

# Authorized Field Change

**INTERNATIONAL**

**AFC G-02906**

**Date:** November, 2002

**Subject File:** ENGINE

**Subject:** Rerouting the Heater Return Hose to Extend Radiator Life in 3200, 4200, 4300, 4400, and 8500 Models (Manual Transmissions Only)

Model: 3200  
End Date: 09/16/2002

Model: 4200  
End Date: 09/17/2002

Model: 4300  
End Date: 07/22/2002

Model: 4400  
End Date: 07/22/2002

Model: 8500  
End Date: 07/22/2002

## DESCRIPTION

Print ready (PDF file) copy of the AFC letter

International has made an improvement in the routing of the heater return hose which extends radiator life and has implemented a program to retrofit 3200, 4200, 4300, 4400, and 8500 Models in the field.

## PARTS INFORMATION

**Table 1** Parts Information for 4300, 4400 and 8500 Models with I6 Engine

| Part Number | Description   | Quantity |
|-------------|---|----------|
| 8000836R91  | Heater Return Hose Kit for 43/44/8500 Models with I6 Engine | 1        |

## PARTS INFORMATION (CONT.)

**Table 2** Vehicles with I6 Engine Equipped with Code 16554, Heater Shut Off Valve, will also need the Following

| Part Number | Description             | Quantity |
|-------------|-------------------------|----------|
| 444046      | 90 Degree Elbow Fitting | 1        |

**Table 3** Vehicles with I6 Engine Equipped with Code 15LDP, Fuel Heater, will also need the Following

| Part Number | Description             | Quantity |
|-------------|-------------------------|----------|
| 444152      | Pipe Tee Fitting        | 1        |
| 444636      | 3/4 Inch Pipe Plug      | 1        |
| 24466R1     | Bushing Reducer         | 1        |
| 864450R1    | 45 Degree Elbow Fitting | 1        |

**Table 4** Parts Information for 3200 and 4200 Models with V8 Engine

| Part Number | Description  | Quantity |
|-------------|--|----------|
| 8000837R91  | Heater Return Hose Kit for 32/4200 Models with V8 Engine | 1        |

**Table 5** Vehicles with V8 Engine Equipped with Code 16554, Heater Shut Off Valve, will also need the Following

| Part Number | Description            | Quantity |
|-------------|------------------------|----------|
| 864450R1    | 45 Degree Street Elbow | 1        |
| 444100      | Coupling               | 1        |

## SERVICE PROCEDURE FOR ALL MODELS WITH I6 ENGINE



**WARNING** – To avoid property damage and/or personal injury, park the vehicle on a flat level surface, turn the engine off, set the parking brake, and chock the wheels.

1. Open the hood.



**WARNING** – Allow the engine to cool before attempting to remove the radiator or deaeration tank cap. Always insulate the cap by wrapping it with a thick, heavy cloth. To prevent possible injury from scalding water or steam, do not pull the pressure cap off immediately when it has been loosened to the first notch. Pause momentarily to allow time for excess pressure to release through the overflow tube.

2. Drain the cooling system into a suitable clean container.

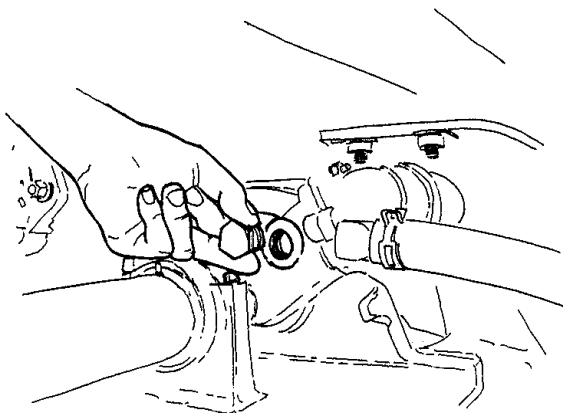
## SERVICE PROCEDURE FOR ALL MODELS WITH I6 ENGINE (CONT.)



**WARNING** – Batteries expel explosive gases. Keep sparks, flames, burning cigarettes, or other ignition sources away at all times. Always wear safety glasses and a face shield when working near batteries to prevent personal injury.

3. Disconnect the negative cable from the battery.
4. Remove the inner fender panel on the passenger side.
5. Remove the heater return hose and 45 degree fitting or shut off valve and bushing reducer from the radiator.
6. Remove 3/4 inch pipe plug from the rear side of the engine front cover (Figure 1) and install the pipe plug into the radiator port that had the 45 degree fitting or shut off valve in Step 5.

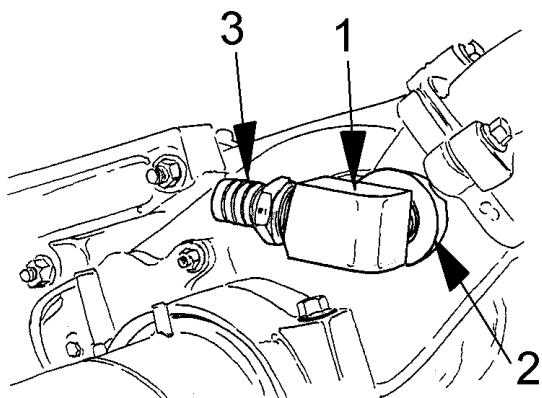
**Vehicles equipped with Code 15LDP** will not have a 3/4 inch pipe plug in the engine front cover but will have a hose fitting. Remove the fitting and set aside for use later in these instructions. Install a 3/4 inch pipe plug from the kit into the radiator port.



**Figure 1 Remove Pipe Plug or Fuel Heater Hose Fitting**

7. **For Vehicles without Shut off Valve:** Install a bushing reducer and the 45 degree hose nipple that was removed from the radiator port in Step 5 into the engine front cover (Figure 2).

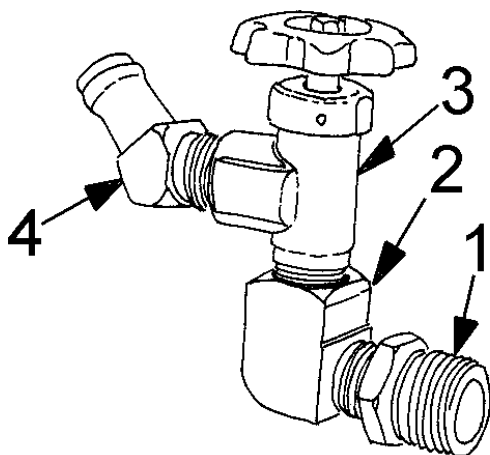
## SERVICE PROCEDURE FOR ALL MODELS WITH I6 ENGINE (CONT.)



**Figure 2 Install 45 Degree Fitting**

1. 45 DEGREE ELBOW
2. BUSHING REDUCER
3. HOSE NIPPLE (HEATER RETURN HOSE)

**For Vehicles with Shut Off Valve:** Install a bushing reducer and a 90 degree fitting into the engine front cover port then install the shut off valve removed from the radiator port in Step 5 (Figure 3).

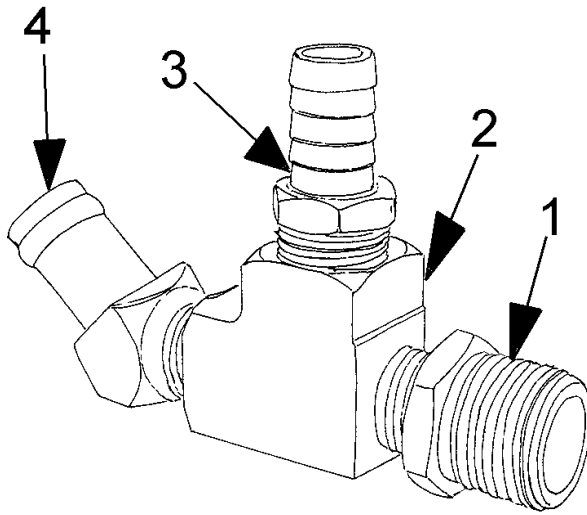


**Figure 3 Fittings for Heater Return Hose with Shut Off Valve**

1. BUSHING REDUCER
2. 90 DEGREE ELBOW
3. SHUT OFF VALVE
4. 45 DEGREE ELBOW (HEATER RETURN HOSE)

**For Vehicles with Fuel Heater Code 15LDP:** Install a bushing reducer and pipe tee into the engine front cover port. Install the pipe nipple for the fuel heater hose removed in Step 6 into the top port of the tee. Install a 45 degree hose nipple into the remaining pipe tee port (Figure 4).

## SERVICE PROCEDURE FOR ALL MODELS WITH I6 ENGINE (CONT.)

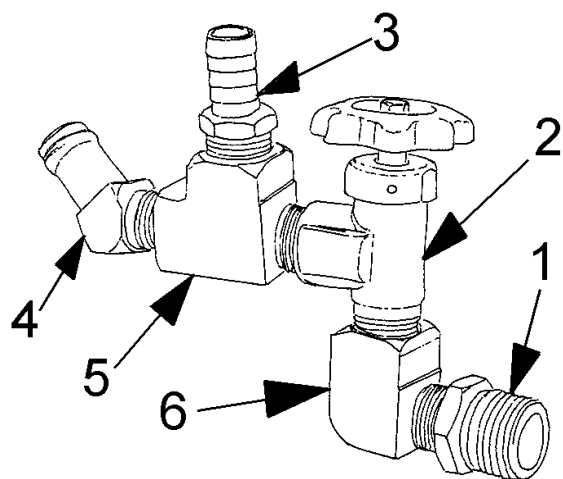


**Figure 4 Fittings for Heater Return and Fuel Heater Hoses**

1. BUSHING REDUCER
2. PIPE TEE
3. HOSE NIPPLE (FUEL HEATER HOSE)
4. 45 DEGREE NIPPLE (HEATER RETURN HOSE)

**For Vehicles with Shut Off Valve and Fuel Heater Code 15LDP:** Install a bushing reducer into the engine front cover port, a 90 degree elbow, and the shut off valve. Install a pipe tee, 45 degree elbow and hose nipple as shown in Figure 5.

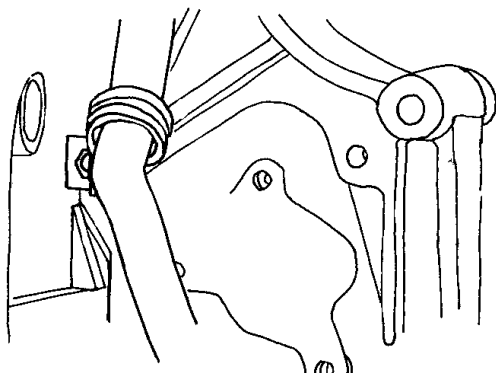
## SERVICE PROCEDURE FOR ALL MODELS WITH I6 ENGINE (CONT.)



**Figure 5 Fittings for Heater Return and Fuel Heater Hoses with Shut Off Valve**

1. BUSHING REDUCER
  2. SHUT OFF VALVE
  3. HOSE NIPPLE (FUEL HEATER HOSE)
  4. 45 DEGREE ELBOW (HEATER RETURN HOSE)
  5. PIPE TEE
  6. 90 DEGREE ELBOW
8. Install insulation over the heater return hose (the hose disconnected from the radiator) and route the hose down to the newly installed 45 degree hose nipple in the engine front cover.
  9. Install the heater return hose to the 45 degree hose nipple and the fuel heater hose with a spring clamp referring to Figure 2, Figure 3, Figure 4, and Figure 5 for the fitting set up on the vehicle being serviced.
  10. Install an extension clip to the stud on the engine front cover (Figure 6).
  11. Install the heater return hose to the extension clip with a P-clip and nut (Figure 6).

## SERVICE PROCEDURE FOR ALL MODELS WITH I6 ENGINE (CONT.)



**Figure 6 Install P-Clip**

12. Refill the radiator with coolant and check for leaks.
13. Reinstall the inner fender panel.



**WARNING** – Batteries expel explosive gases. Keep sparks, flames, burning cigarettes, or other ignition sources away at all times. Always wear safety glasses and a face shield when working near batteries to prevent personal injury.

14. Reconnect the negative battery cable.
15. Run the engine up to operating temperature and check for leaks.

## SERVICE PROCEDURE FOR ALL MODELS WITH V8 ENGINE



**WARNING** – To avoid property damage and/or personal injury park the vehicle on a flat level surface, turn the engine off, set the parking brake, and chock the wheels.

1. Open the hood.



**WARNING** – Allow the engine to cool before attempting to remove the radiator or deaeration tank cap. Always insulate the cap by wrapping it with a thick, heavy cloth. To prevent possible injury from scalding water or steam, do not pull the pressure cap off immediately when it has been loosened to the first notch. Pause momentarily to allow time for excess pressure to release through the overflow tube.

## SERVICE PROCEDURE FOR ALL MODELS WITH V8 ENGINE (CONT.)

2. Drain the cooling system into a suitable clean container.

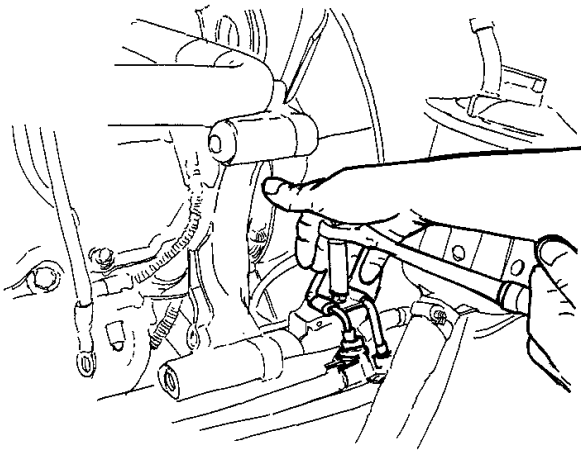


**WARNING** – Batteries expel explosive gases. Keep sparks, flames, burning cigarettes, or other ignition sources away at all times. Always wear safety glasses and a face shield when working near batteries to prevent personal injury.

3. Disconnect the negative cable from the battery.
4. Remove the inner fender panel on the passenger side.
5. Disconnect and remove the alternator.
6. Remove air cleaner housing and pipe.
7. Remove charge air cooler (CAC) hose from the CAC and the turbocharger. Cap (cover) the CAC and turbocharger ports to prevent contaminants from entering.

**NOTE** – The next Step does not require removal of the AC compressor or evacuation of the AC system.

8. Remove air conditioner (AC) compressor mounting bolts and carefully move the AC compressor off the mounting bracket without causing leaks.. Secure the AC compressor with straps or equivalent.
9. Remove belt tensioner and idler pulley.
10. Remove fuel line bracket (Figure 7)

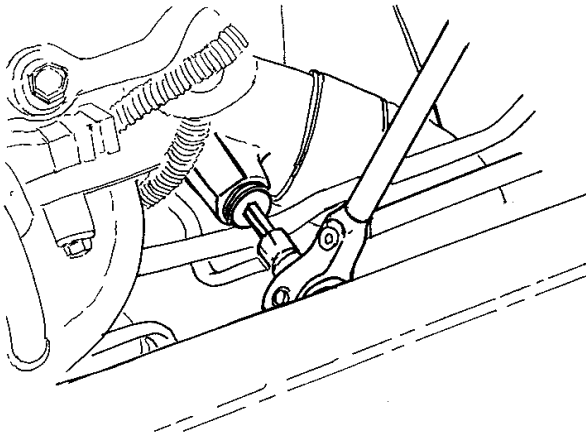


**Figure 7 Remove Fuel Line Bracket**

11. Remove the alternator/ AC compressor bracket.
12. Remove the pipe plug at the lower engine coolant port (Figure 8).

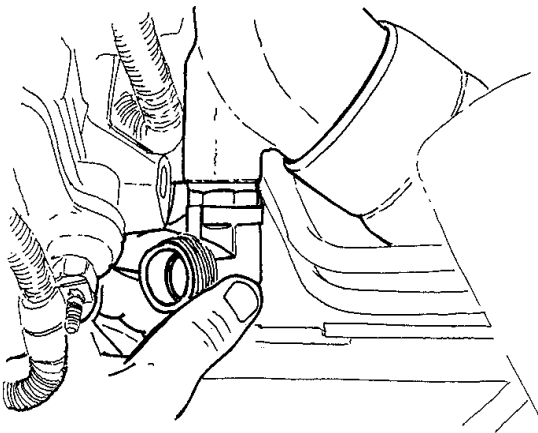


## SERVICE PROCEDURE FOR ALL MODELS WITH V8 ENGINE (CONT.)



**Figure 8 Remove Pipe Plug**

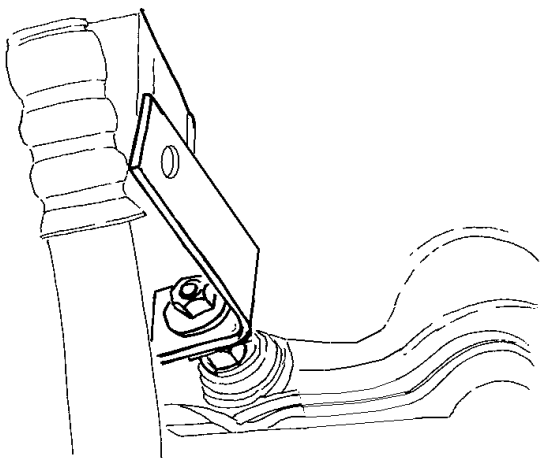
13. Install 90 degree elbow fitting approximately 4 turns. This will allow wrench clearance to tighten the fitting jam nut (Figure 9). Do not tighten the jam nut at this time.



**Figure 9 Install 90 Degree Fitting (As Viewed Looking Down)**

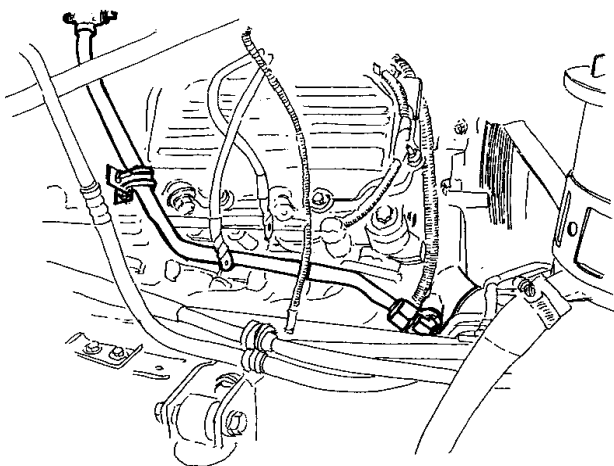
14. Loosely install the extension to the valve cover (Figure 10).

## SERVICE PROCEDURE FOR ALL MODELS WITH V8 ENGINE (CONT.)



**Figure 10 Loosely Install Extension**

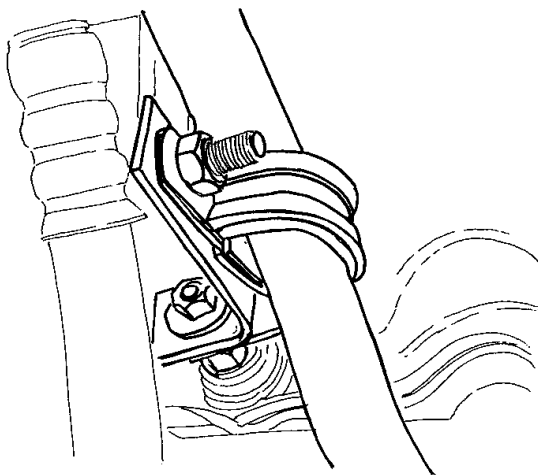
15. Install the new heater return pipe to the 90 degree fitting as shown in Figure 11. Do not tighten fitting at this time.



**Figure 11 Install Heater Return Pipe**

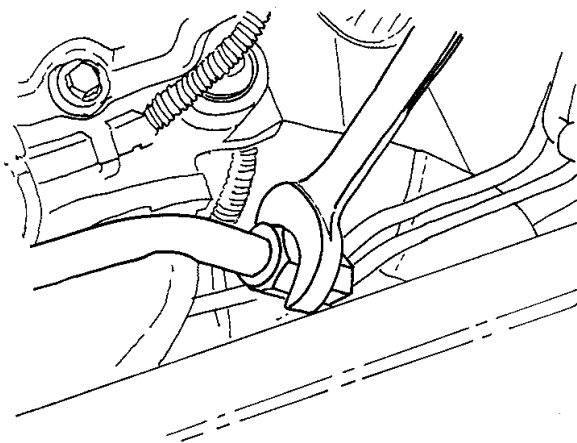
16. Install the P-clip around the new heater return pipe and to the extension (Figure 12). Tighten the nut.

## SERVICE PROCEDURE FOR ALL MODELS WITH V8 ENGINE (CONT.)



**Figure 12 Install P-Clip**

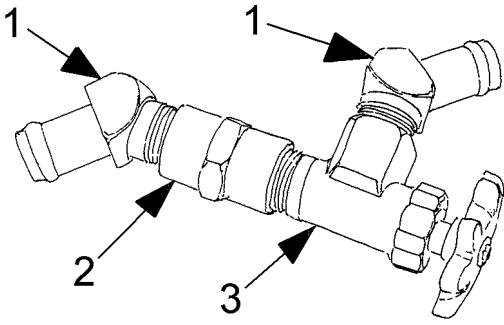
17. Remove the heater return hose from the radiator.
18. Remove the hose fitting and bushing reducer from the radiator and replace with a 3/4 inch pipe plug from the kit.
19. Route the heater return hose down to the newly installed heater return pipe. Cut off surplus hose and connect the hose to the heater return pipe with a hose clamp.
20. Tighten the 90 degree fitting jam nut installed in Step 13 and the compression fitting installed in Step 15 (Figure 13).



**Figure 13 Tighten Fitting**

21. It is recommended that 3200 and 4200 Models with a V8 engine and heater shut off valve not have the shut off valve reinstalled. If the customer demands the heater shut off valve be reinstalled use the following procedure and refer to Figure 14:

## SERVICE PROCEDURE FOR ALL MODELS WITH V8 ENGINE (CONT.)



**Figure 14 Heater Shut Off Valve**

- 1. 45 DEGREE ELBOW
- 2. COUPLER
- 3. SHUT OFF VALVE

- A. Remove the bushing from the heater shut off valve and install a coupler and two 45 degree hose nipples from the kit.
- B. Remove the splice connector in the heater supply line located on the top of the engine.
- C. Install the shut off valve in the heater supply line.

22. Refill the radiator and check for leaks.

23. Reinstall the air cleaner housing and pipe, alternator/ AC compressor bracket, idler and belt tensioner pulleys, alternator belt and inner fender panel.

24. Reconnect the negative battery cable.

25. Run the engine up to operating temperature and check for leaks.

Operation number must appear on all claims.

**Table 6 Labor Information**

| Operation No. | Description                      | Time    |
|---------------|----------------------------------|---------|
| A40-02906-1   | Reroute Heater Hose on I6 Engine | 1.1 Hr. |
| A40-02906-2   | Reroute Heater Hose on V8 Engine | 1.5 Hr. |

### ADMINISTRATIVE PROCEDURE

Expense is to be charged to Warranty. Claims are to be submitted in the normal manner, making reference to Authorized Field Change Number G-02906.

It is important that the coding be completed properly to assist in processing the warranty claim. Complete instructions will be found in the Warranty Manual, Section 7-1. Special attention should be given to Items 39 through 44.

To assure this important improvement is made in a timely manner, all claims for G-02906 activity must be submitted by September 30, 2004 or within the normal warranty period for the vehicle, if after September 30, 2004.

| GROUP                 | NOUN             | C   | WARR.                              | TP   | PAD           |
|-----------------------|------------------|---|------------------------------------|--|---------------|
| GROUP Enter number G— | NOUN Leave blank | C (CAUSE) Enter either 1, 2, 3. (see below) | WARRANTY (Warranty Code) Enter 40. | TYPE PART Enter P for type part causing failure. | PAD Enter 100 |
|                       |                  | 1. Inspected (No repair required).          |                                    |  |               |
|                       |                  | 2. Inspected and repaired.                  |                                    |  |               |
|                       |                  | 3. Defective part from parts stock.         |                                    |  |               |

Distribution: All except J-81  
Reproduction: Not required.