# SERVICE MANUAL

MODEL

L20A, L24 & L26 SERIES

**ENGINES**

NISSAN

**NISSAN MOTOR CO., LTD.**
TOKYO, JAPAN

## SECTION EF

# ENGINE FUEL

EF

# AIR CLEANER

## CONTENTS



## DESCRIPTION

The air cleaner element is a viscous paper type and does not require cleaning service between renewals.

**Note: Never attempt to clean this element with a brush or air blast.**

### AIR CLEANER ELEMENT

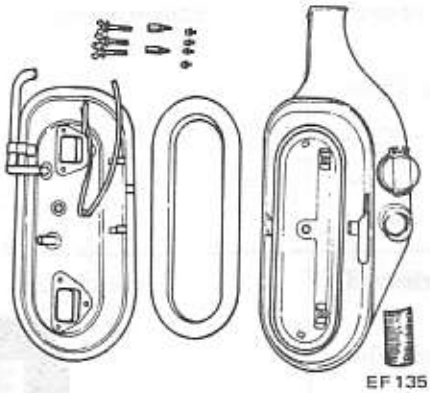
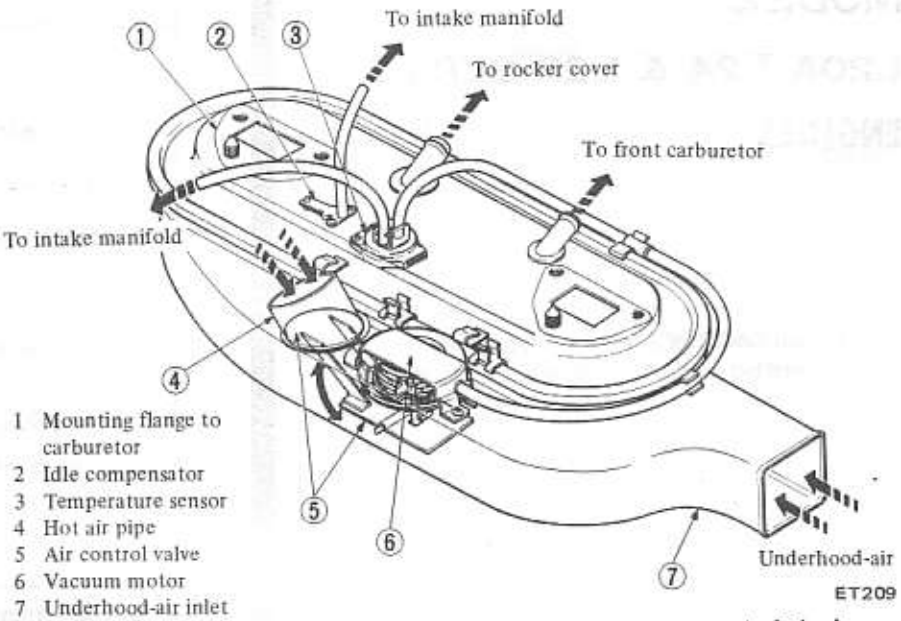



*Fig. EF-1 Air cleaner for twin carburetor*


*Fig. EF-2 Air cleaner for single carburetor*

### AUTOMATIC TEMPERATURE CONTROL AIR CLEANER

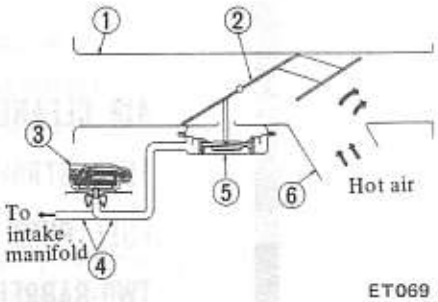
The automatic temperature control air cleaner is a special type equipped with a temperature sensor and vacuum-operated valve. The vacuum acting upon the air control valve is controlled by the sensor (See Figure EF-3.).




1 Mounting flange to carburetor
2 Idle compensator
3 Temperature sensor
4 Hot air pipe
5 Air control valve
6 Vacuum motor
7 Underhood-air inlet

*Fig. EF-3 Automatic temperature control air cleaner*

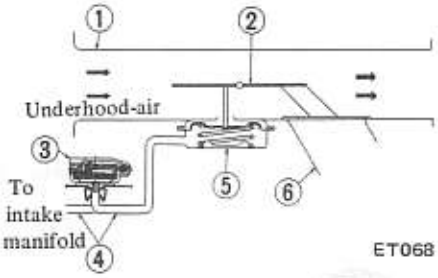
If the temperature of suction air is low when the engine is running. The valve closes the underhood-air inlet, and introduces hot air through the cover which is installed on the exhaust manifold (See Figure EF-4.).




1 Air intake pipe
2 Air control valve
3 Temperature sensor
4 Vacuum hoses
5 Vacuum motor
6 Hot air pipe

*Fig. EF-4 Hot-air delivery mode (during cold engine operation*

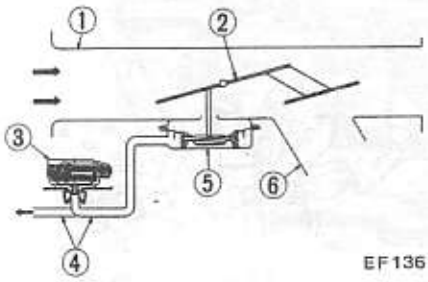
When the temperature of suction air around the sensor reaches 38°C (100°F) or above, sensor activates to open the valve. When the temperature of suction air around the sensor rises further to above 55°C (130°F), the valve opens completely to prevent entrance of hot air, and allows underhood-air alone to be introduced into carburetor (See Figure EF-5.).




1 Air inlet pipe
2 Air control valve
3 Temperature sensor
4 Vacuum hoses
5 Vacuum motor
6 Hot air pipe

*Fig. EF-5 Underhood-air delivery mode (during hot engine operation)*

Due to the operation of the valve as described above, the temperature of suction air around the sensor is always kept at about 46°C (115°F) (See Figure EF-6.).




1 Air inlet pipe
2 Air control valve
3 Temperature sensor
4 Vacuum hoses
5 Vacuum motor
6 Hot air pipe

*Fig. EF-6 Regulating air delivery mode*

When the engine is operating under heavy load, the valve opens the under-hood-air inlet completely to obtain full power regardless of the temperature around sensor.

This kind of control over carburetor air temperatures makes possible a leaner carburetor calibration than conventional control, thus allowing reduced emissions and elimination of carburetor icing.

## REMOVAL AND INSTALLATION

1. Remove three thumbscrews and detach air cleaner cover.
2. Disconnect various hoses.

- o Slow air bypass hose (to front carburetor)
- o Idle compensator hose (to intake manifold)
- o Temperature sensor hose (to intake manifold)
- o Blow-by gas hose (to rocker cover)
- o Hot air duct hose (to exhaust manifold)

3. Remove six screws securing air cleaner flange to carburetor, and detach air cleaner flange.

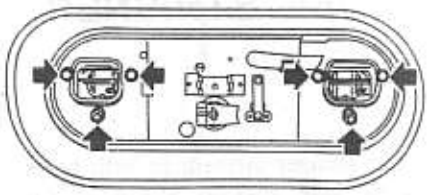


*Fig. EF-7 Removing air cleaner flange*

4. Install air cleaner assembly in the reverse order of removal.

**Note: Be careful not to deform air duct when installing.**

## TEMPERATURE SENSOR

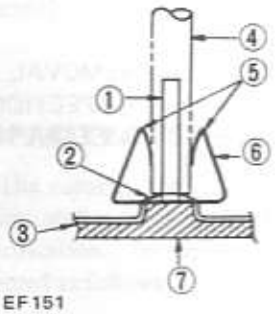
### REMOVAL AND INSTALLATION

#### Removal

1. Flatten the tabs of clip with pliers.
2. Pull out hoses.

**Note: Note the respective positions from which the hoses were removed.**

3. Pry off the tab of clip with a screwdriver.
4. Remove sensor and clip.




1 Pipe
2 Catch
3 Fixed with adhesive
4 Hose
5 Tab
6 Clip
7 Gasket (rubber)

*Fig. EF-8 Removing sensor*

#### Installation

1. Install sensor and gasket assembly in their proper positions.

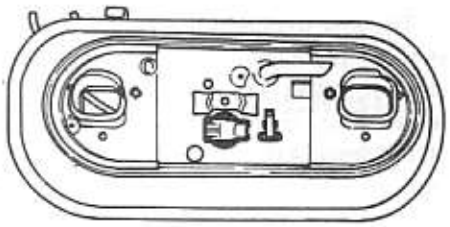



*Fig. EF-9 Installing sensor*

2. Insert clip. Be sure to hold sensor at the correct position to avoid damage.
3. Connect hoses to their proper positions.

**Note: Exercise caution so as not to damage sensor.**

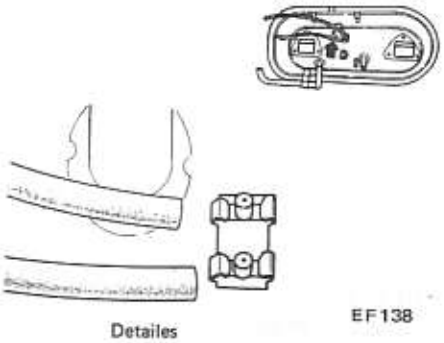
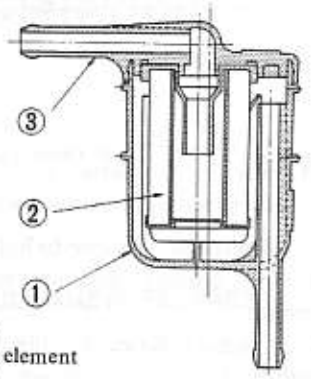



*Fig. EF-10 Inserting clip*

# FUEL STRAINER

## DESCRIPTION

The fuel strainer is a cartridge type strainer, and paper is used as a strainer element. This strainer should be replaced at intervals not to exceed 40,000 km (24,000 miles).




1 Body
2 Paper element
3 Cover

EF005

*Fig. EF-11 Sectional view of cartridge type fuel strainer*

The strainer element in both types can be seen through the bowl for convenience in checking the element's condition without removal.

## REMOVAL

Disconnect the inlet and outlet fuel pipes, and the fuel strainer assembly is easily removed.

## SERVICE REFERENCE

This fuel strainer has no pet cocks, therefore the strainer, carburetor lines, and fuel pump should not be removed or cleaned when the tank is full, unless absolutely necessary. If required, place the tube, at the rear of the strainer, above the top of the fuel tank.

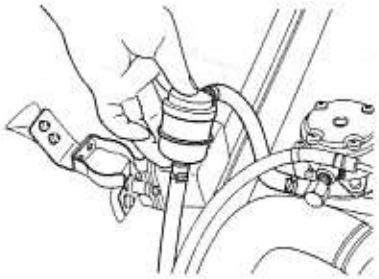


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*Fig. EF-12 Cartridge type fuel strainer*

# FUEL PUMP

## CONTENTS



## DESCRIPTION

The fuel pump transfers fuel from the tank to the carburetor in sufficient quantity to meet the engine requirements at any speed or load.

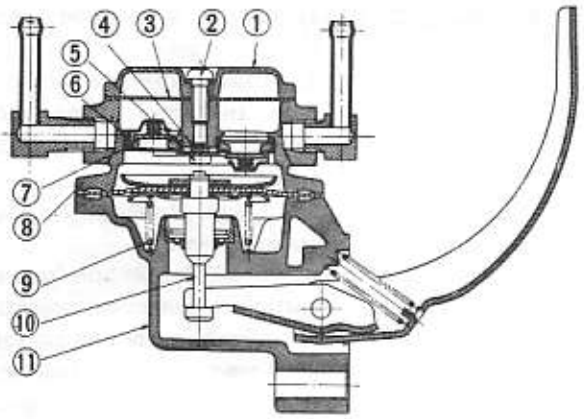
The fuel pump is of a pulsating type designed for easy maintenance. It consists of a body, rocker arm assembly, fuel diaphragm, fuel diaphragm spring, seal inlet- and outlet-valve. Figure EF-13 shows a cross-sectional view of the pump.

The fuel diaphragm consists of specially treated rubber, which is not affected by gasoline and held in place by two metal discs and a pull rod.

This type of fuel pump is used in the L20A, L24 and L26 engines.

## FUEL PUMP TESTING

A fuel pump is operating properly when its pressure is within specifications and its capacity is equal to the engine's requirements at all speeds. Pressure and capacity must be determined by two tests, while the pump is still mounted on the engine. Be sure there is fuel in the tank when carrying out the tests.




EF163

| | | | |
|---|---|---|---|
| 1 | Cover upper body | 7 | Valve assembly |
| 2 | Screw cover set | 8 | Body upper |
| 3 | Gasket cover | 9 | Spring diaphragm |
| 4 | Retainer valve | 10 | Diaphragm assembly |
| 5 | Screw retainer set | 11 | Body comp lower |
| 6 | Gasket valve | | |

*Fig. EF-13 Sectional view of fuel pump*

## STATIC PRESSURE TEST

The static pressure test should be conducted as follows:

1. Disconnect fuel line between carburetor and fuel pump.
2. Connect a rubber hose to each open end of a T-connector, and connect this connector-hose assembly between carburetor and fuel pump.

**Note: Locate this T-connector as close to carburetor as possible.**

3. Connect a suitable pressure gauge to the opening of T-connector, and fasten the hose between carburetor and T-connector securely with a clip.
4. Start and run the engine at varying speeds.
5. The pressure gauge indicates static fuel pressure in the line. The gauge reading should be within the following range.

   0.24 to 0.30 kg/cm$^2$
   (3.41 to 4.27 psi)

**Note: If the fuel in the carburetor float chamber has run out and engine has stopped, remove clip and pour fuel into carburetor. Fasten clip securely and repeat static pressure test.**

Pressure below the lower limit indicates extreme wear on one part or a small amount of wear on each working part. It also indicates ruptured diaphragm; worn, warped, dirty or gummed valves and seats, or a weak diaphragm return spring. Pressure above the upper limit indicates an excessively strong tension of diaphragm return spring or a diaphragm that is too tight. Both of these conditions require the removal of pump assembly for replacement or repair.

## CAPACITY TEST

The capacity test is conducted only when static pressure is within the specification. To conduct this test, proceed as follows:

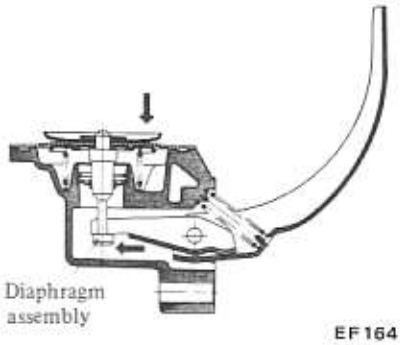
1. Disconnect pressure gauge from T-connector and, in its vacant place, install a suitable container as a fuel sump.
2. Start engine and run at 1,000 rpm.
3. The pump should deliver 1,600 cc (3⅜ U.S. pt.) of fuel in one minute or less.

If little or no fuel flows from the open end of pipe, it is an indication that fuel line is clogged or pump is malfunctioning.

# REMOVAL AND DISASSEMBLY

Remove fuel pump assembly by unscrewing two mounting nuts and disassemble in the following order.

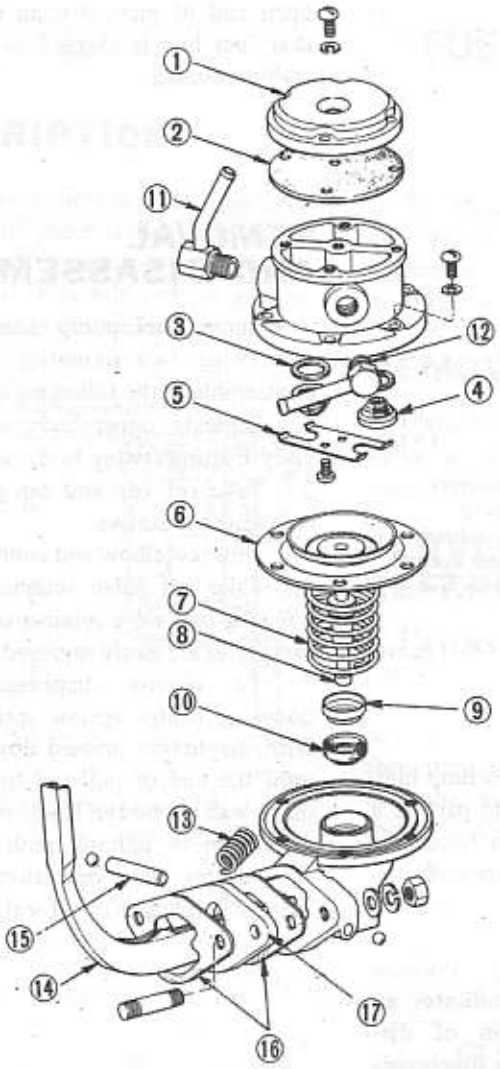
1. Separate upper body and lower body by unscrewing body set screws.
2. Take off cap and cap gasket by removing cap screws.
3. Unscrew elbow and connector.
4. Take off valve retainer by unscrewing two valve retainer screws and two valves are easily removed.
5. To remove diaphragm, press down its center against spring force. With diaphragm pressed down, tilt it until the end of pull rod touches the inner wall of body. Then, release the diaphragm to unhook push rod. Use care during this operation not to damage diaphragm or oil seal.




EF164

*Fig. EF-14 Removing pull rod*

6. Drive out rocker arm pin by using a press or hammer.




1 Fuel pump cap
2 Cap gasket
3 Valve packing Ass'y
4 Fuel pump valve Ass'y
5 Valve retainer
6 Diaphragm Ass'y
7 Diaphragm spring
8 Pull rod
9 Lower body seal washer
10 Lower body seal
11 Inlet connector
12 Outlet connector
13 Rocker arm spring
14 Rocker arm
15 Rocker arm side pin
16 Fuel pump packing
17 Spacer-fuel pump to cylinder block

EF008

*Fig. EF-15 Structure of fuel pump*

## INSPECTION

1. Check upper body and lower body for cracks.
2. Check valve assembly for wear on valve and valve spring. Blow valve assembly with breath to examine its function.
3. Check diaphragm for small holes, cracks or wear.
4. Check rocker arm for wear at the portion in contact with camshaft.
5. Check rocker arm pin for wear. A worn pin may cause oil leakage.
6. Check all other components for any abnormalities and replace with new parts if necessary.

## ASSEMBLY

Reverse the order of disassembly. Closely observe the following instructions.

1. Use new gaskets.
2. Lubricate rocker arm, rocker arm link and rocker arm pin before installation.
3. To test the function, proceed as follows:

Position fuel pump assembly about 1 meter (3.3 ft) above fuel level of fuel strainer and connect a pipe from strainer to fuel pump.

Operate rocker arm by hand. If fuel is drawn up soon after rocker arm is released, fuel pump is functioning properly.

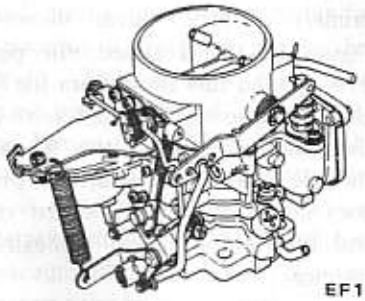
# TWO-BARREL CARBURETOR

## CONTENTS



## DESCRIPTION

| Carburetor type | Applied engine and model |
|---|---|
| DAF342-9A | L20A on model 230 |
| DAF342-12 | L24 on model (K)HGC110 |
| DAF342-11 | L26 on model 230 |



EF165

*Fig. EF-16 External view for two barrel carburetor*

Almost all the mechanisms of these carburetors are quite similar, therefore the general explanation applies for all except for some variations.

These are downdraft type and are designed to increase power and fuel economy.

These carburetors present several distinct features of importance to the vehicle owners.

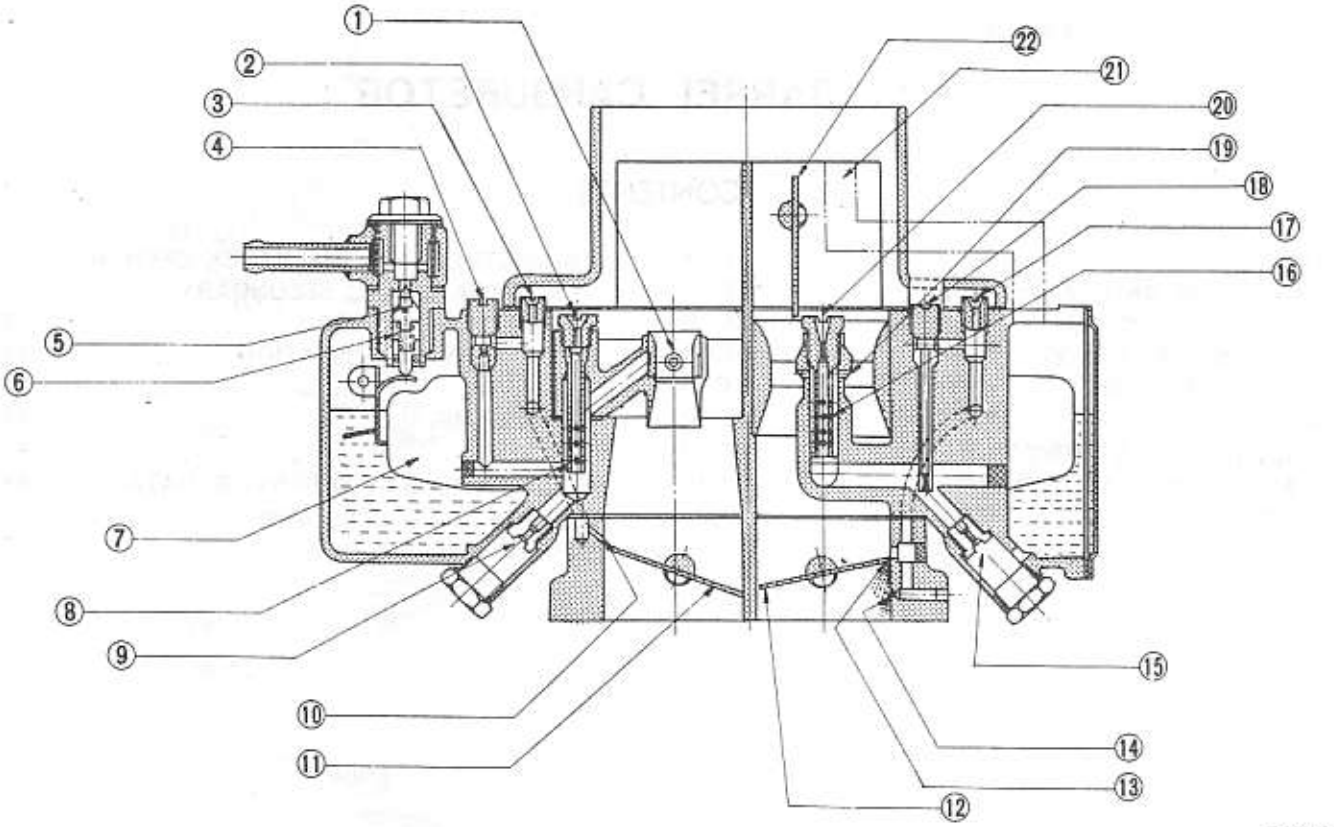
A summary of features is as follows:

1. Secondary throttle valve is operated by the diaphragm which is actuated by the vacuum so that higher power and better acceleration are achieved as compared with the mechanical throttle valve type.
2. The power valve mechanism, so-called vacuum piston type, affords high speed performance.
3. Accelerating pump gives excellent acceleration.

## STRUCTURE AND OPERATION

These carburetors consist of a primary system for normal running and a secondary system for full load running.

The float system which is commonly used by primary and secondary systems, a secondary switchover mechanism, a starting mechanism, accelerating mechanism, etc. are also attached.




| | | | | | |
|---|---|---|---|---|---|
| 1 | S Main nozzle | 9 | S Main jet | 17 | P Slow air bleed |
| 2 | S Main air bleed | 10 | By-pass hole | 18 | P Slow jet |
| 3 | S Slow air bleed | 11 | S Throttle valve | 19 | P Main nozzle |
| 4 | S Slow jet | 12 | P Throttle valve | 20 | P Main air bleed |
| 5 | Needle valve | 13 | By-pass hole | 21 | Air vent |
| 6 | Needle valve spring | 14 | Idle hole | 22 | Choke valve |
| 7 | Float | 15 | P Main jet | | |
| 8 | S Emulsion tube | 16 | P Emulsion tube | | |

*Fig. EF-17 Sectional view of two-barrel carburetor*

## PRIMARY SYSTEM

1. Primary main system

The primary main system is of solex type. Fuel flows as shown in Figure EF-17 through the main jet, mixing with air which comes in from the main air bleed and passes through the emulsion tube, and is pulled out into the venturi through the main nozzle.

2. Idling and slow system

During low engine speed, as shown in Figure EF-17, fuel flows through the slow jet located immediately behind the main jet, mixing with air coming from the air bleed, and then is pulled out into the engine through the idle hole and bypass hole.

Adoption of the submerged type of slow jet eliminates such hesitation as occurs on sudden deceleration of the vehicle.

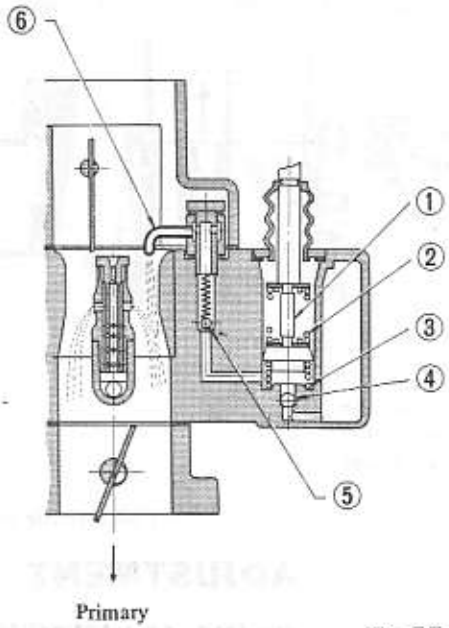
Small opening of the throttle valve in idling or partial load creates a large negative pressure in the intake manifold.

By this negative pressure, fuel is measured through the slow jet located behind the main jet. And air coming from the slow air bleed is mixed with fuel in the emulsion hole.

The atomized mixture is supplied to the engine from the idle hole and bypass hole via the slow system passage.

3. Accelerating mechanism

The carburetor is equipped with the piston type accelerating mechanism linked to the throttle valve. When the primary throttle valve, shown in Figure EF-18, is closed, the piston goes up, and fuel flows from the float chamber through the inlet valve into the space under the piston. When the throttle valve is opened, the piston goes down, opening the outlet valve, and fuel is forced out through the injector.




1 Piston
2 Damper spring
3 Piston return spring
4 Inlet valve
5 Outlet valve
6 Pump injector

EF166

*Fig. EF-18 Acceleration mechanism*

4. Starting mechanism

Pull the choke button to close the choke valve fully, then start the engine. This provides a rich mixture, making it possible to start the engine quickly. When the engine is started, the choke valve is opened at an adequate angle automatically, which prevents overchoking and ensures smooth engine performance. While the engine is being warmed up, it increases in speed at steps, and by releasing the choke button an optimum engine speed can be obtained. With the choke valve closed fully, the primary throttle valve is caused to open at an angle best suited for starting through a link mechanism.

5. Power valve mechanism

The power valve mechanism, so-called vacuum piston type, utilizes the vacuum below the throttle valve.

When the throttle valve is slightly opened during light load running, a high vacuum is created in the intake manifold. This vacuum pulls the vacuum piston upward against the spring, leaving the power valve closed. When the vacuum below the throttle valve is lowered during full load or accelerating running, the spring pushes the vacuum piston downward, opening the power valve to furnish fuel.

6. Dash pot device

These carburetors are equipped with a dash pot interlocked with the primary throttle valve through a link mechanism. The dash pot, which is exclusively installed on vehicles equipped with automatic transmission, is intended to prevent engine stall that would result from quick application of the brake immediately after driving the vehicle, or from the quick release of the accelerator pedal after treading it slightly.

When the primary throttle valve is closed near full angle (1,800 to 2,000 rpm in engine speed), a throttle lever strikes the dash pot stem making the primary throttle valve gradually open, and keeping the engine running.

## SECONDARY SYSTEM

1. Secondary main system

The secondary main system is of zenith stromburg type.

Fuel-air mixture produced by the functions of the main jet, main air bleed and emulsion tube, in the same manner as in the primary system, is pulled out through the main nozzle into the small venturi.

Due to the double venturi of the secondary system, the higher velocity air current passing through the main nozzle promotes the fuel atomization.

2. Step system

The construction of this system may correspond to the idling and slow system of the primary system.

This system aims at the proper filling up of the gap when fuel supply is transferred from the primary system to the secondary one. The step port (by-pass hole) is located near the secondary throttle valve edge in its fully closed state.

3. Secondary switchover mechanism.

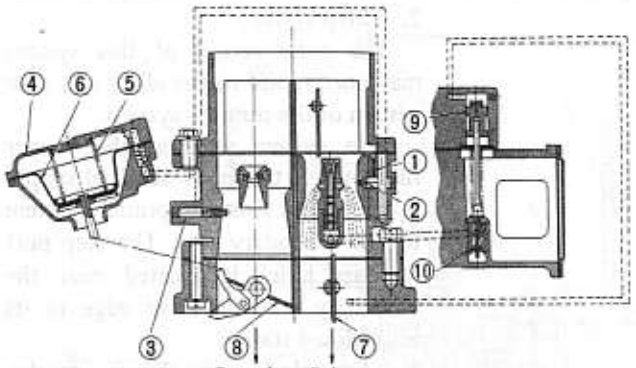
The secondary throttle valve is linked to the diaphragm which is actuated by the vacuum created in the venturi. A vacuum jet is provided at each of the primary and secondary venturies, and the composite vacuum of these jets actuates the diaphragm.

As the linkage, shown in Figure EF-11, causes the secondary throttle valve not to open until the primary throttle valve opening reaches approximately (–11A model; 55°, the others; 50°), fuel consumption during normal operation is not excessive.

During high speed running, as shown in Figure EF-12, as the vacuum at the venturi is increased, the diaphragm is pulled against the diaphragm spring force, and then secondary throttle valve is opened.

The other side, during low speed running (as the primary throttle valve opening does not reach 50° or 55°), the secondary throttle valve is locked to close completely by the locking arm which is interlocked with primary throttle arm by linkage.

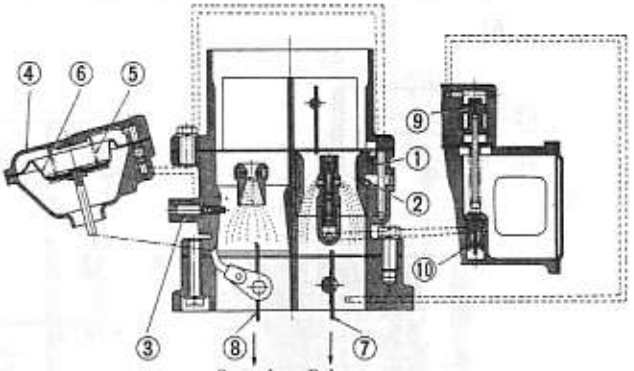
When the primary throttle valve opening reaches position wider than 50° or 55°, the secondary throttle valve is ready to open, because the locking arm revolves and leaves from the secondary throttle arm.




EF167

1 No. 3 vacuum port
2 P. vacuum port
3 S. vacuum port
4 Diaphragm chamber
5 Diaphragm spring
6 Diaphragm
7 P. throttle valve
8 S. throttle valve
9 Vacuum piston
10 Power jet

*Fig. EF-19 Full throttle at low speed*




EF168

*Fig. EF-20 Full throttle at high speed*

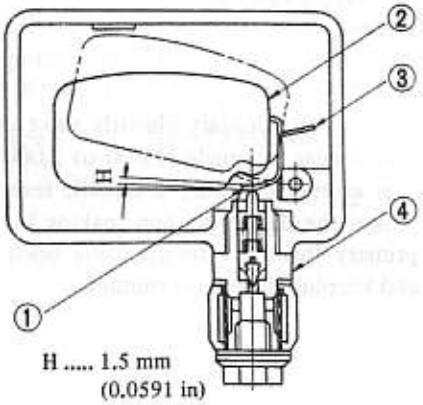
## FLOAT SYSTEM

There is only one float chamber, while two carburetor systems, primary and secondary, are provided.

Fuel fed from the fuel pump flows through the filter and needle valve into the float chamber. A constant fuel level is maintained by the float and needle valve.

Because of the inner air vent type of the float chamber ventilation, the fuel consumption will not be influenced by some dirt accumulated in the air cleaner.

The needle valve includes a special hard steel ball and will not wear under considerably long use. Besides, the insertion of a spring will prevent flooding under rough road running.

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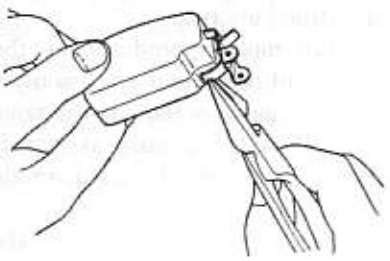
1 Float seat
2 Float
3 Float stopper
4 Needle valve

*Fig. EF-21 Adjusting fuel level*

If the fuel level is in accord with the level gauge line, the float level is properly set. If the float level is not correct, adjust it by bending the float seat as shown in Figure EF-22. Approximately *H mm is required as the effective stroke of the needle valve. So adjust the gap between the valve stem and the float seat to *H mm with the float fully lifted up by bending the float stopper.



EF170

*Fig. EF-22 Adjusting float seat*

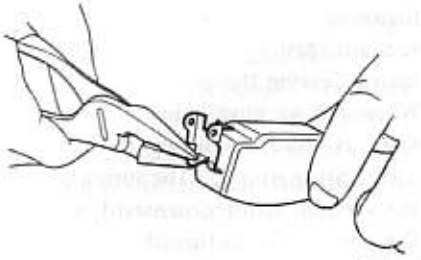
# ADJUSTMENT

## IDLING ADJUSTMENT

Refer to Engine Tune-up section concerning the details of idling adjustment.

## FUEL LEVEL ADJUSTMENT

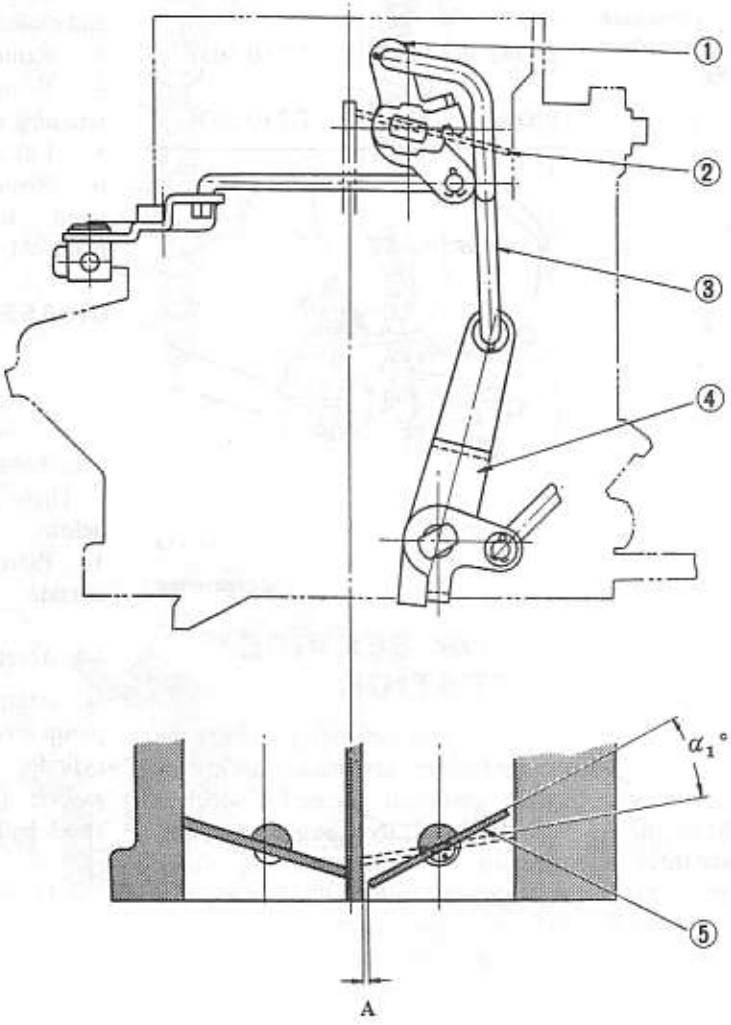
A constant fuel level is maintained by the float and needle valve.



EF171

*Fig. EF-23 Adjusting float stopper*

## ADJUSTMENT OF FAST IDLE OPENING



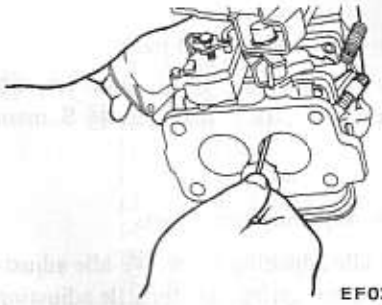

1 Choke lever
2 Choke valve
3 Choke connecting rod
4 Choke connecting lever
5 P. throttle valve

EF172

*Fig. EF-24 Adjusting fast idle opening*

Choke valve at fully closed position automatically opens throttle valve at an optimum angle for starting engine through a link mechanism.

After reassembly, or in a check on interlock opening angle, bend choke connecting rod for adjustment so that a fully closed choke valve will bring clearance A shown in Figure EF-24.

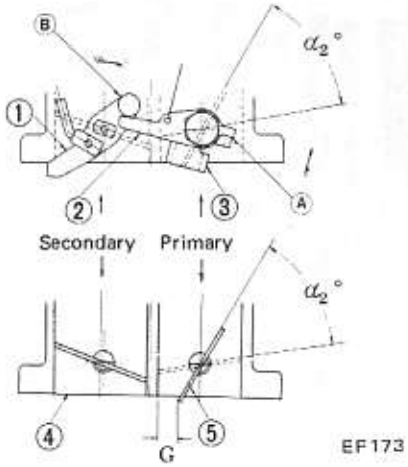


EF020

*Fig. EF-25 Measuring fast idle opening*

| Carburetor type | Approximate fast idle opening ( $\alpha_1$° ) | Dimension "A" mm (in) |
|---|---|---|
| DAF342-9A | 17° | 1.44 (0.0567) |
| DAF342-11A | 19° | 1.6 (0.0630) |
| DAF342-14 | 18° | 1.48 (0.0583) |

## ADJUSTMENT OF INTERLOCK OPENING OF PRIMARY AND SECONDARY THROTTLE VALVES




1 Connecting lever
2 Return plate
3 Adjust plate
4 Throttle chamber
5 Throttle valve

*Fig. EF-26 Adjusting interlock opening of throttle valve*

Figure EF-18 shows the primary throttle valve opened $*\alpha_2°$. When the adjust plate fixed to the primary throttle valve is open $*\alpha_2°$, it comes into contact with the connecting lever at (A). When the throttle valve is further opened, the point (B), where the connecting lever is in contact with the stopper, is detached, permitting the secondary system to start actuating.

The linkage between the primary and secondary throttles operates properly if the distance between the throttle valve and inner wall of the throttle chamber, G , amounts to specifications as shown below. The adjustment is made by bending the point (A) of the adjusting plate.

| Type | G mm (in) |
|---|---|
| DAF342-9A | 7.7 (0.303) |
| DAF342-11A | 7.7 (0.303) |
| DAF342-14 | 7.7 (0.303) |

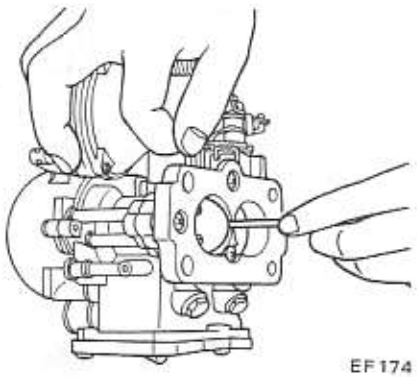



*Fig. EF-27 Measuring clearance*

# MAJOR SERVICE OPERATION

The perfect carburetor delivers the proper fuel and air ratios for all speeds of the particular engine for which it was designed. By completely disassembling at regular intervals, which will allow cleaning of all parts and passages, the carburetor can be returned to its original condition and it will then deliver the proper ratios as it did when new.

To maintain the accurate carburetion of passages and discharge holes, extreme care must be taken in cleaning.

Use only carburetor solvent and compressed air to clean all passages and discharge holes. Never use wire or other pointed instrument to clean as calibration of carburetor will be affected.

## REMOVAL

1. Remove air cleaner.
2. Disconnect fuel line, vacuum line and choke wire from carburetor.
3. Remove throttle lever.
4. Remove four nuts and washers retaining carburetor to manifold.
5. Lift carburetor off manifold.
6. Remove and discard the gasket used between carburetor and manifold. Replace it, if necessary.

## DISASSEMBLY

Some of the carburetor component-parts cannot be removed before choke chamber and throttle chamber are detached.

These parts are listed under item 2 below.

1. Parts which can be removed from outside.

1-1 Accelerating mechanism parts

④ pump rod, ⑧ pump lever, ⑨ pump lever spring ⑩ pump cover, ⑫ cylinder plate, ⑬ cylinder cover gasket, ⑮ piston return spring, ⑯ check ball

1-2 Float system parts

⑱ level gauge cover, ⑲ float chamber gasket, ⑳ level gauge, ㉑ rubber seal, ㉓ collar, ㉒ float

1-3 Fuel nipple and needle valve parts

㉔ lock lever, ㉕ filter set screw, ㉗ filter, ㉘ fuel nipple ㉙ retaining plate, ㉛ needle valve

1-4 Diaphragm chamber parts

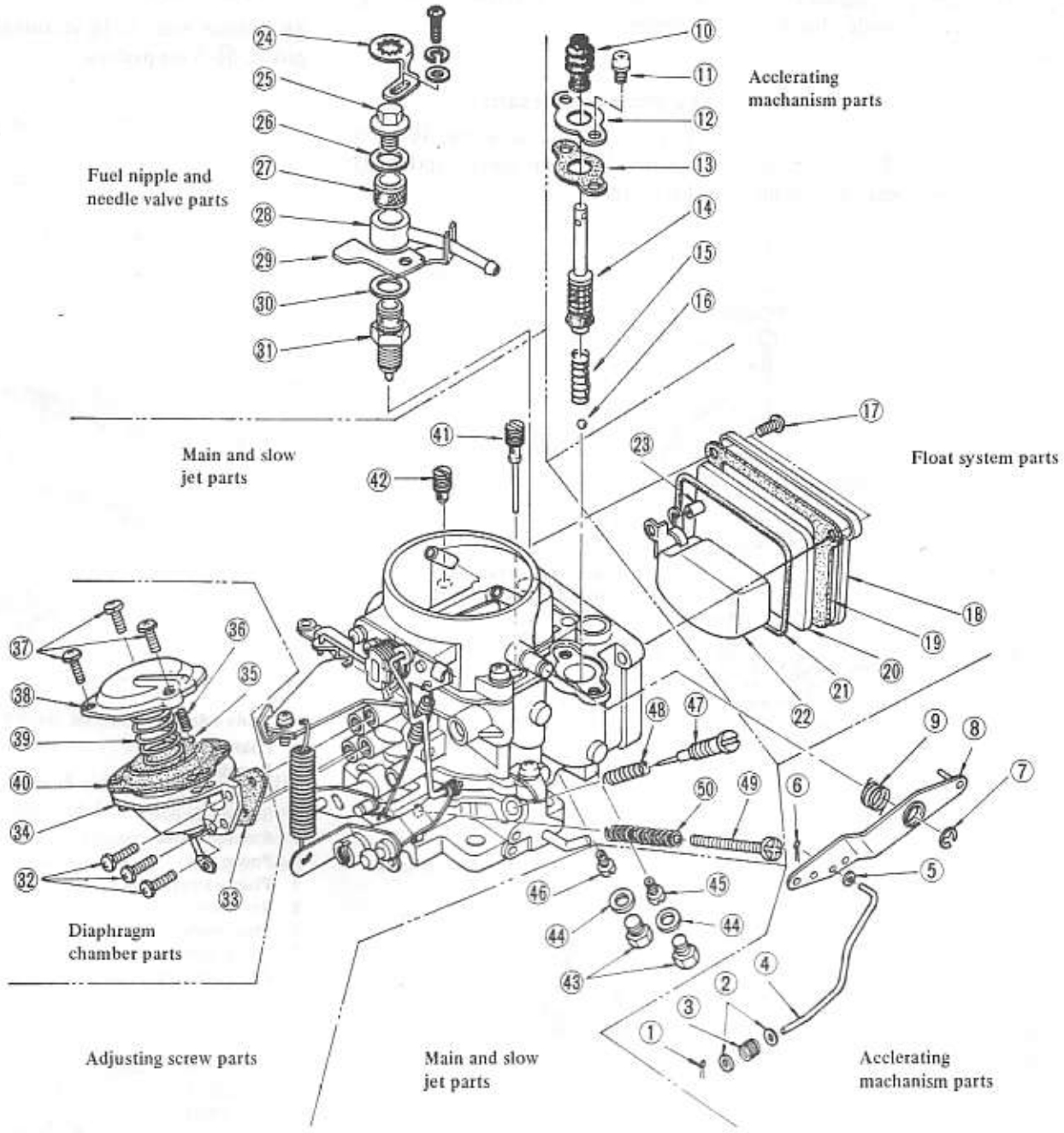
㉝ diaphragm chamber gasket, ㉞ diaphragm chamber, ㊳ diaphragm chamber cover, ㊴ diaphragm spring, ㊵ diaphragm

1-5 Main and slow jet parts

㊶ P. slow jet, ㊷ S. slow jet, ㊸ drain plugs, ㊺ P. main jet, ㊻ S. main jet

1-6 Adjusting screw parts

㊼ idle adjusting screw, ㊽ idle adjusting screw spring, ㊾ throttle adjusting screw, ㊿ throttle adjusting screw spring




| | | | | | |
|---|---|---|---|---|---|
| 1 | Cotter pin (1 dia.) | 18 | Level gauge cover | 35 | Check ball |
| 2 | Plain washer (4 dia.) | 19 | Float chamber gasket | 36 | Spring |
| 3 | Rod spring | 20 | Level gauge | 37 | Screw (M5) |
| 4 | Pump rod | 21 | Rubber seal | 38 | Diaphragm chamber cover |
| 5 | Prain washer (4 dia.) | 22 | Float | 39 | Diaphragm spring |
| 6 | Cotter pin (1 dia.) | 23 | Collar | 40 | Diaphragm |
| 7 | E-ring (# 22) | 24 | Lock lever | 41 | P. slow jet |
| 8 | Pump lever | 25 | Filter set screw | 42 | S. slow jet |
| 9 | Pump lever spring | 26 | Plain washer (8 dia.) | 43 | Drain plug |
| 10 | Pump cover | 27 | Filter | 44 | Plain washer (8 dia.) |
| 11 | Screw (M4) | 28 | Fuel nipple | 45 | P. main jet |
| 12 | Cylinder cover | 29 | Stopping plate | 46 | S. main jet |
| 13 | Cylinder cover gasket | 30 | Plain washer (12 dia.) | 47 | Idle adjusting screw |
| 14 | Piston | 31 | Needle valve | 48 | Idle adjusting screw spring |
| 15 | Return spring | 32 | Screw (M4) | 49 | Throttle adjusting screw |
| 16 | Ball (5/32) | 33 | Diaphragm chamber gasket | 50 | Throttle adjusting screw spring. |
| 17 | Screw | 34 | Diaphragm chamber | | |

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*Fig. EF-28 Disassembling two barrel carburetor (parts which can be removed from outside)*

2. Parts which can be removed after choke chamber and throttle chamber are detached.

2-1 Air bleed, emulsion tube and power jet parts

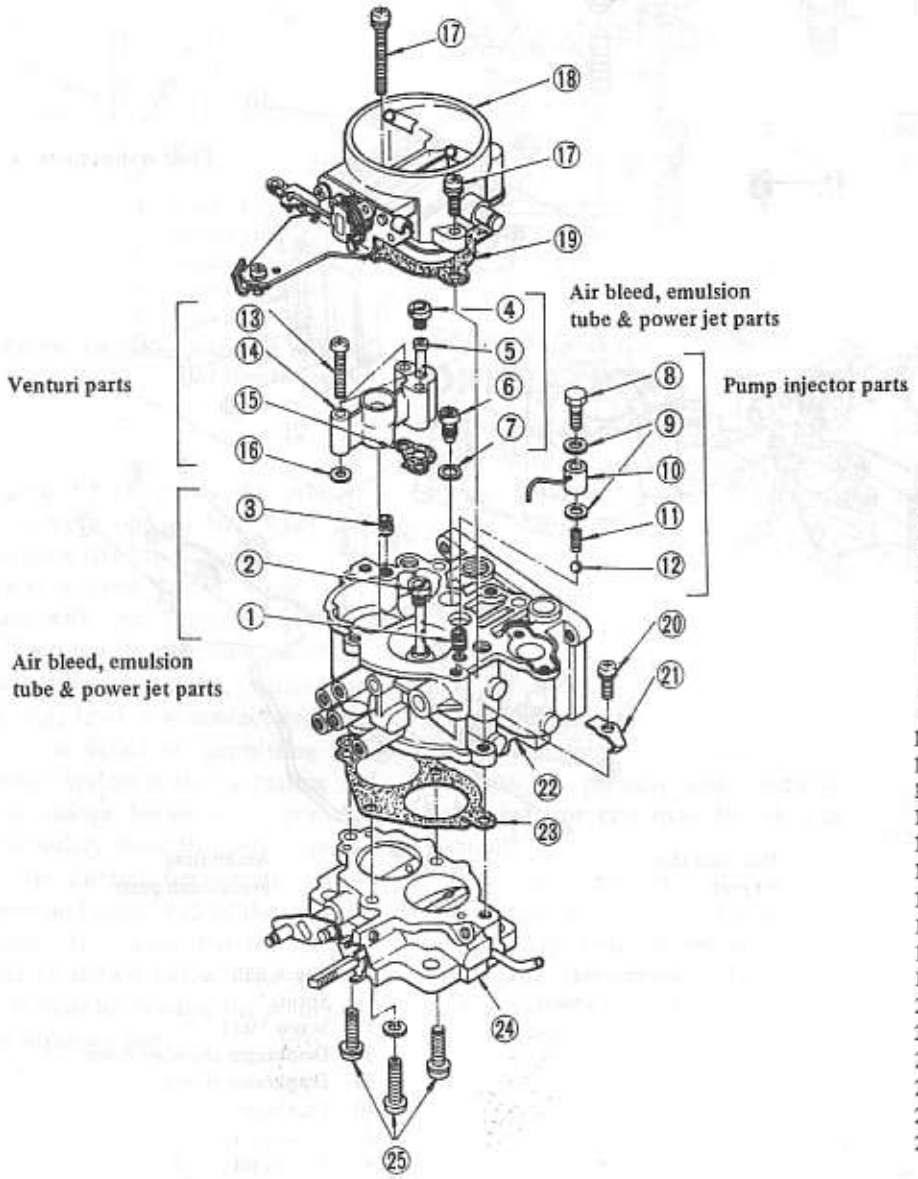
① P. slow air bleed, ② P. main air bleed, ③ S. slow air bleed, ④ S. main air bleed, ⑤ Emulsion tube, ⑥ power jet

2-2 Pump injector parts

⑧ pump injector set screw, ⑩ pump injector, ⑪ pump injector spring, ⑫ check ball

2-3 Venturi parts

⑭ S. small venturi, ⑮ venturi holder gasket, ⑯ 5 dia packing




1 P.slow air bleed
2 P. main air bleed
3 S. slow air bleed
4 S. main air bleed
5 Emulsion tube
6 Power jet
7 Plain washer (8dia.)
8 Set screw
9 Plain washer
10 Pump injector
11 Pump injector spring
12 Check ball
13 Screw (M4)
14 S. small venturi
15 Venturi holder gasket
16 Packing (5dia.)
17 Screw (M5)
18 Choke chamber
19 Choke chamber gasket
20 Screw (M6)
21 Lock plate
22 Float chamber
23 Throttle chamber gasket
24 Throttle chamber
25 Screw (M6)

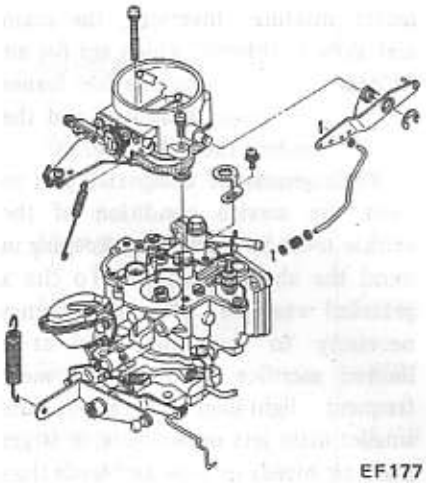
EF176

*Fig. EF-29 Disassembling two barrel carburetor (Parts which can be removed after removal of choke chamber and throttle chamber)*

3. Disassembling procedure

3-1 Disassembly of carburetor assembly

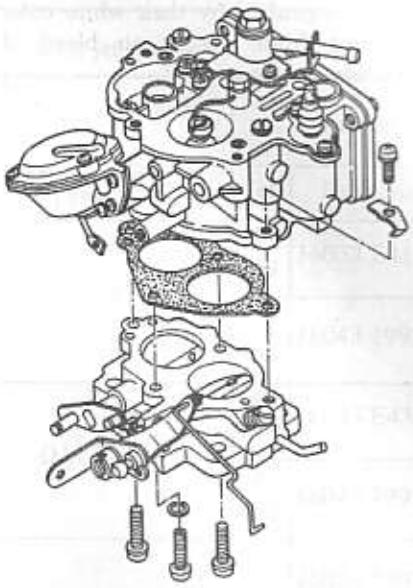
- Remove P throttle return spring, pump lever, pump rod, choke connecting rod and S throttle return spring. Loosen four choke chamber setscrews and remove choke chamber from float chamber.



EF177

*Fig. EF-30 Removing choke chamber*

- Remove E-ring, and separate diaphragm rod from throttle chamber assembly. Loosen four setscrews and seperate float chamber and throttle chamber.

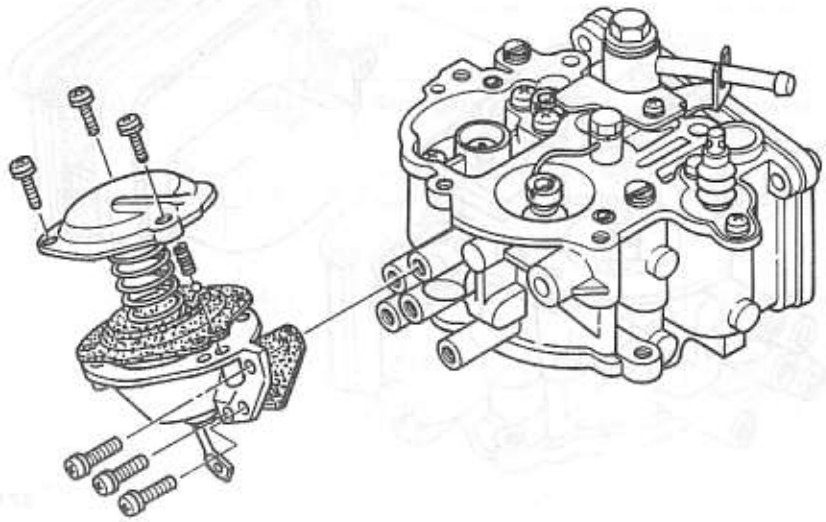


EF178

*Fig. EF-31 Removing throttle chamber*

3-2 Disassembly of float chamber

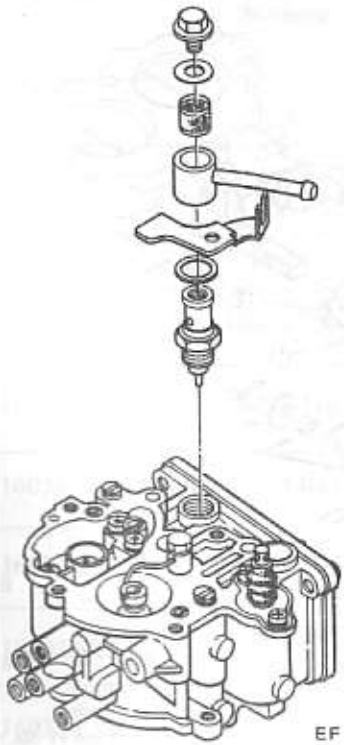
- Disassembly of diaphragm chamber
  Loosen three setscrews and remove diaphragm chamber assembly and diaphragm chamber gasket. Remove three set screws securing diaphragm chamber cover in place, and remove diaphragm chamber, diaphragm, diaphragm spring and diaphragm chamber cover.



EF179

*Fig. EF-32 Disassembling diaphragm chamber*

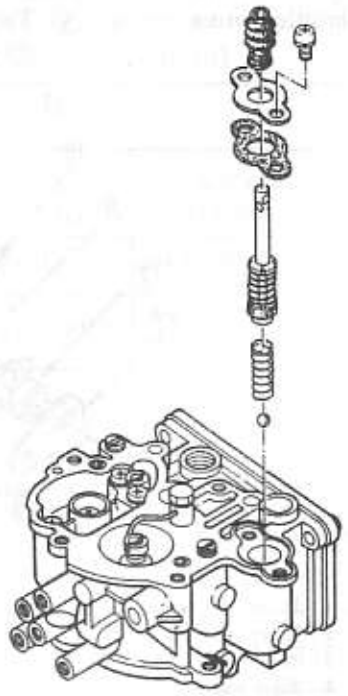
- Disassembly of fuel nipple and needle valve
  Loosen filter set screws and remove fuel nipple, filter and needle valve.



EF180

*Fig. EF-33 Removing fuel nipple*

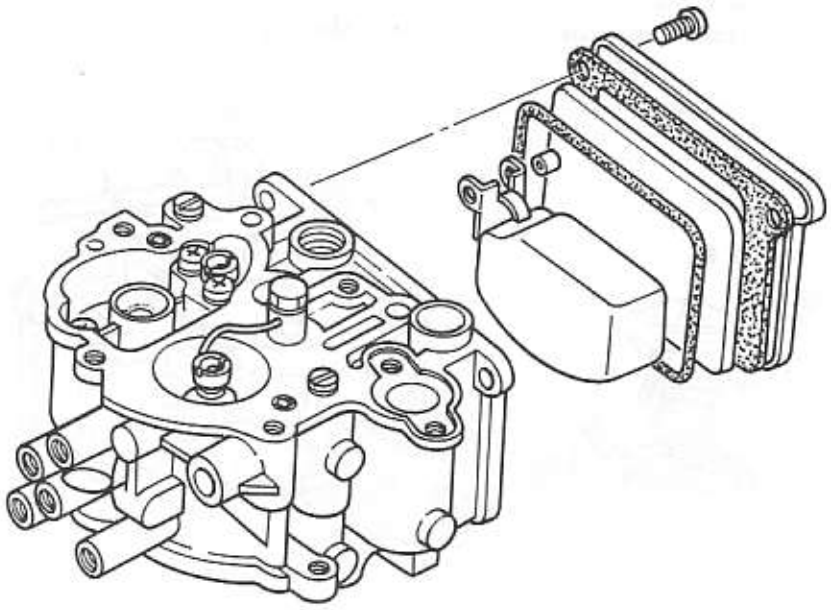
- Removal of accelerator pump
  Loosen two set screws and remove pump cover, cylinder plate, cylinder cover gasket, piston, return spring and check ball.



EF181

*Fig. EF-34 Removing accelerator pump*

o Removal of float
Loosen three set screws and remove level gauge set screws, float chamber cover, level gauge, rubber seal, collar and float.



EF182

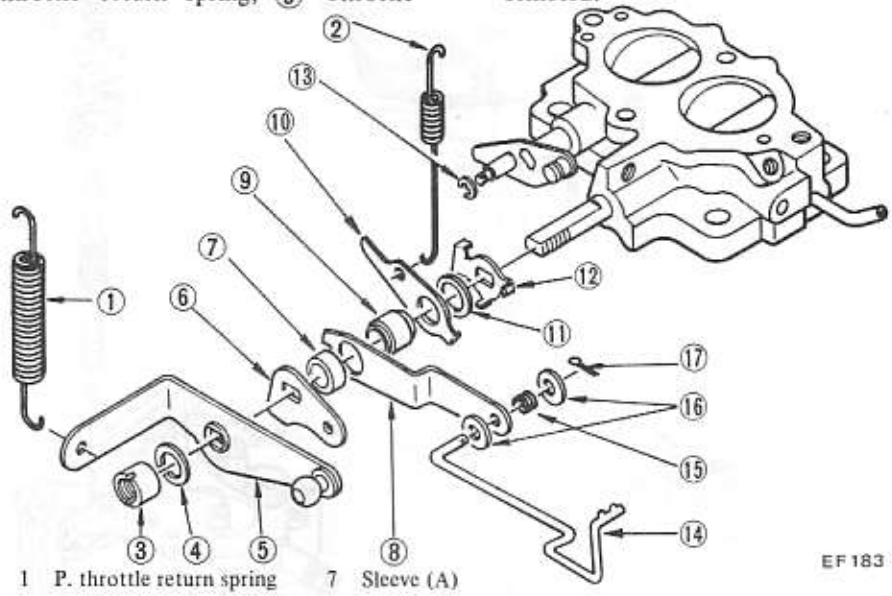
*Fig. EF-35 Removing float*

3-3 Disassembly of throttle linkage

When it is necessary to disassemble throttle linkage, disconnect pump rod linkage and remove parts in the order listed below:

① P throttle return spring, ② S throttle return spring, ⑤ Throttle lever, ⑥ Pump lever T, ⑦ Sleeve A, ⑧ Choke connecting lever, ⑨ Sleeve B, ⑩ Return plate

**Note: Adjusting plate ⑫ is pressed in its place and cannot be disassembled.**



EF183

| | | | | | |
|---|---|---|---|---|---|
| 1 | P. throttle return spring | 7 | Sleeve (A) | | |
| 2 | S. throttle return spring | 8 | Choke connecting lever | 13 | E-ring |
| 3 | Nut | 9 | Sleeve (B) | 14 | Choke connecting rod |
| 4 | Plain washer | 10 | Return plate | 15 | Rod spring |
| 5 | Throttle lever | 11 | Plain washer | 16 | Plain washer |
| 6 | Pump lever (T) | 12 | Adjusting plate | 17 | Cotter pin (1 dia.) |

*Fig. EF-36 Removing throttle linkage*

## JETS

The carburetor performance depends on jets and air bleeds. That is why these components must be fabricated with utmost care. To clean them, use cleaning solvent and blow air on them. Larger inner numbers stamped on the jets indicate larger diameters. Accordingly, main and slow jets with larger numbers provide richer mixture, and the smaller numbers the leaner mixture. Inversely, the main and slow air bleeds, which are for air to pass through, make the fuel leaner if they bear larger numbers, and the smaller numbers the richer fuel.

Replacement of designated jets to meet the service condition of the vehicle must be carried out keeping in mind the above directions. To cite a practical example, when it becomes necessary to economize fuel at a limited sacrifice of output to meet frequent light-load operation, use smaller main jets or slow jets, or larger main air bleeds or slow air bleeds than regularly specified. This should meet the purpose. Inversely, when increase in output is desired at the limited sacrifice of fuel consumption, use larger main jets or slow jets, or smaller main air bleeds or slow air bleeds, and that should bring a satisfactory result.

Carburetor secondary jets such as secondary main jet, secondary main air bleed, step jet and step air bleed could be distinguished by their white color painting from jets or air bleed of primary system.

# SPECIFICATIONS AND SERVICE DATA

| Item \ Carburetor model | | DAF342-11 Manual choke | | DAF342-14 Manual choke | | DAF342-9A Manual choke | |
|---|---|---|---|---|---|---|---|
| Applied engine | | L26 | | L24 | | L20A | |
| Applied model | | 230 | | HGC110 | | 230 | |
| | | Primary | Secondary | Primary | Secondary | Primary | Secondary |
| Outlet diameter | mm (in) | 32 (1.2598) | 34 (1.3386) | 32 (1.2598) | 34 (1.3386) | 32 (1.2598) | 34 (1.3386) |
| Venturi diameter | mm (in) | 24 (0.9449) | 28 x 9 (1.1024 x 0.3543) | 25 (0.9843) | 28 x 9 (1.1024 x 0.3543) | 24 (0.9449) | 28 (1.1024) |
| Main jet | | #132 | #210 | #129 | #160 | #119 | #160 |
| Main air bleed | | #240 | #50 | #240 | #70 | #240 | #70 |
| Slow jet | | #50 | #100 | #48 | #90 | #45 | #90 |
| Slow air bleed | | #230 | #50 | #210 | #50 | #210 | #50 |
| Power jet | | #90 | | #70 | | #65 | |
| Float level | mm (in) | 22 to 24 (0.8661 to 0.9449) | | 22 to 24 (0.8661 to 0.9449) | | 22 to 24 (0.8661 to 0.9449) | |
| Fuel pressure | kg/cm$^2$ (psi) | 0.24 (3.4) | | 0.24 (3.4) | | 0.24 (3.4) | |
| Weight | kg (lb) | 2.8 (6.20) | | 2.8 (6.20) | | 2.8 (6.20) | |

Main jet variation

| ALTITUDE / CARBURETOR TYPE | | Sea level | | 1,000 m (3,300 ft) | | 2,000 m (6,600 ft) | | 3,000 m (10,000 ft) | | 4,000 m (13,300 ft) | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Jet | Parts No. | Jet | Parts No. | Jet | Parts No. | Jet | Parts No. | Jet | Parts No. |
| DAF342-9A | P | # 119 | 16033 E4110 | # 115 | 16033 23015 | # 112 | 16033 23016 | # 108 | 16033 23017 | # 105 | 16033 23018 |
| | S | # 160 | 16043 19915 | # 155 | 16054 23015 | # 150 | 16034 21615 | # 145 | 16054 21054 | # 140 | 16043 25715 |
| DAF342-14 | P | # 129 | 16033 E4310 | # 125 | 16054 18016 | # 121 | 16033 E4313 | # 118 | 16033 E4311 | # 114 | 16033 E4312 |
| | S | # 160 | 16043 19915 | # 155 | 16054 23015 | # 150 | 16034 21615 | # 145 | 16054 21015 | # 140 | 16043 25715 |
| DAF342-11 | p | # 119 | 16033 P3010 | # 128 | 16033 S2210 | # 125 | 16054 18016 | # 121 | 16033 E4313 | # 117 | 16033 23115 |
| | S | # 160 | 16033 P3011 | # 205 | 16033 P3012 | # 200 | 16033 P3010 | # 195 | 16033 P3014 | # 190 | 16033 F0810 |

P ..... primary S ..... secondary

# TROUBLE DIAGNOSES AND CORRECTIONS

In the following table, the symptoms and causes of carburetor troubles and remedies for them are listed to facilitate quick repairs.

There are various causes of engine troubles. It sometimes happens that a carburetor which has no defect seems apparently to have some troubles, when in fact the electrical system is defective. Therefore, whenever the engine has troubles, electrical system must be checked first before making carburetor adjustment.

| Condition | Probable cause | Corrective action |
|---|---|---|
| Overflow | Dirt accumulated on needle valve. | Clean needle valve. |
| | Fuel pump pressure too high. | Repair pump. |
| | Needle valve seat improper. | Lap or replace. |
| Excessive fuel consumption | Fuel overflow. | See above item. |
| | Each main jet, slow jet too large. | Replace. |
| | Each main air bleed clogged. | Clean. |
| | Choke valve does not fully open. | Adjust. |
| | Outlet valve seat of accelerator pump improper. | Lap. |
| | Linked opening of secondary throttle valve too early. | Adjust. |
| Power shortage | Each main jet clogged. | Clean. |
| | Each throttle valve does not fully open. | Adjust. |
| | Idling adjustment incorrect. | Repair. |
| | Fuel strainer clogged. | Clean. |
| | Vacuum jet clogged. | Clean. |
| | Air cleaner clogged. | Clean. |
| | Diaphragm damaged. | Replace. |
| | Power valve operated improperly. | Adjust. |
| Improper idling | Slow jet clogged. | Clean. |
| | Each throttle valve does not close. | Adjust. |
| | Secondary throttle valve operated improperly. | Overhaul and clean. |
| | Each throttle valve shaft worn. | Replace. |
| | Packing between manifold/carburetor defective. | Replace packing. |
| | Manifold/carburetor tightening improper. | Correct tightening. |
| | Fuel overflow. | See above item. |
| Engine hesitation | Main jet or slow jet clogged. | Clean. |
| | By pass hole, idle passage clogged. | Clean tube. |
| | Emulsion tube clogged. | Clean. |
| | Idling adjustment incorrect. | Correct adjustment. |
| | Secondary throttle valve operated improperly. | Overhaul and clean. |

| Condition | Probable cause | Corrective action |
|---|---|---|
| Engine does not start. | Fuel overflows. | See the first item. |
| | No fuel. | Check pump, fuel pipe and needle valve. |
| | Idling adjustment incorrect. | Adjust. |
| | Fast idle adjustment incoreect. | Adjust. |

# SU TYPE TWIN CARBURETOR

## CONTENTS



## DESCRIPTION

The model HMB46W-1C carburetor is a horizontal, variable venturi type. This carburetor is designed to keep constant flow of intake air through the venturi under all engine speeds. That is the venturi opening is automatically adjusted by sliding the suction piston in accordance with changes in the volume of intake air.

Metering calibration of main system is accomplished by the jet needle fixed into the suction piston. Then, the related situation between the taper jet needle and nozzle gives the correct air-fuel mixture. A power valve is provided to improve performance during acceleration from medium speed.

When starting the engine, choke valve is closed by pulling the choke knob and excess fuel is drawn from auxiliary nozzle at the intake side of each carburetor. Consequently, an enriched air-fuel mixture is obtained. Under normal running, a proper mixture is supplied by sliding the jet needle, and vacuum in the suction chamber operates the suction piston.

This carburetor has the following characteristics:

1. Air flows fast in the venturi even when engine runs at low speeds. Therefore, fuel is fully turned into spring, ensuring good driveability.
2. Since the venturi opens wide at high speed running, with the use of two carburetors, high output can be provided to reduce air intake resistance.
3. Idle control system assures stable idling. And two adjusting screws (idle speed adjusting screw on the balance tube and idle mixture adjusting screw at the front carburetor) permit easy access for servicing.
4. Float chamber just beneath the nozzle ensures better starting, stopping and turning.

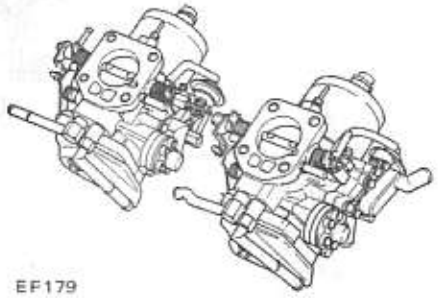



*Fig. EF-37 HMB46W-1C carburetor*

## CONSTRUCTION AND OPERATION

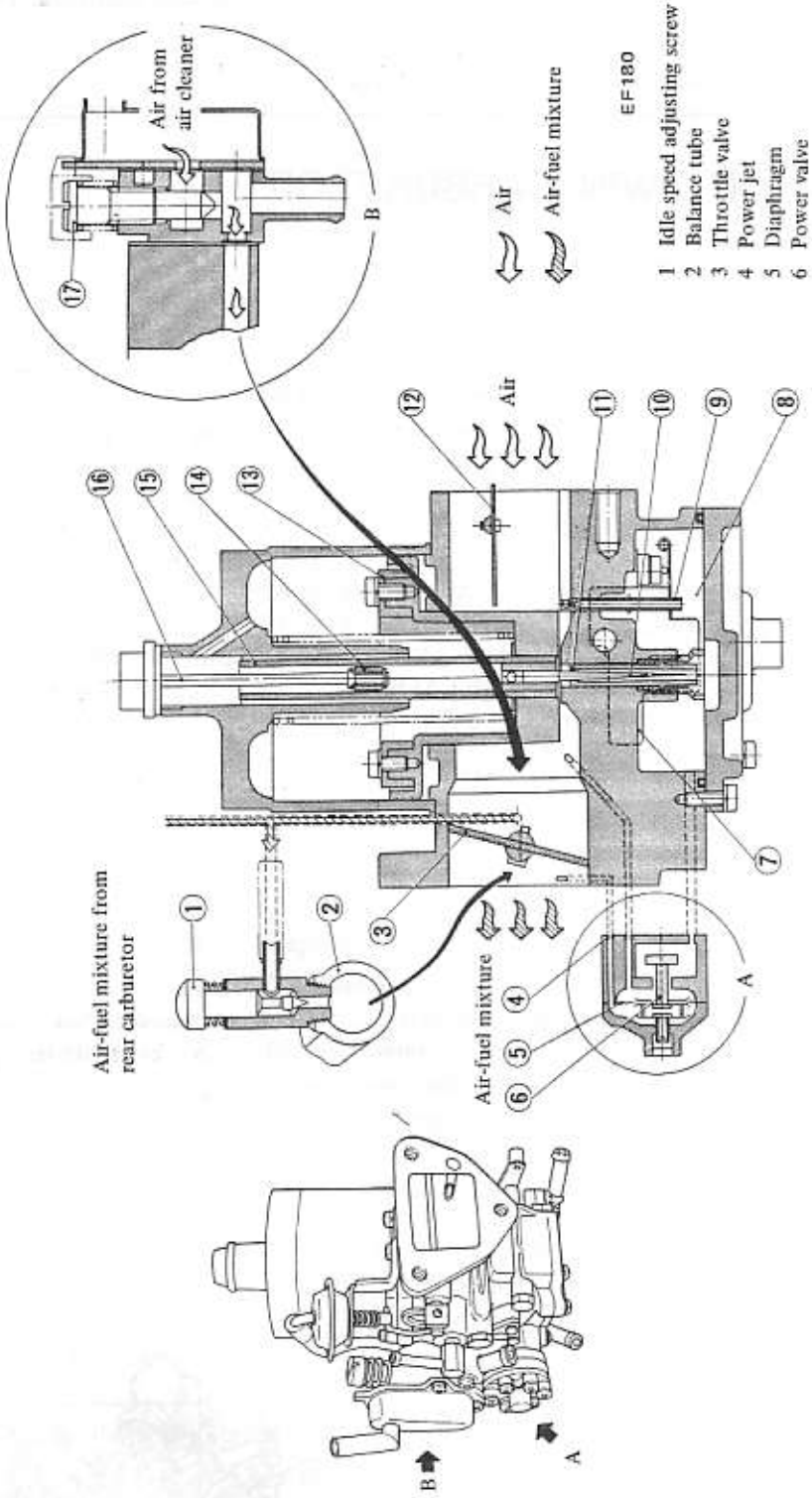



*Fig. EF-38 Sectional view of front carburetor*

## FLOAT SYSTEM

The float circuit is a dual float construction where two floats are symmetrically arranged around the nozzle. The float bowl is positioned just beneath the nozzle so that the level of fuel in the float bowl is kept constant when the car is accelerated or decelerated, or when it is turning a corner. See Figure EF-38.

## VENTURI CONTROL SYSTEM

The suction chamber is mounted above the venturi, and the suction piston slides vertically within the suction chamber, changing the venturi opening area.

Venturi vacuum pressure operates on the upper surface of the suction piston through the suction port, and atmospheric pressure is applied to the bottom of the suction piston through the air hole from the air cleaner. The difference between the upper vacuum pressure and lower atmospheric pressure moves the suction piston up and down. The suction piston stops when a balanced condition exists between the pressure difference and the piston weight plus spring tension. The vacuum pressure is produced by the air flow velocity. For instance, when the throttle valve is opened by depressing the accelerator pedal, the flow velocity of the intake air increases. This also increases vacuum pressure in the venturi, and the suction piston is lifted until the piston is balanced, and the venturi opening area enlarges.

When the throttle valve is closed by releasing the accelerator pedal, the flow velocity of the engine intake air in the venturi is reversely decreased. The piston goes down and the venturi opening area becomes small. The intake air flow velocity recovers as the venturi opening decreases. The piston stops going down because of a balance between the upper and the lower forces operating the suction piston.

Thus, the opening area is adjusted automatically to keep the flow of intake air at constant velocity in the venturi. Consequently, the venturi opening is optimum for any engine operating condition. In addition, the suction piston rod is equipped with an oil damper to prevent the piston coming up quickly as a result of sharp throttle opening. Since the plunger rod positioned in an oil well operates on a fluid brake on rapid rising stroke but exerts no restriction on its fall, it provides an approximate degree of enrichment for acceleration.

## FUEL SYSTEM

Air velocity through the venturi (vacuum pressure) causes fuel to be sprayed from the float chamber, through the opening between the nozzle and jet needle into the venturi.

The jet needle below the suction piston moves up and down in the nozzle according to the motion of the suction piston. Fuel flow changes automatically due to the tapered shape of the jet needle.

Operating conditions under various driving conditions from idling to fully-opened maximum speed are shown in Figures EF-39 and EF-42.

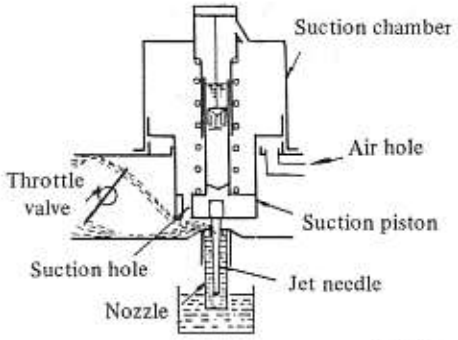



*Fig. EF-39 Idling*

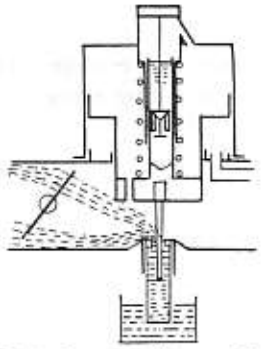



*Fig. EF-40 Intermediate and low speed*

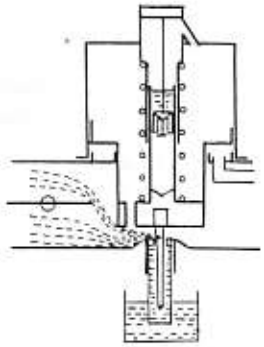



*Fig. EF-41 Fully-opened low speed*

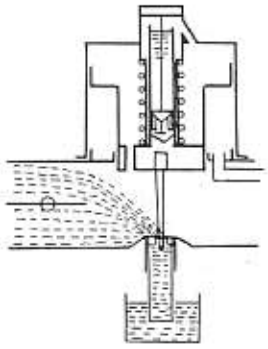
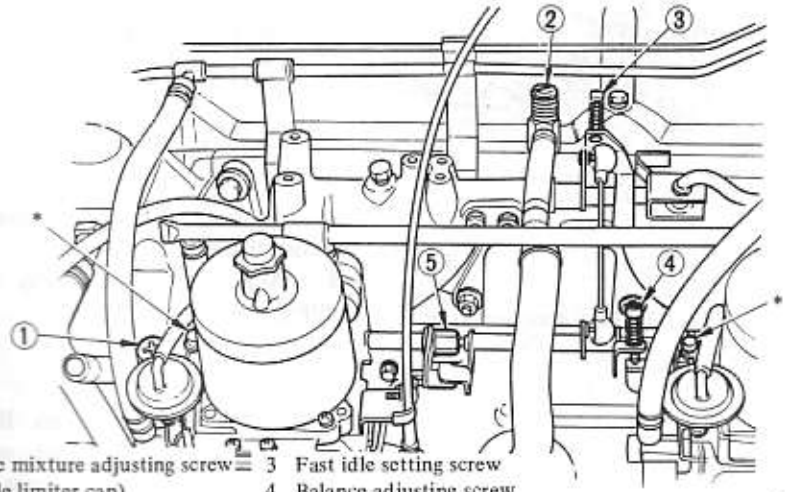



*Fig. EF-42 Fully-opened high speed*

## CONTROL AND ADJUSTMENT

### ADJUSTING ENGINE IDLE R.P.M, MIXTURE RATIO AND IGNITION TIMING




1 Idle mixture adjusting screw (idle limiter cap)
2 Idle speed adjusting screw
3 Fast idle setting screw
4 Balance adjusting screw
5 Throttle shaft

*Fig. EF-43 Carburetor linkage*

Notes:

a. Idle limiter cap equipped with idle mixture adjusting screw must not be removed.

b. Screws marked "*" are properly adjusted at factory and require no further adjustment.

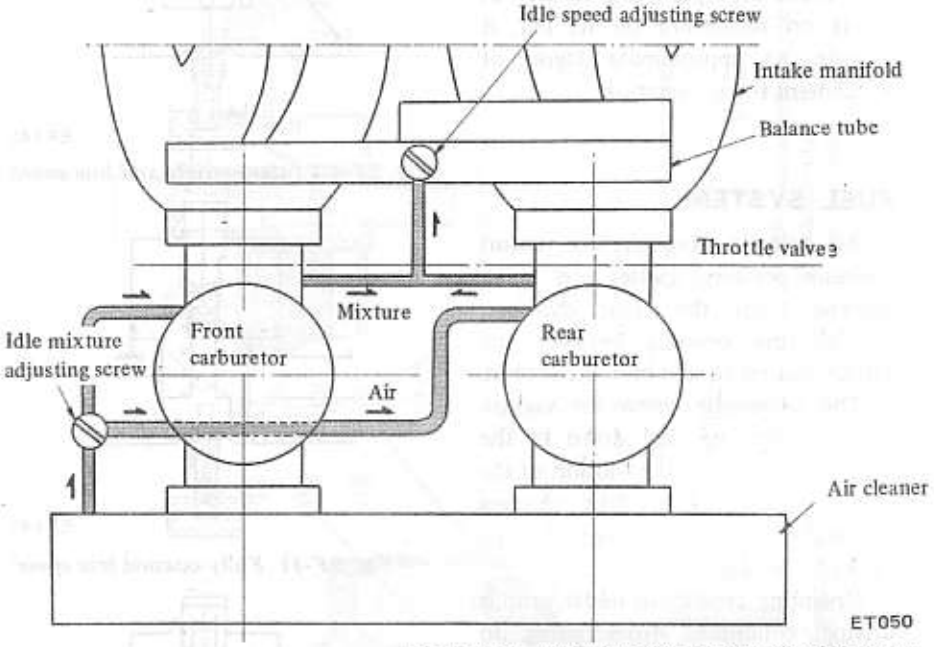



*Fig. EF-44 Adjusting idle speed adjusting screw*

1. Warm up engine by driving car for more than 20 minutes at a speed of about 48 km/h (30 MPH).
2. Remove cleaner cover and oil damper cap, raise suction piston with a suitable soft bar. Make sure that suction piston rises smoothly.
3. Check damper oil level and add oil (MS #20 or 10W-30) if necessary.

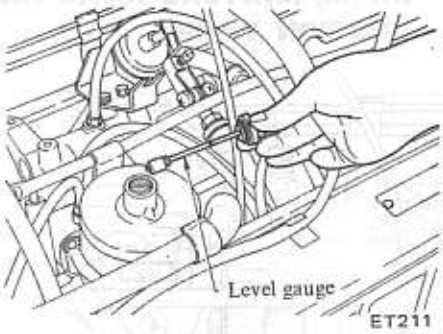



*Fig. EF-45 Checking damper oil level*

4. Loosen balance adjusting screw.

Note: Make sure operation of front carburetor is separated from rear one.

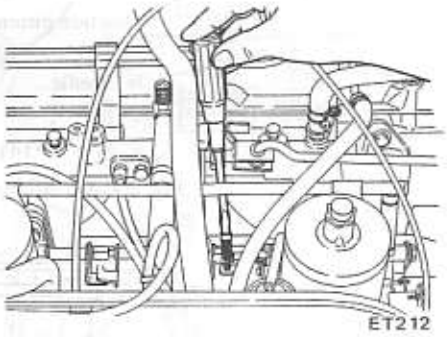



*Fig. EF-46 Adjusting balance adjusting screw*

5. Connect engine tachometer and timing light in proper position.
6. Adjust idling speed by turning idle speed adjusting screw.

L26 (Twin carb.)

Manual transmission ..... 650 rpm

Automatic transmission ..... 700 rpm

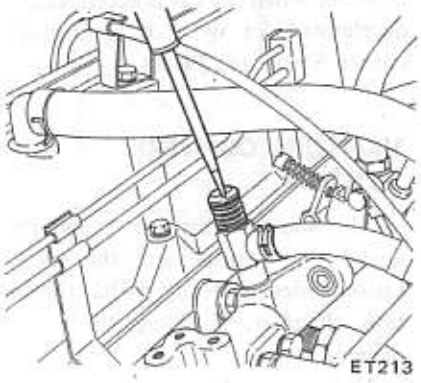



*Fig. EF-47 Adjusting idle speed adjusting screw*

Notes:

a. When idle speed adjusting screw is turned clockwise, idling speed decreases; it increases when the screw is turned counterclockwise.

b. When idle speed adjusting screw is turned fully clockwise during the above adjustment and engine speed cannot be reduced below 700 rpm, the accelerator linkage is incorrectly adjusted. Under normal conditions, the auxiliary throttle shaft and throttle shaft should have a slight play at idling speed. In other words, the auxiliary throttle shaft should be provided with a play "$\theta$" which corresponds to the clearance Ta = Tb shown in Figure EF-48.

c. When adjusting in idling condition for 1 to 2 minutes or more, be sure to race the engine beforehand.

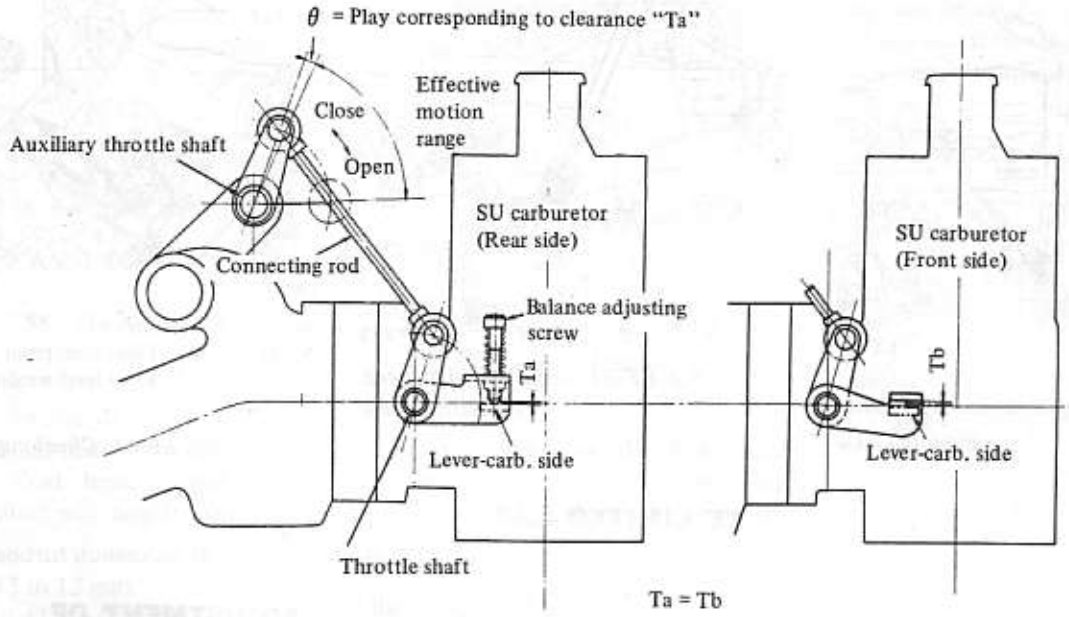



*Fig. EF-48 Carburetor linkage*

7. Turn idle mixture adjusting screw clockwise or counterclockwise until proper air-fuel mixture ratio is obtained.

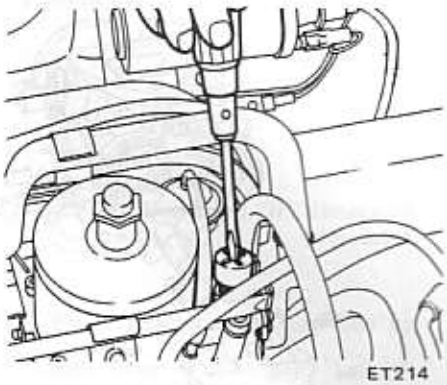



*Fig. EF-49 Adjusting idle mixture adjusting screw*

**Note: Engine speed varies as idle mixture adjusting screw is turned. Optimum air-fuel mixture ratio can be told by the highest engine speed within adjusting range.**

8. Turn idle adjust screw until engine runs at specified idle speed.
9. Set ignition timing to specifications by adjusting distributor as shown below.

Ignition timing of the L26 (Twin carb.) engine (B.T.D.C./rpm)

| | |
|---|---|
| Manual transmission | 17/650 (10/650) |
| Automatic transmission | 17/700 (10/700) |

Note: ( ) for E.C.E.

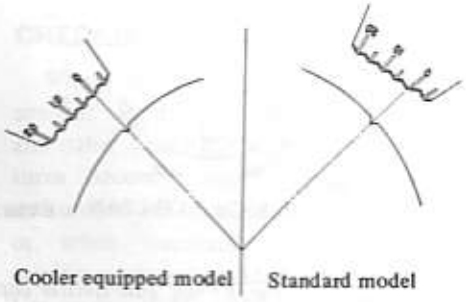



*Fig. EF-50 Checking ignition timing*

10. If engine speed changes after ignition timing has been adjusted, repeat steps 6, 7 and 8 above.
11. Adjust fast idle setting screw until engine runs at about 1,400 rpm.

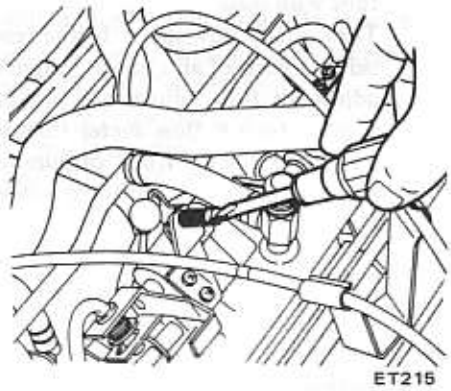



*Fig. EF-51 Adjusting fast idle setting screw*

12. Using a flow meter, adjust balance adjusting screw so that front and rear carburetor intake air volumes are balanced.

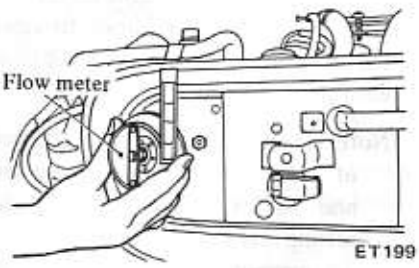



*Fig. EF-52 Setting flow meter*

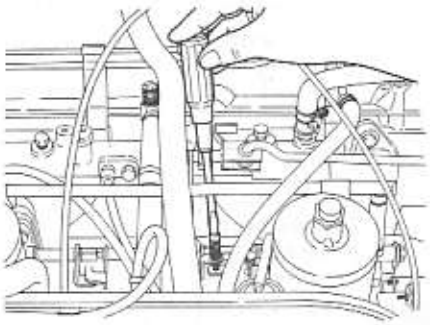



*Fig. EF-53 Adjusting balance adjusting screw*

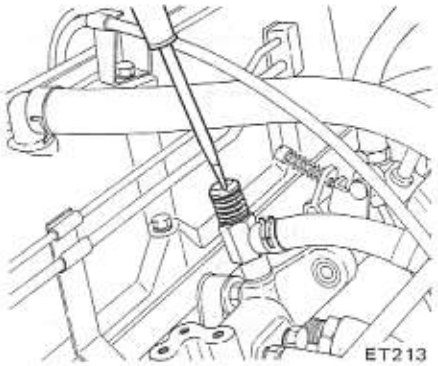
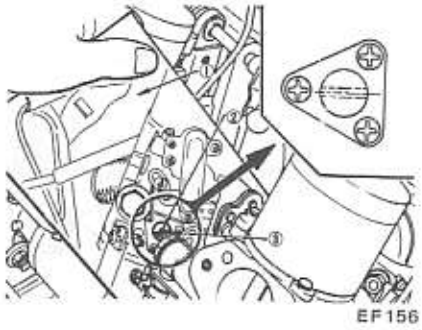



*Fig. EF-54 Adjusting idle speed adjusting screw*




1 Mirror
2 Float level point
3 Float level window

*Fig. EF-56 Checking float level*

Notes:

a. Attach flow meter to the front side air horn of air cleaner, turn air flow adjusting screw of flow meter, and align the upper end of float in glass tube with scale.
   Then attach flow meter to the rear side air horn of air cleaner. (Do not adjust air flow adjusting screw of flow meter.) if flow meter float is not aligned with front carburetor scale, turn balance adjusting screw and align float with front carburetor scale.
b. Stand flow meter float vertically.
c. The flow meter is used to hinder engine air intake, it is therefore recommended that the flow meter be used for a very short period of time (one to two seconds).
   It should not be used continuously.

13. Turn fast idle setting screw out completely until engine runs at the specified idle speed. If necessary, adjust idle speed with idle speed adjusting screw. After adjustment, race engine two or three times to ensure that specified idle speed is obtained each time.

Note: Make sure there is a clearance of 2 mm (0.078 in) between lever and tip of screw when fast idle setting screw is turned out.
To prevent it from falling do not turn fast idle setting screw excessively.

## IDLE LIMITER CAP

Idle limiter cap is attached to idle mixture adjusting screw.

Do not remove this idle limiter cap unless necessary. If this unit is removed, it must be readjusted at time of installation.

To adjust, proceed as follows:

1. Make sure that the "CO" content percentage meets specifications (CO: 1.5%).
2. Install idle limiter cap in position, making sure that adjusting screw is able to turn another 1/8 rotation in the "CO-RICH" direction.

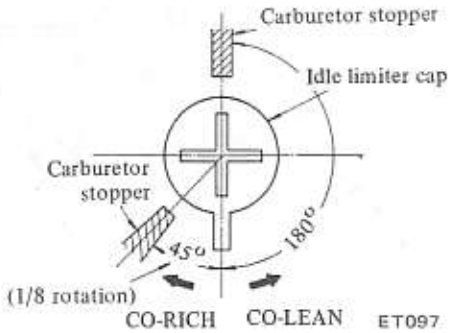



*Fig. EF-55 Idle limiter cap*

## ADJUSTMENT OF FLOAT LEVEL

If it is necessary to adjust the float level, float lever should be bent as required.

1. Remove carburetor assembly from intake manifold, and remove float chamber cover from carburetor.

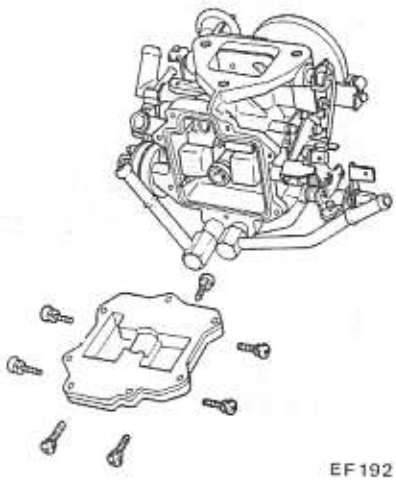



*Fig. EF-57 Removing float chamber cover*

## INSPECTION OF FLOAT LEVEL

The level of fuel in the float chamber can be checked through the circular window located behind carburetor.

It is necessary to use a mirror to inspect the fuel level.

2. Place the carburetor top side down to check the position of float lever.

Refer to Figure EF-50. Ensure that both floats touch the inner wall of carburetor when carburetor is turned upside down on float surface.

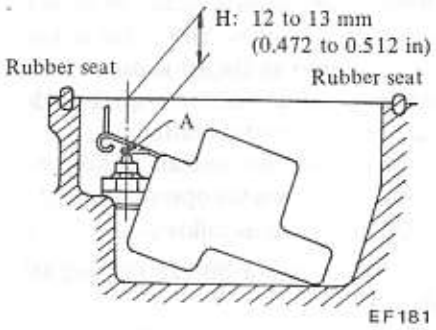



*Fig. EF-58 "H" dimension of float lever*

3. Measure the dimension "H" between the end face of the float chamber and float lever tongue which makes contact with needle valve.

The standard dimension is
12 to 13 mm
(0.472 to 0.512 in).

Measure the "H" dimension at point "A" of float lever. If it is not within the specified value, adjust the tongue by bending its root as required.

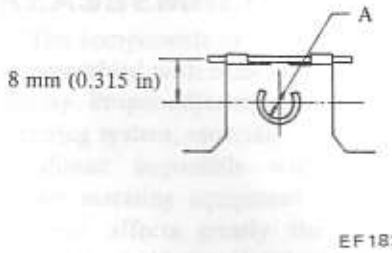



*Fig. EF-59 Measuring "H" dimension at point A*

4. Place the carburetor top side up

Then, measure the gap "G" between the power valve nozzle and float.

The standard gap is between 0.5 mm (0.020 in) and 2 mm (0.079 in). If the gap is not within the specified range, adjust by bending the stopper as required. The above adjustment is particularly necessary to prevent mutual interference between the float and power valve.

**Note: Whenever the stopper is bent for adjustment, check the dimension "H" to ensure that it remains within the specified range.**

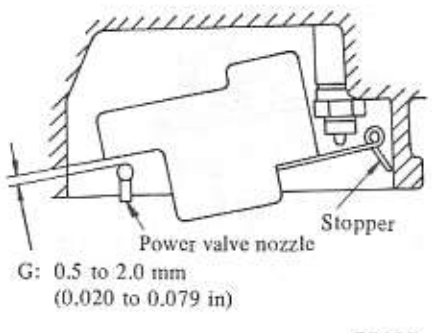



*Fig. EF-60 "G" dimension of float*

5. After adjusting the float lever tongue, install float chamber cover on carburetor float chamber and install carburetor on engine.

The normal fuel level is even with the center line of the float level window.

Float level adjustment should be made only when erratic engine operation due to incorrect fuel level is noted.

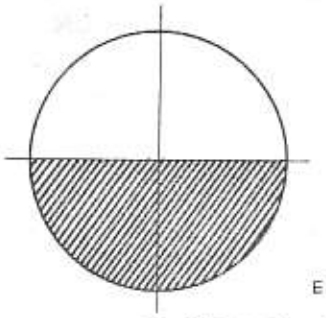



*Fig. EF-61 Float level*

## CHECKING DAMPER OIL

When there is not a sufficient amount of damper oil, acceleration and other operating performance features become sluggish. When new carburetors are installed on the engine, or when overhaul is performed, damper oil must be added without fail. Use engine oil MS #20 or SAE 10W-30 for damper oil. Do not use lower or higher weight oils.

To check damper oil level, remove oil cap nut and check oil level marking on the two grooves on plunger rod. No difficulty will be encountered and there is no damper until the oil level reaches the lower line. If the oil level drops below the lower line, add oil. Slowly fill damper oil to upper line.

When removing and replacing oil cap nut, be careful not to bend rod. If oil cap nut is loose, it may fall off. Be sure that it is sufficiently tightened.

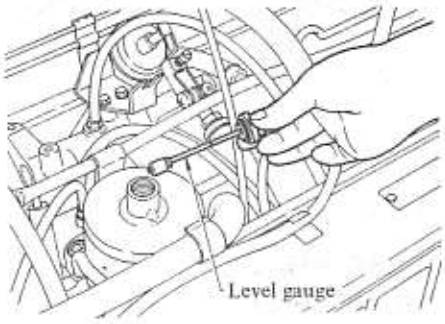
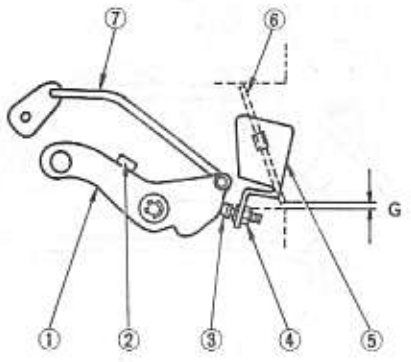



*Fig. EF-62 Checking damper oil level*

## FAST IDLE ADJUSTMENT

Choke valve at fully closed position automatically opens throttle valve at an optimum angle for starting engine through a link mechanism.

After reassembly, or during a check of interlock opening angle, place upper side of fast idle screw on the first step of choke lever. Then adjust fast idle adjusting screw in such a way that the clearance of throttle valve (shown at "G" in Figure EF-63) is held within 0.59 to 0.64 mm (0.023 to 0.025 in). When it is not correct, adjust by turning fast idle screw in or out as necessary.




1 Choke lever
2 Choke lever stopper
3 Fast idle screw
4 Lock nut
5 Fast idle lever
6 Throttle valve
7 Connecting rod

*Fig. EF-63 Adjusting fast idle opening*

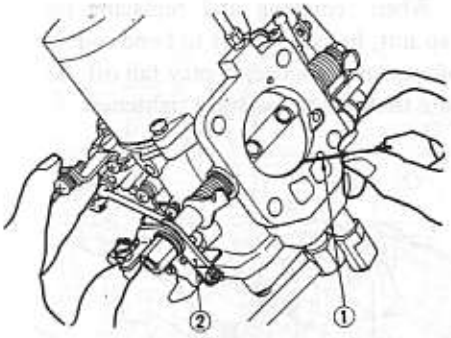



*Fig. EF-64 Measuring fast idle opening*

## CHOKE PISTON ADJUSTMENT

1. Close choke valve completely.
2. Valve can be closed by stretching a suitable rubber band between choke lever which is connected to choke wire, and stationary part of carburetor.
3. Grip diaphragm rod with pliers, and pull completely straight.
4. Under this condition, adjust the gap between choke valve and carburetor body to 1.65 mm (0.065 in) by bending choke piston rod. See Figure EF-65.

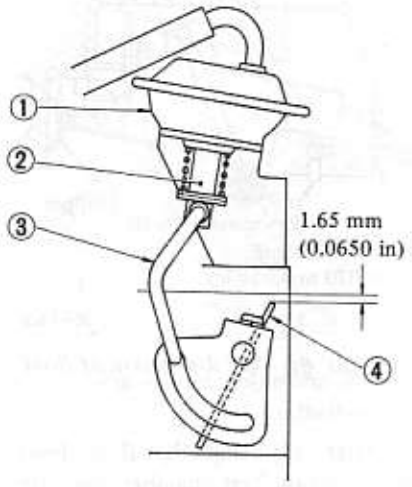



*Fig. EF-65 Choke piston adjustment*

## PERIODIC INSPECTION OF SUCTION CHAMBER AND SUCTION PISTON

Periodic inspection is required to consistently maintain the suction chamber and suction piston in proper operating condition. This is due to the fact that dust in the air is drawn into chamber and accumulates on the sliding portion of suction piston.

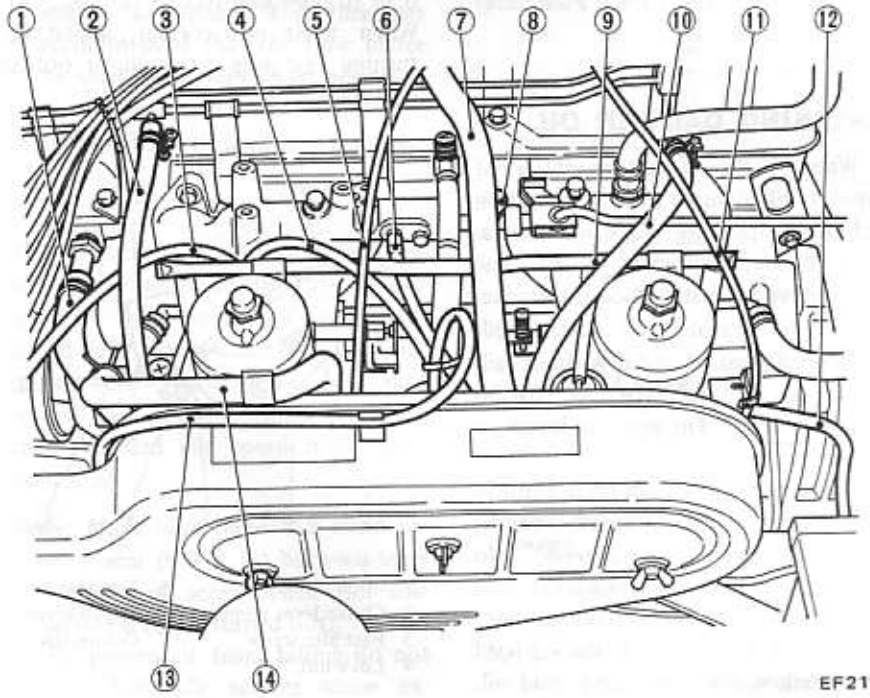
Make sure that suction piston installed on the engine operates smoothly by proceeding as follows:

1. First, remove oil cap nut and air cleaner.
2. Gradually raise suction piston with a suitable bar.
3. Release your finger from suction piston. Suction piston will drop, and the sound of suction running against venturi will be heard.

Piston and chamber conditions are satisfactory if suction piston rises smoothly.

To check for bend of plunger rod, raise suction piston with your fingertip with oil cap nut attached to the assembly, and let piston drop freely. Suction piston will offer strong resistance when lifted since oil damper is activated. Under satisfactory conditions, piston will drop smoothly when your finger is removed from suction piston.

# REMOVAL AND INSTALLATION




1 Coolant inlet hose (from cylinder head to front carburetor)
2 Fuel inlet hose (Front)
3 Distributor vacuum signal hose
4 Temperature sensor hose (from temperature sensor to intake manifold)
5 Throttle wire (Front)
6 Idle compensator hose
7 Crankcase ventilation hose
8 Throttle link
9 Idle speed adjusting screw tube (I.S.S. tube)
10 Fuel inlet hose (Rear)
11 Throttle wire
12 Hot water outlet pipe
13 Temperature sensor hose (from temperature sensor to vacuum motor)
14 Air bypass hose

*Fig. EF-66 Carburetor and air cleaner components piping*

1. Refer to the instructions under air cleaner.
2. Drain cooling water.
3. Remove coolant inlet hose from front carburetor.

Remove coolant outlet hose from rear carburetor.

4. Remove fuel inlet hoses and I.S.S. hoses from front and rear carburetors, and remove air bypass hose from front carburetor.
5. Remove vacuum hose for distributor from front carburetor.
6. Remove throttle link.
7. Remove choke wire from front and rear carburetor.
8. Remove four carburetor attaching nuts, and detach front and rear carburetors as an assembly from intake manifold.

To remove these carburetors separately, it is necessary to remove air bypass hose and coolant hose between front and rear carburetors.

## DISASSEMBLY AND REASSEMBLY

The components of this carburetor are assembled with utmost care at the factory. Proper adjustment of the fuel metering system, especially jet needle, is almost impossible without the proper metering equipment. This adjustment affects greatly the proper performance of the emission control system.

Therefore, disassembly of the carburetor should be strictly prohibited. Only the following may be disassembled and adjusted. Otherwise, replace the whole carburetor assembly.

### FLOAT CHAMBER COVER

1. Remove seven screws securing float chamber cover, and remove it.

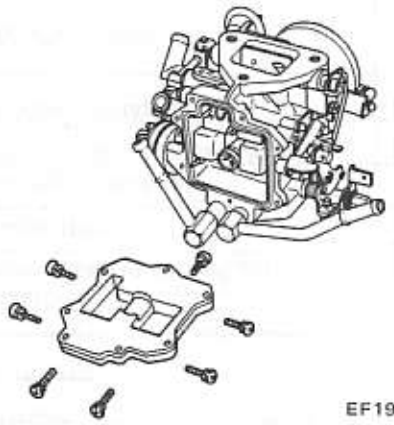



*Fig. EF-67 Disassembling float chamber cover*

2. Assemble float chamber cover in reverse order of disassembly.

**Note: Float and needle valve parts cannot be removed.**

### POWER VALVE

If exhaust "CO" is abnormally rich at idling and no other cause is found in the carburetor adjustment, check the power valve for proper functioning.

Six fixing screws are used for this valve, three for assembling the valve and three for fixing the valve to carburetor.

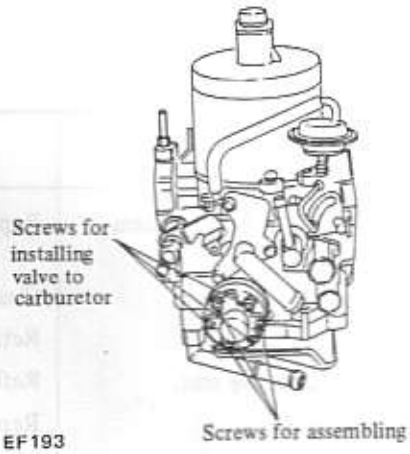



*Fig. EF-68 Power valve unit*

Remove power valve from carburetor and disassemble valve to check diaphragm. If any abnormality is found in diaphragm, replace valve unit.

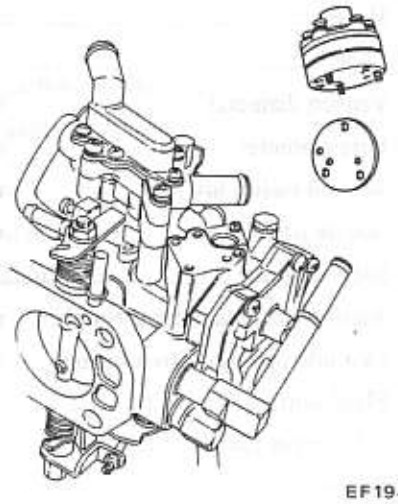



*Fig. EF-69 Removing power valve*

### LINK AND RELATED COMPONENTS

When disassembling and reassembling interlock link and related components, be careful not to bend or deform any components.

Before disassembly, mark links and levers so that they can be replaced in their original positions.

After assembly, check to be sure that they operate smoothly.

## SPECIFICATIONS

| | | |
|---|---|---|
| Carburetor model | | HMB46W-1C |
| Make | | HITACHI |
| Type | | SU type side draft |
| Venturi diameter | mm (in) | 41.6 (1.64) |
| Bore diameter | mm (in) | 46 (1.81) |
| Suction piston lift | mm (in) | 34 (1.34) |
| Nozzle jet diameter | mm (in) | 2.54 (0.100) |
| Suction spring | | #50 |
| Suction hole diameter x Number | mm (in) | 8.0 x 2 (3.15 x 2) |
| Fast idle throttle valve opening | mm (in) | 0.59 to 0.64 (0.0232 to 0.0252) |
| Float venting | | Inner vent type |
| Oil damper plunger diameter | mm (in) | 8.86 (0.349) |
| Power jet | | #40 |
| Fuel pressure | $kg/cm^2$ (psi) | 0.32 (4.6) |

## TROUBLE DIAGNOSES AND CORRECTIONS

The causes of failure and appropriate corrective actions are shown in the table to permit immediate carburetor repair in event of carburetor malfunction.

Improper engine operation can be attributed to many different causes. Although carburetor may be normal, if the electrical system is inoperative, the cause sometimes may appear to be in carburetor. If engine does not operate satisfactorily, first check electrical system before attempting to adjust carburetor.

| Condition | Probable cause | Corrective action |
|---|---|---|
| Overflow | Leakage from float, or float bent or damaged. | Replace carburetor assembly. |
| | Dirty needle valve seat. | Clean valve seat. |
| | Loose needle valve. | Retighten. |
| | Scratches or wear on needle valve seat. | Refit or replace. |
| | Excessive fuel pump pressure. | Repair pump. |
| | Fuel pump drawing in air. | Repair pump. |
| Excessive fuel consumption | Overflow. | Described above. |
| | Faulty suction piston operation. | Described below. |
| | Leakage from power valve. | Replace valve assembly. |
| | Improper idling adjustment. | Readjust. |
| Insufficient output | Throttle valve does not open fully. | Readjust. |
| | Faulty suction piston operation. | Described below. |

| Condition | Probable cause | Corrective action |
|---|---|---|
| Improper idling | Faulty suction piston operation. | Described below. |
| | Improper adjustment of idle adjusting screw and idle mixture adjusting screw. | Readjust. |
| | Worn throttle valve shaft. | Replace carburetor assembly. |
| | Air leakage due to damaged packing between manifold and carburetor. | Replace gasket. |
| Engine operation is irregular or erratic. | Malfunction of suction piston. | Described below. |
| | Insufficient damper oil, or improper oil used. | Replenish or replace. |
| | Improper idling adjustment. | Readjust. |
| Engine does not start. | Overflow. | Described above. |
| | No fuel fed to the engine. | Check pump, fuel line, and needle valve. |
| | Improper idling adjustment. | Readjust. |
| | Malfunction of suction piston. | Described below. |
| Faulty suction piston operation. | Sticking due to deformation (bulging or caving) of suction chamber or suction piston. | Replace carburetor assembly. |
| | Bent jet needle. | Replace carburetor assembly. |
| | Bent plunger rod. | Replace. |