

ENGINE SECTION 1

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(H4SO)
EMISSION CONTROL (AUX. EMISSION CONTROL DEVICES)	EC(H4SO)
INTAKE (INDUCTION)	IN(H4SO)
MECHANICAL	ME(H4SO)
EXHAUST	EX(H4SO)
COOLING	CO(H4SO)
LUBRICATION	LU(H4SO)
SPEED CONTROL SYSTEMS	SP(H4SO)
IGNITION	IG(H4SO)
STARTING/CHARGING SYSTEMS	SC(H4SO)
ENGINE (DIAGNOSTICS)	EN(H4SO)(diag)
FUEL INJECTION (FUEL SYSTEMS)	FU(H4SOw/oOBD)
EMISSION CONTROL (AUX. EMISSION CONTROL DEVICES)	EC(H4SOw/oOBD)
INTAKE (INDUCTION)	IN(H4SOw/oOBD)
MECHANICAL	ME(H4SOw/oOBD)
EXHAUST	EX(H4SOw/oOBD)
COOLING	CO(H4SOw/oOBD)

ENGINE SECTION 1

LUBRICATION	LU(H4SOw/oOBD)
SPEED CONTROL SYSTEMS	SP(H4SOw/oOBD)
IGNITION	IG(H4SOw/oOBD)
STARTING/CHARGING SYSTEMS	SC(H4SOw/oOBD)
ENGINE (DIAGNOSTICS)	EN(H4SOw/oOBD) (diag)

EXHAUST

EX(H4S)w/oOBD)

	Page
1. General Description	2
2. Front Exhaust Pipe.....	6
3. Center Exhaust Pipe	9
4. Rear Exhaust Pipe	10
5. Muffler	11

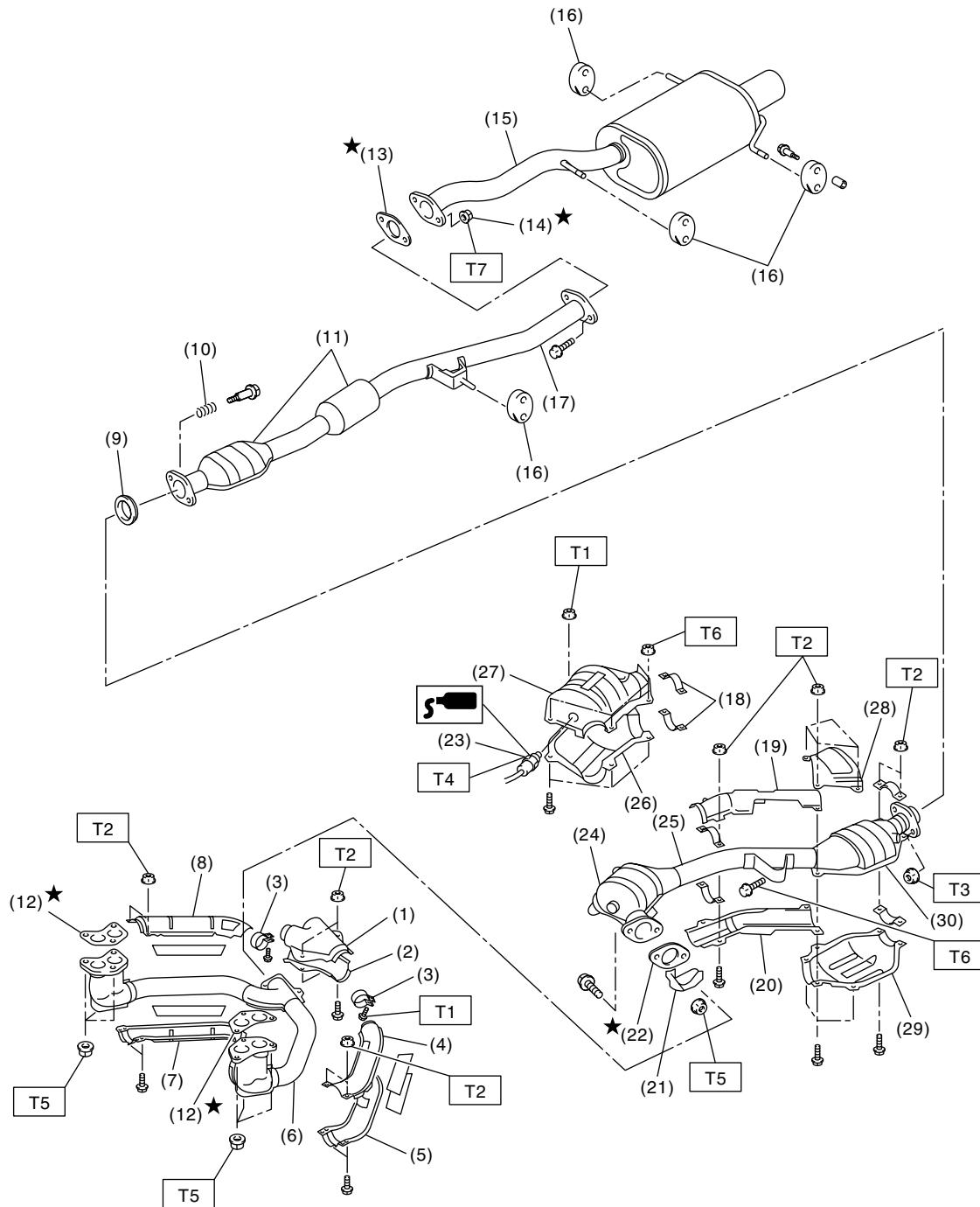
General Description

EXHAUST

1. General Description

A: COMPONENT

1. WITH CATALYTIC CONVERTER



EX-00150

General Description

EXHAUST

(1) Front exhaust pipe upper cover	(15) Muffler	(28) Rear catalytic converter upper cover
(2) Front exhaust pipe lower cover	(16) Cushion rubber	(29) Rear catalytic converter lower cover
(3) Clamp	(17) Rear exhaust pipe	(30) Rear catalytic converter
(4) Front exhaust pipe upper cover LH	(18) Lower clamp	
(5) Front exhaust pipe lower cover LH	(19) Center exhaust pipe upper cover	
(6) Front exhaust pipe	(20) Center exhaust pipe lower cover	
(7) Front exhaust pipe lower cover RH	(21) Protector	
(8) Front exhaust pipe upper cover RH	(22) Gasket	
(9) Gasket	(23) Oxygen sensor	
(10) Spring	(24) Front catalytic converter	
(11) Chamber	(25) Center exhaust pipe	
(12) Gasket	(26) Front catalytic converter lower cover	
(13) Gasket	(27) Front catalytic converter upper cover	
(14) Self-locking nut		

Tightening torque: N·m (kgf·m, ft·lb)

T1: 8 (0.8, 5.9)

T2: 13 (1.3, 9.6)

T3: 18 (1.8, 13.3)

T4: 21 (2.1, 15.5)

T5: 30 (3.1, 22.1)

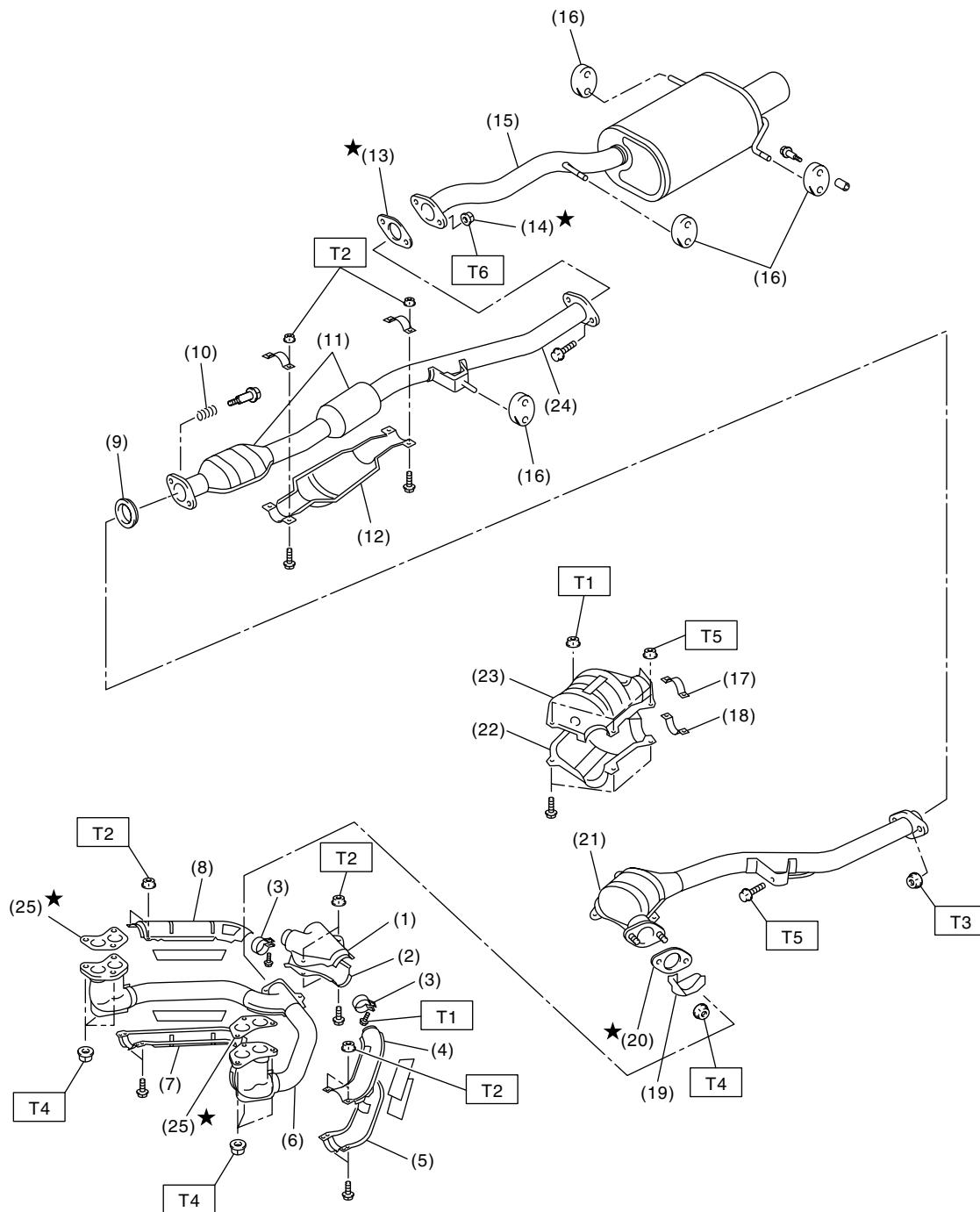
T6: 35 (3.6, 25.8)

T7: 48 (4.9, 35.4)

General Description

EXHAUST

2. WITHOUT CATALYTIC CONVERTER



EX-00151

(1) Front exhaust pipe upper cover	(12) Rear exhaust pipe cover	(23) Center exhaust pipe upper cover
(2) Front exhaust pipe lower cover	(13) Gasket	(24) Rear exhaust pipe
(3) Clamp	(14) Self-locking nut	(25) Gasket
(4) Front exhaust pipe upper cover LH	(15) Muffler	
(5) Front exhaust pipe lower cover LH	(16) Cushion rubber	
(6) Front exhaust pipe	(17) Upper clamp	
(7) Front exhaust pipe lower cover RH	(18) Lower clamp	
(8) Front exhaust pipe upper cover RH	(19) Protector	
(9) Gasket	(20) Gasket	
(10) Spring	(21) Center exhaust pipe	
(11) Chamber	(22) Center exhaust pipe lower cover	

Tightening torque: N·m (kgf·m, ft·lb)

T1: 8 (0.8, 5.9)

T2: 13 (1.3, 9.6)

T3: 18 (1.8, 13.3)

T4: 30 (3.1, 22.1)

T5: 35 (3.6, 25.8)

T6: 48 (4.9, 35.4)

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 sensors or units, be sure to disconnect the ground cable from battery.

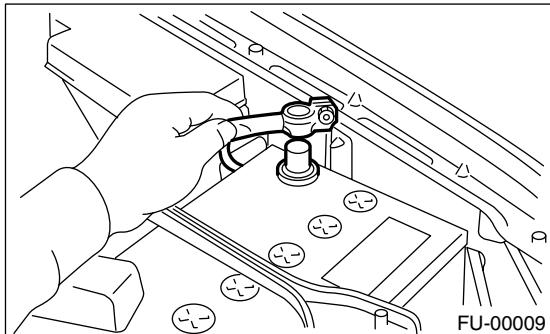
Front Exhaust Pipe

EXHAUST

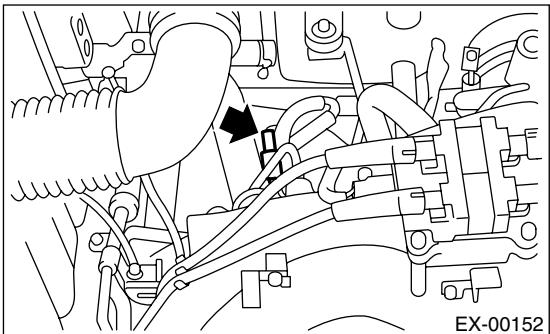
2. Front Exhaust Pipe

A: REMOVAL

1) Disconnect the ground cable from battery.



2) Disconnect the oxygen sensor connector. (With catalytic converter)

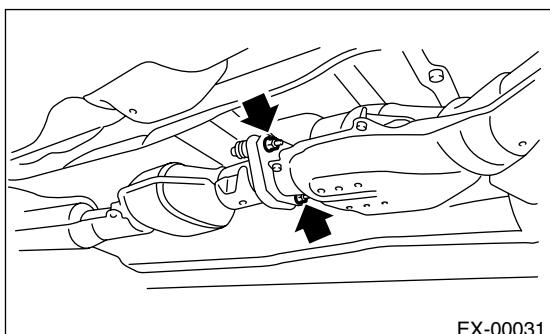


3) Lift-up the vehicle.

4) Separate the front and center exhaust pipe assembly from rear exhaust pipe.

WARNING:

Be careful, the exhaust pipe is hot.

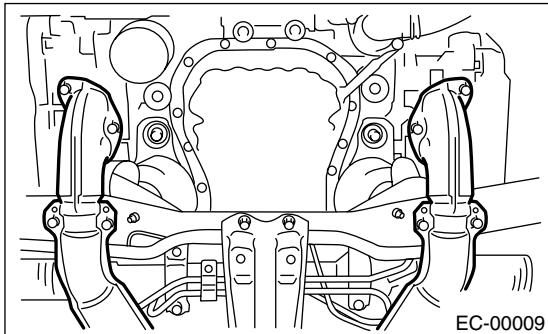


5) Remove the under cover.

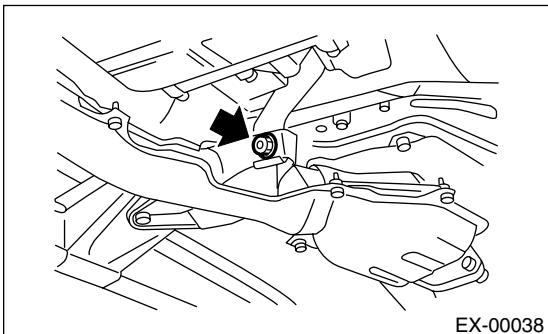
6) Remove the nuts which hold the front exhaust pipe onto cylinder heads.

CAUTION:

Be careful not to pull down the front and center exhaust pipe assembly.



7) Remove the bolt which installs the front and center exhaust pipe assembly to hanger bracket.



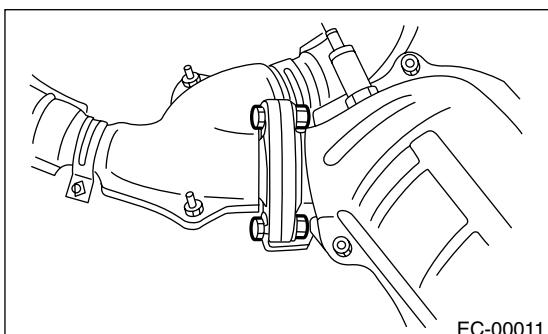
8) Remove the front and center exhaust pipe assembly from vehicle.

CAUTION:

• Be careful not to let the front and center exhaust pipe assembly fall off when removing as it is quite heavy.

• After removing the front and center exhaust pipe assembly, do not apply excessive pulling force on the rear exhaust pipe.

9) Separate the front exhaust pipe from center exhaust pipe.



10) Remove the oxygen sensor. (With catalytic converter) <Ref. to FU(H4SOw/oOBD)-41, REMoval, Oxygen Sensor.>

B: INSTALLATION

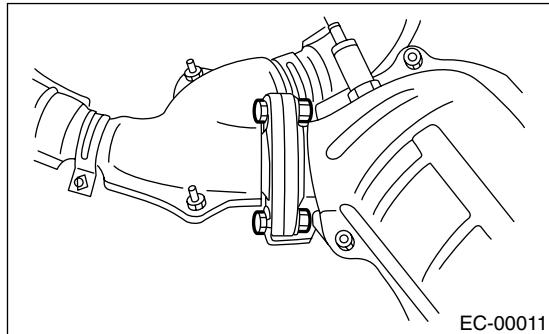
- 1) Install the oxygen sensor. (With catalytic converter) <Ref. to FU(H4SOw/oOBD)-41, INSTALLATION, Oxygen Sensor.>
- 2) Install the front exhaust pipe to center exhaust pipe.

NOTE:

Replace the gaskets with new ones.

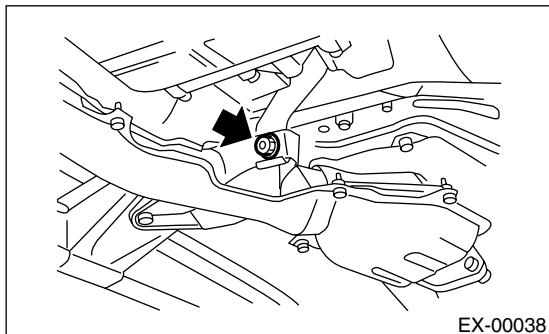
Tightening torque:

30 N·m (3.1 kgf-m, 22.1 ft-lb)



EC-00011

- 3) Install the front and center exhaust pipe assembly to vehicle.
- 4) Temporarily tighten the bolt which installs the front and center exhaust pipe assembly to hanger bracket.

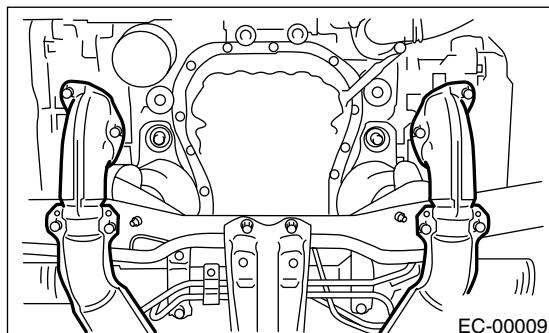


EX-00038

- 5) Tighten the nuts which hold the front exhaust pipe onto cylinder heads.

Tightening torque:

30 N·m (3.1 kgf-m, 22.1 ft-lb)



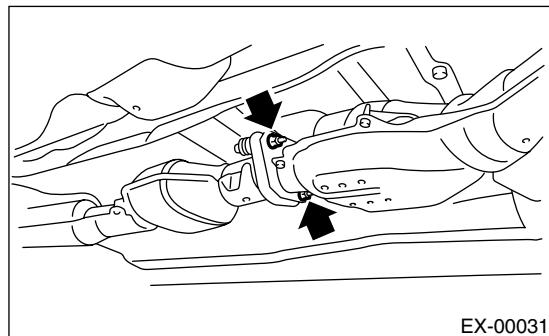
EC-00009

- 6) Install the under cover.

- 7) Tighten the bolts which install the front and center exhaust pipe assembly to rear exhaust pipe.

Tightening torque:

18 N·m (1.8 kgf-m, 13.3 ft-lb)

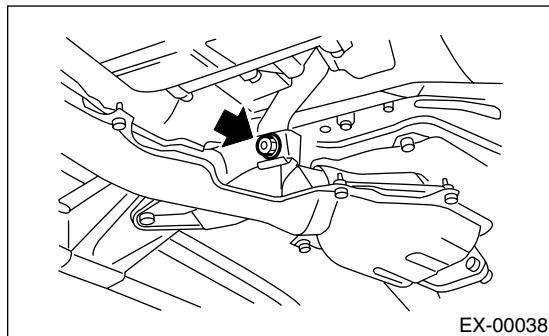


EX-00031

- 8) Tighten the bolt which holds the front and center exhaust pipe assembly to hanger bracket.

Tightening torque:

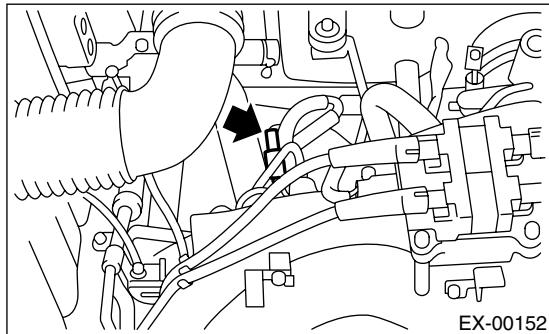
35 N·m (3.6 kgf-m, 25.8 ft-lb)



EX-00038

- 9) Lower the vehicle.

- 10) Connect the oxygen sensor connector. (With catalytic converter)

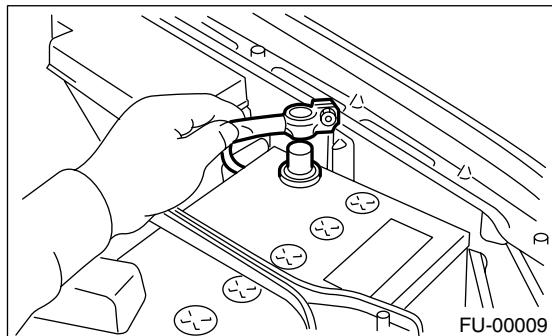


EX-0152

Front Exhaust Pipe

EXHAUST

- 11) Connect the battery ground cable to battery.



C: INSPECTION

- 1) Make sure there are no exhaust leaks from connections and welds.
- 2) Make sure there are no holes or rusting.

3. Center Exhaust Pipe

A: REMOVAL

After removing the center and front exhaust pipes as one unit, separate them. Refer to the procedure for removing the front exhaust pipe. <Ref. to EX(H4SOw/oOBD)-6, REMOVAL, Front Exhaust Pipe.>

B: INSTALLATION

Install the center exhaust pipe and front exhaust pipe as one unit. Refer to the procedure for installing the front exhaust pipe. <Ref. to EX(H4SOw/oOBD)-7, INSTALLATION, Front Exhaust Pipe.>

C: INSPECTION

- 1) Make sure there are no exhaust leaks from the connections and welds.
- 2) Make sure there are no holes or rusting.

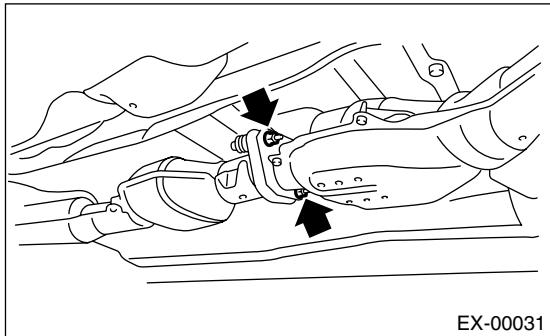
Rear Exhaust Pipe

4. Rear Exhaust Pipe

A: REMOVAL

1) Separate the rear exhaust pipe from center exhaust pipe.

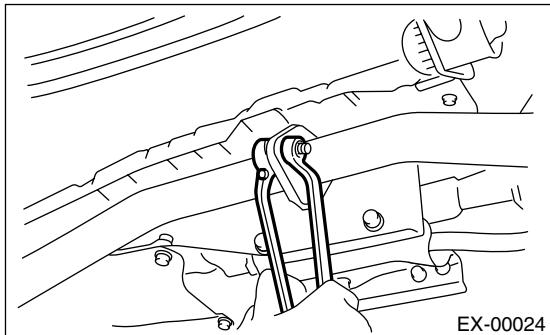
CAUTION:
Be careful, the exhaust pipe is hot.



EX-00031

2) Separate the rear exhaust pipe from muffler.

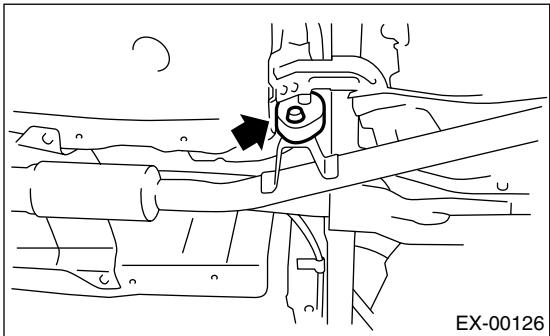
CAUTION:
Be careful not to pull down the rear exhaust pipe.



EX-00024

3) Apply a coat of spray type lubricant to the mating area of cushion rubbers in advance.

4) Remove the rear exhaust pipe bracket from cushion rubber.

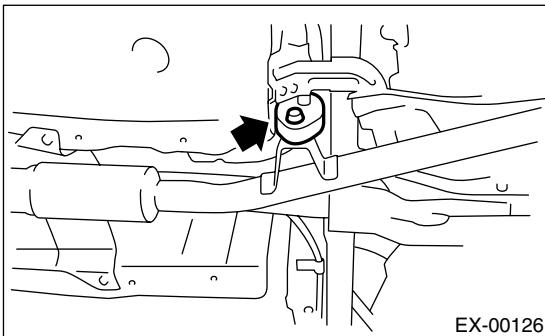


EX-00126

B: INSTALLATION

1) Apply a coat of spray type lubricant to the mating area of cushion rubbers in advance.

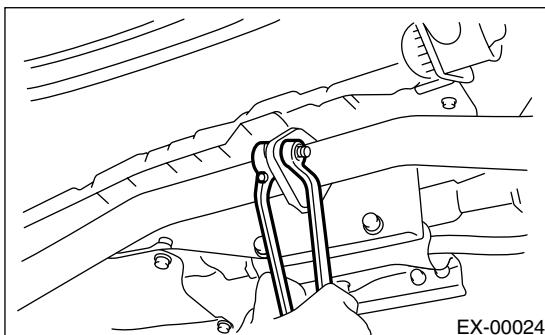
2) Install the rear exhaust pipe bracket to cushion rubber.



EX-00126

NOTE:
Replace the gaskets with new ones.
3) Install the rear exhaust pipe to muffler.

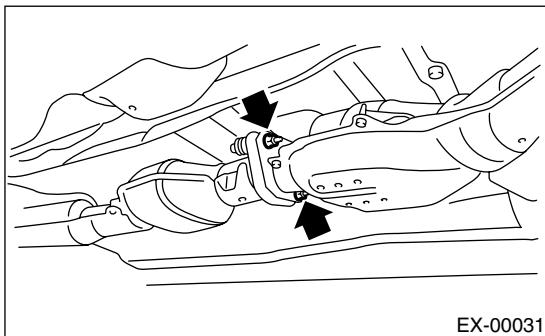
Tightening torque:
 $48 \text{ N}\cdot\text{m} (4.9 \text{ kgf-m}, 35.4 \text{ ft-lb})$



EX-00024

4) Install the rear exhaust pipe to center exhaust pipe.

Tightening torque:
 $18 \text{ N}\cdot\text{m} (1.8 \text{ kgf-m}, 13.3 \text{ ft-lb})$



EX-00031

C: INSPECTION

- 1) Make sure there are no exhaust leaks from connections and welds.
- 2) Make sure there are no holes or rusting.
- 3) Make sure the cushion rubber is not worn or cracked.

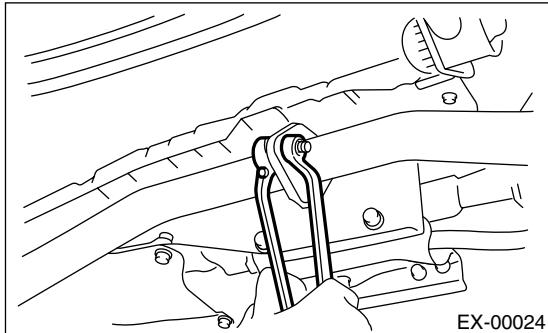
5. Muffler

A: REMOVAL

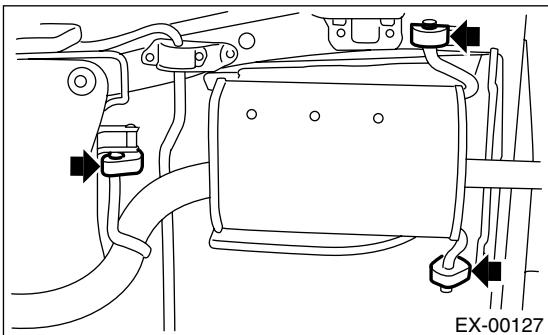
1) Separate the muffler from rear exhaust pipe.

CAUTION:

Be careful, the exhaust pipe is hot.



2) Apply a coat of spray type lubricant to the mating area of cushion rubbers in advance.



3) Remove the front, right and left cushion rubber, and detach the muffler assembly.

B: INSTALLATION

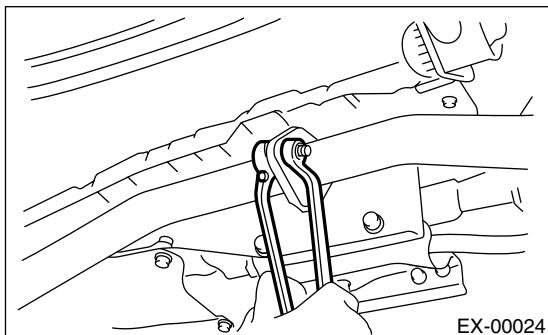
Install in the reverse order of removal.

NOTE:

Replace the gasket with a new one.

Tightening torque:

48 N·m (4.9 kgf·m, 35.4 ft-lb)



C: INSPECTION

1) Make sure there are no exhaust leaks from connections and welds.

2) Make sure there are no holes or rusting.

3) Make sure the cushion rubber is not worn or cracked.

Muffler

EXHAUST
