

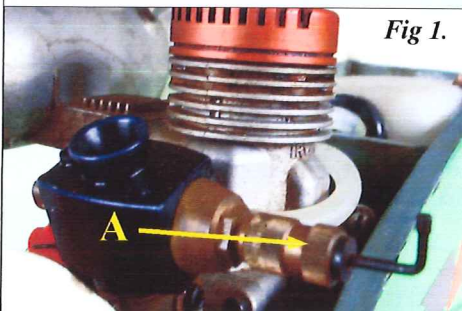
No.3 Carburettors

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Carburettors

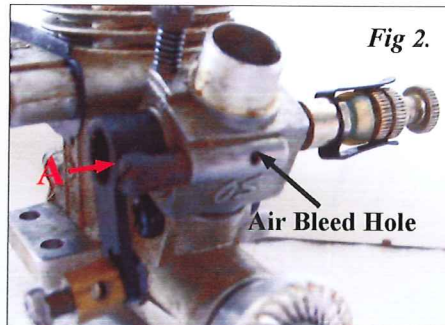
Let us look at that much maligned and fiddled with piece of equipment on the engine, - The R/C Carburettor.

If the manufacturer does not get it right it can destroy the reputation of an engine. If the manufacturer has got it right, then just wait until the modeller gets his / her hands on it! The manufacturer has spent many hundreds of hours getting the design and performance characteristics of the carburettor right, it is not a case of "lets stick this one on and see what happens". Carburettors must take into consideration things like engine suction and timing etc. In this article I am not going to go into carburettor design but just look at two of the types of carburettors that are used and their adjustment. The most common carburettor these days is the twin needle type, which is a Sideways-moving, barrel with two needle valves controlling high speed running and idle to half throttle running. Typical example shown in **Figure 1**.



The other common type of carburettor is the Air bleed variety. The main needle valve still controls the high speed running but an air bleed screw controls the slow speed/idle. Typical example shown in **Figure 2**. We will now look at the external adjustment facilities of modern twin needle carburettors. **Figure 1** - A is the main mixture control needle. This controls the high speed mixture requirements of the engine. **Fig 3** - A is the slow running needle. This controls the idle and part throttle requirements of the engine. There are two ways of adjusting these carburettors dependent upon the make. Before we start adjusting, it should be

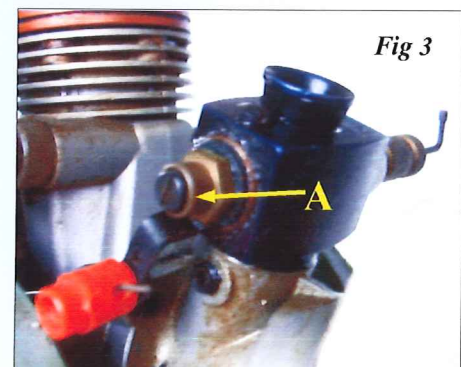
pointed out that carburettors only need adjustment to cater for temperature / humidity changes, fuel changes and propeller changes and any changes must be small. Before



adjusting, make sure you have fresh fuel, a new plug, or little used one, and the propeller that you are using on the aircraft. If the carburettor is of the OS, ASP, IRVINE, THUNDER TIGER and probably all four-stroke types, the best way in my opinion to adjust is as follows.

If it is at all practical, remove the carburettor from the engine taking care not to lose or damage the seating "O" ring seal. Attach a piece of fuel tubing approximately 150mm (6" in old money) to the fuel nipple. Close the main needle valve and then open it up 1.5 to 2 turns. Then close the throttle barrel until there is a 1 to 1.5mm gap showing between the barrel and the carburettor bore. Screw in the idle /mid range mixture screw lightly to it's seat. Do not overdo this; you will feel slight resistance when it is seated. Without disturbing any of the other settings, blow down the fuel pipe while unscrewing the idle/ mid range mixture screw until you hear a faint hissing. This shows that the airway is now open. Stop unscrewing the adjustment screw. One final check is to carry on blowing down the fuel tubing then shut the throttle barrel completely. The air supply should be now be cut off. This method of adjustment gives a slightly rich main needle and idle needle setting, which can be fine-tuned later. Re-assemble the carburettor to the engine making sure that it is sitting on the "O" ring correctly and it is not damaged at all. Now start the engine and let it reach operating temperature,

having adjusted the main needle screw for best running. Close the throttle to idle and wait for 2-3 seconds then go to full throttle instantly. Do this 2-3 times to see the result. If the engine dies when the throttle is opened, the mid-range is "too lean" so, stop the motor and open (turn anti-clockwise) the idle/ mid range needle a 1/4 turn. Small adjustments give the best results. Keep adjusting until you get an instant pick up and constant, smooth power at the top end. Do not adjust the mid needle with the engine running if you value your fingers. If you have not fiddled with the factory settings, when changing propellers or fuel, the maximum adjustment needed should be 1/4 turn either way. If the carburettor is of the MDS type and the factory settings have been disturbed, for initial starting open the main needle 2.5-3 turns and the idle/mid needle 1.5-2 turns. To initially set the idle/ mid needle, CLOSE the throttle barrel, and then gently screw the needle clockwise until the needle seats. Now unscrew the needle 1.5-2 turns.



Air Bleed Carburettors

The air bleed type of carburettor, (see Fig 2) is adjusted in the same manner as the twin needle carburettors except that the idle/mid range adjustment is carried out by screwing the needle at the front of the carburettor, **Fig 2** - A in or out to achieve the best pick up. It is usually best to start adjustment with the screw showing halfway across the bleed hole.