



BULLET PROOF DIESEL®
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INSTALLATION MANUAL

BULLET PROOF VK688-100
Oil Cooler Kit
2003-2007
F-SERIES

NEAL TECHNOLOGIES, INC.
U.S. PATENT 8, 887, 688. OTHER PATENTS PENDING
UPDATED 4/30/2024

Read BEFORE You Begin Installation

There are some drawings in the back of this manual that can aid you in identifying the proper pieces.

Part Number	Description	Quantity
90201121	BPD Oil Transfer Block Assembly	1
6503105	6.7L Oil Cooler For VK 688 Kit	1
90201193	6.7L Oil Cooler Adapter Plate Assembly	1
90201124	VK688 Hose Prepack	1
90100092	Hardware Prepack	1
6502235	6.0 Oil Cooler Relocation Bracket	1
90100077	EGR and Intake Gasket Set	1
6200160	Vacuum Ball	1

Read BEFORE You Begin Installation

Installation Overview

Installing the Bullet Proof Diesel Oil Cooler Relocation Kit is no more difficult than replacing the OEM oil cooler. It is important to remember that this is major surgery. Cleanliness and taking the time to do the job correctly are essential for a perfect installation.

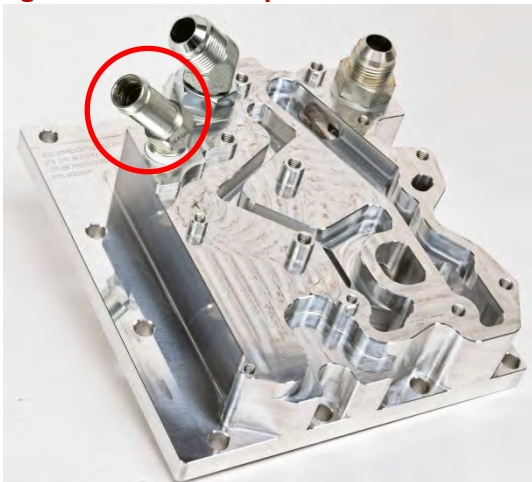
Extra Help: Step-By-Step Instructions for Removal of the Intake Manifold

Detailed installation and removal instructions for the EGR Cooler and Engine Oil Cooler can be purchased online. Please go to BulletProofDiesel.com. Click on "Questions? We have answers". Click on "Do-It-Yourself" and find the link to purchase the information from eAutoRepair.net for your make and model. Once purchased, please proceed to the section:

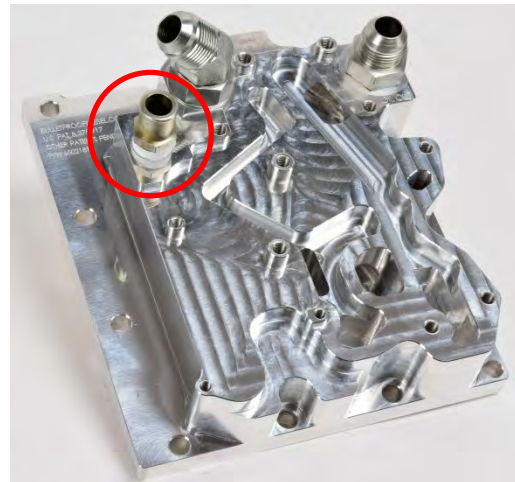
**Repair → Type "INTAKE MANIFOLD" → Search
Engine → Click on "MECHANICAL"
Click on "ENGINE – 6.0 DIESEL" —F250-F550 PICKUPS'
Click on "HEADINGS"**

Search for the "IN-VEHICLE REPAIR" category, which includes removal and replacement instructions for the intake manifold.

Please note: A 2003-2004 truck with a ROUND EGR cooler will need to remove the 45° fitting that comes installed in the oil transfer block and replace it with the straight fitting in the hardware pack.



1. Bullet Proof Diesel Oil Transfer Block with 45° Fitting



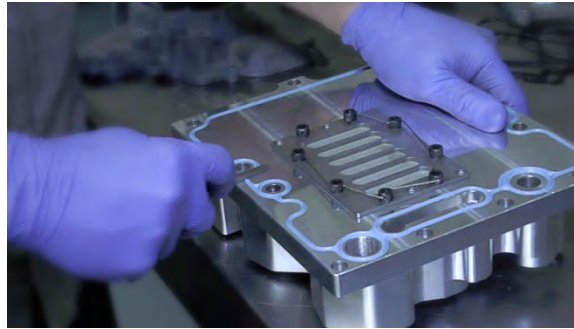
2. Bullet Proof Diesel Oil Transfer Block with Straight Fitting

Installation Stage 1: The Oil Transfer Block

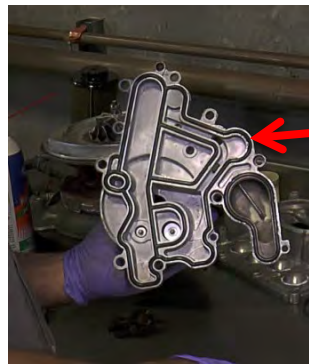
1. Follow the OE oil cooler removal procedures (which include the removal of the intake manifold and turbo charger).

NOTE: THERE ARE NUMEROUS UPGRADES AND UPDATES THAT CAN AND SHOULD BE INSTALLED DURING THIS PHASE. YOU CAN PURCHASE THE APPROPRIATE UPDATE KIT FROM BULLETPROOFDIESEL.COM SEARCH KEYWORD: "PROFESSIONAL"

2. Install the provided OE oil cooler gasket into the Bullet Proof Diesel (BPD) Oil Transfer Block.



3. Remove the OE Oil Filter Base from the OE Oil Cooler block and remove the used seals from the base.



OE Filter Base Seal

4. Clean the seal groove of the OE Oil Filter Base and install the provided replacement seal.

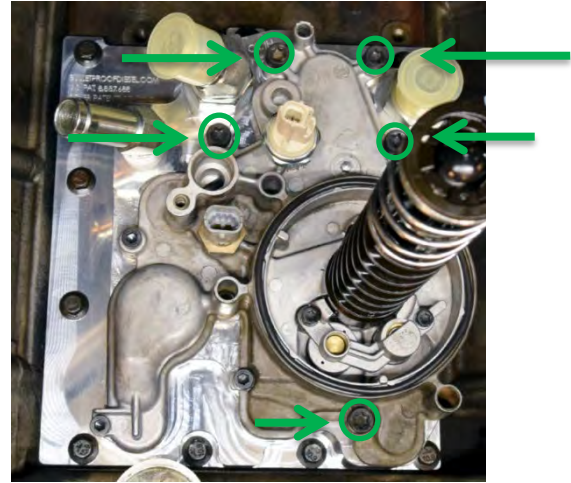
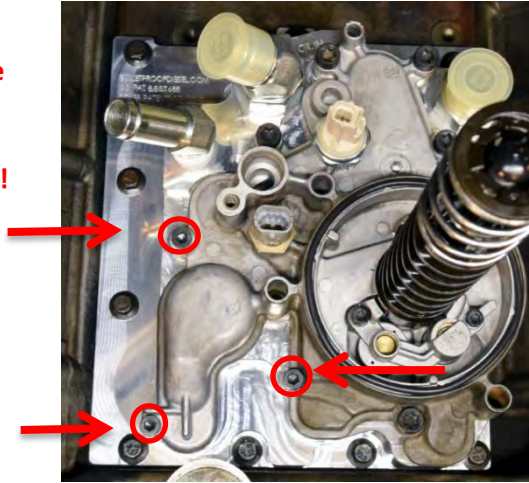


- Using the three (3) provided M6 x 12mm socket head cap screws and the remaining five (5) OE Torx hardware, re-install the OE Oil Filter Base to the BPD Oil Transfer Block.

Shorter M6 Fastener Locations three (3)

OE Torx Fastener Locations five (5)

CRITICAL: Do Not install OE hardware in these three (3) holes. Use the provided hardware!



- Be sure to remove all the oil and debris from the HPOP reservoir.



Tip: Plug the oil port with a lint free cloth to keep debris out of the oil system while cleaning.

- Remove and discard the OE HPOP filter. The BPD Oil Transfer Block has an integral HPOP screen, made from stainless steel, which operates in place of the OE HPOP filter.



BPD HPOP Screen

8. Use the OE bolts and torque specifications to install the BPD Oil Transfer Block.
Replace the OE Filter Housing Seal on the filter base. Do not reinstall the OE Filter housing and Oil Filter at this time, as it will be completed after the oil transfer hoses and intake manifold are installed.

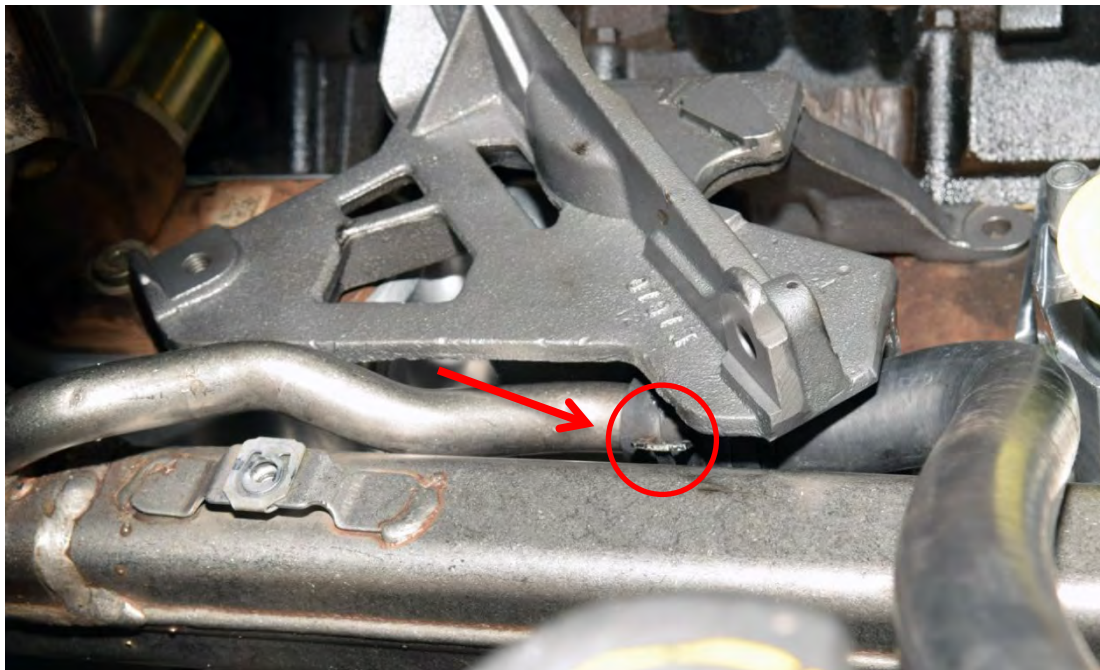


**OE Filter
Housing Seal**

9. Discard the OE silicone coolant hose. This is replaced by the 90° molded heater hose and spring clamps supplied in the kit. We recommend using the spring clamps over regular hose clamps due to the location and the difficulty involved with tightening regular hose clamps after the installation is complete. Spring clamps, by design, will tighten as the rubber relaxes.
10. Following the OE procedure, install the intake manifold. Do not install the OE Oil/Fuel Filter Housing or charge air tubes.

NOTE: With the elimination of the blue silicone hose, you will need to secure the 90° molded heater hose to the EGR cooler in a different manner. It is recommended to use the provided spring clamps to properly secure the hose. It is important to note the routing of the hose over the EGR cooler and intake manifold as shown, as well as the position of the clamps.

2 spring clamps.



Please note: Be sure there is no interference between the clamp and the turbo pedestal.

11. Remove the Oil Filter Standpipe. This will make your hose routing and turbo installation easier.



Installation Stage 2: Oil Hose Installation and Routing

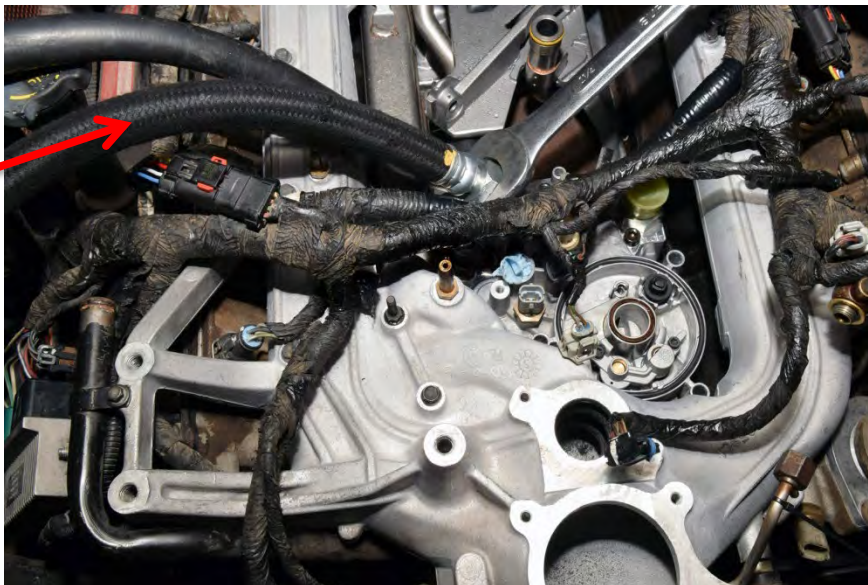
1. Install Coolant Hose #1 (90° Molded Coolant Hose) from EGR cooler towards the passenger side, over the EGR cooler and intake manifold as shown. Make sure to route the hose over the heater hose.

90° Molded
Coolant Hose



2. Secure Oil Hose #1 (21.75") to the Oil In port on the oil transfer block. Route this hose following the same path of the previously installed coolant hose.

Oil Hose #1



3. Following the OE procedure, install the turbo. Do not install the OE Oil/Fuel Filter Housing, Oil Standpipe, or charge air tube yet.

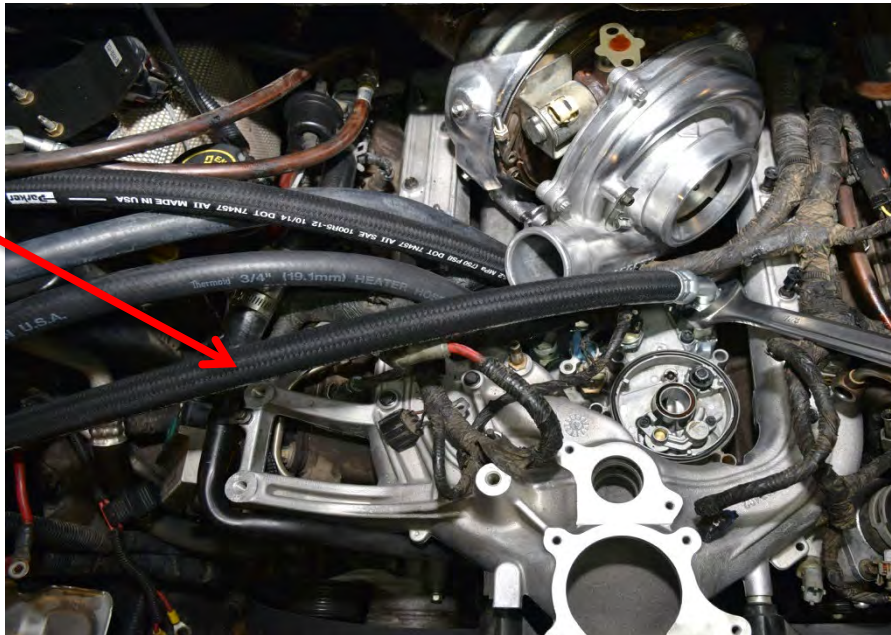
4. Install Coolant Hose #2 from transfer block Coolant out port towards the passenger side, following the previously installed hoses. Make sure to Route over the heater hose.

Coolant Hose #2



5. Install Oil Hose #2 from transfer block Oil Out port towards the passenger side also following the previously installed hoses. Make sure to route this hose behind the turbo oil feed line.

Oil Hose #2



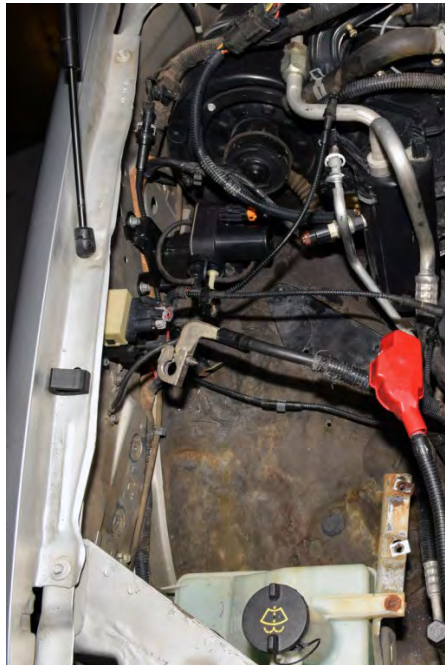
NOTE: Take caution when routing hoses and make sure they are not pinched or against any sharp edges. Pay special attention to hose routing around the alternator.

Installation Stage 3: The Oil Cooler Bracket, Oil Cooler, and Oil Cooler Relocation Plate

1. Disconnect and remove passenger side battery and battery tray.



2. Vacuum reservoir removal is necessary for this installation; remove it and set it aside. A new vacuum reservoir is included in this kit.



3. Install the three (3) vibration isolators using the three (3) M6 x 1.0 nuts and three (3) M6 washers to the oil cooler relocation bracket.



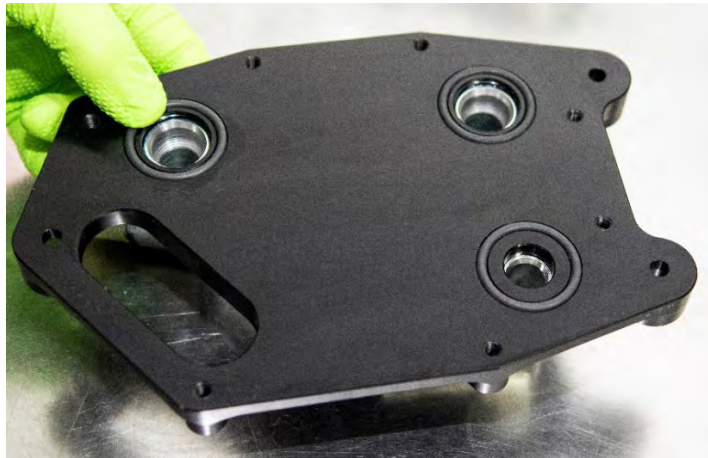
4. Place the Bullet Proof Diesel oil cooler relocation bracket in the battery area on the passenger side.



5. Place the battery tray on top of the bracket. Using the OEM existing hardware, bolt the tray into place.



6. Using the three (3) o-rings provided place one (1) in each of the o-ring grooves on the bottom of the relocation plate. Make sure to press the o-rings into the groove until they are fully seated.



7. Using the seven (7) provided screws, attach the new oil cooler to the relocation plate and tighten to 89-inch lbs. (7.4 lb./ft).

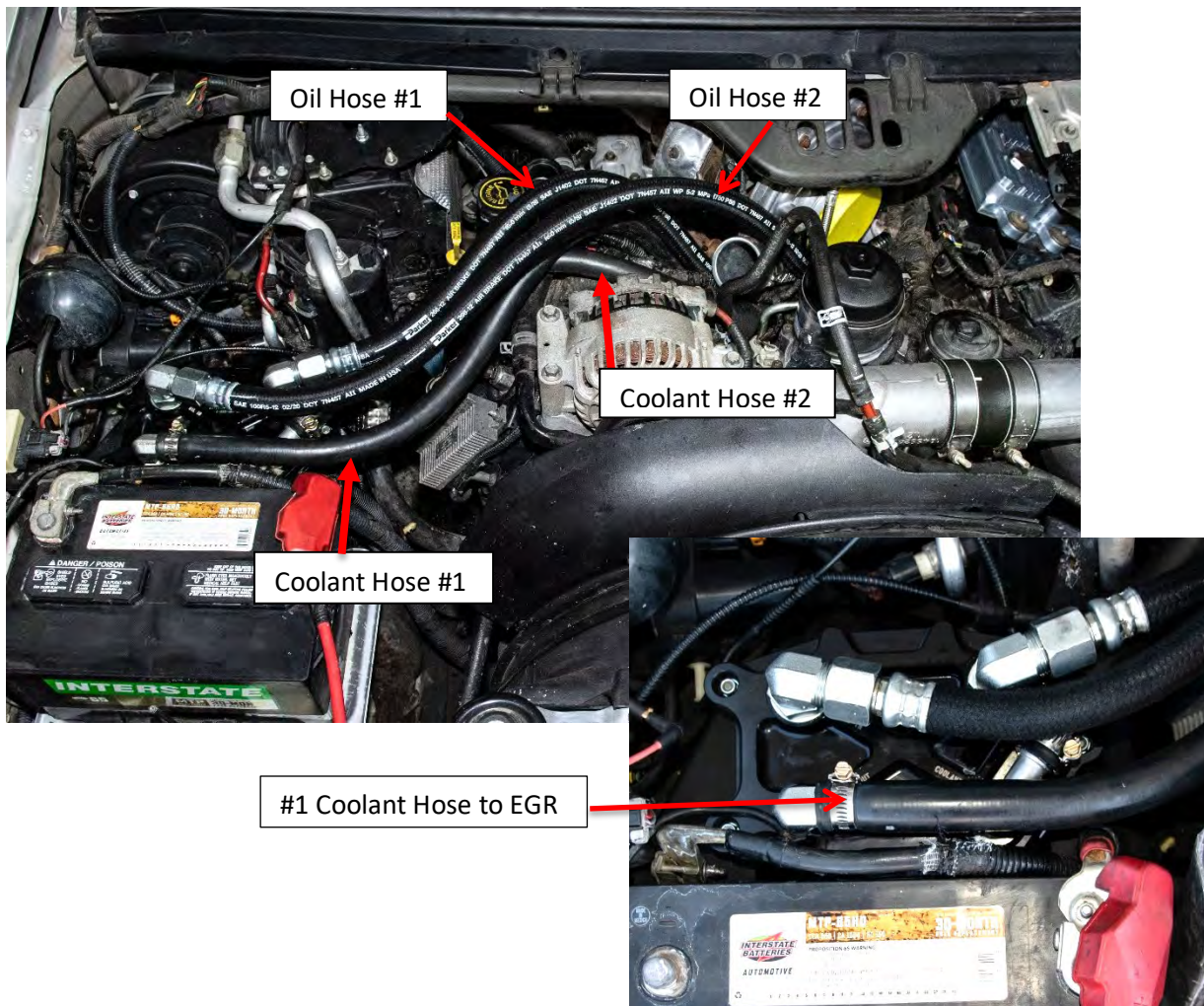


8. Place the assembled oil cooler relocation plate and oil cooler into the bracket.



9. Secure using the using the three (3) M6 x 1.0 nuts and three (3) M6 washers.





10. First, attach the (#1) first oil hose to the “oil out” port on the adapter plate and tighten the fitting.
11. Attach the first (#2) coolant hose, coming from the oil transfer block to the “coolant in” port on the adapter plate and tighten the hose clamp.
12. Attach the (#2) Second oil hose to the “oil in” port on the adapter plate and tighten the fitting.
13. Attach the second (#1) coolant hose coming from the EGR cooler to the “coolant out” port on the adapter plate and tighten the hose clamp.

NOTE: Now all your hoses should be installed, and all clamps and fitting should be tightened. At this point, the hoses should appear like the picture above.

14. Reinstall your battery. Leave your battery ground cable disconnected until the completion of your installation.

Installation Stage 4:

1. Once the hose fittings are installed and tightened, install the OE Filter Oil Standpipe and OE Filter Housing per the OE installation instructions.



2. Reinstall the oil filter and cover. Continue the OE assembly instructions to complete the installation.



This shows the complete installation before the new vacuum reservoir installation. For vacuum reservoir installation instructions, please see separate installation manual.



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INSTALLATION MANUAL

**BULLET PROOF VK688 Oil Cooler Kit
Vacuum Reservoir Install**

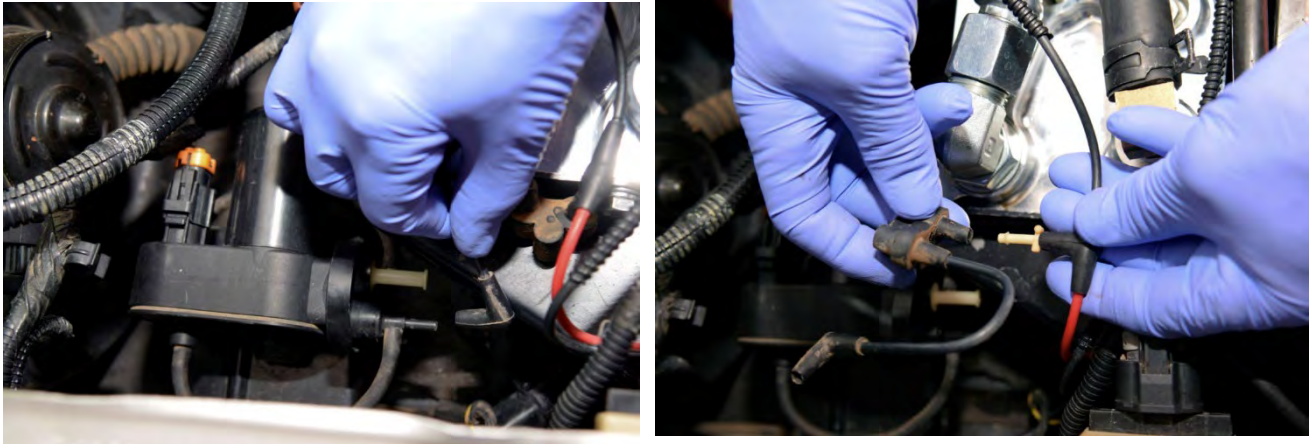
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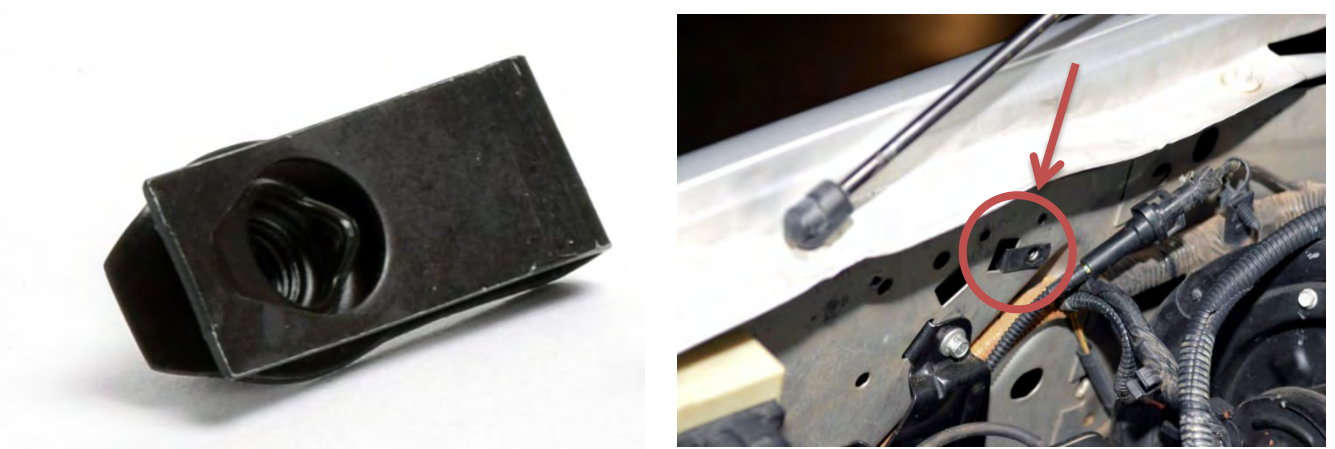
This kit is designed to replace the OEM vacuum reservoir you removed prior to installation of the VK2688 Oil Cooler Relocation Kit.

Part Number	Description	Quantity
6200160	Vacuum Ball	1
90100092	Hardware Prepack	1
6200156	Extruded Nut M6	1
6200159	Self-Tapping ¼" x 1" Screw	1
6200155	M6 Hex Head Bolt	1
6200161	3/16x1/4 Vacuum Adapter	1
6400102	5" x ¼" Vacuum Line	1
6400101	3" x 5/32" Vacuum Line	2

1. Disconnect the vacuum line from the vacuum pump. Disconnect the vacuum line as shown.



2. Install the extruded nut into the existing, square hole in the truck body.



3. Install the bolt into the extruded nut loosely, only using a few turns.



- Slide vacuum reservoir ball onto the installed bolt and install self-tapping screw into truck body.



- Tighten the provided M6 bolt onto the vacuum reservoir ball.



6. Run the 1/4" - 5/32" vacuum line from the vacuum reservoir ball to vacuum pump.



7. Install the 5/32" vacuum line in between the vacuum reservoir ball and the original vacuum tee.





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U.S. Patent: 9,346,392

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