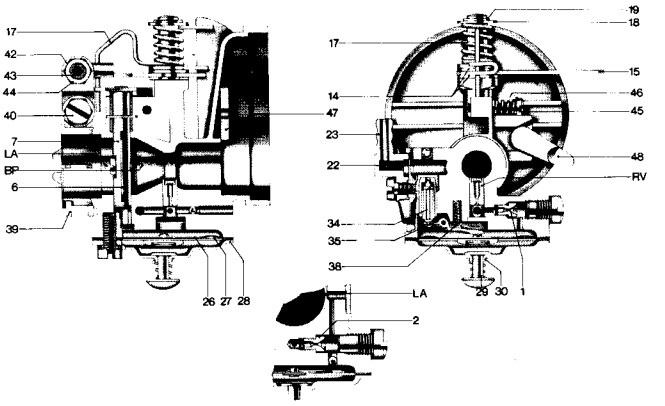
The BING Type 33-3 diaphragm carburetor represents a further development of the BING 33-2. It is manufactured with a 20 mm diameter butterfly valve and fixed air venturi diameters of 10, 12, 14 or 15 mm. The fuel supply is controlled by a diaphragm which is subjected to the vacuum at the carburetor outlet and which operates in conjunction with a supply valve ("Diaphragm-type carburetor").



Installation

The carburetor is fitted to the engine with a clamp (39), screw (40) and nut (41). The connecting diameter is 23 mm. The engine connecting pipe should have as little clearance as possible, so that the carburetor body is not distorted when the clamp is fully tightened. The carburetor air inlet is designed to receive an air filter. In some installations, an induction silencer is attached externally to this connection.

Supply Control

The fuel is supplied to the filter cover (23) and flows through the filter screen (22) which traps impurities which may reach this point despite pre-filtering of the fuel. The fuel flows via the supply valve (NV), with its needle valve (34), into a chamber between the carburetor body and the diaphragm (26). When the engine is stationary the valve is held closed by the spring (38) via the diaphragm lever (35).

The central pin of the diaphragm (26) acts on the diaphragm lever which is attached to the carburetor body with the seal (27) and cover (28). When the engine is running, the diaphragm side facing the engine is subjected to the vacuum at the carburetor outlet. The other side of the diaphragm, together with the cover (28), forms an air chamber which is open to the atmosphere. When the engine is running fuel is drawn from the chamber formed by the carburetor body and the diaphragm. This causes the diaphragm to be drawn towards the carburetor body and, via the diaphragm lever, lifts the valve needle from its seat. The fuel entering through the supply valve balances the quantity lost from the chamber; the diaphragm can thus return and close the supply valve. In the practice during running, the diaphragm assumes a mean position, in which the fuel entering exactly replaces the quantity removed.

The function of the diaphragm system as a supply controller is affected only very slightly by gravity, and therefore depends much less on its positional attitude during operation than does the normal float type carburetor. The moving parts of the system are also very light, which is why diaphragm carburetors are preferred to float type carburetors for engines on vibrator equipment, rammers and the like.

The supply valve with the needle valve serves as part of the supply controller only for regulating the fuel supply, and not as an isolating valve when the engine is not running. Very small impurities can be deposited between the valve seat and the needle valve and prevent complete closing of the valve. Therefore, on stopping the engine, the fuel cock on the tank should be shut off as a matter of principle. The filter (22) provides sufficient normal filtration of the fuel. Where there is a lot of dirt in evidence, the fitting of a larger additional filter to prevent frequent clogging of the filter screen, is recommended.

Main Control System

The quantity of mixture sucked in by the engine is governed by the cross-sectional area of the carburetor outlet, (and consequently governs the power), depending on the amount by which the butterfly valve (6) is opened. The latter is operated by the throttle spindle (7).

Depending on the air velocity in the air venturi, a vacuum occurs there which draws fuel from the chamber formed between the carburetor body and the diaphragm, through the jet system into the carburetor outlet. The quantity of fuel induced, and thus the composition of the mixture, is determined by the main control system.

The fuel flows through the main jet (1) via a non-return valve (RV) fitted in the carburetor body, and enters the carburetor outlet. This non-return valve prevents air entering into the fuel chamber of the supply controller.

The opening of the butterfly valve (6) can be limied by a stop screw (20) with lock nut (21), which may be necessary for limiting the maximum power in engines without a governor.

At its upper end, the throttle spindle (7) carries the throttle lever in which the governor rod, or the spring (17) on non-governed engines engages. When operating with a governor, the spring (17) acts on only one side of the throttle lever and serves to close the butterfly valve when idling.

The carburetor is operated via the lever (15) either by hand or by means of a cable. The lever is located between two friction washers (14) which, when operating by hand, are compressed by the spring (17) through the washer (18) and the circlip (19). For this setting the circlip (19) is inserted in the lower of the two grooves. If the carburetor is to be operated by means of a cable, the circlip (19) is inserted in the upper groove, which reduces the friction of the washers (18). The cable is fitted to the lever (15) with its outer casing in the adjusting screw (43) (with lock nut 44) mounted in the support plate (42).

Idling System

When idling and at light engine loads, the butterfly valve is closed down to a small aperture. The air velocity and the vacuum at the air venturi are consequently so reduced that fuel is no longer sucked through the main control system. The supply of fuel to the air induced in this range is by means of an auxiliary device, the idling system.

Under the influence of the vacuum between the engine and the butterfly valve, fuel flows through the main jet (1), via a connecting duct to the idling jet (2) and then to the idling outlet duct (LA) or the by-pass or transit ducts (BP) into the carburetor outlet.

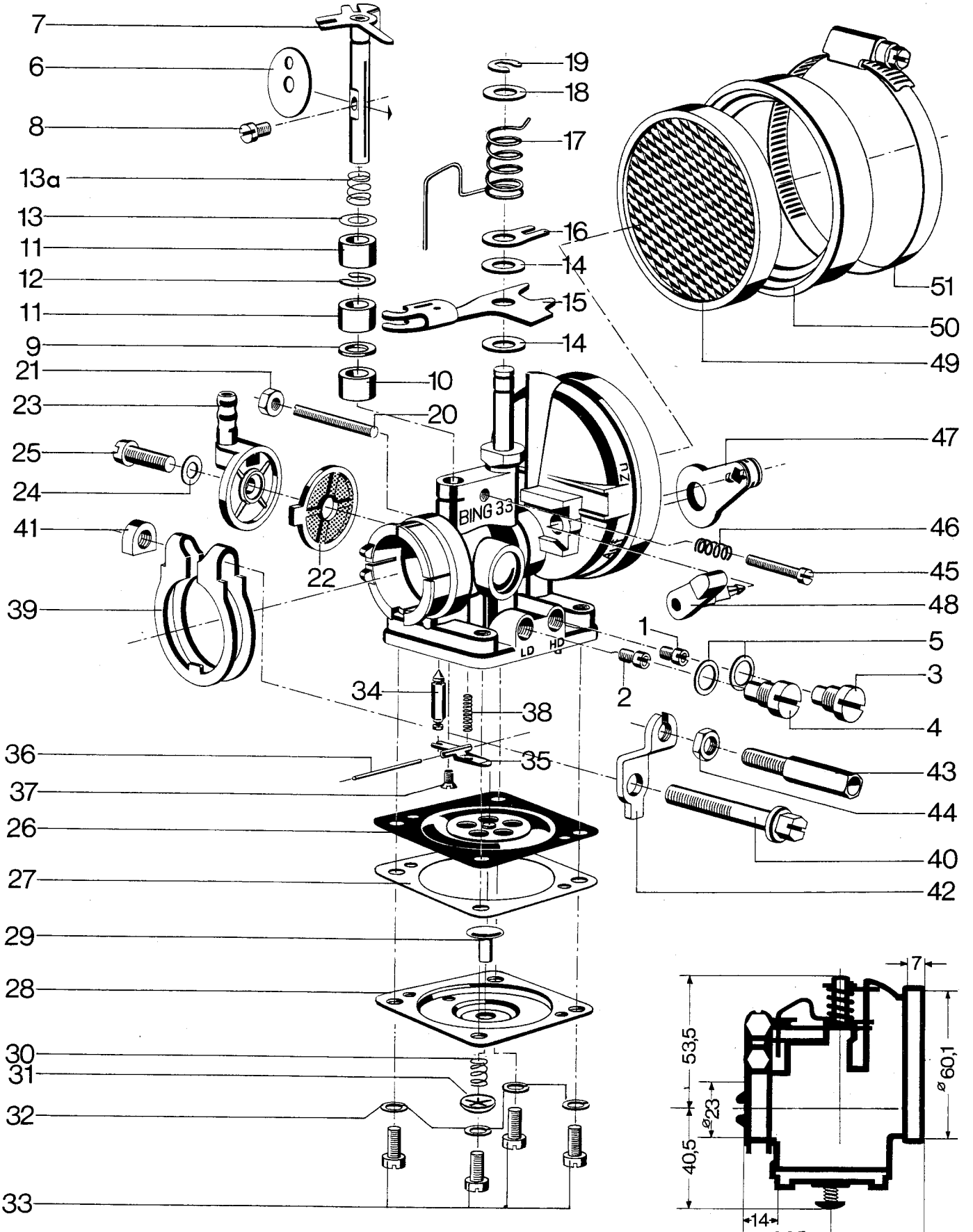
When idling, the butterfly valve is closed to such an extent that there is only the idling outlet (LA) between the butterfly valve and the engine. The fuel required is sucked only through this duct, while air which mixes with the fuel, enters through the by-pass (BP). If the butterfly valve is opened wider and overlaps the by-pass (BP), the latter is then also subjected to the vacuum in the induction pipe and supplies fuel in accordance with the additional requirement for the greater quantity of air now being induced. Idling outlet ducts and by-pass ducts are correctly sized to the particular engine and must not therefore be altered when the carburetor is cleaned.

Adjusting the idling on BING 33-3 diaphragm-type carburetors is carried out solely by means of the adjusting screw (45) which is prevented from loosening by the spring (46). The idling speed is increased by turning clockwise, and decreased by turning anti-clockwise.

Starting Aids

When starting the engine, the mixture induced can be enriched by closing the choke (47) which is mounted in the carburetor body and operated by the starting lever (48). The butterfly valve should be opened about half-way. Once the engine has started, the throttle must be opened again as soon as the revolutions begin to drop due to an over-rich mixture.

The carburetor can also be "flooded". To do this, the diaphragm (26) is pressed against the body by means of the tickler (29) against the spring (30), as a result of which the supply valve will open. Tickling before starting is particularly recommended in low temperatures. It may also be required when starting a very hot engine, in which fuel vapour, which may have collected between the diaphragm and the carburetor body and in the jet system, thus preventing the flow of fuel, must be scavenged.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