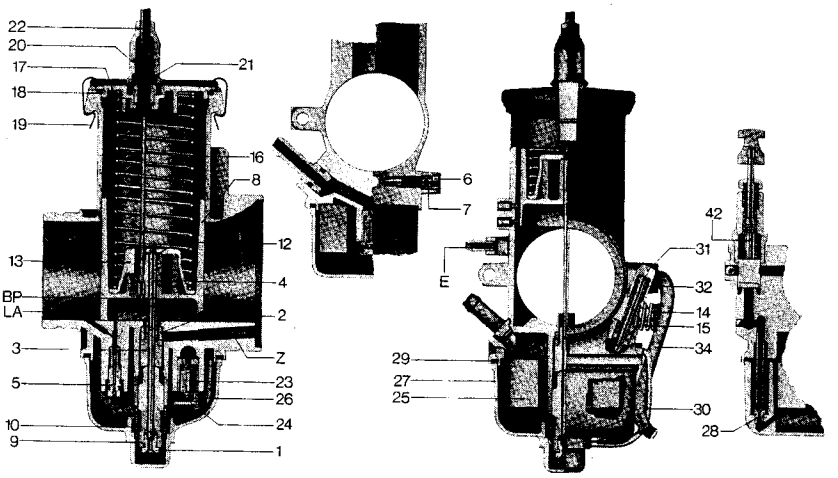
BING-Slide Carburettor Typ 55

The BING Type 55 carburettor comprises a cross-draught slide carburettor with part-load needle jet control, idling system and starting carburettor. It is manufactured with a choke tube size of 40, 42 and 44 mm. Since light alloy (aluminium and magnesium) and plastics are used for almost all the components, this carburettor is extremely light.



Mounting

The carburettor is secured to the motor by a 52 mm diameter connecting sleeve. It is normally connected to the engine by a flexible connector. On the air filter side, a 70 mm diameter connecting sleeve is provided.

Fuel intake control

The float (25) consists of two plastic float elements joined by a metal hinge. The float is positioned centrally below the carburettor choke tube, allowing the carburettor to be inclined considerably in all directions without impairing its operation. The float's function is to maintain constant the fuel level in the float chamber (27). When the fuel has reached a specified level in the float chamber, the float, mounted on a pin (26), is lifted until the float needle (23) is pressed against the seat of the needle valve, thus cutting off any further supply of fuel. When the enginge draws fuel from the carburettor, the fuel level in the float chamber drops and so does the float. The float needle opens the valve again and allows fuel to flow in from the tank.

The float needle valve regulates the fuel supply in conjunction with the float, but it does not act as a shut-off valve when the engine is at a standstill. Minute foreign bodies may be deposited between the valve seat and the tip of the needle, thus preventing complete closure of the valve. When the engine is stopped, therefore, the fuel cock on the tank should always be closed. In addition, the fuel must be filtered before it reaches the carburettor. The filter should be selected so that foreign bodies greater than 0.1 mm are filtered out, without impeding the fuel supply to too great an extent.

The float needle (23) contains a spring-loaded plunger which contacts the float hinge. This absorbs vibration of the float. In addition, the float needle (23) is connected to the float hinge by the retaining spring (24), to prevent it from moving between float and valve seat and thus reducing the fuel supply. The float needle spring and retaining guide make a considerable contribution to keeping the fuel level in the float chamber constant.

When fitting a new float, the fuel level must be adjusted. When doing this, care must be taken to ensure that the float needle spring is not compressed by the weight of the float. It is therefore advisable to place the carburettor in a horizontal position until the float just contacts the float needle. In this position, the pointer on the float hinge is aligned such that the top edges of the float are parallel to the top edge of the float chamber.

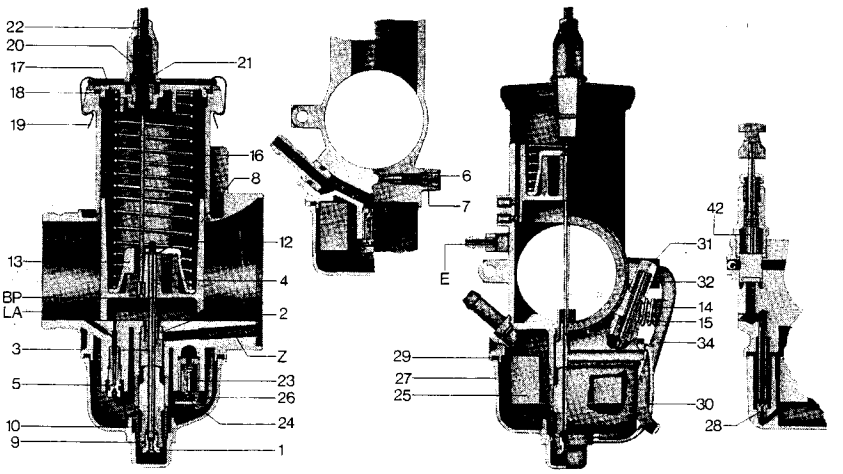
The float chamber (27) is secured to the carburettor housing by a spring yoke (30). A seal (29) is provided between float chamber and carburettor housing. The space above the fuel level is connected to atmosphere by two ducts and hoses (34). When these ducts are blocked, an air cushion forms above the fuel level. The fuel will not lift the float sufficiently to close the needle valve and the carburettor overflows.

The internal ports into the vent ducts (E) are screened by a plate to prevent them from being flooded by fuel.

The float chamber (27) incorporates an overflow pipe to allow fuel to drain off if the specified fuel level is substantially exceeded owing to a faulty needle valve.

Main regulating system

The amount of mixture drawn in by the engine, and thus its performance, is determined by the cross-sectional area in the choke tube, which is opened up by the throttle slide (8). This slide is lifted by a Bowden cable against the action of a return spring (16). The air flow produces a vacuum in the carburettor choke tube which draws fuel from the float chamber through the jet system. The fuel passes through the main jet (1), the jet stock (9) and the needle jet (3); as it leaves the needle jet, it is pre-mixed with air, which is brought in from the filter connection via an air duct (Z) and the atomizer (2) in an annular flow around the needle jet. This air flow assist the atomizing process, forming minute fuel droplets, and thus promotes optimum fuel distribution in the intake manifold and combustion in the enginge.



In the part-load range, in other words when the throttle slide is between one quarter and three quarters of its full stroke, less fuel is required than at full throttle. The fuel supply to the choke tube is therefore reduced by a jet needle (4) which is connected to the throttle slide (8) and engages the needle jet (3). Depending on the dimension of the flat taper at the end of the jet needle, the annular gap between jet needle and needle jet is enlarged or decreased. For fine adjustment, the jet needle may be located in the throttle slide in various positions (needle positions) which, like the jet needle taper, affect the amount of fuel drawn in. A higher needle position results in a larger annular corss-section in the needle jet which allows more fuel to pass through, and vice versa. „Needle positions 2", for example, means that the jet needle has been suspended from the second notch from the top in the spring retainer (12). When the throttle slide opening is reduced further, the amount of fuel supplied is also affected by the shape of the throttle slide at the lower end. The recess on the filter side, called the cutaway, provides a leaner mixture as the height increases.

The carburettor is adjusted using main jets and needle jets of various sizes, together with atomizers, slides and jet needles of various types.

The jet needle (4) is located in the throttle slide (8) by the retainer clip (12). The slide spring (16) is supported by the guide (13) in the throttle slide (8) in such a way that the retainer (12) is secured, but the jet needle is able to hang freely. In addition, the guide provides a locking effect for the attachment hole for the Bowden cable in the throttle slide.

Throttle slide movement is limited at the top by a sealing ring (18) and the cover plate (17), which is secured by the spring yoke (19). Cable play is adjusted by means of an adjusting screw (20) and a lock nut (21). During idling, cable play should be approximately 3 mm. The rubber bush (22) provides a seal between adjusting screw (20) and the cable outer.

The main jet (1) is surrounded by a strainer (10); in particularly severe operating conditions this ensures that the fuel is not spun away from the main jet. The strainer (10) does not act as a filter!

Idling system

During idling, the throttle slide is closed to such an extent that is touches the slide adjusting screw (14). This screw allows the idling speed to be changed. If it is turned in a clockwise direction, the idling speed is increased, and vice versa. The spring (15) ensures that the screw cannot work loose.

In idling position, the vacuum at the needle jet outlet is so low that the main regulating system will no longer supply any fuel. The fuel supply for the air intake is then provided by an auxiliary system, the idling system, which consists of the idling jet (5) with the fuel filter (11) and the mixture control screw (6) with sealing ring (7), which acts as a seal for the screw and also stops it from working loose.

The fuel passes through the filter (11) and the idling jet (5), the bore of which will determine the amount of fuel allowed through. Behind the jet bore, the fuel mixes with air supplied via cross ducts in the jet throat from the atomizing air duct (Z), the amount of air admitted being determined by the setting of the mixture control screw (6). This initial mixture then flows through the idling outlet bore (LA) and the bypass or transition passages (BP) into the choke tube, where it is mixed further with pure air.

Idling speed should always be adjusted with the enginge at running temperature. First, the mixture control screw is turned clockwise until it is fully home and then backed off by the number of turns specified for the particular engine. Turning it in a clockwise direction gives a richer mixture, and anti-clockwise a leaner mixture.

The idling setting quoted serves as a guide only. The optimum will generally differ slightly. First select the desired idling speed by using the throttle slide adjusting screw (14). The mixture control screw (6) is then opened (turned anti-clockwise!) until the engine speed rises. The screw is then slackened off by a quarter of a turn.

If the throttle slide is closed down to the idling position while the engine is running, only the idling outlet bore (LA) is available between throttle slide and engine intake, and it is thus exposed to a suction effect. When the throttle slide is in this position, air will enter through the bypass (BP), making the pre-mixture leaner. If the throttle slide is then opened, the bypass (BP) too will be subject to the vacuum and will supply extra fuel to enrich the mixture in the transition range.

Idling may be adjusted only by turning the setting screw (14) and the mixture control screw (6), or by using idling jets of various sizes. Idling outlet bore (LA) and bypass bore (BP) are precisely matched to the fuel requirements of any given engine and must not be changed.

Starting aids

Depending on the application, the BING Type 55 carburettor may be provided with two different starting aids:

1. Tickler

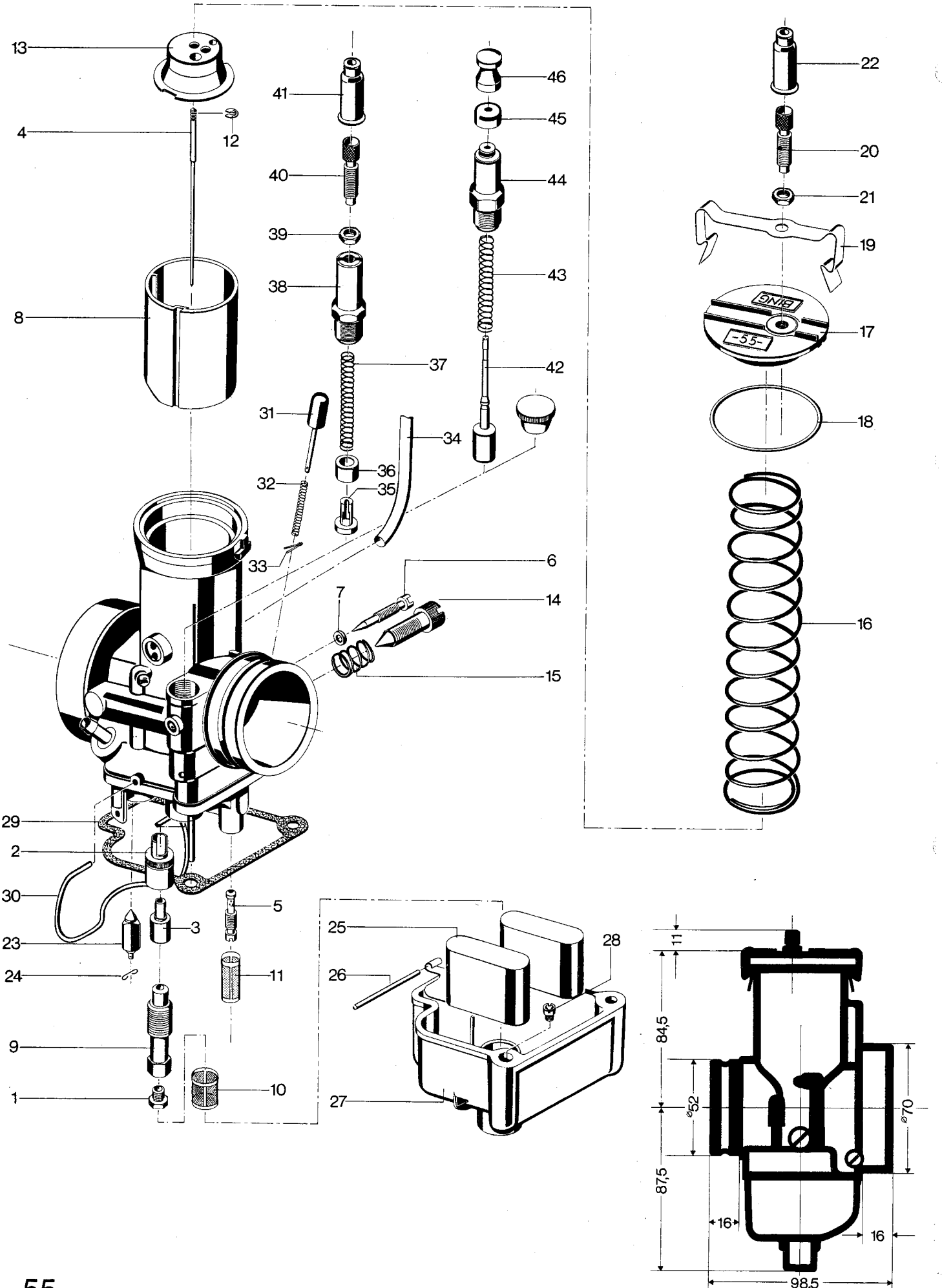
   Before starting at low temperatures, the float may be pushed below the fuel level in the float chamber by depressing the tickler (31) against the spring (32), so that more fuel is supplied than normally necessary. The tickler may be operated only until fuel is seen to emerge from the float chamber vent (E/hose 34).

2. Starting carburettor

   The starting carburettor is a slide carburettor of very simple design which works in parallel with the main carburettor. The slide may be operated either by a pin which protrudes from the top of the housing, or by a Bowden cable.

   When the starting slide is lifted — always with the throttle slide closed — the seal on the bottom of the slide opens the fuel outlet. At the same time, the sleeve opens a duct in the housing which allows air from the filter side of the throttle slide (8) to reach the engine side. This starting air is mixed with fuel in the starting carburettor, the fuel having been drawn in through the starting jet (28) in the float chamber (27) and the riser in the starting carburettor.

   The riser is immersed in a vented compartment of the float chamber (27); with the engine at a standstill and during normal running the fuel level in this compartment will be the same as in the float chamber. When starting the engine with the starting carburettor opened, the fuel will initially be drawn in from this compartment, forming a very rich mixture. The fuel supplied subsequently will be restricted to the amount allowed through by the starting jet. This ensures that, once the engine has started, it is not supplied with an excessively rich mixture causing it to stall. The starting carburettor is therefore matched to any given engine by modifying the starting jet and only in special cases by matching the space behind it.


13
4
12
8
41
40
39
38
37
31
32
33
34
36
35
46
45
44
43
42
22
20
21
19
17
18
16
6
14
7
15
29
2
30
5
3
23
24
11
9
1
10
25
26
28
27
11
84,5
52
70
87,5
16
16
98,5