



**IMPORTANT SERVICE  
INFORMATION FOR:**

- ✓ SERVICE MANAGER
- ✓ SERVICE ADVISOR
- ✓ TECHNICIAN
- ✓ PARTS DEPARTMENT
- ✓ WARRANTY PERSONNEL

BULLETIN NUMBER:  
**SB12-L-003A**

ISSUE DATE:  
**DECEMBER 2012**

GROUP:  
**FUEL & EXHAUST**

## **NPR FROZEN DIESEL EXHAUST FLUID (DEF) LINE – DTC P1490**

### **AFFECTED VEHICLES**

- 2011-2012MY Isuzu NPR (3.0L 4JJ1)  
With production dates prior to 12/12/2011
- 2011-2012MY Isuzu NPRHD/NQR/NRR (5.2L 4HK1)  
With production dates prior to 1/2/2012

***This bulletin supersedes SB12-L-003. This bulletin is being updated to include updated affected vehicle information. Please discard bulletin SB12-L-003.***

### **CONDITION**

The customer may be experiencing the check engine light illuminated, and the engine may also be in reduced power mode.

### **CAUSE**

This condition may be caused due to Diesel Exhaust Fluid (DEF) freezing during extremely cold weather. This is a normal characteristic of DEF. A 32.5% solution of DEF mixed with water will begin to crystallize and freeze at 12°F (-11°C). Under this extremely cold weather condition, the DEF system may not inject fluid into the SRC Chamber in order to maintain the required NOx level. Therefore, the dealer may find the DTC P1490, “DEF System NOx Trap Low Efficiency” appearing in the DTC list.

### **CORRECTION**

***IMPORTANT: It is necessary to retrieve a current Isuzu Health Report before clearing any DTCs or attempting any reprogramming.***

New DCU calibration is needed to improve DEF tank defrosting/heating time. Additional insulation and heating to the outside of the DEF tank lines are outlined in this bulletin’s instruction. Also follow the service manual for this and any other DTC diagnostic aid.

## SERVICE PROCEDURE

1. Retrieve current Isuzu Health Report Data.

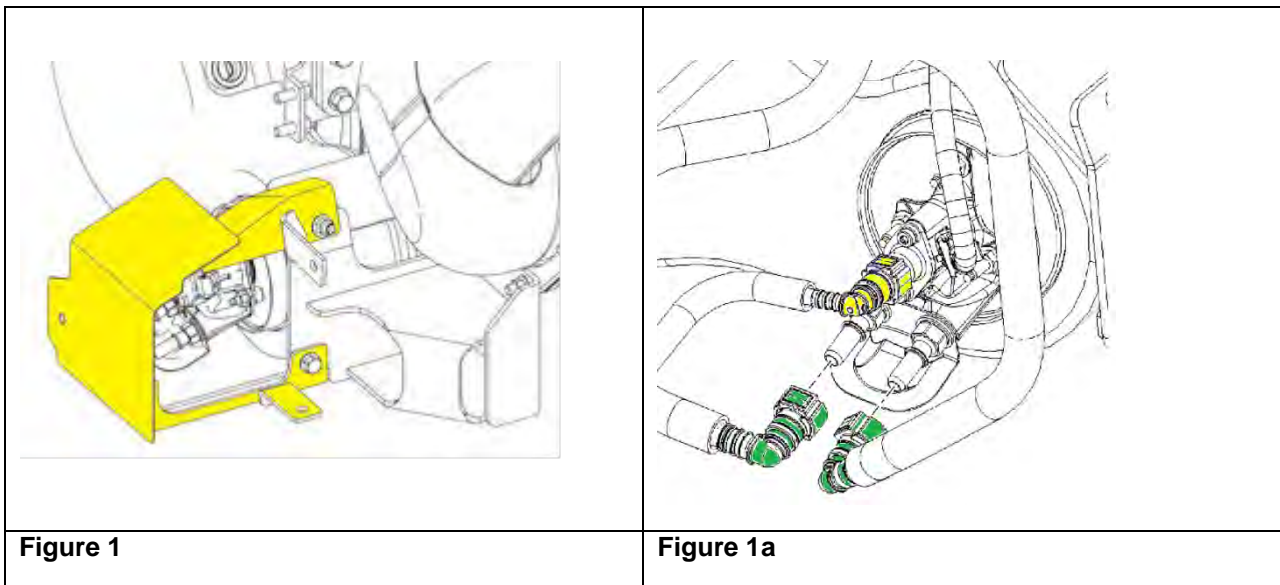
**IMPORTANT: Be sure your IDSS is updated to the latest release before programming the DCU.**

2. Using IDSS, program the DCU to the latest available calibration.
3. Replace the DEF tube lines and other required parts as per the following procedure.

### REMOVAL (4HK1)

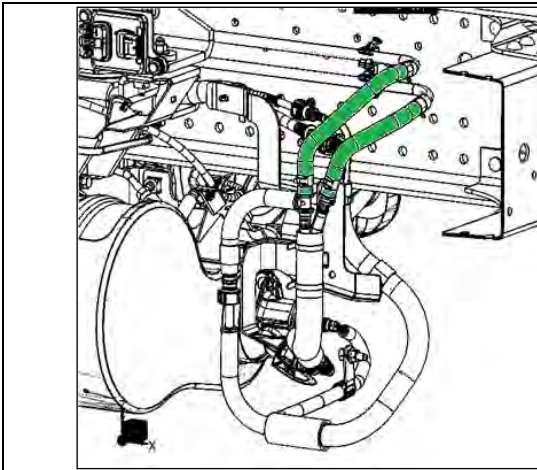
**CAUTION: Diesel Exhaust Fluid (DEF) is highly corrosive to electrical connectors and rubber used in electrical wiring. If any of these components come in contact with DEF, wash the area thoroughly with warm water and allow to completely dry before reconnection. Make a visual inspection for damage if the connection has been exposed to DEF.**

1. Remove the DEF injector cover.

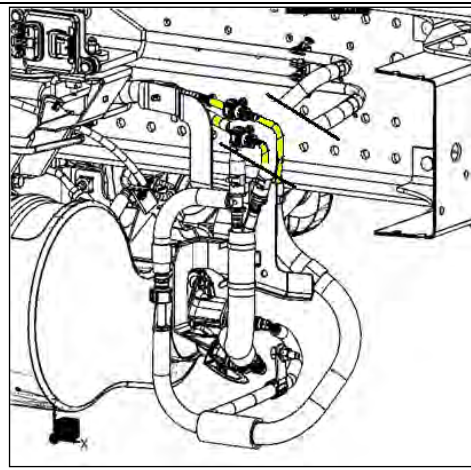


2. Using a clean cloth/rag, clean the following connections:
  - a. Engine coolant tube connector at DEF injector.
  - b. DEF tube connector at DEF injector.
  - c. Engine coolant hoses at frame connection.
  - d. DEF tube connector at frame connection.
3. Clamp the flexible engine coolant hoses at frame connection.
4. Disconnect the coolant lines at the frame connections and at the DEF injector.

**NOTE:** Use a drain pan to catch any coolant that may drain out during this process.



**Figure 2**



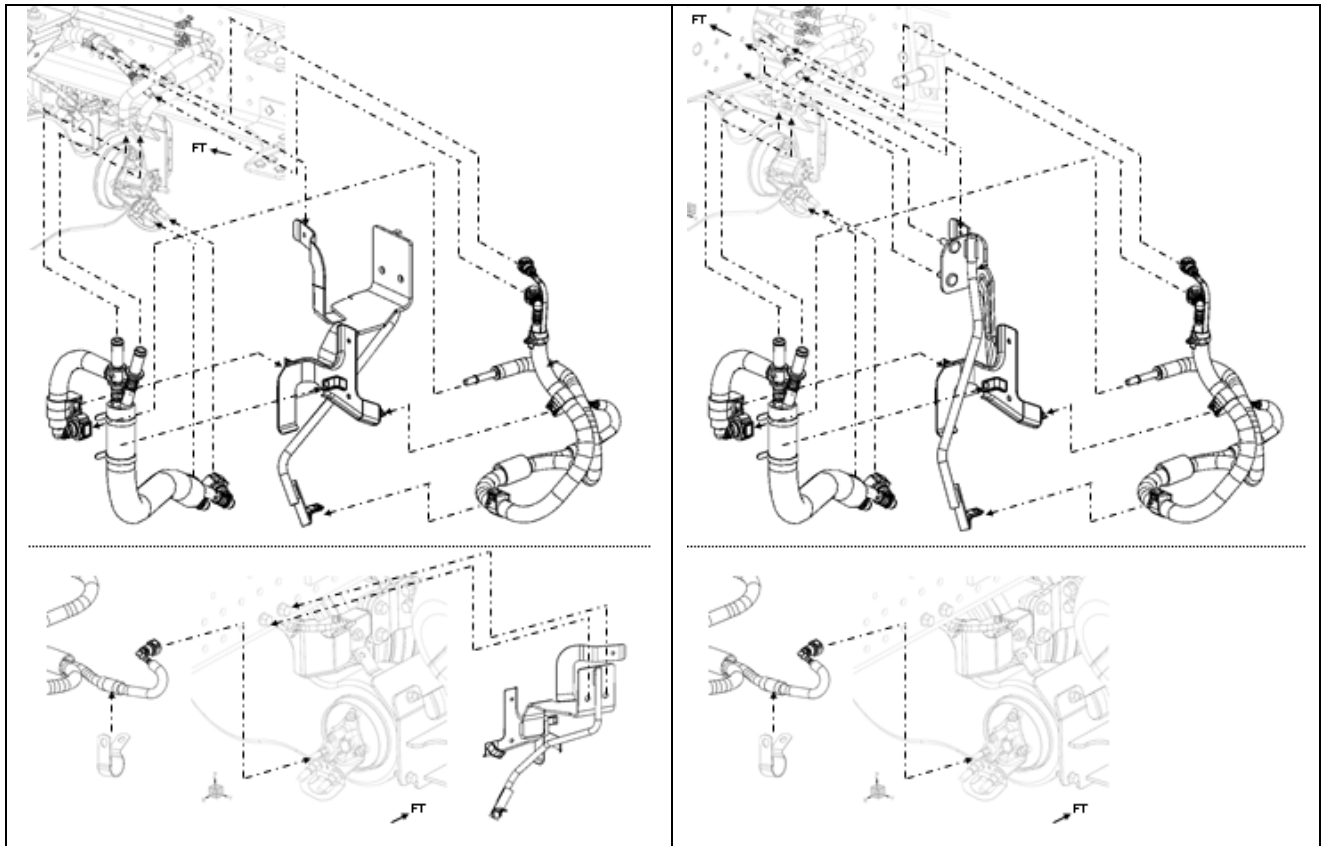
**Figure 2a**

5. Disconnect the DEF tubes at the frame connections and at the DEF injector.
6. Remove the DEF tube/engine coolant hoses bracket bolts. Save the mounting bolts since they will be reused to install a new bracket.
7. Remove the DEF tube/engine coolant hoses assembly and mounting bracket from the vehicle.

### **INSTALLATION (4HK1)**

1. Using a clean cloth/rag, clean the following connections:
  - a. Engine coolant tube connector at DEF injector.
  - b. DEF tube connector at DEF injector.
  - c. Engine coolant hoses at frame connection.
  - d. DEF tube connector at frame connection.
2. Install the DEF tube/engine cooling hoses bracket. Reuse the mounting hardware from Step 6 of the removal procedure.
3. Install the new DEF tubes. Pay close attention to the new routing positions and be sure the tubes are secure.
4. Connect the DEF tubes at the frame connections and at the DEF injector. Be sure an audible click sound is heard ensuring the connection is secure.
5. Install the engine coolant hoses at the DEF injector. Be sure an audible click sound is heard insuring the connection is secure.
6. Install the engine coolant hoses at the frame connection. Properly secure the two connections with hose clamps.
7. Remove the clamps from the engine coolant hoses installed in Step 3 of the removal procedure.
8. Install the DEF injector cover. Be sure to install the new clip provided.

9. Start the engine then activate the DEF tank heater control valve with IDSS to purge the air from the engine cooling hoses. Both hoses should be at same temperature when air is removed.



**Figure 3 -  
132.5", 150", 176" Wheel Bases**

**Figure 3a -  
109" Wheel Base**

## REMOVAL (4JJ1)

**CAUTION:** Diesel Exhaust Fluid (DEF) is highly corrosive to electrical connectors and rubber used in electrical wiring. If any of these components come in contact with DEF, wash the area thoroughly with warm water and allow to completely dry before reconnection. Make a visual inspection for damage if the connection has been exposed to DEF.

1. Remove the DEF supply pump cover.

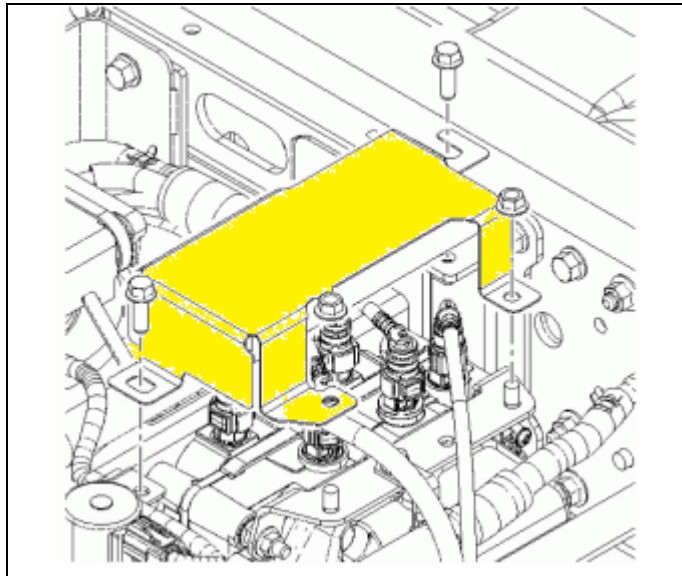


Figure 4

**NOTE:** Use a drain pan to catch any coolant that may drain out during this process.

2. Disconnect the engine coolant and the DEF tube at the DEF supply pump.
3. Disconnect the DEF tube assembly from the bracket.

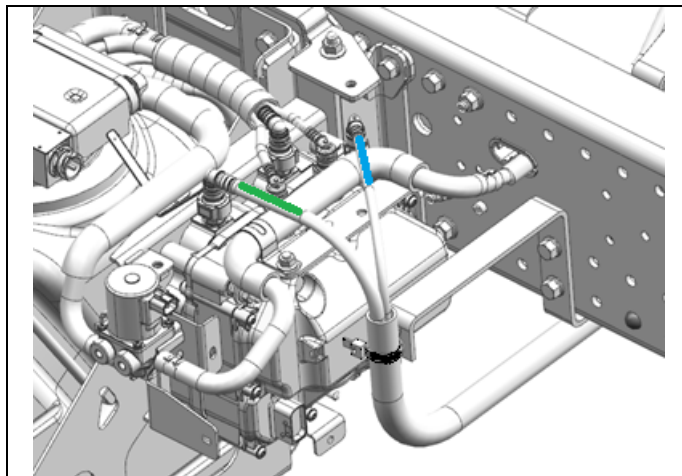
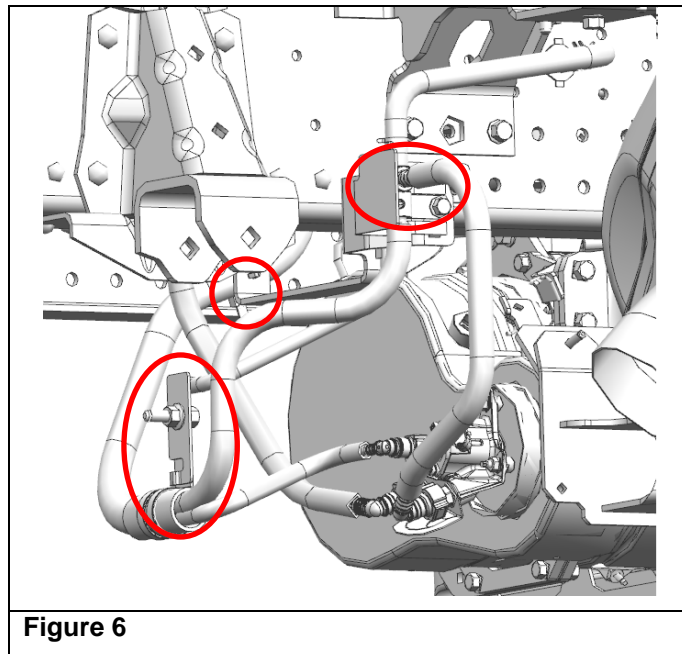


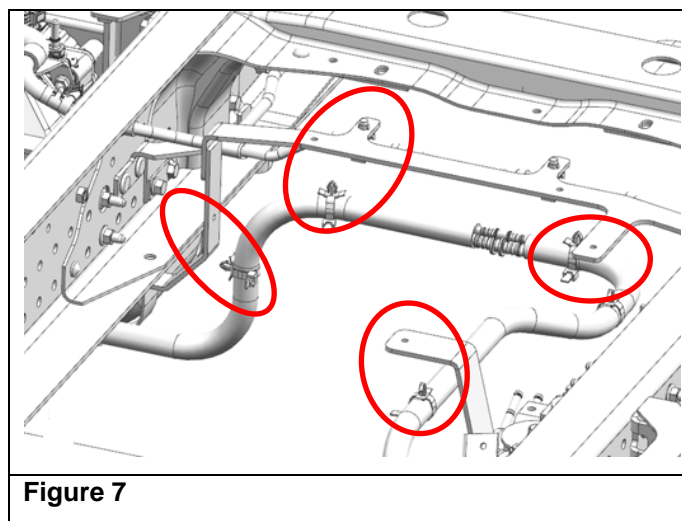
Figure 5

4. Disconnect the DEF tube at the DEF injector.
5. Clamp the flexible engine coolant hoses at frame connection.
6. Disconnect the engine coolant hose above the DEF injector. Remove the “P” clip and mounting bracket installed at this location. Discard the mounting bracket. A new bracket will be installed in the installation procedure.

**NOTE:** Use a drain pan to catch any coolant that may drain out during this process.



7. Disconnect the “P” clamp for the DEF tube assembly.
8. Disconnect the DEF tube assembly at the 5 mounting clips.



9. Remove the DEF tube clip bracket.

## INSTALLATION (4JJ1)

1. Install the new DEF tube clip bracket.
2. Install the new DEF tube assembly across the frame at the 5 mounting clip locations.
3. Install the "P" clamp for the DEF tube assembly.
4. Install the engine coolant hose above the DEF injector. Install the "P" clip and mounting bracket at this location. Install the new mounting bracket.
5. Unclamp the flexible engine coolant hoses at the frame connection.
6. Install the DEF tube at the DEF injector.
7. Install the DEF tube assembly to the bracket.
8. Reconnect the engine coolant and DEF tube at the DEF supply pump.
9. Install the DEF supply pump cover.

## PARTS INFORMATION

Eng	Part Number	Description	Qty	Wheel Base (in.)
4HK1	8-98199-114-0	TUBE ASM; UREA LIQ DOSING	1	
	8-98204-966-0	TUBE ASM; UREA LIQ DOSING	1	
	8-98199-176-0	BRACKET; UREA LIQ DOSING TUBE	1	132.5, 150, 176
	8-98199-178-0	BRACKET; UREA LIQ DOSING TUBE	1	109
	1-09700-126-1	CLIP; UREA LIQ DOSING TUBE	1	
4JJ1	8-98201-060-0	TUBE ASM; UREA LIQ DOSING	1	
	8-98210-727-0	BRACKET; UREA LIQ DOSING TUBE CLIP	1	
	8-98137-046-0	CLIP; UREA LIQ DOSING TUBE	1	
	8-98201-092-0	HOSE; UREA LIQ RSVR HTR RTN	1	
	1-09700-608-2	CLIP; UREA LIQ DOSING TUBE	1	
	0-95235-576-0	CLIP; UREA LIQ DOSING TUBE	1	

## WARRANTY INFORMATION

For vehicles repaired under warranty, use:

Labor Operation	Description	Labor Time
L3025	Replace, NPR Frozen DEF Line (DTC P1490) Add for Diagnosis	1.9 hrs 0.3 hrs