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Coding Information

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Title: 2010 - 2013 MaxxForce 11 and 13 HP Turbocharger Center Section Replacement

Applies To: 2010 MaxxForce 11 and 13 2013 MaxxForce 13 HDOBD 2013 N13 with SCR

DESCRIPTION

This article provides the service procedure for replacing the High-Pressure (HP) turbocharger center section on 2010 MaxxForce® 11 and 13 engines, 2013 MaxxForce® 13 HDOBD engines, and 2013 N13 with SCR engines.

TOOLS REQUIRED

Tool	Tool Number
Navistar Coolant Management Tool	KL5007NAV

PARTS INFORMATION

Part Number	Description	Qty.
2511792C91	Kit, Turbo Hi Pressure 13 L	1
3005741C91 (if needed)	Oil Supply Line	1
1820907C2 (If needed)	O-Ring Seal	1

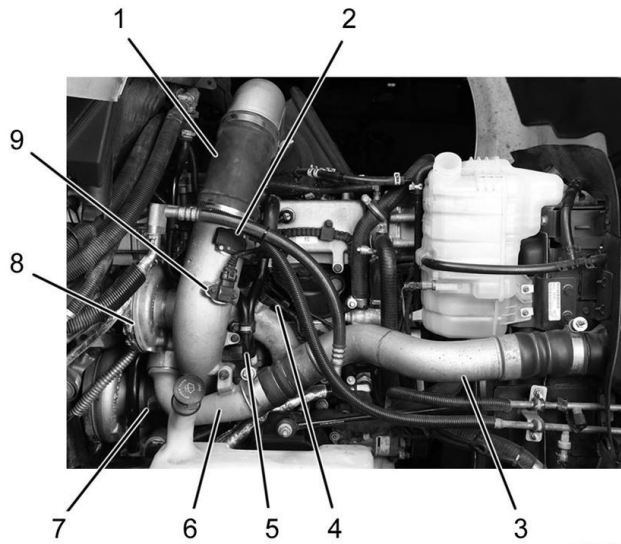
NOTE: If the center section is not available due to part stocking or supply issues, use a COMPLETE turbocharger assembly and simply use the new center section from the kit. Return the old center section and the NEW turbine housing together in the box. The turbine housing is NOT to be used.

REPAIR PROCEDURE

REMOVAL

1. Bring truck into shop and park on flat surface.
2. Shift transmission to Park or Neutral, set parking brake, and install wheel chocks.
3. Unlatch and open hood.
4. Using Navistar Coolant Management Tool KL5007NAV, drain coolant from system. Place suitable drain pan under vehicle to collect any remaining coolant throughout procedure.





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Figure 1. High-Pressure and Low-Pressure Turbochargers and Connections.

- 1. Air inlet duct
- 2. MAF sensor
- 3. HPCAC pipe
- 4. TC2CIP sensor
- 5. Cab heater return and LPCAC coolant supply pipes
- 6. HP compressor outlet duct
- 7. LP turbocharger air inlet duct
- 8. HP turbocharger
- 9. AIT sensor

5. Remove air inlet duct (Figure 1, Item 1).

6. Remove High-Pressure Charge Air Cooler (HPCAC) pipe (Figure 1, Item 3) from HPCAC and High-Pressure (HP) turbocharger compressor outlet duct (Figure 1, Item 6).

7. Install cap on HPCAC.

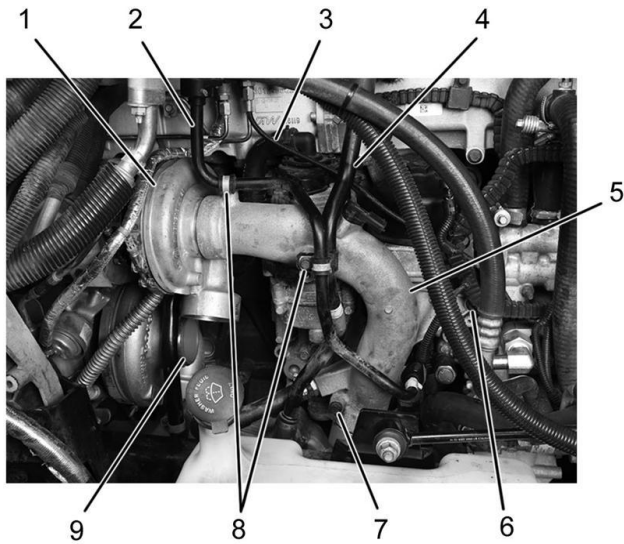
8. Disconnect engine harness connectors at Turbocharger 2 Compressor Inlet Pressure (TC2CIP) sensor (Figure 1, Item 4), Air Inlet Temperature (AIT) sensor (Figure 1, Item 9), and Mass Air Flow (MAF) sensor (Figure 1, Item), if equipped.

9. Remove engine harness nut, located on coolant control valve (CCV) mounting bolt, and secure engine harness out of the way.

10. Remove HP turbocharger compressor outlet duct (Figure 1, Item 6). Discard HP turbocharger outlet duct O-ring.

11. Remove Low-Pressure (LP) turbocharger inlet duct (Figure 1, Item 7) and cover LP turbocharger with cap (Figure 2, Item 9). Discard LP turbocharger inlet duct O-ring.





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Figure 2. HP Turbocharger and Connections.

1. HP turbocharger
2. Cab heater coolant return pipe
3. Air supply line to ACV
4. LPCAC coolant supply pipe
5. HP turbocharger air supply duct
6. M10 x 200 Bolt
7. M10 x 200 Bolt
8. M8 x 20 Bolt
9. Cap

12. Disconnect air supply line (Figure 2, Item 3) from Air Control Valve (ACV) and secure out of the way.

NOTE:

If equipped, disconnect coolant filter line from cab heater coolant return pipe.

13. Remove two bolts securing cab heater coolant return pipe (Figure 2, Item 2) and Low-Pressure Charge Air Cooler (LPCAC) coolant supply pipe (Figure 2, Item 4).

14. Remove bolt (Figure 2, Item 7) and position cab heater coolant return pipe (Figure 2, Item 2) out of the way.

15. Remove two clamps and LPCAC coolant supply pipe (Figure 2, Item 4) from vehicle.

16. Disconnect coolant return hose from HP turbocharger air inlet duct (Figure 2, Item 5).

17. Disconnect coolant hose from HP turbocharger air inlet duct (Figure 2, Item 5).

NOTE:

Do not remove HP turbocharger air inlet duct from HP turbocharger (Figure 2, Item 1) at this time.

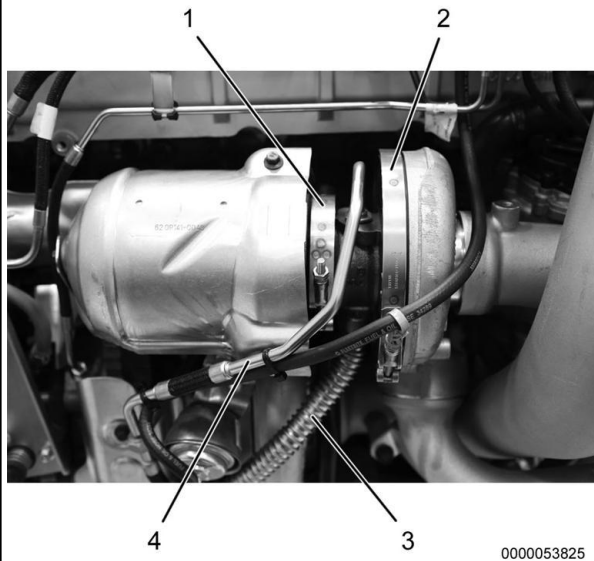


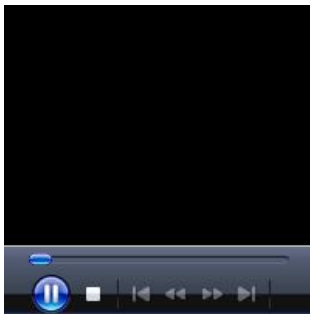
Figure 3. HP Turbocharger.

- 1. V-band clamp (turbine housing)
- 2. V-band clamp (compressor housing)
- 3. HP turbocharger oil return line
- 4. HP turbocharger oil supply line

18. Remove two mounting bolts (Figure 2, Items 6 and 7) from HP turbocharger air inlet duct.

CAUTION:

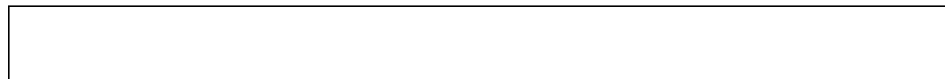
Make sure oil supply line does not bend. Failure to do so will result in damage to HP turbocharger. Damage or distortion will require replacement of oil supply line.



NOTE:

For ease of removal, spray penetrating lubricant onto oil supply line where it enters the HP turbocharger. See video for a method of removal of oil supply line.

- 19. Remove oil supply line (Figure 3, Item 4) from HP turbocharger only.(See video)
- 20. Disconnect oil return line (Figure 3, Item 3) from HP turbocharger only. Discard gasket.
- 21. Remove HP turbocharger turbine housing V-band clamp (Figure 3, Item 1). Discard V-band clamp.
- 22. Using a soft-blow mallet, gently tap HP turbocharger until loose.





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Figure 4. HP Turbocharger Removal.

23. While pulling on HP turbocharger center cartridge, maneuver it straight out until turbine wheel is free from turbine housing (Figure 4).

24. Separate HP turbocharger and HP turbocharger air inlet duct once free from turbine housing. Discard HP turbocharger air inlet duct tube seal.

INSTALLATION



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Figure 5. HP Turbocharger Turbine Housing.

1. HP turbocharger turbine housing.
2. HP turbocharger turbine housing flange (exterior)

1. Using suitable solvent and clean emery cloth, clean inside HP turbocharger turbine housing (Figure 5, Item 1) and exterior flange (Figure 5, Item 2).



Figure 6. Turbocharger Prime.

NOTE:

Prime new HP turbocharger center cartridge with oil prior to installation.

2. While rotating turbocharger turbine wheel, add oil to turbocharger oil supply port until oil comes out drain port (Figure 6).

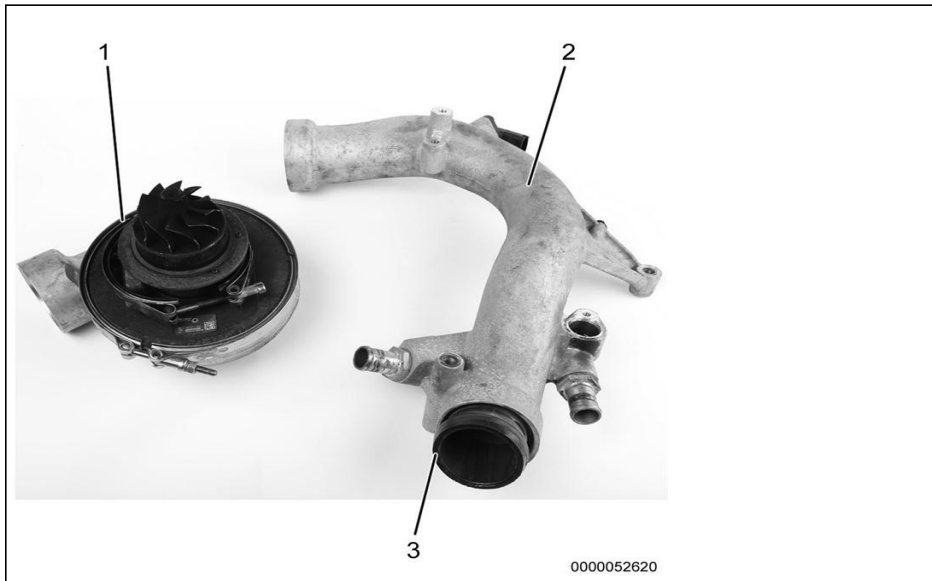


Figure 7. HP Turbocharger Center Cartridge and Air Supply Duct.

- 1. HP turbocharger center cartridge
- 2. HP turbocharger air supply duct
- 3. 72.2 x 60 (DMR) tube seal (extension tube)

3. Install new HP turbocharger center cartridge into old turbine housing and let it rest freely.

NOTE:

Make sure to install lower HP turbocharger air supply duct mounting bolt before installation is complete. This bolt will not be accessible later in the installation procedure, on some vehicles.

NOTE:

Make sure to lubricate rubber fittings and O-rings with P-80® or equivalent lubricant.

4. Install new O-ring onto HP turbocharger compressor housing.
5. Install new 72.2 x 60 (DMR) tube seal (extension tube) (Figure 7, Item 3) to HP turbocharger air supply duct (Figure 7, Item 2).
6. Position lower HP turbocharger air inlet duct bolt in place and install HP turbocharger air inlet duct with new tube seal into LPCAC.



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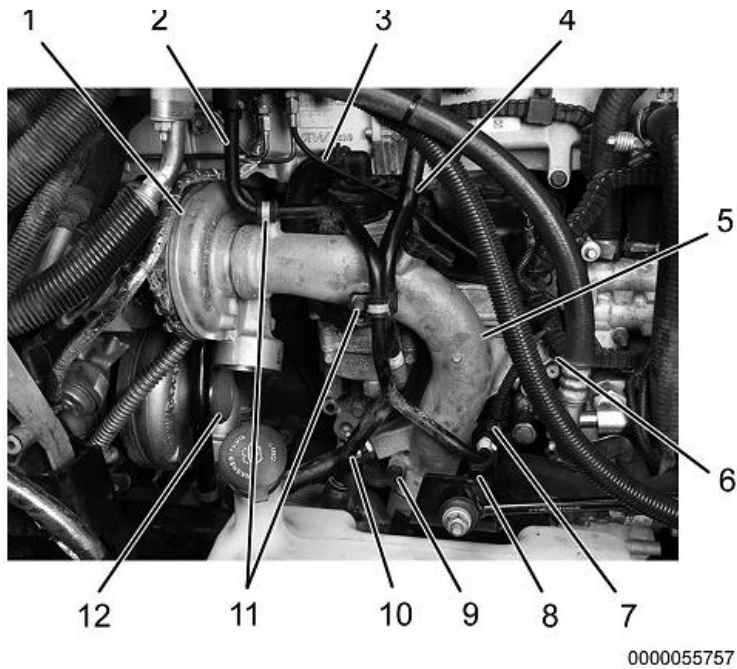
Figure 8. HP Turbocharger and Air Supply Duct.

7. While pulling out on HP turbocharger, mate air supply duct to HP turbocharger inlet (Figure 8), then insert HP turbocharger back into turbine housing.
8. Align and fully seat HP turbocharger onto dowels.
9. Install and torque new V-band clamp (Figure 3, Item 1) to 110 lb-in (12.4 N-m).
10. Install and torque two HP turbocharger air supply duct mounting bolts to 45 lb-ft (62 N-m).

CAUTION:

Make sure oil supply line does not bend. Failure to do so will result in damage to HP turbocharger. Damage or distortion will require replacement of oil supply line.

11. Install new gasket onto oil return line and install into HP turbocharger.
12. Install oil supply line into HP turbocharger.



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Figure 9. HP turbocharger and connections.

1. HP turbocharger
2. Cab heater coolant return pipe
3. Air Supply line to ACV
4. LPCAC coolant supply pipe
5. HP turbocharger air inlet duct
6. M10 x 200 bolt
7. Cab heater coolant return pipe bolt
8. Coolant return hose
9. M10 x 200 bolt
10. Coolant hose
11. M8 x 20 bolt (2)
12. Cap

13. Connect coolant hose (Figure 9, Item 10) to HP turbocharger air inlet duct (Figure 9, Item 5).

14. Connect coolant return hose (Figure 9, Item 8) to HP turbocharger air inlet duct (Figure 9, Item 5).

15. Install LPCAC coolant supply pipe (Figure 9, Item 4) to vehicle with two clamps.

16. Position cab heater coolant return pipe (Figure 9, Item 2) and secure with bolt (Figure 9, Item 7).

17. Install cab heater coolant return pipe (Figure 9, Item 2) and LPCAC coolant supply pipe (Figure 9, Item 4) on HP turbocharger air inlet duct (Figure 9, Item 5) with two bolts (Figure 9, Item 11).

NOTE:

If equipped, connect coolant filter line to cab heater coolant return pipe.

18. Install air supply line (Figure 9, Item 3) to ACV.

19. Install new O-ring into LP turbocharger inlet duct, remove cap (Figure 9, Item 12) from LP turbocharger, and install LP turbocharger air inlet duct to LP turbocharger. Secure with two bolts.

20. Install new O-ring into HP turbocharger outlet duct and install HP turbocharger outlet duct to HP turbocharger. Secure with two bolts.

21. Connect engine harness connectors at EOP sensor, Turbocharger 2 Compressor Inlet Pressure (TC2CIP) sensor (Figure 1, Item 4), Air Inlet Temperature (AIT) sensor (Figure 1, Item 9), and if equipped, Mass Air Flow (MAF) sensor (Figure 1, Item 2).

22. Secure engine harness to CCV stud with mounting nut.

- 23. Install HPCAC pipe to HP turbocharger outlet duct and HPCAC. Secure with two clamps.
- 24. Install upper portion of air inlet duct and secure with clamps.
- 25. Fill cooling system using Navistar Coolant Management Tool KL5007NAV.
- 26. Start vehicle to verify proper operation, no leaks, and no fault codes are present.
- 27. Close and latch hood.
- 28. Remove wheel chocks.

STANDARD REPAIR TIME (SRT)

Description	SRT
Remove and Replace Turbocharger Center Section	1.9 hrs

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Feedback Information

Viewed: 2967
 Helpful: 14
 Not Helpful: 2

Staff ID	Client ID	Comments	Created Date
	DY01174	You received the following feedback From: dy01174 - Robin Loef Email Address: service@lakewaytruck.com Job Classification: SE008, Service Technician Dealer: LAKEWAY TRUCK CENTRE Feedback: just tryed this on truck , not a brand new engine on stand , an actual truck with mileage on it .i think this article is pure unadulterated crap . try this acticle on an actual engine in truck with more than miles on it.	7/30/2013 1:57:55 PM

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