

INTAKE & EXHAUST SYSTEM

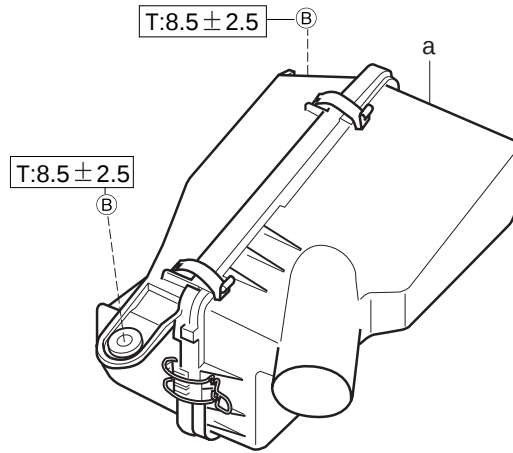
AIR CLEANER.....	IE-2
REMOVAL AND INSTALLATION	IE-2
INTER COOLER.....	IE-3
REMOVAL AND INSTALLATION	IE-3
EXHAUST MANIFOLD GASKET	IE-4
REMOVAL AND INSTALLATION	IE-4
TURBOCHARGER SYSTEM	IE-6
REMOVAL AND INSTALLATION	IE-6
BOOST PRESSURE CONTROL	
SYSTEM.....	IE-10
ABV	IE-10
INSPECTION.....	IE-11
TURBOCHARGER BOOST	
PRESSURE.....	IE-11
WASTE GATE VALVE.....	IE-11

1 AIR CLEANER

1-1 REMOVAL AND INSTALLATION

1-1-1 REMOVAL AND INSTALLATION PROCEDURES

(1) COMPONENTS



T : Tightening torque
Unit : N · m

IIES020004E.eps

(2) REMOVAL AND INSTALLATION PROCEDURES

1 1 a Cleaner Ay, air

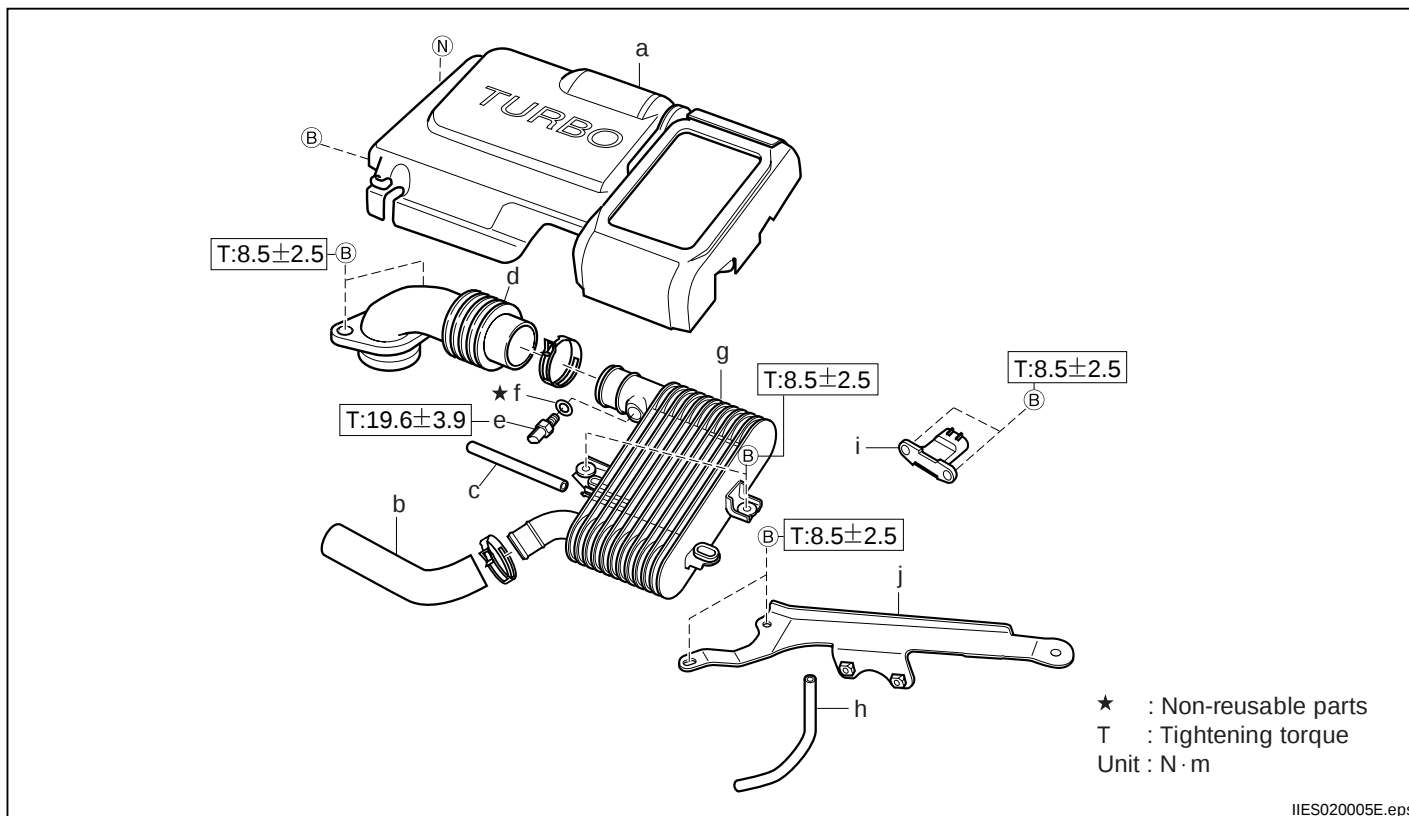
IE-ACL-D-T-00003

2 INTERCOOLER

2-1 REMOVAL AND INSTALLATION

2-1-1 REMOVAL AND INSTALLATION PROCEDURE

(1) COMPONENTS



IIES020005E.eps

(2) REMOVAL AND INSTALLATION PROCEDURES

- | | | | | | | | |
|---|----|---|--|----|---|---|--|
| 1 | 10 | a | Cover S/A, engine upper | 6 | 5 | f | Gasket |
| 2 | 9 | b | Hose, air intake No.1 | 7 | 4 | g | Intercooler A/y |
| 3 | 8 | c | Hose S/A, vacuum (VSV for ABV control - intercooler) | 8 | 3 | h | Hose S/A, vacuum (Pressure sensor - intake manifold) |
| 4 | 7 | d | Conenector A/y, intake air | 9 | 2 | i | Pressure sensor |
| 5 | 6 | e | Intake air temperature sensor | 10 | 1 | j | Bracket, intercooler |

IE-ITC-D-T-00001

3 EXHAUST MANIFOLD GASKET

3-1 REMOVAL AND INSTALLATION

3-1-1 ARTICLES TO BE PREPARED

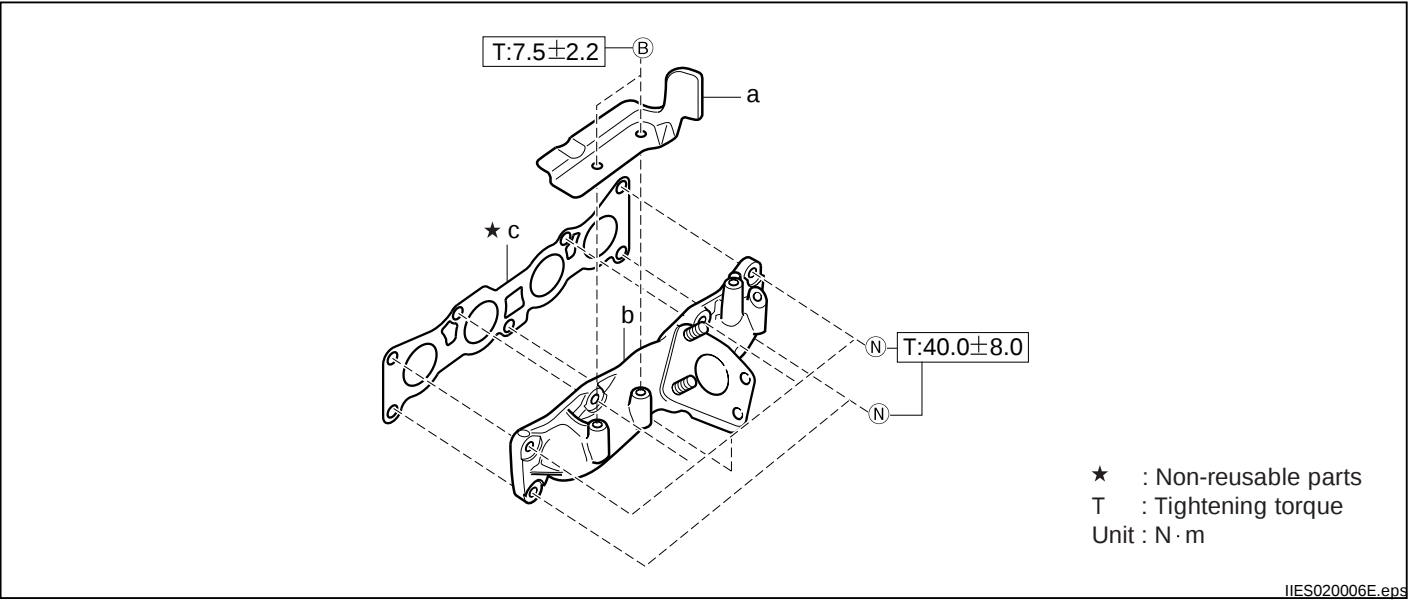
Gauge	Torque wrench
Lubricant	Engine oil

TIES020002E.eps

IE-EXM-D-P-00003

3-1-2 REMOVAL AND INSTALLATION PROCEDURES

(1) COMPONENTS



IIES020006E.eps

(2) REMOVAL AND INSTALLATION PROCEDURES

- 1 3 a Insulator, exhaust manifold heat No.1
- 2 2 b Manifold Ay, exhaust
- 3 1 c Gasket, exhaust manifold

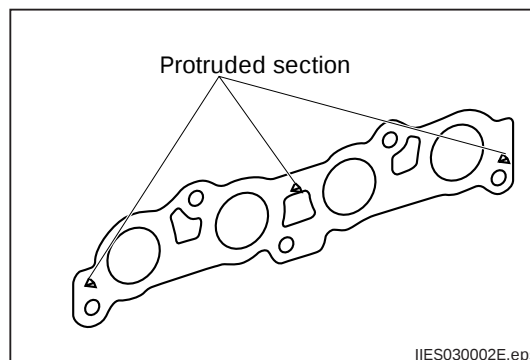
IE-EXM-D-T-00003

3-1-3 POINTS OF INSTALLATION

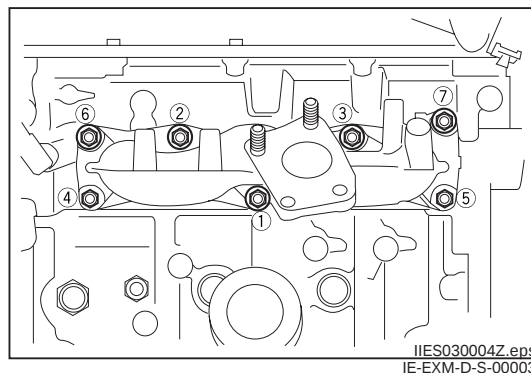
1. Install the exhaust manifold gasket.

CAUTION

- Install the exhaust gasket to the cylinder head so that it's protruded section faces to the cylinder head side.



2. Installation of exhaust manifold
 - (1) Tighten the bolts and nuts in the sequence as indicated in the figure on the right.



4 TURBOCHARGER SYSTEM

4-1 REMOVAL AND INSTALLATION

4-1-2 ARTICLES TO BE PREPARED

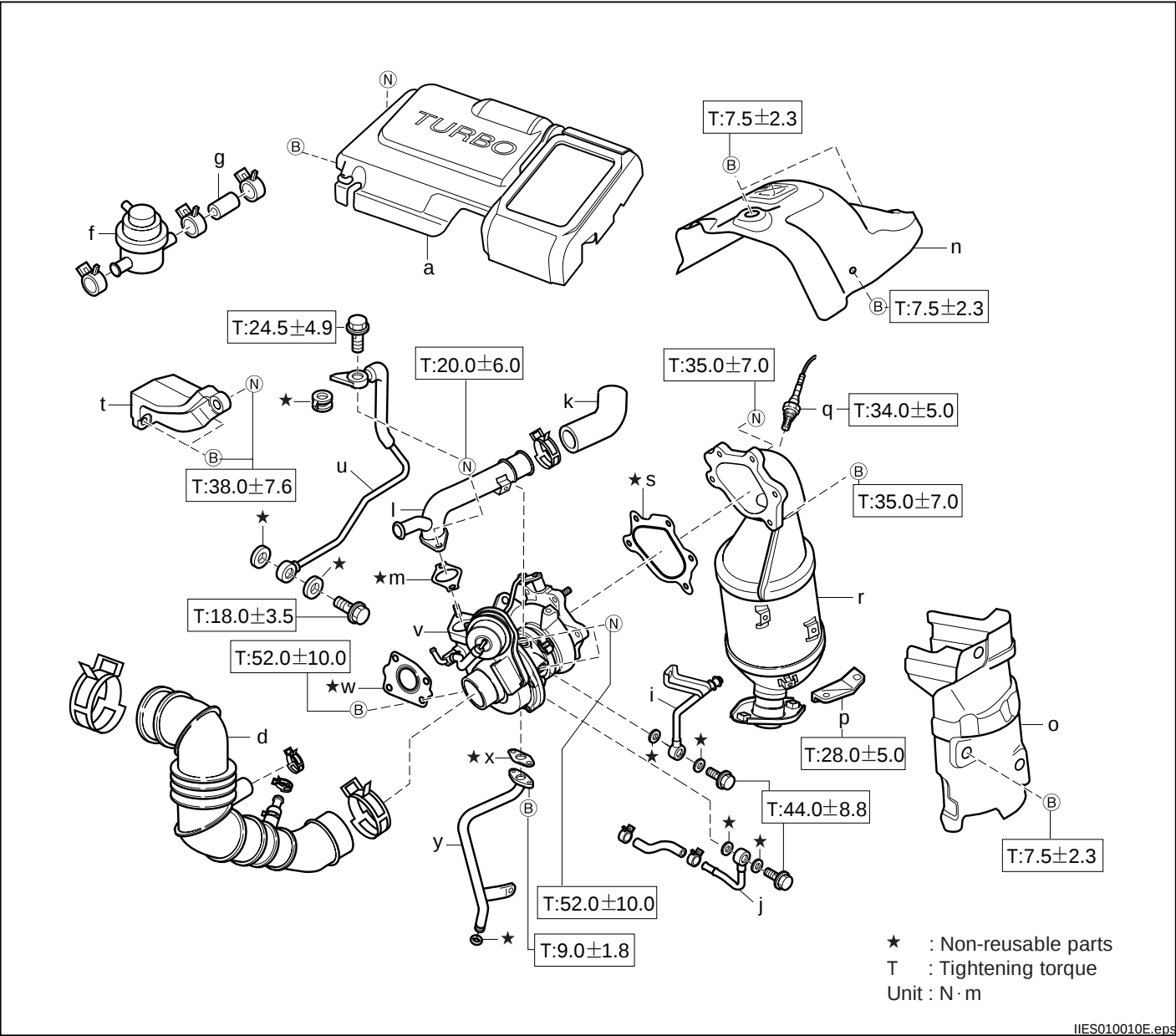
Gauge	Torque wrench
Lubricant	Engine oil

TIES020002E.eps

IE-TC-D-P-00012

4-1-3 REMOVAL AND INSTALLATION PROCEDURES

(1) COMPONENTS



IIES010010E.eps

(2) REMOVAL AND INSTALLATION PROCEDURES

1	25	a	Cover S/A, engine upper	14	12	n	Insulator, exhaust manifold heat, No.2
2	24	b	Hose, ventilation	15	11	o	Insulator, exhaust manifold heat, No.3
3	②③	c	Hose, air bypass No.2	16	10	p	Stay, exhaust manifold
4	22	d	Hose, air cleaner No.2	17	9	q	O ₂ sensor
5	②①	e	Hose, air bypass No.3	18	8	r	Manifold S/A, exhaust No.2
6	②①	f	ABV	19	7	s	Gasket, exhaust manifold No.1 case
7	①⑨	g	Hose	20	6	t	Stay, turbocharger
8	①⑧	h	Hose, air bypass No.1	21	5	u	Pipe, S/A turbo oil inlet
9	17	i	Pipe S/A, turbo water No.2	②②	④	v	Turbocharger Ay
10	16	j	Pipe S/A, turbo water No.1	②③	③	w	Gasket, turbo-to-exhaust manifold
11	15	k	Hose, air intake No.1	②④	②	x	Gasket, turbo oil outlet
12	14	l	Pipe, S/A air inlet	25	1	y	Pipe S/A, turbo oil outlet
13	13	m	Gasket, Intake pipe				

IE-TC-D-T-00012

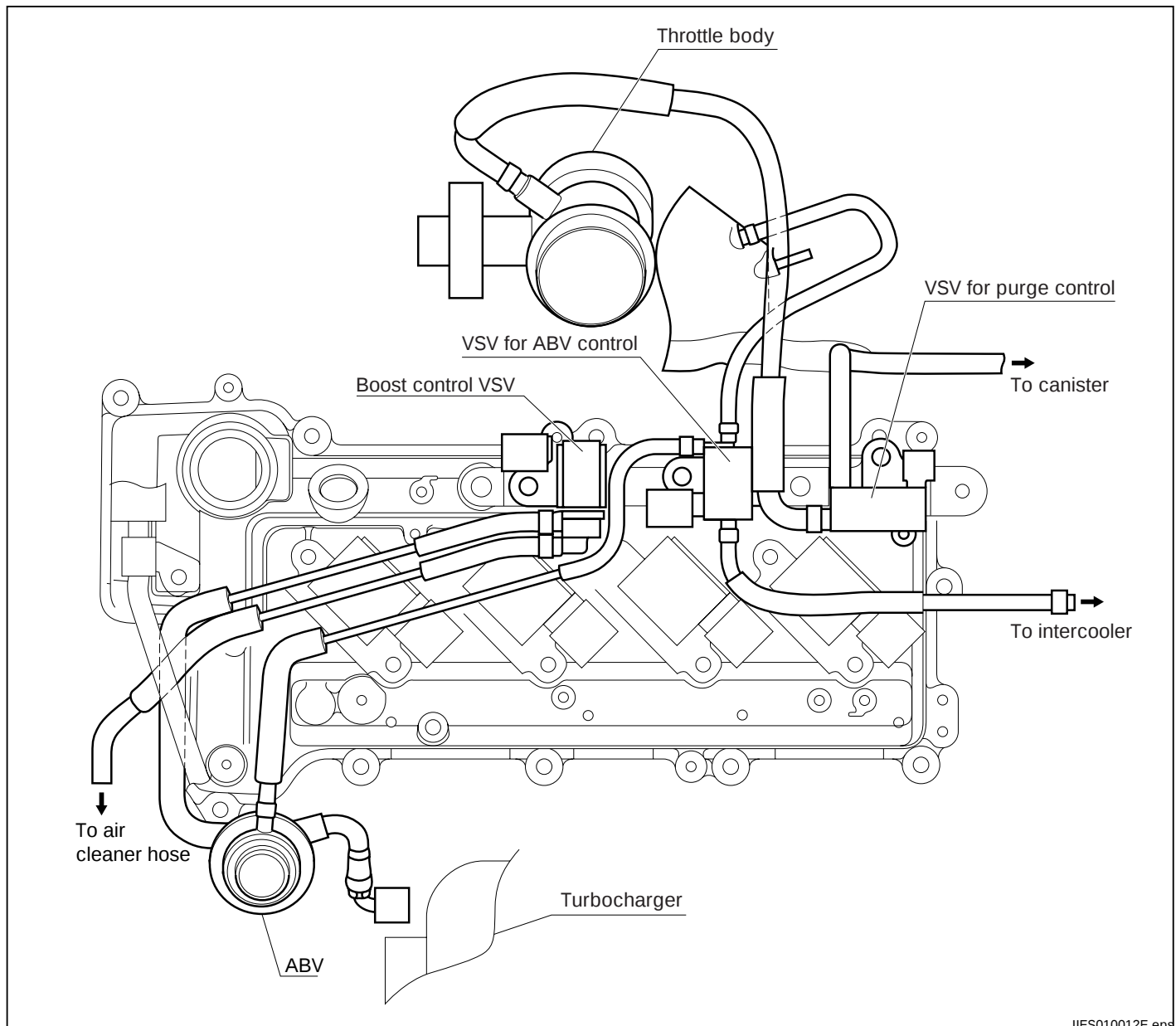
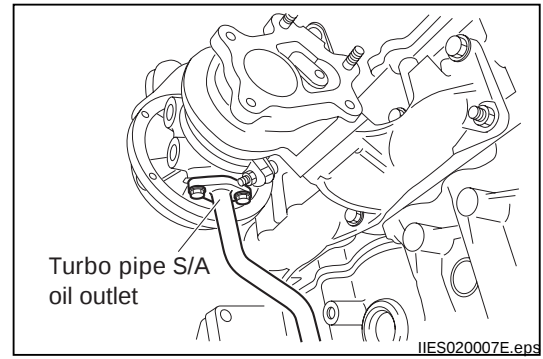
4-1-4 POINTS OF REMOVAL**1. Removal of turbocharger**

- (1) Remove the two bolts that retain the turbocharger to the turbo oil outlet pipe S/A.
- (2) Remove the bolt that retains the turbocharger to the exhaust manifold.
- (3) Remove the turbocharger.
- (4) Remove the turbo-to-exhaust manifold gasket and the turbo oil outlet gasket.

IE-TC-D-D-00012

4-1-5 POINTS OF INSTALLATION

1. Installation of turbocharger
 - (1) When the turbo oil outlet pipe S/A is installed, be sure to install a new O-ring.
 - (2) Securely tighten the two attaching bolts of the turbo oil outlet pipe subassembly with a new turbo oil outlet gasket interposed.
 - (3) Temporarily install the turbocharger to the exhaust manifold with a new turbo-to-exhaust manifold gasket interposed. At this time, insert the turbo oil outlet pipe subassembly into the hole of the cylinder block.
 - (4) Securely tighten the bolt and nut attaching the turbocharger to the exhaust manifold.
 - (5) Assemble the turbo oil outlet pipe subassembly to the engine mounting bracket.
2. Assemble the ABV in such a way that the arrow mark provided at the side faces the air cleaner hose side.
3. Install the air bypass hose No.1, air bypass hose No.3 and air bypass hose No.2, as indicated in the following figure given below.



4-1-6 OPERATION AFTER INSTALLATION

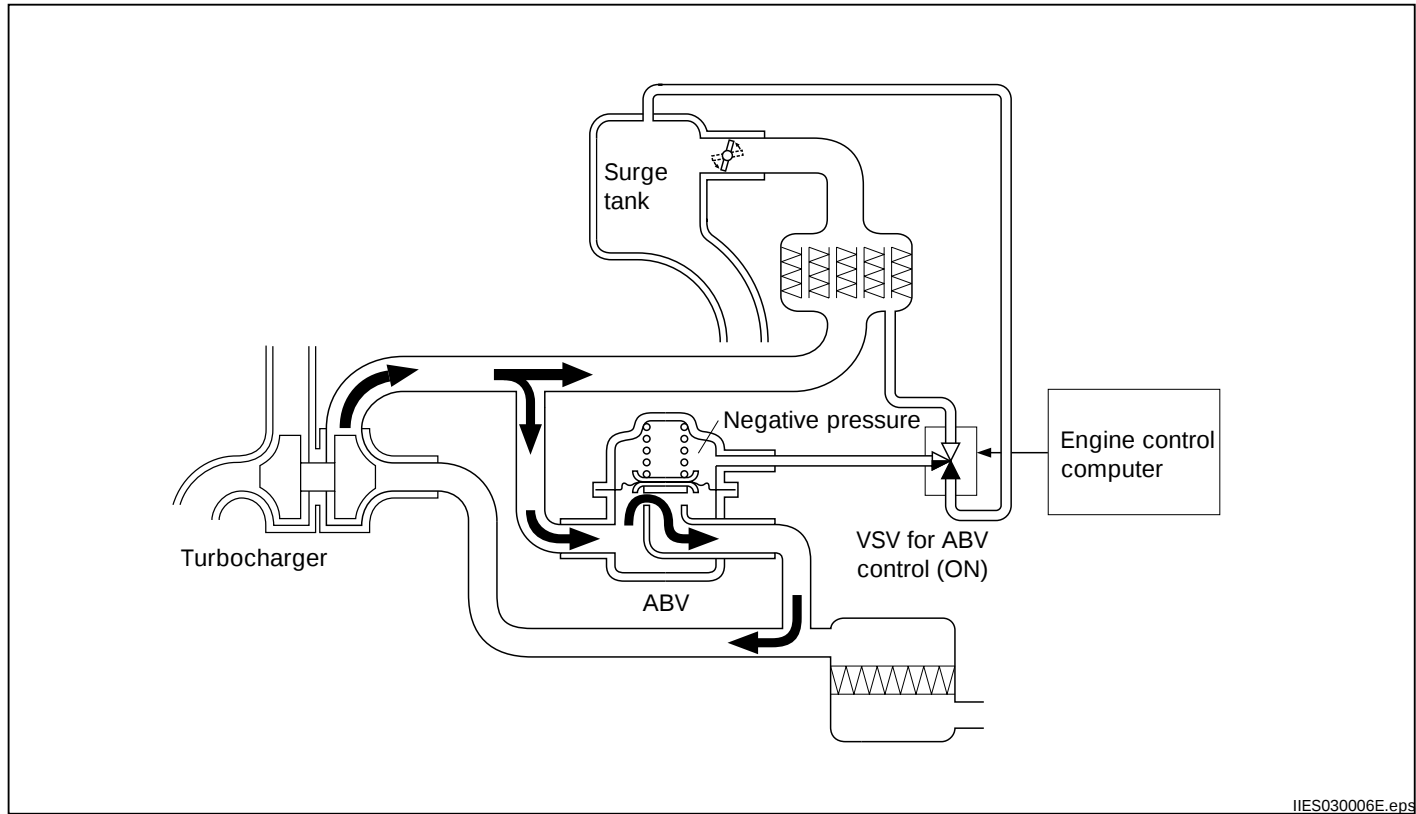
1. Install the compressor of the air conditioner.
2. Install the vane pump.
3. Install the V-ribbed belt and adjust its tension.
4. Install the front exhaust pipe.
5. Connect the negative terminal of the battery.
6. Replenish engine oil.
7. Replenish engine coolant.

5 BOOST PRESSURE CONTROL SYSTEM

5-1 ABV

5-1-1 INSPECTION

(1) SYSTEM DIAGRAM



(2) OPERATION CHECK

1. Disconnect the ABV at the air cleaner side.
2. During the idling state after starting the engine, there shall be no discharge of the sucked air from the ABV.
3. Depress the accelerator suddenly from the idling state. When the pointer of the tachometer registers 4000 rpm, release your foot suddenly from the accelerator. There shall be a discharge of the sucked air from the ABV.

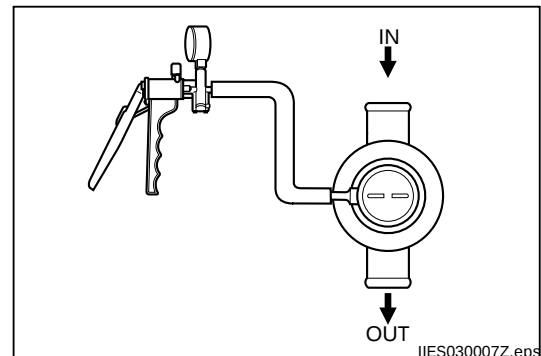
(3) UNIT INSPECTION

1. Remove the air bypass valve.
2. When a negative pressure is applied progressively to the sensing port (diaphragm chamber) of the air bypass valve, ensure that the ABV valve opens. Furthermore, when the negative pressure is retained under this state, there shall be no significant drop of the negative pressure.

NOTE

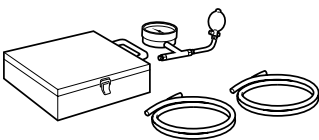
- Check negative pressure 53.3 kPa

3. After the check has been made, assemble the air bypass valve in such a way that the arrow mark provided at the side faces toward the air cleaner hose.



5-2 INSPECTION

5-2-1 ARTICLES TO BE PREPARED

	Shape	Part number, part name	Use
SST		09992-00242-000 Turbocharger pressure gauge	Measure turbocharger pressure and check for actuator operation
Tool	Dial gauge, Torque wrench		
Lubricant	Engine oil		

TIES014002E.eps

IE-BC-I-P-00001

5-3 TURBOCHARGER BOOST PRESSURE

5-3-1 INSPECTION

(1) DRIVING TEST

WARNING

- Conduct a driving test in a site where the full open acceleration running can be conducted safely in the ② range, with two persons riding.
1. Connect a three-way pipe and a turbocharger pressure gauge between the surge tank (intake manifold) and the pressure sensor. Put the gauge at the vehicle interior.
 2. After warming-up the engine, perform a full open acceleration in the ② range until the engine attains 4400 rpm.
 3. "Check the pressure at the time when the engine attains 4200rpm. If the pressure is not the specified value, replace the turbocharger Ay.

SPECIFIED VALUE: 3.5-6.1kpa

CAUTION

- Never perform adjustment or disassembly on the turbocharger Ay.

IE-BC-T-I-00001

5-4 WASTE GATE VALVE

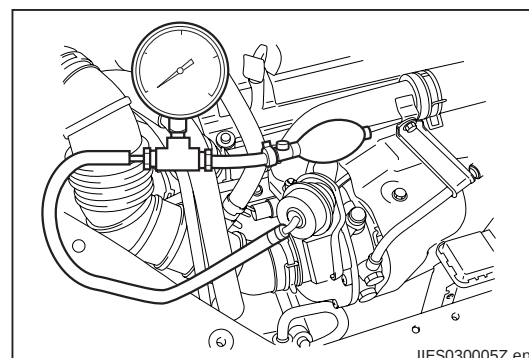
5-4-1 OPERATION CHECK

SST: 09992-00242-000

1. Disconnect the waste gate actuator hose at the actuator side.
2. With a turbocharger pressure gauge connected, apply a pressure of 67 kPa. Ensure that the rods and links operate and, when the pressure is released, they return to the original positions without any binding.
3. Check the hoses for signs of cracks and damage.

CAUTION

- Do not apply a pressure exceeding 78 kPa to the waste gate actuator. Failure to observe this caution may damage the diaphragm.



IIES030005Z.eps

IE-BC-W-I-00001