# 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-T59080-00　Ver.3-3.01 |
| VEHICLE | ・TOYOTA　GR86　（3BA-ZN8）<br>・SUBARU　BRZ　（3BA-ZD8） |
| ENGINE | FA24 |
| MODEL YEAR | ・TOYOTA　GR86 (3BA-ZN8)　2021/10～<br>・SUBARU　BRZ　(3BA-ZD8)　2021/08～ |
| REMARKS | 【NOTE】<br>• HKS is not responsible for the damage to the engine and/or other parts of a vehicle after installing this product.<br>• Injectors, fuel pump, engine management device, engine plug are not included in this product.<br>• Modification of the radiator support, reinforcement, fan shroud, oil pan, etc. is required.<br>• Check the spark plugs occasionally and replace them if necessary.<br>• Upgrading the injectors and fuel pump is required.<br>• Resetting by an engine management device must be done.　Resetting of fuel and ignition must be done to avoid engine damage.<br>• A boost controller such as HKS EVC is required when the boost pressure is changed.<br>• Change the engine oil to the one with 40 or higher viscosity at high temperatures.<br>• The boost pressure of the provided actuator is set to approximately 60-70 kPa.<br>• 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 |
| | | | |
| | | | |
| | | | |
| | | | |

## INDEX



## 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 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.<br>(Large-scale damage is the damage caused by a product defect.<br>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 | |
| 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 | ID21 |
| 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.3 | 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 | ID22 L300 |
| 90 | Corrugated Tube | 1 | ID15 L500 |
| 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.

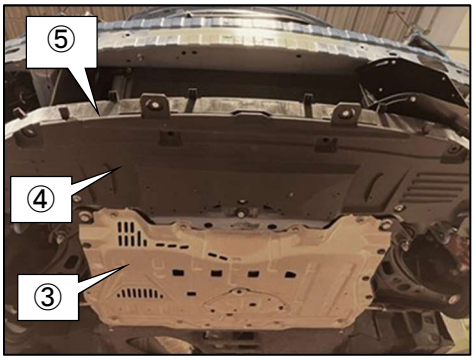
(1) Disconnect the negative terminal from the Battery.

(2) Unplug the wiring connectors of the ①Side Turn Signal Lamps on both left and right sides.


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

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

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




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

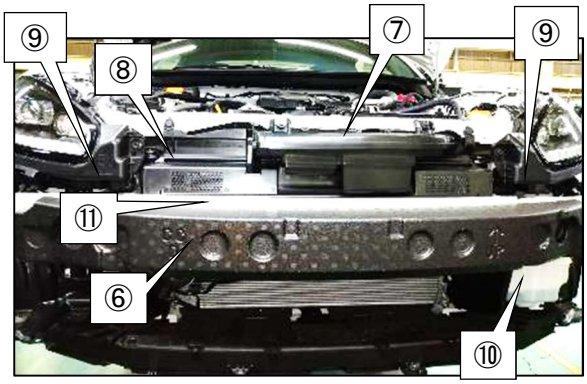
(7) Drain the engine oil and coolant.

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

(9) Remove the ⑦Air Cleaner Inlet.

(10) Remove the ⑧Radiator Cover Plate.

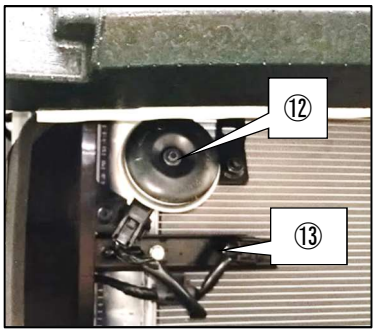
(11) Remove the ⑨Front Bumper Corner Bracket from both left and right sides.
（The removed Bracket will be reinstalled later.）




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

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

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




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

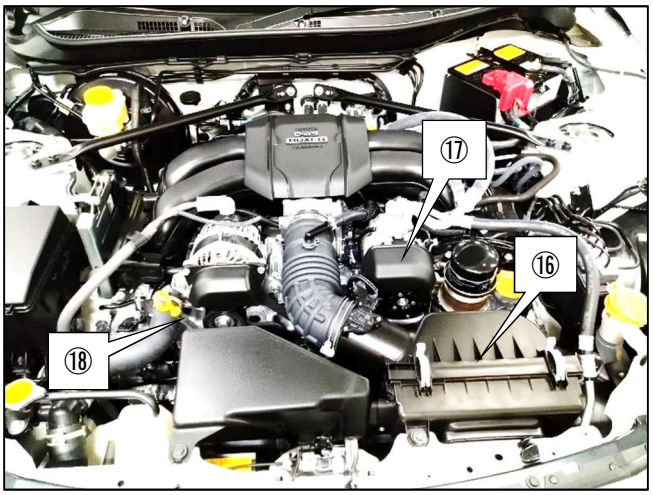
(16) Remove the ⑭Radiator Guide right sides.
（The removed Guide will be reinstalled later.）

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


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

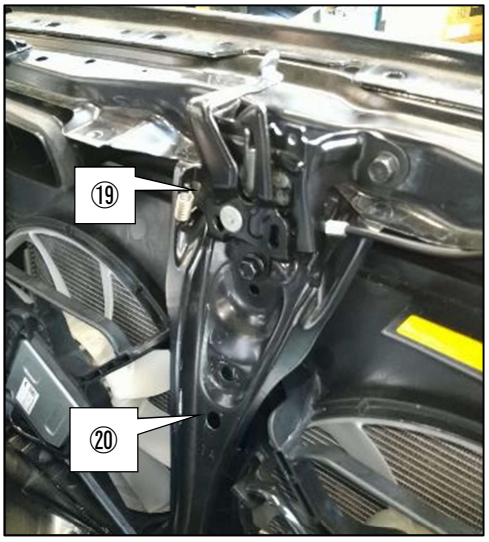
(19) Remove the ⑰Belt Cover.
（The removed Cover on the A/C Compressor side will be reinstalled later.）

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

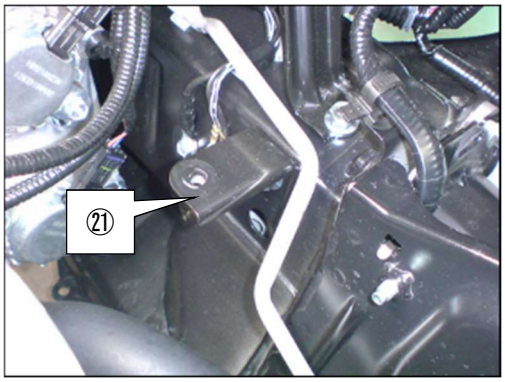



(21) Remove the ⑲Hood Lock from the Radiator Support.
（The removed Hood Lock will be reinstalled later.）

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

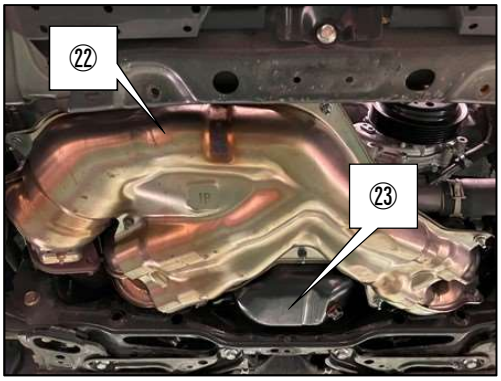



(23) Remove the ㉑air cleaner case bracket.



(24) Disconnect the A/F sensor and $O_2$ sensor harness.
Remove the ㉒exhaust manifold.
(The removed nut will be reused later.)

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

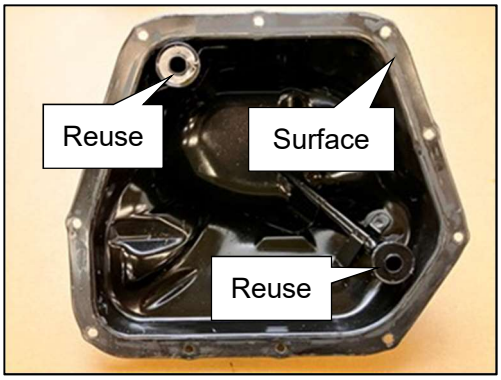


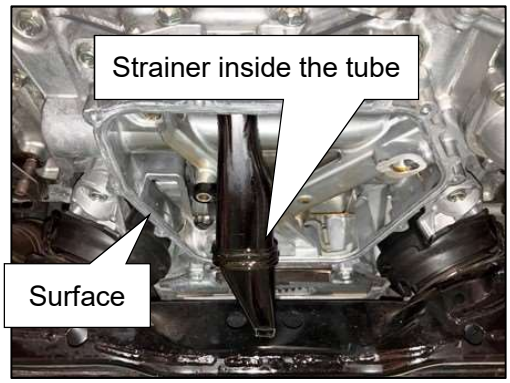

(26) After removing the oil pan, remove the liquid gasket from the mounting surface.

NOTE

Liquid gasket debris when factory engine was assembled may be stuck to the strainer.

Remove with fine tweezers.



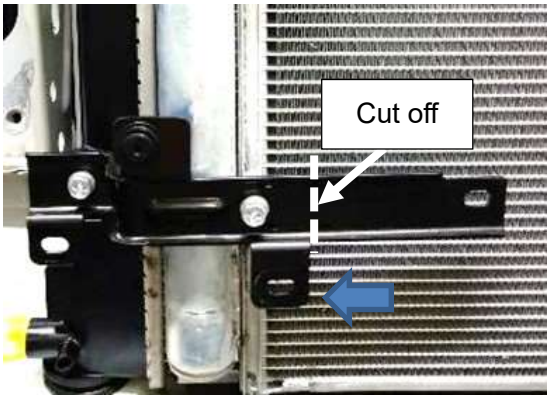



# 2. MODIFICATION OF FACTORY PARTS

PARTS LIST


| No. | Description | Qt |
|---|---|---|
| P2 | Exhaust Manifold | 1 |
| P23 | Oil Return Pipe | 1 |
| P32 | Gasket | 2 |
| P82 | Hose Clamp Mark 230 | 2 |
| P84 | Hose Clamp Mark 130 | 1 |
| P85 | Hose Clamp Mark 115 | 1 |
| P92 | Tie Wrap M | 4 |
| P95 | Insulation Tape | 1 |
| P96 | Insulation Sticker | 1 |

(1) Cut off portion of the A/C Condenser Bracket along the dotted line shown in the diagram on the right. Relocate the outside temperature sensor to the hole indicated by the arrow.




(2) Cut off the shaded portion of the reinforcement as shown below:

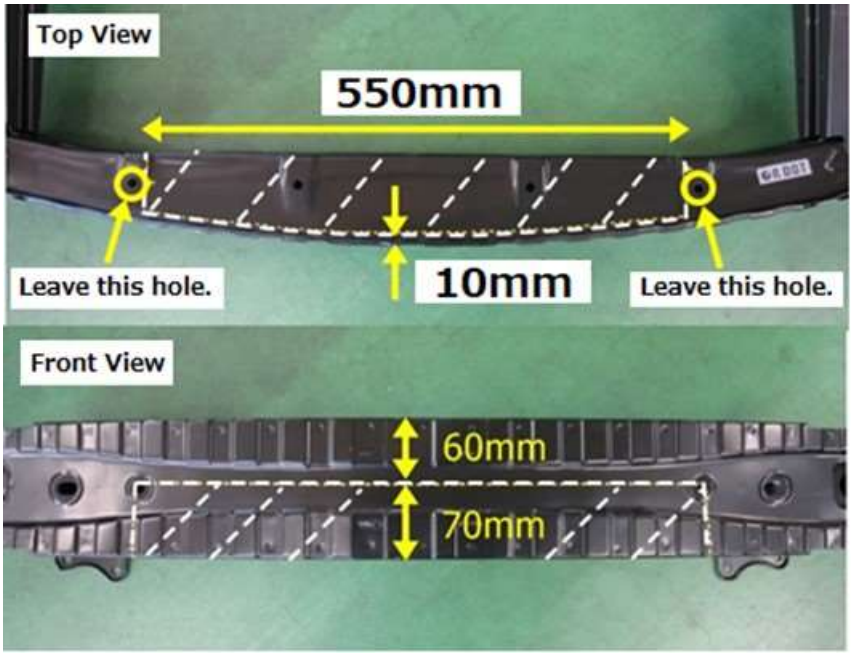
NOTE

Modify the reinforcement to avoid unnecessary contact with the intercooler.

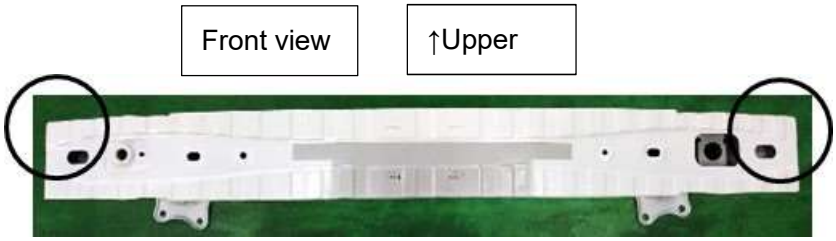
Mark the center position of the reinforcement. Cut the reinforcement referring to the photo on the right.

Make sure to leave the holes to install the intercooler bracket.

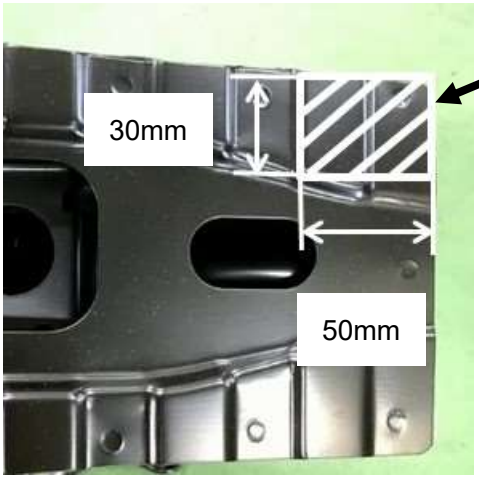
After cutting off the shaded portions, remove burr and apply a rust prevention treatment.



※For BRZ, cut a part of the front bumper reinforcement as shown below.

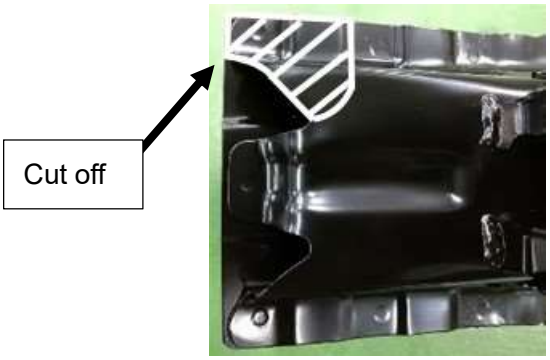



※Dimensional value is symmetrical

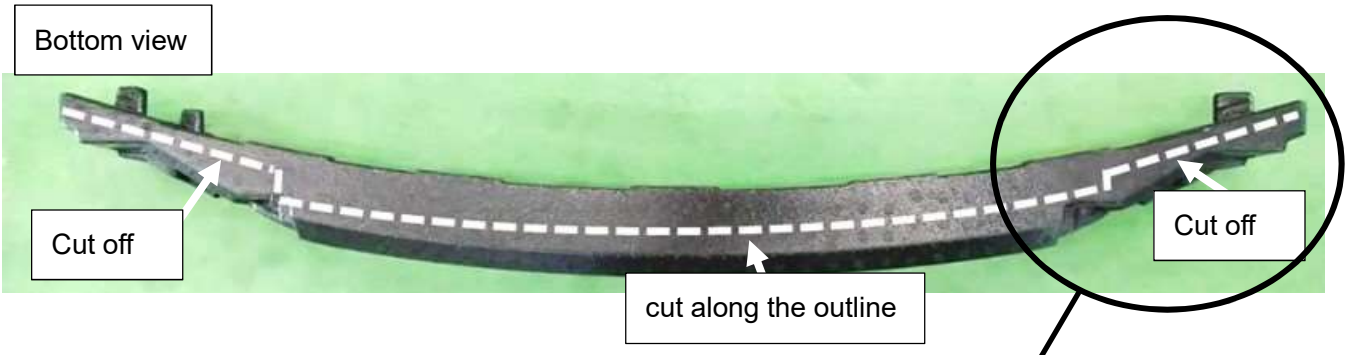



Cut off
※Avoid contact with Front Bumper

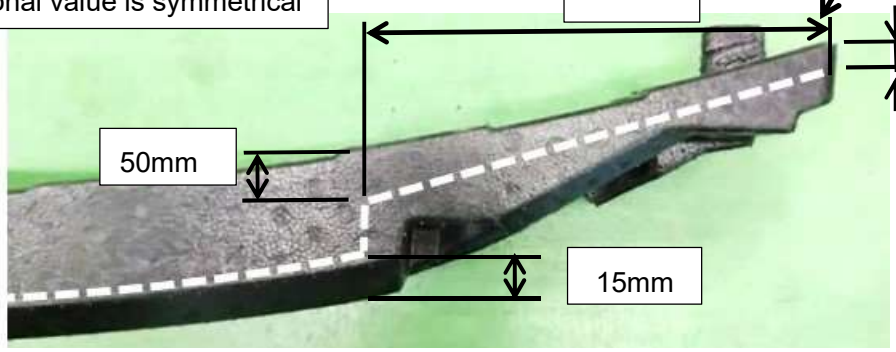
NOTE
Cut off the back side so that it is not sharp.

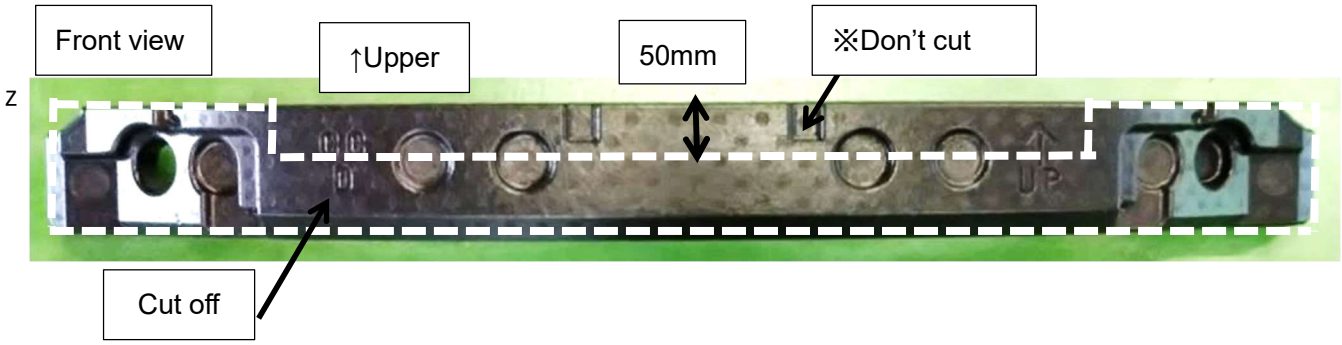


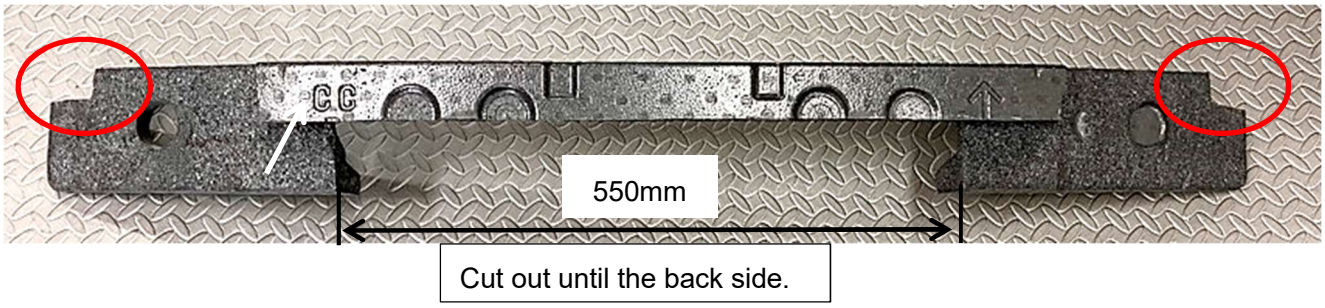

(3) Cut off the Front Bumper Energy Absorber removed at the dotted line.




※Dimensional value is symmetrical





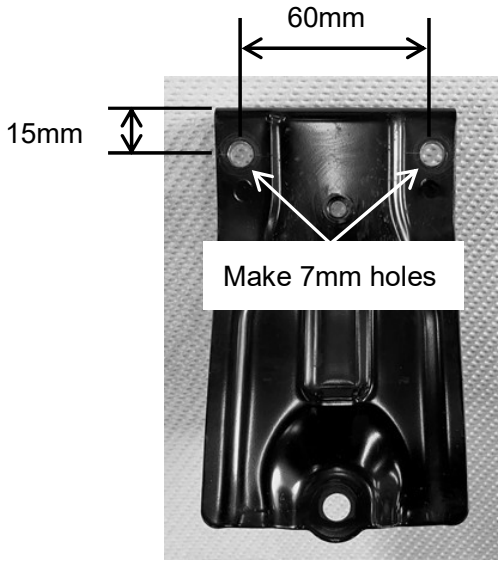

**※Circled area.**

**In the case of BRZ, cut further along the shape of the Front Bumper Reinforcement cut in 2-2.**

(4) Modify the front bumper bracket as shown in the photo shown on the right.

NOTE

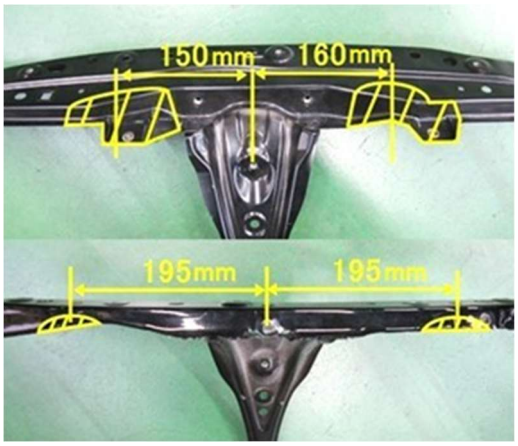
This modification is to secure the bracket of intercooler.




(5) Cut the radiator support as shown in the photo.

NOTE

This modification is to avoid unnecessary contact with the intercooler pipe.

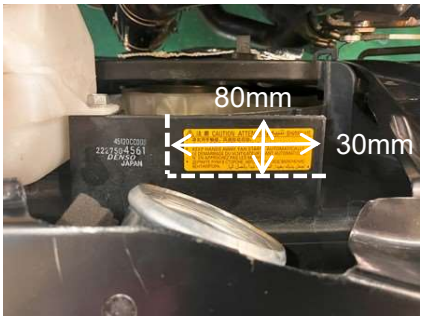


(6) Cut the fan shroud as shown in the photos.

NOTE

This modification is to avoid unnecessary contact with the piping.

Top of right side fan shroud




Top of left side fan shroud


(7) Remove the clamps from the left and right electric fan harnesses and lay out the harnesses so that they pass through the top of the fan shroud.

Cut the Insulator Tape 70mm x 1000mm to an appropriate size and wrap to the harness of the electric fan motor.

Cut the Insulator Sticker 300mm x 300mm to an appropriate size and place to the electric fan motor and fun shroud.

- P95: Insulation Tape
- P96: Insulation Sticker 300mm x 300mm

NOTE

Use a wire twister pliers to secure the wrapped insulator with wire.

NOTE

It may also be possible to combine the two fan motor connectors into one with a thermal tube.
The thermal tube will be used in Section 7-5, so please leave 195mm.

(8) Secure the harnesses to radiator shroud using Tie Wrap M or wire twister pliers

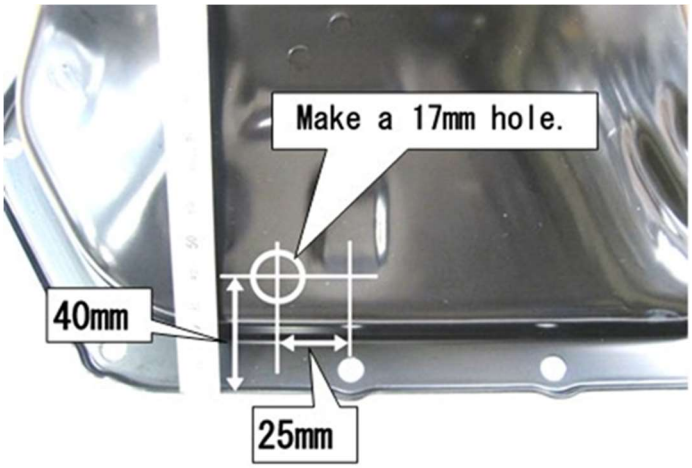
- P92: Tie Wrap M x 2

(9) Remove the oil pan from the vehicle.

(10) Drill a 17mm hole in the position indicated in the photo on the right.

NOTE

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

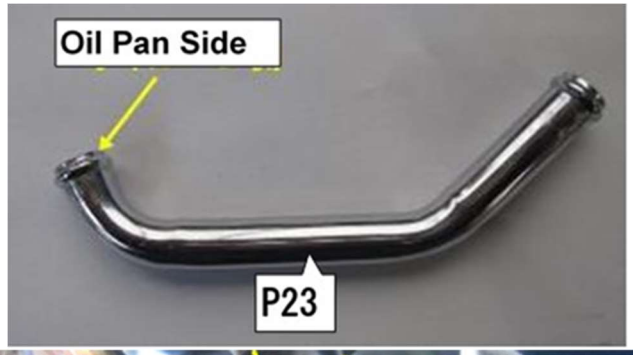



(11) Temporarily reinstall the oil pan, and temporarily install the Exhaust Manifold using the provided Gaskets.

- P2: Exhaust Manifold x 1
- P32: Gasket x 1

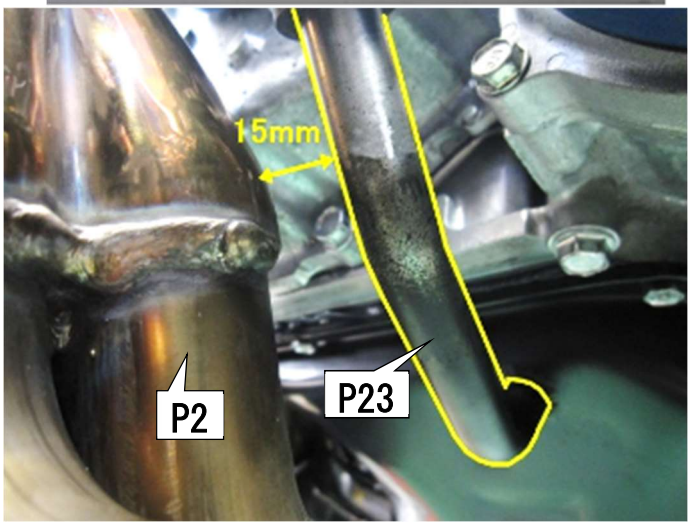
(12) Determine the installation position of the Oil Return Pipe. Mark the position or temporarily install the pipe.

- P23: Oil Return Pipe x 1




NOTE

Make sure the clearance between the exhaust manifold and Oil Return Pipe is at least 15mm. The clearance between the V-belt and pipe should be approximately 20mm, and approximately 60mm between the bolt. Please refer to those photos on the right.




Make sure to insert the Oil Return Pipe to the oil pan until the pipe end contacts the stopper.

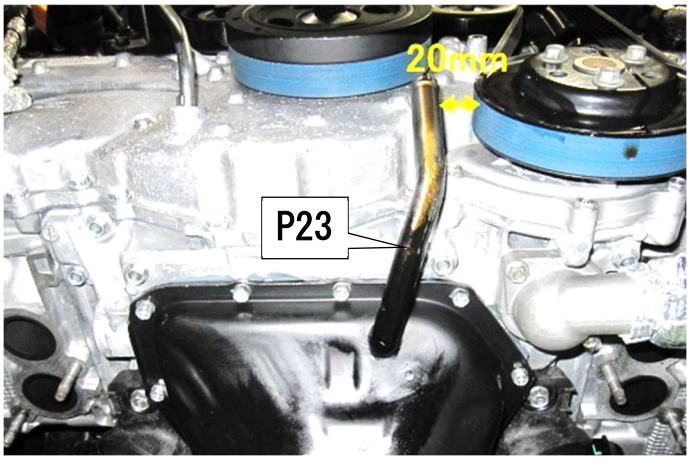
(13) Remove the oil pan. Weld the Oil Return Pipe to the oil pan.

NOTE

Weld the pipe gradually and make sure the clearance between parts during welding.

Remove paint on the welding part of the oil pan using a sand-paper before welding.

Carefully check the welding seam for leaks.



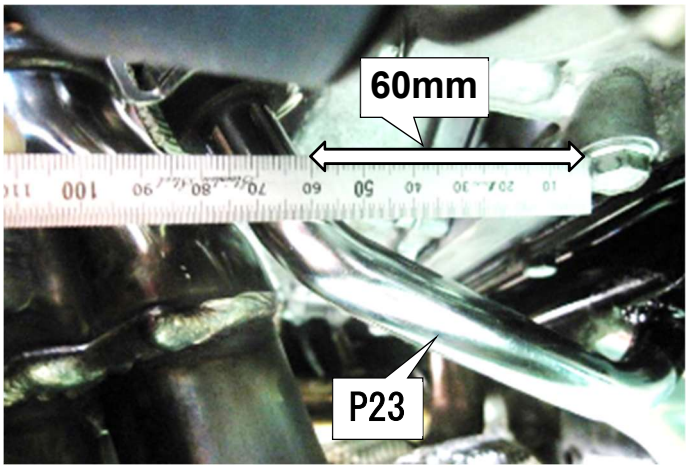

(14) Apply a rust prevention treatment to the weld zone.
After the treatment is applied and the applied zone becomes dry, clean the parts.

NOTE

Make sure to remove all foreign objects such as burr, chip, etc. to prevent engine damage.

(15) Clean the installation surface of the oil pan and engine using a scraper or a similar tool and remove oil from the surfaces.
Install the oil pan using a liquid gasket 1217G.

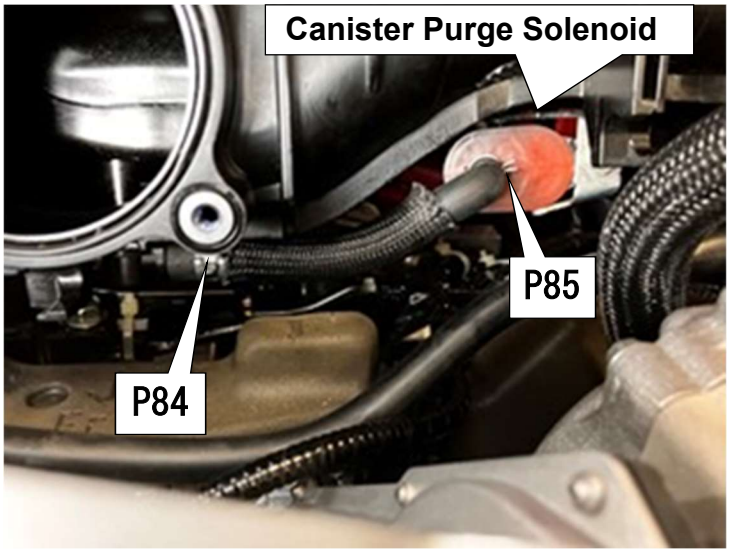
NOTE
Reuse the factory bolt and seals.




(16) Remove the Exhaust Manifold.

(17) Remove the installation bolt from the A/C compressor.
Move the compressor slightly so there is adequate space for installation function under the intake manifold.

NOTE
Do not disconnect the piping.




(18) Remove the installation bolt from the throttle body.
Move the throttle body slightly so there is adequate space for installation function under the intake manifold.

NOTE
Do not disconnect the water piping.

(19) After remove the T/H body and the A/C compressor, you can see the purge solenoid and the Hose.
Remove the installation bolt from the intake manifold.
Move the intake manifold slightly so there is adequate space for installation function under the intake manifold.

NOTE
To float the intake manifold.
Remove the port side injector connector.
Disconnect the three fuel line connectors.
There are 6 mounting bolts for the intake manifold.

(20) Install the Hose Clamps as shown in the diagram on the right.

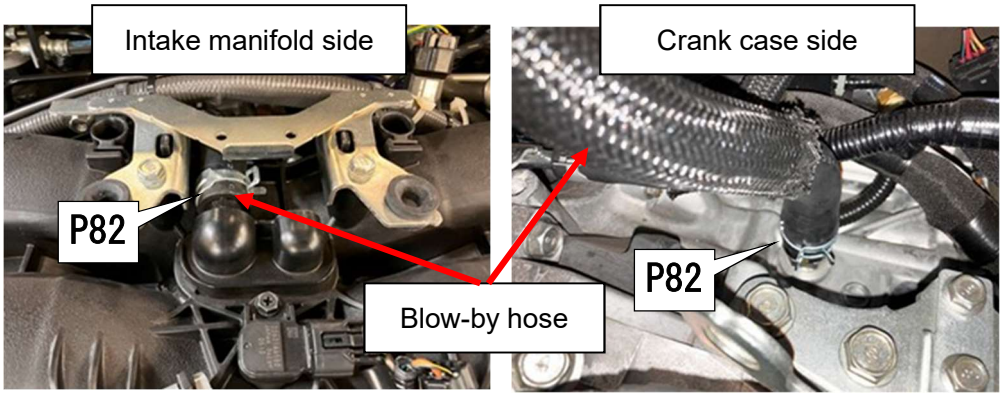
- P84: Hose Clamp Mark 130 x 1
- P85: Hose Clamp Mark 115 x 1

NOTE
Do not remove the hose on the intake manifold side as this may damage the resin nipple.
Remove the hose only the solenoid side.
Temporary remove the protector.
Slide the P84 clip to intake manifold side and install it.

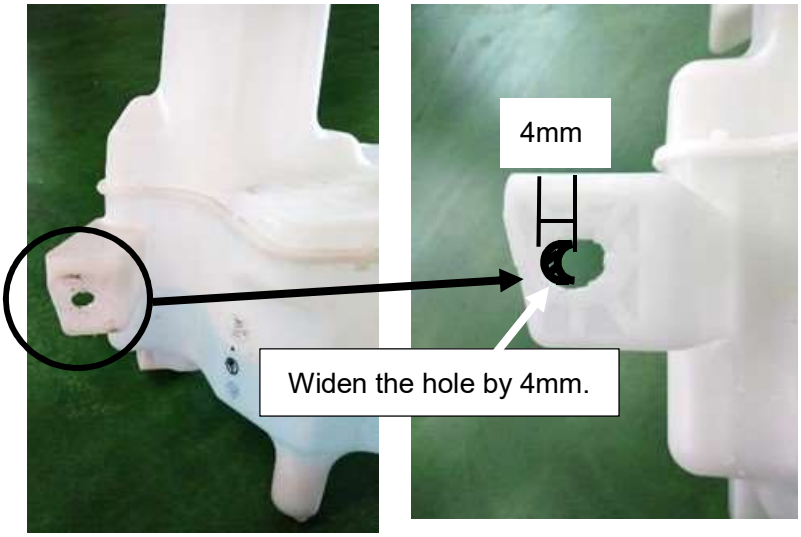
(21) Reinstall the intake manifold and the T/H body.
Do not install the A/C compressor yet.
(In the later process of connecting the T/C cooling hose, there will be work under the A/C compressor.)

(22) Install the Hose Clamps to the blow-by hose.

・P82: Hose Clamp Mark 230 x 2



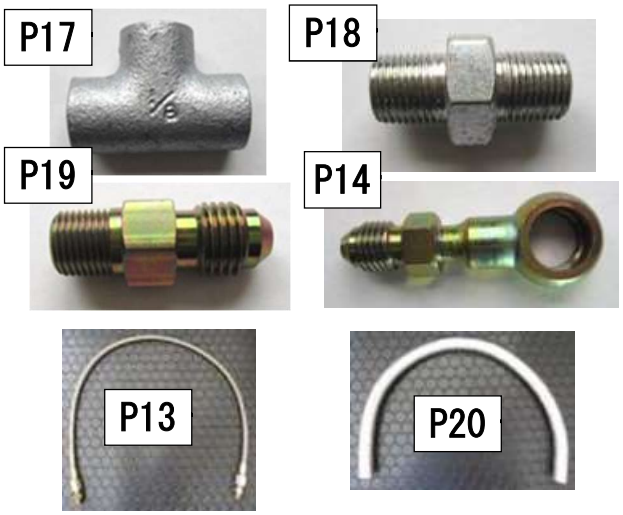

(23) Enlarge the mounting hole of the Washer Tank removed at 1-(12).



# 3. INSTALLATION OF OIL INLET PARTS

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

PARTS LIST

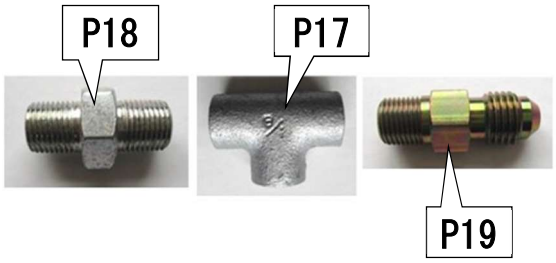



| No. | Description | Qt |
|---|---|---|
| P13 | Oil Inlet Hose | 1 |
| P14 | Oil Inlet Banjo | 1 |
| P17 | T-fitting | 1 |
| P18 | Hexagon Fitting | 1 |
| P19 | Oil Line Fitting | 1 |
| P20 | Thermal Tube ID21 | 1 |

(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 ThreeBond TB1324 thinly to the PT thread.

- P17: T-fitting x 1
- P18: Hexagon Fitting x 1
- P19: Oil Line Fitting x 1

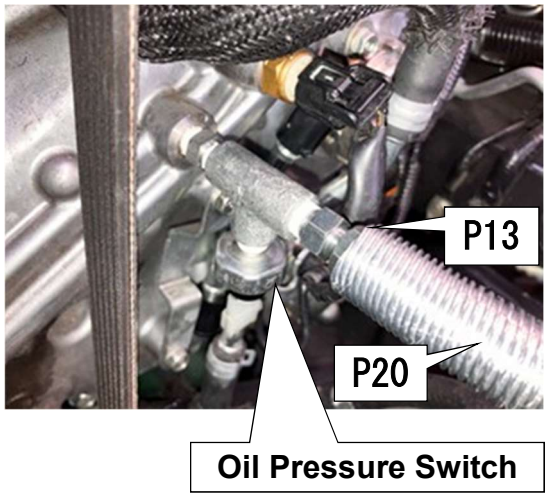



NOTE

Make sure not to overtighten the PT thread to prevent damage to other parts of the vehicle.
Apply only minimum required amount of ThreeBond TB1324 so it does not run off inside the oil flow line.

(3) Install the assembled fittings to the engine as shown in the photo on the right. Apply the ThreeBond TB1324 thinly to the PT thread.

(4) Install the removed oil pressure switch to the engine as shown in the photo on the right. Apply the ThreeBond TB1324 to the PT thread.




(5) Install the Oil Inlet Hose.

- P13: Oil Inlet Hose x 1

(6) Cover the hose with the Thermal Tube.

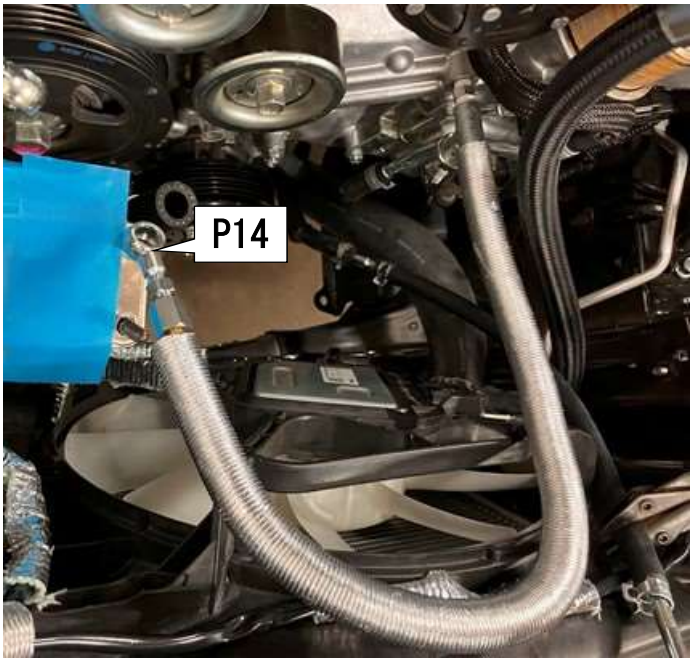
- P20: Thermal Tube ID21 x 1

(7) Temporarily install the Oil Inlet Banjo.

・P14: Oil Inlet Banjo x 1

NOTE

The inlet banjo will be tightened completely after the turbocharger is installed.




## Caution

- When assembling the oil line, do not use a seal tape. Make sure to use only minimum required amount of liquid gasket to prevent damage to the turbocharger assembly.
- Make sure to secure the oil inlet hose without excessive force on the caulking section of the oil inlet hose and bending the hose too tight. If neglected, excessive stress may be applied to the hoses by engine vibration and such which may result in leakage of oil causing vehicles fire in the worst case.

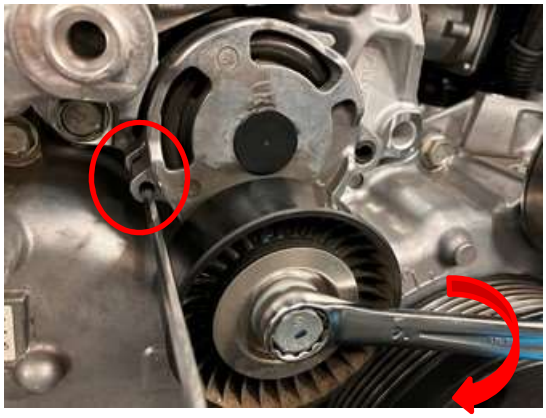
# 4. INSTALLATION OF TURBOCHARGER BRACKET

PARTS LIST




| No. | Description | Qt |
|---|---|---|
| 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) Place a tool on the belt tensioner bolt. Loosen the belt as shown in the diagram on the right and secure it with a 3mm hexagonal wrench or a similar tool.



(2) Remove the idler pulley No.1 as shown in the diagram on the right.
The removed idler pulley cover (washer) will be reused later.

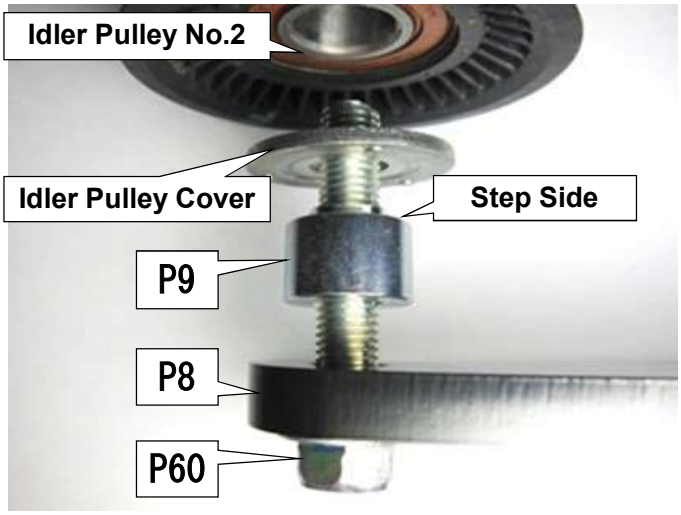
(3) Remove the idler pulley No.2 as shown in the diagram on the right.
The removed idler pulley cover (washer) will be reused later.

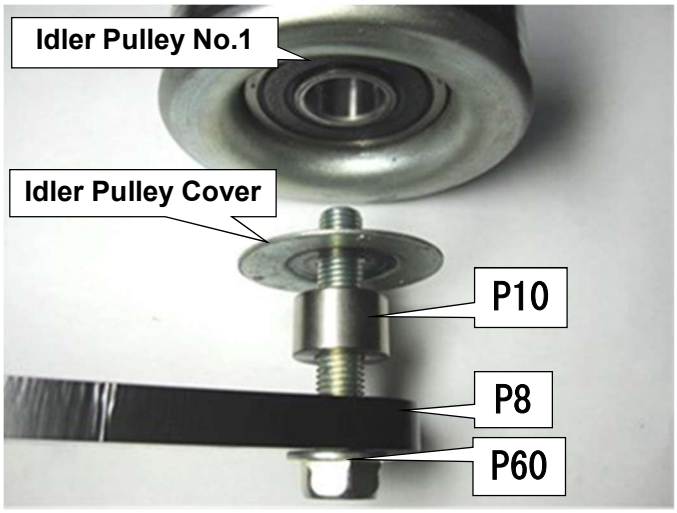
(4) Install the Turbocharger Bracket No.1, Stepped SpacerOD20, Spacer OD20, removed idler pulley cover, and idler pulley using the provided Flange Bolt M10 L50 7-mark.

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

NOTE
Make sure to install the Stepped Spacer in a correct direction.

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



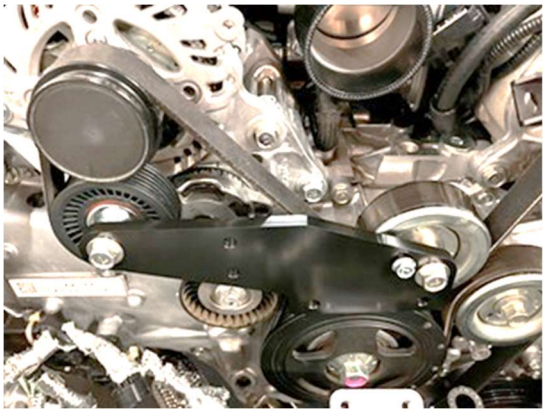




(5) Temporarily install the Flange Bolt M6 L10 as shown in the photo on the right.

・P65: Flange Bolt M6 L10 x 1

NOTE
This bolt is to install the insulator.
The bolt is installed here for easier installation of the insulator.


(6) Make sure the belt is placed on all pulleys. Remove the 3mm hexagonal wrench or a similar tool securing the belt. Make sure a proper tension is applied to the belt.



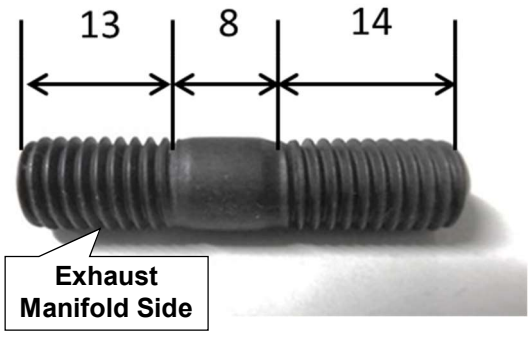
# 5. INSTALLATION OF EXHAUST MANIFOLD

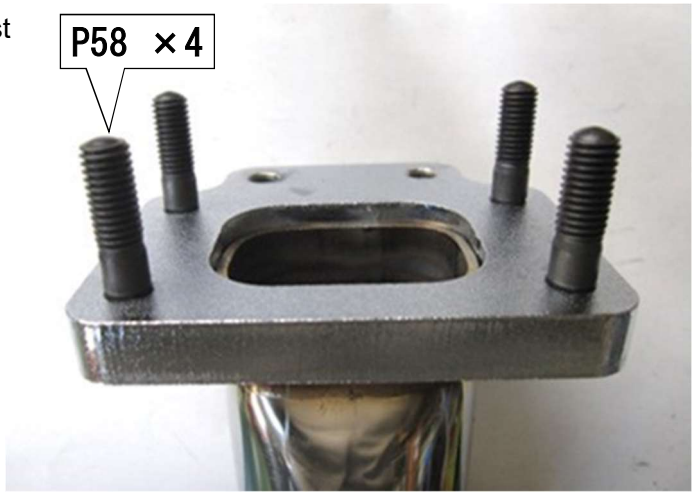
PARTS LIST


| 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) Install the Stud Bolt M8 13-8-14 to the Exhaust Manifold.

・P58: Stud Bolt M8 13-8-14 x 4




(2) Install the Insulator ID50 L=100 to the Exhaust Manifold using the provided Hose Band #28 as shown in the photos on the right.

・P50: Hose Band #28 x 2
・P54: Insulator ID50 L=100mm x 1

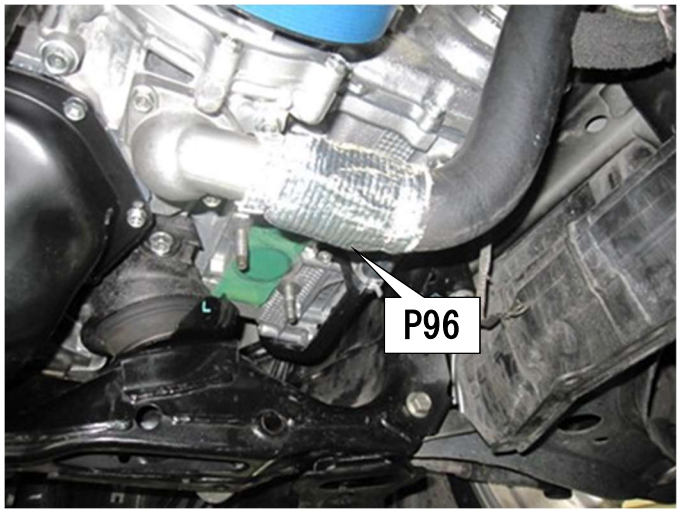
NOTE
Place the insulator toward the engine side.
Install the hose band over the SUS mesh.


(3) Cut the Insulator Sheet to an appropriate size as shown in the photo on the right. Wrap the radiator hose with the Insulator Sheet and secure the sheet with a wire.

・P96: Insulation Sticker 300mm×300mm x 1

NOTE

Insulate the other parts around the exhaust manifold.

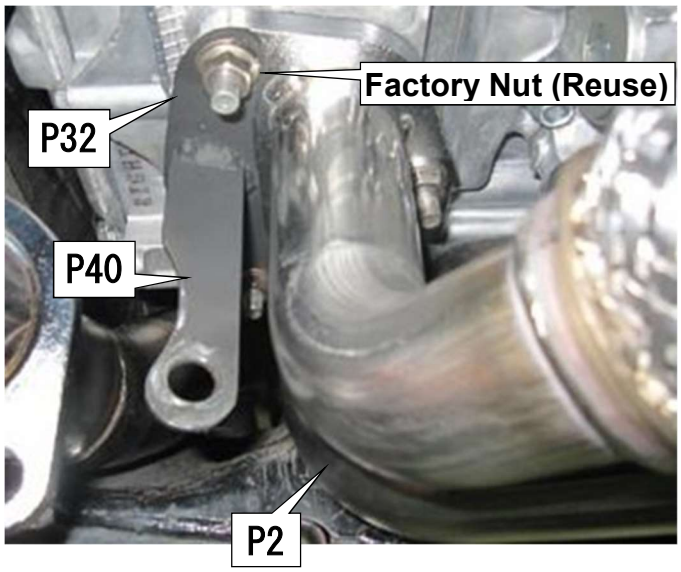



(4) Temporarily install the Exhaust Manifold using the provided Gasket and factory nut.
For the right side flange, install the Extension Bracket together as shown in the photo on the right.

・P2: Exhaust Manifold x 1
・P32: Gasket x 2
・P40: Extension Bracket x 1

NOTE

For easier positioning of the extension bracket, temporarily install the extension bracket after installing the extension.

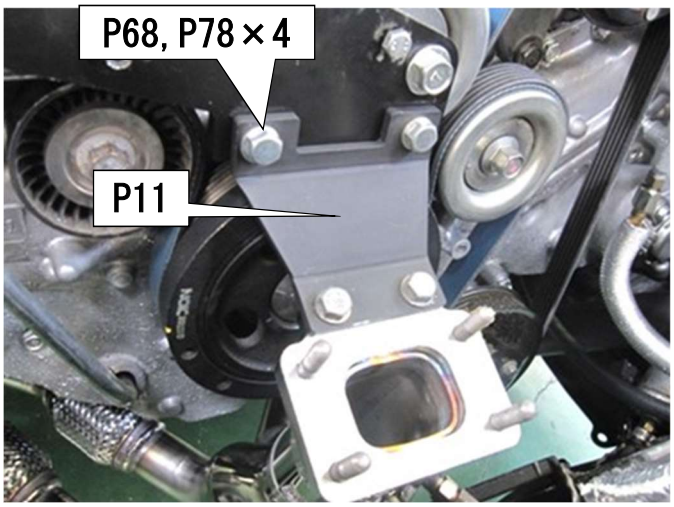



(5) Temporarily install the Turbocharger Bracket No.2 to the flange on the turbocharger side.

・P11: Turbocharger Bracket No.2 x 1
・P68: Hexagon Bolt M8 L15 x 4
・P78: Flat Washer M8 x 4

NOTE

Do not use the flange bolt here since the bracket seat surface is narrow.

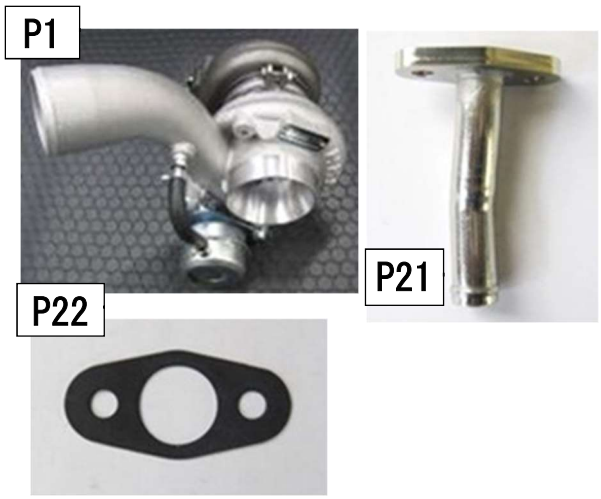



(6) Determine the installation position of the Exhaust Manifold; then tighten the Turbocharger Bracket No.2 completely.

# 6. ASSEMBLY OF TURBOCHARGER

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

PARTS LIST




| No. | Description | Qt |
|---|---|---|
| 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 |

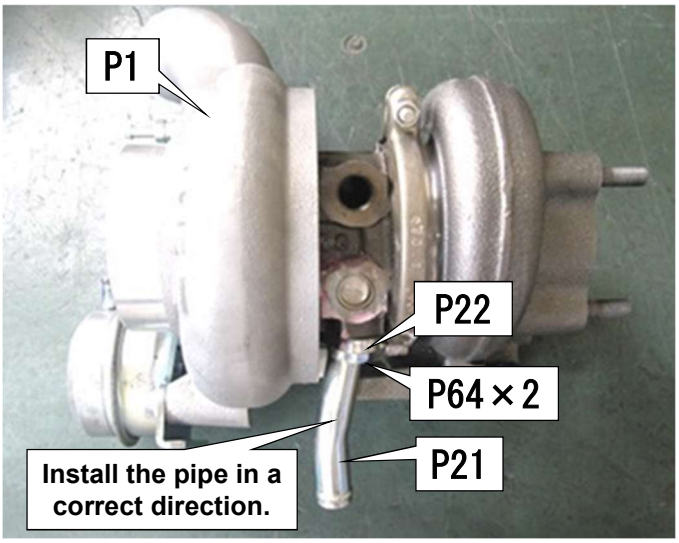
(1) Install the Oil Outlet Pipe to the Turbocharger using the provided Gasket as shown in the photo on the right.

- P1: Turbocharger Assembly x 1
- P21: Oil Outlet Pipe x 1
- P22: Gasket x 1
- P64: Flange Bolt M6 L15 x 2

NOTE

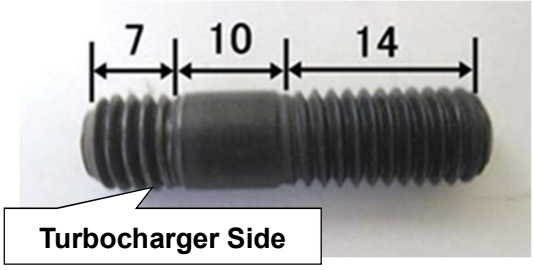
Make sure to install the oil outlet pipe in a correct direction.

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




(2) Install the Stud Bold M8 to the Turbocharger Assembly.

- 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 debris.**

PARTS LIST


| No. | Description | Qt |
|---|---|---|
| P24 | Hose ID16 L=250mm | 1 |
| P25 | Thermal Tube ID30 L=500mm | 1 |
| P33 | Gasket | 1 |
| P77 | Lock Nut M8 | 4 |
| P82 | Hose Clamp Mark 230 | 2 |

(1) Cut the provided Hose ID16 to 195mm in length.

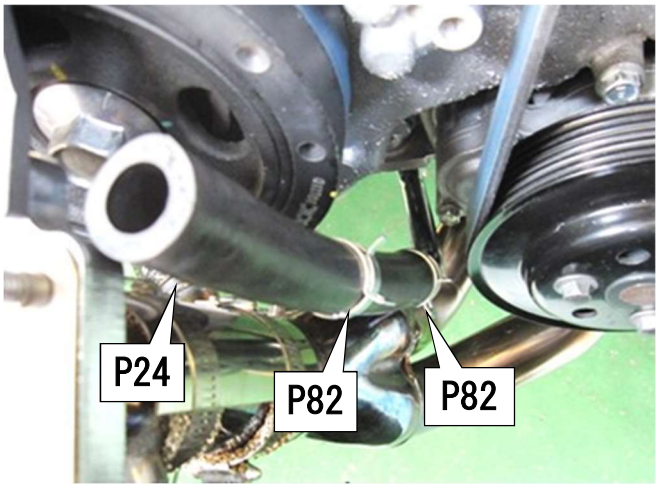
・P24: Hose ID16 L=250mm x 1

(2) Install the cut Hose to the Oil Return Pipe installed in 2-(16). Secure the hose with the provided Hose Clamp Mark 230.

・P82: Hose Clamp Mark 230 x 2

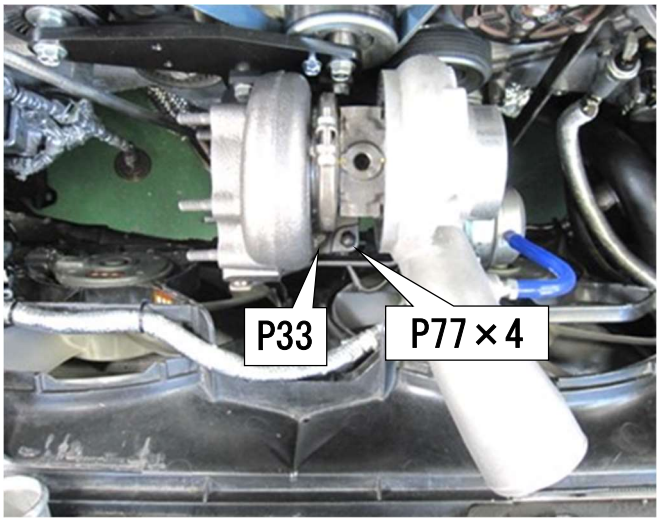
NOTE

Do not completely tighten the hose clamp on the turbocharger side.




(3) Install the Turbocharger Assembly to the Exhaust Manifold using the provided Gasket and Lock Nut M8 as shown in the photo on the right.

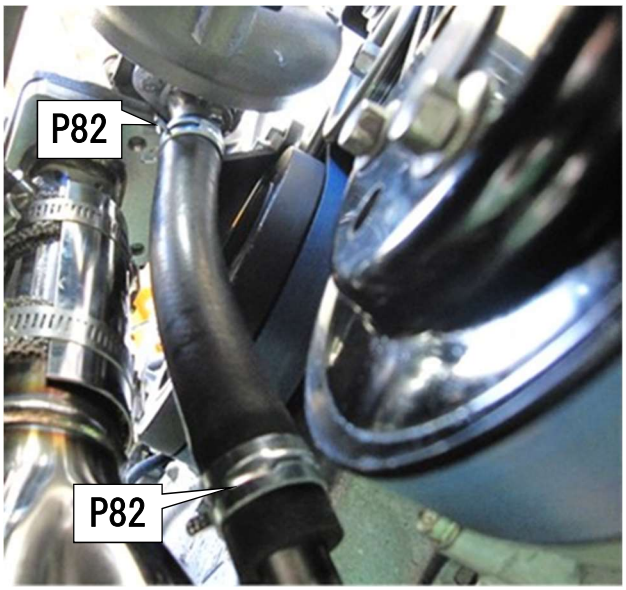
・P33: Gasket x 1
・P77: Lock Nut M8 x 4



(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.

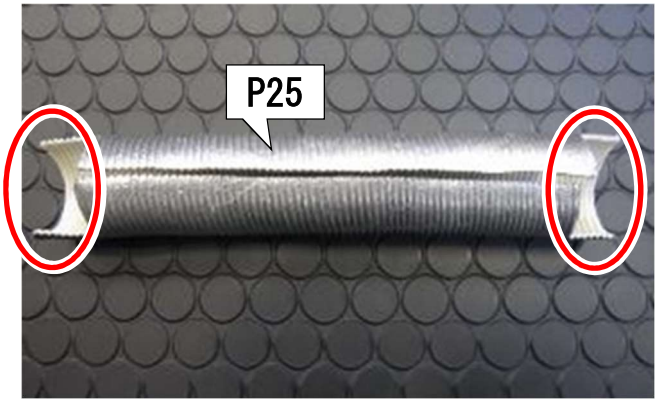
NOTE

Make sure the hose does not come in contact with the exhaust manifold, pulley, and belt.




(5) Cut the provided Thermal Tube ID30 to 195mm. Make a relief cut for the hose clamp's exposed tabs.

・P25: Thermal Tube ID30 L=500mm x 1




(6) Cover the hose with the Thermal Tube modified in (5). Secure the covered hose with a wire.

NOTE

Make sure the hose does not come in contact with the exhaust manifold, pulley, and belt.

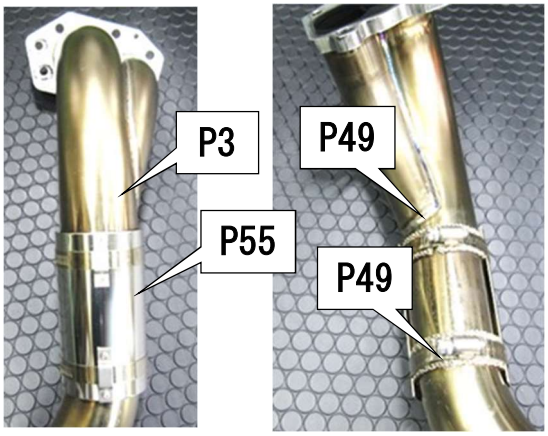
# 8. INSTALLATION OF EXTENSION PIPE

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 | 1 |
| P96 | Insulation Sticker 300mm×300mm | 1 |

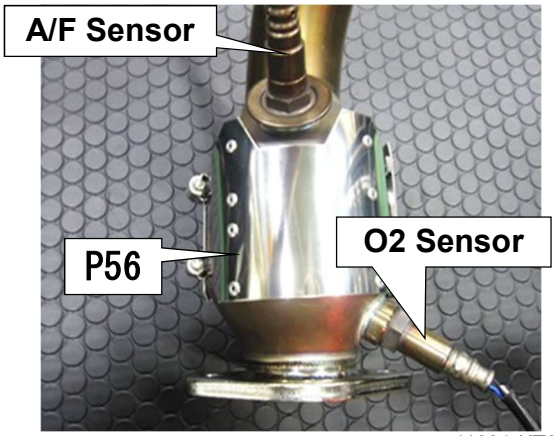
(1) Install the provided Insulator ID60 to the Extension as shown in the photo one the right, and secure it with the provided Hose Band #40.

- P3: Extension Pipe x 1
- P55: Insulator ID60 L=120mm x 1
- P49: Hose Band #40 x 2




(2) Attach the A/F 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 x 1
- P57: Heat Plate Assy Catalyzer 2 x 1
- P46: Hose Band #64 x 2

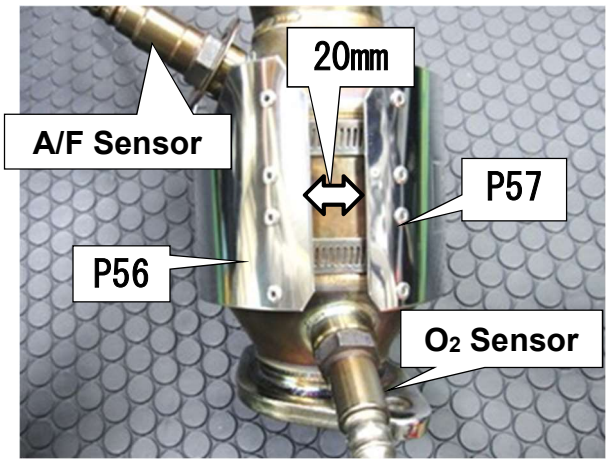


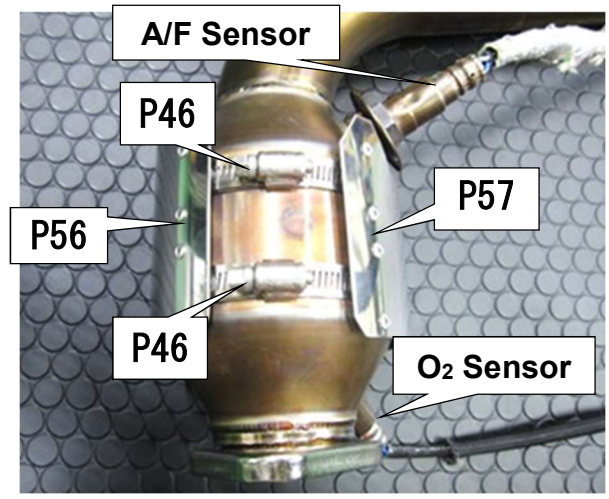



11001-KT007

NOTE

- The insulator No. 2 and the A/F 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) Cut the provided Insulation Tape to an appropriate size. Wrap the air-fuel ratio sensor wire with the Tape and secure it with a wire.
Wrap the $O_2$ sensor wire with the Tape and secure it with a wire.

- P95: Insulation Tape x 1

(4) Cut the provided Insulation Tape to an appropriate size. Wrap the sensor wire with the sheet and secure it with a wire.

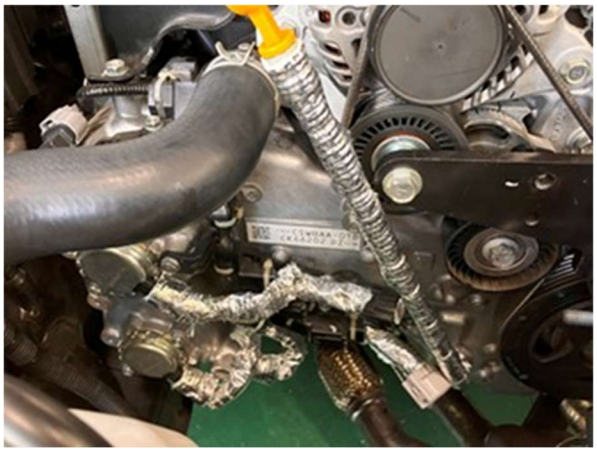
- P95: Insulation Tape x 1

NOTE

Affix the insulation Tape to other parts around the extension. Insulator other wires or resin parts if necessary.

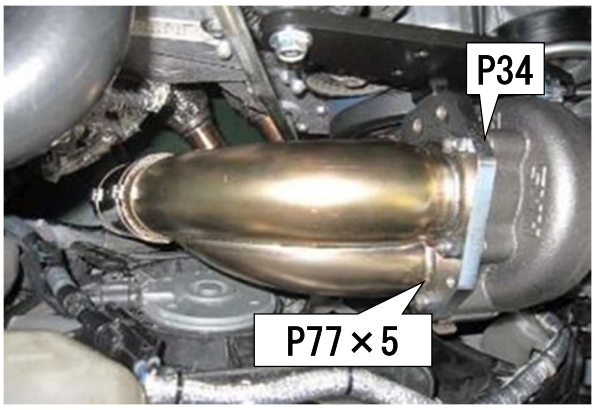
(5) Cut the provided Insulation Tape to an appropriate size.
Wrap the oil level gage with the sheet and secure it with a wire

・P95: Insulation Tape x 1



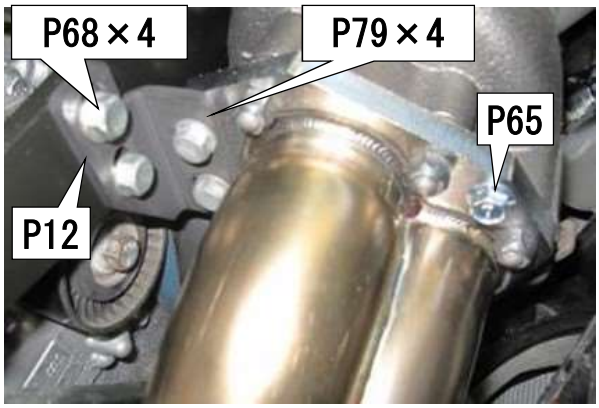
(6) Fit the extension pipe assembled in (1) to (3) with the gasket to the turbine and temporarily attach it with the locknut.

・P34: Gasket x 1
・P77: Lock Nut M8 x 5




(7) Install the Turbocharger Bracket No.3 using the provided Hexagon Nut M8 L15 and Flat Washer M8 as shown in the photo on the right.
Temporarily install the Flange Bolt M6 L10.

・P12: Turbocharger Bracket No.3 x 1
・P65: Flange Bolt M6 L10 x 1
・P68: Hexagon Bolt M8 L15 x 4
・P79: Flat Washer M8 x 4




NOTE
Do not use the flange bolt here since the bracket seat surface is narrow.
Flange Bolt M6 L10 is to install the insulator.

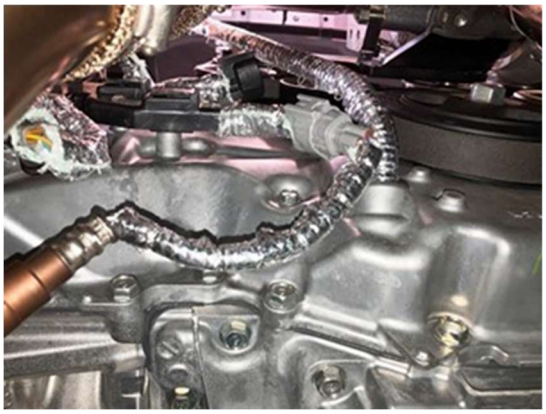
(8) Temporarily attach the front pipe side of the extension pipe to the joint pipe via the gasket.
At this time, co-tighten the extension bracket attached in 5-(4).

・P35: Gasket x 1
・P66: Hexagon Bolt M10 L40 x 2
・P75: Hexagon Nut M10 x 2
・P78: Flat Washer M10 x 4

(9) Tighten the M8 and M10 bolts and nuts that have been temporarily tightened in steps (6) to (7).

NOTE
To easily determine the installation positions, temporarily install the bolts; then gradually tighten them.

(10) Connect the mounting couplers to the A/F sensor and the $O_2$ sensor.



(11) Cut the provided Insulation Tape to an appropriate size. Wrap the couplers with the Insulation Sticker and secure it with a wire

- P95: Insulation Tape x 1
- P96: Insulation Sticker x 1

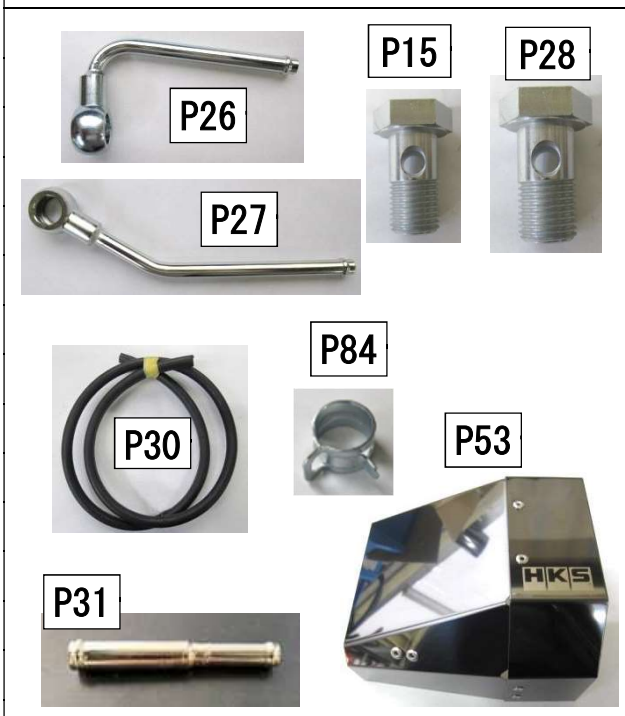
(12) Fix the A/F sensor coupler to the Oil gauge.Fix the $O_2$ sensor coupler to the harness of cam angle sensor.
so that do not contact with extension pipe.

NOTE

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

# 9. INSTALLATION OF TURBOCHARGER ACCESSORY PARTS

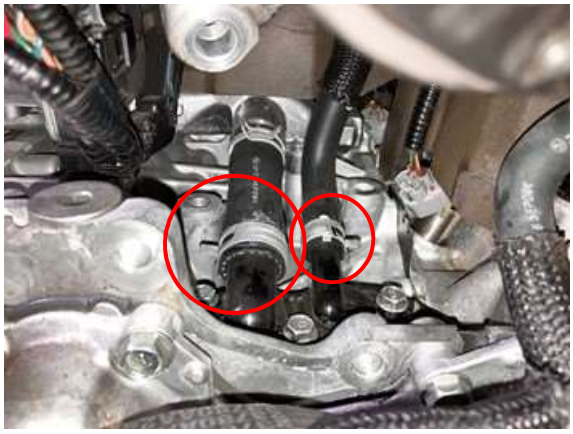
PARTS LIST




| 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 |
| P90 | Corrugated Tube ID15 | 1 |
| P91 | Tie Wrap L | 2 |
| P92 | Tie Wrap M | 5 |
| P94 | Sponge Sheet | 1 |
| P96 | Insulation Sticker | 1 |

(1) In section 2-(20), the A/C compressor is floated.
Put it in that state again.

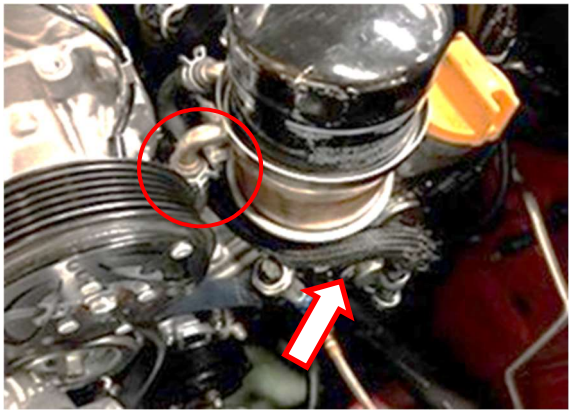
(2) Turn the genuine hose clip knob so that it is in the horizontal direction.



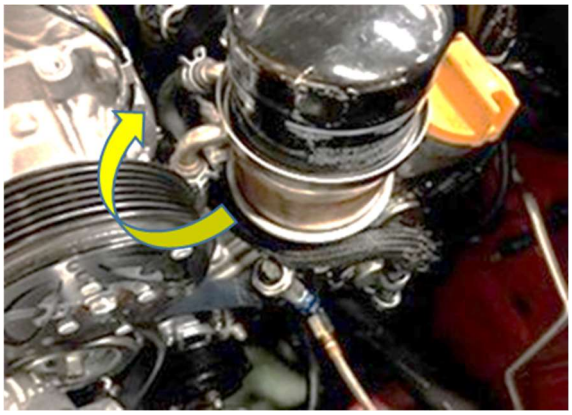
(3) To prevent water from coming out of the removed hose, drain the cooling water or attach a water stop clamp to the hose.

(4) Remove the lower end of the hose connected to the factory oil cooler.

NOTE
Front side hose only



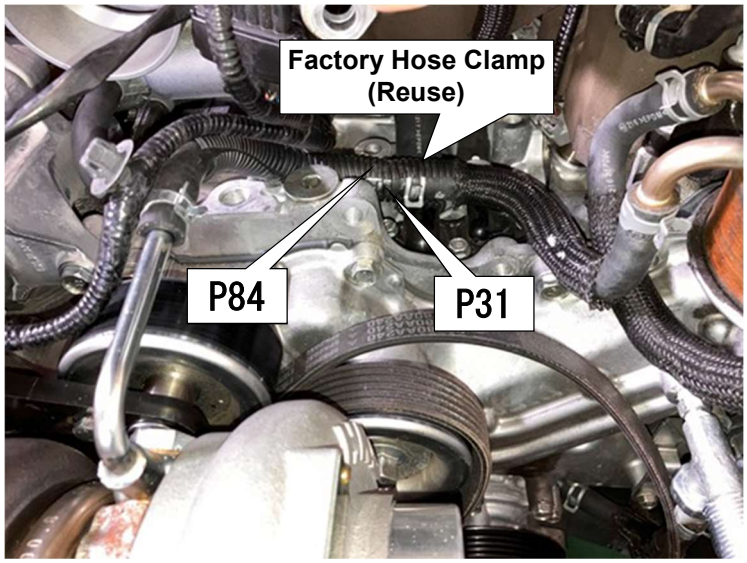
(5) Loosen the clip and rotate the hose 180 degrees so that the end of the hose you removed in (4) passes under the air conditioner compressor.



(6) Create a layout like the image on the right. Connect the factory hose to the OD8 hose using a joint pipe(OD8-OD10).

NOTE
The direction of the clip knob is horizontal.

・P30:Hose ID8 L=550mm x1
・P31:Joint Pipe OD8-OD10 x1
・P84:Hose Clamp Mark 130 x2



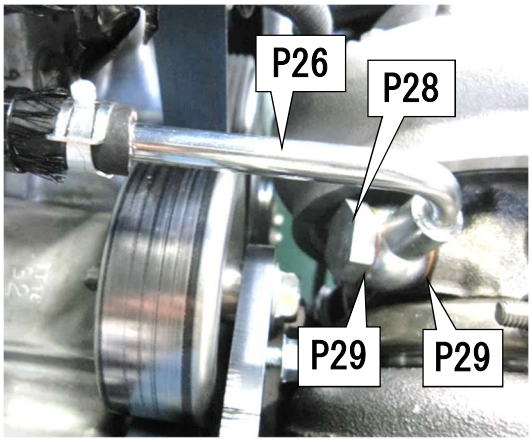

(7) Cut the ID8 hose to the appropriate length.

NOTE
About 180mm

(8) Install the Water Line Banjo No.1 to the turbocharger using the provided Banjo Bolt M14 and Copper Washer 14×20.

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

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




(9) Connect the hose in (7) and the Water Line Banjo No.1.

(10) Cut the Corrugated Tube (ID15) to 170mm

Wrap the Corrugated Tube (ID15) around the end of the factory hose protector.

Make sure that the joints and hoses do not directly interfere with the air conditioner compressor.

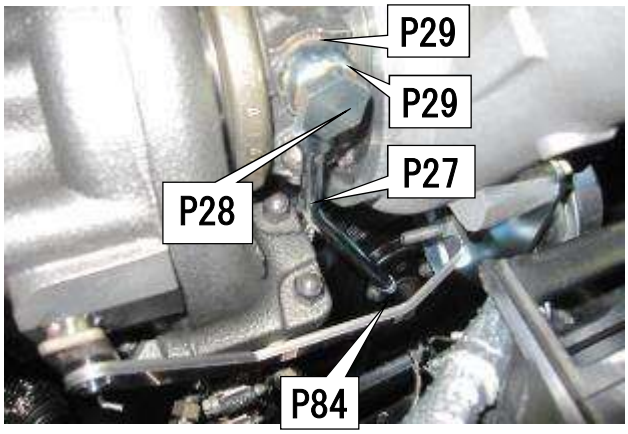
・P90: Corrugated Tube ID15

(11) Install the air conditioner compressor, making sure that there is no interference with the hose.

(12) Install the Water Line Banjo No.2 to the turbocharger using the provided Banjo Bolt M14 and Copper Washer 14×20.

・P27: Water Line Banjo No.2 x 1
・P28: Banjo Bolt M14 x 1
・P29: Copper Washer 14×20 x 2

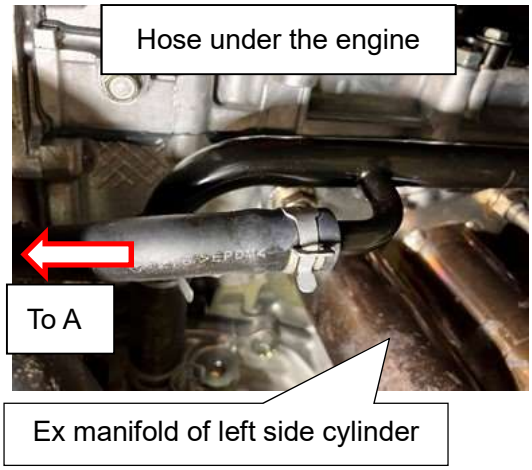
●Tightening Torque：N・m (kgf・m)
M14：T= 33-41 (3.4-4.2)




(13) Cut the provided Hose ID8 to 340mm in length. And connect the Water Line Banjo No.2

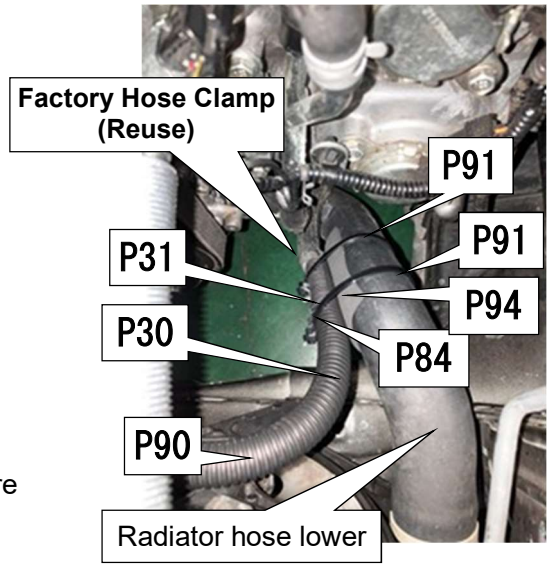
・P84:Hose Clamp Mark 130 x1

(14) Remove the arrow side of the hose on the bottom of the engine that is connected to the genuine pipe of the hose removed in 9-(4).


(15) Connect the factory Hose (14) and the Hose (13) using the Joint pipe (OD8-OD10).
Secure the hose with the provided Hose Clamp Mark 130 as shown in the photo on the right.

・P30:Hose φ8 L=550mm x1
・P31:Joint Pipe OD8-OD10 x1
・P84:Hose Clamp Mark 130 x1




(16) Cut the tube to 300mm and protect the connected hose.

・P90:TUBE ID15

(17) Affix the sponge sheet to the radiator lower hose and Secure the hose with the provided Tie Wrap L.

・P91: Tie Wrap L x 2
・P94:Sponge Sheet x1

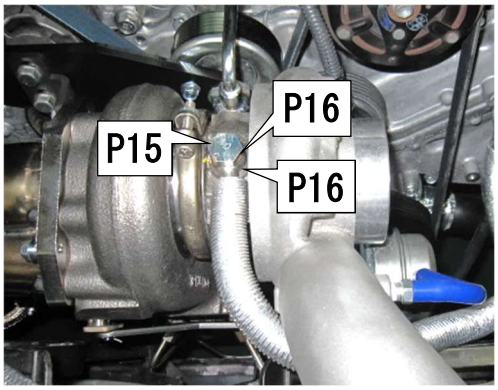
(18) Attach the Insulation Sticker to the part of the hose near the turbocharger.

・P96:Insulation Sticker

(19) Install the Oil Inlet Banjo to the turbocharger using the provided Banjo Bolt M12 and Copper Washer 12×17.

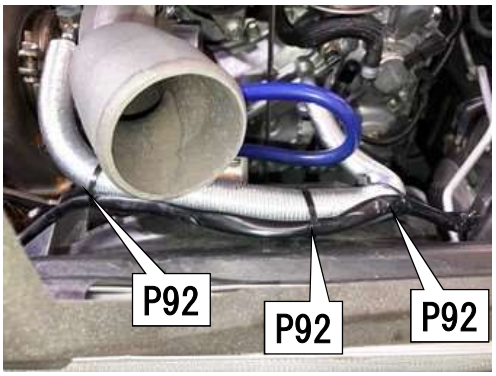
・P15: Banjo Bolt M12 x 1
・P16: Copper Washer 12×17 x 2

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




(20) Tighten the Oil Inlet Banjo completely.

NOTE
Route the oil inlet hose as shown in the photo on the right.

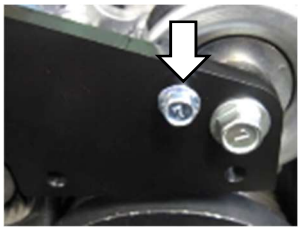



(21) Secure the left fan motor harness to the oil hose with a tie wrap to prevent harness from getting caught in the fan.

・P92:Tie Wrap M x3

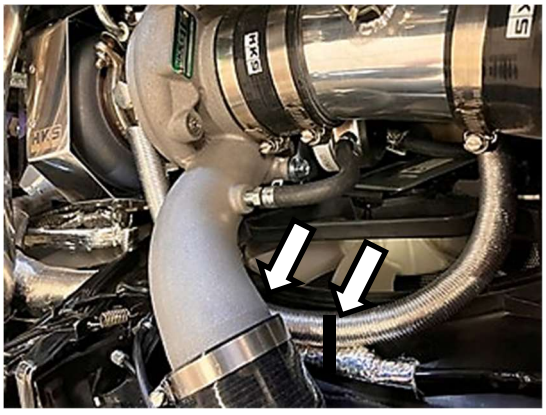
(22) Insert the Insulator into the Flange Bolt M6 L10 temporarily installed in 4.(5) and 8.(5) and tighten the bolts.

・P53: Insulator x 1




(23) Secure the fan motor harness and oil line with tie wraps.

・P92 Tie Wrap M x 2



# 10. INSTALLATION OF AIR CLEANER and SUCTION PIPE

PARTS LIST

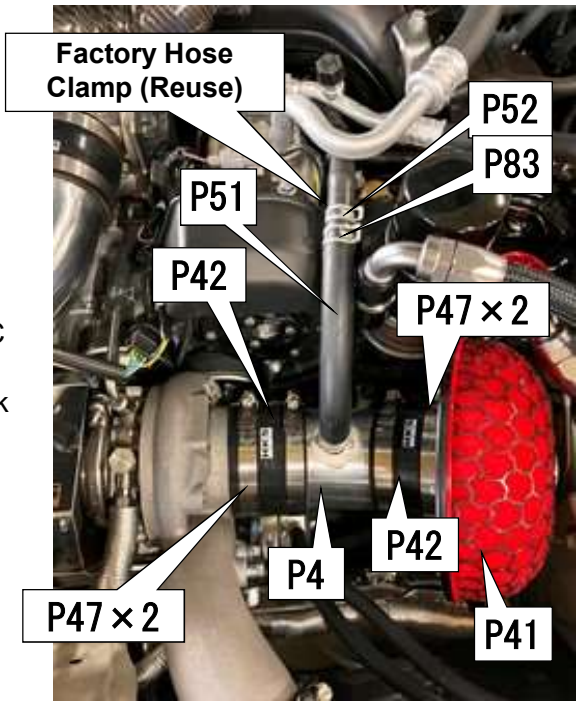

| No. | Description | Qt |
|---|---|---|
| P4 | Suction Pipe | 1 |
| P41 | Air Cleaner | 1 |
| P42 | Silicone Hose ID80 | 2 |
| P47 | Hose Band #52 | 4 |
| P51 | Hose ID12 L=200mm | 1 |
| P52 | Joint Pipe OD12 | 1 |
| P83 | Hose Clamp Mark 180 | 2 |
| P89 | Corrugated Tube ID22 | 1 |
| | | |

(1) Connect the Air Cleaner to the Suction Pipe using the provided Silicone Hose ID80. Secure the hose with the provide Hose Band #52.

- P4: Suction Pipe x 1
- P41: Air Cleaner x 1
- P42: Silicone Hose ID80 x 2
- P47: Hose Band #52 x 4

(2) Relocate the factory blow-by hose to the left side of the A/C compressor. Connect the Hose ID12(200mm) to the Joint Pipe. Secure the pipe with the provided Hose Clamp Mark 180 and factory hose clamp as shown in the photo on the right.

- P51: Hose ID12 L=200mm x 1
- P52:Joint Pipe OD12 x1
- P83:Hose Clamp Mark 180 x1

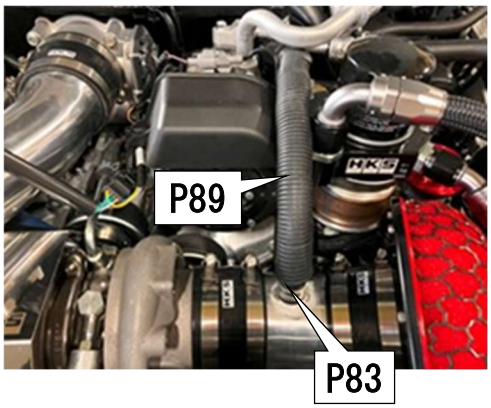



(3) Connect the Hose OD12 from the Joint Pipe to the Suction Pipe. Secure the hose using the provided Hose Clamp Mark 180. Wrap the hose with ID22 Corrugated Tube.

- P83: Hose Clamp Mark 180 x 1
- P89: Corrugated Tube ID22

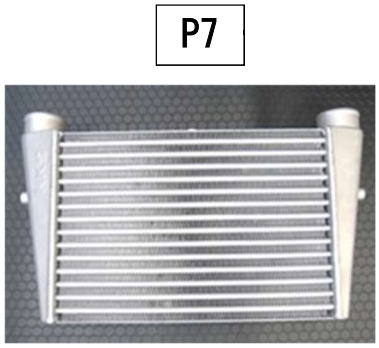
NOTE

Make sure the air cleaner does not come in contact with any other parts of the vehicle. Adjust the positon of the air cleaner bracket if the air cleaner comes in contact with any other parts of the vehicle.



# 11. INSTALLATION OF INTERCOOLER

PARTS LIST





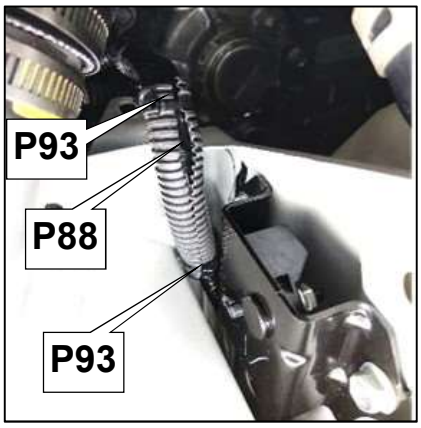



| No. | Description | Qt |
|---|---|---|
| P7 | Intercooler | 1 |
| P36 | Intercooler Bracket No.1 | 1 |
| P37 | Intercooler Bracket No.2 | 1 |
| P38 | Intercooler Bracket No.3 | 1 |
| P39 | Spacer OD16 | 2 |
| P61 | Flange Bolt M8 L15 | 4 |
| P62 | Flange Bolt M8 L10 | 1 |
| P63 | Flange Bolt M6 L35 | 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) Install the Corrugated Tube around the Airbag Sensor wiring on both left and right sides.

・P88 Corrugated Tube ID10 ×2

・P93 Tie Wrap (S） ×4

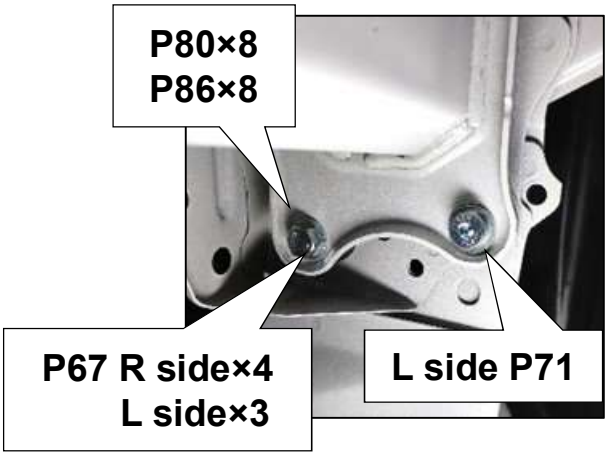



(2) Install the ⑫Reinforcement.
Place the Spacer（OD25×ID10×L15） between the Reinforcement and the vehicle.

・P67 Hexagon Bolt M8 L35 x7
・P71 Low Head Cap Bolt M8 L35 x1
・P80 Flat Washer M8 x8
・P86 Spacer（OD25×ID10×L15） x8

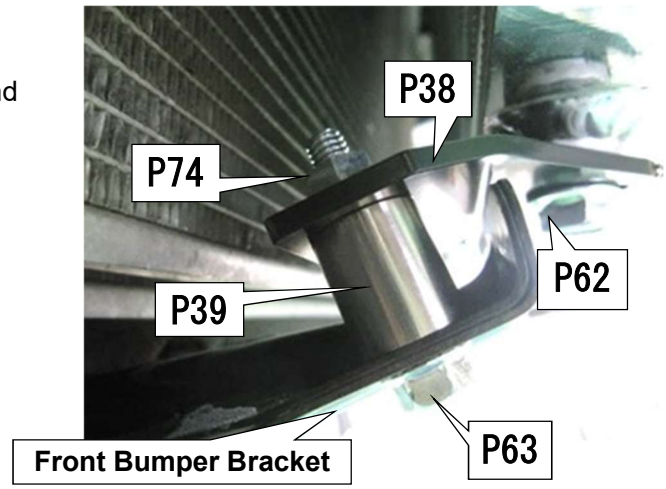
Low Head Cap Bolt M8 L35 are used for the lower left on the left side of the vehicle to avoid interference with washer tank.

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



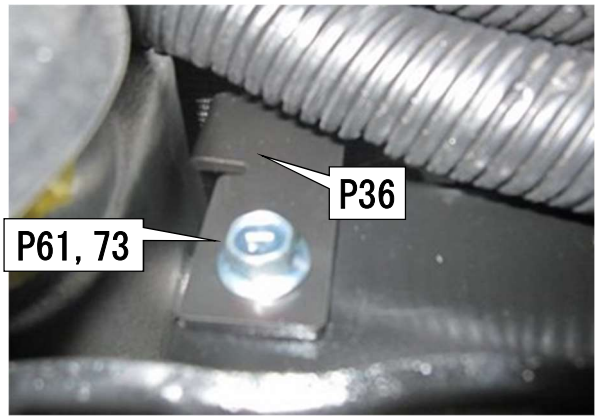
(3) Insert the provided Spacer OD16 between the front bumper bracket and Intercooler Bracket No.3.
Install the brackets using the Flange Bolt M6 L35 and Flange Nut M6.

- P38: Intercooler Bracket No.3 x 1
- P39: Spacer OD16 x 2
- P63: Flange Bolt M6 L35 x 2
- P74: Flange Nut M6 x 2




(4) Temporarily install the Intercooler Bracket No.1 and No.2 using the Flange Bolt M8 L15 and Flange Nut M8.

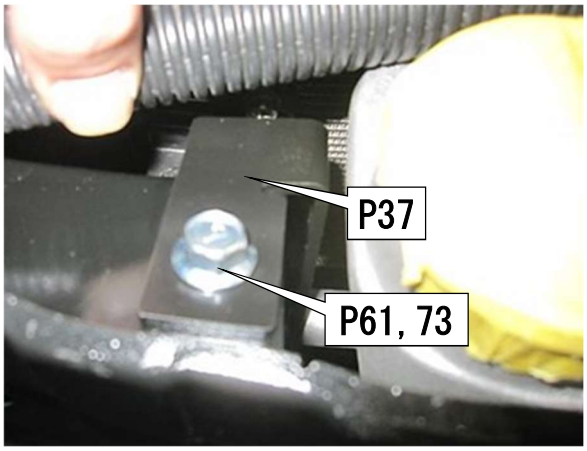
- P36: Intercooler Bracket No.1 x 1
- P37: Intercooler Bracket No.2 x 1
- P61: Flange Bolt M8 L15 x 2
- P73: Flange Nut M8 x 2

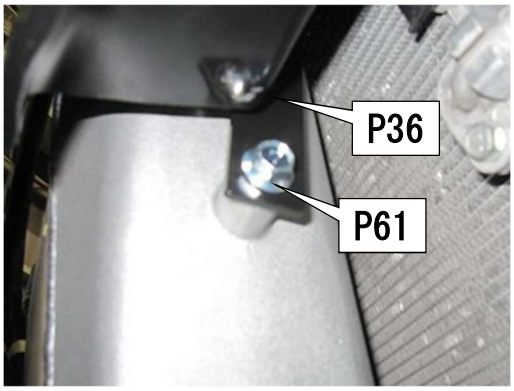


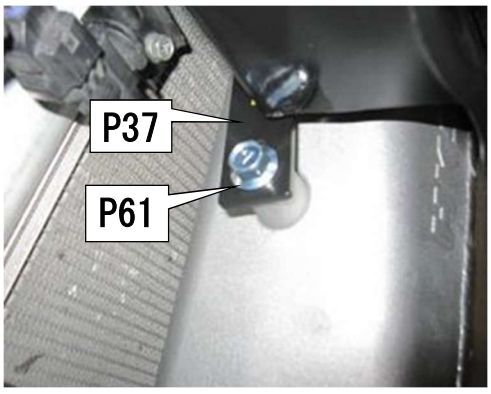

(5) Temporarily install the Intercooler.
To install the intercooler, use the Flange Bolt M8 L15 for the side of the Intercooler, and use the Flange Bolt M8 L10 for the lower side.

- P62: Flange Bolt M8 L10 x 1
- P61: Flange Bolt M8 L15 x 2

NOTE
Make sure to use the Flange Bolt M8 L10 to install the lower side of the Intercooler.




(6) Tighten all bolts completely after making sure the Intercooler does not come in contact with any other parts of the vehicle.
NOTE
As possible install the intercooler horizontally by adjusting the bolt position within the oval-shaped bolt hole.

(7) Temporarily attach the Front Bumper Cover LWR.

(8) Mark the shape of the bottom of the intercooler.

(9) Remove the marked parts of the Front Bumper Cover LWR.

(10) Cut along the markings.

(11) Install the Front Bumper Cover LWR and check for interference with the intercooler.

NOTE

If there is interference, it will make installation difficult when installing the front bumper.

# 12. INSTALLATION OF PIPING

PARTS LIST

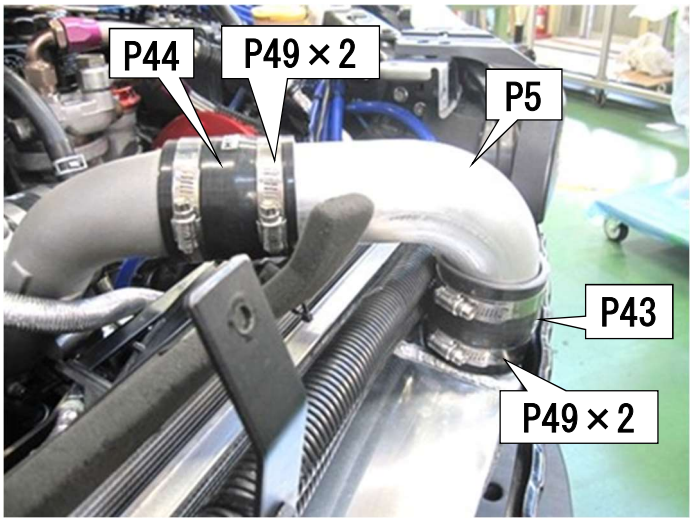

| No. | Description | Qt |
|---|---|---|
| P5 | Intercooler Pipe | 2 |
| P6 | Chamber Pipe | 1 |
| P43 | Silicone Hose ID60 L70 | 3 |
| P44 | Silicone Hose ID60 L85 | 1 |
| P45 | Silicone Hose ID74-ID79 | 1 |
| P48 | Hose Band #48 | 2 |
| P49 | Hose Band #40 | 8 |
| P72 | Button Bolt M4 L10 | 2 |
| P96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

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

- P5: Intercooler Pipe x 1
- P43: Silicone Hose ID60 L70 x1
- P44: Silicone Hose ID60 L85 x1
- P49: Hose Band #40 x 4

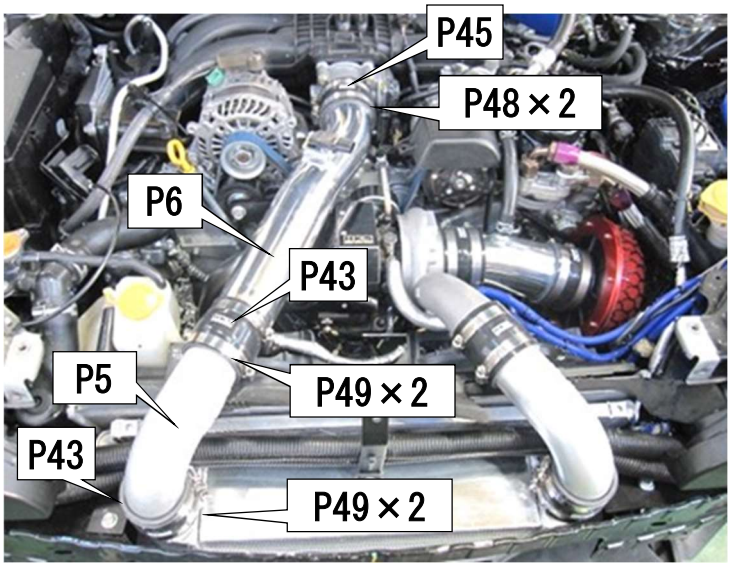
NOTE

Cut off the portion of the factory radiator sponge where comes in contact with the pipe.




(2) Install the Intercooler Pipe and Chamber Pipe 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 x 1
- P6: Chamber Pipe x 1
- P43: Silicone Hose ID60 L70 x 2
- P45: Silicone Hose ID74-ID79 x 1
- P48: Hose Band #48 x 2
- P49: Hose Band #40 x 4

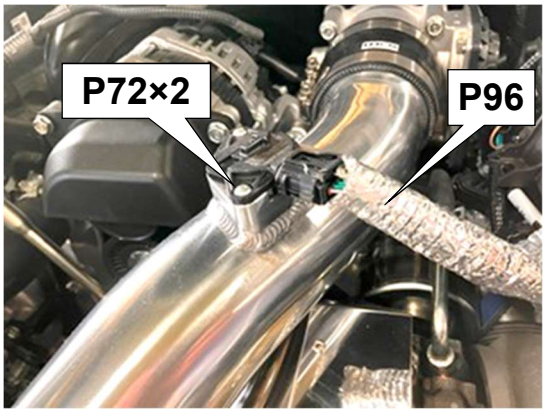


(3) Cut the Insulator Sticker to an appropriate size. Wrap the air-flow sensor wire with the Insulator Sticker and secure the wire with a wire as shown in the photo on the right.

・P96: Insulation Sheet 300mm×300mm x 1

(4) Install the air-flow sensor to the Chamber Pipe using the provided 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.

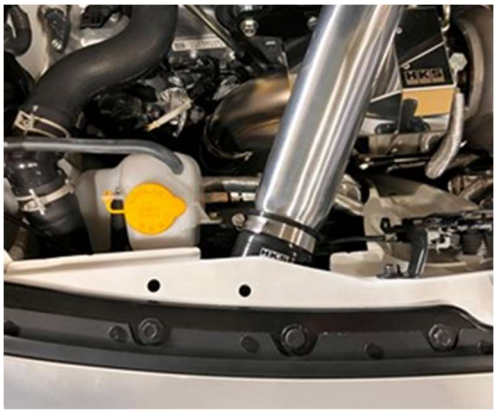
PARTS LIST

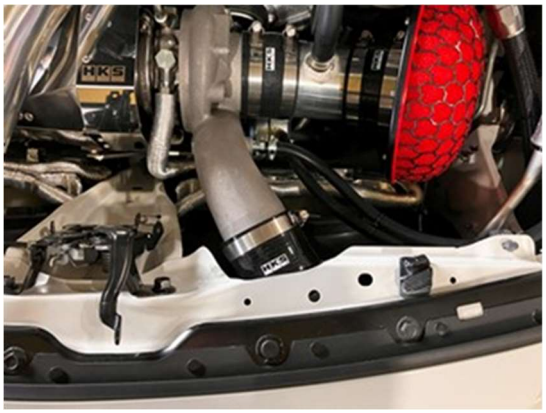
P94

| No. | Description | Qt |
|---|---|---|
| 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) Affix the Sponge Sheet to the back of the radiator support around the pipe.

・P94: Sponge Sheet 50mm×50mm x 2



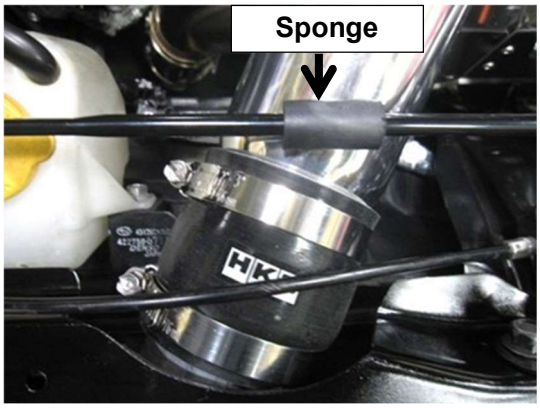


(2) Reinstall the radiator support.

NOTE

Adjust each pipe's position so it the radiator support does not come in contact with the pipe.

(3) Relocate the sponge on the hood support rod to the position shown in the photo on the right.



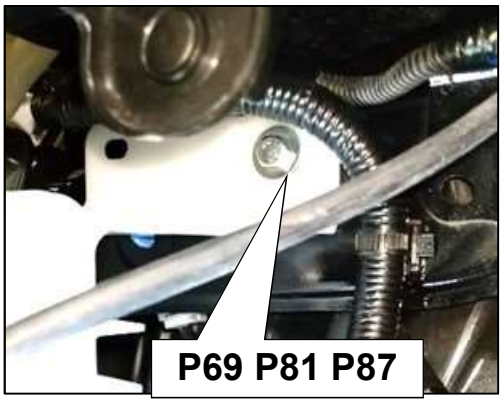

(4) Degrease the threads of the Hexagon Bolt and apply the ThreeBond TB1324 thinly then mount the ⑪Washer Tank modified at 2. (23)

・P69 Hexagon Bolt M6 L25 ×1

・P70 Hexagon Bolt M6 L15 ×1

・P81 Flat Washer M6 Large Diameter ×2

・P87 Spacer（OD20×ID6×L10） ×1

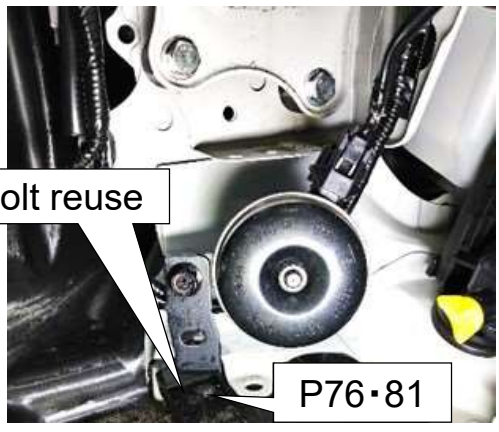




(5) Install the ⑫Horn removed at 1. (13) on the vehicle using the genuine unused hole located under the Front Bumper Reinforcement mounting surface on the right side of the vehicle.

・P76 Hexagon Nut M6 ×1

・P81 Flat Washer M6 Large Diameter ×1

(6) Restore the items removed in sections 1 and 2.

(7) Reconnect the negative cable to the battery.

(8) Refill the engine oil and coolant.


## 14. CONFIRMATION AFTER INSTALLATION

○ Use the insulation Sticker included in this kit to affix to high temperature areas around the turbocharger, exhaust parts, etc.

・P96: Insulation Sticker

○ Use the Tie Wraps and Sponge Sheet included in this kit to prevent unnecessary contact between the parts.

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

○ After the installation process is complete, check all items listed in the “Confirmation after Installation” section of the Instruction Manual.

## 15. TECHNICAL INFORMATION

● The boost pressure actuator is set to 65kPa(0.66kgf/㎠).
Actual boost pressure may be different due to the size of exhaust, front pipe and etc. Engine power output and torque may be different due to the vehicle situation.

**Caution**

- When without upgrading the engine parts, please use factory front pipe with catalytic converter. Using a front pipe without a catalytic converter will increase boost pressure and may cause power output to exceed the allowable range of the stock engine. This may cause fuel system shortage and engine damage.

● To increase boost pressure more than initial setting, a boost controller such as HKS EVC is required. Please set up according to the specifications of vehicle engine and drive train parts.
**※Extreme boost may cause damage to the engine and drive train.**
**※When increasing boost pressure, please do not adjust with actuator.**

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