

“Helpful tips in fitting your Re-engineered Concentric Carburettor” by Jeff Skillen

With over 40 years experience with motorcycles, carburettors and the engineering industry, we feel that we have made a good product even better. As our product is individually processed and hand fitted, the standard should be superior to a mass produced product, though the Amal products of today are of higher quality and standard than those of past products.

Our goal is to provide you with the best possible product that will give you many miles of trouble free service at a reasonable cost. We have many satisfied customers in every state of Australia, some with repeat business for multiple motorcycles. We hope you attain their level of satisfaction.

For your own safety, we strongly recommended that you engage a qualified technician to install your new carby. The following information is provided as guidance to assist them in the installation and set up.

Because all critical surfaces have been machined and hand-fitted to the closest workable tolerance, time and care is needed for the initial fitting.

You have purchased a re-engineered concentric. How good is the rest of the system? i.e. the twist grip, throttle cable, junction box (if used), throttle linkages, fuel lines and the inlet manifold flange.

If your throttle cable is old and has the slightest amount of resistance, it may need lubrication or replacement. Do so before fitting to the carby so as not to flush rubbish into the carby body.

If you fit a new cable, lubricate it first before fitting. While you have the twist grip apart fitting the new cable, wash it out and lubricate it and the handle bar, making sure not to push it onto the handlebar too far so that it binds.

You do not need a choke cable or slide in these carbies. If you want to keep your handle bar looking standard, fit your old throttle cable to your choke lever and you will know that you have a spare throttle cable already threaded through your frame and under your tank that will fit and work. If you ever break one on the side of the road, it is a simple matter of just swapping the ends over.

Before tightening up the two screws at the top of the



throttle body, bring the carby to full throttle and keep it there while tightening the screws. This centralises the top, spring and slide, and prevents it sticking during service. DO NOT Over-tighten! You have to treat these carbies as if they are made of plastic. As a guide, do not tighten and carby part more than you would a tail light lens. Over-tightening will cause body distortion, air and fuel leaks and sticking slides.

Fit an O-ring to the flange by smearing the flange with a little grease, fit the O-ring to the groove and smear again and then fit the manifold. With the nuts at finger tight, as you tighten the flange nuts, work the throttle up and down. If it starts to stick, STOP! Are the nuts too tight? Is your manifold flange clean? Is it warped? Is your spacer/heat block flat? The carby has been machined flat and worked perfectly until now! The problem must be from the carby forward. Do not continue until you correct it.

If you have slide sticking problems in the idle position, it can be due to over-tightening the float bowl or the air filter, or tension in the fuel lines. Has a foreign particle entered the carby whilst fitting the top or via the fuel lines or via the throat? With such close tolerances, cleanliness is of the utmost importance!

Simply put, fitting a new carburettor is the motorcycling equivalent of a lung transplant!

If you continue to have slide sticking problems, remove the slide and examine the inside of the throttle body for scoring or high spots due to foreign body or damage in transit. The slide is of harder material than the body. Do not touch or alter it. The use of a bit of 240+ Wet & Dry on a finger is an

acceptable method of fixing irregularities in the throttle body.

While fitting the carby, check for sticking after each process. This will give you an indication of what may be causing the problem!

Most people don't have any problem at all.

Multiple Carby Setup

The most important aspect of multiple carby setups is balance. Each carby turns its respective cylinder into a motor with its own characteristics. The balance between the carbys and cylinders is of the utmost importance. When you purchase a set of carbys, we match every detail in the set.

On a multiple carby setup, the use of vacuum gauges to balance them is the perfect scenario.

If you don't know how to use them, or don't have access to a set, a simple, and I believe 98% effective method, is to determine where fully closed is, where full throttle is and tape the twist grip to the handle bars at half throttle. This is where you do most of your riding and because it is half-way through your throttle range, any error is halved.

Place identical rod indicators in the throat of the carbys so that they are against the needles and just under the engine side of the slides. You could use pencils, biros, or your wife's knitting needles. Your rods should be sitting at an angle. Get down beside the motor and, sighting along them, adjust the cable adjusters until the rods are all at the same angle.

Remove the rods from the throats, un-tape the twist grip and back all the idle screws out to their lowest position. Adjust each idle screw up until it just meets the slide. It may be helpful to place your finger in the throat of each carby so that you can feel when the screw meets the slide. Once you have got all the idle screws just touching, proceed with the idle mixture adjustments in the next section. If you need to adjust the idle setting screws, adjust all the screws by the same amount to maintain balance.

Initial Start-up

Set the idle mixture screws ? to 1 turn out. Turn on the fuel. Flood the float bowl and start the engine.

Occasionally on a dry carby or one that has been sitting for a while, you may find that the fuel flows in quicker than the float and needle can react, causing flooding. Don't Panic - the whole idea is to flood the carby before starting anyhow. Turn the fuel off and start the engine. Once started turn the

fuel back on. The vibrations will correct the float and needle positions. If it continues to flood, check that a foreign particle has not entered the needle and seat prior to fitting or via the fuel lines.

Now adjust the idle mixture screw. For multiple carbys, adjust one screw at a time. Adjust the screw in until you notice the idle just beginning to falter. Make a note of this position. Adjust the screw out until it smooths out again and keep adjusting until the idle just falters again. Set the idle mixture screw midway between the two rough positions.

Moving an idle mixture screw in or out adjusts the amount of air being mixed with the pre-determined amount of fuel being metered by the idle mixture circuit. "Out" provides more air making the idle mixture leaner and "in" reduces the amount of air making the mixture richer. Richer settings are more likely to cause plug fouling with excessive idling, so I tend to set them slightly on the lean side.

It is rare to get a perfect idle mixture and idle setting by adjusting them in the workshop since the engine is unlikely to be at normal running temperature. Set the idle up so that the bike is rideable and ride it for 2-3kms, pull up and readjust the screws and head back to the workshop, where you may need to make a final fine adjustment.

The idle circuit is separate to the rest of the fuel circuit and does not shut down, so it can influence the mixture at other throttle positions, particularly at lower throttle positions and to a diminishing degree, higher throttle positions as well.

In most cases today, the use of premium unleaded fuel, 95 RON, is recommended, however this is a richer, denser fuel and in some cases can cause richness at lower throttle openings. This can be partially corrected by the idle mixture screw, but mainly is compensated for by the cutaway of the slide. An increase of .020" cutaway in most cases solves this problem. A hotter plug may also help.

The easiest and best way to check your existing cutaway size is to measure the front and back of the slide. The difference is related to the slide number. A #3 slide has 3/16" or 0.187" difference, a #3½ has 3½/16"=7/32"=0.218" and a #4, 4/16"=¼"=0.250". I have found a vernier gauge is the best for measuring this, but a flat surface and the butt of various size drill bits will do in a pinch.

Checking and setting float (fuel) levels

All RCC Carburettors have their float and fuel levels (where applicable) pre-adjusted on our test-bench before dispatch

so these procedures should be unnecessary for new RCC carbys.

It is important to set the fuel level in the float bowl, since the fuel level influences the richness of the mixture drawn into the cylinder at higher throttle openings. Note that it is the fuel level, not the float level that is important. Since the inception of the concentric carburettor, there have been ongoing improvements and developments by Amal and there are several float bowls, floats and float needles. Float bowls with a drain allow you to perform the dynamic level adjustment in addition to the static adjustment for greater accuracy.

Static method of setting float level

Assemble the float, pivot pin and needle into the float bowl. Using your two thumbnails to hold the pivot pin, invert the float bowl with the needle and seat closest to you. The weight of the float will push the needle into the seat via the pivot. The round edge of the float should sit 2mm or 0.080" inside the outer edge of the float bowl. You can adjust the height of the seat, if needed, with a 1/8" pin-punch through the fuel inlet to raise the seat, lowering the float level, or a 3/8" punch on top to lower the seat, raising the float level. Note that adjustments to the seat level result in much larger adjustments to the float level and often 0.003-0.005" movement may be all that is needed.

Dynamic method of setting fuel level

Having completed the static setting procedure fit the bowl to the body and install the carby onto the bike with the fuel lines attached.

Fit a clear plastic hose in the drain plug hole and run the tube up the side of the carby near the idle setting screw. Turn on the fuel and allow the fuel level in the tube to settle and then lower the end of the tube 10mm or so. This second lowering of the tube allows the needle to seat under the normal action of the float, rather than the in-rush of fuel into an empty bowl. The fluid level in the tube should settle at a level lower than the bottom of the throttle by 5-7mm. I find the 5-7mm fluid height seems to suit our climate and premium unleaded fuel. Adjustments are performed by adjusting the seat height as per the static method.

Twin carbys should be set up identically. For Trident and Rocket 3's, you will go mad trying to get all 3 identical, so I fit the higher of the 3 to the middle carby since it's a little richer, which aids in cooling the middle cylinder.

Hints and tips to extend carby and motor life

Most carbys show signs of wear at the lower throttle openings. This is 99% caused by excessive idling. In the idle position, the slide is in the most exposed and least supported position, and any movement becomes exponential, particularly in the standard carby, with the body and slide both made of soft material and having mass-produced tolerances, they flog themselves to death! So don't let them idle unnecessarily.

The correct starting procedure is Get Dressed First! Flood the carby, start the engine, open the throttle to 1500-2500 RPM (until the richness clears), put it in first gear and travel the first 200m, into second for 200m and so on until it warms up.

As soon as you stop and your foot hits the ground, Turn It Off!

Idling achieves nothing positive. It does not let an engine warm up properly or cool down. It wastes fuel and can cause a hot engine to overheat. It creates excessive wear in the carby and in some cases can cause plug fouling. If you are serious about looking after your pride and joy and want many miles of trouble free riding, DON'T LET IT IDLE EXCESSIVELY!!!

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