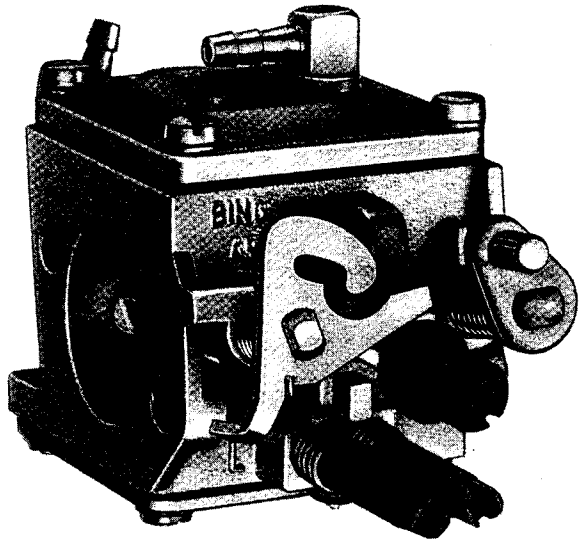
BING Diaphragm Carburettor Type 49

The BING Type 49 diaphragm carburettor is the ideal carburation unit for equipment which has to operate reliably in all positions, and/or which is subjected to particularly heavy vibrations (chain saws, hammer drills, stamp hammers, vibraring plates etc.). With a maximum throttle valve diameter of 21.5 mm, a maximum venturi diameter of 18.5 mm and a maximum choke diameter of 22 mm, it is particularly suitable for chain saws in the high power range (professional saws).

The carburettor is fitted with a pneumatically-driven fuel feed pump, (operated for example by the crankcase pressure). Its delivery is largely sufficient for the size of the carburettor and the fuel requirements of the engine.



MOUNTING AND OPERATION

The carburettor is generally mounted on the engine with two M 5 screws. Depending on the application, it should be protected against the flow of heat from the engine with suitable insulation. The gasket between the carburettor flange and the engine should reliably prevent any additional air from leaking in.

Various levers are available for the operation of the throttle valve and the choke. If required, the choke spindle can be locked into the starting position (ball and spring).

The main jet (**H 1**) and the idling jet (**L 4**) can be adjusted in most applications. The adjusting screws are available with various cone dimensions and head shapes. Special versions are available on request.

The pressure pulses for driving the pump can be transmitted through a drilling in the flange on the engine side, or through a tube and a right angled nipple on the pump cover. A well fitted tube should be used as the fuel supply line to the carburettor. Connecting nipples of 4, 5 and 6 mm are available.

OPERATION OF THE CARBURETTOR

The following illustrations shows the flow of air and fuel at full load, part-load, idling and starting.

Pump

The diaphragm of the fuel pump is moved by pressure fluctuations in the engine crankcase. When it moves towards the engine, the inlet valve (**E**) of the pump opens and the outlet valve (**A**) shuts, and the pump sucks in fuel. When the diaphragm swings back, the inlet valve (**E**) closes and the fuel is forced out of the outlet valve (**A**). A compensating chamber (**W**), situated between the inlet and the outlet valves cushions the oscillations of the fuel flowing past. The diaphragm of the chamber springs upwards towards the atmosphere when fuel pressure builds up, and contracts again when the pressure drops.

After the pump, the fuel flows through the fine filter (**F 16**). This traps residual particles of dirt, but is not a substitute for the large-area filter, which must be fitted in the fuel flow before the carburettor.

Pressure regulator

A diaphragm pressure regulator ensures, almost independently of the pump pressure, a constant vacuum before the jet systems.

If the vacuum in the carburettor inlet pipe is transmitted to the pressure regulator via the jets, it moves the regulator lever (**R**) via the diaphragm (**M**), against a spring and opens the feed valve (**N**). An even flow of fuel then passes through the valve into the regulator and through the jets into the carburettor port. The diaphragm (**M**), the regulator lever (**R**) and the feed valve (**N**) constantly adjust to any given flow quantity.

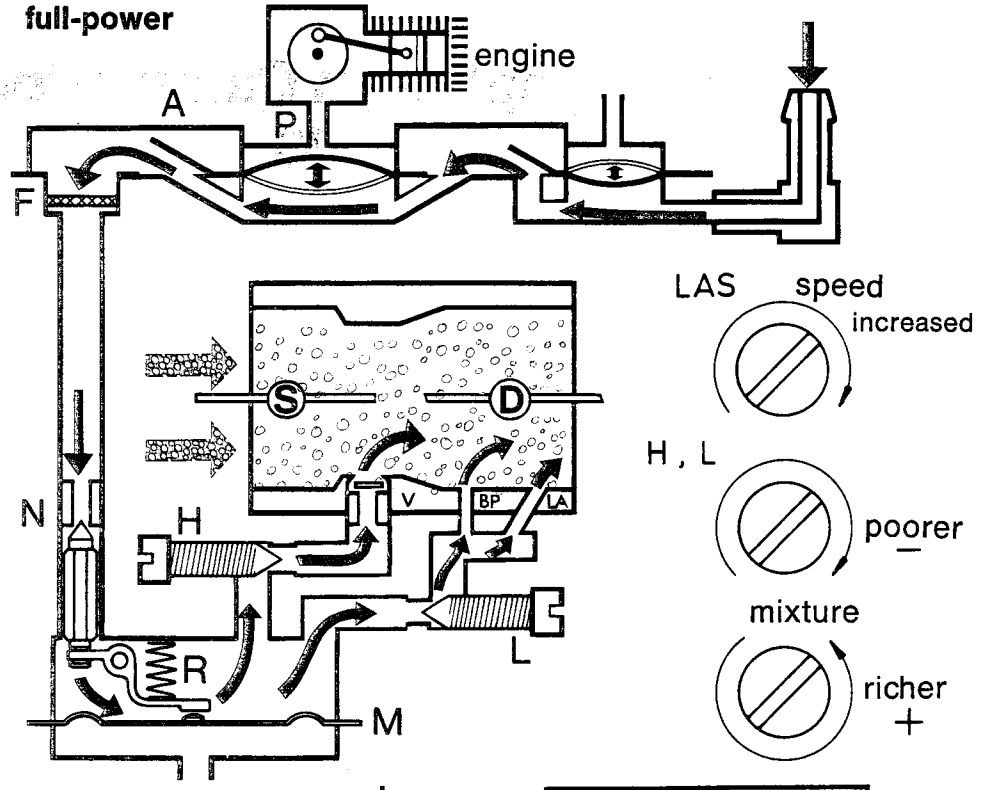
Full-power operation

If full power is required from the engine, the throttle valve and choke are fully opened. The vacuum in the carburettor sucks fuel into the main system via the main jet (**H**) and the non-return valve (**V**), and through the idling system via the idling jet (**L**), the idling outlet drilling (**LA**) and the bypass drillings (**BP**).

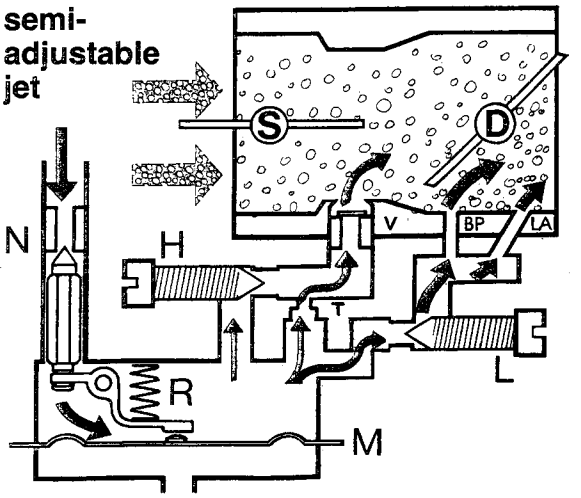
The fuel flow can be altered by opening and closing the main jet and the idling jet.

In a special version, the carburettor can be fitted with a semi-adjustable jet (**T**) which, parallel to the adjustable main jet (**H**), regulates the supply of fuel through a constant drilling. If the correct jets are chosen, this arrangement ensures that engine always receives the minimum supply of fuel. Furthermore, the responsiveness of the adjustable main jet (**H**) is diminished.

full-power



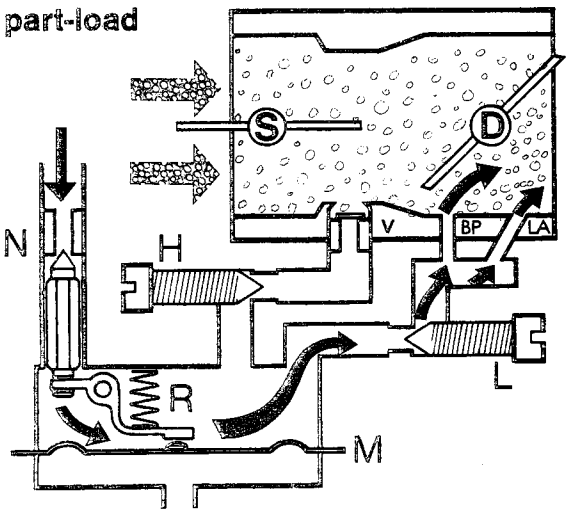
semi-adjustable jet



Part-load operation

If only reduced engine output is required, and the throttle valve is accordingly partially closed, a vacuum sufficient to suck fuel is present only in the space between the throttle valve and the engine. The fuel now only flows through the idling system. As a result, the non-return valve (**V**) in the main system closes, thus preventing air from entering the pressure regulator, where it could impede the fuel flow.

part-load

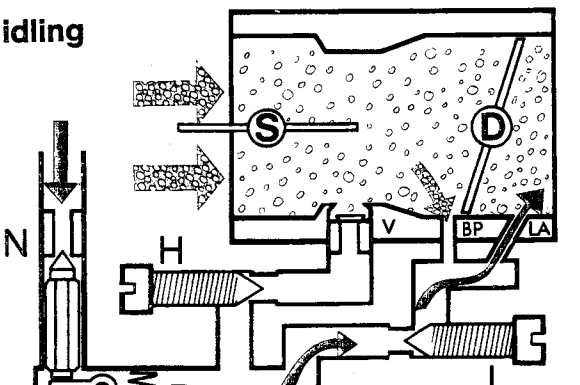


Idling operation

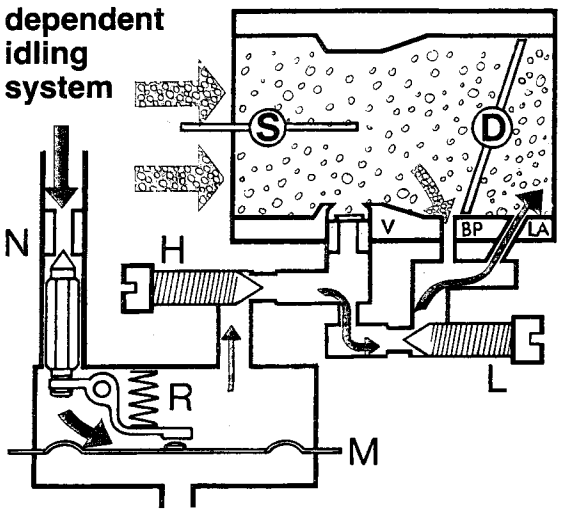
When the engine is idling, the throttle valve is so far closed that the vacuum between the valve and the engine only acts on the idling outlet drilling (**LA**). While fuel is being sucked out of the idling outlet drilling (**LA**), air is entering through the bypass drilling (**BP**), which mixes with the fuel coming out.

The idling speed is set with the stop screw (**LAS**) and the matching fuel quantity with the idling jet (**L**).

idling



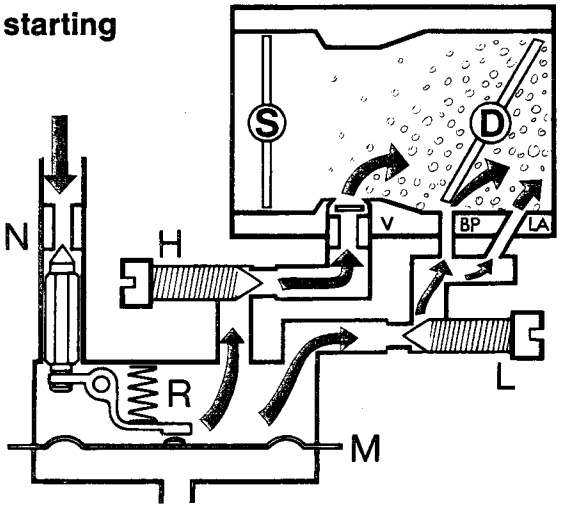
In a special version, the fuel for the idling system can be drawn after the main jet (**H**): dependent idling system. The advantage of this arrangement is that the idling system is less active when full power operation is required; it is regulated by the main jet (**H**) alone.



Starting

To start the engine, the choke is closed, with the throttle valve (**D**) roughly half-open. Each attempt to start the engine produces a vacuum in the carburettor port, which draws fuel through both jet systems.

When starting a hot or cold engine, the carburettor must first be filled with fuel, as air and fuel vapour must be flushed out of the carburettor systems. Several attempts at starting – usually four, are necessary before the first firing occurs. The choke must then be opened and the next attempt will start the engine running.



DESIGN OF THE CARBURETTOR

The main part of the carburettor is a compact aluminium casing in which the most important components are located.

The fuel pump consists of a diaphragm with cut-out valve tabs, a gasket and a cover, positioned on the carburettor casing in that order and fastened with four screws.
The fuel filter is pressed into the carburettor casing and should not be removed for cleaning. The needle valve is set so deep in the carburettor casing that the regulator level is flush with the casing surface. This setting should never be altered. The moving parts of the system are extremely resistant to wear and tear, no adjustment is necessary.

In addition to the feed valve and the regulator lever with its spring, the pressure regulator also includes a gasket, a diaphragm and the regulator cover, placed on the carburettor casing in that oder and fastened with four screws.

Depending on the application, the two jets can either have the same or different points, with very small point angles. When adjusting the carburettor, great care must be taken to identify the closed position of the jets. By opening the jets one turn at a time, an adequate operating position can usually be found, which can then be improved by slight alterations.

The idling outlet drillings and the bypass drillings are matched to each engine very carefully, and should not be altered.

MAINTENANCE, REPAIR

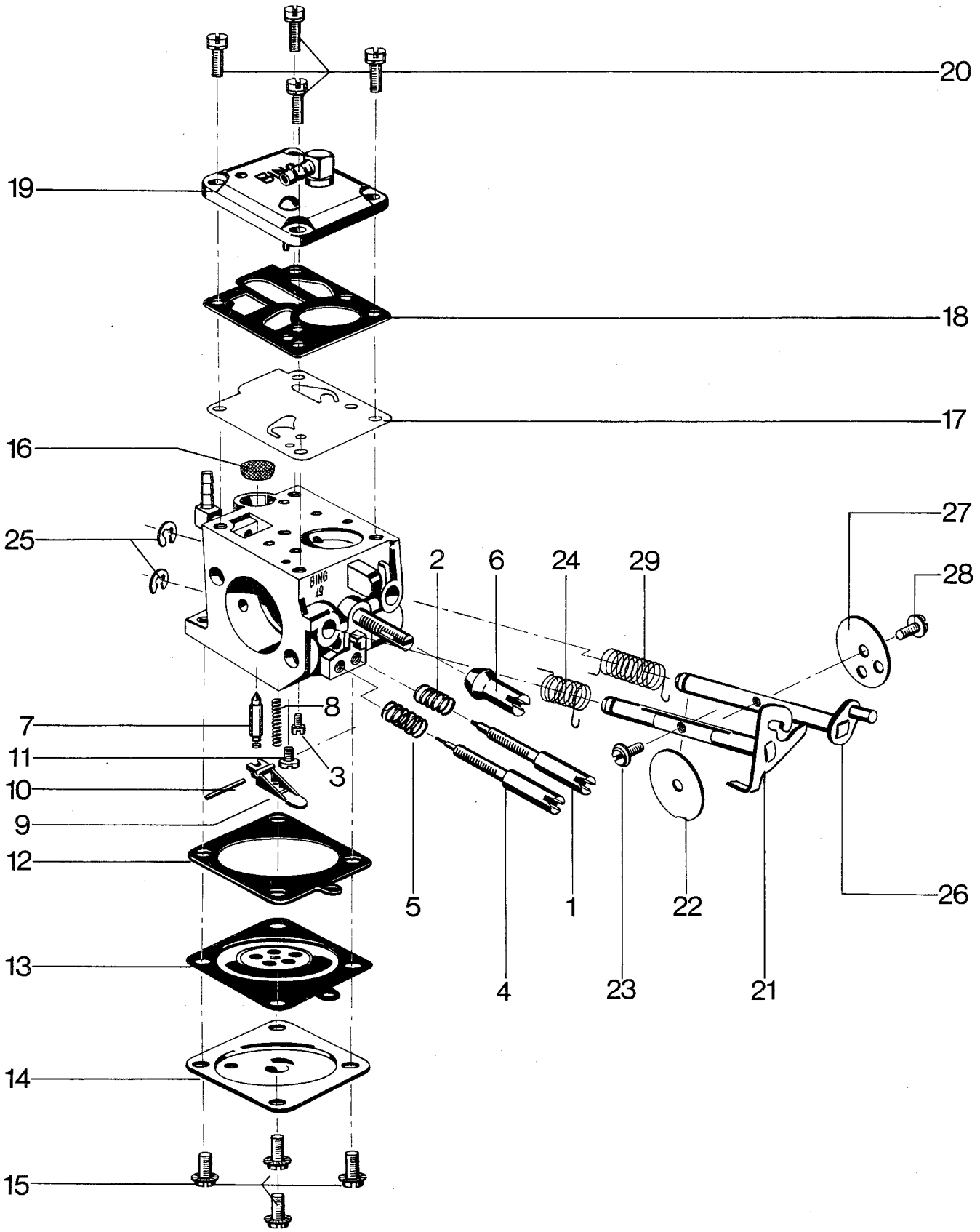
All moving parts in the carburettor are resistant to wear and tear. Dismantling the carburettor will only be necessary in the event of malfunction.

Diaphragm carburettors are particularly sensitive to impurities. The carburettor must therefore be cleaned thoroughly before being dismantled. Only clean, suitable tools are to be used for working on the carburettor.

The carburettor and its parts should only be cleaned with compressed air.

Every time the carburettor is cleaned, new gaskets and diaphragm should be fitted, althought this will be seldom necessary during the service life of a carburettor. These parts are attacked by components in the fuel, can become porous as a result of continuous movement (diaphragm), or become heavily deformed as a result of the sealing corrugations which become impressed into the gaskets.

Only use original BING spare parts, which you will find on the illustration overleaf. The corresponding spare parts numbers are quoted on the spare parts list.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