

Diary of an ES250 Trophy-Velorex Sidecar Project – Peter Fielding
Part 1 – February to June 2010

Background

I already had a TS250 outfit with Mitzi sidecar which had given me great fun and been used extensively from 2008 up to February 2010. However, nothing stays the same in my garage for long and there were a couple of improvements I would have liked. The main one was to fit leading link forks as the steering with the standard telescopic forks was very heavy on things like roundabouts. A ride (drive) on a friend's modern Yamaha outfit had shown me how much better handling could be with a properly set up set of L/L forks.

My initial intention was to fit a set of ES250 Trophy forks and I managed to obtain a complete front end from Poole in mid 2009. I also bought an old TS250 frame to experiment with as I suspected it was not going to a quick or easy conversion. A test assembly showed two immediate problems. The first was the incompatibility of the steering head bearings between the frame and the forks. The second was that the forks, lined up in the frame on a temporary basis, were clearly going to foul the engine. After much deliberation, the solution to the second problem was to lengthen the frame by four inches which was duly done. Strangely enough, once loosely assembled, the overall wheel base was still only 54". I examined a number of potential solutions to the other problem. There were no commercially available bearings that would mate the components. I could have modified the Trophy forks to take a TS250 stem but was reluctant to do this except in extremis. The alternative was the modify the frame even further to allow the standard ES250 cups to be fitted. This was preferable as the frame was already trashed but was beyond my own workshop skills and was going to be expensive. So the project stalled in late 2009 waiting for inspiration and/or a lottery win.

Then three things happened within days of each other, which provided two quite different solutions. I had placed an advert in the MZRC journal for a sidecar pattern front fork s/a. These are longer and have two sets of spindle holes, the forward set being used for sidecar work. In February 2009, Alan from Cumbria rang to say he had the remains of a trophy that had the sidecar forks. Further discussion indicated there were other sidecar related parts so in the end I bought the frame and forks and several other bits that Alan did not need for his project. We agreed to meet at telford whilst he was at the Off Road Show, this being roughly half way between his home in Cumbria and my home in Wiltshire. Secondly, Steve, another MZRC friend, local this time, rang to say he had a Velorex sidecar which he had just removed from his bike; was I interested: So a deal was done and this gave rise to a possible new project to build an ES250 Trophy with Velorex sidecar. This would provide a number of benefits, sidecar pattern l/l forks, a loop frame to make attaching the sidecar easier (note easier, not necessarily easy), a 16" sidecar wheel which looks more period in my eyes and a sidecar brake and best of all, free tax as my Trophy frame was pre 1973. In the interim, I had need to talk to Mark Dicker about something else and from him I learned about a pair of l/l forks he had built some years ago for his trials TS250. These forks were now with Robin Davies from Newport. A chat with Robin established that he had never fitted them and I could have them to try if I wished. So a good deal of fuel was consumed picking up all the various bits which were then laid out on the garage floor to decide which way to go.

Remembering the original project, the obvious thing to do was to fit Mark's forks to my TS250, job done and if I had talked to Mark at a much earlier stage this may be what would have happened. However, we found a slight snag with this approach, the Dicker l/l forks were bent, a result of some really heavy cornering according to Mark.

Opinions differed on exactly what was bent and how to repair them. In due course they will be resurrected and an attempt made to repair them for fitting to my TS250 but that will be a separate story. Now the project had mutated into building a trophy with Velorex and this is how it went.

Mating the Velorex chassis to the Trophy frame - Days 1-7

Various fittings came with the sidecar some of which were standard Velorex parts to mate to a Jawa. Others were obscure parts used to mate it to its previous tug, a Kawasaki. After considerable fiddling and trials, I identified four fixing points. The two



straight struts were relatively simple. The front one mated to a 40mm clamp on the front down tube. I was fortunate to have one of these already in the garage.

The rear one uses a clevis which screws into the top support for the rear shock. This support is internally threaded at 16mm x 1.5mm and must I think be intended for such duty. Later MZs only have an 8mm bolt and a penny washer. The clevis shown is a mock-up of what is needed. The threaded part is actually a standard top bolt with the head turned

off. It will serve as a pattern for a friend to make me one from solid bar. My lathe skills fall short of screw cutting.

The front lower mounting is a long bent tube. One end slides into the chassis and is clearly meant to provide adjustment for tracking. The other end bolts to a plate and can pivot to allow setting of vertical alignment. I tried various ways of bolting this plate to the Trophy frame. In the end I found it easiest to sort out the overall sidecar alignment, see exactly where it wanted



to settle on the frame, then weld it in position. Conveniently, one edge of the plate



butted against the bottom engine mounting bracket so this made alignment easy and plenty of contact for welding. I was concerned about the small contact area at the front so added a metal loop having first checked it would not foul the engine. Surplus metal was then cut off with the angle grinder. The final result can be seen below.

The rear lower mounting took longer to solve and implement. It consists of a long bar with a vertical pivot at the chassis end which clamps in a sliding bracket. This one

had been modified at the bike end and it looked as though the whole thing had simply been welded to its previous tug. It was far too short to reach any part of the bike under proper alignment conditions. The whole thing needs to be as far back as possible to give adequate swing of the k/s. In addition there was no obvious connection point on the frame and the fitting would need to be adjustable. My solution was two-fold. Firstly I welded a ¼" plate below the rearmost section of the frame tube. This plate had an 18mm hole. I then welded a 6" length of 16mm threaded bar to the existing sidecar fitting. The different hole sizes were deliberate to allow a degree of adjustment when setting lean-out. The result is shown in the next picture.



With these fixings I was finally able to secure the sidecar at four points and attempt a proper alignment. To my relief I was able to set toe-in to ½" and achieve vertical alignment, I know the good book says to set 1 or 2 degrees of lean out but this never feels comfortable to me on lightweight outfit. Final alignment will need to be done once the bike is wearing proper tyres, the correct shocks, the sidecar is fitted and loaded and someone is in the saddle to settle the suspension. For now I am content that my fixings are robust and have sufficient adjustment available.



Perhaps I should mention at this time that everything looks very rough and indeed it is. Many of the pictures were taken when things had just been tacked in place and the source components are in the as received or found state. No point in spending time or money on shot blasting or painting until the design is proven.

At this stage I fitted the body for the first time partly to make sure I had all the bits and partly to make sure there was sufficient clearance all round. As far as I can tell I have adequate room to operate the kick-starter, which most inconveniently is on the lh side on an MZ. That done the body was removed and put away for now.

The Sidecar Brake – Day 8

Next stage was to sort out a sidecar brake. I did contemplate setting up hydraulic linkages but rapidly rejected this as being too complex and too expensive as I had no suitable source parts and could well have spent a lot of time and money trying to find the right combination of bits. An added factor is that, at this stage I want to stick with the cable operated drum front brake. I have seen disk brake conversion on Trophy's but the fabrication is probably beyond my skills and it just would not look right. I do

have some thoughts which will be developed later to maximise the effectiveness of the standard front brake, but a working sidecar brake will give more confidence. (My TS/Mitzi combo has an ETZ disk brake front end so stopping is never an issue even though there is no sidecar brake).

Anyway, first issue was lack of an operating arm on the Velorex brake spindle. A spare MZ rear brake arm roughly fitted after a special nut was fabricated on the lathe. A genuine arm will be essential as the temporary fitting is too flimsy for operational use. Next port of call was my scrap cables box looking for something that might just do the job. The one I selected will do for testing and as a pattern, the proper one needs to be a bit longer to get a smoother sweep when the body is fitted. Proper combos seem to have a separate lever operating the sidecar brake, I imagine so that you can brake each wheel separately and I imagine could help on left handers. However, I have never enjoyed this feature on any of my combos so for now I have opted for operating both bike rear and sidecar brake from the standard MZ rear brake lever. Two cable stops were fabricated, one is fixed to the short operating arm on the LH side of the brake lever, the other to the left side passenger footrest bracket. At present everything is held with bolts. When I am happy with the design, most bits will be welded in place. The end result was satisfactory, I could adjust both brakes separately and the final settings will have to be determined in a road test. I did briefly fit the steering damper which came with the Velorex. However, I decided it was best left until the end when the body engine mudguards etc are in place to make sure nothing is going to foul. So 7 days into the project and we seem to have a fitted chassis and brakes. Next stage is to sort out an engine.



Fitting The Engine (or rather choosing the Engine) – Day 9

In theory this is a no-brainer. MZ supplied the Trophy with a nice 250 engine and frame fittings to match. That of course is too easy. I do have a 4 speed motor on the shelf in good working order but a later 5 speed motor does give better overall performance and a better gear change. The rear mounting plates are in fact the same on all later variants of the MZ 250 so were not a problem. The difficulty is that the Trophy frame is designed to have the motor supported at the bottom on pair of rubber doughnuts whereas the later engines use a single top doughnut. Four speed engine have two 10mm threaded bosses at the bottom of the engine to which a plate can be bolted and the plate in turn sits on the bottom doughnuts. Both the Supa 5 and ETZ motors have only one of these threaded bosses (on the RH side and used to fix the exhaust clamp). I have in the past fabricated a LH boss into a Supa 5 crankcase and this works but swapping engines is not easy unless you have a supply of modified crankcases. I was reluctant to go down that route this time. I consulted widely but got little response, I do not believe I am the only one who has wanted a 5 speed Trophy but no one was admitting to addressing or solving the problem.

Three options came to mind. The first was to use only one front mounting point, perhaps with a heavy piece of rubber where the second bolt should be. This would



probably work, in a sense the later engines only have a single front mounting and can be seen jumping around particularly at tickover. I may yet have to fall back to this option. The second option was to fabricate and weld to the frame a top mount to hold the standard doughnut. This is an attractive idea; it would permit unlimited choice of engines from the later MZ range (a 301 would be nice). I successfully manufactured such a mounting after a few false starts, though I only clamped it to the

frame whilst experimenting. The result is shown below. At first sight it was a winner, it clearly fits, there is plenty of clearance for the tank and the engine is perfectly aligned in the frame (what cannot be seen in the picture is that the engine is still sitting on its standard bottom mounts). The difficulty lies with assembling the engine into the frame in this configuration. Due to lack of head room mostly caused by the tank mounting bracket, even the standard Trophy motor has to be put in the frame without the head. It even uses short studs and special head bolts to allow easier fitting of the head once the engine is in the frame. Supa 5 and ETZ engines are normally fitted with heads on and pivoted on the rear engines plates to slide the top studs into the rubber doughnut. In the Trophy frame there is insufficient up and down pivoting possible to get the top studs into the doughnut. The only solution I could find was to remove the head studs slide the head onto the doughnut then use bolts to secure it. (you can see the Allen screws in the picture). There also remains the problem that the studs holding head/barrel to crankcase have to be inserted afterwards. All this can be done but with repeated assembly and disassembly, stripped threads are likely to occur. On balance an elegant solution but fraught with difficulties so a day's work was reluctantly binned.

The solution finally opted for was to retain the bottom mounts but fabricate an external replacement for the LH mount. This effectively links the large bolt at the front of all MZ 250 motors (which now does nothing much but looks as though it was once a front engine mounting) to the LH bolt hole on the bottom plate. It should support the motor and resist twisting in the frame under power/overrun.

Only time will tell if it works ok. In the picture I have shown this mod for an ETZ motor. I think a slightly different bracket will be needed for a TS motor but it was easy enough to make so should not present a problem if I decide to go that route. The ETZ motor was the only one to hand at this point and I like the idea of 12v and oil pump so next project is how to mount an oil tank.



Oil Tank Fixing – Day 10

Not a particularly difficult job as it turned out. Since the battery will be a sizeable 12v car type sitting in the sidecar, the ES250 battery tray is redundant. I was able to make a bracket to position the oil tank just above the tray. Drilled and tapped a



couple of 6mm holes in the frame first, then welded nuts on as well to reinforce the fittings. Had to fit the rear mudguard temporarily to make sure it did not foul. I was tempted to cut the battery tray off altogether as it is very rusty and flimsy. May still do this, the only drawback is that I would have to fabricate another bracket to secure the side panel. However, I have virtually decided to do without the LH panel anyway for a variety of reasons. Will make a final decision when I have the airbox in place and the electrics sorted.

One further task was to check that the exhaust system fitted. The only ES250 pipe I could find was a parallel type but you need a special adapter for these and I do not have one. So I decided to convert the pipe to the flanged type. This was done by cutting slots round the engine end of the pipe. I used a jubilee clip about 3mm down the pipe as a control for depth. Once all the slots were cut, some patient tapping with the ball peen hammer produced the result below. It fitted and clamped up fine. I used a copper/asbestos ring to help seal the cuts. Not intended to be a permanent solution but it will help to get the bike to road test stage without having to buy a new pipe.



That about finishes all the fabrication and modifications so I spent the rest of the day stripping the bike to bare frame state and sorting a pile of stuff to go for blasting and powder coating. The resultant pile of bits is shown in the picture. In fact there is one item missing, the aluminium beam for the front suspension, also the front s/a is no the actual one being done, the picture was taken in a hurry to show to the shop to get a quote. Obviously there is a lot more that will need doing (mudguards tanks etc) but most of those will be just shot blasted then sprayed by me. The bits shown should get me a rolling chassis at least.



Day 11 Cleaning up

The quote from the powder coater was £130 for the bits pictured in gloss black, which I thought very fair. There was a temporary hiccup, I could not get the pivot pin out of the second front fork to release the extended (sidecar type) s/a. Lots of hammering did no good, so I took it to my friends workshop where he has a heavy metal bench and a bigger hammer. After a lot of swearing and a cup of coffee, the pin finally started to move and eventually came free. Strangely enough, once out, there was no significant corrosion to explain the stiffness and it went back in fairly easily. The pin had taken quite a battering but it did clean up in the lathe and should be ok; fortunately its only a spare as the pin from the other fork is fine. That done the whole lot was delivered to the powder coater

This gave me a lot more space the workshop so the rest of the day was spent stripping down the front and rear shocks, cleaning and polishing everything and reassembling. The original shrouds were pretty tatty but I had some old ones from my previous ES250 restoration that were a bit better. The result is shown below, not brilliant but perfectly acceptable for now. New ones can be had but I prefer to save the money for other more essential items right now. Some painting will be necessary for the shocks but I will defer this until I have a stock of things that need to be painted silver. So far so good, next major cleanup is the front wheel.

Days 12-14 – Slow progress

Well not much work done on the project for the last 3 days largely because I am waiting for parts from various sources. I did strip and paint a few small items that were too trivial to powder coat. I also lengthened the rear brake rod as it was a bit too short for my liking. I suspect it started life as a TS item. Other than that I have made a start on the ISDT project, which came my way just after the combo project took off. That is a separate diary.

Day 17

No work on project for last 3 days, too busy working on the ISDT bike and helping out other people with engine rebuilds and a wheel rebuild. This morning the powder coater rang to say the bits were ready so I nipped down to see what I had got. Very impressed with the results. Nice deep gloss, hard to believe what a load of tat it was previously. Couple of things which did not get masked properly so will need cleaning out but otherwise very happy, No room to work on project at present so all the bits were sneaked into the spare bedroom while the wife was shopping. Hope to pick up some bits on Sunday from a friend in Reading and a seat plus couple of small bits from an ebay success are on their way. Could be a few weeks before work restarts on the combo project.

Day 19

A trip to meet the Oxford Section of the MZ club also yielded a few more bits for the combo project. I now have a complete air box assembly, a RH side panel, a rear light with backing rubber mount, a pair of engine mounting rubbers and an exhaust clamp. So a major step closer.

Day 21

The seat and aluminium key cover I bought on Ebay arrived today; both very serviceable items. Also a couple of pairs of nearly new brake shoes that may come in useful. All items put on the shelf until time and space are available for the re-assembly process. I took a load of parts for the ISDT bike to the powder coater today including the mudguards. If these turn out ok I may have the Trophy mudguards powder coated as well, saves me a very tedious job and I am not the world's best sprayer.

Day 25

Not much activity for a few days, the arrival of spring and the demands of house and garden have added to the pressures on my time caused by the ISDT bike. I have ordered some items for the combo along with other MZ spares needed to rebuild a friend's TS250 engine. Perhaps the most significant is a set of spokes to enable the rebuild of the front wheel. These bits should be here soon. I also bought some 6203 bearings for the sidecar swinging arm. The old ones were borderline anyway, but the frame came back with the bearings well congealed with powder so that made the decision. What a performance to get the old ones out, they were really tight. I ordered a C3 fit for the replacements and once installed they were really smooth in operation and no trace of play. I had also forgotten to mask the sidecar wheel spindle, which is integral with the swinging arm. Took me an hour to remove powder coating to the point where brake plate and wheel would slide into place. Two hard learned lessons in connection with powder coating, will not make that mistake again.

Day 26

A box of parts arrived today and included the front wheel spokes, nice shiny chrome; however, if they are anything like the previous ones I bought, they will need a lot of TLC to keep rust at bay. The speedo cable I also ordered turned out to be for a Simson moped, a quick email to the supplier has produced a promise to send the correct part. That plus the poor quality of ES250 rubber gaiter also delivered made the whole package a bit of a disappointment. Looks like MZ spares are going down the same low quality route as British bike spares. Could be a problem looming here.

Anyway, I made a start of rebuilding the front wheel and managed to get 24 new spokes in place before having to pack it in for the day.

Day 27

Finished rebuilding the front wheel. Found a suitable tyre on another wheel, an Avon SM mk2 in 3.25 by 16 size. Not new but with plenty of tread and no cracks or other nasties in the sidewalls. This is actually a back tyre and had worn flat (as SMs have a habit of doing). Utterly useless on a solo but perfect for the front of an outfit. Whilst



fitting the brake back-plate, I noticed that someone had modified the brake shoes. They normally pivot on pins at the back but these had been filed flat so that they can slide on the pins. In theory this should enable them to self-centre and keep maximum contact on the drum. Will be interesting to see how they perform.

It is also my intention to further modify the brake back plate to provide an external operating arm. MZ front

brakes are always limited in power by the use of the short internal arm.

Day 34

Finally got some spare cash and time to progress the project. I ordered a set of steering head bearings from Fred Rogers plus a new top ring nut. In addition as I was very happy with the finish on the ISDT mudguards, I took the mudguards, handlebar cover and RH side panel to be powder coated. He is also going to shot blast the tank and headlamp shell so that I can spray these items. Should be ready in about a week or so.



Day 36

The steering head bearings arrived today so I made a start on reassembly. Knocking out the old bearings was easier than I expected as was tapping in the new ones. Last time I did this job they were desperately tight. I have also fitted the rear swinging arm. This took a lot longer as I had to cleanout the excess powder from the pivot holes and various other places. Eventually it all went back together and the result can be seen – looking much better since the frame etc were powder coated. Rebuilding now ceases for a few days as a friend is going to turn up a 16mm sidecar top mount for me and he wants the frame to check the size and fitting.



Day 41

Quite a lot has happened over the past few days. Not so much in the actual process of rebuilding, more in the area of collecting the building blocks. Friend Terry rang to say that he had finished the sidecar top mount so I drove over to collect it and the frame. It was just as well he had insisted on me making the frame available as the thread in the top tube turned out to be 15.75mm rather than 16mm. I suspect that MZ's tooling was getting a bit worn by the time my bike was made. When I got home the powder coater rang to say that the mudguards etc were ready for collection. The painted bits all went into the spare bedroom for safety. The tank and headlamp shell had to be immediately rubbed down and sprayed to prevent them going rusty. So it was time to clear everything out of the garage, wheel out the compressor and sort out a tin of primer. The preparation and the clearing up took 10 times as long as applying the actual paint. They are now protected for the short term, meanwhile I have to locate a source of Volkswagen Tornado Red paint in cellulose. Not easy as it's gradually being phased out. Last act of the day was to apply the gold lining tape to the mudguards

Day 42

My plea for other parts for the projects were heard and responded to by a fellow MZ club member. Thanks to Ross, I now got just about all the parts I am likely to



need in the shape of a complete ES250 (well minus a few bits like tank rubbers and badges) plus a bag of assorted spares. Spent the day sorting out what was useful in the bag and removing from the bike those parts that I needed. In fact it was not a huge amount so there is still a virtually complete bike for someone else to take on as a project. In fact I already have a couple of people interested in taking it on. I will however hang on to it for a while just in case I discover any thing else I

need. Now all I need is a time slot to get started in earnest on the rebuild. There are some things which need blasting and painting mostly they can be added later.

Day 45

Last 3 days have been spent riding in a VMCC event and fixing other peoples bikes so no progress on the combo project until this evening. Decided to tackle another of those jobs you just know is going to be difficult. In this case fitting the bottom cone to the front forks. First job was to get the old one off. It came free, very reluctantly and with a few (thankfully small) chips in the powder coating. Getting the new one on was if anything more difficult as I did not have a long enough tube to act as a drift. Gentle tapping for a very long time did successfully install the cone in the end. Next job was to try the new top nut which holds the whole thing together. As I suspected, the threads were a bit distorted so it took a fine file and a lot of patience before I could even get the nut to start. Then it was a question of winding it on a few threads backwards and forwards a bit to ease it up and so on. Eventually nut and thread agreed to co-exist. Next job was to try the top bracket that mounts the handlebars. This also was very stiff and had to be worked on and off many times before a reasonable sliding fit was achieved. Final job was to try the top cone, of course it was too tight as well so I then had to steadily polish the top of the fork stem until it would slide on fairly easily. It was clearly a bit of distortion caused by the clamp as once it was past this point it was a good sliding fit. All in all, this 'simple' job took most of the evening. However, I am glad that I took the time to try it all out now. If I had pressed on and started the actual assembly with ball bearings in the cups etc, and then hit these problems, it would have been a nightmare. So now I think the way is clear to start the rebuild. I need to clear and tidy the garage to give me adequate working room and check the calendar to decide the optimum time to start.

Thursday 29th April

Lost the plot on elapsed days so will now record calendar dates. Bought some Volkswagen Tornado Red cellulose paint today and made a start on spraying the tank and headlamp surround. Not my favourite job and frankly not a particularly good result. Will leave it overnight to harden and try again tomorrow.

Friday 30th April

Rubbed down the items and gave them another coat of Tornado red. A lot better this time, Once T Cut and polished, I think it will do. Also cleared the garage and collected all the various parts which have been lying around the house. Final act of preparation was to sort out all the other boxes of bits belonging to the bike which were still in the garage (somewhere).

Saturday 1st May

Early start once the dogs were walked . First job is one I hate, putting the front forks into the frame. Managed to complete it this time without losing half the ball bearings. The preparation I did previously obviously paid off as all the headstock bits went on easily as well. Top nut tightened down and the forks turn easily but with no trace of play. My home-made top bearing cover also fitted a treat. Next in line was the front swinging arm, This needed a lot of cleaning up to remove surplus powder coating in the various holes. Getting it to fit on the alloy beam was also difficult. Just as I was beginning to despair, it finally slipped into place. Fitting the shocks and mudguard was straightforward. A bit more cleaning up of excess powder around the brakeplate location slot was needed and finally the front wheel was in place.

This made the bike reasonably stable so I decided to fit the engine. This is the ETZ250 hybrid with TS250 top end which I built a while ago and used for my John O' Groats to lands End trip last year. Having done a trial fit previously, there were no particular problems other than the usual one of getting the rear bolts started in the engine plate. I also fitted the footrest bar. This was where I hit my first snag. I had to make up some 20mm spacers to lower the footrest so that it cleared the nearside crankcase. I do not remember this problem when I did the trial assembly; I am now a



bit worried about clearance for the exhaust system. Fitting the rear mudguard and rear wheel was simple enough, though I found that I had overlooked painting the rear torque arm so this will have to be done later. With the wheel in place I was also able to fit the rear brake pedal and line up the rest of the brake connections. Final job of the day was to fit the airbox, which also provides the mounting for the coil, regulator and fuse box. So

at the end of the first day the bike is on its wheels and has the bottom half of the engine in place. No major snags yet but a growing list of small parts I will be needing, hopefully most will be on the donor ES250 just purchased.

Sunday 2nd May

Not a lot of time spent today as I was manning our section checkpoint for the Founders Relay rally. However what was achieved was very satisfying, mainly because I found a few bits I did not know I had. The bike now has handlebars (plural as they are in two halves on these bikes), a working throttle and carb plus front brake connected. I also found an ES250 main wiring loom in excellent condition so that is one problem solved. I also made a minor repair to the headlamp shell to enable the headlight surround to be fitted. Tomorrow I hope to complete the engine build and see how well the exhaust lines up.

Monday 3rd May

The engine is now fully built,; it was a bit difficult to get the squish setting initially. To get it below 1.2mm I had to make a choice of junking the base gasket or the head gasket as I had already reduced this to the thinnest shim available. Decided the base gasket was the safest option and finally got a reading of 1.18, just inside tolerance. The exhaust system actually went on better than I had expected and after a little bit

of playing around with the fixings, and adjusting the footrest spacers, it all looks good. Next step was to sort out the wiring and electrical fittings. The spare loom I found is in very good condition and I quickly got the rear/stop light assembly wired up and tested. Whilst sorting through a box for some bulbs, I found a coil clamp (one of the items on my 'missing' list) and the speedo bracket so that was a bonus. I have temporarily fitted the headlamp shell so that I can mount the ignition/lighting switch and speedo. By the end of the day I had a spark from the plug, neutral warning light and possibly a charge indicator light. I thought I knew MZ electrics pretty well but I could not figure out how the charge light is supposed to be wired up on this bike. I even resorted to downloading an ES250 wiring diagram from the internet but that only served to confuse. I have rigged up my own system and if this proves successful, I will modify the wiring properly later. The ETZ engine I have used has the late type 12v alternator with the diode box and regulator on a PCB mounted on the alternator body. If this works it's a very neat arrangement and eliminates a lot of wiring and equipment mounting issues. In theory the engine is now ready to run, perhaps tomorrow?

Tuesday 4th May

Mundane things like gardening and shopping got in the way today so no attempt to start the engine. I did make a giant effort to tidy the workshop, as every tool and every box seemed to have migrated to the floor and the workbench and I could no longer find anything. This was a smart move as I also found a number of things I had mislaid for ages. In terms of progress on the bike itself, I have finally solved the mystery of the wiring loom, by looking at the spare bike, which fortunately is still standard and complete in this respect. Bizarrely, there must be an internal connection within the speedo between two of the warning lights, I can see no other way for it to work. Anyway, the loom is now complete and every circuit has been tested. However, I still need to fabricate a stop light switch bracket, buy a 12v horn and a new headlight unit. I was going to rob these bits from the donor bike but frankly the items are not in particularly good condition and good lights are going to be essential if I am to get good service from my project. So my shopping list has just grown again, will it ever end. Checking the donor bike electrics also identified that I had mounted the headlight shell incorrectly, just as well it was a trial assembly.

Final act of the day was to fit the speedo cable – should have been a simple job. My project has a TS250 rear wheel assembly with integral speedo drive (standard ES250's drive the speedo from the gearbox but later engines such as I am using lack the fittings for the speedo gearbox). I now find that the chain cover fits too snugly to the swinging arm to allow the speedo cable ferrule to fit. This is primarily because my swinging arm has the mounting bracket for a sidecar anti-roll bar right where the ferrule wants to be. The mounting itself is redundant as it's intended for a RH continental style sidecar. However, taking an angle grinder to my newly powder coated s/a is very much last resort. Time to stop and ponder and hope for a better day tomorrow.

Thursday 6th May

Despite the elapse of two days, not much real progress to report, in part because I have a heavy cold which makes working in a cold garage less than appealing. The good news is that the stop light switch bracket has been fabricated and I now have an operational stop light. I have used a Japanese style switch partly because these are more reliable than the integral back wheel switches and partly because it is easier to add a front light switch at a later date. I also fitted the seat I bought on ebay a while ago, not perfect but very presentable.

The problem over the attachment of the speedo cable has also partly gone away. I found that the cable does fit if first attached to the plastic chain cover. Does mean

removing the wheel and sprocket drive first but not a problem as it is easy and rarely needs touching once set up. The bad news is that wheel assembly seems to lock up when fully tightened. This may be due to a damaged plastic outer cover or it could be some other problem that has actually caused the damage to the cover. As the sprocket carrier assembly was built up with the best parts from 2 donors, I may have an incorrect part fitted. Have put it all back together loosely so the bike can be wheeled about whilst I ponder the matter. I feel another begging email coming on to see if I can borrow a complete back wheel assembly. On balance I may try to buy a set-up from an ETZ251 as I think the ETZ design is stronger anyway. I successfully used this type in a previous sidecar project.

The day got even worse when I decided it was time to get the engine running. First problem was it seemed to lack compression even with some thin oil squirted through the plug hole to help seal the rings. In the end I removed the remaining head gasket and re-assemble with additional washers on the head bolts in case they were bottoming out. This helped a lot and the squish gap was measured at 1.08mm which was just about perfect. However, after an afternoon of frantic kicking and playing around with ignition timing I could only get the occasional cough and splutter. A couple of times it did run for a few seconds. Tried all the usual tricks, new plugs, heating the plugs, fully recharging the battery, squirting Easy Start down the plug hole and still just the odd splutter. Finally the cold got the better of me and I simply put the bike away for another day.

Monday 10th May

Put the combo project on the back burner for a few days waiting for inspiration and until I felt in the mood to tackle the problem. Started from first principles, re-checked the timing – perfect. Stripped the carb and cleaned everything up, something I had not done initially as the carb had come from running bike, As expected nothing radically wrong. Jest clear and just a bit of crud in the float chamber. Put it back together and connected up the choke assembly to its lever. Replaced the manifold gaskets, though again there was nothing obviously wrong. Finally it was all back together so I topped up the carb , kicked the engine over on full choke a couple of time, turned on the ignition and it started!!, Very ragged and would only run at medium-high revs with loads of smoke but a better result than previously. Turned the choke of and it continued to run for a bit then died, but it could just have been running out of fuel as the tank is not connected, just the carb being refilled from a can. Topped it up and bingo it started again and as it warmed up began the smoke began to lessen and it became happier at lower throttle settings. A couple more iterations and it was almost ready to tick-over.

There are still symptoms of an air leak as the engine speed only dies down slowly after being revved. However it's a whole lot better than before and I finally had time to observe that the charge light was going out so my alternator and regulator seem to be functioning ok. I think the problem was a combination of things including a build up of oil in the crankcase, the choke not properly connected and air leaks caused by removing the cylinder base and head gaskets. I cannot replace them as they alter the squish setting so I plan to partially strip the engine and use liquid gasket top and bottom to help the sealing.

Flushed with success I decided to strip the headlight unit and horn from the donor bike to complete the electrics. This turned out to be harder than anticipated as the headlight surround fixing screws were well and truly rusted into the plastic. Tried drilling them out but eventually bits started breaking off the brittle plastic so regrettably it became scrap. Sad but there was never any chance of saving it and I do have another. Armed with the bits I was able to connect up a horn and a

headlight. So we now have a complete set of electrics and a running engine a fair result for today.

Wednesday 19th May

Bit slack on the diary recently, but some progress over the last few days. I removed the headlamp shell and given it plus the fuel tank a good rub down and a final few coats of paint. Still not a wonderful job but I think good enough. The headlamp shell is now re-fitted and all the electrical gubbins, headlamp and surround are all fitted. Something new I found out is that the actual headlight is the same size as the one fitted to the TS bikes. I always thought it was smaller. I also found a pair of the proper bar end winkers and these are now fitted and working.

I was able to source a complete 16" wheel, brake plate and sprocket carrier from an ETZ251 from a friend in Bristol. The plastic chain cover was toast but I had a brand new one in my spares stock. Fetched all the bits today, spent an hour or so cleaning everything up and bingo I now have a really sound back wheel assembly with the chain fitted. The only things missing are the rubber chain guides. I have one brand new one and will have to order a second as the ones on the donor bike are really beyond salvaging.

The bike is very nearly complete (to the solo motorcycle stage anyway) and its really lack of money and time which is holding me back. Too many other things at a higher priority are consuming both of these items. As far as I can tell it needs the following which I will use as my check list:

Friday 28th May

A little progress over the past 10 days. The LH side panel and the rear brake torque arm have now been powder coated and were fitted today. I finally got round to gluing on the name plate on the rear mudguard and I have fitted the petrol tank. A petrol tap was found, cleaned up and fitted as was the fuel pipe. Somehow I could not bring myself to fill it up with petrol just yet and though its presentable, it does look sad without the knee grips and transfers. These and the footrests are all on order from Fred Rogers and will be shipped shortly, when the spokes for the ISDT bike also arrive.

Friday 18th June

Well not a lot of actual progress on the bike itself, but a lot of back ground preparation work has also been done. The Mitzi sidecar has been sold and the TS250 is back to solo trim (though for now its still wears the 16" front wheel). My other ES250 has been put back to standard trim and its original 4 spd engine refitted and also sold. These actions necessary to create more space and provide spare cash to finish my current projects. I also now have a spare MZ-B electronic ignition system and a 5 spd engine TS250 modified to fit the ES250 engine mounts. These are held in reserve for either the ISDT bike or the ES250 sidecar project. The footrest rubbers, tank and panel transfers and the rubber strip between tank and headlamp arrived from Fred Rogers today (but not the tank rubbers annoyingly). I have also had powder coated what I hope is the final batch of parts for the sidecar project. Sidecar mudguard and light brackets, another footrest assembly (original is bent backwards and making gear changing difficult) plus centre stand were all collected today. So really no excuses left.

Monday 21st June

Quite a lot of progress in a short period for once. Footrest rubbers fitted – 5 minutes. Side panel decals fitted – 10 minutes. Tank rubbed down with very fine wet and dry then t-cut and polished. Still not perfect but now very presentable so I then fitted the tank decals. Must admit they do look better in white than the black I used on my first

Trophy. Decided against fitting the new centre stand for now. The TS250 stand actually in use fits better with the ETZ engine. Will fit correct stand if I switch to the 5 speed TS250 motor with the MZB electronics. After some thought, I made up some tank knee grips from black vinyl cloth. Bodge job but they cost nothing and look ok from a distance. Eventually I will shell out the £30 or so Fred quoted for the correct rubbers but it can wait. Final cosmetic act was to fit some MZ badges I had made up on the headlamp shell – the correct badges are now very rare and very expensive so they are something else that can wait. No excuses now so I put in ½ gallon of fuel and kicked over the engine. Started immediately so I threw on a helmet and jacket and took it down the road for a test ride. To my utter amazement, it ran perfectly, brakes worked well, engine pulled nicely and it handled passably despite the square Avon SM front tyre. Even the horn, which came from the donor bike, started working again.



Got me thinking that an MoT was in the offing. In terms of its solo status, it looks as though the remaining tasks are all in the realms of cosmetics:

- Buy and fit two new chain guides.
- Buy and fit tank knee grips
- Replace the chrome shrouds on front shocks
- Replace chrome shroud on offside rear shock
- Replace headlamp surround.
- Locate and fit correct headlamp shell badges.
- Chrome plated exhaust pipe

I think its finally time to start on the refurbishment of the sidecar. Most of the chassis has been done, it's the body and the seats that need attention.

Wednesday 23rd June

Much progress over last two days. The sidecar body has been moved from garden shed to main garage. All the various fittings had been removed and the black top coat of paint (which looks like it was applied with a tar brush) is slowly being removed. I did originally plan to just rub it down, but I am fairly sure the paint is household enamel which would blister if I applied cellulose. It seems to chip off easily with a bit of help from the hot air gun and the surface underneath is a much better foundation for a re-spray. A tedious job which I can only do for short periods before getting bored so will take a while longer but at least the job has started.

The bike itself pass its MoT today so should be taxed and fully road legal shortly (I need to visit DVLA at Bristol to get the status changed to historic vehicle). This was its first outing on the road a a few this came to light. Their was some juddering when the brake was applied, I have now tightened the steering head bearings so that should settle this issue. A clattering from the underside on rough ground was traced to the centre stand which now has a piece of rubber tube in place. A vibration on the rear mudguard was traced to it fouling the rear brake stay, a piece of rubber seems to have cured this but further investigation needed to establish why it's touching. Most serious problem was reluctance by the engine to start and a tendency to splutter and misfire for the first few minutes. Once warmed up it pulled well and hardly missed a beat to the garage. The same problem on the way home. Changed the plug and set the carb up for a clean tickover but not sure if this has helped. Handling was a bit odd but this is almost certainly due to the square front tyre intended for sidecar use. Overall not a bad result for a first run.

Saturday 26th June

In fits and starts quite a lot achieved over the past few days. On the sidecar front, I finally chipped and scraped all the old enamel paint of the body. After a rubbing down, 3 coats of hi-build primer and some more rubbing down it looked presentable. So I used up the last on my Tornado Red paint to give it the top coat. Reasonably happy with the final result and once its reassembled it will look quite good I think. Big problem is where to keep it until the chassis has been assembled. Previously it was kept standing on its end in the garden shed but this is no longer possible without scratching the paint. At the moment its sat on a wheelbarrow on the patio. Inspiration will strike soon but no panic so long as the fine weather lasts.

Back to the bike. The spluttering and poor starting I experienced on the way to-from the MoT became decidedly worse the next day, in fact it would not run at all. Spark looked a bit weak so I checked the points and tried a new plug. Then I noticed the plug was quite dry despite the long period of kicking. Next day I worked through the fuels system checking the tank, tap and carb but found nothing wrong. I then decided to remove the head and lift the barrel so that I could check the base and head joints;

to get the squish setting correct I had to remove the base and head gaskets. In fact there was no sign of serious leakage or blowing at either joint and certainly I had not detected any such issues on the road. Anyway, I cleaned both ends and reassembled with some Wellseal gasket cement. While the tank was off, I took the opportunity to fix the tank-headlamp seals properly in their clips and laid in a cable for the oil pump though it is not yet connected at either end.

Kicking over the bike brought one limp cough and nothing else at all. However, when I removed the plug I found that I had no spark at all. After checking the circuit through, I concluded the coil was dead so fitted another which also turned out to be dead. Fortunately, my third (and last) coil proved ok and we had healthy sparks again and the bike started immediately everything was back in place. Clouds of blue smoke of course due to all the previous abortive kicking over. A test run to the shops established that then engine was now fine and all it needed was a twiddle on the slow running to finish that job. Two other problems did however emerge. In tightening the headstock I had obviously moved the handlebars out of alignment as with the bike running straight, the handlebars were at 2 o'clock and 8 o'clock. Made for an interesting ride but was a 2 minute job to fix back home. A further road test proved satisfactory.

The other problem was loud clonking if I hit a pothole or the like. Not the stand as this was now rubber mounted and not really sure what it was. I did notice that the silencer just touched the rear footrest lug but cannot see how there can be movement at that point to cause a loud clang. Oh dear, I will just have to ride it some more to investigate! Final act for today was to fit the tax disk holder and new tax disk to make it fully legal.

Plan is to ride it for a couple of weeks to flush out any residual problems and then fit the sidecar. So I think we can call this the end of Stage1 of the project.