BOLT-ON TURBO PRO KIT GTIII-RS

INSTALLATION MANUAL

Installation must be done by a professional.

Read this manual prior to the installation.

Always have access to this manual as well as a factory service manual.

NAME OF PRODUCT	BOLT-ON TURBO PRO KIT GTIII- RS
PURPOSE	AUTOMOBILE PARTS
PART NUMBER	11001-KT007
MANUAL NUMBER	E04211-T59082-00 Ver.3-3.03
VEHICLE	・TOYOTA GR86 （3BA-ZN8） ・SUBARU BRZ （3BA-ZD8）
ENGINE	FA24
MODEL YEAR	・TOYOTA GR86 (3BA-ZN8) 2021/10～ ・SUBARU BRZ (3BA-ZD8) 2021/08～
REMARKS	【NOTE】 • HKS is not responsible for the damage to the engine and/or other parts of a vehicle after installing this product. • Engine management device and engine plug are not included in this product. • Modification of the radiator support, reinforcement, fan shroud, oil pan, etc. is required. • Check the spark plugs occasionally and replace them if necessary. HKS SUPER FIRE RACING M50HL (50003-M50HL) Equivalent to NGK No. 10. (equivalent to stock No. 9) • Resetting by an engine management device must be done. Resetting of fuel and ignition must be done to avoid engine damage. • A boost controller such as HKS EVC is required when the boost pressure is changed. • HKS recommends the engine oil at a high-temperature viscosity of 30 or 40. • The boost pressure of the provided actuator is set to approximately 60-70kPa. • The welding process is necessary for the oil return pipe. • The stainless wire is used to secure the insulation materials. • Use ThreeBond 1324 or an equivalent anaerobic sealant (medium strength type). • Use ThreeBond 1217G or an equivalent silicone-based sealant. • Installation work will take approximately 16 hours. • When the engine output may exceed 331kw/450ps after installing this product, upgrading the engine parts is required.

Rev. Number	Date	Manual Number	Details
3-3.01	2024/04	E04211-T59080-00	1st Edition
3-3.02	2024/06	E04211-T59081-00	2nd Edition
3-3.03	2024/10	E04211-T59082-00	3rd Edition

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INDEX

NOTICE／ATTENTION／SAFETY PRECAUTIIONS ····· 1
PARTS LIST ····· 2
1. REMOVAL OF FACTORY PARTS ····· 5
2. MODIFICATION OF FACTORY PARTS ····· 8
3. INSTALLATION OF OIL INLET PARTS ····· 15
4. INSTALLATION OF TURBOCHARGER BRACKET ····· 17
5. INSTALLATION OF EXHAUST MANIFOLD ····· 19
6. ASSEMBLY OF TURBOCHARGER ····· 21
7. INSTALLATION OF TURBOCHARGER AND OIL RETURN HOSE ····· 22
8. INSTALLATION OF EXTENSION PIPE ····· 24
9. INSTALLATION OF TURBOCHARGER ACCESSORY PARTS ····· 28
10. INSTALLATION OF AIR CLEANER AND SUCTION PIPE ····· 32
11. INSTALLATION OF INTERCOOLER ····· 34
12. INSTALLATION OF PIPING ····· 37
13. REINSTALLATION OF FACTORY PARTS ····· 38
14. CONFIRMATION AFTER INSTALLATION ····· 40
15. TECHNICAL INFORMATION ····· 40

NOTICE

Thank you for purchasing HKS BOLT-ON TURBO PRO KIT. This manual assumes that you have and know how to use the tools and equipment necessary to safely perform service operations on your vehicle. This manual assumes that you are familiar with typical automotive systems and basic service and repair procedures. Do not attempt to carry out the operations shown in this manual unless these assumptions are correct. Always have access to a factory repair manual. To avoid injury, follow the safety precautions contained in the factory repair manual.

ATTENTION

- This manual indicates items you need to pay attention to in order to install this product safely and lists precautions to avoid any possible damage and/or accidents.
- This product is an automobile part. Do not use it for any other purposes.
- HKS will not be responsible for any damage caused by incorrect installation and/or use, or use after modification and/or dismantling of this product.
- The specifications of this product are subject to change without notice.
- The instructions are subject to change without notice. Make sure to refer to the most recent instructions.
- The unit of length used in this instruction manual is [mm].

SAFETY PRECAUTIONS

The following precautions for use of this product are to prevent possible accidents and/or injuries and for proper use.

⚠ WARNING	Indicates risk of serious injury and/or possible death.

⚠ CAUTION	Indicates risk of damage to people or large-scale damage to property. (Large-scale damage is the damage caused by a product defect. Ex. Damage to a vehicle, burnout, etc.)

PARTS LIST

No.1

No.	Description	QT	Remarks
1	Turbocharger Assembly	1	GTⅢ-RS
2	Exhaust Manifold	1	
3	Extension Pipe	1	With catalyzer
4	Suction Pipe	1	OD80
5	Intercooler Pipe	2	OD60
6	Chamber Pipe	1	OD70
7	Intercooler	1	
8	Turbocharger Bracket No.1	1	
9	Stepped Spacer	1	OD20
10	Spacer	1	OD20
11	Turbocharger Bracket No.2	1	Lower side of T/C
12	Turbocharger Bracket No.3	1	Side of T/C
13	Oil Inlet Hose	1	L460
14	Oil Inlet Banjo	1	
15	Banjo Bolt M12 P1.25	1	
16	Copper Washer	2	ID12 OD17
17	T-fitting	1	PT1/8
18	Hexagon Fitting	1	
19	Oil Line Fitting	1	
20	Thermal Tube	1	ID16
21	Oil Outlet Pipe	1	
22	Gasket	1	For oil outlet pipe
23	Oil Return Pipe	1	For oil pan welding
24	Hose	1	ID16 L250
25	Thermal Tube	1	ID30 L500
26	Water Line Banjo No.1	1	
27	Water Line Banjo No.2	1	
28	Banjo Bolt M14	2	
29	Copper Washer	4	ID14 OD20
30	Hose	1	ID8 L550
31	Joint Pipe	2	OD8 - OD10
32	Gasket	2	Exhaust manifold E/G side
33	Gasket	1	Exhaust manifold T/C side
34	Gasket	1	Extension T/C side
35	Gasket	1	Extension Exhaust side
36	Intercooler Bracket No.1	1	Left
37	Intercooler Bracket No.2	1	Right
38	Intercooler Bracket No.4	1	Lower

PARTS LIST

No.2

No.	Description	QT	Remarks
39	Spacer	2	OD16
40	Extension Bracket	1	
41	Air Cleaner	1	FILTER：OD200 INLET：OD80
42	Silicone Hose	2	ID80
43	Silicone Hose	3	ID60 L70
44	Silicone Hose	1	ID60 L85
45	Silicone Hose	1	ID74-ID79
46	Hose Band	2	#64
47	Hose Band	4	#52
48	Hose Band	2	#48
49	Hose Band	10	#40
50	Hose Band	2	#28
51	Hose	1	ID12 L200
52	Joint Pipe	1	OD12
53	Insulator	1	For turbocharger
54	Insulator	1	For exhaust manifold ID50 L100
55	Insulator	1	For extension ID60 L120
56	Heat Plate Assy Catalyzer 1	1	
57	Heat Plate Assy Catalyzer 2	1	
58	Stud Bolt M8	4	M8 13-8-14
59	Stud Bolt M8	5	M8 7-10-14
60	Flange Bolt M10	2	L50 7-mark
61	Flange Bolt M8	4	L15
62	Flange Bolt M8	1	L10
63	Flange Bolt M6	2	L35
64	Flange Bolt M6	2	L15
65	Flange Bolt M6	2	L10
66	Hexagon Bolt M10	2	L40
67	Hexagon Bolt M8	7	L35
68	Hexagon Bolt M8	8	L15
69	Hexagon Bolt M6	1	L25
70	Hexagon Bolt M6	1	L15
71	Low Head Cap Bolt M8	1	L35
72	Button Bolt M4	2	L10
73	Flange Nut M8	2	
74	Flange Nut M6	2	
75	Hexagon Nut M10	2	
76	Hexagon Nut M6	1	

PARTS LIST

No.3

No.	Description	QT	Remarks
77	Lock Nut M8	9	
78	Flat Washer M10	4	
79	Flat Washer M8	8	OD15
80	Flat Washer M8	8	OD18
81	Flat Washer M6 Large Diameter	3	
82	Hose Clamp	4	Mark 230
83	Hose Clamp	2	Mark 180
84	Hose Clamp	5	Mark 130
85	Hose Clamp	1	Mark 115
86	Spacer	8	OD25×ID10×L15
87	Spacer	1	OD20 ID6 L10
88	Corrugated Tube	2	ID10 L70
89	Corrugated Tube	1	ID15 L500
90	Corrugated Tube	1	ID22 L300
91	Tie Wrap L	10	
92	Tie Wrap M	10	
93	Tie Wrap S	10	
94	Sponge Sheet	5	50mm×50mm
95	Insulation Tape	2	t1.7×70mm×1000mm
96	Insulation Sticker	2	300mm×300mm
97	Installation Manual	1	The book
98	Manual General Instruction Ver.3-3.01	1	

1. REMOVAL OF FACTORY PARTS

Refer to this installation manual and the factory service manual to remove the factory parts.

(1) Disconnect the negative terminal of the battery.

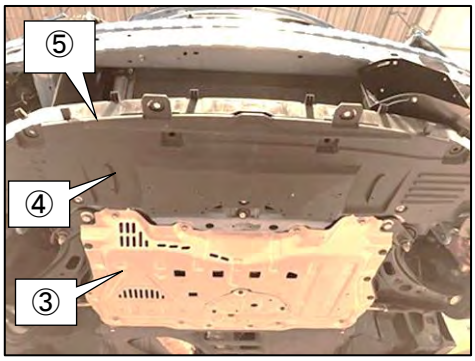
(2) Disconnect the connectors of the Side Turn Signal Lamps ① on the left and right side.

(3) Remove the Front Bumper ②.
(The removed front bumper will be reinstalled later.)

(4) Remove the Engine Under Cover ③.
(The removed engine cover will be reinstalled later.)

(5) Remove the Front Lower Bumper Cover ④.
(The removed Cover will be reinstalled later.)

(6) Remove the Front Bumper Stay Bracket ⑤.
(The removed front bumper stay bracket will be reinstalled later.)



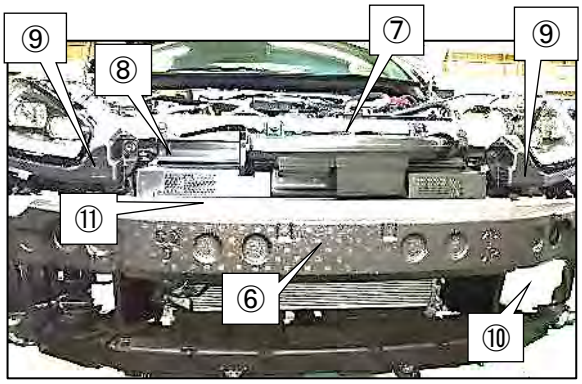
(7) Drain the engine oil.

(8) Remove the Front Bumper Energy Absorber ⑥.
(The removed absorber will be modified and reinstalled later.)

(9) Remove the Air Cleaner Inlet ⑦.

(10) Remove the Radiator Cover Plate ⑧.

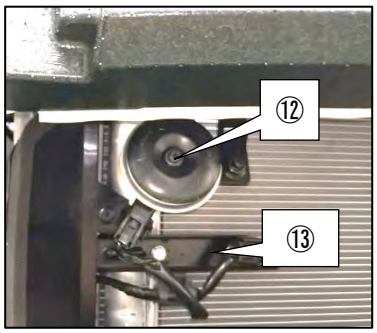
(11) Remove the Front Bumper Corner Bracket ⑨ on the left and right.
(The removed corner bracket will be reinstalled later.)



(12) Remove the Washer Tank ⑩.
(The removed washer tank will be modified and installed later.)

(13) Remove the Horn ⑫ from Front Bumper Reinforcement.
(The removed horn will be reinstalled later.)

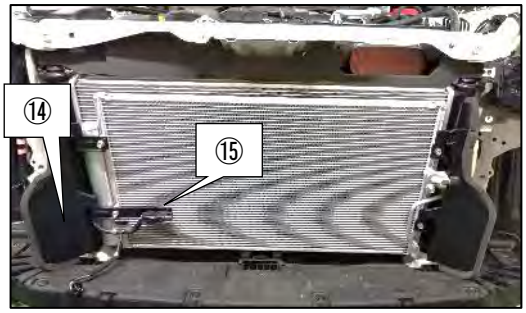
(14) Remove the Outside Air Temperature Sensor ⑬ from the A/C Condenser Bracket.
(The removed sensor will be modified and reinstalled later.)



(15) Remove the Front Bumper Reinforcement ⑪.
(The removed front bumper reinforcement will be modified and reinstalled later.)

(16) Remove the Radiator Guide ⑭ on the right side.
(The removed radiator guide will be reinstalled later.)

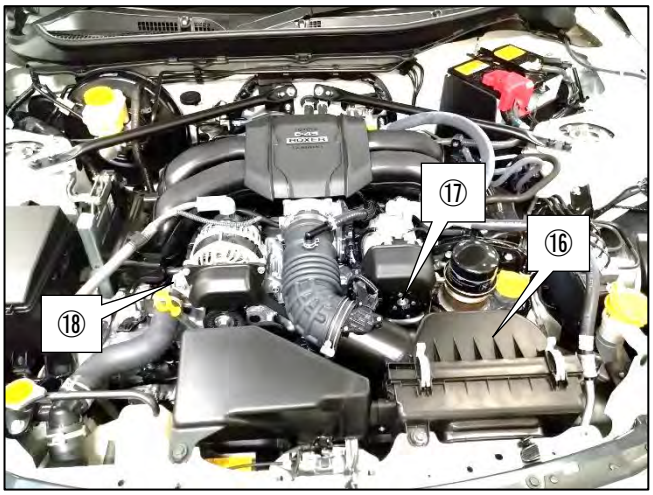
(17) Remove the A/C Condenser Bracket ⑮.
(The A/C condenser bracket will be modified and reinstalled later.)



(18) Remove the Air Cleaner Case ⑯ with Inlet pipe and Resonator.

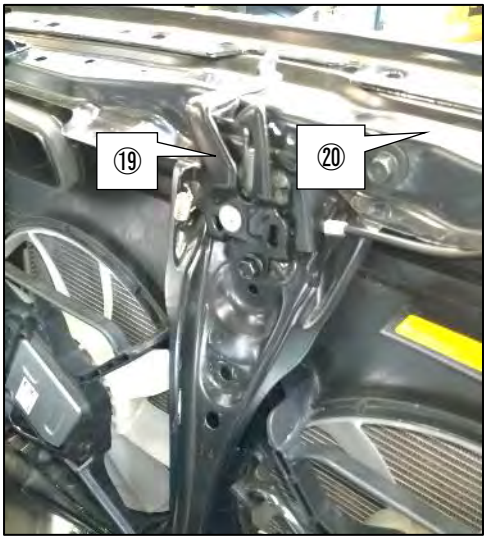
(19) Remove the Belt Cover ⑰ on the A/C Compressor side.
(The removed belt cover will be reinstalled later.)

(20) Remove the Oil Level Gauge ⑱.
(The removed oil level gauge will be modified and reinstalled later.)

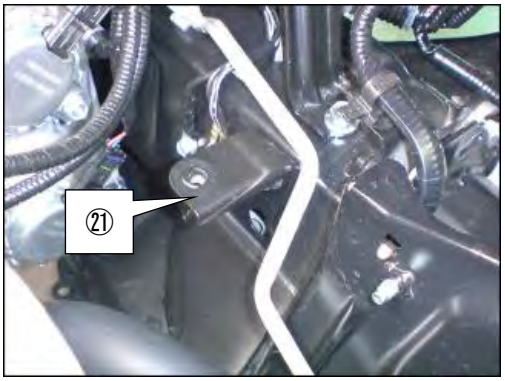


(21) Remove the Hood Lock ⑲ from the Radiator Support.
(The removed hood lock will be reinstalled later.)

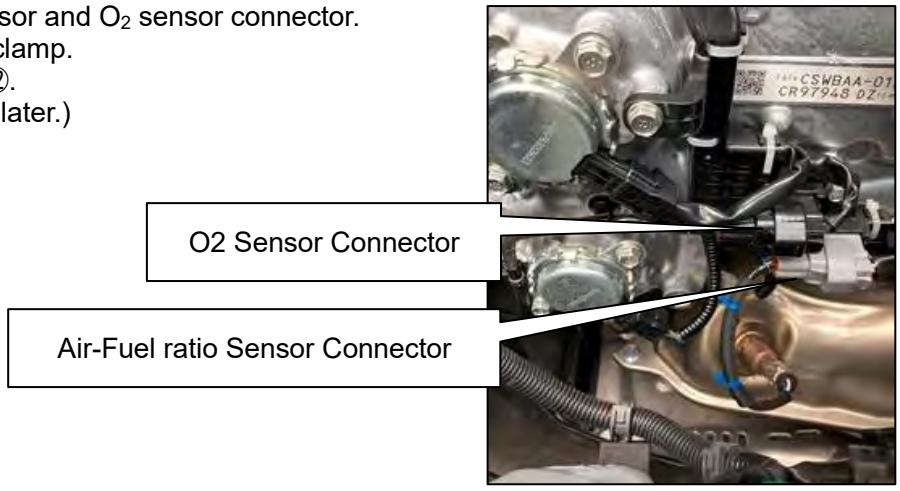
(22) Remove the Radiator Support ⑳.
(The removed radiator support will be modified and reinstalled later.)



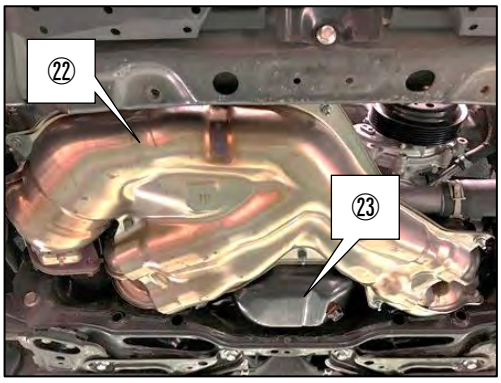
(23) Remove the Air Cleaner Case Bracket ㉑.



(24) Disconnect the Air-Fuel ratio sensor and O_2 sensor connector.
Remove the O_2 sensor harness clamp.
Remove the Exhaust Manifold ㉒.
(The removed nut will be reused later.)

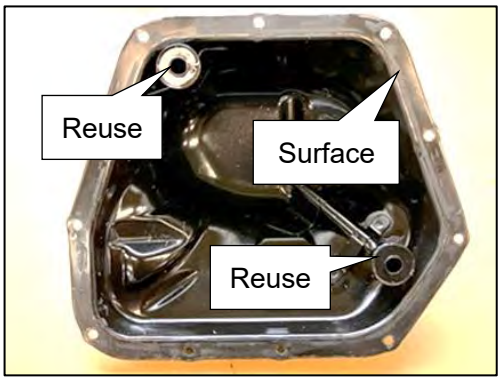


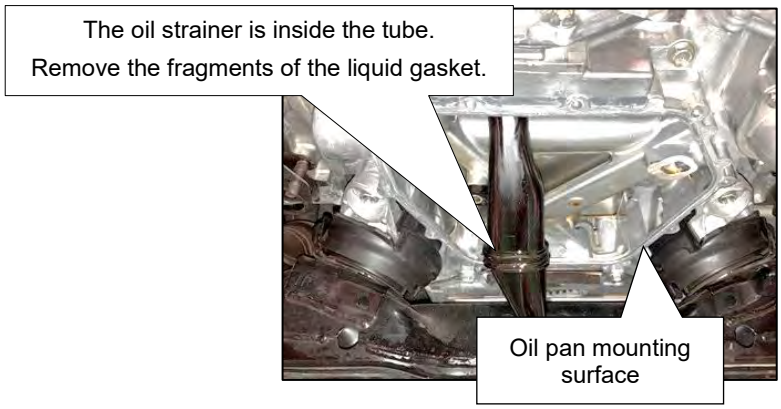
(25) Remove the Oil Pan ㉓.
(The removed oil pan will be modified and reinstalled later.)
(The removed bolt and seals will be reused later.)



(26) After removing the oil pan, remove the liquid gasket from the mounting surface.

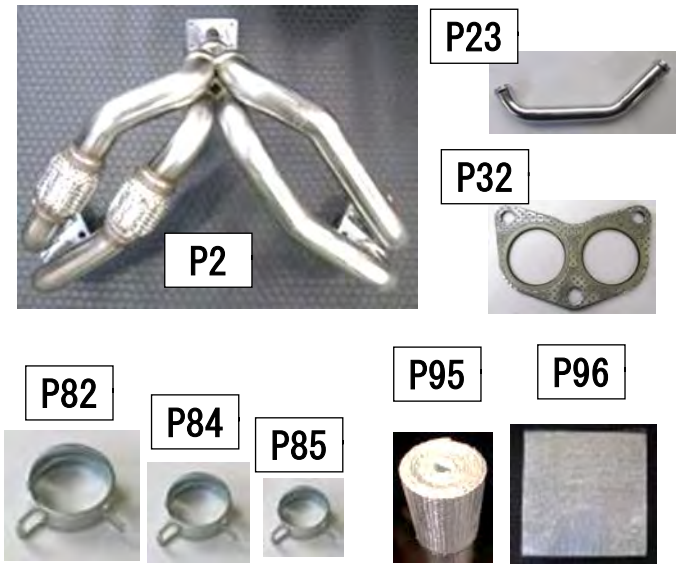
NOTE
The fragments of the removed liquid gasket remain on the oil strainer.
Remove it with the tweezers.





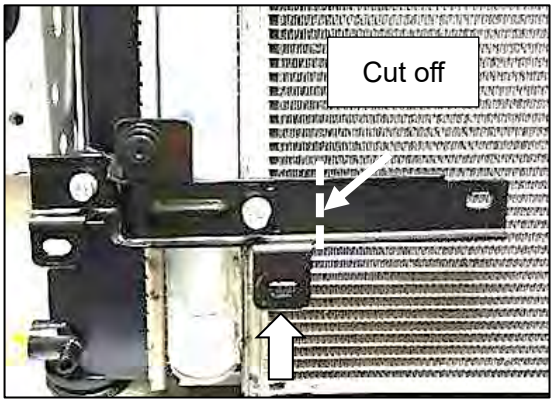
2. MODIFICATION OF FACTORY PARTS

PARTS LIST



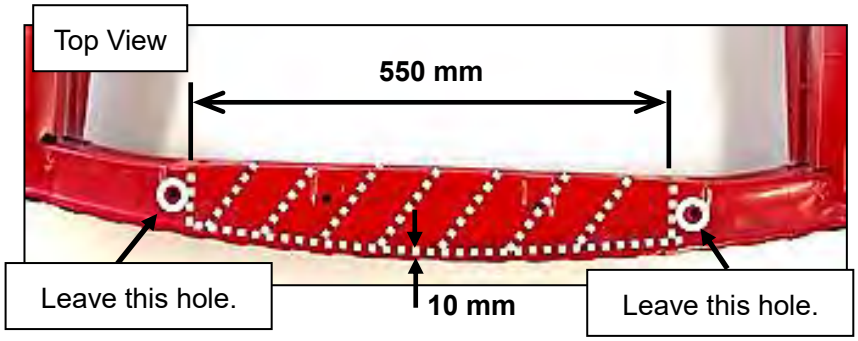
No.	Description	Qty
P2	Exhaust Manifold	1
P23	Oil Return Pipe	1
P25	Thermal Tube ID30	1
P32	Gasket	2
P82	Hose Clamp Mark 230	2
P84	Hose Clamp Mark 130	1
P85	Hose Clamp Mark 115	1
P95	Insulation Tape 70mm x 1000mm	1
P96	Insulation Sticker 300mm x 300 mm	1

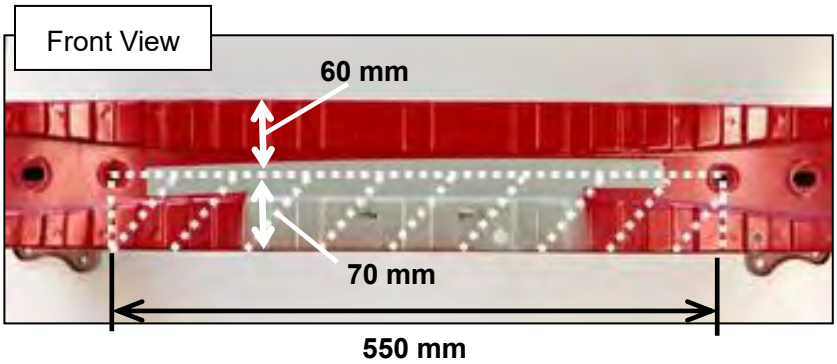
(1) Cut off the A/C condenser bracket along the dotted line shown in the photo on the right.
Relocate the outside temperature sensor to the hole indicated by the arrow.



(2) Cut off the shaded part of the front bumper reinforcement as shown below:

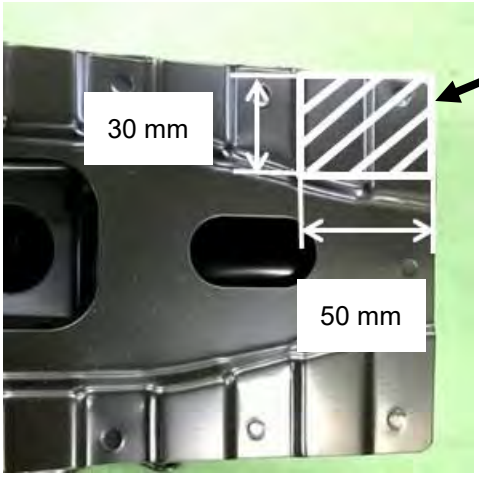
NOTE
Leave the two holes at both ends to install the intercooler bracket.
After cutting off the shaded part, remove the burr and apply a rust prevention treatment.





* For BRZ, additionally cut the front bumper reinforcement as shown below.

* Cut to a symmetrical size on the right and left

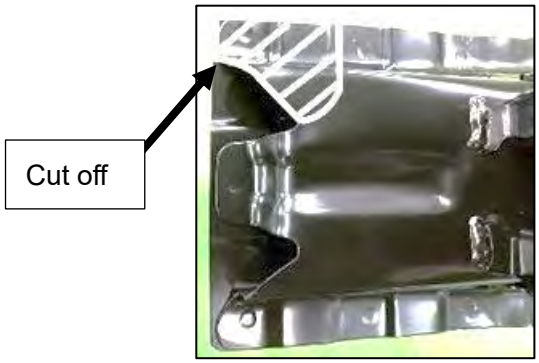


Cut off

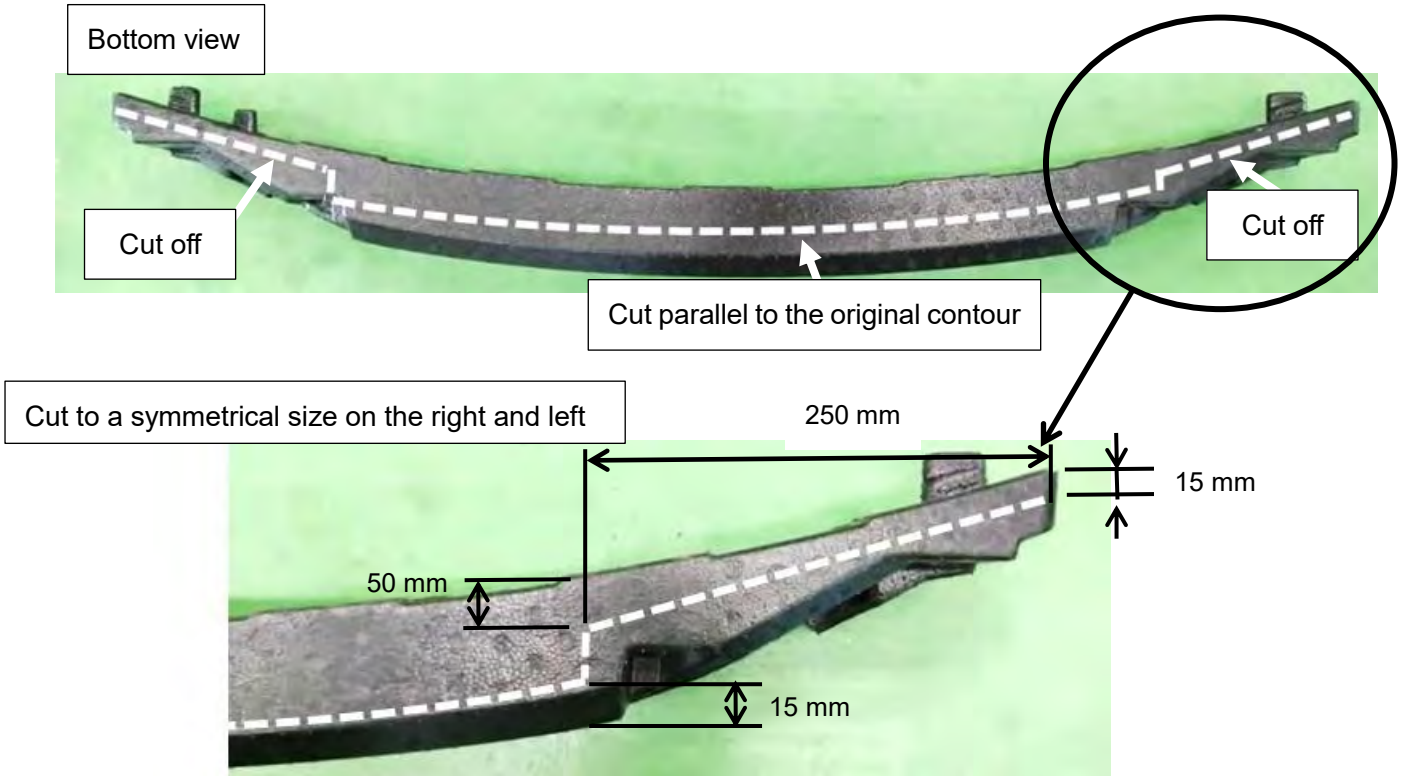
* Avoid contact with Front Bumper

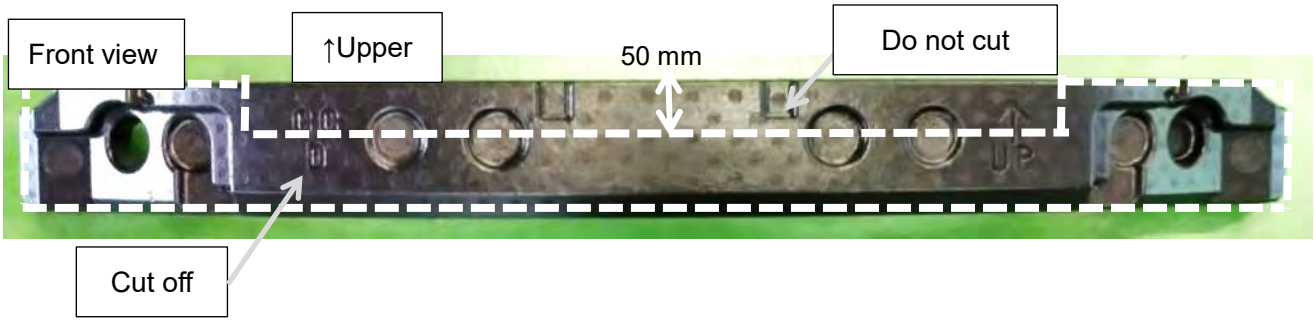
NOTE

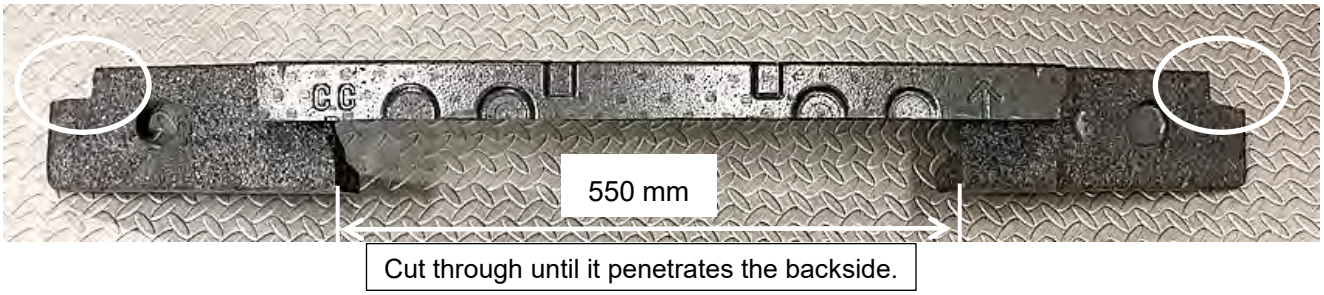
Cut off the backside as shown below to avoid it becoming sharp.



(3) Cut off the removed Front Bumper Energy Absorber at the dotted line.



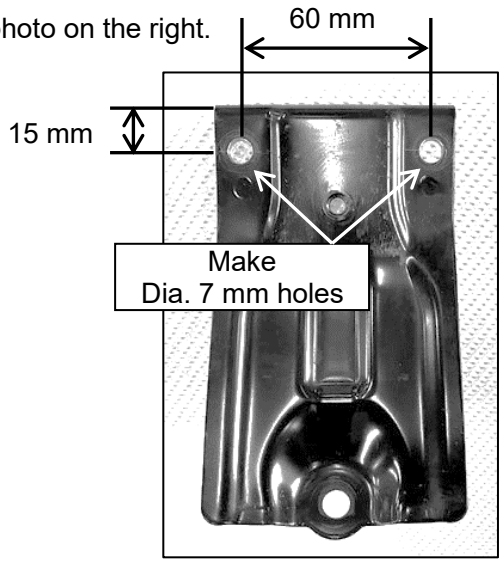




*** Circled area: only for BRZ**

Cut the circled area as the same step of the front bumper rear reinforcement modified in 2-(2).

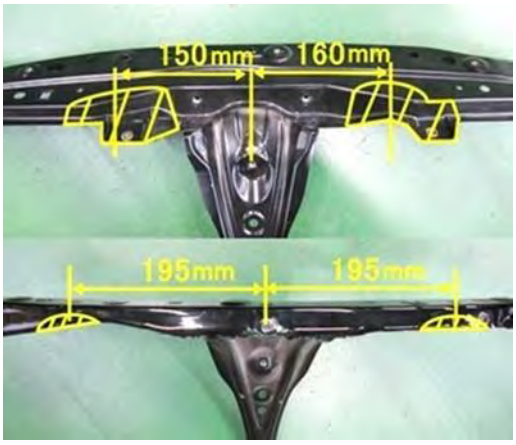
(4) Additionally, modify the front bumper bracket according to the photo on the right.



NOTE

This modification is to secure the bracket of the intercooler.

(5) Cut off the radiator support according to the photo.



NOTE

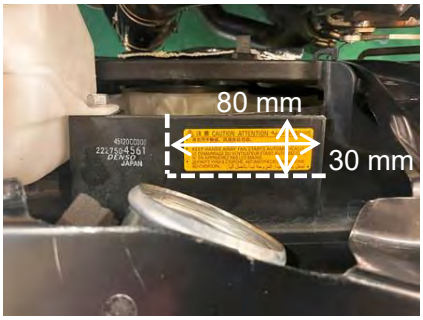
This modification is to avoid contacting the intercooler pipe. Enlarge the modification part if contacting the intercooler pipe in 13-(2).

(6) Cut the fan shroud as shown in the photos.

NOTE

This modification is to avoid unnecessary contact with the piping.

Upper part of the fan shroud on the right side of the vehicle



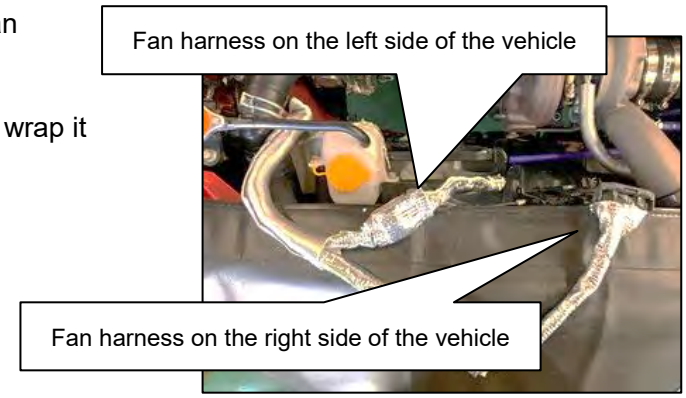
Upper part of the fan shroud on the left side of the vehicle.

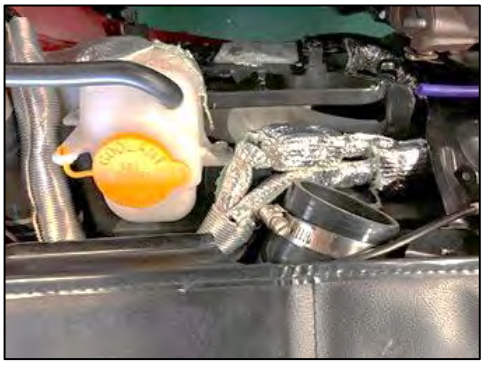
(7) Remove the clamps on the left and right electric fan harnesses and pull them out.

Cut the Insulation Tape to an appropriate size and wrap it to the harness of the electric fan motor.

The electric fan harness on the right side of the vehicle, wraps the insulation tape from the right-left branch point to the fan connector. Fix it with the wire.
The electric fan harness on the left side of the vehicle, wraps with insulation tape until the section is hidden by the core support. Fix it with the wire.
P25 thermal tube ID30 L500mm is cut to 300mm.
The harness gathered section should be collected with the thermal tube.

P25: Thermal Tube ID30 L500mm
P95: Insulation Tape 70mm x 1000mm
P96: Insulation Sticker 300mm x 300mm





NOTE

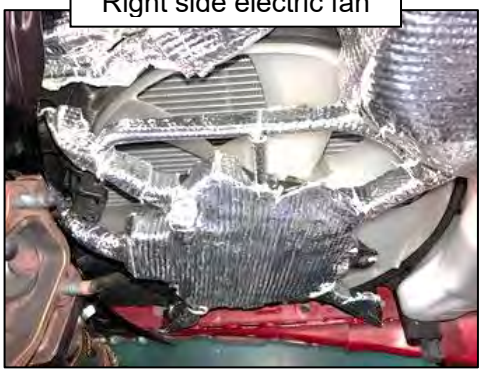
The thermal tube ID 30 will be used in 7-(5) as well. Therefore, leave the length of 195 mm of the thermal tube.
Secure the wrapped Insulation Tape with the wire using the wire twisting plier.

(8) Connect the connector to the left and right electric fan from the radiator reservoir tank on the right side of the vehicle through the forward of the tank and pass the fan shroud.

(9) Cut the Insulation Sticker and the Insulation Tape in an appropreate size. Attach them to the electric fan motor, up side of the radiator reservior tank and fan shroud.

P95: Insulation Tape 70mm x 1000mm
P96: Insulation Sticker 300mm x 300mm

Right side electric fan



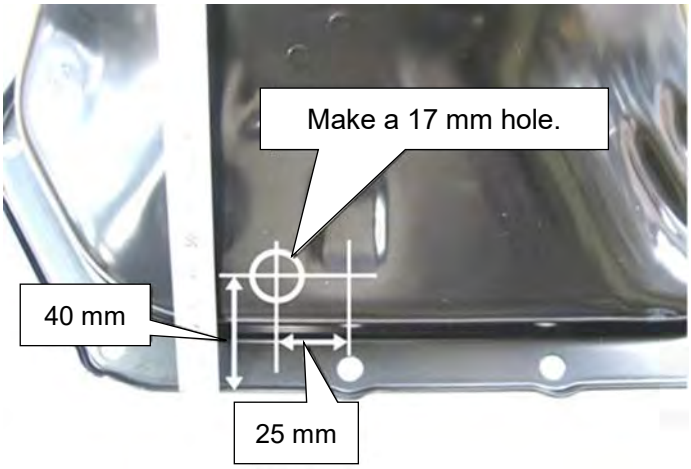
Left side electric fan

(10) Weld the oil return pipe to the removed oil pan.

(11) Make a 17 mm hole in the position indicated in the photo on the right.

NOTE

Make sure to measure from the flange edge by a ruler.



(12) Temporarily attach the oil pan, then temporarily attach the Exhaust Manifold with the provided gaskets.

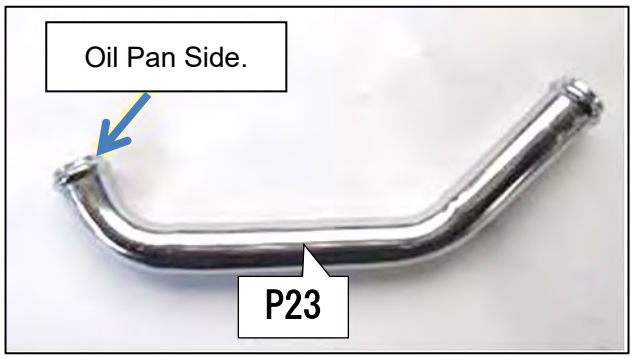
P2: Exhaust Manifold
P32: Gasket

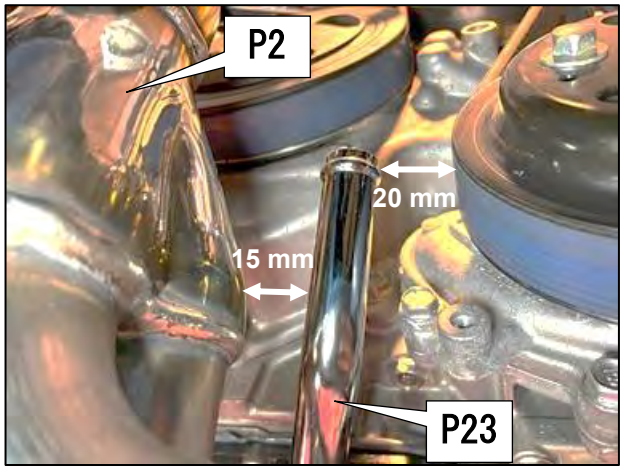
(13) Position the install position of the oil return pipe. Mark the location or temporarily attach the pipe.

P23: Oil Return Pipe

NOTE

Check the clearance between the exhaust manifold and the oil return pipe should be 15 mm or more.
Secure the clearance between the V-belt and the pipe in Approx. 20 mm and the bolts at the engine side in Approx. 70 mm.
Please refer to the photos on the right.
Check that the pipe end must contact with the stopper when inserting the oil return pipe to the oil pan.



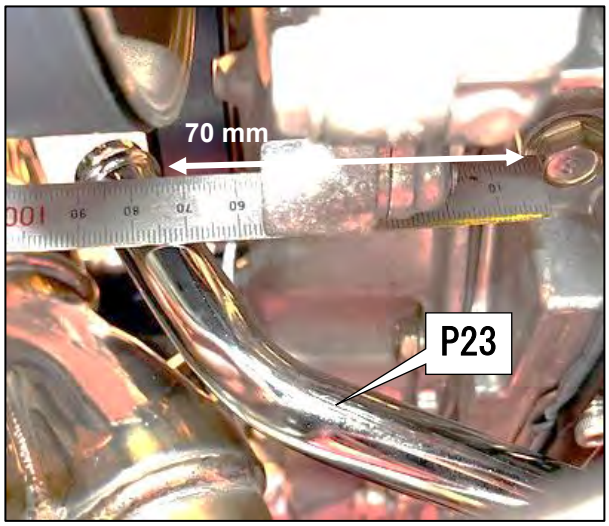


(14) Remove the temporally attached exhaust manifold.

(15) Remove the oil pan and weld the oil return pipe to the oil pan.

NOTE

Remove the paint from the welding area of the oil pan using sandpaper before welding.
Gradually weld the pipe while checking the clearance between the parts.
Check carefully if there are any air leaks from the welding joint.



(16) Apply the rust-proof painting to the welding area. Clean the parts after drying the painted area.

NOTE
Remove burrs, sludges, or all foreign matter to prevent engine damage.

(17) Remove the oil on the surface of the oil pan and engine mounting surface.
Attach the oil pan using the liquid gasket 1217G.

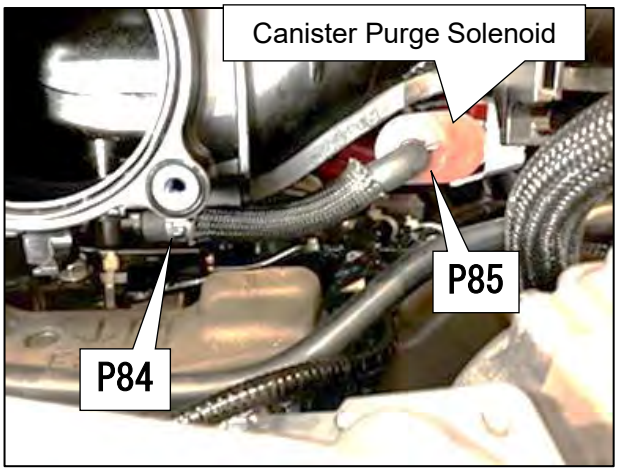
NOTE
Reuse the factory bolt and rubber seals.

(18) Remove the installation bolt from the air conditioner compressor.
Secure the accessible space under the intake manifold by moving the compressor slightly.

NOTE
Do not remove the air conditioning pipes.

(19) Remove the installation bolt from the throttle body.
Secure the accessible space under the intake manifold by moving the throttle body slightly.

NOTE
Do not remove the cooling water hoses.



(20) You will see the purge solenoid valve and hose after moving the throttle body and the air conditioner compressor.
Attach the hose clamps between the canister purge solenoid and the intake manifold as shown in the above photo.

P84: Hose Clamp Mark 130
P85: Hose Clamp Mark 115

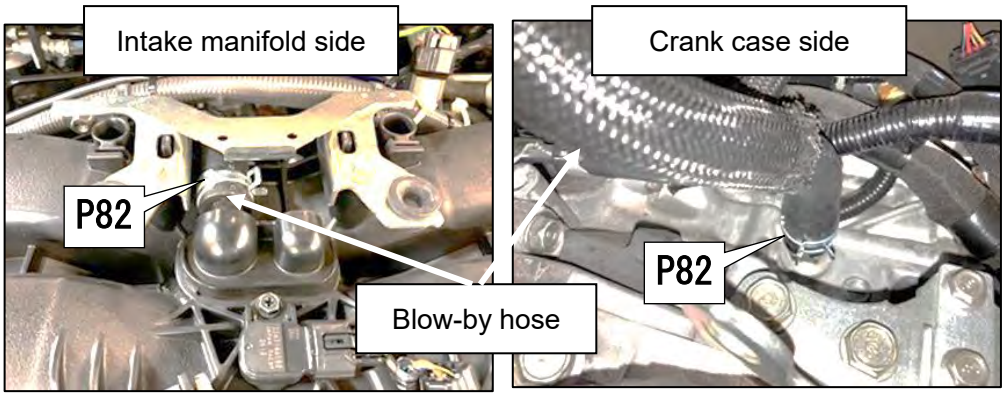
NOTE
Do not remove the hose on the intake manifold side because it may cause damage to the resin nipple under the intake manifold. Only remove the hose on the solenoid side.
Temporarily remove the hose protector.
Attach the P84 hose clamp while sliding to the intake manifold side.
* The above photo shows the intake manifold being raised by removing the mounting bolt. Attach the P84 hose clamp so as not to remove the intake manifold as much as possible.
If you want to take the intake manifold off, remove the injector connector on the port side. Remove the three fuel line connectors. The intake manifold has mounting bolts in 6 places.

(21) Attach the throttle body.

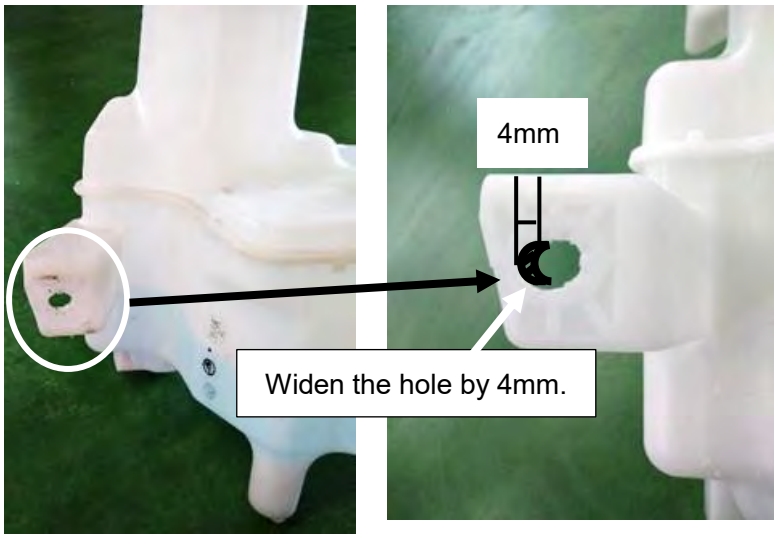
NOTE
Do not install the air conditioner compressor yet.
When connecting the turbocharger cooling hose, work while removing the air conditioner compressor state.

(22) Attach the Hose Clamp to the blow-by hose.

P82: Hose Clamp Mark 230 x 2



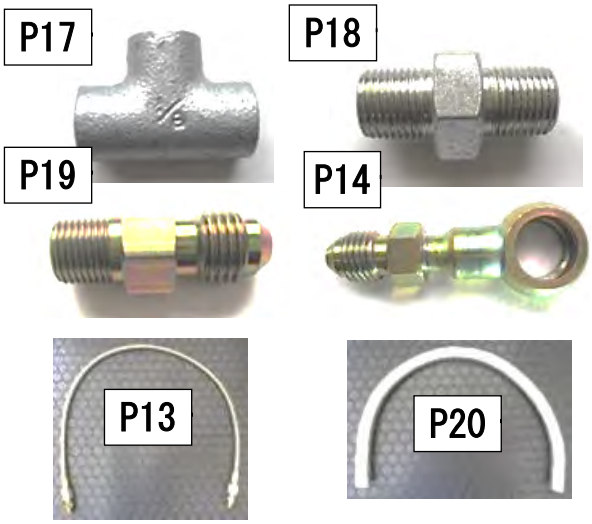
(23) Widen the mounting hole of the washer tank removed in 1-(12).



3. INSTALLATION OF OIL INLET PARTS

＊ Air-blow each part before installation to prevent the entry of foreign objects.

PARTS LIST

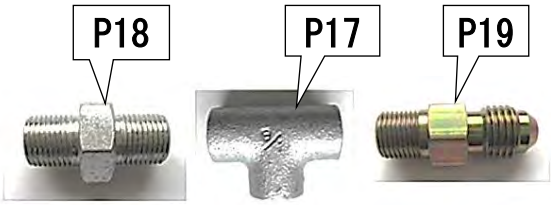


No.	Description	Qty
P13	Oil Inlet Hose	1
P14	Oil Inlet Banjo	1
P17	T-fitting	1
P18	Hexagon Fitting	1
P19	Oil Line Fitting	1
P20	Thermal Tube ID16	1

(1) Remove the oil pressure switch from the engine block.

(2) Install the Hexagon Fitting and Oil Line Fitting to the T-fitting. Apply the ThreeBond1324 thinly to the PT thread after degreasing.

P17: T-fitting
P18: Hexagon Fitting
P19: Oil Line Fitting



⚠ Caution

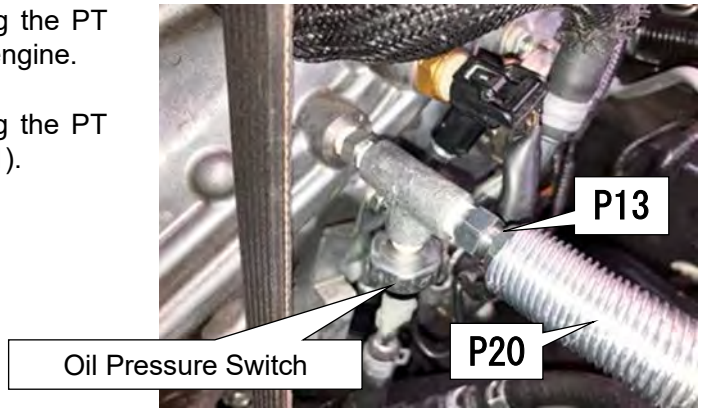
- Excessive tightening can cause damage to other parts.
- To avoid clogging of the oil line, apply ThreeBond1324 carefully so as not to overflow into the oil flow passages.

(3) Apply ThreeBond1324 thinly after degreasing the PT thread assembled in (2), then attach it to the engine.

(4) Apply ThreeBond1324 thinly after degreasing the PT thread of the oil pressure switch removed in (1).

(5) Attach the Oil Inlet Hose.

P13: Oil Inlet Hose



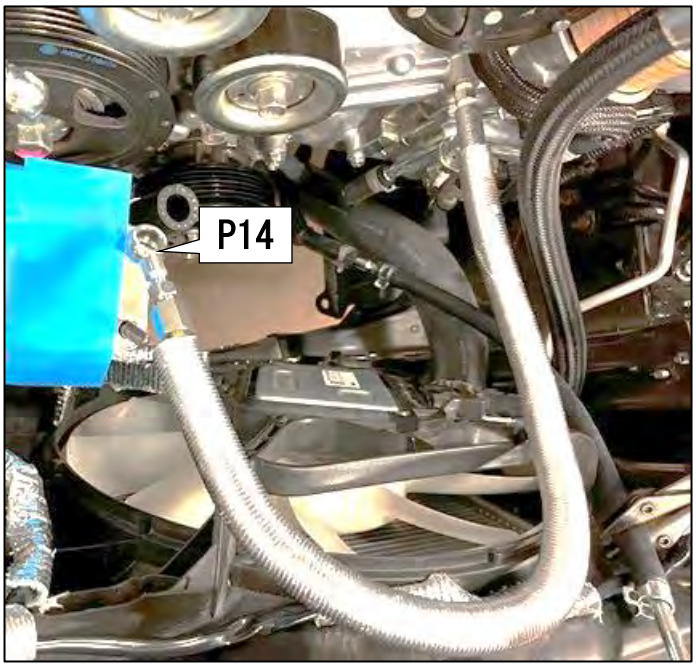
(6) Cut the Thermal Tube ID16 in 450 mm and put it over the hose.

P20: Thermal Tube ID16

(7) Temporarily attach the Oil Inlet Banjo.

P14: Oil Inlet Banjo

NOTE
Fully tighten the Oil Inlet Banjo after installing the turbocharger.



Caution

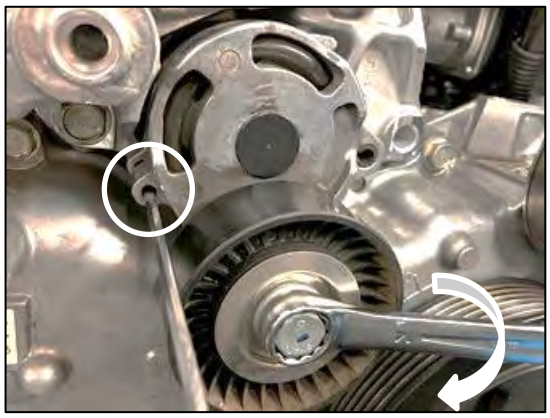
- Do not use seal tape when assembling the oil line. Also, minimize the use of liquid gaskets, as they may clog the turbocharger's oil line and damage it.
- When fixing the oil inlet hose, avoid bending the riveted part of the hose too much or applying excessive force. This may damage the hose, causing an oil leak, and, in the worst case, lead to a vehicle fire if used under conditions where the hose is bent too much, excessive force is applied, or bending force is repeatedly applied due to engine vibration.

4. INSTALLATION OF TURBOCHARGER BRACKET

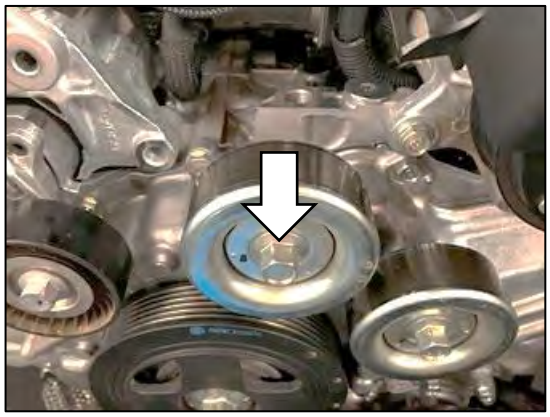
PARTS LIST

No.	Description	Qty
P8	Turbocharger Bracket No.1	1
P9	Stepped Spacer OD20	1
P10	Spacer OD20	1
P60	Flange Bolt M10 L50 7-mark	2
P65	Flange Bolt M6 L10	1

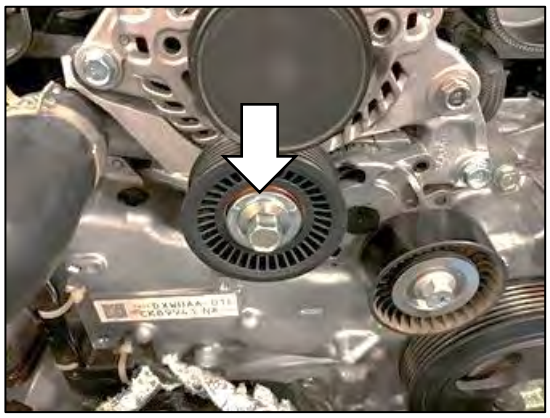
(1) Put a tool on the bolt of the belt tensioner. Loosen the belt and fix it with the 3 mm hex key.



(2) Remove the idler pulley No. 1. The idler pulley cover and the washer will be used later.



(3) Remove the idler pulley No. 2. The idler pulley cover and the washer will be used later.

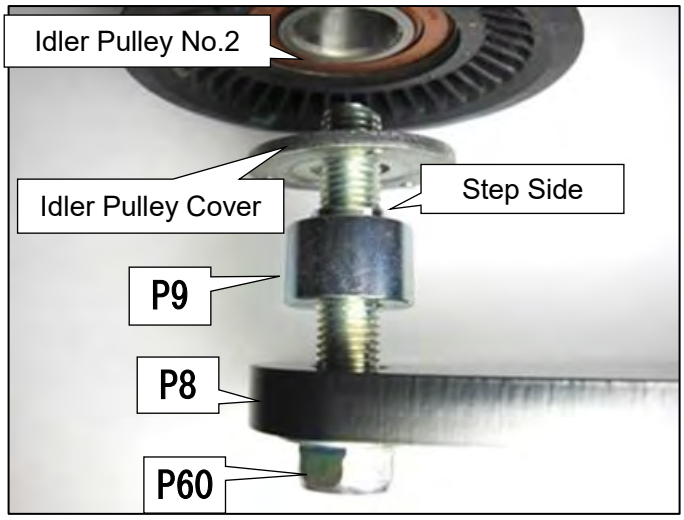


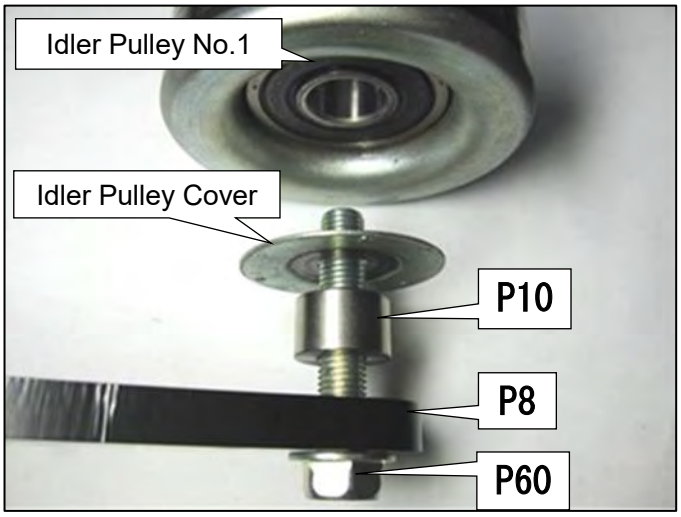
(4) Assemble the turbocharger bracket No. 1, spacer, factory idler pulley cover, and idler pulley using the Flange Bolt M10.

P8: Turbocharger Bracket No.1
P9: Stepped Spacer OD20
P10: Spacer OD20
P60: Flange Bolt M10 L50 7-mark

●Tightening Torque : N・m (kgf・m)
M10: T=36 (3.7)

NOTE
Be careful of the direction of the step side of the spacer when installing.
Before attaching the bracket, make sure to pass the belt through the inside of the bracket.

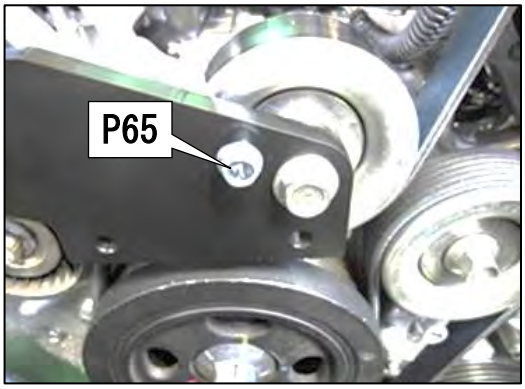




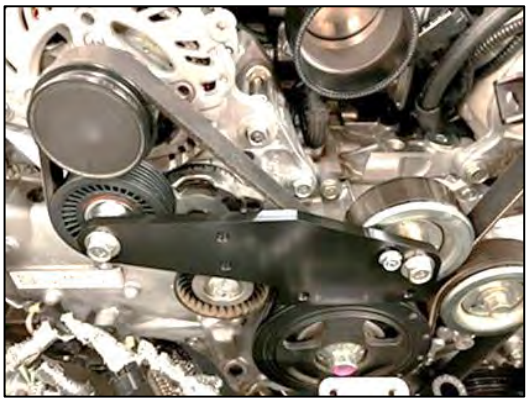
(5) Temporarily attach the M6 L10 flange bolt in the position shown in the photo on the right.

P65: Flange Bolt M6 L10

NOTE
This is the bolt for installing the insulator in 9-(22).
Temporarily attach the flange bolt in advance because it cannot be attached after installing the turbocharger assembly.



(6) Do not tension the belt before installing the A/C compressor.
The A/C compressor should be installed after piping the water pipe of the turbocharger.
The image after completing the installation refers to the photo on the right.



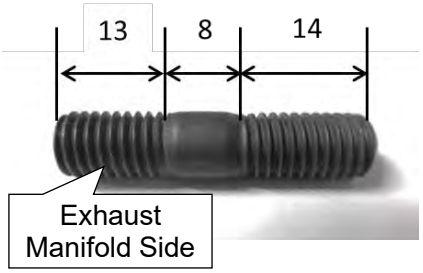
5. INSTALLATION OF EXHAUST MANIFOLD

PARTS LIST

No.	Description	Qt
P2	Exhaust Manifold	1
P11	Turbocharger Bracket No.2	1
P32	Gasket	2
P40	Extension Bracket	1
P50	Hose Band #28	2
P54	Insulator ID50 L=100mm	1
P58	Stud Bolt M8 13-8-14	4
P68	Hexagon Bolt M8 L15	4
P79	Flat Washer M8 OD15	4
P96	Insulation Sticker 300mm×300mm	1

(1) Attach the Stud Bolt M8 to the Exhaust Manifold.

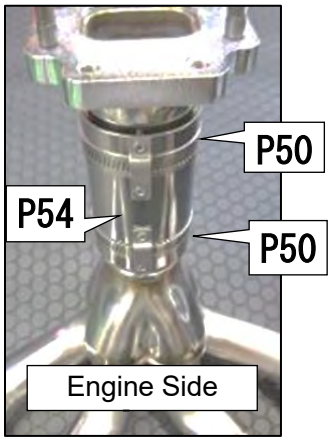
P2: Exhaust Manifold
P58: Stud Bolt M8 13-8-14 x 4

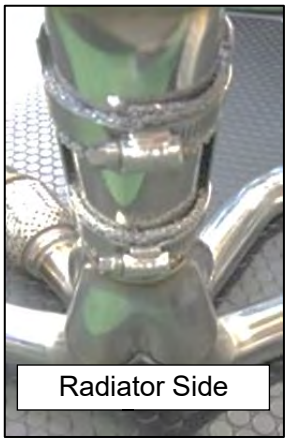


(2) Attach the Insulator ID50 to the Exhaust Manifold.

P50: Hose Band #28 x 2
P54: Exhaust Manifold Insulator ID50 L=100mm

NOTE
Position the insulator so that it faces the engine side.
Attach it with the hose band over the SUS mesh.



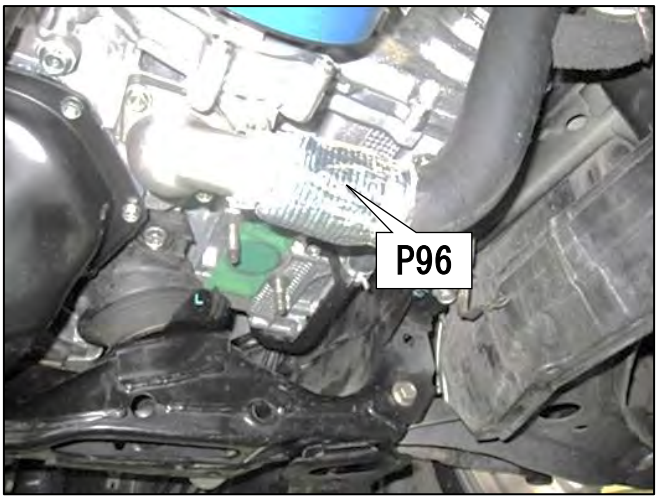


(3) Cut the Insulation Sticker to an appropriate size. Wrap it around the radiator outlet hose and secure it with wire.

P96: Insulation Sticker 300mm×300mm

NOTE

Take heat shielding measures around the exhaust manifold.

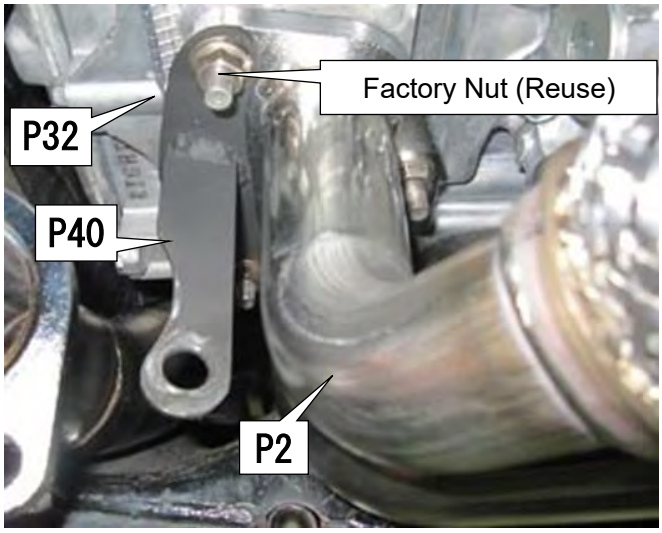


(4) Temporarily attach the exhaust manifold with the factory nut putting the provided gasket.
Tighten together with the extension bracket and the flange.

P2: Exhaust Manifold
P32: Gasket x 2
P40: Extension Bracket

NOTE

Tighten the extension bracket after installing the extension pipe.



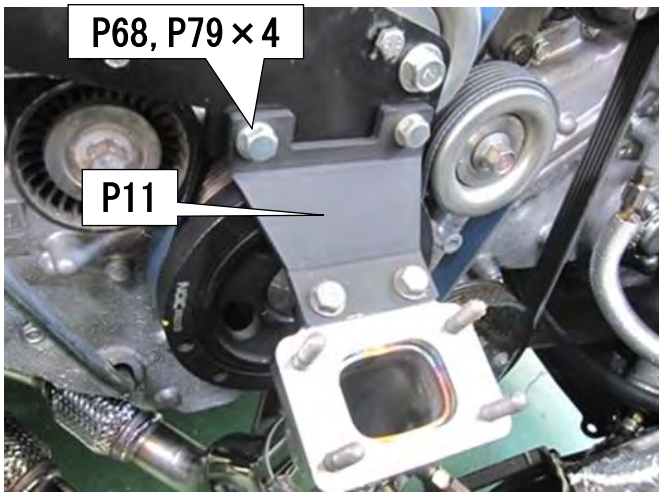
(5) Temporarily attach the Turbocharger Bracket No.2 to the flange of the turbine side.

P11: Turbocharger Bracket No.2
P68: Hexagon Bolt M8 L15 x 4
P79: Flat Washer M8 x 4

(6) Tighten it while positioning the exhaust manifold and the turbocharger bracket No. 2.

Note

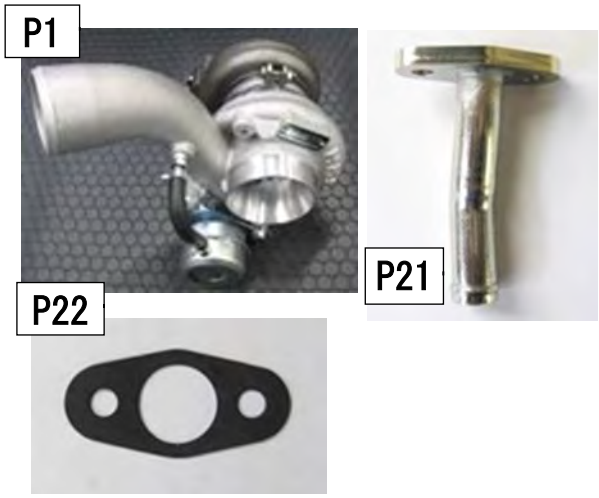
Attach the gasket to the flange of the turbine side of the exhaust manifold. Check that it has not come into contact with turbocharger bracket No. 2.



6. ASSEMBLY OF TURBOCHARGER

∗ Air-blow each part before installation to prevent the entry of foreign objects.

PARTS LIST



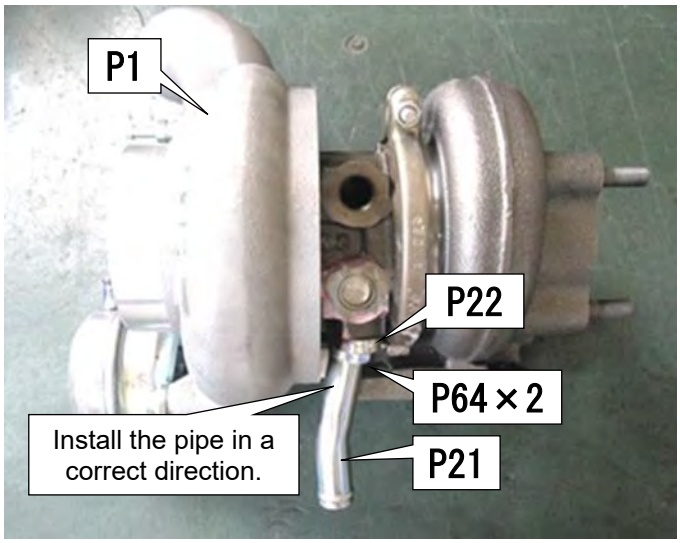
No.	Description	Qty
P1	Turbocharger Assembly	1
P21	Oil Outlet Pipe	1
P22	Gasket	1
P59	Stud Bolt M8 7-10-14	5
P64	Flange Bolt M6 L15	2

(1) Attach the oil outlet pipe to the turbocharger Assy putting the provided gasket.

P1: Turbocharger Assy
P21: Oil Outlet Pipe
P22: Gasket
P64: Flange Bolt M6 L15 x 2

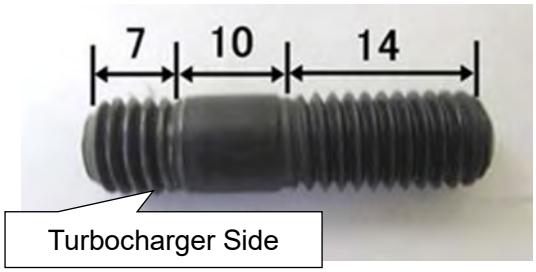
NOTE
Check the direction of the oil outlet pipe when installing.

●Tightening Torque : N・m (kgf・m)
M6: T=8.5～10 (0.8～1.0)



(2) Attach the stud bolt to the turbocharger Assy.

P59: Stud Bolt M8 7-10-14 x 5



7. INSTALLATION OF TURBOCHARGER and OIL RETURN HOSE

∗ Air-blow each part before installation to prevent the entry of foreign objects.

PARTS LIST

No.	Description	Qty
P24	Hose ID16 L=250mm	1
P25	Thermal Tube ID30	1
P33	Gasket	1
P77	Lock Nut M8	4
P82	Hose Clamp Mark 230	2

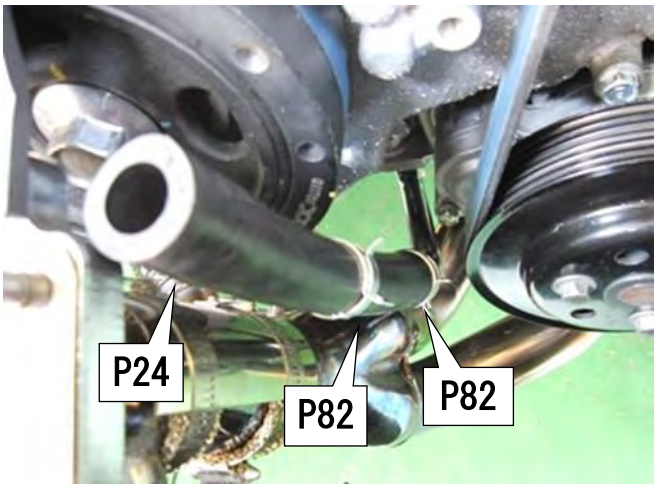
(1) Cut the hose ID 16 in 195 mm length.

P24: Hose ID16 L=250mm

(2) Attach the hose ID16 to the oil return pipe processed in 2-(16).
Attach the hose clamp mark 230.

P82: Hose Clamp Mark 230 x 2

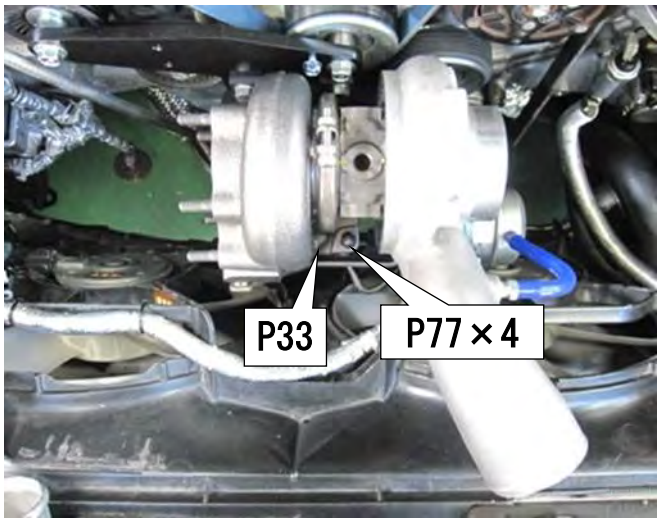
NOTE
Temporarily attach the hose clamp of the turbocharger Assy side.



(3) Attach the turbocharger Assy assembled in 6. putting the provided gasket and tighten the lock nut.

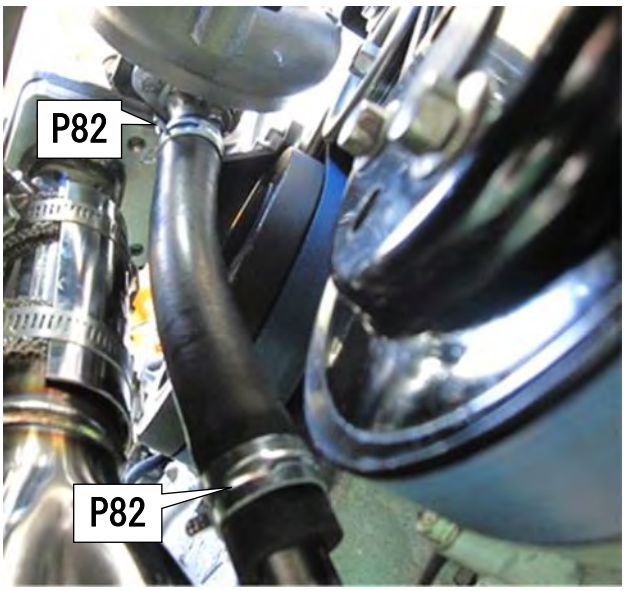
P33: Gasket
P77: Lock Nut M8 x 4

NOTE
When tightening the turbocharger with the lock nut, please check that there is no gap between the exhaust manifold flange surface and the turbocharger flange surface.



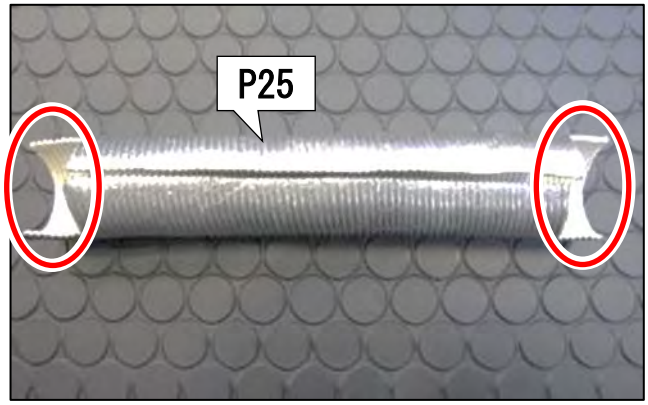
(4) Connect the Hose from the Oil Return Pipe to the Oil Outlet Pipe from the Turbocharger Assembly. Secure the hose with the provided Hose Clamp Mark 230.

NOTE
Attach the hose to prevent contact with the exhaust manifold, pulley, and belt.



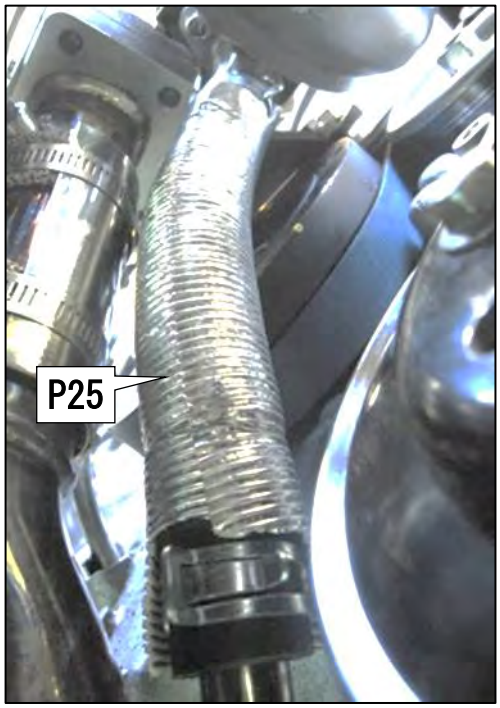
(5) Cut the Thermal Tube ID30 to 195 mm in length. Make a clearance processing to the claw of the hose clamp.

P25: Thermal Tube ID30



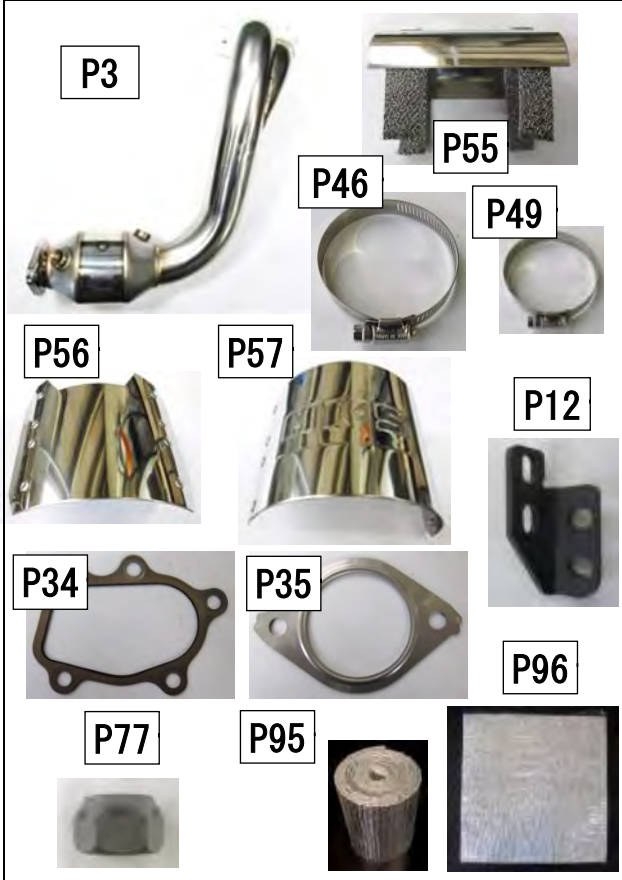
(6) Put the thermal tube processed in (5) over the hose. Secure it with the wire.

NOTE
Attach the hose to prevent contact with the exhaust manifold, pulley, and belt.



8. INSTALLATION OF EXTENSION PIPE

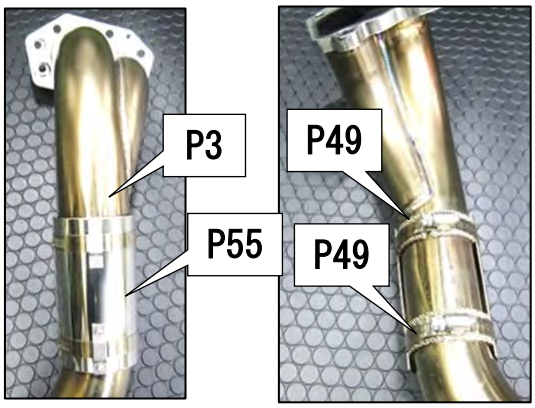
PARTS LIST



No.	Description	Qt
P3	Extension Pipe	1
P12	Turbocharger Bracket No.3	1
P34	Gasket	1
P35	Gasket	1
P46	Hose Band #64	2
P49	Hose Band #40	2
P55	Insulator ID60 L=120mm	1
P56	Heat Plate Assy Catalyzer 1	1
P57	Heat Plate Assy Catalyzer 2	1
P65	Flange Bolt M6 L10	1
P66	Hexagon Bolt M10 L40	2
P68	Hexagon Bolt M8 L15	4
P75	Hexagon Nut M10	2
P77	Lock Nut M8	5
P78	Flat Washer M10	4
P79	Flat Washer M8 OD15	4
P95	Insulation Tape 70mm x 1000mm	1
P96	Insulation Sticker 300mm×300mm	1

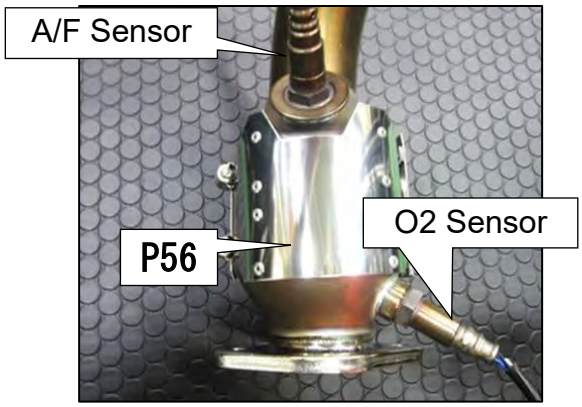
(1) Attach the provided Insulator ID60 to the Extension as shown in the photo one the right, and secure it with the provided Hose Band #40.

P3: Extension Pipe
P55: Insulator ID60 L=120mm
P49: Hose Band #40 x 2



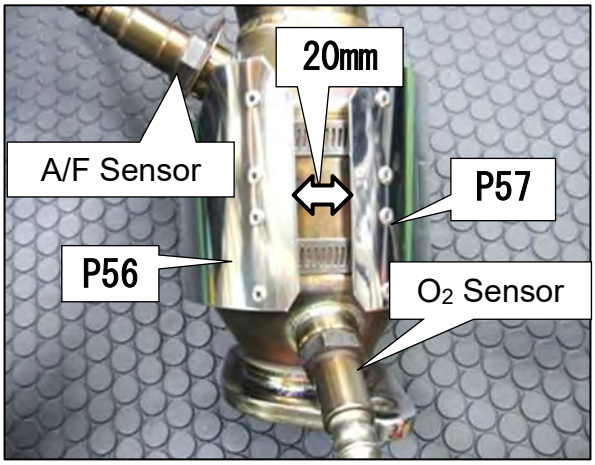
(2) Attach the Air-Fuel ratio sensor and the O_2 sensor, attach insulators No. 1 and No. 2 to the catalyzer section of the extension pipe and fix them with a hose band.

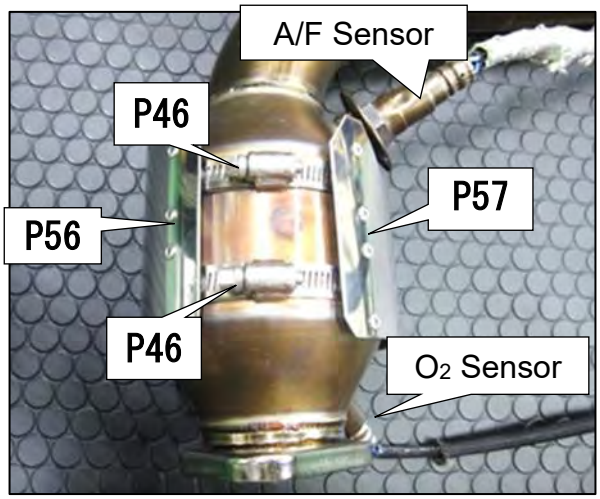
P56: Heat Plate Assy Catalyzer 1
P57: Heat Plate Assy Catalyzer 2
P46: Hose Band #64 x 2



NOTE

The insulator No. 2 and the Air-Fuel ratio sensor must have a clearance of about 5 mm to avoid interference. The gap between insulators No. 1 and No. 2 should be about 20 mm to avoid interference with the O_2 sensor. If the two insulators and the sensor interfere with each other, this can cause noise, so refer to the figure and assemble the insulators correctly.





(3) Wrap the Insulation Tape to the harnesses of the Air-Fuel ratio sensor and the O_2 sensor, then fix it with the wire.

P95: Insulation Tape 70mm x 1000mm

(4) Wrap the Insulation Tape to the engine harnesses of the Air-Fuel ratio sensor and the O2 sensor, then fix it with the wire.

P95: Insulation Tape 70mm x 1000mm

NOTE

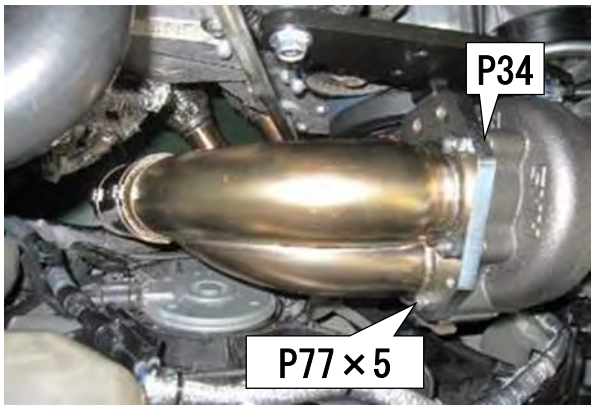
Affix the Insulation Tape to other parts around the extension pipe if necessary.

(5) Wrap the Insulation Tape to the oil level gage, then fix it with the wire.

P95: Insulation Tape 70mm x 1000mm

(6) Attach the extension pipe assembled in (1) - (3) while putting the gasket to the turbine, then temporarily attach the lock nut M8.

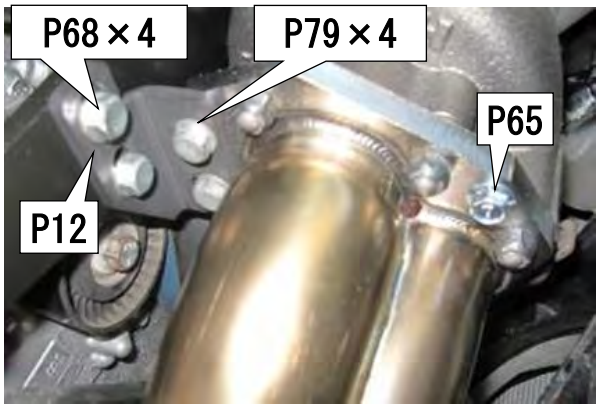
P34: Gasket
P77: Lock Nut M8 x 5



(7) Temporarily attach the turbocharger bracket No. 3.

P12: Turbocharger Bracket No.3
P65: Flange Bolt M6 L10
P68: Hexagon Bolt M8 L15 x 4
P79: Flat Washer M8 x 4

NOTE
Temporarily attach the P65: flange bolt M6 L10 here because it will be used later to attach the insulator.



(8) Temporarily attach the joint pipe to the extension pipe, with the gasket in between. Tighten it together with the extension bracket attached in 5-(4).

P35: Gasket
P66: Hexagon Bolt M10 L40 x 2
P75: Hexagon Nut M10 x 2
P78: Flat Washer M10 x 4

(9) Tighten the factory nut of the exhaust manifold temporarily tightened in 5-(4). Tighten the M8, and M10 bolts and nuts temporarily tightened in (6) to (8).

●Tightening Torque : N・m (kgf・m)
Exhaust Manifold mounting nut : T=65 (6.6)

(10) Connect the mounting couplers to the Air-Fuel ratio sensor and the O_2 sensor.

(11) Wrap the Insulation Sticker to the couplers, then fix it with the wire.

P95: Insulation Tape 70mm x 1000mm
P96: Insulation Sticker 300mm x 300mm

(12) Fix the Air-Fuel ratio sensor coupler to the Oil gauge with the wire.
Fix the O_2 sensor coupler to the harness of cam angle sensor with the wire.
so that do not contact with extension pipe.

NOTE
The Air-Fuel ratio and O_2 sensor couplers do not use the factory fixing points.

9. INSTALLATION OF TURBOCHARGER ACCESSORY PARTS

PARTS LIST

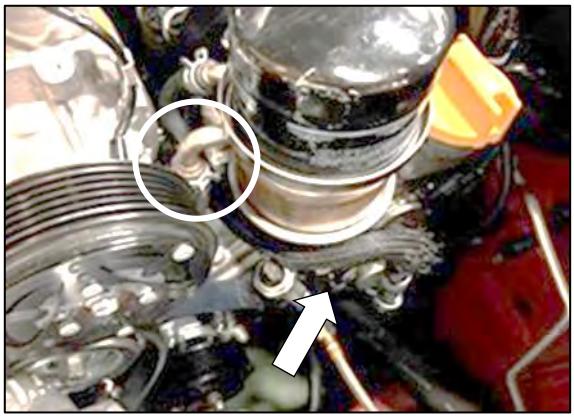
No.	Description	Qt
P15	Banjo Bolt M12 P1.25	1
P16	Copper Washer 12×17	2
P26	Water Line Banjo No.1	1
P27	Water Line Banjo No.2	1
P28	Banjo Bolt M14	2
P29	Copper Washer 14×20	4
P30	Hose ID8 L=550mm	1
P31	Joint Pipe OD8-OD10	2
P53	Insulator	1
P84	Hose Clamp Mark 130	4
P89	Corrugated Tube ID15	1
P91	Tie Wrap L	2
P92	Tie Wrap M	5
P94	Sponge Sheet	1
P96	Insulation Sticker 300mm x 300mm	1

(1) In section 2-(20), the air conditioner compressor is a float. Put it in that state again.

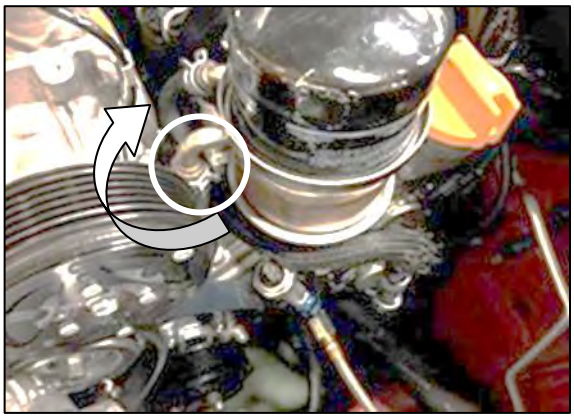
(2) Turn the genuine hose clip knob so that it is in the horizontal direction.

(3) Attach the water stop clamp or discharge the cooling water in order to prevent the water leak from the removed hose.

(4) Remove the lower end of the hose connected to the factory oil cooler.
* Only remove the lower end of the hose on the front side of the vehicle circled in the photo.



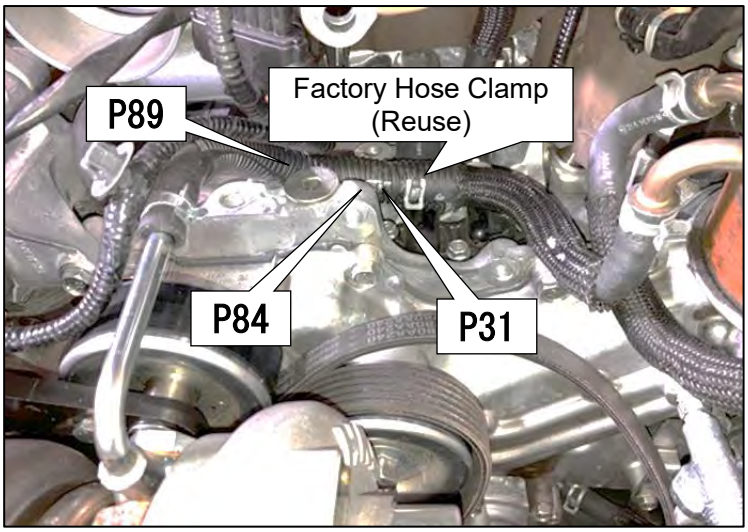
(5) Loosen the clip circled in the photo.
Rotate the hose 180 degrees in order to pass through the hose removed in (4) under the air conditioner compressor.



(6) Organize the hose layout as shown in the photo. Connect the hose ID8 to the factory hose using the joint pipe OD8-OD10.

NOTE
Face the claw of the clip to be connected should be in a lateral direction.

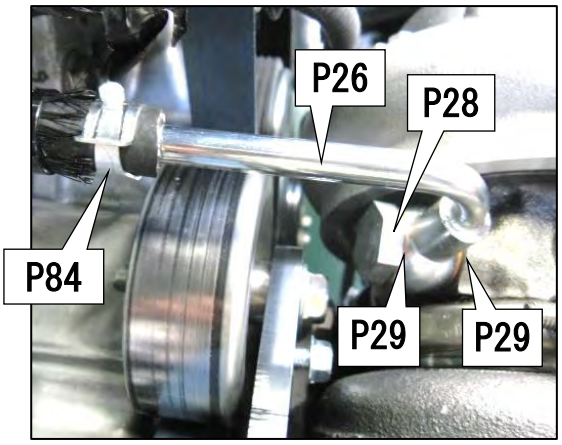
P30: Hose ID8 L=550mm
P31: Joint Pipe OD8-OD10
P84: Hose Clamp Mark 130



(7) Attach the Water Line Banjo No. 1 to the turbocharger using the provided Banjo Bolt M14 and Copper Washer.

P26: Water Line Banjo No.1
P28: Banjo Bolt M14
P29: Copper Washer 14x20 x 2

●Tightening Torque：N・m (kgf･m)
M14：T= 33～41 (3.4～4.2)



(8) Cut the Hose ID8 in an appropriate length (Approx. 180 mm) and connect it to the water line banjo No. 1.

P84: Hose Clamp Mark 130

(9) Cut the Corrugated Tube ID 15 in 170 mm length.
Wrap the Corrugated Tube ID15 from the edge of the factory hose protector to the Hose ID8.
Check that the joint pipes and hoses do not contact with the A/C compressor.

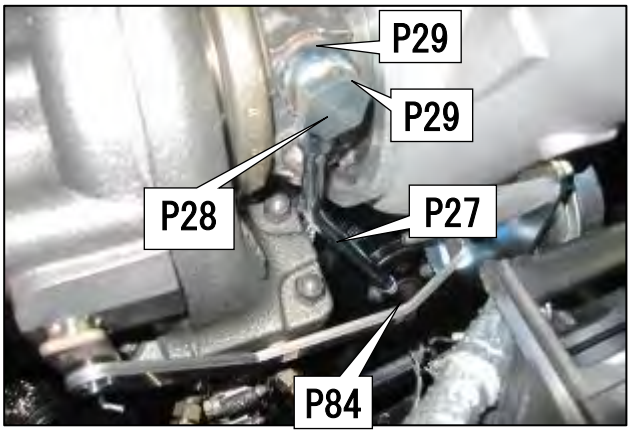
P89: Corrugated Tube ID15

(10) Attach the air conditioner compressor while ensuring it does not come into contact with the hose. Check that belt is put on all the pulleys. Remove the Allen key by securing the belt tensioner and restore the belt to its original state.

(11) Attach the Water Line Banjo No. 2 to the turbocharger using the provided Banjo Bolt M14 and Copper Washer.

P27: Water Line Banjo No.2
P28: Banjo Bolt M14
P29: Copper Washer 14×20 x 2

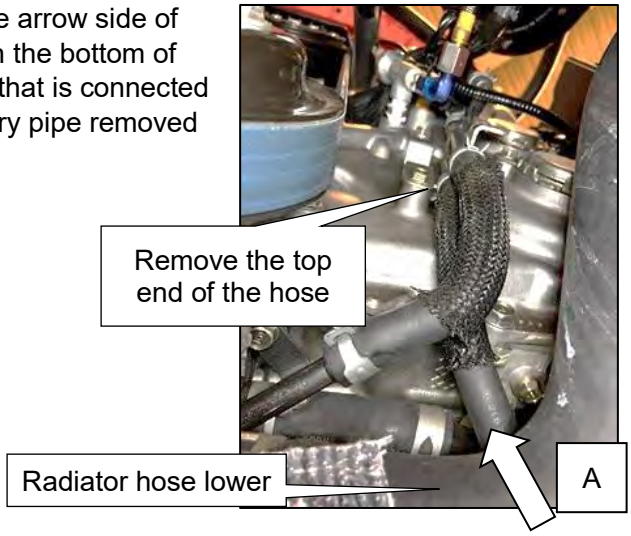
●Tightening Torque：N・m (kgf・m)
M14：T= 33-41 (3.4-4.2)

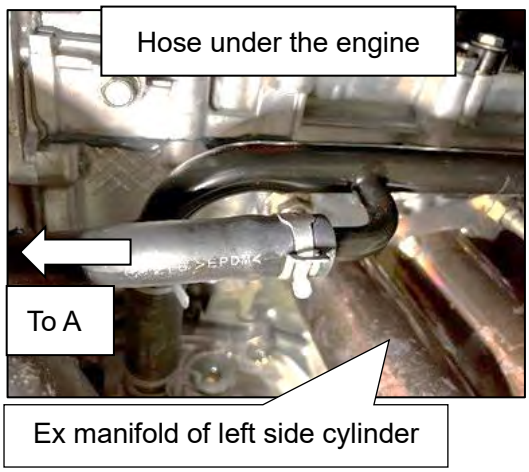


(12) Cut the provided Hose ID8 to a length of 340 mm and connect it to the Water Line Banjo No. 2.

P84: Hose Clamp Mark 130

(13) Remove the arrow side of the hose on the bottom of the engine that is connected to the factory pipe removed in 9-(3).





(14) Connect the Hose ID8 to the factory hose removed in (13) using the Joint Pipe OD8-OD10

(15) Fix the hose with the provided Hose Clamp Mark 130 referring to the photo.

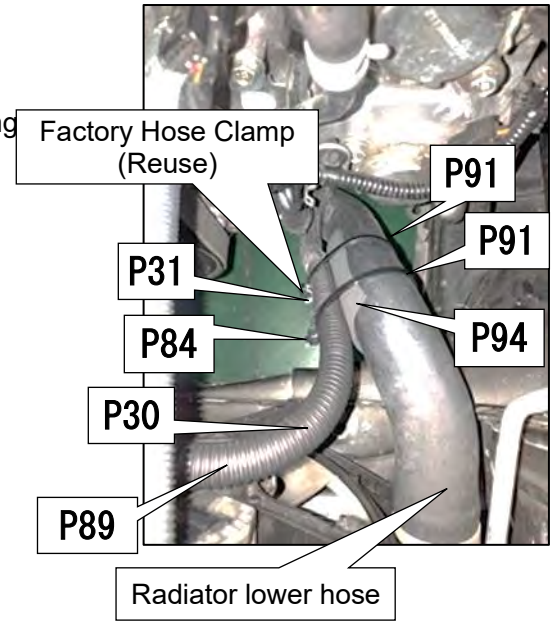
P30: Hose ID8 L=550mm
P31: Joint Pipe OD8-OD10
P84: Hose Clamp Mark 130

(16) Cut the Corrugated Tube ID15 to a length of 300 mm and protect the hose.

P89: Corrugated Tube ID15

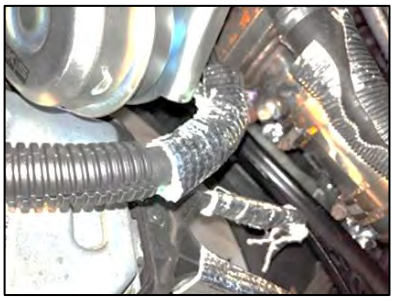
(17) Attach the Sponge Sheet to the radiator lower hose and fix it with the provided Tie Wrap L.

P91: Tie Wrap L x 2
P94: Sponge Sheet



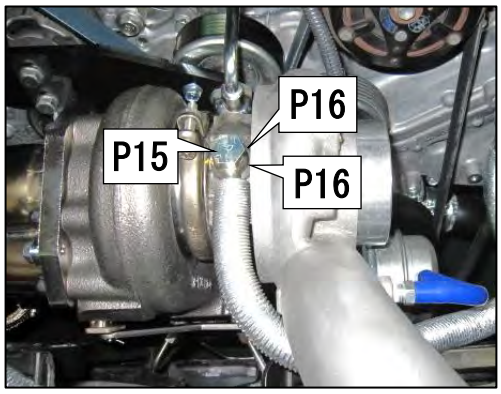
(18) Attach the Insulation Sticker to the hose or pipe near the turbocharger.

P96: Insulation Sticker 300mm x 300mm



(19) Lay out the oil inlet hose, referring to the photo.
Temporarily attach the oil inlet banjo to the turbocharger using the Banjo Bolt M12 P1.25 and Copper Washer.

P15: Banjo Bolt M12 P1.25
P16: Copper Washer 12×17 x 2

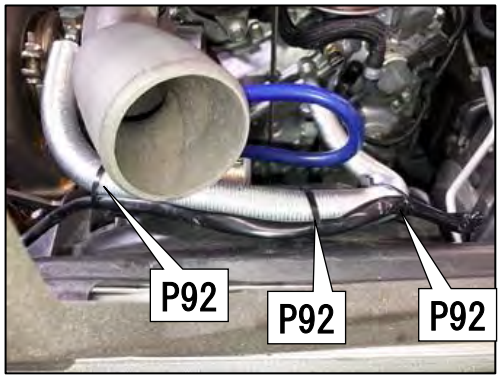


(20) Confirm that there is no interference or tension.
Completely tighten the oil inlet hose, the oil inlet banjo, and the banjo bolt M12 (P1.25).

●Tightening Torque : N・m (kgf・m)
M12 : T= 17-23 (1.8-2.4)

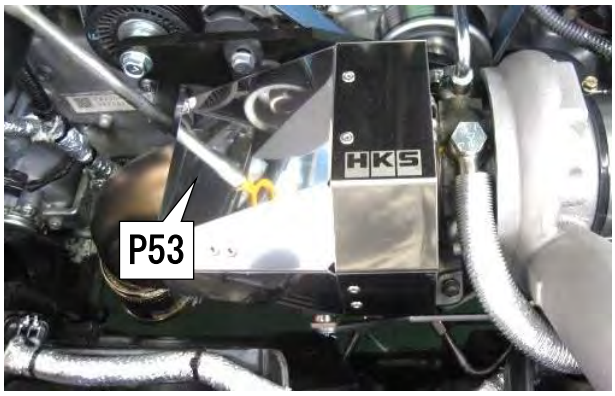
(21) Fix the fan motor harness on the left side to the oil hose with the Tie Wrap M, ensuring the harness does not get caught in the fan.

P92: Tie Wrap M x3



(22) Insert the Insulator into the Flange Bolt M6 L10 temporarily installed in 4-(5) and 8-(7).
and tighten the bolts.

P53: Insulator



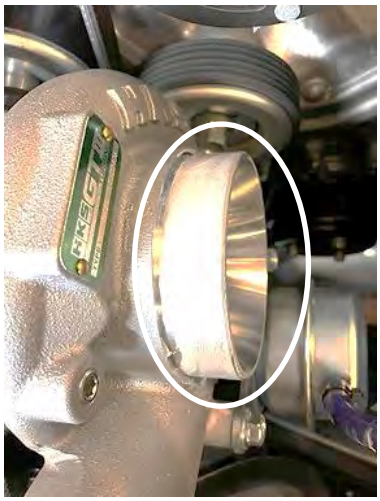
10. INSTALLATION OF AIR CLEANER and SUCTION PIPE

PARTS LIST

No.	Description	Qty
P4	Suction Pipe	1
P41	Air Cleaner	1
P42	Silicone Hose ID80	2
P47	Hose Band #52	4
P51	Hose ID12 L=200mm	1
P52	Joint Pipe OD12	1
P83	Hose Clamp Mark 180	2
P90	Corrugated Tube ID22	1

(1) When the vehicle has excessive blowby, the suction hose may be easily removed because the liquefied gas adheres to the inside of the silicone hose.

Apply a thin layer of 1217G liquid gasket, used when attaching the oil pan to the suction hose mounting part of the compressor housing.



Caution

- Ensure that the liquid gasket is applied to the compressor housing side. If the liquid gasket is applied to the silicone hose side, it may protrude into the airflow path and enter the turbo side when the silicone hose is attached to the compressor housing.

(2) Connect the Air Cleaner and the Suction Pipe.

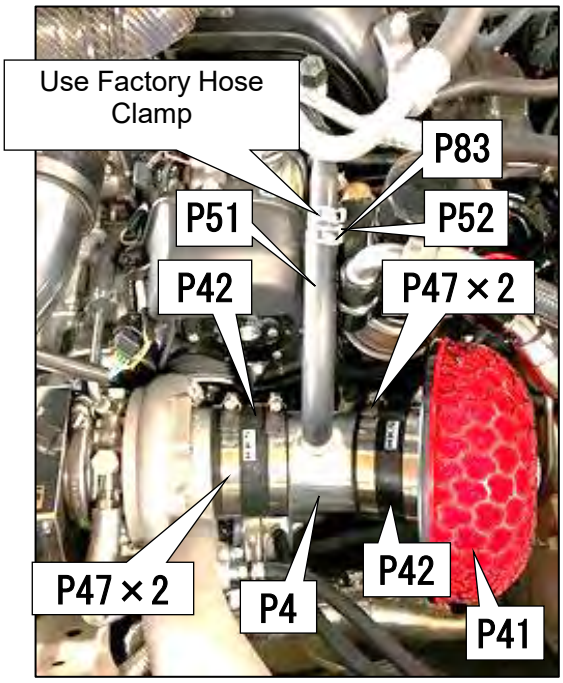
P4: Suction Pipe
P41: Air Cleaner
P42: Silicone Hose ID80 x 2
P47: Hose Band #52 x 4

(3) Relocate the blow-by hose to the side of the A/C compressor. Connect the Hose ID12 to the Joint Pipe OD12 using the provided Hose Clamp (Mark 180) and the factory hose clamp.

P51: Hose ID12 L=200mm

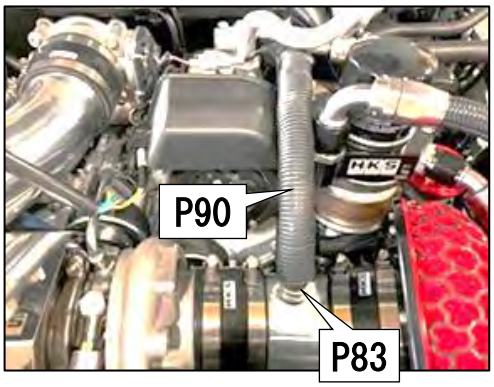
P52: Joint Pipe OD12

P83: Hose Clamp Mark 180



(4) Connect the extended blow-by hose to the suction pipe, then secure it with the hose clamp.
Wrap the blow-by hose with the Corrugated Tube ID22.

P83: Hose Clamp Mark 180
P90: Corrugated Tube ID22



11. INSTALLATION OF INTERCOOLER

PARTS LIST

No.	Description	Qty
P7	Intercooler	1
P36	Intercooler Bracket No.1	1
P37	Intercooler Bracket No.2	1
P38	Intercooler Bracket No.4	1
P39	Spacer OD16	2
P61	Flange Bolt M8 L15	4
P62	Flange Bolt M8 L10	1
P63	Flange Bolt M6 L35	2
P67	Hexagon Bolt M8 L35	7
P71	Low Head Cap Bolt M8 L35	1
P73	Flange Nut M8	2
P74	Flange Nut M6	2
P80	Flat Washer M8 OD18	8
P86	Spacer（OD25×ID10×L15）	8
P88	Corrugated Tube ID10	2
P93	Tie Wrap S	4

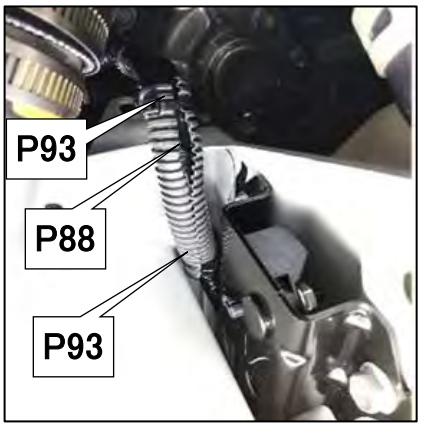
(1) Attach the Corrugated Tube ID10 to the wiring of the left and right airbag sensors, then secure both ends with the Tie Wrap S.

P88: Corrugated Tube ID10 ×2

P93: Tie Wrap S ×4

NOTE

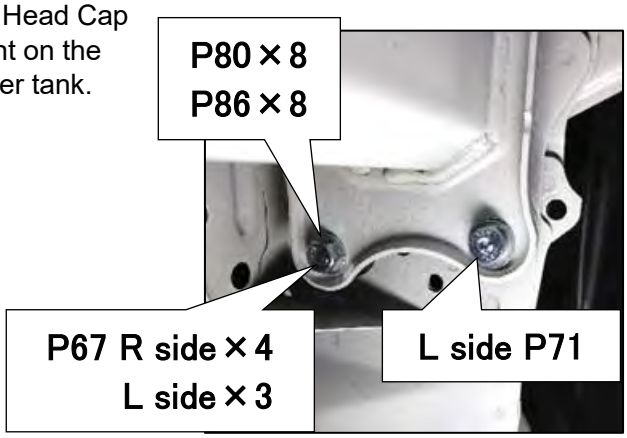
Attach it near the edge part of the reinforcement.



(2) Attach the ⑪ factory front bumper reinforcement, placing the Spacer OD25 between it and the vehicle. Use the Low Head Cap Bolt M8 in one place at the bottom of the mounting point on the left side of the vehicle to prevent contact with the washer tank.

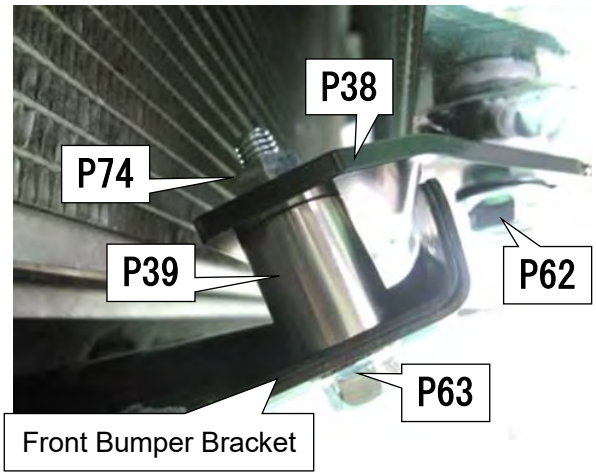
P67: Hexagon Bolt M8 L35 x7
P71: Low Head Cap Bolt M8 L35
P80: Flat Washer M8 OD18 x8
P86: Spacer (OD25×ID10×L15) x8

●Tightening Torque：N・m (kgf･m)
T= 32 (3.3) (Low Head Cap Bolt, Hexagon Bolt)



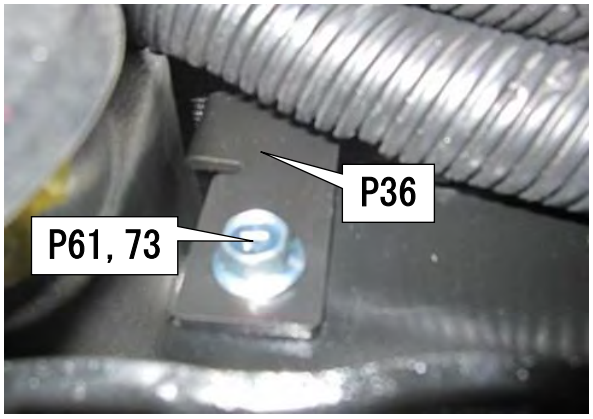
(3) Place the Spacer OD16 between the front bumper bracket modified in 2-(4) and the Intercooler Bracket No.4. Secure it with the Flange Bolt M6 L35 and the Flange Nut M6.
* Secure it so that the Flange Nut M6 should be on the top.

P38: Intercooler Bracket No.4
P39: Spacer OD16 x 2
P63: Flange Bolt M6 L35 x 2
P74: Flange Nut M6 x 2



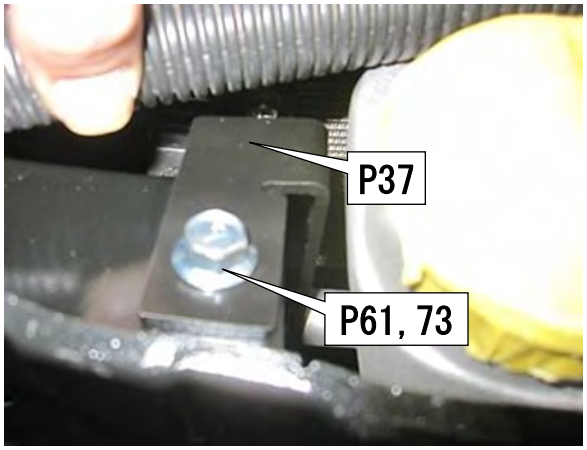
(4) Temporarily attach the Intercooler Bracket No. 1 and 2 to the reinforcement modified in 2-(2).

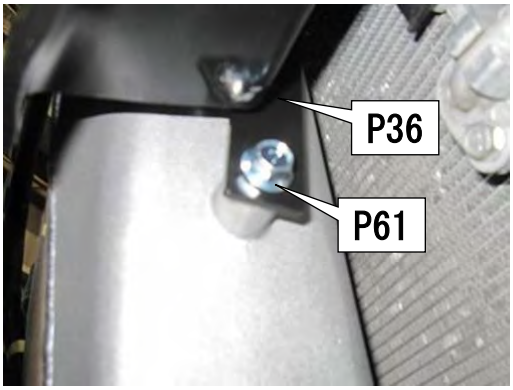
P36: Intercooler Bracket No.1
P37: Intercooler Bracket No.2
P61: Flange Bolt M8 L15 x 2
P73: Flange Nut M8 x 2

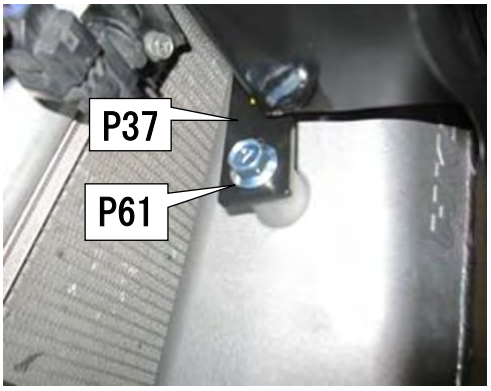


(5) Secure the intercooler temporarily using the Flange Bolt M8 (L15) on both sides of the intercooler. Use the Flange Bolt M8 (L10) on the lower side of the intercooler.

P61: Flange Bolt M8 L15 x 2
P62: Flange Bolt M8 L10







(6) Tighten the temporarily attached sections to prevent the intercooler from coming into contact with the air conditioner condenser or reinforcement.

NOTE
Attach the intercooler as horizontally as possible.

(7) Temporarily attach the Front Bumper Cover Lower.

(8) Mark the outline of the lower part of the intercooler to the front bumper cover lower.

(9) Remove the clip then remove the marked section of the front bumper cover lower.

(10) Cut off the inner side of the marked section along the outline.

(11) Attach the front bumper cover lower after ensuring there is no contact with the intercooler.

NOTE

If it is touching, attaching the front bumper will be difficult.

12. INSTALLATION OF PIPING

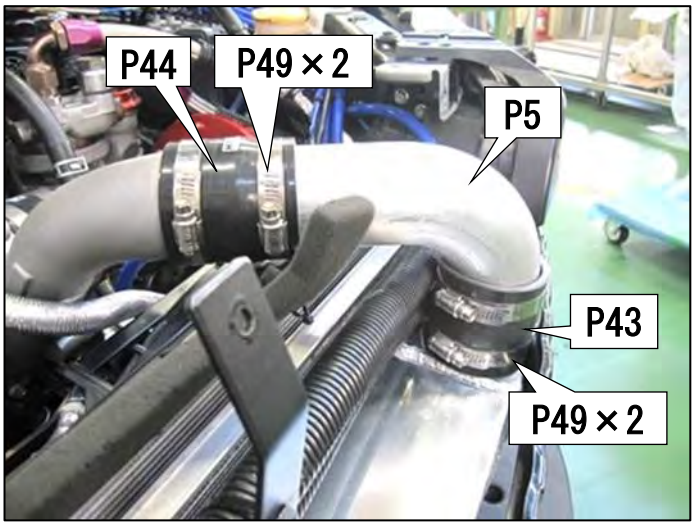
PARTS LIST

No.	Description	Qty
P5	Intercooler Pipe	2
P6	Chamber Pipe	1
P43	Silicone Hose ID60 L70	3
P44	Silicone Hose ID60 L85	1
P45	Silicone Hose ID74-ID79	1
P48	Hose Band #48	2
P49	Hose Band #40	8
P72	Button Bolt M4 L10	2
P96	Insulation Sticker 300mm×300mm	1

(1) Attach the Intercooler Pipe using the provided Silicone Hoses ID60 (L70), ID60 (L85) and Hose Band #40.

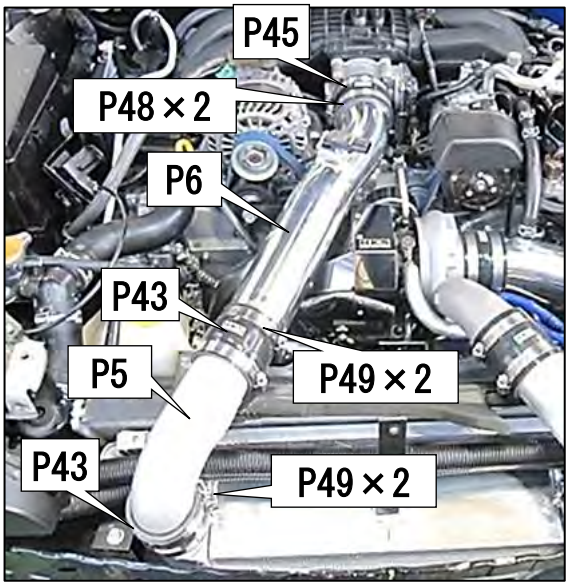
P5: Intercooler Pipe
P43: Silicone Hose ID60 L70
P44: Silicone Hose ID60 L85
P49: Hose Band #40 x 4

NOTE
Be careful with the difference in the Silicone Hose length of ID60.
Cut out the section of the factory radiator sponge where the pipe passes through.



(2) Attach the Intercooler Pipe and Chamber Pipe on the right side of the vehicle using the provided Silicone Hose ID60 and Hose Band #40.
Use the provided Silicone Hose ID74-ID79 and Hose Band #48 for the throttle side.

P5: Intercooler Pipe
P6: Chamber Pipe
P43: Silicone Hose ID60 L70 x 2
P45: Silicone Hose ID74-ID79
P48: Hose Band #48 x 2
P49: Hose Band #40 x 4

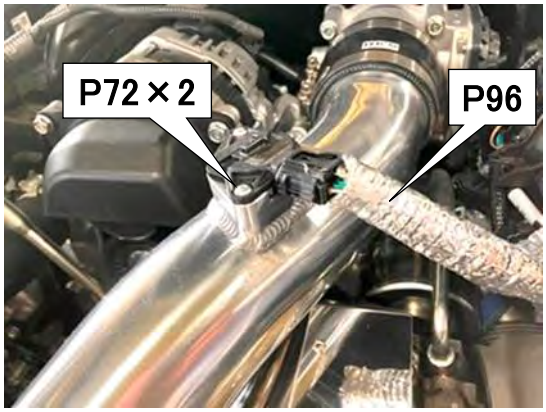


(3) Cut the Insulation Sticker to an appropriate size. Attach it to the wiring of the airflow sensor, then fix it with the wire.

・P96: Insulation Sticker 300mm×300mm

(4) Attach the airflow sensor to the chamber pipe using the Button Bolt M4 (L10).

・P72: Button Bolt M4 L10 x 2



13. REINSTALLATION OF FACTORY PARTS

Use this instruction manual and the manufacturer's service manual as a reference.

PARTS LIST

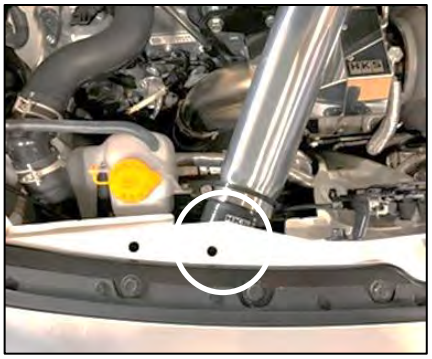
P94

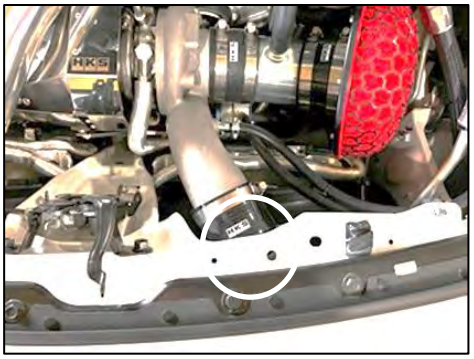
No.	Description	Qty
P69	Hexagon Bolt M6 L25	1
P70	Hexagon Bolt M6 L15	1
P76	Hexagon Nut M6	1
P81	Flat Washer M6 Large Diameter	3
P87	Spacer (OD20×ID6×L10)	1
P94	Sponge Sheet 50mm×50mm	2

(1) Attach the Sponge Sheet to the proximal section of the pipe on the back side of the radiator support.

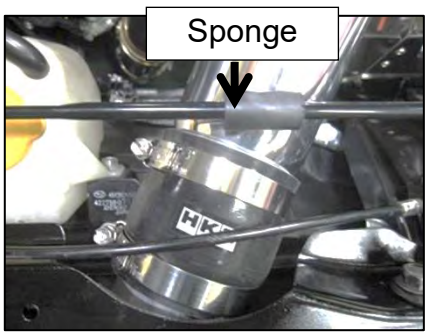
P94: Sponge Sheet 50mm×50mm x 2

(2) Attach the radiator support to prevent the pipe from contacting the radiator support.





(3) Change the position of the sponge on the hood support rod to the position shown in the photo.



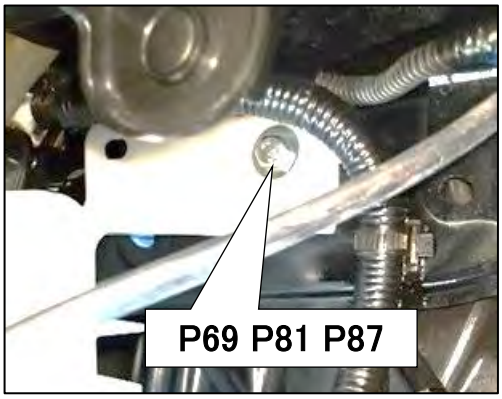
(4) Degrease the threaded part of the Hexagon Bolt, then thinly apply ThreeBond1324. Attach the ⑪ washer tank modified in 2-(23). To the mounting section on the upper side, put the Spacer between the vehicle body and the washer tank to prevent contact with the reinforcement.

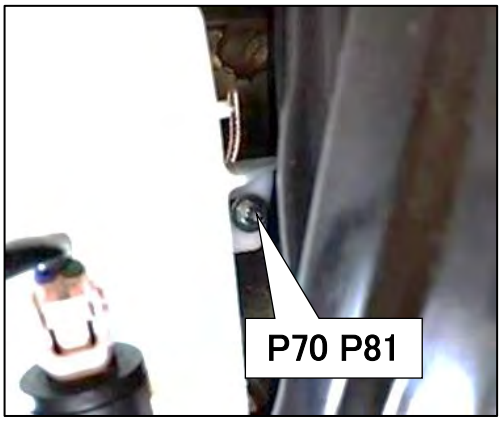
P69 Hexagon Bolt M6 L25

P70 Hexagon Bolt M6 L15

P81 Flat Washer M6 Large Diameter ×2

P87 Spacer (OD20×ID6×L10)

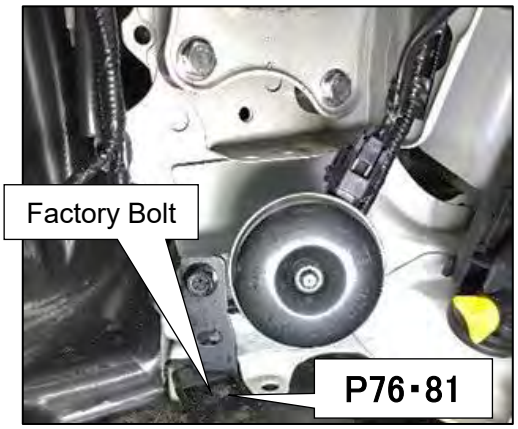




(5) Attach the ⑫ hone removed in 1-(13) to the hole of the mounting section of the reinforcement on the right side of the vehicle reusing the factory bolt, Hexagon Nut M6, and Flat Washer M6 (Large dia.).

P76 Hexagon Nut M6

P81 Flat Washer M6 Large Diameter



(6) Attach the parts again removed in sections 1 and 2.

(7) Refill the engine oil.

(8) Refill the coolant to the insufficient amount due to removing/attaching the hose.

(9) Connect the negative terminal of the battery.

14. CONFIRMATION AFTER INSTALLATION

Use the provided insulation materials for high-temperature areas, such as the turbocharger or exhaust, if necessary.

P95: Insulation Tape 70mm x 1000mm
P96: Insulation Sticker 300mm x 300mm

Use the provided Tie Wrap and the Sponge Sheet to prevent contact with each part, if necessary.

P91, P92, P93: Tie Wrap
P94: Sponge Sheet

After all installation work is completed, follow the confirmation process in the 'Confirmation after Installation' section of the instruction manual.

15. TECHNICAL INFORMATION

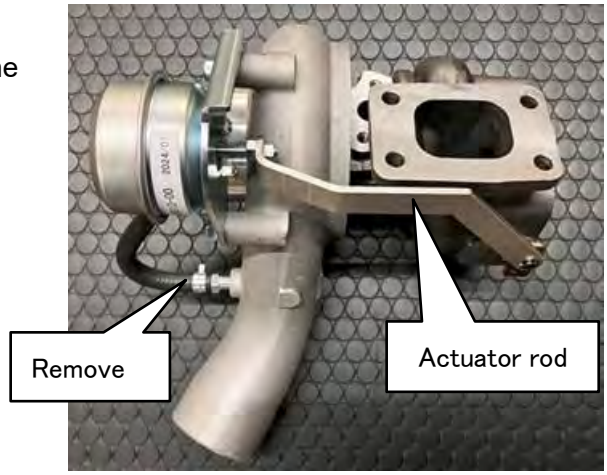
The turbocharger actuator set pressure is set to 65kPa(0.66kgf/㎠) for minimum boost when shipped from the factory.
Please adjust the actuator to your desired boost.

○Actuator adjustment method

(1) Loosen the fixing nut on the actuator rod.

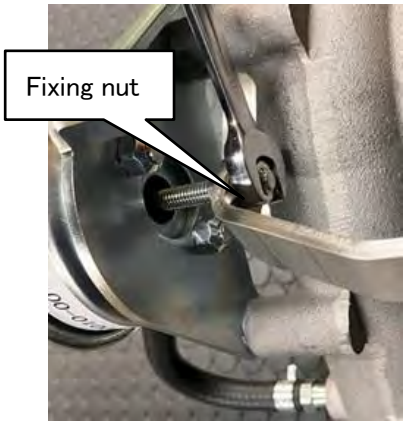
(2) Disconnect the compressor end of the actuator hose.
Use the disconnected hose to apply air pressure to the actuator equivalent to the desired boost.
Use a hand pump with a gauge.

NOTE
The actual boost tends to be about 5～8kPa higher than the pressure when adjusting the actuator, so please set it carefully.



(3) While keeping the pressure applied at (2), adjust the length of the actuator rod until you can turn the swing valve a little with your fingers.

(4) Tighten the fixing nut of the actuator rod.
Tightening torque 7±1N･m



(5) Make sure that the swing valve can be turned slightly with your fingers.
If it cannot be turned, repeat step (2)－(4) to make adjustment.

⚠ Caution

Please set up an actuator according to the specifications of vehicle engine and drive train parts.
Extreme boost may cause damage to the engine and drive train.
The actual boost tends to be about 5～8kPa （0.05～0.08kgf/cm2）higher than the pressure when adjusting the actuator, so please set it carefully.

NOTE
When using the boost within the range up to 90kPa, please adjust with the actuator rod. If you want to use it with boost pressure above 90kPa, please use HKS EVC in combination.

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