Authorized Field Change

AFC 08904

Date: June, 2008

Subject File: ENGINE

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

Model: Workhorse Chassis : WAZ, W6Z
Start Date: 06/01/2004 End Date: 01/10/2008

Engine Family: VT 275

Engine Family: MaxxForce 5

DESCRIPTION

High pressure oil leakage internally within the engine 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.

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.

SERVICE PROCEDURE (CONT.)

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

1. Open hood assembly.
2. Remove engine housing cover.
3. Remove air cleaner housing assembly.
4. Remove charge air cooler intake hose.
5. Remove oil filler tube.
6. Remove oil dipstick tube mount bolt from head.
7. Remove oil dipstick tube.
8. Disconnect Injection Control Pressure (ICP) sensor.
9. Remove Injection Control Pressure (ICP) sensor.
10. Remove high pressure turbocharger assembly crossover tube.
11. Remove engine lifting bracket (right rear).
12. Reposition engine wiring harness from on top of the valve cover.
13. Remove oil fill tube adapter from valve cover.
14. Remove right valve cover mount bolts (9 M6 x 35M bolts) (Figure 1).
15. Remove right valve cover from vehicle (Figure 2).

SERVICE PROCEDURE (CONT.)

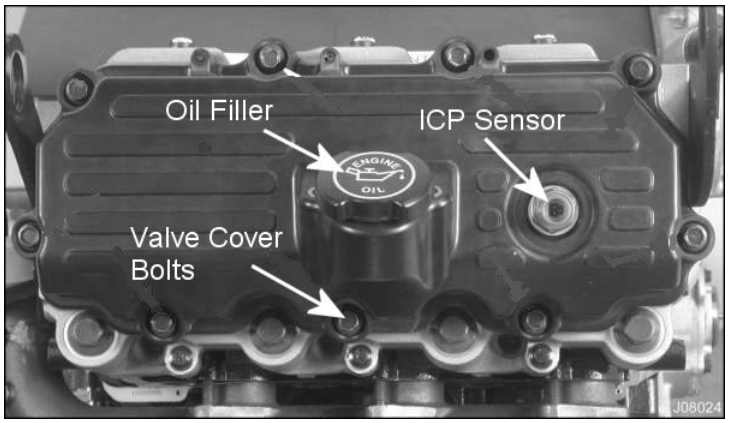


Figure 1 Valve Cover (Right Shown)

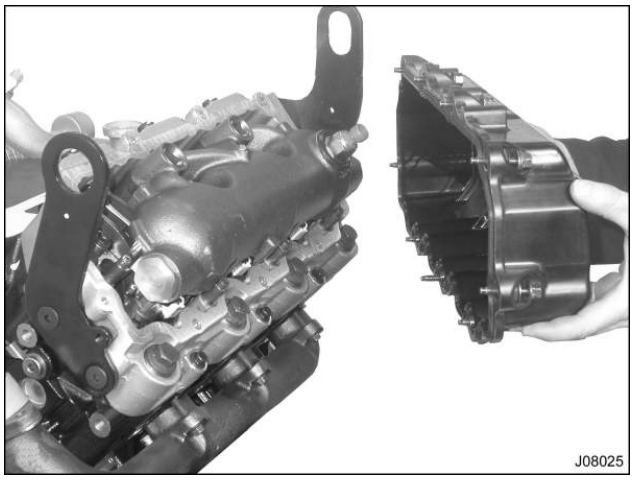


Figure 2 Valve Cover Removal

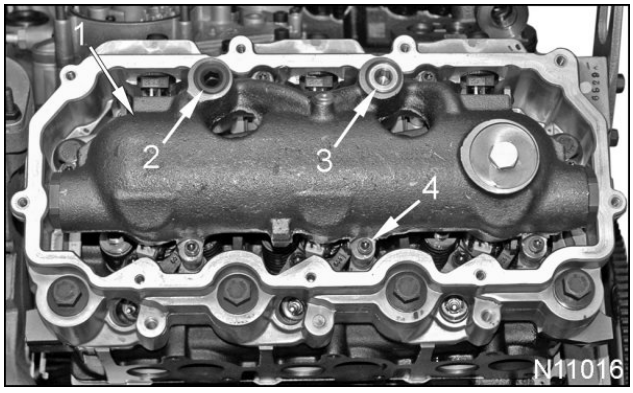


Figure 3 High Pressure Oil Rail (left Shown)

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

SERVICE PROCEDURE (CONT.)

NOTE – Limited access prevents removing case-to-head tube assemblies. Depending on how the assembly comes out, a service tool in Figure 7 might have to be used to remove the tube held in the oil manifold; or, if the tube and plug come out together, they will have to be separated to complete removal.

16. Remove case-to-head tube plug and the rail port plug with a 10 mm hex bit socket or wrench (Figure 4).

NOTE – On occasion, the case-to-head tube (lower) will come out along with the case-to-head plug. If this occurs, discard entire case-to-head tube assembly. Refer to case-to-head tube assembly (Figure 6).

Figure 4 Removing Crankcase-to-Head Tube Plug (square head socket shown)

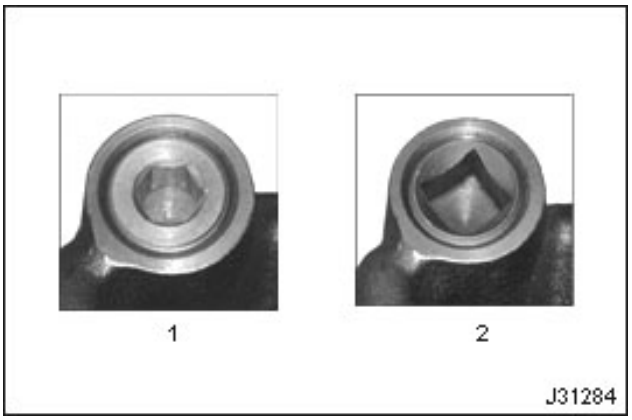


Figure 5 Crankcase-to-Head Tube Plugs

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 7, Items 1 and 2; service with Items 3 and 4).

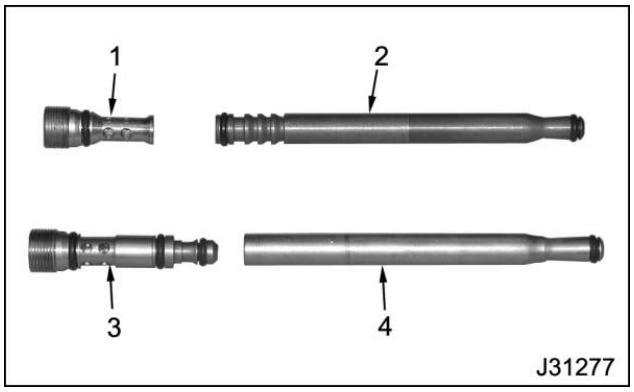


Figure 6 Crankcase-to-Head Tube Assemblies

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)

17. Using the needed service tool (Figure 7), remove the crankcase-to-head tube assembly from the high-pressure oil rail (Figure 6, Item 4). If the tube cannot be removed due to chassis interference, go to Step 20.

NOTE – The lower crankcase-to-head tube (Item 4, Figure 6), 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 18.
- If crankcase-to-head tube assembly was removed, continue with Step 19.

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.

SERVICE PROCEDURE (CONT.)

Figure 7 ZTSE4694-FLDUPD

Figure 8 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

18. Insert the Crankcase-to-head tube Removal Tool (Item 1, Figure 8) 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.

NOTE – Do Steps 20 and 21 only if there is not enough clearance to remove the case-to-head tube.

19. Discard crankcase-to-head tube and go to Step 26.

20. Loosen and remove seven M6 x 40 bolts securing the oil rail assembly to the rocker arm carrier.

SERVICE PROCEDURE (CONT.)

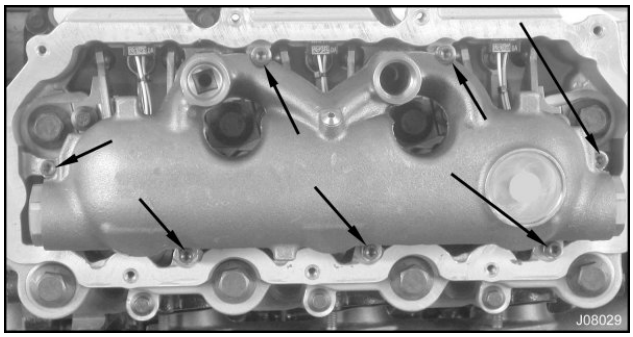


Figure 9 Oil Rail Bolts

21. Lift oil rail assembly straight away from injectors and case-to-head tube assembly. Allow oil to drain back to the sump or other suitable container (Figure 10). Go to Step 17 to remove broken case-to-head tube assembly components.

CAUTION – To prevent engine damage, do not remove the 1¼ x 20 UNF oil rail end plugs or single ball tubes. Service parts are not available to support these components.

SERVICE PROCEDURE (CONT.)

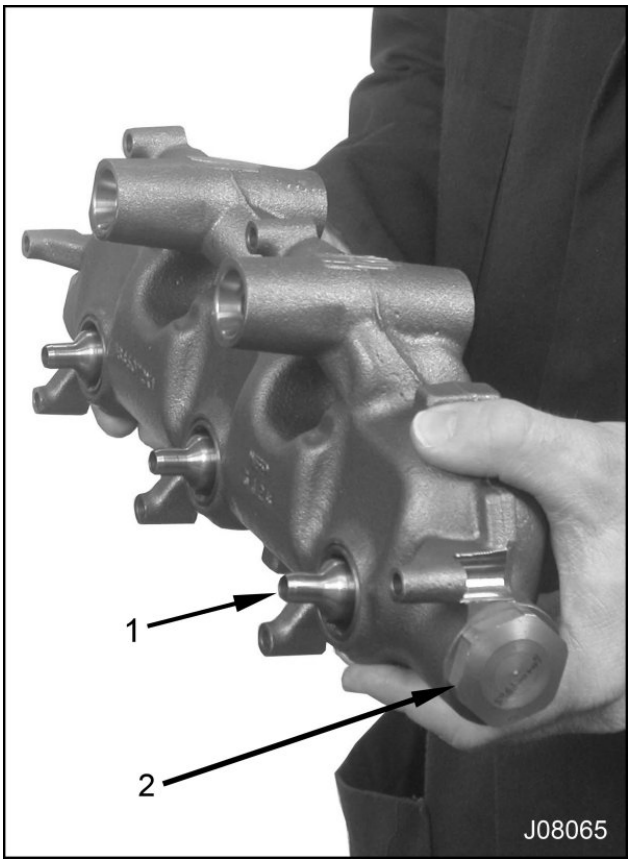


Figure 10 Non-serviceable oil rail components

1. Single ball tube (3)
2. Oil rail end plug (2)

NOTE – The procedure for removing the case-to-head tube assembly is the same for both sides of the engine.

New service tools were shipped the week of May 19, 2008 to accommodate the situation that might occur on the removal of the case-to-head tubes. These new tools are shown in Figure 8.

CAUTION – To prevent engine damage, replace case-to-head tubes and rail port plugs if removed. D-ring seals are not replaceable. Inspect each D-ring carefully for cuts, abrasions, and twisting. Never use a tube with any of these problems.

If high pressure oil rail was not removed, go to Step 26.

22. Install right High Pressure Oil Rail (HPOR).

SERVICE PROCEDURE (CONT.)

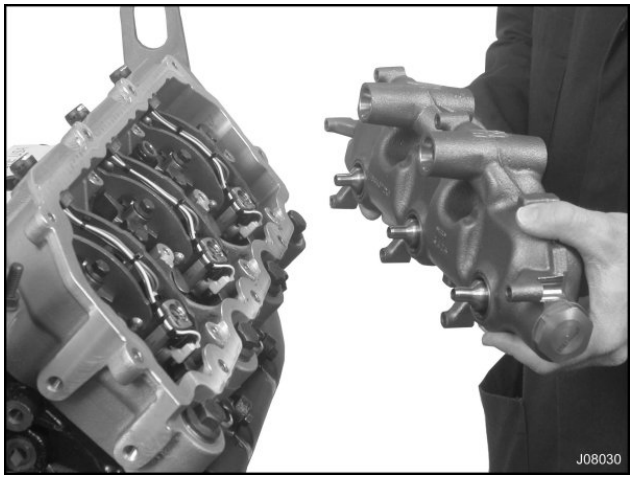


Figure 11 Align Oil Rail Assembly to Injector Oil Inlets

23. Using both hands, align the oil rail assembly with the oil inlets of each fuel injector. Push down evenly until oil rail assembly is firmly seated (Figure 11).

24. Install oil rail assembly M6 x 40 bolts finger tight.

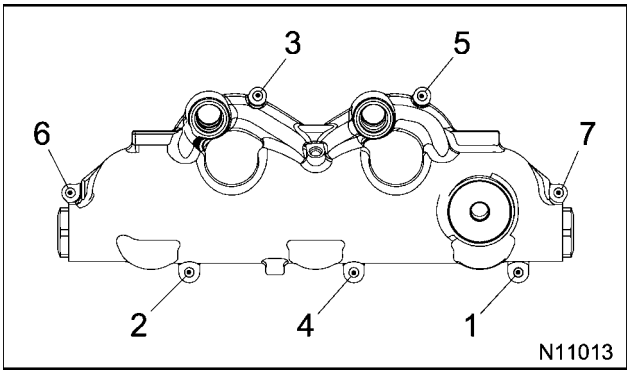


Figure 12 Oil Rail Torque Sequence

25. Tighten M6 x 40 bolts to 13 Nm (115 lbf-in) torque in the above sequence (Figure 12).

26. Lubricate the D-rings on the case-to-head tube (Figure 6, Item 4) with clean engine oil and install into the branch tube.

27. Install right case-to-head tube plug (Figure 6, Item 3) and rail port plug.

28. Tighten case-to-head tube assembly to special torque 82 N-m (60 lbf-ft).

SERVICE PROCEDURE (CONT.)

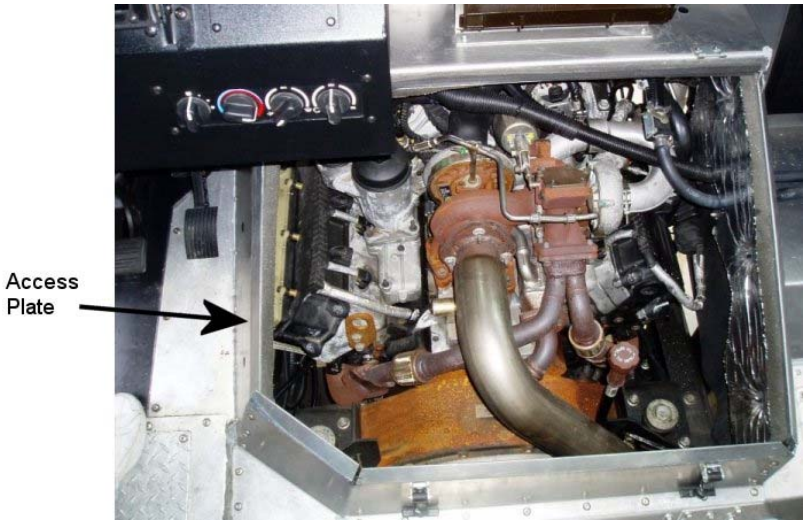


Figure 13 Engine Compartment with Cover Removed

29. Remove access plate on left side of engine cover (Figure 13). (Plate may be held on with rivets that will have to be drilled out.)

30. Disconnect crankcase ventilation breather assembly hose from breather.

31. Remove left valve cover mount bolts.

32. Remove left valve cover and breather from vehicle.

33. Remove left Case-to-Head Tube assembly and rail port plug.

34. Install left case-to-head tube assembly.

35. Install rail port plug .

36. 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.

37. Install left 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.

38. Connect crankcase ventilation breather assembly hose to breather.

39. Install left side floor access panel (caulk edges of panel before putting it in place to make sure it is sealed).

40. Install accelerator pedal position sensor.

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

42. Install oil filler tube adapter to valve cover.

43. Position engine wiring harness over valve cover.

SERVICE PROCEDURE (CONT.)

44. Install high pressure turbocharger assembly crossover tube.
45. Install Injection Control Pressure sensor (ICP) and torque to 27N-m (20 lbf-ft), per IK 1200185 dated 11/14/07.
46. Connect Injection Control Pressure (ICP) sensor.
47. Install oil dipstick tube mount bolts.
48. Install right rear engine lifting bracket.
49. Install oil filler tube.
50. Install tie straps as necessary.
51. Install charge air cooler intake hose.
52. Install air cleaner housing assembly.
53. Start engine assembly and check for proper operation.
54. Install engine housing cover.
55. Top off engine oil.
56. Close hood assembly.

Operation number must appear on all claims.

Table 2 Labor Information

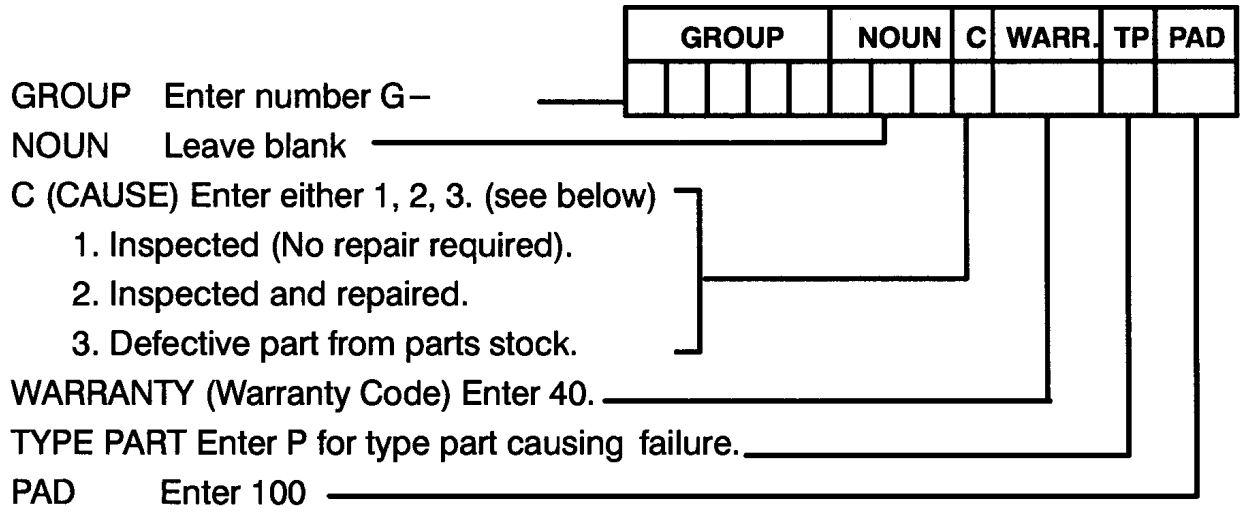
Operation No.	Description	Time
A40–08904–1	Replace Case to Head Tubes	5.0 Hrs.
A40–08904–2	If access panel on left side of engine cover is riveted on, rivets will have to be drilled out.	1.0 Hr.

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-08904.

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-08904 activity must be submitted by June 30, 2009 or within the normal warranty period for the vehicle, if after June 30, 2009.



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