Almost everything you ever wanted to know
About Carburetor Rebuild Kits

To rebuild your carburetor in a professional manner there are a few simple and precision tools that you need to have in your toolbox.

1. A pop-off gauge is a must
2. A small machinist brass and stainless steel brush
3. an old tooth brush,
4. a small tip screwdriver that will fit the screws that hold your carburetor together
5. a couple of old cake pans (one to hold some cleaning solvent in for washing and one for parts), a small can of WD-40 or Marvel Mystery Oil
6. a bottle of good castor based oil
7. a dial caliper and a precision machined fulcrum arm gauge to fit your carburetor
8. If it's a Tillotson carburetor an inlet seat gasket line up fixture
9. a box of Q-tips
10. a roll of lint free paper towels (an old t-shirt will substitute for the paper towels).
11. An air compressor is nice to have but if you don't have one go down to the local auto parts house and get a couple of cans of pressurized brake cleaner
12. a pair of tweezers
13. a small pair of side cutters.
14. Last, but not least, a handful of pop-off springs.

For those that don't have the special tools needed to rebuild your carburetor with we have made them available in kit form to fit your needs and you can get them from us or any EC Distributing/Carroll LTD distributor.

In the complete carburetor kits (RK for Tillotson, check carburetor page for your carburetor to see what kit fits) there is no fuel strainer screen in the kit. Cleaning the fuel strainer screen is where the toothbrush comes into play or take the easy way out and replace it.

We will do the Tillotson kits first because these carburetors are used for 85% of small engine racing worldwide.
Tillotson carburetors fall into two different groups or types. There are double pump carburetors or three plate stack and single pump which is a two-plate stack.

For the most part it is thought that the three-plate stack,which is referred to as a double pumper, is for alky only and a single pump or two stack plate carburetor for gas only.
This is not true.
A double pump carburetor does not have a double fuel pump built into it. The extra plate that you have is what is referred to as a double pumper Tillotson carburetor and its purpose is to double up the volume of fuel *that is in the carburetor.*
This extra amount of fuel in the carburetor is preferred for alky burning engines or the HR series of gas carburetors because of the size of the carburetor.

Now if you have a two-plate carburetor and you think that you have a fuel problem because of volume and it's legal for the class that you run you can put the three-plate stack on your carburetor. These plate stacks are designed to fit any HL or HR series carburetor.

Needle and seats in all diaphragm carburetors fall into two groups or types. These are captured or un-captured types.

As a general rule of thumb, a captured needle and seat assembly is preferred for carburetors that are used on the asphalt. For dirt racing an un-captured needle and seat assembly is the most preferred.

A captured needle and fulcrum arm, which makes up the assembly, means that the fulcrum arm has a fork on the end of it and this fork hooks into a machined slot on the end of the needle. The advantage of this type of needle and seat assembly is that as soon as there is a depression on the wet side of the carburetor and the metering diaphragm comes down, it over runs the pressure of the inlet needle spring (pop off pressure) and the needle is pulled off the seat. Now fuel is allowed to fill the wet side of the carburetor.

In an un-captured assembly the fulcrum arm is not hooked to the inlet needle and when the main metering diaphragm starts its travel down and starts to over ride the inlet spring tension the needle comes off the seat by what little pressure is supplied by the pump pressure of the carburetor and a fuel pump if the engine has one on it.

Now that we have opened up this can of worms we have to go a little further.
Let's look at the needle in the needle and seat assembly as a door.
Now this door is only allowed to open as far as you want it to or let it open.
Now staying with the thought that the needle is the door part of the needle and seat assembly then the seat must be the size of the door.
In short the Fat Lady can't sing her song if she can't get through the door opening and your engine won't be a happy camper if it can't get enough fuel to the wet side of the carburetor.

This action has nothing to do with where the inlet seat pressure is (pop of pressure) but the adjustment of the fulcrum arm itself.
This would be the distance off the carburetor body or the topside of the metering diaphragm gasket to what we call the foot part of the fulcrum arm (end of the fulcrum arm where the striker pin of the main metering diaphragm comes in contact with the fulcrum arm) that will affect how far the door is able to open.

The following information on heights relate to the distance off of the carburetor body with original equipment replacement main metering diaphragm gaskets.

As a sample let's use a Tillotson carburetor for the rest of this information. With gasoline for the fuel of the day, we like to have this measurement from the carb body to the fulcrum arm in the range of .085 to .075 thousands of an inch. This is all that is needed for gasoline as fuel.
With an Alky burning engine we want to have .075 to .065. In short, as you can see, if the arm measurement from the carb body to the fulcrum arm foot is .065 verses .085 then the door is able to open further and this will let more fuel come into the wet side of the carburetor.

Most of these needle and seat assemblies below are a bit on the pricey side, but we have to make them up by hand. One good thing about these seats is that once you have one of them it's a part that is good for the life of the carburetor.
The needles are inexpensive and you can replace them as needed without buying a whole needle and seat kit. These kits are also package with the needed inlet needle spring for the carburetor you have which can also be purchased separately.

EC-014
Un-captured Ram Flow Tillotson needle and seat kit for all HL and HR series Tillotson carburetors. This is an un-captured needle and seat assembly that was designed years ago for all alky carburetors used for dirt racing. The seat is hand machined and the inlet needle is made from a Viton ® tipped needle for the special machined seat that has holes machined in the side of the seat to increase the fuel flow.
As with all of these special seats one is good for the life of the carburetor and the replacement of the inlet tip needles can be purchased for replacement as needed.

EC-014A
Captured Ram Flow Tillotson needle and seat assembly for all HL and HR series Tillotson carburetors. This needle and seat assembly is the same as the EC-014 but comes with a

captured arm and captured Viton® tipped needle. This type of needle and seat kit is preferred for Asphalt Sprint tracks, Jr. Dragsters and 1/4 Midgets where fuel delivery is needed in a hurry. In short a faster fill on the wet side of the carburetor helps increase the torque of the engine from the start.

EC-014B
Ram Flow captured inserted needle and seat assembly for all HL, HR, and European Formula A and Formula Super A
carburetors. This needle and seat assembly we make up can pass more fuel than any on the market. It comes with a blue needle that is machined on the sides to allow fuel to travel up the sides of the needle. The seat is machined with a series of holes through the sides to also allow fuel to get into the wet side of the carburetor faster and an insert that fits into the bottom of the seat to control a perfect seal for the needle to rest on.
This seat was designed more for the gasoline carburetors. For Direct Drive and Sprint 2 cycle racing this is the answer to solve fuel starvation.

EC-014C
Ram Flow un-captured needle and seat kit for HL-166B,C and HL-357A,B carburetors. With the Tillotson pipe line now being filled with the Viton ® tipped needles and the nickel seats we can now offer this complete kit with the new nickel seat, gasket, Viton ® tipped needle, fulcrum arm and special inlet spring for an up date of the carburetor that you have. This kit is recommended for dirt carburetors on gasoline or alky.

EC-014D
Ram Flow captured needle and seat kit for all HL-166B,C and HL-357A,B carburetors. This is the same type of needle and seat kit as the EC-014C but comes with the captured needle and captured fulcrum arm. This kit is recommended for the sprint tracks and small Jr. Dragster engines. Gas or Alky.

EC-MIK 34-37
Mikuni Ram Flow un-captured needle and seat assembly for BMC-34 carburetors. This is an un-captured needle and seat assembly and works perfect for asphalt or dirt for this series of carburetor. The needle we make for this kit has a Viton ® red tip needle. The seat gets TLC handwork and comes with a copper gasket to assure you of no leaks around the seat surface. A new fulcrum arm and special needle inlet spring is also included with the kit. This kit will serve all your needs for gas or alky as a fuel. This needle and seat kit also helps off set the nightmares of fuel control and setting the pop-off pressure in the Mikuni carburetor.

Inlet needle springs:
002 alleged to be usful for high pop off pressure in mcculloch carbs
003 pops off at about 8-9# tilly application
009 pops off at about 1# more tilly application
24b-299 is similar to the 009 spring but has an extra coil (top and bottom) that can be cut off to lower spring height.

(pop-off springs) In these springs we have several different ones that we keep in stock. We're not going to list all of them because there are three different springs that handle most all needs. All three of these springs have a double wind coil on each end. This lets you cut off one full coil on one end or both and leave you with the must have flat bottom spring for constant inlet spring tension. Along with these special springs we have made a shim kit with .010 thick shims.

shim kit 712 shim pac 10 pcs. is .005
shim kit 713 shim pac 10 pcs. is .010

Shim Kit. There are enough shims here to do two or three carburetors. That is if you don't drop them in the grass.