Removing and Installing Carburetor

1 Fu

Special tools
P 75 Carburetor synchronizing unit
P 23 Carburetor wrench 12 mm

Removal

1. Close fuel cock
2. Remove air filter
3. Disconnect fuel line between fuel pump and carburetor

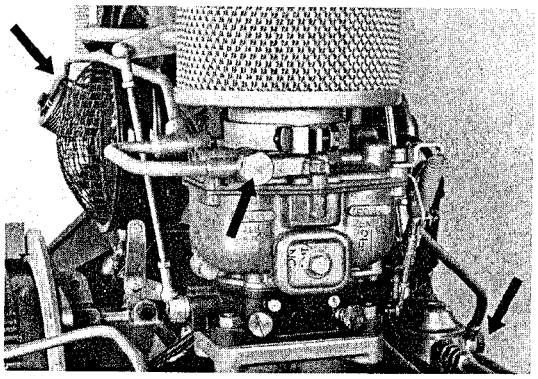

Fig. 10

4. Loosen and remove carburetor throttle lever at carburetor linkage

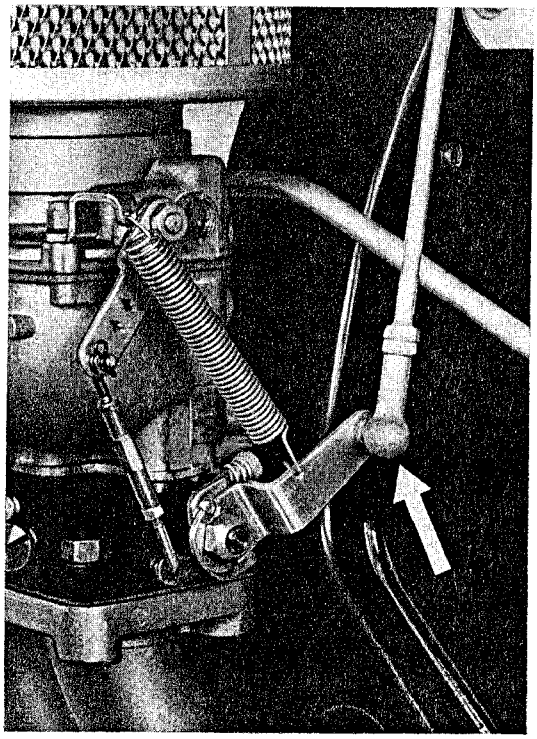

Fig. 11

5. Loosen carburetor flange nuts (special wrench P 23)

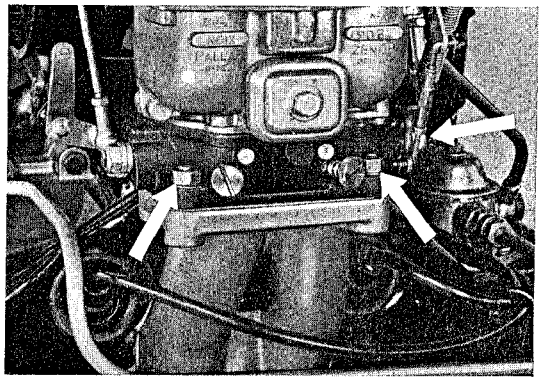

Fig. 12

6. Take off carburetor
7. Cover intake manifold

Installation:

When installing, proceed in reverse order, observing the following points:

1. Replace gasket at intake manifold flange.
2. Tighten carburetor flange nuts.
3. Adjust throttle valve position by actuating accelerator linkage, so that at full throttle opening both carburetors are in the same open position. (Must be corrected later on while engine is running).
4. Check gasket for fuel line nipple, replace if necessary.
5. If necessary, clean and oil filter.
6. Adjust idling speed. Synchronize carburetors using P 75 unit (see 4 Fu).

2 Fu

Cleaning Carburetor

Cleaning

1. Remove carburetor
2. Wash carburetor with clean gasoline.
3. Unhook pump linkage.
4. Loosen retaining screws on carburetor cover.
5. Take off carburetor cover.
6. Remove dual float.
7. Remove cover (jet chamber cover), unscrew main jets and idling jets.
8. Unscrew retaining screw for mixture tube holder, loosen air correction jets, take off both mixture tube holders, remove air correction jets, remove and clean mixture tubes.
9. Remove and clean idling air jet.
10. Remove and clean float needle valve and pump jets.
11. Carefully clean all jets and ports.
12. Re-insert jets.

It is recommended to clean the carburetor in clean gasoline. Blow compressed air through jets and lines. When cleaning the jets, do not use a needle or wire, since this will damage or widen the calibrated bores.

3 Fu

Disassembling and Assembling Carburetor

1. Remove carburetor.
2. Remove spring clip and pressure spring at pump linkage and unhook linkage.

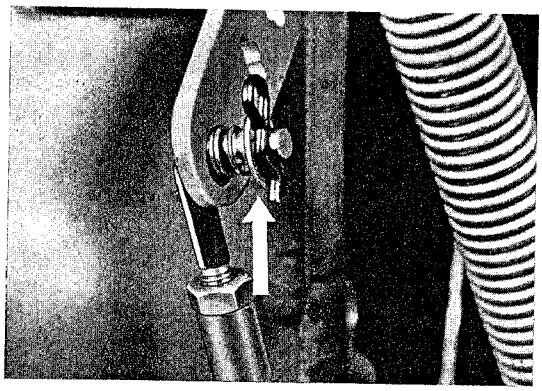

Fig. 13

3. Loosen retaining screws and carefully take off carburetor.
4. Remove float toggle lever and take off dual float.

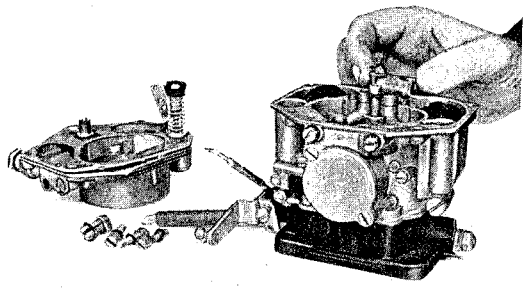

Fig. 14

5. Remove retaining screw on mixture tube holder.

6. Loosen air correction jets.

7. Pull out mixture tube holder.

8. Unscrew air correction jets and remove both mixture tubes.

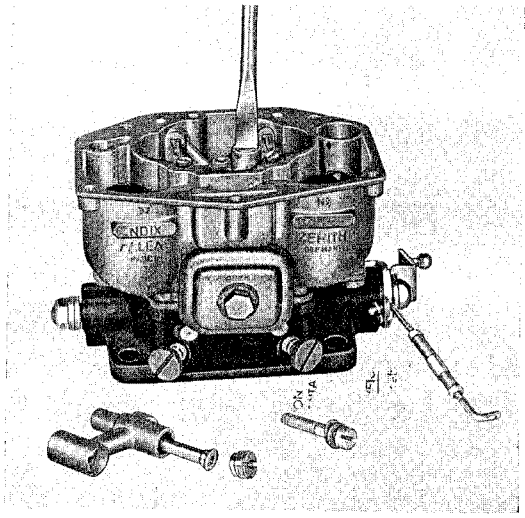

Fig. 15

9. Screw out idling air jets.

10. Screw out pump jets.

11. Remove injection tubes, if necessary by using a screw driver which should be protected by means of a protection tube to avoid damage to the injection tubes. Protect venturi by a piece of wood as illustrated below (fig. 16).

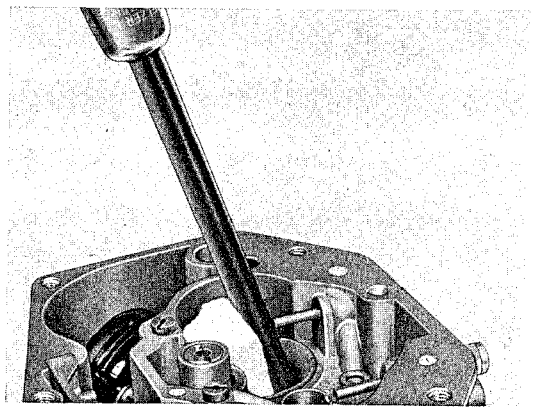

Fig. 16

12. Release venturi clamping screw and lift out venturi.

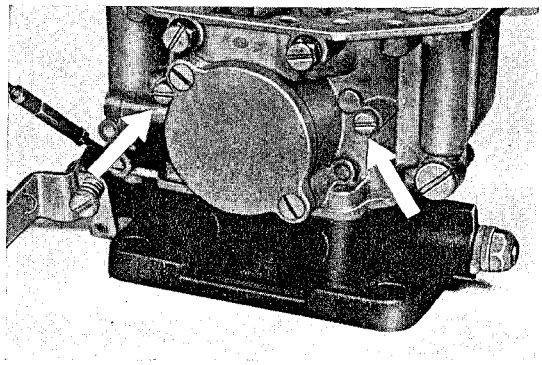

Fig. 17

13. Remove jet chamber cover.
14. Remove main jets and idling jets.
15. Remove idling mixture regulating screws.

Cleaning

1. Clean all components in fuel.
2. Blow compressed air through jets, valves, and ports. When cleaning, do not use a needle or wire, since this will damage or widen the calibrated bores.

Inspection and Assembly

When assembling, proceed in reverse order of disassembling. To check the components, the following points should be observed:

Carburetor Cover

1. Check float needle valve for leaks.
2. The sealing surface of the float needle valve must be perfectly smooth and clean.
3. Check float needle valve gasket for perfect condition and make sure that it is properly installed to prevent leakage.
4. The thread for the hollow bolt must be intact.
5. Check sealing surfaces of carburetor cover.
6. Replace gasket.

The carburetor cover gasket is held by two rivets. When replacing the gasket, the rivets may be removed by using a sturdy knife. The new gasket must be secured by two rivets.

Carburetor Bowl

1. Check pump plunger for perfect condition, if necessary replace.

2. Check float for perfect condition, replace if leaking. For float weight see „Carburetor Adjustment Data" table, page F 9.

3. Check all jets for correct size given in the „Carburetor Adjustment Data" table.

When replacing jets or valves, only genuine ZENITH parts should be used, which are available as spare parts. These parts are accurately calibrated and thus ensure proper adjustment and low fuel consumption.

4. Install venturi. Be sure that the restriction (rated diameter of venturi) faces upwards, i. e. that designations can be read from above. Do not overtighten clamping screw (fig. 17) (hold venturi).

5. Check clearance of throttle valve shaft. Excessive radial clearance allows secondary air to enter which has a detrimental effect on the starting and idling conditions.

6. Check tip of idling mixture regulating screw for perfect condition. Replace screw, if tip is bent or broken off

4 Fu

Idling Adjustment

Special Tool:
P 75 Carburetor Synchronizing Unit

1. Remove air filter while engine is at operating temperature.

2. Loosen pressure rods for actuating carburetor levers from bell cranks.

3. Tighten idling adjustment screw uniformly on both carburetors, until engine reaches approx. 1000 r.p.m.

4. Fully close idling mixture regulating screws on both carburetors (do not tighten too firmly, in order to avoid damaging the cone), then re-open by approx. 1½ turns. Now adjust by screwing in or out and leave it in the position which gives the highest r.p.m. and at which the engine runs smoothly. The regulating screws must never remain in fully closed position.

5. Loosen idling adjustment screws until an idling speed of 650 – 750 r. p. m. is reached.

6. Mount carburetor synchronizing unit P 75 on one carburetor and adjust by turning adjusting screw (varying venturi) so that the plunger in the inspection glass rises to about half-way position between two marks.

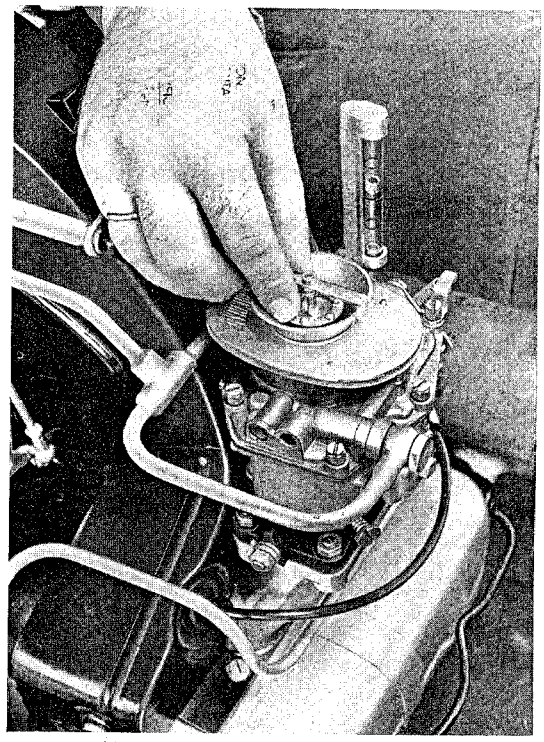

Fig. 18

7. Mount carburetor synchronizing unit on second carburetor (varying venturi) without making any alteration at the adjusting screw, until the plunger in the inspection glass is in the same position as described in point 7.

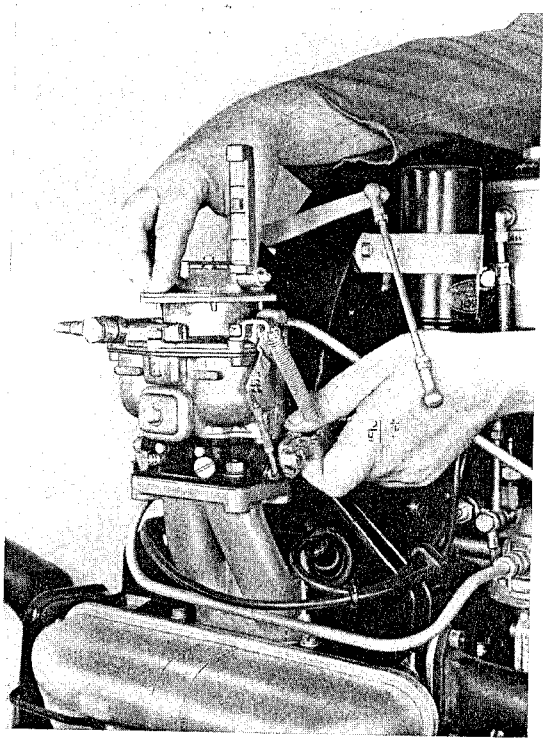

Fig. 19

8. Adjust idling mixture regulating screws of both carburetors, so that the plunger in the inspection glass shows hardly any discrepancies.

9. Attach pressure rods to bell cranks.
Note: Adjust pressure rods so that at idling position the pressure rods may be attached without tension.

10. Adjust engine speed to 1200—1300 r. p. m. by means of the hand gas knob and check uniform throttle butterfly valve position using synchronizing unit P 75 (see point 7 and 8). If the carburetor synchronizing unit does not give the same value for both carburetors, the throttle valve position must be adjusted by adjusting the pressure rods.

11. Re-check idling speed.

12. Check injection quantity (0.2—0.3 c.c with 2 strokes at one tube)

13. Check and, if necessary, adjust stop screw at accelerator pedal. When the accelerator pedal is fully depressed, there must be a clearance of approx. .04" (1 mm) between stop point of throttle valve shaft and stop point at carburetor housing.

14. Mount air filter or intake silencer resp.

Note: If a correct idling cannot be obtained, the throttle valve part must be checked as described in section 8 Fu. For checking, the carburetors must be removed.

Adjusting Injection Ratio

5 Fu

Special Tools
P 76 Carburetor wrench 5.5 mm
P 25 a Gauge glass

1. Adjust idling speed.
2. Fill float housing with fuel (while the engine is running)
3. Stop engine and remove air filter from carburetor.
4. Actuate throttle lever, until bubbles on the injection tube disappear.
5. Hold gauge glass (P 25 a) toward injection tube opening and press throttle lever twice from stop to stop.
6. Check fuel quantity, fully empty gauge glass and repeat measuring process.

7. Injection ratio should be 0.2 — 0.3 c.c. per injection tube at two strokes.

8. Repeat measuring process on second carburetor.

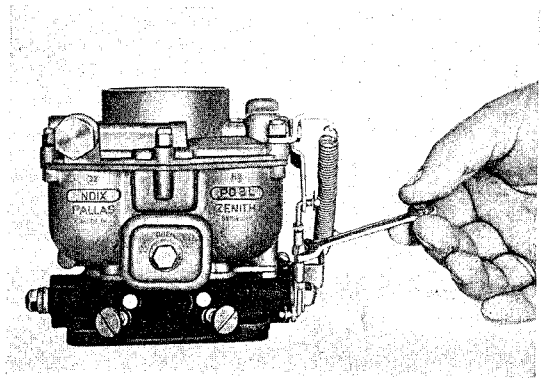

Fig. 20

9. If necessary, adjust the injection quantity by adjusting the pump pressure rods with carburetor wrench.

Note:

The pump jet has no influence on the injection ratio. Injection time and ratio must be uniform for both carburetors.

6 Fu

Checking Fuel Level in Float Housing

Special Tool:
P 77 Fuel Level Measuring Glass

1. Place carburetor horizontally.

2. Connect level measuring glass P 77 to fuel outlet at float housing.

3. Pour fuel into float housing in the normal manner. Use a 2.3 m high fuel column (corresponding to approx. 1.8 m WC) to obtain the correct pressure.

4. Close fuel supply and read fuel level. The correct level should be 18.5 ± 1.0 mm (.728" ± .04") measured from the edge of the carburetor housing to the fuel surface.

Note:

Usually it is not necessary to adjust the fuel level, provided the correct method of checking has been applied. In case an incorrect fuel level is obtained, the float and float needle valve should be checked for perfect condition. Only then the fuel level may be adjusted by using a thicker or thinner gasket.

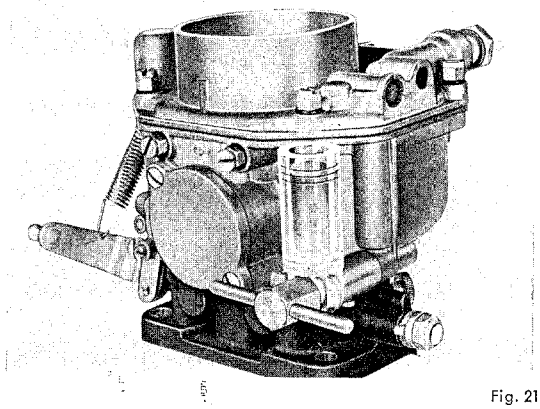

Fig. 21

Checking Float

7 Fu

General Information

Flowing over of the carburetor or excessive fuel consumption and poor engine performance may be a result of incorrectly adjusted floats or floats touching the float housing.

Checking

1. Remove float.
2. As shown in fig. 22, place floats on a plane plate and check to see whether both floats and the float brackets touch. If necessary, rebend floats carefully.

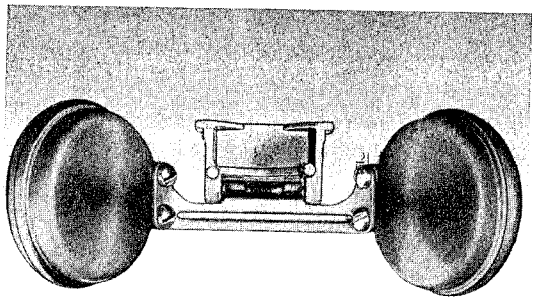

Fig. 22

3. Insert float into float housing. Allow float to oscillate (see fig. 23), then check whether floats touch float housing. If necessary, rebend floats carefully.

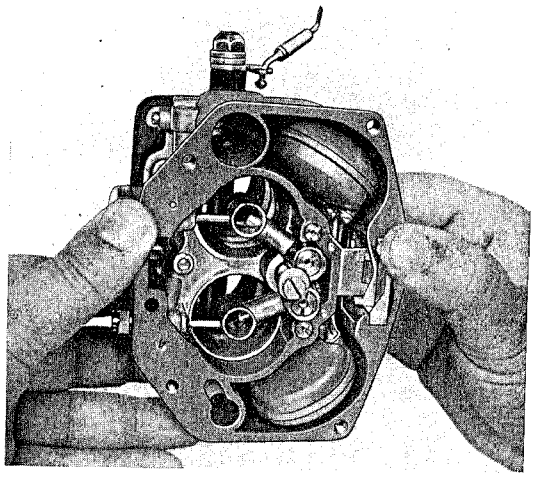

Fig. 23

4. Reinstall floats.
5. Check fuel level in float housing (6 Fu).

Checking Throttle Valve Assembly

8 Fu

General

Poor idling and flat spots are not always caused by clogged idling jets, but may be attributed to the throttle valve assembly.

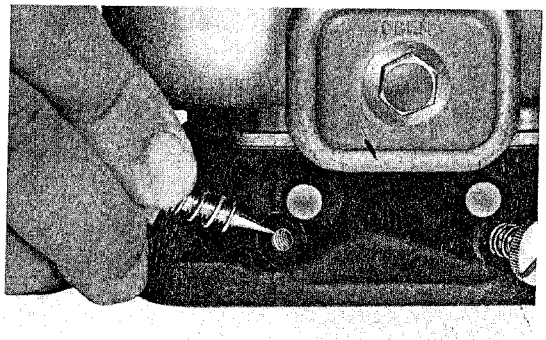

Fig. 24

Checking:

1. Unscrew mixture regulating screws and check whether cone is intact, i.e. make sure that no dents nor pressure points can be found. Cone should neither be bent (see fig. 24). In case of doubt, use new mixture regulating screws.
2. Subject throttle valves to a light scanning test. Both throttle valves must close uniformly (see fig. 25). Should this not be the case, turn throttle valve shaft carefully until both throttle valves close uniformly.

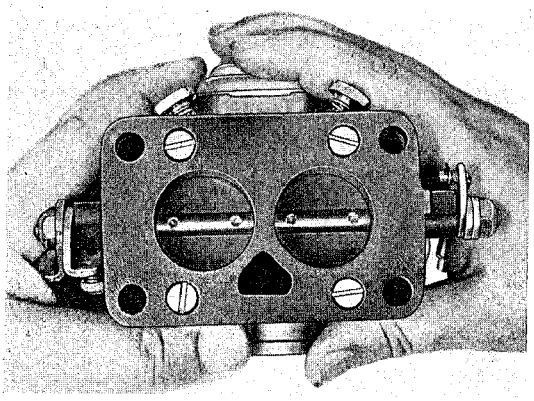

Fig. 25

3. Remove throttle valve assembly by loosening 4 fastening screws, check to see whether gasket between float housing and throttle valve assembly covers idling bores correctly or whether a foreign body has entered. It is hardly possible to remove foreign bodies at this point of the carburetor without removing the throttle valve assembly.

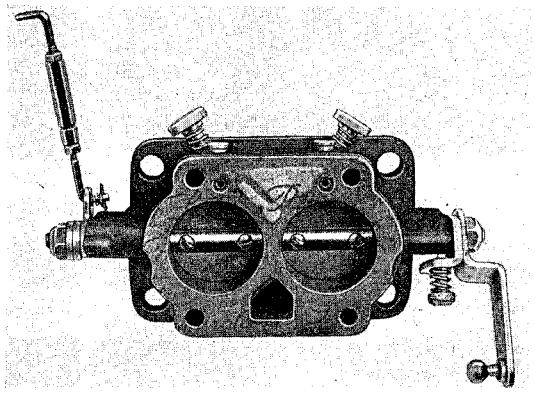

Fig. 26

4. Remount throttle valve assembly.

9 Fu

Cleaning Air Filter

The metal air filter, moistened with oil, serves to clean the intake air from entering dirt and dust. Frequency of cleaning the oil filter depends more or less on the local conditions prevailing.

1. Loosen clamp screws on fastening clips.
2. Remove air filter.
3. Clean air filter in clean washing gasoline.
4. Blow through with compressed air.
5. Slightly oil air filter.
6. Mount air filter.

10 Fu

Replacing Micronic Elements

The engines of type 1600 S are equipped with two intake silencers. They contain micronic elements, which should be replaced by new ones whenever they are dirty, at the latest, however, after 20 000 km (12 000 miles). (Fig. 27).

The micronic elements must not be washed nor oiled! If necessary, they may be slightly beaten or blown through with compressed air.

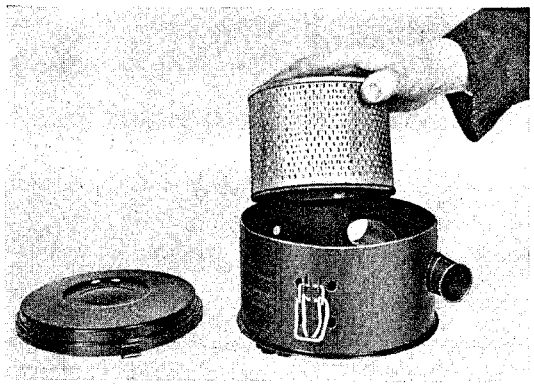

Fig. 27

Removing and Installing Intake Manifold

11 Fu

Removal

1. Remove carburetor.
2. Take off spark plug connectors.
3. Remove vertical side duct plate.
4. Loosen intake manifold nuts and screws and take off intake manifold.
5. Cover suction port of cylinder head.

Installation

Follow reverse order, observing the following details:

1. Replace intake manifold gasket. Care should be taken that the punched gasket holes correspond to the size of the cylinder head suction ports.
2. Install graphite-treated side of gasket toward cylinder head.
3. Check intake manifold for cracks.
4. Tighten intake manifold nuts and screws carefully and uniformly.
5. Replace carburetor gasket.

Removing and Installing Accelerator Linkage

12 Fu

Removal

1. Unhook ball pan on accelerator pedal.
2. Remove accelerator pedal.
3. Remove left half of floor board.
4. Loosen ball pan of long accelerator rod from ball joint on bell crank.
5. Unscrew ball pan and lock nut from accelerator rod, as otherwise the accelerator rod cannot be pulled backward.
6. Open rear hood.
7. Detach ball pan of short accelerator rod from bell crank at blower housing.

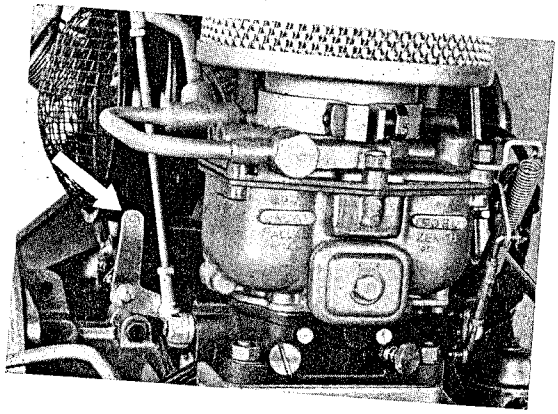

Fig. 28

8. Jack up rear end of car.
9. Loosen long accelerator rod from bell crank on transmission and pull out of the frame, moving backward.

Pull out short accelerator rod from engine compartment and unhook it on bell crank.

Installation

When installing proceed in reverse order. Carefully grease the ball pans and all bell crank axles. Tighten lock nuts of ball pans.

13 Fu

Adjusting Carburetor Linkage

The carburetor linkage must be adjusted so that all throttle valves are operated uniformly. Care must be taken that the full travel of the throttle valves from idling position to full throttle opening is not obstructed by incorrect adjustment of the pressure rod at the front bell crank. Final adjustment is effected by using the carburetor synchronizing unit P 75, see page F 14.

Caution!

Correct and uniform closing of the throttle valves is only obtained, if all ball joints of the acellerator linkage are moving smoothly. If necessary apply some grease to ball pans.

Carburetor Troubles and their Cure

The carburetor troubles as mentioned below presuppose the specified carburetor settings (see table on page F 9).

Trouble	Cause	Remedy
1. Engine will not start (with fuel in tank and ignition in order	a) No fuel in system	a) Clean main jet. Check fuel supply. Detach line to fuel pump and actuate starter without ignition. If fuel escapes pump, float needle valve is clogged. If no fuel comes out, pump valves may stick, pump mechanism may be damaged, or fuel cock is dirty
	b) Carburetor flows over	b) Check and clean float needle valve. Check gasket. Check float, if nec. replace
2. Flat spot at idling speed	a) Idling adjustment incorrect	a) Readjust idling speed
	b) Idling jet or idling air jet clogged	b) Clean idling jet or idling air jet
	c) Intake manifold leaking	c) Check intake manifold, flanges, gaskets and compensation line
	d) Idling mixture regulating screw damaged	d) Replace idling mixture regulating screw
3. Poor acceleration	a) Idling mixture too lean	a) Readjust idling speed (check jet)
	b) Fuel level incorrect	b) Adjust fuel level
	c) Incorrect injection ratio	c) Check injection ratio
	d) Intake manifold leaking	d) Check intake manifold, flanges and gaskets and compensation line
4. Engine stalls when accelerator pedal is suddenly released	Incorrect idling adjustment	Readjust idling speed
5. Engine runs uneven, misfires and cuts out	a) Fuel surplus	a) Check pump pressure. Check float needle valve. Check float. Check fuel level.
	b) Lack of fuel	b) Clean main jet Check fuel lines Check fuel level
	c) Intake manifold leaking	c) Check intake manifold, flanges, gaskets and compensation line
6. Fuel consumption too high	a) Float needle valve flooded	a) Check pump pressure
	b) Float leaking	b) Replace float
	c) Float needle valve does not close	c) Check float needle valve