Purpose:

The purpose is to find a replacement for the Amal carb that came stock on Brit bikes. That is necessary for several reasons. Even though the new Amals are offered in several models as replacement carbs, Amal managed to reproduce all the faults of the original designs and add some too. Those faults are:

1. Slides made of the same material as carb body promoting galling and fast wear leading to both sticking slides and loose slides that allow air around them through excessive clearances which makes the idle uneven.

2. Flanges from the carb body to the motor's intake manifold that when over tightened permanently distort the carb body, causing the slide to stick in its bore. Once the body is distorted the precision of the carb is lost.

3. Some have come through the manufacturing process crudely made. Are they Chinese or Indian copies or is Amal's quality control not that good?

4. Pilot jets that are pressed in bushes not meant to be removed or resized, stuck down in a passage way that is prone to clogging if the bike is stored with gas in the carb. This passage way is not easy to clean as there is access only to one end as the passage way is a right angle turn off another main passage.

5. Idle and transition circuits, including small holes into the mouth of the carb, that are prone to clogging and hard to thoroughly clean.

6. The latest one for me is the sinking float. My friend's relatively new Concentric's float filled with gas while out on a ride, about 50 miles from the truck. We had to drill a hole, drain the gas from the float, epoxy up the hole, and pray we would be able to get back to the truck before the float filled again. We could find no hole for the fuel to leak into the float in an in-field inspection of the float. The float again filled to about 20% full in less than 20 miles of operation. Add to that the comment from a Piled Arms poster that he had to buy and test about five floats to get one that didn't leak.

Common fixes for these maladies is to have the slide bore of the carb fitted with a chrome or brass thin liner or have the slide hard chromed to start with. But if the body is already distorted these fixes might work off the bike but once the carb is bolted to the manifold the sticking slide returns. Brute force bending the carb flanges back into place or machining the flanges flat still leaves the body of the carb distorted. The idle bush is drilled out and a separate idle jet is installed in the float area of the carb (available because the first version Concentrics came with an idle jet in the float bowl area, not underneath the air screw adjustment). Amal moved the idling function years ago because idle quality suffered initially with the jet so far from its source of suction, the idle airpassage.

A New Carb:

In a casual request for information on the JRC (Bill Getty) carb that I only recently heard about, Bill Getty offered to allow me an evaluation carb after hearing that I write TECH articles for the Piled Arms web page. The carb arrived with a new throttle cable (which was not required or used), a plastic tee for the fuel lines, several feet of fuel line (again, I had my own which I used), a set of six hose clamps (Sorry Bill, but they were sub standard and two broke while I tightened them…used the name brand micro clamps from an auto parts store), and several main jets (130, 132, 135, 138) all leaner than the main jet installed (140) in the carb.

The carb is from the Keihin PWK family and is marked as a PWK 30 but the bore actually is oval and measures 30mm vertically and 28mm horizontally, perfect for my Triumph Trophy Trail as it originally came with a 928 28mm Concentric. It is a modification of the standard PWK 26 mm carb but consideration is being made to get Keihin to make a new body for a full 30mm body. The carb was jetted as follows:

Main Jet…140. (may be a bit rich so will make adjustments on the first field test)
Slow Jet…38 (same as pilot or idle jet)
Needle jet was a pressed in jet (unknown size) but only one size appears in the Keihin parts catalog.
Needle unmarked and in middle clip position.
Slide (not marked but measures about a 2 1/2 cutaway (?) and is chrome Plated, Yea!) The air jet size is fixed.

For specs the comparison should be made between the Concentric, the JRC, and the Mikuni. The Concentric is a simple carb with only a few choices for needle and needle jets and a fixed air bleed system for the main and idle jetting. The JRC is also a simple carb with only one needle jet but about 35 needles with various tapers and needle diameters allowing a reasonable choice with only one variable for mid throttle tuning, the needle itself. The JRC slide is a modern flat slide with chrome plating to avoid galling of the carb's slide bore, unlike the Concentric. The Mikuni has virtually an infinite choice of needles and needle jets, and changeable main system air bleeds (air jets). With a dyno and enough time and knowledge a person could get the Mikuni jetted perfectly but I don't have the knowledge or the dyno and with all those variables for tuning, the Mikuni can be a nightmare to jet. Not so the JRC or the Concentric. The Mikuni's have a rubber manifold while the JRC's flange mount is rubber isolated from the body (no body distortion from flange over tightening as on the Concentric, Yea!). The Mikuni and the JRC have starter systems that include a jet and an air passage while the Concentric has a cable operated choke and a tickler button to flood the carb for starting. The floats of the Concentric are mounted to the removable float bowl while the Mikuni and the JRC carbs have them attached to the carb body. The JRC carb requires that the main jet and needle jet holder be removed before the float bowl can be removed and even then you have to snake the float bowl around the floats to get it off. Finally the JRC is sized externally to fit in the space allotted for a Concentric, with an intake bell that is the same size as the AMAL carb to allow the stock pancake filter assembly to fit perfectly.

Specification wise the Concentric is simple to tune but very prone to wear and damage from abusive maintenance. The Mikuni is complex to tune but pretty good for wear. The JRC is a simple carb, simple to tune, and very wear and maintenance abuse resistant by design.

Bill Getty (JRC) tells me he has successfully jetted a version of the JRC carb for the following bikes: Triumph T140, TR7, TR6, T120, T160,T110, T100 and TR5T, an Ariel 4 (same jetting as TR7). He has not yet done any Norton, or BSA but has plans to do so. The jetting for the BSA's or Norton's can not be too far off equivalent Triumph displacements. He offers only the one slide but has yet to have anyone request a slide different from the one provided. Bill is willing to share tuning information and will stock jetting for the carb. He is upgrading the hose clamps.

JRC Install:

All went well but I did have to shorten the bike's left side manifold mounting stud as it bumped into the JRC carb body. The carb is fractionally longer than the Concentric so fitting it to my Rickman may be more of a challenge than the fitting I did to the TR5T Triumph Trophy Trail (no air box…just a filter sock). But the JRC Carb is much shorter than a Mikuni of the same bore size. My original cable worked fine as did my air filter sock that was on the original Concentric, formerly mounted to the bike. The bike started right up after the install. I tweaked the idle speed screw and the air screw after the bike warmed up a bit. It idled very smoothly, ran smoothly and had no flat spots anywhere in the power band that I could determine running up and down the street in front of my house. It certainly ran at least as good as the Concentric, if not better. So far it looks like a better choice for a Brit carb replacement than either a new Concentric or the Mikuni.

Field Testing:

The test ride was a 60 mile loop from 3000 feet to over 6000 feet, on both paved and dirt roads and some jeep roads. The bike starts more readily from cold or hot. The enrichment system (pull the plunger up and its detent locks up for starting) is adequately rich for starting but not overly rich, so you can let it idle for a few minutes with the enrichment system on. The bike ran well at all altitudes with no flat spots or rich bogs. The needle jet and needle seem perfect with the clip in the middle. The motor accelerates smoothly which tells

me the slide cutaway is correct as well as the slow jet (pilot jet) is probably correct as well. The idle is smooth and can be made to be very slow without the engine stalling. At altitude I tried many times to induce a rich bog by giving full throttle at slow engine speed. No rich bog. The carburetion was near ideal, to the best of my abilities to tune a carb.

I pronounce this carb a viable alternate to the Amals and a better choice than the hard to tune Mikunis or the problem prone Amals. JRC has the jetting for my bike right on. As for pricing, what a deal! At this time the price is $116 for the carb, only. All the extra piece parts I got are to be extra. Except for the gas line, the tee, clamps, and the heavy duty return spring there is really nothing else you need. It is indeed a bolt on mod.

Conclusion:

The JRC carb is indeed a viable, good alternative to either the stock Concentric or the Mikuni. See www.jrceng.com for the dealer list (JRC is a distributor, only, and does not sell retail). Many thanks to Bill Getty of JRC for all the help.