



Copyright © 2022 Keith Jones, All Rights Reserved

2002 MX5 Mk.2.5 ARIZONA SE

MOT Welding Repairs

& Suspension Upgrade

Updated 11th December 2022

This blog highlights the MOT work carried out on my Mazda MX5 Arizona Mark 2.5 special edition. Welding & suspension upgrade 2022.

I have owned this low mileage car since 2015. When I bought it, it was immaculate and had been cherished, regularly serviced, meticulously cleaned & polished by the previous owner (and also *garaged*). The previous owner only took it out for a drive when it was dry & sunny. Hence when I purchased this car it was **IMMACULATE**. Not one inch or ounce of **RUST** anywhere! Even under the bonnet and in the boot (or hood & trunk as the Americans call them) the car was absolutely spotless. It gleamed in the Sun (in fact; it glistened via the shiny metallic-like Mica particles added to this paint finish). There was **NO** sign of corrosion or surface rust anywhere. The interior was as equally impressive and spotless throughout. The heated leather seats had no scuffs or marks and the embroidered *Arizona* carpets looked brand new. It drove like a new car, it sounded great and with the hood down . . . Well, what can I say, I felt that I was in my twenties again. What was not to like about this MX5 – *I Bloody Love this Car!*

However, my lovely MX5 has been my daily ride for all of this time and has been well used by me over the last seven years. Unfortunately (as can be seen from the photo right) it has lived outside on my drive, in **ALL** weathers, year after year, after year etc.

During all of this time it has been exposed to the best and the very worst kind of UK weather, braving the elements and driven throughout the winter as well as through our sunnier but intermittent and unpredictable spring, summer & autumn climate too.

Now although I've serviced it regularly over the years and have replaced many mechanical parts, such as: new brake pipes, callipers, brake pads & new tyres in 2019. In 2020 (just before Covid Lockdown) I replaced the complete clutch and in 2021 I was forced to replace the complete exhaust system including the catalytic converter (which was stolen by three low-life armed scum-bags who helped themselves to my catalytic-converter in the dead-of-night). And finally, in April 2022 the windscreen wipers blades, the water pump and cam belt was replaced.

So, it's not surprising that after seven years of living outdoors it was inevitable that this poor little MX5 was going to start to show signs of 'wear & tear' - just like any well used & abused twenty year old car is bound to show. **BUT . . .** I didn't expect what was to follow !



Ministry of Transport Vehicle Road Test (aka 'The dreaded MOT Test'); Due in August 2022.

This brings us the present time. The annual MOT Test on my MX5 was due on 4th August 2022 so I booked it in early for a pre-MOT test on Tuesday 19th July 2022. The car was running exceptionally well but I had already decided to get the suspension & steering upgraded which included changing both front & rear suspension shock absorbers & springs, both track-rod ends and all of the wishbone bushes. I felt that this suspension upgrade was well over-due but I really did not fancy doing the work myself.

I had already received a quotation for this '*suspension upgrade*' by the garage who would be carrying out the MOT. This quote for all of the work listed above including parts and labour came to almost fifteen hundred quid (yes! I did say £1,500.00 Pounds Stirling), but, as I love this car so much I thought . . . It's worth it. And I was convinced as well as improving the overall driving experience it would breeze through the MOT for yet another year.

So I drove my MX5 over to the Mazda dealership where I originally purchased my MX5 from (just over 7 years ago) for them to carry out said work & MOT Test. About an hour later I received a phone call from them asking me to "pop around for them to show me what they had found". They said they hadn't started any of the suspension work yet because the car was in urgent need of some serious welding & body repairs first. They even sent me some photographs via WhatsApp showing the condition of the underside of the Car to better prepare me for what I was about to see in person.

"Are you sitting down" they said . . . "The welding and body repairs alone are going to cost at least £2,900.00 and that doesn't include the cost of the Sills"! So the overall cost of ALL of the work needed including all suspension work and painting the car after welding was going to be in excess of £5,000.00 (at least).

OMG ! These are the original pre-MOT photographs that I received on my phone from the Mazda dealership (below):



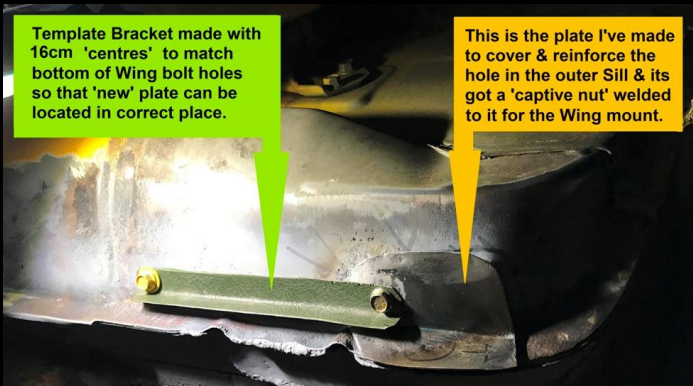
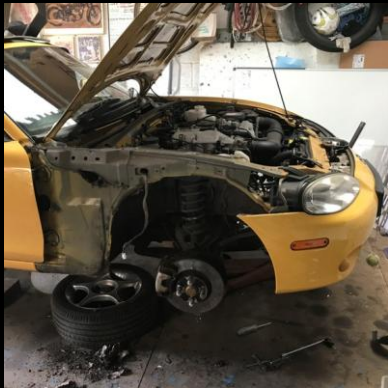
More Holes than Swiss Cheese. Rust, rust & even more rust . . . not to mention needing a new Tyre as well.

Now THAT was a SHOCK to this old body system of mine. I certainly didn't expect the under-body section to be THIS BAD ! WOW! I was gutted. From NORMAL view, standing by the car (at street level) none of this ROT was visible or evident. So WHAT A SURPRISE (and not in a good way)!

What to do ? I definitely DO NOT want to scrap my Mazda or trade it in for another car. Only one answer = Get it repaired.

I find there is nothing more MOTIVATING to do a job yourself than getting a MASSIVE QUOTE FOR REPAIRS, so I decided to carry out the repair work myself. Fortunately for me I still have all of my welding equipment and tools from when I ran my own garage repair business. Plus; bucket-loads of experience & skills, not to mention plenty of TIME (very little money, but loads of time on my hands) to rectify this problem and turn-around this rusty mess back into a road worthy car once more.

The following pages below show a series of photographs plotting my progress addressing the welding repairs & bodywork needed to get my once beautiful MX5 back up to MOT Standards & looking as good as a 20 year old car can look. After 'jacking the car up' on axle stands (& extra blocks of wood for added safety) I then started work on the front off-side corner by removing the wing for better access to the O/S rusty sill, jacking point and to repair the bottom of the wing.



Once welding was finished all of the welded joints was coated with phosphoric acid solution. After this had dried, all of the *phosphated* areas was cleaned & sprayed with zinc primer & 'Tiger Sealed' (squeezed into all of the welded joints & seams) before covering the whole lot with 'Stone Chip' under-seal spray (for good measure). When ALL of the welding is completed (on all four corners) the intention is to Lanoguard® or Wax-Oil all inner sills & box sections, etc.

The next stage was to 'open-up' the 'Sill drainage holes' that had been crunched-closed over many years of improper 'jacking-up' use & misuse (NOT by me I might add). This is one of the reasons why the sills are in such bad condition. The drainage holes being *closed* meant that any ingress of water &/or road detritus could not 'drain out' as intended by Mazda. I 'enlarged' these drainage holes using a tapered Drift-Punch, making each hole bigger than originally designed, thereby alleviating future problems (providing I instigate & maintain a regular cleaning-out programme for these newly enlarged drainage holes).



I also added a shaped plate to the sill (photos 2 & 3 left) to give extra strength to the front jacking point and welded it in place. RESULT = stronger JP.

After welding I treated it all to the same phosphoric acid, zinc primer, tiger seal & stone chip under-seal coating that will be carried-out on all four corners of the car once all of the welding has been completed.

The Good News is; I've started work on the MX5 (to get it repaired ready for MOT) and to get it back on the road again.

The Bad News is; I've had to put on hold ALL of my other (bike) projects (Bummer)!

The other Bad news is; I've still got the wing to do . . . and another three corners to sort-out after that !

Now for the WING ! As can be seen below; the price of a new wing (an after-market e-bay wing at that) is seventy pence short of £170.00 each and I obviously need two front wings. This sort-of made my mind up about repairing my rusty wings myself (yes! repair rather than buying two new wings). The first job was to make a template (as always) using my well tried'n'tested CAD method (Cardboard Aided Design) using the original wing (or at least what was left of it) to transpose said cardboard template design onto 20 gauge mild steel plate (see the end photo below right) and then MIG weld the new metal into place.

The wheel arch was much easier to deal with by sanding back the scaby-rusty-edge followed by phosphoric acid treatment, zinc primer & a coat of primer-filler. I intend to wait until the MX5 passes its MOT before finishing-off all of the painting properly. I will just cover the 'grey-primed' areas with a base coat for now.

Front Wing, MX5 Mk2/2.5

£169.30
inc £28.22 VAT

PayPal Available at checkout

View Availability

ADD TO BASKET

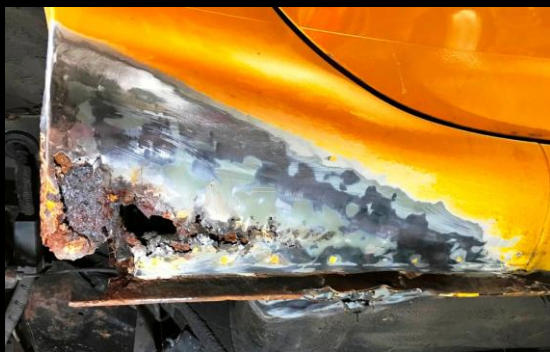


With the rotten metal cut-out of the bottom of the drivers side front wing and a new piece of taylored mild steel plate MIG welded into place, I simply 'Linished-off' the surface and applied phosphoric acid treatment & zinc priming (as with previous work). You can see from the middle row of photos that I've also sprayed stone chip underseal guard on the complete inside wing section too. The last 3 photos (bottom of page) show the inner wing area undercoated as well.

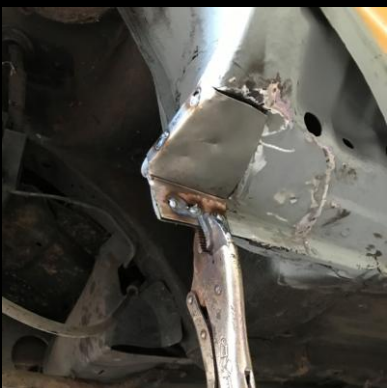
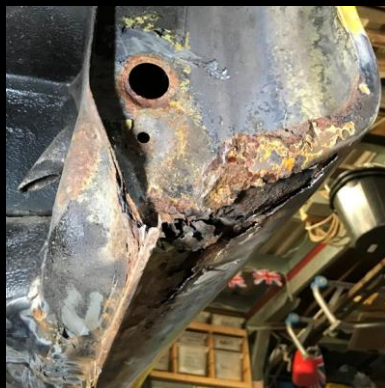


I am pleased to say the first corner of my car is now fully welded-up, primed, sealed & wing refitted. Obviously I will wait until all four corners are completed and the affected bodywork is primed before applying any top-coat paint. My plan is to continue work on the offside rear sill, jacking point & wheel arch next.

ROUND TWO: The off-side REAR sills & jacking point tackled. The 1st two rows of photos show the rusty sills (inner & outer) being cut-out and ground back to good metal followed by fabrication & welding. The end-plate & inner sill sections of the rear quarterpanel are now fully welded up and treated as before.

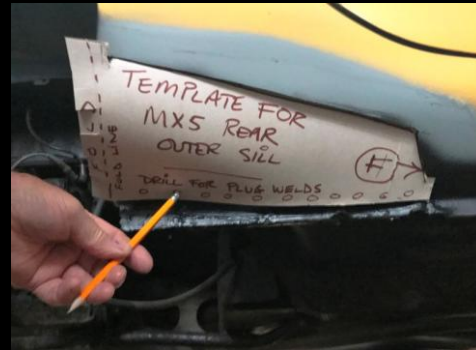


Once all of the bad metal was removed and replaced with new metal which took a fair bit of fabrication work and panel-beating to achieve the original shapes and strength in the seams and support gussets before welding the whole lot back together again and the usual phosphoric acid & zinc applied, etc. to each section.





A bit more panel beating to get the correct shape around the *drainage holes* to fit panel over the outer sill & the jacking point before folding & welding in place.



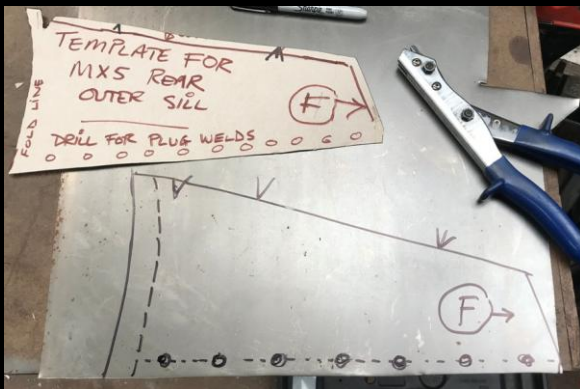
Just as a *side note* and to add a bit of history to this blog: I learnt how to weld as a teenager, because both my Dad & my Brother were welders by trade and they had welding equipment and machines at home. So it was inevitable that I would pick-up welding at an early age as I had two very good & most knowledgeable teachers.

Eventually, in the 1970's I attended night-school at Wulfrun College where I achieved City & Guilds Certificates in both manual metal arc welding and C&G's in advanced welding techniques (including Arc, Gas & MIG welding).

I have been welding ever since with over 54 years of welding experience it should come as no surprise to anyone that my welding skills are not that shabby and my panel beating & fabrication skills '*honed*' over many years.

This side of the car is almost done, or rather most of the fabrication & welding work to the O/S front & rear sills, rear arches, rear jacking points & bottom of the front wing is very near completed (apart from the final '*painting*' of the bodywork – as already explained I intend to wait until after MOT to add top coat paint).

The photos below (next page) show the final *fabricated* o/s outer sill (cut-out of 20 gauge mild steel sheet), shaped to fit the original curved bodywork. The '*dotted-line*' area is then cut & folded to make a right angle edged-seam to join the new bit to the wheel arch quarter-panel. Then ALL seams heavily Tiger Sealed.



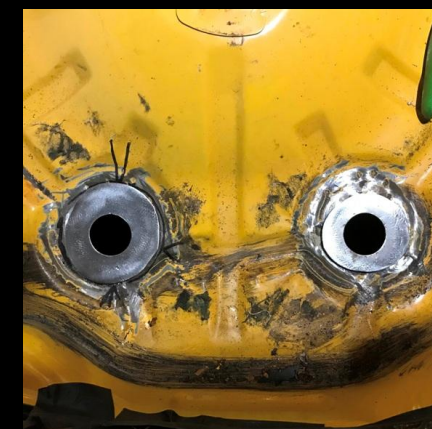
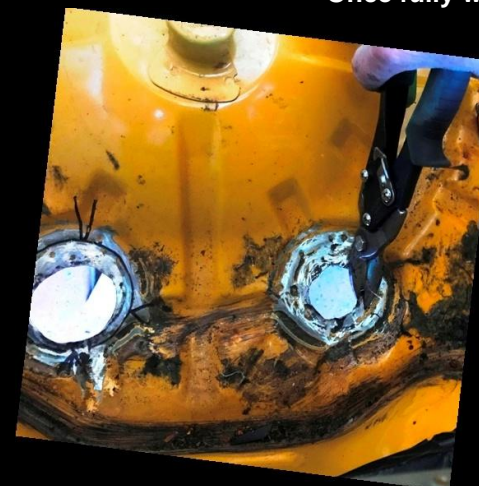
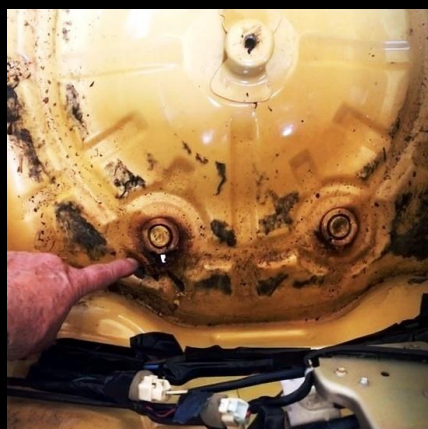
Once fully welded; all seams Tiger Sealed

First photo left shows the corrosion inside the boot around the two drain-hole rubber bungs.

These 'bungs' can be removed to drain-off any excess water that may find its way into the boot. If water is allowed to collect there the result is often corrosion around these holes.

The next photos (right) show the rusty metal being cut-out & the end photo shows two new drain-plug plates inserted ready for welding. Once sealed with Tiger Seal, two new bungs will be fitted.

This was yet another unexpected & additional welding job that needed doing.



These are the suspension & steering parts that I ordered from MX5Parts Ltd. I've got these ready for when the welding has been completed, All four tie-rods (front & rear), 2 track-rod ends, top & bottom ball joints for both sides to be replaced (1st photo left) as will the shock absorbers with these VMAXX coil-over shockers (2nd photo left). The next two photos on the right show the complete set of *Polybush* wishbone bushes to replace the original knackerd OE bushes.

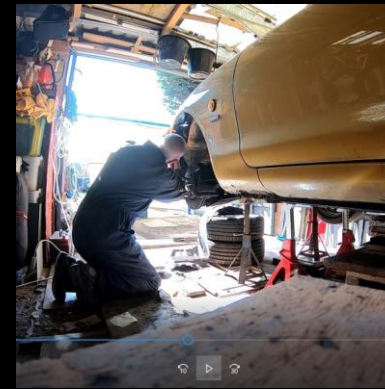


The next two photos below show the disk brake backplate dust covers which I got from the Mazda main dealers (I couldn't get these from anywhere else).

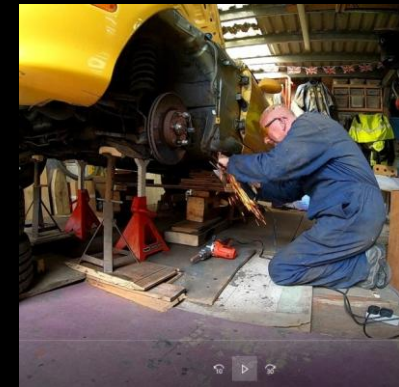
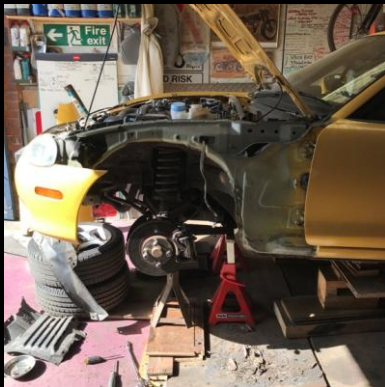


The above parts won't be fitted until I've finished-off all of the welding but I thought these images would be a welcome interlude from bodywork photos.

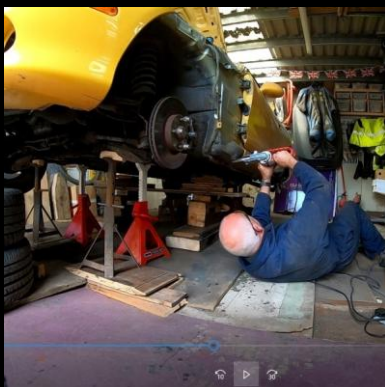
Now for the nearside repairs. As you can see from the photos below my 'Arizona 2.5 special edition' is ready for a 'duplication' of the off-side-repairs. More pix.



The near side front wing being removed (you can see it's just as bad as the other side). Followed by working on the inner & outer sills & jacking points.



Most of the images of 'Me' working on the MX5 are taken with my GoPro camera. Some of them are taken from my garage cctv cameras (hence the date-stamp on some of the 'stills' taken from the cctv) and the rest of the photographs have been taken using my iPhone camera. Hey! Modern Tech – what can I say !





Even with these photos being so graphic, it is still difficult to appreciate how bad this corrosion really was and to see how extensive the remedial fabrication and amount of panel beating & metal-shaping was required to fix all of this damaged bodywork. But . . . I am pleased with how the work is progressing even though the whole job is quite wide-spread. However; at least this treatment will prolong the life of my lovely MX5 and God willing, I should get another twenty years driving out of it (or if not by me, at least someone else will benefit from the joys of ownership and driving this wonderful little Mazda (as much as I have).

Bloody heck ! I've come over all philosophical-like (all of a sudden)!





Just as I was thinking "I've nearly completed all of the welding on all four corners" (apart from welding the bottom of the near-side front wing) I discovered the front chassis rail was also badly corroded. This didn't appear to be in need of immediate attention until I probed more deeply but because the corrosion is within 30 centimeters of main structural parts (i.e. suspension roll bar mounting, wishbone and shock absorber mountings) it is obvious that this should constitute an MOT 'Fail', so it was a no-brainer to tackle this chassis rail now whilst the car is still 'in the air' on axle stands, so I decided to tackle & weld this section too.

This section is quite an important structural part of the car supporting the front suspension & steering. The bad news is: to get at it properly I have to remove the Radiator, Power Steering pipework, various other fittings, wiring & hoses in the engine bay just to get access to the inner chassis member. I made a new chassis rail out of 14 guage steel plate (captive nuts welded in place to support the anti-roll bar bracket and other fittings) exactly where Mazda designed & intended.



Now the inner & outer rear sills & jacking-points are welded up fully, the next step was to start on the front near-side chassis rail. The front bumper was removed to gain access to the rotten chassis rail. The first challenge encountered was the plastic fittings that broke-off 'one by one' as I tried to release the bumper. This thing is fighting back all of the way! I made new metal captive nuts to replace the broken plastic fittings and as mentioned above, I had to drain-off the coolant and remove the radiator, plus unbolt the power steering unit and induction air-filter housing, pipe work & wiring. To remove the anti roll bar bracket I had to unbolt the two bolts on each side of the bracket (which sheered off) and drill-out two spot-welds that further secure the anti-roll-bar bracket to the chassis rail.



I then had to remove the front near side suspension & steering assemblies completely to gain better access to be able to weld the front chassis rail on properly. Removing all of this was necessary anyway, to replace all of the worn out suspension parts and replace them with the MX5Parts Ltd items that was 'in-waiting'. It was necessary for these parts to be removed in order to weld the new chassis rail onto the main baulkhead (where the chassis rail meets the highly reinforced Mounting Brackets and inner wing supports (that the top of the shockabsorber is bolted to) and mounted to (and forms) the inner wing-flitch-plate.



Photo below:
The front near-side top & bottom wishbones and suspension leg removed ready for reconditioning and upgrade.

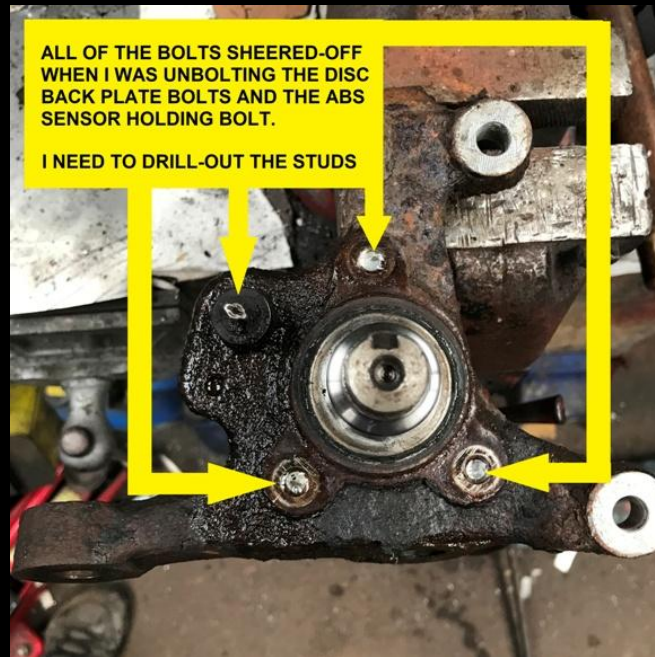
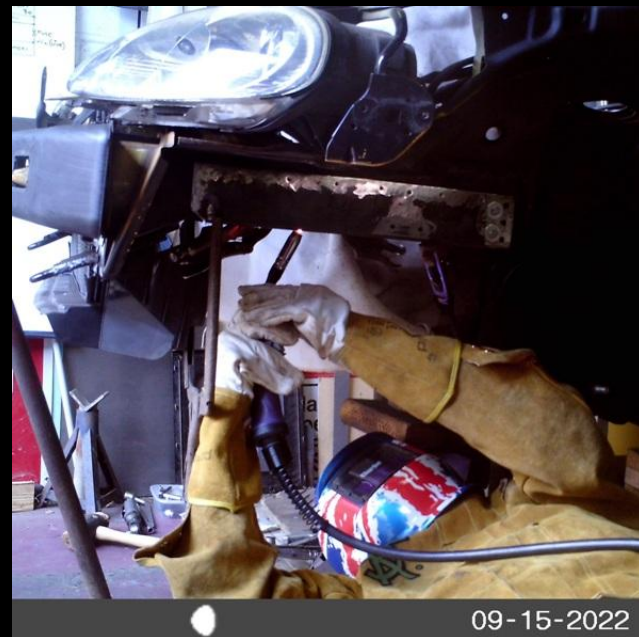
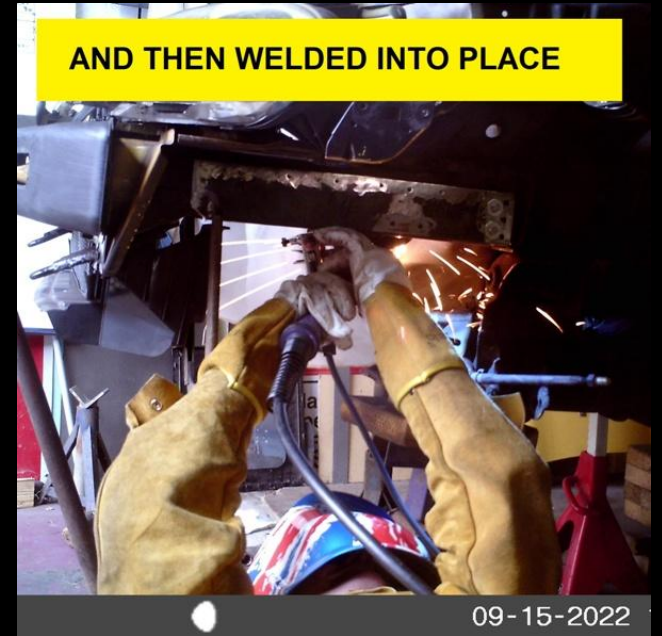


Photo below:
Shows the old rusty front disc back-plates (totally corroded) situated between the two new shiny Mazda supplied brake back-plates (seen here on either side of the rusty remains).



Now originally, my intention all along was to get someone else do all of this suspension & steering work (i.e the Garage doing the MOT), but . . . due to the costs involved I decided to do this work myself, even though I really did NOT want to go to all of this trouble myself. BUT . . . As it happens, I am now really enjoying working on the mechanical, fabrication and welding work again. It makes a change from stripping-down 1950's motorbikes and working on all of my other bike projects (which I also really enjoy doing). So, I have fallen in love with 'car work' once more (or rather 'fallen in love' with working on my MX5).

15th September 2022 work continues: I'm glad I managed to tackle this chassis rail now as it definitely turned-out to be a lot worse than it first looked.



The front near side chassis rail is now fully welded & finished-off with zinc primer etc. & ready for re-assembly after *Tiger Sealing* all around the seams.



3 extra tack-welds added as well as the original 'central' plug weld.



Photos above right show the sill & lower quarter panel sprayed with black body Shutz under-seal (which is 'paintable' to accept topcoat paint).

Photo Left: the reconditioned front anti-roll bar fitted with a new tie-bar link. The Americans call these *sway bar links* (but here in the UK they are also known as drop-links).

Next two photos (right) show the near side upper wishbone (rusty & then treated in red anti-rust primer) ready for a top coat of black gloss paint prior to bush fitting.



First photo below shows the new upper ball joint being 'Pressed-into-place' using my two ton arbour press. Even though this ball joint is an extreme 'interference fit' in the upper wishbone there is also a new retaining 'Circlip' fitted (for added security) just to make sure this vital suspension component stays in place. The 3rd photo along (below) shows the lower wishbone (after the 'broken stud' was drilled-out) being re-tapped. This re-threaded captive nut holds the new ABS wheel speed sensor cable bracket in place. Photo No.4 is a picture of the top suspension bracket that fits on top of the shock absorber (painted gloss black), ready to be bolted onto the new coil-over Vmaxx shock absorber. The end photo below right; shows the shockabsorber being assembled on the bench.



The new Polybushes ® were also 'Pushed' into place (into the top & bottom wishbones) using my two ton arbour press. These jobs (or any jobs for that matter) are always easier with the right *tools & equipment* at hand.

I realise that I am very fortunate that I still have most of my specialised garage tools and equipment around and a decent sized garage / workshop that makes my life so much easier when doing this type of repair. Lucky Me!

In the photo left, you can just about see the orange coloured Polybushes fitted where the inner wishbone is bolted to the chassis sub-frame.

And even more clearly, you can see my brand-new fully adjustable front VMAXX coilovers (with bright red springs). There are two Springs fitted to each of these VMAXX shocks. The top spring is the 'main' suspension spring and the lower spring is listed as an 'assister' spring. These VMAXX are specifically designed for *Road Use*.

New top & bottom Ball Joints fitted ready for the front Stub Axle to be re-connected (aka the front 'Upright') so the '*mechanicals*' are coming along nicely too.

An added expense was the two new ABS Sensors that I had to buy because the original ABS Sensors had siezed in the stub axle and simply broke on disassembly.

The next 4 photos (right) show the front Stub Axle.

I had to drill-out the four m8 broken bolts (sheered off during disassembly). The 'trick' is to drill as near 'dead-centre' as possible with a small pilot-hole followed by using a 6.5 mm drill which should just 'break' the crest of the thread.

When you get this process right it should look just like this (first photo on the right). If you are very careful and aim for precision, the remains of the thread comes out with the drill (like the photo).

All that is needed then is to clean-up the thread with an 8mm Tap (like the two end photos - far right).



Photo No.1 (left) Shows the front axle wheel bearing housing, wire brushed ready for painting. Photo No.2 (left) shows after being cleaned-up & painted, ready to be refitted on to the stub axle.

Photo (right) shows all of the suspension, shock absorbers, wishbone bushes, ball joints etc. including the disk brake & calliper have now been refitted.

The wing is only loosely fitted at this stage as the rotten-part of the bottom of 'the wing' still needs welding-up. But the rest of the suspension work and brakes have now been completed (on this side at least). RESULT ✓



2nd October 2022:

Work now starts on the off-side front suspension upgrade which is an exact duplication of the work carried-out on the front near-side suspension. The first photo (below right) show the OE shockabsorber & springs being compressed ready for removal. The only part of the old suspension units to be saved and refitted to the new VMAXX coil-over shock absorber is the top mounting plate bracket, top bushes and top washer (obviously re-used on both sides).

The spring compressor tool being used (photo right) is over 47 years old.

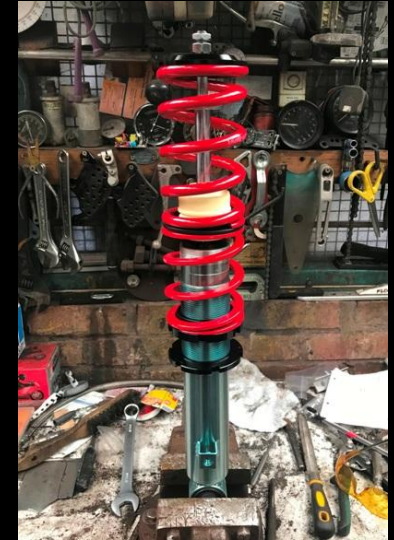
I bought these when I first went self-employed in 1978 and moved into my first Motor Repair Garage Business in Darlaston and I have used this tool literally hundreds of times over the years without incident (I am pleased to say).

This type of spring compressor tool is affectionately know in the trade as 'The Widow Maker' because if used incorrectly and without due respect . . .

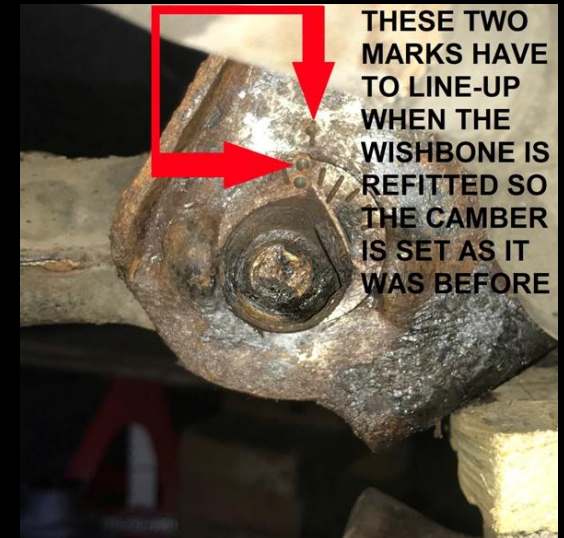
. . . they have a tendency to twist out of place and the incredibly strong spring is explosively released causing death, serious injury &/or loss of limb . . . but more often than not, total loss of bowl control.

I have replaced all of the 'broken' bolts (both m6 & m8) with stainless steel alternatives. Plus, all of the fasteners have been liberally coated with *CopperSlip* anti-sieze grease, hopefully to make future dismantling a lot easier than I've just experienced (and should also prevent similar future siezures & breakages).

At this time, I am Not replacing the brake pads at this stage as they were replace just over a thousand miles ago. Especially as these items are so easy to replace at any-time in the future.



The first photo below (left) shows the new disk calliper 'Slider Bolts' fitted to the refurbished disk brake brackets

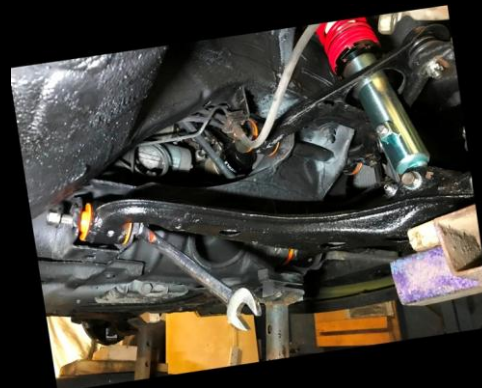


The photo above (far right) shows the lower wishbone camber adjuster 'Cam', marked ready for re-setting the wishbone back to its original 'camber' setting.

Front off-side chassis sub-frame. First photo below (left) shows the rusty sub-frame (suspension wishbones & shocker removed). Second photo (middle) shows sub-frame wirebrushed & de-rusted with liberal coating of phosphoric acid, turning the ferrus oxide into a sealed & stable 'ferrus-phosphate'. The end photo (right) sub-frame now zinc primed & ready for the stone chip guard underseal top coat. It's coming along slowly but surely (time and work commitments willing).



The off-side top wishbone now reconditioned (below left) with new ball joint & polybushes fitted. Next photo shows both wishbones in place before tightening.



Just like the near-side stub axle, I had to drill-out the broken bolts & re-thread to 8mm before re-assembly. M8 stainless steel bolts used as replacement bolts.



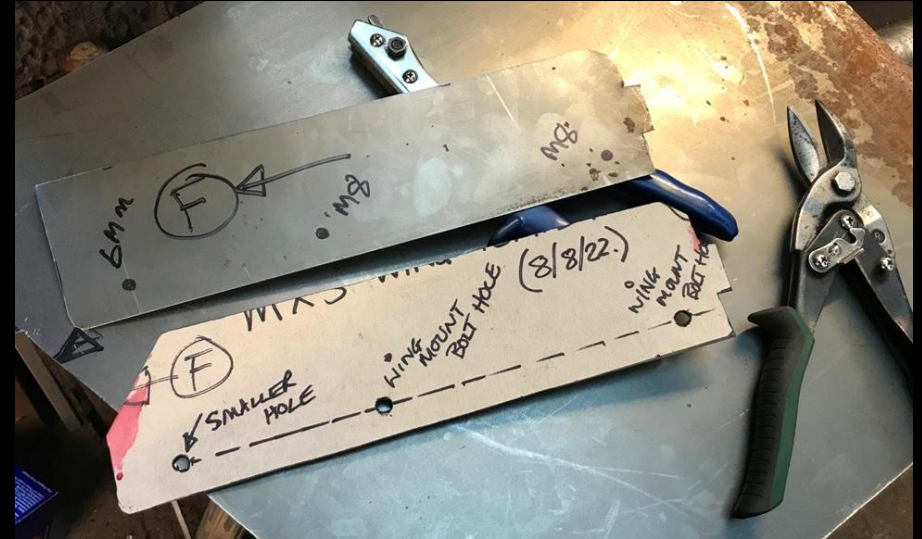
I removed all of the rust from the brake disk (left) and rubbed it down before painting it silver (just like I did with the other side).

I obviously removed all paint overspray from the actual 'brake pad contact area' before assembling the disk back onto the stub axle. I fitted my new calliper sliders to the painted calliper housing and then fitted the new abs speed sensor & new brake back plate.

I reinstated the front off-side wing and plastic under-wing mudguards ready for the front wheel to go back on to the car.

Effectively, the front off-side is now completed = RESULT (Finally).

Next job on my list: To remove the badly corroded metal from the bottom of the near-side front wing (just as I did with the other side). I managed to use the cardboard template I made for the other wing, but 'trimmed-it-down' a tad, to suit the requirements of 'this' wing. I'm using the same sized 20 guage mild steel plate that I used on the other side. Not forgetting, this repair is saving me a total of two hundred and forty quid (for the price of two ebay wings). And . . . I am really enjoying doing all of this work. Now that was an unexpected & pleasant surprise. Probably because there is no rush to get it done & me taking my time too.



Photos below; show the replacement plate 'in situ' and reshaped to match the contours of the lower part of the wing. After fully MIG welding it in place I used P40 followed by P30 body filler to blend the old & the new sections together. Once sanded back, primed and stone chip undersealed the n/s wing was re-fitted. This concludes all of the work on the front of the car. Next Job on my list: is to replace the rear shock absorbers & wishbone bushes ready for the MOT (again).



Oh! I nearly forgot . . .

I've still got to buy another Tyre.





Photos (left & below) show the stone chip under-seal guard also applied to the inner part of the n/s front wing as well as the bottom section of the outside part of the wing. The wing was then reunited once more with the car to finish off the front . . . all that is needed now is to refit the front wheels.

Like stated on the previous page . . . only the rear shocks'n'bushes & tyre to do now (& a lick of paint).



With the help of Julie from Jewel Paints Ltd, the correct paint code was identified and I proceeded to buy the paint & materials to tackle the body-work. This MX5 Paint is applied as a three part process. The *first part* is a coat of yellow base coat, the *second part* contains the Mica element (that provides the glitter & sheen in the sunlight) and finally the *third* and final part of this process is the application of the top clear lacquer coat. This will give a high gloss (Petrol & UV safe) finish to the whole paint process when applied and completed correctly. However, I don't intend to do a complete re-spray just yet.

I will just paint the parts that I have already primed and prepared so far, as I want to get the car MOT'ed and road-usable first before I start on a proper 'Respray' job. As you can imagine, this three-part-paint system is NOT cheap and therefore I need to let my much-used credit card 'time' to cool down a bit. Plus, it would be prudent to 'paint' the whole car in warmer, dryer 'Summer-type' weather. Well ! That's the plan.

Near Side Rear Suspension Reconditioning Work begins . . . The near-side rear shockabsorber 'Bolt' was totally siezed in the wishbone and needed heating-up to eased it out, as a sheared bolt or broken 'captive' nut at this stage would add even more expense to an already increasing repair bill. It was easier to remove the shockabsorber & wishbone together as one unit and tackle the job 'OFF' the car (seen here on the anvil). OEM Shocker & spring in Vice for the change-over.



The near side rear suspension 'came apart' without too much hassle, but when dismantled . . . I found that both top & bottom wishbones had been attacked by the dreaded rustworm. Fortunately, after a bit of grinding-back to good metal I managed to MIG weld some strengthening strips to both wishbones. So with a lick'of'paint and new Polybushes fitted (see photo on next page) all that is required now is to re-assemble and finish-off this side before starting on the 'Home-Run' . . . or rather . . . to begin to recondition the off-side rear suspension – to complete this epic SAGA of a repair.

Photos below show the rear wishbone bushes fitted and the Camber 'cam adjusting bolts' (before & after photos), after 'rotary wire brush' polishing the bolts & cams. And finally (below far right) the VMAXX shocks & wishbones re-fitted to the car once more. The rear off-side suspension work can now begin.



After doing all of this work, I can now appreciate the original garage quotation received for 'this work' (from Mazcare). Clearly it was not as over-priced as I first thought. The original quotation was as a result of their knowledge & experience welding up many MX5 sills & wings, etc and they knew the potential extent of work needed to sort this problem out. Photos below: further wishbone welding repairs to the other side (NOT quoted for and therefore in addition to the original work). Metal around corroded holes in the off-side wishbones was ground-back to good metal and new mild steel plates MIG welded into place making these wishbone as strong as new again. Just as before, all of the welded metalwork was zinc primed & painted ready for re-assembly.



One final 'Tip' about refitting the suspension wishbones. The Camber 'Cam Adjusting Bolts' and the wishbone 'Pivot Bolts' that secure all of the wishbones in place (to the chassis) should only be tightened under load. In other words, the full weight of the car must be on the wheels before these wishbone Nuts and Bolts are tightened up so as to avoid putting these Bushes under too much undue load with twisting stresses. They need to be set at the correct ride height first.

25th October 2022: All of the MOT work has now been completed with all corroded areas fully repaired, welded & treated. ALL new steering & suspension parts fitted and the final push to finish-off this project is on by painting all primed panels and to get a new tyre purchased & fitted (asap) = RESULT !

Oh! I may have forgotten to mention *one extra little job* that I decided to give myself. See photos below of the little extra fabrication / welding project completed.



I read the other day that my MX5 Mk. 2.5 Arizona model should have a top-suspension mounted Front Strut Brace fitted. These front strut braces are only fitted to the Sports Editions (like mine). My other MX5 has a front strut brace fitted but the Arizona's is missing??? So I decided to take this opportunity to make my own version of a front strut brace to fit my Arizona too. The materials used for this extra little project was made out of 90 percent recycled steel (14 gauge oval m/s tubing) that I've had in the garage for ages (waiting for just this sort of project) and to be repurposed into something 'most useful'.

The two 'Bases' that join the strut cross-bar to the bodywork are MIG welded together, finished-off and then painted silver, hopefully to compliment the rest of the under-bonnet layout. The finished Strut is then bolted to the top of each suspension mount. Each 'mounting base' is also made out of 14 gauge mild steel plate that I've cut, folded, fabricated and then MIG welded-up to form a strong mounting pillar completing the new support cross-bar 'suspension Strut Brace'.



I'm pleased with the front strut brace because 1) it's made from 90% recycled materials. 2) it cost me nothing to make (apart from time & a bit of MIG welding wire) and . . . 3) It's strengthened the front suspension and engine bay & chassis no end, which should sharpen-up & improve the handling of the car even further.

28th October 2022:

The rear tyre that was an obvious 'immediated MOT fail' because of the large 'bulge' on the inside tyre-wall (see first photo below left). Again this was out of sight. I'm convinced this damage was caused when I unavoidably struck a very large Road Pot Hole at speed a few months ago. Our bloody Roads are crap!

The middle photo shows both of the rear wheels stacked together for the inside part of the wheels to be cleaned-up and prepared ready for new tyres. Both of these old rear tyres still have a reasonable amount of tread left on each tyre, but obviously the damaged one definitely needs replacing. I've never been a fan of just fitting one new tyre on the same axle set and leaving the other old tyre on the other side of the car. I believe tyres should be changed in pairs on the same Axle. I am also opposed to fitting part-worn tyres on any of my cars, as the history of such second-hand tyres is unknown. There is also the issue of the 'age of said tyres'. Tyres should be changed every seven years anyway – irrespective of visual condition as the materials used for tyre manufacture deteriorates and degrades over time. That's why tyres have a date stamp code on them.

Third photo (below right) shows my new Avon 190/50R/15 ZV7 tyres that I decided to buy. These two new tyres now match the front tyres which are also Avons.



If I do decide to sell this car I've been told several times now by my matre Rick “. . . the next owner will be most pleased with all of this work you've done”. p.s. I'm not selling the car now all of this work has been lovingly completed. That is . . . unless someone offers me at least £8K for it. Well-worth every penny.



After part-masking the the car, I applied Body Shutz to the lower wings, sills & bottom of the doors. The end photo (above right) shows the Shutz 'painted over' with the correct paint-code 'Base Coat'. No Glitter added yet, that will have to wait until the car is MOT'ed again. It's starting to look more like its old self again.

As you can see from the photos below . . . I managed to put some more yellow 'Base Coat' colour over the 'Primed' areas of my Arizona. The bottom of the doors & sills have also received several more coats of yellow base coat over the black body shutz (see the 1st photo left). The original coverage was not as good as I expected so it needed more paint to get it to look right. However, It's looking pretty good now. FULL COVERAGE achieved (but still only in base coat – in other words; No shiny glittery paint added to the car yet). All of these new painted areas have been done using *Rattle Cans* only. Purely as a quick-fix paint job.



two small annoying dents in the driver's side door have been there for years



And . . . finally, after having two small annoying dents in the drivers-side-door (for several years now) I decided it was time to 'get rid of them'. See close-up photo (above centre), but only because I already have body filler, primer & paint, etc. to finish-off the cosmetic work (following welding repairs) so I thought . . . "I might as well tackle these 'two annoying dents' at the same time". The photos below: show the driver's side-door repair. After a bit of panel-beating, followed by the application of a small amount of body filler, then sanding-down & multi-priming. I added the yellow base coat to the o/s door and other primed areas on the front wing & rear wheel arches just to neaten everything-up and make it a bit more presentable ready for the MOT.

I really wasn't expecting to do this driver's side door repair (when I first started to work on my MX5) . . .

. . . but at least its done now.





I must admit the finish is not brilliant but not bad for 'Rattle Can' spraying (or rather 8 rattle cans to be precise, which includes the primer used). And . . . Like I have already stated several times now, my intention is to do the proper paint job / re-spray later when the car is MOT'ed and back on the road again and when the weather improves.

Now the 'Optimist in me' thinks I will re-spray the whole car next Spring if/&when it starts to get warmer, but if not then, in the Summertime when the temperature is hot enough and the conditions are right. But at least its looking a lot better in the meantime whilst we are all waiting for the weather to improve.



I am quite impressed with the results produced using just *Rattle Cans* and whilst it's certainly not showroom condition, it'll pass muster (just).

Monday 7th November 2022: Finally, all of the work is completed and it is now ready to be lowered to the ground and awaits 'Tracking' & MOT'ing.

(Question); But at what Cost ????

(Answer); In monetary terms, I have spent a total so far of £1,595.87 making quite a 'Saving' on the original estimated quotation (you do the Math as the Americans say).

This is broken down as follows: I spent £1,140.69 on ALL of the suspension, steering & brakes parts used (i.e. Vmaxx coil-overs, Polybushes, ball joints & track rod ends, tie-rods, brake backplates, ABS sensors +wiring, & brake compensating *slider* bolts, etc.). I spent £125.00 on two new Avon rear tyres and a further £190.18 on paint materials; rattle cans of yellow base-coat & mica coat, plus clear coat lacquer, primer, underseal, P40 & P38 body fillers, coarse sanding paper, wet & dry paper & other refinishing materials. Four mild steel metal sheets (20, 18 & 14 guages) cost £40.00 this metal was used to make the new sills & wing sections and all the other fabrication used. Another £100 was spent on various consumable items (such as welding wire, Argon Gas for the MIG welder, propane gas for heating-up rusty bolts etc).

And . . . (second part of the answer):

In terms of time & labour, it has taken me three months (from August to October) of my time, working on & off (and on again, etc.) as time permitted fitting all of the welding & mechanical work (as well as the refinishing, painting and polishing of the extra bodywork carried out), all of which was done in my spare-time, done in between doing paid work, volunteering at our local community centre and the inevitable family commitments.

And finally (next week) it should cost me a further £125 for the Optical Steering & Camber Tracking to be done followed by the cost of the MOT Test. With all of the work that I've done I have every confidence that my lovely reconditioned & repaired MX5 should pass the MOT and I am expecting to be able to tell you all that; "I'm pleased to say that my Arizona has now passed its annual MOT Test and is back on the road again".

But obviously . . . only time will tell, as nothing is guaranteed in this world other than Death & Taxes (so I've been told).

Other mechanical parts used for this repair (other than those bought from MX5 Specialists listed already) came from Car Spares Distribution Ltd, of Cooper Street Wolverhampton who offer an excellent next day service and carry a wide range of parts, equipment and tools.

The paint and painting materials / consumables, etc. was supplied by Jewel Paints (West Midlands) Ltd, of Cannock Road, Wolverhampton (highly recommended) they helped identify the correct paint code for me and 'mixed' said paint there & then as required. Very quick & accurate service. In fact, great service received from ALL of those companies mentioned in this blog including *Mazcare* who also offer a complete sales and repair service.

And finally a most important point to stress:

I must add this as a disclaimer that I have no business connection or financial gain or benefit from any of the companies stated in this blog (other than being a very satisfied customer) and merely quote their names as a matter of fact and that I am happy to share this information with MX5 club members and fellow MX5 owners and other interested readers of this blog. When the Arizona is finally painted and is glistening once more in the sunshine, hopefully dent free & looking as good as it can look, I will add one final photograph (on the very last page of this blog) showing-off my beautiful completed and road-worthy Blaze Yellow Mica MX5 Arizona 1.8i Mk.2.5 SE as a final & fitting ending.



I need to thank my good friend Rick for the loan of his two heavy-duty axle stands (to bolster-up and complement my own axle stands that I have used). And Last but not Least, I would like to take this opportunity to 'Thank' both Rick and my business partner Debbie for their continued advice, help and support throughout this whole MX5 repair process.

Thanx Youse Twouse ✓✓

SOME MAZDA STATISTICS about the 2002 MX5 Arizona 1.8i Special Edition (Sports Mark 2.5 models)

As you can see (from all of my photos) my MX5 is painted Yellow, but not just any old Yellow, this is a Special Edition Arizona Pearlescent Yellow (Blaze Yellow Mica) that glistens in the Sunshine.

There are still a few extra items missing from the list below.

MX5 2.5 Arizona special edition

Arizona 1.8i - 146bhp
5-Speed Manual Transmission
Torsen - LIMITED SLIP DIFF on 1.8i only
Power Steering - Engine speed sensing
Glass rear window/defogger
15" Alloy wheels - 195/50R15 Tyres
Electric windows with 1-touch auto for driver
ABS - and Electronic Brakeforce Distribution EBD
White background instrument dials
Stainless steel Scuff Plates
Black Leather HEATED Seats / handbrake lever / Gear knob
Black Leather NARDI Steering wheel
Remote Central door locking & Boot release
Modular Radio Single CD unit + 2 extra door tweeters
Electric aerial
Electric Door Mirrors
Style Bar & Windblocker
Aluminum-look centre console and meter rings
Alarm + Immobiliser
Seatbelt pre-tensioners
Driver & Passenger Airbags
Airbag cancellation facility
ARIZONA colour coded mats

I've only recently discovered that the mark 2.5 SE models are also classed as 'Sports Edition' models, which have larger brake disks fitted and have bigger brake callipers, etc. Front suspension strut braces should also be fitted to the top of the front MacPherson Strut Legs on Sports models.

The MX5 Arizona special edition, mark 2.5 came out in July 2002 and was produced until November 2002 with a choice of two engine sizes.

A brand-new MX5 1.8i Arizona cost £16,605 in 2002 and the smaller 1.6i engined model costing slightly less at £16,095.

All Arizona models had *Enkie* styled 15" Alloy Wheels fitted with low profile tyres, each wheel also secured by locking wheel nuts.

Mazda only produced 265 of the 1.8i models in Blaze Yellow Mica paint option (same colour as Mine). So mine is 'One' of only 'Two-hundred & sixty-five' limited edition models ever made in this special *Blaze Yellow Mica* paintwork.

Mazda also produced 120 of the 1.8i models in Eternal Red (which makes it even more collectable) and 265 of the 1.8i models in Sunlight Silver. Making a total number 650 limited edition MX5 1.8i Mk.2.5 Arizona models.

In addition to the 1.8i models, Mazda also produced a series of smaller engined models as stated above (1600cc) of which there was a total of only 350 of these 1.6i models made.

Mazda also used the same three Arizona special colour-coded paint options for the smaller 1.6i models too.

So the final number of 2002 Arizona special edition models ever made (1.8i & 1.6i combined) only amounted to 1,000 in total.

If I had not decided to do the extensive welding repairs etc. to my Mazda MX5 and instead decided to scrap the car for parts, as is probably the case when these cars that fail the MOT Test (miserably like mine did), then I can imagine quite a lot of these MOT failed cars ending-up being '*lost forever*'.

Now that makes mine just that bit more special to me.

More Statistics (about 2002 MX5 Arizona 1.8i Special Edition, Mark 2.5 models). The Arizona is a much sort after model.

MAZDA MX-5 ARIZONA

Only produced from July 2002 to November 2002

Tax/SORN

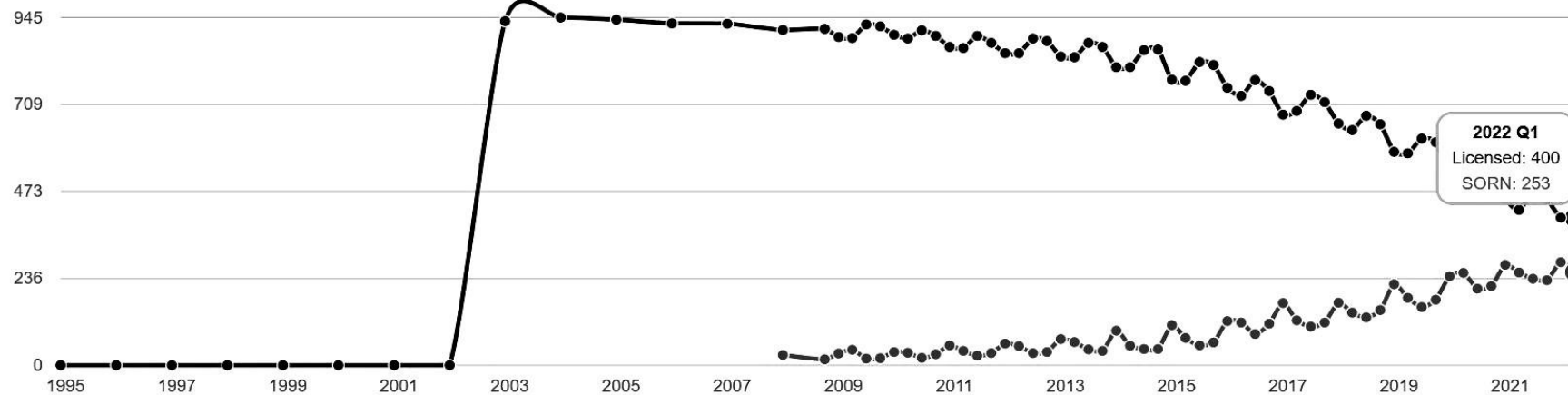
Years

New Registrations

Engines

Quarterly number of vehicles licensed or SORN

Data taken from DVLA at the end of the first quarter of 2022
with only 400 Licensed vehicles recorded and 253 listed on SORN



Mazda call these cars 'Special Edition' cars but in fact they are more like a 'Limited Edition' series with only a 1000 Arizona models ever made.

I did some research on the internet for present day statistics of how many MX5 Arizona models are still on the road and I found this up-to-date chart illustrating official current data and as you can see they list only 400 MX5 Arizona models that are still Licensed for the road (UK Road Fund License or Taxed as we call it in the UK). It also lists 253 on SORN (Statutory Off Road Notification). As a 'thumbnail sketch' this is an indication of how many Arizona MX5's are still around and how many have survived the ravages of age and of the dreaded Rust Worm! Only 653 listed out of 1,000 produced.

I'm also guessing the other 347 cars either ended-up being written-off in car accidents, some being stolen (& not recovered) or broken-up for spare parts, whilst others going to the scrap yard for other reasons (other than Rust damage). One third of ALL Arizona MX5's GONE ! But, either way, it is a dwindling number each year.

And this is just one of the reasons 'Why' I should hang-on to my lovely reconditioned MX5 Arizona.

Fortunately for me I also own another MX5 to drive around until my Arizona is completed. This one (photo below) is my latest acquisition and is a 1.8i Nevada SE Mark 2.5 MX5 in Cerrion Silver (with a hint of greenish-blue or is it blueish-green?) and it is a totally rust free example and is in perfect condition. So, I really need to look after this one (better than I did with the Arizona). I bought both of my Mazda MX5's from the same dealership; Mazcare of Bilston Road, Wolverhampton who specialise in Mazda Cars (Sales & Repairs). I intend keeping the *Nevada* in my garage and only using it for special occasions, high days & holidays, etc. Whereas the *Arizona*; I intend to continue driving this one around as my *daily driver* and enjoy driving it 'roof-down' as often as I can.

Obviously from this point onwards, I intend to look after all of my cars a lot better than I have in the past. I intend to regularly clean-out the sill drainage holes (that I have enlarged) and flush-out the rear gutter drainage system (that clears water away from the folding-roof/hood via two dedicated plastic drain-pipes). These two simple tasks should keep my sills and inner box sections dry & rust free. Plus (a most important rust-life-saver) is to apply Lanoguard wax treatment to both cars *every year* to ensure that neither of them suffer in the future from the ignominy of further rust worm attacks.



Finally . . . My Arizona (photo below) has successfully passed its MOT Test and is once more back on the road again (all legal like), i.e. it is Road Taxed, fully Insured and is now MOT'ed once more.

On the positive side: The suspension & steering upgrade has certainly made a positive difference (from the standard 'set up') because the steering is so much more responsive than before. It '*Holds the Road*' better and feels tighter than with the OE parts. I am very pleased with the steering upgrade (ten out of ten) as it has definitely sharpened-up everything steering wise.

On the negative side: The new Vmaxx coil-over shock absorbers feel quite hard, or rather . . . the '*Ride*' now is much '*Harder*' than with the original (OE) shock absorbers.

So . . . only time will tell how I will get-on with this suspension change-over. All I can say at this time is that the '*Ride*' is very '*Hard*' and I'm just hoping that I can get '*Used to the 'Feel*' of these stiffer / harder Vmaxx's (or I may need to change the shock absorbers back to the '*Original*' Mazda set-up)?



This web-blog was last updated on 11th December 2022



11th December 2022 . . . Well ! The White Stuff has arrived. But . . . unfortunately, I haven't got any space yet in my garage to 'house' my Nevada, so as you can see from the photo on the left – its relegated to outdoor winter parking.

With only two weeks left now to Christmas 2022 I would like to take this opportunity to wish everyone a very Merry Christmas and a Happy New 2023.

“Merry Christmas”

and my favourite Christmas Film quote

“Keep the change you filthy animal . . .”

Can you remember which Christmas Film this quote is from?