

SERVICE MANUAL

MODEL
A10 & A12
ENGINE

SECTION EC

EMISSION CONTROL SYSTEM

EC

GENERAL DESCRIPTION.....EC- 2

**CRANKCASE EMISSION
CONTROL SYSTEMEC- 2**

**EVAPORATIVE EMISSION
CONTROL SYSTEMEC- 3**

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GENERAL DESCRIPTION

There are two types of control system. These are:

1. Closed type crankcase emission control system.

2. Evaporative emission control system.

Periodic inspection and required

servicing of these systems should be carried out to reduce harmful emissions to a minimum.

CRANKCASE EMISSION CONTROL SYSTEM

DESCRIPTION

This system returns blow-by gas to both the intake manifold and carburetor air cleaner.

The positive crankcase ventilation (P.C.V.) valve is provided to conduct crankcase blow-by gas to the intake manifold.

During partial throttle operation of the engine, the intake manifold sucks the blow-by gas through the P.C.V. valve.

Normally, the capacity of the valve is sufficient to handle any blow-by and a small amount of ventilating air.

The ventilating air is then drawn from the dust side of the carburetor air cleaner, through the tube connecting carburetor air cleaner to rocker cover, into the crankcase.

Under full-throttle condition, the manifold vacuum is insufficient to draw the blow-by flow through the valve, and its flow goes through the tube connection in the reverse direction.

On cars with an excessively high blow-by some of the flow will go through the tube connection to carburetor air cleaner under all conditions.

INSPECTION

P.C.V. VALVE AND FILTER

Check P.C.V. valve in accordance with the following method.

With engine running at idle, remove the ventilator hose from P.C.V. valve, if the valve is working, a hissing noise will be heard as air passes through the valve and a strong vacuum should be felt immediately when a finger is placed over valve inlet.

Replace P.C.V. valve and filter in accordance with the maintenance schedule.

VENTILATION HOSE

1. Check hoses and hose connections for leaks.

2. Disconnect all hoses and clean with compressed air.

If any hose cannot be free of obstructions, replace.

Ensure that flame arrester is surely inserted in hose between air cleaner and rocker cover.

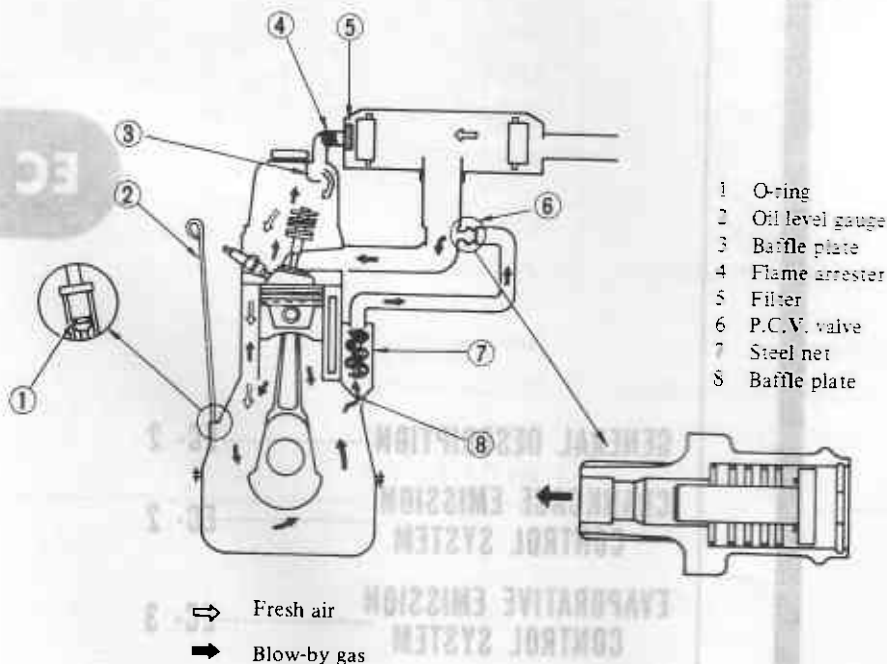


Fig. EC-1 Crankcase emission control system

EF266

EVAPORATIVE EMISSION CONTROL SYSTEM

DESCRIPTION

This system consists of four basic elements indicated below:

1. Fuel tank with positive sealing filler cap.
2. Vapor-liquid separator. (B210 and B120 models)
3. Vapor vent line.
4. Flow guide valve.

The flow guide valve prevents blow-by gas from flowing into the fuel tank and guides fresh air into it, preventing gasoline vapor from escaping into the carburetor air cleaner.

Flow guide valve operates and blow-by gas and gasoline vapor flow as follows.

When the engine is not running, the vapor vent line, vapor-liquid separator and fuel tank are filled with gasoline vapor produced in the sealed type fuel tank. A flow guide valve opens when the gas pressure is above 10 mmHg (0.4 inHg). The gas passed through the flow guide valve (C) accumulates in the crankcase. Once the engine starts, the gas evaporating in the crankcase is

sucked into the manifold for combustion. When the pressure of the sealed type fuel tank, vapor-liquid separator and vapor vent line becomes negative through the decrease in fuel, the flow guide valve (A) opens to send fresh air from the carburetor air cleaner to the fuel tank. When flow guide valve does not operate properly or vent line is clogged, fresh air is sucked into fuel tank through relief valve of fuel filler cap or vent cleaner to prevent damage to fuel tank.

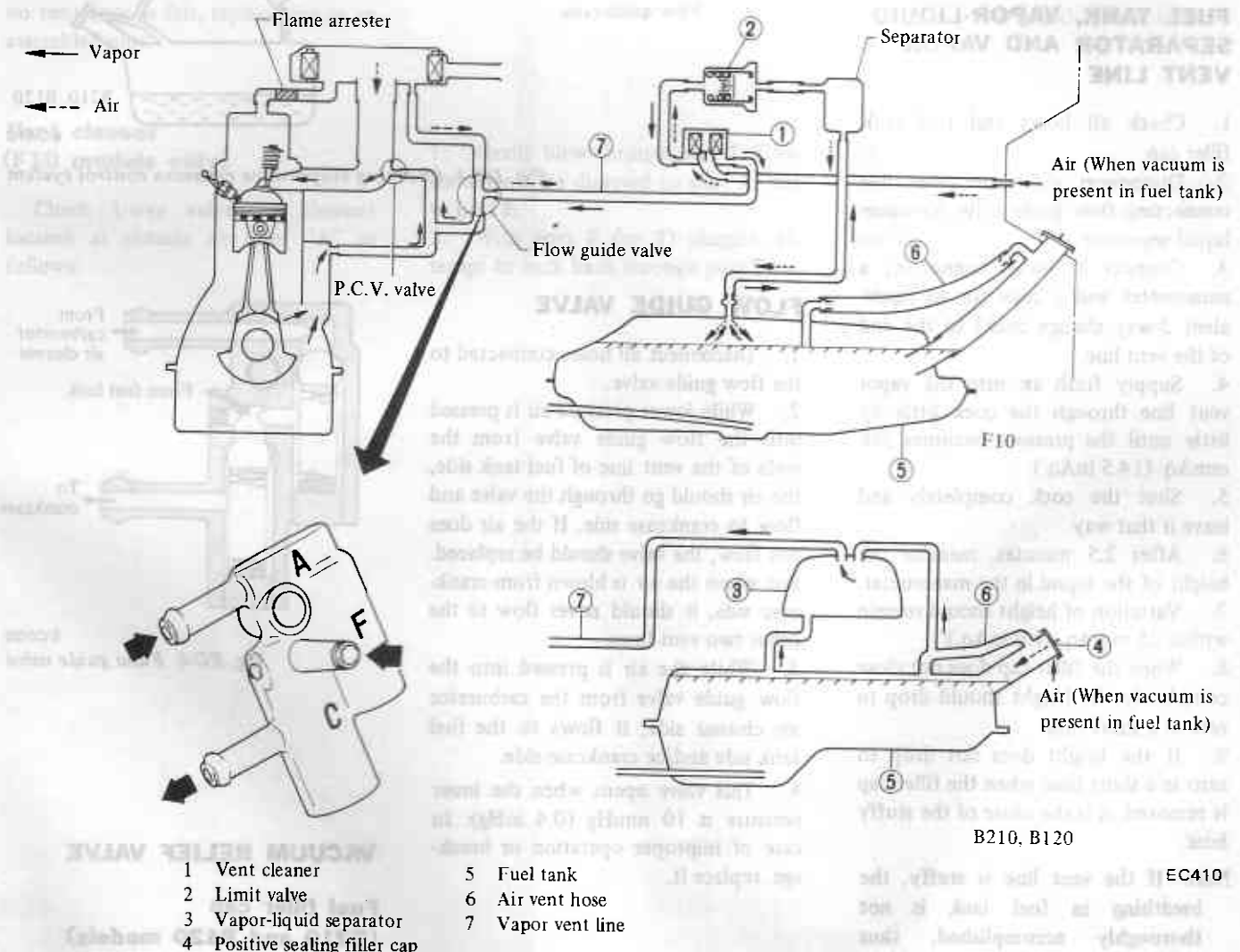


Fig. EC-2 Evaporative emission control system

FLOW GUIDE VALVE

This valve is mounted in the engine compartment. Marks A, F and C are engraved in the body of the valve to indicate the connection of the vapor vent line.

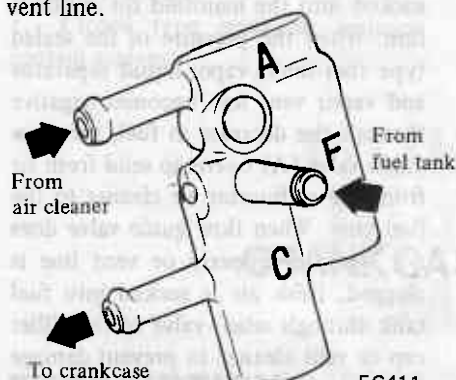


Fig. EC-3 Flow guide valve

INSPECTION

FUEL TANK, VAPOR-LIQUID SEPARATOR AND VAPOR VENT LINE

1. Check all hoses and fuel tank filler cap.
2. Disconnect the vapor vent line connecting flow guide valve to vapor-liquid separator.
3. Connect a 3-way connector, a manometer and a cock (or an equivalent 3-way change cock) to the end of the vent line.
4. Supply fresh air into the vapor vent line through the cock little by little until the pressure becomes 368 mmAq. (14.5 inAq.).
5. Shut the cock completely and leave it that way.
6. After 2.5 minutes, measure the height of the liquid in the manometer.
7. Variation of height should remain within 25 mmAq. (1.0 inAq.).
8. When the filler cap does not close completely the height should drop to zero in a short time.
9. If the height does not drop to zero in a short time when the filler cap is removed, it is the cause of the stuffy hose.

Note: If the vent line is stuffy, the breathing in fuel tank is not thoroughly accomplished, thus causing insufficient delivery of fuel to engine or vapor lock. It must therefore be repaired or replaced.

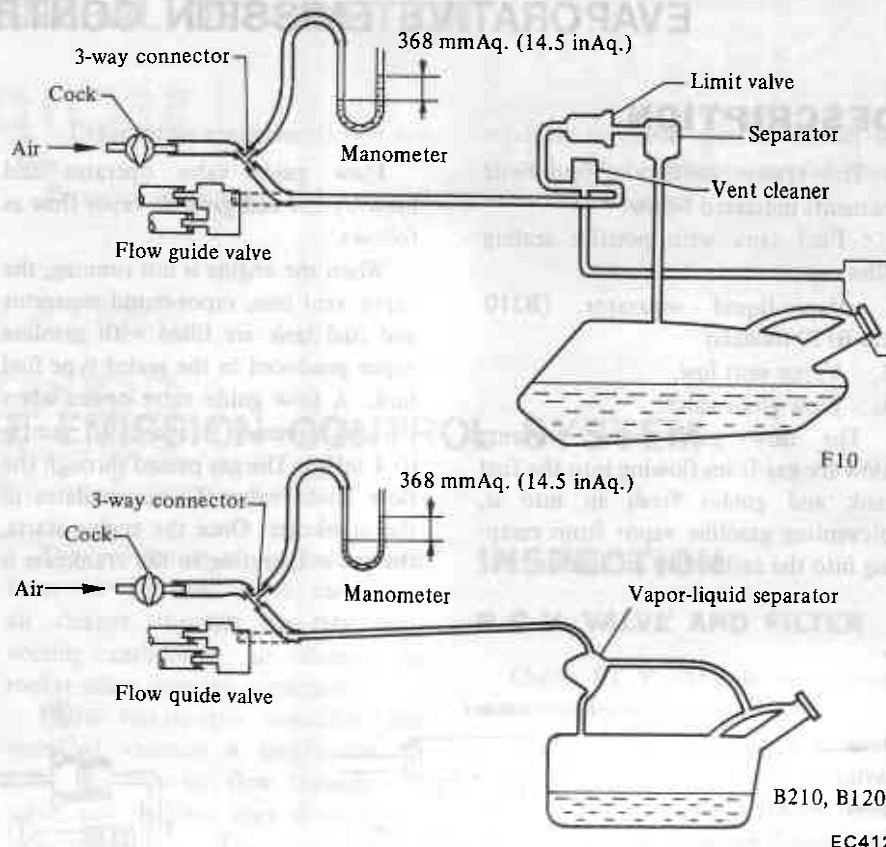
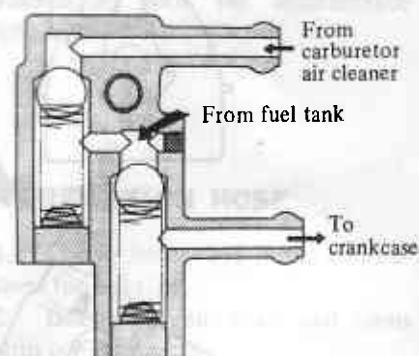


Fig. EC-4 Checking evaporative emission control system

FLOW GUIDE VALVE

1. Disconnect all hoses connected to the flow guide valve.
2. While lower pressure air is pressed into the flow guide valve from the ends of the vent line of fuel tank side, the air should go through the valve and flow to crankcase side. If the air does not flow, the valve should be replaced. But when the air is blown from crankcase side, it should never flow to the other two vent lines.
3. While the air is pressed into the flow guide valve from the carburetor air cleaner side, it flows to the fuel tank side and/or crankcase side.
4. This valve opens when the inner pressure is 10 mmHg (0.4 inHg). In case of improper operation or breakage, replace it.



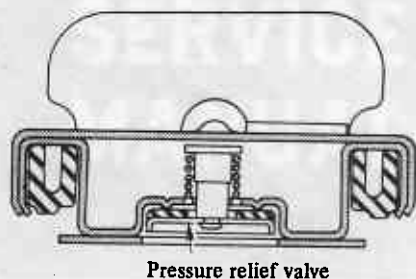
EC030

Fig. EC-5 Flow guide valve

VACUUM RELIEF VALVE

Fuel filler cap (B210 and B120 models)

Remove fuel filler cap and see if it functions properly as follows:



Pressure relief valve

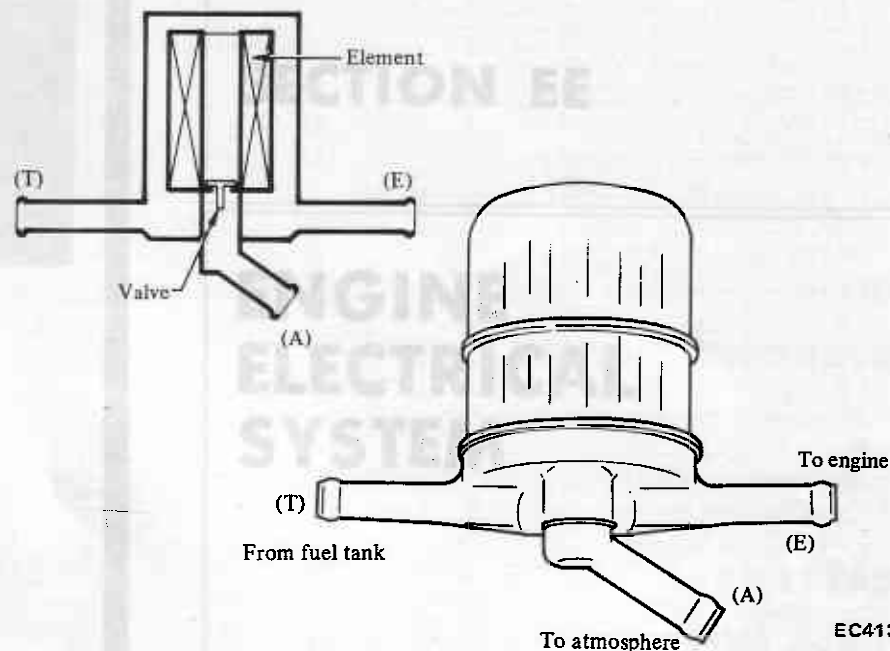
EF271

Fig. EC-6 Fuel filler cap

1. Wipe valve housing clean and put it in your mouth.
2. Inhaling air. A slight resistance accompanied by valve indicates that valve is in good mechanical condition. Note also that, by further inhaling air, the resistance should disappear with valve clicks.
3. If valve seems to be clogged, or if no resistance is felt, replace cap as an assembled unit.

Vent cleaner (F10 models only)

Check 1-way valve and element located at outside air inlet "A" as follows:



EC413

Fig. EC-7 Vent cleaner

1. Orally blow through port T. Flow should not be directed to port A, but to port E.
2. With port E (or T) plugged, attempt to suck back through port T (or

E).

Flow accompanied with a slight resistance should be directed from port A.

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