

The Carburettor Basics (Carb)



The modern carb is the result of more than 100 years of development into delivering the optimum fuel / air mixture to allow an engine to perform at its best. A Minimoto engine is very simple and thankfully the carbs are too. A basic understanding is essential before tackling repairs and modifications. In a nutshell;

1. Gravity allows the fuel mix to run from the tank into a small bowl at the base of the carb.
2. From there it is drawn through small hole/s called jets by the suction created in the engine.
3. Once through the jet/s it mixes with air drawn from the back of the carb (usually through a filter) and forms a fine mist.
4. The mist is drawn into the engine and burnt to produce the 'engine cycle'.

The aim is to create the optimum mixture of air and fuel throughout the rev range of the motor so that it runs at its best. Sounds simple but it's not. Some carbs have become extremely complicated trying to achieve this goal. In pursuit of the 'perfect mix' most four-stroke engines have replaced the carb with fuel injection where the mix is calculated by computer acting on numerous sensors in different parts of the engine.

This guide aims to give a simple course in the stripping down, rebuilding of the SHA carb.

Access to the carb will vary depending on the make and model of bike. Often, before removing the carb the bodywork will have to be removed to gain access. For best access the seat and petrol tank will have to be removed as well.

Removal, inspection and Basics

Unscrew the top cover screws.

To remove the top cover release the internal choke lever

Note the construction of the top cover, especially the routing of the cable and the presence of a gasket. The SHA carb is so simple it doesn't even have a needle, just a flat plastic slide.

Turn fuel tap off or otherwise stem fuel flow from tank.

Release clamp from manifold and with some gentle persuasion the carb can be removed.

The air filter is usually attached with a simple clamp and is easily removed.

Note the filter often has a piece joining it to the carb that needs to line up accurately.

Remove the fuel inlet banjo (4.2 carb). Don't forget the fibre washer on reassembly. Behind the banjo is an internal filter that can be removed and needs to be regularly checked for debris. The banjo can normally be removed with the carb still on the bike. On the Baby Blata you will have to unscrew the tap to reveal the screw.

Debris and moisture getting into the carb is a common cause for problems. Do not rely solely on the internal filter to keep debris out. An 'inline' filter is cheap and easy to fit into the pipe between the fuel tank and carb.

To remove the float bowl undo the two retaining screws. Ensure correct positioning of rubber seal on reassembly.

The small white plastic float governs the flow of fuel into the float bowl. Note how it pivots in the chamber and activates the needle (or float) valve. As the bowl fills with fuel the float rises. When the bowl is full the float forces the valve into its seat and stops the fuel from over filling the bowl. The float and valve are easily removed by releasing the pin that retains the assembly. Using a paper clip to gently push it through can do this.

Note how the float and needle combine.

The SHA carb has only one removable (main) jet.

On the right side of the carb is the tick over (or idle / mixture) screw. It is spring loaded so that it can be adjusted without coming loose. It is tapered on the inside of the carb and makes contact with the slide in such a way that by turning the screw the slide rises slightly from the fully closed position to allow the engine to tick over (idle). This can be adjusted while the engine is running.

The cold starting (or choke) mechanism can be stripped but there's normally no need. It works simply by restricting the flow of air into the carb. This forces the mixture to be 'rich' (more fuel than air). A rich mixture allows a cold engine to start more easily. The arrangement of springs and levers hold the choke on until the throttle is held fully open when it is automatically released.

Reassembly

Reassembly of the carb is a reversal of the above. Make sure that the carb is clean and free of moisture. Blow through the jet and drilled passages of the carb. If an airline is not available, use your lungs! Don't be tempted to use wire or any other tool; this can cause damage that will interfere with the running of the engine.

Another common problem is air leaks. When reassembling and refitting the carb make sure that all joints are sealed, especially the top of the carb (note the small gasket) and the clamp to the manifold. Air leaks cause the engine to run lean (more air than fuel).

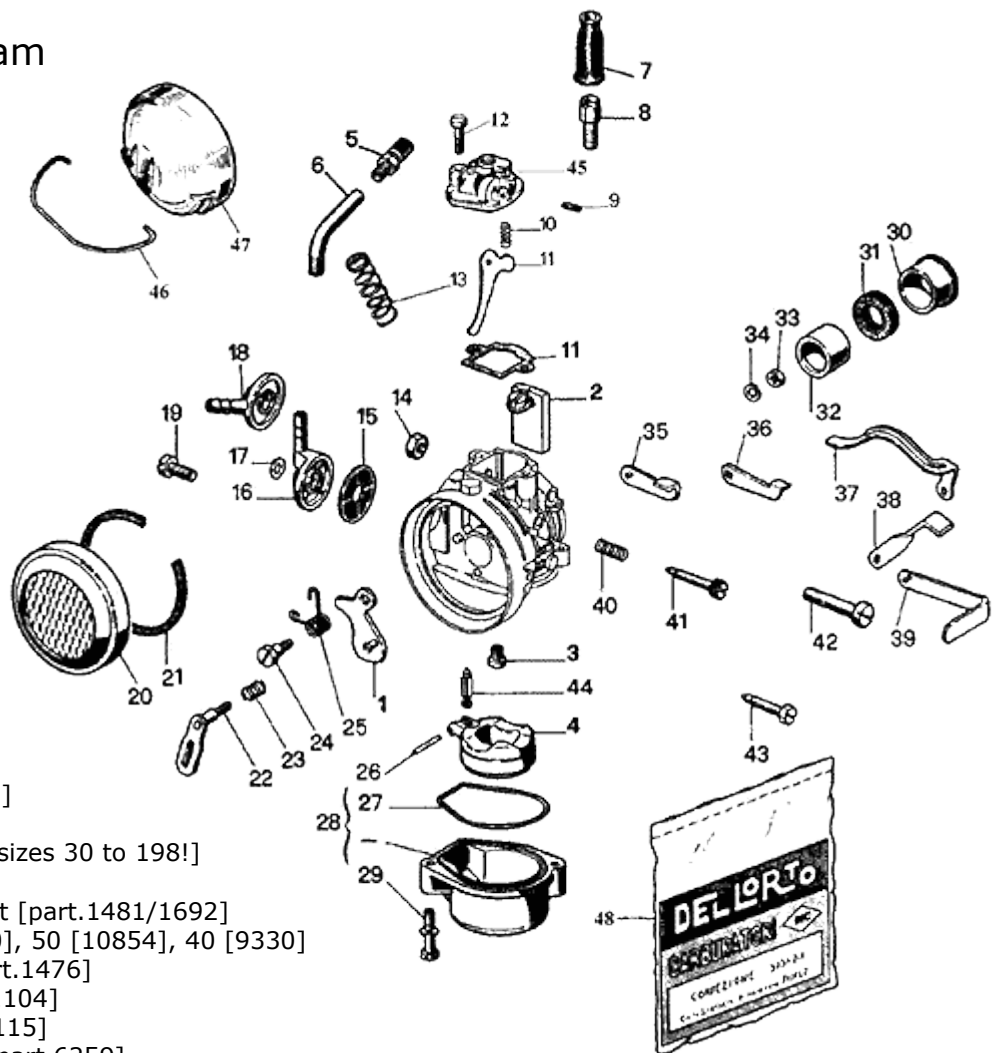
When correctly assembled, clean and free of air leaks the SHA has only one thing that determines how it can make your engine run...the main jet. The size of jet will depend on your engine size and type, what state of tune it's in and atmospheric conditions.

A larger main jet allows more fuel through and richens the mixture; a smaller jet achieves the opposite. Broadly speaking, more powerful engines require a larger jet while less powerful engines require a smaller jet to obtain the optimum fuel mixture.

Jets are changed to get the best out of tuning modifications. They are **not** a way to tune your engine on their own. Running your engine too lean or too rich will reduce performance and may damage your engine (especially too lean).

The aim is to get the perfect mixture.

Exploded Diagram SHA Carb.



1. Choke flap [part.9253]
2. Slide [part.6108]
3. Main jet [available in sizes 30 to 198!]
4. Float [part.6122]
5. Cable adjuster/locknut [part.1481/1692]
6. Elbow : 70 [part.3600], 50 [10854], 40 [9330]
7. Rubber cable cap [part.1476]
8. Cable adjuster [part.1104]
9. Top cover pin [part.6115]
10. Choke lever spring [part.6259]
11. Choke lever [part.6112]
12. Top cover screw [part.3318]
13. Slide return spring [part.3346]
14. Nut [part.7424]
15. Fuel filter [part.6109]
16. Fuel banjo [part.6475]
18. Banjo bolt seal [part.3385]
19. Banjo bolt [part.4190]
22. Choke spindle [part.9256]
23. Choke spindle spring [9259]
24. Shouldered screw [part.5417]
25. Choke spring [part.7179]
26. Float pivot pin [part.8773]
27. Float bowl o-ring [part.6123]
28. Float bowl [part.15447]
29. Screw [part.11837]
30. Manifold sleeve, internal dimension 21mm-18mm [part.11362]
31. Seal, part of gasket set only
32. Manifold sleeve, internal dimension 20mm-18mm [part.6448]
33. Choke spindle nut [part.8000]
34. Spring washer [part.1581]
35. Choke lever [part.9257]
36. Choke lever [part.10162]
37. Choke lever [part.11119]
38. Choke lever [part.12394]
39. Choke lever [part.13004]
40. Mixture screw spring [part.3606]
41. Mixture screw [part.6140]
42. Screw [part.6305]
43. Mixture screw [part.7578]
44. Needle valve [part.2834] available with spring loaded tip [part.11668]
45. Carburettor top [part.6110]
48. Gasket set [part.52579]