Simson AWO 425 Restoration Diary

Every since I first saw a picture of the Simson AWO425 250cc I have wanted one. The first I saw in action was Phil Speakman's model which he rode to the 2009 MZRC AGM at Whitchurch and this just confirmed my lust. A trip to Shaftesbury in May 2011 to meet up with the VMCC Weymouth Week revellers brought another sighting. This was being ridden two up by a German couple, it was cosmetically challenged but sounded wonderful when they departed. This is a picture taken at Shaftesbury to give an idea of what these bikes look like in well used condition plus a picture from the internet of what I hope mine will look like when restored:

In the July issue of the MZRC magazine was the first advert I had ever seen for a 425 so I rang immediately and arranged to visit the next day. We were made very welcome by Steve and his wife Carol not only being offered a drink but lunch as well; we settled for coffee and toast. Steve is Hungarian by birth but has been in the UK since the mid 1950s. He has quite a collection of bikes, mostly beautifully restored including for MZ fans an immaculate BK350. He had brought the 425 back from a holiday in Hungary in 1999 along with the BK350. Steve confirmed that the bike had been running when he bought it.

The 425 was virtually complete but most of the mechanical parts had been dismantled. Steve gave me a run down on what he had found wrong or needing attention which I felt were not show stoppers. He had also collected a few new parts ready for the restoration which included an original silencer. The deal was soon done and we managed after a bit more dismantling to pack everything into the back of my Citroen C3. One thing which was immediately apparent was that this was no lightweight; everything was solid and heavy. The photos below shows the back of my car when we got home.

Friday 1st July 2011

Back home the first job was to unpack all the boxes and do a quick assessment of what we had and perhaps more particularly what we didn't have. On the rolling chassis side the only obvious missing item was the speedo cable. The tank had some brazing around the fixing holes which will need to be tested, there are a couple of dents and the chrome is fairly poor. A more rigorous examination is needed but hopefully it will at least be usable in the short term. There was also signs of welded repairs at various points which suggest that vibration may have been as issue on this bike. However, no show stoppers that I could see. The engine is probably complete but it's in so many bits I have no real way of telling as I have yet to acquire a parts list. I found the broken cam follower and home made push rod Steve had mentioned so they will be an urgent requirement, The cam shaft itself looked fine and all the various bearings I could identify were common metric sizes so they should not be a problem, The crank journals look fine but there is a bit of play in the big end so it might pay to get that sorted sooner rather than later. There were three barrels and two cylinder heads so I should be ok in that respect. Pleasingly, the engine and frame numbers matched. Speedo was present seems to work ok and showed about 36k kms (about 23k miles) no way of knowing if this is correct, probably not given the broken speedo cable. The gearbox thankfully was still complete and seems ok all the gears select via the hand change lever, the foot change lever is still proving elusive. Final act of the day was to examine the paperwork which was somewhat limited. The original Hungarian log book showing the date of first registration as 17th May 2011. The frame number matched that on the bike and the VIN plate also showed 1960 as year of manufacture. There were also a few Hungarian vehicle tax receipts, the most recent dated 1979. The only other paper work was the Customs receipt showing duty paid in 1999 and a workshop manual. This was in Hungarian so apart from the pictures of limited use at present. Below is a picture of the frame etc set up on my work bench ready for the project to begin:

Sunday 3rd July 2011

I was away on a rally on the Saturday so this was my first day on the project. I was not intending to do anything much today but a bit like eating peanuts, I just could not stop once I got into the garage. In the end I spent from 10am to 4pm on various tasks. A lot of the time was spent trying to work out how things fitted together and cleaning up various parts. The rear brake linings were well soaked in oil so clearly the oil seal from the bevel box will need attention (did I mention that this bike has shaft drive). Moving on to the frame I removed the battery box and tool box and the air box came away as well. A few minor dent in the box lids but easily enough to beat out, a little

rust but nothing serious. The swinging arm was next and was a bit reluctant but eventually the pivot pins came undone. Very simple design and no obvious signs of wear so that was encouraging. The arm itself had a ball joint for a sidecar fitting which I decided to remove for now in the interests of saving a little weight. Likewise the pillion footrest and mounting arms. As you can see fro the picture above the bike has twin saddles so I intend to build it as a single seater initially. I disconnected all the wiring which freed up the headlamp. This had a couple of dents so I removed the speedo and the remains of the wiring loom (no ignition switch fitted but there is one lurking in one of the boxes) There was also a piece of paper in English listing which wires went where. This may be useful as so far I do not have a wiring diagram. Fortunately, the wiring harness, though a bit battered seems complete and the wires are all plain colours so making a new loom should be fairly straightforward. I treated the headlight shell to some panel beating and I think it will be satisfactory so that was a win. The forks had already been removed to get the bike in the car but the wheel as still attached as we could not get the front spindle out. Initial fears about massive corrosion etc proved groundless. Once I had found and undone the spindle locking bolt and established it was a LH thread, it came out easily. The wheel and brake assembly seem ok so it was put aside for now as were the rest of the forks. The headlight shrouds were both bent and had both been poorly welded at the ears; yet more evidence of vibration. I did manage to straighten them up and generally tidy them enough for short term use though a bit more angle grinding on the welds would be beneficial. They seem very similar to the MZ TS items so I may substitute a pair of those instead.

Back to the frame and I decided to tackle the stand which is pivoted on extend bolts holding the footrests. This proved the trickiest job of the day as both had clearly been bodged before using none standard bolts which defied all my attempts to undo. In the end I resorted to drilling of the head of the first one but it took so long I decided to leave the other until another day. I will need to make up a pair of new pivot pins and bolts and it looks as though I will need to bush the stand pivot holes somehow. A satisfying day and time to write up my progress and do some research on parts and literature.

Tuesday 5th July
Some more time in the workshop today so the first job was to remove the other footrest bolt. This was not an original type anyway so I took the angle grinder to it and it was soon off. Apart from the VIN plate, the frame is now bare and ready for cleaning up and painting. Next job was to address the slack fit of the wheel spindle in the lh side of the swinging arm. A careful session with a hacksaw finally achieved a satisfactory size of slot which just about pinches up. I don't want to overdo this so I plan to zinc plate the end of the wheel spindle which will smarten it up and add enough metal to give a tight fit. Another job sorted and something else ready for prep and paint. The rear mudguard caught my eye so I removed the number plate bracket which was very bent and the rear light unit; in both cases the angle grinder was needed to remove the rusted bolts. The light unit is from an MZ and not correct for this period of bike so a proper light unit is now on the wish list. Otherwise the rear mudguard is in good condition no dents or splits and should come up well. The front mudguard had a small piece broken from the end of one of the stays so I spent an hour or so carefully drilling and filing a new end piece. This is temporarily held in place by a small bolt until I can get it Mig welded. Next on the list were the tool box and battery box. All extraneous bits were removed including the locks. One neat touch was the stop light switch which actually sits inside the battery box. Both boxes needed a little gentle panel beating to the lids but are now in the pile for prep and paint. Flushed with success I decided to have a look at the front forks. The rh one seemed fine and the chrome bottom leg cleaned up well enough to use for now. The painted top gaiter seems to be integral with the stanchion so will have to be painted in-situ. This precludes shot blasting as I don't want the grit getting into the works and likewise powder coating is out. Still they should be an easy enough job for hand finishing. The lh leg had a broken spring but luckily, the wire diameter and coil diameter is identical to an MZ front fork spring so I cut down one of those to fit for now. One thing which puzzled me was the lack of any oils seals unless the are inside the painted top covers. I guess this enigma will be resolved in the fullness of time. As a finale to work on the forks, I cleaned up

the appalling welding on the headlight shrouds with the angle grinder; I think they will now look fine once painted though one needs a small amount of Mig welding. Final workshop activity of the day was to clean up and assess the wheels. The spokes are quite rusty on both, not a safety issue but definitely a cosmetic issue. Likewise the rims are a bit challenged with most of the chrome bubbling and some actually missing showing bare rusty steel. The hubs themselves are good quality aluminium castings and in fine condition. I don't want to splash out on a full rebuild at this point as my ultimate goal will be s/s spokes and aluminium rims of the pattern used on MZs. Sourcing these parts will take time. As a short term improvement, I will do my usual trick of removing a few spokes at a time and cleaning them up in the rotary wire brush. This also enables better access to the hub and rim for cleaning. Final touch will be to paint the spokes and the worst of the rust patches on the rim with silver paint. The overall effect is quite good and the cost minimal.

On the computer I have had some limited success in identifying potential sources of spares, literature and information but it is slow going. There is an AWO425 forum in Germany, which I am slowly working through with the help of Google Translate. This has already turned up a wiring diagram and a spares book – albeit for the earlier plunger frame mode but it will probably be helpful in some cases. A more rigorous search on German ebay has found some useful spares but none from sellers who will post to UK as yet, ideally I want to find a single seller who can supply all the bits I need as otherwise the postage costs will be horrendous.

Wednesday 6th July

Mostly tidying up and sorting out today. I went through all the boxes again and sorted everything engine related into one box and another box of duplicated stuff I hope not to need, This latter box was put in the shed to make more space in the workshop. I made a further check of the stuff which needs painting sorting this into things that need welding first and things that are otherwise ready to go. The latter were masked up where necessary to prevent grit and paint getting where it's not wanted. As luck would have it my friend John turned up to have a look at the Simson and was duly impressed with the build quality. He also kindly offered to do the welding jobs using his gas welding set. This will be a boon on some of the more delicate bits which I was rather concerned about. I examined the engine parts in more detail; the barrel is 70mm which is 2mm oversize and possibly on maximum. There is another barrel with a lot more meat in the liner so I may have to use this. I finally worked out how to assemble the clutch, on the bench anyway. Quite how I can do this and centre the driven plate when it is in the housing is another matter. I also noted that there seems to be no thrust pad in the pressure plate; in fact it looks as though it has been running without one so that's another item to research. I cleaned the magneto; this bike is very British as it also has a 6v dynamo. One of the bearings felt a little rough but I have run some thin oil down the shaft to see if that helps. It was sparking ok so I may get away with that item for now, The magneto is of the rotating magnet type but an unknown make so good knows who I could send it to for repair. I am not too worried at this stage as there are a number of options regarding sparks. One other helpful factor was a picture I found on the internet of the front forks. Armed with this knowledge I was able to remove the shrouds so they can now go for powder coating as well. Even with the diagram, I still cannot figure out where the bushes and oil seals are located. I also found an owners manual on the internet which I have downloaded and am laboriously translating using Google. Early finish today as its club night.

Saturday 9th July

Over the last two days I have tackled the wheels. The front has been dismantled a few spokes at a time to enable them and the hub to be properly cleaned. I then checked and adjusted the run out to make sure it was still true and finally painted the spokes and the inside of the hub with aluminium paint though it was actually quite good. A few words to describe but a full afternoons labour. However, the result can be seen and the only cost was some paint and a few hours of my time. Something done and finished at last.

Flushed with success I had a go at the rear wheel but rapidly gave it up. A lot of the spokes seem to be damaged and could not be unscrewed and the rim was never going to clean up satisfactorily. So I dismantled it completely and cleaned/polished the hub ready to be sent to the wheel builders. I have a fetish for shiny wheels so it will get s/s spokes and a good quality chrome rim. This will take about 6 weeks so sets the agenda for other work.

Next on the list was the second rear shock absorber. This was stripped, cleaned and refilled with oil and works well. The outer covers were polished and it is now in the completed items bin. While I was in the mod for cleaning things, I had a look at some of the engine components. The piston and barrel were cleaned and examined. The piston is a good fit in the barrel and I think it can be used at least for the preliminary engine rebuild. I cleaned up a second barrel, which is currently on 69mm so I will be able to buy a 69.5mm piston and have the barrel rebored at some stage. I cleaned up the outer crankcase cover and removed the second crankshaft support bearing; it's a standard 6205 so easy to replace. The mounting for the dynamo is the same as an MZ so I will be able to use an MZ dynamo. This will give me 60W instead of 45W for a brighter headlight as well as avoiding any issues over the functionality of the Simson dynamo. Final job for the day was to remove the timing pinion and support plate from the crankshaft. This gave access the timing side main bearing, a standard 6206 that was sorely in need of replacement. It also gave access to the oil thrower disk which was full of debris and badly rusted. I presume that this is a centrifugal oil filer but quite how the oil gets into the filter let alone the big end is baffling me at present. Anyway a new centrifugal filter disk is now on the shopping list. I have found a web site which sells complete new 425 cranks but they are near £300. Having got a second opinion I am inclined to make do with my existing crank for now and use the money saved for other things that are more urgent.

Monday 11th July
Put the rear hub in the lathe and gave it a good clean and polish. Now parcelled up and posted to Brickwood Wheel Builders in Salisbury; estimated 4-6 weeks. I managed to get the old centrifugal oil thrower of the shaft and cleaned out the crankpin oil ways. A quick test with some thin oil established that there was clear a path through the pin to the big end. Next on the list was the cylinder head. This required the manufacture of a tool to adapt my standard valve spring compressor to hairpin springs. Very successful and the collets were soon out. The inlet side looks ok, little play in the guide and the valve seat look ok as well though it needs a re-grind. Lots of play in the exhaust guide so the shopping list now includes an exhaust guide and valve. All the external casings look sound enough but quite badly stained. We have a guy locally who does soda blasting which is a lot less aggressive than shot blasting and can be

washed out. I will enquire about the cost of having the engine and gearbox casings done. I also made up a tank filler cap with a Schrader valve so that I could pressurise the petrol tank to identify any leaks. Unfortunately, I found that air was escaping from around one of the fixing holes where some brazing had already been done. This will need attention. Not time for much else today, wife returns from a girl's weekend away so I have a house to tidy up and a plane to meet.

Tuesday 12th July
Quite a lot of progress today. I have joined http://www.awoforum.de/ on the web which seems to have over a 1000 members. Though the membership is predominantly based in Germany and the site is mainly in German, with the help of Google translate I have been able to read some of the posts and through them found useful documentation and established a few links with other members. They have very kindly suggested that I post my questions (of which I will have many) in English as many members are fluent in that language but I will try to upgrade my language skills as well. I have submitted a photograph of the various parts that I believe comprise my crankshaft assembly and am waiting to hear if I am missing any items.

I hope the group will be able to put me in contact with suitable spares suppliers as well. This evening I visited my friend John who has gas welded various parts very neatly. We also discussed the tank. Reluctantly, I was beginning to feel that a tank sealant was the only answer but with all the Ethonal issues not a solution I really wanted to employ. Anyway. John tried applying more braze to the area where I had detected the leak and another spot he was suspicious of. What a star, when I got home and pressure tested it the tank was airtight and hopefully petrol tight as well.

Wednesday 13th July
After a bit more tidying up I laid out all the items to be powder coated and took a couple of pictures. I use these as a reference for the powder coater so that he knows which bits are mine. We can jointly use it when I pick up the parts to make sure I have them all.

On the way back from the powder coater, I dropped in on a paint shop which had been recommended and showed them the tank and a picture of another bike I had downloaded from the internet. They agreed that they could match this paint scheme (see the bikes picture at the beginning of this article) but I need to get a better photograph to give a clearer idea of scheme detail. Having now looked at all the photos I have downloaded so far, I realise that they are all very low-res so another task looms. Painting the tank is going to be very expensive (circa £400)

so my plan is to clean it up at home and do a temporary paint job myself to get the bike on the road and sorted. Once I have overcome all of the other issues that will undoubtedly arise and am happy with the bike, I will then splash out on the proper paint job.

After lunch I spent a couple of hours stripping and cleaning the fork yokes, kick start lever and sundry other smaller parts. Some will be painted silver, the smaller parts will be bright zinc plated. In the process of cleaning I found a crack in the bottom steering head bearing so that's another item on the shopping list.

Thursday 14th July

Today was a painting and plating day and the results can be seen in the picture below. I bright zinc plated the smaller parts including the uj cover for the bevel box and the rim of the speedometer. The bigger bits were painted with silver wheel paint then clear lacquered. While the speedo was apart, I cleaned it up as best I could and repainted the needle. Not spectacular but satisfying and a few more parts completed ready for the rebuild. I had another look at the front forks. The chrome on one leg cleaned up pretty well so all I needed to do was touch up a small rust spot which I don't think will show in use anyway. The chrome on the other leg was worn very thin and no amount of polishing would bring back a shine. However, I found that the silver wheel paint gave a very acceptable finish when I did a test piece so I think this will do nicely. I had another look at the internals and I am still unclear about the existence of oil seals, I found one damper rod was bent, probably on the side that had the broken spring but it was easy enough to true up. There also seems to be a lot of free play on both legs and I need to find out the correct spring length as mine may be too short. I put a 20mm spacer in each leg and that took up the free play nicely. The exhaust pipe has been sprayed with BBQ paint and is a precautionary measure. I hope to be able to buy a new pipe before it actually goes on the road. Likewise the handlebars which are special to this bike with a push-pull twist grip. Really they need chrome plating but it takes forever and costs a fortune so I will soldier on with these and try to get new ones in due course. Tomorrow I tackle the petrol tank.

Friday 15th July

A succession of domestic distractions and visits by friends today means that I did not get much time to work on the AWO. I have started stripping the paint on the tank and its has obviously been repainted at some time in the past as it's a bit like peeling an onion. The bottom layer of

paint must be stove enamel or similar as it is very tough. This is going to be one long job. I also had a visit from the guy who does soda blasting and he has taken away a sample piece to see how well it cleans up. If its looks good, I will give him all the engine castings to do. The nice thing about soda blasting (actually baking powder) is that it is water soluble so will not leave any nasty grit in the engine.

Saturday 16th July

The tank has now been stripped of paint. What a job, took me nearly all day. It had clearly been repainted at least once in its life and the primer they had used was quite hard even when softened with a hot air gun. The original paint underneath this (which I assume was stove enamled, was even harder. However, it is now all done and I have repainted the bottom with Hammerite as a protective coat. The good news is that no new holes or dents were found and the base metal seems very sound. A couple of pictures below show the progress:

The tappet cover was also returned from Soda blasting in the afternoon and a picture of the result is shown. I have not polished it yet, just rubbed it over with a pot scourer to see how it would respond. I was quite impressed, Normal shot blasting would have left the surface much more deeply etched and required a lot more work to polish up. I will eventually have the whole engine done. However, this will be delayed until I have done a preliminary build to make sure everything is present a shipshape. This will be a messy process and I don't want to spoil a freshly blasted set of cases.

In between these jobs I repaired the footrest/centre stand fixings which I damaged getting them off. I drilled the remaining part 9mm and tapped 10mm then screwed & welded in place normal 10mm bolts. This makes them look identical to the originals; the small heads are needed to get a socket in place for tightening. I am still concerned about the lack of oil seals on my forks and reading up the technical section of the AWO Forum (with the help of Google Translate) it seems that there may be an issue with getting the parts. There were several mentions of using MZ forks, and since I have a spare set lying around I decided to investigate. The hole in the bottom yoke is about 37.5mm (MZ stanchions are 35mm) so with a suitable insert, they would fit. The MZ stanchions fitted the top yoke but would need a tapered spacer to make a really tight fit. So I do have an alternative if I cannot repair the original AWO forks.

Sunday 17th July

The tank has now been rubbed down, masked, primed and sprayed with black smoothrite. Not a professional job by any means but it look pretty good to me. Certainly it will do for the initial rebuild. The hard part is having the patience to leave it alone for 2-3 weeks to let the paint harden properly. Then it will need lining and lacquering. In between waiting for primer and paint layers to dry I tackled a few other small jobs including stripping the carburettor. This nearly turned into a disaster when I found that the steel float needle had corroded into the float. My attempts to ease it out resulted in the inner tube of the float coming away with the needle. Fortunately there was part of a carb in the spares that came with the bike including a perfect float and needle, so disaster averted. The rest of the carb was very dirty and corroded but cleaned up and I think will be fine. I also had a look at the two seats. They are of the sprung frame type unlike British bikes which use dense foam padding. Structurally they are both fine but ideally they need dismantling so that they framework can be shot blasted and powder coated, Doing this is most likely going to damage the seat covers so I will leave them alone for now and try to find some replacement covers on the internet or failing that see if someone local can make me a set. I have made MZ seat covers in the past but these seem a bit more complex and beyond my sewing skills. A productive day I feel and to top it off I found a full colour wiring diagram for bike. This will make the electrical rebuild a lot easier.

Monday 18th July

The tank had dried enough today to remove the masking from the chromed section. I had taken careful templates of the panels before stripping the old paintwork and used these to create the masking. However, comparing my result with some pictures from the web, it was clear that the chromed section needed to extend almost to the rear of the tank. In fact the problem was quite easily solved. I laid some masking tape over the rear section and then drew on the required shape. The outline was cut out using a Stanley knife and then peeled back to the outline also with a sharp blade. As the paint was still quite soft this was easy to do. Not a perfect job but certainly good enough until I can afford a professional paint job. The result so far is shown below.

I also spent some time on the internet mostly on the awo425 forum site (http://www.awoforum.de). What a boon this has been, so much help freely given. Thanks to this help, I now have confidence to rebuild the motor once I have secured the parts.

Tuesday 26th July
Cannot believe that it is over a week since I updated the diary and I am having difficulty remembering exactly what I have done with respect to the AWO in that time. A lot of it has been research on the internet trying to find information and parts. Most of the bits I need are available but irritatingly not all from a single source. To add to the problem, some sellers will not post outside Germany and/or do not take Paypal making paying for items a bit tricky. On the positive side, I have taken the cylinder head to a local engineering shop. They will be able to fit new valve guides and valves. They can also replace the valve seats but it is not clear yet if this is needed. I am consulting the AWO Forum on the subject. Pictures of the head with and without valves below:


The big question is whether the deep recess of the inlet seat is a design feature or the result of 50 years abuse. I have already established that the exhaust valve is incorrect the one fitted is 36mm whereas it should be 34mm.

I have also made up a tool which I hope will enable me to fit and centre the clutch. I will add a picture later. As things were a bit quiet, I also decided to strip and plate the pillion footrest assemblies. I noticed later that you can buy replica footrests for about £17 but at least mine are now shiny and the originals. I also found a complete but very rusty oil thrower on an old crankshaft. After carefully removing it (I had to drill out the retaining ring which was very tight), I spent the best part of an afternoon cleaning it up and then left it soaking overnight in pickling acid. Today I plated the thrower, mainly to stop it going rusty again as clearly paint was not an option for an item running continuously in hot oil. Came up quite well as the photo hopefully shows. These centrifugal filters collect an amazing amount of crud from the oil and it packs tight setting like concrete. The picture also shows the carb which cleaned up well and the rear struts which have also cleaned up pretty well, the heads of the bolts were also plated. I have now surveyed everything and have a pretty good idea of the bits I need to firstly complete the rolling chassis and secondly to rebuild the engine. About to spend money rather than time I fancy.

Sunday 31st July
Well I am now a month into the project and not a great deal to show for the work undertaken as yet. I am in the waiting game. Firstly for the frame and tinware items to be returned from the powder coater, secondly for the rear wheel rebuild to be completed and thirdly establishing prices and sources for the parts I need. I have confirmed that my head will need a new inlet seat as well as exhaust but both are on hold until the guides and valves are obtained from Germany. The new guides have to be inserted before they can replace the seats. Workshop activity has come to a halt as I have run out of bits to work on. I did manage to take a picture of my home-made clutch compressor/centering tool which is shown alongside. Out of interest I have been looking at the design of BMW's singles particularly the R25 and R26. As you would expect, the AWO shares a lot of features including (to my eyes) the somewhat archaic oiling system using the oil flinger. This was a standard feature of all BMWS up the /2 models of the late 60s. Unfortunately, as far as I can see, none of the parts are interchangeable.

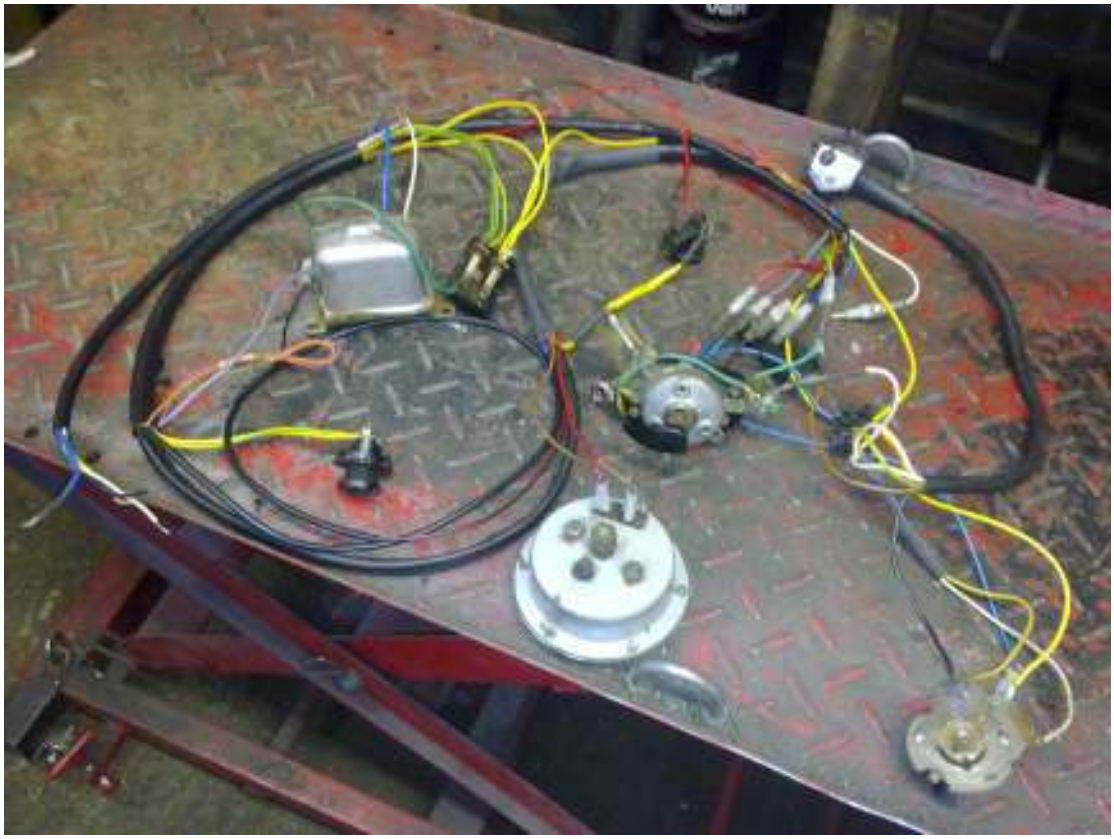
Sunday 7th August
Another week gone by, still mainly a question of waiting. In any event, I was quite busy on other things so perhaps it was as well for domestic bliss that the AWO was not dominating my time. I have been agonising over the list of parts that I need and the list is growing longer each time I inspect the engine components. Just about everything in the engine seems to be worn to the point where the only sensible action is a total rebuild. My original intention was to do the minimum to get it running and I would have preferred to buy a few parts at a time and spread the cost over a longish period. However, Getting parts from Gemany is proving complicated as the shipping is relatively expensive for small parcels and most suppliers do not take Paypal or other similar easy payment methods. The only way seems to be a bank transfer which costs £10 each time. Overall, it looks as though the sensible option is to buy everything in one go and raid the piggy bank to pay for it. Hence I am agonising over the list before confirming the purchase.

Back to more enjoyable workshop matters. I gave all the major engine castings a good soak and scrub in my parts cleaner to get rid of the oil and grease. Taking advantage of my wife absence for the week, I put everything into the dish washer with a double dose of cleaner tablets. I was not overly impressed with the results initially but found that giving them a further scrub with pot scourers and washing up liquid has produced a tolerable finish for now. My original plan to have the engine professionally cleaned will have to be deferred to free up funds for the spares. This is how they look:

I also decided to make my own wiring loom as this will save about £40. Started the job last night and progressing well. I have enough wire and connectors in stock to do most of the job. It is all laid out and cut to size (using the old loom as a template). Today I will get soldering and wrapping. I quite enjoy this task and it does mean I know the electrical system intimately.

8th August

Well the loom is now substantially complete and has been tested on the bench. I made a few modifications and additions. Firstly I have included additional earth wires to the engine and from the headlight area right back to the battery, With a 6v system this helps to reduce voltage drop. The connector socket, which is I think intended to be for the lights on a sidecar, is now a take-off for a lead light or a battery charger. I have also included 2 spare wires from the headlight area to the back of the bike in case I want to fit indicator lights in the future. Something else I have discovered is that the warning lights (which are an integral part of the ignition switch) are special and known as cup bulbs in Germany. For special read expensive at around £6 each. However, I have overcome this problem by using appropriately coloured leds, soldered into the switch assembly. You can just about see them in the picture below. The only wiring remaining is for the rear light but I need the bike assembled to work out the cable run and lengths. Fortunately my ignition switch is ok at present but judging by prices on German Ebay, they are like hens teeth and very expensive. Just in case it ever goes wrong, I have a cunning plan to use a standard MZ switch which is very similar in construction but does not have the built in warning light and speedo light holders. Also the AWO switch uses screwed connections whereas the MZ switch uses lucar push-on connectors which are much easier to work with in the confined space inside the headlamp. I have therefore terminated all the headlight connections with female spade connectors (lucars) and made up pigtails with male lucars for the switch itself. This will make wiring maintenance a lot easier as all you have to do is pair up matching coloured wires. Overall I am quite pleased with the result.



Tuesday 16th August

Very busy last week on VMCC duties running a Navigation Trial. This took place on Sunday 14th. I have finally issued the results and got rid of the paperwork so now I can concentrate on the AWO again. I have received a list of the BSA M20 parts my German friend is seeking and managed to find a couple of items at an autojumble last Saturday. I also put out feelers for the other required bits so hopefully this will come to fruition shortly. I have finalised the AWO shopping list of parts I can afford at this juncture and this is now with Sebastian. There will have to be a second order later in the year for the mainly cosmetic stuff.

I collected the rear wheel from Brickwood's today and have put on the old tyre for now so that the wheel is useable. I will need to buy a new one before using it on the road as this one has splits in the sidewall where it was left flat for too long. I think something in the Mitas range will give me the suitable traditional block tread pattern. None of the usual British manufacturers have anything I find suitable in the correct size (3,25 x 18). The Dunlop K82 is closest but I have one on the rear of my BSA Star Twin and am not overly impressed with it.

I also put together the major castings of the engine to see what it would look like and make sure I had all the correct bolts etc. It looks quite handsome but very big for a 250 though without its innards, it's not that heavy strangely enough. The new engine bearings were bought yesterday whilst I was at the bearing factors on another task. £30 for five SKF bearings and a seal was pretty good I thought. Only slightly more than the cost of a new speedo cable from Germany (An item I am leaving to the cosmetics stage for now pending inspiration to fix the original one). Friday should see the powder coating items returned and if this proves correct, I can finally start the rebuild.

Sunday 21st August

What a difference a day makes (well actually two days). The powder coating was available as promised on Friday afternoon and I took the following picture of the parts. I don't think it does justice to the quality of the work and I was delighted with the result. As you can imagine I have spent quite a lot of the last two days putting it all back together. Some parts were quite easy, other gave me some grief. Very first problem was the swinging arm bearings. I thought they were metal and left them in the arm but with the holes sealed to stop the powder getting inside. When I removed the selas. The bushes just fell out. They seem to be made of a composite material which has shrunk in the oven. In the end I had to make up some temporary bushes so that I could carry on with the rebuild. The design is such that I ought to be able to fit the new ones when I can get them. Fitting the airbox, tool & battery boxes and mudguard was pretty straightforward as was the bevel box and rear wheel. At last it was beginning to look like a bike, This was just the softening up stage; reassembling the front forks took nearly a whole day. The steering head assembly went in quite easily, the old headstock bearings are satisfactory for now but I did source new ¼" balls. (why do continental bikes still use imperial measures for some

things?). Getting the fork legs to line up properly with the headlamp shrouds and their rubber mounts was challenging as was get the bottom shrouds to fit. This turned out to be a

combination of corrosion on the stanchions and an excess of powder on the inside of the shrouds. Powder coating is tough stuff to remove. Eventually, I did get the forks reassembled and it will be much easier next which will not be too far away as they are quite badly worn and bushes /seals etc are in the shopping list coming from Germany. Fitting the mudguard turned into the next challenge, funny it seemed to come off in a simple and straightforward way but initially baffled me. In fact one of the mounting bolts on each side is still not fitted but I had an epiphany whist walking the dog and reckon I now know how to fit it properly. Getting the front wheel in was thankfully simple and voila the AWO was on its wheels.

I decided to fit the wiring harness and associated electrical equipment next. Initially it was difficult to figure out exactly where it should all go but fortunately I had taken some pictures and this jogged the memory. Its actually very neat and apart from round the headstock, most of the wiring runs inside the tinware, Pleasingly my home made loom fitted perfectly and all it needed was the last few connectors once I had trimmed everything to length. I have used the MZ style rear light unit for now as a genuine AWO type is over £40 and I am not sure it would actually be

legal in the UK as the rear light lens appears to be orange. The only snag I encountered was trying to fit the headlamp rim. It just will not go on. I was getting a bit tired and irritable so have parked that problem for another day. Still a long way to go but signs of real progress at last.

Tuesday 23rd August
Quite a lot to record from the last two days efforts. The engine and gearbox are now in the frame. This proved more finicky that I had anticipated. Perhaps it would have been advisable to read the manual but the one I have is in Hungarian and the pictures do not give a lot of details about this operation. I tried initially doing it the BMW way; engine first, add the gearbox then the final drive. No way Jose. Once the engine is in the frame you cannot fit the gearbox if the swinging arm is in place and you cannot refit the swinging arm once the gearbox is in place. In the end I had to refit gearbox to engine and fit it as a complete assembly. This was not too difficult where the engine is just empty crankcases. It will be a two man job next time when a fully operational engine is fitted. Good practise though. Once this was completed, the bevel box and back wheel went in easily so now it looks like a proper bike. I found that the universal joint at the gearbox end was rubbing on the swinging arm pivot pin. There is quite a lot of space between the engine and the frame and I am not sure if this is taken up by squeezing the tubes together or using spacers. The engine was already out of the frame when I bought the bike but I do recall a load of washers on the engine bolts so I suspect spacers are the answer. This would solve the rubbing problem as the whole engine/gearbox assembly can be moved over slightly to create clearance. I will check on the AWO forum about this point.

The exhaust system also went on quite easily. I have made one temporary bracket to secure the pipe to the engine but will need to talk to my friend Mick to get some offcuts of s/s sheet to make a decent bracket and a clamp for the silencer/pipe joint. The silencer fits on a rubber mounting presumably to isolate it from vibration.

Most of this work was completed on Monday. Today has been a succession small but satisfying jobs interspersed with entertaining my grand daughter and helping the man who was fixing the water leaks in our motor home. Domestic chores get in the way of serious stuff like restorations. Anyway, the brake light switch is now operational, I solved a problem with the brake lever fouling the exhaust pipe at the same time; just a question of bending it out slightly to clear. I fitted a new front brake cable, which came from my MZ stock but was a better fit than the original. I fitted the original clutch cable really just to check up on the cable run etc. A strong spring pulls the arm back to simulate clutch operation for now, All seems well but it's a pretty tatty cable so I will replace this in due course. Next job was to connect up the carb. Took me three attempts to get this right as the cable run is critical. I fitted the speedo cable more for appearance's sake than any other as the inner cable is broken and a new one is a long way down the wish list. Connecting up the neutral switch proved that I did not have the loom routing quite correct so I had to re-lay some of the cables but it was quick and easy enough. The rider's seat only needed the threads in the frame tapping to remove excess paint and it then fitted straight on. It's serviceable but is going to let the bike down so will be an early item for cosmetic enhancement. The rear seat is even tattier so I shall leave that and the passenger footrests off the bike for now. The handlebars also look awful so I am going to have to address that item fairly soon as well. Perhaps the most pleasing job of the day was the tool box locks. I found one complete lock assembly and a key that worked. Put this on the battery side. I only found part of another lock, these items were already removed when I bought the bike so I don't know if it was never there or I have mislaid it. Anyway after a bit of thought I bodged something suitable up from an old knurled brass knob and part of an old tap from one of my diving bottles. Sounds ridiculous but it actually works and looks quite good, At least now the toolbox lid stays shut.

Wednesday 24th August

The tank still needs fitting properly, I need to make up some thick rubber washers and fit the tap. The proper headlight rim is still resisting my attempts to make it fit. I think the paint is just too thick but I am reluctant to start scraping it back in case it is a different problem. This is another item which had been dismantled before I bought the bike so I don't know for sure if it ever fitted. The one in the picture is from an ETZ250 and is a tad too big really but it does work so will have to do for now. The only thing that got fully completed today was the centre stand spring which is made from two BMW springs. Some better pictures when I have completed the last few jobs to get it to an MoT state. I am also going to fit the passenger seat and footrests as It does not look quite right with just the riders seat. I have now written to the MZRC Classics Officer requesting a dating certificate so hopefully I can expect a visit sometime soon. Armed with that and the MoT I can start the process of registering the bike with DVLA. This is how it now looks. I believe the outstanding jobs to be:

- Fit the petrol tank with its tap and plumbing
- Sort out the headlamp rim
- Fit the passenger seat and footrests
- Buy and fit a 6v battery (or borrow one from the MZ more likely)

Wednesday 31st August

The AWO now has an MoT, with a number of advisories which is only what I expected. It will be a long time before it turns a wheel on the road. This of course is only stage one of the restoration. Once I have the spares from Germany, it will be partially dismantled to complete the engine rebuild, sort out the swinging arm bushes, rebuild the front forks and install the

charging system. Doubtless this process will throw up a heap of additional problems but now that I can se what the bike will look like I am encouraged to keep going.

Current Shopping List:

Description	Part Number if known	Status
Engine Parts		
Exhaust valve guide 14.0mm		ordered
Inlet valve guide 14.0mm		ordered
Exhaust valve 34mm		ordered
Inlet valve 36mm tulip		ordered
~~Centrifugal Oil Thrower~~	~~K21-014 AWO-41285-88803~~	~~Refurbished old one~~
~~Engine bearings 6205, 6206, 6207~~	~~Local source~~	~~bought~~
~~Camshaft bearings 6204 (2 off)~~	~~Local source~~	~~bought~~
Engine gasket set		ordered
Pushrod	K22-14 AWO-41042-G88802	ordered
Cam Follower	K22-13 AWO-041488- G88802	ordered
Piston – 70mm		ordered
Refurbished crank		ordered
Frame Parts		
Engine mount rubbers – frame		ordered
Speedo cable	Do without for now	On hold
Rear light unit	Use MZ type for now	On hold
Stand bushes & bolts	Original fixed for now	On hold
Exhaust Clamp – to frame	Made one for now in s/s	On hold
Exhaust clamp – pipe to silencer	Made one for now in s/s	On hold
Swinging Arm bushes		ordered
~~Wiring Loom~~	~~Made my own~~	
Outside Services		
~~Rebuild rear wheel~~		~~received~~
~~Powder Coating frame etc~~		~~received~~
Refurbish Cylinder head	M&J Eng	Awaiting guides and valves
Rebore	M&J Eng	Awaiting piston