



PTUNING
engineered_for: **competition**

INSTALLATION MANUAL

PTUNING FR-S/BRZ Laminova Oil Cooler System

2013+ Scion FR-S | 2013+ Subaru BRZ

(Used with PTUNING FR-S/BRZ Turbo System)

Part#: PTP-ENG-90060





READ THIS FIRST: Please read the entire installation manual before proceeding. Engine damage may occur if any component within these instructions is improperly installed. This installation should only be performed by a trained specialist who is familiar with the automobile's mechanical system. Performance Tuning, Inc. (PTUNING) or any of its distributors cannot be held responsible for damages as a result of negligent or improper installation. This oil cooler system can be installed using common tools and automotive procedures. If in doubt, please contact PTUNING's technical support staff at 703-257-1728, between the hours of 10:00AM and 5:00PM EST, Monday through Friday.

Remove the oil cooler system from its packaging and inspect for any obvious physical damage. All kit components are thoroughly inspected and carefully packaged prior to shipment from the factory. If any shipping damage is evident, contact your supplier and request that they process a claim with the shipper involved. Be sure to review the parts list on page three to verify that you have all necessary system components to proceed. If any components in the parts list are missing, contact PTUNING's customer service staff.

The information contained in this publication was accurate and in effect at the time the publication was approved for printing and is subject to change without notice or liability. PTUNING reserves the right to revise the information presented herein or to discontinue the production of parts described at any time.

IMPORTANT: Do not attempt to start up the vehicle after installation of the oil cooler system without first verifying that the engine oil level is correct and all hoses and clamps are properly secure. Due to the addition of the oil cooler, oil cooler lines, and coolant lines, additional oil and coolant are required beyond the factory fluid capacity. Please refer to the factory service manual for instructions on how to bleed the coolant system after installation of the oil cooler system.

SAFETY REQUIREMENTS: It is recommended to follow these precautions.

- Always wear safety glasses & gloves.
- Turn the ignition switch to the OFF position & disconnect the battery.
- Always use properly rated jack stands when working under the vehicle.
- Prevent unexpected vehicle movement by using wheel chocks and/or parking brake.
- Operate the vehicle only in well ventilated areas.
- Do not smoke or use flammable items near or around the vehicle's fuel system.
- Keep hands, clothing and other objects away from moving parts when engine is running.

SUPPLIES: It is recommended to have the following items before beginning installation.

- Scion FR-S or Subaru BRZ factory service manual, for your model year vehicle.
- A large table or bench, and plenty of adjacent available workspace.
- Standard selection of automotive tools, primarily metric sizes.
- The ability to securely lift the vehicle at least a few feet off the ground.
- NPT thread sealant (for installation of optional oil gauge block adaptor)
- 1 quart of engine oil.
- 2 gallons of factory radiator fluid.
- Torx-Plus 27 IP socket

- Torx-Plus 20 IP socket (if installing optional oil sensor gauge adaptor)
- 4mm Allen Head socket (if installing optional oil sensor gauge adaptor)

TORQUE RECOMMENDATION: When removing and re-installing factory fasteners, refer to the Scion or Subaru service manual for torque values. When installing fasteners included in this kit, refer to the following chart:

FASTENER SIZE	TORQUE (FOOT POUND)
M5	5
M6 Torx-Plus	9
M6	12
M8	22
BSP & NPT fittings (tapered thread)	2-3 turn past finger tight using Teflon sealant tape or liquid

OIL COOLER SYSTEM PARTS LIST (Included with Part# PTP-ENG-90060):

PACKAGE PART #:	PART #:	Qty/Pkg	DESCRIPTION
PKG-PTP-ENG-90060-1	PTP-ENG-90060-A	1	PTUNING FR-S Oil Cooler Vertical Mounting Bracket (Black)
	PTP-ENG-90060-B	1	PTUNING FR-S Oil Cooler Passenger Side Mounting Bracket (Black)
	PTP-ENG-90060-C	1	PTUNING FR-S Oil Cooler Driver Side Mounting Bracket (Black)
PKG-PTP-ENG-90060-2	PTP-CLP-90015-47	4	RotoClip Constant Tension Hose Clamp 47mm nominal ID (41.4-50mm) (Black)
	PTP-FAS-90009-16	1	M6-1.0x16mm Flange Hex Bolt (Zinc)
	PTP-FAS-90030-16	2	M8-1.25x16mm Flange Hex Bolt (Zinc)
	PTP-FTG-90066	1	Schrader Push-to-Bleed Bleeder Valve, 1/8 Male NPT (Nickel-plated)
PKG-PTP-ENG-90060-3	PTP-HSE-90100	1	PTUNING FR-S Oil Cooler Lower Coolant Hose, 4-Ply Silicone Hose (38mm ID to block) (Gloss Black)
	PTP-FTG-90065	1	PTUNING FR-S Coolant Hose Bleeder Bung (58mm OD, 1/8 Female NPT) (6061 Alum.) (Preassembled)
	PTP-CLP-90013-25	1	Tongue and Groove Pinch Clamp (22.4-25.6mm) 9/32" Band width (Preassembled)
	PTP-HSE-90101	1	PTUNING FR-S Oil Cooler Upper Coolant

			Hose, 4-Ply Silicone Hose (38mm ID/39.5mm ID to radiator) (Gloss Black)
PKG-PTP-ENG-90060-4	PTP-GSK-90007	2	Double-Seal Buna-N O-ring, AS568S. Dash# 333 (Oil Filter Block Adaptor)
	PTP-ENG-90065-C	1	PTUNING Oil Filter Union (Extra Long, M20) (Cadmium Plated)
	PTP-FTG-90070-10	2	M22 x -10AN Male Flare Oil Cooler Adaptor Fitting (Black)
PKG-PTP-ENG-90060-5	PTP-ENG-90065-A	1	PTUNING FR-S Oil Filter Spacer (6061 Alum.)(Anodized Black)
	PTP-ENG-90065-B	1	PTUNING FR-S Oil Filter Block Adaptor (6061 Alum.)(Anodized Black)
PKG-PTP-ENG-90060-6	PTP-HSE-90105	1	-10AN x 18" Aeroquip Textile Braided/Silicone Shield Oil Cooler Line 1 (-10AN 45 Deg. X -10AN 90 Deg.) (Oil Cooler Bottom Outlet) (Line 1 of 2)
	PTP-HSE-90106	1	-10AN x 16" Aeroquip Textile Braided/Silicone Shield Oil Cooler Line 2 (-10AN 45 Deg. X -10AN 90 Deg.) (Oil Cooler Top Outlet) (Line 2 of 2)
PKG-PTP-ENG-90060-7	PTP-ENG-90061-180	1	PTUNING Laminova C43-180 Oil Cooler (-10AN Oil, 38mm Water) (Preassembled)
PKG-PTP-ENG-90060-8	PTP-ENG-90060-MAN	1	PTUNING FR-S BRZ Laminova Oil Cooler System Installation Manual (2013+ FR-S/BRZ)
	PTDECALCOMP_LE_WHI	2	PTUNING - tuned_for: competition (8.5" x 1.5" - Window Decal) - WHITE Limited Edition
	PTP-MSK-90000	1	PTUNING - tuned_for: competition (License Plate Frame)
PKG-PTP-ENG-90060-9	PTP-ENG-90066	1	PTUNING FR-S Oil Cooler Gauge Adapter (oil temp & oil pressure) (6061 Alum.)(Anodized Black)
(Optional)	PTP-GSK-90009	1	Metric Buna-N O-Ring, 1.6 mm Width, 18.1 mm ID (Oil Cooler Oil Gauge Block)
	PTP-FAS-90045-40	2	M5 x 0.8 x 40mm Socket Head Cap Screw (Zinc Plated)
	PTP-FTG-90002	3	1/8" NPT Brass Socket Hex Plug (3/16" Hex)

PKG-PTP-ENG-90060-1



PKG-PTP-ENG-90060-2



PKG-PTP-ENG-90060-3



PKG-PTP-ENG-90060-4



PKG-PTP-ENG-90060-5



PKG-PTP-ENG-90060-6



PKG-PTP-ENG-90060-7



PKG-PTP-ENG-90060-8



PKG-PTP-ENG-90060-9 (Optional)



1 – PREPPING THE VEHICLE FOR TURBO SYSTEM INSTALLATION

1. Using a 10mm socket or wrench, remove the negative and positive battery terminals.
2. Have some factory radiator coolant on hand to bleed the coolant system after the installation of the oil cooler system. This will be necessary since the coolant lines for the Laminova oil cooler will be added during the installation process. Please refer to the factory service manual for details on bleeding the coolant system.
3. Have at least a quart of motor oil on hand to top off the engine oil after the installation of the oil cooler system. This will be necessary since the oil cooler lines and oil cooler core will add some additional oil capacity. This may also a good time to perform an oil change with some fresh synthetic oil.
4. Layout all the installation packages on a workbench and verify that you have received all the packages listed at the beginning of this manual. Some packages are marked as optional and may not be included with your kit. The instructions will refer to the individual packages throughout the manual.
5. Jack up the vehicle to a workable height and secure vehicle with jack stands if not using a vehicle lift. We highly recommend the installation of the oil cooler system on a two-post lift. See FIGURE 1.1

FIGURE 1.1



2 – REMOVING THE FRONT FASCIA AND ENGINE UNDER TRAY

1. Using a 10mm socket and flat head screwdriver remove bolts and clips attaching the front bumper. SEE FIGURE 1.2 & 1.3

FIGURE 1.2



Figure 1.3



2. Unplug and remove the side marker lights. Using a Phillips screwdriver, remove the 4 body clips that attaches the front bumper cover to the splash shield on each side of the bumper cover. Remove the two retaining clips under the marker lights attaching bumper to fender using a flat head screw driver. SEE FIGURE 2.1 & 2.2

FIGURE 2.1



FIGURE 2.2

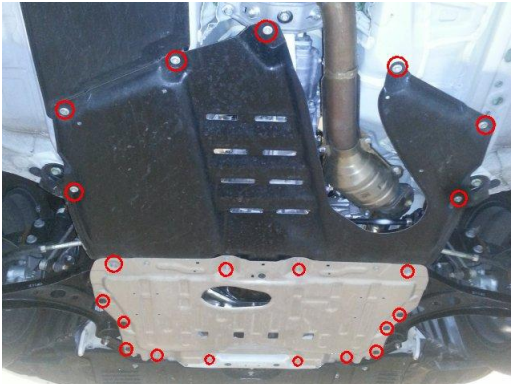


3. Gently pull each side of the bumper towards the outside. The bumper should “pop” out of its connections. Pull bumper forward enough to disconnect front turn signals and/or fog lights.
4. The bumper should now be free. Gently pull the bumper straight forward away from the car.

5. Using a 10mm socket, remove the bolts holding the rear (black tray) Using 12mm socket and a flat head screwdriver, remove the 8 bolt and 6 clips that secure the lower engine under tray to the chassis. SEE FIGURE 2.4

Note: both under-trays can be removed as one piece leaving the four bolts connecting the rear tray to the front metal tray.

FIGURE 2.4



3 – REMOVING THE LOWER FACTORY RADIATOR HOSE

1. Use a hose clamp pliers to remove the two hose clamps securing the radiator hose to the lower outlet of the radiator and the inlet of the motor. Drain the coolant from the radiator into a coolant-safe container for disposal. SEE FIGURES 3.1, 3.2 & 3.3

FIGURE 3.1



FIGURE 3.2



FIGURE 3.3



4 – INSTALLING THE OIL COOLER AND MOUNTING BRACKET

1. Layout all components of the oil cooler system on a workbench. SEE FIGURES 4.1, 4.2, 4.3

FIGURE 4.1



FIGURE 4.2



FIGURE 4.3

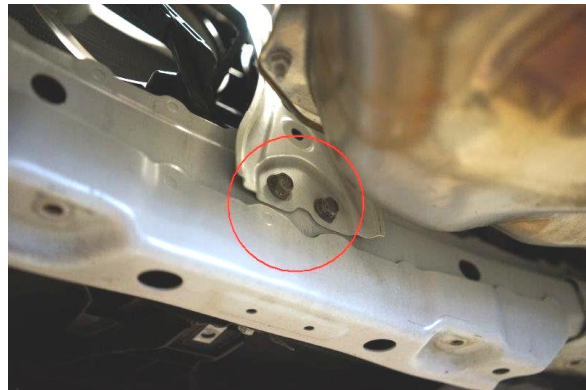


2. Use a 12mm socket to remove the three M8 bolts securing the top and bottom of the factory vertical radiator support beam. SEE FIGURE 4.4, 4.5

FIGURE 4.4



FIGURE 4.5



3. Locate installation package **PTP-PKG-ENG-90060-1** & **PTP-PKG-ENG-90060-2**. Install the vertical oil cooler mounting bracket by first screwing in the lower two M8 bolts three or fourth full turns by hand. Then align

the upper portion of the bracket with the remaining mounting hole and install the top M8 bolt. Once the bracket is properly aligned, proceed to fully tighten all three M8 bolts to factory spec. SEE FIGURES 4.6 & 4.7

FIGURE 4.6



FIGURE 4.7



4. Locate installation package **PTP-PKG-ENG-90060-7**. Using a Torx-Plus 27 IP socket, remove the eight M6 Torx screw on both ends of the oil cooler as shown. Be careful not damage the oil ring and gasket on the coolant-neck adaptors. Install the two mounting bracket using the eight M6 Torx screw. Position the two brackets as shown and torque the eight M6 Torx screw to 9 ft/lb. SEE FIGURES 4.8, 4.9, 4.10, & 4.11

FIGURE 4.8



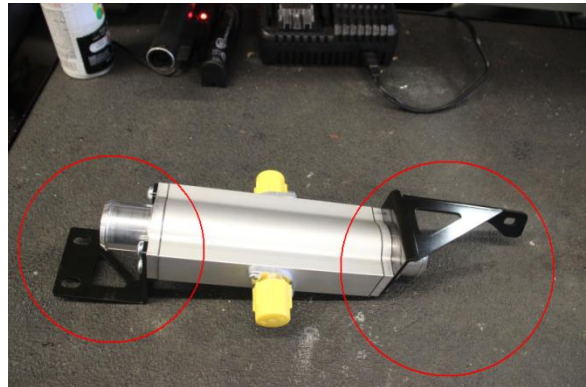
FIGURE 4.9



FIGURE 4.10



FIGURE 4.11



5. Locate the factory air box mounting L-bracket on the driver-side sub frame. SEE FIGURE 4.12. Remove the L-bracket and trim the bracket as shown to provide clearance for the oil cooler coolant hose. Re-install and secure the L-bracket with the factory M6 bolt. SEE FIGURES 4.13

FIGURE 4.12

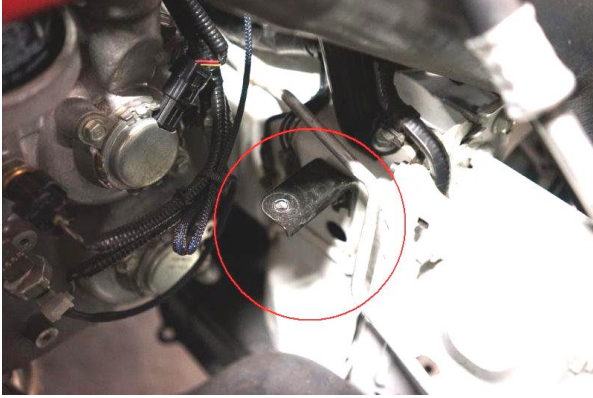
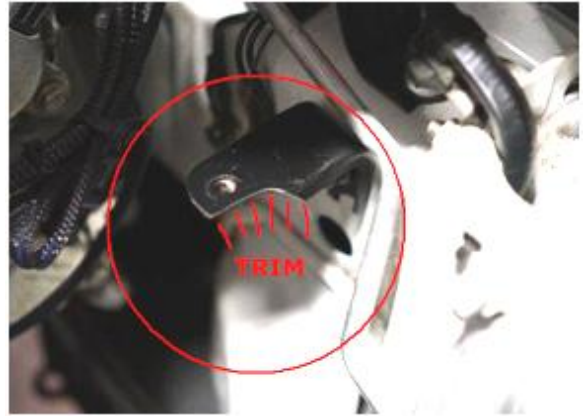


FIGURE 4.13

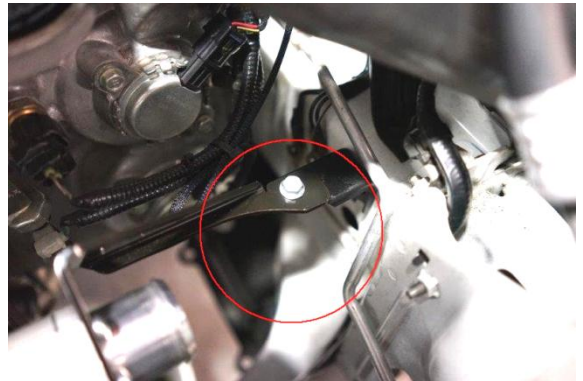


6. Using the two supplied M8 bolt and one M6 bolt, secure the oil cooler to the vertical mounting bracket and factory air box L-bracket as shown. SEE FIGURES 4.14 & 4.15

FIGURE 4.14



FIGURE 4.15



5 – INSTALLING THE OIL SENSOR BLOCK ADAPTOR (OPTIONAL)

1. The following steps are for installation of the optional oil sensor block adaptor. If you are installing an oil pressure or oil temperature sensor, only install the brass NPT plug for the unused ports. Use the two side ports on the oil sensor block adaptor for the oil temperature or oil pressure sensors. The third rear port is an extra port for future use.
2. Locate installation package **PTP-PKG-ENG-90060-9**. Install the three supplied brass 1/8" NPT plug into the three ports on the oil sensor block adaptor. Use Teflon thread sealant or tape for the NPT threads on the plugs. Install the supplied o-ring into the o-ring groove on the underside of the adaptor. SEE FIGURES 5.1, 5.2

FIGURE 5.1



FIGURE 5.2



- Using a Torx-Plus 20 IP socket, remove the two M5 Torx screw on the oil fitting at the top of the oil cooler. Locate the two supplied M5 socket head cap screw and secure the Oil fitting on top of the oil sensor block adaptor to the top of the oil cooler. Make sure the sensor block adaptor is positioned with the PTUNING logo facing the front of the vehicle. Torque the two M5 socket head bolts to 5 ft/lbs. SEE FIGURES 5.3, 5.4, 5.5 & 5.6

FIGURE 5.3



FIGURE 5.4



FIGURE 5.5

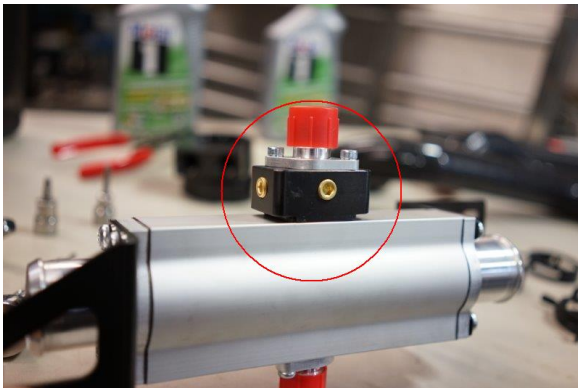


FIGURE 5.6



6 – INSTALLING OIL COOLER UPPER COOLANT HOSE

1. Locate installation package **PTP-PKG-ENG-90060-3**. Install the upper coolant hose so that the larger diameter end (39.5mm ID) is position towards the lower radiator outlet and the smaller diameter end is position towards the driver-side end of the oil cooler. Slide the supplied hose clamp over the smaller diameter end of the coolant hose. SEE FIGURE 6.1 & 6.2

FIGURE 6.1



FIGURE 6.2



2. To help ease with the installation of the coolant hose onto the radiator outlet, slide the supplied hose clamp onto the radiator outlet first, then push the coolant hose onto the radiator outlet. Use a hose clamp to expand the clamp larger enough so that the coolant hose can be pushed inside the hose clamp and over the radiator outlet. SEE FIGURE 6.1 & 6.2

FIGURE 6.1

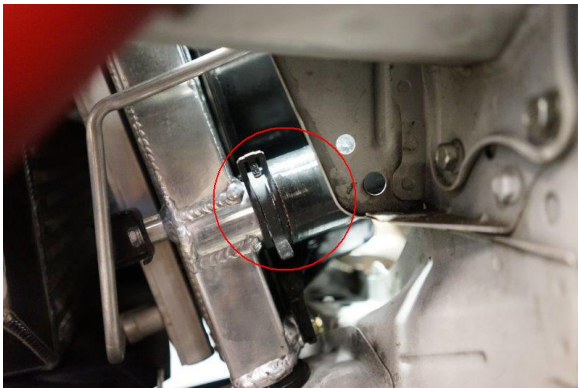


FIGURE 6.2

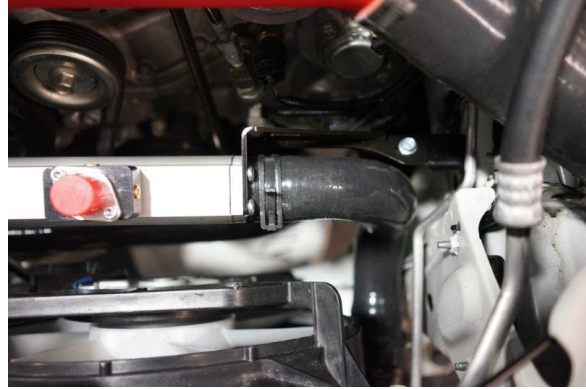


3. Install the other end of the coolant hose to the oil cooler and slide the hose clamp into the correct position as shown. The coolant hose should be secure and positioned so as not to touch any part of the vehicle. SEE FIGURES 6.3 & 6.4

FIGURE 6.3



FIGURE 6.4



7 – INSTALLING OIL COOLER LOWER COOLANT HOSE

1. Locate installation package **PTP-PKG-ENG-90060-3**. Install the upper coolant hose so that tight 180 degree end (with the bleeder bung) is position towards the passenger-side end of the oil cooler and the other end is positioned in front of the water pump neck on the engine. Slide the supplied hose clamps over the each end of the coolant hose. Expand the hose clamp and push the coolant hose onto the end of the oil cooler and position the clamp as shown. SEE FIGURE 7.1 & 7.2

FIGURE 7.1



FIGURE 7.2



2. Push the other end of the coolant hose onto the water pump neck on the engine and slide the hose clamp into position as shown. SEE FIGURE 7.3 & 7.4

FIGURE 7.3



FIGURE 7.4



8 – INSTALLING OIL COOLER BLOCK ADAPTOR

1. Locate installation package **PTP-PKG-ENG-90060-4 & PTP-PKG-ENG-90060-5**. Install the two supplied M22 x - 10AN flare o-ring fittings onto the oil block adaptor. SEE FIGURE 8.1 & 8.2

FIGURE 8.1



FIGURE 8.2



2. Install the supplied double-seal o-ring into the o-ring groove on the block adaptor. Lube the exposed o-ring side with a light coat of motor oil before installation on the engine. SEE FIGURE 8.3 & 8.4

FIGURE 8.3



FIGURE 8.4



3. Install the supplied double-seal o-ring into the o-ring groove on the oil filter spacer. Lube the exposed o-ring side with a light coat of motor oil before installation on the engine. SEE FIGURE 8.5 & 8.6

FIGURE 8.5



FIGURE 8.6

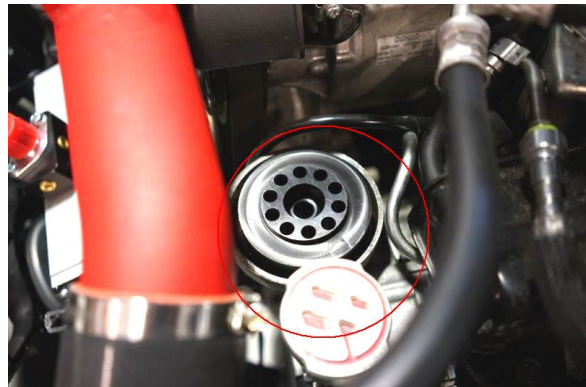


4. Remove the factory oil filter using a filter wrench. SEE FIGURE 8.7
5. Install the oil filter spacer with the o-ring side facing downward onto the factory oil filter union. SEE FIGURE 8.8

FIGURE 8.7



FIGURE 8.8

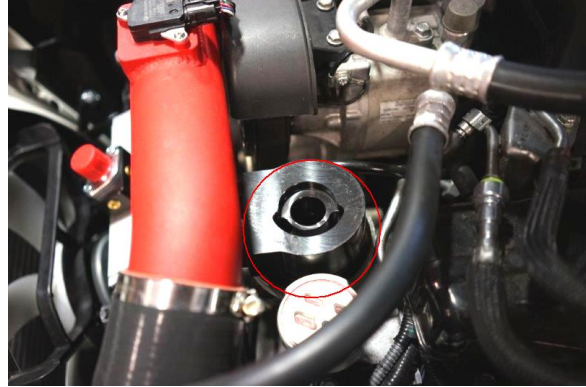


6. Install the oil filter block adaptor with the o-ring side facing downward onto the oil filter spacer. SEE FIGURE 8.9 & 8.10

FIGURE 8.9



FIGURE 8.10



7. Position the two -10AN Fitting on the block adaptor so that it's pointing directly towards the front of the vehicle as shown. SEE FIGURE 8.11 & 8.12

FIGURE 8.11



FIGURE 8.12



8. Install the supplied oil filter union adaptor into the center of the hole on the oil filter block adaptor and spacer. Using a 27mm socket, torque the filter union to 10 ft/lb. SEE FIGURE 8.13 & 8.14

FIGURE 8.13



FIGURE 8.14



9. Locate installation package **PTP-PKG-ENG-90060-6**. Remove the plastic protective cap from the oil cooler's top oil fitting. Using the shorter (16") oil line #2, install the 45 Degree hose-end to the driver-side oil fitting (right fitting when viewing from front of vehicle) on the oil block adaptor. Next, install the 90 degree hose-end to the oil fitting at the top of the oil cooler. SEE FIGURE 8.15 & 8.16

NOTE: Gently bend the oil line (maintaining a large as possible arc) while fitting the hose end on the top of the oil cooler. Be careful not to kink the oil line. The hose-end can swivel slightly to position it onto the oil fittings. Adjust hose-end angle and hose position before fully tightening the fittings. SEE FIGURE 8.17

FIGURE 8.15

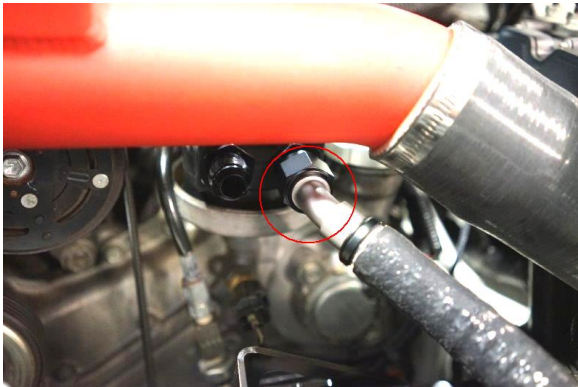


FIGURE 8.16

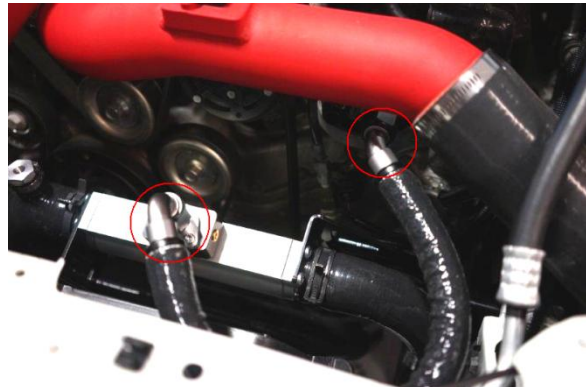
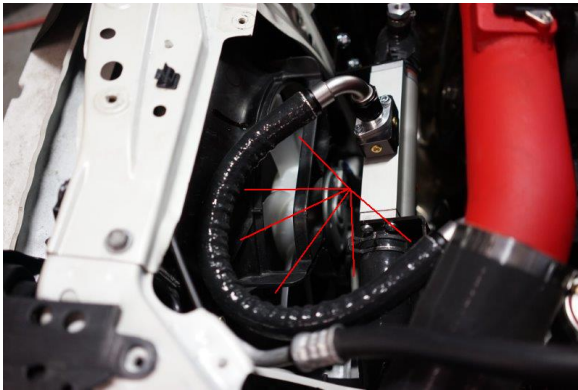


FIGURE 8.17



10. Remove the plastic protective cap from the oil cooler's bottom oil fitting. Using the longer (18") oil line #1, install the 90 Degree hose-end to the oil fitting at the bottom of the oil cooler. Next, install the passenger-side oil fitting (left fitting when viewing from front of vehicle) on the oil block adaptor. Route the oil line so that the line is position directly on the back-side of the fan-shroud and over the lower coolant hose as shown. Position the oil line so that it does not come into contact with the vehicle's side frame rail. SEE FIGURE 8.18 & 8.19

NOTE: Gently bend the oil line (maintaining a large as possible arc) while fitting the hose-end on the top of the oil cooler. Be careful not to kink the oil line. The hose-end can swivel slightly to position it onto the oil fittings. Adjust the hose-end angle and hose position if necessary before fully tightening the fittings.

FIGURE 8.18

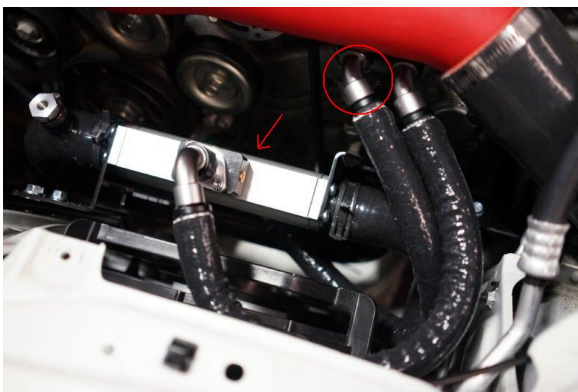
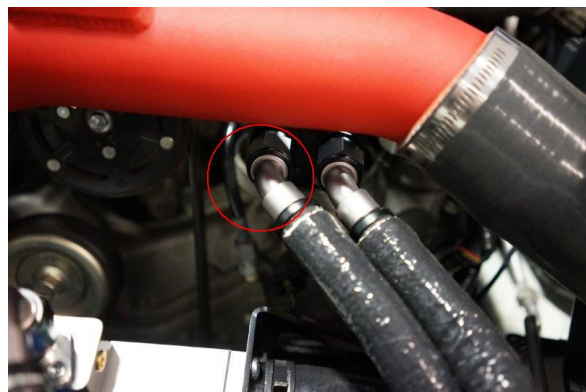


FIGURE 8.19



9 – INSTALLING COOLANT BLEEDER SCREW AND BLEEDING COOLANT SYSTEM

1. Verify that all bolts previously removed and re-installed are fully tightened to factory spec.
2. Verify that all coolant lines and oil lines connections to ensure that they are all secured and kink-free.
3. Verify engine oil is at factory level.
4. Locate the 1/8" NPT coolant bleeder screw included in the installation package **PTP-PKG-ENG-90060-2**. Install Teflon sealant or tape on the threaded portion of the bleeder screw.
5. Remove the radiator cap and add factory radiator fluid to the coolant system. Once coolant begins to overflow out of the bleeder bung on the oil cooler's lower coolant hose, stop adding coolant and install and tighten the supplied bleeder screw. Continue adding coolant until the coolant is topped off. SEE FIGURE 9.1 & 9.2
6. Start the vehicle and check for any oil, coolant leaks.
7. **Please refer to the factory service manual for detail procedure on bleeding the coolant system.**

FIGURE 9.1

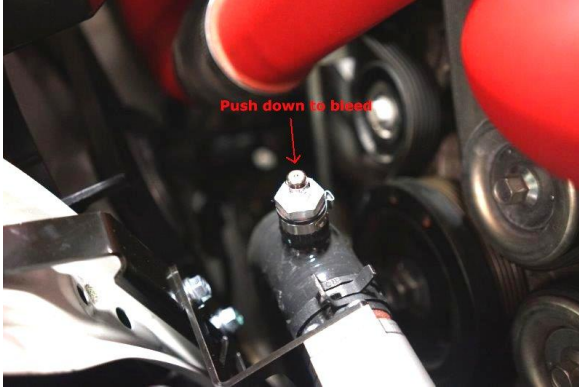


FIGURE 9.2



8. Once the coolant system is completely bleed of air and with the engine still running, push the bleeder screw button down until coolant begins to seep out of the bleeder screw and then release the button. The bleeder screw is a push-to-bleed fitting that will removal of air trapped in the oil cooler's coolant hose. SEE FIGURE 9.3

FIGURE 9.3



9. Verify that the coolant level is at factory level.
10. Verify that the oil level is at factory level.
11. Verify that there are no oil or coolant leaks.
12. Installation of the oil cooler system is now complete.