

ENGINE2 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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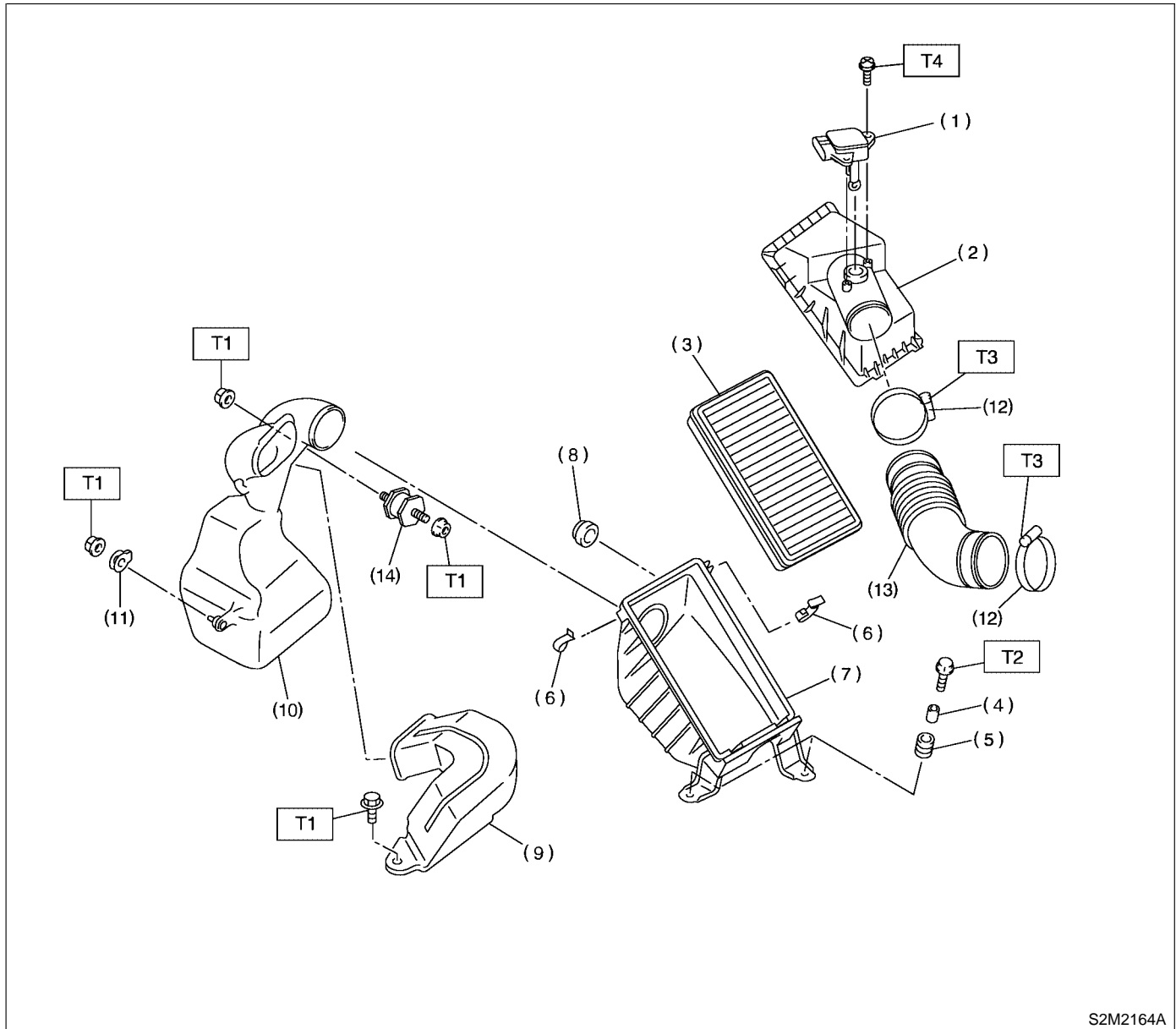
GENERAL DESCRIPTION

Intake (Induction)

1. General Description S184001

A: COMPONENT S184001A05

1. AIR CLEANER S184001A0501



S2M2164A

- | | |
|-----------------------------|-----------------------------|
| (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) Bushing | (12) Clamp |
| (6) Clip | (13) Air intake boot |
| (7) Air cleaner lower case | (14) Cushion |

Tightening torque: N·m (kgf·m, ft·lb)

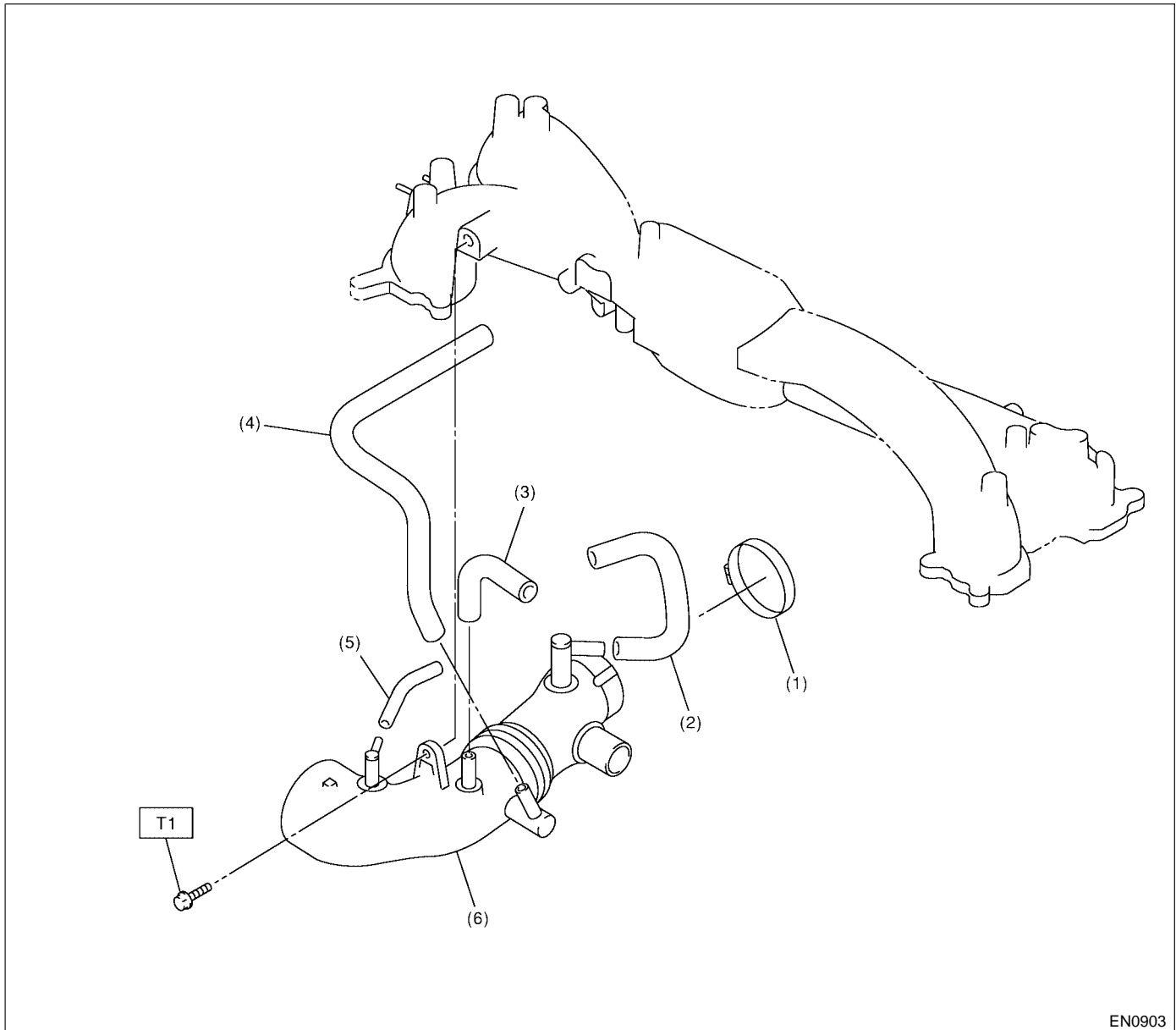
T1: 7.5 (0.76, 5.5)

T2: 33 (3.4, 25)

T3: 2.5 (0.25, 1.8)

T4: 1.7 (0.17, 1.2)

2. INTAKE DUCT S184001A0502



EN0903

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

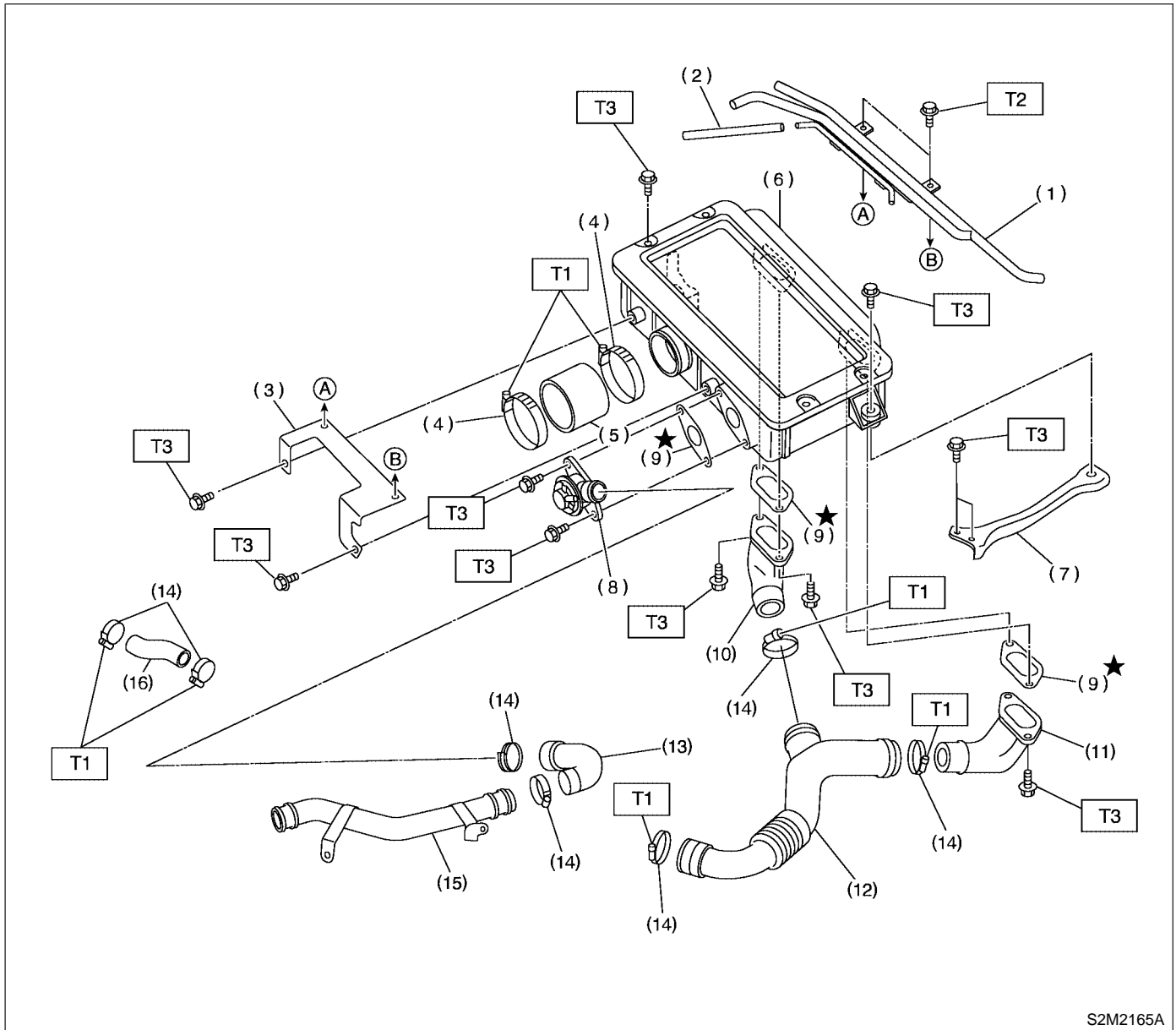
Tightening torque: N·m (kgf-m, ft-lb)

T1: 15.7 (1.6, 11.6)

GENERAL DESCRIPTION

Intake (Induction)

3. INTER COOLER S184001A0503



S2M2165A

- | | |
|-------------------------|-------------------------|
| (1) PVC pipe | (9) Gasket |
| (2) Air by-pass hose C | (10) Intercooler duct A |
| (3) Stay | (11) Intercooler duct B |
| (4) Clamp | (12) Intercooler duct C |
| (5) Air intake hose | (13) Air by-pass hose A |
| (6) Intercooler | (14) Clamp |
| (7) Intercooler bracket | (15) Air by-pass pipe |
| (8) Air by-pass valve | (16) Air by-pass hose B |

Tightening torque: N·m (kgf-m, ft-lb)

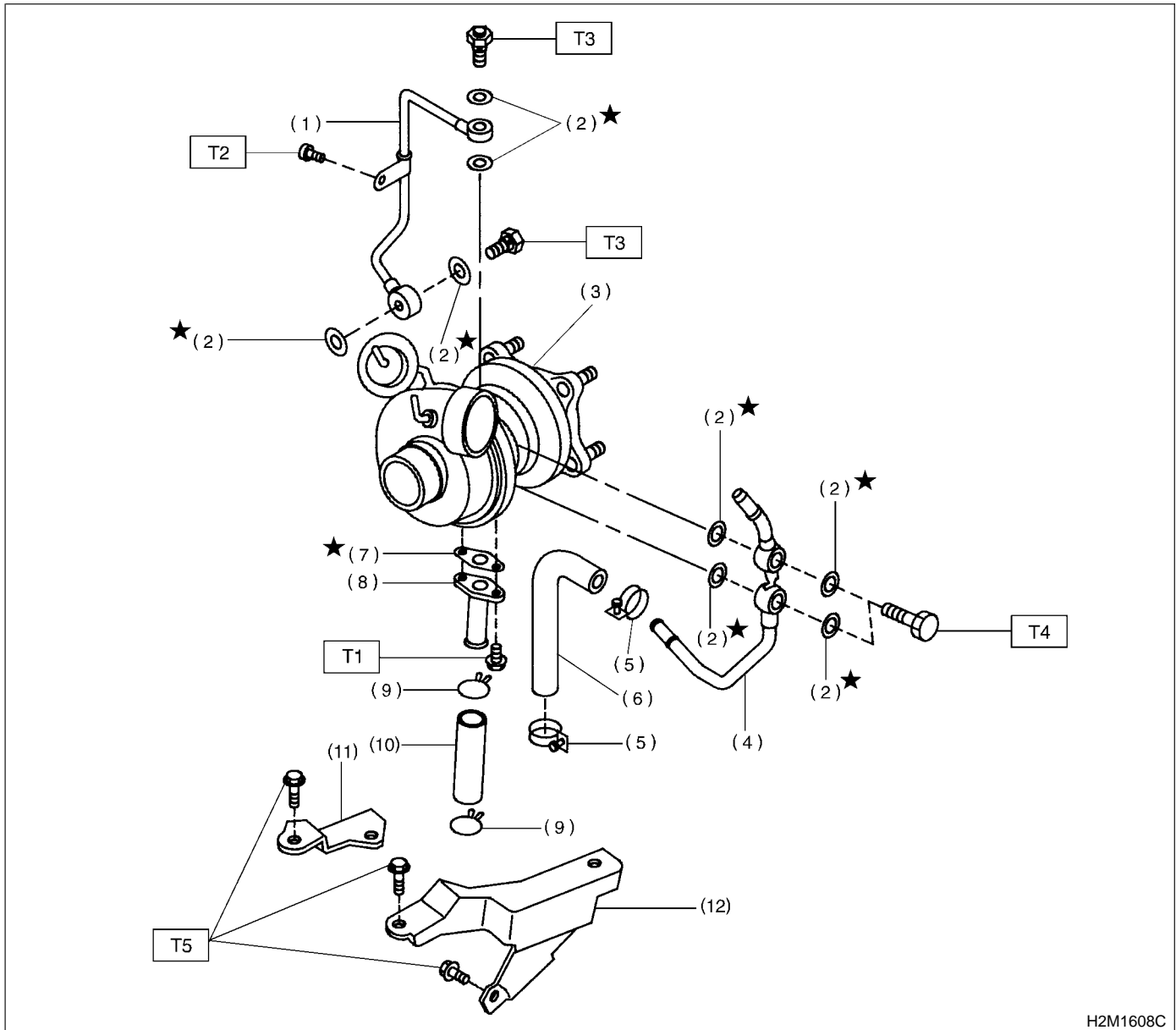
T1: 3 (0.22, 1.6)

T2: 6.4 (0.65, 4.7)

T3: 16 (1.6, 11.7)

IN(DOHC TURBO)-4

4. TURBOCHARGER S184001A0504



- | | |
|-------------------------|------------------------------|
| (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)

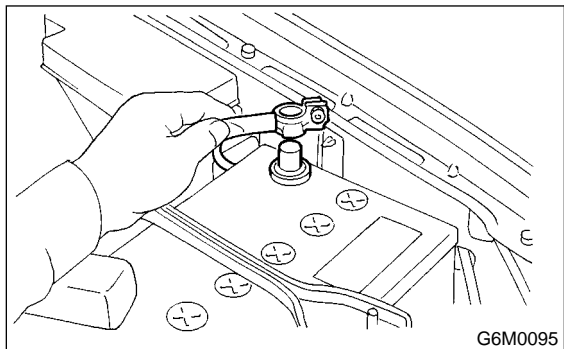
B: CAUTION S1B4001A03

- 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.

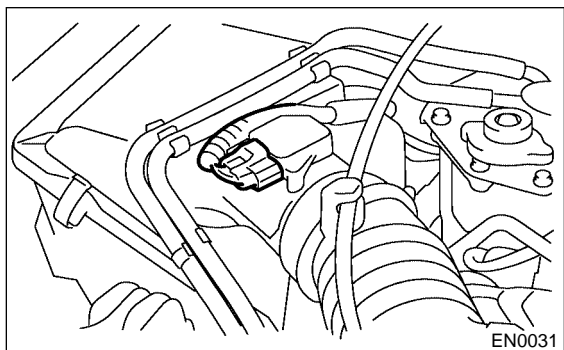
2. Air Cleaner S184087

A: REMOVAL S184087A18

- 1) Disconnect connector battery ground cable.

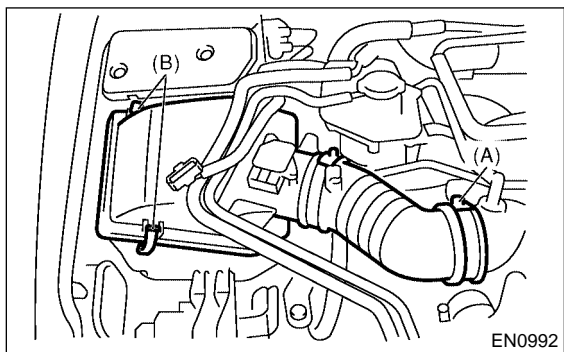


- 2) Disconnect connector from mass air flow sensor.



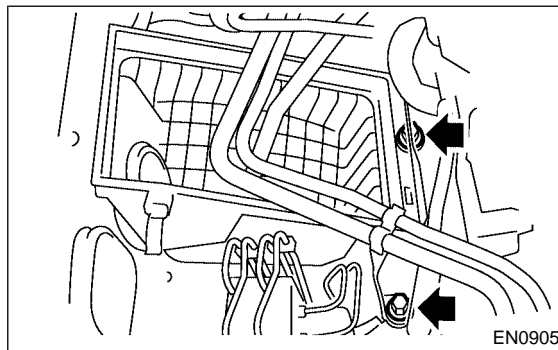
- 3) Loosen clamp (A) which connects air intake boot to intake duct.

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



- 5) Remove air cleaner upper cover.
- 6) Remove air cleaner element.

- 7) Remove air cleaner lower case.

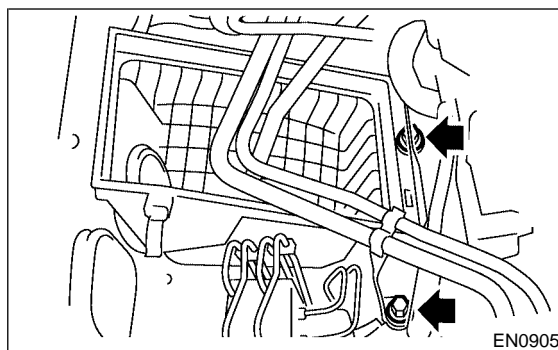


B: INSTALLATION S184087A11

Install in the reverse order of removal.

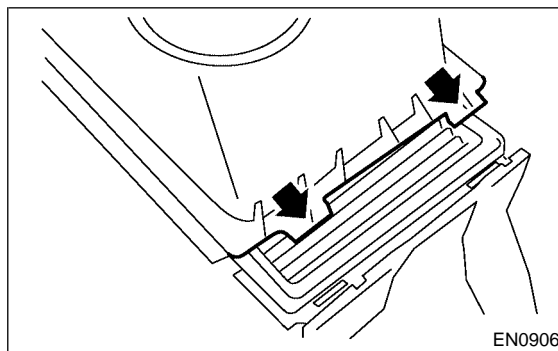
Tightening torque:

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 S184087A10

Replace if excessively damaged or dirty.

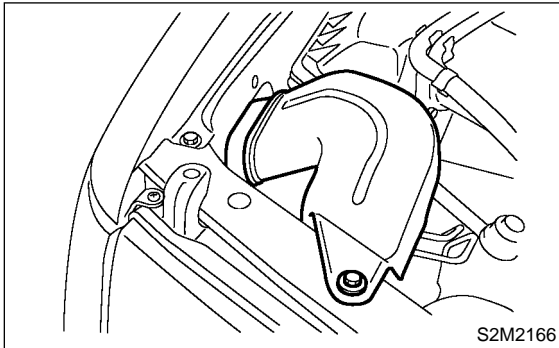
AIR INTAKE DUCT

Intake (Induction)

3. Air Intake Duct S184566

A: REMOVAL S184566A18

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



B: INSTALLATION S184566A11

Install in the reverse order of removal.

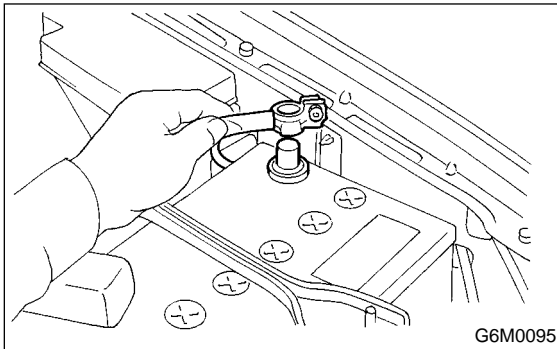
C: INSPECTION S184566A10

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

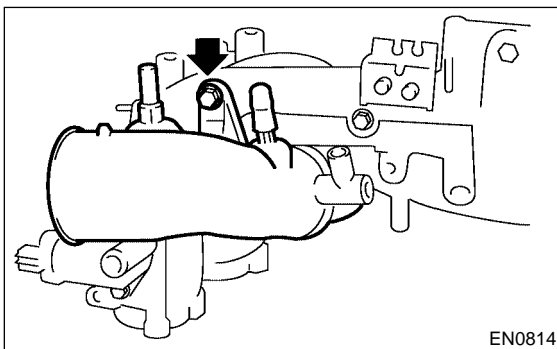
4. Intake Duct S184760

A: REMOVAL S184760A18

- 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)-21, DISASSEMBLY, Intake Manifold.>
- 4) Remove intake duct from intake manifold.



B: INSTALLATION S184760A11

Install in the reverse order of removal.

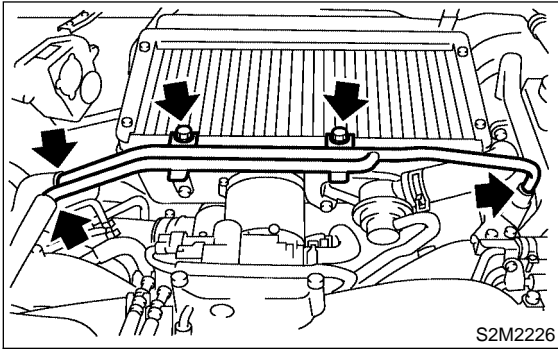
INTERCOOLER

Intake (Induction)

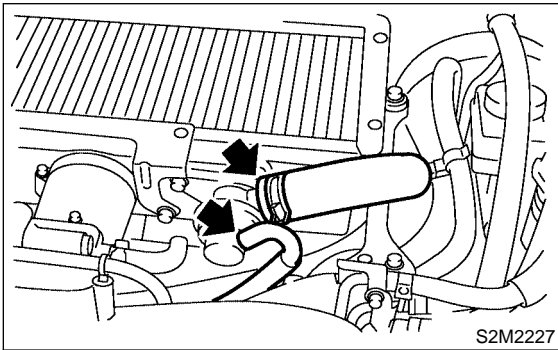
5. Intercooler S184761

A: REMOVAL S184761A18

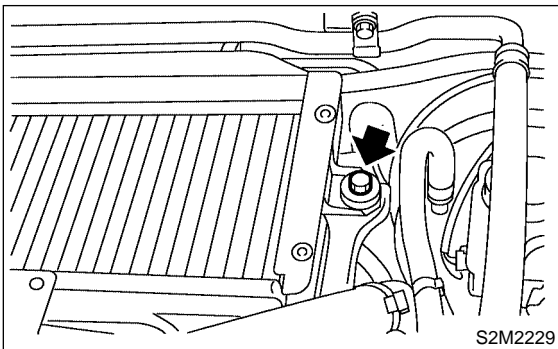
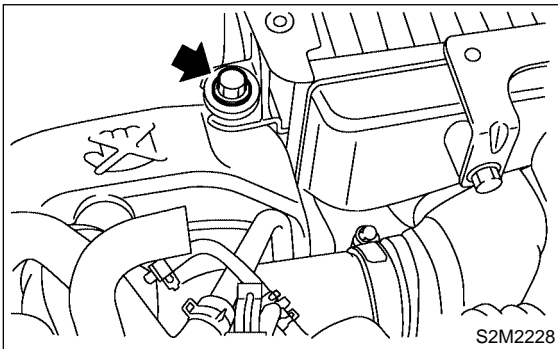
1) Remove air by-pass hoses from intercooler.



2) Loosen clamp, and remove hoses from air by-pass valve.

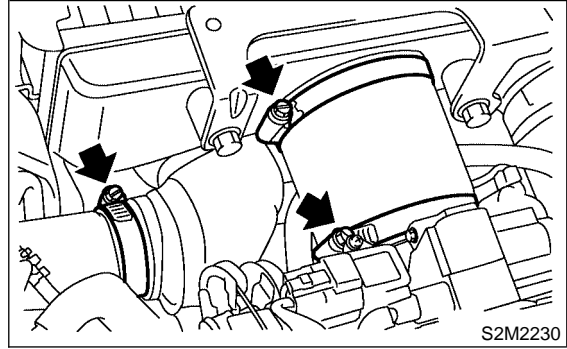


3) Remove bolts which secure intercooler to bracket.



4) Separate intercooler air duct from turbocharger.

5) Separate intercooler from throttle body.

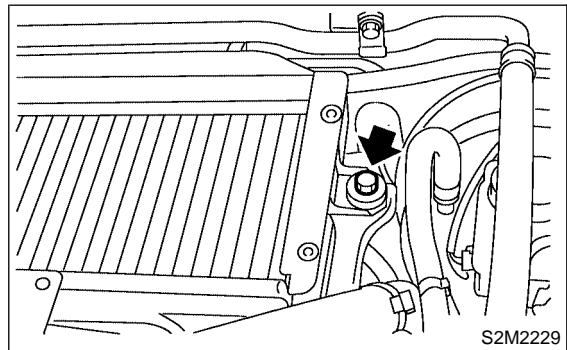
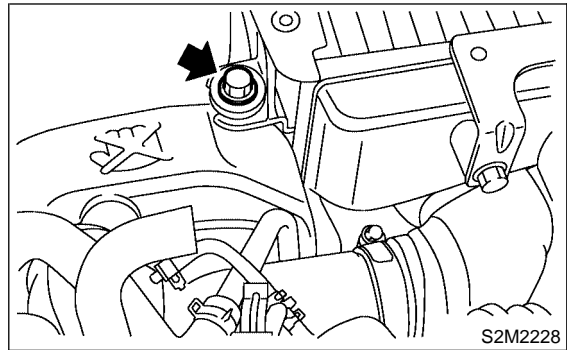


B: INSTALLATION S184761A11

Install in the reverse order of removal.

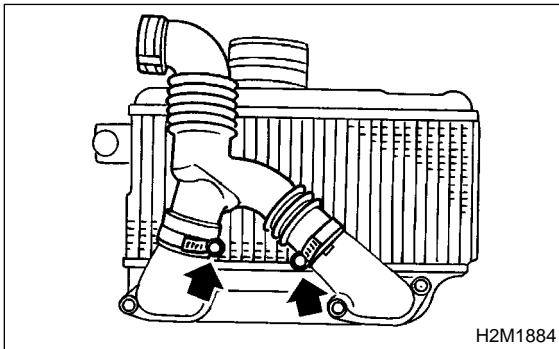
Tightening torque:

16 N·m (1.6 kgf·m, 11.7 ft·lb)

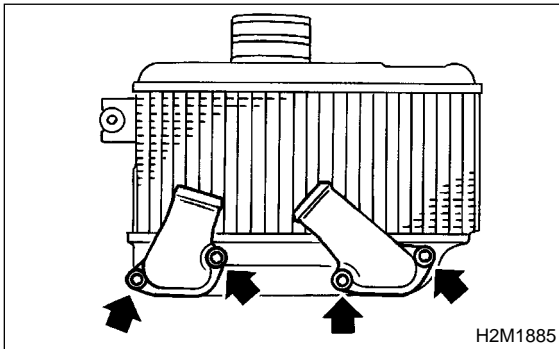


C: DISASSEMBLY S184761A06

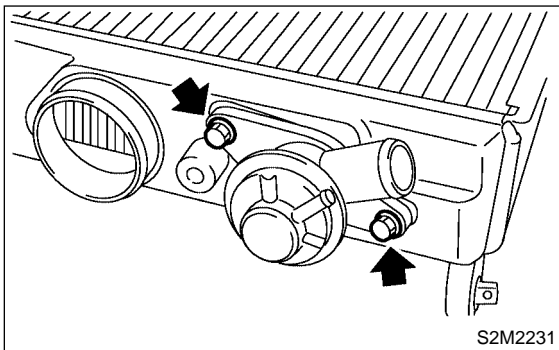
- 1) Loosen clamps, then remove intercooler duct.



- 2) Remove intercooler ducts from intercooler.



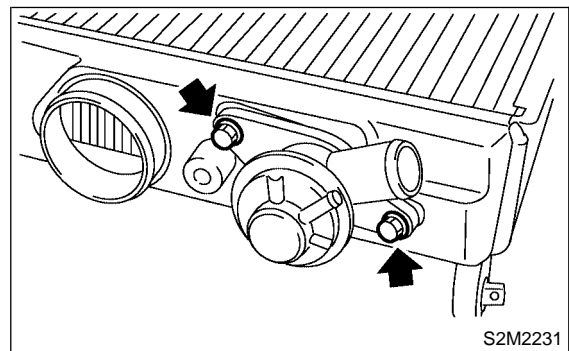
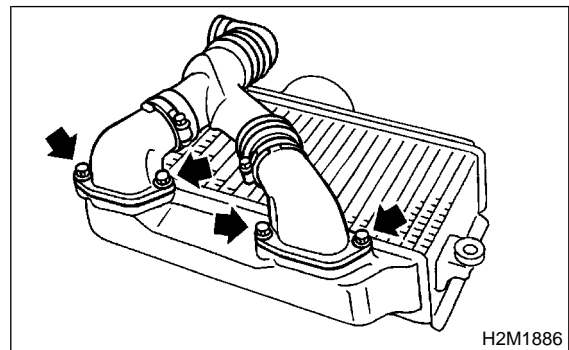
- 3) Remove air by-pass valve.



D: ASSEMBLY S184761A02

Assemble in the reverse order of disassembly.

Tightening torque:
16 N·m (1.6 kgf·m, 11.7 ft·lb)



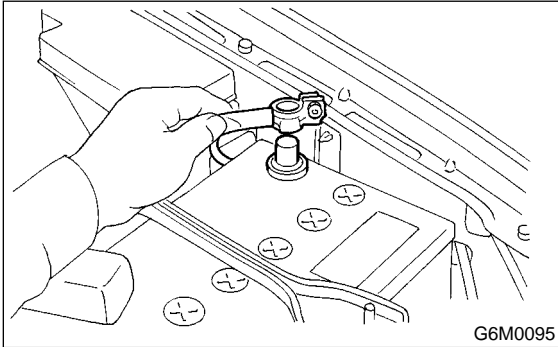
TURBOCHARGER

Intake (Induction)

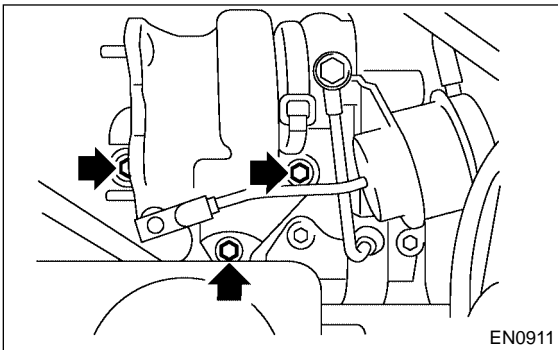
6. Turbocharger S184762

A: REMOVAL S184762A18

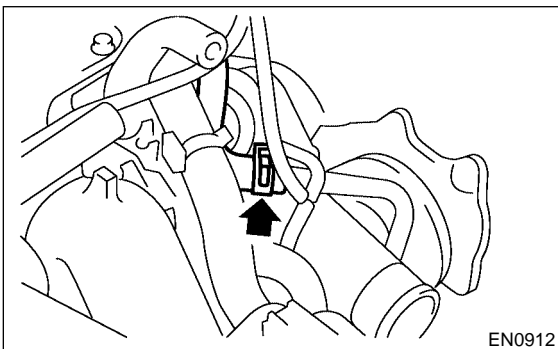
- 1) Set the vehicle on the lift.
- 2) Disconnect battery ground cable.



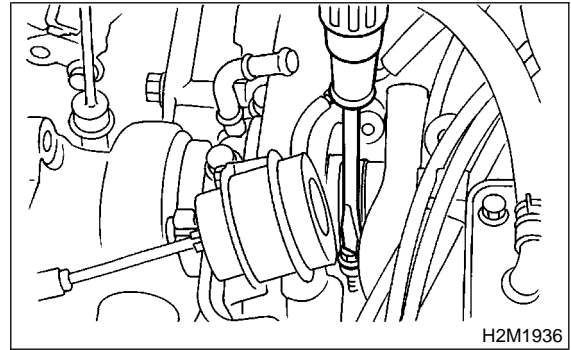
- 3) Remove center exhaust pipe. <Ref. to EX(DOHC TURBO)-9, REMOVAL, Center Exhaust Pipe.>
- 4) Lower the vehicle.
- 5) Separate turbocharger joint pipe from turbocharger.



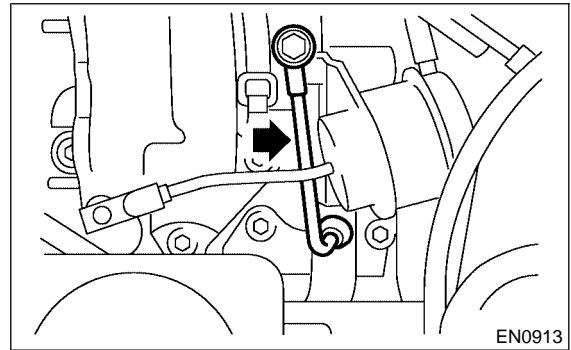
- 6) Disconnect engine coolant hose which is connected to coolant filler tank.



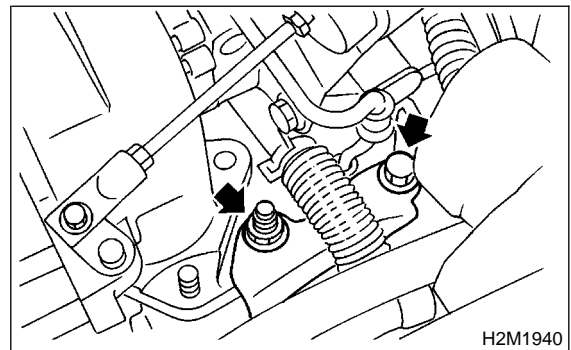
- 7) Loosen clamp which secures turbocharger to air inlet duct.



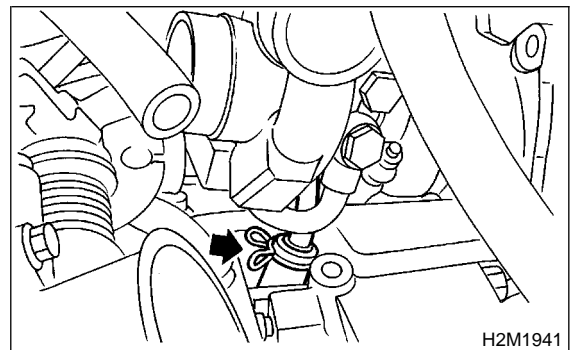
- 8) Remove bolt which secures bracket of oil pipe to turbocharger.
- 9) Remove oil pipe from turbocharger.



- 10) Remove turbocharger bracket.



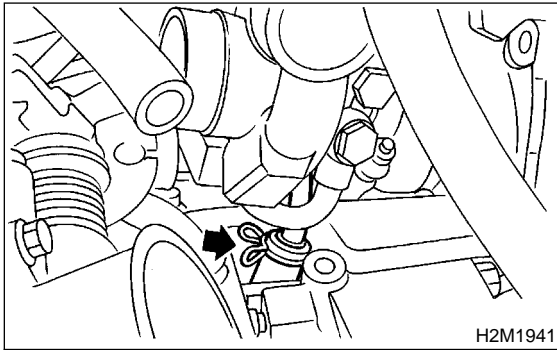
- 11) Disconnect oil outlet hose from pipe.



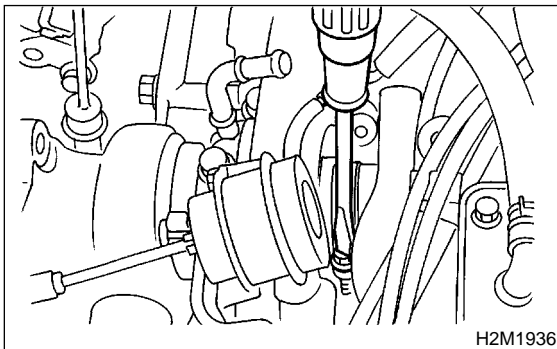
- 12) Take out turbocharger from engine compartment.

B: INSTALLATION S184762A11

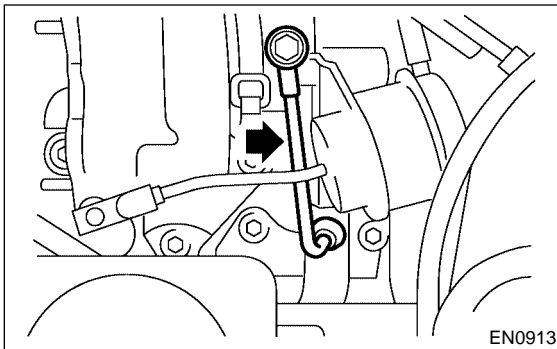
- 1) Connect oil outlet hose to outlet pipe.



- 2) Install turbocharger to air intake duct.



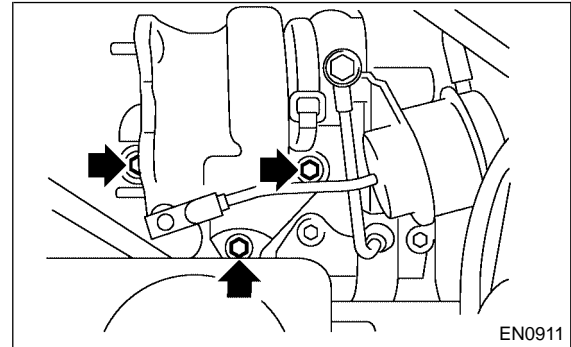
- 3) Install oil pipe to turbocharger.



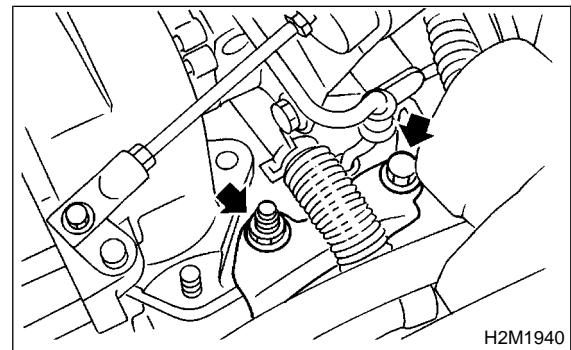
- 4) Install joint pipe to turbocharger.

CAUTION:
Replace gasket with a new one.

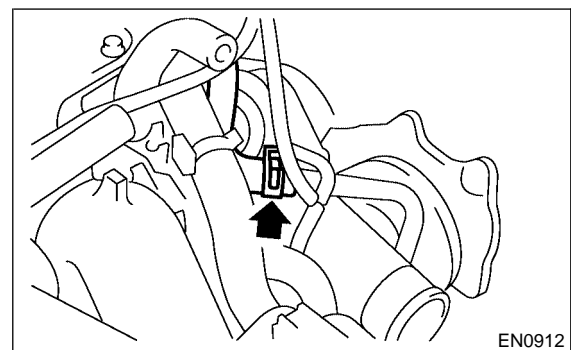
Tightening torque:
30 N·m (3.1 kgf·m, 22.4 ft·lb)



- 5) Install turbocharger bracket.



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

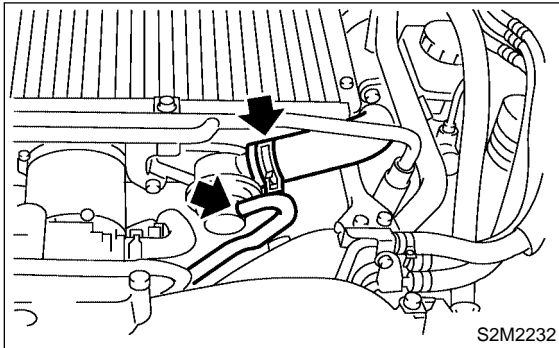


- 7) Lift-up the vehicle.
- 8) Install center exhaust pipe. <Ref. to EX(DOHC TURBO)-10, INSTALLATION, Center Exhaust Pipe.>

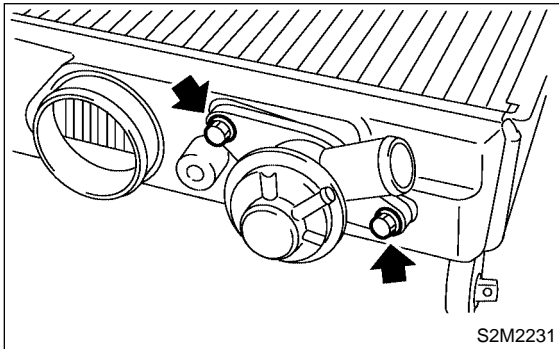
7. Air By-pass Valve S184016

A: REMOVAL S184016A18

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



- 2) Remove air by-pass valve from intercooler.



B: INSTALLATION S184016A11

Install in the reverse order of removal.

Tightening torque:

16 N·m (1.6 kgf·m, 11.7 ft·lb)

