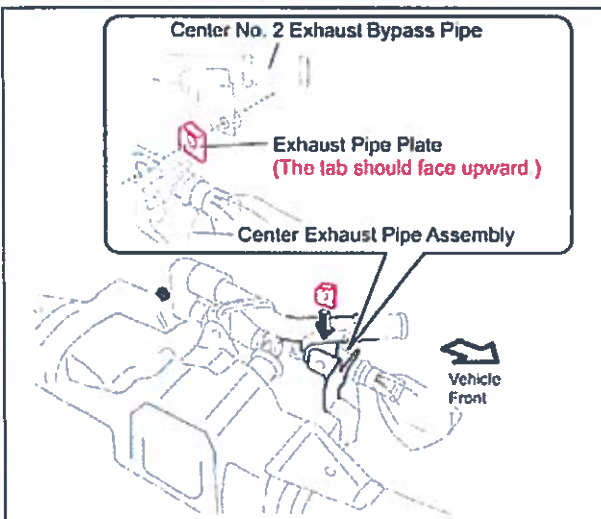
- b) Loosely install the 3 *NEW* actuator bolts several threads.

NOTE: DO NOT tighten these bolts at this time as the actuator will need to be adjusted.



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THE FOLLOWING STEPS ARE VITAL. CONFIRM THESE STEPS ARE FOLLOWED CLOSELY IF THESE STEPS ARE NOT FOLLOWED A COOLANT LEAK COULD DEVELOP.



7. TEMPORARILY INSTALL THE BYPASS PIPE

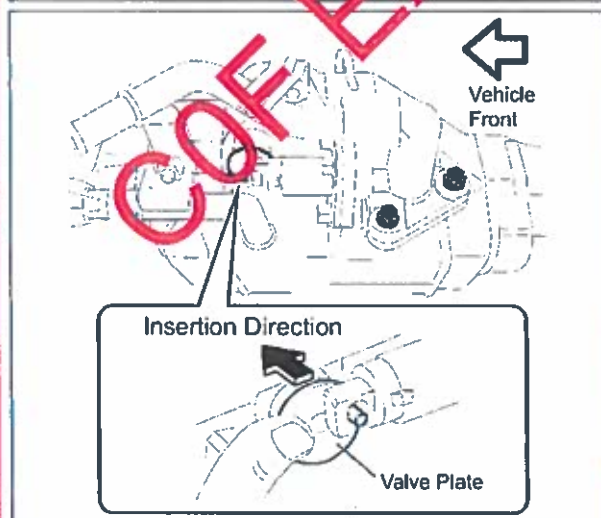
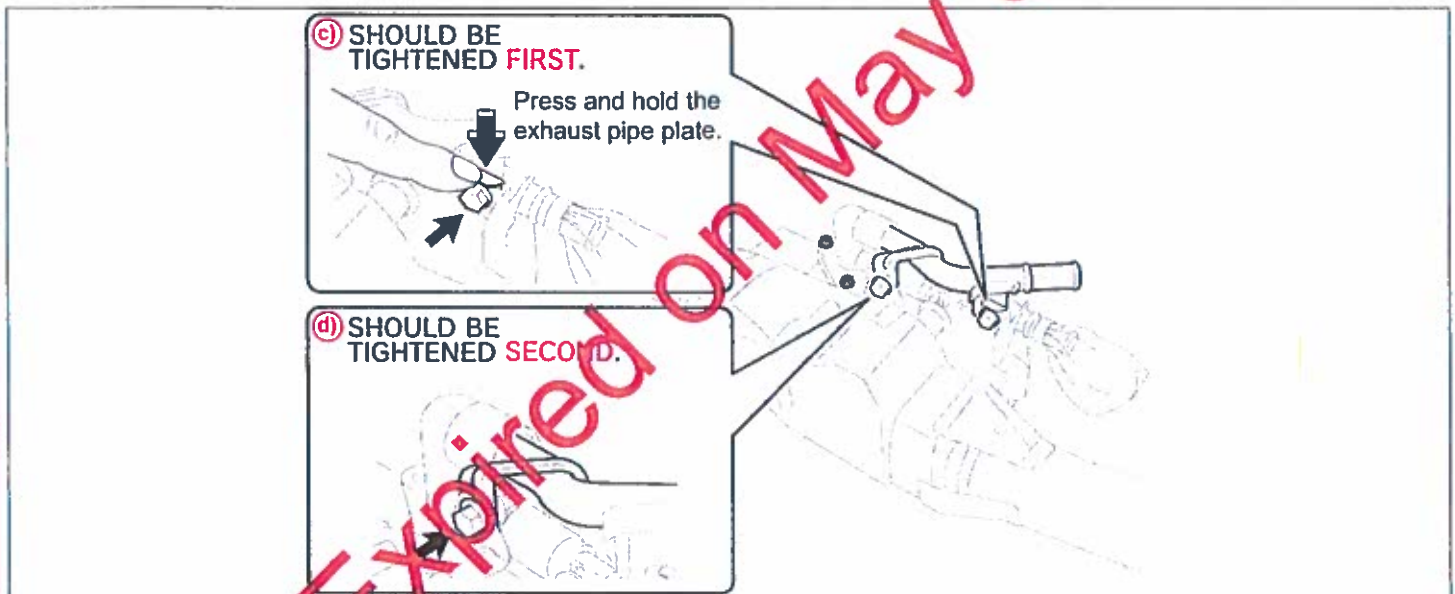
- Insert the **NEW** exhaust pipe plate between the bypass pipe bracket and exhaust bracket that is positioned towards the front of the vehicle.



Confirm the plate is installed in the correct direction, with the tab facing upward.

- Loosely install 2 **NEW** black bolts.

- While pressing down on the newly installed exhaust pipe plate tighten the bolt.
 - While pressing down on the newly installed No.2 insulator tighten the bolt.
- Torque: 75in.lbf (8.5N·m)

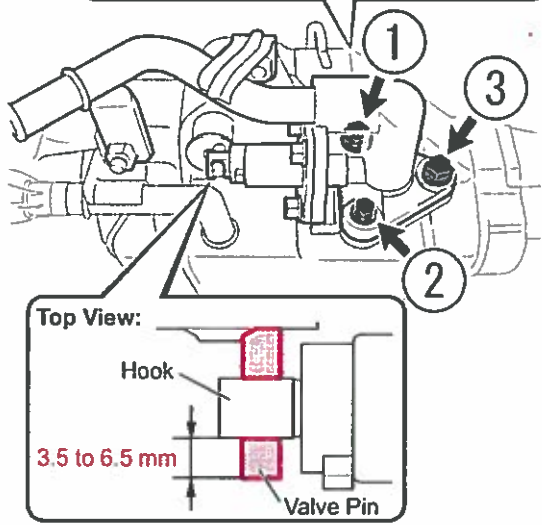
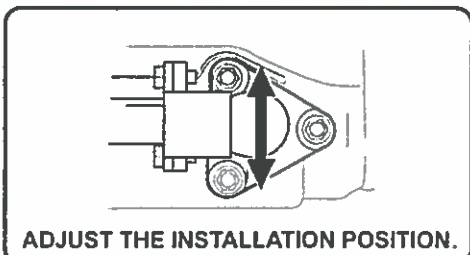


8. INSTALL THE EXHAUST GAS CONTROL ACTUATOR

- Confirm the valve plate is positioned correctly by pressing the plate.

NOTE: If the valve plate is not positioned correctly, the final actuator position may be difficult to achieve.

VITAL STEPS CONTINUED



- b) Position the actuator so that approximately 4.5mm of the valve pin is protruding past the actuator hook.
- c) Tighten the 3 bolts evenly following the torque sequence shown in the illustration.

Torque: 44 in.lbf (5.0N·m)

- d) Measure the length of the valve pin that protrudes beyond the actuator hook.

Specification: 3.5 – 6.5mm

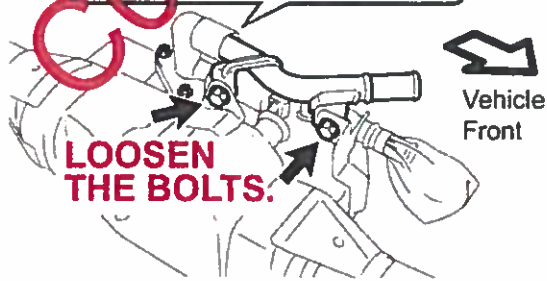
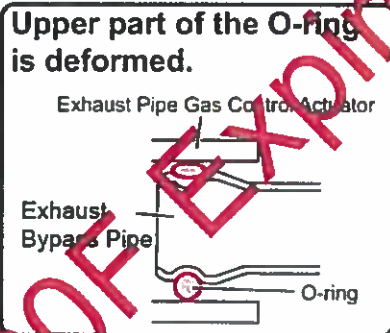
STOP If the protruding pin length is not within specification, the 3 actuator bolts **MUST** be loosened and **ALL** of **STEP 9** **MUST** be repeated.

9. SETTLE THE BYPASS PIPE O-RING

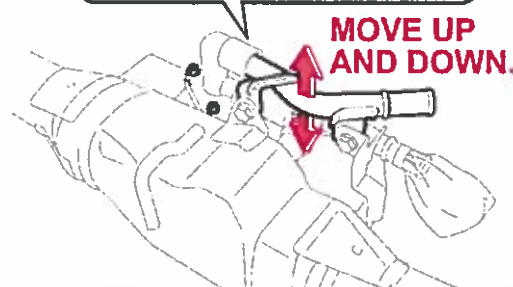
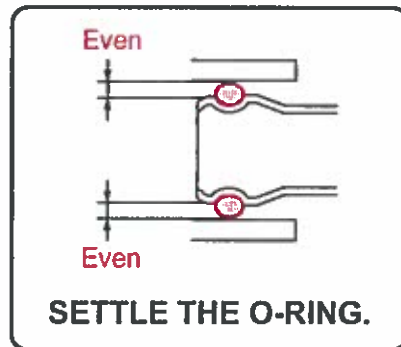
- a) Loosen the 2 bolts slightly. **DO NOT** remove the bolts.
- b) Move the bypass pipe up and down to properly settle the o-ring.

STOP If this step is not performed, a coolant leak **WILL** develop.

a) BEFORE ADJUSTMENT



b) AFTER ADJUSTMENT



10. TIGHTEN THE BYPASS PIPE BOLTS

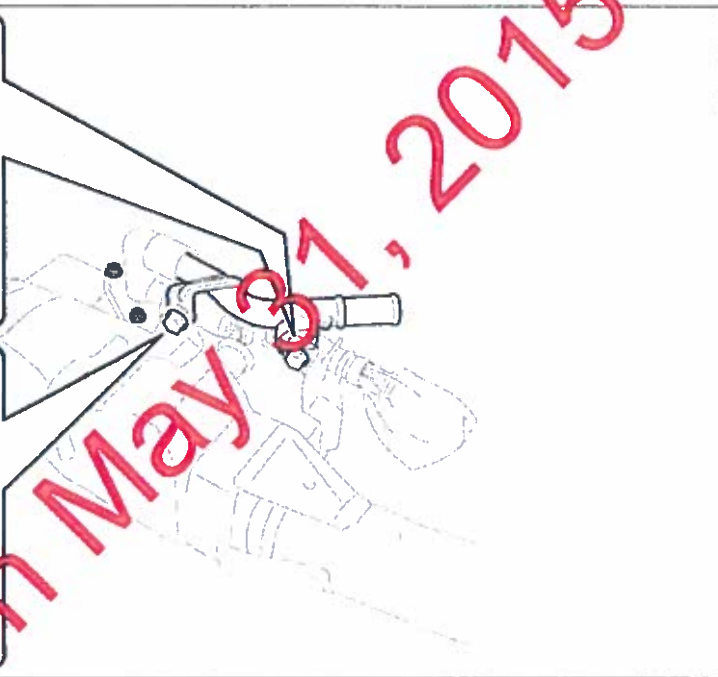


- **DO NOT** press down on the bypass pipe when tightening the bolts, this may cause a coolant leak.
- It is critical that step a) be performed before b), if these steps are completed in the incorrect order a coolant leak may develop.

a) While pressing down on the newly installed exhaust pipe plate tighten the bolt.

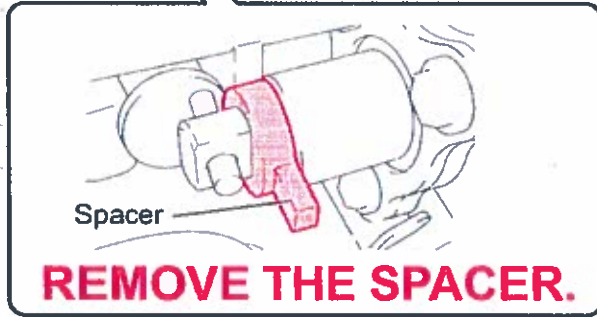
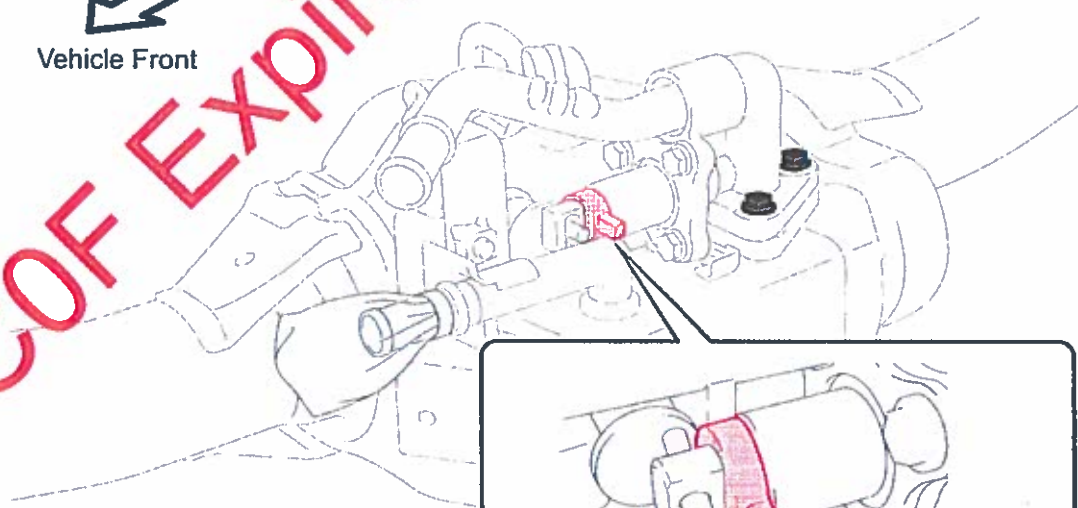
b) While pressing down on the newly installed No.2 insulator tighten the bolt.

Torque: 75in.lbf (8.5N·m)



11. REMOVE THE SPACER

a) Remove the spacer from the actuator.



D. EXHAUST PIPE ASSEMBLY INSTALLATION

1. INSTALL THE EXHAUST PIPE ASSEMBLY

- a) Install the exhaust pipe assembly in the reverse order of removal, refer to TIS for instructions on exhaust pipe assembly installation.

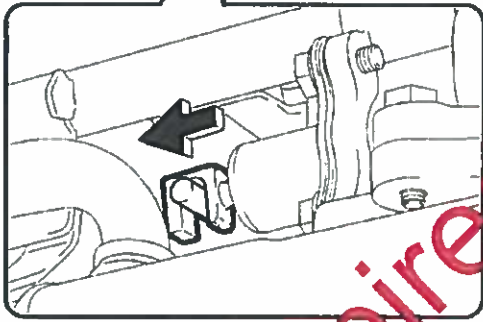
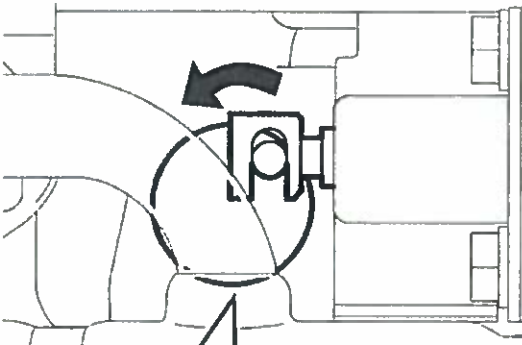


- Confirm the **NEW** exhaust pipe gaskets included in the parts kit are used.
- Confirm the cloth that was attached to the bumper during exhaust pipe removal is removed.
- Confirm the coolant drained from the radiator is reused.
- Confirm the coolant is filled and the system is properly bled.

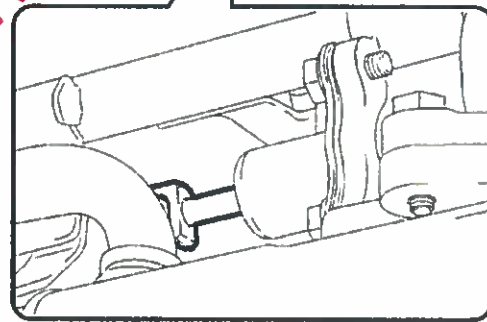
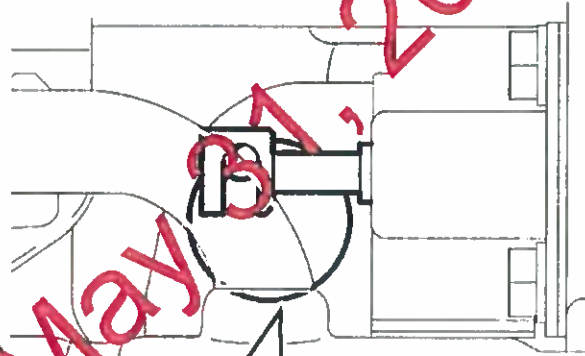
2. INSPECT THE OPERATION OF THE EXHAUST GAS CONTROL ACTUATOR

- a) Place the vehicle in 'Inspection Mode' and warm the engine to normal operating temperature.
b) Confirm the hook of the actuator is fully extended.

With cold engine:



With warm engine:



CONFIRM THAT THE HOOK IS EXTENDED.

3. CHECK FOR EXHAUST SYSTEM LEAKS

4. CHECK FOR DTCS

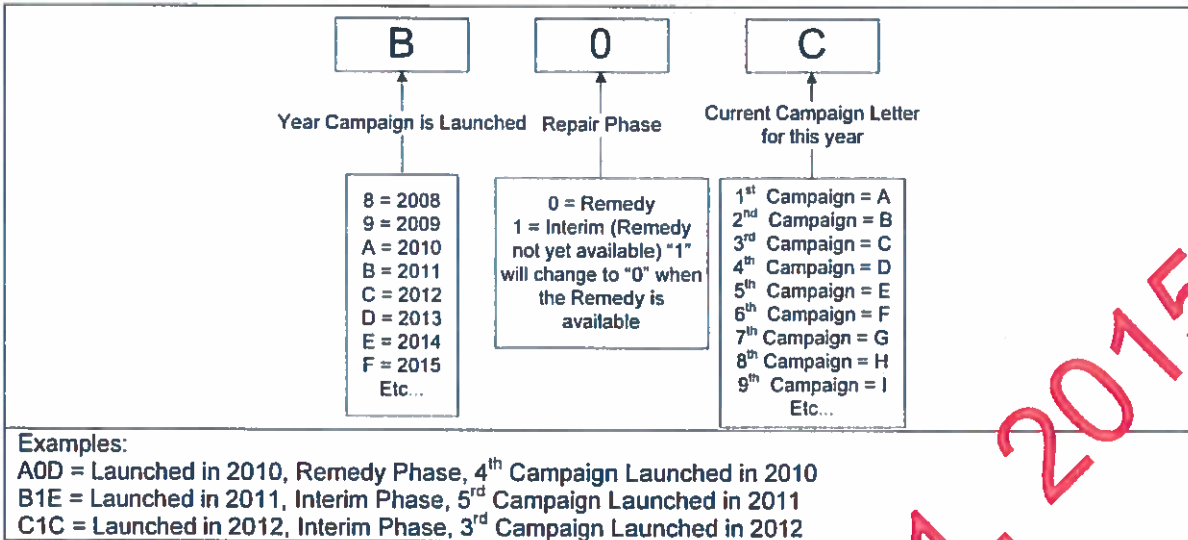
◀ VERIFY REPAIR QUALITY ▶

- Confirm the coolant is drained from the radiator using a clean container as this coolant **MUST** be reused
- Confirm the new actuator and bypass pipe are installed and aligned correctly
- Confirm the cooling system is refilled and bled correctly
- Confirm the actuator is working correctly by following the inspection in these instructions

If you have any questions regarding this campaign, please contact your regional representative

VI. APPENDIX

A. CAMPAIGN DESIGNATION DECODER



B. CAMPAIGN PARTS DISPOSAL

As required by Federal Regulations, please make sure all campaign parts (original parts) removed from the vehicle are disposed of in a manner in which they will not be reused, *unless requested for parts recovery return.*

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