

# **WORKSHOP MANUAL**

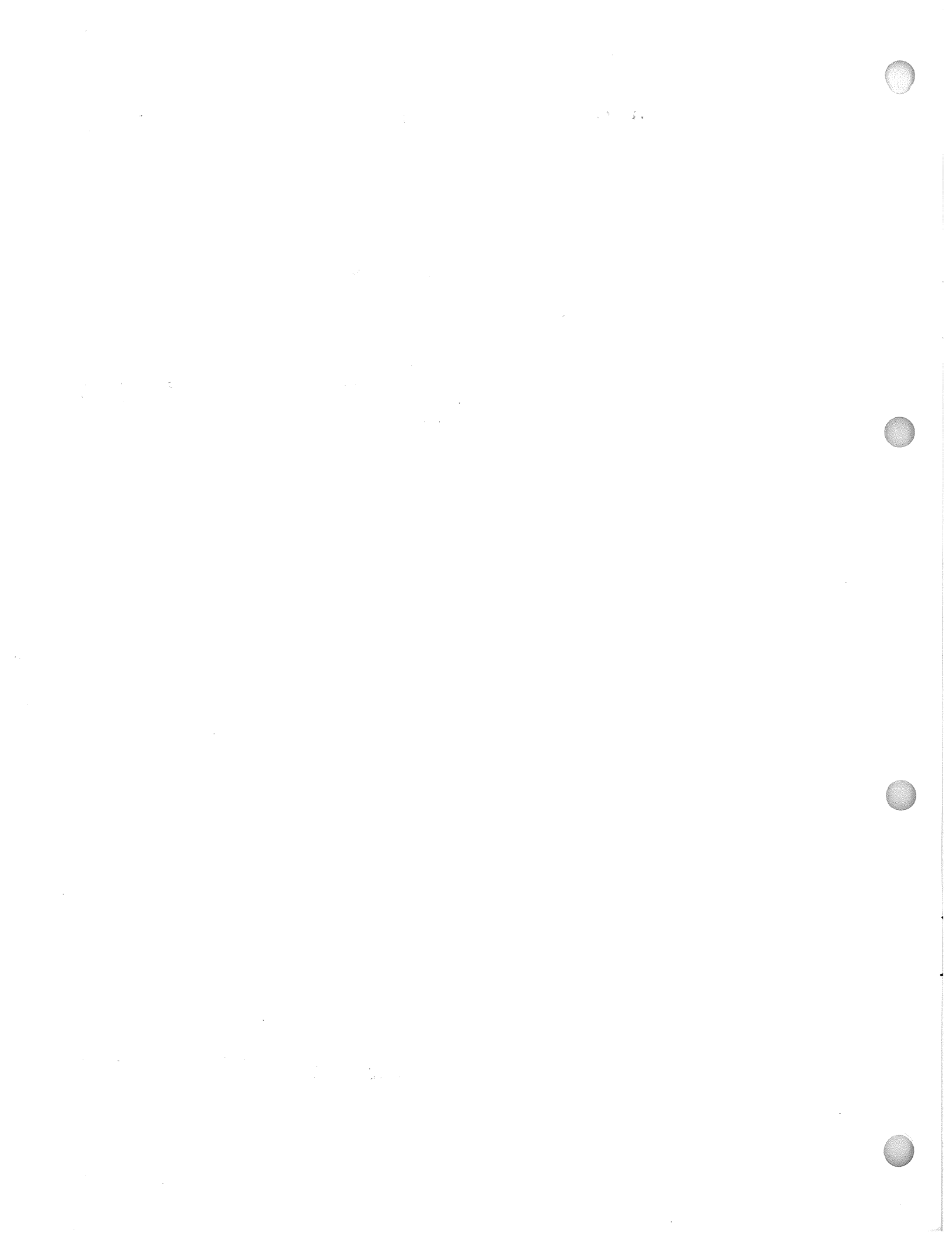
**KB**

**SECTION 08A**

## **FUEL SYSTEM, INTAKE SYSTEM AND EXHAUST SYSTEM**



**ISUZU MOTORS LIMITED**



---

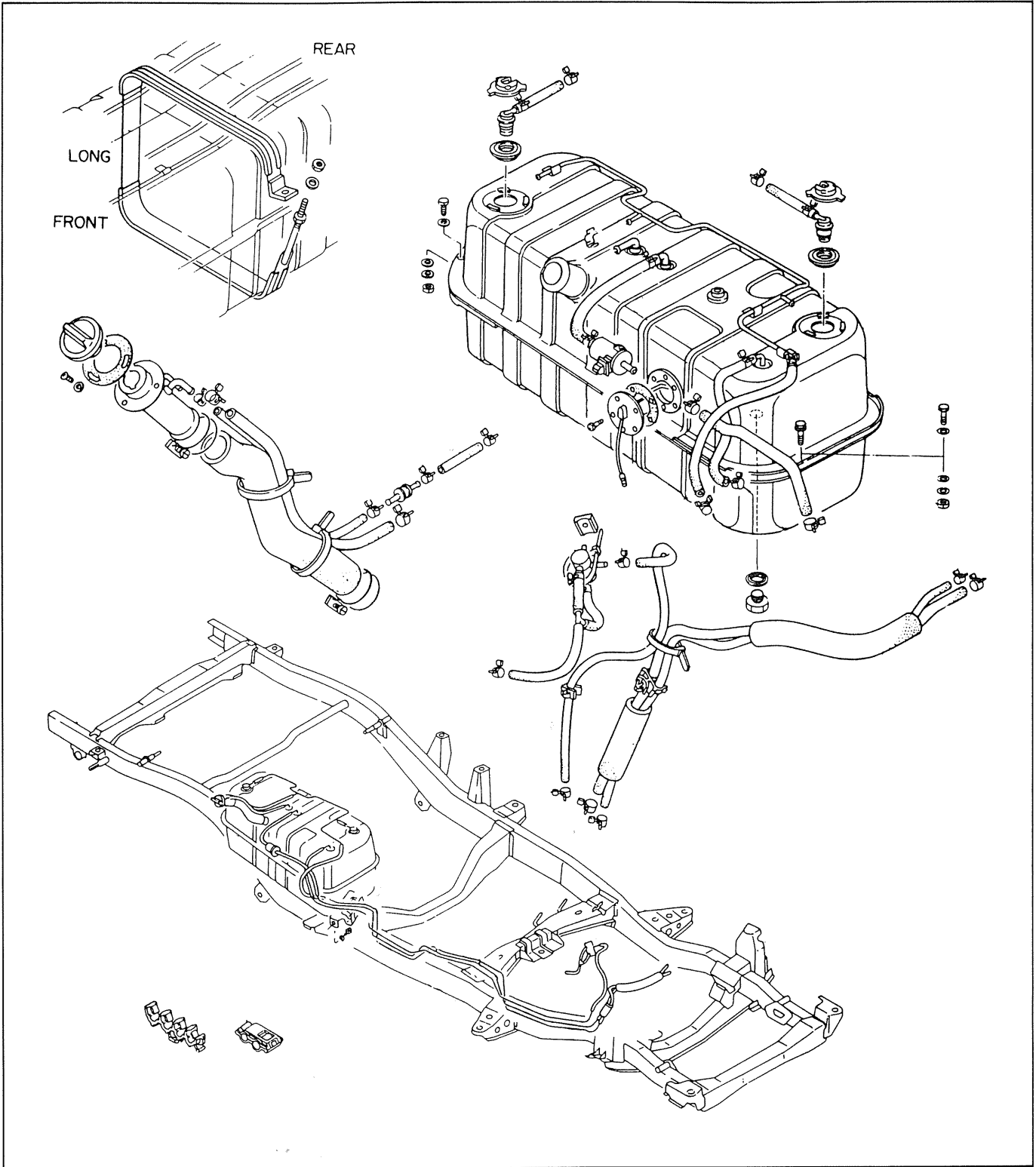
<b>CONTENTS</b>	<b>PAGE</b>
<b>Gasoline engine</b> .....	<b>08A— 1</b>
<b>General description</b> .....	<b>08A— 1</b>
<b>Specifications</b> .....	<b>08A— 4</b>
<b>Fuel system</b> .....	<b>08A— 5</b>
<b>Intake system</b> .....	<b>08A—11</b>
<b>Exhaust system</b> .....	<b>08A—13</b>
<b>Emission control system</b> .....	<b>08A—16</b>
<b>Diesel engine</b> .....	<b>08A—20</b>
<b>General description</b> .....	<b>08A—20</b>
<b>Specifications</b> .....	<b>08A—21</b>
<b>Fuel system</b> .....	<b>08A—22</b>
<b>Intake system</b> .....	<b>08A—25</b>
<b>Exhaust system</b> .....	<b>08A—27</b>
<b>Emission control system</b> .....	<b>08A—30</b>



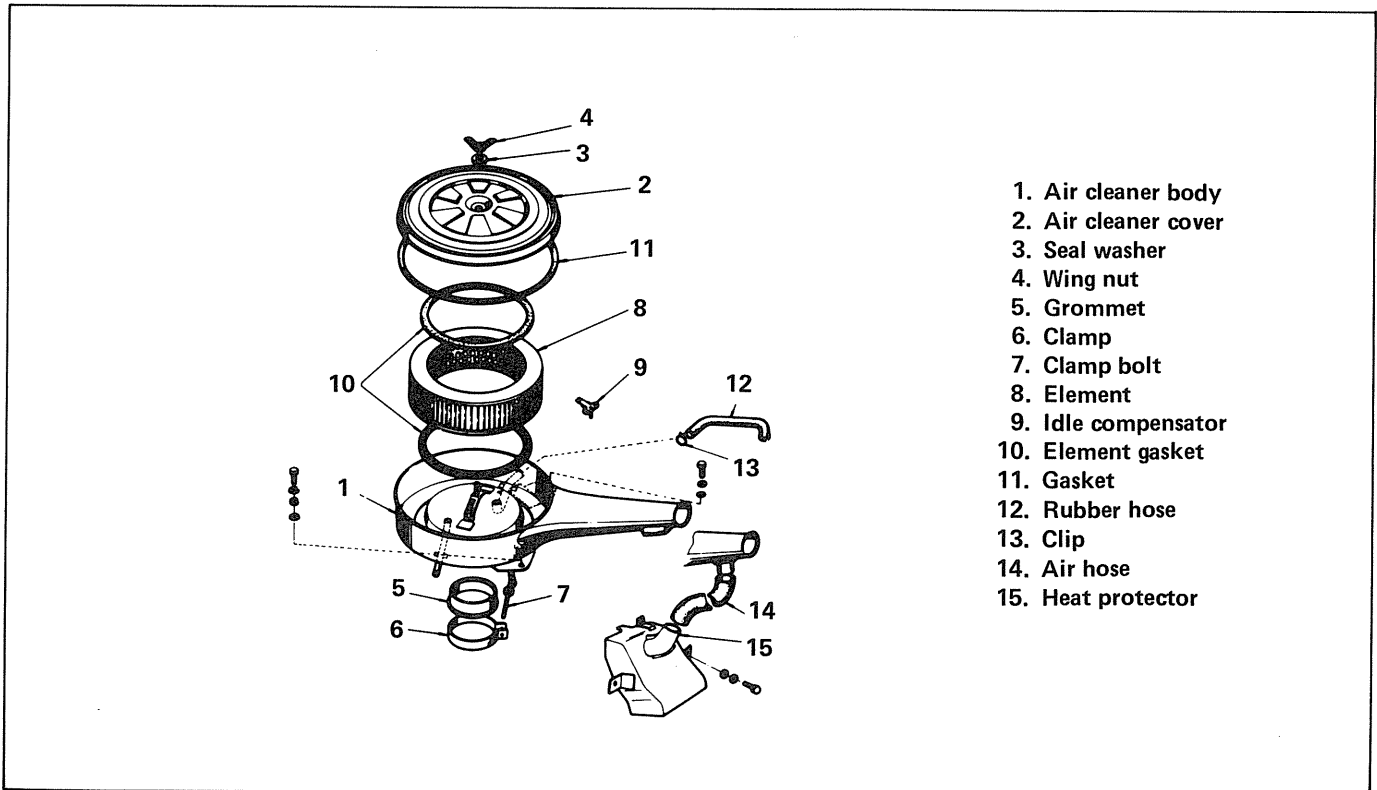
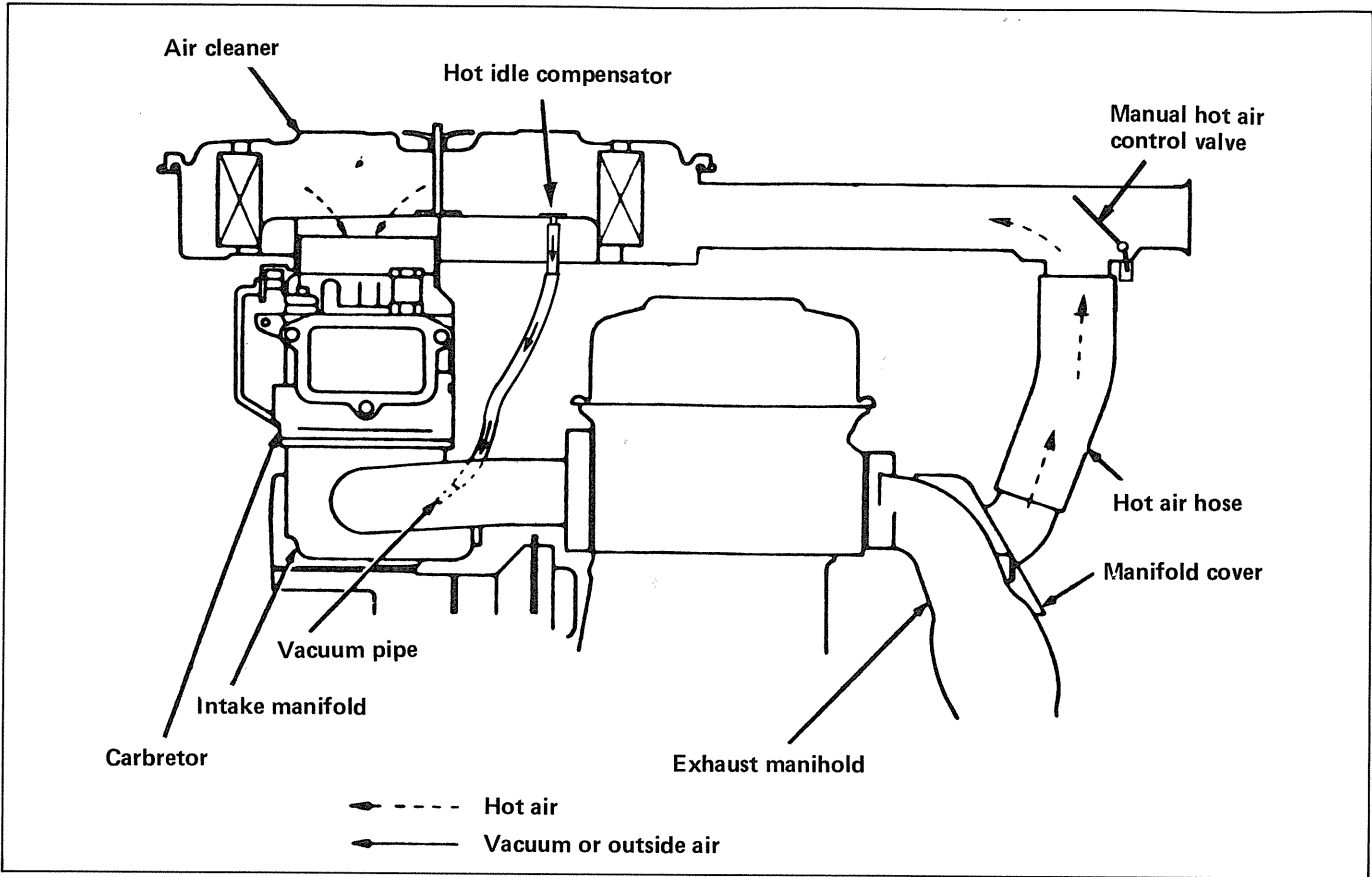
# GASOLINE ENGINE

## GENERAL DESCRIPTION

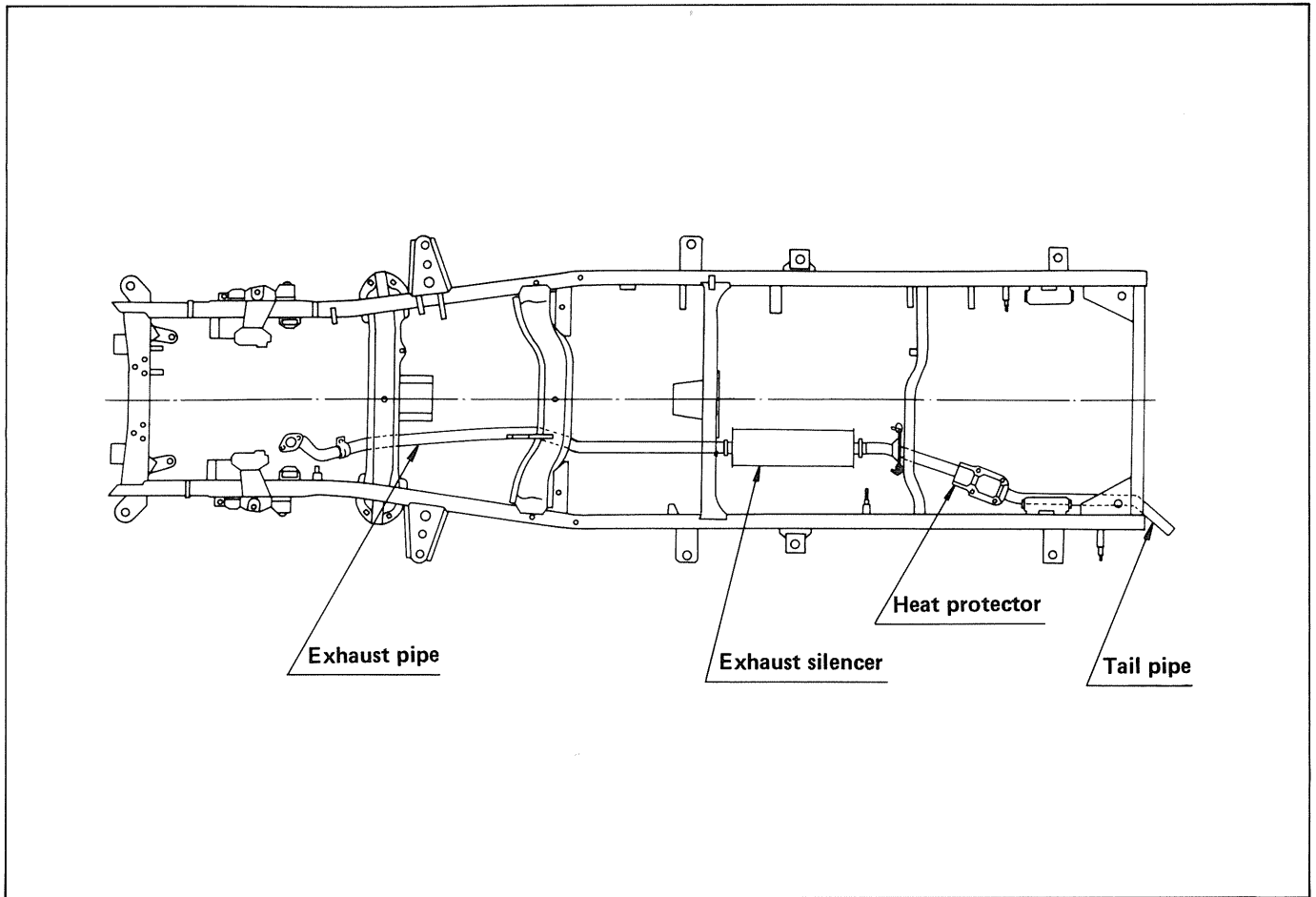
### FUEL TANK



INTAKE SYSTEM



EXHAUST SYSTEM



**SPECIFICATIONS**

**FUEL TANKS**

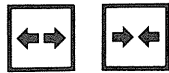
		SWB, CREW CAB, SINGLE CAB	LWB ; SINGLE CAB
Capacity	liters(gal.)	50 (227.3)	72 (327.3)
Length	mm(in.)	817 (32.17)	1164 (45.83)
Width or Dia.	mm(in.)	348 (13.70)	379 (14.92)
Height	mm(in.)	322 (12.68)	323 (12.72)
Weight	kg(lbs.)	7.6 (16.75)	11.6 (25.57)

SWB ..... Short wheelbase

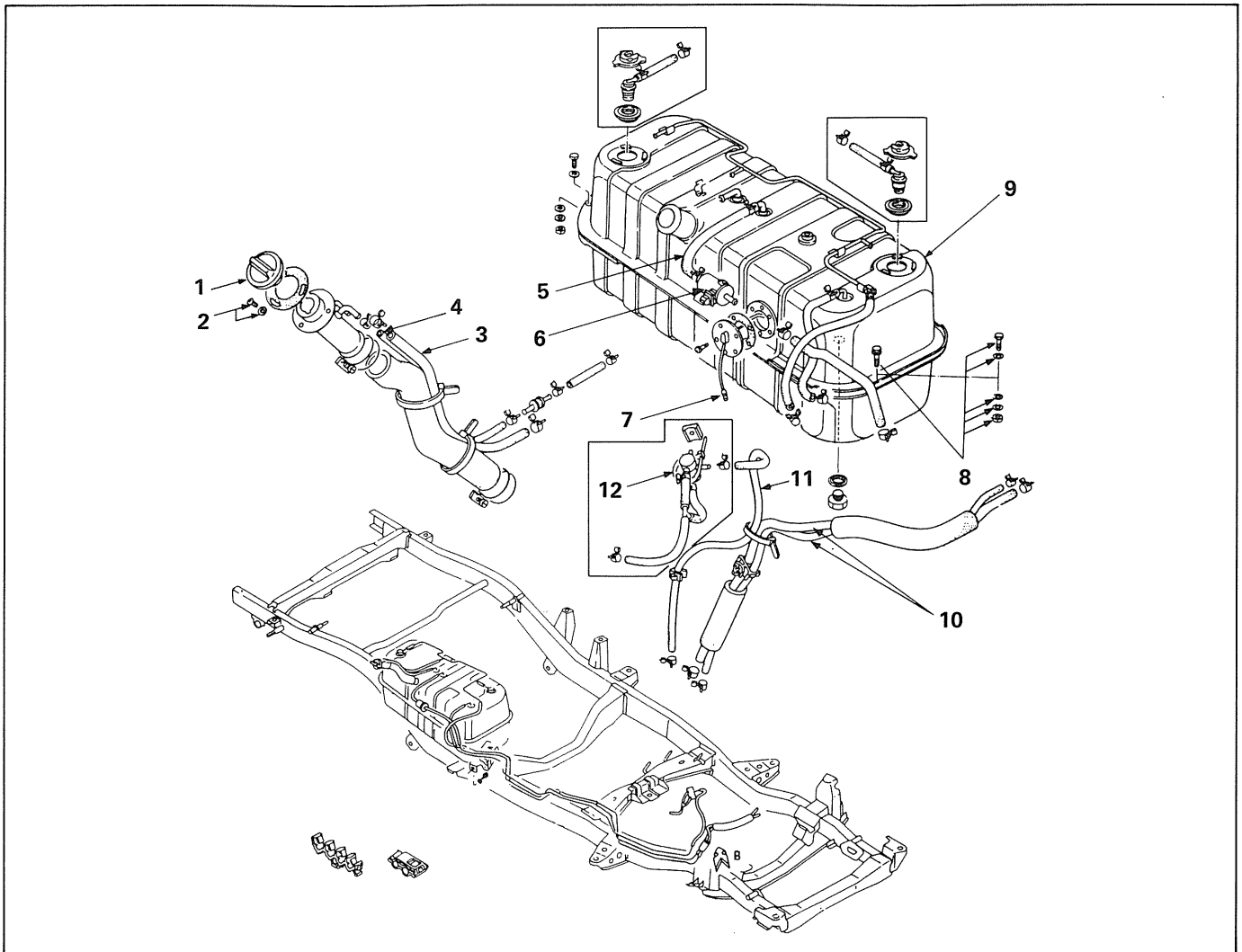
LWB ..... Long wheelbase



## FUEL SYSTEM



### REMOVAL AND INSTALLATION



#### Removal steps

1. Cap assembly ; fuel tank
2. Screw ; filler neck to body
3. Hose ; breather
4. Hose ; evapo, neck to 2 way  
(Australia, Hong Kong,  
Saudi arabia only)
5. Hose ; fuel tank to fuel filter
6. Fuel filter
7. Connector ; fuel tank unit
8. Bolts ; fuel tank to frame
9. Fuel tank assembly
10. Hose ; delivery and return
11. Hose ; evapo line to control line  
(Australia, Hong Kong,  
Saudi arabia only)
12. Valve assembly ; control fuel evapo

#### Installation steps

To install, follow to the removal steps in reverse order.



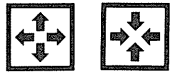
## INSPECTION AND REPAIR

Make necessary adjustments, repairs, and part replacements if wear, damage, or other problems are discovered during inspection.

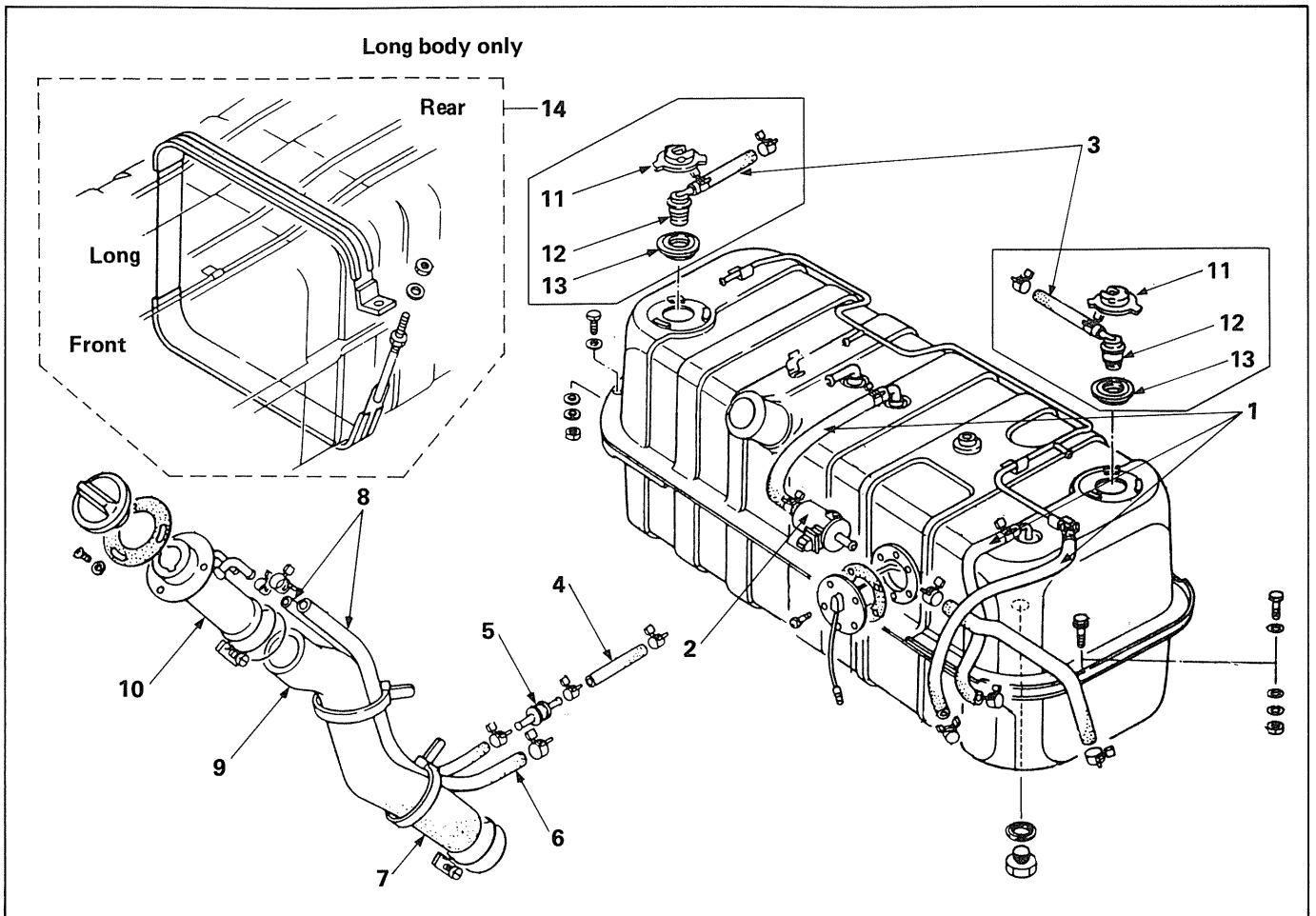
- Hose rubber ; fuel
- Hose rubber ; evaporator
- Hose ; fuel filler
- Valve assembly ; control fuel evapo

### Visual check

Check the following parts for damage or other abnormal conditions.



## DISASSEMBLY AND REASSEMBLY

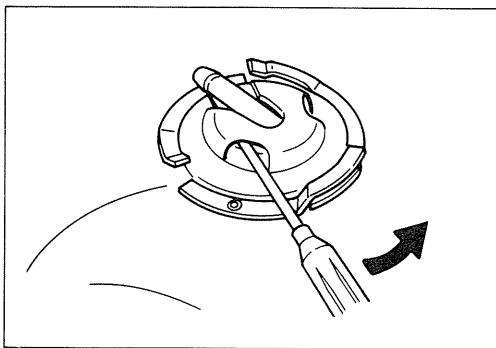


### Disassembly steps

1. Hoses (feed, return, evaporation)
2. Fuel filter
3. Hose ; evaporation  
(Australia, Hong Kong,  
Saudi arabia only)
4. Hose ; 2 way valve
5. 2 way valve
6. Hose ; breather
7. Clip ; filler
8. Hose ; filler neck 2 way
9. Hose ; filler
10. Filler neck assembly
- ▲ 11. Cover ; roll over valve  
(Australia, Hong Kong,  
Saudi arabia only)
- ▲ 12. Valve ; roll over
13. Seal ; roll over
- ▲ 14. Band ; fuel tank (long body only)

### Reassembly steps

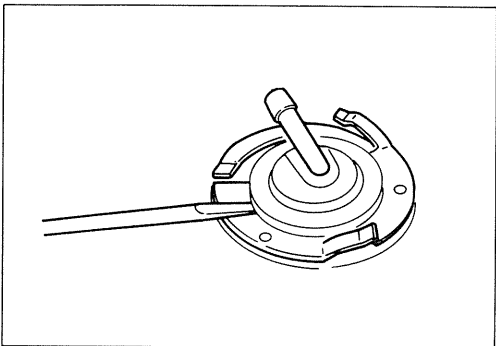
14. Band ; fuel tank (long body only)
13. Seal ; roll over  
(Australia, Hong Kong,  
Saudi arabia only)
12. Valve ; roll over
11. Cover ; roll over valve
10. Filler neck assembly
9. Hose ; filler
8. Hose ; filler neck 2 way
7. Clip ; filler
6. Hose ; breather
5. 2 way valve
4. Hose ; 2 way valve
3. Hose ; evaporation  
(Australia, Hong Kong,  
Saudi arabia only)
2. Fuel filter
1. Hoses (feed, return, evaporation)



**Important operation**

**11. Cover ; roll over valve**

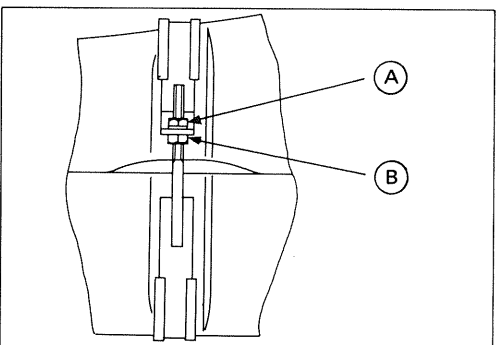
Remove the cover by turning it counter-clockwise with a screw driver.



**12. Valve ; roll over and float**

Do not attempt to force the valve out of position by holding the pipe, or breakage of the pipe will result.

Force the valve assembly part way out by inserting the edge of a screw driver under the flange of the valve before removing completely.



**14. Band ; fuel tank**

- Long body only

- (1) After tightening nut A to 1 kg-m of torque, loosen it to 0.8 kg-m of torque.
- (2) Tighten nut B and then lock nut A .



**INSPECTION AND REPAIR**

Make all necessary adjustments, repairs, and part replacements if wear, damage, or other problems are discovered during inspection.

- Hose rubber ; fuel
- Hose rubber ; evaporation
- Hose ; fuel filler



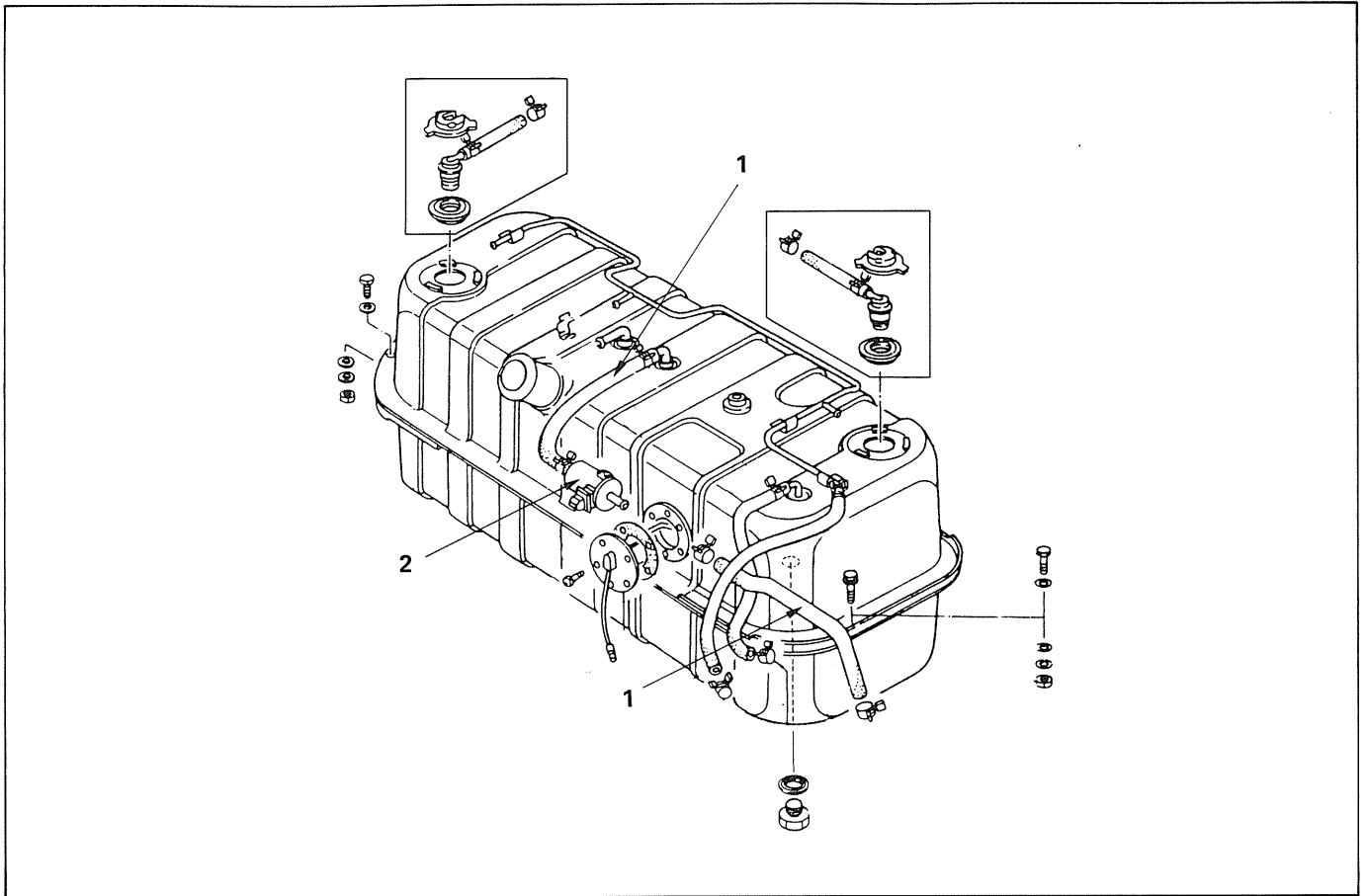
**Visual check**

Check the following parts for damage or other abnormal conditions.

FUEL FILTER



REMOVAL AND INSTALLATION



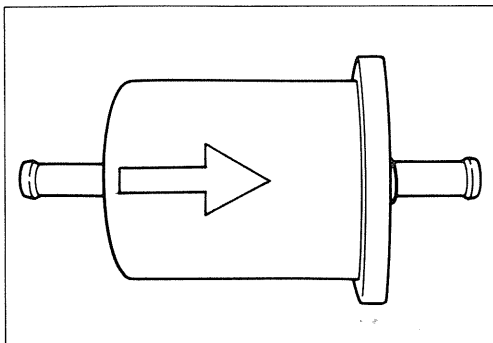
**Removal steps**

1. Loosen the clips attaching the fuel hoses
2. Remove the fuel filter from the fuel hoses

**Installation steps**

- ▲ 2. Install the fuel filter to the fuel hoses
1. Tighten the clips attaching the fuel hoses

**Note:** Start the engine and check the hose connections for leakage.



**Important operation — Installation**

**2. Fuel filter**

The fuel filter must be mounted to the fuel pump in the direction indicated by the arrow stamped on the side of the fuel filter.



## INSPECTION AND REPAIR

Make all necessary adjustments, repairs, and part replacements if wear, damage, or other problems are discovered during inspection.



### Visual check

Check the following parts for damage or other abnormal conditions.

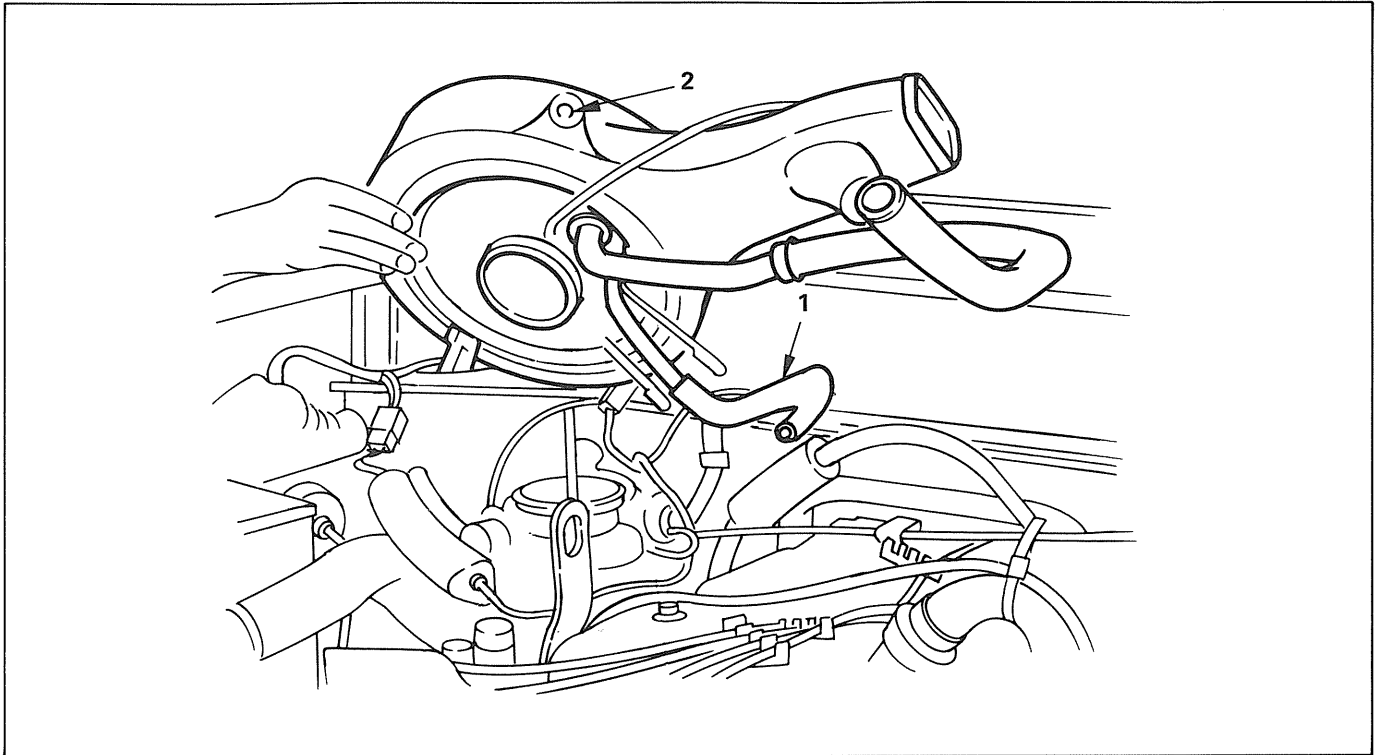
- Hose rubber ; fuel
- Hose rubber ; evaporator
- Hose ; fuel filler
- Valve assembly ; control  
fuel evapo

## INTAKE SYSTEM



### REMOVAL AND INSTALLATION

#### AIR CLEANER



#### Removal steps

1. P.C.V. hose
2. Bolts air cleaner attaching

#### Installation steps

To install the air cleaner, reverse the removal procedure.

**3. Hot idle compensator**

- Connect a thermocouple type thermometer (J-type) to the same position it was connected when testing thermosensor.
- Start and hold engine running at idle with air cleaner cover removed, to supply hot air to idle compensator. Read thermometer when hot idle compensator begins to work. When hot idle compensator begins to function, operation is accompanied by a sound of outside air intake. The hot idle compensator is normal if actuating temperature is between 46 and 52°C (115 and 126°F).

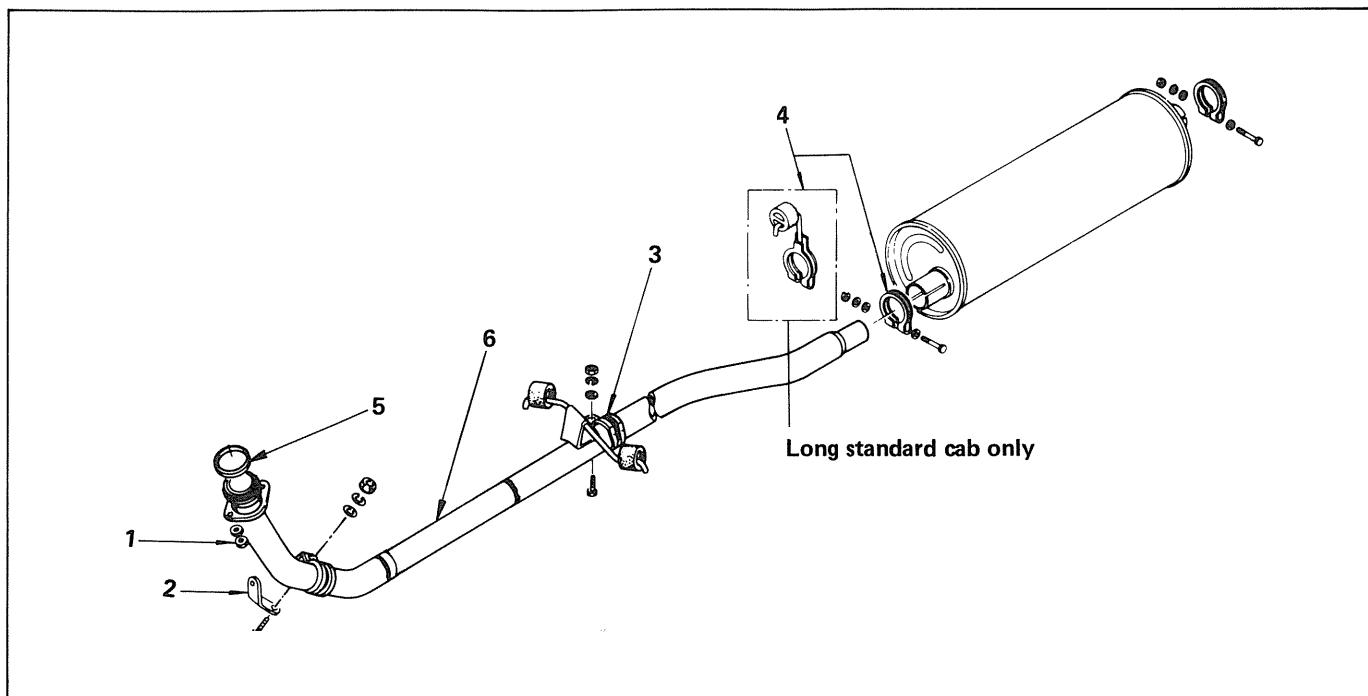


## EXHAUST SYSTEM



### REMOVAL AND INSTALLATION

#### EXHAUST PIPE ; FRONT



#### Removal steps

1. Nut ; lock exhaust pipe to pipe
2. Bracket ; pipe
3. Clamp
4. Clamp ; silencer
5. Gasket
6. Pipe assembly ; front

#### Installation steps

6. Pipe assembly ; front
- ▲ 5. Gasket
4. Clamp ; silencer
3. Clamp
2. Bracket ; pipe
1. Nut ; lock exhaust pipe to front pipe

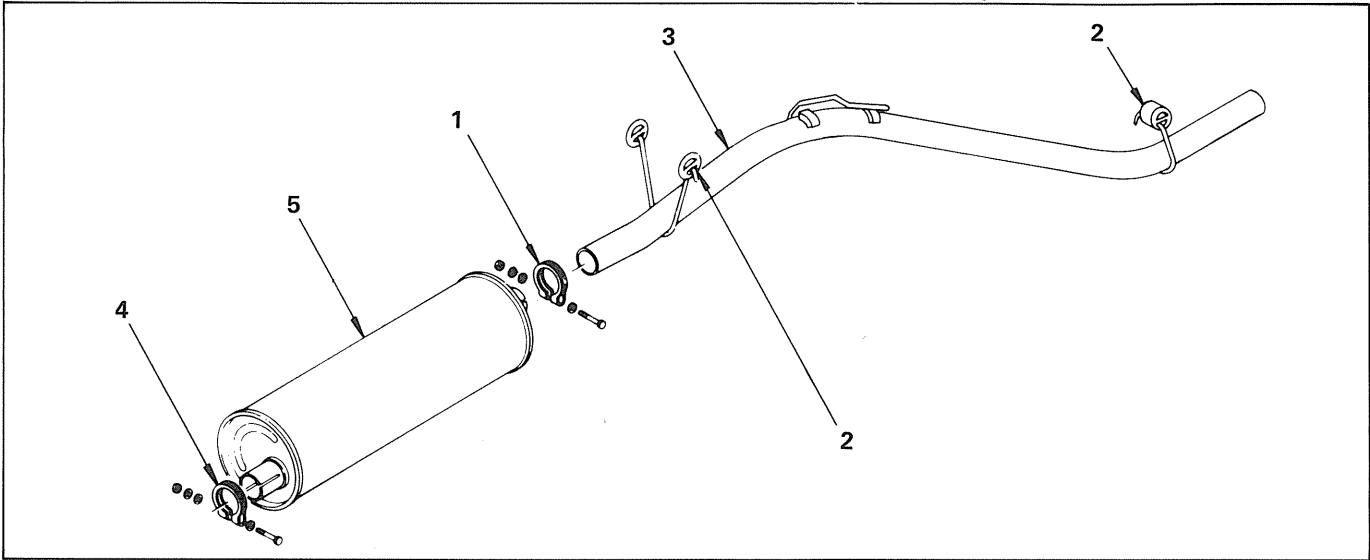


#### Important operation — Installation

##### 5. Gasket

Use a new gasket when installing the front exhaust pipe.

EXHAUST SILENCER AND PIPE ; REAR



**Removal steps**

1. Clamp ; silencer ; rear
2. Hanger
3. Pipe assembly ; rear
4. Clamp ; silencer ; front
5. Silencer

**Installation steps**

To install, follow the removal procedures in reverse order.



## INSPECTION AND REPAIR

Make necessary adjustments, repairs, and part replacements if wear, damage, or other problems are discovered during inspection.



### 1. Pipes and rubber rings

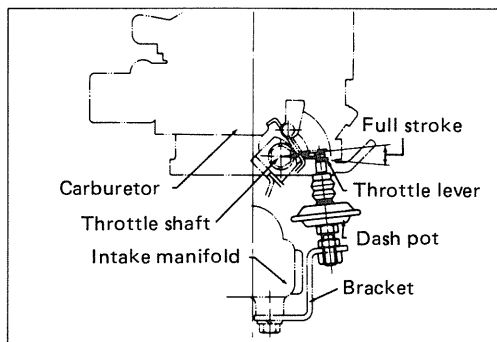
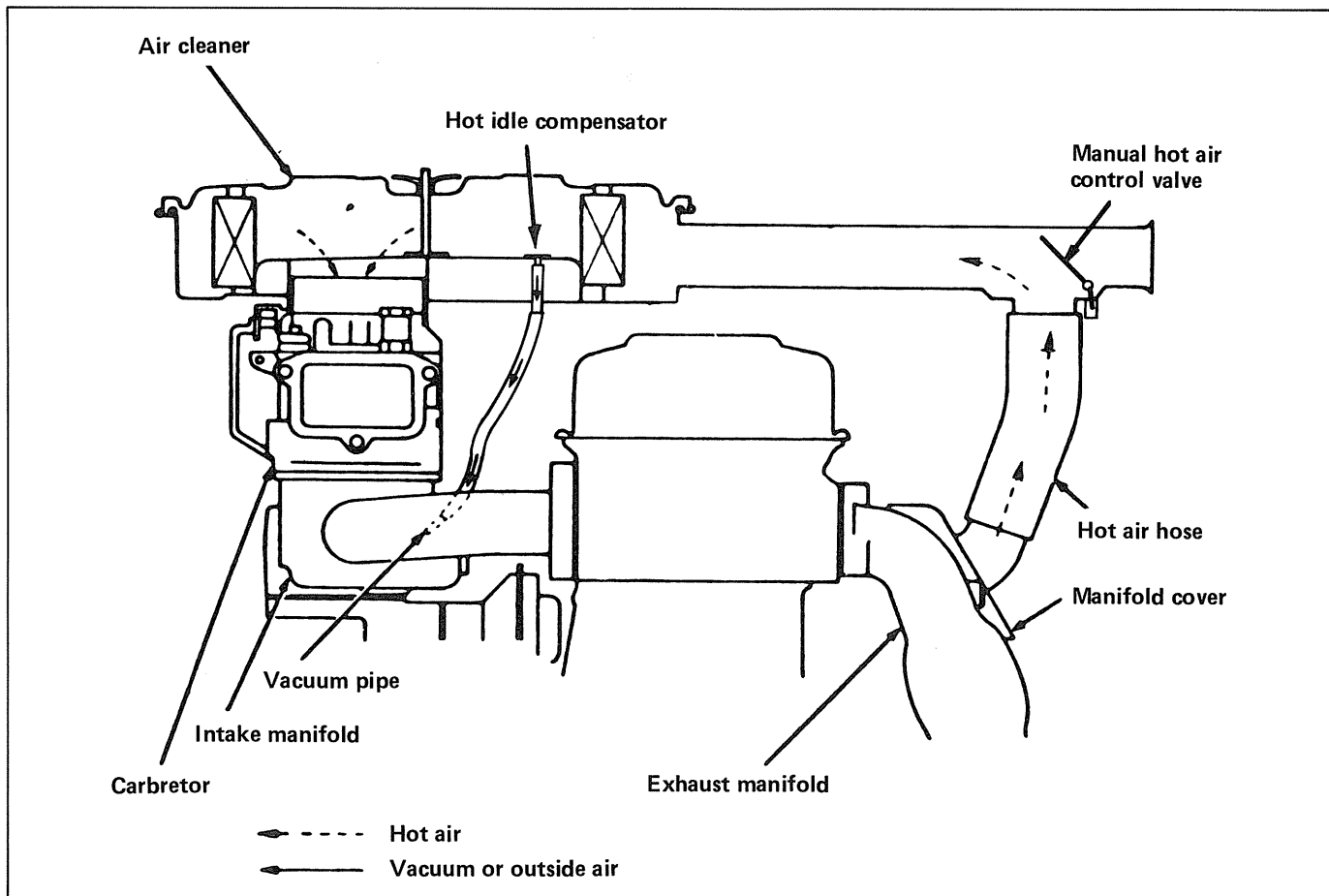
- Check the pipes for corrosion, cracking, damage or misalignment and repair as required.
- Check the rubber rings for deterioration or damage and repair as required.

## EMISSION CONTROL SYSTEM

### CONTROLLED COMBUSTION SYSTEM (CCS)

The Controlled Combustion System consists principally of the manually operated, hot air control valve and the idle compensator. These components are mounted to the air cleaner body and snorkel as illustrated. It is necessary to maintain the intake air temperature at an optimum level since variations in the temperature will adversely affect fuel atomization and may cause rough engine operation and increase in pollutants. The CCS system is so designed that when the temperature of intake air is too low for efficient engine operation, air heated by the engine exhaust manifold is fed into the air cleaner for efficient fuel atomization and smooth engine idle.

As the intake air temperature increases, fresh air is supplied, through the bypass circuit, into the intake manifold, to prevent over-enrichment of the air fuel mixture, thereby to control CO and HC emissions.



### DASH POT

The throttle dash pot is used to prevent the throttle valve from closing too rapidly on deceleration, thereby reducing the hydrocarbons.



## INSPECTION AND REPAIR

Make necessary adjustments, repairs, and part replacements if wear, damage, or other problems are discovered during inspection.

The air cleaner utilizes the viscous type filter element, which has a long service life and is high in filtering efficiency. The filter element can be removed easily by removing the wing nut from the center bolt. However, the filter element replacement intervals should be shortened if vehicle is operated primarily under very dusty conditions. Even though viscous type filter elements in use may seem to be dirtier than the dry type paper filter element, it normally maintains filtering efficiency with a minimum of restriction in the passage. The viscous type filter element should be replaced if found to be broken or otherwise damaged.

Check idle compensator and thermo sensor fasteners for looseness. Check rubber hose between thermo sensor and intake manifold for loose connections. Check other hoses for loose connections.

## DASH POT

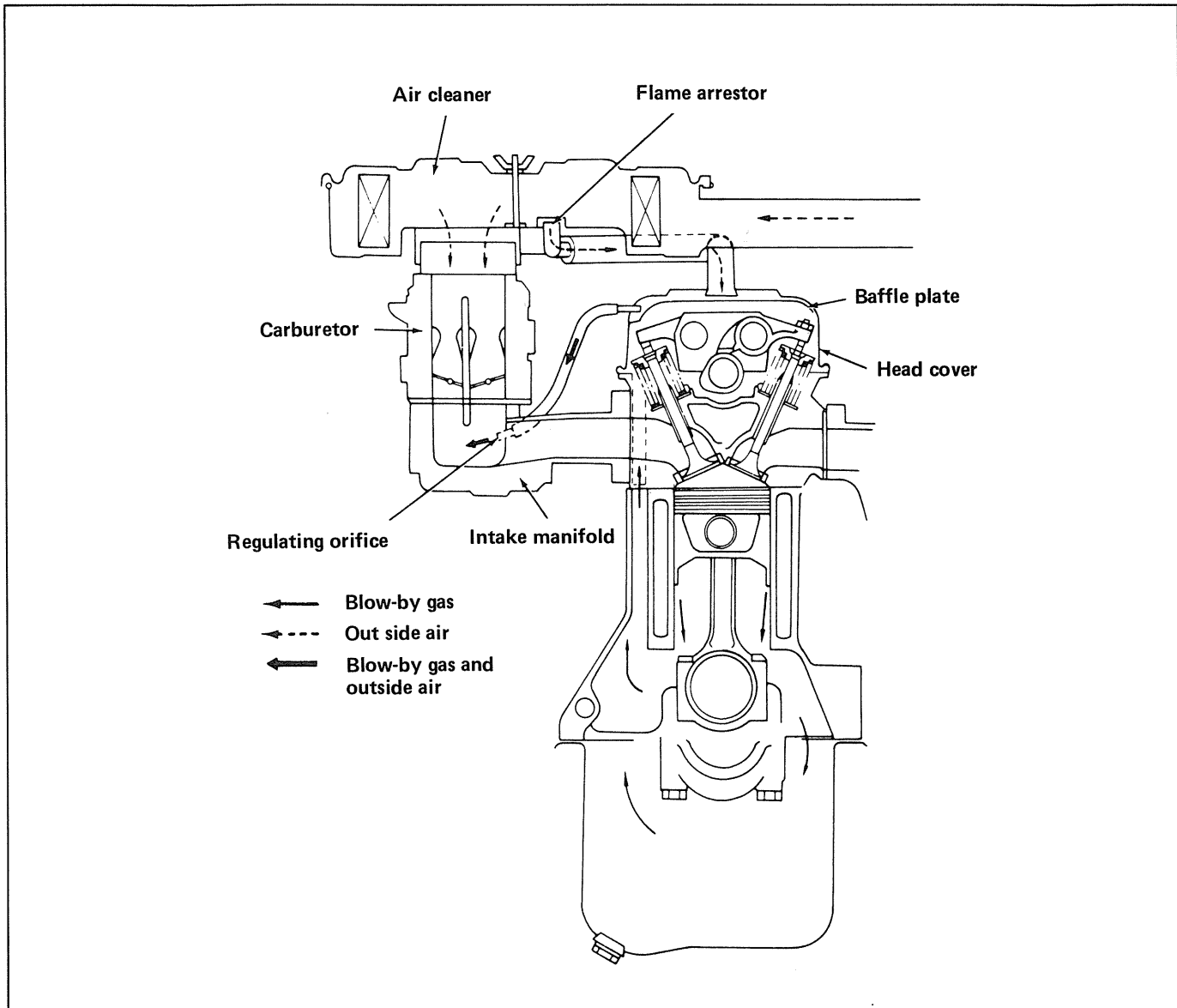
1. Check that the dash pot operates smoothly when the shaft is moved endwise by hand; replace if found to be defective.
2. Check the rubber boot for damage or deterioration; replace as necessary.



## ADJUSTMENT

1. Disconnect vacuum lines at the distributor, idle compensator and EGR valve, and plug lines.
2. Loosen the dash locknut and screw the dash pot all the way out (counterclockwise).
3. Hold engine speed between 2200 to 2600 rpm with the throttle lever and turn the dash pot clockwise until the end of the dash pot contacts the throttle lever ; tighten the locknut.
4. When adjustment is completed, connect vacuum lines.

## POSITIVE CRANKCASE VENTILATION SYSTEM (PCV)



The Positive Crankcase Ventilation system is designed to force blow-by gases generated in the engine crankcase back into the intake manifold, then return them together with the air-fuel mixture back into the engine.

This system is of a closed type, consisting of a baffle plate in the head cover for separating oil particles from blow-by gases; an orifice in the intake manifold for controlling suction of blow-by gases; a hose connecting these parts, and a hose for leading fresh air from the air cleaner into the control system.

### Operation

Under normal operating conditions, blow-by gases passing between pistons and cylinder walls and fuel vapor emitted from the fuel tank are mixed within the engine with ambient air supplied from the air cleaner. Oil particles are separated from the blow-by gases by means of the baffle plate type oil separator, which is built into the center of the head cover.

The blow-by gases are drawn through the regulating orifice into the intake manifold for reburning. When the engine is running with the throttle wide open, the negative pressure within the intake manifold is not high enough to cover the entire amount of blow-by gases, therefore, part of the gases are drawn into the air cleaner via the rear end of the head cover.

## REGULATING ORIFICE

The amount of blow-by gases is small when the engine is running with light load, but increases in proportion to increase in the engine load. When the engine is running with a light load and the amount of blow-by gases is small, a high negative pressure is developed in the intake manifold. Conversely, when the engine is heavily loaded, generating a considerable amount of blow-by gases, the negative pressure in the intake manifold lowers, with a resulting reduction in suction force.

It is, therefore, necessary to install a flow control orifice that regulates the flow of blow-by gases in response to variation in negative pressure developed in the intake manifold. The regulating orifice is adapted for this purpose and is installed within the intake manifold.



## INSPECTION AND REPAIR

Make necessary adjustments, repairs, and part replacements if wear, damage, or other problems are discovered during inspection.



## REGULATING ORIFICE AND HOSE INSPECTION

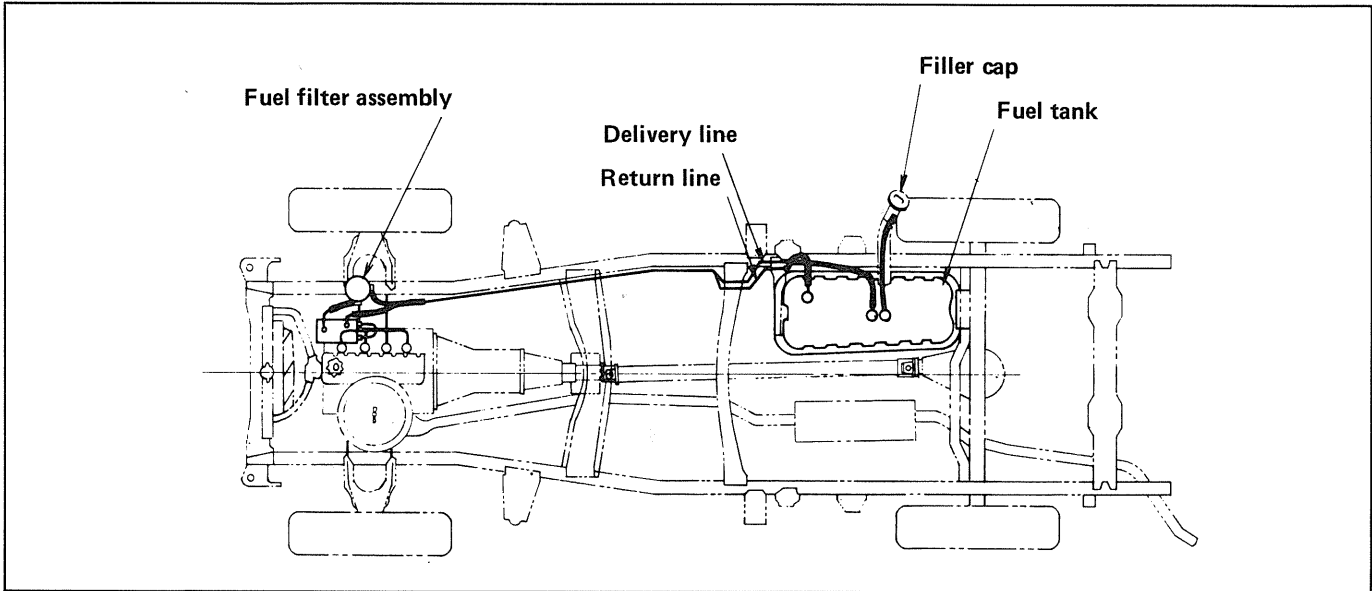
Clean hoses internally and calibrating orifice in detergent oil and blow away foreign matter with compressed air. Check hoses for cracks, fatigue and swelling, replace if necessary.



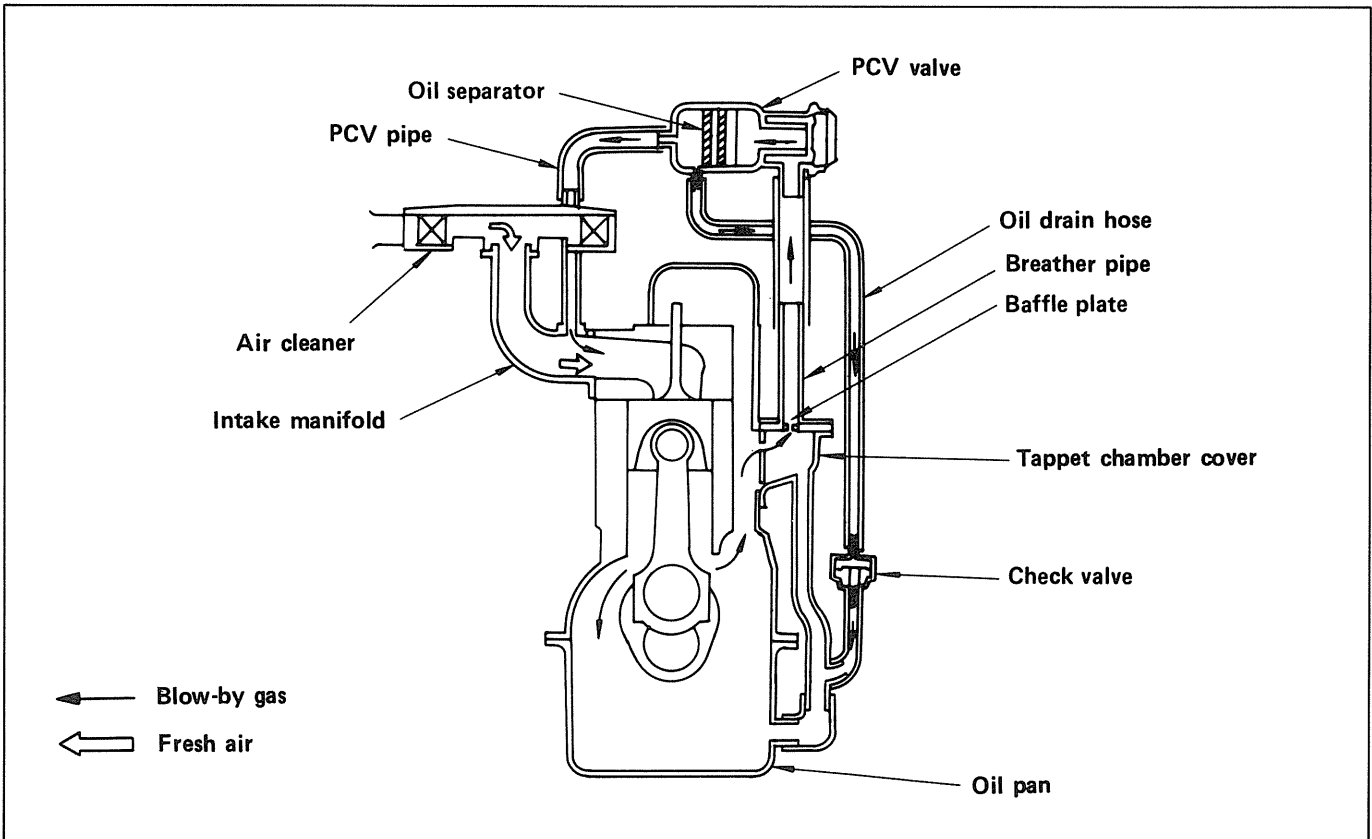
Clean internal part of hoses and regulating orifice in detergent oil and blow away foreign matter with compressed air. Check hoses for cracks, fatigue and swelling; replace if defective.

# DIESEL ENGINE

## GENERAL DESCRIPTION



## POSITIVE CRANKCASE VENTILATION (PCV)





**SPECIFICATIONS**

**FUEL TANKS**

		SWB, CREW CAB, SINGLE CAB	LWB ; SINGLE CAB
Capacity	liters(gal.)	50 (227.3)	72 (327.3)
Length	mm(in.)	817 (32.17)	1164 (45.83)
Width or Dia.	mm(in.)	348 (13.70)	379 (14.92)
Height	mm(in.)	322 (12.68)	323 (12.72)
Weight	kg(lbs.)	7.6 (16.75)	11.6 (25.57)

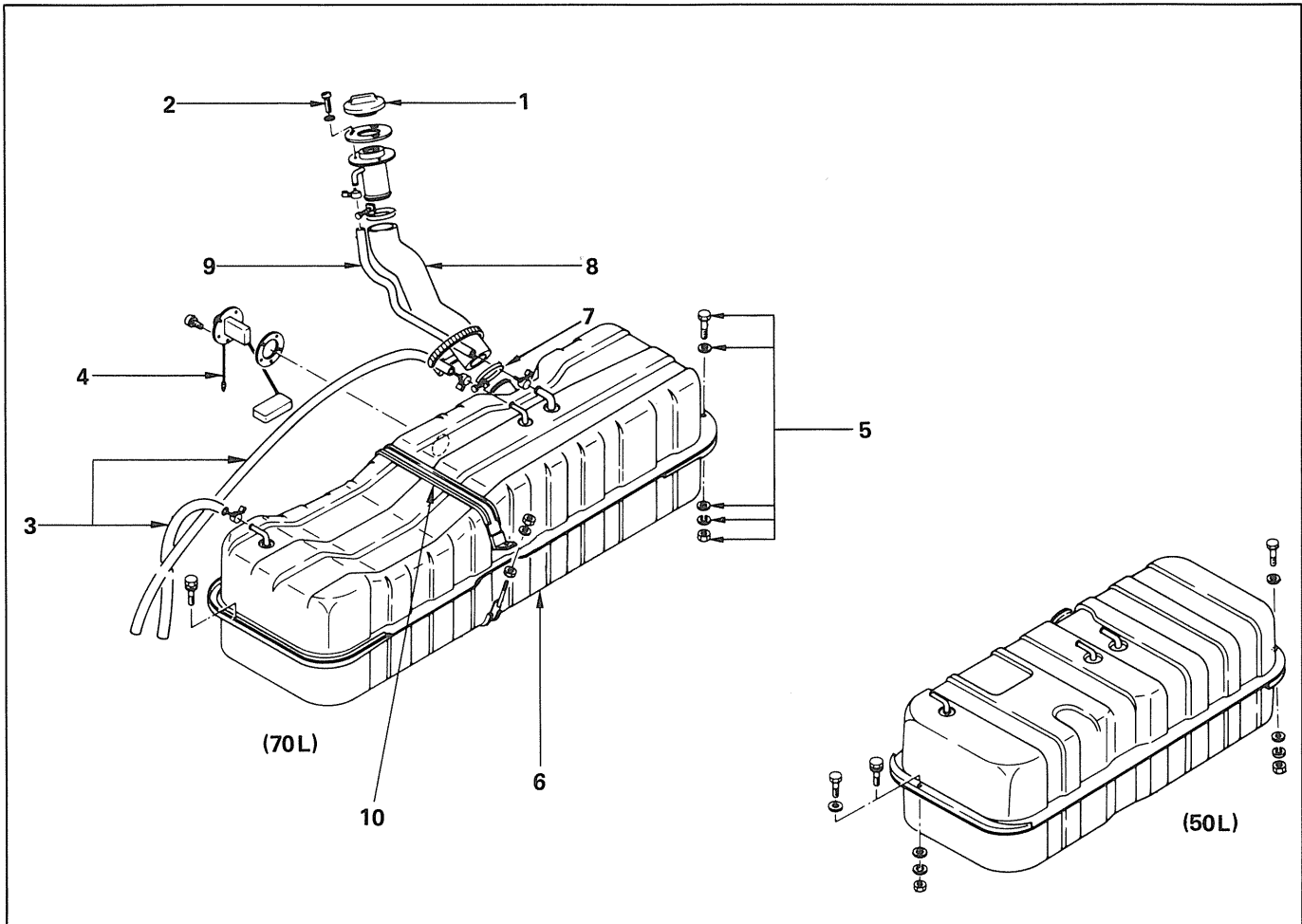
SWB ..... Short wheelbase  
 LWB ..... Long wheelbase

## FUEL SYSTEM



### REMOVAL AND INSTALLATION

#### FUEL TANK ASSEMBLY

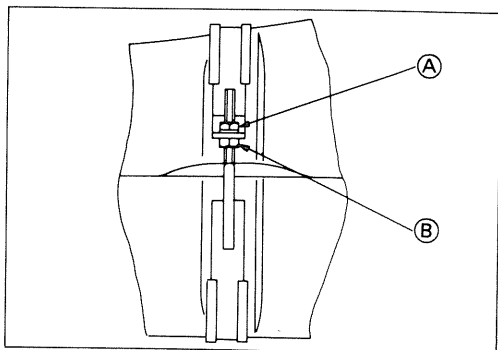


#### Removal steps

1. Cap assembly ; filler
2. Screw ; filler neck to body
3. Rubber hose
4. Harness ; tank unit
5. Bolt ; tank to body
6. Fuel tank assembly
7. Clip ; filler hose to tank
8. Hose ; filler neck to tank
9. Hose ; breather tank
10. Band ; fuel tank  
(Long wheel base only)

#### Installation steps

- ▲ 10. Band ; fuel tank  
(Long wheel base only)
9. Hose ; breather tank
8. Hose ; filler neck to tank
7. Clip ; filler hose to tank
6. Fuel tank assembly
5. Bolt ; tank to body
4. Harness ; tank unit
3. Rubber hose
2. Screw ; filler neck to body
1. Cap assembly ; filler



### Important operation – Installation

#### 10. Band ; fuel tank

Tighten the band nuts in the following steps.

- (1) After tightening nut A to 1 kg·m (7.233 ft.lbs.) of torque, loosen it to 0.8 kg·m (5.786 ft.lbs.) of torque.
- (2) Tighten nut B and then lock nut A.



### INSPECTION AND REPAIR

Make necessary adjustments, repairs, and part replacements if wear, damage, or other problems are discovered during inspection.

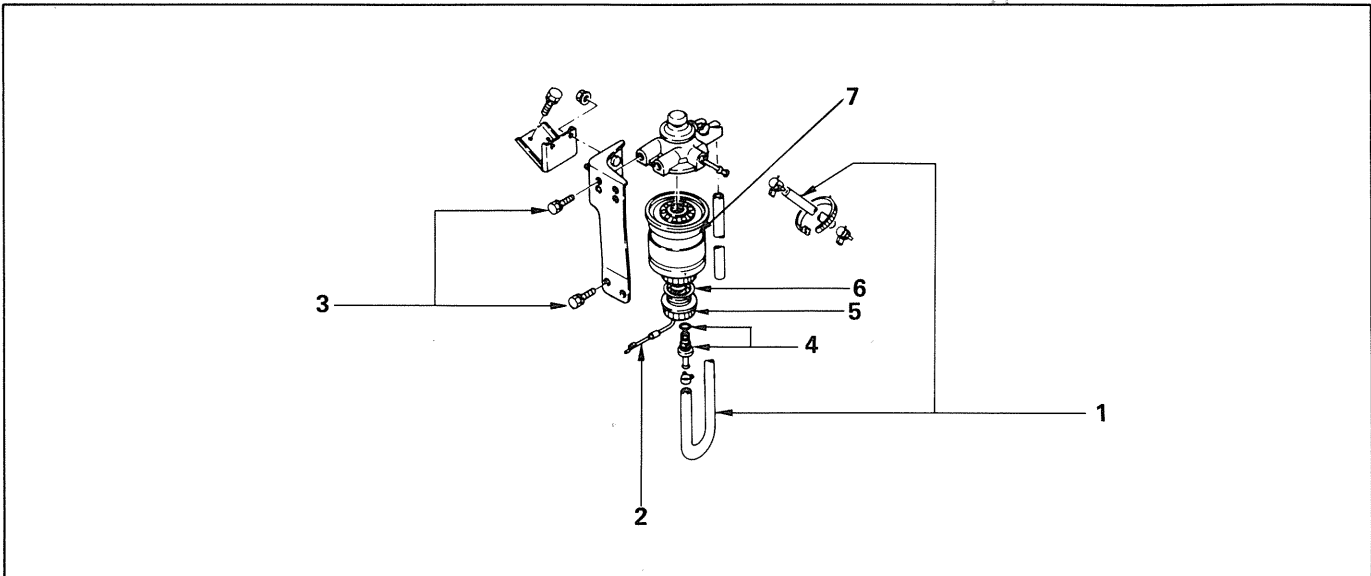
- Fuel tank
- Rubber hose
- Cap assembly
- Tank unit
- Band
- Band cushion rubber



#### Visual check

Check the following parts damage or other abnormal conditions.

## FUEL FILTER

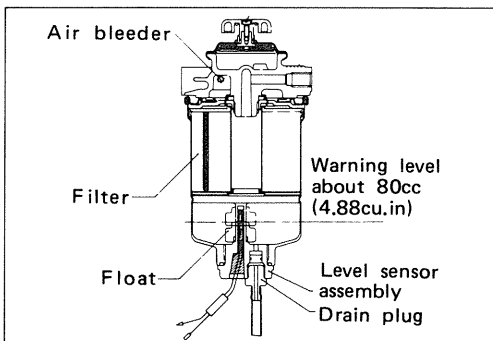


### Removal steps

1. Rubber hose ; fuel filter
2. Harness ; fuel filter
3. Bolt
4. Plug assembly ; fuel filter
5. Sensor assembly
6. Packing ; O-ring
7. Element ; fuel filter

### Installation steps

To install follow the removal in the reverse order

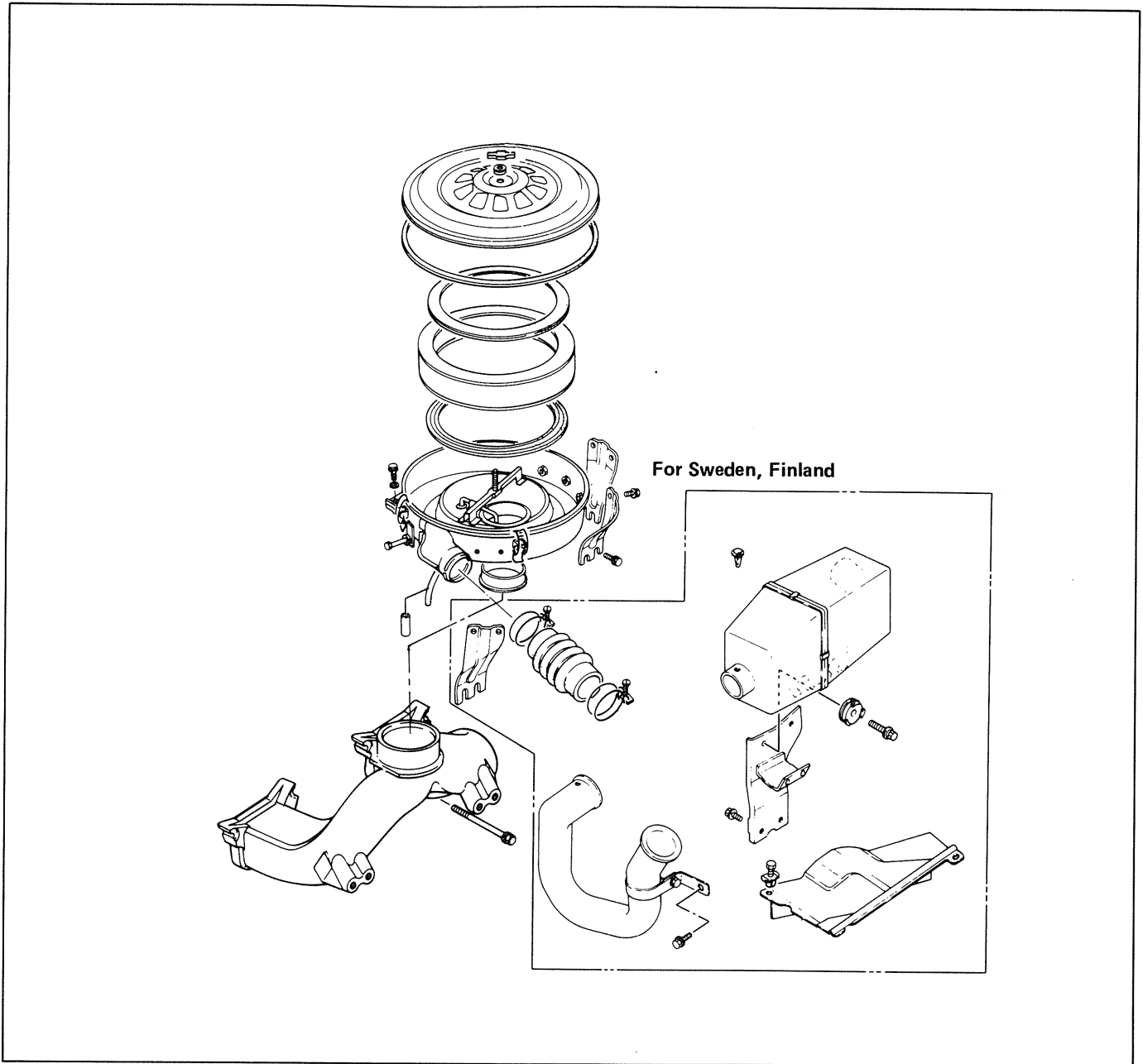


### Important operation

Draining accumulated water from the fuel filter

- 1) Open the drain plug.
- 2) By hand, operate the priming pump seven or eight times. This should force the collected water out of the fuel filter.
- 3) Shut the drain plug. Once again, operate the priming pump several times and check that no fuel is leaking from the fuel filter. Also make sure that the warning light is off.

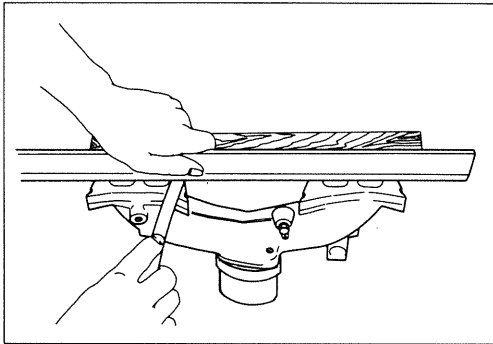
# INTAKE SYSTEM





## INSPECTION AND REPAIR

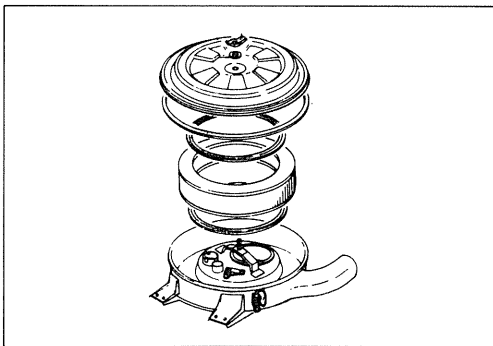
Make necessary correction or parts replacement if wear, damage or any other abnormal conditions are found through inspection.



### Intake manifold

Check cylinder head fitting surface of the intake manifold for distortion.

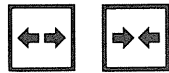
Limit	mm(in.)	0.2 (0.0079)



### Air cleaner

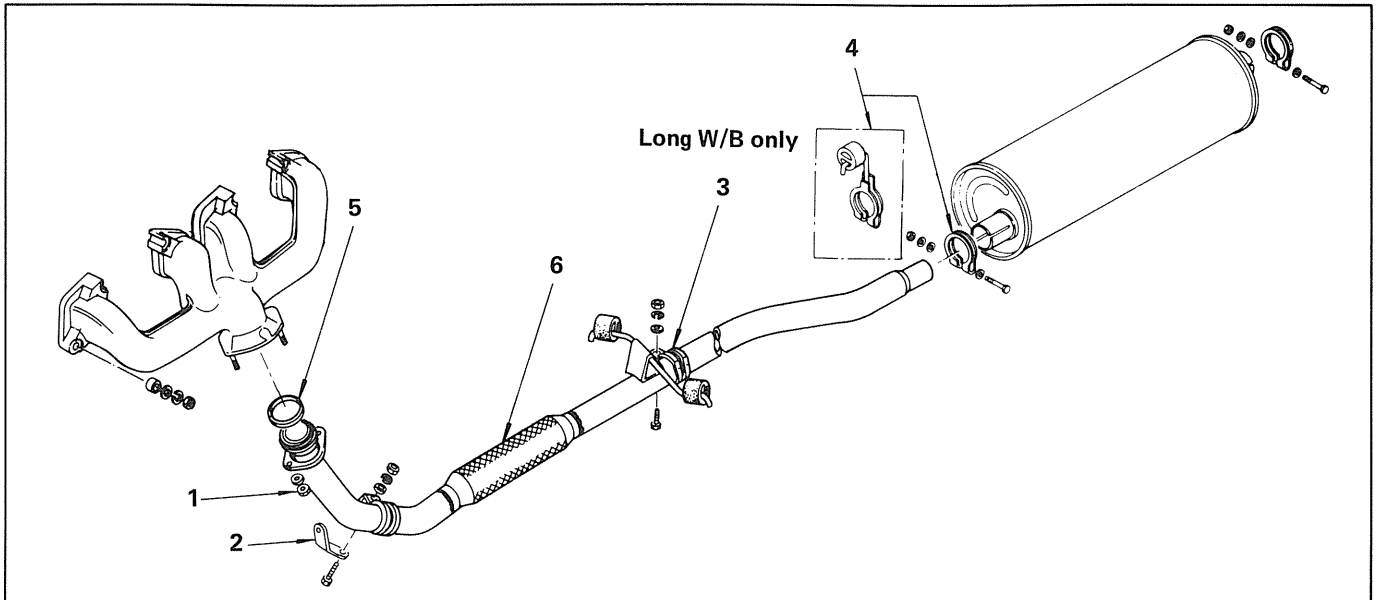
Check air cleaner element for distortion and damage; air cleaner body for cracks, distortion and proper sealing. Correct or replace as necessary. Air cleaner element should be replaced at specified intervals and more often when element is subject to dusty or severe conditions. The element should be replaced immediately if found to be damaged or fouled.

## EXHAUST SYSTEM



### REMOVAL AND INSTALLATION

#### EXHAUST PIPE ; FRONT



#### Removal steps

1. Nut ; lock exhaust pipe to manifold
2. Clamp ; engine side
3. Clamp ; hanger
4. Clamp ; silencer
5. Gasket
6. Pipe assembly ; front

#### Installation steps

1. Pipe assembly ; front
- ▲ 2. Gasket
3. Nut ; lock exhaust pipe to manifold
4. Clamp ; hanger
5. Clamp ; engine side
6. Clamp ; silencer

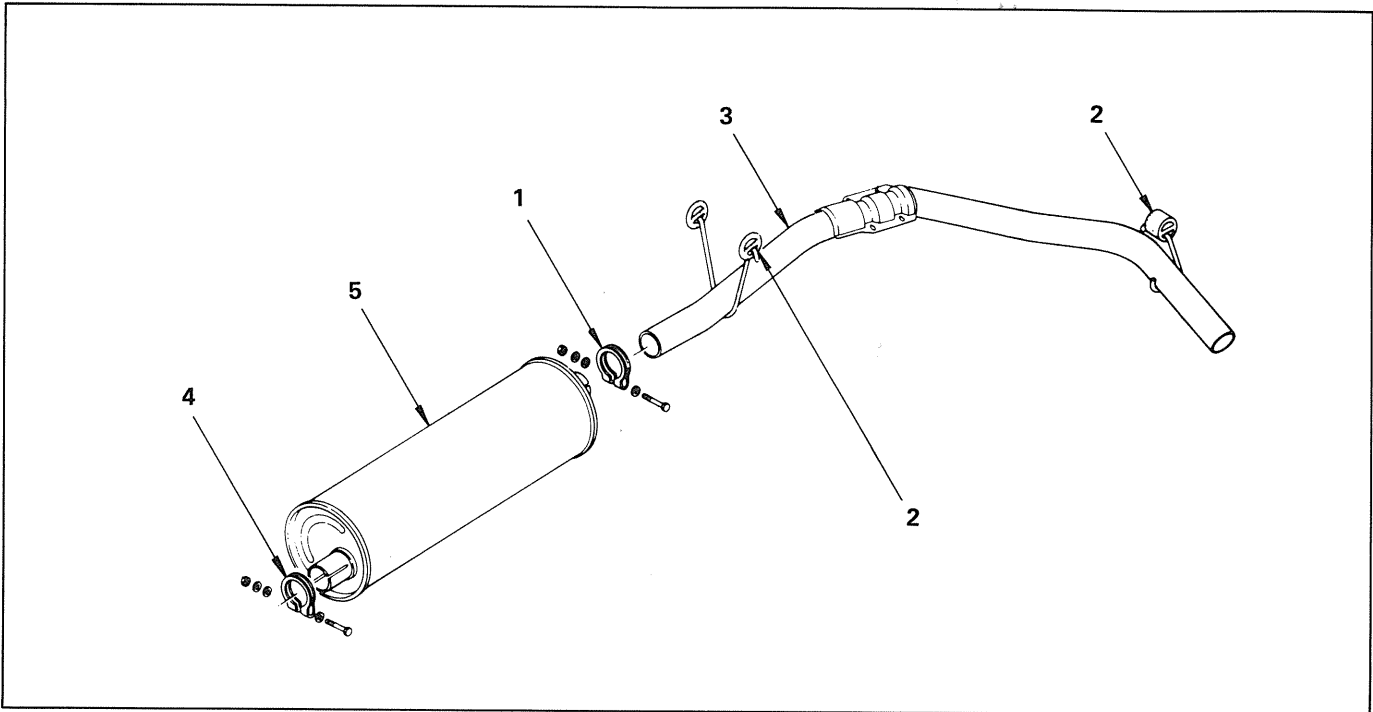


#### Important operation — Installation

##### 2. Gasket

Use a new gasket when installing the exhaust pipe ; front

EXHAUST SILENCER AND PIPE ; REAR



**Removal steps**

1. Clamp ; silencer ; rear
2. Hanger
3. Pipe assembly ; rear
4. Clamp ; silencer ; front
5. Silencer

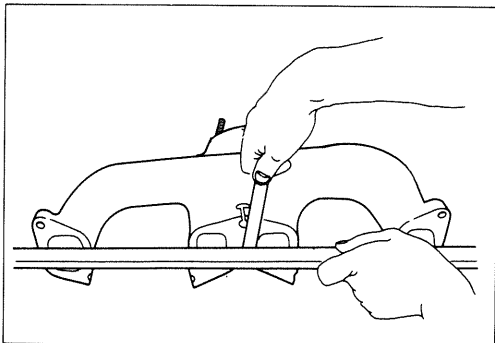
**Installation steps**

To install, follow the removal procedures in reverse order.



**INSPECTION AND REPAIR**

Make necessary correction or parts replacement if wear, damage or any other abnormal conditions are found through inspection.

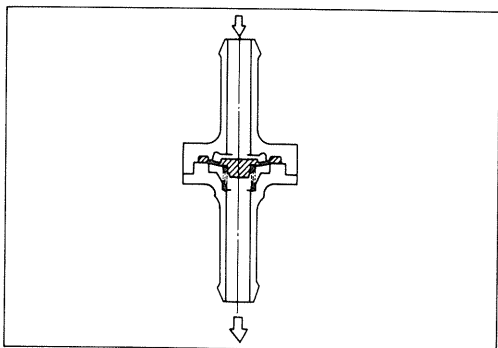


**Exhaust manifold**

Check cylinder head fitting face of the manifold for distortion.

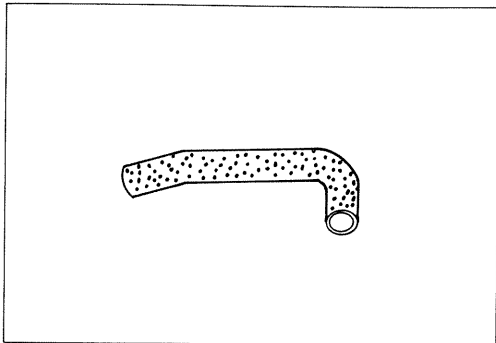
Limit	mm(in.)	0.2 (0.0079)





**Check valve**

Check the check valve function. If air flows in the wrong direction or if valve is plugged, replace the check valve.

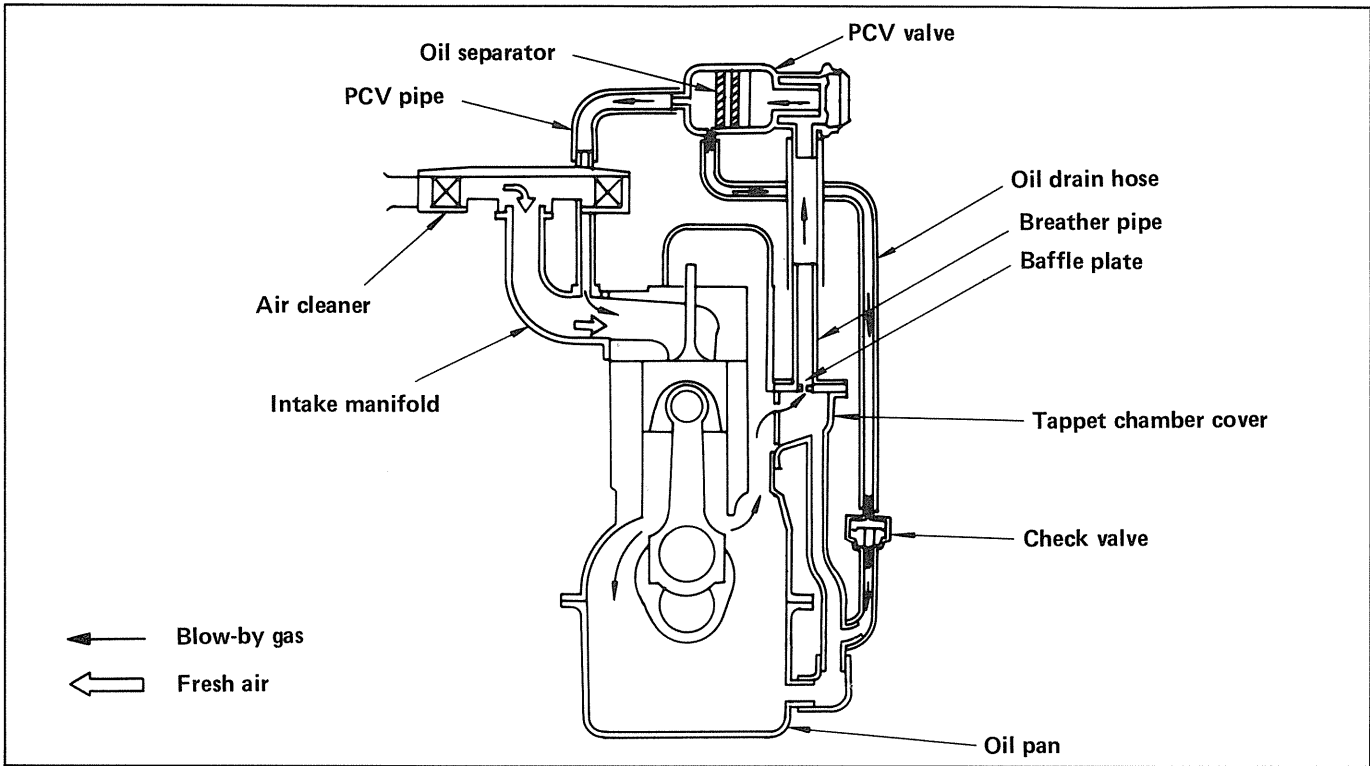


**Rubber hose**

Check the rubber hoses for evidence of deterioration and damage.

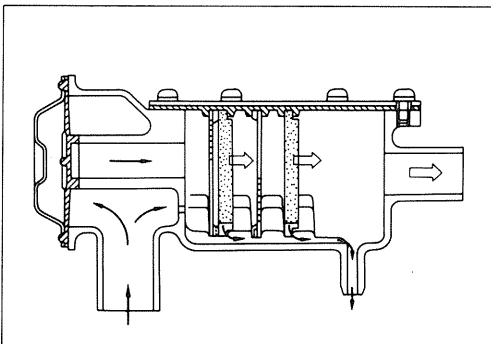
## EMISSION CONTROL SYSTEM

### POSITIVE CRANKCASE VENTILATION (PCV)



### INSPECTION AND REPAIR

Make necessary correction or parts replacement if wear, damage or any other abnormal conditions are found through inspection.



### PCV valve assembly

Check the diaphragm valve for damage, and stickiness surface, and the oil separator element for wear. If any abnormal conditions are found, replace the PCV valve assembly.





## **KBTNK-WE-65G**

You are requested to order this manual using the manual number that is shown above.

This manual is applicable for vehicles in all countries except USA and Canada.

Copyright reserved for this manual may not be reproduced or copied, in whole or in part, without the written consent of ISUZU MOTORS LIMITED.

---

**Issued by**

**ISUZU MOTORS LIMITED**

OVERSEAS SERVICE DEPARTMENT

Tokyo, Japan

---

First edition Aug., 1985

6508-01K-8





