Makeover for a 1970 BMW R75/5

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The R75/5 when bought in 2011 – Scruffier than the picture suggests

The preamble – October/November 2012

I have a long standing fondness for BMWs and have owned several over the past 10 years or so. This one came from Bristol and was quite an early series 5 with the short wheel base rear end. Quite scruffy and a number of things that were not quite right but the price was fair so I bought it. My original plan was to customise the bike with some ideas I had dreamed up after an earlier flirtation with a fire damaged R45.

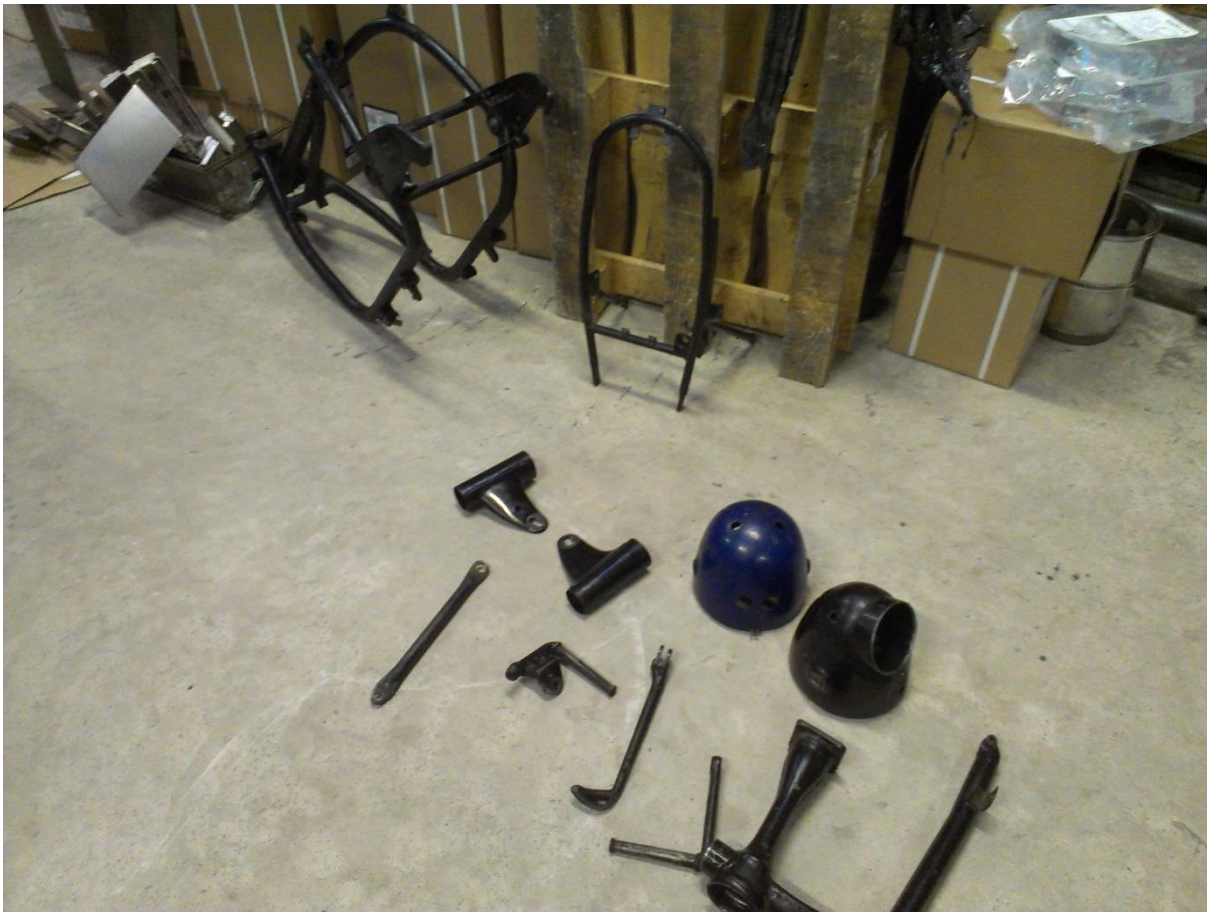
In the end I just rode it as my touring bike for the 2012 season. The fuel consumption was a bit higher than expected and the top end seemed a bit noisy so I replaced the timing chain which did not improve either matters overmuch. Nevertheless it was generally reliable and a comfortable bike to cover longish distances at moderate speeds. However this changed somewhat in September on my way to Cornwall. It had covered the first 60 miles to Wellington perfectly but was totally devoid of sparks when I tried to start it after a coffee break. In the end it was recovered home courtesy of my breakdown insurance and I had to use another bike to complete the Cornish Weekend.

The loss of sparks is still unexplained. The bike was fitted with Boyer electronic ignition as were all my previous boxers none of which had ever given problems in this department. I temporarily converted it back to points ignition and the engine ran so the coils clearly worked. I sent the electronics back to Boyer and it

was returned promptly with ‘no fault found’. I re-fitted it to the bike and it started immediately. I took it for a 100 mile run the next week and it ran perfectly. Don’t you hate it when that happens.

However, one thing I had observed when investigating the ignition problem was that I could not get the timing anywhere near correct when running with points. There simply was not enough adjustment on the back plate (Boyer back plates have a lot more adjustment). This made me wonder if I had messed up when changing the timing chain, it’s not an easy task on the early boxer engines with duplex timing chains. Given that it was now late October and the riding season was virtually done I felt that a total strip down and makeover was the way to go.

Cosmetically the mudguards and tank were quite good but the rest of the cycle parts needed repainting and there were several other little jobs needed so I started the strip down in mid-November. Taking it apart was not overly difficult. The main issue is the weight of the engine so I had to call on friends periodically to help lift it out of the frame. I also had to call on assistance from friend Terry to separate the drive shaft from its taper as this needed a hydraulic press. No other serious problems were found and the bits needing powder coating were assembled and photographed for security:



With the cycle parts at the powder coater I was able to start work on the remaining parts though there was no master plan and I just tackled them in whatever order took my fancy. An early task was to work through the whole wiring system which had always worried me. The main loom in fact was fairly sound and just needed a few wires replacing. Luckily I had the remnants of another BMW loom in my spares box and this provided enough bits of correctly coloured wire to make the repairs. A bigger task was the handlebar switch gear which was largely a homemade bodge. This took a while but thanks to soldered joints and shrink wrap I

eventually finished up with a neat set of original switch cables with the termination wires all correctly colour coded (though hidden inside the wrapping it was not quite so standard). The wiring within the headlamp was to be re-visited later as I had other plans for this.

Next task was to strip the timing side of the engine to investigate the cam chain setting and sort out an annoying oil leak from the timing cover. I found that I had indeed set the cam chain one tooth out which is now corrected. Hopefully the engine will now run rather better. The oil leak was caused by some welding which had been done to the cover by a previous owner. The metal had actually shrunk slightly leaving a gap no matter how tight the case screws were tightened. Consultation with a friend who taught metallurgy at the local college produced a solution. Basically he advised to gently tap the cover around the affected area which would relieve the welding stresses and allow the metal to recover its original shape. Bless him he was absolutely correct. After an hours tapping against a heavy metal late and measuring with feeler gauges, the cover was once again completely flat and oil tight. Another issue resolved.

While it was apart, I did remove the starter motor to check the brushes but thet were fine. The rest of the engine was simply cleaned as it was performing well and apart from the timing cover had no significant oil leaks. Likewise the gearbox was just cleaned and the clutch operating arm greased. I should mention that I had stripped the top end of the engine earlier when I did the cam chain and fitted a set of twin plug heads which had been sitting on the shelf. Not entirely sure they suit the R75 (they were originally fitted to my R80) but I intend to persist with them especially as the cam timing is now correctly set.

Various other smaller bits were stripped and cleaned but mainly it was a question of waiting for the frame etc to be painted. In the interim I had an epiphany and decided to investigate the options for converting the bike from short wheelbase (SWB) to long wheelbase (LB). In my mind there is no doubt that the SWB variant handles better on twisty country roads but it is not as stable at higher speeds particularly with side winds. The other major advantage and the deciding factor in my case was the ability to fit the larger 30a battery. BMW themselves introduced a LWB version of the /5 models in 1972 and this was standard on most airheads until the late 80s when things like paralever were introduced. I already had a LWB swinging arm complete with drive shaft bearings and seals all in good condition. After much agonising I decided to paint rather the powder coat the s/a due to the difficulty in masking all the critical parts. Ebay provided me with a LWB subframe from an R80 and a large style battery carrier. With this decision made I was also able to order the correct style of new seat in LWB style (the old seat being somewhat sad and in need of a lot of tlc). The parts arrived on the same day that the powder coating was ready and as the shop was closing down for Christmas these parts would have to wait until January – which subsequently became a bit of a problem.

The rebuild begins Late December 2012

The parts were collected from the powder coater on 17th November 2012 and he had made a really good job of everything. First job was to remove all the masking items I had put in place and for once I did not have to spend hours rubbing down and scraping excess paint from various orifices. The centre stand was refitted together with the steering head; both head bearings were perfect so got re-used. The fork shrouds and legs went on next along with the stalks for the front indicators. I had replaced the originals which were painted with some chromed items to improve the appearance. One slight issue was the cable run for the indicators which was a fiddly route through the shrouds and meant that my newly made up cables were too thick and too short. In the end I decided to simply run them direct from the end of the stalks into the headlamp shell and this proved satisfactory. With the forks assembled I was able to fit the front wheel and this plus the centre stand gave a stable platform for the remainder of the rebuild. Next major task was getting the engine

into the frame (ideally without scraping too much paint). As luck would have it my son came to visit so he was pressed into service and the job was soon done. There are a couple of thick alloy spacers on the rear mounting bolt and these had worn thin leaving quite a gap. It would probably have squeezed up when the bolts were tightened but I decided to make up some new thicker ones on the lathe.

As I had not disturbed the clutch, the gearbox slid onto the splines easily and was soon bolted up. I thought I had read somewhere that it was necessary to remove the engine mounting bolts and slide the engine forward a tad to get the gearbox installed but on my bike (4 speed box with k/s) this was not required. Fitting the starter motor was easy, fitting the air cleaner assembly les so as it did not want to line up properly and is still a bit lopsided. My guess is that it was always so as I can find nothing wrong with any of the fasteners but time will tel. I used a new air cleaner while I was at it though the old one seemed pretty clean.

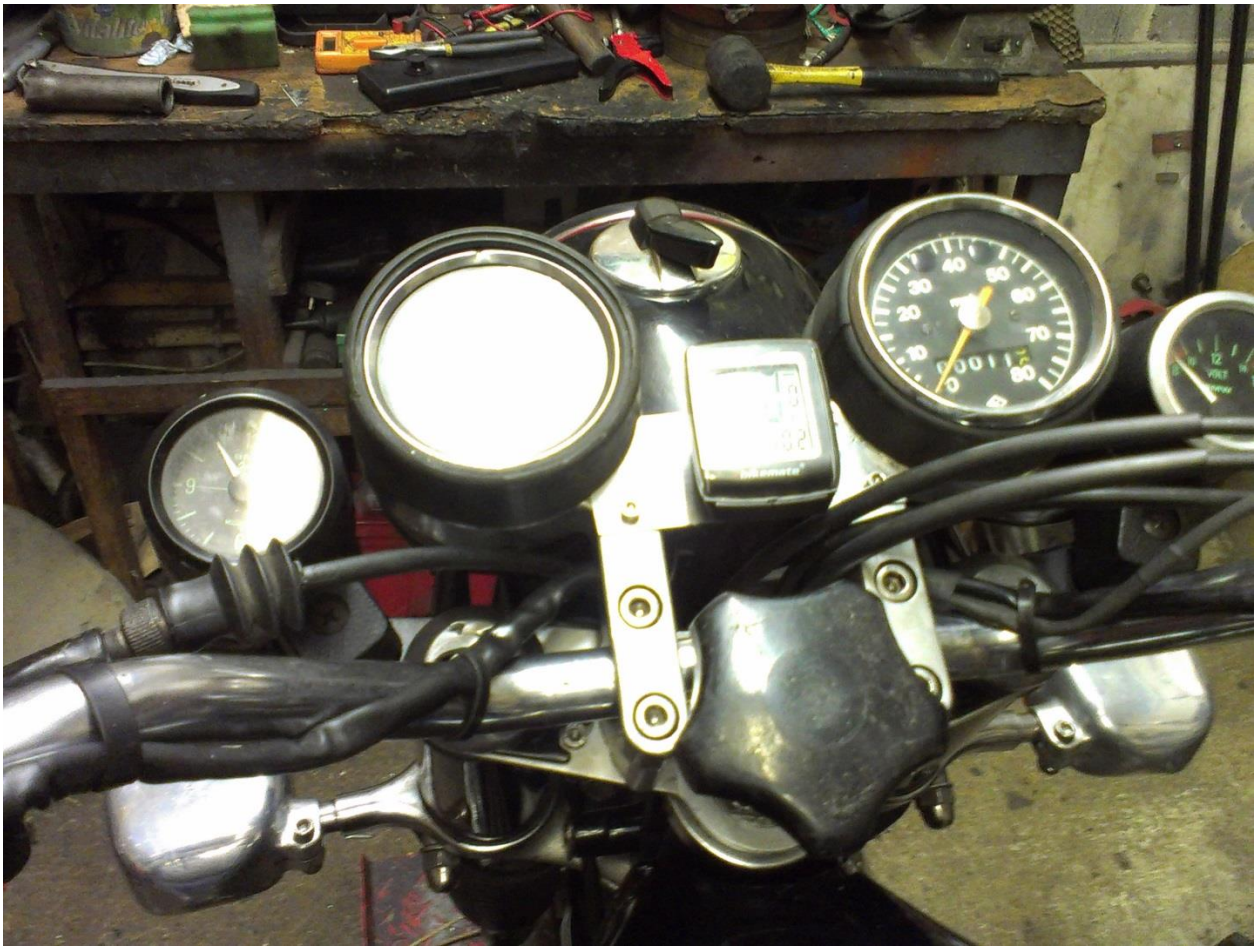
The wiring loom was the next task. This had been removed as a complete entity with all the relays, diode board and regulator still attached to minimise the risk of misplacing wires. With some ingenuity, I was able to get everything back into place without much if any disconnection of wires so hopefully there will be no problems from this source later. The next stage of rewiring was more complex. I have never been a fan of the headlamp assembly on the series 5 BMWs. This is very similar to the early series 2 models except that the speedo has an integral tacho. The ignition/lighting switch is a strange gadget held together with spikes of metal which are an integral part of the headlamp shell. Mine did not appear to be in the best of condition and possibly may have been the culprit in my recent breakdown. Also the tacho was broken so I had been using an MZ tacho mounted in an MZ binnacle for some months with great success. The plan therefore was to junk the whole BMW headlamp and speedo assembly and use an MZ headlamp with MZ ign/lighting switch and separate binnacle mounted MZ speedo and tacho. However, this was taking us into uncharted territory.

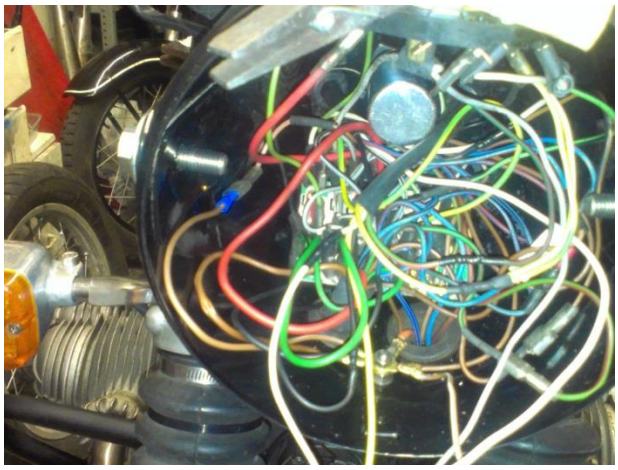
Fitting the instrument binnacles was easy, requiring only a small amount of filing to the handlebar holes in the bracket to allow them to line up with the original BMW bottom handlebar mounts. The speedo cable fitted the MZ speedo perfectly and the cable was just the right length. There will of course be a problem with the speedo gearing but I have a plan for this in due course. The tacho cable also fitted the MZ tacho but is really about ½”too short which results in the instrument being pulled deeper into the rubber binnacle. The gearing is also incorrect as it records 2k revs when the engine is doing 1k. However, it has run for months like this without problem so I intend to live with this for now. If it proves to be an issue, I will investigate a longer cable (possible the/6 or going to an electronic tacho. The tacho is not essential and its main purpose is to provide the oil pressure and ignition warning light mounts. The speedo provides the main beam and neutral light mounts; as yet I have not decided if I need an indictor repeater or where to mount it.

Offering up the MZ headlamp to complete the front end highlighted a number of snags to my master plan. Some were easy to solve like sleeves to adjust the shroud hole to the mounting bolt size and drilling a number of extra holes at the bottom rear for the profusion of cables which need to run into the headlamp shell. The bigger problem was the shape of the rear of the shell which fouled the MZ binnacles even with the shell mounted as far forward in the shrouds as possible. The solution was to have dents beaten into the shell and I pondered long and hard about how feasible this would be. In the end I marked up roughy the shape I needed and took the shell to friend Mike who was a metal basher by trade before taking up teaching. Fortunately he still has all the right tools and with a couple of hours he had beaten two very neat indents into the shell all without distorting the headlamp end and to our amazement, without unduly marking the powder coating which did not crack or flake of. In practise two visits were needed as my original markings

proved not quite correct but eventually everything lined up perfectly and now you would never know the headlamp shell was not designed for this bike. It would of course have been far more sensible to have done a trial assembly and the modifications before I had it powder coated and I was lucky to get away with it.

With the headlamp assembly neatly in place I could then start offering up all the wires and making the various connections. My efforts in converting all the wires back to standard colours now paid off as it was a fairly straightforward task though getting all the cables into the shell was fiddly. I did make two mods which are I feel worthy of note. Firstly the flasher unit was mounted in a housing identical to the headlamp connector. This may be a standard BMW fitment or an owners mod but either way it seemed like a good idea, The housing was rubber mounted at the back of the shell and wired into the harness and the flasher unit just pushes into the housing making a change quick and easy. The other innovation was to use a connection board as fitted to the later airheads inside their headlight shells. This provides a multitude of colour coded connectors for linking things like the indicator cables and as a distribution board for power. This was bolted down to allow a firm base. The MZ headlamp being larger and not housing a speedo gives a lot more room as well. A standard MZ ignition switch has been used which is fixed by three screws and can be easily changed if it goes wrong. The key itself is very similar in appearance to the BMW key and I doubt many would notice the difference. All in all I was very pleased with my efforts and the end result is shown below. I forgot to mention that I had also fitted a voltmeter and a clock both of which had been acquired as part of the makeover. As a temporary measure a bicycle speedo is also fitted, this was calibrated before the bike was stripped against the original speedo and is pretty accurate.





With the front end virtually complete, I was able to tackle the back end. First the LWB sub frame and rear mudguard were loosely fitted just to make sure it all went together properly; which fortunately it did. I was relieved to find that the original cables to the back end were still on enough otherwise I would have need to splice in extra pieces. On the original rear sub frame the cable runs though the top tube but the LWB sub frame has no such feature so the cable will have to run alongside the top tube. This may be why it is still long enough. The battery box was then offered up and proved to have totally different fitting. After some pondering I made up a pair of top mounts in very strong plastic which was heated and hammered to shape. The bottom sits on rubber tubing from a car top hose and “U” shaped metal brackets will be riveted to the base of the battery box to locate it on the rubber mounts. This combination should be strong enough and provide some insulation from vibration.

The sub frame was them removed ready for powder coating which have me space to fit the LWB swinging arm assembly. This was a little fiddly but my workmate provided support for the back end which allowed me to manoeuvre the front end into place and centralise the taper roller bearings. Connecting the drive shaft to the gearbox is also a fiddly job and needs a very thin 12 point ring spanner. There is a torque setting specified for these bolts which have to be replaced every time. How on earth you get a torque wrench in there defeats me so I just did them up as tight as I could. The bevel box was then given a good clean and fitted to the swinging arm with new gasket. Normally I don't use gasket cement with paper gaskets but I made an exception tis time and used Wellseal on both sides. The drive shaft was filled with oil and so far it seems leak free.

Monday 7th January 2013.

I only started this log today so there are no specific dates for the previous tasks and they may well not have been tackled in exactly the order suggested but they do reflect most of what has been achieved so far. Today was significant in that the powder coater was due back from holiday. However, when I visited his workshop it was still locked up. Worse still, when I rang the number later the phone was answered by his wife who could not tell me when he would be back and indicated that the business may not be re-opening. This was a big blow but after mulling it over I did a search on the internet and found another powder coater a few miles away. I took the parts to him yesterday afternoon and am satisfied that he will do a good job; his main business is restoring the magnesium wheels from Ferraris and the like. The only drawback is a three week waiting time unless he can fit in my job earlier. Until the rear sub frame is painted not much more can be done.

Tuesday 8th January 2013

I have a cunning plan regarding the re-calibration of the MZ speedo. They are relatively easy to dismantle and I have an old broken one which has been stripped to gain access to the dial. Using this as a template I have made a new dial with revised settings; the pictures are shown below – original dial on the right:

At present I have no idea how accurate my new dial is but that is not critical for now. The important thing is that I have a template against which to mark up the settings once these are known. The new face will be laminated for strength and appearance and the white areas with be punched or cut out. In the case of the

rectangle to make the odometer visible. In the case of the circles to show the warning lights. The coloured lenses will push through the holes. This has all been done in trial mode. What I need to do once the bike is mobile again is some test runs using the bicycle speedo as a guide and a chinagraph pencil to mark the present speedo dial for various key speeds. I can then adjust my template; it will not be totally accurate but near enough. Of course the odometer will still be uncalibrated but so far I have no solution to that. Based on my previous experience of fitting an MZ speedo to a BMW R45, the speedo will under read so using an MZ speedo calibrated to kms will get the odometer closer to the truth. There is even a faint chance that a standard kms speedo will be close enough to use without my other mods. . Anyway it will be fun trying and I am now scanning Ebay for a kms speedo as a donor.

Friday 11th February 2013

Well I guess it must be my lucky week. On Wednesday afternoon I had a phone call from the powder coater to say that he had managed to fit my job into his schedule early and it was ready for collection. I was at his door pretty much before he had put the phone down. Not able todo much that day but and I was busy on Thursday morning but Thursday afternoon saw the back end of the bike reassembled together with the new seat and the luggage frame which I had on the shelf for a while but which would not fit the SWB back end. I have matching panniers to the frames so this could be useful and it does give me a rear carrier. I left the battery on charge overnight and it was just a question of connecting up the rear light and fitting the silencers which I did this morning. Now for the acid test, would the bike run. Initially the answer was no. All I got was a machine gun rattle from the solenoid and I wondered if the battery was shot. Then I noticed that the thick earth lead from the battery to the engine was not connected. Putting this right got the starter motor churning and after a few coughs and splutters it rumbled into life. Not wonderfully smooth but at least it was alive.

This was a great relief so I got connected up the strobe light and checked the timing. One issue with the Boyer electronic kit for BMWs is that there is positive way to set the static timing. All I could do was stick the back plate in the centre of the adjuster slot and hope. In fact it was far too advanced but after a couple of trial adjustments I got the timing marks where they needed to be. They recommend running dual plug systems like mine about 6 degrees retarded from the normal setting. No real way of measuring this so I settled for the full advance marker at the bottom of the inspection hole instead of the middle for now. Next job was to adjust the carbs. Other than removing them from the bike they had not been touched so it was a bit puzzling that the tickover adjustment was way out on both carbs but eventually I got a sensible tickover speed and hopefully they are reasonably well balanced. Later boxer twins have a connection for vacuum gauges but not on my early model so it is always a bit of guesswork. I do have a Colortune device which I will bring into play later if I am not happy with the settings. One reassuringthing was that the bike will now start on the kickstarter without too much drama. This was a feature of the bike when I first got it but something that had become difficult, not to say painful later and may well have coincided with the incorrect setting of the valve timing.

No excuses , so it was helmet on and down the road for a first trial run. Really there was nothing much to comment on. The low speed running is a bit lumpy so some fine tuning of the carbs is still needed but even this was getting better as it warmed up properly. The right and mirror needed resetting and the left hand mirror had to be found and fitted. There was a rattle from the clutch or gearbox which disappeared when you pulled the lever in. I suspect it has always been present and is probably the thrust bearing; not

something I am going to agonise over for now. The new LWB back end worked fine and frankly I did not notice any difference on my test run.

The MZ speedo worked but at 20mph on the bicycle speedo was only registering about 7-8mph. This was much lower than I expected so I did some test with a couple of other MZ speedos using my electric drill. I found one with that produced around double the speed for the same input revs so this was fitted instead. By now it was dark so further testing will have to wait another day. Tomorrow rain and possibly snow is forecast so it might be a while. The only down side to this speedo swap is the colours of the warning lights. Neutral is now red and main been is green. I should be able to sort this out when I have re-calibrated the whole thing so will live with it for now. One other thing that was reassuring was the headlight alignment. I thought it might be too high even in its lowest position which can be comfortably achieved with the current set of dents. However, It seems to be ok subject to a more rigorous check. The bike got a bit dirty and greasy while I was reassembling so it was due a clean and polish before I wanted take any photos

of the finished (well almost) product. The small picture is a reminder of what it looked like when I bought it. Not a huge difference in some respects but the original photo does mask a lot of detail faults. I am happy with the result anyway and it has turned out pretty much as I wanted. Just the speedo to sort out as far as I know; however, looking at the picture I can see the rear indicator is not quite aligned.


750cc


750cc

Saturday 20th April 2013

Amazing how time passes so quickly. The R75 has languished in the garage for nearly two months. Main reason was the difficulty in getting the bike to start and run properly. After a lot of cranking it would reluctantly fire up on one cylinder for a few seconds then stall. Eventually with a very delicate hand on the throttle it would pick up on two but it was clearly not happy and mostly the battery went flat before we got that far. With the wet and cold weather we have suffered this spring, there was no incentive to try and ride the bike so other jobs took priority. I did treat it to a new Varta 30amp battery and this got it started more reliably but did not help the poor running.

Eventually I decided that it had to be carb related so I ordered a complete set of main and pilot jets, floats and the air adjuster screws plus all the 'O' rings. An eye watering cost for a small packet of brass bits. I had already replaced the needles, needle jets and diaphragms in Summer 2012 so did not see the need to replace them again. Finally a warm sunny day arrived when I felt in the mood to play with BMWs again.

I replaced the pilot jet and pilot adjuster on the LH side for starters. This can be done easily with the carb still on the bike. First check was fuel level and this was spot on and as the carb was currently not leaking at all I decided leave the float for now. Nothing obviously wrong with the pilot adjuster though the 'O' ring was a bit manky. The pilot jet itself was quite corroded and the 'O' ring was in the wrong position, near the top of the jet rather than at the base. Whether it got into that position as I removed the jet or had been fitted incorrectly, I don't know. Anyway once the new bits were fitted I tried to start the engine which fired up much quicker than before and seemed much happier. Same treatment to the RH side where the pilot jet was in a similar state and the adjuster screw was missing its tensioning spring (fortunately I found one in a spare carb). Fuel level was also correct so I left the float for now. The bike then started immediately and settled to a very reliable but far too fast tickover. This was easily remedied and even though cold it now had the best tickover I have ever experienced with this bike; no farting or coughing in the silencer and running evenly on both pots. It still needs a road test to get it really warmed up and the carbs properly balancied but I am feeling much better about BMWs than for some time. In fact I may even take it for an MoT next week.

Monday 22nd April 2013

Well the bike started first time every time I tried it out over the weekend so it was ridden to an MoT station this morning. Flew through the test no problems and rode very well apart from a lumpy tickover which I was expecting as I had not yet tried to balance the carbs. Back home and nicely warmed up I tweaked the carbs until I had a smooth tickover at 1000rpm and a clean pickup. Just about to declare the job done when the bike suddenly stalled. No sparks, no starter motor and no indicators. My heart sank as this seemed like a repetition of the September incident, though then the starter motor would still work. Everything else seemed to function ok and no blown fuses. Took the headlight unit off and inspected the wiring, no obvious problems but when I pressed the starter button it was live once again as were the indicators. The motor also started and ran. Clearly I had a dodgy connection and firkling in the wiring had temporarily at least restored life. I resorted to removing all the ignition switch controlled leads from the fuse board one at a time until I identified one that disabled the starter motor, though curiously the indicators still worked. Nothing obvious wrong with the connector so I carefully put everything back and the bike now runs fine again. Not happy as I have no confidence that I have found and fixed a fault so the bike will get some local test rides until I am confident of its reliability. I doubt there is any direct link with the September problem as the whole wring system has been stripped, repaired and in the case of the ignition switch, completely replaced. Just hope I

can find it soon without a major breakdown situation as the bike is scheduled for use at Weymouth in mid-May. B*****r.

Friday May 30th 2014

Work has continued on the BMW over the last 2 months, but with the advent of the riding season I switched from maintaining an individual diary for each bike to a daily blog covering all my motorcycling activities. It is now time to précis events concerning the BMW. The intermittent electrical problem continued to plaque me. Very time I took the bike out for a run it run beautifully for somewhere between 5-8 miles then suddenly stop. Each time I removed the headlamp and fiddled around with the wires and it would start working again and usually get me home without further issues.

After experiencing this 3 or 4 times I began to lose heart and confidence in the bike so it sat unloved for several weeks until I decided to carry out an in depth investigation of the whole wring loom. Eventually I found one fault, the wire linking the coils was missing. BMWs use twin 6v coils wired in series. I finished the checking but found nothing else amiss so I replaced the wire and took the bike for a 30 mile ride. Not a single hiccup or misfire – what bliss. Since then it has been used on several 100 mile plus runs without any sign of the cutting out problem so I am pretty sure that was the cause. Quite how the bike ran at all is a mystery and I think it's because it is twin plugged so that it was only running on one coil which got overheated. I suspect that my fiddling around with the wires in the headlamp had no direct bearing on getting the bike running again other than letting things cool down.

Anyway another problem reared its head when the slow running got very lumpy making it really unpleasant to ride. When checked over at home I found the offside choke cable was not shutting down properly and I had balanced the carbs with the choke partly on. Once found it was not difficult to fix and I used the Colortune to set the mixture at the same time as the plugs were looking rather sooty. Despite this a further check later still showed the plugs rather rich so attention is now due to the float levels and the needle positions.

Whilst doing this the I thought I detected a leaky seam in the petrol tank so it had to come off and be drained down as I had filled it to the brim earlier in the day. After extensive testing I found no trace of a leak however, I did find a small patch of filler lifting at he rear of the tank, fortunately in a place which is not readily noticeable. In case it was leaking from behind this point and causing he lifting I removed the filler and did another test but again no trace of a leak. So I replaced the filler and painted the tank. I think in retrospect that the dampness I detected must have been residue from over filling but better to be safe than sorry.

Finally a couple of weeks ago I carried out one of my periodic reviews of the bikes in my garage. I finally concluded that I much preferred riding my MZs for short-medium journeys and the Honda Revere for longer trips plus of course the British bikes for certain other type of event. The BMW sadly scored low in the analysis and I have decided to put it up for sale as it was simply not going to get used and it takes upa lot of space. I have written up a warts- and-all advert for Ebay and we will see what happens. This was the main reason for updating the diary as I intend to make it available to the new owner.

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