



Via Overnight Mail
January 16, 2009

To: Lexus Area General Managers

From: Jerry Marcotti - Service and Parts Field Operations Manager

Subject: Special Service Campaign (Safety Recall) 9LA
Certain 2006 - 2007 GS, 2006 - 2008 IS and 2007 - 2008 LS vehicles
Fuel Delivery Pipe Replacement

Lexus will initiate a Special Service Campaign (SSC) on certain 2006 through 2007 GS 300/350, 2006 through 2008 model year IS 250/350, and 2007 through 2008 LS 460/LS 460L vehicles. The involved vehicles are equipped with aluminum fuel delivery pipes (fuel rails). Lexus has determined that ethanol fuels with low moisture content will corrode the internal surface of the fuel rails. As this condition progresses, the engine malfunction indicator light (MIL) may illuminate. Over time, the corrosion will create a pinhole resulting in fuel leakage.

The following information is provided to advise you and your staff of the dealer and owner notification phase of the campaign and your degree of involvement. Additional information may be found in the attached dealer letter which contains the Lexus Q&A and customer notification letter.

Dealer and Owner Notification Date

Dealer packages with the attached dealer letter will be sent to the attention of the service manager today via UPS Next Day delivery service. The affected VIN lists will be sent to the attention of the service manager on January 21, 2009 via UPS Next Day delivery service.

Lexus will begin sending the Special Service Campaign notification to owners in late January 2009 via first class mail.

Identification of Involved Vehicles

MODEL	VDS	MY	Serial Range
GS 300	BH96S	2006	5000028 - 5045859
GS 300 AWD	CH96S	2006	0001017 - 0021080
GS 350	BE96S	2007	0007608 - 0028362
GS 350 AWD	CE96S	2007	0001838 - 0012689
IS 250	BK262	2006	2000010 - 2021611 5000018 - 5025772
		2007	2021159 - 2058542 5025773 - 5050845
		2008	2057792 - 2061389 5050849 - 5053158

Tools and Equipment

The following tools and equipment are required for this procedure.

- Standard hand tools
- Torque wrench
- 22 mm union nut wrench
- SST: (non-essential) 09612-24014 (09617-24011)
- SST: Stud Bolt - 04007-32331 (2 stud bolts have been included in each Service Manager's package)
- SST: 09260-39015 Injector seal tool set (02968-03020, 09268-03010) Lexus drawer 1
- Techstream
- Protective tape
- Wooden boards (for clamping purposes)

Warranty Claim Processing Instructions

Dealers are required to submit SSC claims using the information described below.

SSC	Model	Opcode	Description	Labor Hours*
9LA	LS 460 /LS 460L	8506FA	Replace the fuel delivery pipes	7.2
	GS 300	8506FC	Replace the fuel delivery pipes	3.2
	GS 350	8506FG	Replace the fuel delivery pipes	3.3
	IS 250/IS 350	8506FJ	Replace the fuel delivery pipes	3.3

***NOTE:** Above flat rate time(s) include 0.1 hour for campaign administrative cost per unit for the dealership. Lexus warranty will only accept one claim per vehicle under the terms of the SSC. Please ensure that your dealerships check Dealer Daily or TIS to see if the vehicle has been repaired under this SSC prior to servicing a vehicle.

In a small number of cases, based upon the inspection results you may need to replace the fuel injectors. Please utilize the following operation codes if fuel injector becomes necessary.

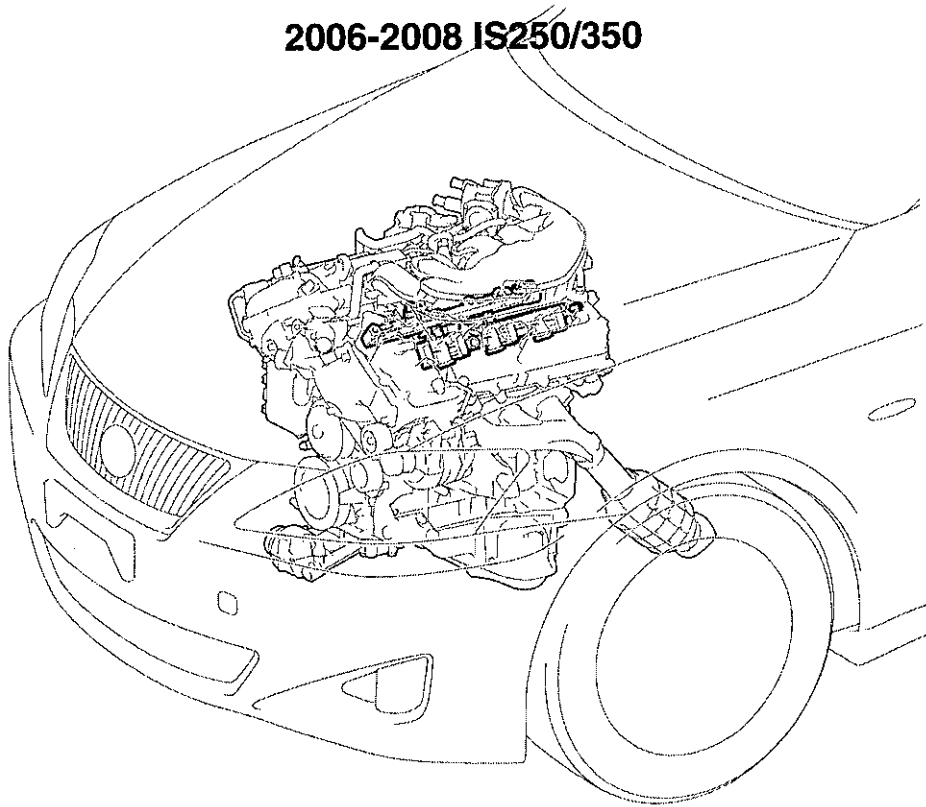
SSC	Model	Opcode	Description	Labor Hours*
9LA	LS 460/LS 460L	8506FB	Replace the fuel delivery pipes and the injectors	6.8
	GS 300	8506FD	Replace the fuel delivery pipes and the injectors	2.9
	GS 350	8506FH	Replace the fuel delivery pipes and the injectors	3.0
	IS 250/IS 350	8506FK	Replace the fuel delivery pipes and the injectors	3.0

***NOTE:** Above flat rate time(s) include 0.1 hour for campaign administrative cost per unit for the dealership. Lexus warranty will only accept one claim per vehicle under the terms of the SSC. Please ensure that your dealerships check Dealer Daily or TIS to see if the vehicle has been repaired under this SSC prior to servicing a vehicle.

The affected VIN information and operation codes will be downloaded and activated for dealerships to use on January 20, 2009.

Important Note: Many vehicles subject to SSC 9LA are also a part of SSC 9LB (Rear Brake Caliper) and 9LC (Electric Power Steering). Lexus will only accept sublet charges for customer care amenities (car wash, fuel fill, rental, pick up and delivery) on the dealer claim for the SSC 9LA repair with the exception of GS 430/450h vehicles which should be claimed on the applicable SSC 9LB claim and RX 400h vehicles which should be claimed on the applicable SSC 9LC claim.. It is important that your dealership perform all applicable SSC repairs in a single service visit and correctly submit the associated warranty claims.

TECHNICAL INSTRUCTIONS
FOR
SPECIAL SERVICE CAMPAIGN 9LA
FUEL DELIVERY PIPE REPLACEMENT
2006-2008 IS250/350



I. IDENTIFICATION OF AFFECTED VEHICLES

A. AFFECTED VIN RANGE

Vehicle Model	Year	WMI	VIN Range	
			VDS	Range
IS250	2006	JTH	BK262	2000010 - 2021611
				5000018 - 5025772
	2007			2021159 - 2058542
				5025773 - 5050845
				2057792 - 2061389
				5050849 - 5053158
2008	CK262		2000003 - 2008675	
			5000013 - 5007908	
2007			2008542 - 2019897	
			5007909 - 5015612	
			2019898 - 2020648	
			5015613 - 5016546	
2008	BE262		2000000 - 2007084	
			5000018 - 5011869	
2007			2006942 - 2013016	
			5011870 - 5017246	
			2011547 - 2013594	
			5017247 - 5017817	
2008				

II. PREPARATION

A. Tools

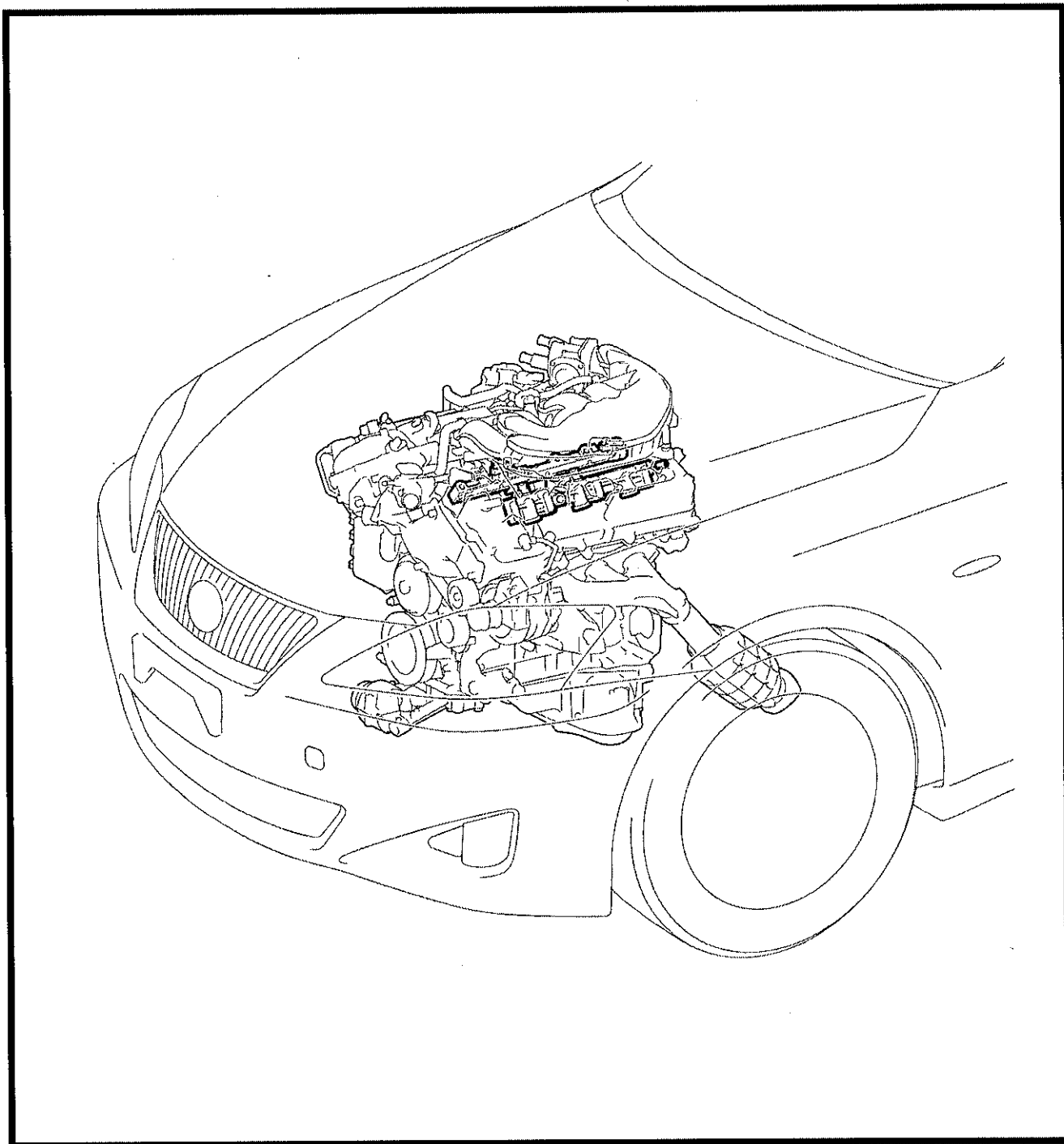
- Standard hand tools
- Torque wrench
- 22 mm union nut wrench
- SST: (non-essential) 09612-24014 (09617-24011)
- SST: Stud Bolt - 04007-32331 (2 stud bolts have been included in each Service Manager's Package.)
- SST: 09260-39015 Injector seal tool set. (02968-03020, 09268-03010) Lexus drawer 1

B. Equipment

- Techstream

IV. BACKGROUND

The involved vehicles are equipped with aluminum Fuel Delivery Pipes (Fuel Rails). Lexus has determined that ethanol fuels with a low moisture content will corrode the internal surface of the fuel rails. As this condition progresses, the engine Malfunction Indicator Light (MIL) may illuminate. Overtime, the corrosion will create a pinhole resulting in fuel leakage.

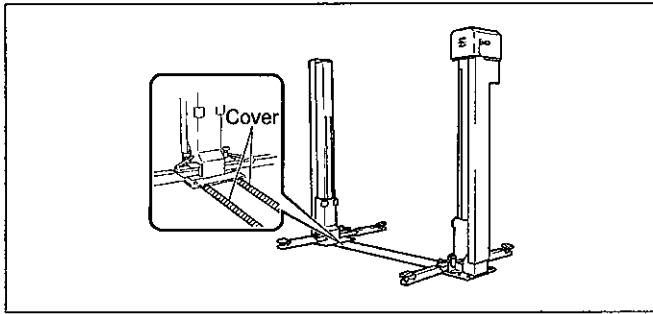


■ Copy And Display When Working

**WORKING WITH
GASOLINE**

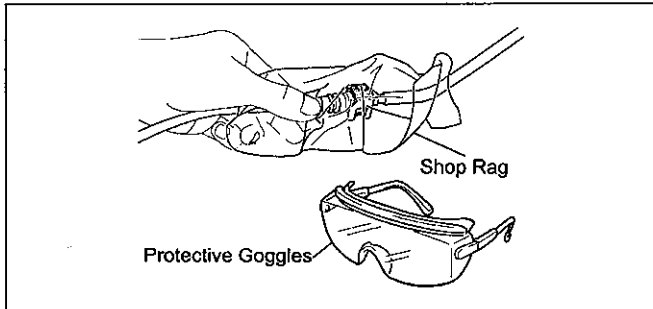
**NO FIRES
NO IGNITION
SOURCES**

Supervisor



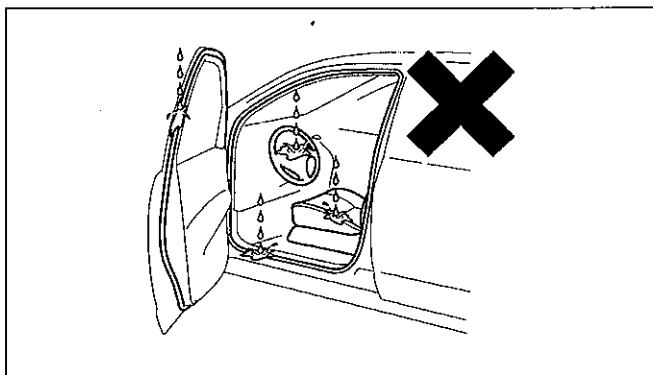
E. PRECAUTIONS WHEN USING A LIFT

- ☐ For bays equipped with auto lifts, cover all access cover joints with duct tape.
- ☐ In the event that fuel has leaked inside the auto lift, remove the access cover and clean up any spilled fuel. Dissipate fuel vapors until the smell is gone.



F. PREVENT THE FUEL FROM SPRAYING

- ☐ When disconnecting any fuel pipes or connectors there may still be some pressure remaining, even after discharging the system. To prevent the fuel from spraying, cover the pipe with a shop rag before disconnecting.
- ☐ Remember to always wear protective goggles especially when disconnecting fuel pipes.

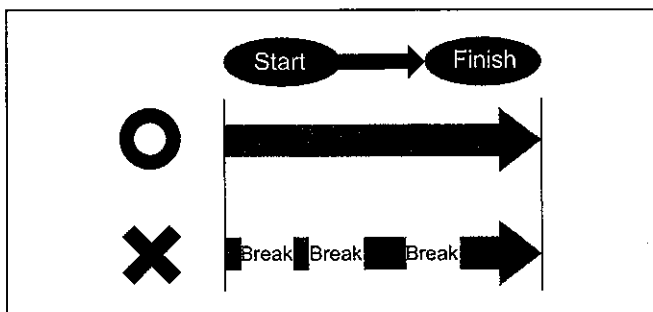


G. PREVENT THE FUEL FROM CONTACTING OTHER PARTS

- ☐ Do not allow the fuel to come in contact with any parts made of rubber or leather.

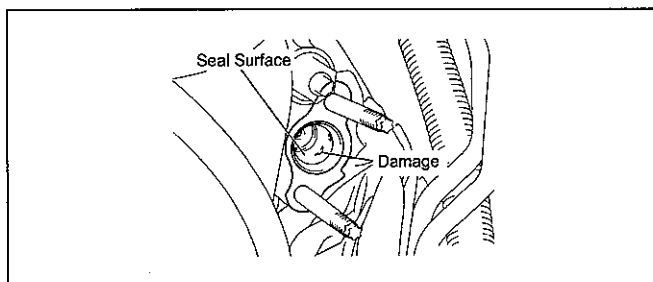
H. ASSIGN A SAFETY SUPERVISOR

- ☐ Assign a safety supervisor to be in charge of all safety precautions and fire hazards around the work area.



I. WORK SCHEDULING

- ☐ Work must be completed the same day.
- ☐ As a general rule, do not stop work midway. If work must stop midway, inform your safety supervisor.



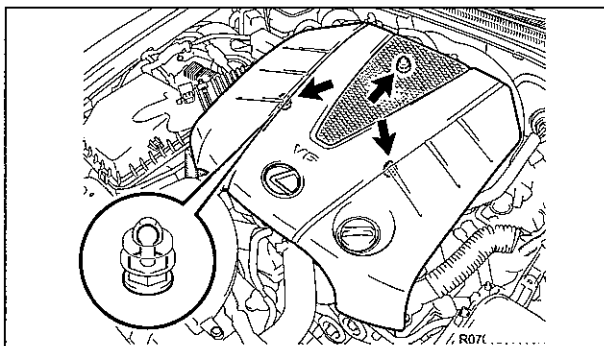
J. WHEN CONNECTING THE FUEL PIPE

- ☐ Any amount of damage or small foreign object (dust, a piece of thread, rust, etc.) may cause a fuel leak. Be thorough when inspecting and cleaning the fuel pipes and seal surface areas.

B. REMOVE THE INTAKE MANIFOLD

IS250 (3GR-FSE) – Skip to page 15

IS350 (2GR-FSE) – INTAKE MANIFOLD REMOVAL

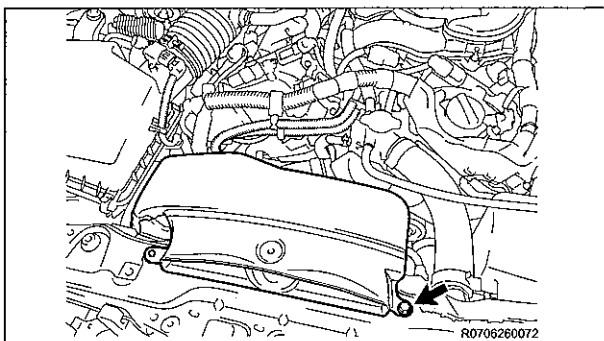


1. REMOVE V-BANK COVER SUB-ASSEMBLY

- a) Hold the front of the V-bank cover and raise it to disengage the 2 clips on the front of the cover. Continue to raise the cover to disengage the clip on the rear of the cover and remove the cover.

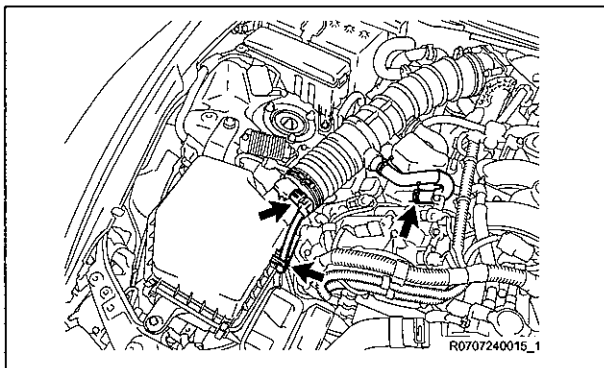
NOTE:

Attempting to disengage both front and rear clips at the same time may cause the cover to break.



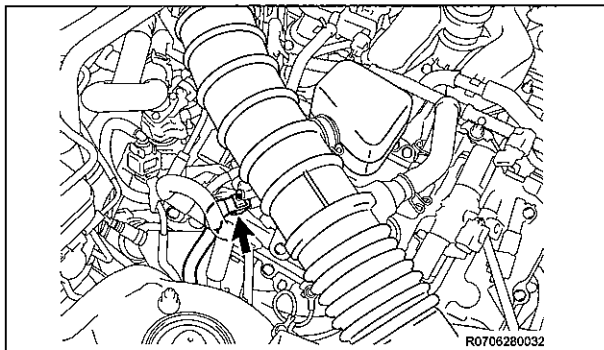
2. REMOVE NO. 1 AIR CLEANER INLET

- a) Remove the bolt, clip and inlet air cleaner.

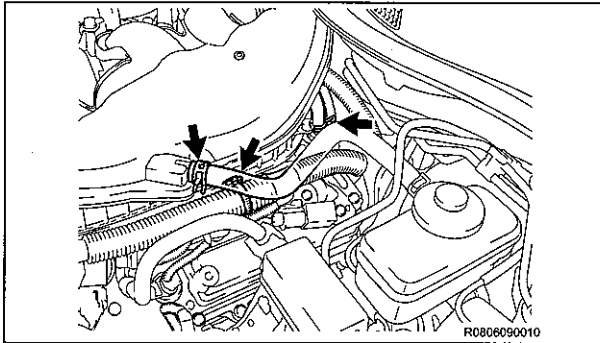


3. REMOVE AIR CLEANER CAP WITH AIR CLEANER HOSE

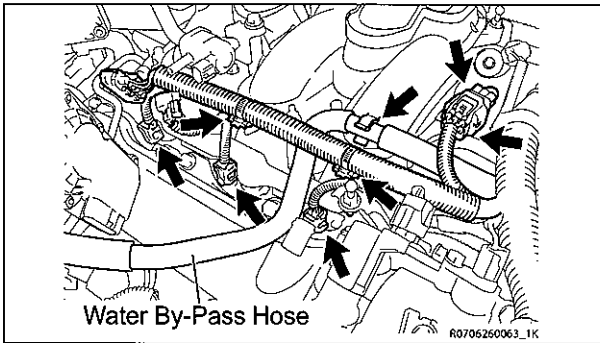
- a) Disconnect the MAF connector and remove the wiring from the clamp.
- b) Disconnect the NO.2 ventilation hose.



- c) Disconnect the vacuum hose clamp.

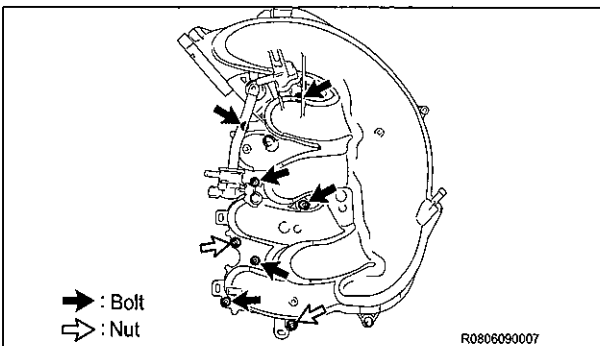
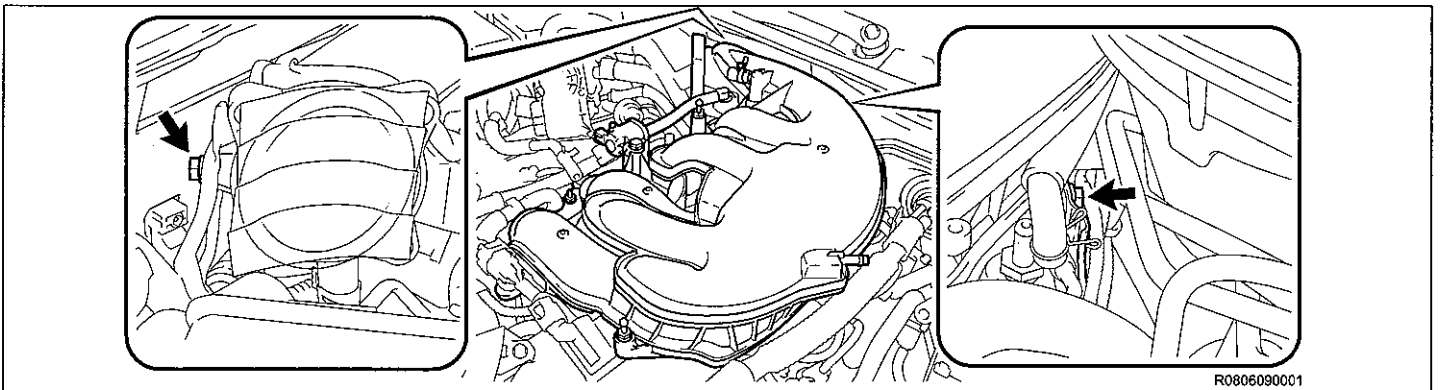


- c) Disconnect the ventilation hose from the intake manifold.
- d) Disconnect the union to check valve hose from the intake air surge tank.
- e) Disconnect the wire harness clamp from the intake air surge tank.

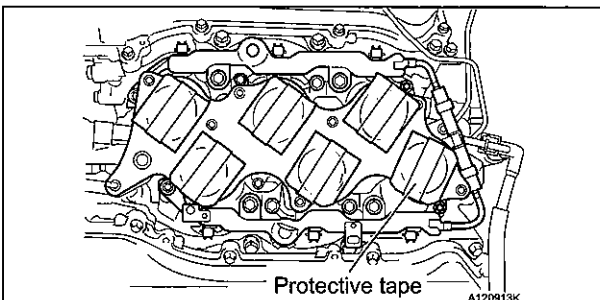


- f) Disconnect the 4 injector connectors.
- g) Disconnect the 3 wire harness clamps from the intake air surge tank.
- h) Disconnect the water by-pass hose from the intake air surge tank.

- i) Remove the 2 bolts from the intake air surge tank, see illustration below.

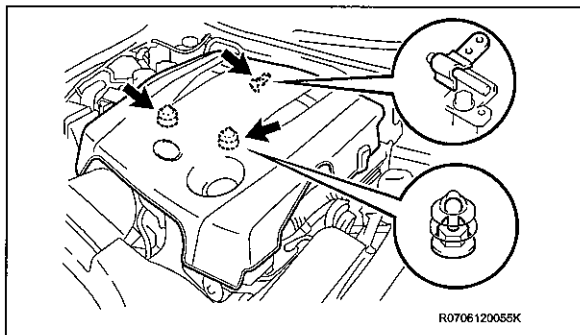


- j) Using a long hexagon 5 mm, remove the 6 bolts and using a 10mm socket remove the 2 nuts.
- k) Remove the intake surge tank and gasket.



- l) Place protective tape over the intake manifold openings to prevent foreign objects from entering.

IS250 (4GR-FSE) – INTAKE MANIFOLD REMOVAL

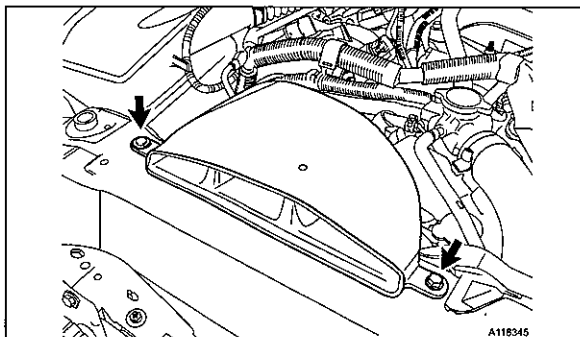


1. REMOVE V-BANK COVER SUB-ASSEMBLY

- a) Hold the front of the V-bank cover and raise it to disengage the 2 clips on the front of the cover. Continue to raise the cover to disengage the clip on the rear of the cover and remove the cover.

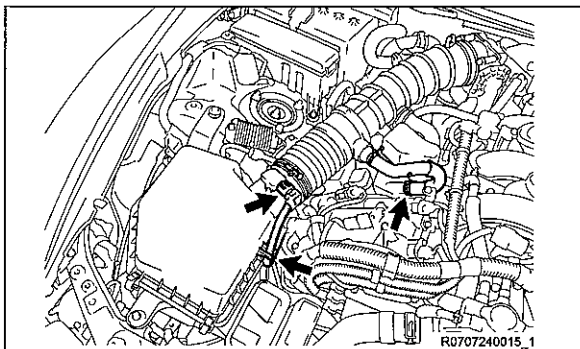
NOTE:

Attempting to disengage both front and rear clips at the same time may cause the cover to break.



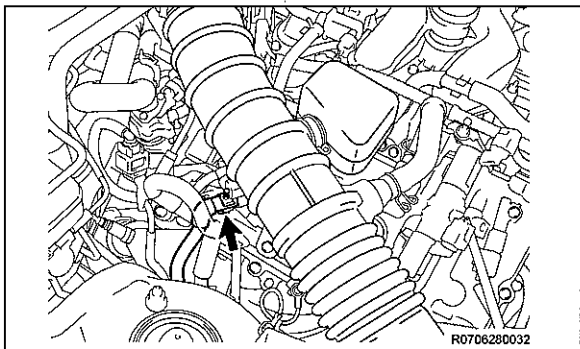
2. REMOVE NO. 1 AIR CLEANER INLET

- a) Remove the bolt, clip and air cleaner inlet.

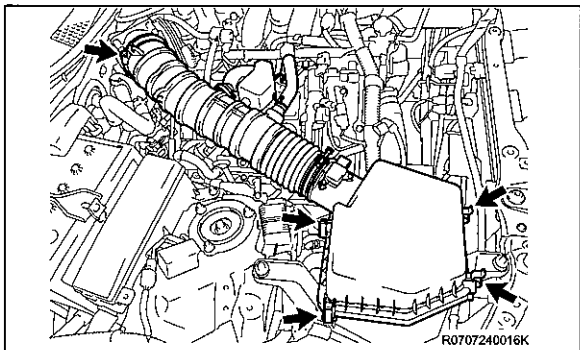


3. REMOVE AIR CLEANER CAP WITH AIR CLEANER HOSE

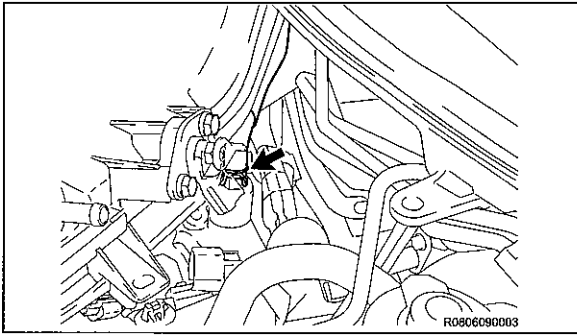
- a) Disconnect the MAF connector and remove the wiring from the clamp.
- b) Disconnect the No. 2 Ventilation hose.



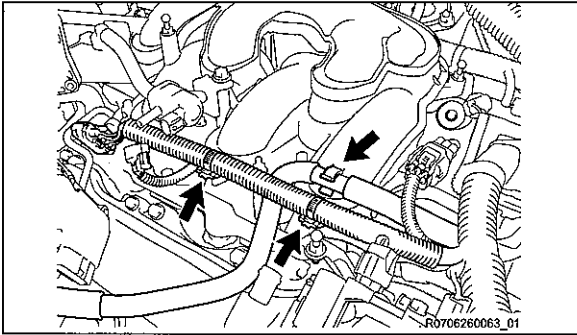
- c) Disconnect the vacuum hose clamps.



- d) Loosen the hose clamp bolt.
- e) Remove the 4 clips and air cleaner cap with air cleaner hose.

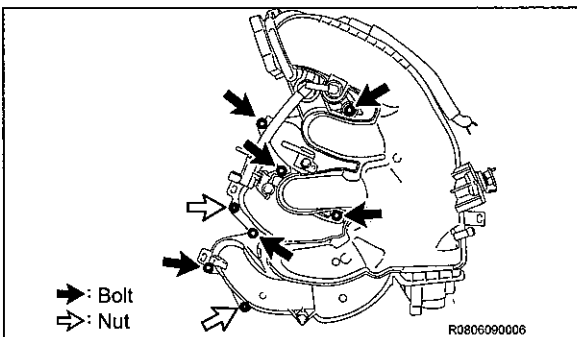
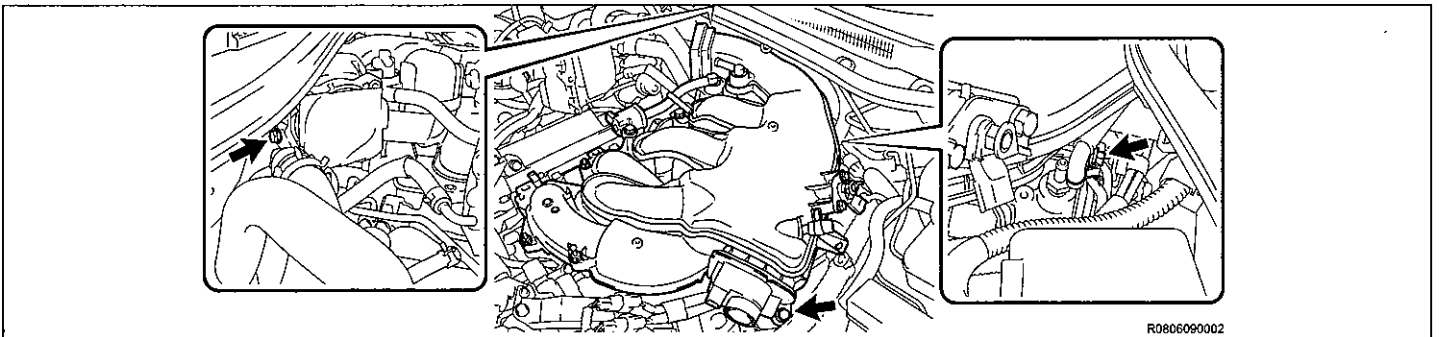


h) Disconnect the ventilation hose from the intake manifold.



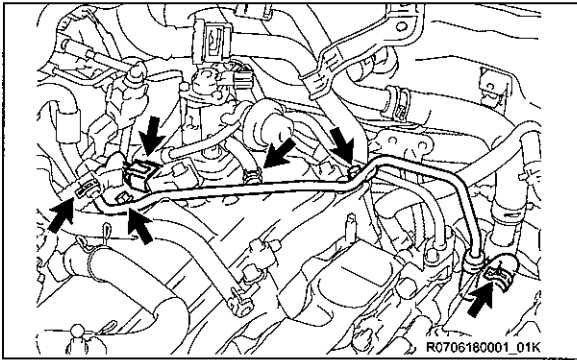
- i) Disconnect the 2 wire harness clamps from the intake air surge tank.
- j) Disconnect the water by-pass hose from the intake air surge tank.

k) Remove the 3 bolts from the intake air surge tank, see illustration below.



- l) Using a hexagon 5 mm, remove the 6 bolts, then using a 10mm socket remove the 2 nuts.

C. REMOVE FUEL DELIVERY PIPE

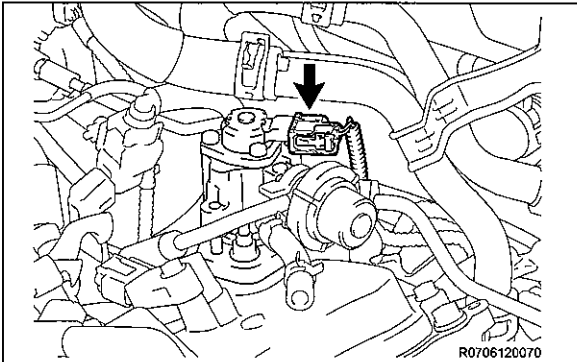


1. REMOVE NO. 1 FUEL PIPE

- Disconnect the ignition coil connector illustrated.
- Disconnect the 3 fuel hoses.
- Remove the 2 bolts and No. 1 fuel pipe.

NOTE:

- Insert a hose plug into the hose.
- Wipe away any spilt fuel with a shop rag.

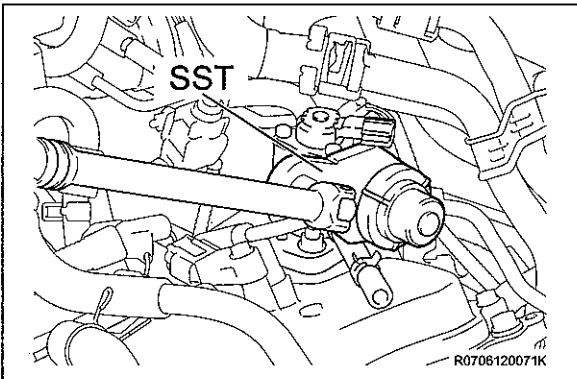


2. REMOVE FUEL PRESSURE PULSATION DAMPER

- Disconnect the pulsation damper connector.

NOTE:

When the fuel pressure pulsation damper is removed, be certain to disconnect the connector to prevent it from being damaged by tools.

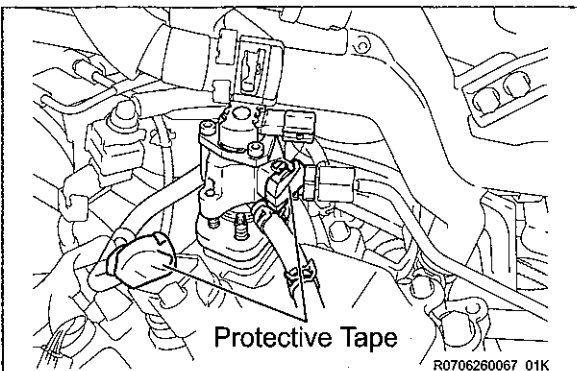


- Using SST or a 22 mm wrench, remove the fuel pressure pulsation damper and 2 gaskets from the fuel pump.

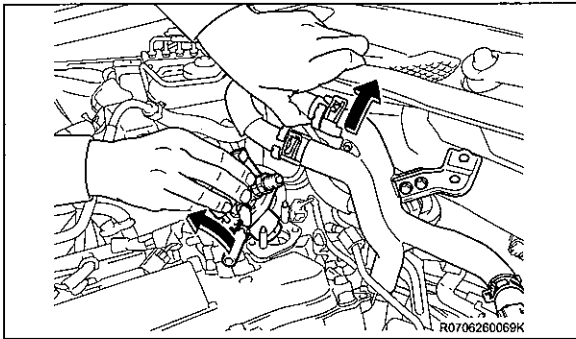
SST 09617-24011

NOTE:

- Do not blow pressurized air into the pulsation damper. The air pressure may damage the internal diaphragm.



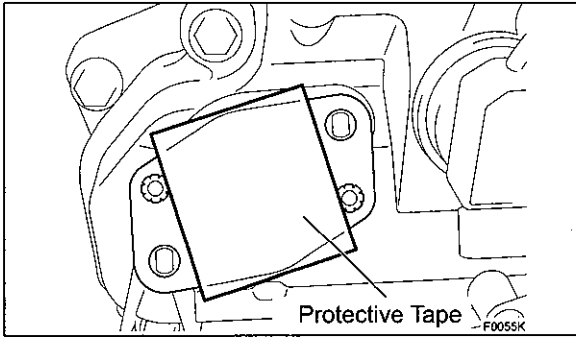
- Place protective tape over the fuel pump and fuel tube to prevent damage.



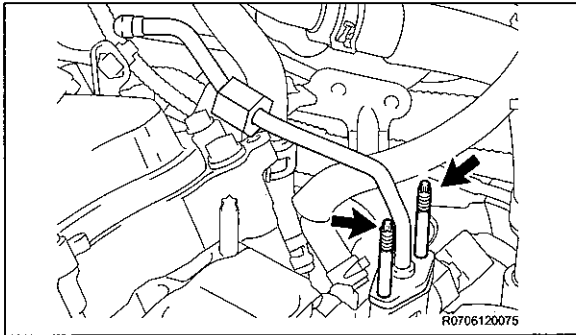
d) Remove the fuel pump and fuel pump insulator.

NOTE:

- Wipe away any spilt fuel with a shop rag.
- Do not apply excessive force to the heater hose and coolant pipe.



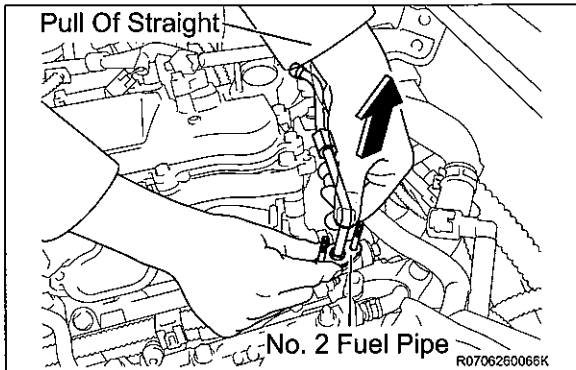
e) Place protective tape on the old insulator and place it over the head cover opening to prevent foreign objects from entering.



5. REMOVE NO. 2 FUEL PIPE

a) Hand tighten the 2 SST stud bolts in the delivery pipe's bolt attachment holes. (torx® side up)

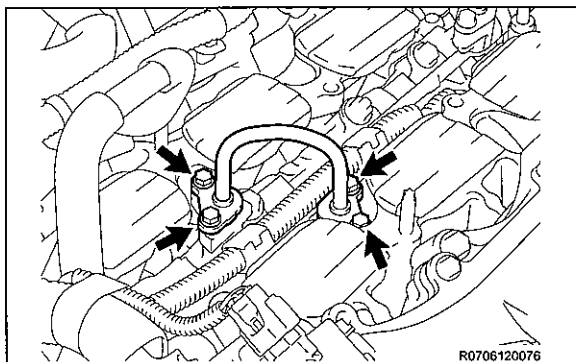
SST 04007-32331



b) Remove the fuel pipe from the fuel delivery pipe.
c) Remove the 2 stud bolts.

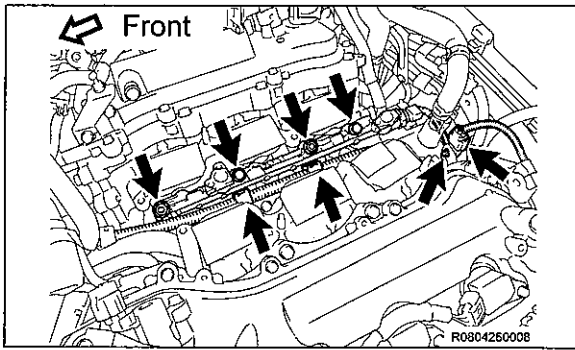
NOTE:

- Shifting the pipe too widely to the left and right may damage the part which may lead to a fuel leak.
- Fuel Pipes may be extremely tight, use caution while removing as to not cause damage.



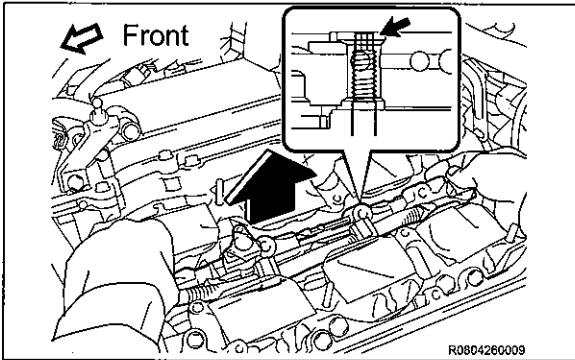
6. REMOVE NO. 3 FUEL PIPE

a) Remove the 4 bolts.

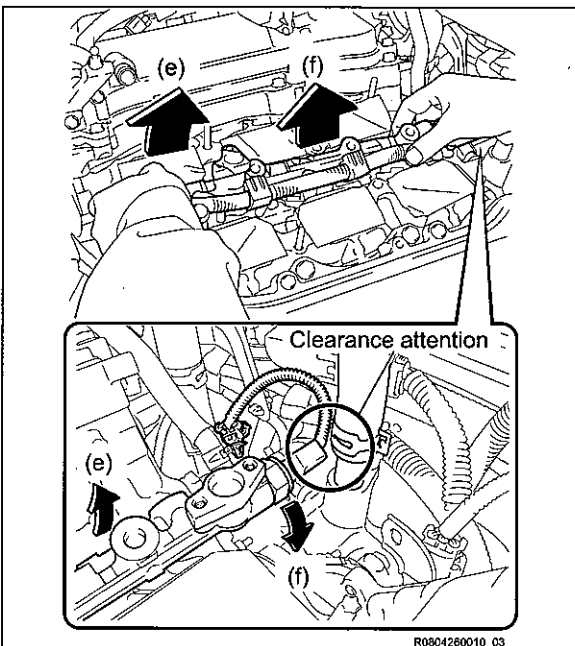


8. REMOVE NO. 1 FUEL DELIVERY PIPE

- Disconnect the fuel pressure sensor connector and wire harness clamp.
- Disconnect the 2 wire harness clamps from the fuel delivery pipe.
- Remove the 2 bolts and 2 nuts from the fuel delivery pipe.



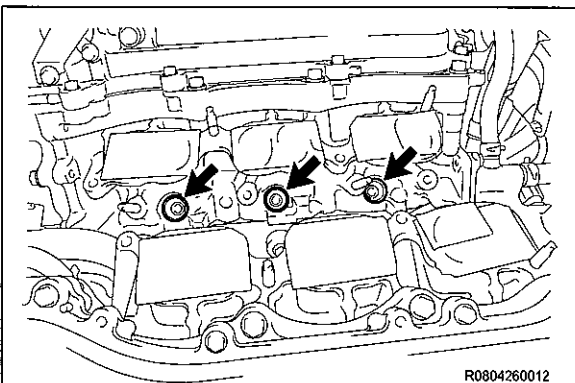
- Pull the delivery pipe straight up until the delivery pipe is horizontally level with the stud bolts.



- Gently pull up the front side of the delivery pipe.
- Pull the delivery pipe straight up without allowing the fuel pressure sensor and heater hose to touch.

NOTE:

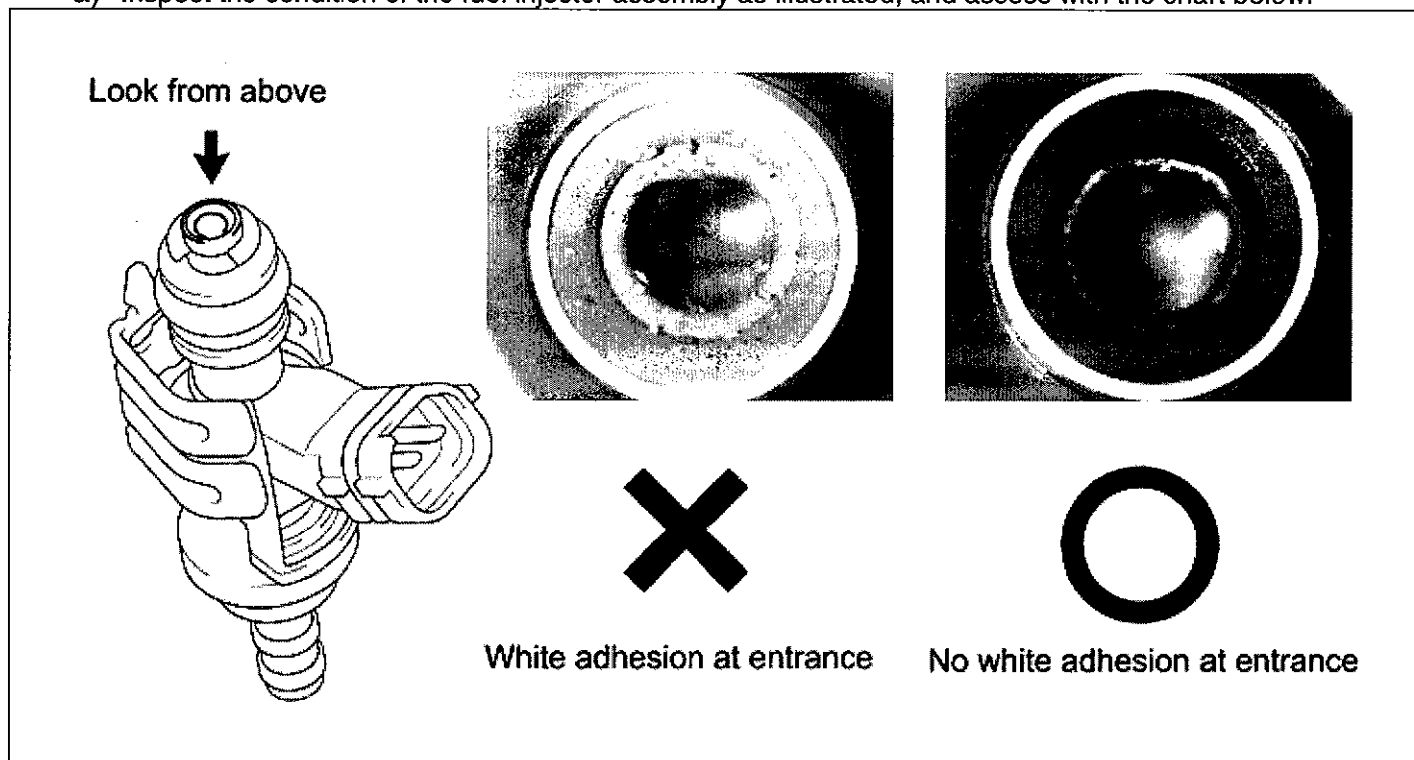
- Be extremely careful not to touch or strike the tips of the injectors.
- Pull and remove the fuel pipe in a straight line without tilting it.
- Do not allow the fuel pressure sensor to come in contact with the heater hose.



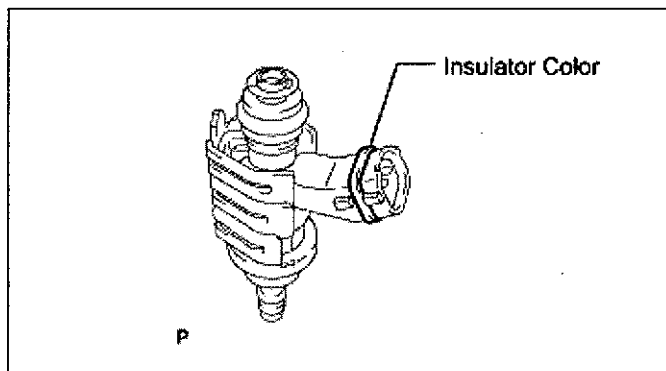
- Disconnect the 3 connectors from the 3 injectors.
- Remove the 3 injector vibration insulators from the cylinder head.

2. FUEL INJECTOR INSPECTION

a) Inspect the condition of the fuel injector assembly as illustrated, and assess with the chart below.



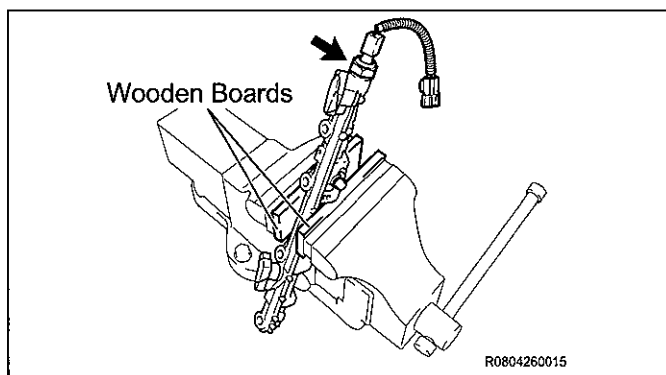
Condition of fuel injector assembly	Results
No white adhesion at entrance	Reuse the fuel injector.
White adhesion at entrance	Replace ALL fuel injectors with new ones. Keep used injectors for possible parts recovery and inspection.



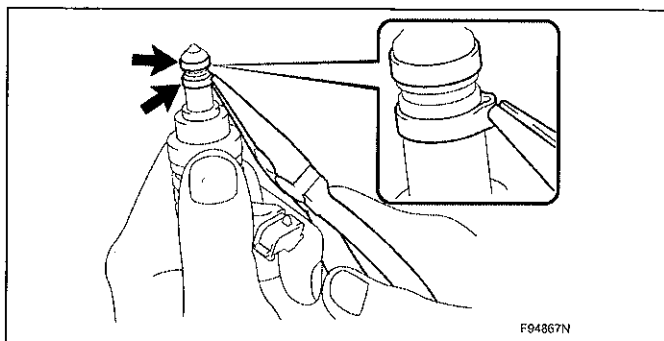
NOTE:

- Either injector listed in the parts table for a particular vehicle type may be installed; however, make sure that all injectors installed on the vehicle are the same color.
- IS250 23209-39057-A0 = Black
- IS250 23209-39057-B0 = Reddish Brown
- IS350 23209-39155-B0 = Black
- IS350 23209-39155-C0 = Reddish Brown
- IS350 23209-39155-D0 = Green

3. REMOVE FUEL PRESSURE SENSOR



- Clamp the No. 1 fuel delivery pipe in a vise with wooden boards placed in between the pipe and vise as illustrated.
- Using a 24 mm wrench, remove the fuel pressure sensor and gasket.

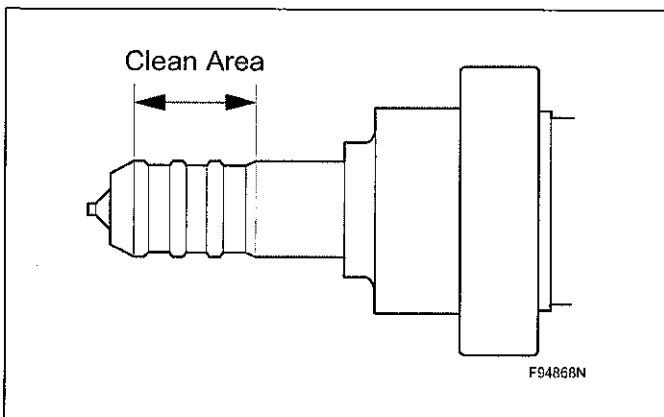


7. REMOVE FUEL INJECTOR SEAL

- Using the tips of a pair of needle nose pliers, pinch and pull one of the 2 injector seals at several points to stretch it. Repeat this for the other injector seal.
- Repeat step a) for the remaining injectors.

NOTE:

If an injector is dropped or the tips of the injectors are struck, replace it with a **NEW** one.

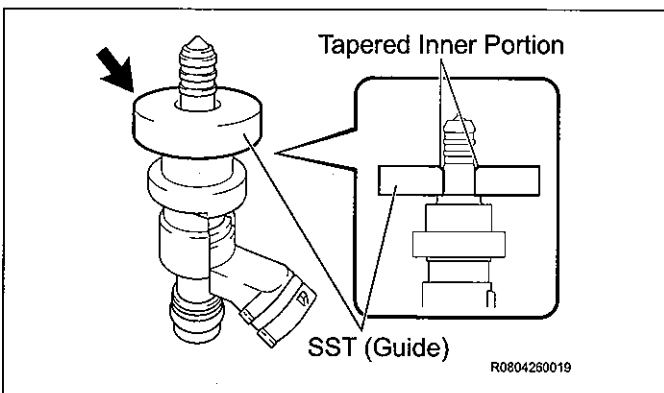


8. INSTALL FUEL INJECTOR SEAL

- Apply engine conditioner to the injector area shown in the illustration. Using a piece of cloth, clean carbon deposits from the injector and its grooves.

NOTE:

- Do not clean the tip of the injector.
- Do not use a wire brush to clean the injector.
- If an injector is dropped or the tips of the injectors are struck, replace it.

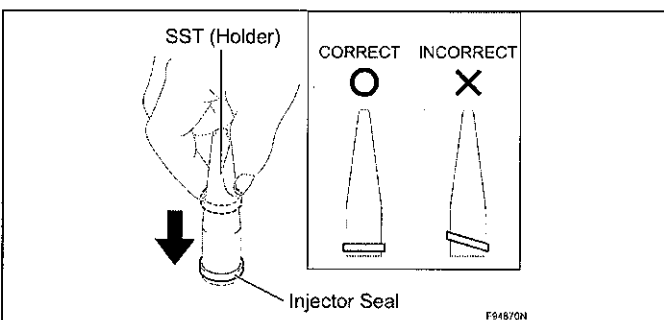


- Apply engine oil to the injector contact surface of SST (guide). Then attach SST (guide) to the injector with the tapered inner portion facing the tip of the injector, as shown in the illustration.

SST 09260-39015 (09268-03020)

NOTE:

Due to the specific tolerances needed to seat the seals it will be difficult to slide the SST. Slowly wiggle it from side to side while sliding it up the injector little by little.

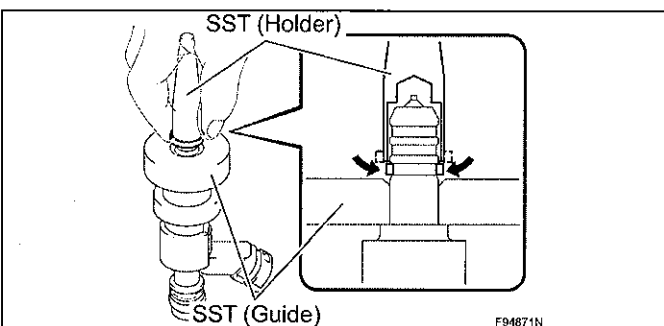


- Install a **NEW** injector seal to SST (holder).

SST 09260-39015 (09268-03010)

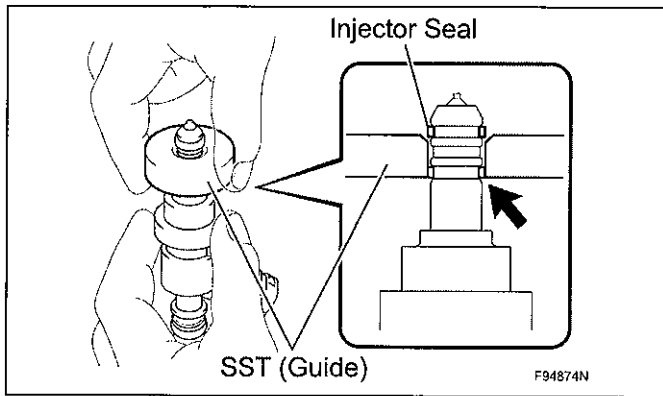
NOTE:

Be careful not to install the injector seal to the SST (holder) at an angle. Doing so will stretch the seal.

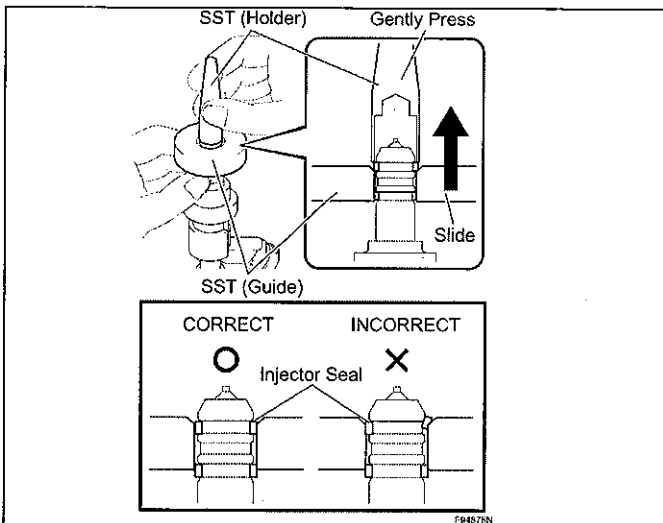


- Install SST (holder with injector seal) to the tip of the injector. Slide the seal downward into the injector groove (injector connector side) with your fingers, as shown in the illustration.

SST 09260-39015
(09268-03010, 09268-03020)



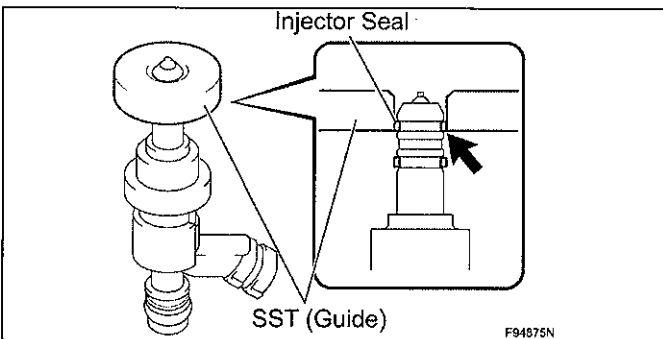
- i) Slowly slide SST (guide) towards the tip of the injector. When the injector contact surface of SST (guide) aligns with the seal (injector connector side) as shown in the illustration, hold the position for 5 seconds or more to fully align the seal into the injector groove.



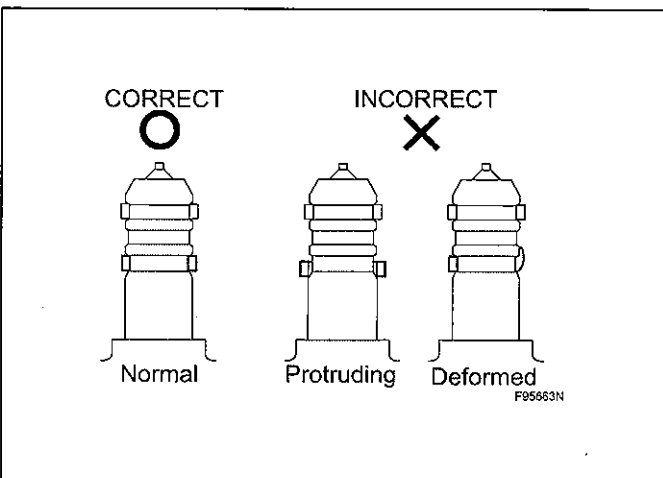
- j) Using SST (holder), gently press downward on the injector seal (injector tip side). Then slowly slide SST (guide) towards the injector tip to settle the seal into the injector groove.

NOTE:

Be careful that the seal is not pinched between SST (guide) and the injector groove. Replace the seal if it becomes damaged.



- k) Slowly slide SST (guide) towards the tip of the injector. When the injector contact surface of SST (guide) aligns with the seal (injector tip side) as shown in the illustration, hold the position for 5 seconds or more to fully align the seal into the injector groove.



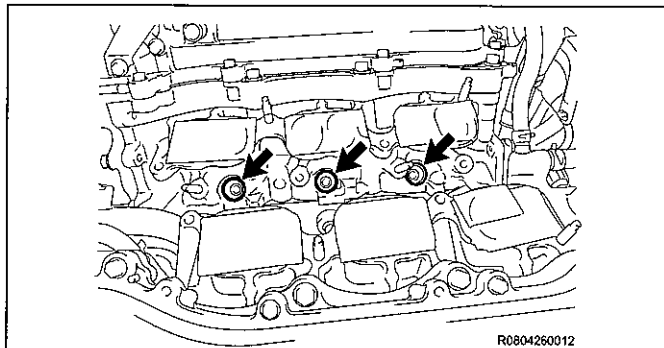
- l) After installing the seals, check that the seal is not scratched, deformed or protruding from the injector groove.

NOTE:

- If the seal is scratched, deformed or protruding from the groove, replace it with a **NEW** one.
- The 2nd seal from the injector tip is partially on a tapered surface so after installation it may slide up to 0.5 mm.

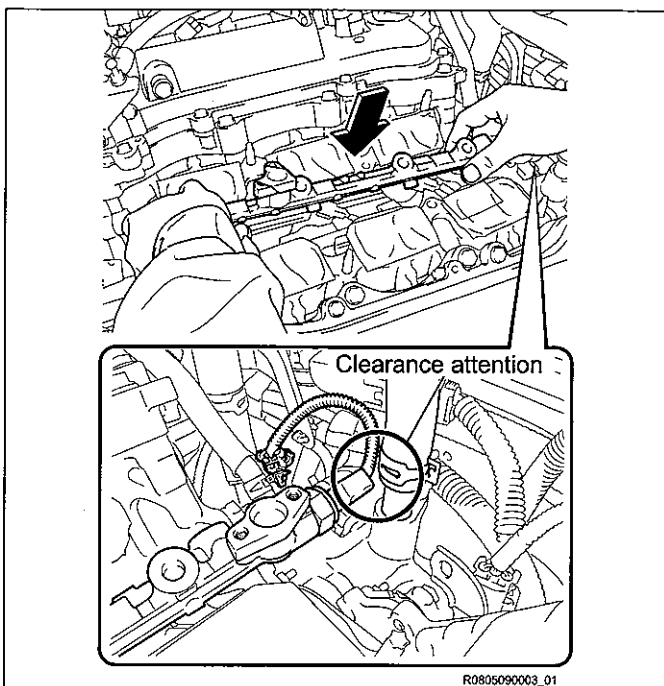
- m) Repeat steps a) ~ k), for the remaining injectors.

E. FUEL PIPE INSTALLATION



1. INSTALL NO. 1 FUEL DELIVERY PIPE

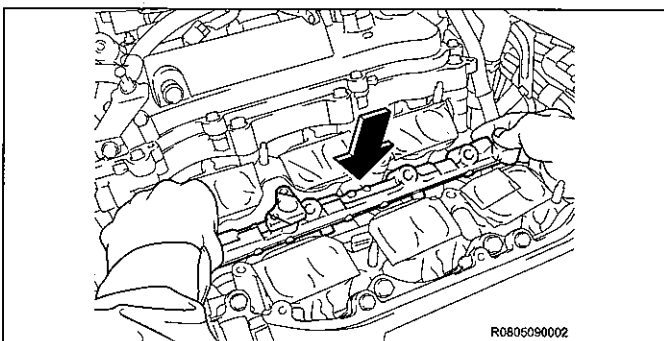
- Install 3 **NEW** injector vibration insulators to the cylinder head.
- Apply lubricant to the installation hole of the injector.



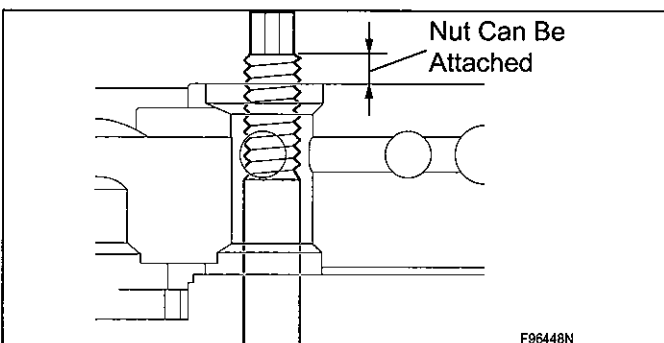
- While gently raising the front of the delivery pipe, carefully insert the fuel delivery pipe on to the cylinder head's stud bolts. Do not allow the fuel pressure sensor and heater hose come in contact.

NOTE:

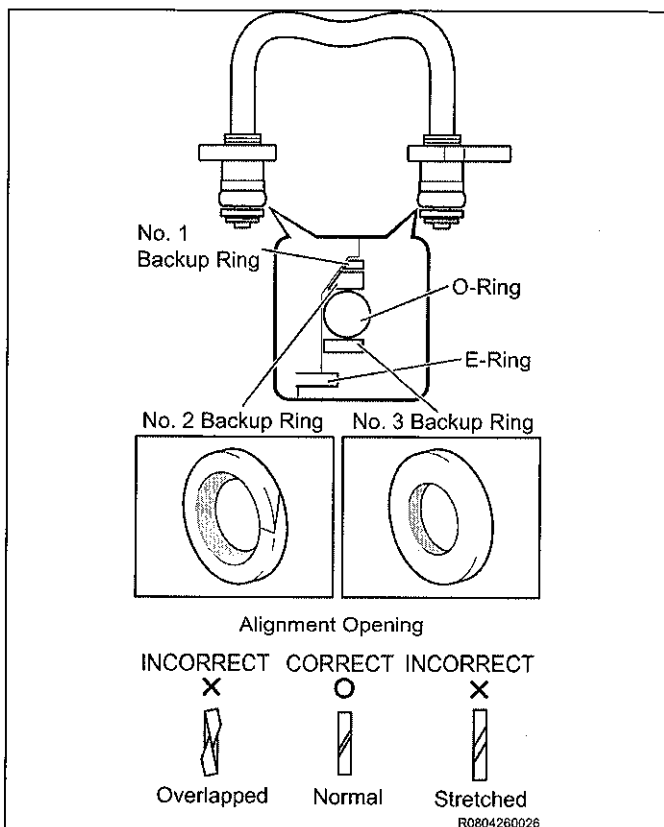
- If an injector is dropped or the tips of the injectors are struck, replace it with a **NEW** one.
- Check that there is no foreign matter or damage to the injector insertion hole of the delivery pipe.
- When inserting the fuel delivery pipe, push it in evenly without tilting it.



- Align the delivery pipe's attachment holes with the stud bolts and install the delivery pipe without letting the fuel pressure sensor and heater hose come in contact.
- Connect the 3 electrical fuel injector connectors.



- Install the fuel delivery pipe until the screw threads protrude enough so that a nut can be attached.



3. REINSTALL NO. 3 FUEL PIPE

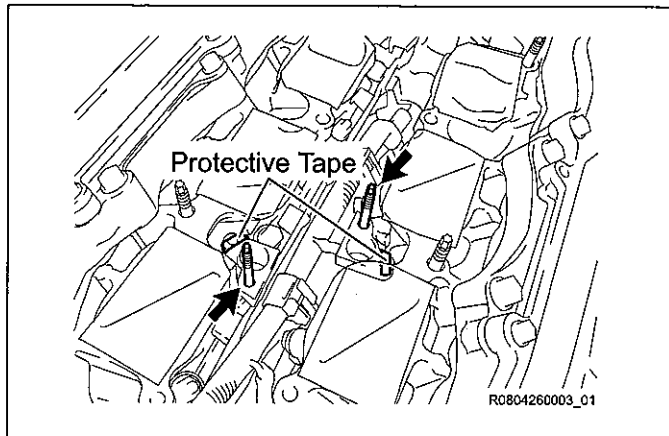
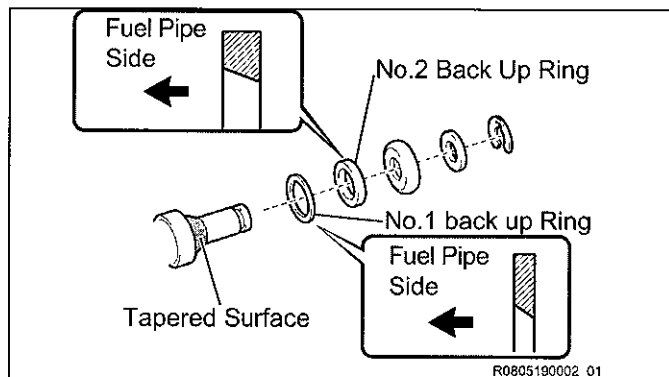
- Remove the O-ring, backup rings and E-ring from the No. 3 fuel pipe.
- Install a **NEW** O-ring, **NEW** backup rings (No. 1 No. 2, and No. 3) and **NEW** E-ring to the fuel injector as shown in the illustration.

NOTE:

- Check that there is no foreign matter or damaged areas in the injector's O-ring groove.
- Check that the No. 1 and No. 2 backup rings are installed in the correct direction.
- Make sure that the backup rings and O-ring are installed in the correct order.
- Check that the alignment openings of the backup rings are not overlapped or stretched as shown in the illustration.
- After installing the O-ring, check that it is not contaminated with foreign matter and is not damaged.

NOTE:

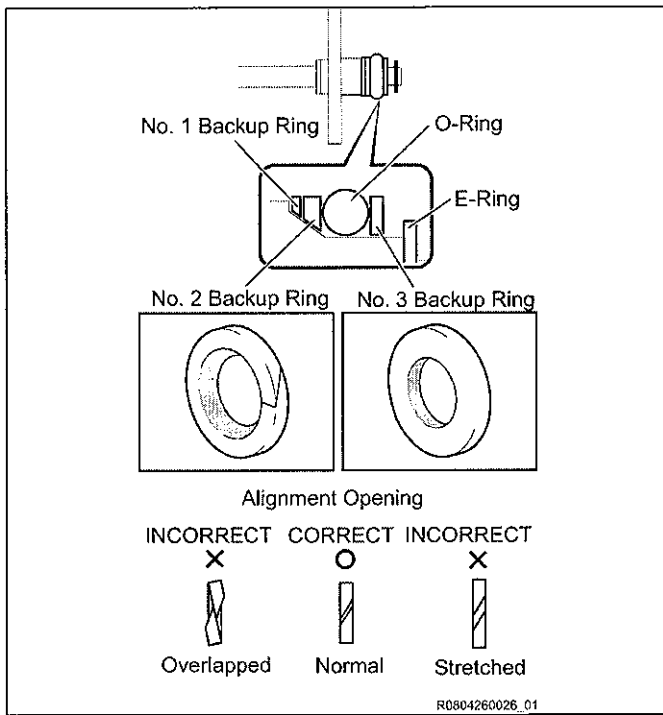
Align and install the No.1 and No.2 back up rings to the No. 3 fuel pipe's tapered surface.



- Hand tighten the 2 stud bolts to the delivery pipe bolt attachment holes diagonally as illustrated. (torx® side up)
- Place protective tape over screw holes without stud bolts to prevent lubricant from entering.
- Apply gasoline to the No. 3 fuel pipe's O-ring and into the attachment hole of the delivery pipe's No. 3 fuel pipe.

NOTE:

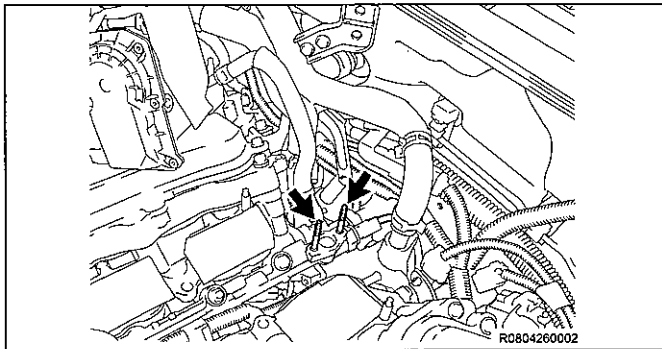
- Failure to lubricate both o-ring and attachment hole, may damage the seal.



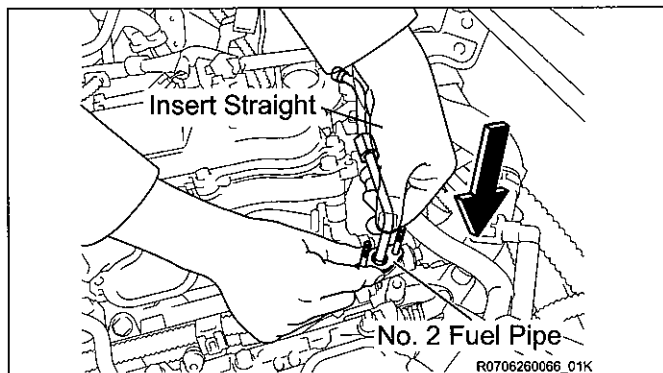
- b) Remove the O-ring, backup rings and E-ring from the No. 2 fuel pipe.
- c) Install a **NEW** O-ring, **NEW** backup rings (No. 1 No. 2, and No. 3) and **NEW** E-ring to the fuel injector as shown in the illustration.

NOTE:

- Check that the No. 1 and No. 2 backup rings are installed in the correct direction.
- Make sure that the backup rings and O-ring are installed in the correct order.
- Check that the alignment openings of the backup rings are not overlapped or stretched as shown in the illustration.
- After installing the O-ring, check that it is not contaminated with foreign matter and is not damaged.
- Check that the No. 3 fuel pipe installation end is not contaminated with foreign matter and is not damaged.



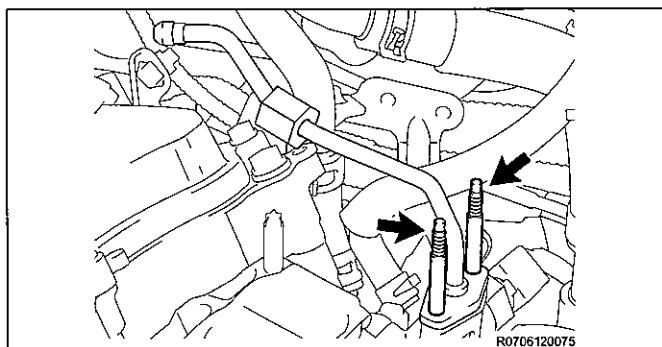
- d) Hand tighten the 2 stud bolts in the delivery pipe's bolt attachment holes. (torx® side up)



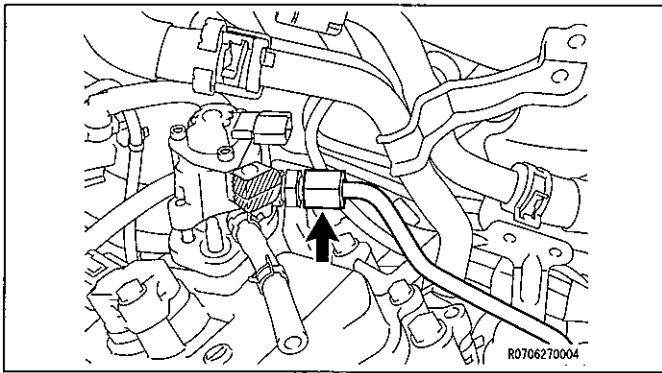
- e) Apply gasoline to the No. 2 fuel pipe's O-ring and into the attachment hole of the delivery pipe's No. 3 fuel pipe.
- f) Press the fuel pipe and delivery pipe together by hand until there is no gap between them.

NOTE:

- Apply gasoline on both the O-ring and into the attachment hole. Lubricant will run out immediately after insertion if only applied to the O-ring side.



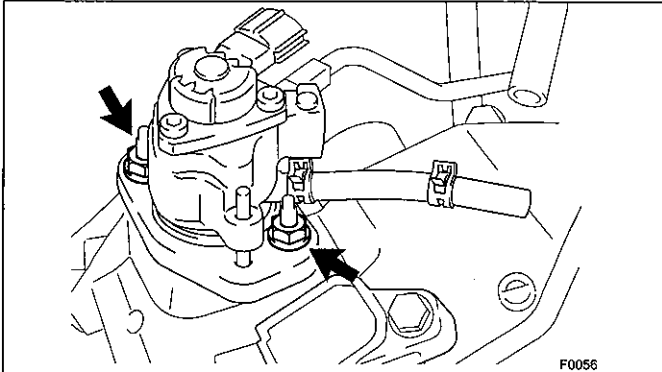
- g) Remove the 2 stud bolts.
- h) Reinstall the 2 bolts but do not torque yet.



- n) Remove the Protective tape.
- o) Loosely install the No. 2 fuel pipe sub-assembly to the fuel pump assembly.

NOTE:

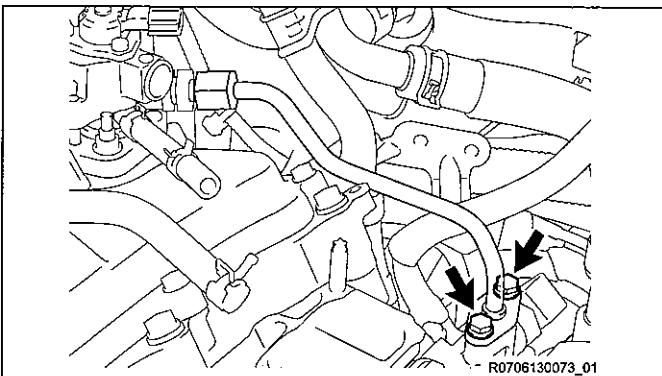
Be careful not to damage the sealing surface of the fuel pipe when temporarily installing the fuel pipe.



- p) Install the 2 nuts and tighten them in several passes.

Torque Specification:

25 N·m (255 kgf·cm, 18 ft·lbf)

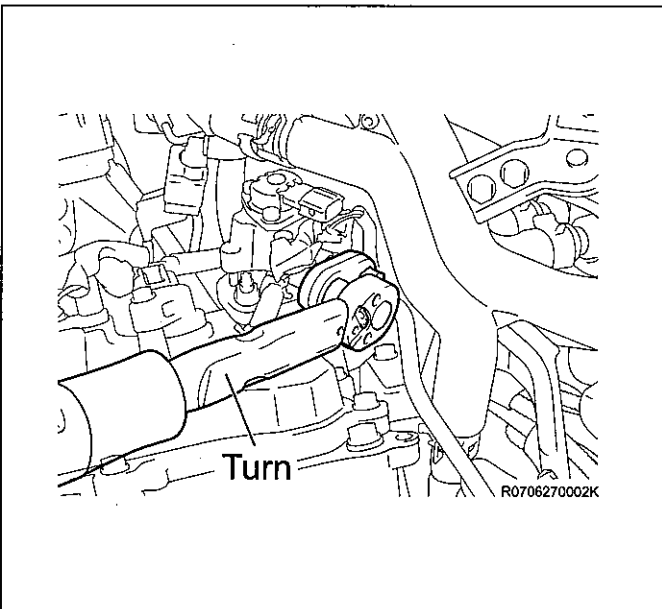


5. RECONNECT NO. 2 FUEL PIPE

- a) Torque the 2 fuel pipe bolts.

Torque Specification:

10 N·m (102 kgf·cm, 7 ft·lbf)



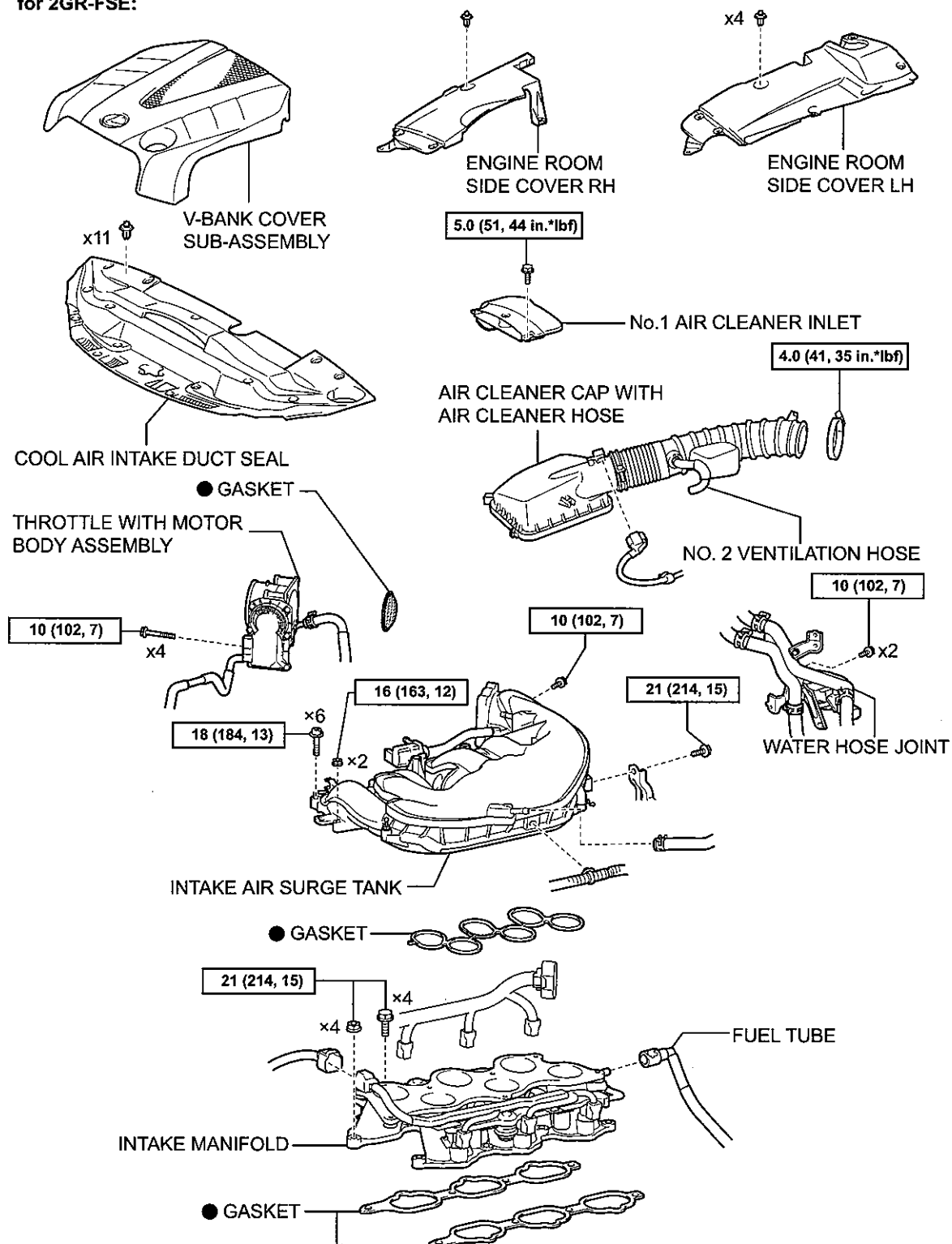
- b) Using a 19 mm union nut wrench, connect the fuel pipe.

Torque Specification:

26 N·m (265 kgf·cm, 19 ft·lbf)

F. IS350 2GR-FSE INTAKE MANIFOLD REINSTALLATION

for 2GR-FSE:

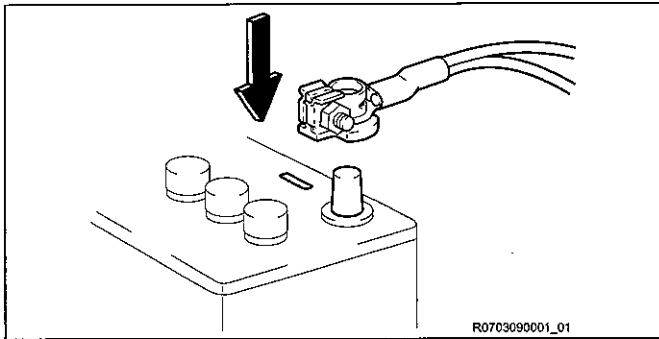


N*m (kgf*cm, ft.*lbf): Specified torque ● Replacement part *1 For use with union nut wrench 10mm R0806030018_1

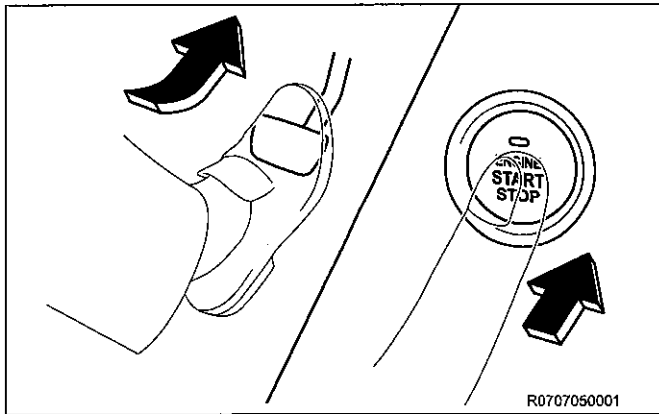
REINSTALL THE COMPONENTS SHOWN IN THE ILLUSTRATION ABOVE. Click link if additional assistance is required:

- **IS350 2GR-FSE FUEL: FUEL INJECTOR (for Direct Injection): INSTALLATION (2007 IS350)**

F. CHECK FOR FUEL LEAKS & REASSEMBLY



1. CONNECT THE NEGATIVE (-) BATTERY TERMINAL CABLE



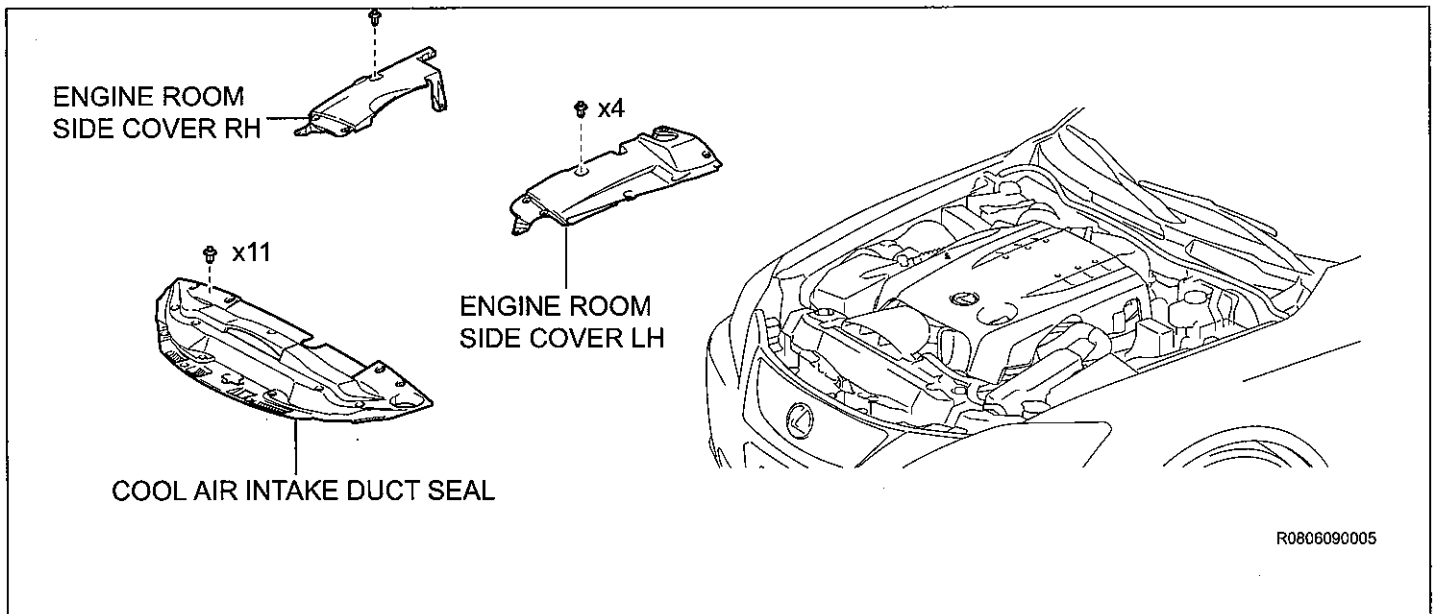
2. CHECK FOR FUEL LEAKS

- Start and then stop the engine after approximately 5 seconds.
- Inspect each part for fuel leakage.
- If there is no fuel leakage found in step (b), restart the engine and re-inspect.

NOTE:

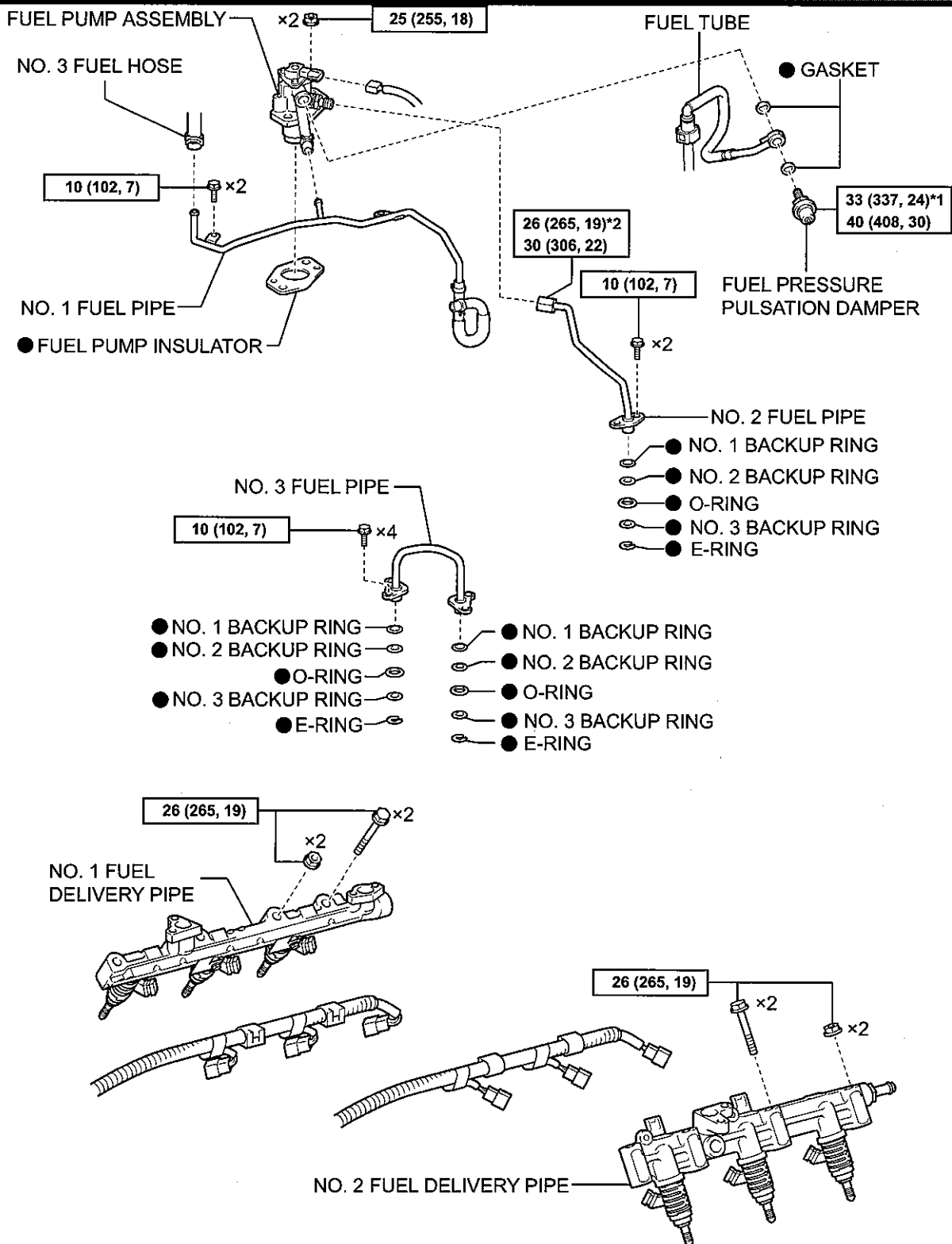
- Cranking alone may not start the high pressure fuel pump solenoid valves used to produce fuel pressure (high pressure).

3. INSTALL ENGINE ROOM COVERS



VII. APPENDIX

A. Components



*1 For use with SST

[N*m (kgf*cm, ft.*lbf)]: Specified torque ● Replacement part *2 For use with union nut wrench 19mm

RF00211_05 K

B. CAMPAIGN PARTS DISPOSAL

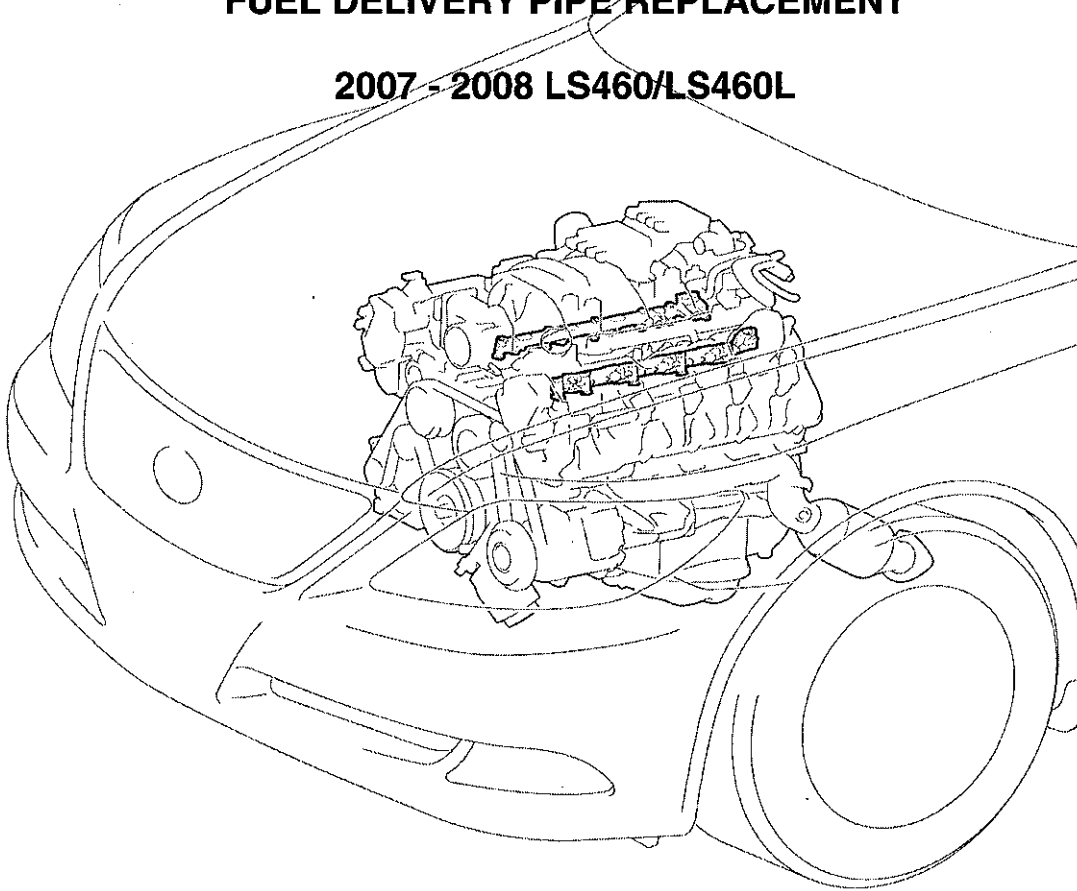
As required by Federal Regulations, please make sure all campaign parts (original parts) removed from the vehicle are disposed of in a manner in which they will not be reused.

C. PARTS KIT CONTENTS

IS350		
Part #	Description	Qty
04008-18231	Pipe Kit, Fuel Delivery, No. 2	1
Kit contains the following:		
23807-31070	Pipe, Fuel Delivery	1
23808-31020	Pipe, Fuel Delivery, No. 2	1
17176-31060	Gasket, Air Surge Tank to Intake Manifold	1
17177-31060	Gasket, Intake Manifold to Head, No. 1	2
22271-31020	Gasket, Throttle Body	1
23255-31010	Seal, Fuel Injector	12
23256-74010	Ring, Fuel Injector Back-up, No.1	9
23257-74010	Ring, Fuel Injector Back-up, No.2	9
23258-28011	Ring, Fuel Injector Back-up, No.3	9
23279-74010	Gasket, Fuel Pressure Pulsation Damper	2
23291-31011	Insulator, Injector Vibration	6
23915-46011	Insulator, Fuel Pump	1
90301-06016	O-Ring	3
90301-06018	O-Ring	6
90430-12026	Gasket	2
90523-05007	E-Ring	9

IS250		
Part #	Description	Qty
04008-18431	Pipe Kit, Fuel Delivery, No. 3	1
Kit contains the following:		
23807-31020	Pipe, Fuel Delivery	1
23808-31010	Pipe, Fuel Delivery, No. 2	1
17176-31050	Gasket, Air Surge Tank to Intake Manifold	3
17177-31020	Gasket, Intake Manifold to Head, No. 1	2
22271-31030	Gasket, Throttle Body	1
23255-31010	Seal, Fuel Injector	12
23256-74010	Ring, Fuel Injector Back-up, No. 1	9
23257-74010	Ring, Fuel Injector Back-up, No. 2	9
23258-28011	Ring, Fuel Injector Back-up, No. 3	9
23279-74010	Gasket, Fuel Pressure Pulsation Damper	2
23291-31011	Insulator, Injector Vibration	6
23915-46011	Insulator, Fuel Pump	1
90301-06016	O-Ring	3
90301-06018	O-Ring	6
90430-08014	Gasket (for Cold Start Injector)	2
90430-12026	Gasket	2
90523-05007	E-Ring	9

TECHNICAL INSTRUCTIONS
FOR
SPECIAL SERVICE CAMPAIGN 9LA
FUEL DELIVERY PIPE REPLACEMENT
2007 - 2008 LS460/LS460L



III. PREPARATION

A. TOOLS

- Standard hand tools
- Torque wrench
- 22 mm union nut wrench
- SST: (non-essential) 09612-24014 (09617-24011)
- SST: Stud Bolt - 04007-32331 (2 stud bolts have been included in each Service Manager's Package.)
- SST: 09260-39015 Injector seal tool set. (02968-03020, 09268-03010) Lexus drawer 1

B. EQUIPMENT

- Techstream
- Radiator Cap Tester

C. MATERIALS

- Protective Tape
- Coolant (Toyota SLLC)
- Wooden boards (for clamping purposes)

D. PARTS

Model	Part No.	Part Name	Qty/Unit
LS460/ LS460L	04008-18138	Fuel Delivery Pipe Kit No. 1*	1

*See Appendix for kit contents.

Based upon the inspection results you may need to replace the fuel injectors. Please keep all fuel injectors for possible parts recovery and inspections. If requested you will need a fuel injector shipping kit for dealers.

Model	Part No.	Insulator color	Part Name	Qty/Unit
LS460/ LS460L	23209-39155-B0* or	Black	Injector Assy, Fuel	8 (as needed)
	23209-39155-C0* or	Reddish Brown		
	23209-39155-D0*	Green		

* Either injector listed for the vehicle type may be installed; however, make sure that all injectors installed on the vehicle are the same type. The injector may be identified by the injector insulator color. Please see page 25 for addition information.

IV. TABLE OF CONTENTS

Background.....	page 4
Safety Precautions.....	page 5
Work Procedure	page 9
Fuel Delivery Pipe Replacement.....	page 24
Appendix	page 47

IMPORTANT: Only partial reinstallation steps are included in these Technical Instructions; please reference TIS for additional assistance if needed.

V. BACKGROUND

WORK PROCEDURE

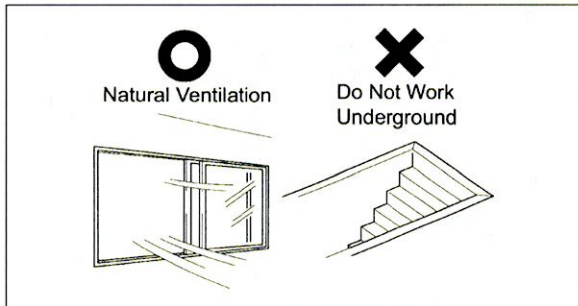
VI. SAFETY PRECAUTIONS

A. PRECAUTIONS WHEN WORKING ON THE FUEL SYSTEM



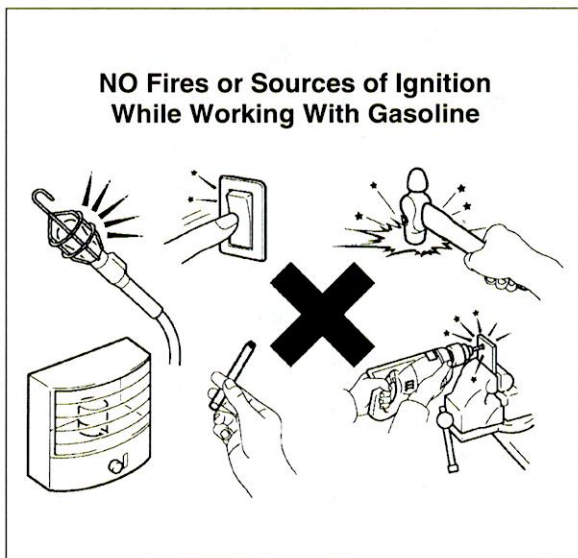
- ALWAYS REMEMBER "SAFETY FIRST".
- IMMEDIATELY WIPE UP ANY SPILT FUEL.
- BE EXTREMELY CAREFUL WHEN HANDLING FUEL TO PREVENT FIRES FROM OCCURRING.
- BEFORE REMOVING ANY FUEL SYSTEM PART, DRAIN ALL FUEL TO PREVENT SPILLING.
- BEFORE WORKING ON THE FUEL SYSTEM, PERFORM THE FOLLOWING SAFETY CHECK LIST.

B. SAFETY CHECKLIST



A. AIR VENTILATION

- ☐ Perform work in a well ventilated area.
- ☐ **DO NOT** work underground or in an area where fuel vapors may fill the room due to poor ventilation.
- ☐ Quickly clean up any spilled fuel with a dry cloth and dissipate the fuel vapors.
- ☐ Dry all cloths that have come in contact with fuel in a well ventilated area and dispose of them properly (according to applicable local regulations).



B. FIRES AND IGNITION SOURCES ARE STRICTLY PROHIBITED

- ☐ Fires and ignition sources are prohibited while working on the fuel system.
- ☐ Clearly display the sign found on the next page stating "**WORKING WITH GASOLINE, NO FIRES OR IGNITION SOURCES**".
- ☐ Smoking is prohibited near the work area.
- ☐ **DO NOT** work in areas where there are welders, grinders, drills, electric motors, heaters, etc.
- ☐ **DO NOT** use work lamps or any other electrical appliance due to the risk of sparks flying from the power switch or a rise in temperature.
- ☐ **DO NOT** use metal hammers while working, due to the risk of flying sparks.
- ☐ **DO NOT** start any engine or perform any of the above in neighboring work bays.

C. FIRE EXTINGUISHER

- ☐ Have a fire extinguisher ready and available before beginning work.



D. PREVENT STATIC ELECTRICITY

- ☐ To help prevent static electricity, lightly wet the floor with water, but not to the point where it creates a hazardous working condition.
- ☐ Place appropriate warning cones or stand signs around the area as a caution.

■ Copiar y exhibir al trabajar

**TRABAJANDO CON
GASOLINA**

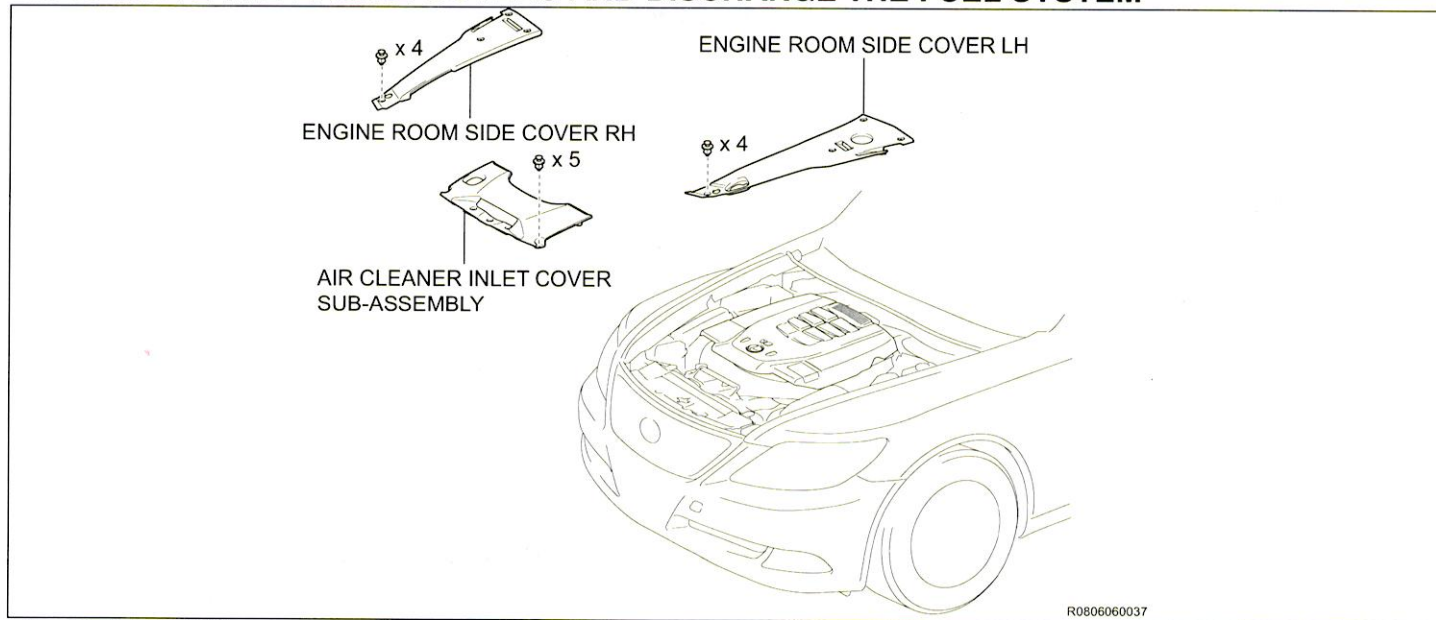
NINGÚN INCENDIOS

**NINGUNA FUENTE
DE IGNICIÓN**

Supervisor

VII. FUEL DELIVERY PIPE REPLACEMENT

A. REMOVE THE ENGINE COVERS AND DISCHARGE THE FUEL SYSTEM

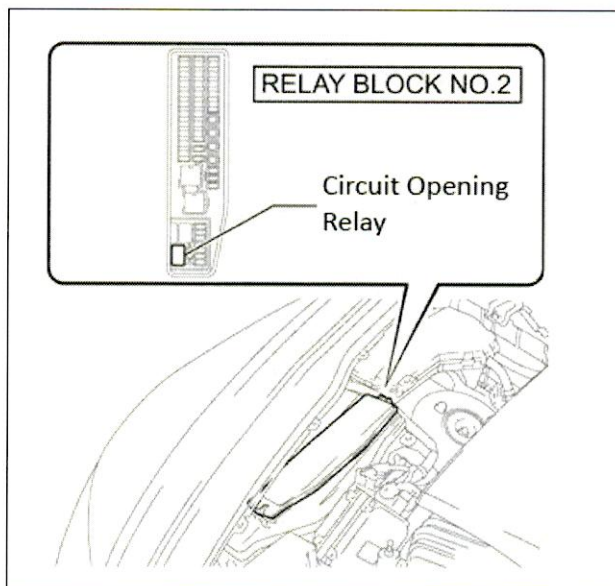


1. DTC CHECK

- a) If DTC(s) are present, verify them, view and record the freeze frame data, and perform the necessary repairs.

2. REMOVE THE ENGINE ROOM COVERS

- DO NOT DISCONNECT ANY PART OF THE FUEL SYSTEM UNTIL YOU HAVE DISCHARGED THE FUEL SYSTEM PRESSURE.
- EVEN AFTER DISCHARGING THE FUEL SYSTEM PRESSURE, PLACE A PIECE OF CLOTH AROUND THE FITTINGS AS YOU SEPARATE THEM TO REDUCE THE RISK OF FUEL SPRAYING ON YOURSELF, IN THE ENGINE COMPARTMENT, AND ONTO OTHER PARTS.



3. DISCHARGE THE FUEL SYSTEM PRESSURE

- a) Remove the relay block upper cover No. 2.
- b) Remove the circuit opening relay.
- c) Start the engine.
- d) After the engine has stopped, turn the ignition switch off.
- e) Crank the engine again to relieve any existing fuel pressure.

NOTE:

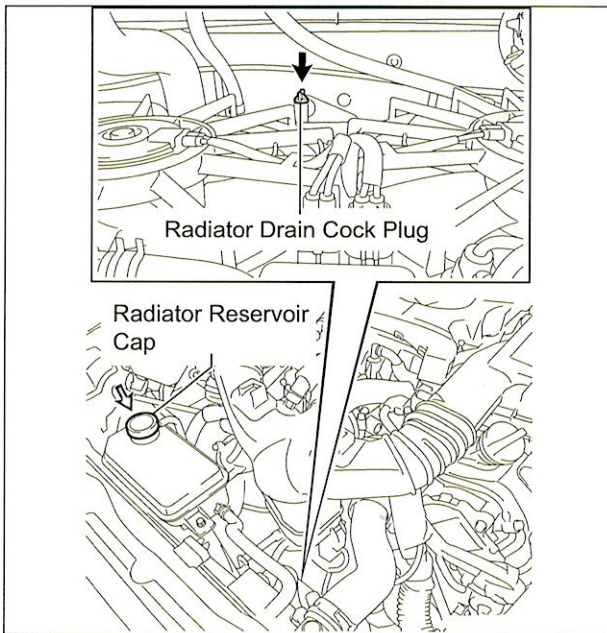
DTC P0171/25 and/or P0191/49 may be set.

- f) Fully remove the fuel cap to discharge the fuel tank pressure and then reinstall cap.
- g) Record the radio station presets.

NOTE:

DO NOT disconnect the negative (-) battery cable until 6 minutes have elapsed. The HDD navigation system requires approximately 6 minutes to save memory and settings, after turning OFF the ignition.

- h) Disconnect the negative (-) battery cable.
- i) Reinstall the circuit opening relay and relay block upper cover No. 2.



4. DRAIN ENGINE COOLANT

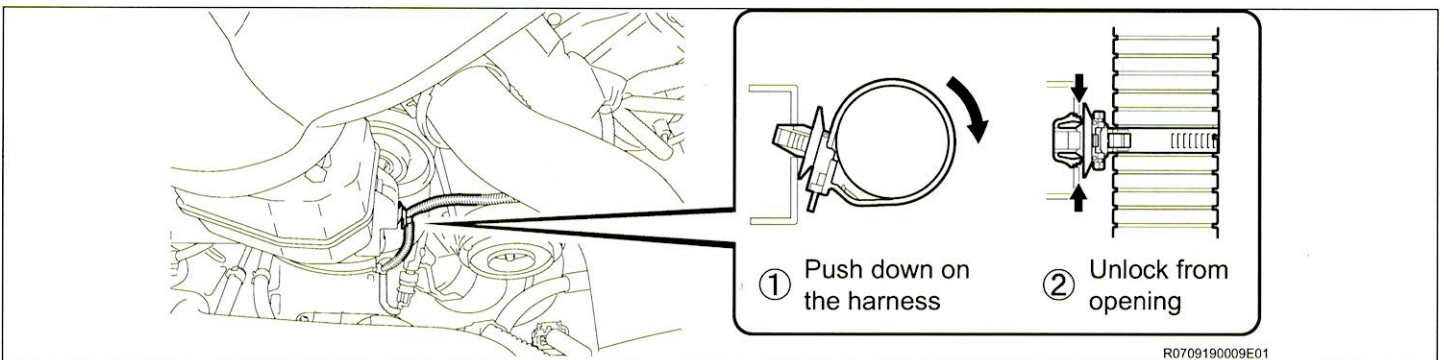
- Loosen the radiator drain plug and drain coolant.
- Remove plug and o-ring.
- Remove the radiator reservoir cap.
- Dispose coolant according to local regulations.

NOTE:

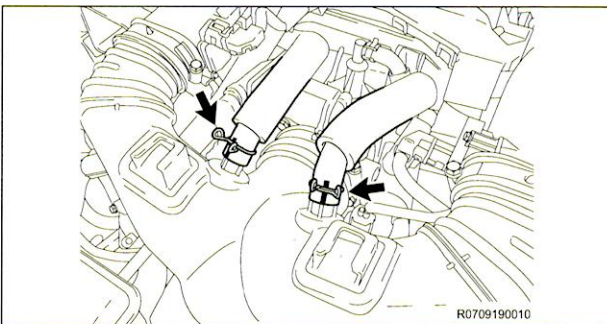
Wait until engine coolant temperature has dropped significantly before releasing pressurized coolant. Hot coolant may cause serious injuries or burns.

5. REMOVE INTAKE AIR CONNECTOR PIPE

- Remove the clamp, and disconnect the wire harness.



R0709190009E01



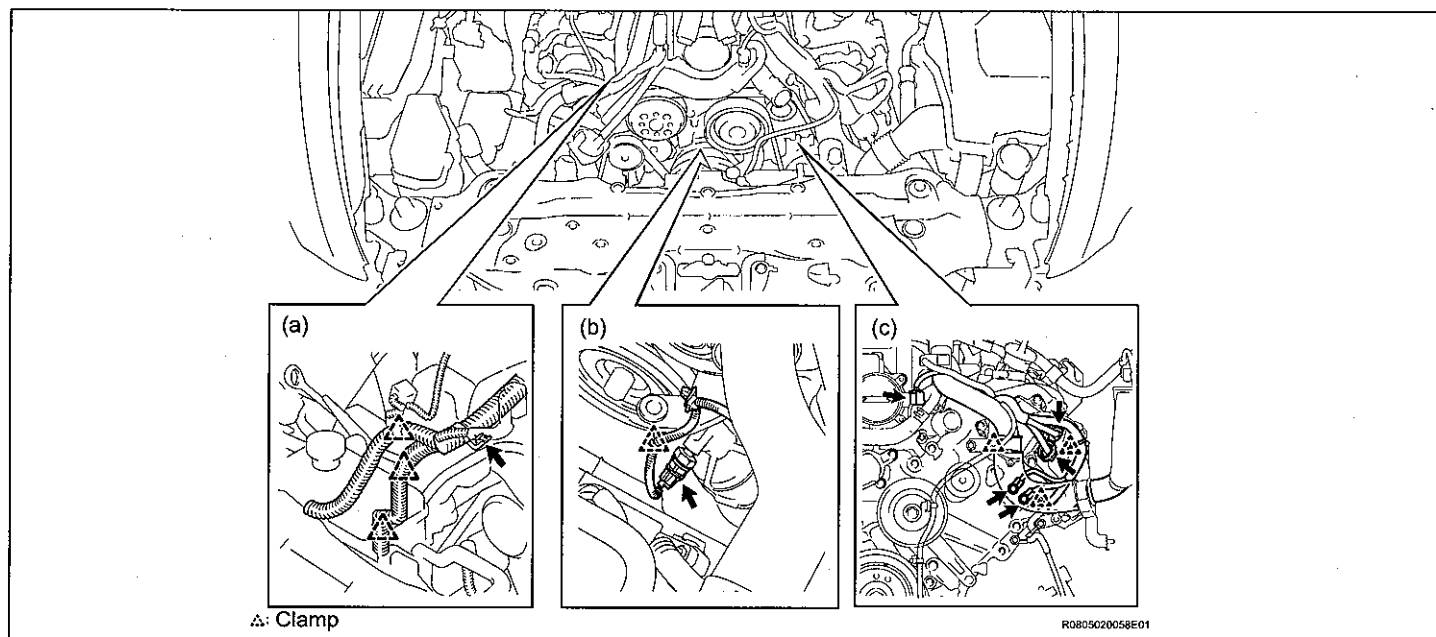
- Disconnect the 2 ventilation hoses.



- Loosen the 3 hose clamps, and remove the intake air connector pipe.

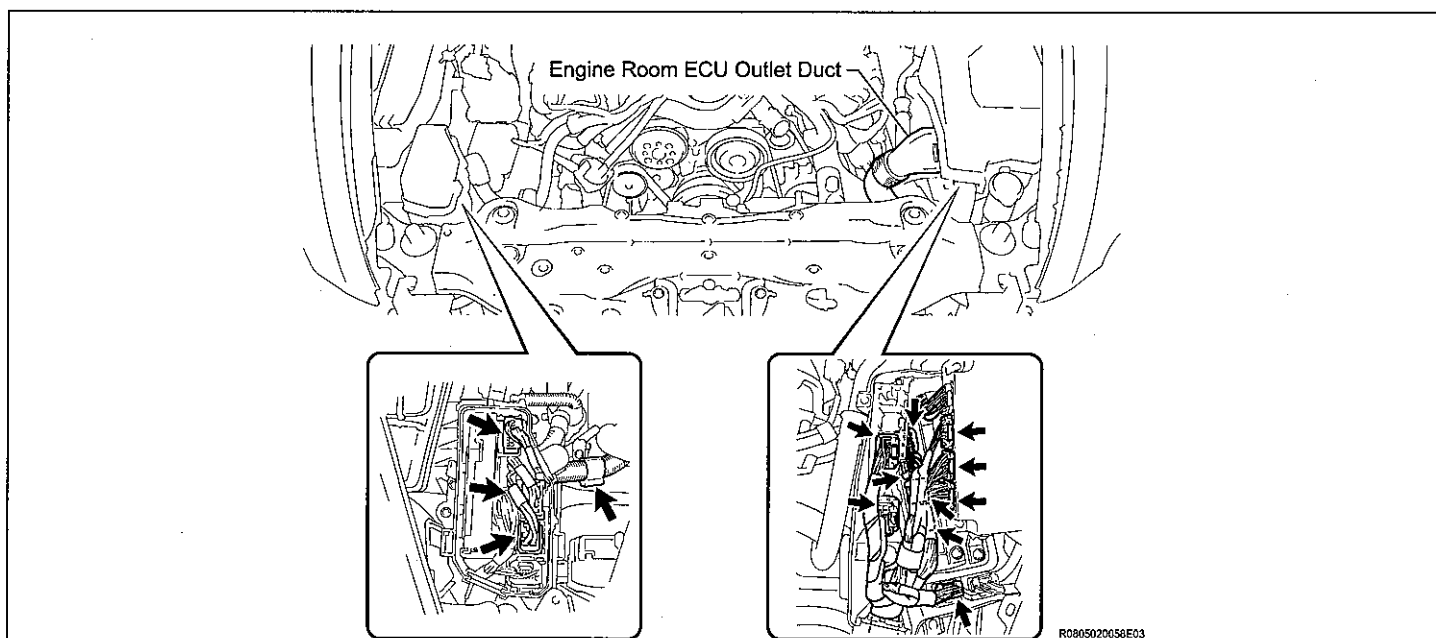
8. DISCONNECT ENGINE WIRE

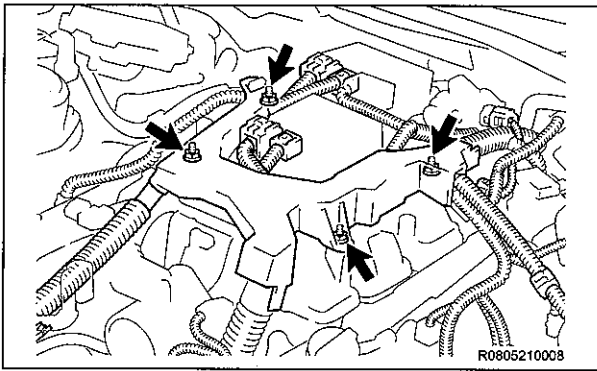
- a) Remove the bolt, and disconnect the 3 clamps.
- b) Disconnect the clamp and connector.
- c) Remove the 2 bolts, and disconnect the 3 clamps and 3 connectors.



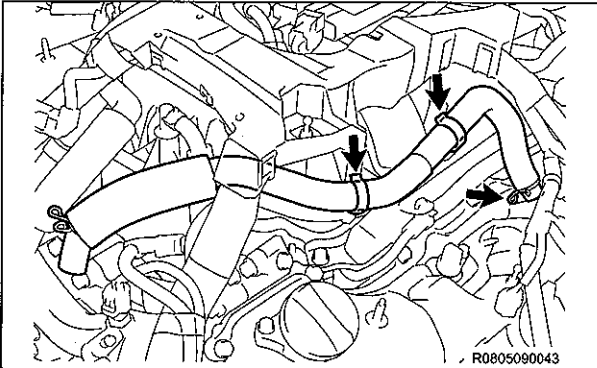
See illustration below for steps d) ~ j)

- d) Remove the engine room ECU outlet duct.
- e) Remove the 3 bolts and ECM box cover (upper).
- f) Disconnect the 3 ECT and 4 ECM connectors.
- g) Disconnect the 3 connectors.
- h) Remove the box cover (upper).
- i) Disconnect the 3 connectors and clamp.
- j) Disconnect the engine wire harness.

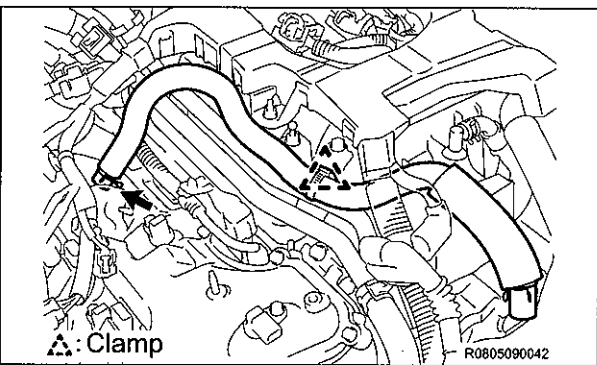




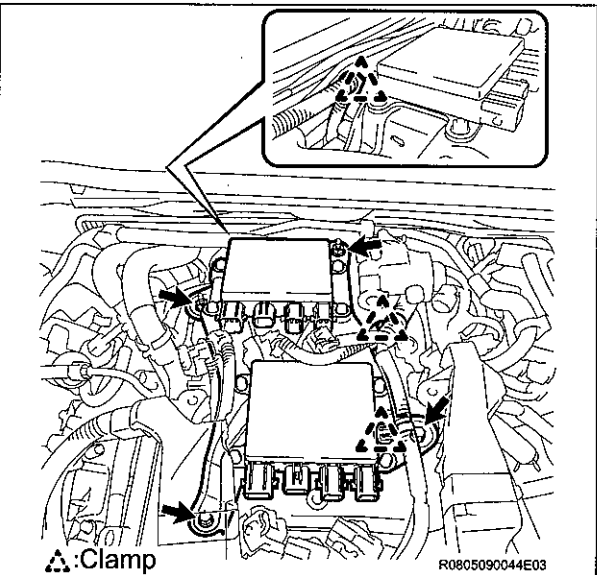
q) Remove the 4 nuts, and disconnect the engine wire.



9. REMOVE NO. 1 VENTILATION HOSE

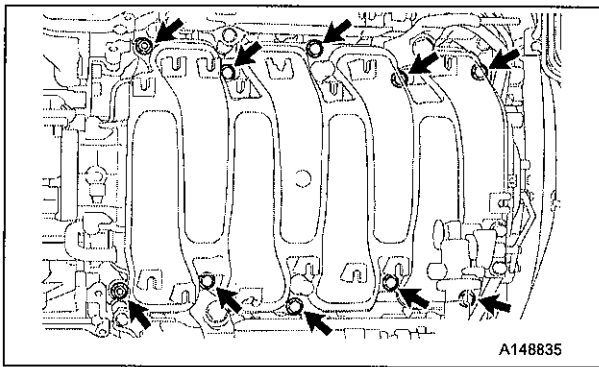


10. REMOVE NO. 2 VENTILATION HOSE



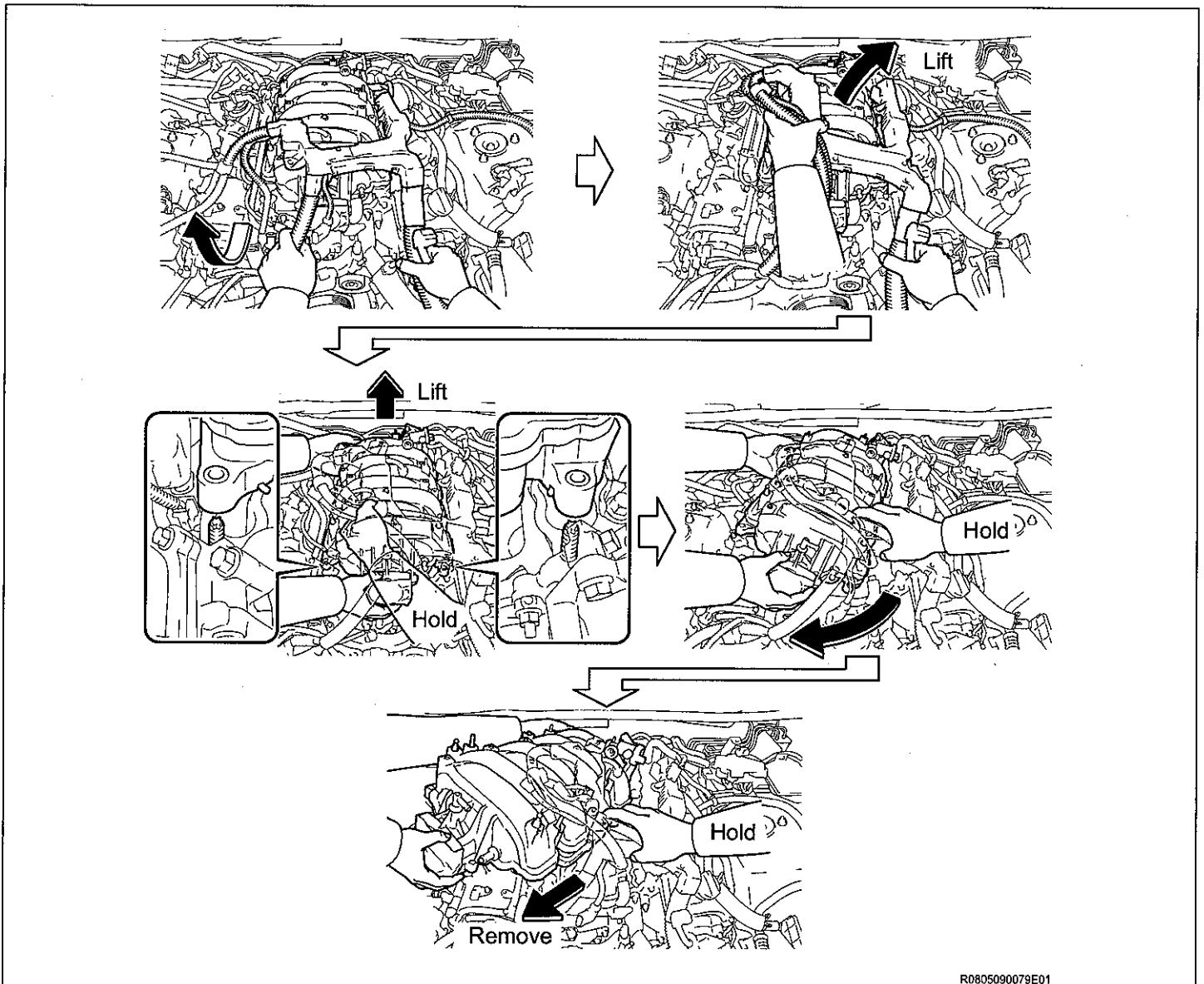
11. REMOVE INJECTOR DRIVER

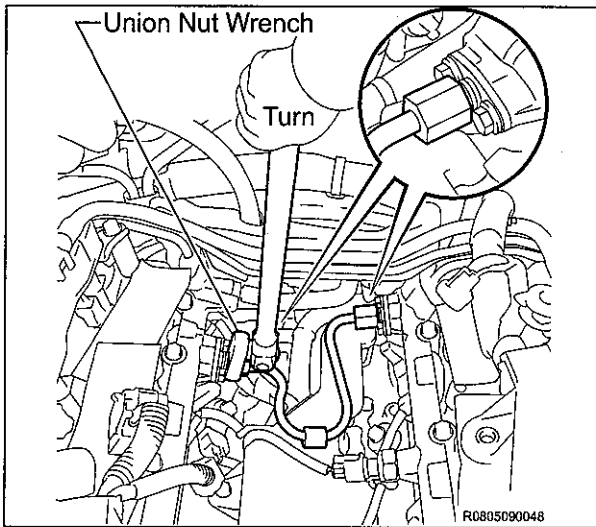
- a) Using a deep 10mm socket wrench, remove the 2 bolts and 2 nuts.
- b) Disconnect the 3 clamps, and remove the injector driver.



c) Using a 12 mm deep socket wrench, remove the 8 bolts and 2 nuts.

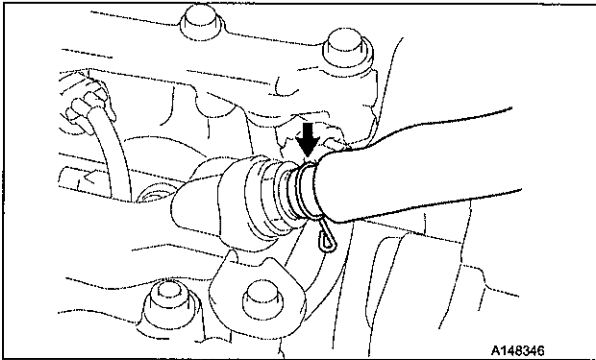
- d) Lift the engine wire harness towards yourself.
- e) Gather up the disconnected connectors of the engine wire harness and have an assistant lift the harness.
- f) With the harness raised, lift the intake manifold and disengage it from the studs. Then slide the front of the manifold towards the right bank.
- g) Remove the intake manifold from the right bank.
- h) Remove the 2 gaskets.



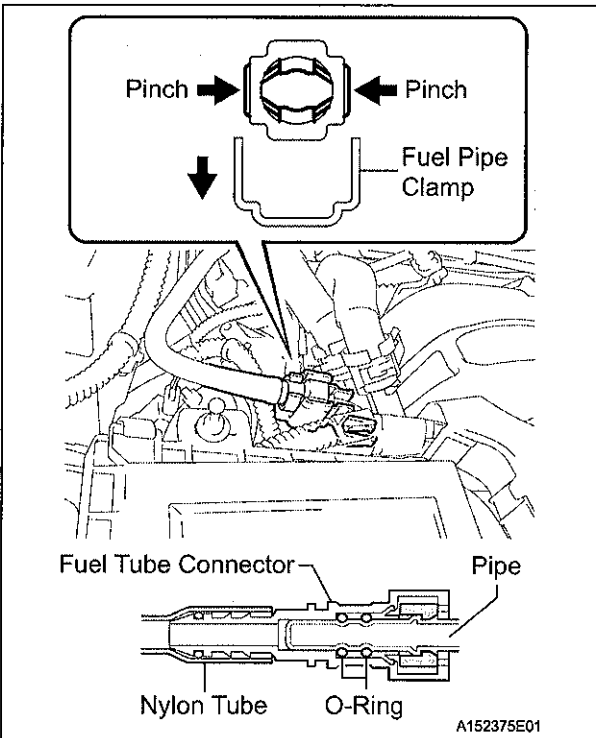


18. REMOVE NO. 4 FUEL PIPE SUB-ASSEMBLY

- a) Using a 19 mm union nut wrench, remove the No. 4 fuel pipe sub-assembly.



19. REMOVE PCV HOSE

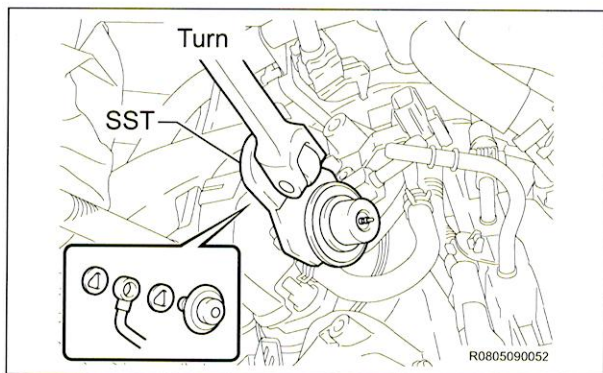


20. DISCONNECT NO. 3 FUEL HOSE

- a) Remove the fuel pipe clamp.
- b) Pinch and pull the fuel hose connector to disconnect the connector from the delivery pipe.
- c) Cover the pipe and connector ends to prevent damage and dirt contamination.

NOTE:

- Check for any dirt and foreign matter contamination in the pipe and around the connector. Clean if necessary. Foreign matter may damage the O-rings or cause leaks in the seal between the pipe and connector.
- Do not use any tools to separate the pipe and connector.
- Do not forcefully bend or twist the nylon tube.
- Check for any dirt and foreign matter on the pipe seal surface. Clean if necessary.
- If the pipe and connector are stuck together, pinch the tube between your fingers and turn it carefully to free it. Then disconnect the tube.

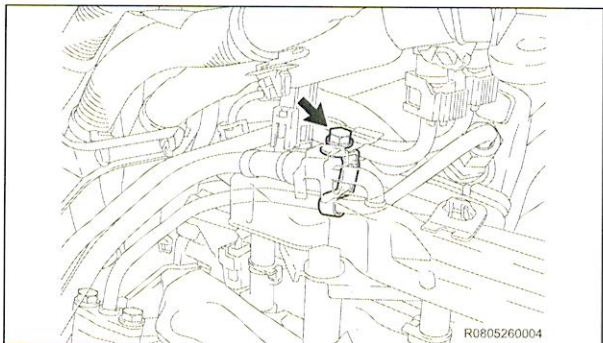


- d) Using SST or equivalent, remove the fuel pressure pulsation damper RH and 2 gaskets from the fuel pump.

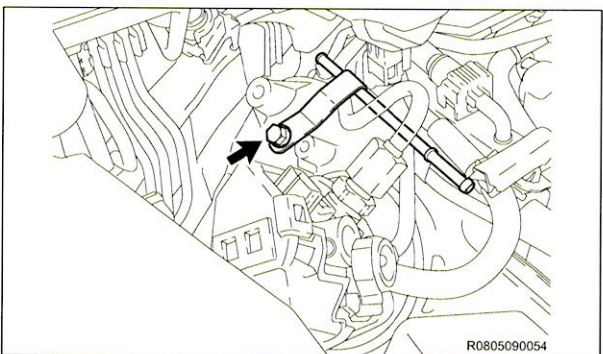
SST 09612-24014 (09617-24011)

NOTE:

- When the fuel pressure pulsation damper is removed, be careful not to let the fuel pump's return pipe from interfering.
- Do not blow air into the pulsation damper. The air pressure may damage the internal diaphragm.



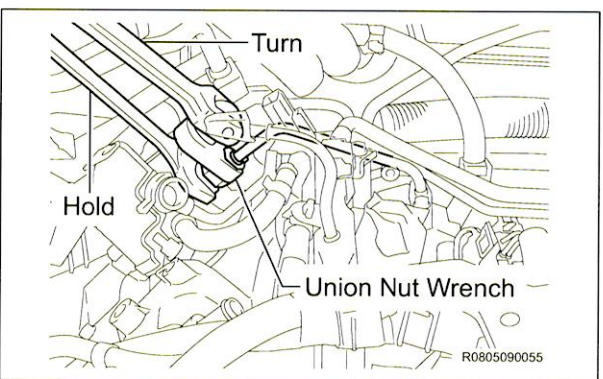
- e) Remove the bolt from the LH side of the engine bay.



- f) Remove the bolt, and disconnect the No.1 fuel pipe sub-assembly.

NOTE:

Wipe away any spilt fuel with a shop rag.

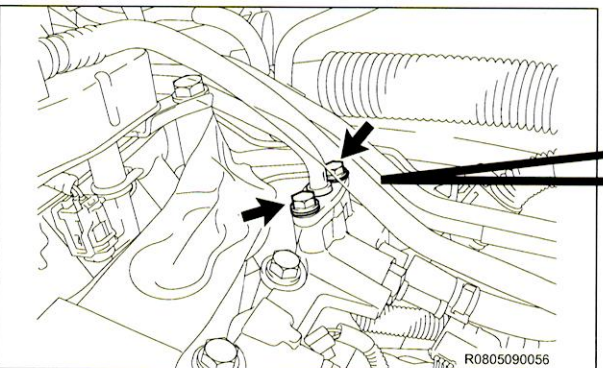


22. REMOVE NO. 2 FUEL PIPE SUB-ASSEMBLY

- a) Fix the union bolt on the fuel pump side in place with a 21 mm wrench. Using a 19 mm union nut wrench, loosen the union and remove the fuel pipe.

NOTE:

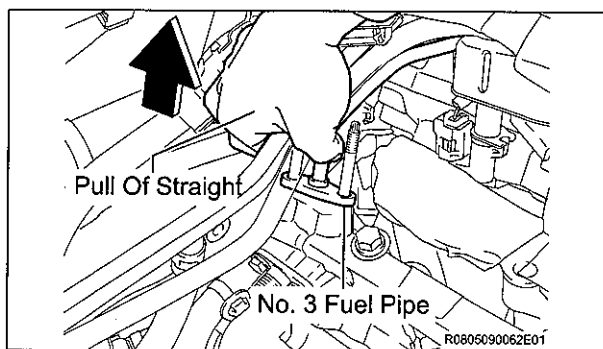
- There must be absolutely no free play in the union on the fuel pump side.
- If the union on the fuel pump side has free play, replace the fuel pump.



- b) Remove the 2 bolts.

NOTE:

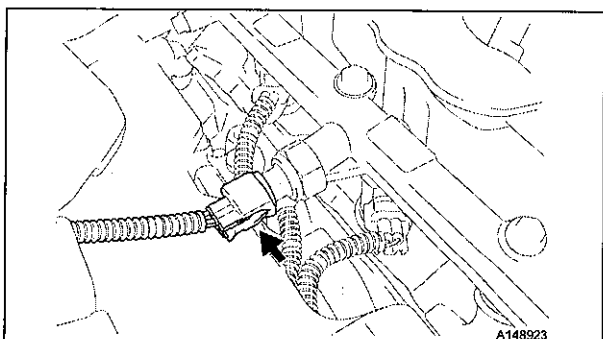
Do not remove the fuel pipe from the delivery pipe. Only remove the 2 bolts.



- d) Remove the fuel pipe from the fuel delivery pipe.
- e) Remove the 2 stud bolts.

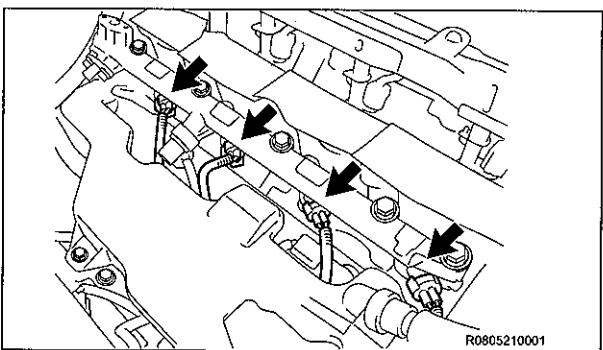
NOTE:

Shifting the pipe too widely to the left and right may damage the part which may lead to a fuel leak.

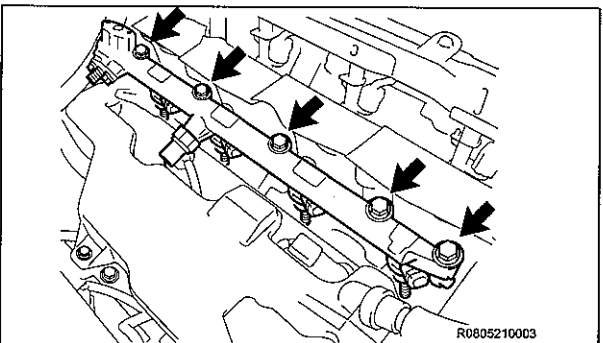


24. REMOVE FUEL DELIVERY PIPES

- a) Disconnect the fuel pressure sensor connector from the No. 2 fuel delivery pipe.



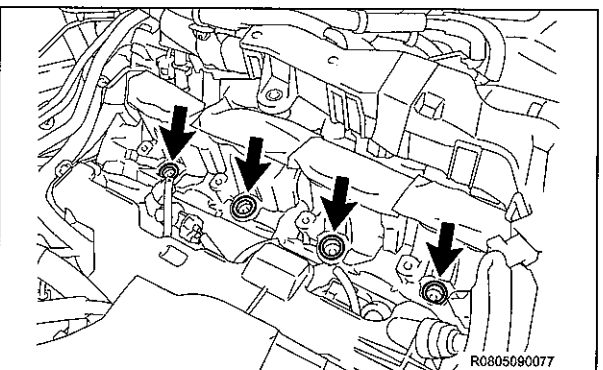
- b) Disconnect the 4 electrical injector connectors.



- c) Remove the 5 bolts and delivery pipe.

NOTE:

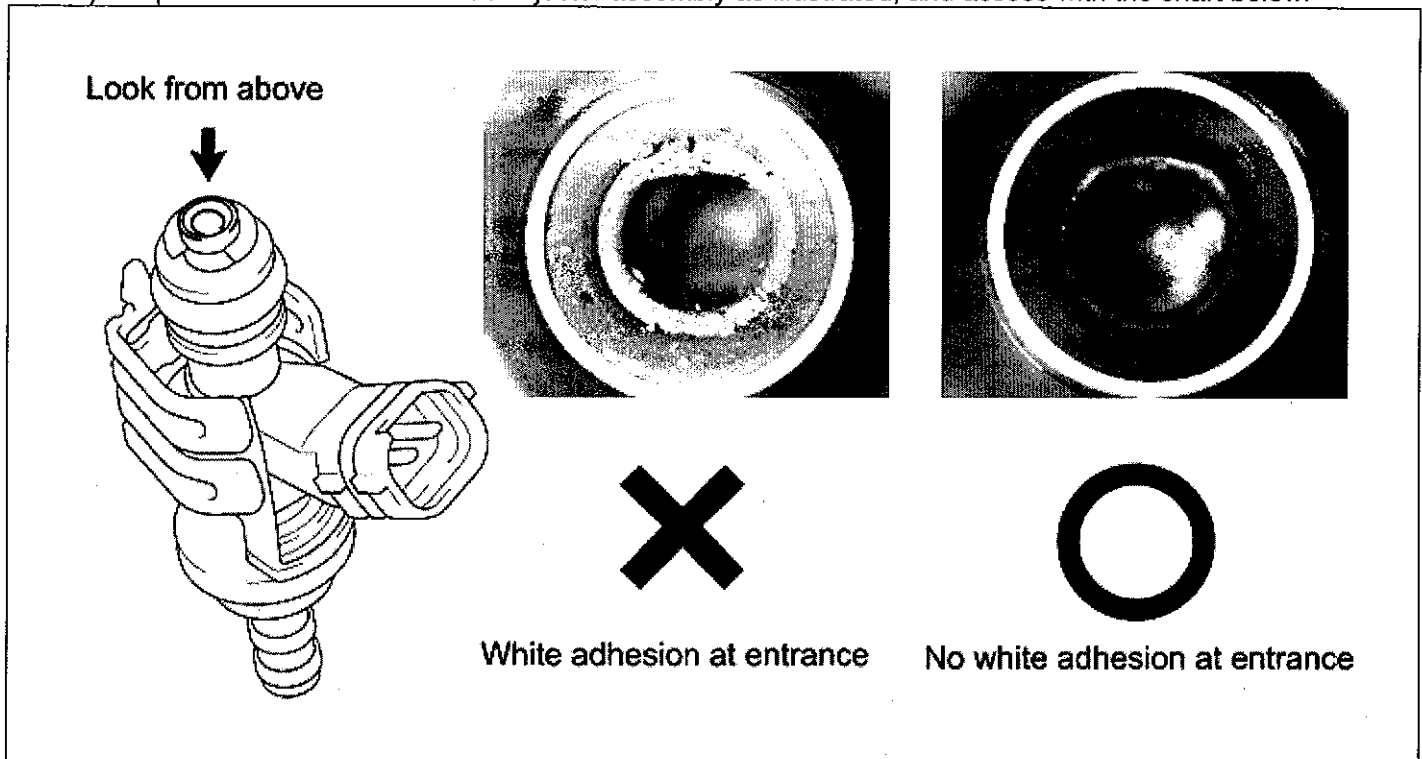
- Be extremely careful not to touch or strike the tips of the injectors.
- Pull and remove the fuel delivery pipe in a straight line without tilting it.



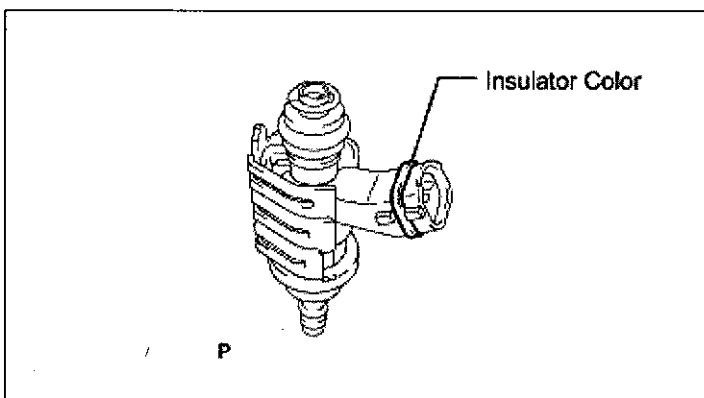
- d) Remove the 4 injector vibration insulators.
- e) Repeat steps b) ~ d) for the No. 1 fuel delivery pipe.

1. FUEL INJECTOR INSPECTION

a) Inspect the condition of the fuel injector assembly as illustrated, and assess with the chart below.

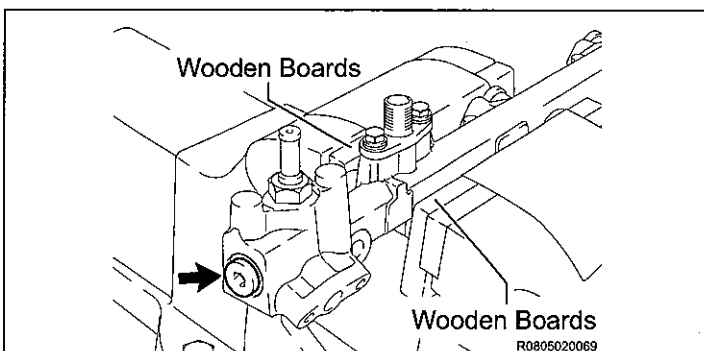


Condition of fuel injector assembly	Results
No white adhesion at entrance	Reuse the fuel injector.
White adhesion at entrance	Replace ALL fuel injectors with new ones. Keep used injectors for possible parts recovery and inspection.



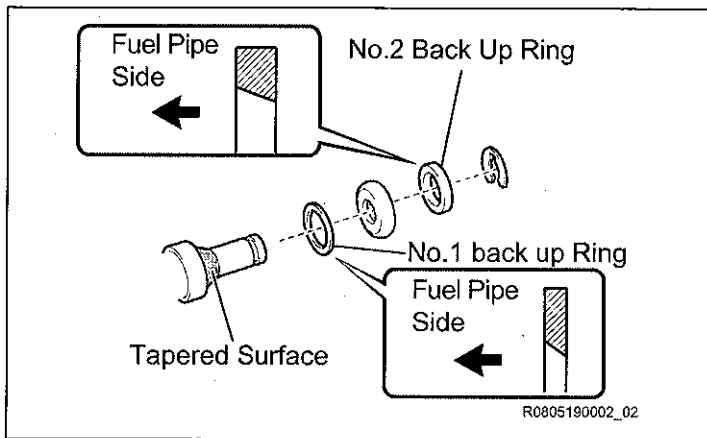
NOTE:

- Either injector listed in the parts table for a particular vehicle type may be installed; however, make sure that all injectors installed on the vehicle have the same color insulator.
- -B0 = Black insulator color
- -C0 = Reddish brown insulator color
- -D0 = Green insulator color



2. REMOVE FUEL DELIVERY PIPE PLUGS

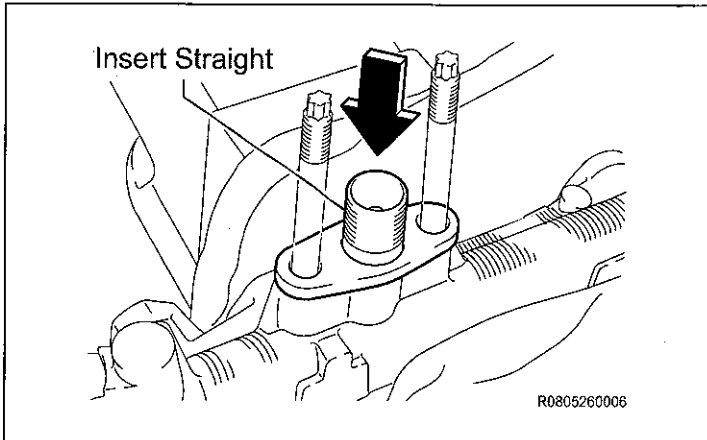
- Clamp the No. 1 fuel delivery pipe in a vise with wooden boards placed in between the pipe and vise as illustrated.
- Using a socket hexagon wrench 6mm, remove the fuel delivery pipe plug and gasket.
- Repeat steps a) ~ b) for the No. 2 fuel delivery pipe.



- b) Install a **NEW** O-ring, **NEW** backup rings (No. 1 and No. 2) and **NEW** E-ring to the fuel pipe support as illustrated.

NOTE:

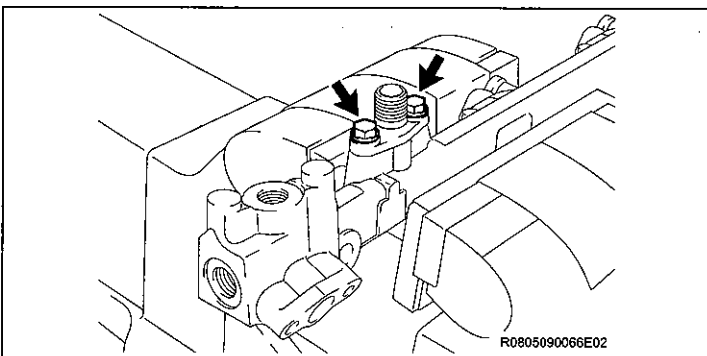
Align and install the No.1 and No.2 backup rings to the fuel pipe support tapered surface.



- c) Clamp a **NEW** No. 1 fuel delivery pipe in a vise with wooden boards placed in between the pipe and vise as illustrated.
- d) Hand tighten 2 stud bolts to the delivery pipe bolt attachment holes. (torx® side up)
- e) Apply gasoline to the fuel pipe support's O-ring and into the attachment hole of the delivery pipe's fuel pipe support.
- f) Press the fuel pipe support and delivery pipe together by hand until there is no gap between them.
- g) Remove the 2 stud bolts.

NOTE:

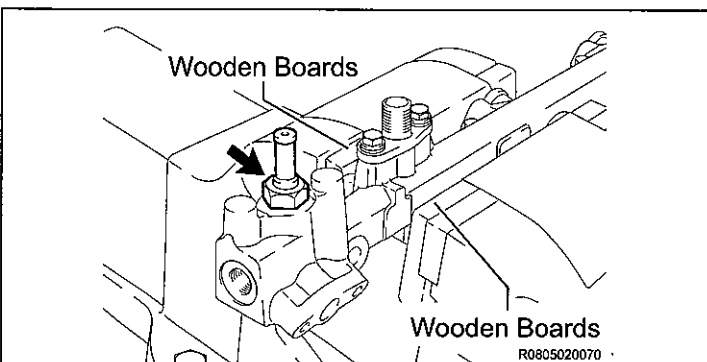
- Do not over apply lubricant.
- Apply gasoline on both the O-ring and into the attachment hole. The gasoline will run out immediately after insertion if only applied to the O-ring side.



- h) Using a 10mm deep socket wrench, install the 2 bolts.
- i) Repeat steps a) ~ h), for the No. 2 fuel delivery pipe.

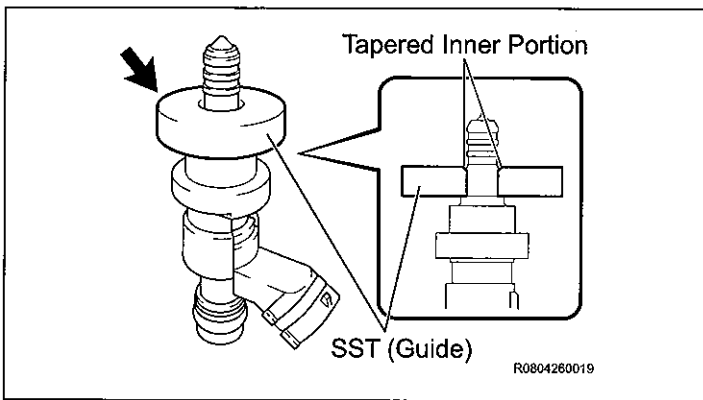
Torque Specification:

10 N·m (102 kgf·cm, 7 ft·lbf)



6. REMOVE FUEL RELIEF VALVE ASSY

- a) Clamp the No. 1 fuel delivery pipe in a vise with wooden boards placed in between the pipe and vise.
- b) Using a 17mm deep socket wrench, remove the fuel relief valve and gasket.

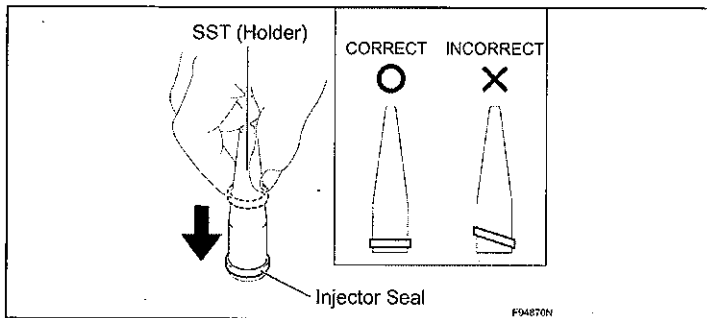


- b) Apply engine oil to the injector contact surface of SST (guide). Then attach SST (guide) to the injector with the tapered inner portion facing the tip of the injector, as shown in the illustration.

SST 09260-39015 (09268-03020, guide)

NOTE:

Due to the specific tolerances needed to seat the seals it will be difficult to slide the SST. Slowly wiggle it from side to side while sliding it up the injector little by little.

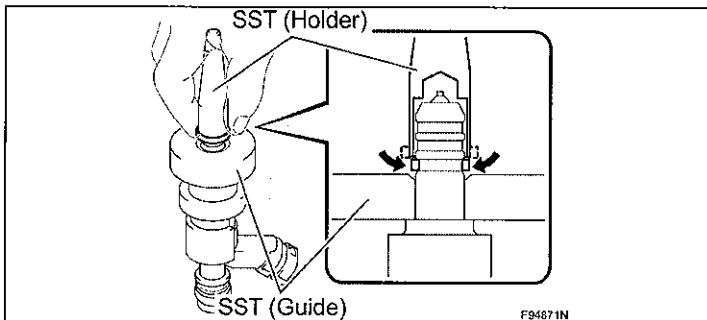


- c) Install a **NEW** injector seal to SST (holder).

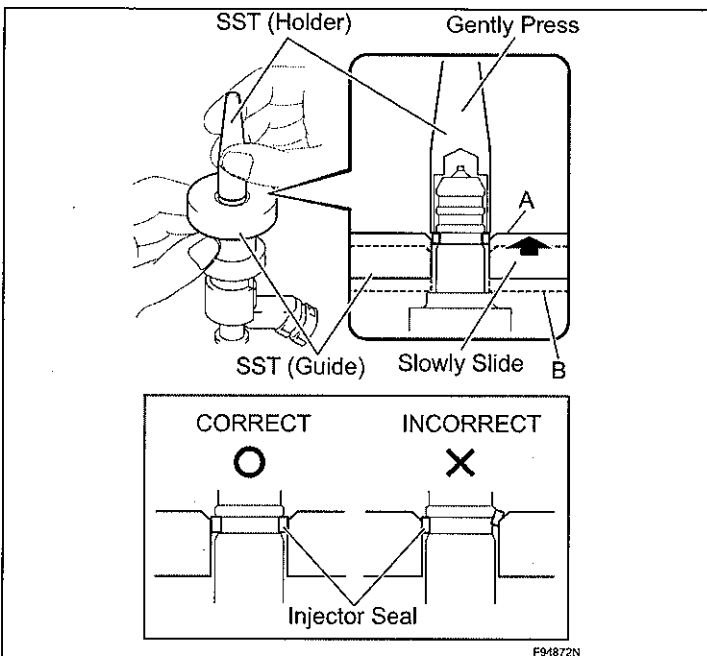
SST 09260-39015 (09268-03010, holder)

NOTE:

Be careful not to install the injector seal to the SST (holder) at an angle. Doing so will stretch the seal.



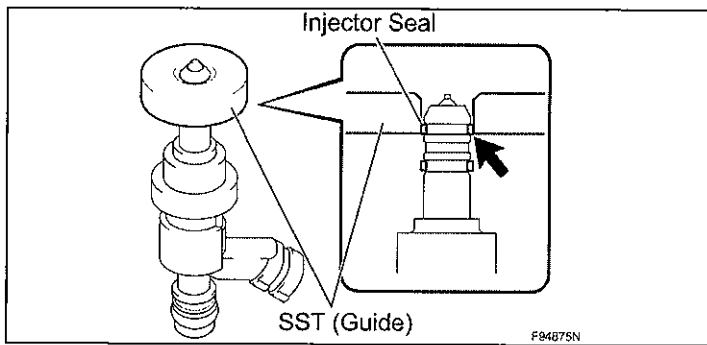
- d) Install SST (holder with injector seal) to the tip of the injector. Slide the seal downward into the injector groove (injector connector side) with your fingers, as shown in the illustration.



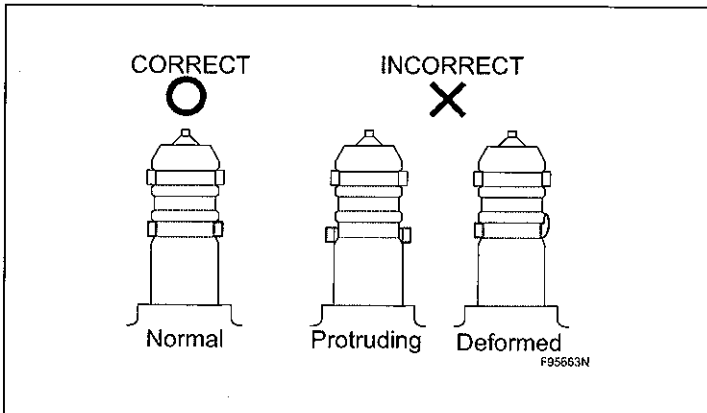
- e) Using SST (holder), gently press downward on the injector seal (injector connector side). Then slowly slide SST (guide) towards the injector tip to settle the seal into the injector groove.

NOTE:

- Be careful that the seal is not pinched between SST (guide) and the injector groove. Replace the seal if it becomes damaged.
- When using SST (guide) to settle the seal into the groove, SST (guide) only needs to be slid upward to the position labeled A in the illustration.
- After using SST (guide) to settle the seal into the groove, return SST (guide) to its position labeled B in the illustration.



- k) Slowly slide SST (guide) towards the tip of the injector. When the injector contact surface of SST (guide) aligns with the seal (injector tip side) as shown in the illustration, hold the position for 5 seconds or more to fully align the seal into the injector groove.

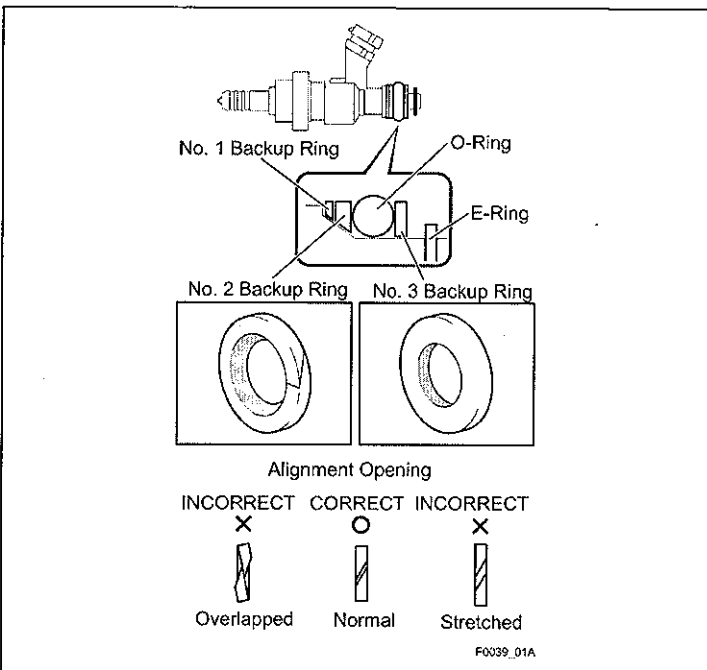


- l) After installing the seals, check that the seal is not scratched, deformed or protruding from the injector groove, if the seal is damaged, replace it with a new one.

NOTE:

- The second seal from the injector tip is next to a tapered surface so after installation it may slide up to 0.5 mm.

- m) Repeat steps a) ~ l), for the remaining injectors.



12. REPLACE FUEL INJECTOR O-RING, BACKUP RINGS AND E-RING

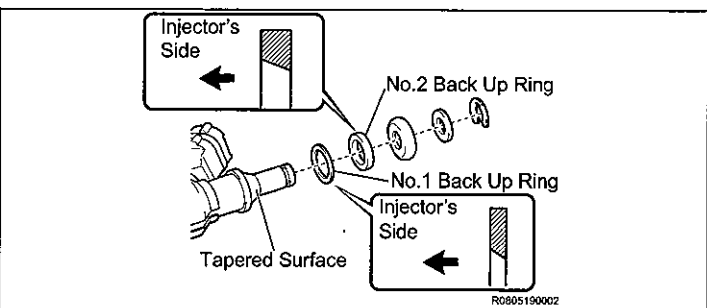
- a) Remove the O-ring, backup rings and E-ring from the fuel injector.
- b) Install a **NEW** O-ring, **NEW** backup rings (No. 1, No. 2, No. 3) and **NEW** E-ring to the fuel injector as shown in the illustration.

NOTE:

- Check that there is no foreign matter or damaged areas in the injector's O-ring groove.
- Check that the No. 1 and No. 2 backup rings are installed in the correct direction.
- Make sure that the backup rings and O-ring are installed in the correct order.
- Check that the alignment openings of the backup rings are not overlapped or stretched as shown in the illustration.

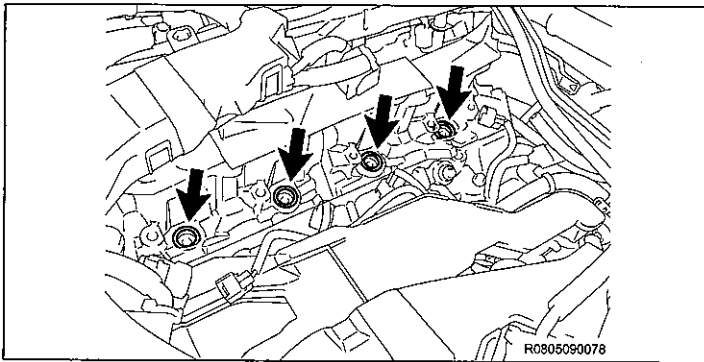
NOTE:

Align and install the No.1 and No.2 backup rings to the fuel injector's tapered surface.



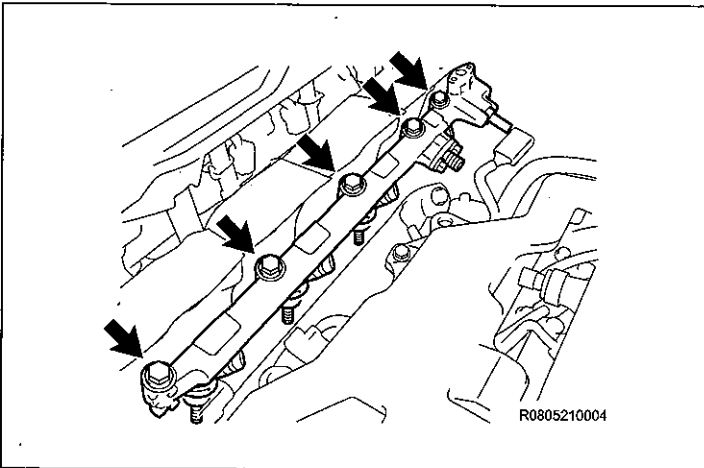
- c) Repeat steps a) ~ b), and install the 8 **NEW** O-ringS, **NEW** backup rings (No. 1 No. 2, and No. 3) and **NEW** E-rings.

D. INSTALL FUEL DELIVERY PIPE WITH FUEL INJECTOR



1. INSTALL FUEL DELIVERY PIPES

- Install 4 **NEW** injector vibration insulators.
- Apply lubricant to the installation injector seal and holes of the cylinder head.

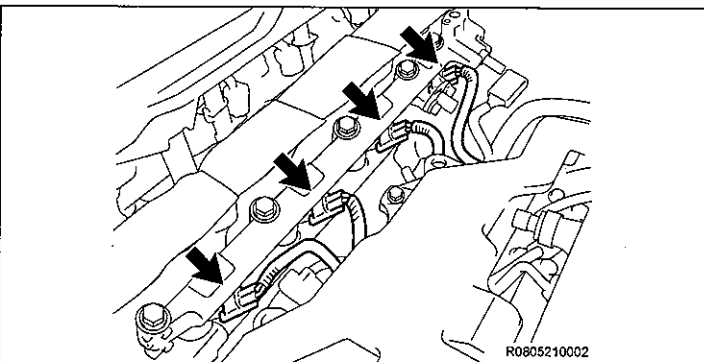


- Install the No. 1 delivery pipe with the 5 bolts.

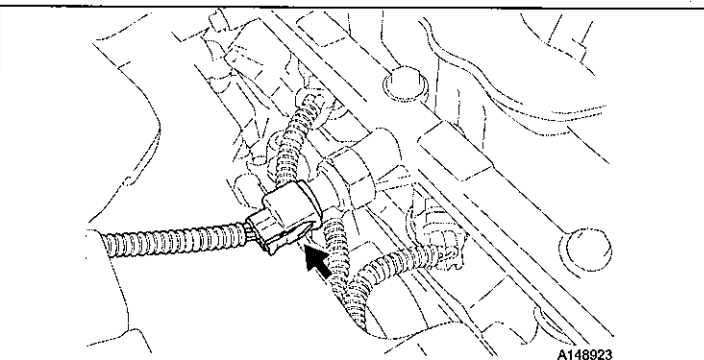
Torque Specification:
21 N·m (214 kgf-cm, 15 ft-lbf)

NOTE:

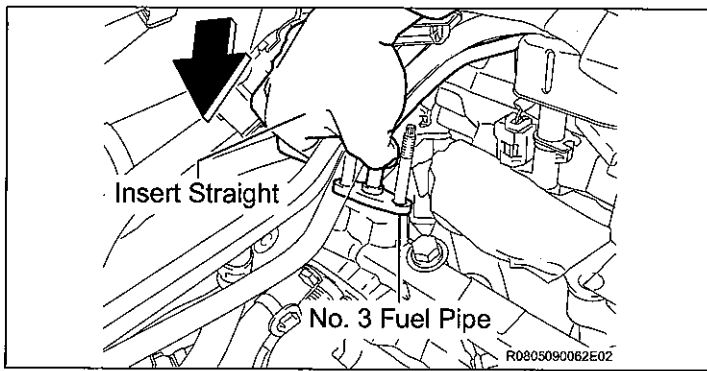
- If an injector is dropped or the tips of the injectors are struck, replace it with a **NEW** one.
- Check that there is no foreign matter or damage to the injector insertion hole of the cylinder head.
- When inserting the fuel delivery pipe, push it in evenly without tilting it.



- Connect the 4 injector connectors.
- Repeat steps a) ~ d) for the No. 2 Fuel delivery pipe.



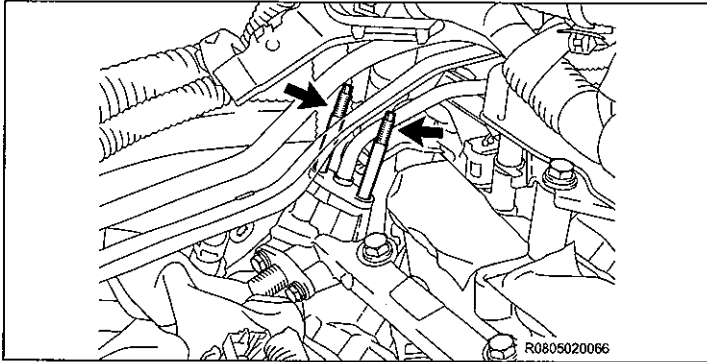
2. REINSTALL THE FUEL PRESSURE SENSOR CONNECTOR.



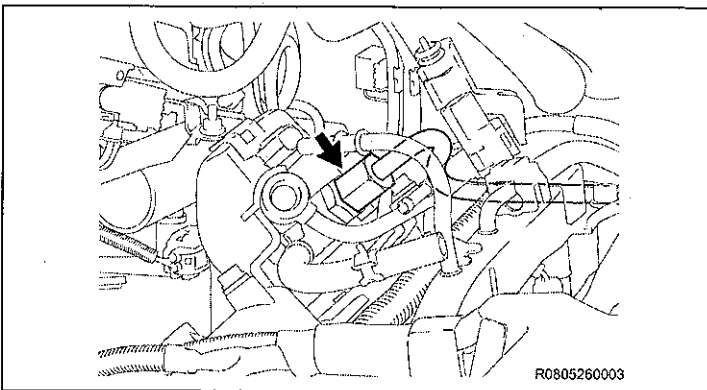
- e) Press the fuel pipe and delivery pipe together by hand until there is no gap between them.

NOTE:

Shifting the pipe too widely to the left and right may damage the part which may lead to a fuel leak.



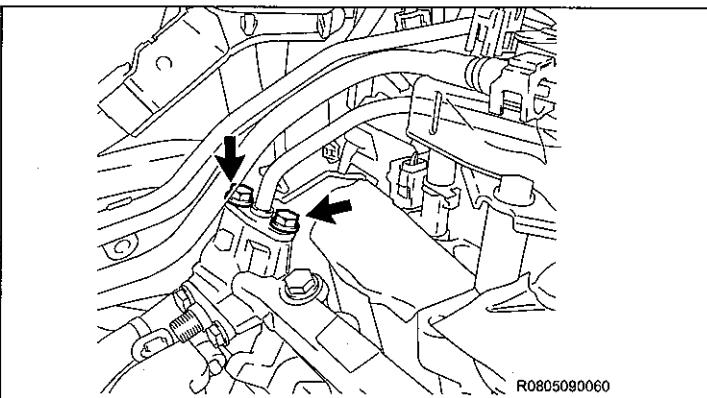
- f) Remove the 2 stud bolts.



- g) Loosely install the No. 3 fuel pipe sub-assembly to the fuel pump assembly.

NOTE:

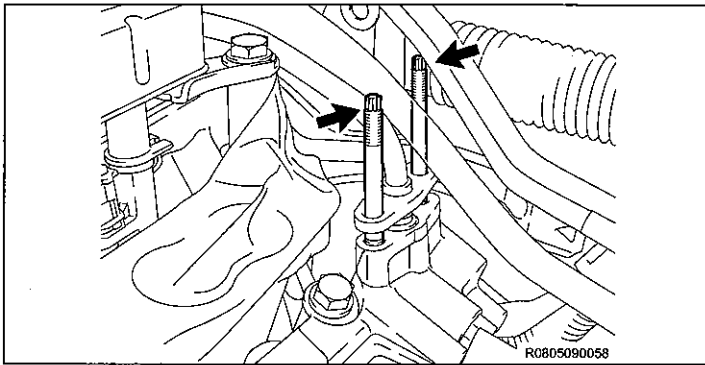
Be careful not to damage the sealing surface of the fuel pipe when temporarily installing the fuel pipe.



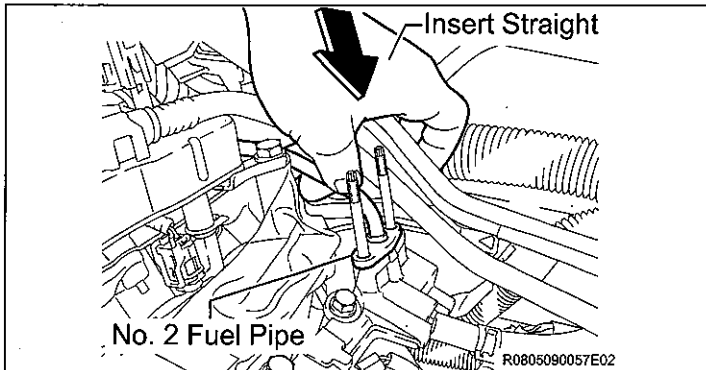
- h) Install the 2 bolts.

Torque Specification:

10 N·m (102 kgf·cm, 7 ft·lbf)



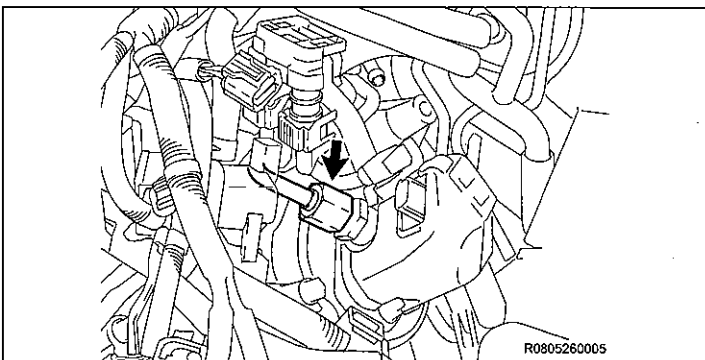
- d) Hand tighten the 2 stud bolts to the delivery pipe bolt attachment holes. (torx® side up)



- e) Press the fuel pipe and delivery pipe together by hand until there is no gap between them.
f) Remove the 2 stud bolts.

NOTE:

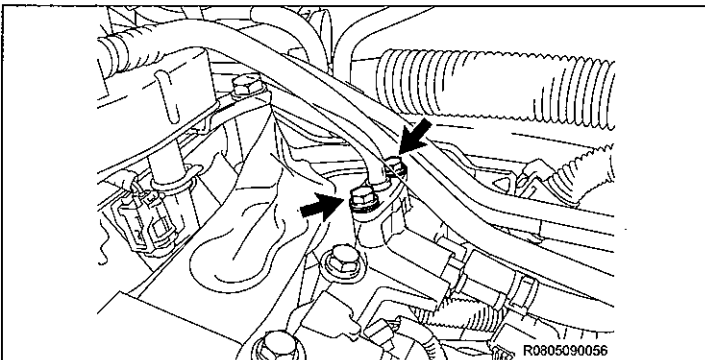
Shifting the pipe too widely to the left and right may damage the part which may lead to a fuel leak.



- g) Loosely install the No. 2 fuel pipe sub-assembly to the fuel pump assembly.

NOTE:

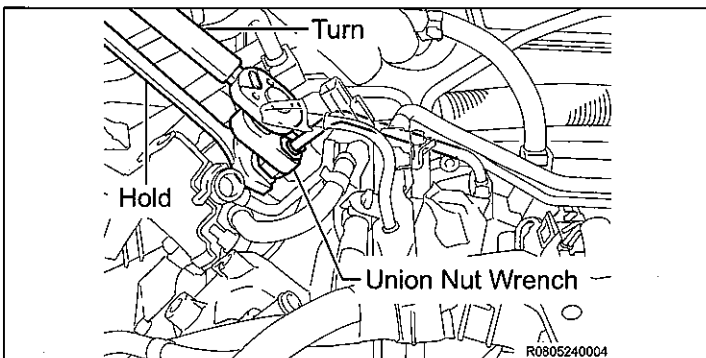
Be careful not to damage the sealing surface of the fuel pipe when temporarily installing the fuel pipe.



- h) Install the 2 bolts.

Torque Specification:

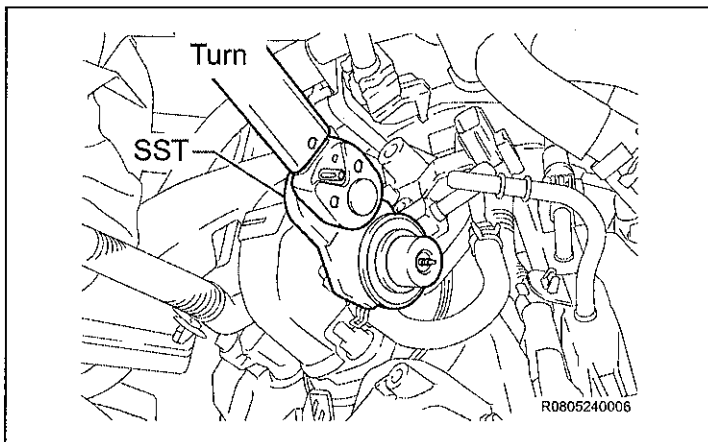
10 N·m (102 kgf·cm, 7 ft·lbf)



- i) Using a 19 mm union nut wrench, connect the fuel pipe.

Torque Specification:

26 N·m (265 kgf·cm, 19 ft·lbf)



- e) Use SST or equivalent, securely tighten the fuel pressure pulsation damper RH.

SST 09612-24014 (09617-24011)

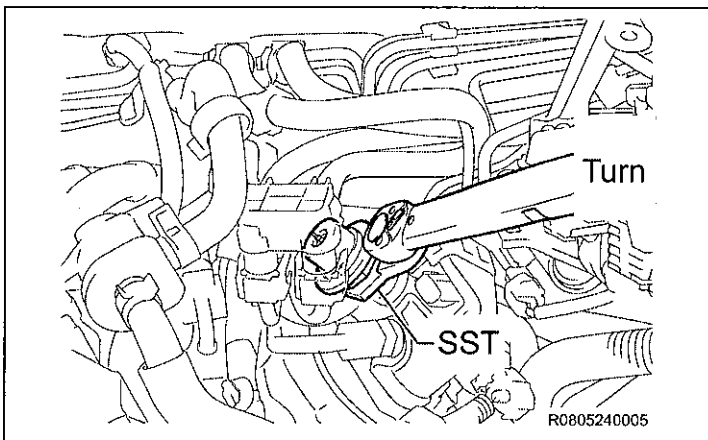
Torque Specification:

With SST

33 N·m (337 kgf·cm, 24 ft·lbf)

With out SST

40 N·m (408 kgf·cm, 30 ft·lbf)



- f) Use SST or equivalent, securely tighten the fuel pressure pulsation damper LH.

SST 09612-24014 (09617-24011)

Torque Specification:

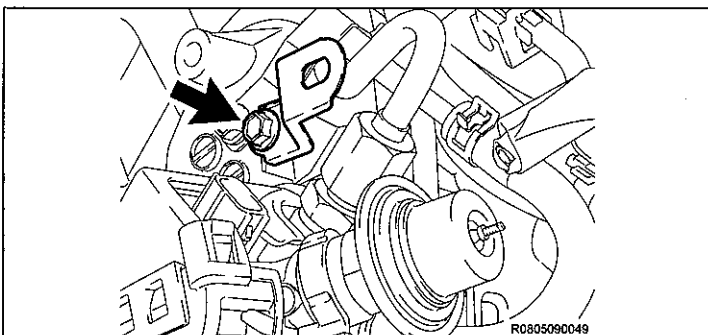
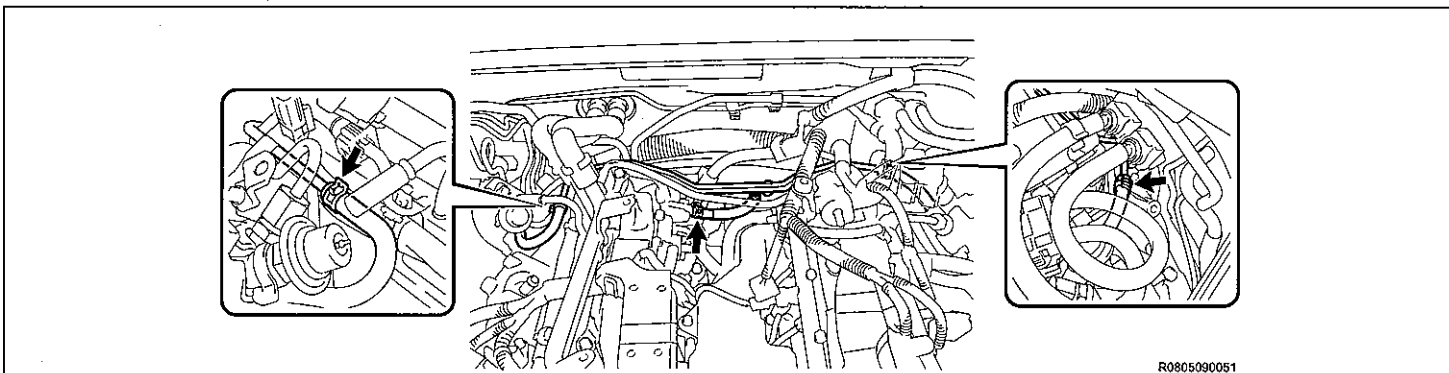
With SST

33 N·m (337 kgf·cm, 24 ft·lbf)

With out SST

40 N·m (408 kgf·cm, 30 ft·lbf)

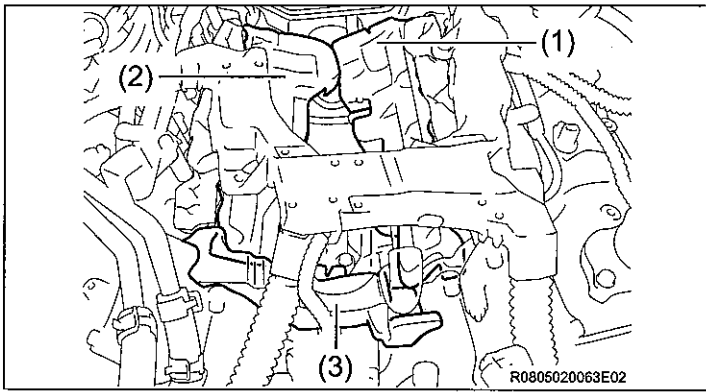
- g) Connect the 3 fuel hoses. (illustration below)



- h) Install the bracket with the bolt.

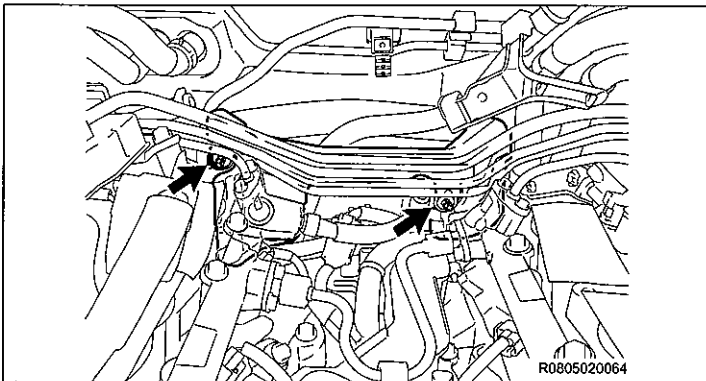
Torque Specification:

10 N·m (102 kgf·cm, 7 ft·lbf)



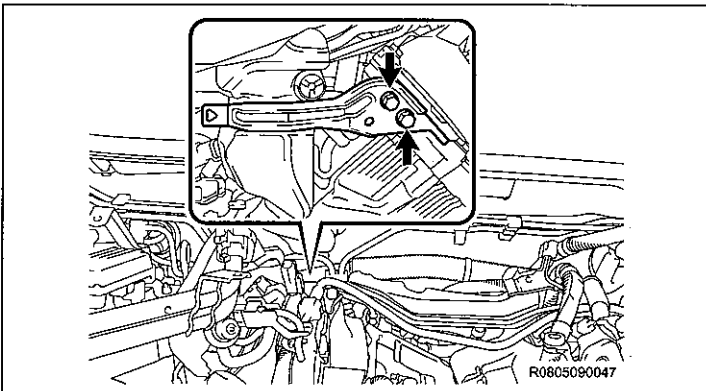
9. INSTALL ENGINE COVER SUB-ASSEMBLY

- a) Install the 3 engine covers.



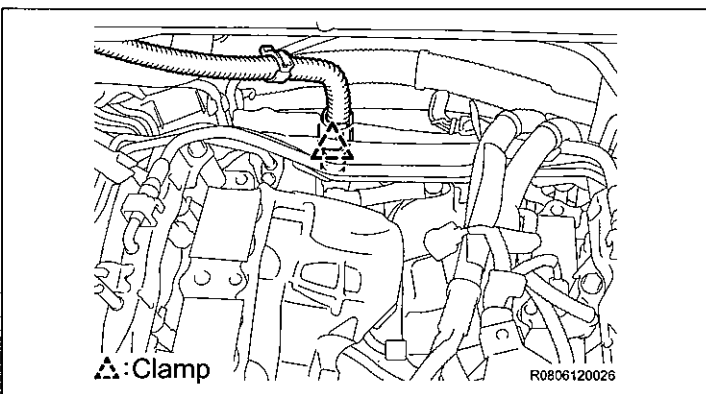
10. INSTALL NO. 3 ENGINE COVER SUB-ASSEMBLY

- a) Install the No. 3 engine cover sub-assembly with the 2 clips.



- b) Install the bracket with the 2 bolts.

Torque Specification:
10 N·m (102 kgf·cm, 7 ft·lbf)

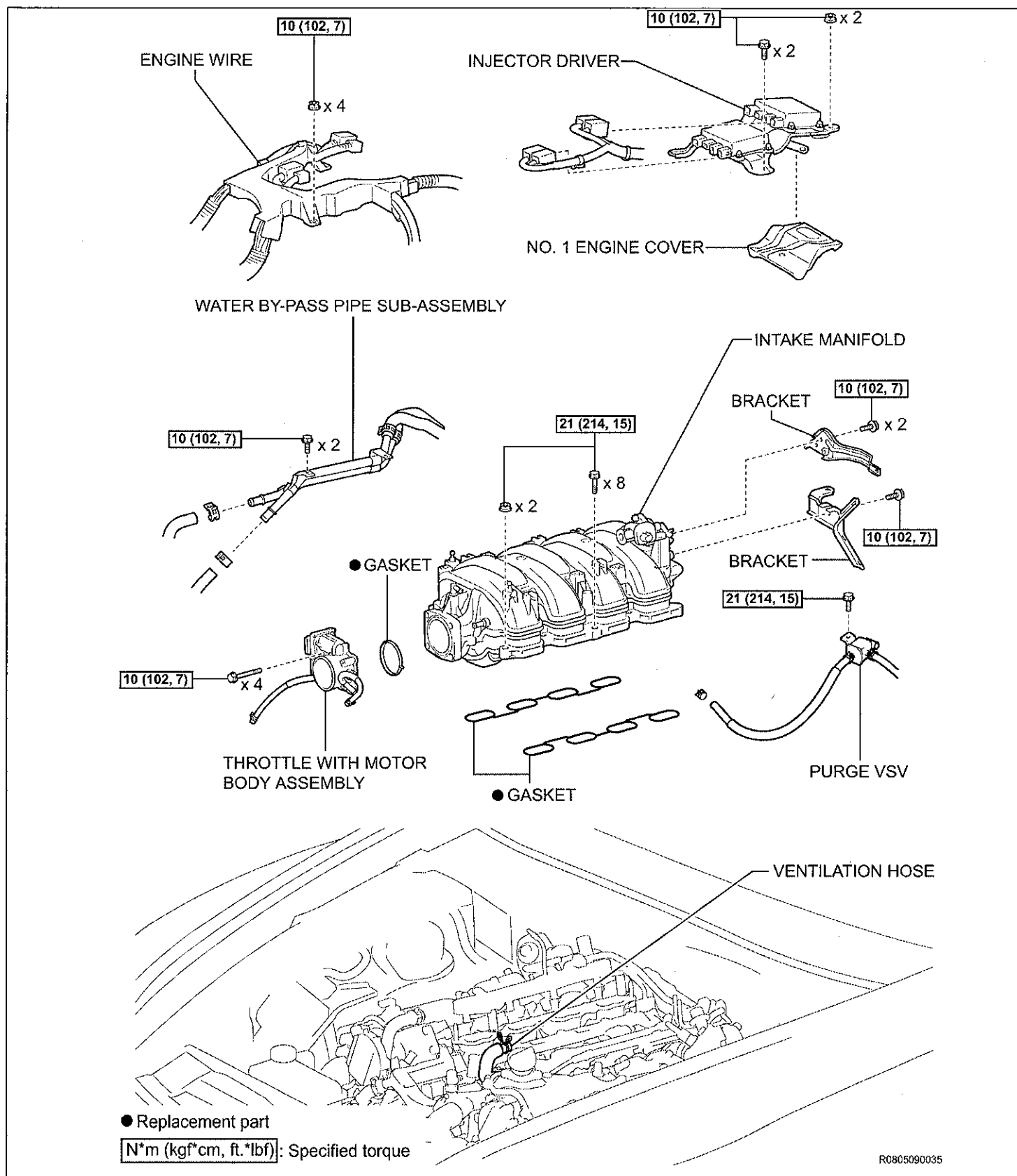


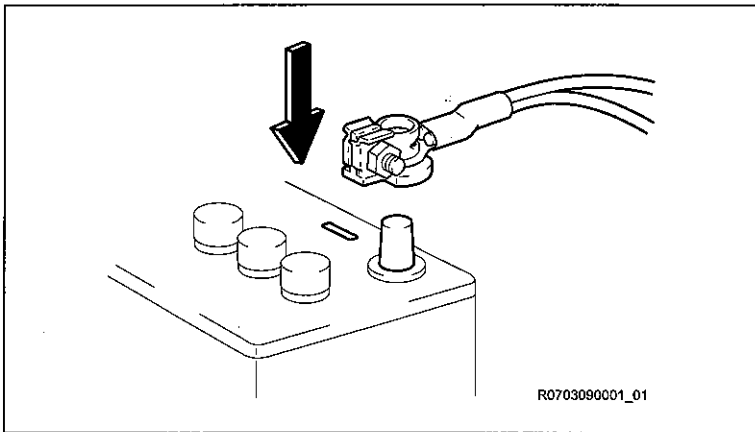
- c) Install the clamp.

2. REINSTALL THE REMAINING COMPONENTS IN THE REVERSE ORDER OF REMOVAL.

NOTE:

Use the illustrations on this page and the next page for assistance and torque specifications during reinstallation.





- a) Reinstall and reconnect the battery and insulator.
- b) Install the cowl top ventilator lower RH.

E. CHECK FOR FUEL LEAKS & REASSEMBLY

1. CHECK FOR FUEL LEAKS

- a) Connect the Techstream to the DLC3.
- b) Push the engine switch on (IG).

NOTE:

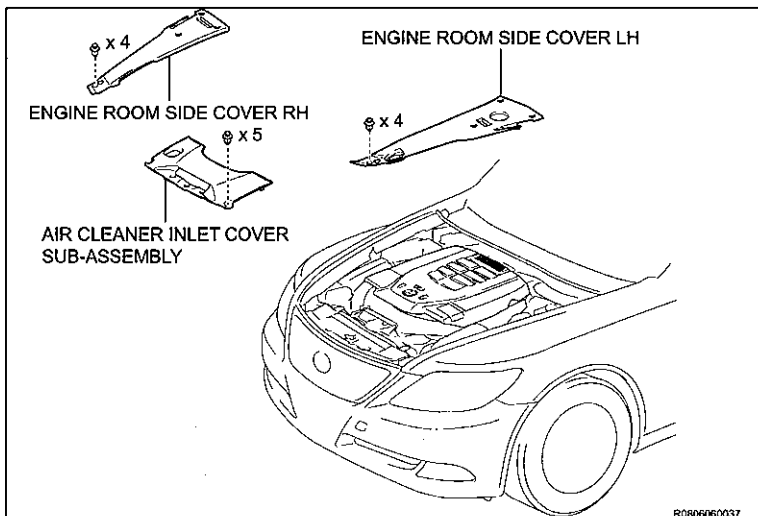
Do not start the engine.

- c) Push the tester ON.
- d) Enter the following menus: Powertrain / Engine / Active Test / Control the Fuel Pump Speed.
- e) Check that there are no fuel leaks anywhere on the system after performing maintenance. If there is a fuel leak, repair or replace parts as necessary.

2. COOLANT REPLACEMENT

- a) Click the link for additional assistance.

[1UR-FSE COOLING: COOLANT: REPLACEMENT \(2007 LS460\)](#)



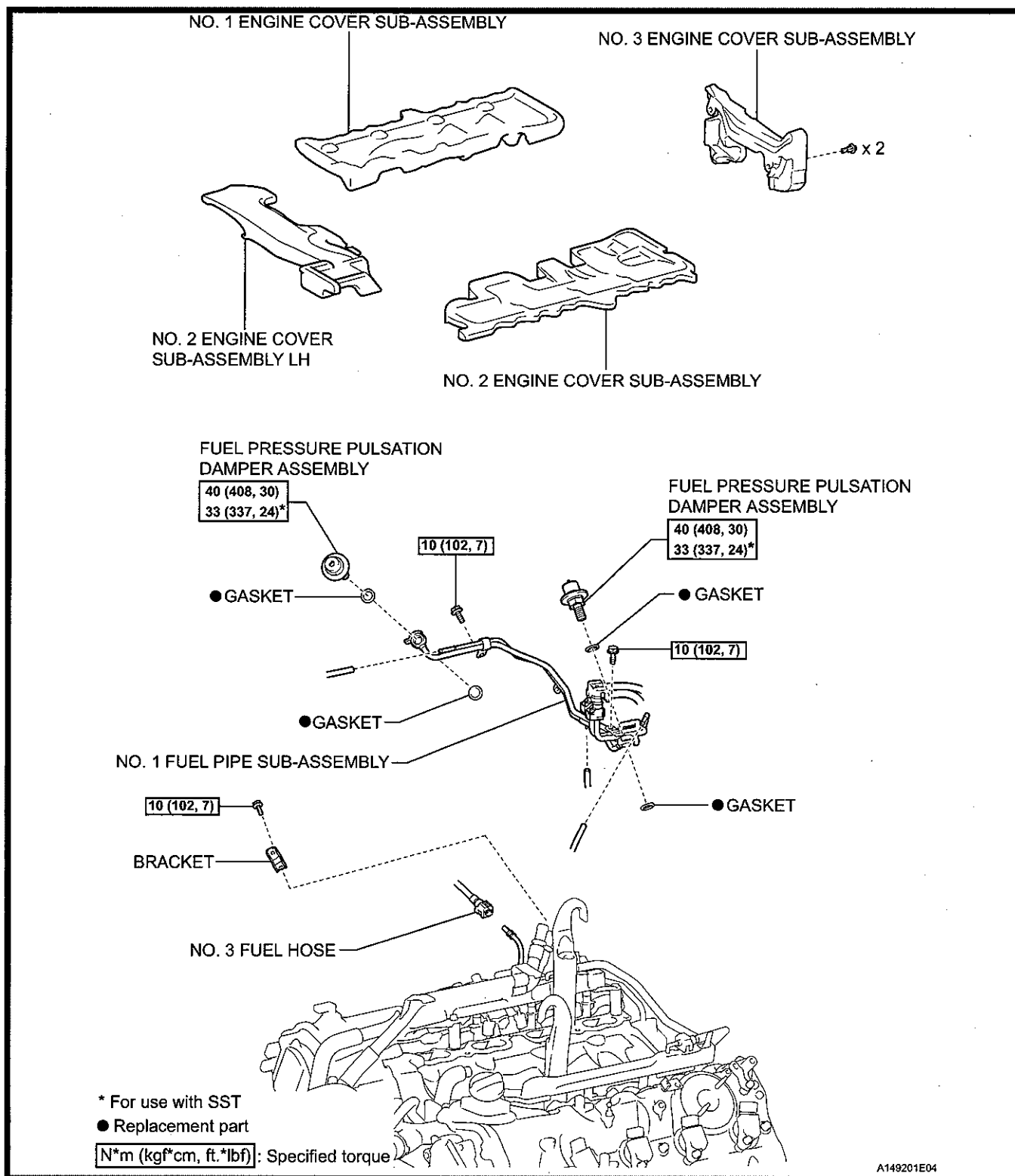
3. REINSTALL ENGINE ROOM COVERS

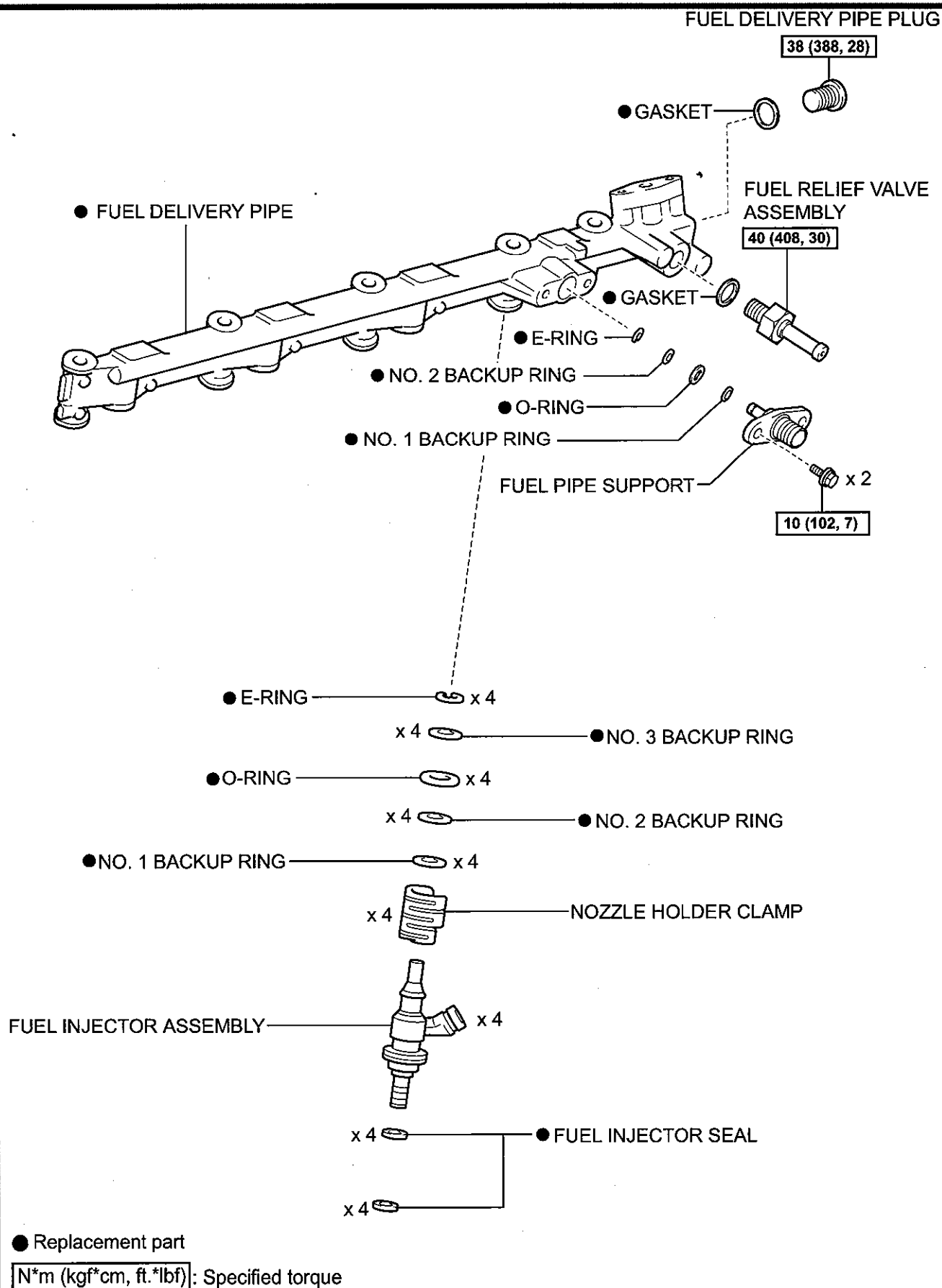
VIII. APPENDIX

A. 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.

B. COMPONENTS



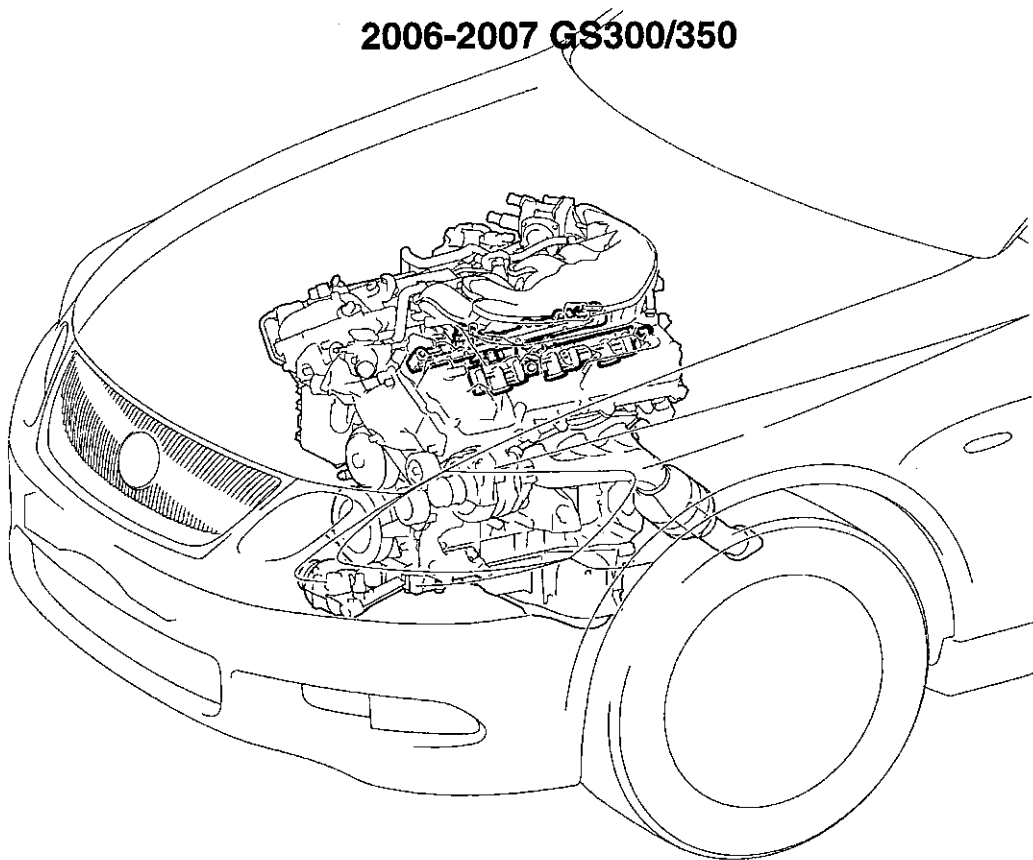


R0805090037

C. PARTS KIT CONTENTS

Part Number		Part Name	
04008-18138		Pipe Kit, Fuel delivery, No. 1	
The kit listed above includes the following parts:			
	Part Number	Part Name	Q'ty
	23814-38051	Pipe, Fuel Delivery	1
	23815-38031	Pipe, Fuel Delivery, No2	1
	16418-20290	Pacing, Radiator Drain Cock	1
	16492-21050	Ring, O Radiator	1
	17171-38020	Gasket, Intake Manifold to Head, No.1	2
	22271-50050	Gasket, Throttle Body	1
	23255-31010	Seal, Fuel Injector	16
	23256-38010	Ring, Fuel Pipe, No.1	4
	23256-74010	Ring, Fuel Injector Back-up, No.1	8
	23257-38010	Ring, Fuel Pipe, No.2	4
	23257-74010	Ring, Fuel Injector Back-up, No.2	8
	23258-28011	Ring, Fuel Injector Back-up, No.3	8
	23279-74010	Gasket, Fuel Pressure Pulsation Damper	4
	23291-31011	Insulator, Injector Vibration	8
	90301-06018	Ring, O	8
	90301-06019	Ring, O	4
	90430-12026	Gasket	4
	90523-04006	Ring, E	4
	90523-05007	Ring, E	8

TECHNICAL INSTRUCTIONS
FOR
SPECIAL SERVICE CAMPAIGN 9LA
FUEL DELIVERY PIPE REPLACEMENT
2006-2007 GS300/350



III. PREPARATION

A. TOOLS

- Standard hand tools
- Torque wrench
- 22 mm union nut wrench
- SST: (non-essential) 09612-24014 (09617-24011)
- SST: Stud Bolt - 04007-32331 (2 stud bolts have been included in each Service Manager's Package.)
- SST: 09260-39015 Injector seal tool set. (02968-03020, 09268-03010) Lexus drawer 1

B. EQUIPMENT

- Techstream

C. MATERIALS

- Protective Tape
- Wooden boards (for clamping purposes)

D. PARTS

Model	Part No.	Part Name	Qty/Unit
GS300	04008-18331	Pipe Kit, Fuel Delivery, No. 3	1
GS350	04008-18231	Pipe Kit, Fuel Delivery, No. 2	1

*See Appendix for kit contents.

Based upon the inspection results you may need to replace the fuel injectors. Please keep all fuel injectors for possible parts recovery and inspections. If requested you will need a fuel injector shipping kit for dealers.

Model	Part No.	Insulator color	Part Name	Qty/Unit
GS300	23209-39057-A0* or	Black	Injector Assy, Fuel	6 (as needed)
	23209-39057-B0*	Reddish Brown		
GS350	23209-39155-B0* or	Black		
	23209-39155-C0* or	Reddish Brown		
	23209-39155-D0*	Green		

* Either injector listed for the vehicle type may be installed; however, make sure that all injectors installed on the vehicle are the same type. The injector may be identified by the injector insulator color. Please see page 24 for addition information.

IV. WORK PROCEDURE TABLE OF CONTENTS

Background.....	page 4
Safety Precautions.....	page 5
Fuel Delivery Pipe Replacement.....	page 9
Fuel Injector Inspection.....	page 23
Appendix	page 42

IMPORTANT: Only partial reinstallation steps are included in these Technical Instructions; please reference TIS for additional assistance if needed.

WORK PROCEDURE

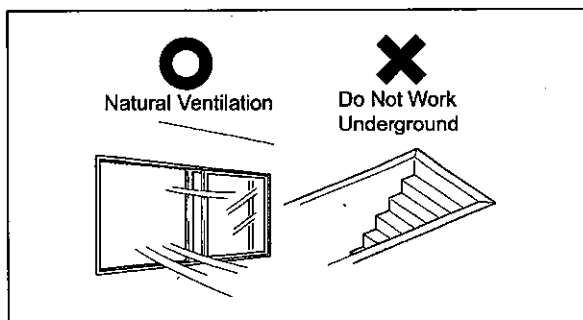
VI. SAFETY PRECAUTIONS

A. PRECAUTIONS WHEN WORKING ON THE FUEL SYSTEM



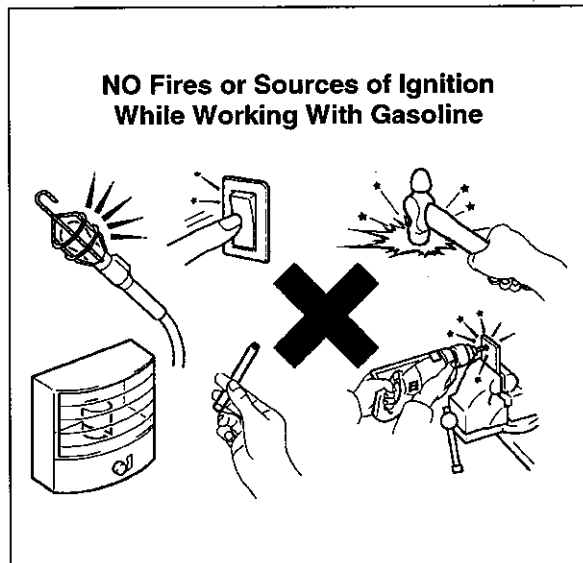
- ALWAYS REMEMBER "SAFETY FIRST".
- IMMEDIATELY WIPE UP ANY SPILLED FUEL.
- BE EXTREMELY CAREFUL WHEN HANDLING FUEL TO PREVENT FIRES FROM OCCURRING.
- BEFORE REMOVING ANY FUEL SYSTEM PART, DRAIN ALL FUEL TO PREVENT SPILLING.
- BEFORE WORKING ON THE FUEL SYSTEM, PERFORM THE FOLLOWING SAFETY CHECK LIST.

B. SAFETY CHECKLIST



B. AIR VENTILATION

- ☐ Perform work in a well ventilated area.
- ☐ **DO NOT** work underground or in an area where fuel vapors may fill the room due to poor ventilation.
- ☐ Quickly clean up any spilled fuel with a dry cloth and dissipate the fuel vapors.
- ☐ Dry all cloths that have come in contact with fuel in a well ventilated area and dispose of them properly (according to applicable local regulations).



C. FIRES AND IGNITION SOURCES ARE STRICTLY PROHIBITED

- ☐ Fires and ignition sources are prohibited while working on the fuel system.
- ☐ Clearly display the sign found on the next page stating "**WORKING WITH GASOLINE, NO FIRES OR IGNITION SOURCES**".
- ☐ Smoking is prohibited near the work area.
- ☐ **DO NOT** work in areas where there are welders, grinders, drills, electric motors, heaters, etc.
- ☐ **DO NOT** use work lamps or any other electrical appliance due to the risk of sparks flying from the power switch or a rise in temperature.
- ☐ **DO NOT** use metal hammers while working, due to the risk of flying sparks.
- ☐ **DO NOT** start any engine or perform any of the above in neighboring work bays.

D. FIRE EXTINGUISHER

- ☐ Have a fire extinguisher ready and available before beginning work.



E. PREVENT STATIC ELECTRICITY

- ☐ To help prevent static electricity, lightly wet the floor with water, but not to the point where it creates a hazardous working condition.
- ☐ Place appropriate warning cones or stand signs around the area as a caution.

■ Copiar y exhibir al trabajar

**TRABAJANDO CON
GASOLINA**

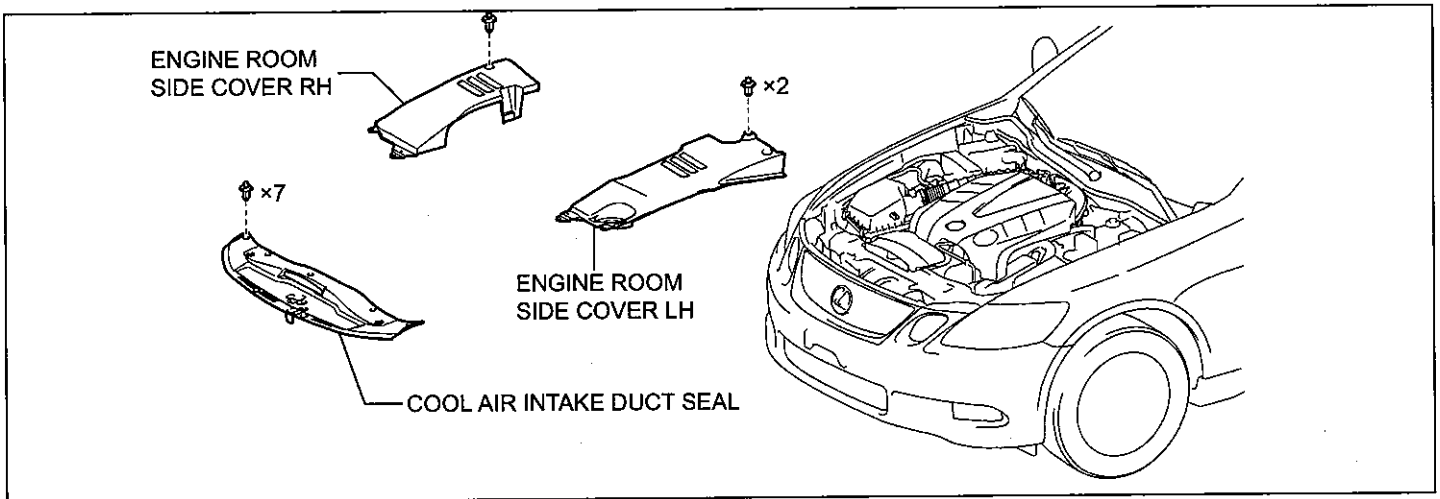
NINGÚN INCENDIOS

**NINGUNA FUENTE
DE IGNICIÓN**

Supervisor

VII. FUEL DELIVERY PIPE REPLACEMENT

A. REMOVE THE ENGINE COVERS AND DISCHARGE THE FUEL SYSTEM

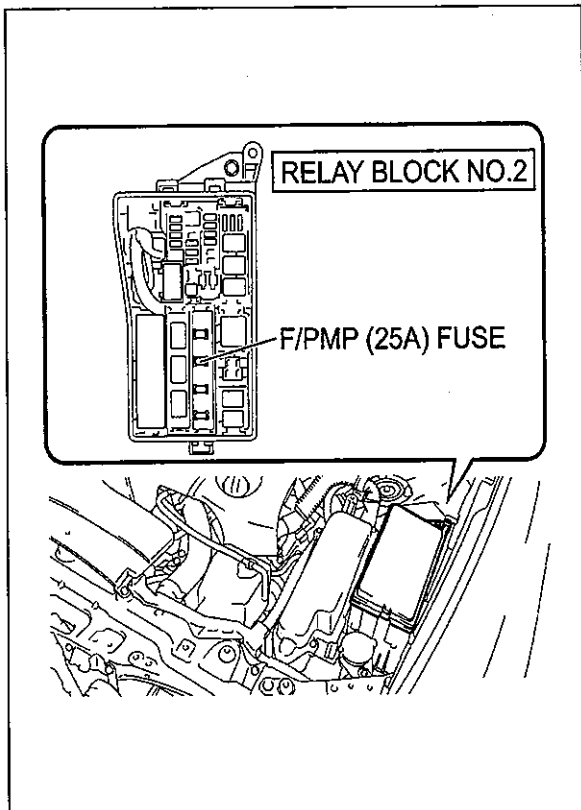


1. CHECK FOR DTCs

- If DTC(s) are present, verify them, view and record the freeze frame data, and perform the necessary repairs.

2. REMOVE THE ENGINE ROOM COVERS

- DO NOT DISCONNECT ANY PART OF THE FUEL SYSTEM UNTIL YOU HAVE DISCHARGED THE FUEL SYSTEM PRESSURE.
- EVEN AFTER DISCHARGING THE FUEL SYSTEM PRESSURE, PLACE A PIECE OF CLOTH AROUND THE FITTINGS AS YOU SEPARATE THEM TO REDUCE THE RISK OF FUEL SPRAYING ON YOURSELF, IN THE ENGINE COMPARTMENT, AND ONTO OTHER PARTS.



3. DISCHARGE THE FUEL SYSTEM PRESSURE

- Remove the relay block upper cover No. 2.
- Remove the fuel pump (F/PMP) 25 amp fuse.
- Start the engine.
- After the engine has stopped, turn the ignition switch OFF.
- Crank the engine again to relieve any existing fuel pressure.

NOTE:

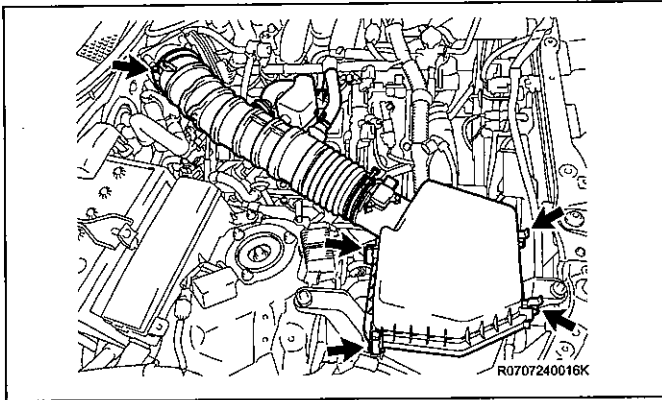
DTC P0171/25 and/or P0191/49 may be set.

- Remove the fuel cap to discharge the fuel tank pressure.
- Record the radio station presets.

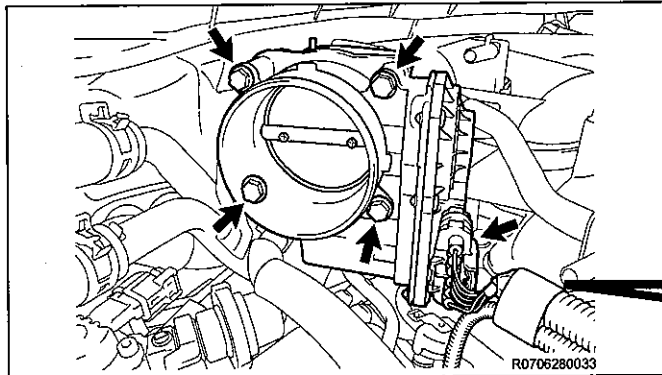
NOTE:

DO NOT disconnect the negative (-) battery cable until 6 minutes have elapsed after turning the ignition OFF.

- Disconnect the negative (-) battery cable.
- Reinstall the fuel pump (F/PMP) 25 amp fuse.
- Reinstall the relay block upper cover No. 2.
- Reinstall the fuel cap.



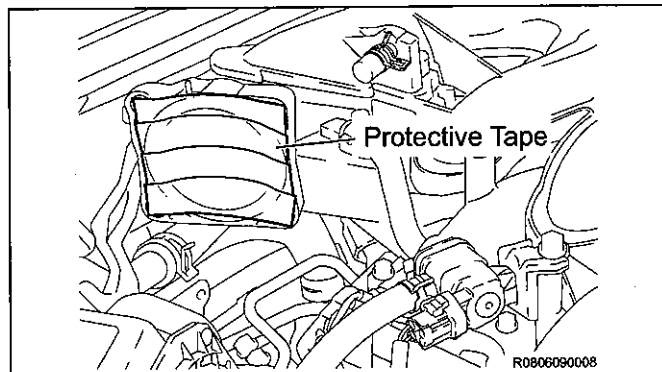
- d) Loosen the hose clamp bolt.
- e) Remove the 4 clips and air cleaner cap with air cleaner hose.



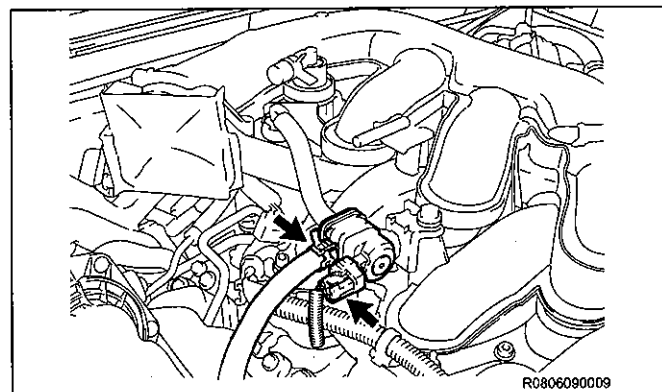
4. REMOVE THROTTLE WITH MOTOR BODY ASSEMBLY

- a) Disconnect the connector.
- b) Remove the 4 bolts and throttle with motor body assembly and gasket.

NOTE:
Do not disconnect the 2 water by-pass hoses.

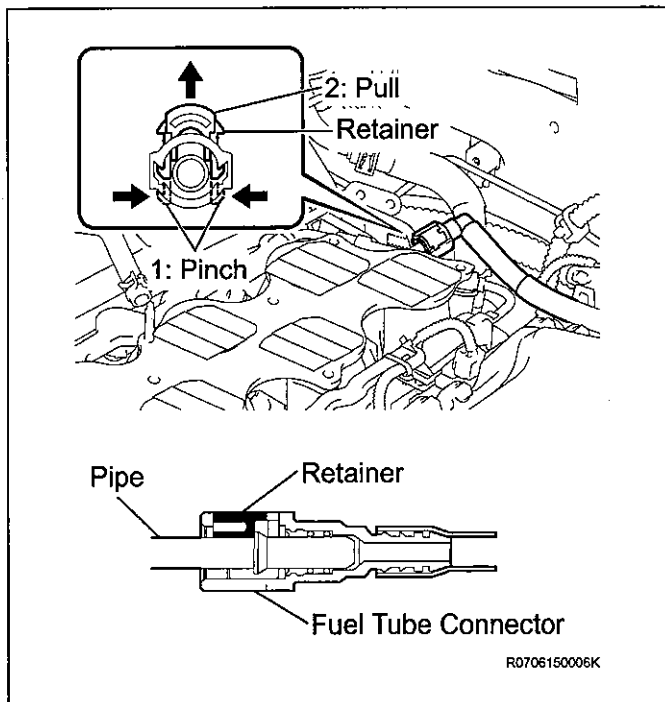


- c) Place protective tape over the surge tank opening to prevent foreign objects from entering from the old gasket above.



5. REMOVE INTAKE AIR SURGE TANK

- a) Disconnect the connector.
- b) Disconnect the vacuum hose from the purge VSV.

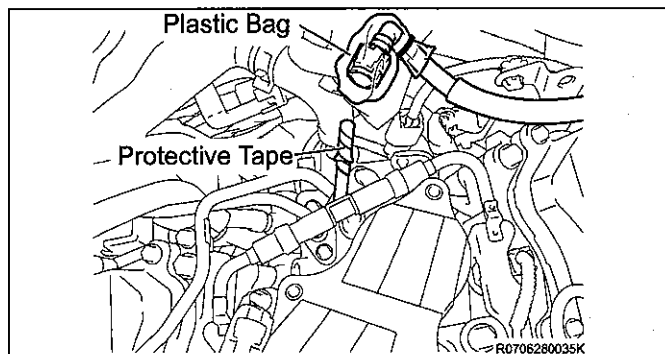


6. REMOVE INTAKE MANIFOLD

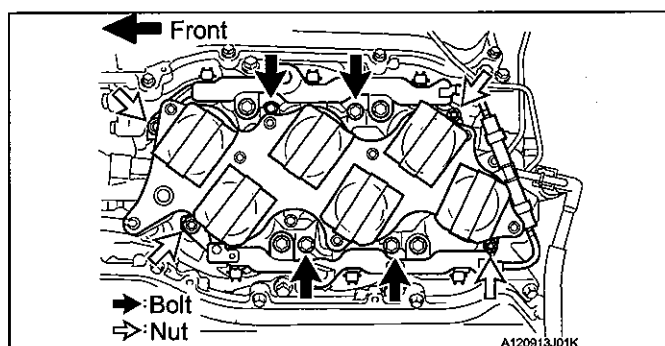
- a) Pinch and pull the fuel tube connector to disconnect the connector from the delivery pipe.

NOTE:

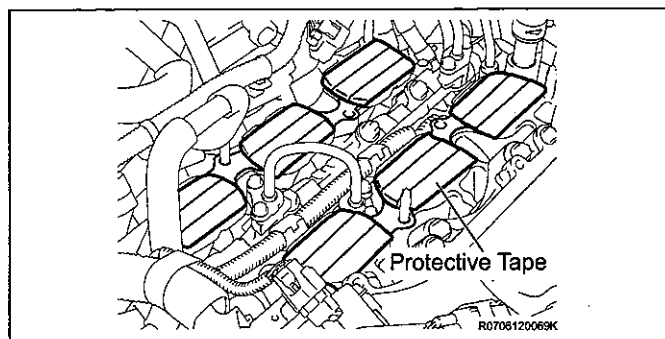
- Check for any dirt and foreign matter contamination in the pipe and around the connector. Clean if necessary. Foreign matter may damage the O-rings or cause leaks in the seal between the pipe and connector.
- Do not use any tools to separate the pipe and connector.
- Do not forcefully bend or twist the nylon tube.
- Check for any dirt and foreign matter on the pipe seal surface. Clean if necessary.
- If the pipe and connector are stuck together, pinch the tube between your fingers and turn it carefully to free it. Then disconnect the tube.



- b) Place and seal a plastic bag over the fuel tube to prevent damage or foreign objects from entering.
- c) Place protective tape around the sides of the pipe to prevent damage.

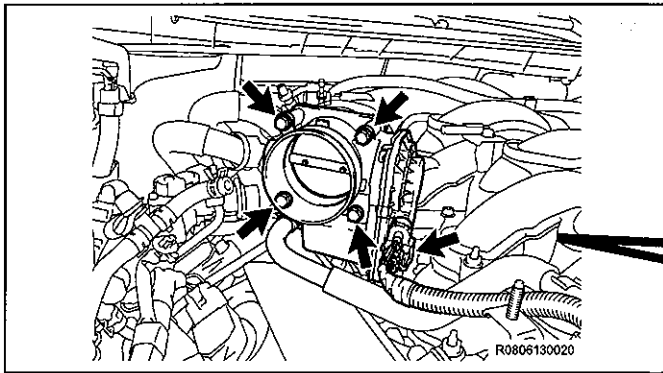


- d) Remove the 4 bolts, 4 nuts, intake manifold and gasket.



- e) Place protective tape on the old gasket and place it over the cylinder head opening to prevent foreign objects from entering.

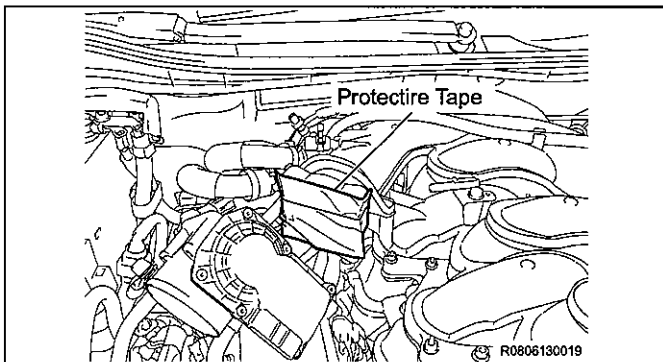
7. SKIP TO PAGE 18, REPLACE FUEL DELIVERY PIPE



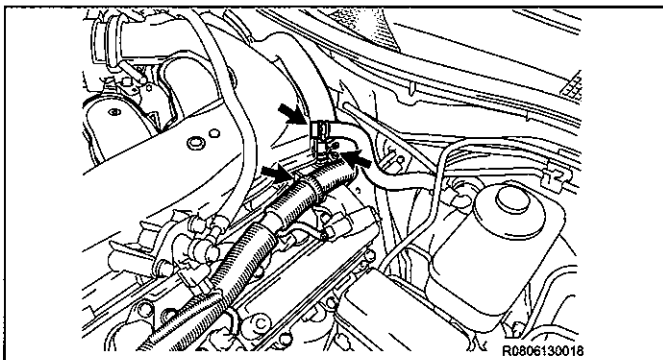
4. REMOVE THROTTLE WITH MOTOR BODY ASSEMBLY

- a) Disconnect the connector.
- b) Remove the 4 bolts and throttle with motor body assembly and gasket.

NOTE:
Do not disconnect the 2 water by-pass hoses.

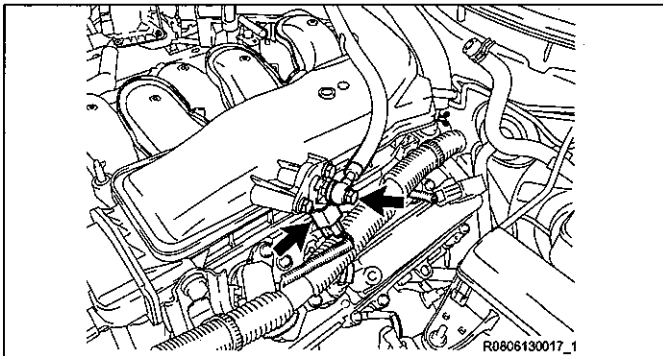


- c) Place protective tape over the surge tank opening to prevent foreign objects from entering from the old gasket above.



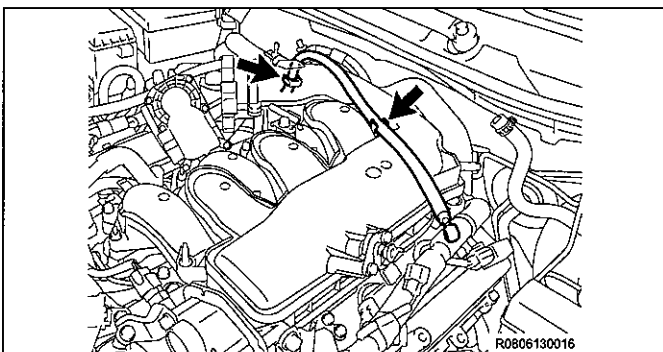
5. REMOVE INTAKE AIR SURGE TANK

- a) Disconnect the union to check valve hose from the intake air surge tank.
- b) Disconnect the wire harness and brake booster hose from the surge tank.

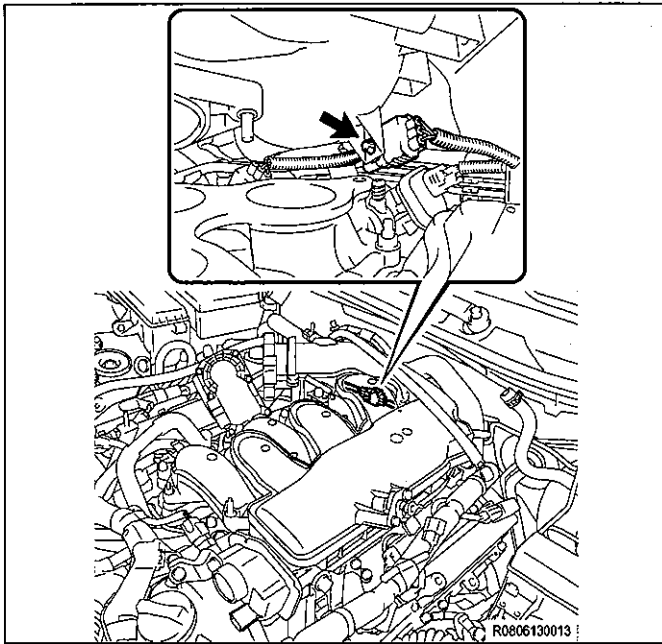


- c) Disconnect the connector.
- d) Remove the bolt and 2 gaskets, and disconnect the fuel tube from the cold start injector.

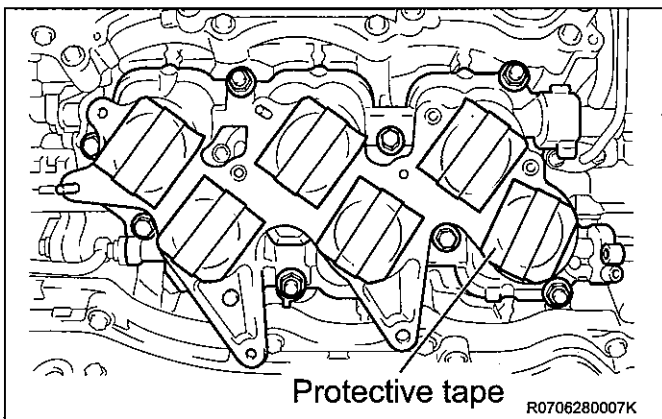
NOTE:
Do not fold or bend the hose.



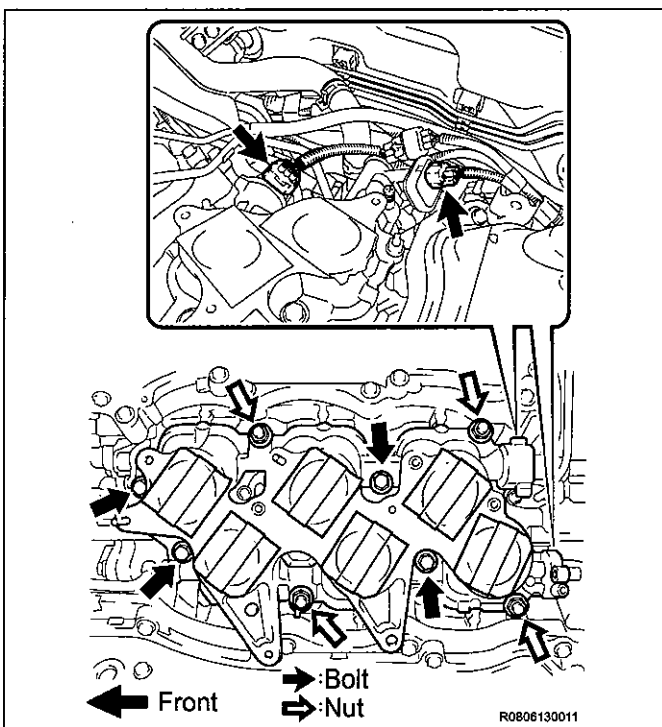
- e) Disconnect the 2 clamps.



- k) Disconnect the connector clamp from the intake air surge tank.
- l) Remove the bracket on the rear of the surge tank.
- m) Remove the intake air surge tank and gasket.

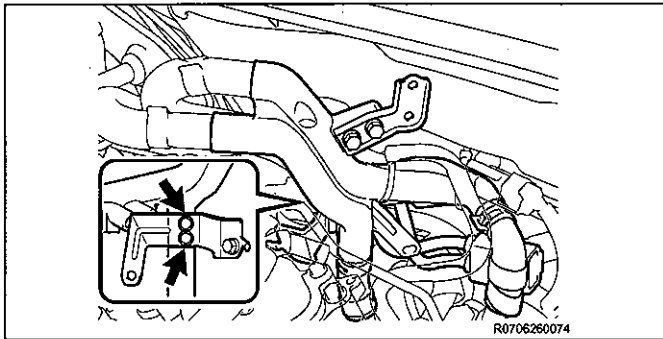


- n) Place protective tape over the intake manifold openings to prevent foreign objects from entering.



6. REMOVE INTAKE MANIFOLD

- a) Disconnect both SCV connectors.
- b) Remove the 4 bolts, 4 nuts, intake manifold and gasket.
- c) Place protective tape on the old gasket and place it over the cylinder head opening to prevent foreign objects from entering.



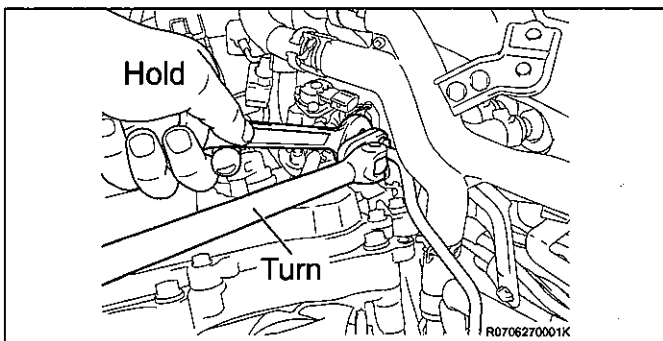
3. REMOVE WATER HOSE JOINT (for GS350 2GR-FSE only)

- a) Remove the 2 bolts and disconnect the water hose joint.

4. REMOVE FUEL PUMP ASSEMBLY AND NO. 2 FUEL PIPE



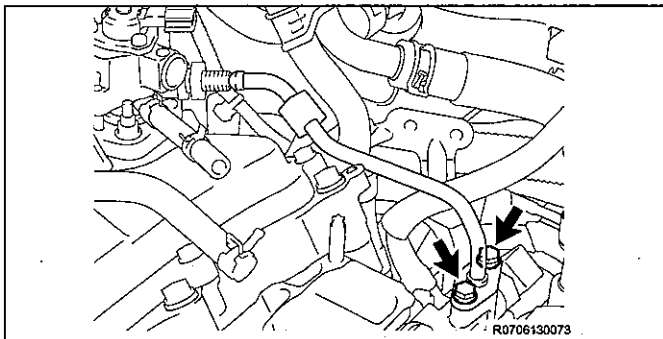
WHEN REPLACING FUEL PIPE NO. 2, THE FUEL PUMP MUST BE REMOVED. THIS MUST BE DONE TO PREVENT SEAL DAMAGE AND THE TWISTING OF THE FUEL PIPE, FAILURE TO DO SO MAY RESULT IN A FUEL LEAK!



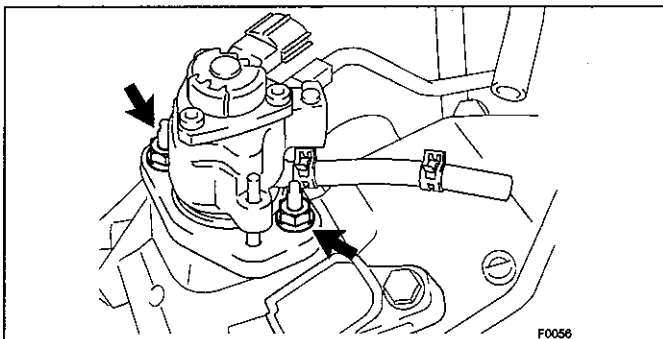
- a) Fix the union bolt on the fuel pump side in place with a 21 mm wrench. Using a 19 mm union nut wrench, loosen the union and remove the fuel pipe.

NOTE:

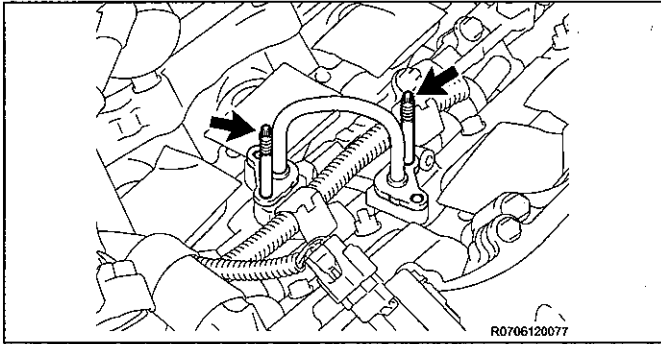
- Must be absolutely no free play in the union on the fuel pump side.
- If the union on the fuel pump side has free play, replace the fuel pump.



- b) Remove the 2 bolts on the delivery pipe side.



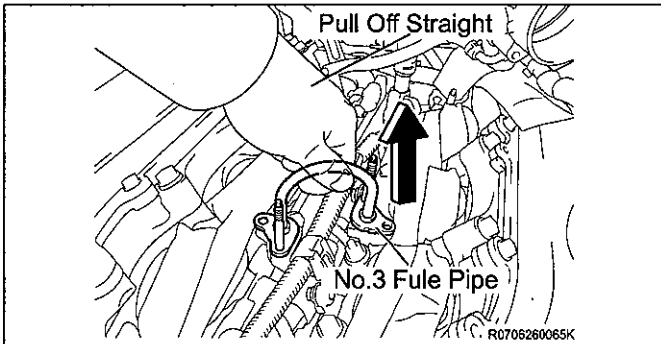
- c) Remove the 2 nuts from the fuel pump.



- b) Hand tighten the 2 stud bolts to the delivery pipe.
(torx® side up)

NOTE:

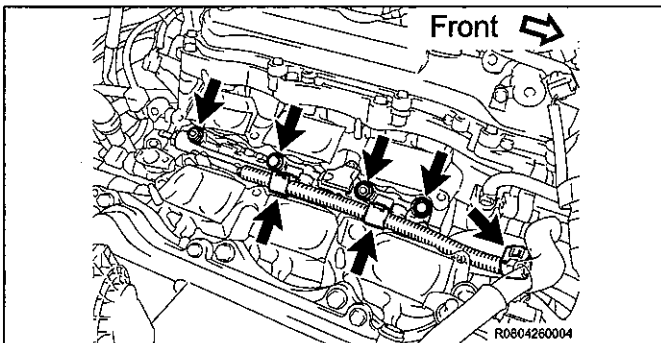
Attach the stud bolts diagonal from each other.



- c) Remove the fuel pipe from the fuel delivery pipe.
d) Remove the 2 stud bolts.

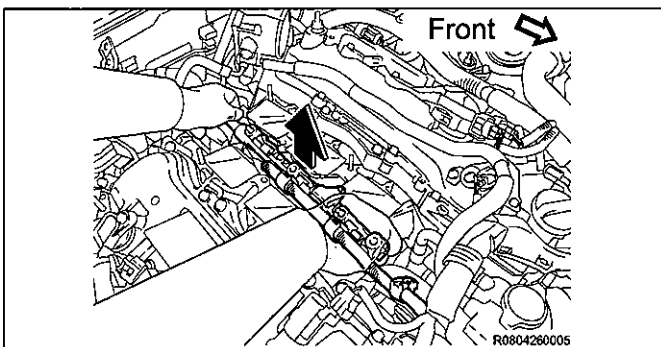
NOTE:

Shifting the pipe too widely to the left and right may damage the part which may lead to a fuel leak.



7. REMOVE NO. 2 FUEL DELIVERY PIPE

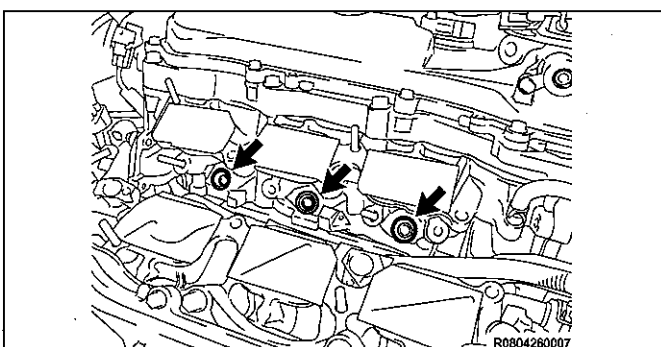
- a) Disconnect the 3 wire harness clamps.
b) Remove the 2 bolts and 2 nuts.



- c) Remove the delivery pipe.
d) Disconnect the 3 electrical connectors

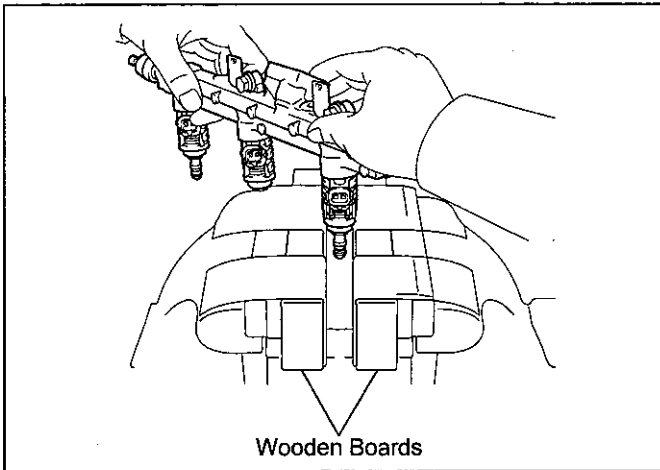
NOTE:

- Be extremely careful not to touch or strike the tips of the injectors.
- Pull and remove the fuel pipe in a straight line without tilting it.



- e) Remove the 3 injector vibration insulators from the cylinder head.

D. REMOVE AND INSPECT FUEL INJECTORS

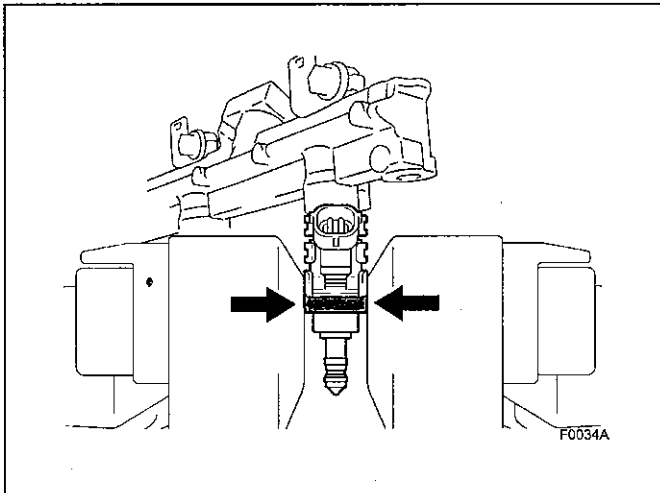


1. REMOVE FUEL INJECTORS

- a) Clamp the fuel injector assembly in a vise with wooden boards placed in between the vise and assembly.

NOTE:

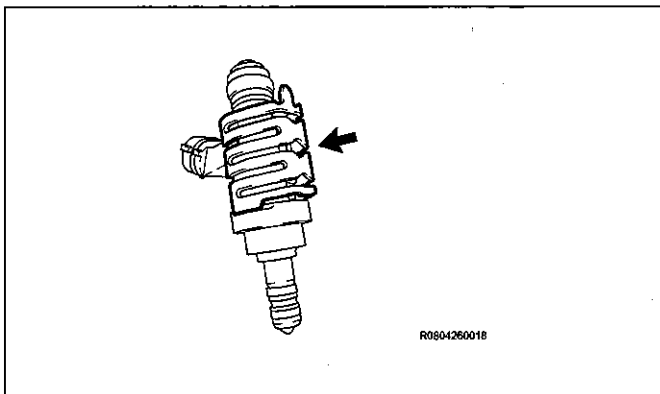
- Be extremely careful not to touch or strike the tips of the injectors.
- Use both hands when clamping the fuel injector assembly to the vise.



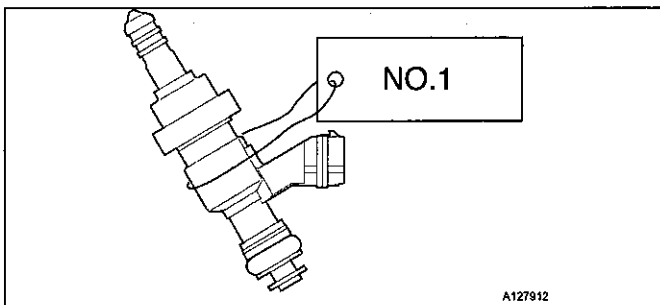
- b) With the fuel injector assembly clamped in the vise, remove the fuel delivery pipe by pulling straight back from the assembly as shown in the illustration.

NOTE:

- Clamp the vise to the areas illustrated on the fuel injector assembly. Do not clamp areas which are not indicated in the left illustration.
- Do not over tighten. Also, do not allow the connector to come in contact with the vise.



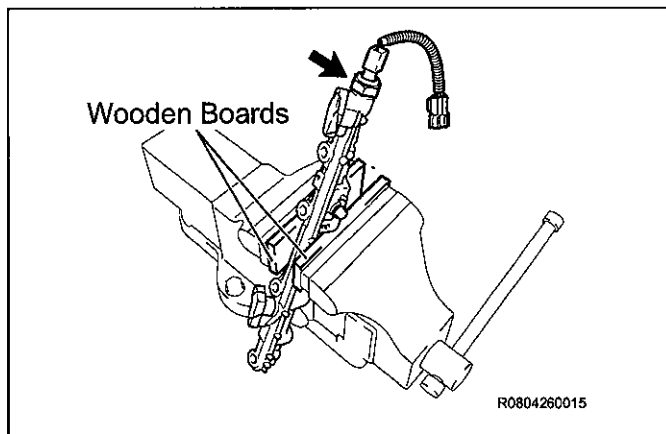
- c) Remove the nozzle holder clamp from the injectors.



NOTE:

For reinstallation, attach a tag or label to the injector shaft.

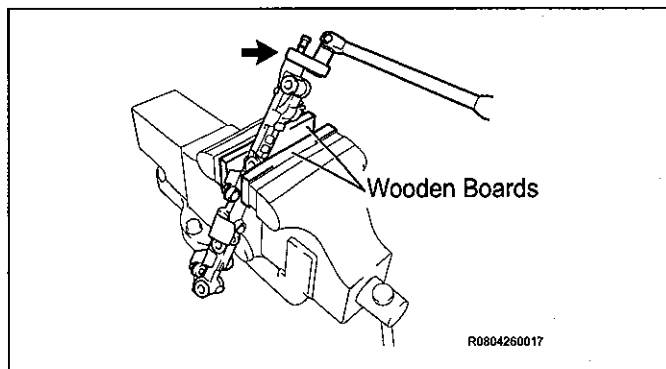
- d) Repeat steps a) ~ c) for the remaining injectors.



4. INSTALL FUEL PRESSURE SENSOR

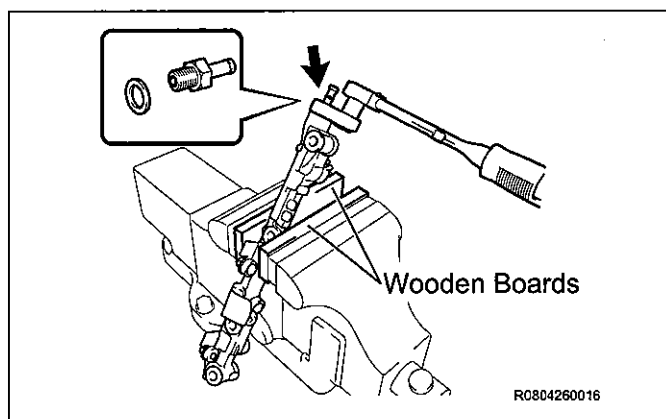
- Clamp a **NEW** No. 1 fuel delivery pipe in a vise with wooden boards placed in between the pipe and vise as illustrated.
- Install a **NEW** gasket to the fuel pressure sensor.
- Install the fuel pressure sensor to the No. 1 delivery pipe.

Torque Specification:
31 N·m (316 kgf·cm, 23 ft·lbf)



5. REMOVE FUEL RELIEF VALVE ASSY

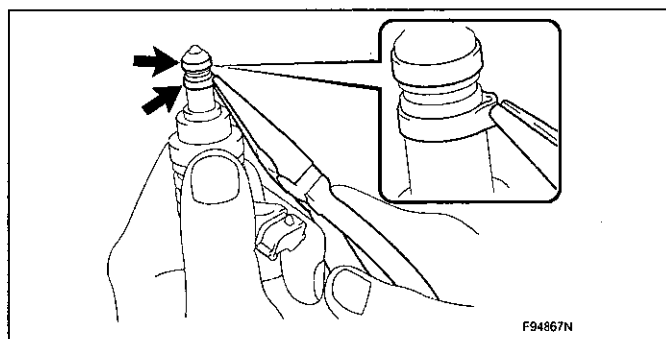
- Clamp the No. 2 fuel delivery pipe in a vise with wooden boards placed in between the pipe and vise as illustrated.
- Using a 17 mm union nut wrench, remove the fuel relief valve and gasket.



6. INSTALL FUEL RELIEF VALVE ASSY

- Clamp a **NEW** No. 2 fuel delivery pipe in a vise with wooden boards placed in between the pipe and vise as illustrated.
- Install a **NEW** gasket to the fuel relief valve.
- Using union nut wrench 17 mm, install the fuel relief valve to the No. 2 delivery pipe.

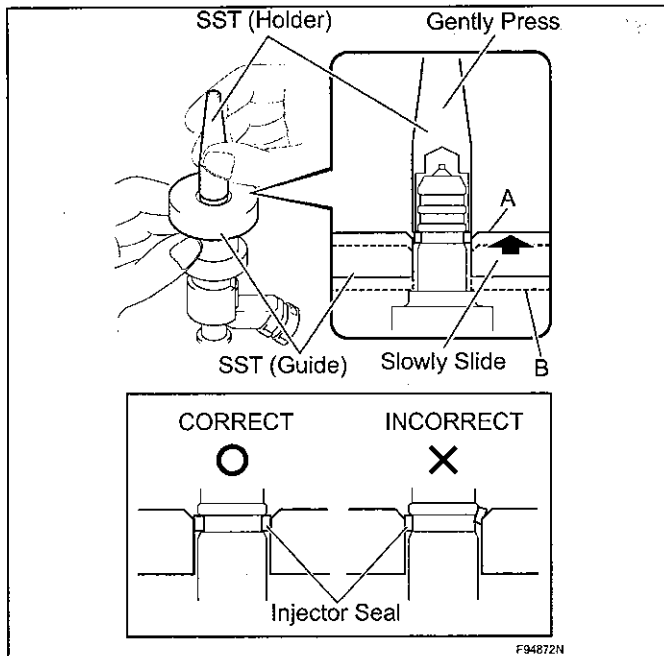
Torque Specification:
36 N·m (367 kgf·cm, 27 ft·lbf)



7. REMOVE FUEL INJECTOR SEAL

- Using the tips of a pair of needle nose pliers, pinch and pull one of the 2 injector seals at several points to stretch it. Repeat this for the other injector seal.
- Repeat step a) for the remaining injectors.

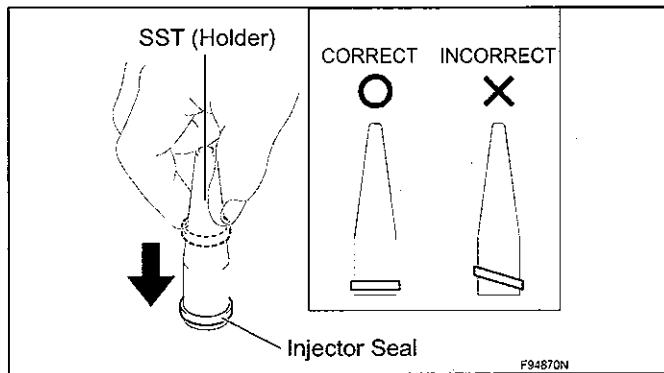
NOTE:
If an injector is dropped or the tips of the injectors are struck, replace it with a **NEW one.**



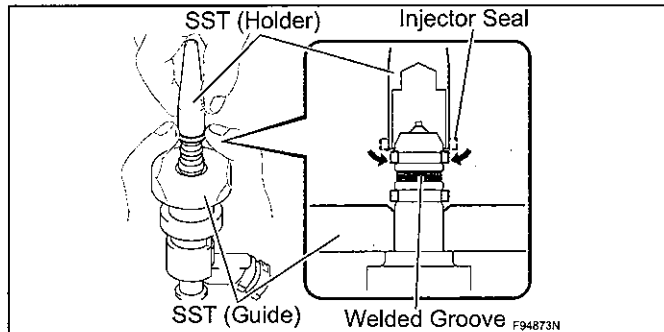
- e) Using SST (holder), gently press downward on the injector seal (injector connector side). Then slowly slide SST (guide) towards the injector tip to settle the seal into the injector groove.

NOTE:

- Be careful that the seal is not pinched between SST (guide) and the injector groove. Replace the seal if it becomes damaged.
- When using SST (guide) to settle the seal into the groove, SST (guide) only needs to be slid upward to the position labeled A in the illustration.
- After using SST (guide) to settle the seal into the groove, return SST (guide) to its position labeled B in the illustration.



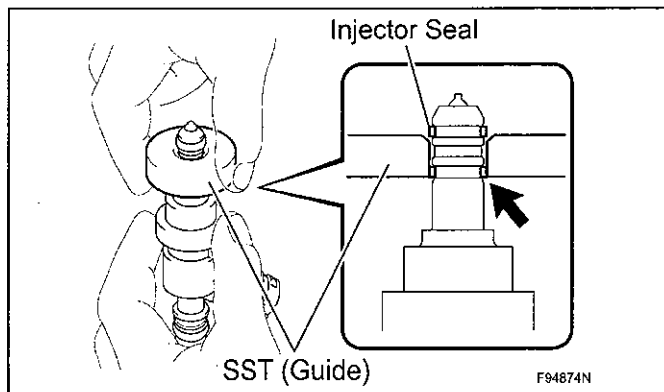
- f) Install a **NEW** injector seal to SST (holder).



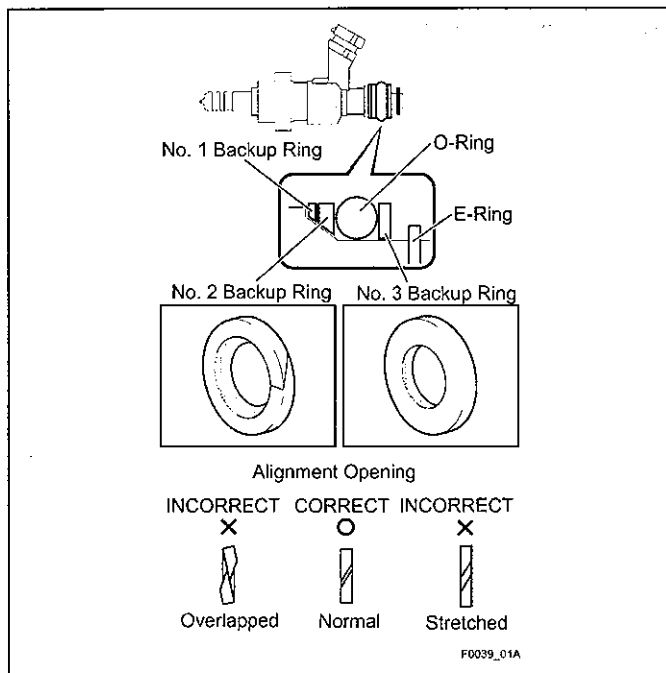
- g) Install a **NEW** injector seal to the injector groove (injector tip side) as shown in the illustration.
- h) Check that the seal covers the circumference of the injector groove as shown in the illustration.

NOTE:

Make sure that the seal does not slip into the welded groove of the injector shown in the illustration. If it does, replace it with a **NEW one.**



- i) Slowly slide SST (guide) towards the tip of the injector. When the injector contact surface of SST (guide) aligns with the seal (injector connector side) as shown in the illustration, hold the position for 5 seconds or more to fully align the seal into the injector groove.



9. REPLACE FUEL INJECTOR O-RING, BACKUP RINGS AND E-RING

- Remove the O-ring, backup rings and E-ring from the fuel injector.
- Install a **NEW** O-ring, **NEW** backup rings (No. 1, No. 2, No. 3) and **NEW** E-ring to the fuel injector as shown in the illustration.

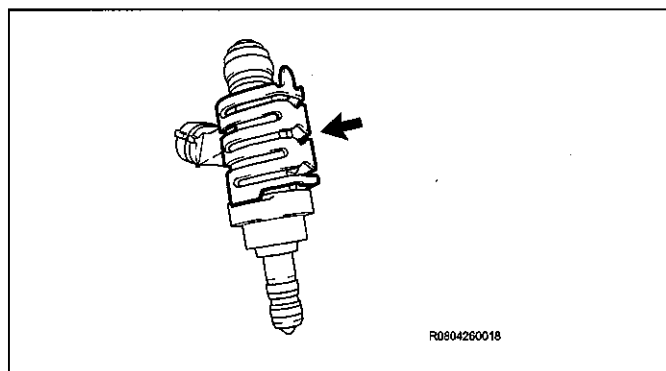
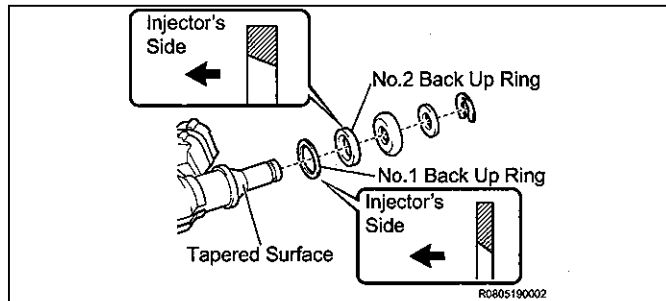
NOTE:

- Check that there is no foreign matter or damaged areas in the injector's O-ring groove.
- Check that the No. 1 and No. 2 backup rings are installed in the correct direction.
- Make sure that the backup rings and O-ring are installed in the correct order.
- Check that the alignment openings of the backup rings are not overlapped or stretched as shown in the illustration.

NOTE:

Align and install the No.1 and No.2 back up rings to the fuel injector's tapered surface.

- Repeat steps a) ~ b), and install the 6 O-ring, **NEW** backup rings (No. 1 No. 2, and No. 3) and **NEW** E-ring.



10. INSTALL FUEL INJECTOR ASSEMBLY

- Install the injector nozzle holder clamp.
- Apply gasoline to the fuel injector's O-ring and into the attachment hole of the fuel delivery pipe.

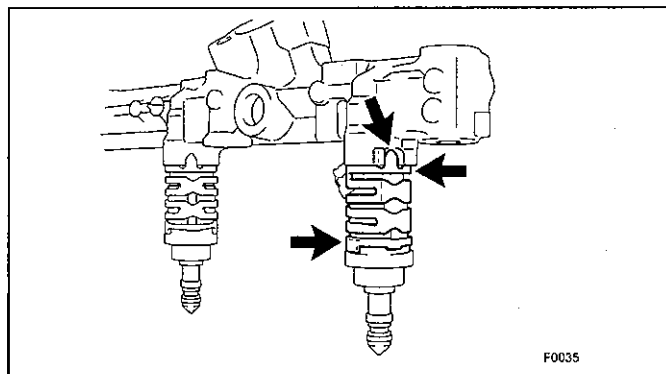
NOTE:

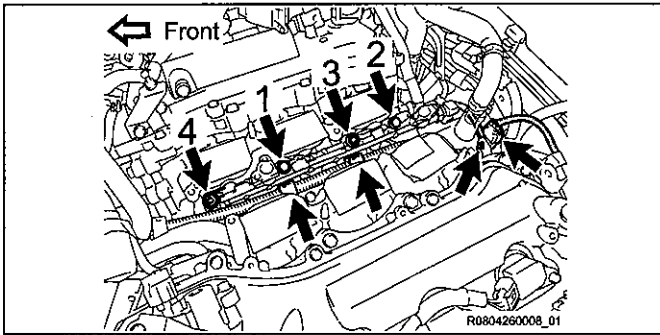
Apply gasoline on both the O-ring and into the attachment hole. Lubricant will run out immediately after insertion if only applied to the O-ring side.

- Install the nozzle holder clamp by aligning the protruding part of the clamp to the notch of the delivery pipe.
- Repeat steps a) ~ c) for the remaining injectors.

NOTE:

- Make sure that there is no gap between the delivery pipe and clamp.
- Check that there is no foreign matter or damage to the injector insertion hole of the delivery pipe.

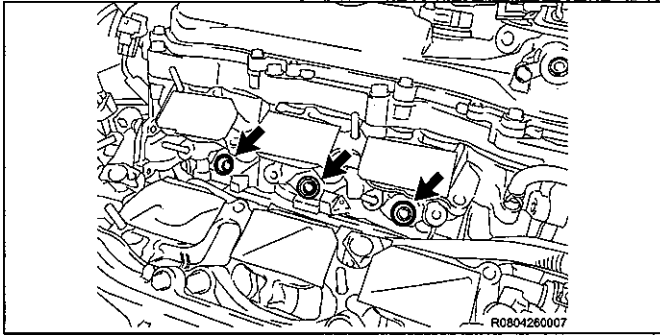




- g) Install the fuel delivery pipe by uniformly tightening the 2 bolts and 2 nuts in several passes in the order shown in the illustration.

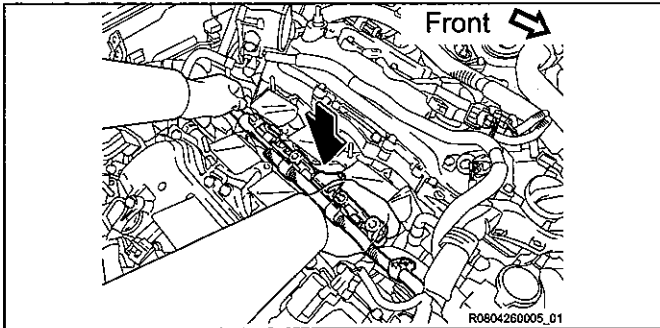
Torque Specification:
26 N·m (265 kgf·cm, 19 ft·lbf)

- h) Connect the fuel pressure sensor connector and wire harness clamps.



2. INSTALL NO. 2 FUEL DELIVERY PIPE

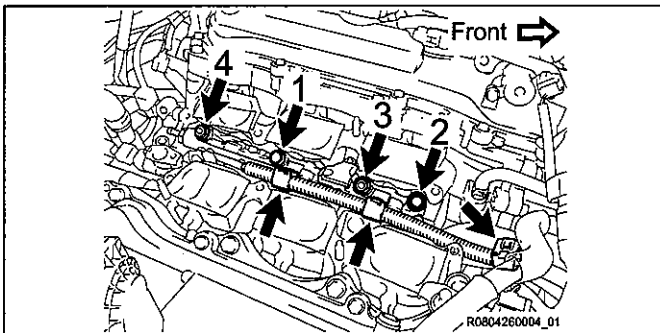
- a) Install 3 **NEW** injector vibration insulators to the cylinder head.
b) Apply lubricant to the installation holes of the injectors.
c) Connect the 3 electrical connectors.



- d) Install the fuel delivery pipe until the screw threads protrude enough so that a nut can be attached.

NOTE:

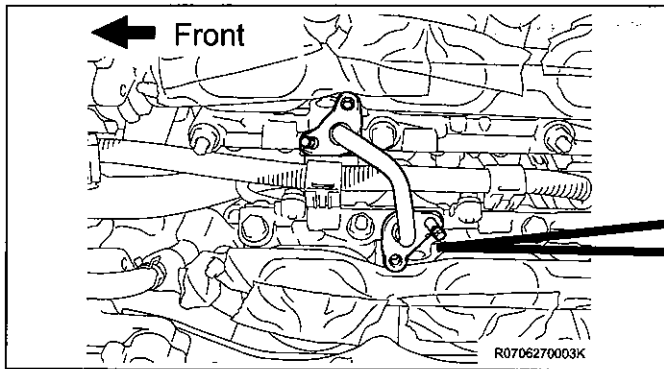
- If an injector is dropped or the tips of the injectors are struck, replace it with a **NEW** one.
- When inserting the fuel delivery pipe, push it in evenly without tilting it.



- e) Reinstall the fuel delivery pipe by uniformly tightening the 2 bolts and 2 nuts in several passes in the order shown in the illustration.

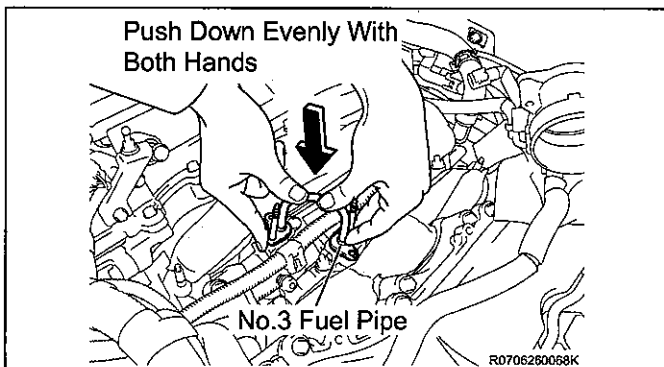
Torque Specification:
26 N·m (265 kgf·cm, 19 ft·lbf)

- f) Connect the 3 wire harness clamps.



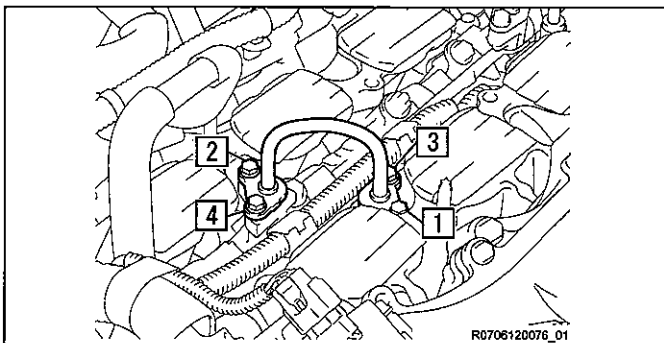
- f) Remove the protective tape and clean the delivery pipe attachment surface.
- g) Insert the 2 stud bolts through the No. 3 fuel pipe.

NOTE:
Be Careful of the Direction for Pipe No. 3.
(Attaching the pipe backwards will interfere with the intake manifold.)



- h) Press the fuel pipe and delivery pipe together by hand until there is no gap between them.
- i) Remove the 2 stud bolts once the pipes are together.

NOTE:
Shifting the pipe too widely to the left and right may damage the part which may lead to a fuel leak.



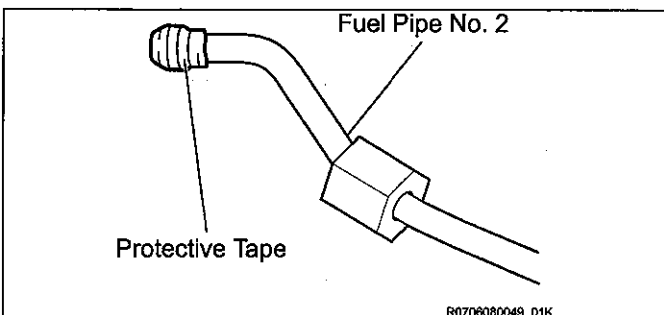
- j) Clean the screw holes of dirt and gasoline, and then insert and tighten the 4 bolts in the order shown in the illustration.

Torque Specification:
10 N·m (102 kgf·cm, 7 ft·lbf)

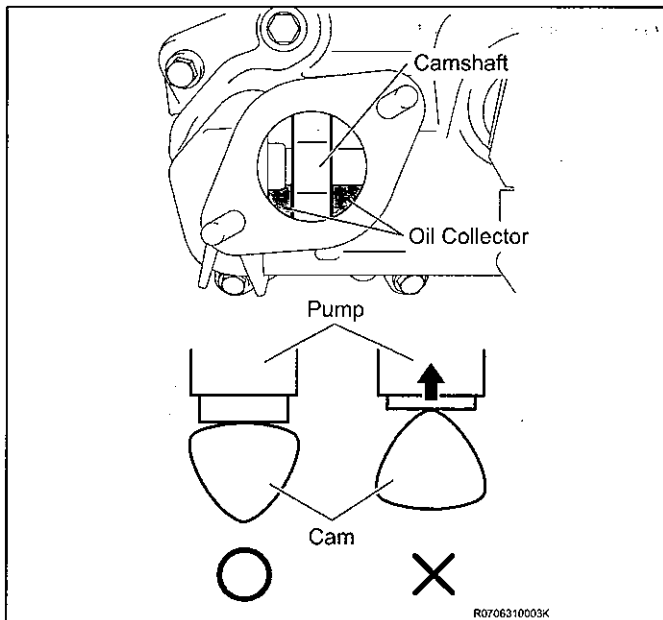
4. INSTALL NO. 2 FUEL PIPE



WHEN REINSTALLING FUEL PIPE NO. 2 AND THE FUEL PUMP, FOLLOW THE TEMPORARY INSTALLATION, TIGHTENING AND OTHER PROCEDURES SHOWN TO PREVENT DAMAGE TO ALL SEALING SURFACES.



- a) Place protective tape over the taper section of the No.2 fuel pipe's fuel pump to prevent damage.

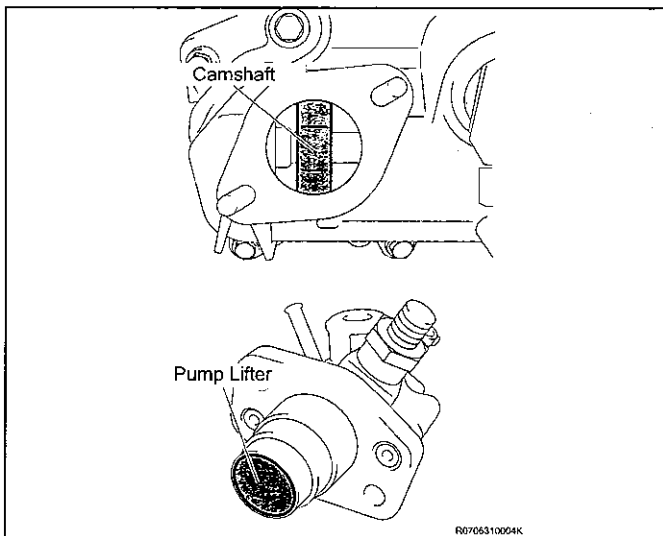


- i) Turn the crankshaft until the flat of the cam is facing the cylinder head cover's fuel pump attachment hole, as shown in the illustration.

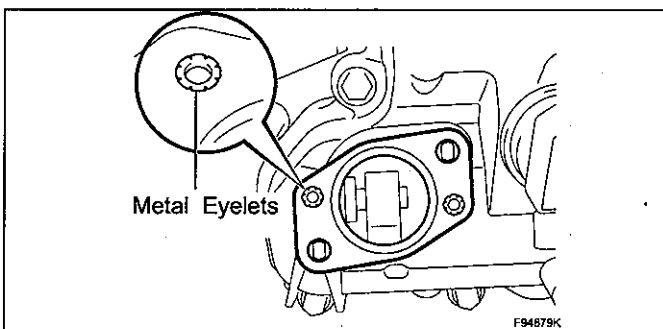
NOTE:

When installing the fuel pump by following the procedure described above: By not using the camshaft pointed side to push up the pump activation surface, it is easier to install the fuel pump and No. 2 fuel pipe later.

- j) Pour 30 cc of engine oil through the cylinder head cover's fuel pump attachment hole into the cylinder head oil collector.



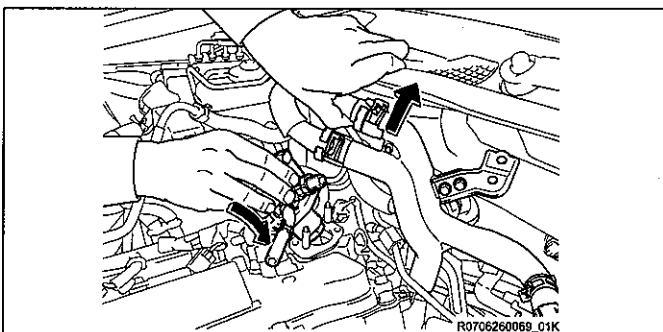
- k) Apply a coat of engine oil to the pump activation cam and pump lifter part.



- l) Install a **NEW** fuel pump insulator to the cylinder head cover.

NOTE:

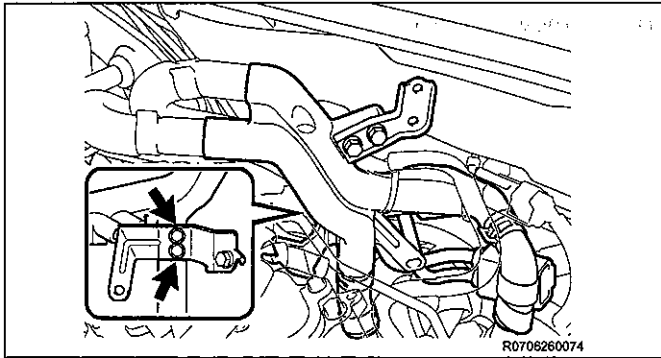
- Install the insulator so that the open sides of the metal eyelets are facing outward, as shown in the illustration.



- m) Reinstall the fuel pump.

NOTE:

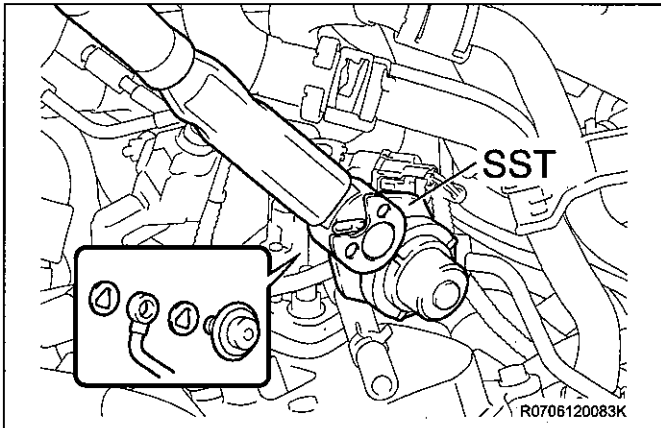
Do not apply excessive force to the heater hose and coolant pipe.



6. REINSTALL WATER HOSE JOINT (Step for GS350 2GR-FSE only)

- Reinstall the water hose joint with the 2 bolts.

Torque Specification:
10 N·m (102 kgf·cm, 7 ft·lbf)



7. REINSTALL FUEL PRESSURE PULSATION DAMPER

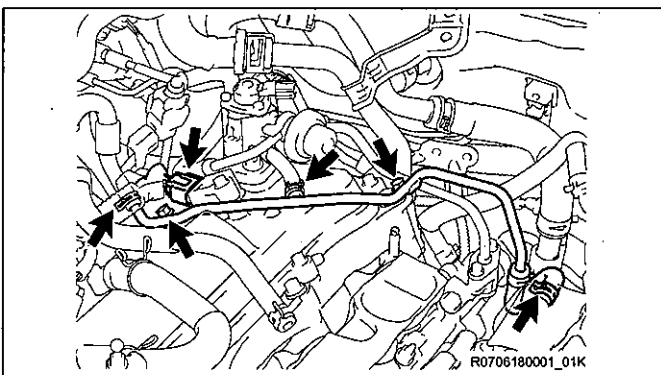
- Remove the protective tape and clean the attachment's surface.
- Once the 2 **NEW** gaskets and fuel tube have been installed, attach the fuel pressure pulsation damper and tighten by hand.
- Use SST or equivalent to securely tighten the pulsation damper.
- Connect the electrical connector to the fuel pump.

SST 09617-24011

NOTE:

Do not use pulsation dampers which have been dropped. Dropped dampers may not work properly.

Torque Specification:
For Use With SST :
33 N·m (337 kgf·cm, 24 ft·lbf)
For Use Without SST :
40 N·m (408 kgf·cm, 30 ft·lbf)



8. REINSTALL NO. 1 FUEL PIPE

- Reinstall the fuel pipe with the 2 bolts.

Torque Specification:
10 N·m (102 kgf·cm, 7 ft·lbf)

- Connect the 3 fuel hoses.
- Connect the ignition coil connector.

4. CHECK THROTTLE BODY

- a) Check the throttle control motor operating sounds.
 - 1) Push the engine switch on.
 - 2) When pressing the accelerator pedal, check the operating sound of the running motor. Make sure that no friction noises emit from the motor. If friction noise exists, replace the throttle body.
- b) Check the throttle position sensor.
 - 1) Connect the techstream to the DLC3.
 - 2) Push the engine switch on.
 - 3) Depress the accelerator pedal. When the value is fully opened, check that the value of the "Throttle Sensor Position" is within the specification.

Standard throttle valve opening percentage: 60% or more.

NOTE:

- When checking the standard throttle valve opening percentage, the shift should be in the N position.
- If the percentage is less than 60%, replace the throttle body.

5. CHECK FOR DTC

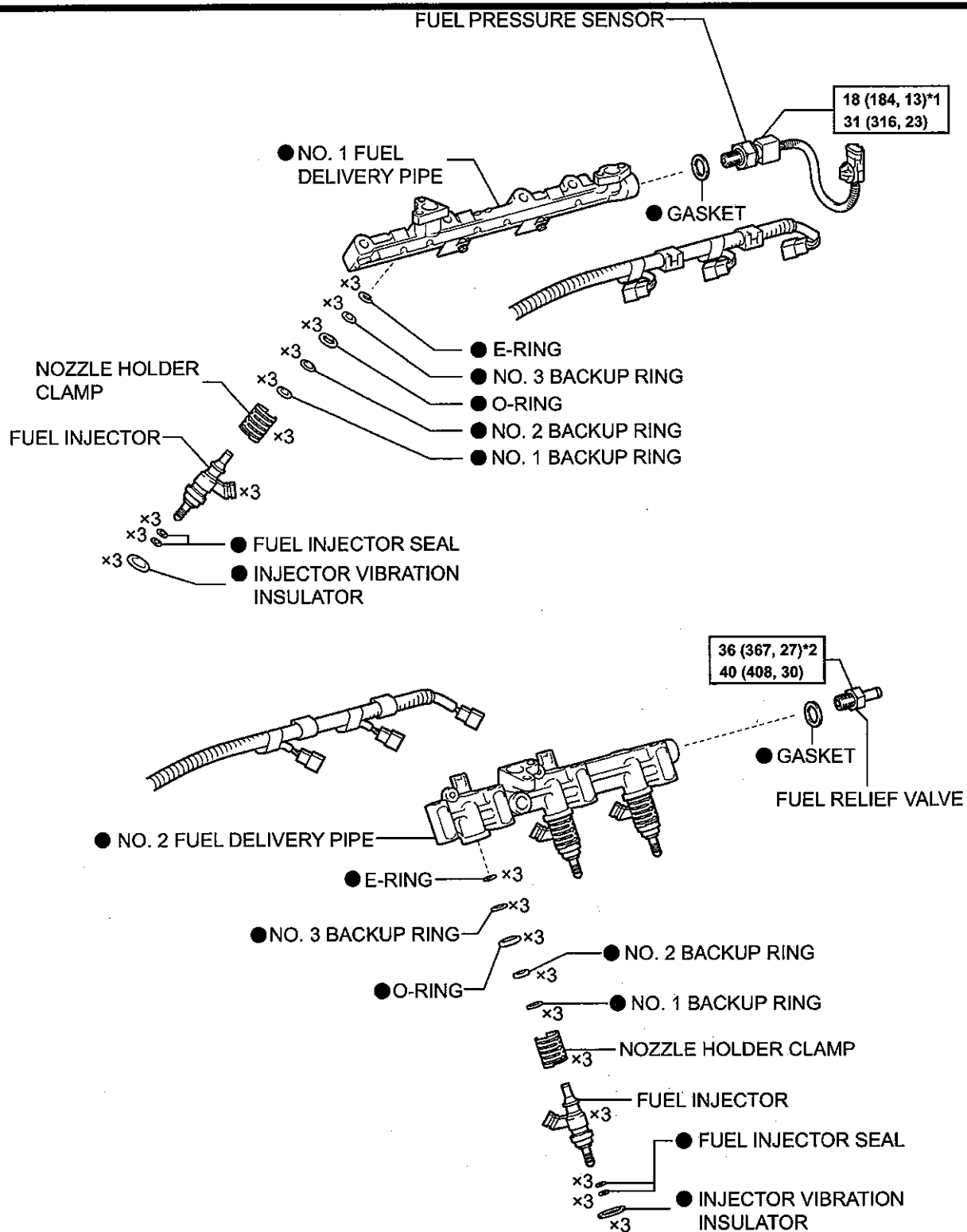
- a) If an error code displays, repair as necessary.

6. TEST DRIVE

- a) Test drive the vehicle and inspect for any abnormalities. (warning lamps, drivability, etc.)

7. PERFORM INITIALIZATIONS

INITIALIZATION FUNCTION	GS300	GS350
Enter Recorded Presets	Required	Required
Power Window Control System	Required	Required
Sliding Roof System	Required	
Clearance Sonar System	Required	
Variable Gear Ratio Steering System	Required	Required
Intuitive Parking Assist System		Required



N*m (kgf*cm, ft.*lbf)

: Specified torque ● Replacement part *2 For use with union nut wrench 17mm

*1 For use with SST