Countries:	AUSTRALIA, CANADA, UNITED STATES, MEXICO, PUERTO RICO	**Document ID:**	IK1201113
Availability:	ISIS, FleetISIS	**Revision:**	0
Major System:	ENGINES	**Created:**	4/3/2014
Current Language:	English	**Last Modified:**	6/24/2014
Other Languages:	NONE	**Author:**	Aaron Wenthold
Viewed:	643		

Less Info

Hide Details Coding Information

Copy Link	Copy Relative Link	Bookmark	Add to Favorites	Print	Provide Feedback	Helpful	Not Helpful
		View My Bookmarks				4	0

Title: 2010 MaxxForce 11 & 13 and 2013 N13 HT EGR Core Removal/Installation

Applies To: 2010 MaxxForce11/13, 2013 N13, All Truck Models

CHANGE LOG

2014/06/23 - Launch to field

DESCRIPTION

A faster, more effective procedure for High Temp (HT) Exhaust Gas Recirculation (EGR) Cooler repair has been developed. This document will guide the user through the procedure of in chassis replacement of the cooler core for a 2010 Emissions MaxxForce 11 or 13 or 2013 Emissions N13. The new procedure will **REPLACE** HT cooler assembly replacement for **INTERNAL** leaks.

Please note, if the LT is being repaired with a High Temp (HT) replacement, reference iKNow 1201100 for LT core replacement instructions.

It is important to thoroughly review the following instructions to prevent tool damage. A lot as been learned through the development of the tool, and important notes/areas of concern are specifically called out at relevant points.

SYMPTOMS

Diagnostic Trouble Codes & Dashboard Indicator Lights:

DTC/Light	Description
SPN 111 FMI 1	Low Coolant
SPN 2659 FMI 21	EGR Low Flow
	Malfunction Indicator Light (MIL)

	Red Stop Lamp (RSL)

Customer Observations or Concerns:

- Malfunction Indicator Light (MIL)
- Red Stop Lamp (RSL)
- Coolant consumption
- Low coolant
- Coolant puddling under engine
- White smoke from the exhaust
- Coolant in the oil or oil analysis

SPECIAL TOOLS

Tool Description	Tool Number	Comments	Instructions
LT Core Replacement Tool	12-892-04		Link
HT Core Replacement Tool	12-892-05		
Coolant Management Tool	KL5007NAV		Link
EGR Leak Detection Kit	12-892-02	Only if necessary	Link

DIAGNOSTIC STEPS

All diagnostic steps should be completed through the Fault Code Action Plans for 111-1 or Coolant Consumption/Loss. At this point, the truck should have been diagnosed with an internal leak of the HT cooler.

REPAIR NOTES:
-The following procedure should **NOT BE USED** if the cooler is **LEAKING EXTERNALLY** for cracks, porosity, broken fittings, etc. Instead, replace the entire HT cooler assembly.
-If the cooler is leaking at the joint between the HT and the center plate, replace the HT assembly.
-If leaking between the center plate and the LT assembly, reference the LT seal kit in the parts section.
-If leaking from the LT Y-Fitting (only if the fitting is bolt-on), reference the LT Y-Fitting kit.

TESTING NOTE
If **BOTH** cooler halves are found leaking, make sure the LT cooler did not appear failed due to residual air in the core from the High Temp testing. Typically this happens when the leak detection hose is not vented to atmosphere (left in water) between tests and/or when the HT is tested and the fittings are switched quickly--the air pressure in the core passages is still enough to cause bubbles when putting pressure to the LT.

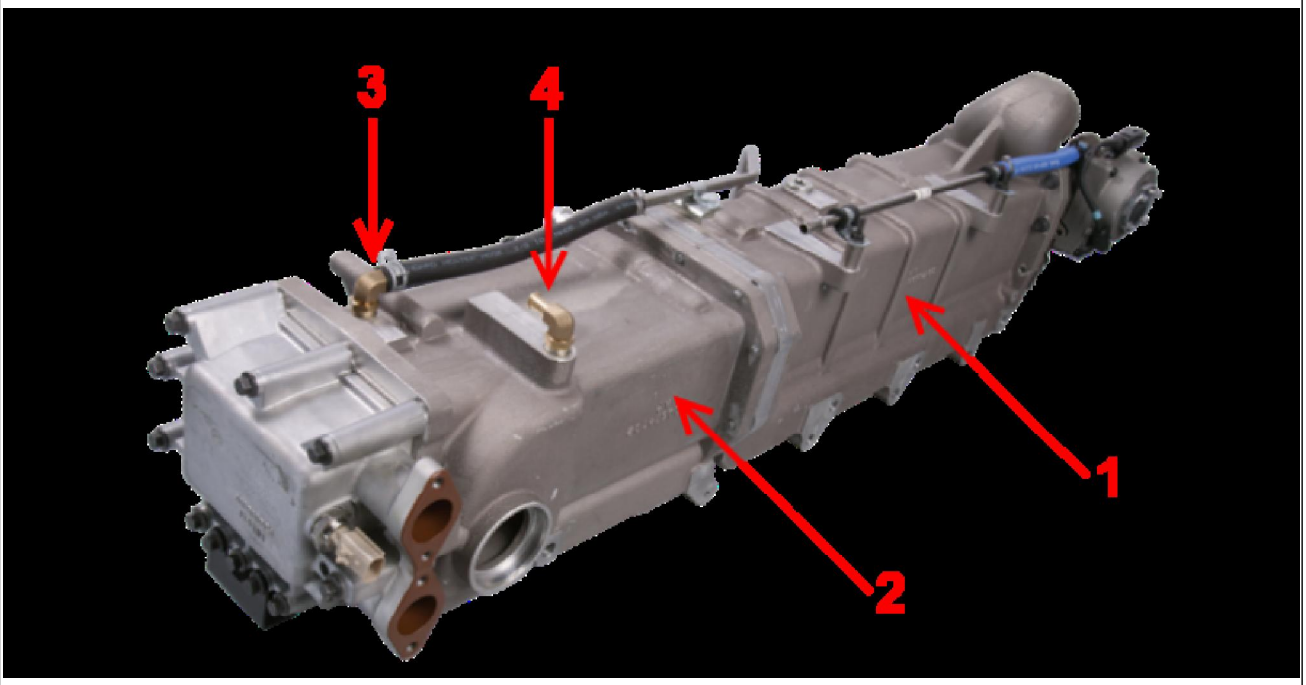

Figure 1: 2010 MaxxForce 11/13 EGR Cooler Assembly

Item 1: High Temp (HT) Cooler
Item 2: Low Temp (LT) Cooler
Item 3: LT Cooler Pressure Test Port (dearation fitting)
Item 4: HT Cooler Pressure Test Port (dearation fitting)

SERVICE PARTS INFORMATION

Kit Description	Part Number	Quantity Required	Notes
Kit, High Temp Core	2513445C91	1	Required
Kit, Low Temp Core	2513209C91	1	ONLY if necessary
Module, HT	3014254C95	1	ONLY if necessary
Module, LT (MaxxForce)	3015862C92	1	For external leaks ONLY, in place of LT Kit
Module, LT (N13)	5010689R91	1	For external leaks ONLY, in place of LT Kit

Kit, Low Temp Seal		1	For external leaks between the LT and the plate
Kit, Y-Fitting (Low Temp)	1844447C1		For leaks at LT Y-Fitting (bolt-on ONLY)
P-80 Assembly Lube	2511097C1	1	Case of 6 Pints

REPAIR STEPS

The following repair steps are for the cooler removal and installation in chassis.

WARNING
To prevent personal injury or death, read all safety instructions in the "Safety Information" section of the diagnostic manual, linked here.

WARNING
To prevent personal injury or death, shift transmission to park or neutral, set parking brake, and block wheels before doing diagnostic or service procedures.

WARNING
To prevent personal injury or death, make sure the engine has cooled before removing components.

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

REMOVAL PROCEDURE:

The dog house, coolant crossover and EGR tubes should have already been removed to gain access to the cooler for pressure testing.

1. Remove and discard the 9 bolts securing the EGR Valve to the HT cooler housing.
2. Remove the two dowel pins in the top right and bottom left corner of the housing.
3. Discard the EGR valve to cooler gasket.
4. Install the removal tool

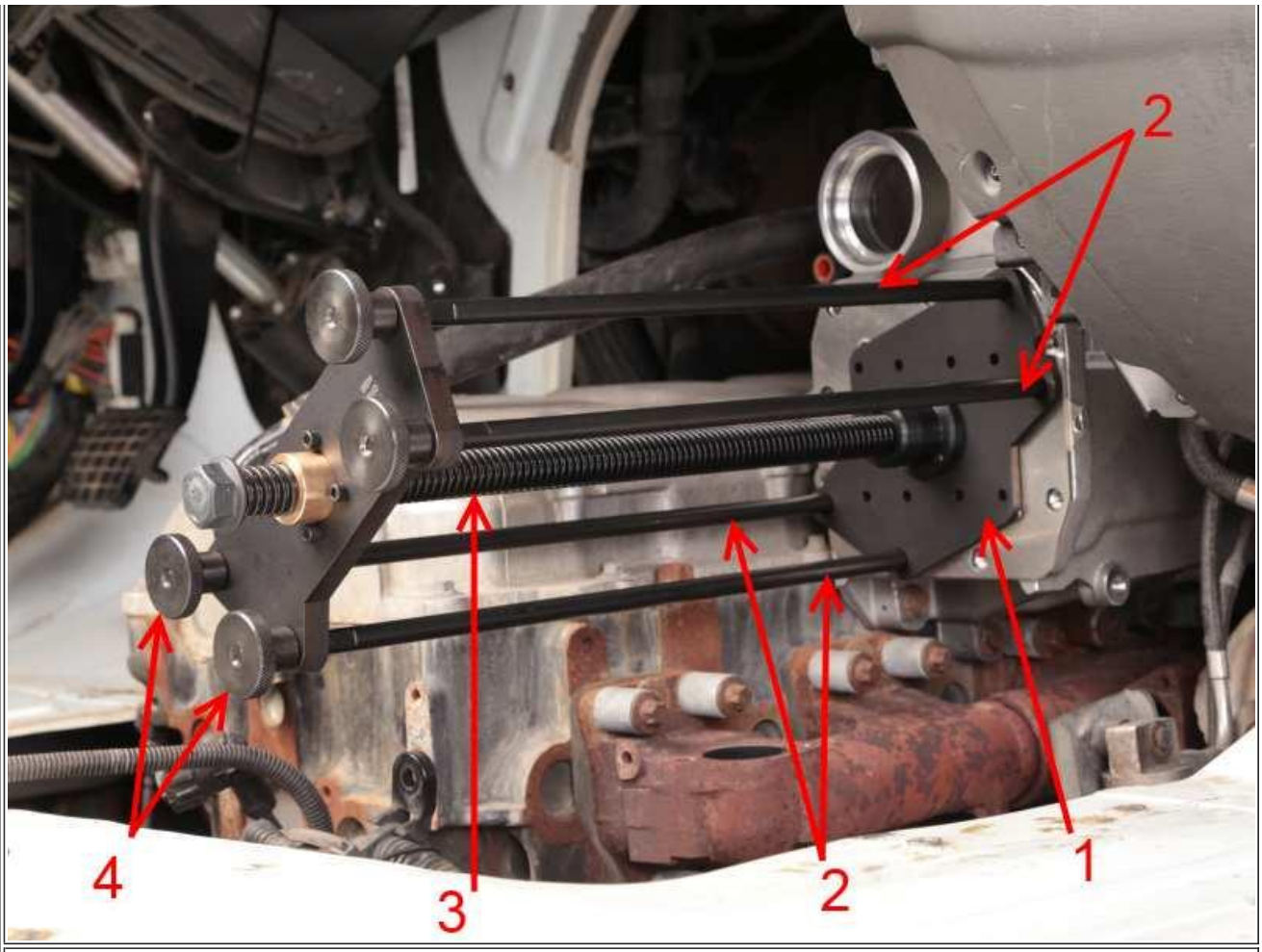

Figure 2: HT Core Removal Tool

Item 1: Removal plate
Item 2: Support rods
Item 3: Forcing screw
Item 4: Thumb screws

a. Screw in the support rods in the two upper right, and lower, bottom left corner, holes (**Figure 2**, Item 2). **Tighten using a 9mm open-end wrench**.

WARNING
It is critical that the rods get torqued to the housing. There is a bevel between the threads and the shaft, designed specifically to drive the cooler header onto the shaft. Failure to do so will lead to the header being caught on the rod and breaking/bending the rod. There have been instances of the housing being damaged to the point of replacement, as well.

b. Slide the puller over the rods

c. Attach/tighten the thumb screws (**Figure 2**, Item 4).

Figure 3: HT Core Tool Plate with Screws

d. Lastly screw the removal plate into the core using the eight screws supplied in the HT kit (Figure 3).

Reference the HT Tool Instructions (12-892-5, TL2900093) for more information.

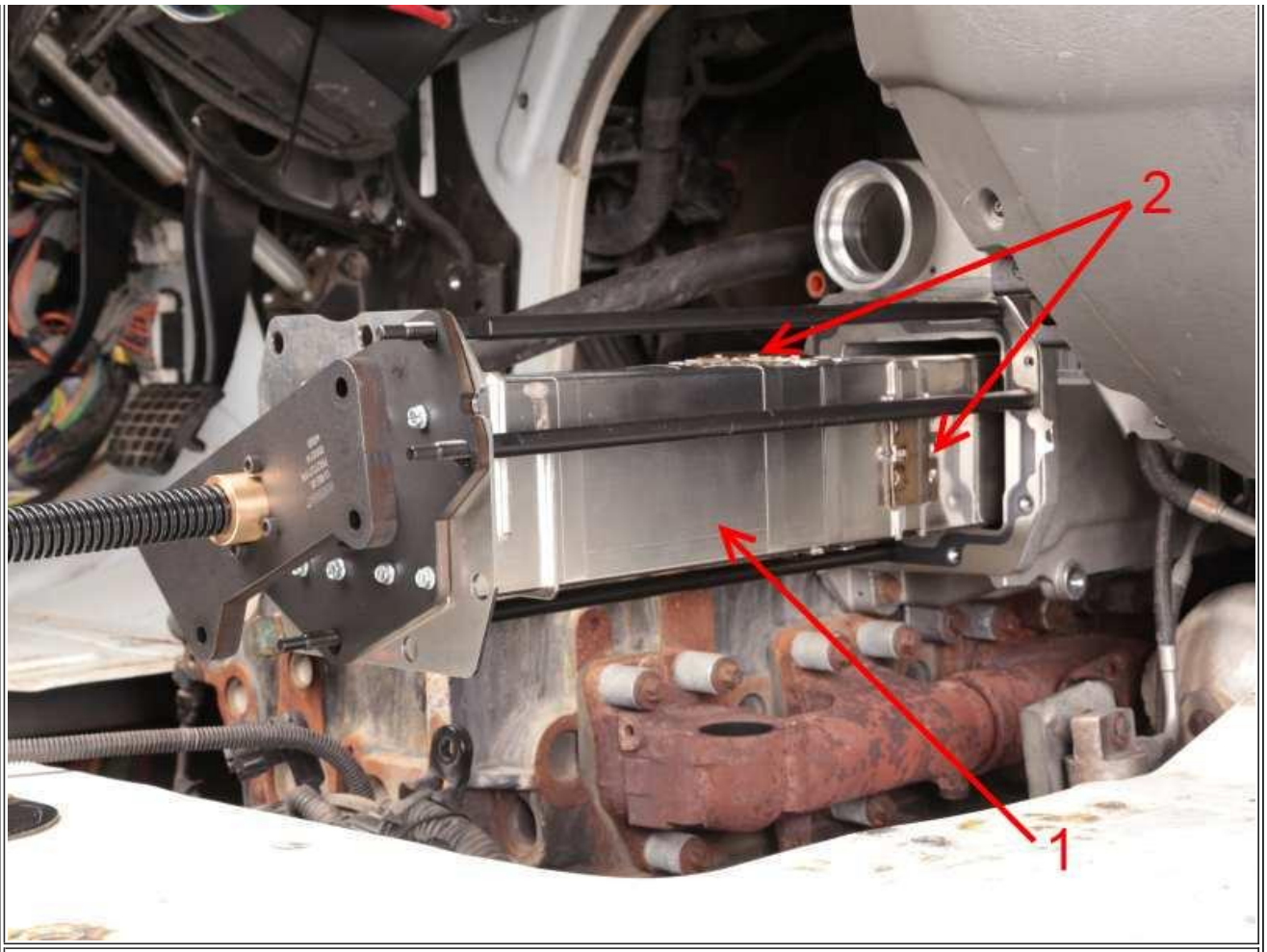

Figure 4: High Temp Core and Spring Clips

Item 1: HT Cooler Core
Item 2: Spring Clips

5. Back out the bolt to extract the core from the housing **(counter-clockwise)**.

There are two pairs of spring clips supporting the core in the housing. Therefore, the core will need to be pulled about 16 inches before it will be free to remove.

6. Unscrew the knobs from the rods.
7. Remove the cooler core from the housing.
8. Unscrew the screws from the removal plate/core and discard.
9. Unscrew the rods to remove the gasket (discard).

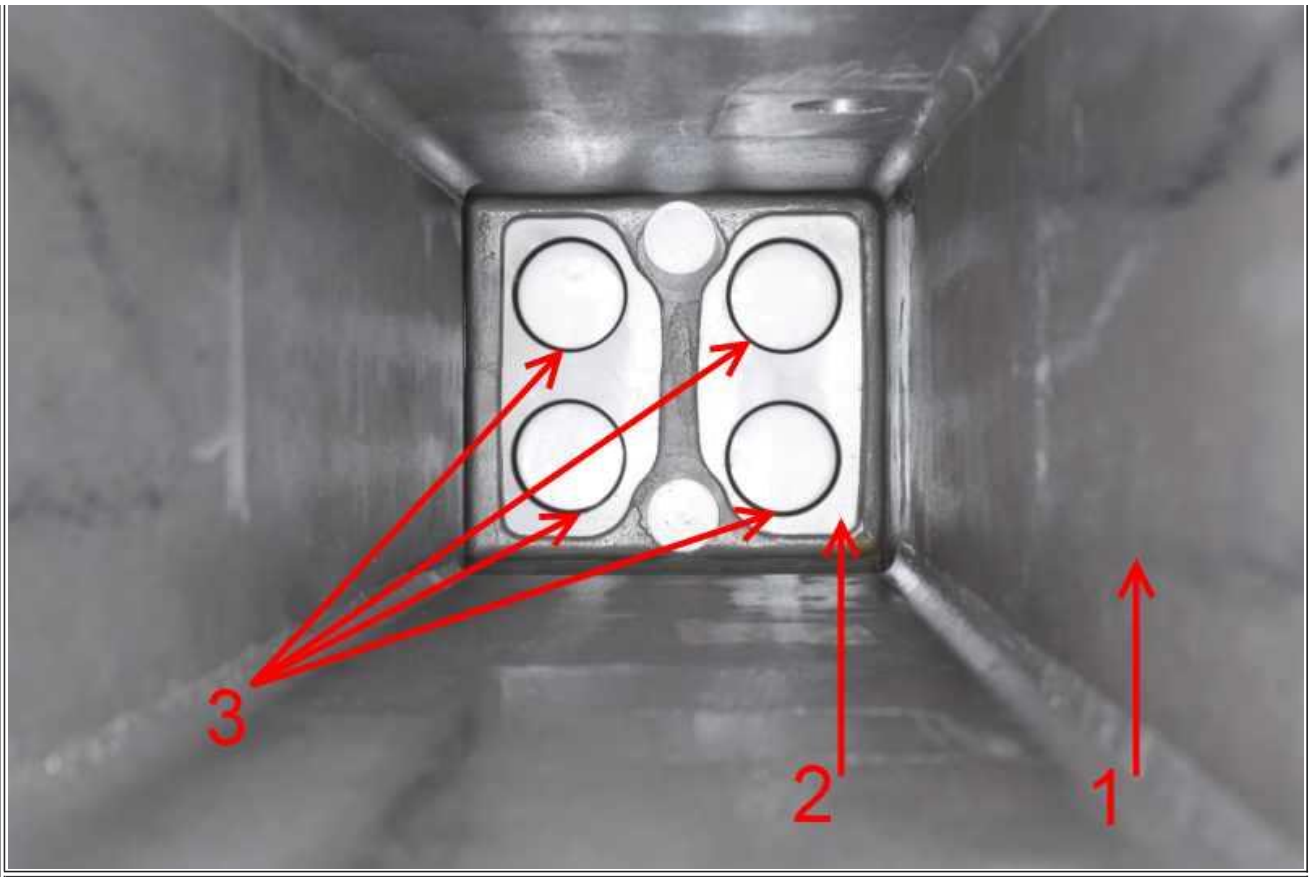

Figure 5: HT Diffuser O-Rings

Item 1: HT Housing
Item 2: Manifold (joint) Plate
Item 3: O-Rings

10. Use a pick to remove the four o-rings in the center of the cooler and discard. *The o-rings must be replaced every time the core is replaced. Non-compliance will result in premature failure of the core.*

INSTALLATION PROCEDURE:

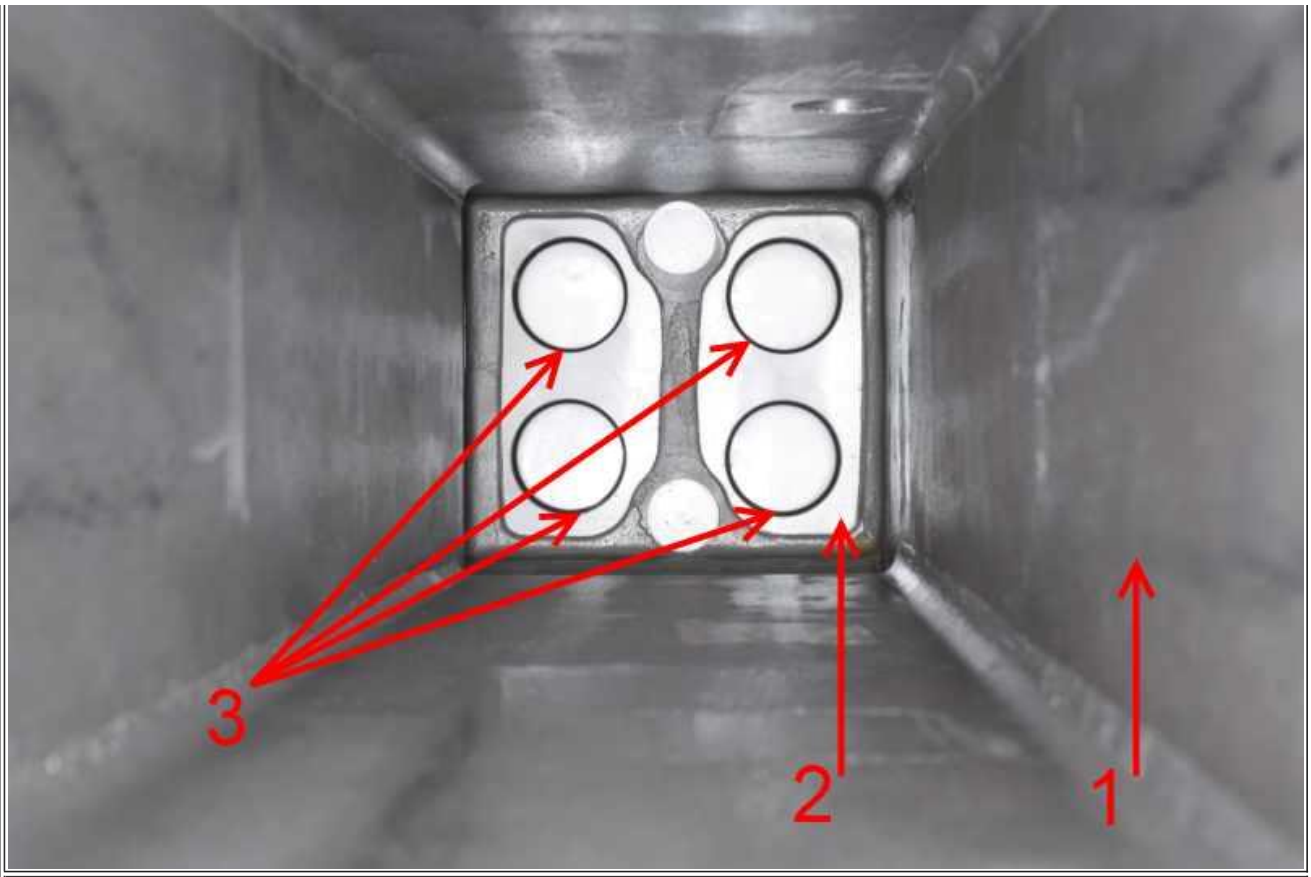

Figure 6: HT Diffuser O-Rings

Item 1: HT Housing
Item 2: Manifold (joint) Plate
Item 3: O-Rings

1. Install the four o-rings from the HT kit (**Figure 6**, Item 3).

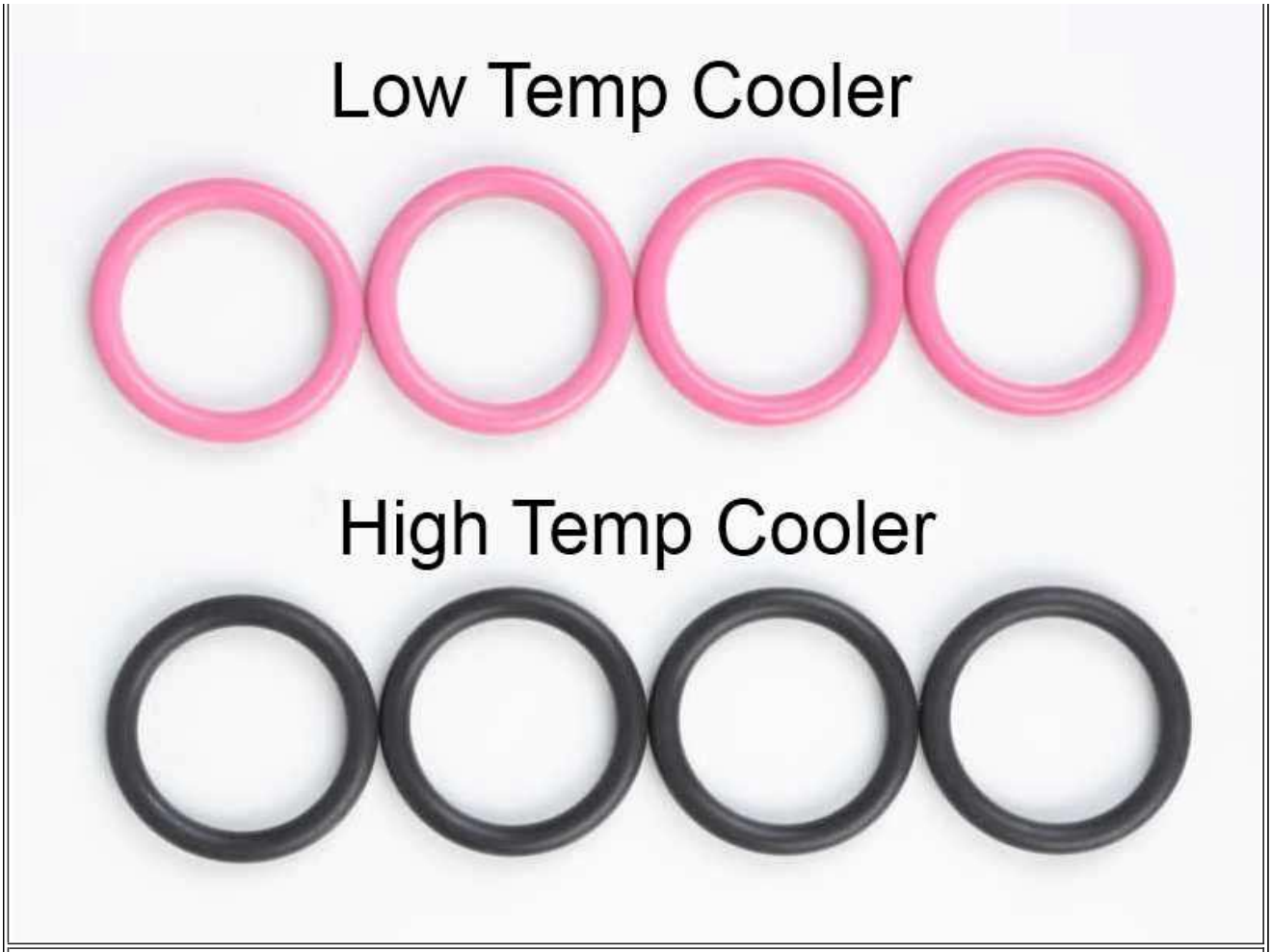

Figure 7: Cooler Core Kit O-Rings

WARNING
There are two o-ring designs and both are the same size with different durometers. Make sure to use only the black o-rings on the HT core and pink o-rings on the LT core.

2. Apply generous amounts of P-80 to the four o-rings.
3. Install the two dowel pins into the housing. Use a hammer to tap them in, if necessary.
4. Install the core to housing gasket.
5. Screw in the four rods from the tool kit (tighten using a 9mm open-end wrench).

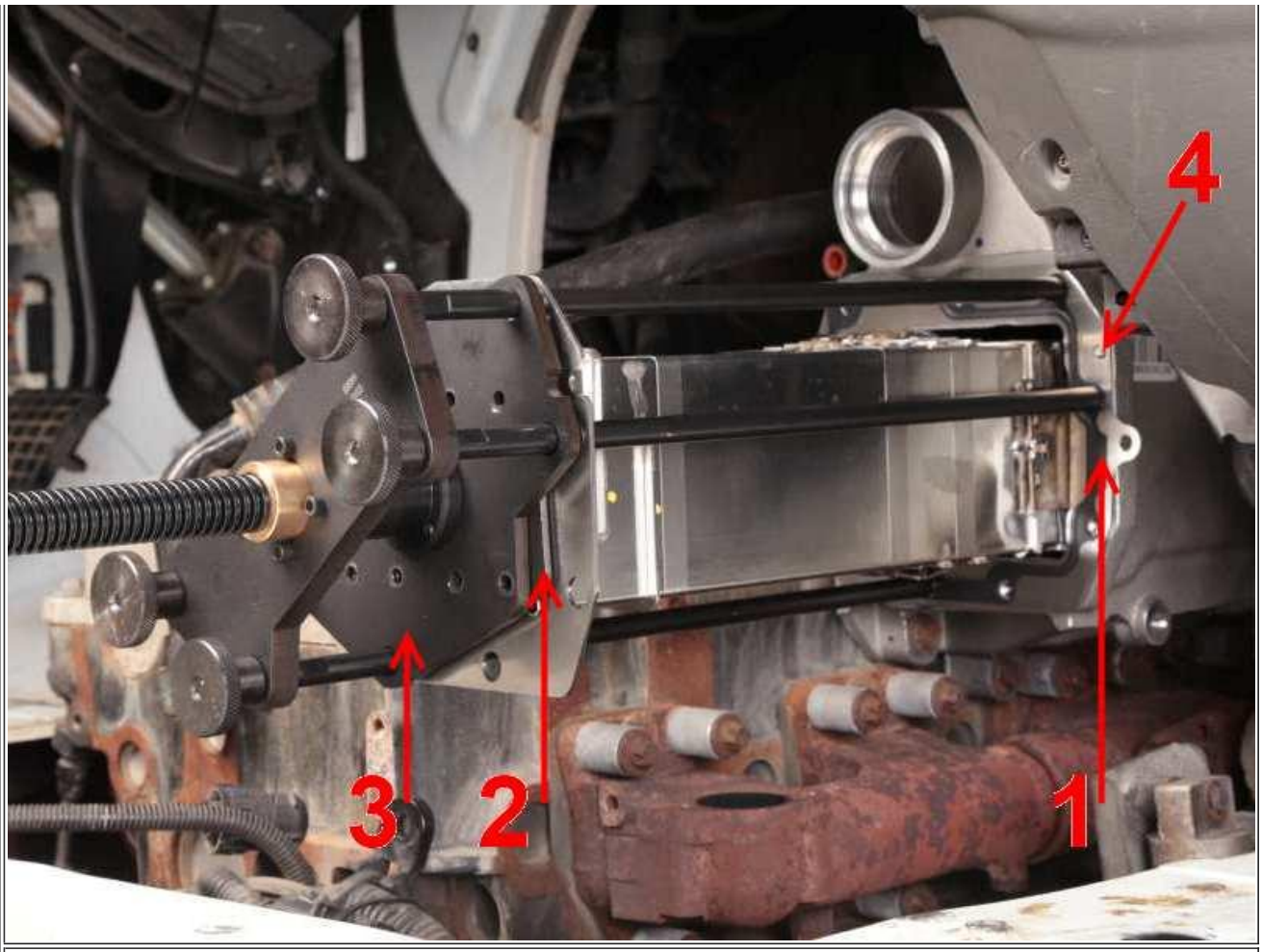

Figure 8: HT Core Installation

Item 1: Core to Housing Gasket
Item 2: Installation Plate
Item 3: Removal Plate
Item 4: Dowel Pin

6. Apply liberal amounts of P-80 to the outlet manifold and spring clips of the HT core.
7. Slide the HT Core into the housing.
8. Attach the insertion plate to the tool and slide it over the rods.
9. Screw the thumbscrews onto the rods.
10. Use a torque wrench to tighten the bolt, which will drive the core into the housing. Stop when the core header touches the gasket.

NOTE
DO NOT OVER TIGHTEN. Stop when the plate merely touches the gasket/housing.
The core should take up to 10 lb-ft of bolt torque to slide in. **Damage to the tubes will occur if the torque exceeds 15 lb-ft (equates to 1000 lb force).**

11. Remove the knobs, tool and rods.
12. Install the EGR Valve gasket.

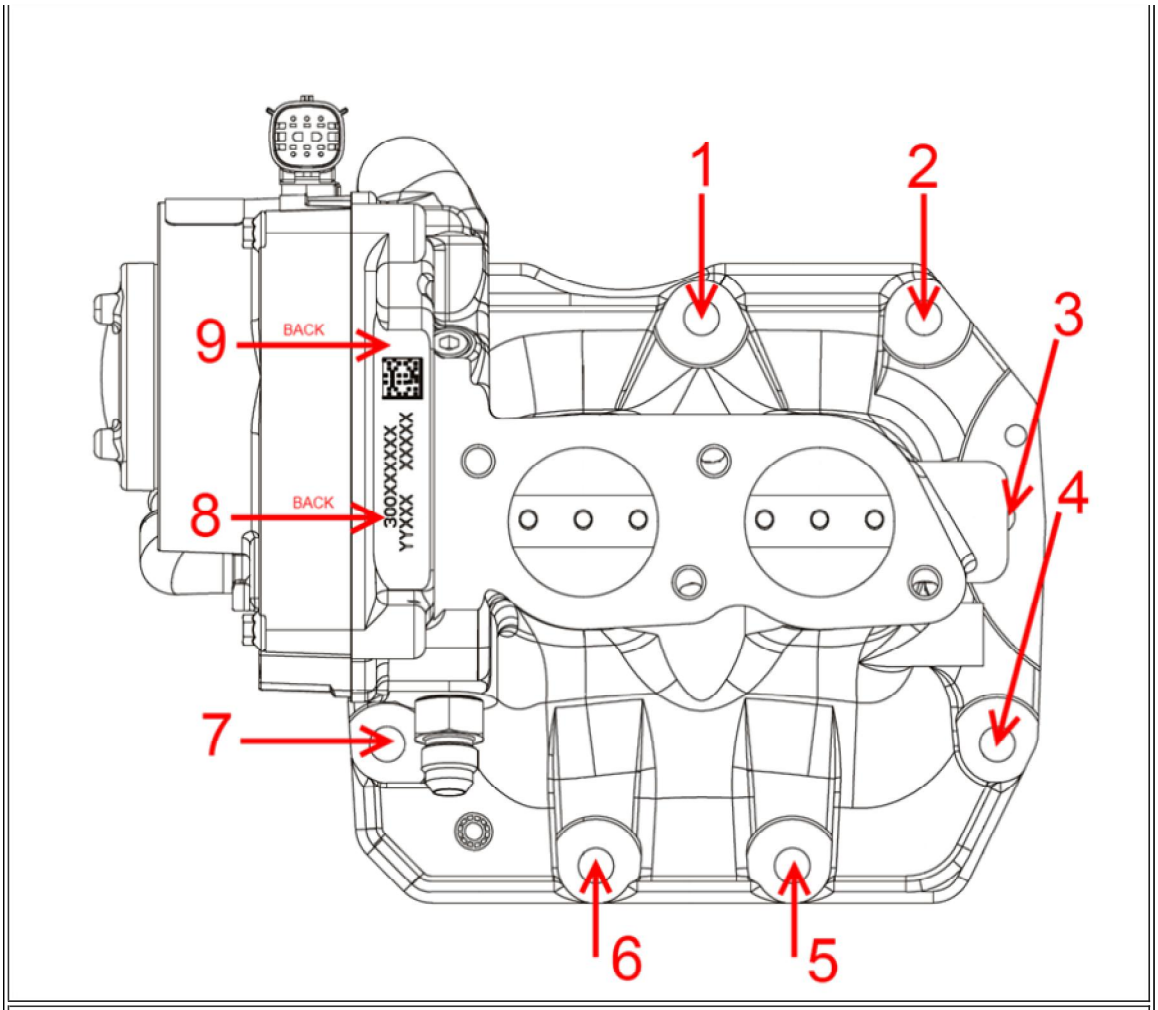

Figure 9: EGR Valve Bolt Notation

13. Install the EGR valve and torque as follows, referencing Figure X for bolt position notation.
    a. Hand tighten all
    b. Torque "1-5-7-4" to 5 N-m (4 lb-ft)
    c. Torque "5-1-6-2-7-3-4-8-9" to 24 N-m (18 lb-ft)
14. Attach all coolant lines for cooling system refill. Do not begin truck reassembly yet.
15. Perform vacuum fill of the cooling system while watching for an inability to maintain vacuum.

NOTE
If the system is unable to maintain vacuum, perform a cooling system pressure decay test. If no external leaks can be found, pressure test the EGR Cooler using the leak detection tool.
The vacuum fill is a critical aspect of the repair. Any issues (cut/damaged/missing o-rings) will be caught here, as well as ensuring no air pockets are left in the system (which can reduce the life of the cooler or make the system appear leaking as the pockets are burped).
If there is no choice but to use the bucket fill method, it will be CRITICAL to pressure test the cooling system after the repair.

16. Assemble the remaining components removed for pressure testing
17. Per best practice, verify repair.

For an internal leaking cooler

Replace the engine oil and filter for coolant contamination and follow iKNow IK1201065 for Lambda Sensor Relearn.
Provide the customer with oil change information.

WARRANTY INFORMATION

Warranty Claim Coding:

Group:	12000 - Engine
Noun:	892 - Cooler, EGR

Standard Repair Times: **WILL BE UPDATED WHEN THEY ARE PUBLISHED**

Step	Description	SRT	Hours
HT CORE REPLACEMENT IN CHASSIS			
	HT core replacement (**including pressure test**) - ProStar	R12-6892U-	4.4
	HT core replacement (**including pressure test**) - TranStar	Q12-6892U-	4.1
	HT core replacement (**including pressure test**) - WorkStar	N12-6892U-	4.4
	HT core replacement (**including pressure test**) - CAT CT660	TC12-6892U-	4.4
MODULE ASSEMBLY REPLACEMENT (unable to replace core only)			
	ProStar+ HT and/or LT Replacement	R12-3892U-34	7.6
	TranStar HT and/or LT Replacement	Q12-3892U-34	7.4
	WorkStar HT and/or LT Replacement	N12-3892U-34	7.9
	CAT CT660 HT and/or LT Replacement	TC12-3892U-34	
LT CORE R&R IN CHASSIS WITH HT (see LT iKNow when LT ONLY rep'd)			
	ProStar+122 LT Core Replacement in Chassis	R12-6892U-	1.4
	ProStar+113 LT Core Replacement in Chassis	R12-6892U-	1.5
	TranStar LT Core Replacement in Chassis	Q12-6892U-	1.8
	WorkStar LT Core Replacement in Chassis	N12-6892U-	1.8
	CAT CT660 LT Core Replacement in Chassis	TC12-6892U-	1.8
LT CORE R&R OFF CHASSIS (add-on when HT MODULE replaced)			
	ProStar+122 LT Core Replacement off Chassis	R12-6892U-6	0.3
	ProStar+113 LT Core Replacement off Chassis	R12-6892U-6	0.3
	TranStar LT Core Replacement off Chassis	Q12-6892U-6	0.3
	WorkStar LT Core Replacement off Chassis	N12-6892U-6	0.3
	CAT CT660 LT Core Replacement off Chassis	TC12-6892U-6	0.3
HT CORE R&R ADD-ON			

	All Models--for situations where a tech already has parts down to the cooler removed. Examples: EGR Valve repair, EGR Tubes, Exhaust Manifold, etc.		0.5
MISCELLANEOUS RELEVANT SRTs			
	Cooling System Leak Test	A09-9022A	0.3
	Engine Oil Replacement *Already in HT and/or LT **Module Assembly** Replacement SRT *Use when core is leaking and the only part replaced	A12-1889U	0.6
	Lambda Relearn or Replacement (see SRT section of iKNow)	IK1201065	

EXAMPLE: A ProStar+113 has the HT replaced for leaking and the LT replaced for 2659-21. The warranty claim should be HT Core R&R (R12-6892U-X, 4.4 hrs), LT Core R&R (R12-6892U-X, 1.5 hrs), Oil Change (A12-1889U, 0.6 hrs), and lastly, Lambda relearn/replacement, which depends on the condition of the Lambda.

With the warranty claim comments, we need only the basics--"Truck came in with leaking HT and plugged LT. Replaced both cores, oil, and performed lambda relearn/replacement."

SRT Manual

OTHER RESOURCES

2010 MaxxForce 11/13 Resource Center (IK1200548)
2010 MaxxForce 11/13 Diagnostic Manual
2010 MaxxForce 11/13 Service Manual

HT Tool Instructions (TL2900093)

EGR Low Flow - 2659-21 (IK1201100)
LT Core Removal/Install Tool Instructions (TL2900085)
ProStar LT Instructions (iKNow 1201096)
TranStar LT Instructions (iKNow 1201097)
WorkStar/CAT LT Instructions (iKNow 1201098)

Hide Details

Feedback Information

Viewed: 642
Helpful: 4
Not Helpful: 0

No Feedback Found