Authorized Field Change

AFC 08903R2

Date: May, 2008/Revised June, 2008

Subject File: ENGINE

Subject: VT 275 and MaxxForce 5 Case to Head Tube and Plug D-Ring Seal Deterioration

Model: CF 500
Start Date: 06/01/2004 End Date: 01/10/2008

Model: CF 600
Start Date: 06/01/2004 End Date: 01/10/2008

Engine Family: VT 275

Engine Family: MaxxForce 5

DESCRIPTION

REVISION DESCRIPTION

Tool ZTSE4694–FLDUPD information added.

Step 4 after Figure 11 has been revised.

Lack of appropriate sealing allows high pressure oil leakage internally within the engine and can eventually lead to no start and hard start conditions resulting from lack of high pressure oil to power the fuel injectors.

PARTS INFORMATION

Table 1 Parts Information

Part Number	Description	Quantity
1882993C93	Case-to-head Tubes and Plugs Kit	1

SERVICE PROCEDURE

WARNING – To prevent personal injury or death, make sure the engine is in neutral or park, parking brake is set, and wheels are blocked before doing diagnostic or service procedures on engine or vehicle.

SERVICE PROCEDURE (CONT.)

WARNING – To prevent personal injury or death, remove ignition key or disconnect battery so engine can not be started while you are working on the front of the engine.

WARNING – To prevent personal injury or death, let a hot engine cool sufficiently before doing diagnostic or service procedures.

WARNING – To prevent personal injury or death, do not let engine fluids stay on your skin. Clean skin and nails with hand cleaner and wash with soap and water. Wash or discard clothing and rags contaminated with engine fluids.

Remove Case to Head Tube Left Side

1. Disconnect mass air flow sensor (MAF) wiring and cut tie strap (Figure 1).

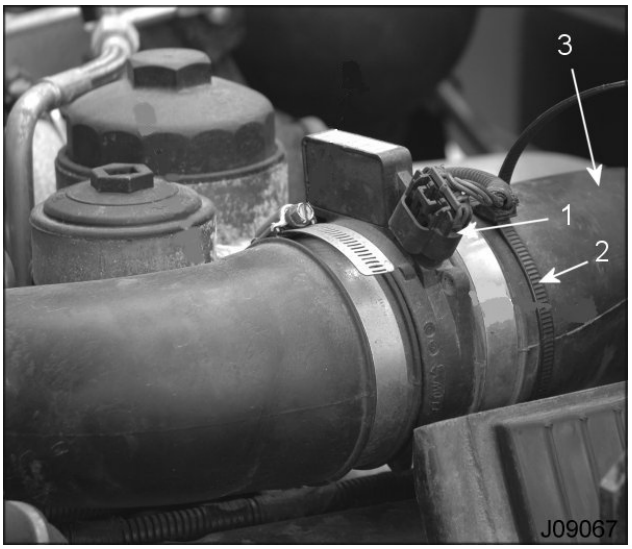


Figure 1

1. MAF Sensor
2. Tie Strap
3. Air Cleaner Outlet Pipe

2. Loosen clamp and remove air cleaner outlet pipe with MAF attached. Cap all openings to prevent dirt entry.

SERVICE PROCEDURE (CONT.)

3. Remove air cleaner outlet pipe bracket (Figure 2).

Figure 2

1. Air Cleaner Outlet Pipe Bracket

4. Loosen clamp and remove turbocharger inlet pipe (with crankcase breather hose attached) (Figure 3). Cap turbocharger air inlet.

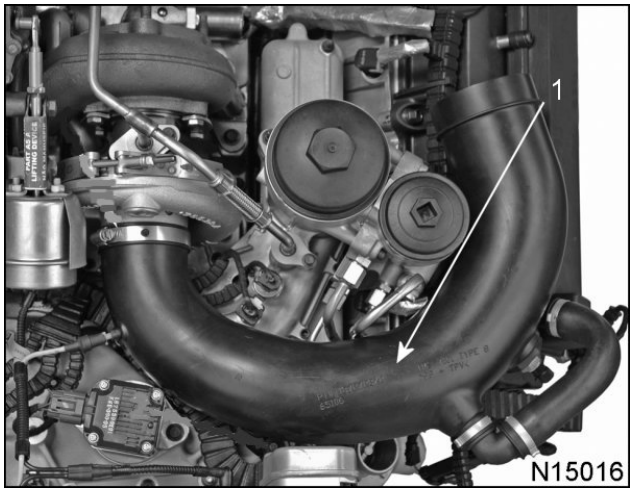


Figure 3

1. Turbocharger Inlet Pipe

SERVICE PROCEDURE (CONT.)

5. Remove valve cover mount bolts, left (Figure 4).

Figure 4 Left Valve Cover

1. Valve Cover Bolt (9)

6. Remove valve cover from vehicle, left. Do not damage valve cover gasket and reuse.

   The rail port plug and the crankcase-to-head tube plug are shown in Figure 5.

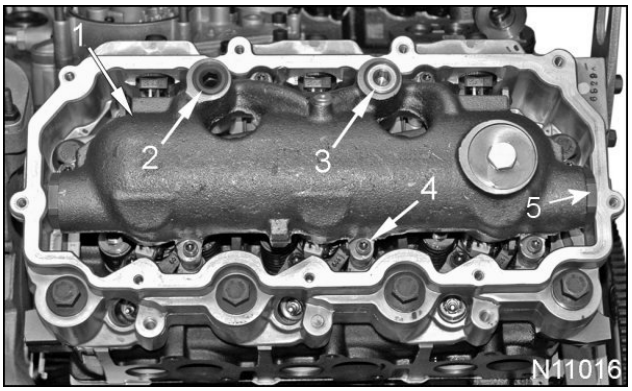


Figure 5 High-pressure oil rail plugs and crankcase-to-head tube assembly locations (left side shown)

1. High pressure oil rail
2. Rail port plug
3. case-to-head tube plug
4. M6 x 40 bolt (7)
5. Rail end plug (2)

SERVICE PROCEDURE (CONT.)

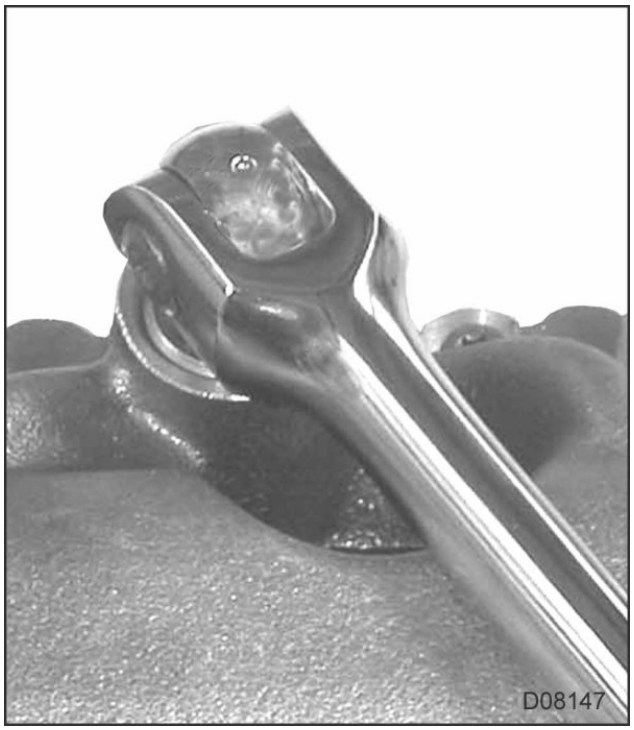


Figure 6 Removing crankcase-to-head tube plug (square head socket shown)

Crankcase-to-Head Tube Assembly

7. Loosen the crankcase-to-head tube assembly plug using a 1/2 inch breaker bar and Allen Hex type or square head socket (Figure 6).

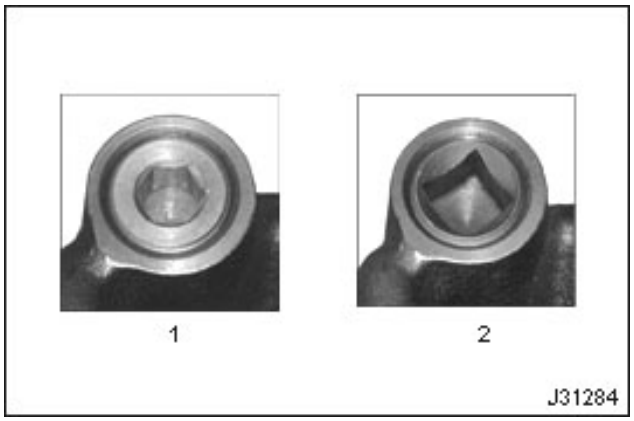


Figure 7 Crankcase-to-head tube plugs

1. Hex socket
2. Square socket

SERVICE PROCEDURE (CONT.)

NOTE – The square socket identifies the short crankcase-to-head tube plug. The hex socket identifies the longer crankcase-to-head tube plug (with check valve).

NOTE – The square socket short crankcase-to-head tube plug and crankcase-to-head tube assembly is not available for service.

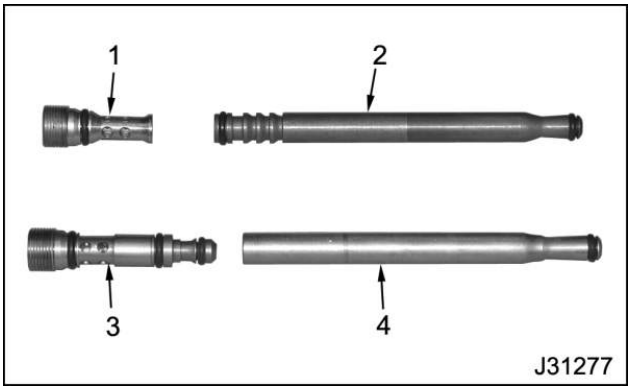


Figure 8 Crankcase-to-head tube assemblies

1. Crankcase-to-head tube plug (short)
2. Crankcase-to-head tube (used with item 1)
3. Crankcase-to-head tube plug (long – with check valve)
4. Crankcase-to-head tube (used with item 3)

8. Using the needed service tool (Figure 10), remove the crankcase-to-head tube assembly from the high-pressure oil rail (Figure 11).

NOTE – The lower crankcase-to-head tube (Item 4 , Figure 8), used with the long crankcase-to-head tube plug, may remain in the crankcase.

- **If crankcase-to-head tube remains in the crankcase, continue with Step 9.**
- **If both crankcase-to-head tube assemblies were removed, continue with Step 11.**

NOTE: The tool set ZTSE4694-FLDUPD was automatically shipped June 5, 2008 to all US and Canadian service dealers. This tool set was shipped per the Dealer Sales/ Maintenance Agreement and at **no charge** to the Dealer.

ZTSE4694-FLDUPD - Field Upgrade Components (extended rod and sleeve) These components extend the length of the current service tool ZTSE4694 and with this change effective update the existing tools into the ZTSE4694A. These tools components are being supplied to Navistar's Dealer network at no charge and will be included in a direct mailing.

Figure 9 ZTSE4694-FLDUPD

SERVICE PROCEDURE (CONT.)

Figure 10 Crankcase-to-Head Tube Removal Tool

1. Tube Removal Tool ZTSE4694A
2. Lower Plug and Tube Removal Tool ZTSE4923
3. Broken Lower Plug Removal Tool ZTSE4922

9. Insert the Crankcase-to-head tube Removal Tool, (Item 1, Figure 10) into the crankcase-to-head tube, tighten T-handle, and pull out tube. If the lower portion of the plug remains in the lower crankcase-to-head tube, use tool 2 to attach to the lower plug and pull out plug and tube.

   If the lower portion of the plug has had the threaded top broken off, use tool 3 to hook the plug and pull out plug and tube.

10. Discard crankcase-to-head tube.

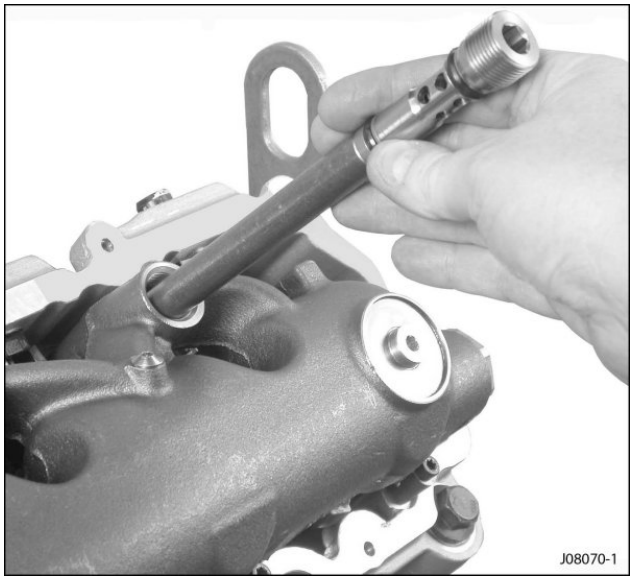


Figure 11 Removing the crankcase-to-head plug (with check valve)

11. Lift out the crankcase-to-head tube assembly and discard.

SERVICE PROCEDURE (CONT.)

CAUTION – To prevent engine damage, do not remove the 1-¼ x 20 UNF oil rail end plugs or the Acoustic Wave Attenuator (AWA) bottom port fitting. Service parts are not available to support these components.

Installation

Use the new plugs and crankcase-to-head tube assembly, supplied in the kit, and install as follows:

NOTE – Crankcase-to-head tube assembly (Figure 5, item 3) and the rail port plug (Figure 5, item 2) can be reversed, depending upon which side of the engine the high-pressure oil rail is being installed. The crankcase-to-head tube assembly should always be to the rear of the engine (high-pressure pump end) or to the rear of the rail port plug.

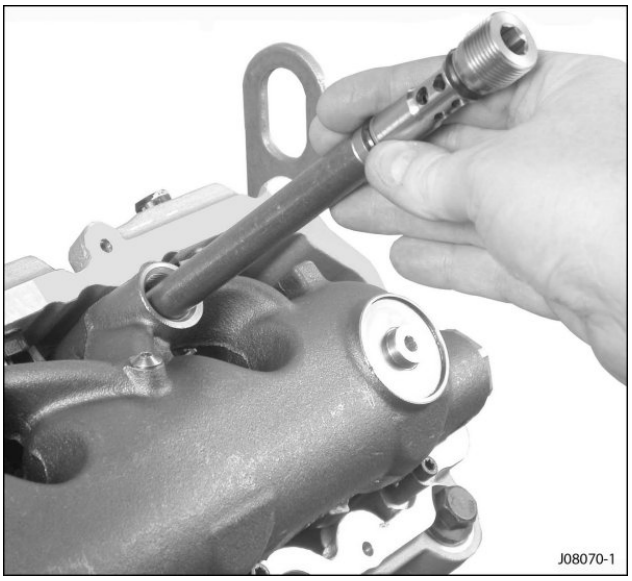


Figure 12 Installing the crankcase-to head tube assembly

1. Lubricate the D-rings on the crankcase-to-head tube assembly with clean engine oil and install through the high-pressure oil rail and into the branch tube.

2. Remove and inspect O-ring on the plug on the left HPOR that corresponds in location to ICP sensor on the right HPOR. Replace as needed.

3. Torque the crankcase-to-head tube to 82 N·m (60 lbf-ft).

4. Inspect the valve cover gasket and reuse if in good condition, install valve cover and torque to 9 N.m (84 lbf-in). Replace the o-ring on the CCV breather fitting in the valve cover with the o-ring supplied in the service kit.

SERVICE PROCEDURE (CONT.)

Remove Case To Head Tube Right Side

1. Disconnect charge air cooler intake hose from turbo and reposition (Figure 13).

2. Remove engine splash shield, right (Figure 13).

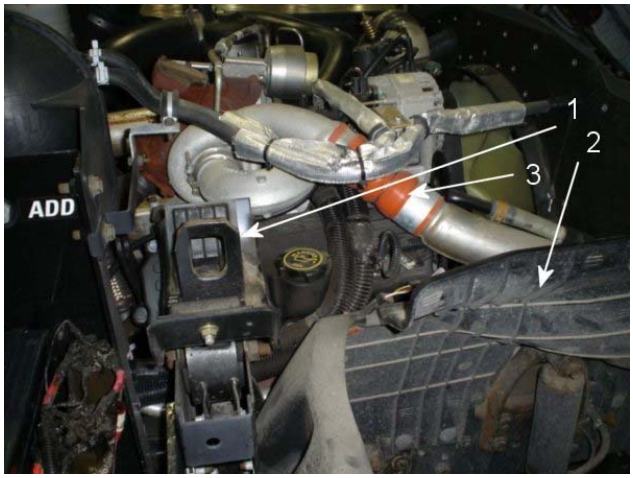


Figure 13

1. Cab Mounting Bracket
2. Engine Splash Shield
3. Charge Air Cooler Intake Hose

3. Remove cab mounting bracket (Figure 13) and right valve cover.

4. Remove injector control pressure sensor (ICP) (Figure 14).

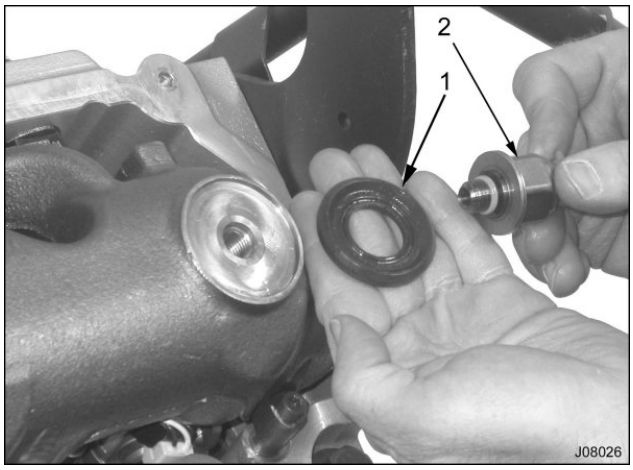


Figure 14

1. ICP Sensor Gasket
2. ICP Sensor

5. Replace crankcase to head tubes as done on the left side.

SERVICE PROCEDURE (CONT.)

6. **Install injection control pressure sensor (ICP) and torque to 27 N-m (20 lbf-ft), per IK 1200185 dated 11/14/07.**

   Check the tightness of the plug where the ICP sensor is located on the right side. Torque to 27 N.m (20 lbf-ft)

7. Install valve cover and torque to 9 N.m (84 lbf-in).

8. Install cab mounting bracket, right side.

9. Install engine splash shield right side.

10. Connect charge air cooler intake hose to turbo.

11. Install turbocharger inlet pipe.

12. Install air cleaner outlet pipe mount bracket, left side.

13. Install air cleaner outlet pipe with MAF attached, left side.

14. Connect mass air flow sensor (MAF) wiring and install tie strap, left side.

15. Start engine and check for leaks.

16. Lower cab assembly.

Operation number must appear on all claims.

Table 2 Labor Information

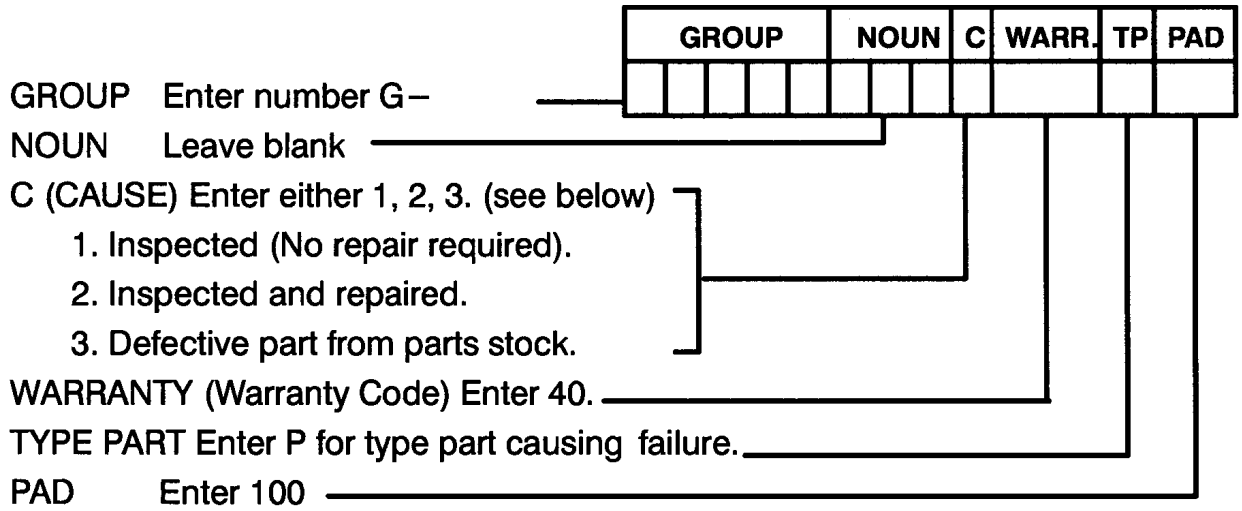
Operation No.	Description	Time
A40–08903–1	Replace Head Tubes	2.7 Hrs.

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-08903.

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-08903 activity must be submitted by May 31, 2009 or within the normal warranty period for the vehicle, if after May 31, 2009.



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