Your Ultimate Source for OEM Repair Manuals

FactoryManuals.net is a great resource for anyone who wants to save money on repairs by doing their own work. The manuals provide detailed instructions and diagrams that make it easy to understand how to fix a vehicle.

2007 MAZDA 6/Atenza Hatchback OEM Service and Repair Workshop Manual

Go to manual page

Small-type turbocharger charging deficiency inspection

Possible cause

MALFUNCTION OCCURRENCE LOCATION		PHENOMENON	CAUSE	INSPECTION ORDER
Small-type compressor side	Large-small compressor connection pipe	Pressurization leak	Connection looseness or disconnection of large-small compressor connection pipe	1
	Compressor bypass valve	Pressurization leak	Crack in compressor bypass valve outlet	2
		Large valve opening angle	Valve sticking Rod link deformity or disconnection Vacuum malfunction in compressor bypass solenoid valve	6
		Pressurization leak	Valve deformity Foreign matter adhering to seal surface	7
Small-type turbine side	Between turbine inlet and cylinder head Flanges on both sides of regulating valve Between turbine outlet and catalytic converter	Exhaust gas leakage	Cracks Gasket deterioration	3, 10
Regulating valve		Large valve opening angle	Valve sticking Rod link deformity Vacuum malfunction in regulating solenoid valve	4, 5, 12
		Exhaust gas leakage	Cracks Valve deformity Foreign matter adhering to seal surface	10, 11
Small-type compressor wheel		Wheel damage or sticking	Foreign matter penetration Rotation exceeds threshold maximum	8
Small-type turbocharger shaft or bearing		Sticking or dislodged, broken small-type compressor installation nut	Foreign matter penetration Deficient lubrication	9

Small-type turbocharger charging deficiency inspection (on-vehicle inspection)

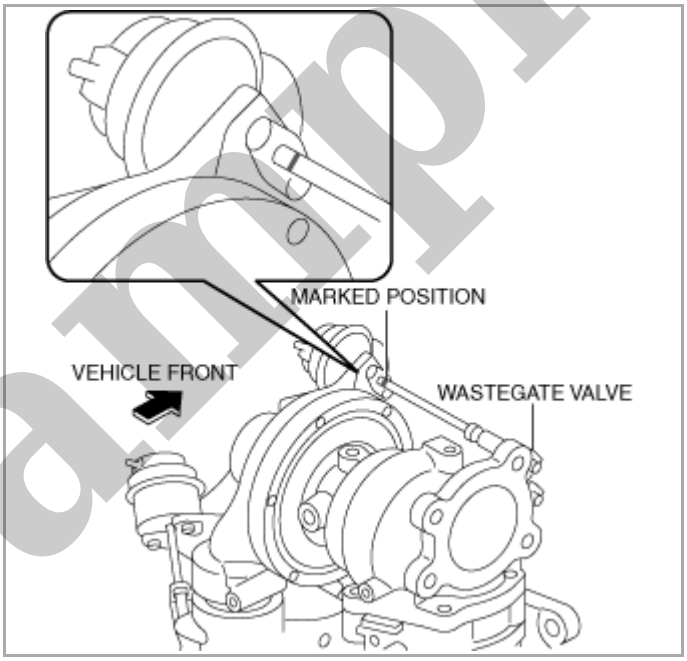
STEP	INSPECTION	RESULTS	ACTION
1	INSPECTION OF PRESSURIZATION LEAKAGE FROM LARGE-SMALL COMPRESSOR CONNECTION PIPE • Inspect for disconnection, looseness in large-small compressor connection pipe. • If there is even slight looseness, apply soapy water and verify if bubbles are produced while running the engine under no load (selector lever in P position, engine speed 3000 to 3500 rpm.) • Are bubbles produced?	Yes	Replace the turbocharger. (See TURBOCHARGER REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)
		No	Go to the next step.

Possible cause

MALFUNCTION OCCURRENCE LOCATION	PHENOMENON	CAUSE	INSPECTION ORDER
Regulating valve	Largel valve opening angle	Valve sticking Rod link deformity Vacuum malfunction in regulating solenoid valve	1
Compressor bypass valve	Large valve opening angle	Valve sticking Rod link deformity Vacuum malfunction in compressor bypass solenoid valve	2
	Exhaust gas leakage	Valve deformity Foreign matter adhering to seal surface	5
Large-type compressor wheel	Wheel damage or sticking	Foreign matter penetration Rotation exceeds threshold maximum	3
Large-type turbocharger shaft or bearing	Sticking or dislodged, broken large-type compressor installation nut	Foreign matter penetration Deficient lubrication	4
Small-type compressor wheel	Wheel damage or sticking	Foreign matter penetration Rotation exceeds threshold maximum	6
Small-type turbocharger shaft or bearing	Sticking or dislodged, broken small-type compressor installation nut	Foreign matter penetration Deficient lubrication	7

Oil leakage inspection of compressor side

STEP	INSPECTION	RESULTS	ACTION
1	REGULATING VALVE OPENING ANGLE INSPECTION • Verify PID REGVP and REGVP_DSD using the M-MDS data logger function. • Idle the engine. • Is the difference between REGVP and REGVP_DSD 1.0 mm {0.039 in} or more?	Yes	Replace the turbocharger. (See TURBOCHARGER REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)
		No	Inspect the vacuum pipe. If it is normal, go to the next step. If there is any malfunction, repair or replace the malfunctioning part.
2	COMPRESSOR BYPASS VALVE OPENING ANGLE INSPECTION • Perform the following inspections: — Is the compressor bypass valve link deviated? — Remove the air pipe of the compressor outlet and verify that the compressor bypass valve closes normally and that there are no gaps. — Remove the compressor bypass valve vacuum pipe, and verify the lift amount with a vacuum pump. Starting with a change in lift amount of approx. -30 kPa {-225 mmHg, -8.9 inHg}, is the maximum lift amount (approx. 11 mm {0.43 in}) at approx. -60 kPa {-450 mmHg, -18 inHg}? • Is there any malfunction in the inspection results?	Yes	Replace the turbocharger. (See TURBOCHARGER REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)
		No	Go to the next step.

STEP	INSPECTION	RESULTS	A
2	**WASTEGATE VALVE OPENING ANGLE INSPECTION** • Perform the following inspections: — Move the wastegate valve rod by hand in the axial direction. • Does it move normally? **Caution** **• Do not apply excessive load to the rod.** **• Do not use a tool.** — Remove the wastegate valve vacuum pipe, and inspect the lift amount using the vacuum pump. • Starting with a change in lift amount of approx. -6 kPa {-45 mmHg, -2 inHg}, is the maximum lift (approx. 6 mm {0.2 in}) at a rate of approx. -20 kPa {-150 mmHg, -5.9 inHg} while conforming smoothly to the vacuum amount? — After marking the rod with the engine stopped, mark the rod again while the engine is idling. Then, turn off the engine and measure the distance between the two marked locations. • Is the distance between the marks 5−8 mm {0.2−0.3 in}?  ac5wzw00005907 • Is there any malfunction in the inspection results?	Yes	Re tu r. (S TU RO RI NS OI [S D
		No	Go ne
3	**LARGE-TYPE TURBOCHARGER SHAFT AND BEARING INSPECTION** • Rotate the induction side by hand and inspect for play in the axial direction. • Does the shaft not rotate smoothly or is there play of 0.5 mm {0.02 in} or more?	Yes	Re tu r. (S TU RO RI NS OI [S D
		No	Go ne

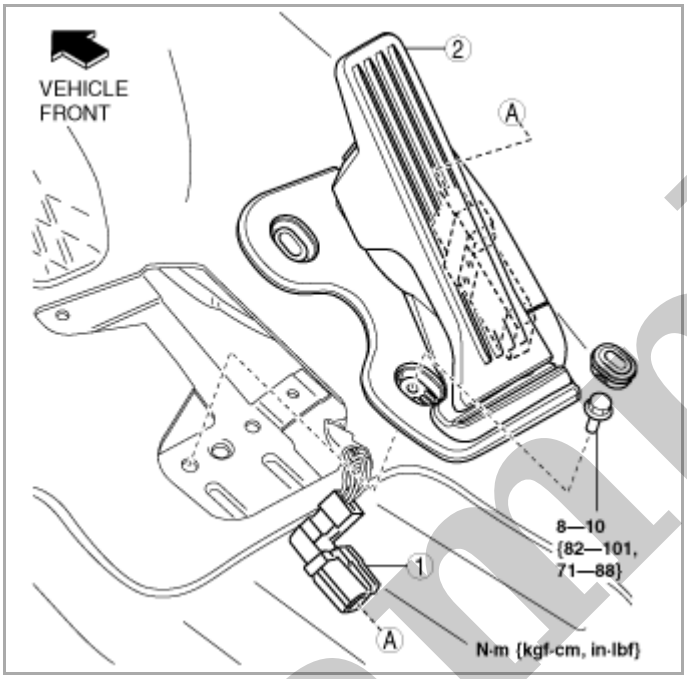
ACCELERATOR PEDAL REMOVAL/INSTALLATION [SKYACTIV-D 2.2]

SM2897425

id0113z780140

1.Disconnect the negative battery terminal. (See NEGATIVE BATTERY TERMINAL DISCONNECTION/CONNECTION.)

2.Remove in the order indicated in the table.



ac5uuw00000361

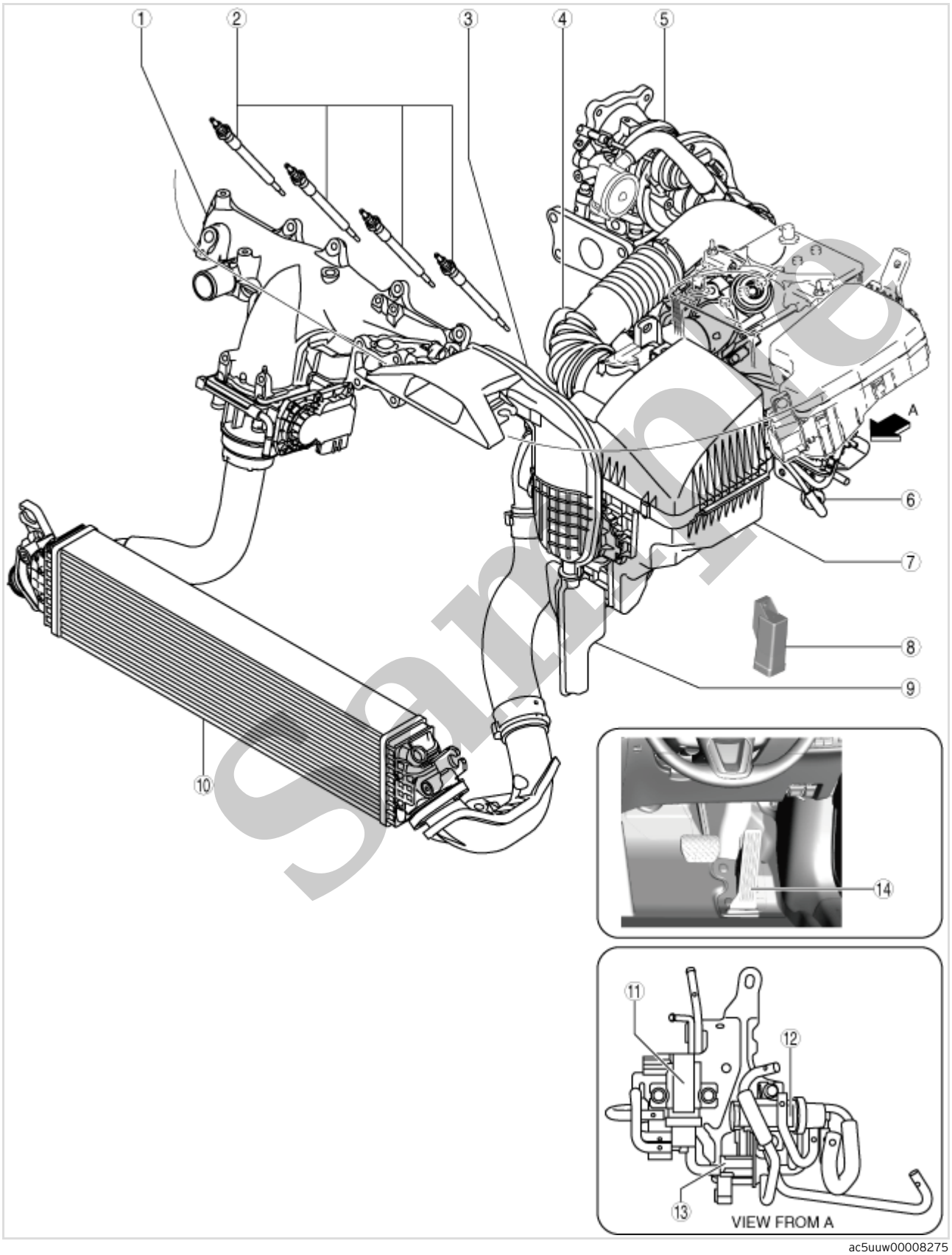
1	APP sensor connector
2	Accelerator pedal

3.Install in the reverse order of removal.

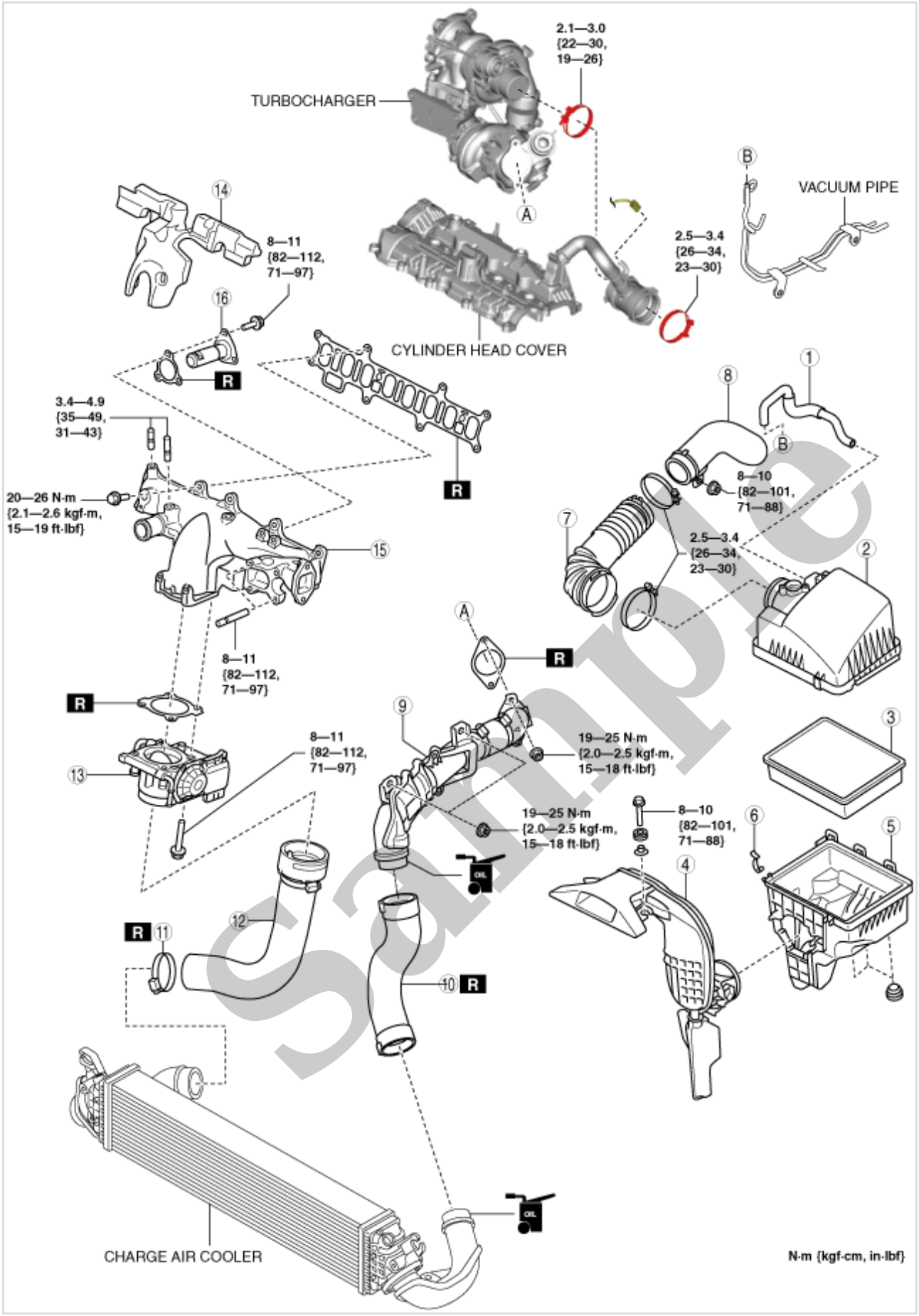
INTAKE-AIR SYSTEM LOCATION INDEX [SKYACTIV-D 2.2]

SM2897427

id0113z780170

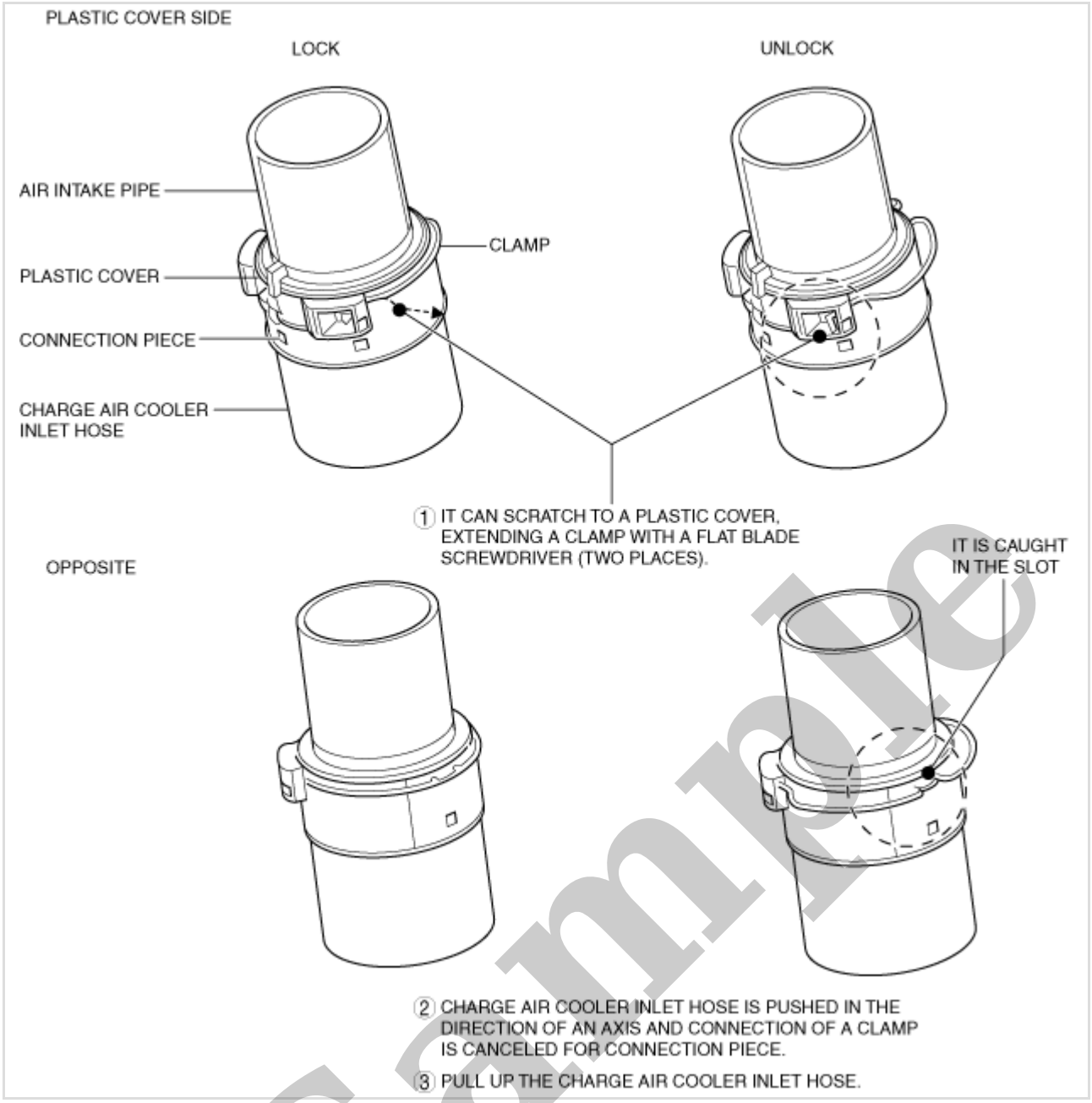


ac5uuw00008275



ac5uuw00008277

1	Vacuum hose (See Vacuum Hose Installation Note.)
2	Air cleaner cover (See Air Cleaner Cover Removal Note.) (See Air Cleaner Cover Installation Note.)



ac5uuw00010798

Hose Clamp Removal Note

1.Remove the front under cover No.1 and the front under cover No.2. (See FRONT UNDER COVER No.1 REMOVAL/INSTALLATION.) (See FRONT UNDER COVER No.2 REMOVAL/INSTALLATION.)

2.Remove the hose clamp.

Charge Air Cooler Outlet Hose Removal Note

1.Release the lock of connector and remove the charge air cooler outlet hose.

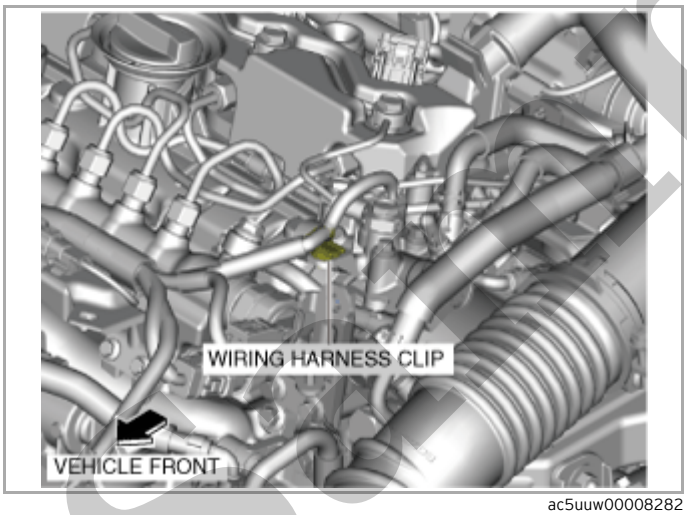
7.Remove the intake manifold insulator.

Intake Manifold Removal Note

1.Disconnect the connectors of the following parts:

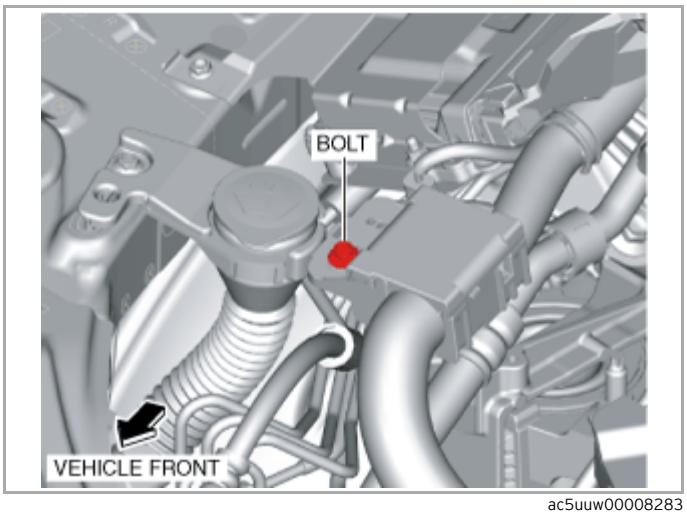
- Engine oil temperature sensor/engine oil pressure sensor (See ENGINE OIL TEMPERATURE SENSOR/ENGINE OIL PRESSURE SENSOR REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)
- ECT sensor (See ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)
- MAP sensor No.2 (See MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)
- Fuel pressure relief valve (See COMMON RAIL REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)
- Glow plug short-cord (See GLOW PLUG REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)
- Camshaft position sensor (See CAMSHAFT POSITION (CMP) SENSOR REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)
- EGR cooler bypass valve (See EGR COOLER BYPASS VALVE REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)
- Terminal B cable (starter) (See STARTER REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)

2.Disconnect the wiring harness clip shown in the figure.

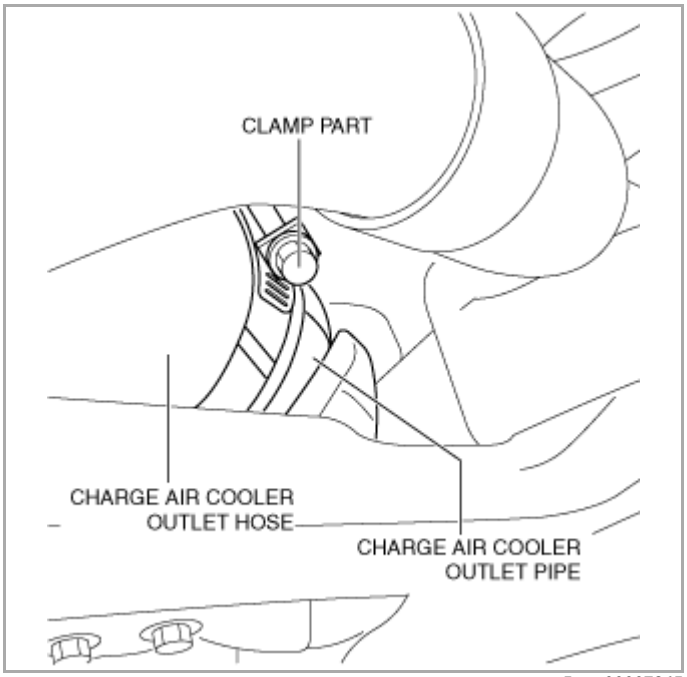


ac5uuw00008282

3.Remove the bolt shown in the figure.



ac5uuw00008283

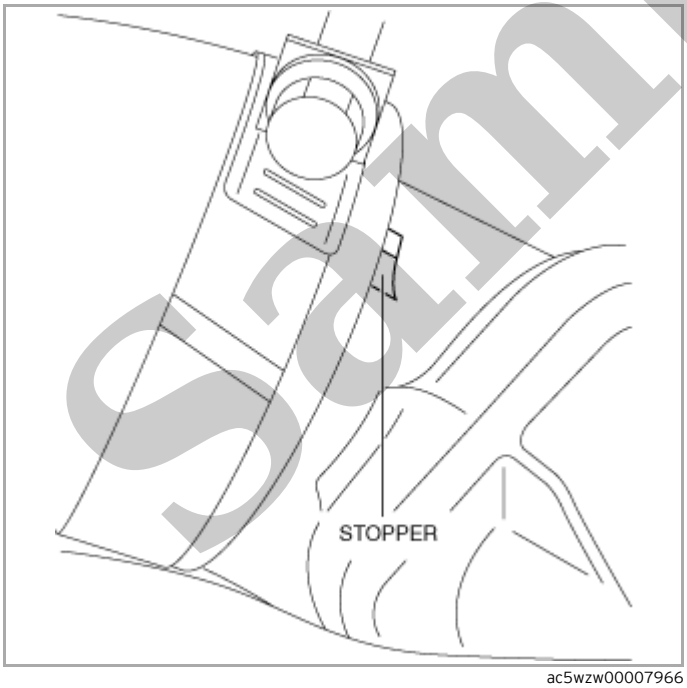


ac5wzw00007965

Caution

• When installing the hose, do not apply oil to the area that was cleaned to prevent it from becoming disconnected.

4.Insert the charge air cooler outlet hose until it contacts the charge air cooler outlet pipe stopper.



ac5wzw00007966

5.Re-position the temporarily installed hose clamp to the position 5−7 mm {0.20−0.27 in} from the charge air cooler outlet pipe stopper.