

ENGINE 2 SECTION

This service manual has been prepared to provide SUBARU service personnel with the necessary information and data for the correct maintenance and repair of SUBARU vehicles.

This manual includes the procedures for maintenance, disassembling, reassembling, inspection and adjustment of components and diagnostics for guidance of experienced mechanics.

Please peruse and utilize this manual fully to ensure complete repair work for satisfying our customers by keeping their vehicle in optimum condition. When replacement of parts during repair work is needed, be sure to use SUBARU genuine parts.

All information, illustration and specifications contained in this manual are based on the latest product information available at the time of publication approval.

FUEL INJECTION (FUEL SYSTEMS) FU(SOHCw/oOBD)

EMISSION CONTROL (AUX. EMISSION CONTROL DEVICES) EC(SOHCw/oOBD)

EXHAUST EX(SOHCw/oOBD)

IGNITION IG(SOHCw/oOBD)

ENGINE(DIAGNOSTICS) EN(SOHCw/oOBD)

FUEL INJECTION (FUEL SYSTEMS) FU(DOHC TURBO)

EMISSION CONTROL (AUX. EMISSION CONTROL DEVICES) EC(DOHC TURBO)

INTAKE (INDUCTION) IN(DOHC TURBO)

MECHANICAL ME(DOHC TURBO)

EXHAUST EX(DOHC TURBO)

IGNITION IG(DOHC TURBO)

ENGINE (DIAGNOSTICS) EN(DOHC TURBO)

INTAKE (INDUCTION)

IN(DOHC TURBO)

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3. Air Intake Duct.....	8
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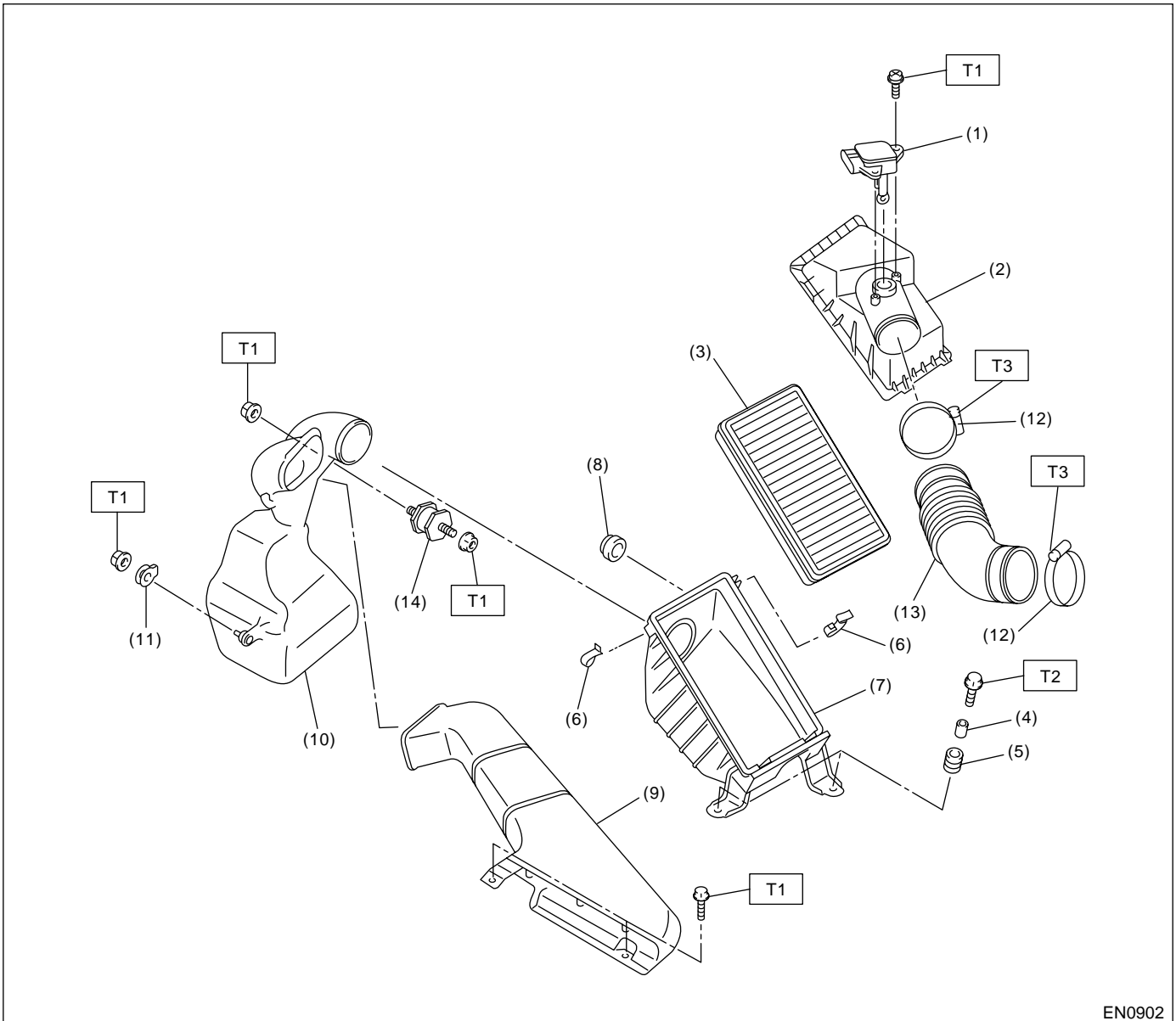
GENERAL DESCRIPTION

INTAKE (INDUCTION)

1. General Description

A: COMPONENT

1. AIR CLEANER



EN0902

- | | |
|-----------------------------|-----------------------------|
| (1) Mass air flow sensor | (8) Cushion rubber |
| (2) Air cleaner upper cover | (9) Air intake duct |
| (3) Air cleaner element | (10) Resonator chamber ASSY |
| (4) Spacer | (11) Cushion rubber |
| (5) Bush | (12) Clamp |
| (6) Clip | (13) Air intake boot |
| (7) Air cleaner lower case | (14) Cushion |

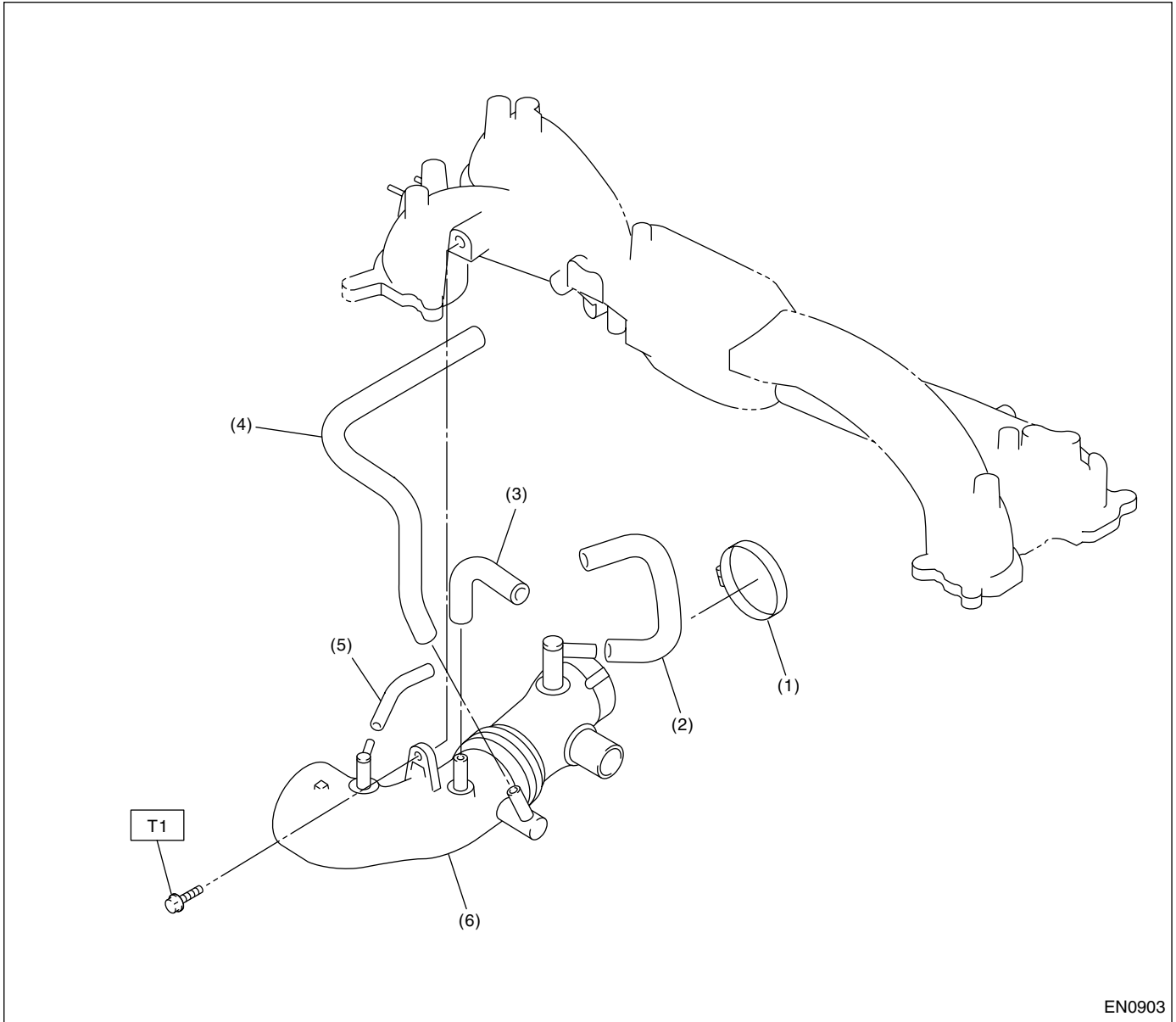
Tightening torque: N-m (kgf-m, ft-lb)

T1: 7.5 (0.76, 5.5)

T2: 33 (3.4, 25)

T3: 2.5 (0.25, 1.8)

2. INTAKE DUCT



- | | |
|------------------------|------------------------|
| (1) Clamp | (4) Air by-pass hose C |
| (2) Air by-pass hose A | (5) Air by-pass hose D |
| (3) Air by-pass hose B | (6) Intake duct |

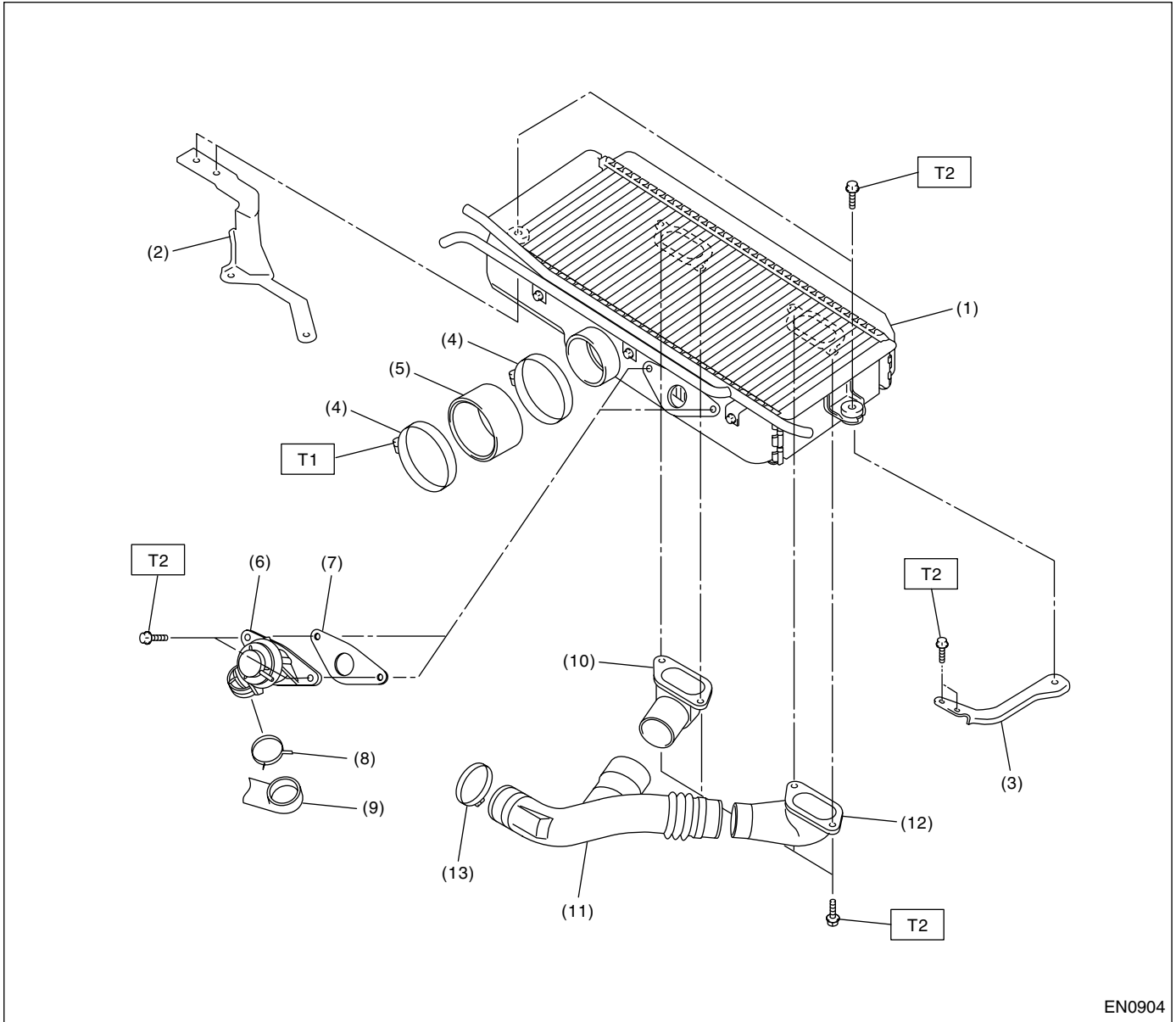
Tightening torque: N·m (kgf·m, ft·lb)

T1: 15.7 (1.6, 11.6)

GENERAL DESCRIPTION

INTAKE (INDUCTION)

3. INTER COOLER



EN0904

- | | |
|----------------------------|-------------------------|
| (1) Intercooler | (7) Gasket |
| (2) Intercooler bracket RH | (8) Clamp |
| (3) Intercooler bracket LH | (9) Air by-pass hose A |
| (4) Clamp | (10) Intercooler duct A |
| (5) Air intake duct | (11) Intercooler duct B |
| (6) Air by-pass valve | (12) Intercooler duct C |

Tightening torque: N·m (kgf·m, ft·lb)

T1: 3 (0.22, 1.6)

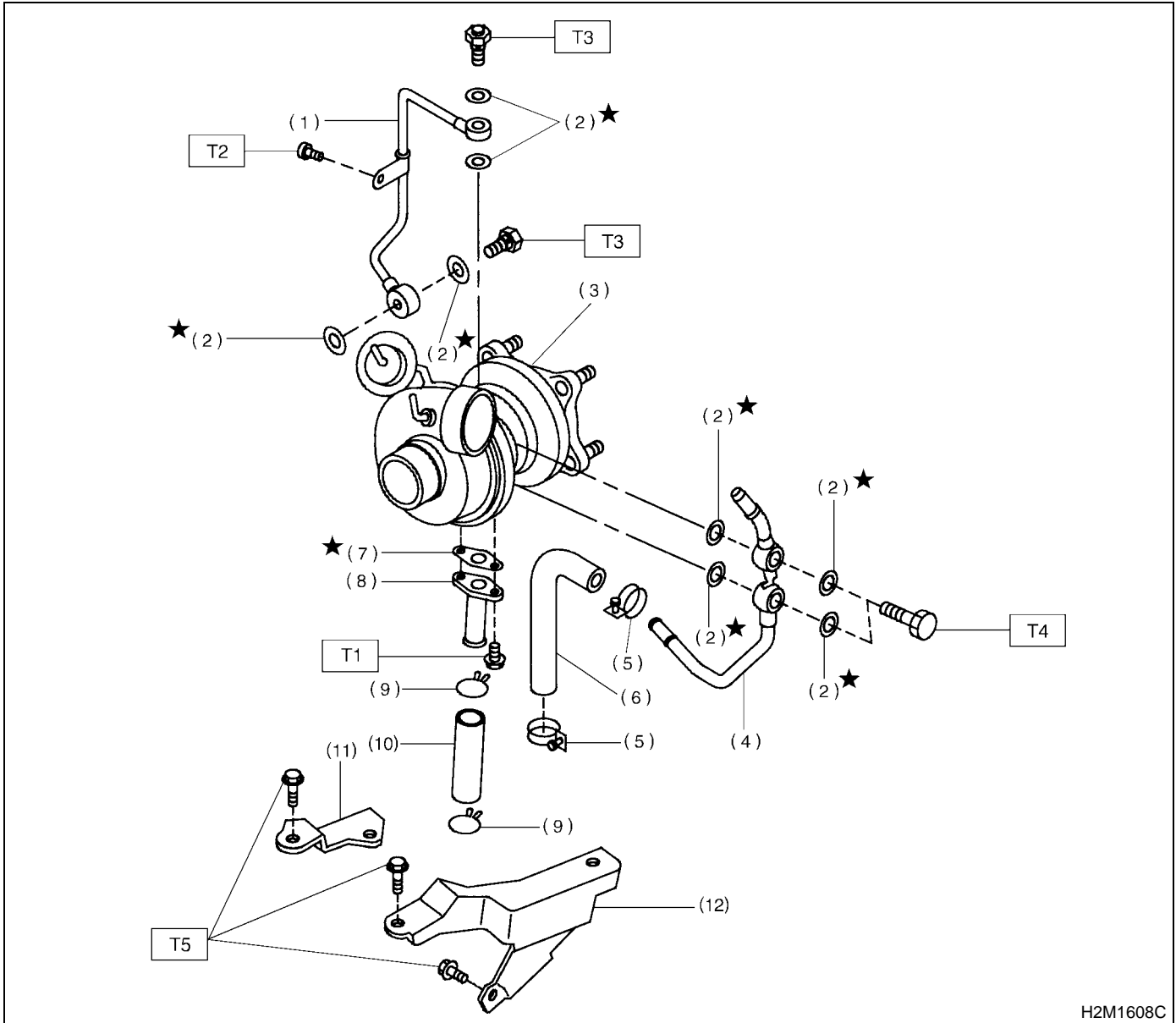
T2: 16 (0.61, 4.4)

IN(DOHC TURBO)-4

GENERAL DESCRIPTION

INTAKE (INDUCTION)

4. TURBOCHARGER



H2M1608C

- | | |
|-------------------------|------------------------------|
| (1) Oil inlet pipe | (8) Oil outlet pipe |
| (2) Metal gasket | (9) Clip |
| (3) Turbocharger | (10) Oil outlet hose |
| (4) Water pipe | (11) Turbocharger bracket RH |
| (5) Clamp | (12) Turbocharger bracket LH |
| (6) Engine coolant hose | |
| (7) Gasket | |

Tightening torque: N·m (kgf·m, ft·lb)

T1: 4.4 (0.45, 3.3)

T2: 4.9 (0.50, 3.6)

T3: 29 (3.0, 21.7)

T4: 30 (3.1, 22.4)

T5: 33 (3.4, 24.6)

GENERAL DESCRIPTION

INTAKE (INDUCTION)

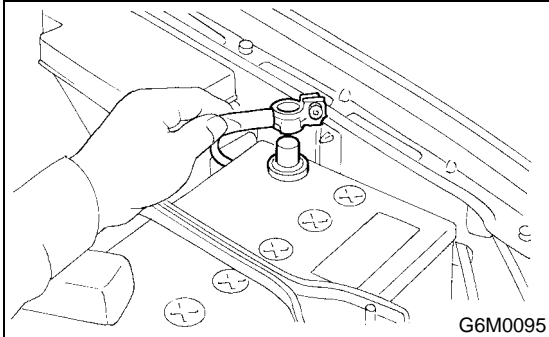
B: CAUTION

- Wear working clothing, including a cap, protective goggles, and protective shoes during operation.
- Remove contamination including dirt and corrosion before removal, installation or disassembly.
- Keep the disassembled parts in order and protect them from dust or dirt.
- Before removal, installation or disassembly, be sure to clarify the failure. Avoid unnecessary removal, installation, disassembly, and replacement.
- Be careful not to burn your hands, because each part on the vehicle is hot after running.
- Be sure to tighten fasteners including bolts and nuts to the specified torque.
- Place shop jacks or safety stands at the specified points.
- Before disconnecting electrical connectors of sensor or units, be sure to disconnect negative terminal from battery.

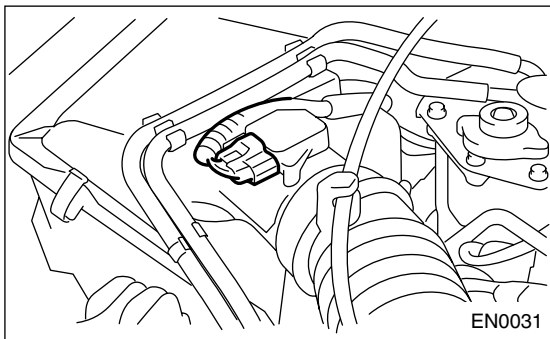
2. Air Cleaner

A: REMOVAL

- 1) Disconnect connector battery ground cable.

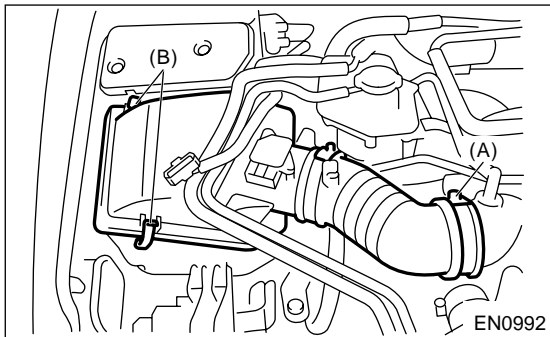


- 2) Disconnect connector from mass air flow sensor.



- 3) Loosen clamp (A) which connects air intake boot to intake duct.

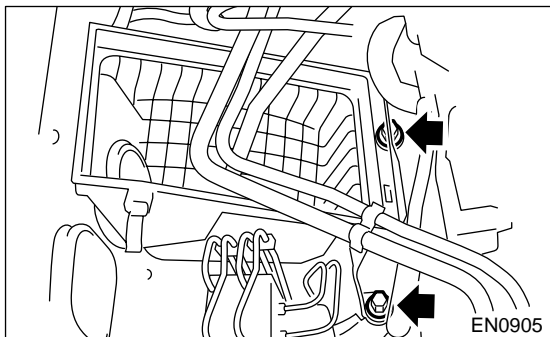
- 4) Remove the two clips (B) from air cleaner upper cover.



- 5) Remove air cleaner upper cover.

- 6) Remove air cleaner.

- 7) Remove air cleaner lower case.

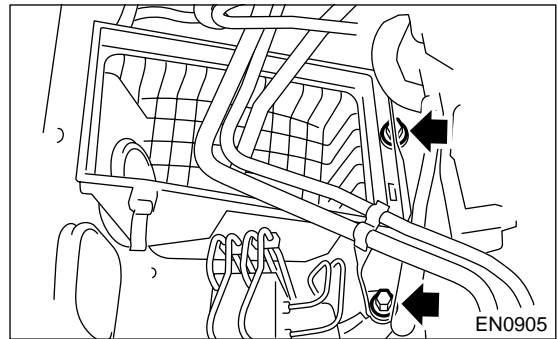


B: INSTALLATION

Install in the reverse order of removal.

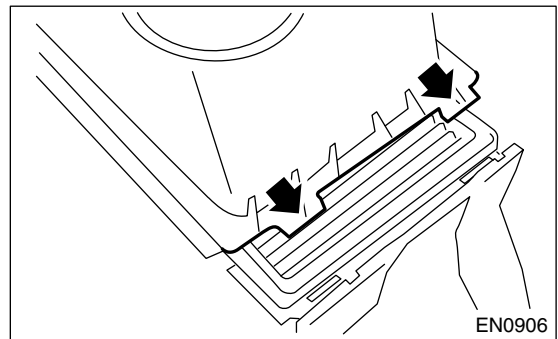
Tightening torque:

33 N·m (3.4 kgf·m, 25 ft·lb)



CAUTION:

Before installing air cleaner upper cover, align holes with protruding portions of air cleaner lower case, then secure upper cover to lower case.



C: INSPECTION

Replace if excessively damaged or dirty.

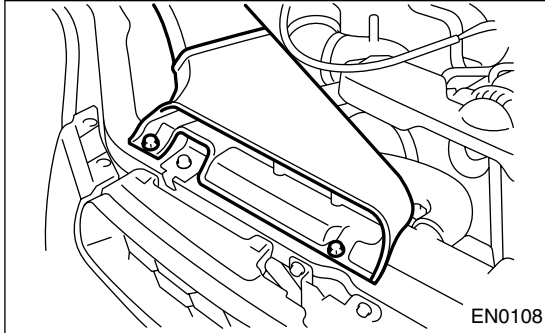
AIR INTAKE DUCT

INTAKE (INDUCTION)

3. Air Intake Duct

A: REMOVAL

1) Remove bolts which install air intake duct on the front side of body.



B: INSTALLATION

Install in the reverse order of removal.

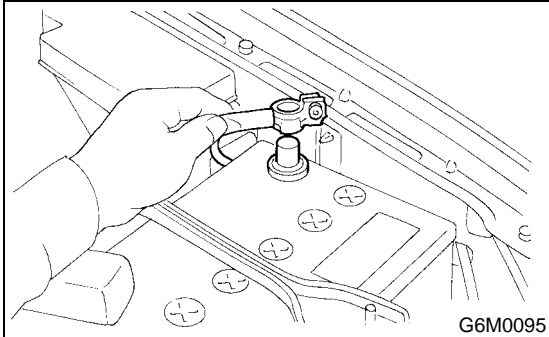
C: INSPECTION

- 1) Inspect for cracks and loose connections.
- 2) Inspect that no foreign objects are mixed in the air intake duct.

4. Intake Duct

A: REMOVAL

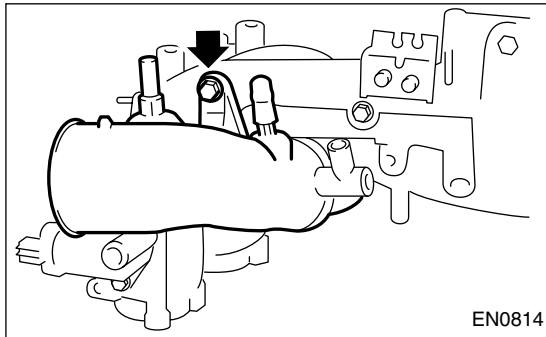
1) Disconnect battery ground cable.



2) Remove intake manifold. <Ref. to FU(DOHC TURBO)-15, REMOVAL, Intake Manifold.>

3) Remove sensor, engine harness, and fuel pipe attached to the intake manifold. <Ref. to FU(DOHC TURBO)-20, DISASSEMBLY, Intake Manifold.>

4) Remove intake duct from intake manifold.



B: INSTALLATION

Install in the reverse order of removal.

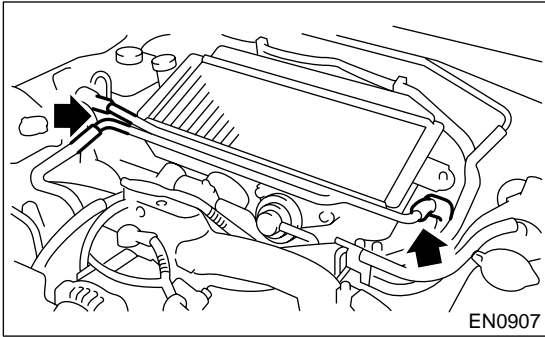
INTERCOOLER

INTAKE (INDUCTION)

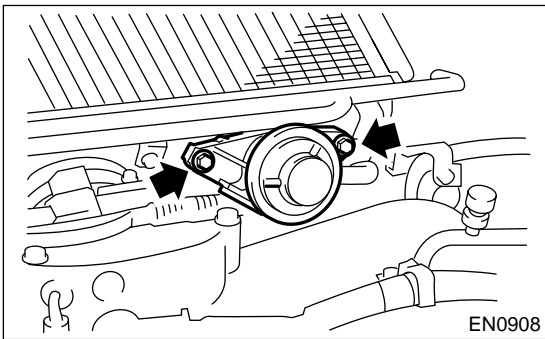
5. Intercooler

A: REMOVAL

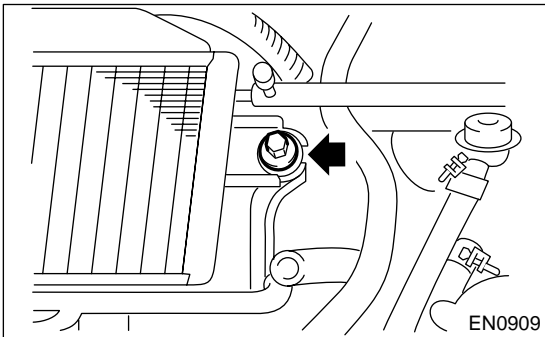
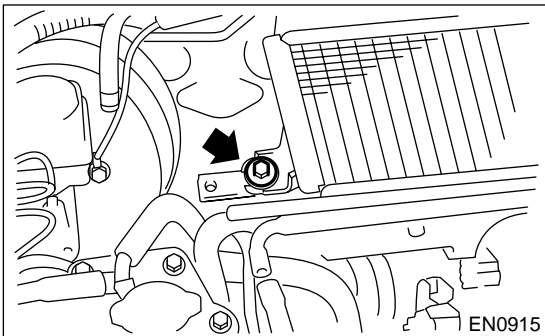
1) Disconnect air by-pass hoses from intercooler.



2) Separate air by-pass valve from intercooler.

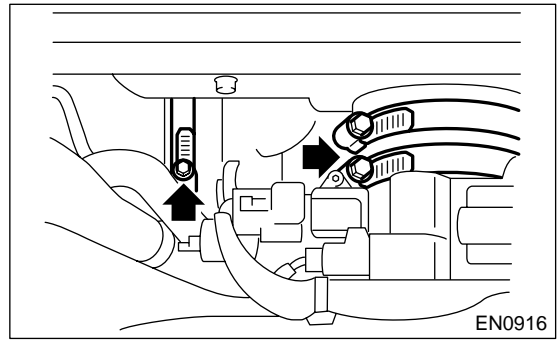


3) Remove bolts which secure intercooler to bracket.



4) Separate intercooler air duct from turbocharger.

5) Separate intercooler from throttle body.

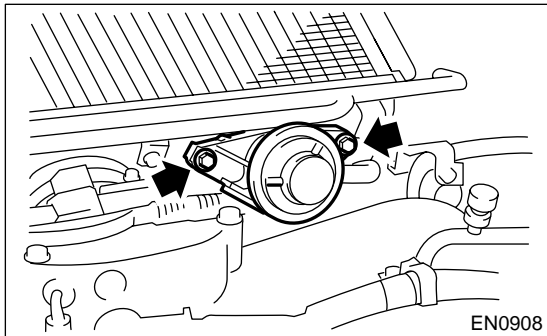
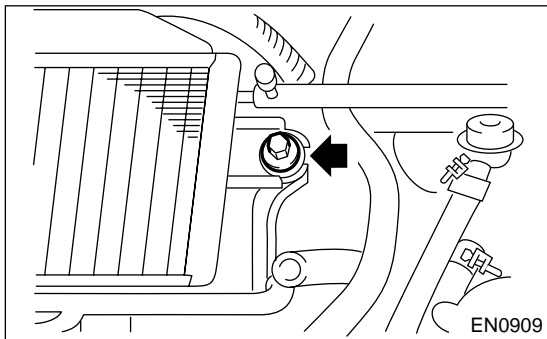
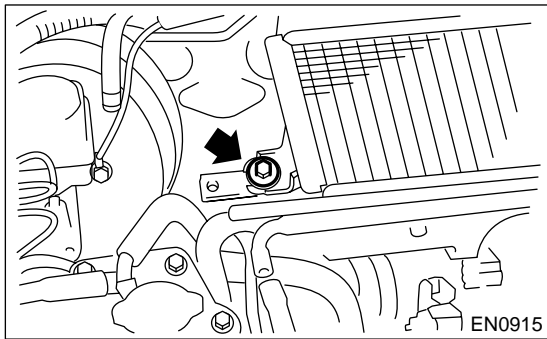


B: INSTALLATION

Install in the reverse order of removal.

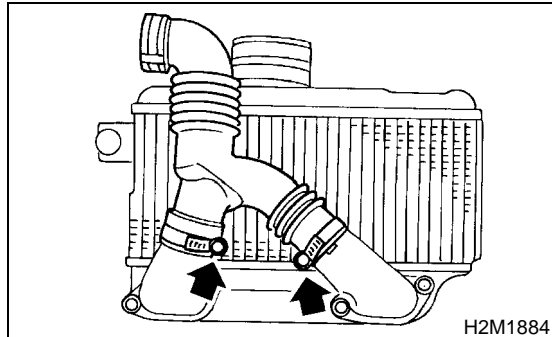
Tightening torque:

16 N·m (1.6 kgf·m, 11.7 ft·lb)

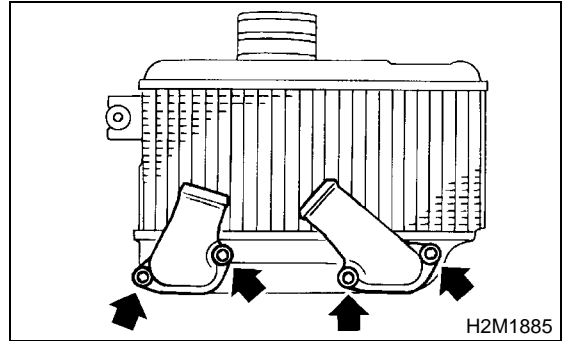


C: DISASSEMBLY

1) Loosen clamps, then remove intercooler duct.



2) Remove intercooler ducts from intercooler.

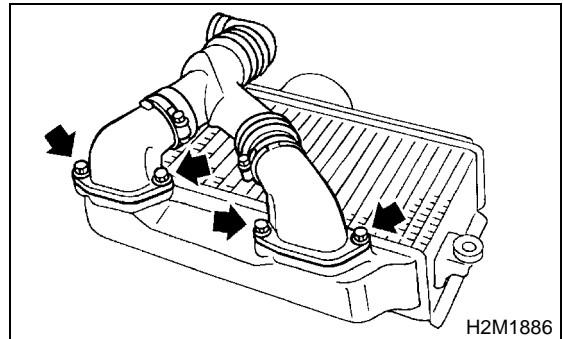


D: ASSEMBLY

Assemble in the reverse order of disassembly.

Tightening torque:

16 N·m (1.6 kgf·m, 11.7 ft·lb)



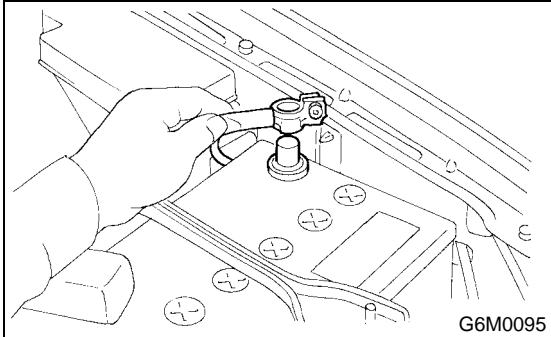
TURBOCHARGER

INTAKE (INDUCTION)

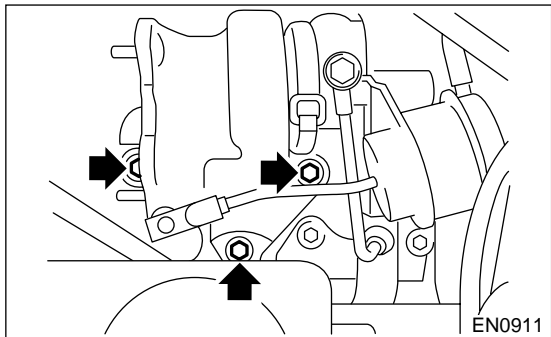
6. Turbochager

A: REMOVAL

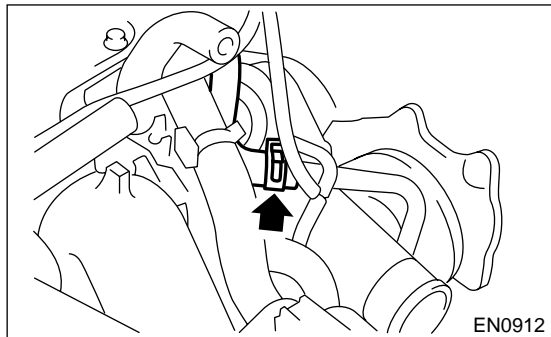
- 1) Set the vehicle on the lift.
- 2) Disconnect battery ground cable.



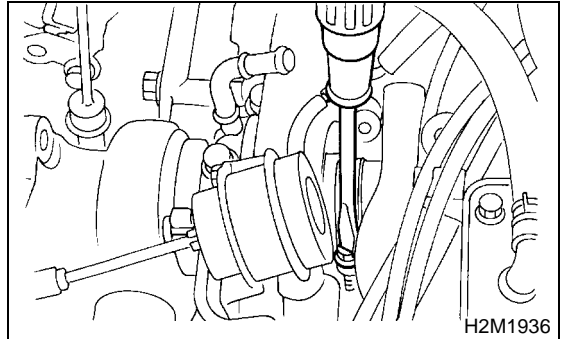
- 3) Remove center exhaust pipe. <Ref. to EX(DOHC TURBO)-8, REMOVAL, Center Exhaust Pipe.>
- 4) Lower the vehicle.
- 5) Separate turbocharger joint pipe from turbocharger.



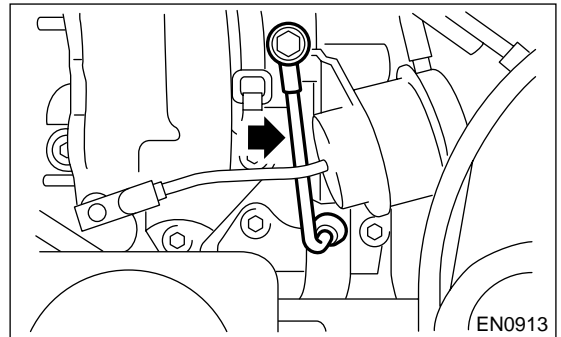
- 6) Disconnect engine coolant hose which is connected to coolant filler tank.



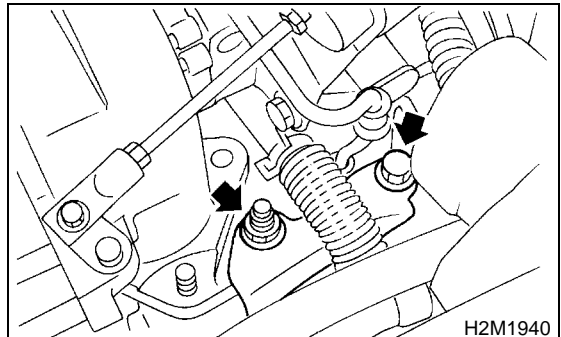
- 7) Loosen clamp which secures turbocharger to air inlet duct.



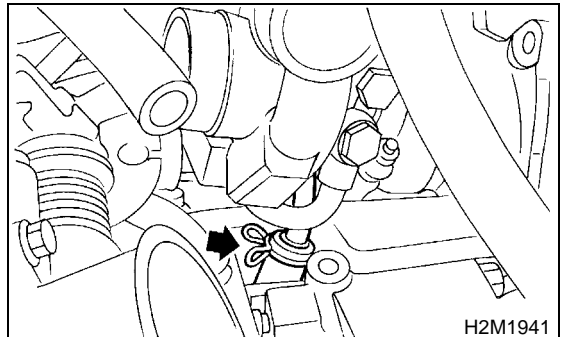
- 8) Remove bolt which secures bracket of oil pipe to turbocharger.
- 9) Remove oil pipe from turbocharger.



- 10) Remove turbocharger bracket.



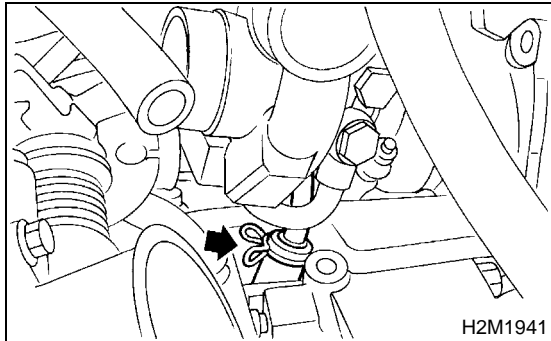
- 11) Disconnect oil outlet hose from pipe.



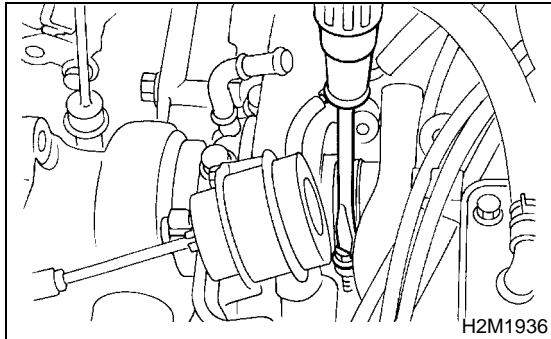
- 12) Take out turbocharger from engine compartment.

B: INSTALLATION

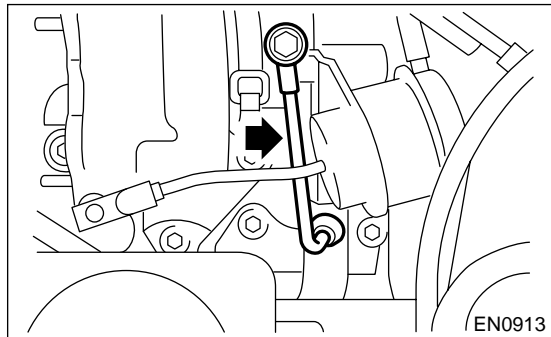
1) Connect oil outlet hose to outlet pipe.



2) Install turbocharger to air intake duct.



3) Install oil pipe to turbocharger.



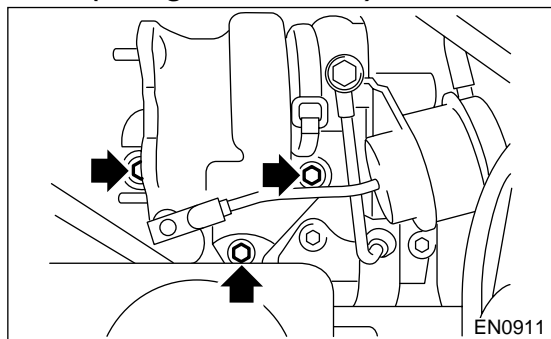
4) Install joint pipe to turbocharger.

CAUTION:

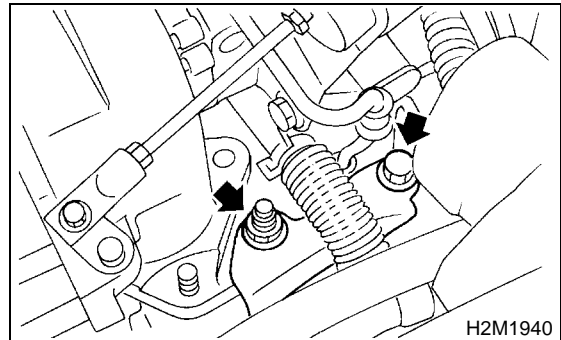
Replace gasket with a new one.

Tightening torque:

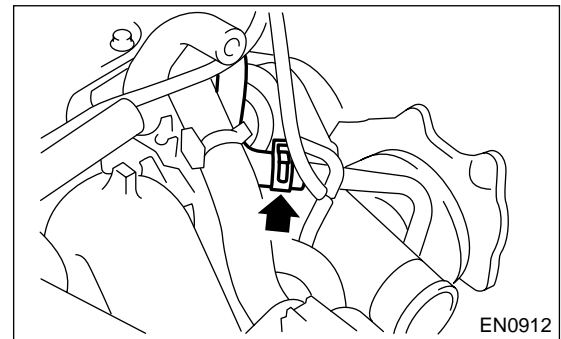
30 N·m (3.1 kgf·m, 22.4 ft·lb)



5) Install turbocharger bracket.



6) Connect engine coolant hose which is connected to coolant filler tank.



7) Lift-up the vehicle.

8) Install center exhaust pipe. <Ref. to EX(DOHC TURBO)-9, INSTALLATION, Center Exhaust Pipe.>

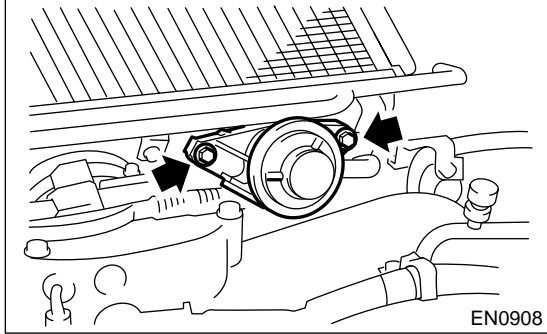
AIR BY-PASS VALVE

INTAKE (INDUCTION)

7. Air By-pass Valve

A: REMOVAL

1) Remove air by-pass valve from intercooler.



2) Disconnect air by-pass hoses from air by-pass valve.

B: INSTALLATION

Install in the reverse order of removal.

Tightening torque:

16 N·m (1.6 kgf-m, 11.7 ft-lb)

