



BULLET PROOF DIESEL®
.COM

INSTALLATION MANUAL

BULLET PROOF OIL COOLER KIT
2003-2010
E-SERIES

NEAL TECHNOLOGIES, INC.

U.S. PATENT 8,375,917. OTHER PATENTS PENDING

UPDATED 9/27/2023

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These are the parts included in your kit. Please locate and identify each part prior to starting the installation process. There are diagrams at the end of this manual that will help guide you with part identification. Note: Some of the items below are not shown in the diagrams.

Part Number	Description	Quantity	
90201029	E-Series Manifold Block	1	Oil Block Assembly
6200003	Transfer Block Oil Gasket	1	
6000070	Factory Adapter O-Ring	1	
6400049	Dual Crown O-Ring	2	
6502056	Dual O-Ring Crown	1	
6200004	M8 x 1.25 x 35mm Bolt	2	
6400004	3/4" Blue Silicone Hose – 7"	1	
6200002	Constant Tension Spring Clamp	2	
6200099	M8 1.25 x 45mm Bolt	2	
6000092	EGR/Intake Gasket Set	1	
6000036	Turbo Hardware Kit	1	Oil Filter Adapter
6000074	Factory Hard Line O-Ring	4	
6502057	E-Series Oil Filter Adapter	1	
6000013	Oil Filter	1	
6200094	M8 x 1.25 x 30mm Bolt	3	
90100083	45° JIC Elbow 3/4"	1	
90100082	90° JIC Elbow 3/4"	1	
6200093	M8 x 1.25 x 12mm Bolt	1	
6502090	E-Series Oil Filter Bracket	1	

Part Number	Description	Quantity	
90100023	E-Series Hard Line #3 Oil Filter Adapter In	1	Hoses & Lines
90100021	E-Series Hard Line #1 Oil Filter Adapter Out	1	
6200011	1/4-20 Hex Nut	1	
6502062	Tube Clamp A	1	
6502063	Tube Clamp B	1	
90100019	14" Hose Straight x Straight	2	
90201005	2003-2010 E-Series Cooler Mount Assembly	1	Air Cooler

Installation Overview

Installing the Bullet Proof Diesel Oil Cooler Kit is no more difficult than replacing the original equipment (OE) engine oil cooler. That being said, 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.

There are three major stages to the installation:

1. Replacement of the OE EGR cooler and oil cooler with the Bullet Proof Diesel (BPD) Oil and EGR coolers. This is performed the same as OE repair procedures with only a few deviations, and includes removal of the turbo and intake manifold.
2. Installation of the engine oil filter adapter and the air/oil cooler.
3. Installation of the thermostat and oil lines.

It is possible to run a dual oil cooler system. This would involve leaving the OE oil cooler in place and installing only the BPD Oil Filter Adapter, oil lines and Oil Cooler assemblies. This configuration does not address several pattern failures that the full install does and is less than ideal; however it is a viable alternative to installing a complete kit.

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 particular 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”

Click on “HEADINGS”

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

Installation Stage 1: The Oil Transfer Block

NOTE: Now is the time to make other critical repairs. Things like the STC fitting, IPR valve, IPR valve screen, and the Turbo Drain Tube are very easy to replace during this operation.

You can find our Professional Packs at BulletProofDiesel.com. The Professional Packs feature all the upgrades and extra parts, washers, and filters that should be serviced when doing this upgrade. Go to BulletProofDiesel.com and type [Professional](#) in the search box, or follow the given link.

1. Follow the OE oil cooler replacement procedures (which include removal of the intake manifold and turbo).
2. Remove the oil pressure sender and oil temperature sensor from the OE oil cooler housing.



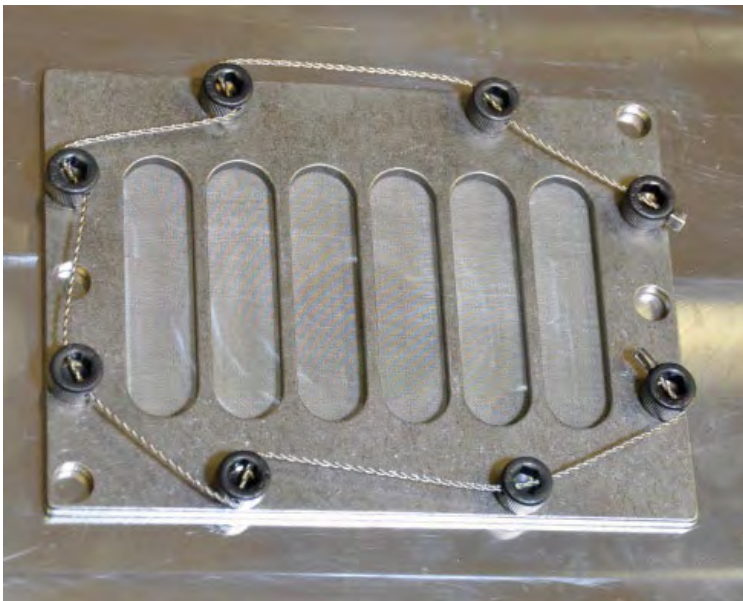
3. Gently clean and install the oil temperature sender and the oil pressure sender into the Oil Transfer Block.



4. When the OE oil cooler is completely removed, clean all the oil and debris from the HPOP reservoir.



5. Remove and discard the HPOP filter. The BPD Oil Transfer Block has an integral HPOP screen, which operates in place of the OE HPOP filter.



6. Install the OE oil cooler to engine block gasket (rubber seal) into the BPD Oil Transfer Block.

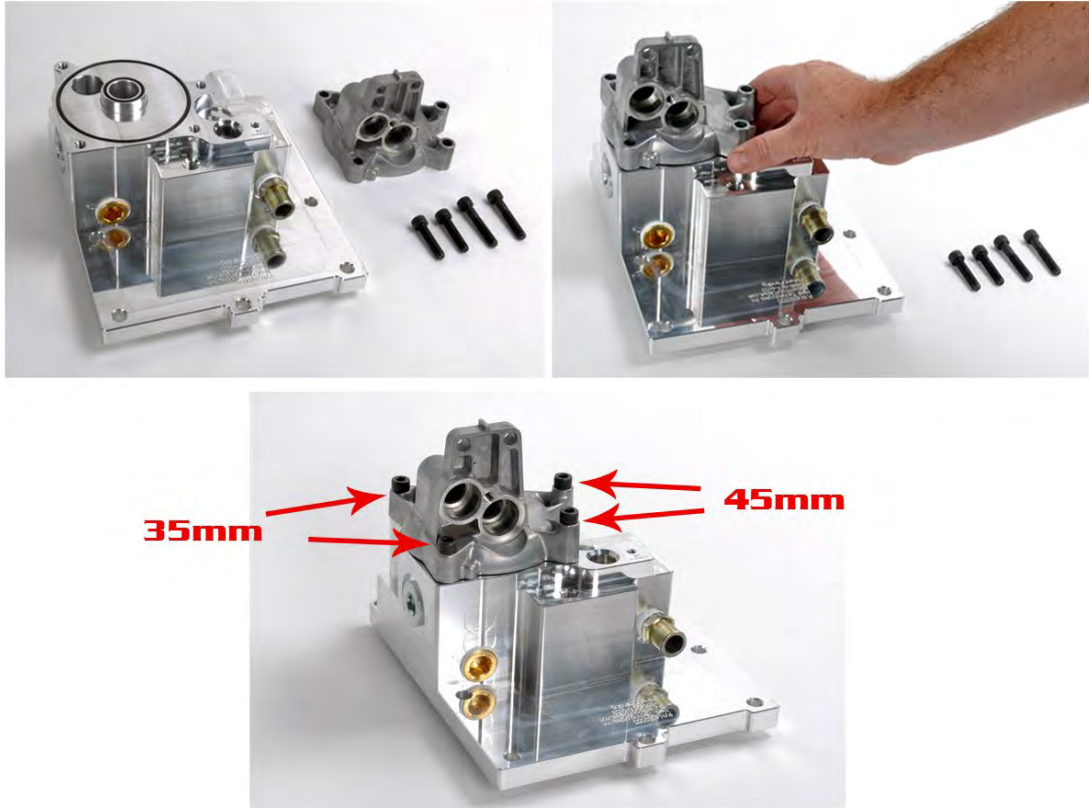
7. Use the OE bolts and torque specifications to install the BPD Oil Transfer Block.
8. Replace the O-rings on the OE oil hard lines.



9. **IMPORTANT!** Install the 2 supplied O-rings on the dual O-ring crown and install into the BPD Oil Transfer Block.
10. Install the OE oil cooler gasket (large O-ring) into the BPD Oil Transfer Block.



11. Now install the OE oil line manifold adapter to the top of the BPD Oil Transfer Block using the supplied hardware.



12. Use the longer silicone hose and clamps supplied with the kit in place of the OE silicon hose. 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 silicone rubber relaxes.



13. Continue following the OE installation procedure.

Installation Stage 2: Oil Filter Adapter Installation

1. Remove the OE oil filter housing and discard.



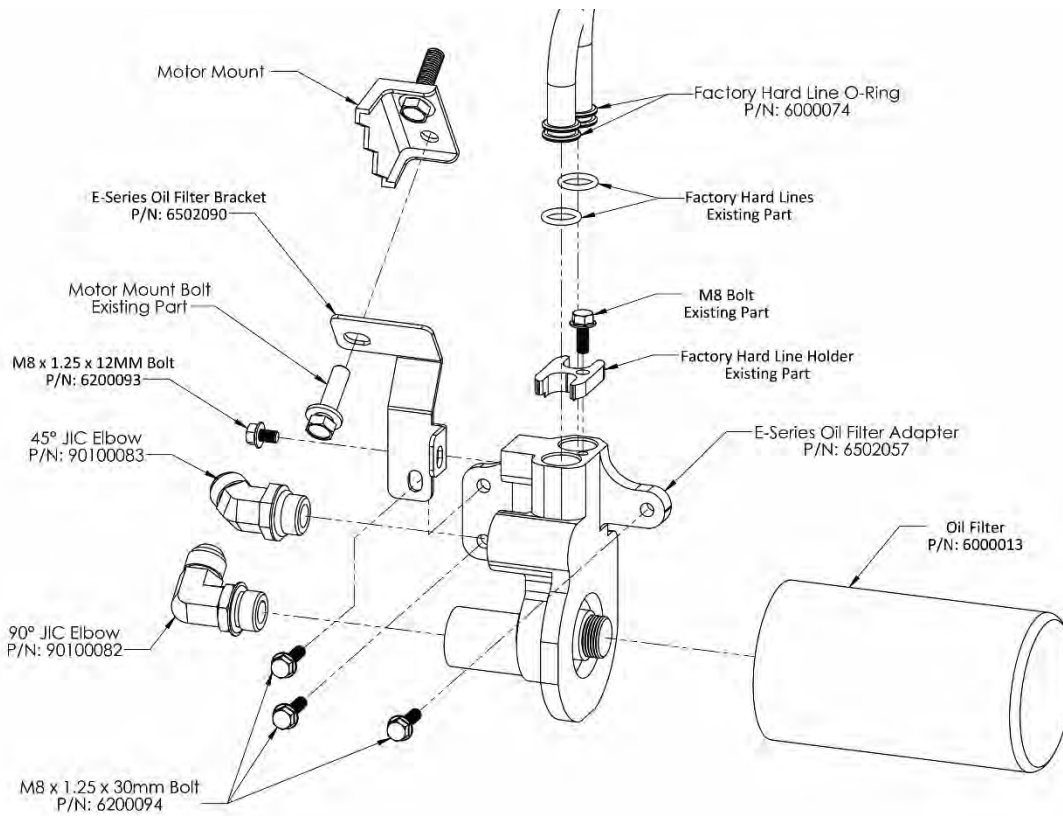
2. Replace the oil rings on the OE oil hard lines.



3. Install the BPD Oil Filter Adapter using the supplied hardware.

NOTE: The extra support bracket is very important. The cast aluminum oil pan adapter isn't strong enough to support the BPD Oil Filter Adapter by itself. Make sure to tighten all of the fasteners evenly.

IMPORTANT: The extra support bracket hardware should initially be installed hand tight. Once the 3 BPD Oil Filter Adapter mounting bolts have been installed and torqued to OE specifications, THEN torque the extra support bracket hardware. This will ensure that there is no pre-stress on the OE oil pan adapter.



4. Install the OE oil hard line retainer using the OE hardware and torque to OE specifications.

5. Install the supplied oil filter. Make sure that the transmission cooler lines do not make contact with the oil filter.



Tech Tips for Weatherizing Your Oil Lines and Fittings



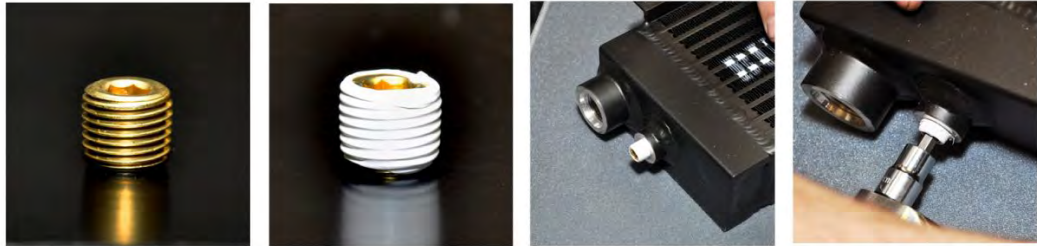
Some of our customers live in areas/climates where salt or chemicals are used for deicing the roads in the winter months. These substances can cause premature deterioration of the fittings and hoses.

Instead of replacing these parts as they wear from the attack of chemicals, a simple rubberized undercoating (pictured) can help ensure that your fittings are protected against the elements, so you can enjoy your Bullet Proof Diesel products for years to come.

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Installing the oil cooler

1. Remove the front bumper from the vehicle.
2. Lay bumper face down on something soft to prevent scratching the finish.
3. Secure the Oil Cooler Assembly to the bumper using OE hardware.



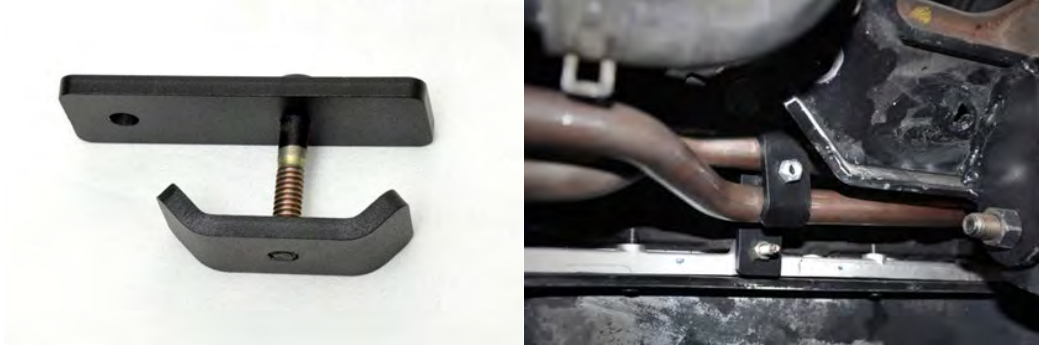
4. Test fit the bumper and cooler assembly back on the vehicle. Note the clearance of the oil cooler thermostat and the anti-sway bar. Also note the clearance of the power steering cooler lines. It may be necessary to remove a portion of the radiator fan shroud that retains the power steering cooler lines.



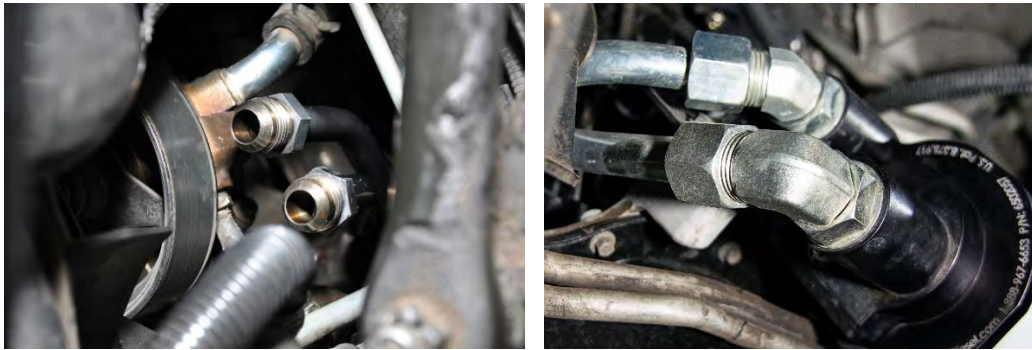
5. Prefilling the oil cooler with oil is easiest prior to installing the bumper assembly. Priming of the oil system is necessary before attempting to start the engine. Failure to prime the oiling system and to keep the oil system free from debris and contaminants could lead to premature engine wear and/or engine failure.
6. When ready, reinstall the front bumper assembly. Ensure there is enough clearance around the oil cooler to prevent damage.

Installing the oil cooler hard lines

1. Remove the nut on the transmission cooler line support stud. Install the oil hard line support bracket as shown and reinstall the nut.



2. Install the 2 oil hard lines on the BPD Oil Filter Adapter.



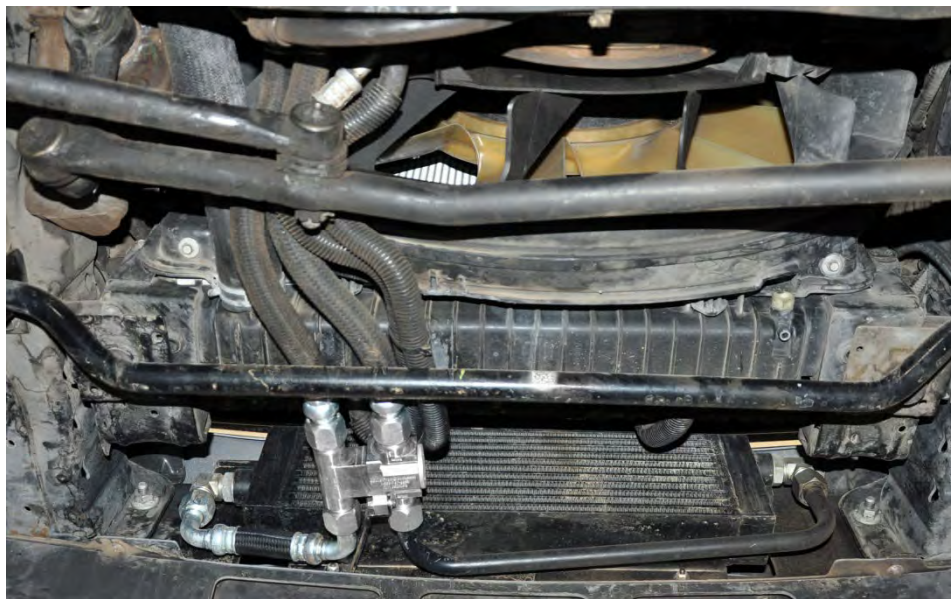
3. Snug fit the lines on the BPD Oil Filter Adapter fitting. Install the oil hard line retainer on the support bracket and lightly snug the oil hard line retaining nut. Adjust the fitting and oil hard lines at the BPD Oil Filter Adapter until the lines are free from contacting each other and the engine block.

NOTE: If the lines contact the engine block, over time they could wear through.

4. Once the oil hard lines are adjusted, tighten the hard line retainer nut and all of the line fittings. Inspect the lines for proper fitment.



5. Make sure the oil thermostat is installed correctly. **NOTE: DO NOT INSTALL BACKWARDS! THIS WILL RESULT IN HOTTER THAN NORMAL OIL!** For more information, see the oil thermostat section of this manual.
6. Install the flexible oil cooler hoses as shown in the diagram. Make sure the lines do not contact any steering or suspension after installation. Remember that steering and suspension components move, and clearance is always required.



7. Double check your work. If an oil line rubs on anything, over time it could start to leak. Make sure all your bolts and fitting connections are tight. Periodically check for signs of wear. Make sure your motor mounts are maintained as well.

Engine Oil Thermostat

FUNCTION:

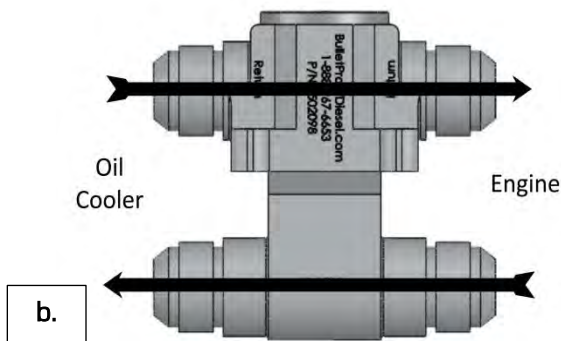
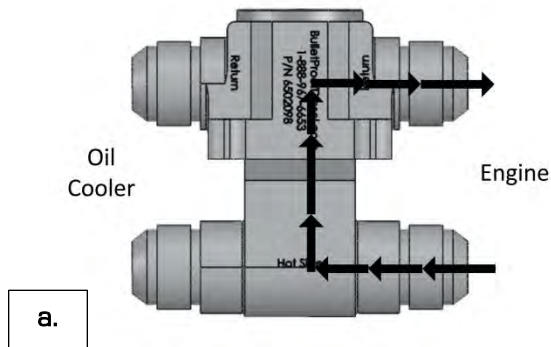
Oil thermostats are designed to regulate oil flow through cooling devices until optimal (minimum) temperatures are reached. Cold oil enters the thermostat and is bypassed through the center of the unit returning to engine (Figure a.). During warm-up, the thermostat never closes off oil flow to the cooler. Instead, it offers a less restrictive path for the oil to flow, allowing the cooler to acclimate to system temperature. As oil warms to 180°, the operating “waxstat” closes the bypass, permitting full flow to the cooler (Figure b.) percentage of oil bypass can vary up to the point where the bypass is closed and full flow to the cooler is achieved.

Thermostat Installation

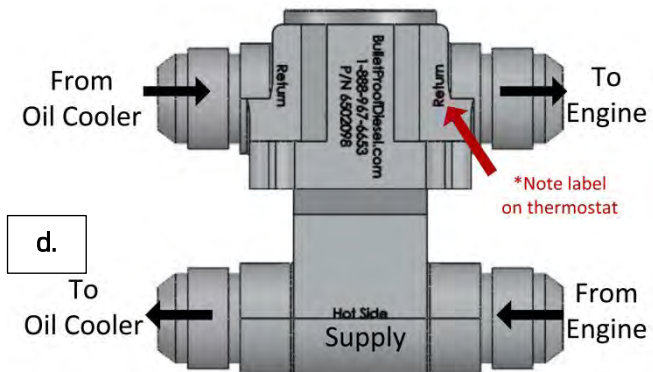
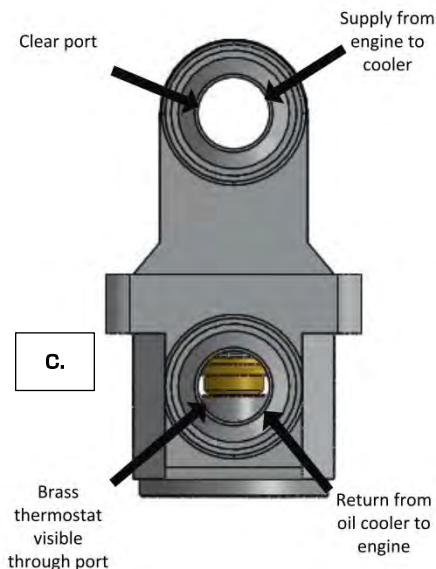
1. Select a place, close to the engine and away from moving parts, to insert the thermostat where oil hoses are running parallel.

2. Determine the orientation of the thermostat prior to connecting the hose fittings see (Figure c.). It is normal to see straight through both ends of the thermostat; the

3. Splice the thermostat in the hoses running to and from the cooler using 4 appropriate type hose ends. Follow schematic (Figure d.). Note: Thermostat can be installed in any position/orientation as long as the schematic shown in Figure d. is followed.



bypass function occurs in the (unseen) center portion.



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	90201029	6.0L E-SERIES OIL TRANSFER BLOCK ASSEMBLY	1
2	90201005	2004-2010 E-SERIES OIL COOLER MOUNT, 6.0L	1
3	90100019	14" HOSE STRAIGHT X STRAIGHT	2
4	90100023	OIL IN HARD LINE	1
5	90100021	OIL OUT HARD LINE	1
6		EGR COOLER	1
7	EXISTING PART	FACTORY REMOTE OIL FILTER ADAPTER	1
8	EXISTING PART	FACTORY HARD LINE, OIL IN	1
9	EXISTING PART	FACTORY HARD LINE, OIL OUT	1
10	EXISTING PART	FACTORY HARD LINE RETAINER	2
11	EXISTING PART	M8 x 1.25 x 30mm HEX HEAD FLANGE SCREW	2
12	6502056	DUAL O-RING CROWN	1
13	6502057	6.0L E-SERIES OIL FILTER ADAPTER	1
14	6502090	E-SERIES OIL FILTER ADAPTER BRACKET	1
15	6000013	OIL FILTER	1
16	6502062	HARD LINE CLAMP FRONT	1
17	6502063	HARD LINE CLAMP BACK	1
18	90100083	45° ELBOW, -12 JIC X -12 ORB	1
19	90100082	90° ELBOW, -12 JIC X -12 ORB	1
20	6400004	3/4" SILICONE HOSE, BLUE	1
21	6200002	1-1/16" SPRING CLAMP	2
22	6000070	OIL FILTER ADAPTER O-RING	1
23	6200147	VITON O-RING 210	4
24	6400049	VITON O-RING 121	2
25	6200011	1/4"-20 LOCK NUT	1
26	6200093	M8 x 1.25 x 12mm HEX HEAD FLANGE SCREW	1
27	6200094	M8 x 1.25 x 30mm HEX HEAD FLANGE SCREW	3
28	6200004	M8 x 1.25 x 35mm SOCKET HEAD CAP SCREW	2
29	6200099	M8 x 1.25 x 45mm SOCKET HEAD CAP SCREW	2

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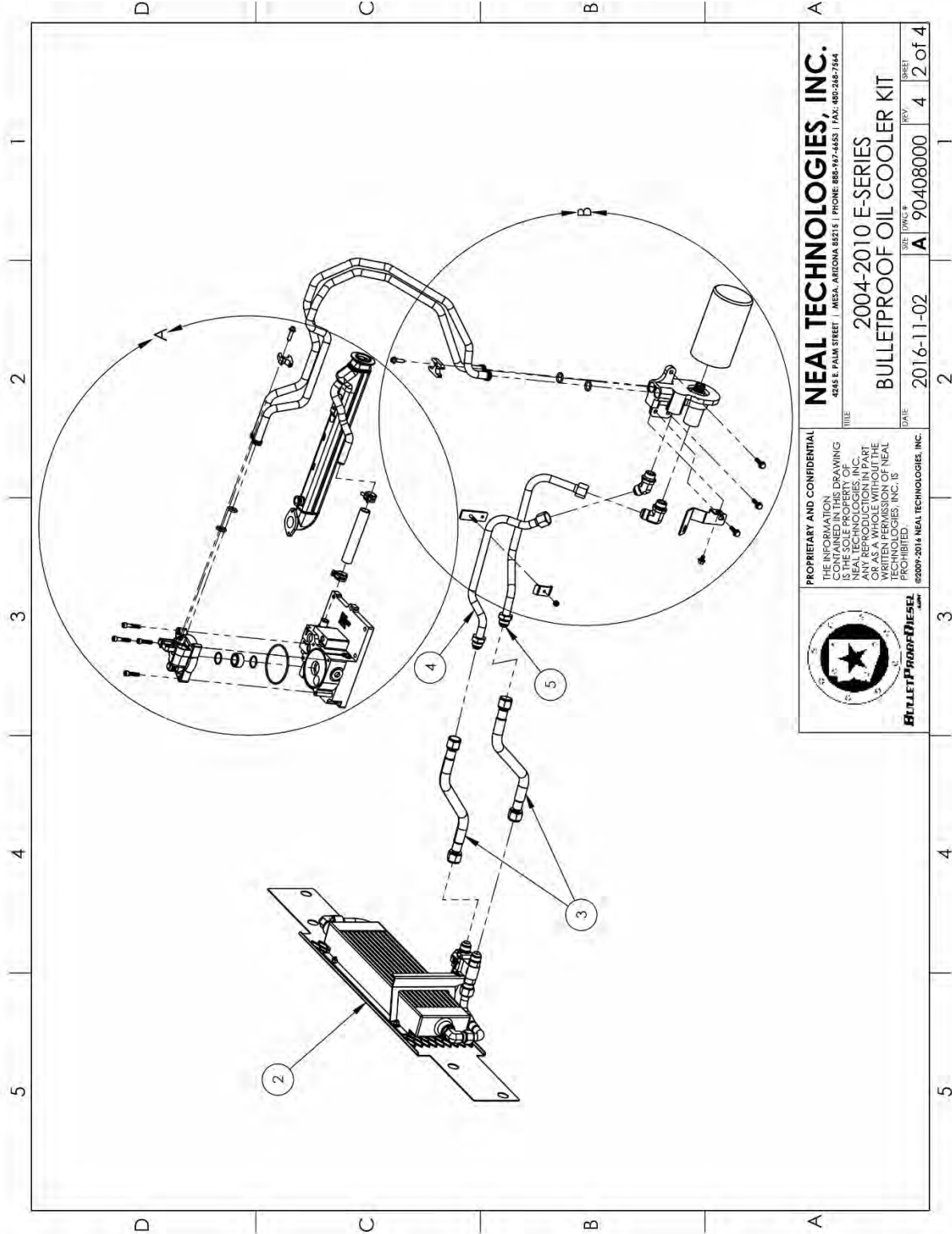
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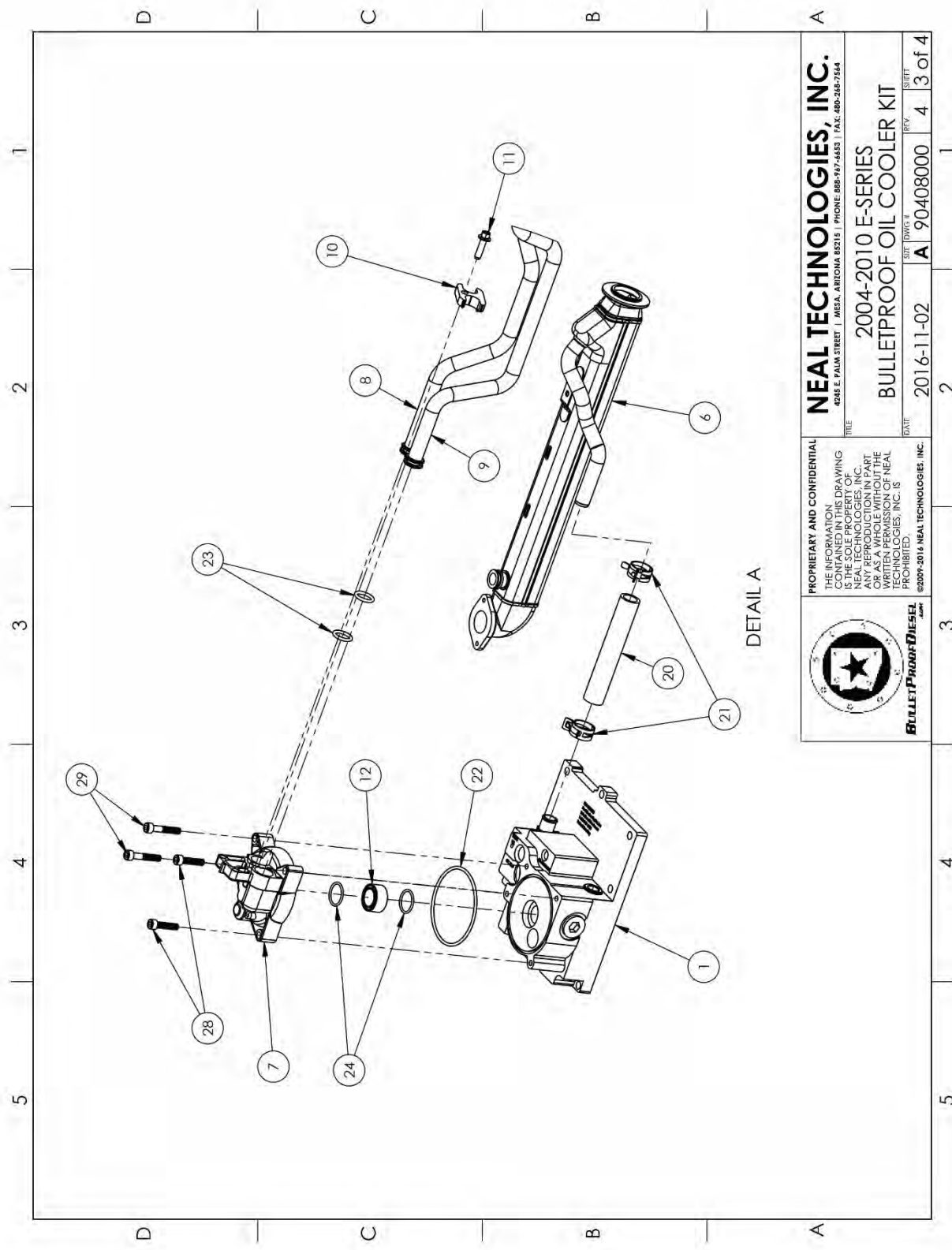
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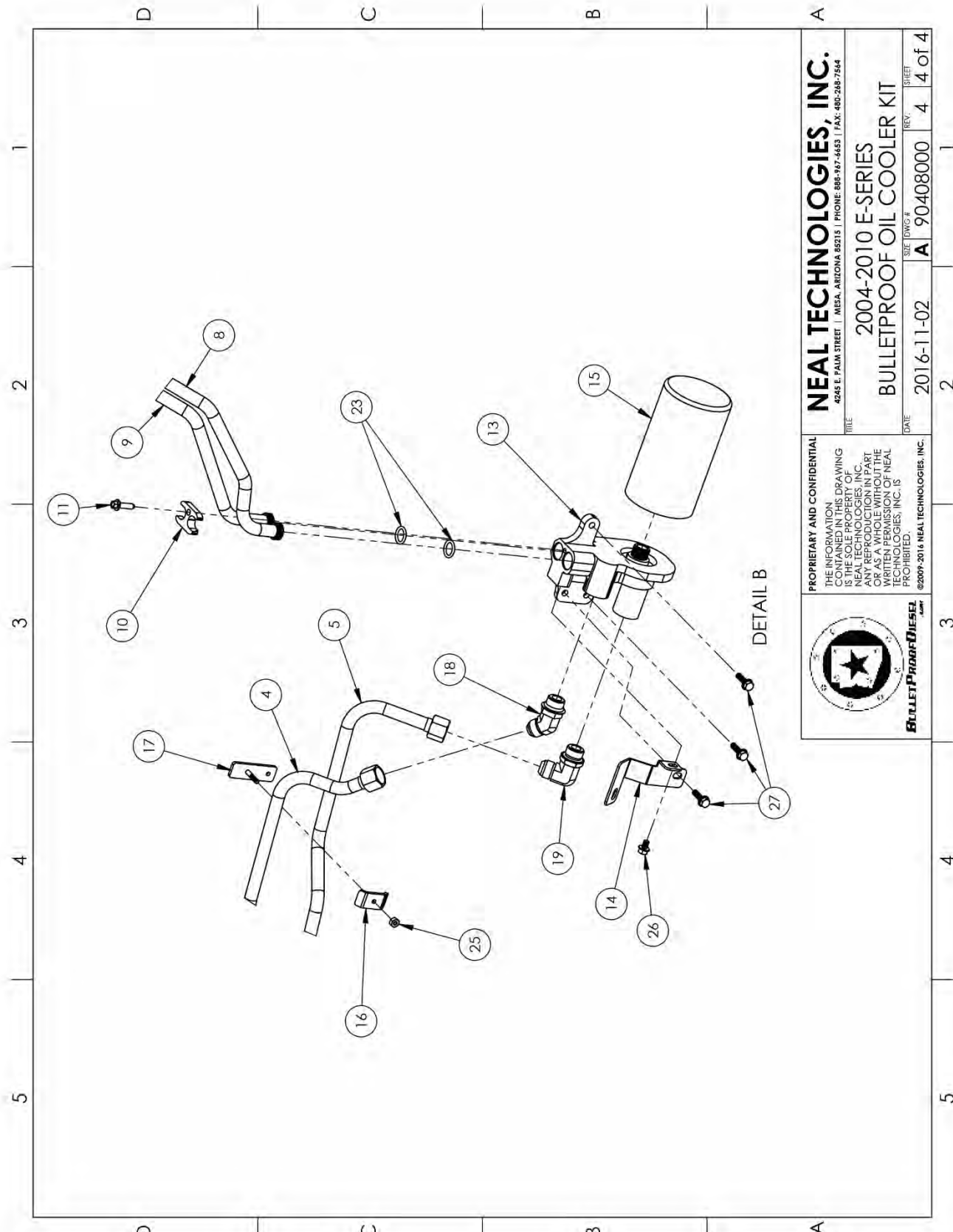
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