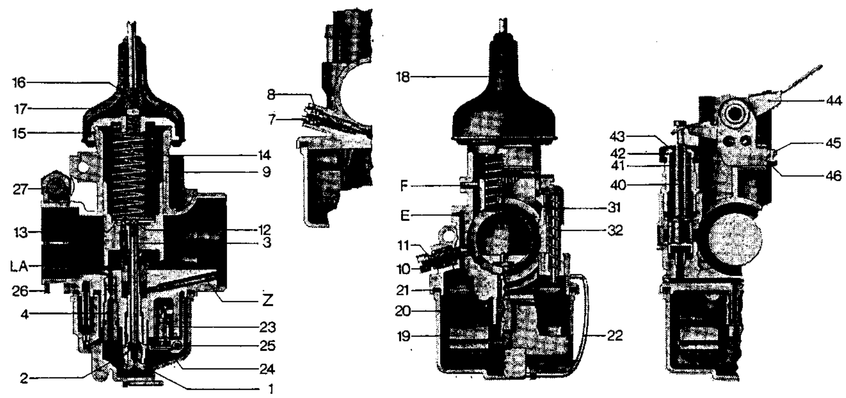
BING Slide Carburettor Type 21

The BING carburettor type 21 is a cross-draught slide carburettor with part-load needle jet control and idling system. It is produced with a bore size of 20 and 22 mm.



Mounting
The carburettor is mounted to the engine either by a clip fitting comprising the clip (26), the bolt (27) and the nut (28) or by a push-on connection using a flexible connecting piece pushed on to intake stub and carburettor housing. The clamp fitting is produced with a diameter of 29 mm which can be reduced to a smaller diameter by using the insulating bush (29), the insulating washer (30) providing insulation at the end face. The diameter of the push-on connection is also 29 mm.

On the air intake side the carburettor is provided with a stub having a diameter of 40 or 35 mm and a length of 12 mm for connecting an air filter or intake silencer.

Fuel Supply Control
The carburettor float (19) consists of two plastic float elements joined by a metal hinge. It is arranged centrally below the carburettor bore so that the carburettor can be tilted far in all directions without impairing operation. The object of the float is to maintain a constant fuel level in the float chamber (20). When the fuel has reached the specified level in the float chamber, then the float mounted on pin (25) is lifted until the float needle (23) is pressed against the inlet seat thus interrupting any further supply of fuel. When the engine draws fuel from the carburettor, the level in the float chamber (20) drops and so does the float. The float needle clears the inlet seat and allows fuel to flow in from the tank.

In conjunction with the float the float needle valve only regulates the fuel supply, it does not function as a tap when the engine is not running. Minute foreign bodies may be deposited between needle seat and needle tip, thus preventing complete closure of the valve. When stopping the engine, therefore, the fuel tap on the tank should always be closed. Furthermore, it is necessary to filter the fuel before it reaches the carburettor.

The filter for this should be selected so that foreign bodies greater than 0.1 mm are filtered out and the fuel supply is not impeded to too great an extent.

The float needle (23) contains a spring-loaded plunger which contacts the float hinge. This absorbs vibrations of the float (19). In addition the float needle (23) is connected to the float hinge by the flat spring (24) to prevent it from moving between float and inlet seat and thus reducing the fuel supply. This spring loading makes a considerable contribution towards keeping the fuel level in the float chamber constant. When fitting a new float, the fuel level has to be adjusted. When doing this, the spring-loading of the float needle should be taken into account which must not be compressed by the float weight when making the adjustment. It is therefore advisable to hold the carburettor in a horizontal position until the float just contacts the float needle. In this position the tongue on the float hinge is set in such a way that the flat surfaces at the bottom of the floats are parallel to the washer surface of the float chamber.

The float chamber (20) is attached to the carburettor body by the spring retaining clip (22). The washer (21) lies between float chamber and carburettor body. The space above the fuel level is vented to atmosphere by two ducts (E). When these ducts are blocked, an air lock forms above the fuel level, the fuel will not lift the float sufficiently to close the needle valve and the carburettor will flood.

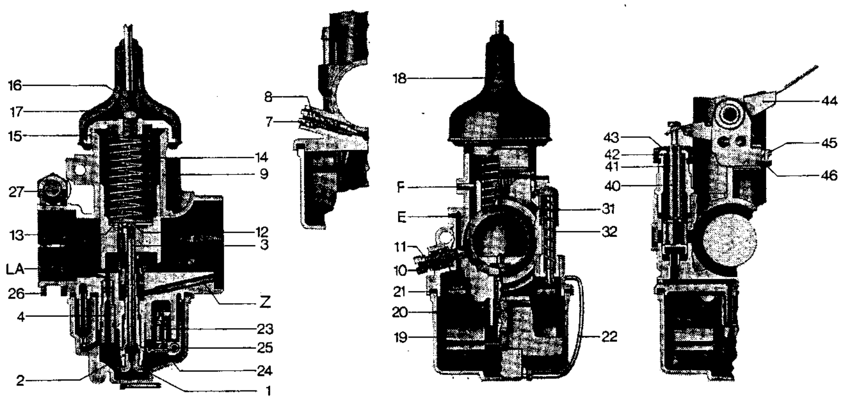
On some versions the vent duct openings are fitted with a tube thus preventing ingress of dust and water into the carburettor.

The float chamber (20) contains an overflow pipe which allows fuel to escape if the specified fuel level in the float chamber is exceeded due to a faulty fuel 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 bore which is opened up by the throttle valve (9). This valve is lifted by a cable against the action of a return spring (14). The air flow produces a vacuum in the carburettor bore which draws fuel from the float chamber through the jet system.

On its way from the float chamber to the bore the fuel passes through the main jet (1) and the needle jet (2); as it leaves the needle jet, it is pre-mixed with air which is brought in from the filter connection via an air duct (L) and the atomiser (Z) in an annular flow around the needle jet. This air flow assists the atomising process to form minute fuel droplets and thus favourably affects the fuel distribution in the intake manifold and also combustion in the engine.

In the part-load range, in other words when the throttle valve is between one and three quarters of its movement, less fuel is required than at full throttle. The fuel supplied to the bore is therefore reduced by a jet needle (3) which is connected via the throttle valve (9) and enters the needle jet (2). Depending on the dimension of the taper at the lower end of the jet needle, the annular gap between the jet needle and needle jet is



enlarged or decreased. For fine adjustment the jet needle is located in the throttle valve in five positions at different heights (needle positions) which, similarly to the jet needle taper, affect the amount of fuel drawn in. For example a higher needle position results in a larger annular gap in the needle jet which allows more fuel to pass through and vice versa. "Needle position 2" means that the jet needle has been suspended by the clip (12) from the second notch from the top. When the throttle valve opening is reduced, the amount of mixture supplied is affected also by the shape of the throttle valve at the lower end. With increasing height the cylindrical recess results in the mixture becoming leaner. The chamfer on the filter side called cutaway has a similar effect but this extends up to a greater throttle valve movement.

The carburettor is adjusted by using main jets and needle jets of various sizes as well as different types of throttle valves and jet needles.

The jet needle (3) is located in the throttle valve (9) by the clip (12). The throttle valve spring (14) is supported in the throttle valve (9) via the washer (13) in such a way that the clip (12) is secured. In addition the washer (13) closes the nipple hole in the throttle valve for the cable. A guide piece (F) (no spare part!) in the carburettor housing locates the throttle valve.

The throttle valve movement is limited at the top by the screwed cap (15). Cable play is adjusted by means of an adjusting screw (16) and a locknut (17). During idling the cable play should be approx. 3 mm. The rubber cover (18) provides protection against ingress of dirt for screw cap and adjusting screw.

Idling System

During idling the throttle valve is lowered to such an extent that it touches the valve adjusting screw (10). This screw allows the idling speed to be changed. If it is turned in clock-wise direction, the idling speed is increased and vice versa. The spring (11) ensures that the adjusting screw (10) cannot work loose.

In the idling position the vacuum at the needle jet outlet is so low that the main regulating system will no longer supply any fuel. This is then supplied via an auxiliary system, the idling system, which consists of the idling jet (4) and the mixture control screw (7) with sealing ring (8) which acts as a seal for the screw and also stops it from working loose.

The fuel passes through the idling jet (4) whose bore will determine the amount of fuel allowed through. Behind the jet bore the fuel mixes with air which is supplied via cross-ducts in the jet throat from the atomiser air duct, the amount of air admitted being determined by the setting of the mixture control screw (7). This initial mixture then flows through the idling outlet bore into the bore where it is mixed further by the main airstream.

The idling setting should always be adjusted with the engine at operating temperature. First the mixture control screw is turned in fully clockwise and then slacked off by the number of turns specified for the particular engine. Turning in clock-wise direction results in a richer mixture and turning in anti-clockwise direction in 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 valve adjusting screw (10). The mixture control screw is then opened (turned anti-clockwise!) until the speed is increased. Then turn the screw back by a quarter of a turn.

Idling may be adjusted only by turning the throttle adjusting screw (10) and the mixture control screw (7) or by using idling jets of various sizes. The idling outlet bore (LA) is matched to the fuel requirement of any given engine and must not be changed.

Starting Aids

Depending on the particular application, the BING carburettor type 21 is provided with three different starting aids:

1. Tickler
   When 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 is required for normal operation. The tickler should only be operated until fuel is seen to emerge from the float chamber vent (E) or becomes visible in the vent hose.
2. Starting carburettor, cable-operated
   The starting carburettor is a slide carburettor of simplest design which works in parallel with the main carburettor. When its valve consisting of the starting plunger (33) and sleeve (34) is lifted against the action of spring (35), then the starting plunger (33) opens the fuel outlet which was previously closed by the seal on its underside. At the same time the

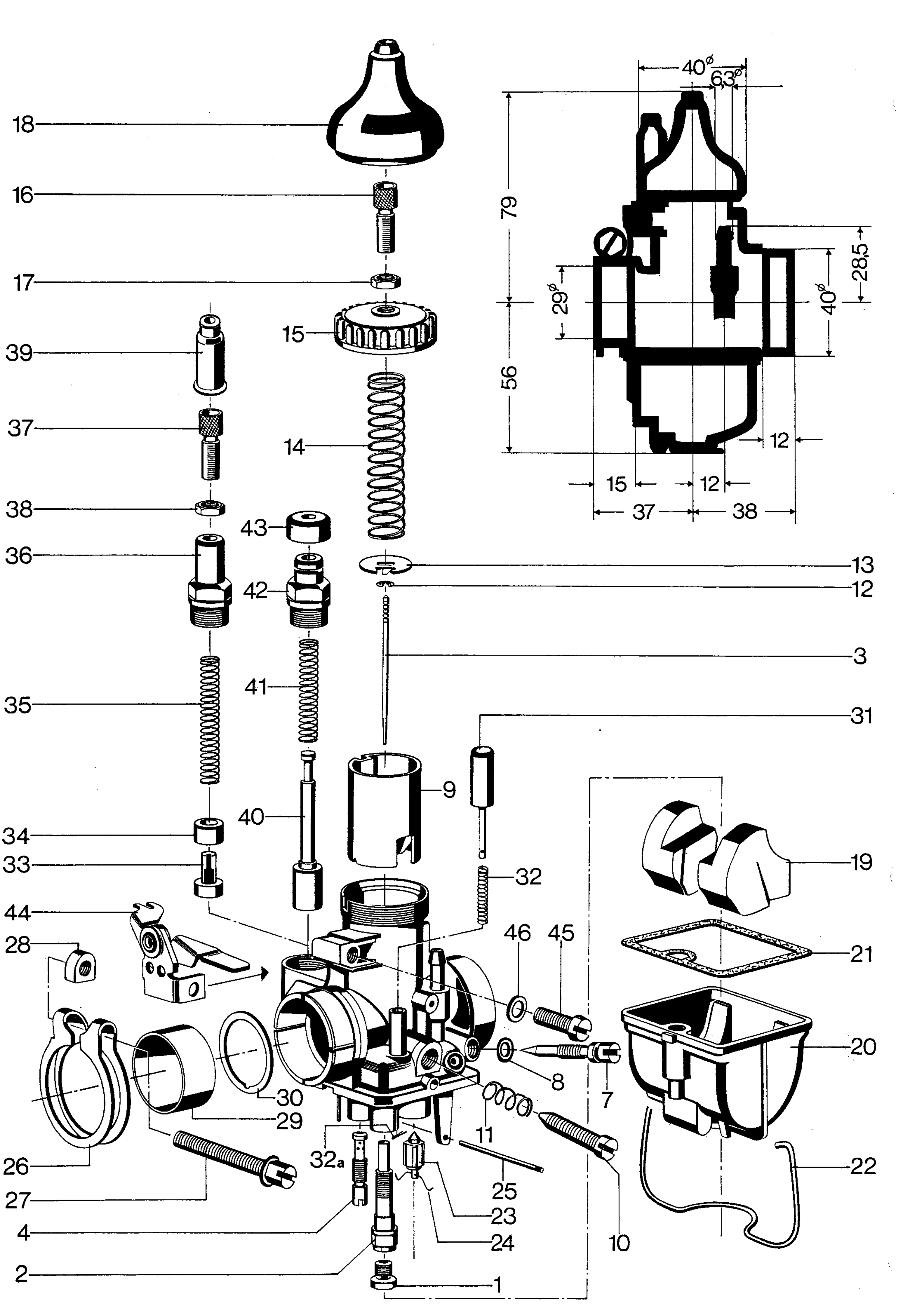
sleeve (34) opens a duct which allows air from the filter side of the throttle valve (9) to reach the engine side. This starting air is mixed with fuel in the starting carburettor, the fuel having been drawn in through the starting jet in the float chamber (20) and the standpipe in the starting carburettor. During starting the throttle valve must be closed!

The standpipe is immersed into a vented compartment of the float chamber (20); with the engine at a standstill and also during normal operation the fuel level in this compartment will be the same as in the float chamber. When starting with opened-up starting carburettor, the fuel will initially be drawn in from this compartment forming a very rich mixture. The fuel supplied subsequently will only be the amount allowed through by the starting jet in the float chamber. This ensures that, once the engine has started, it is not supplied with an excessively rich mixture and stalls. The starting carburettor is therefore matched to any given engine by modifying the starting jet and matching the space behind it.

The starting carburettor is provided with a screw plug (36) housing the adjusting screw (37) and the locknut (38) which enables the starting cable to be adjusted. The rubber cover (39) provides a seal between adjusting screw and cable.

3. Starting carburettor, hand-operated

   The starting carburettor can also be operated by lever (44). In this case starting plunger (33) and sleeve (34) are replaced by the starting plunger (40). It has a starting lever 44 at its upper end which is attached to the carburettor body by screw (45) and lockwasher (46). The lever is used to lift the starting plunger against the action of spring (41) which opens the fuel outlet into the starting carburettor as well as the air duct from the filter side to the engine side of the starting carburettor. At the top the starting carburettor is completed by plug (42). The starting plunger is then sealed by rubber bush (43).



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