PTUNING

COMPETITION TURBO SYSTEM

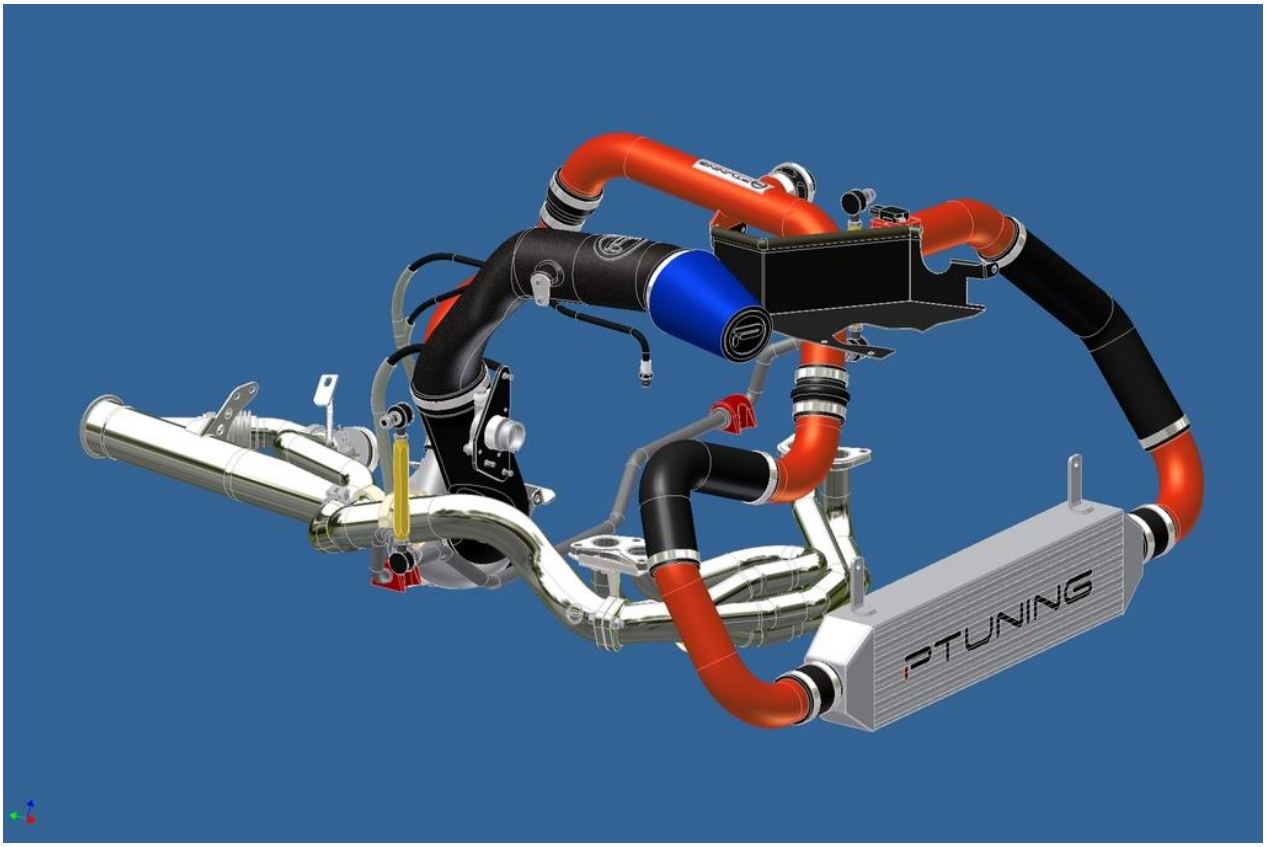
INSTALLATION MANUAL

PTUNING FR-S/BRZ Competition Turbo System V2

2013+ Scion FR-S | 2013+ Subaru BRZ

(Manual Transmission Only)

Part#: PTP-TBK-15000-V2, PTP-TBK-15001-V2, PTP-TBK-15002-V2, PTP-TBK-15003-V2, PTP-TBK-15004-V2



READ THIS FIRST: Please read the entire installation manual before proceeding. Engine and/or turbocharger 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, electrical and fuel management 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 turbocharger 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 turbocharger 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.

Although this turbocharger system has been designed to retain many of the factory emissions controls, it is not CARB legal in California and therefore recommended for "off road" use only. In other states, check local laws regarding aftermarket modification to emission controlled vehicles.

The use of premium grade gasoline (91 octane or higher) is required with this kit.

Although this turbocharger system can be purchased with the fueling package (Ecutek ProEcu license, injectors, map sensors, and base map) final calibration of the base map for your specific vehicle and local atmospheric conditions must be performed by a professional tuner before attempting to drive the vehicle under boost.

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 turbo system without first verifying that the oil scavenging pump is connected and working properly. There is a procedure at the end of the installation manual that must be performed to verify that the oil scavenging pump is functioning properly prior to initial engine startup.

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.
- Utility knife
- An assortment of zip ties.
- The ability to securely lift the vehicle at least a few feet off the ground.
- NPT thread sealant.
- Replacement engine oil and oil filter.
- Replacement factory exhaust header-to-overpipe 2-bolt gasket.

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)
M6	12
M8	22
M10	30
BSP & NPT fittings (tapered thread)	2-3 turn past finger tight using Teflon sealant tape or liquid

TURBOCHARGER SYSTEM PARTS LIST (Included with Part# PTP-TBK-10004-RED/BLK/POL):

PACKAGE PART #:	PART #:	Qty/Pkg	DESCRIPTION
PTP-PKG-15000-1B	PTP-CLP-90020-200	1	2.00" 304SS Worm-drive Clamp (1-9/16" To 2-1/2" Clamp Dia. Range, 1/2" Band Width)
	PTP-CLP-90020-250	12	2.50" 304SS Worm-drive Clamp (2-1/16" To 3" Clamp Dia. Range, 1/2" Band Width)
	PTP-CLP-90020-300	1	3.00" 304SS Worm-drive Clamp (2-9/16" To 3-1/2" Clamp Dia. Range, 1/2" Band Width)
	PTP-HSE-90004	1	2.00" / 2.50" ID x 3" Long, 4-Ply Silicone Reducer (Gloss Black)
	PTP-HSE-90082	1	2.50" x 10" x 7.5" 45 Degree, 4-Ply Silicone Hose (Gloss Black)
	PTP-HSE-90001	1	2.50" ID x 3" Long, 4-Ply Silicone Hump Hose (Gloss Black)
	PTP-HSE-90081	1	2.50" x 4" x 4" 90 Degree, 4-Ply Silicone Hose (Gloss Black)
	PTP-HSE-90044	2	2.50" ID x 3" Long, 4-Ply Silicone Straight Hose (Gloss Black)
	PTP-HSE-90027	1	2.50" / 3.00" ID x 3" Long, 4 Ply Silicone Reducer (Gloss Black)
PTP-PKG-15000-2B-GT28	PTP-HSE-90080-GT28	1	2.00" x 3.5" x 5" 45 Degree, 4-Ply Silicone Hose (Gloss Black)
GT28R Option	PTP-HSE-90083-GT28	1	3.00"/4.00" x 11.5"L x 90 Degree, 4-Ply Silicone Hose - GT28R (Gloss Black)
	PTP-CLP-90020-200	2	2.00" 304SS Worm-drive Clamp (1-9/16" To 2-1/2" Clamp Dia. Range, 1/2" Band Width)
	PTP-CLP-90020-400	1	4.00" 304SS Worm-drive Clamp (3-9/16" To 4-1/2" Clamp Dia. Range, 1/2" Band Width)
	PTP-CLP-90020-300	1	3.00" 304SS Worm-drive Clamp (2-9/16" To 3-1/2" Clamp Dia. Range, 1/2" Band Width)
PTP-PKG-15000-2B-GT30	PTP-HSE-90080-GT30	1	2.00" x 3.5" x 3.5" 45 Degree, 4-Ply Silicone Hose (Gloss Black)
GT30R Option	PTP-HSE-90083-GT30	1	4.00" x 12"L x 90 Degree, 4-Ply Silicone Hose - GT30R (Gloss Black)
	PTP-CLP-90020-200	2	2.00" 304SS Worm-drive Clamp (1-9/16" To 2-1/2" Clamp Dia. Range, 1/2" Band Width)
	PTP-CLP-90020-400	2	4.00" 304SS Worm-drive Clamp (3-9/16" To 4-1/2" Clamp Dia. Range, 1/2" Band Width)
PTP-PKG-15000-3	PTP-INT-15001-AB	1	FRS Intake Shroud Base
	PTP-INT-15001-C	1	FRS Intake Shroud Mounting Bracket
	PTP-GRO-15000-14	1	Edge-Grip Rubber Seal, Top of intake shroud (13-7/8" length)

	PTP-GRO-15010-12	1	Rubber Edge Trim, edge around Coolant overflow bottle (12" length)
	PTP-FAS-90090-8	2	M6 x 1.0 x 8mm SS Button Head Socket Cap Screw
PTP-PKG-15000-4	PTP-HSE-90046-72	1	1/4" ID x 72"L Gates Reinforced Rubber Vacuum Hose (for WG & BOV)
	PTP-FAS-90009-16	1	M6 -1.0 x 16mm Hex Flange Bolt (JIS Class 10.9) (Zinc)
	PTP-CLP-90012-13	1	Rubber-cushioned Loop Clamp, zinc-plated 1/2" (13mm) diameter
	PTP-CLP-90011-11	4	11mm Spring Hose Clamp (Dacromet Finish)
	PTP-CLP-90011-12	3	12mm Spring Hose Clamp (Dacromet Finish) (EVAP vacuum lines under intake manifold)
	PTP-CLP-90011-14	2	14mm Spring Hose Clamp (Dacromet Finish) (1x for bottom of intake manifold behind bottom of TB, 1x for PCV valve on rear top of engine block)
	PTP-CLP-90011-17	2	17mm Spring Hose Clamp (Dacromet Finish)
	PTP-FTG-90011	1	1/8" NPT x 1/4" Barbed Hose Adaptor (Brass) (for IC Piping #1 to Wastegate)
	PTP-FTG-90021	1	3/8" x 1/4" x 3/8" Nickel-Plated Barbed Reducing Tee Vacuum Fitting (for BOV)
	PTP-CLP-90005-1120	1	11-20mm Worm-drive Clamp (7/16" to 25/32" Clamp Diameter Range, 5/16" Band Width)
	PTP-HWR-90010-24	1	ThermalShield Heat Shielding Tube 5/8" ID x 24"L
	PTP-ADP-90044	1	FR-S IC Piping Throttle Body Bracket
	PTP-FAS-90009-12	2	M6 -1.0 x 12mm Hex Flange Bolt (JIS Class 10.9) (Zinc)
	PTP-FAS-90016-8	2	M4 x 0.7 x 8mm Button Head Socket Cap Screw (18-8 SS) (For mounting Factory MAF Sensor)
	PTP-FTG-90002	1	1/8" NPT Brass Socket Hex Plug (3/16" Hex)
PTP-PKG-15000-5B	PTP-HSE-90023-24	1	-4AN Primary Female-to-Female, Straight to Straight, SS Braided Oil Feed Line, 24" Long (1/4 hose) (Black PVC Coated)
	PTP-HSE-15001-CUS	1	-4AN Secondary Male-to-Female SS Braided Oil Feed Line w/Check Valve
	PTP-HSE-90063-28	1	-4AN Female-to-Female, 90 to straight, SS Braided Oil Sump Breather Line, 28" Long (1/4 hose, Black Alum. Hose End, Black PVC Coated)
	PTP-HSE-15003-27	1	-6AN Female to 12mm Banjo, Straight to 90 Deg., Rotate 30 Deg., SS Braided Oil Return Line, 27" Long (Black PVC Coated)
	PTP-HWR-90010-12	2	ThermalShield Heat Shielding Tube 5/8" ID x 12"L
	PTP-HWR-90015-12	1	ThermalShield Heat Shielding Tube 3/4" ID x 12"L

PTP-PKG-15000-6B	PTP-ENG-90080	1	PTUNING Billet Aluminum Turbo Oil Sump (GT Turbo)
	PTP-FTG-90072	1	-6AN Male Flare x M12-1.5 Union Fitting (Steel) (Zinc-plated) (Turbo Oil Sump)
	PTP-FTG-90073	2	-4AN Male Flare x M12-1.25 Union Fitting (Aluminum) (Anodized Black) (Turbo Oil Feed Cylinder Head, Turbo Oil Sump Breather)
	PTP-GSK-90004-12	3	12mm Copper Crush Washer
	PTP-FAS-90051-50	2	M8-1.25 x 50mm Socket Head Cap Screw (Zinc-Plated) (Turbo Oil Sump)
	PTP-FAS-90041-M8	2	M8 x 14.8mm OD Split Lock Steel Washer (Zinc-Plated) (Turbo Oil Sump)
	PTP-GSK-90011	1	Metric Chemical Resistant Viton O-Ring, 2.0 mm x 15mm ID (Turbo Oil Return) (Brown)

PTP-PKG-15000-7B	PTP-ENG-90090	1	PTUNING FR-S FA20DIT Oil Scavenge Pump Adaptor Base Plate (Black Anodized 6061 Alum.)
	PTP-ENG-90091	1	PTUNING Machined FA20DIT Oil Scavenge Pump
	PTP-FAS-90017-M8	3	M8-1.25 x 20mm Flat Head Socket Cap Screw (18-8 SS) (Turbo Scavenge Pump)
	PTP-FAS-90009-20	3	M6 -1.0 x 20mm Hex Flange Bolt (JIS Class 10.9) (Zinc)
	PTP-FTG-90028-12	1	12mm x 1.25 x 20mm Long Banjo Bolt (Steel) (Zinc-plated)
	PTP-GSK-90004-12	2	12mm Copper Crush Washer

PTP-PKG-15000-9-R1	PTP-HSE-15007-25	2	PTFE Teflon SS braided line 14mm Banjo to -6AN female crimped ends, 25” Long (3/8 hose) (BLACK PVC COVER)
	PTP-HSE-15008-20	1	5/16" x 20" Gates Safety Stripe Heater Hose
	PTP-HSE-15008-9	1	5/16" x 9" Gates Safety Stripe Heater Hose
	PTP-FTG-90071-65	2	-6AN Male Flare x 5/16" Single Barb Fitting (Aluminum)
	PTP-FTG-90026	2	14mm x 1.5 x 25mm Long Banjo Bolt (Steel) (Zinc-plated)
	PTP-GSK-90004-14	4	14mm Copper Crush Washer
	PTP-CLP-90011-14	4	14mm Spring Hose Clamp (Dacromet Finish)
	PTP-HWR-90015-12	2	ThermalShield Heat Shielding Tube 3/4" ID x 12"L

PTP-PKG-15000-12B-GT28	PTP-ADP-90075-A-GT28	1	PTUNING FR-S Turbo Compressor Transmission Bracket w/Support Arm (304SS) (GT28R)
GT30R Option	PTP-ADP-90078	1	PTUNING FR-S Turbine Heat Shield (304SS)

PTP-PKG-15000-12B-GT30	PTP-ADP-90075-A-GT30	1	PTUNING FR-S Turbo Compressor Transmission Bracket w/Support Arm (304SS) (GT30R)

GT28R Option	PTP-ADP-90078	1	PTUNING FR-S Turbine Heat Shield (304SS)
PTP-PKG-15000-13	PTP-ADP-90076	1	PTUNING FR-S Rear Undertray Mounting Bracket (304SS)
	PTP-FAS-90009-16	1	M6 -1.0 x 16mm Hex Flange Bolt (JIS Class 10.9) (Zinc)
PTP-PKG-15000-14	PTP-FAS-90027-90	2	M8 x 1.25 x 90mm Hex Head Cap Screw, Partially Threaded (Class 10.9, Yellow Zinc-plated) (For Mounting Intercooler)
	PTP-FAS-90028	2	M8 x 24mm OD Extra Large Steel Flat Washer (1.8mm-2.2mm Thick, Zinc-plated)
	PTP-FAS-90029	2	M8 x 1.25 Nylon-insert Flanged Lock Nut (Class 8, Zinc-plated)
PTP-PKG-15000-15	PTP-DNP-15000	1	PTUNING FR-S 3" 304SS Polished V-band Downpipe (w/ Recirculated WG Flange)
PTP-PKG-15000-16	PTP-CLP-998ZD-0382	1	3.00" 304SS V-band Clamp (use w/ formed or machined v-band flange) (For Outlet-end of Downpipe)
	PTP-FTG-90001	1	O2 Bung Plug (Hex Countersunk socket) (Steel)
PTP-PKG-15000-17	PTP-WGD-15001	1	PTUNING FR-S 1.75" 304SS Polished WG Inlet Tube w/Hanger
	PTTS-0504-3004	1	TSWG45 1.75" WG Outlet V-band Clamp (w/ Nut and Bolt) (For Hanger-side of WG Inlet Tube)
PTP-PKG-15000-18	PTP-WGD-15002	1	PTUNING FR-S 1.75" 304SS Polished Recirculated WG Dump Tube w/Flex Bellows
	PTTS-0504-3004	1	TSWG45 1.75" WG Outlet V-band Clamp (w/ Nut and Bolt) (For Hanger-side of WG Inlet Tube)
PTP-PKG-15000-19	PTP-CLP-90100	1	Tial Turbine Inlet V-band Clamp (GT30/GT35)
	PTP-CLP-90101	1	Tial Turbine Outlet V-band Clamp (GT30/GT35)
PTP-PKG-15000-20B	PTP-TBM-15000-1	1	PTUNING Full 304SS Turbo Overpipe #1 of 2 (2-bolt Flange, V-band Flange, Investment Casting, GT28/GT30R/GT35R)
	PTP-TBM-15000-2	1	PTUNING Full 304SS Turbo Overpipe #2 of 2 (Tial V-band Turbine Flange, V-band WG Flange, Investment Casting, GT28/GT30R/GT35R)

PTP-PKG-15000-21B	PTP-CLP-90200-238	1	2.375" 304SS V-band Clamp w/Quick Release Latch (For 2-piece FR-S Overpipe Connection) (Trimmed Tab)
	PTP-ADP-90079-A	1	PTUNING FR-S Front Overpipe Support Bracket
	PTP-ADP-90079-B	1	PTUNING FR-S Front Overpipe Hanger Bracket
	PTP-FAS-90030-16	2	M8 -1.25 x 16mm Hex Flange Bolt (JIS B1189 Class 10.9) (Zinc)
PTP-PKG-15000-22	PTTS-0204-1102-S2K	1	Turbosmart Race-Port BOV (PTUNING-Spec 22 In/Hg Spring, Black)
	PTTS-0204-3004	1	Turbosmart Race-Port V-band Clamp w/nut and bolt
	PTTS-0204-3005	1	Turbosmart Race-Port Flange O-ring
	PTTS-0505-3009	1	Turbosmart 1/16" NPT x 1/4" Barb Vacuum Fitting
	PTTS-0505-3010	1	Turbosmart 1/16" NPT Vacuum Plug
PTP-PKG-15000-23	PTTS-0505-1006	1	Turbosmart Comp-Gate 40mm WG (7psi, Black)
	PTTS-0505-3004	1	Turbosmart 40mm WG Inlet V-band Clamp w/nut and bolt
	PTTS-0505-3005	1	Turbosmart 40mm WG Outlet V-band Clamp w/nut and bolt
	PTTS-0505-3009	2	Turbosmart 1/16" NPT x 1/4" Barb Vacuum Fitting
	PTTS-0505-3010	2	Turbosmart 1/16" NPT Vacuum Plug (one pre-installed)
	PTTS-0505-3008	1	Turbosmart 74mm Locking Collar Tool
PTP-PKG-15000-24	PTP-INT-90001	1	PTUNING Blue SuperNano 3.5"x5.25"x6" Cone Filter w/ 4" Inlet (includes Worm-drive Clamp)
PTP-PKG-15000-25	PTP-FTR-90001	1	2.00"D x 1.5" L x 5/8" ID K&N Crankcase Filter (Rubber Top)
PTP-PKG-15000-27	PTP-INC-15001	1	PTUNING FR-S/BRZ Front Mount Intercooler (32"W x 6.5"H x 3"D, 2.5" Inlet/Outlet)
PTP-PKG-15000-28	PTP-MAN-15000-V2	1	PTUNING FR-S/BRZ Turbo System Installation Manual
	PTDECALCOMP_LE_WHI	2	PTUNING - tuned_for: competition (8.5" x 1.5" - Window Decal) - WHITE Limited Edition
	PTP-MSC-90000	1	PTUNING - tuned_for: competition (License Plate Frame)
PTP-PKG-15000-29	PTP-SUS-15001	1	PTUNING Front Sway Bar (21mm) (Gray)
	PTP-SUS-15001-BSH	2	PTUNING Front Sway Bar Bushings (21mm Urethane Bushing) (Red)

PTP-PKG-15000-30	PTP-SUS-15001-LNK	2	PTUNING Front Sway Bar Adjustable End-Links (Black/Gold)

PTP-PKG-15000-31	PTP-FTG-90035	1	4AN Male x 7/16-24 Male Inverted Male Oil Feed Restrictor Fitting (w/ 0.035" Restrictor Hole)
	PTP-MSC-90014	3	Tial Locking Tabs for Turbine Housing (304SS, 6mm hole)
(Circle Turbo Option)	PTP-TRG-GT2871-64-FRS	[__]	Garrett GT2871R 3" In/2" Out T04B Comp HSG and Tial SS V-band turbine HSG .64 A/R (PTUNING FR-S, BRZ System)
	PTP-TRG-GT3076-63-FRS	[__]	Garrett GT3076R 4"In/2"Out T04E Anti-Surge Shroud and Tial SS V-band Turbine HSG .63 A/R (PTUNING FR-S, BRZ System)
	PTP-TRG-GTX2867-64-FRS	[__]	Garrett GTX-2867R 3" In/2" Out T04B Comp HSG and Tial SS V-band turbine HSG .64 A/R (PTUNING FR-S, BRZ System)
	PTP-TRG-GTX2871-64-FRS	[__]	Garrett GTX-2871R 3" In/2" Out T04B Comp HSG and Tial SS V-band turbine HSG .64 A/R (PTUNING FR-S, BRZ System)
	PTP-TRG-GTX3076-63-FRS	[__]	Garrett GTX-3076R 4"In/2"Out T04E Anti-Surge Shroud and Tial SS V-band Turbine HSG .63 A/R (PTUNING FR-S, BRZ System)
	<Turbo Not Included>	[__]	
	<Custom Turbo Specified>	[__]	

PTP-PKG-15000-32	PTP-HWR-90015-215	1	PTUNING Titanium Exhaust Wrap (2"x15' – 1500 F)
	PTP-FAS-90162	2	PTUNING Stainless Steel Cable Ties *14.5" Long)

PTP-ICP-15001	PTP-ICP-15001-P	1	2.0" 6061 Aluminum I/C Piping #1 (w/ 1/8" NPT weld bung) (1 of 6) (Polished)
(Circle Color Option)	PTP-ICP-15001-B	1	2.0" 6061 Aluminum I/C Piping #1 (w/ 1/8" NPT weld bung) (1 of 6) (Black)
	PTP-ICP-15001-R	1	2.0" 6061 Aluminum I/C Piping #1 (w/ 1/8" NPT weld bung) (1 of 6) (Red)
	PTP-ICP-15001-CC	1	2.0" 6061 Aluminum I/C Piping #1 (w/ 1/8" NPT weld bung) (1 of 6) (Custom Color =>):

PTP-ICP-15002	PTP-MSC-10000	1	PTUNING Aluminum Name Plate (PTUNING Competition Turbo System)
(Circle Color Option)	PTP-ICP-15002-P	1	2.5" 6061 Aluminum I/C Piping #2 (w/BOV flange) (2 of 6) (Polished)
	PTP-ICP-15002-B	1	2.5" 6061 Aluminum I/C Piping #2 (w/BOV flange) (2 of 6) (Black)

	PTP-ICP-15002-R	1	2.5" 6061 Aluminum I/C Piping #2 (w/BOV flange) (2 of 6) (Red)
	PTP-ICP-15002-CC	1	2.5" 6061 Aluminum I/C Piping #2 (w/BOV flange) (2 of 6) (Custom Color =>):
PTP-ICP-15003	PTP-ICP-15003-P	1	2.5" 6061 Aluminum I/C Piping #3 (Below radiator hose) (3 of 6) (Polished)
(Circle Color Option)	PTP-ICP-15003-B	1	2.5" 6061 Aluminum I/C Piping #3 (Below radiator hose) (3 of 6) (Black)
	PTP-ICP-15003-R	1	2.5" 6061 Aluminum I/C Piping #3 (Below radiator hose) (3 of 6) (Red)
	PTP-ICP-15003-CC	1	2.5" 6061 Aluminum I/C Piping #3 (Below radiator hose) (3 of 6) (Custom Color =>):
PTP-ICP-15004	PTP-ICP-15004-P	1	2.5" 6061 Aluminum I/C Piping #4 (Lower PS) (4 of 6) (Polished)
(Circle Color Option)	PTP-ICP-15004-B	1	2.5" 6061 Aluminum I/C Piping #4 (Lower PS) (4 of 6) (Black)
	PTP-ICP-15004-R	1	2.5" 6061 Aluminum I/C Piping #4 (Lower PS) (4 of 6) (Red)
	PTP-ICP-15004-CC	1	2.5" 6061 Aluminum I/C Piping #4 (Lower PS) (4 of 6) (Custom Color =>):
PTP-ICP-15005	PTP-ICP-15005-P	1	2.5" 6061 Aluminum I/C Piping #5 (Lower DS) (5 of 6) (Polished)
(Circle Color Option)	PTP-ICP-15005-B	1	2.5" 6061 Aluminum I/C Piping #5 (Lower DS) (5 of 6) (Black)
	PTP-ICP-15005-R	1	2.5" 6061 Aluminum I/C Piping #5 (Lower DS) (5 of 6) (Red)
	PTP-ICP-15005-CC	1	2.5" 6061 Aluminum I/C Piping #5 (Lower DS) (5 of 6) (Custom Color =>):
PTP-ICP-15006	PTP-ICP-15006-P	1	2.5" 6061 Aluminum I/C Piping #6 (Upper w/MAF Flange) (6 of 6) (Polished)
(Circle Color Option)	PTP-ICP-15006-B	1	2.5" 6061 Aluminum I/C Piping #6 (Upper w/MAF Flange) (6 of 6) (Black)
	PTP-ICP-15006-R	1	2.5" 6061 Aluminum I/C Piping #6 (Upper w/MAF Flange) (6 of 6) (Red)
	PTP-ICP-15006-CC	1	2.5" 6061 Aluminum I/C Piping #6 (Upper w/MAF Flange) (6 of 6) (Custom Color =>):

PTP-ICP-15007-V2	**PTP-ICP-15007-P**	**1**	**4.0" Rotomold Cobra Intake Tube V2 (Turbo Inlet) (7 of 7) (Black)**
	PTP-FTG-90075	**1**	**-4AN Male Flare x -4AN ORB Union Fitting (Aluminum) (Anodized Black) (Turbo Intake Sump Breather)**
	PTP-ADP-90047	**1**	**PTUNING FR-S Turbo Intake Mounting Bracket (6061 Alum. 0.125" thick)**
	PTP-FAS-90009-12	**1**	**M6 -1.0 x 12mm Hex Flange Bolt (JIS Class 10.9) (Zinc)**

PTP-PKG-15000-1B

PTP-PKG-15000-2B-GT28 (GT28R Only)

PTP-PKG-15000-2B-GT30 (GT30R Only)

PTP-PKG-15000-3

PTP-PKG-15000-4

PTP-PKG-15000-5B

PTP-PKG-15000-6B

PTP-PKG-15000-7B

PTP-PKG-15000-9-R1

PTP-PKG-15000-12B-GT28 (GT28R Only)

PTP-PKG-15000-12B-GT30 (GT30R Only)

PTP-PKG-15000-13

PTP-PKG-15000-14

PTP-PKG-15000-15

PTP-PKG-15000-16

PTP-PKG-15000-17

PTP-PKG-15000-18

PTP-PKG-15000-19

PTP-PKG-15000-20B

PTP-PKG-15000-21B

PTP-PKG-15000-22

PTP-PKG-15000-23

PTP-PKG-15000-24

PTP-PKG-15000-25

PTP-PKG-15000-27

PTP-PKG-15000-28

PTP-PKG-15000-29

PTP-PKG-15000-30

PTP-PKG-15000-31

PTP-PKG-15000-32

PTP-ICP-15001

PTP-ICP-15002

PTP-ICP-15003

PTP-ICP-15004

PTP-ICP-15005

PTP-ICP-15006

PTP-ICP-15007-V2

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 turbo system. This will be necessary since the coolant lines for the water-cooled GT turbocharger 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 turbo system. This will be necessary since the oil return line on the turbocharger 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 through the entire 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 turbo 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

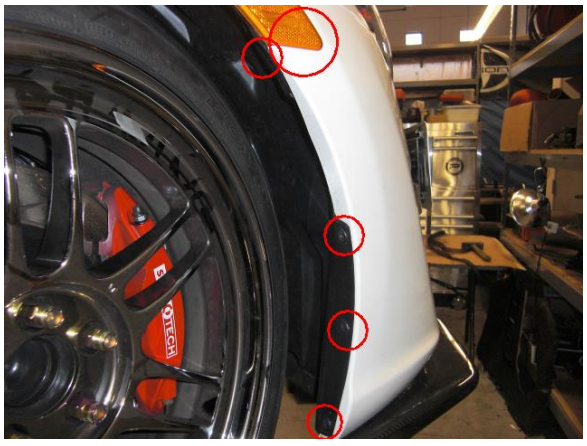
FIGURE 1.2

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. With the bumper off the car, locate the two plastic shields held in place by three silver screws and remove them using a Phillips screwdriver. Set bumper aside in a safe place. SEE FIGURES 2.3 & 2.4

Note: you will not need to remove the front lower plastic under-tray

FIGURE 2.3

Figure 2.4

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.

6. Trim rear (black) under tray as shown using the provided template below. SEE FIGURE 2.5 & 2.6

FIGURE 2.4

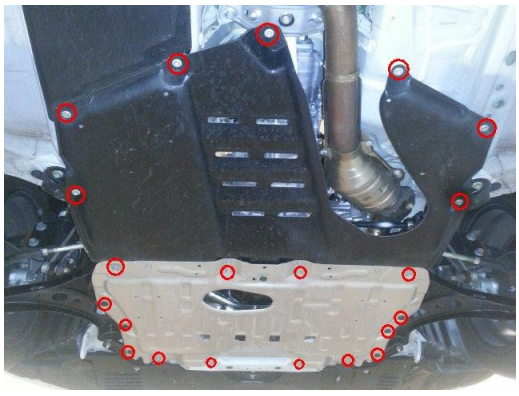
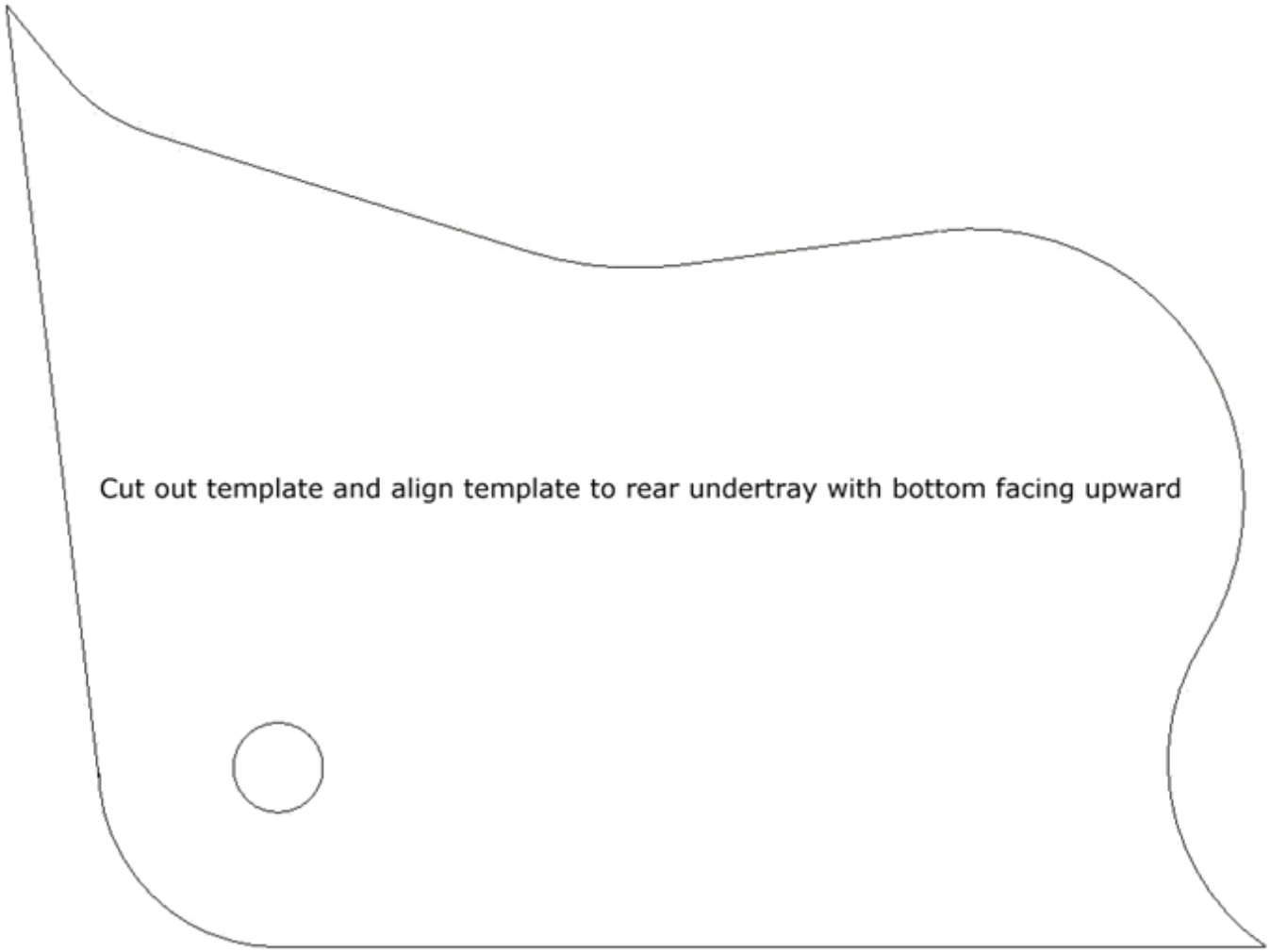


FIGURE 2.5

FIGURE 2.6


Cut out template and align template to rear undertray with bottom facing upward

3 – REMOVING THE STRUT CROSS-BAR, OEM AIR BOX AND SOUND TUBE

1. Use a 10mm and 12mm socket to remove the factory strut cross-bar and intake runner cover. SEE FIGURES 3.1

2. Use a 10mm socket and Phillips screwdriver to remove the factory intake and air box. SEE FIGURES 3.1 & 3.2

FIGURE 3.1

FIGURE 3.2

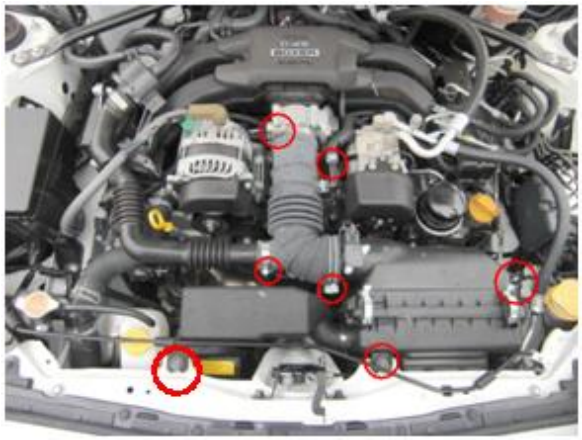


FIGURE 3.1

3. Use a 10mm socket to remove the factory sound tube. Use a clip-removal tool to pry the sound tube hose clips. SEE FIGURES 3.3 & 3.4

FIGURE 3.3

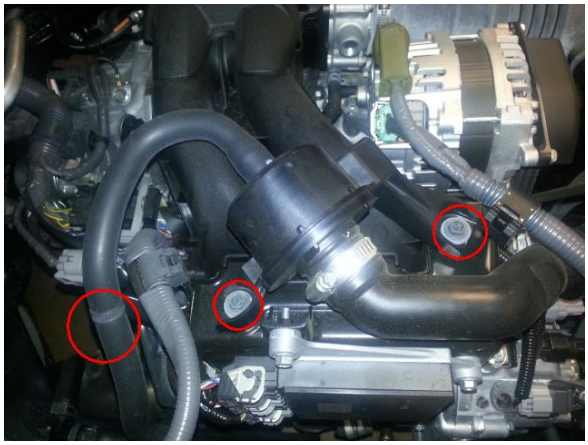


FIGURE 3.4

4. Disconnect the sound tube from the fire wall. SEE FIGURES 3.5 & 3.6

FIGURE 3.5

FIGURE 3.6

5. Using a plier and a rubber mallet, bend down the three tabs as shown on the metal injector cover to allow clearance for the turbo intake tube. SEE FIGURES 3.7 & 3.8

Optional: If you have access to a grinder, you can remove the fuel injector cover and grind the spot-welds to completely remove tabs and spray paint over for a cleaner install. At this point, go ahead and install the fuel injectors before re-installing the metal covers (If you purchased the optional fueling package). See factory repair manual for details.

FIGURE 3.7

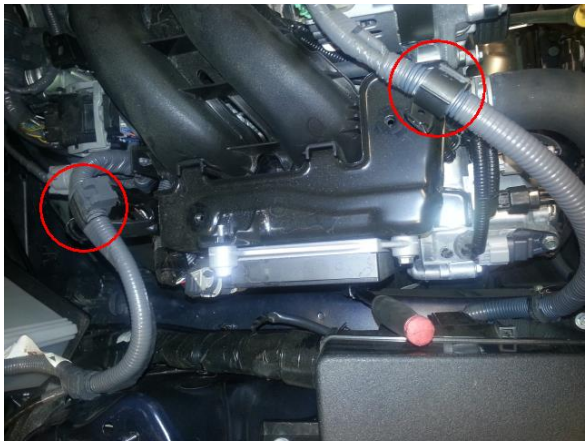


Figure 3.8

6. Set the metal injector cover aside for now. You will need access to the turbo oil feed port on the passenger side cylinder head at a later stage in the installation.

4 – REMOVING THE WINDSHIELD FLUID RESERVOIR AND RELOCATING THE FACTORY HORN

1. Using a flat head screwdriver, remove the two side air diversion panels. SEE FIGURE 4.1 & 4.2

FIGURE 4.1

FIGURE 4.2

2. Disconnect the windshield reservoir pump connector and plug the hose. Using a 10mm socket to remove the bolts that secure the reservoir to the chassis. SEE FIGURES 4.3

FIGURE 4.3

3. Using a 10mm socket, remove the front horn mounting bracket and loosen the bracket on the backside of the horn as shown. SEE FIGURES 4.4 & 4.5

FIGURE 4.4

FIGURE 4.5

4. Rotate the horn bracket as shown and reinstall the horn and outside air temp sensor in the new location next to the side of the radiator. SEE FIGURES 4.6 & 4.7

FIGURE 4.6

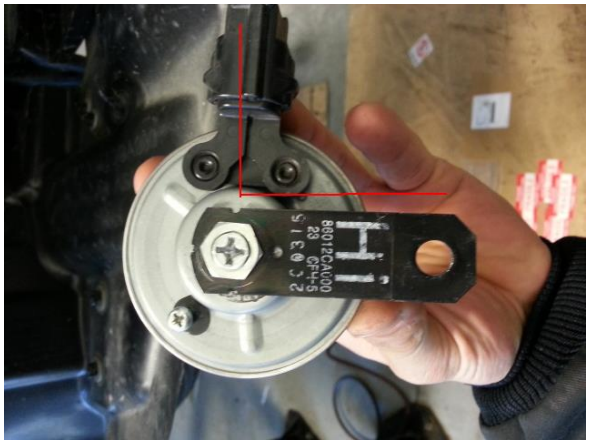
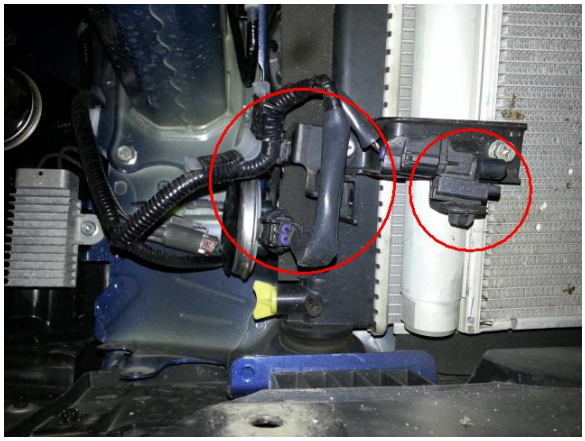


FIGURE 4.7



5 – REMOVING THE FACTORY OVER-PIPE, MID-PIPE

1. Remove the over-pipe and mid-pipe sections of the factory exhaust system (see factory service manual for details). You will need the two 14mm nuts used to connect the over-pipe to the header for installation of the turbo over-pipe later.

2. Remove the mid-pipe support bracket and transmissions lower case bolts shown. Put aside bolts for installation of the turbo downpipe and PTUNING turbo compressor to transmission support bracket later. The factory mid-pipe support bracket will not be reused. SEE FIGURE 5.1 & 5.2

FIGURE 5.1

FIGURE 5.2

3. Remove right lower transmission bell housing nut. Set aside to install PTUNING turbo compressor to transmission support bracket later. SEE FIGURE 5.3

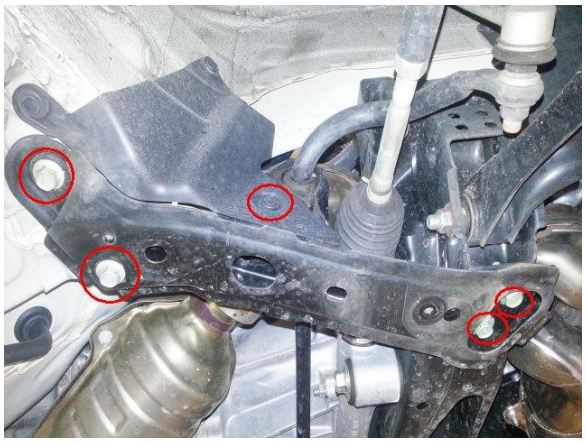
FIGURE 5.3

6 – REMOVING FACTORY SWAY BAR & END-LINKS

1. Remove the nuts connecting the end-links to sway bar and struts. Remove the two plastic clips securing the plastic shield to the sway bar mounting brackets. Remove the eight bolts on the sway bar mounting brackets (four bolts per side). Remove sway bar with mounting bracket assembly. SEE FIGURE 6.1 & 6.2

FIGURE 6.1

FIGURE 6.2



2. Remove the two bolts and two nuts attaching the sway bar to mount brackets. Make sure to note the sway bar orientation. Set aside for later.

3. Locate installation package **PTP-PKG-15000-30**. Set adjustable end-links next to factory end-links. Adjust end-links about 2" shorter than factory end-links. Install adjustable end-links on struts. SEE FIGURE 6.3
Note: Final adjustment will be made later.

4. Locate installation package **PTP-PKG-15000-29.** Using the supplied bushing and lubricant, lubricate the inside of the new sway bar bushings and slide onto new sway bar. Attach new sway bar to mounting brackets and torque to factory spec**. Leave sway bar with mounting brackets aside to be installed later after the turbo is installed.** SEE FIGURE 6.4

FIGURE 6.3

FIGURE 6.4

7 – INSTALLING TURBO COOLANT LINES & SECURING FACTORY EVAP VACUUM LINES

1. Locate installation package **PTP-PKG-15000-9-R1.** Slip the two supplied 5/8”x12” thermal wrap over the banjo-end of the two turbo coolant lines (Use a rod or compress air to help expand the thermal wrap to ease installation onto coolant lines). Install each of the two supplied -6AN flare x 5/16” barb fittings on each female-end of the braided coolant lines. Install the supplied 5/16”x20” (Long) rubber heater hose to the barb-end of the fitting and secure the rubber hose to the fitting with the supplied 14mm spring hose clamp. Perform the same procedure with the other shorter 5/16”x9” (Short) hose. SEE FIGURE 7.1 & 7.2.

FIGURE 7.1

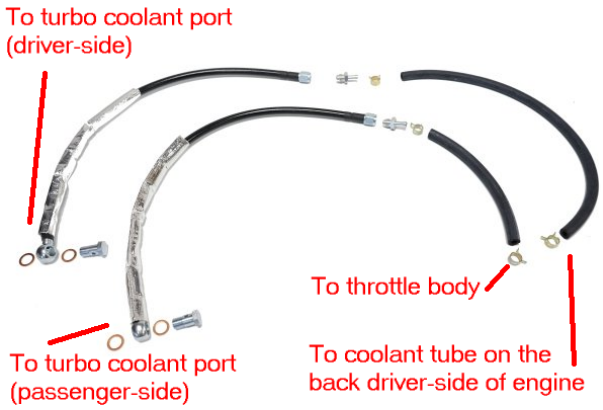
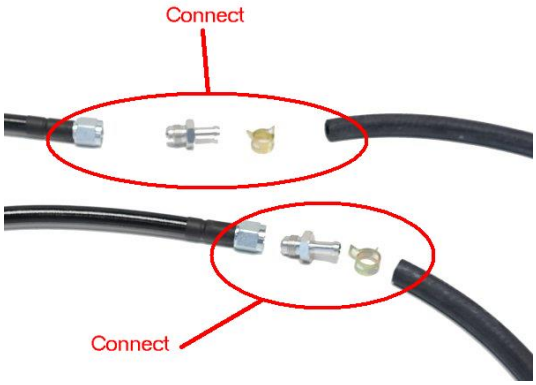


FIGURE 7.2



2. Route both turbo coolant lines with the 14mm banjo fittings along the passenger-side of the transmission bell housing. It helps to label the lines “S” & “L” (Long & Short) on banjo fittings with permanent marker to ease install on turbo later on. Leave lines hanging on passenger-side of transmission to bolt to turbo later on. SEE FIGURE 7.3 & 7.4

FIGURE 7.1

FIGURE 7.2

3. Remove the factory rubber coolant line that connects the coolant tube on the back of the engine on driver-side to the port on the side of the throttle body—You will not need this line for the installation. Install the rubber-end of the turbo coolant line (Short) underneath the intake manifold onto the throttle body coolant port. Secure the hose using the supplied 14mm spring hose clamp. Install the rubber-end of the other turbo coolant line (Long) onto the coolant tube on the back of the engine on the driver-side, using the supplied

14mm spring hose clamp—Route the longer turbo coolant line underneath the back-side of the intake manifold. SEE FIGURE 7.3 & 7.4

FIGURE 7.3

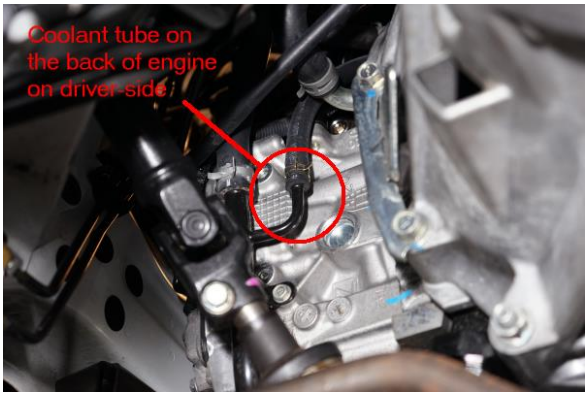


Figure 7.4

4. Release tension on serpentine belt and slide belt off the A/C compressor (refer to factory service manual for details). Remove the three bolts holding the A/C compressor in place and move the compressor aside to access the two EVAP line needed to be spring clamped. This step is necessary to prevent the possibility of the two EVAP lines from popping off under boost. SEE FIGURE 7.5

5. Locate installation package **PTP-PKG-15000-4**. With the A/C compressor out of the way, locate the two EVAP lines underneath the intake manifold (viewed from the front center of intake manifold), pull the two line out of the nipple on the EVAP solenoid, slip on the supplied 12mm spring clamps on each end of the two lines and re-install lines back onto EVAP solenoid using a pair of long needle nose pliers, use to squeeze the clamp while simultaneously pushing the line back on the EVAP solenoid. Install the supplied 14mm spring hose clamp onto the third EVAP hose underneath the intake manifold behind the back of the throttle body—this hose is not visible without removing the intake manifold, however you can feel it with your hand. Install the other 14mm spring hose clamp on the hose connected to the PCV port on the top back of the intake manifold. Reinstall A/C compressor and serpentine belt and torque to factory spec. SEE FIGURE 7.6, 7.7, 7.8 & 7.9.

FIGURE 7.5

FIGURE 7.6

FIGURE 7.7

FIGURE 7.8

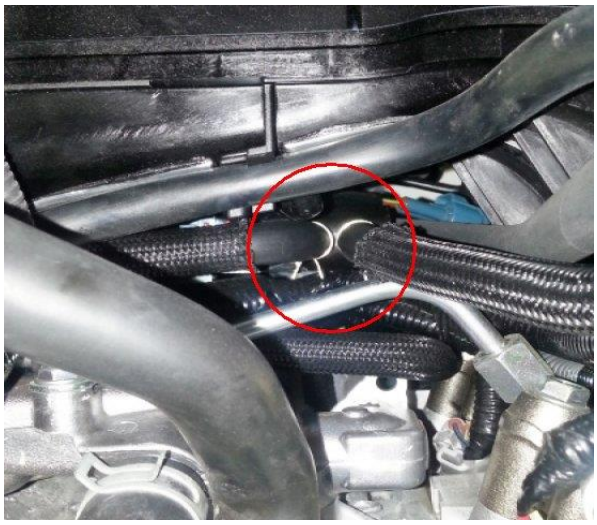
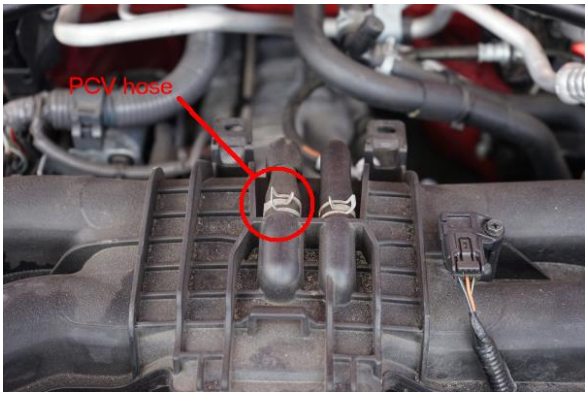


FIGURE 7.9



8 - INSTALLING PTUNING TURBO 2-PIECE OVER-PIPE AND GT TURBO

1. Locate installation package **PTP-PKG-15000-20B and PTP-PKG-15000-21.** Remove the two outer M10 nuts from the passenger-side exhaust header flange. Install the supplied front overpipe support bracket over the header flange and re-install the two M10 nuts. Torque the two M10 nuts to 22 ft./lb. SEE FIGURE 8.1

2. Locate installation package **PTP-PKG-15000-32**. Wrap the front overpipe with the supplied exhaust heat wrap to protect the turbo inlet coupler. Apply the heat wrap over the overpipe with a 1" overlap, starting from one end of the overpipe to the other end. Trim any extra heat wrap at the end and secure the heat wrap on both ends of the overpipe with the supplied stainless steel cable ties. SEE FIGURE 8.0A & 8.0B

FIGURE 8.0A

FIGURE 8.0B

3. Install the supplied front overpipe hanger bracket using the two supplied M8x16mm flange bolts. Hand tighten the bolts just enough to support the hanger bracket. Align the 2-bolt end of the turbo overpipe to the 2-bolt flange on the header, using a new OEM 2-bolt gasket (not provided). Now position the slotted-hole end of the hanger bracket behind the inner-side hole of the two-bolt flange and hand tighten the factory M10 nuts to secure the overpipe flange between the header flange and the hanger bracket. SEE FIGURE 8.2 & 8.3

FIGURE 8.1

FIGURE 8.2

FIGURE 8.3

FIGURE 8.4

4. Install second piece of over-pipe to the first piece making sure the “T-bolt” clamp side is facing the inside (towards compressor housing) and slight clocked towards the outside. Leave the clamp loose enough so that two-piece over-pipe can still rotate. Be sure the male and female v-band flanges on the over-pipe are sitting flush against each other. The nut on the t-bolt clamp should be facing downward. SEE FIGURE 8.4

5. Locate installation package **PTP-PKG-15000-12B-GT28** or **PTP-PKG-15000-12B-GT30** depending on the turbo option**.** Install PTUNING turbo compressor transmission support bracket and PTUNING FR-S turbine heat shield onto the transmission using the two transmission bolt and bell housing nut removed in the earlier steps. SEE FIGURE 8.5 & 8.6

FIGURE 8.5

FIGURE 8.6

6. Your GT turbo comes with the oil restrictor fitting preinstalled on the CHRA. Verify that the tiny pin-hole size opening on the -4AN oil feed restrictor fitting is not obstructed before installation. Install and tighten the fitting to the oil feed port on top of the turbo CHRA.

7. Locate installation package **PTP-PKG-15000-5B.** Install and tighten the secondary oil feed line with brass check valve (short SS line) onto the oil restrictor fitting on the top of the turbo's CHRA (center cartridge).

8. **(GT28 Turbo Option)** Remove the 3 bolts on the turbo compressor (opposite the turbine inlet as shown below). Slide the turbo into place between the over-pipe and compressor support mount bracket and aligning the 3 bolt holes on the compressor to the 3 slotted holes on the turbo mounting bracket. Hand-tighten the 3 bolts that holds the compressor housing to the mounting bracket. The 3 bolts will be fully-tightened later, after final adjustments are made. SEE FIGURE 8.7 & 8.8 & 8.9

9. **(GT28 Turbo Option)** Remove the 2 bolts on the turbo compressor (opposite the turbine inlet as shown below). Slide the turbo into place between the over-pipe and compressor support mount bracket and aligning the 2 bolt holes on the compressor to the 2 slotted holes on the turbo mounting bracket. Hand-tighten the 2 bolts that holds the compressor housing to the mounting bracket. The 2 bolts will be fully-tightened later, after final adjustments are made. SEE FIGURE 8.7 & 8.8 & 8.9

NOTE: The turbocharger is pre-clocked prior to shipment and therefore does not need to be clocked. The turbine inlet, CHRA, and compressor outlet are all located in the required position.

FIGURE 8.7

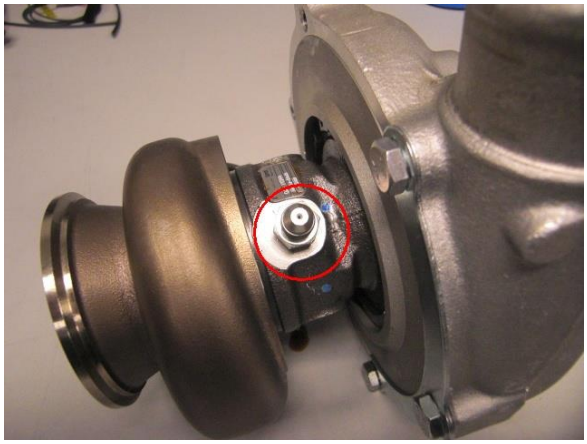
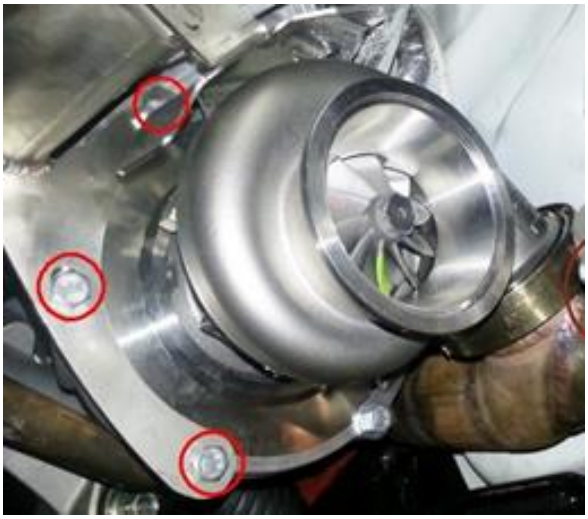


FIGURE 8.8

FIGURE 8.9



10. Locate installation package **PTP-PKG-15000-9-R1.** Using the two supplied 14mm banjo bolts and four crush-washers, connect the previous installed turbo coolant lines "L" (long) to inside of the turbo CHRA facing the transmission and coolant line "S" (short) to the outside of the turbo CHRA facing the passenger side of the turbo and tighten banjo bolts. Each banjo fitting will use two crush-washers, one on each side of the fitting. SEE FIGURE 8.10 & 8.11

NOTE: Make sure the turbo coolant lines are positioned, so that the coolant lines do not come into contact with the turbine housing (hot side). The thermal heat shield on the coolant lines should be position so that it touches the banjo fittings to insulate the coolant lines from the turbine housing.

FIGURE 8.10

FIGURE 8.11

11. Locate installation package **PTP-PKG-15000-19.** Rotate the over-pipe so the v-band flange on the over-pipe and turbine inlet mates up. Using the supplied TIAL V-Band turbine clamp (smaller v-band clamp), bolt the turbo to over-pipe. Make sure to position the clamp so that the t-bolt is located below the over-pipe as shown). Leave clamp slightly loose but make sure the male/female v-band flanges are flush against each other. SEE FIGURE 8.12

12. Locate installation package **PTP-PKG-15000-17**. Using a 12mm socket, remove the M8 bolt securing the rear transmission mounting bracket to the rear of the transmission. Using the provided 1.75" v-band clamp, install the wastegate inlet tube to the v-band flange on the over-pipe. Position the clamp so that the bolt is position below the wastegate tube. Leave the clamp slightly loose so it can rotate. Using a 14mm socket, remove the 10mm transmission mount bolt where the inlet tube hanger will bolt on. Rotate the other end of the wastegate inlet tube so that the slotted hanger lines up with the bolt hole on the transmission mounting bracket. Partially thread the 10mm bolt two to three full turns. SEE FIGURE 8.13 & 8.14

FIGURE 8.12

FIGURE 8.13

FIGURE 8.14

13. Locate installation package **PTP-PKG-15000-15 and PTP-PKG-15000-16**. With over-pipe and turbine v-band clamps slightly loose, install downpipe to turbine outlet using the provided TIAL V-band clamp (larger clamp from package **PTP-PKG-15000-19**). Position the t-bolt on the clamp facing in towards transmission and pointing downward as shown. Leave slightly loose so it can rotate. SEE FIGURE 8.15

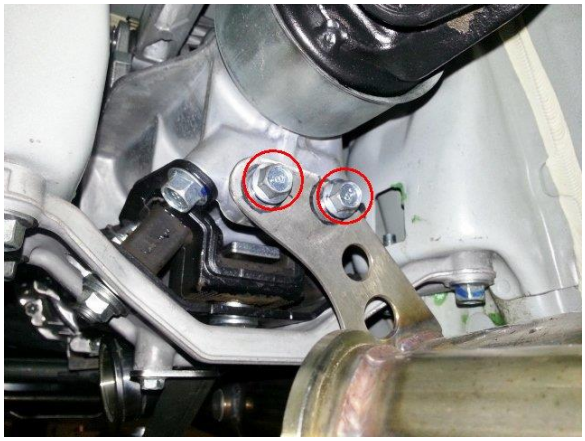
NOTE: The PTUNING downpipe includes provision for mounting an aftermarket wideband O2 sensor. If an O2 sensor will not be installed at this time, simply plug up the O2 bung on the downpipe with the supplied O2 bung plug. The v-band clamp included in package PTP-PKG-15000-16 will be used to connect the downpipe to either a PTUNING DS-333 3" turbo exhaust system or a PTUNING 3" to 2-bolt exhaust adaptor (must be purchased separately).

14. Rotate the downpipe so the mounting bracket holes line up to the transmission holes where the factory front pipe mounting bracket was removed. Thread the two 12mm bolts removed earlier three full turns. **Do not tighten yet.** SEE FIGURE 8.16

NOTE: The downpipe mounting bracket may need to be push back slightly to allow the bracket to line up with the two mounting holes on the rear of the transmission. The bracket may not sit flush with the surface of the transmission mounting holes but the bracket is flexible and will conform to the mounting surface when tighten later.

FIGURE 8.15

FIGURE 8.16



15. Locate installation package **PTP-PKG-15000-18 and PTP-PKG-15000-23**. Using a 4mm allen hex socket and 8mm wrench, install provided vacuum barb fitting and plugs onto the wastegate as shown. The top vacuum fitting on the wastegate cap is left open to atmosphere. The bottom vacuum fitting below the wastegate collar will later be connected to intercooler piping #1 for boost reference. SEE FIGURE 8.17

16. Loosely bolt on the wastegate dumptube with flex bellows to the wastegate using the smaller clamp included in package **PTP-PKG-15000-23**. Using the larger clamp from package **PTP-PKG-15000-23**, loosely bolt the bottom of the wastegate (inlet) to the wastegate inlet tube previously installed as shown. Rotate the wastegate dumptube so that the v-band flange (male end) mates up with the v-band flange (female end) on the downpipe. Using the supplied clamp from package **PTP-PKG-15000-18**, loosely install clamp, but make sure the flanges are flush against each other. SEE FIGURE 8.18

NOTE: When handling the wastegate, be careful not to drop the wastegate valve seat located at the bottom of the wastegate. The valve seat is held in placed once the wastegate is secured to the wastegate inlet tube.

FIGURE 8.17

FIGURE 8.18

17. IMPORTANT! Go back and fully tightening the v-band clamps and bolts in the following order:

1. V-band clamp between front and rear section of over-pipe
2. V-band clamp between turbine inlet to over-pipe
3. V-band clamp between turbine outlet to downpipe
4. V-band clamp between over-pipe to wastegate inlet tube
5. 12mm bolt (1) on rear transmission bracket to wastegate inlet tube hanger
6. V-band clamp between wastegate inlet tube to bottom of wastegate
7. V-band clamp between wastegate outlet to dumptube
8. V-band clamp between dumptube to downpipe
9. 12mm bolts (2) on downpipe mounting bracket
10. 13mm bolts (3) on compressor-to-transmission mounting bracket

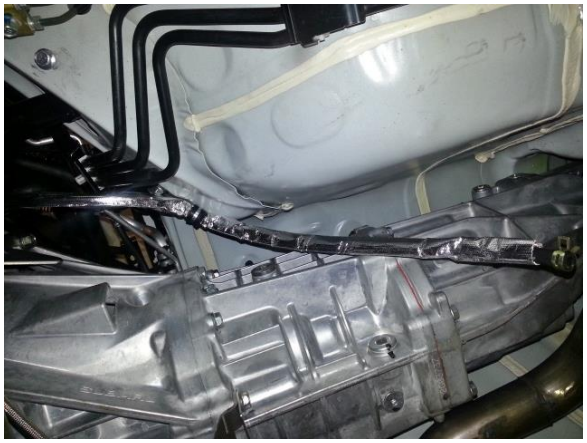
18. Locate installation package **PTP-PKG-15000-4**. Slip the supplied 5/8”x24” thermal shield over the ¼” vacuum hose (Use a rod or compress air to help expand the thermal wrap to ease installation onto vacuum hose). Install one end of the vacuum hose with the supplied 11mm spring clamp to the bottom barb fitting on the wastegate (the fitting marked “connect to IC piping #1” in figure 8.17). Slide the thermal shield until it touches the spring clamp on the wastegate fitting. Using the supplied rubber cushion clamp and M6x16mm bolt, secure the vacuum hose to the transmission tunnel of the car in the location shown below. Route the other end of the vacuum hose towards the back of the intake manifold. The vacuum hose will be connected to the intercooler piping #1 later. SEE FIGURE 8.19, 8.20, 8.21, 8.22

FIGURE 8.19

FIGURE 8.20

FIGURE 8.21

FIGURE 8.22



9– INSTALLING TURBO OIL SCAVENGING PUMP & OIL SUMP

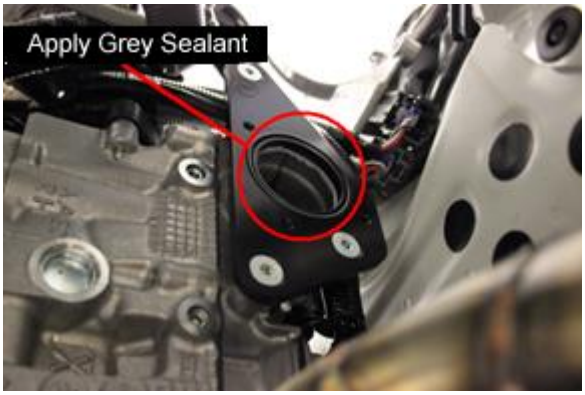
1. Remove factory metal cylinder block-off plate on the right cylinder head. **Plate and bolts will not be reused**. SEE FIGURE 9.1

FIGURE 9.1

2. Locate installation package **PTP-PKG-15000-7B**. Clean cylinder head mating surface and apply a bead of Loctite grey 5699 silicone gasket maker or factory silicone gasket maker onto cylinder head (Refer to factory service manual for details). Install PTUNING FR-S Oil Scavenge Pump Adaptor Base Plate along with the three supplied M8x20mm Flat-head socket cap screw. Apply a thick bead of Loctite grey 5699 silicone gasket maker or factory silicone gasket maker into the sealant groove before inserting the pump on the next step— The sealant should fill the groove with a thickness of about 2mm above the face of the adaptor plate. Using a 6mm Allen-head socket, torque the three screws to 12 FT/LB. SEE FIGURE 9.2 & 9.3.

FIGURE 9.2

FIGURE 9.3



3. Rotate the shaft on the supplied Oil Scavenge Pump so that the female slot on the pump shaft lines up with the male slot on the back of the camshaft before attempting to install the pump onto the mounting adaptor. You will need rotate the pump back and forth until the two slots line up in order for the pump to fully seat against the adaptor plate. Once the pump is fully seated, rotate the pump so that the three mounting holes on the pump line up with the holes on the adaptor plate. Install the three supplied M6x12mm flange head hex bolts. Using an 8mm socket, torque bolts to 12 FT/LB. SEE FIGURE 9.4.

4. Locate installation package **PTP-PKG-15000-5B**. Install the supplied ¾”x12” thermal heat shielding tube over the -6AN oil return line. Install the 12mm banjo bolt and copper crush washers (one on either side of the banjo fitting) into the banjo-end of -6AN oil return line. Flip the banjo-end of the oil return line if necessary so that the other 90 deg. end of the oil return line is facing towards the driver side when routed to the location where the turbo oil return sump will be installed. Torque the banjo bolt to 15 FT/LB. SEE FIGURE 9.4, 9.5, 9.6 & 9.7.

FIGURE 9.4

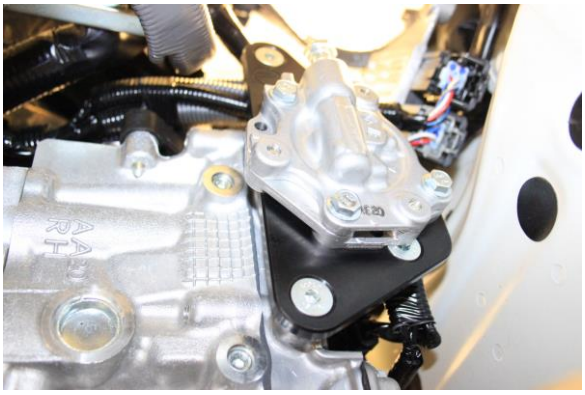
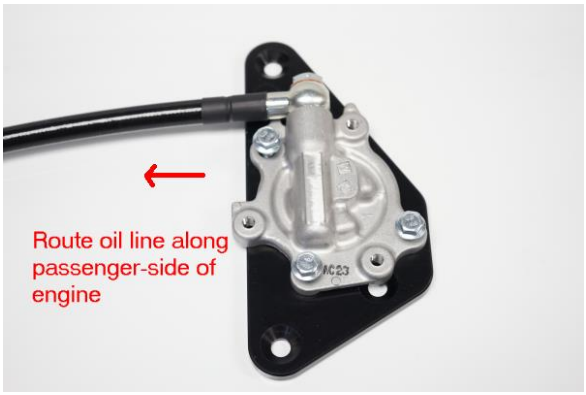


FIGURE 9.5

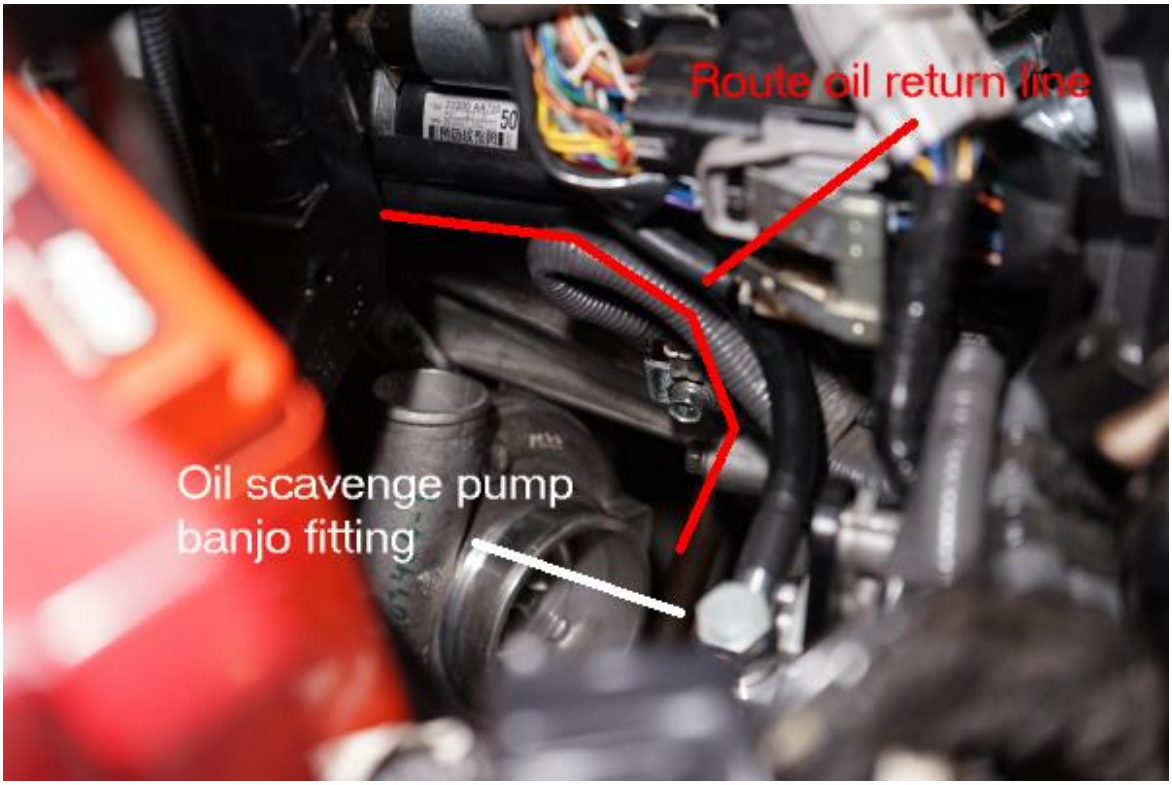
FIGURE 9.6

FIGURE 9.7



5. Route the oil return line along the passenger-side of the engine and transmission and let the 90 degree-end hang for now. Pull the factory wiring harness of the metal retaining clip and push it down and towards the center of the engine to make room for the turbo intake tube that will be installed later. SEE FIGURE 9.8

FIGURE 9.8



6. Locate installation package **PTP-PKG-15000-6B.** Install the 12mm copper crush washer and -4ANxM12 union fitting (black aluminum) into the top breather port of the turbo oil sump. Install the 12mm copper crush washer and -6ANxM12-1.5 port fitting (steel) into the side port of the turbo oil sump. Place the supplied 15mm O-ring into the O-ring groove at the top of the turbo oil sump. Torque all fittings to 15 FT/LBS. SEE FIGURE 9.3 & 9.4.

FIGURE 9.3

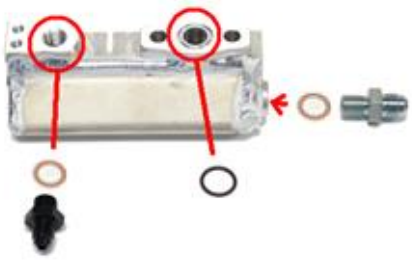
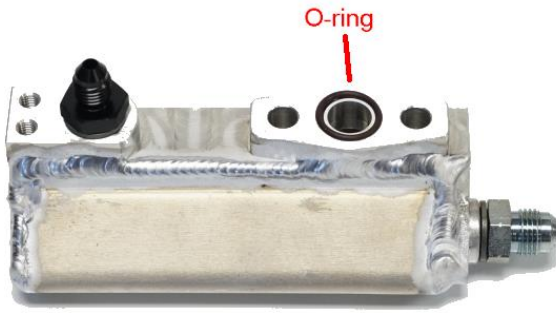


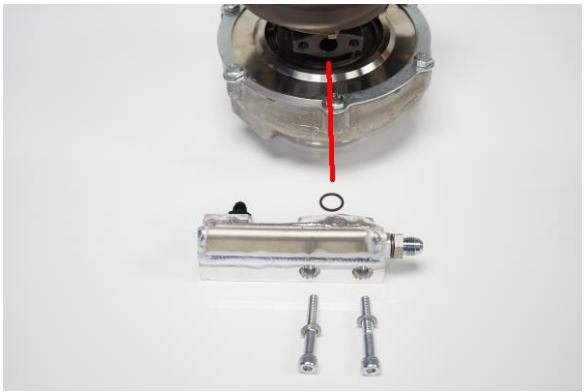
FIGURE 9.4



7. Locate installation package **PTP-PKG-15000-5B.** Slip the 5/8”x12” thermal heat shielding tube over the 28” -4AN oil sump breather line and install the line onto the -4AN fitting at the top of the turbo oil sump. Route the other end of the breather line between the transmission and turbocharger. Route the other end of the breather line on the same path as the oil return line installed earlier. Secure the turbo oil sump onto the bottom of the turbocharger’s oil return port by using the two supplied M8x50mm socket head cap screws and split lock washers (**IMPORTANT: make sure oil return O-ring is still sitting within the O-ring groove**). Torque the M8 screws to 18 FT/LBS. SEE FIGURE 9.5 & 9.6

FIGURE 9.5

FIGURE 9.6



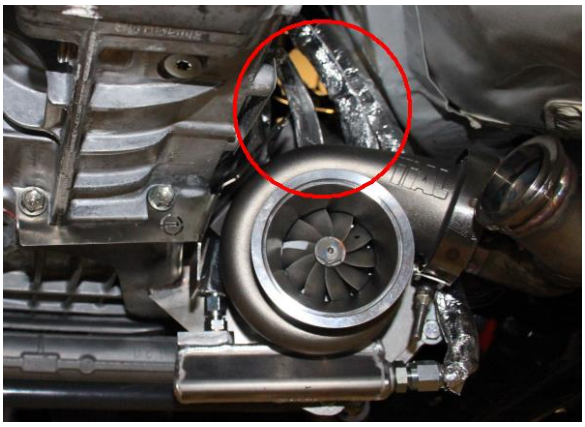
8. Route the other end of the 28" breather line as shown below. The 90-degree end of the 28" breather line will be connected to the Cobra Intake later in the installation. SEE FIGURE 9.7

FIGURE 9.7

9. Route the oil return line that was installed earlier, between the compressor and turbine housing of the turbo. Connect the 90 Degree end of the oil return line to the -6AN fitting on the side of the turbo oil sump and fully tighten the nut. At this time, check to verify that the oil feed line, oil return line, turbo coolant lines, and oil sump breather lines are properly shielded with the heat shield tube. All the lines mentioned should be position between the compressor and turbine housing on the turbo as shown. SEE FIGURE 9.8 & 9.9

FIGURE 9.8

FIGURE 9.9



10. Locate the installation package **PTP-PKG-15000-5B**. Install the 5/8”x12” thermal shield over the supplied 24” -4AN primary oil feed line. Connect the 24” primary oil feed line to the secondary oil feed line w/check valve and finally slide the thermal shield down, covering up the secondary oil feed line. Install the 12mm copper crush washer and -4ANxM12 union fitting (black aluminum) onto the oil feed port of the passenger side cylinder head. Secure the other end of the 24” primary oil feed line to the oil feed fitting. SEE FIGURE 9.10 & 9.11

FIGURE 9.10

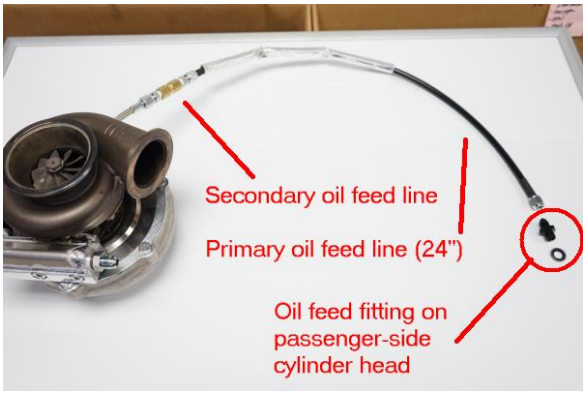
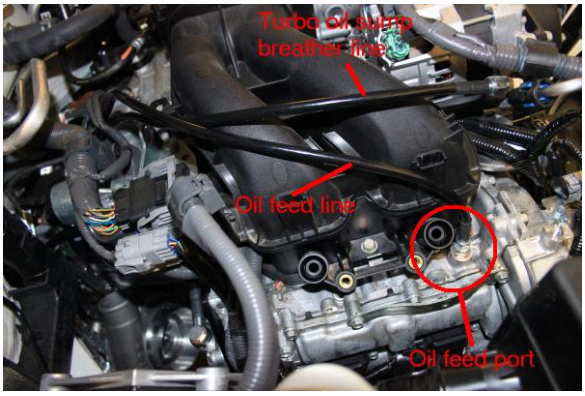


FIGURE 9.11

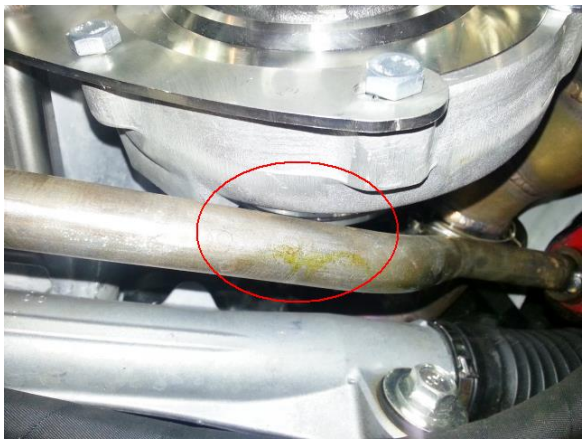


10 – ADJUSTING THE FRONT SWAY BAR FOR TURBO CLEARANCE

1. Now that the turbocharger and all plumbing lines are installed and secured, Install the sway bar and sway bar mounting bracket assembly previously removed from vehicle and torque the bolts and nut to factory spec**.** With the vehicle's front wheels fully drooped and strut fully extended, adjust the two end-links front sway bar so that there is a 1/8" clearance between the sway bar and the front of the turbo compressor housing. Fully tighten the lock nut on the adjustable end-links. SEE FIGURE 10.1 & 10.2.

FIGURE 10.1

FIGURE 10.2



11 – INSTALLING THE FRONT-MOUNTED INTERCOOLER, IC PIPING AND INTAKE

1. Locate installation package **PTP-PKG-15000-14** and **PTP-PKG-15000-27.** Using a 13mm socket and wrench, install the front-mounted intercooler as shown with the supplied M8x90mm bolts, washers and lock nuts. The washer should be located on the front of the bumper support and the lock nut on the backside of the bumper support. SEE FIGURE 6.1 & 6.2

FIGURE 11.1

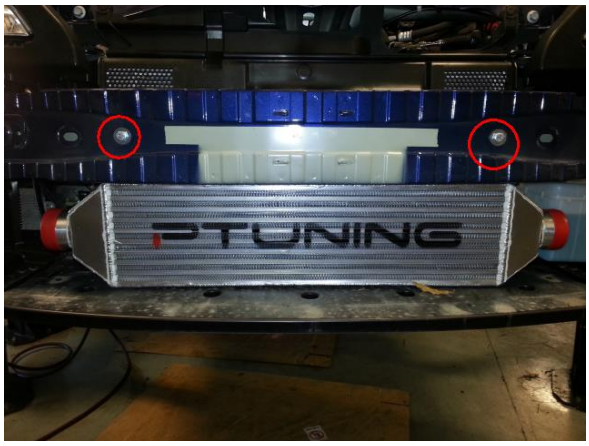
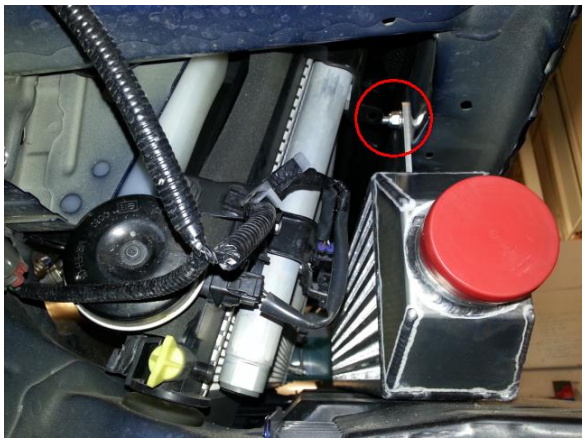


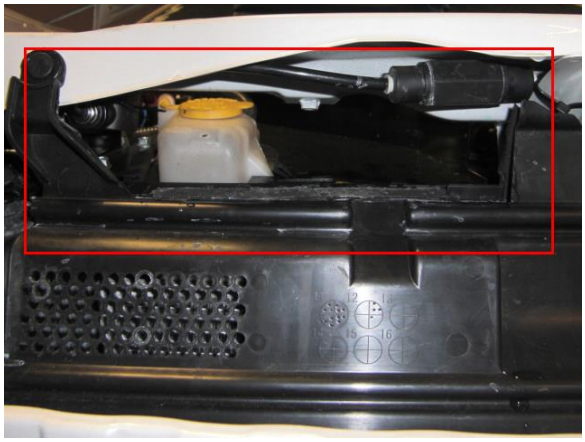
FIGURE 11.2



2. Using a box cutter or sheer, trim off the top passenger-side portion of the plastic air shroud as shown to create an opening for the new air intake shroud. Also trim away the factory foam covering the opening behind the trimmed shroud. SEE FIGURE 11.3 & 11.4

FIGURE 11.3

FIGURE 11.4



3. If you have purchased the optional fueling package, remove the factory map sensor located on the intake manifold and install the Omni Power map sensor. SEE FIGURE 11.5

FIGURE 11.5

4. Before installing the intercooler piping, have a bottle of Windex handy to help ease the installation of the silicone couplers onto the intercooler piping. Spray a light mist of Windex on the inside edge of the silicone couplers before installing it onto the intercooler piping. This procedure will allow you to easily adjust the coupler on the piping once the piping is installed. The included worm clamp should be tightened loosely on the coupler and then fully tighten once the desire position of the piping is achieved. It is recommended that the screw head on the worm clamps be positioned so that it is easily accessible once all the piping has been installed.

5. Locate installation package **PTP-PKG-15000-1B** and **PTP-PKG-15000-2B-GT28** or **PTP-PKG-15000-2B-GT30 (depending on turbo option)**. Layout all the silicone couplers and worm clamps on a workbench and set the correct worm clamp next to each end of the couplers. The 2" clamps should be on the end of the 2" coupler, and 2.5" clamp next to the 2.5" coupler end, etc.

6. Locate intercooler piping #1 marked as package **PTP-ICP-15001**. Install the supplied ¼" barb hose adaptor from package **PTP-PKG-15000-4** onto the piping as shown. Install the 2" 45-degree coupler and 2"to2.5" reducer coupler onto the piping, using the 2" worm clamps and 2.5" worm clamp as shown. Be sure to position the orientation of the 45-degree coupler as shown. FIGURE 11.6

7. Route intercooler piping #1 over the top of the transmission bell housing, directly below the strut cross bar mounting bracket (center of firewall). The 45-degree coupler end should be facing upward towards the front of the car and the 45-degree coupler-end should be connected to the turbo compressor outlet. The piping should sit along the left-side of the transmission bell housing and next to the back of the starter motor. Secure all worm clamps. SEE FIGURE 11.7

FIGURE 11.6

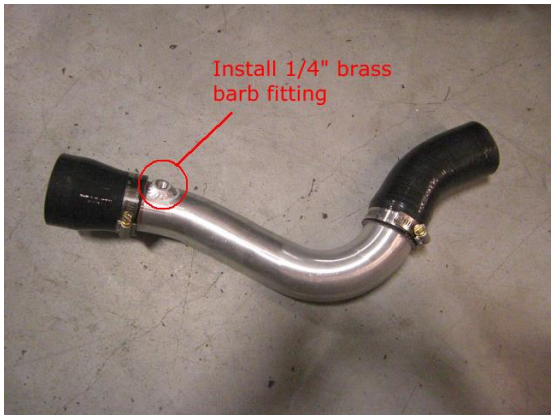
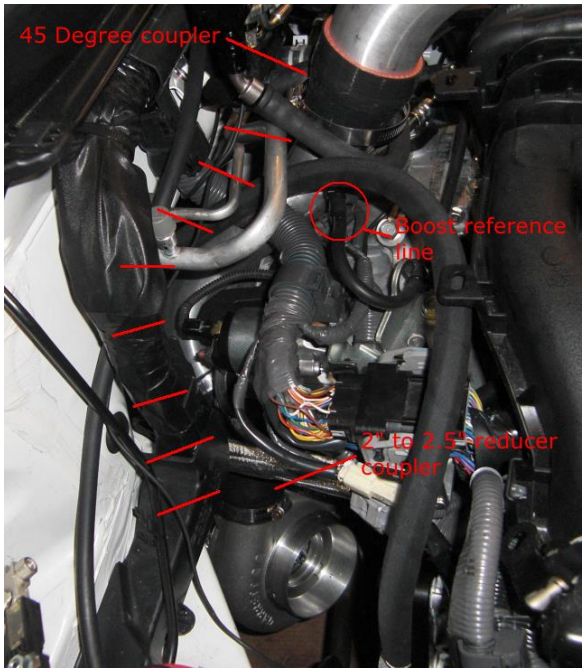


FIGURE 11.7



8. Using the supplied 11mm spring hose clamp from package **PTP-PKG-15000-4**, connect and secure the boost reference line (from wastegate) to the barb hose fitting on the piping #1. NOTE: The rubber vacuum/boost line supplied will need to be cut to the desire length. The remaining line will be used as a vacuum line for the blow off valve. SEE FIGURE 11.8

9. **NOTE: The rubber vacuum/boost line supplied will need to be cut to the desire length. The remaining line will be used as a vacuum line for the blow off valve.**

FIGURE 11.8

10. Locate installation package **PTP-PKG-15000-22**. On the blow-off valve (BOV), take the 4mm Hex Plug and plug the port on the left side of the "Turbosmart" logo and an 8mm wrench; install the supplied barb fitting to the right side of the logo. Use a tiny amount of Teflon thread sealant to insure an air-tight seal. SEE FIGURE 11.9

11. Locate intercooler piping #2 marked as package **PTP-ICP-15002**. Insert the BOV O-ring onto the BOV flange on piping #2. SEE FIGURES 11.10

FIGURE 11.9

FIGURE 11.10

1. Install the V-Band clamp and the BOV and orient it as shown. Tighten the clamp using a 4mm hex socket or Allen wrench. SEE FIGURE 11.11 & 11.12

FIGURE 11.11

FIGURE 11.12

12. Locate installation package **PTP-PKG-15000-4**. Remove the top two throttle body mounting bolts and install the IC piping throttle body bracket. Position the bracket so that the two protruding threaded inserts on the bracket is on top and facing towards the firewall. Install and torque the two throttle body bolts to factory spec. Now position intercooler piping #2 so that mounting bracket hole lines up with the holes on the throttle body mounting bracket. Using the supplied M6x12mm bolts (2), secure the piping #1 mounting bracket to the throttle body mounting bracket. Using a 2.5" worm clamp from package **PTP-PKG-15000-1B**, secure piping #2 to the coupler connected to piping #1 as shown. SEE FIGURE 11.13 & 11.14

FIGURE 11.13

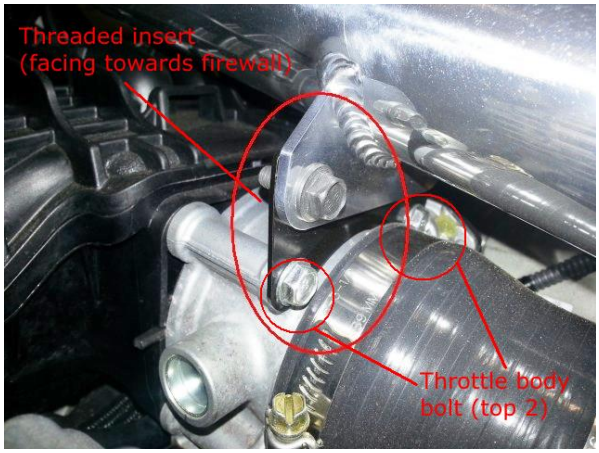


FIGURE 11.14

13. Locate intercooler piping #3 and #4 marked as package **PTP-ICP-15003** and **PTP-ICP-15004**. Using the 2.5" hump-hose silicone coupler and 2.5" worm clamps, connect one end of the hump-hose to piping #2 (w/BOV) and the other end to piping #3. Using the 2.5" 45-degree coupler and 2.5" worm clamps, connect one end of the coupler to piping #3 and the other end to piping #4. Using the 2.5" straight coupler and 2.5" worm clamps, connect the piping to the passenger-side intercooler end-tank. SEE FIGURE 11.15, 11.16 & 11.16B

FIGURE 11.15

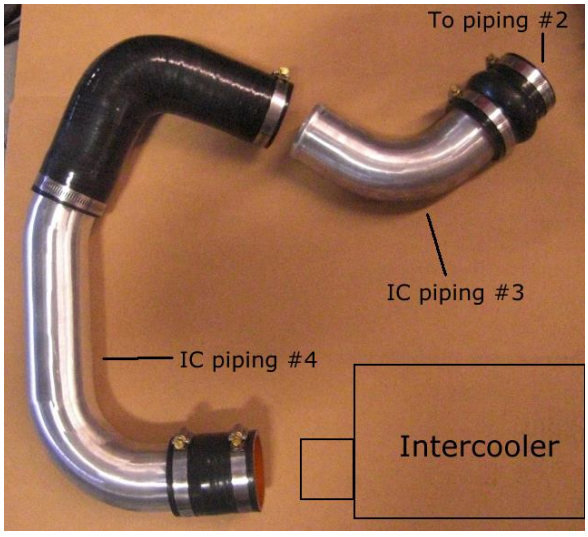
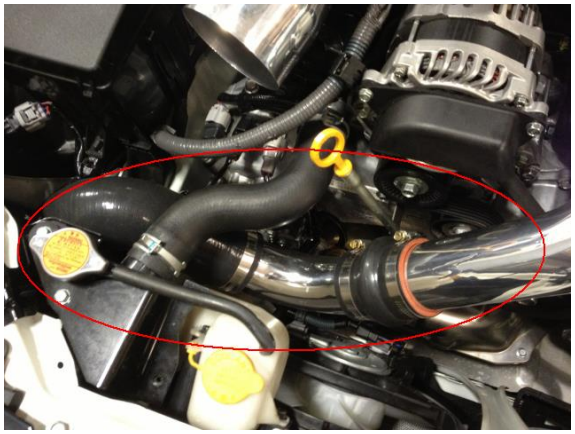


FIGURE 11.16

FIGURE 11.16B



14. Locate intercooler piping #5 marked as package **PTP-ICP-15005**. Using the 2.5” straight coupler and 2.5” worm clamps, connect one end of the coupler to the shorter-end of piping #5 and the other end to the driver-side intercooler end-tank. Using the 2.5” 45-degree coupler, connect the short-end of the coupler to the long-end of piping #5 and route the other end of the coupler through the opening underneath the driver-side headlight. Adjust the position and angle of the coupler as shown in FIGURE 11.17, 11.18, 11.19 & 11.20

NOTE: It is recommended that the plastic mounting-tab for the headlight plug, beneath the headlight, be trimmed to allow additional clearance for 45-degree coupler connecting piping #5 and #6. SEE FIGURE 11.21

FIGURE 11.17

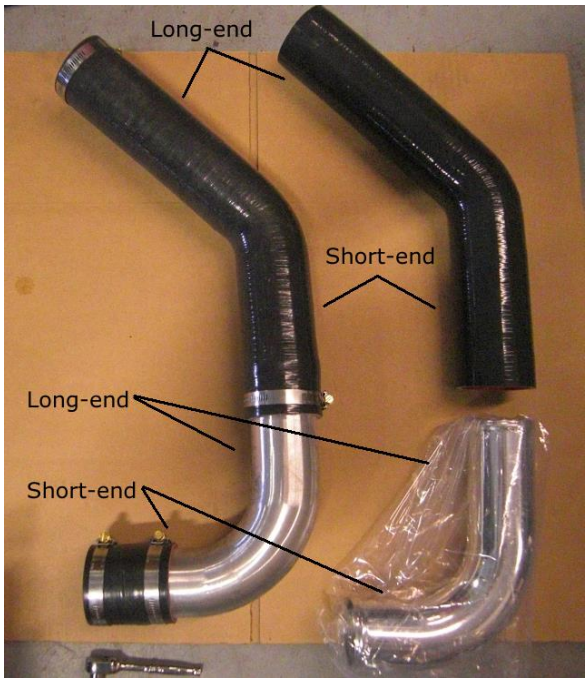


FIGURE 11.18

FIGURE 11.19

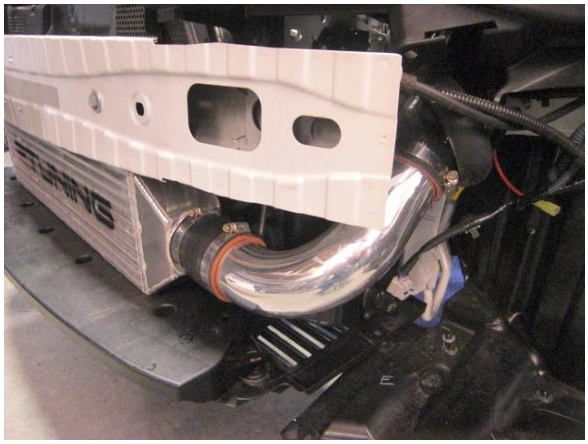


FIGURE 11.20

15. Locate intercooler piping #6 marked as package **PTP-ICP-15006** and **PTP-PKG-15000-4**. Install the supplied 1/8” NPT hex plug (using Teflon thread sealant) onto the 1/8” NPT WMI bung on piping #1. SEE FIGURE 11.22

FIGURE 11.21

FIGURE 11.22

16. Using the 2.5” to 3” reducer coupler and 2.5” & 3” worm clamps, connect the 2.5”-end of the coupler to the piping #6 (side where WMI bung is located) and the other 3”-end to throttle body. Secure the opposite end of piping #6 to the piping #5 coupler using the 2.5” worm clamp. Adjust the piping on the coupler to allow 3/8” clearance between piping #2 and #6 and 1/4" clearance between piping #6 and the A/C compressor pulley cover. FIGURE 11.20, 11.23 & 11.24

FIGURE 11.23

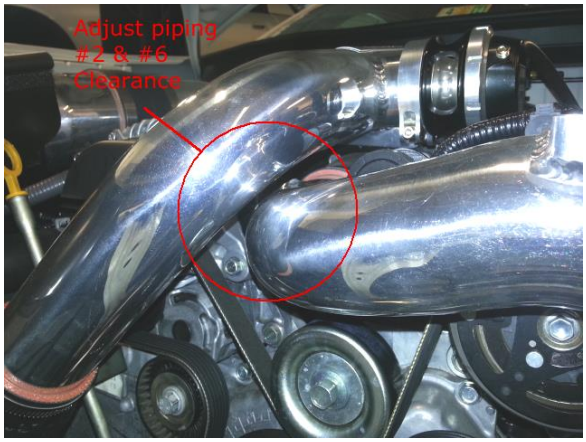
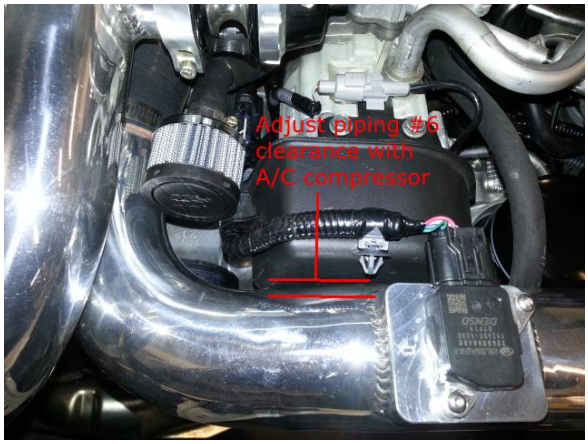


FIGURE 11.24



17. Remove the factory MAF sensor from the factory air box and install the MAF sensor onto intercooler piping #6 using the supplied M4x8mm button head socket cap screw (2) from package **PTP-PKG-15000-4**. Reconnect the MAF sensor plug and route the sensor harness as shown. SEE FIGURE 11.25

FIGURE 11.25

18. Locate air shroud package **PTP-PKG-15003**. Install the supplied rubber edge trim around the front of the shroud and trim off the excess edge trim. Install firmly press down the supplied edge-grip trim on top edge of the shroud and trim off the excess trim. SEE FIGURE 11.26

19. Remove the two M6 bolts securing the factory radiator cap bracket, install the supplied air shroud mounting bracket on top and secure the bracket with the two M6 bolts previously removed. FIGURE 11.27

FIGURE 11.26

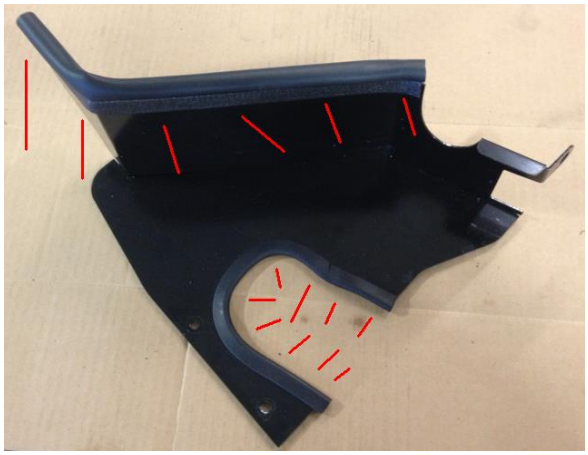


FIGURE 11.27

20. Remove one of the M8 bolts securing the factory hood latch, slide the air shroud into place so that the two 6mm holes on the shroud sits on top of the two 6mm holes on the air shroud support bracket. Position the 8mm mounting hole on the air shroud tab against the factory hood latch and secure the air shroud with the previously removed M8 bolts and the supplied M6x8mm button head socket cap screws (2). Adjust the position of the gray factory alternator harness as shown to allow clearance for the intake tube installed later. FIGURE 11.28 & 11.29

FIGURE 11.28

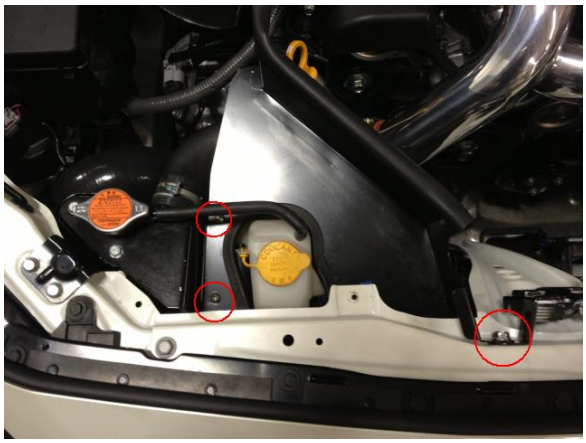
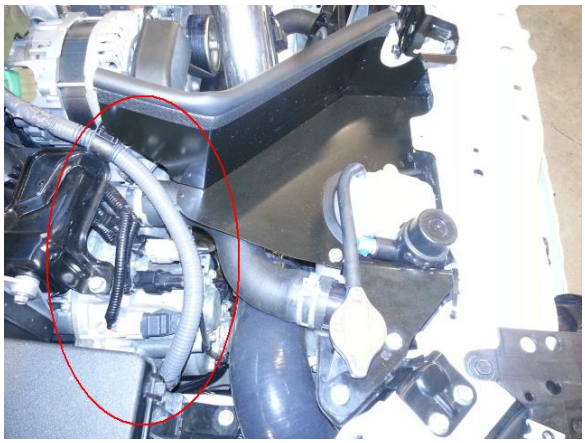


FIGURE 11.29



21. Locate package **PTP-PKG-15000-2B-GT28** or **PTP-PKG-15000-2B-GT30** depending on turbo option. Using the supplied 90-degree 4" coupler and 4" worm clamp (GT30 Turbo) or 3" worm clamp on GT28 turbo, slide the worm clamp and orient the position of the worm clamp screw as shown in FIGURE 11.30. Install the shorter end of the 90 degree 4" coupler and clamp onto the turbo compressor inlet as shown. Tighten the worm clamp just enough to keep the coupler in place (the clamp will be fully tightened later once the intake tubes have been secured into place. SEE FIGURE 11.30 & 11.31

FIGURE 11.30

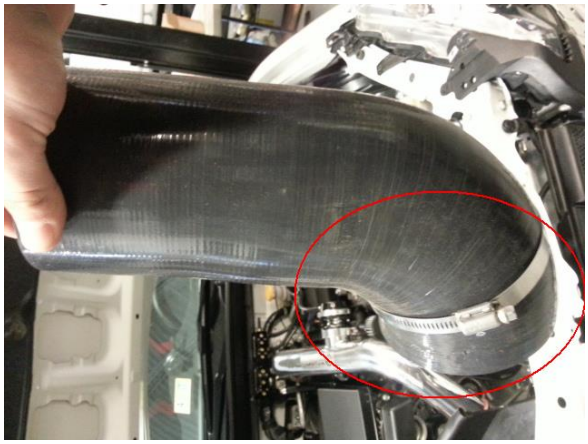
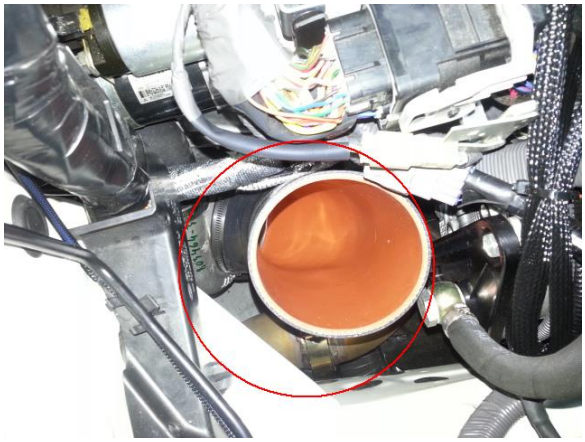


FIGURE 11.31



22. The v-band clamp on the over-pipe will sit against the 4" coupler as shown. Also note the position of the worm clamp screw on the coupler. The clamp screw should be positioned so that it can easily be tightened from underneath the vehicle. FIGURE 11.32 & 11.33

FIGURE 11.32

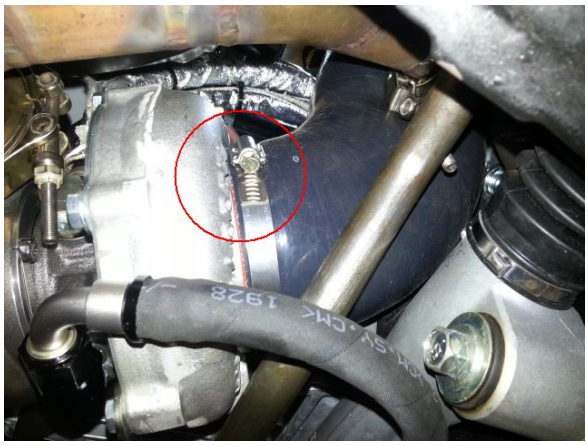


FIGURE 11.33

23. Install a 4” worm clamp onto the other end of the 90 degree 4” coupler with the clamp screw positioned as shown. SEE FIGURE 11.34

24. Locate package **PTP-ICP-15007-V2.** Remove the top rear M6 bolt securing the Direct-Injection ECU to the passenger side of the motor and line up the mounting bracket hole on the intake. Install the supplied mounting bracket to the intake mounting hold and secure the bracket with the supplied M6x16mm flange hex bolt and torque to 8 ft./lb. Finally, install the factory M6 bolt through the smaller end of the mounting bracket and into the ECU mounting hole and torque to factory spec. SEE FIGURE 11.35 & 11.36

FIGURE 11.34

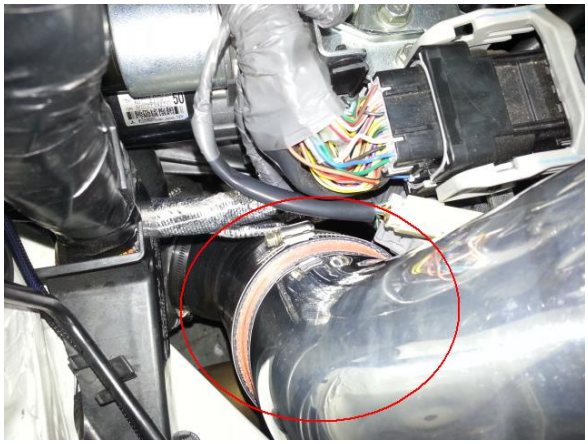


FIGURE 11.35

25. Install a 4” worm clamp onto the other end of the 4” straight coupler with the clamp screw positioned as shown. Slide the longer-end of the secondary intake tube onto the straight coupler so that the other end of the secondary intake tube pointing downward and towards the passenger side fender. Installed the supplied PTUNING 4” intake filter onto the other end of the secondary intake tube as shown. SEE FIGURE 11.36

FIGURE 11.36

FIGURE 11.37

26. Locate the PTUNING 4” air intake filter marked as package **PTP-PKG-15000-24.** Position the worm clamp crew on the air filter as shown and adjust the angle of the secondary intake tube and coupler so that the filter is positioned as shown without coming into contact with the wiring harness, fuse box, or radiator hose. SEE FIGURE 11.37

27. Locate the black 4AN male flare fitting from package **PTP-ICP-15007-V2.** Install the fitting onto the side of the intake tube with the O-ring side facing the intake breather hole as shown below. Locate the loose end of the 28" breather hose installed in section 9 earlier and secure the 90-degree end of the hose onto the other end of the 4AN breather fitting. SEE FIGURE 11.38 & 11.39

FIGURE 11.38

FIGURE 11.39

12 – INSTALLING VACUUM LINES AND BREATHER FILTER

1. Locate installation package **PTP-PKG-15000-4**. Cut the vacuum hose coming off the intake manifold to the brake boost in the position shown below. Connect the supplied 3/8”x1/4”x3/8” barbed Tee fitting onto the ends of the cut brake booster vacuum hose. Using the left-over rubber vacuum hose from the WG boost line installation, attach one end of the 1/4” vacuum hose to the 1/4” barb Tee and the other end to barb fitting on the blow-off valve (BOV) (cut the 1/4” vacuum hose to desire length, leaving a bit of slack). Secure the vacuum hose and brake boost hose with the supplied 11mm (2) and 17mm (2) spring clamps. Install BOV vacuum line and T-vacuum fitting, breather filter. SEE FIGURE 12.1 & 12.2

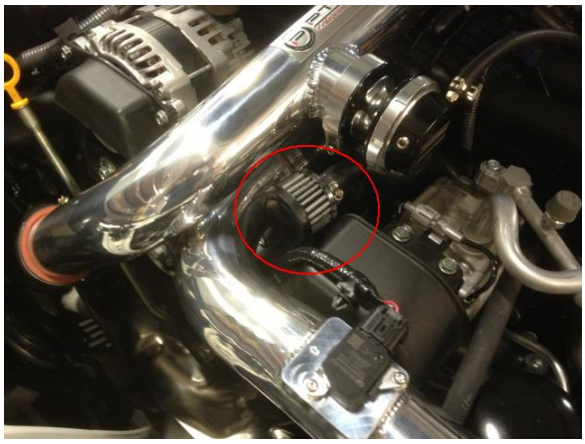
FIGURE 12.1

FIGURE 12.2

2. Locate installation package **PTP-PKG-15000-25**. Connect the crank case breather hose (previously removed from the factory intake tube) to the supplied breather filter using the supplied 7/16” worm clamp. Position the breather filter between the A/C compressor and the intercooler piping #6 as shown. SEE FIGURE 12.3 & 12.4

FIGURE 12.3

FIGURE 12.4



13 –MODIFYING REAR UNDER TRAY AND INSTALLING MOUNTING BRACKET

1. Position the rear (black) under tray up against the bottom of the vehicle (in the normal mounting position) and use a marker to mark the area where the turbo oil sump comes into contact with the under tray. Using a utility knife, trim the under tray as shown to provide clearance for the turbo oil sump. SEE FIGURE 13.1, 13.2 & 13.3.

FIGURE 13.1

FIGURE 13.2

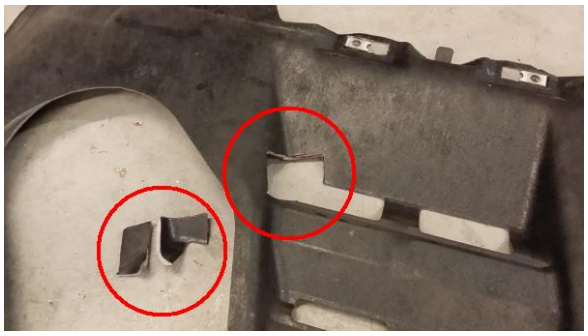
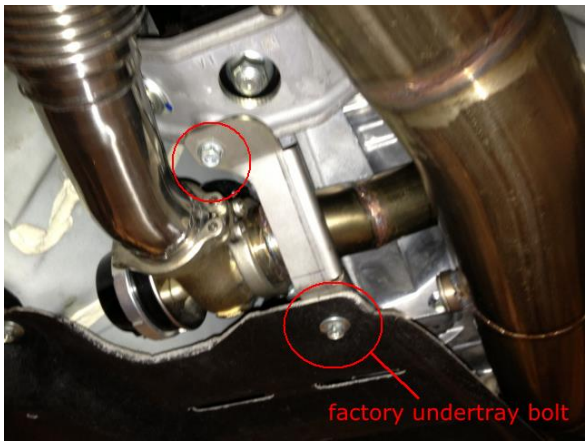


FIGURE 13.3

2. Locate installation package **PTP-PKG-15000-13**. Temporarily mount the rear undertray to the vehicle chassis. Install the supplied undertray mounting bracket in the position shown, using the supplied M6x16mm flange bolt. Secure the bracket to the transmission rear cross member. Using an awl or small Phillip screwdriver, punch a hole through the undertray where the other mounting hole on the other end of the mounting bracket resides. Enlarge the punched hole and bolt the undertray to the mounting bracket using the factory undertray bolt. Remove the undertray and set aside for now until after the final checklist in the manual has been performed. SEE FIGURE 13.4

FIGURE 13.4



14 – FINAL CHECKLIST

1. Verify that all sway bar connections and mounting bolts are fully tightened to factory spec.
2. Verify that all transmission bolts previously removed and re-installed are fully tightened to factory spec.
3. Check all vacuum and boost lines connections on wastegate, blow-off valve, brake booster, and intercooler piping to ensure that they are all secured and kink-free.
4. Verify that all vacuum fittings and NPT plugs on intercooler piping are secured and leak free.
5. Verify that all exhaust and turbine connection bolts are fully tightened.
6. Verify that all turbo oil feed, oil return, oil sump breather, and turbo coolant lines connections are fully secured.
7. Verify that all factory connector plugs have been re-connected.
8. Verify that the intercooler piping does not rub against any part of the vehicle chassis.
9. Verify that all silicone clamps are fully tightened.
10. Verify engine oil is at factory level. We highly recommend the use of synthetic motor oil to help prolong the life of the turbocharger.
11. Only use premium unleaded fuel (93 octane or higher) for proper engine performance and to reduce the possibility of engine damage from detonation.
12. Reconnect the negative and positive terminal on the vehicle battery. **DO NOT ATTEMPT TO START THE VEHICLE AT THIS TIME.**
13. Cycle the ignition to the “ON” and then “OFF” position several time to pressurize the fuel system and check for fuel leaks.
14. At this time, the engine ECU calibration map (Ecutek ProECU ROM file) should be loaded into the factory ECU before starting the vehicle.
15. Start the vehicle and check for any oil, coolant, fuel, exhaust and vacuum leaks.
16. Bleed the engine coolant system to remove any air pockets from the coolant system. Add coolant if necessary during the process. Please refer to the factory service manual for details on bleeding the coolant system.
17. Re-install front and rear lower under trays, as well as any plastic splash shields removed during the installation process.
18. Verify that all turn signal plugs and horn plugs are connected and re-install front bumper cover.
19. It is recommended at this time that the vehicle’s ECU calibration be calibrated and/or verified on a chassis dynamometer with AFR reading before driving under boost.
20. Installation of the turbo system is now completed.

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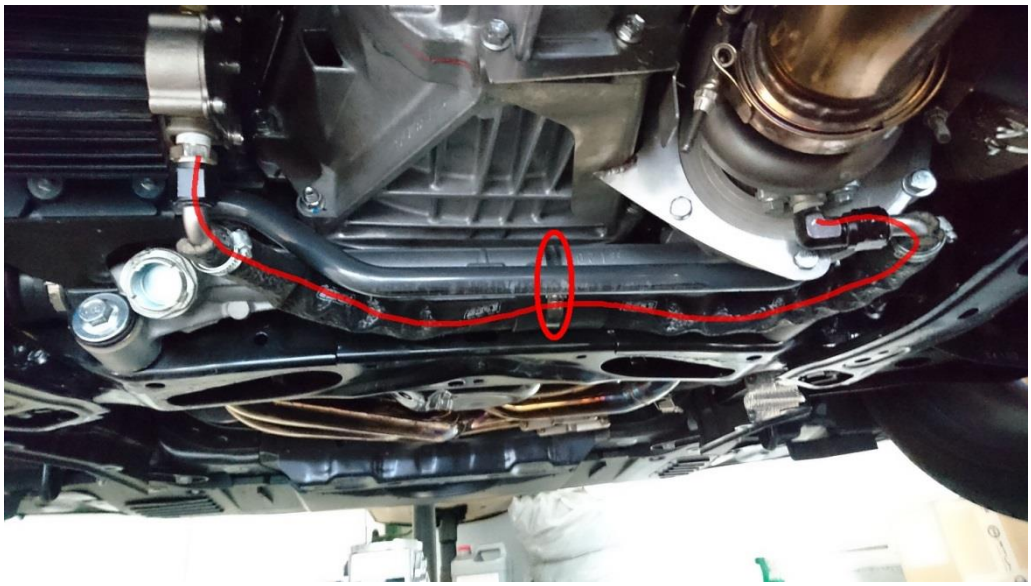
ADDENDUM A – MECHANICAL TURBO SCAVENGE PUMP UPGRADE

This section provides the steps for removing the electrical turbo scavenge pump and installing the mechanical scavenge pump. This section only applies to those purchasing the mechanical turbo scavenge pump upgrade kit (**PART#: PTP-PGK-15000-PUPG**).

1. Lift car and remove under trays.
2. Remove 4” intake piping and couplers from the air filter to turbo.

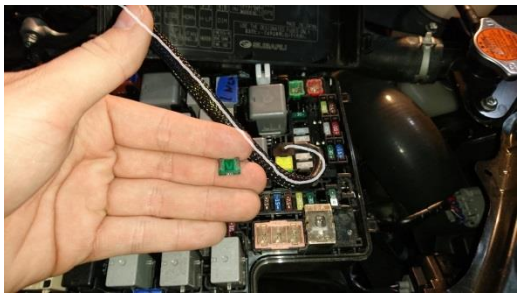
3. Remove warm clamp and oil line from electrical pump to turbo.

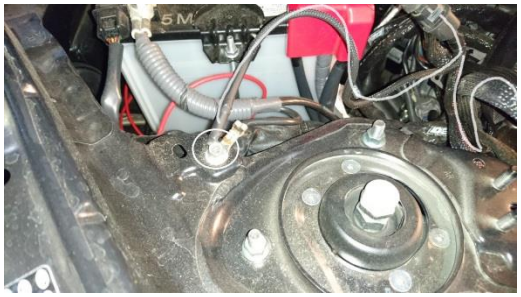


4. Remove oil return line from engine to oil scavenge pump.


5. Place a rag on the over-pipe. Remove oil return plate bolts and pry off the oil return plate. Clean off old gasket.

6. Remove electrical pump wiring and swap original fuse. Wiring harness can hang from scavenge pump for now.

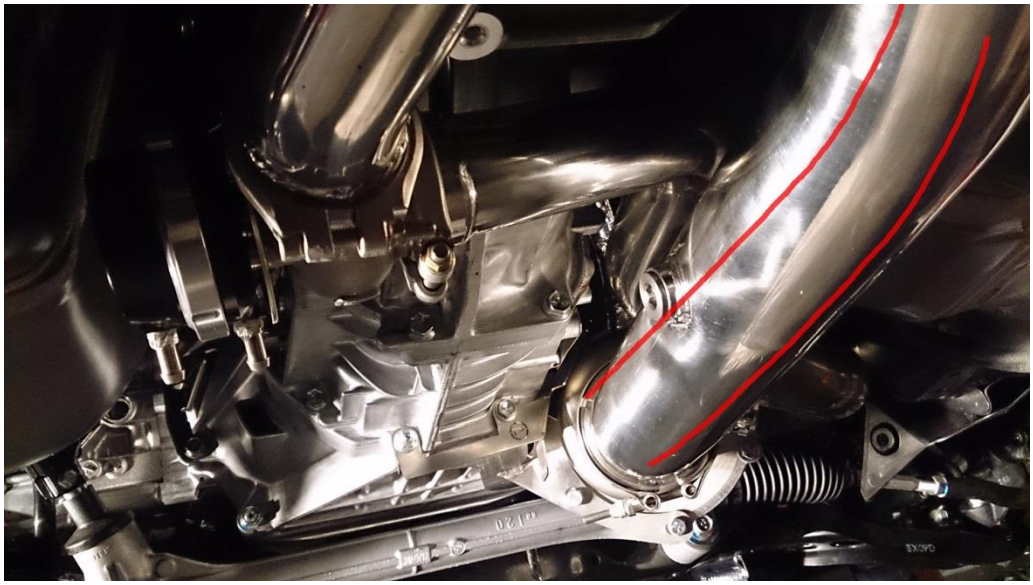





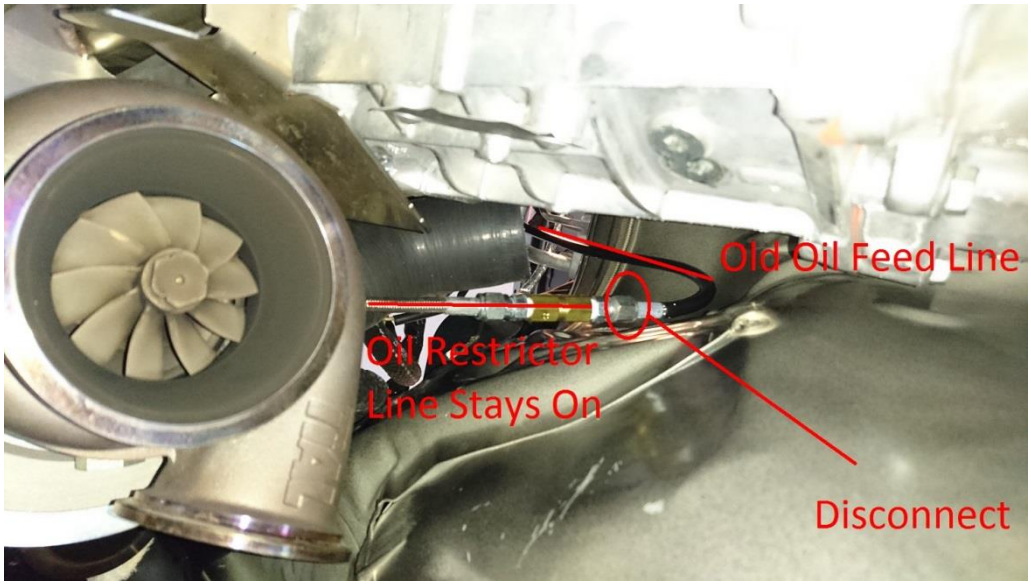

7. Remove oil feed line and sensor from T-fitting. Remove T-fitting and reinstall the original sensor with new thread seal tape. Connect factory sensor wire. Leave the oil feed line hanging for now.

8. Remove oil scavenge pump. I find it easy to remove and reinstall the steering rack bolt with a jack and crescent wrench placed under it to support it so it doesn't sag. This relieves pressure from the threads when removing and reinstalling.

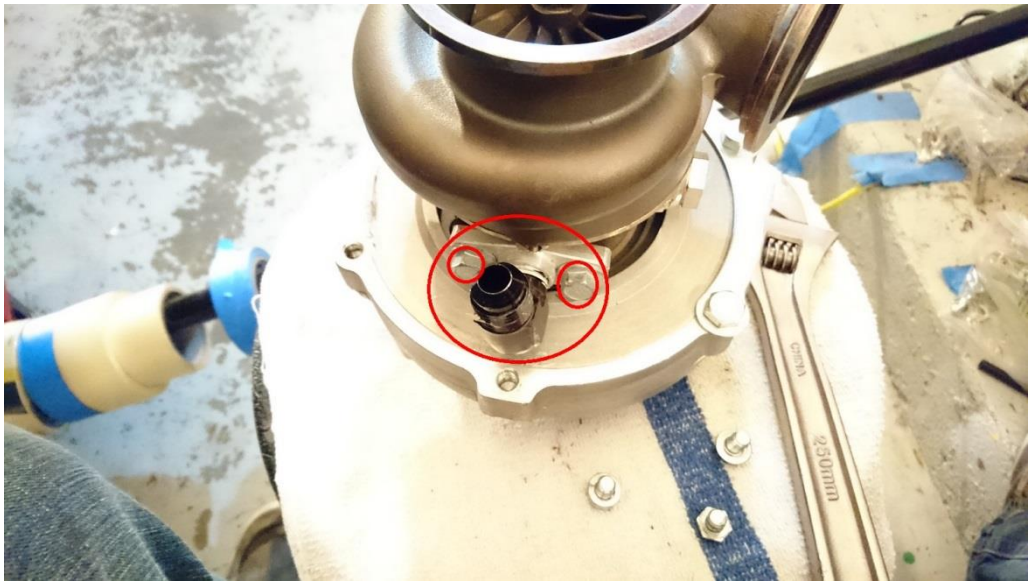
9. Disconnect oil feed line from restrictor fitting on the turbo. To get access to the oil feed line you may need to remove the turbo down-pipe at a minimum. You should be able to push the feed line down, from above, so you can then reach from below and pull the oil line down. This first image is the down-pipe.



10. This next image shows the old oil feed line to be removed and old restrictor line that will stay on. You will need to remove thermal shielding to see this connection. Disconnect old oil feed line as shown here and connect new oil feed line. Route it to where the turbo intake goes for now.



11. Rotate oil return elbow on the bottom of the turbo to gain access to the two bolts. Remove these two bolts and pull off the old adapter. Clean off old gasket material from turbo. Note: Photo is an example when the turbo is off the car, it will still be on the car when you do this.



12. The removal of the electrical turbo scavenge pump setup is now completed. To install the mechanical-scavenge pump setup, refer to section **9– INSTALLING TURBO OIL SCAVENGING PUMP & OIL SUMP** above on page 41.