

Disassembly, Checking, Reconditioning and Reassembly of Carburetor

Types 220 and 220 a

Note: Only qualified carburetor specialists should be entrusted with this task.

Special Tools:

Special screw driver for idle suction pipes

187 589 12 61

Procedure:

1. Unscrew carburetor cover with gasket.
2. Loosen the two screws and take off gasket; screw float needle valve out.
Type 220a: Loosen three screws of starter air valve (1), take off cover with diaphragm and diaphragm spring (Fig. M 33/2).

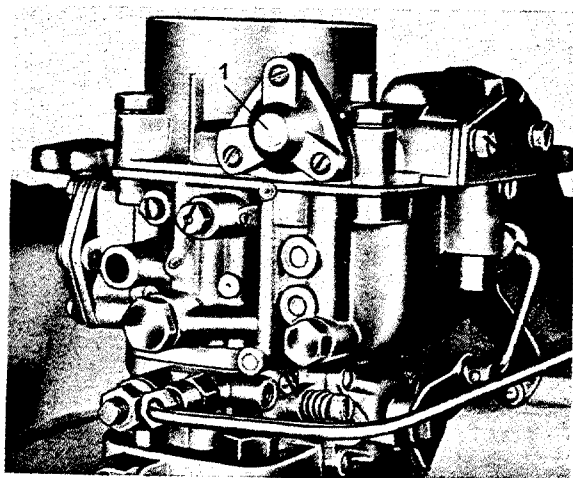


Fig. M 33/2

3. Turn float fastening screw (1) out and take out float (Fig. M 33/6).
4. Take out small injection pipes (2) with gasket and ball valves (see Fig. M 33/6).
5. Loosen idle suction pipes (3) with special screw driver 187 589 12 61 and take them out (see Fig. M 33/6).
6. Screw out air compensating jets (4) and take mixing tubes out (Fig. M 33/6).

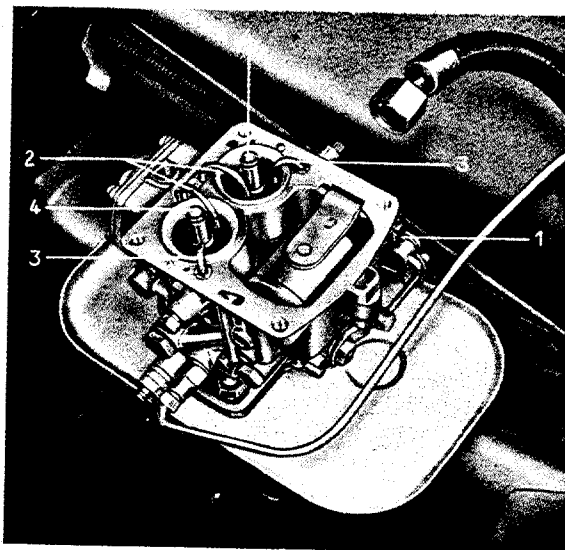


Fig. M 33/6

- 1 Float fastening screw
- 2 Small injection pipes
- 3 Idle suction pipes
- 4 Air compensating jets

Note: To turn the jets out, always use good screw drivers and short, well-fitting fork wrenches.

7. Screw idle jets (1) out (Fig. M 33/7).

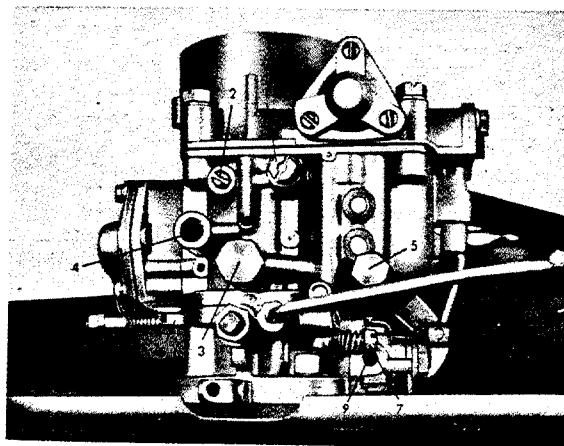


Fig. M 33/7

8. Loosen Venturi retaining screws (2) and take Venturi out (see Fig. M 33/7).
9. Screw out main jet carrier (3) with main jet (see Fig. M 33/7).

10. Turn out screw plugs (4) and starter fuel jet (5). See Fig. M 33/7.

Note: In Type 220a the screw plugs have been omitted.

11. Screw out lower nonreturn valve with strainer (6) of accelerating pump as well as idle mixture adjusting screws (7) and starter air jet (9). See Fig. M 33/7.

Note: In Type 220a the starter air jet has been omitted.

12. Loosen cotter pin and nuts of tie rod. Turn the six screws out of diaphragm pump cover. Take off cover with pump lever, diaphragm with spring (in old design with pump No. 94 also pump valve with spring) and lower part of diaphragm pump as well as bushing and washer of tie rod (Fig. M 33/12).

- 12a. Type 220a: Loosen nut at starting system, remove cotter pin and washer from angle lever and remove angle lever with linkage and stop for starting system.

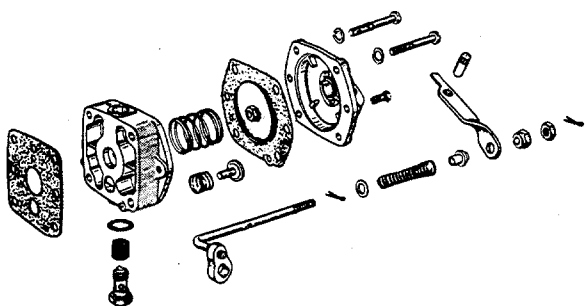


Fig. M 33/12

13. Take off throttle housing after turning out the four screws of the float chamber.

14. Turn the four screws out of starter housing cover and take off cover with starter lever, piston rod and piston (Fig. M 33/14).

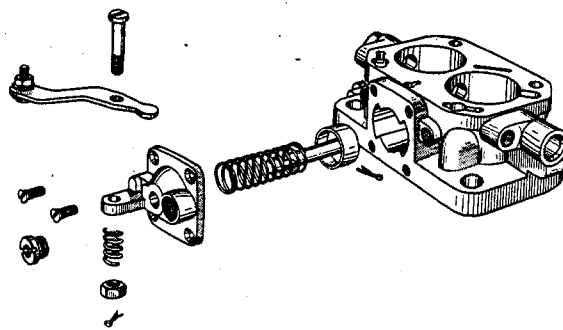


Fig. M 33/14

- 14a. Type 220a: Loosen nut of starter slide stem and take off starter lever and stop. Unscrew cover and take off together with starter slide (Fig. M 33/14a).

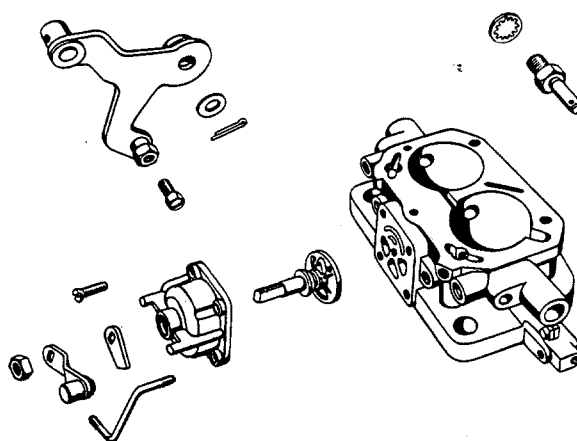


Fig. M 33/14a

Note: The starter piston need not be removed if it is in good order and if the piston rod can be easily moved.

15. Loosen throttle valve fastening screws with a well-fitting screw driver and pull throttle valves out.

Note: Remove throttle valve only if throttle valve or throttle stem is damaged.

16. Loosen nut with washer from throttle stem and pull stem out. Unscrew abutment and throttle lever.

II. Cleaning and Checking the Distributor Parts:

17. Denatured alcohol (spirit) is particularly suited for cleaning the carburetor parts. It is recommended to soak the parts and then

to clean them with a soft brush. After this flush the carburetor parts in a fresh cleansing agent and blow out with compressed air.

Note: Do not use cotton waste. When flushing the parts and blowing them out, be careful that all brizzles or other residues are removed. Never treat the jets and ports with wire or needles, otherwise the ports will be enlarged.

Check all parts after they have been cleaned. Damaged or unserviceable parts must be replaced.

Give the following your special attention:

- a) Replace deformed float needle valves.
- b) Replace defective float needle valve gaskets.
- c) Replace leaking or dented floats.
- d) Check firm seat of mixing tube carriers in float chamber (manually).
- e) Check, clean and, if necessary, reseal piston of starting system. (The piston must by all means be resealed if seat of piston shows wear or oxidation). Watch out for the two starter ports (see Fig. M 31/02). Finish seat surface after the end of the grinding operation.
Type 220a: Check starter slide and counter surface for wear. (If the sliding surfaces show black spots or signs of wear, reseal counter surface and starter slide by grinding them).
- f) Check throttle housing meticulously for cracks.
- g) Check float chamber for cracks.
- h) Check all flange surfaces and recondition, if necessary.
- i) Check bores for throttle stem. If the bores are worn out, replace the throttle housing. Do not attempt to rework the bores.
- k) Check nonreturn valve, plate valve (old design) and diaphragm in diaphragm

pump as well as injection pipe and float chamber for tightness and proper functioning.

- l) Type 220a: Check diaphragm of starter air valve.

III. Reassembly:

The carburetor is assembled in reverse order of disassembly. Note the following:

Provide gaskets with a little oil and coat throttle housing with a sealing compound before you install it.

18. Install throttle valves.

19. Mount starting system; make sure that starter piston moves easily.

- 19a. When mounting the starting system of Type 220a, be sure that cold starting mixture outlet at starter slide (20) (see Fig. M 31/09) coincides with inlet of starter passage (3) (see Fig. M 31/010). After the system has been mounted, it must be possible to rotate the starter slide with a suggestion of drag.

20. Mount throttle housing.

Note: Apply a very thin layer of sealing compound, proceeding with great care.

Be careful! The bores must not be closed by the sealing compound when the parts are pressed together! Tighten screws evenly.

21. Install diaphragm pump and secure tie rod with cotter pins.

- 21a. Type 220a: Install angle lever with linkage and secure with cotter pins. Check linkage for easy moving.

22. Screw in lower ball valve with strainer of diaphragm pump, idle mixture adjusting screws, starter air jet and connecting piece for vacuum line.

23. Install Venturis. The Venturis, which are held in position by retaining screws, must sit snugly, but not firmly in the carburetor.

24. Screw in main jet carrier with main jet, screw plugs, starter fuel jet and idle jets.

25. Install mixing tubes, air compensating jets and idle suction pipes (use special screw driver 187 589 12 61).

Note: Blow idle suction pipes out with compressed air before you install them.

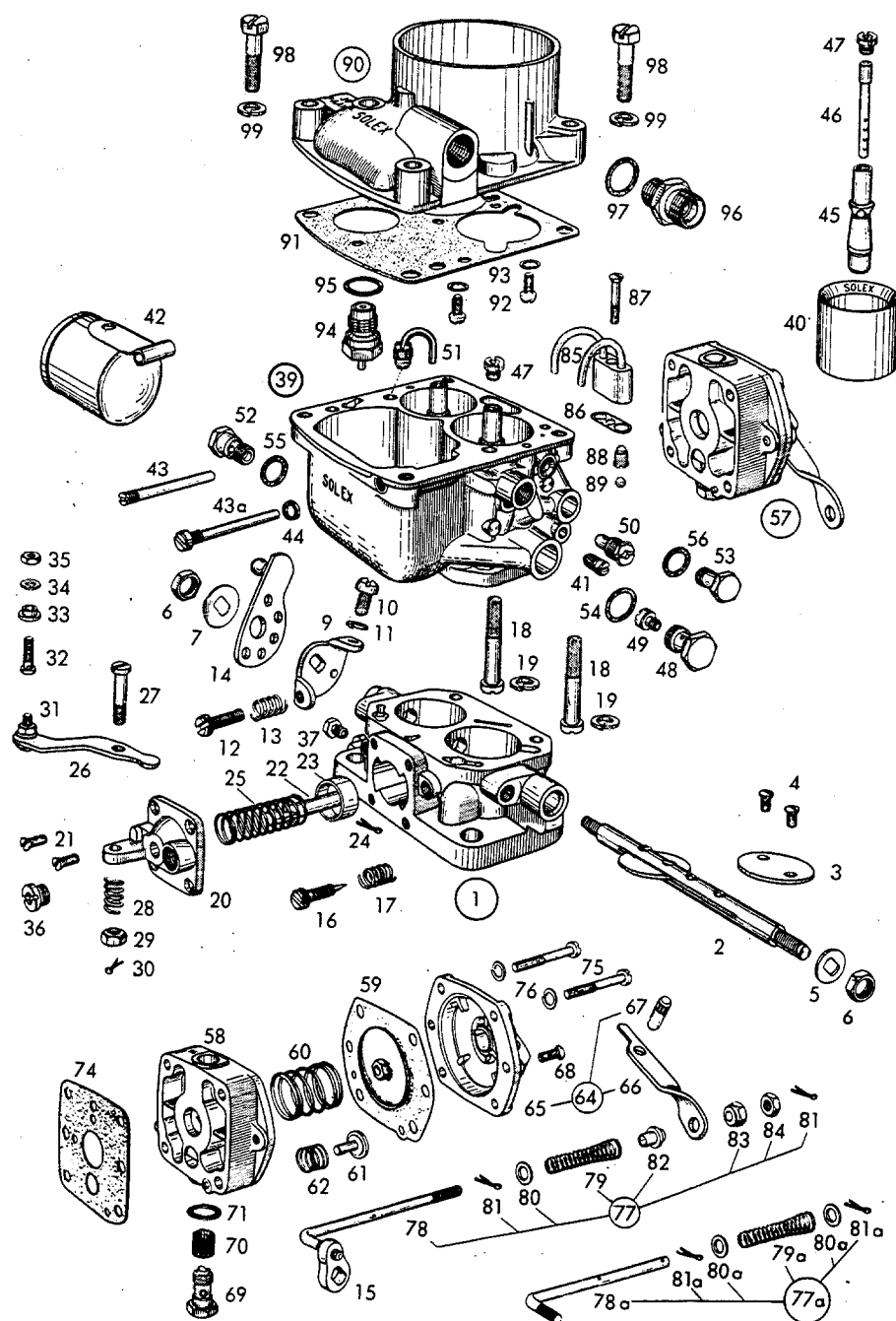
26. Screw injection pipes in. Do not forget ball valves and **new** gasket. The pipes should be midway between Venturi and mixing tube carrier.

Note: The jet of injected fuel should hit the edge of the closed throttle valve.

27. Secure float with retaining screws; complete carburetor cover, put it on and tighten evenly.

- 27a. Type 220a: Install starter air valve with spring and diaphragm.

Nomenclature Type 30 PAAL



- 1 Throttle housing
- 2 Throttle stem
- 3 Throttle valve
- 4 Oval-head countersunk screw
- 5 Washer
- 6 Hexagonal nut
- 7 Retaining washer
- 9 Abutment with pin
- 10 Opening restricting screw
- 11 Spring washer
- 12 Idle adjustment screw

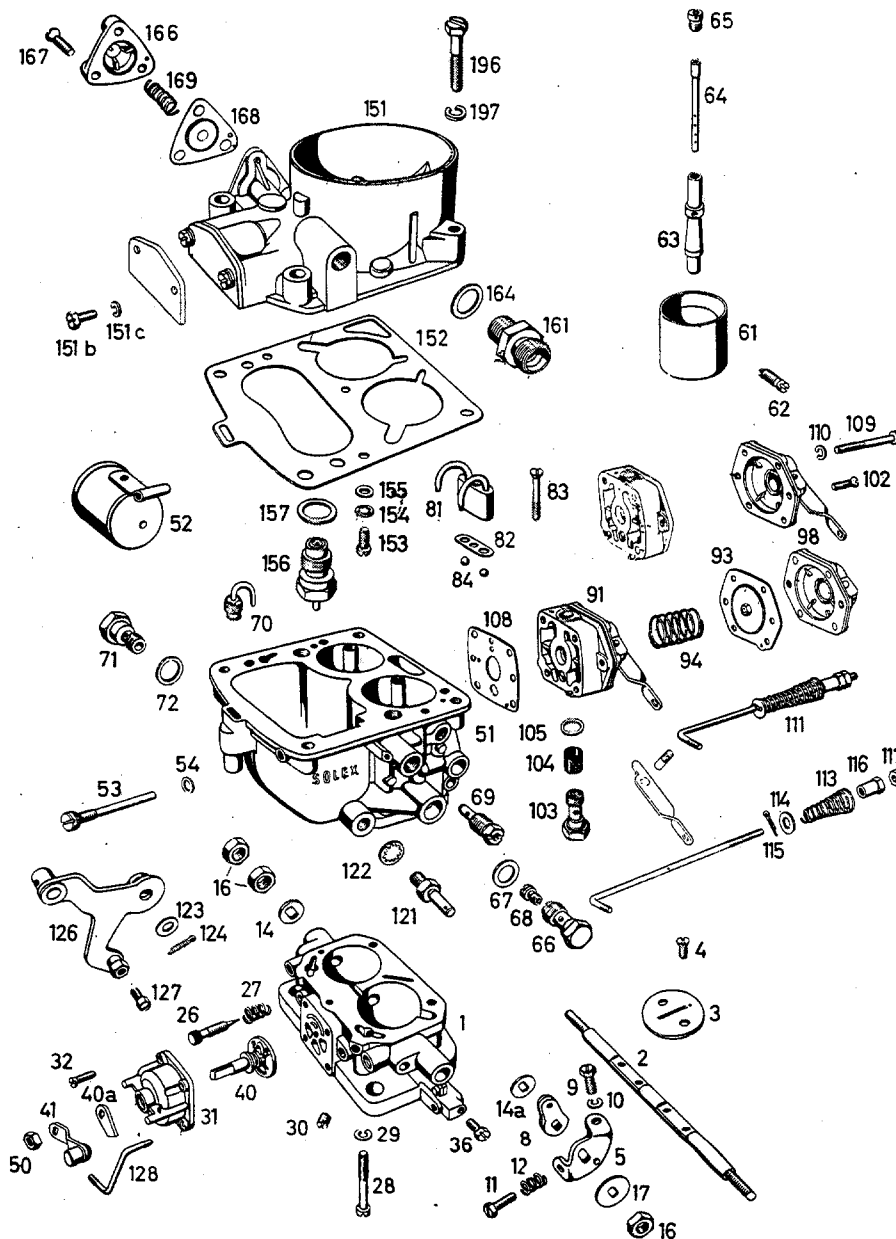
- 13 Pressure spring
- 14 Throttle arm
- 15 Transfer arm
- 16 Idle mixture adjusting screw
- 17 Pressure spring
- 18 Cheese-head screw
- 19 Spring washer
- 20 Starter cover
- 21 Oval-head countersunk screw
- 22 Piston rod
- 23 Piston

- 24 Cotter pin
- 25 Spring
- 26 Starter lever
- 27 Pin
- 28 Pressure spring
- 29 Hexagonal nut
- 30 Cotter pin
- 31 Clamping screw assembly
- 32 Clamping screw
- 33 Bushing
- 34 Washer

- 35 Hexagonal nut
- 36 Starter air jet (Ga)
- 37 Clamping screw
- 39 Float chamber with pressed-in mixing tube carriers
- 40 Venturi (K)
- 41 Retaining screw
- 42 Float
- 43 Float fastening screw
- 43a Float fastening screw (new design)
- 44 Sealing ring
- 45 Mixing tube carrier
- 46 Mixing tube
- 47 Air compensating jet (a)
- 48 Main jet carrier
- 49 Main jet (Gg)
- 50 Idle jet (g)
- 51 Idle suction pipe assembly
- 52 Starter fuel jet (Gs)
- 53 Screw plug
- 54 Sealing ring
- 55 Sealing ring
- 56 Sealing ring
- 57 Diaphragm pump assembly No. 94
- 58 Lower part of pump
- 59 Diaphragm
- 60 Diaphragm spring
- 61 Valve
- 62 Valve spring
- 64 Cover assembly
- 65 Cover
- 66 Pump lever
- 67 Shaft
- 68 Oval-head countersunk screw
- 69 Nonreturn valve assembly
- 70 Strainer
- 71 Sealing ring
- 74 Gasket
- 75 Cheese-head screw
- 76 Spring washer
- 77 Tie rod assembly
- 78 Tie rod, adjustable
- 79 Spring
- 80 Washer
- 81 Cotter pin
- 82 Bushing
- 83 Union nut
- 84 Hexagonal nut
- 77a Tie rod assembly (former design)
- 78a Tie rod
- 79a Spring
- 80a Washer
- 81a Cotter pin
- 85 Injection pipe assembly
- 86 Gasket
- 87 Oval-head countersunk screw
- 88 Fuel jet
- 89 Ball
- 90 Carburetor cover
- 91 Gasket
- 92 Round-head screw
- 93 Toothed disc
- 94 Float needle valve
- 95 Sealing ring
- 96 Screw plug
- 97 Sealing ring
- 98 Dismounting screw
- 99 Spring washer

Nomenclature

Type 32 PAATI



- 1 Throttle housing
- 2 Throttle stem
- 3 Throttle valve
- 4 Oval-head countersunk screw
- 5 Abutment with pin
- 8 Follower arm
- 9 Opening restricting screw
- 10 Spring washer

- 11 Idle adjustment screw
- 12 Pressure spring
- 14 Washer
- 14a Washer
- 16 Hexagonal nut
- 17 Lock nut
- 26 Idle mixture adjusting screw
- 27 Pressure spring

- 28 Cheese-head screw
- 29 Spring washer
- 30 Headless screw
- 31 Starter body
- 32 Oval-head countersunk screw
- 36 Clamping screw
- 40 Starting slide assembly
- 40a Stop

- 41 Starter lever
- 50 Hexagonal nut
- 51 Float chamber
- 52 Float
- 53 Float fastening screw
- 54 Sealing ring
- 61 Venturi (K)
- 62 Retaining screw
- 63 Mixing tube carrier
- 64 Mixing tube (s)
- 65 Air compensating jet (a)
- 66 Main jet carrier
- 67 Sealing ring
- 68 Main jet (Gg)
- 69 Idle jet (g)
- 70 Idle suction pipe assembly
- 71 Starter fuel jet (Gs)
- 72 Sealing ring
- 81 Injection pipe assembly
- 82 Gasket
- 83 Oval-head countersunk screw
- 84 Ball
- 91 Diaphragm pump assembly No. 92
- 93 Diaphragm
- 94 Diaphragm spring
- 89 Cover assembly
- 102 Oval-head countersunk screw
- 103 Nonreturn valve assembly
- 104 Strainer
- 105 Sealing ring
- 108 Gasket
- 109 Cheese-head screw
- 110 Spring washer
- 111 Tie rod assembly
- 113 Spring
- 114 Washer
- 115 Cotter pint
- 116 Union nut
- 117 Hexagonal nut
- 121 Retaining pin
- 122 Toothed disc
- 123 Washer
- 124 Cotter pin
- 126 Angle lever
- 127 Clamping screw
- 128 Tie rod
- 151 Carburetor cover assembly with cover plate
- 151b Hexagonal screw
- 151c Spring washer
- 152 Gasket
- 153 Round-head screw
- 154 Toothed disc
- 155 Washer
- 156 Float needle valve
- 157 Sealing ring
- 161 Screw plug
- 164 Sealing ring
- 166 Valve cover
- 167 Oval-head countersunk screw
- 168 Diaphragm
- 169 Valve spring
- 196 Dismounting screw
- 197 Spring washer

Technical Data of Carburetor

Table 23

	Type 220 Solex 30 PAAI old design	Type 220 Solex 30 PAAI new design	Type 220a Solex 32 PAATI
Venturi "K"	24	24	24
Main jet "Gg" At altitudes of over 2,000 m (6,560 ft.)	0115 0110 (0105)	0125 0120 (0115)	0130 0125 (0120)
Air compensating jet "a"	140	160	170
Mixing tube "s"	0	0	0
Mixing tube carrier	Res. 5	Res. 4.8	Res. 4.8
Idle jet "g"	g 50	g 52.5*	g 47.5
Injection pump	No. 94, lean 40°	No. 92	No. 92
Injection volume in ccm (cu.in.)/stroke	1.0–1.2 (0.06–0.075)	1.3–1.5 (0.08–0.09)	1.3–1.5 (0.08–0.09)
Injection pipe	low	low, calibrated	low, calibrated to 0.5 mm (0.02")
Injection pipe jet	2 × 0.5	2 × 0.5	2 × 0.5
Ball valve	unbored	unbored	unbored
Starter fuel jet "Gs"	200	200	150
Starter air jet "Ga"	4.5	4.5	—
Starter air jet orifice	—	—	5.5
Float needle valve	2.0	2.0	2.0
Weight of float	21 g (0.74 oz.)	21 g (0.74 oz.)	21 g (0.74 oz.)
Fuel level	13–15 mm (0.5–0.6")	13–15 mm (0.5–0.6")	13–15 mm (0.5–0.6")
Throttle valve	8°, bore 2.1	8°, bore 2.1	8°, bore 1.5
By-pass port	1.0–0.05 and 1.0–0.05	—	—
By-pass slot	—	1.0–0.05 × 4.25 ± 0.1	0.9–0.05 × 3.45

* In the Convertible A of Type 220 with high-compression cylinder head an idle jet "g" 50 must be installed in the place of a jet "g" 52.5.