

Stag Restoration

by Terry Hunt



My plan was to “do” a Stag as a retirement project, but I was having difficulty finding a good candidate. Eventually I found a Mk2 locally on eBay which was pretty much complete, aside from an engine. It was purchased unseen as a potential spares car but when I got it home, I found that the body was in rather good shape with little rust. Most of the engine was missing, just a block, some pistons and a crank remained but there was a 4-speed gearbox in the boot which I decided deserved saving. Now I needed an engine, so another Stag (Mk1) was found with a body long past repair but would provide some additional spares. The engine was complete, and despite appearances, it proved to be in rather good shape. I had wanted to use the first car’s original block, but it was beyond repair.

The heads were fine, so they had a valve job and light skim. The block was over-bored to +20 and lightly decked, the crank was reground -20 and the components balanced. However, I wasn't happy with the shop's assertion that cranks never

need hardening so sent it off to Shaft-Tech in Ohio for hardening and polishing. The engine was installed using German IWIS timing chains and the engine assembly went well. However, you do need to be on your best game with this engine as it is not simple and there are lots of items that need special attention. I had calculated the volume of everything before assembly and in the end with the new pistons and skimmed heads, the compression came out at 9.2:1 - just what I was looking for.

I had made the decision to go with an electric water pump so the oil and water holes in the block were plugged with simple Welch plugs (core plugs) and the Davies Craig Model EWP-115 was mounted low on the left side, which is only possible if the mechanical fan is removed. The thermostat was also removed, and the bypass deleted as the EWP controller, mounted in the glove box, would take over those functions. I had a decent Mk2 radiator which tested fine even after I had soldered two stubs in for a VW header tank, but on installation it sprung leaks everywhere. I

think the stress of installation caused the old solder to fail. A supergill radiator was purchased and a 16” electric fan mounted in pusher mode as there was no room for a puller even without the mechanical fan.

The 4-speed gearbox was next, thankfully it was an actual Stag unit with the stronger internals and was in rather good shape. I enjoy overdrive, so a TR6 J-type overdrive box with stripped gears was sourced for the components I needed to convert the Stag box which was rebuilt with new synchros and some bearings and converted to overdrive. Once the overdrive itself was stripped, the cone clutch looked a bit thin so a re-lined one was sourced. The only thing missing was an overdrive top cover, so I had to drill and thread the original for the 3-4 gear inhibitor switches.

By now it was spring and time to get my Stag out of its storage container and give it a proper examination. I had stripped it bare aside from suspension and now it went off to a media blaster to remove the paint and detect any rust holes. It was, as I had suspected rather good! There

was some rust in the front valance, a little area on the front lower area of one wing, the left side seam from rocker to body behind the B-post looked suspect and the passenger footwell had a fair sized hole, but otherwise it was fine. The biggest job was fixing the damage caused by previous owners. At some point in time, a 5-speed gearbox had been installed and the cross-member had been cut away and now had no strength left, so I used the one from the donor. The transmission tunnel had been distorted presumably to give some clearance which was painstakingly pulled apart by releasing the spot welds and re-aligning, but some metal was so stretched and fatigued that patches were needed. Finally, as a fix for some presumably light rust in the pan beneath the rear seat, some glass fibre matting had been applied. This allowed moisture to collect underneath and it had rusted very badly. This was my biggest problem as the complex panel was beyond my fabrication skills and tools. Replacement panel are no longer available and the only place I could source one was in the UK. After cutting it down to size with a grinder at my brother's house during a visit, much to the enjoyment of the neighbours, it was shipped back to the States. The old panel was cut out and this one inserted. It fitted well and was almost impossible to see afterwards.

I had made a rotisserie from three Harbour Freight engine stands, so once the suspension was stripped the shell was mounted on it and the access was much better in my single-width garage. I started patching and repairing the body. I used a stud welder to pull a particularly nasty 2ft-long crease in one door and various other minor dents in the body. My aim is always to use as little filler as possible. I used some

autobody epoxy glue on the repair patch on the rocker to body joint as it was a hard place to weld and this not only solved that problem but ensured a good waterproof seal. The underneath was covered in Rocker Schultz and painted body colour then the various fuel and brake lines were installed before I took it off the rotisserie and on to a dolly for painting.

This is the fourth car I have painted in my garage. It's not easy but I seem to manage it! I used PPG DCC paint which is expensive but sprays well. It's a two-part single-stage paint. When painting at home you are bound to get dust in the finish and colour sanding is a must, so I ensured there was plenty of paint on the car. Before that I had put a coat of epoxy primer on the bare metal, and on some spot areas where I did the body repairs, I applied and levelled the filler to where I wanted it and followed that with another two coats of epoxy. Then on went 4-6 coats of polyester hi-build followed by blocking and reapplying as needed, followed by another coat of epoxy as a sealer. This is the hard bit; it takes many hours but gives a good finished. A low humidity, warm September day was needed, and the garage had been cleaned, sealed off with plastic sheeting and five fans covered in filter material were used as extractors. Filters were used on the air inlet side as well. I did use an air-fed respirator as it still gets nasty in there. I purchased a Festool nib remover which is a tungsten block used to scrape paint nibs and runs from new paint. It worked very well, and I was glad I had it, despite its rather high cost! After a full colour sand and buff, the paint looks great.

By now the suspension had been restored, cleaned up and painted with all new shocks and new bushings all round. I

kept some of the bushings that attach to the body in original rubber for smooth riding, but the rest are all poly to control movement. The power steering pump was rebuilt, along with the power steering rack, a first for me but it seems to have gone well. New brake and clutch masters were sourced. The brake servo was sent out as it seemed that it was not much more expensive



than the parts needed. In the end it was the only thing I did not do myself. New disks, calipers were rebuilt with new pistons and the brake lines are all new. I had the differentials from both cars and chose the original which seemed to be OK with not a great deal of backlash and no leaks, but I did not open it up, a decision I would later regret.

All the wire looms had been removed from the car and were checked, pins cleaned and replaced where needed, wires repaired and rewrapped with some extra additions for the EWP and fan. I also made a relay box to hold the fan relay and some headlight relays and fuses to take the strain off the headlight switch. LED taillights were installed, and the rear holders had good grounds soldered in. I also installed a Wideband O2 sensor in the exhaust, which makes carb tuning a snap and may come in handy later. I did not bother with a gauge as I can use a laptop to read it when tuning. All instruments had



Terry's Springer spaniel Penny knew he was on to a good thing



The Stag was purchased sight unseen



been stripped, repainted internally and LED bulbs installed, I can now actually see them at night!

I had worked on the dash wood early on. Some of it was de-laminating so glue was used to stabilise and then re-veneered. However, the dash pad itself was not in great shape so a replacement was obtained. Carpeting was installed with a little adjustment needed to get the fit I wanted as it seemed a bit too wide. Seats were stripped, repainted, re-foamed and recovered. Not the easiest seats I have ever dealt with but got there in the end. The rear seat base foam is not available, so it had to be repaired and reused. The tonneau was also recovered along with the T-bar which needed some heavy straps to get the bolts aligned. The windscreen was installed in ten minutes, but the trim took another 2½ hours. Next time I will install the trim before the glass is fitted. The hood frame was stripped and rebuilt with new shims and bolts where needed.



Very neat engine bay

There are fourteen different bolts used on that hood which was quite distorted and needed lots of bending and multiple fittings to get it working. I found that it was best to adjust it without any of the springs fitted, that way its easier to move around. The Mohair hood went on without much drama. I spent weeks on that hood and all for something I will probably only use twice a year.

When finally ready to start the engine, it fired on its first crank - and boy what a wonderful sound! Everything went well and slowly over the next few weeks I proved it was all working, especially the EWP cooling. The carbs had been set with the needles at the same height and then adjusted equally to get the correct 14 air-fuel-ratio (AFR) on the wideband sensor. After a few runs the plugs were checked and compared. As each carb supplies specific pistons, I compared one fed by right to one fed by left. Initially I checked 2 and 4. The left looked rich, so I leaned it a little and reset the AFR again on the wideband. On next check it looked good. I ran it hard on a few 90 deg.+ days which finally eased any overheating worries, and I could close the glovebox where the EWP controller is mounted and stop stressing! A slight coolant leak from a couple of Welch plugs on the heads strangely went away after a few days. Some oil leaks were found around the rear of the engine - fixed by resealing the rocker covers, and the sump was torqued up again curing the worst leaks. A little oil was still coming from the oil pump area, probably from the oil pump relief valve. The oil pressure was too high at 75psi, a known issue with the new county pumps so the original relief spring was installed with a couple of shims to get it to 50psi and a new slightly oversized seal was installed. All gears and overdrive were great, and it is a joy to drive.

The Stag's V8 engine has one of the best soundtracks around, its pretty punchy, at least with the high compression I have. It is free revving and sounds positively angry when pushed - who would swap it? Not me! My early impression on driving was that the steering was a bit ponderous; an alignment helped but it still felt wrong. I eventually realised that this Mk2 had a Mk1 steering wheel, so a correct

14½-inch wheel was procured, and it now feels much more responsive and I can now reach the stalks easier. The only thing that was amiss was the differential and rear driveshafts. The diff was whining at around 60mph - not awful but annoying enough and it, along with the driveshafts, had a bit of backlash, causing some clunkiness. Also, there was a big measure of the famous "Triumph twitch" which improved as the molly grease got around the splines but was still quite disconcerting. I decided to open the spare diff to see what it looked like. All looked good, so I renewed the planetary shims which took out any clunk and changed all the seals. I was lucky to get the inner driveshaft flanges apart without too much drama by bolting them together tail to tail to crack one and a simple puller for the other. I have heard of 20-tonne presses failing on those! While I was awaiting a good weekend to swap the diffs I broke down and ordered a pair of CV driveshafts to install at the same time. The differential came off easily as I left the extension in place. I also replaced the quill shaft bearing inside the extension in situ. All went back together fine and what a difference. No clunk, no whine, and no twitch. The CV driveshafts are expensive but on a car this good, I felt they were the icing on the cake.



The EWP was mounted low on the left side



In the paint booth - garage!

Once the cool weather set in, I found that the cooling worked so well that the car could not get up to temperature for a long time, if at all. Without a bypass to help warm it up the cold water from the radiator was just too much despite the electronic control, so a thermostat was needed. As I have a Mk1 inlet manifold I was not keen to restore the bypass as, unlike the Mk2, it will always bypass even in the summer. I therefore installed a thermostat with a couple of 3mm holes to restrict the flow until it opens. I chose an 82 degree high flow which should be wide open in the summer when the EWP controller is set at 90 degrees, for winter I have the controller set to 85 degrees and it is working well.

The car is now hibernating for the winter and I have a few jobs left to do - some LED turn signal indicators and I need to replace the overdrive switch which despite being new is intermittent. The A/C-type vacuum heat control is not working. I suspect the thermostat needs looking at. I had thought about re-commissioning the A/C system with modern components and had checked and prepared everything inside the cabin but reconsidered as I rarely put the top up so when would I use it? All-in-all, I am well pleased with this car and it is definitely a keeper that I can happily drive anywhere. This year is the 50th anniversary meet up in Canada and COVID-permitting, I will be driving up for that. Even though I have done all the work myself it has cost north of \$20k but I have

replaced almost every part that wears and tears so this car is good for a long while, which is more than I can say about myself!

Terry hales originally from the U.K. coming to the U.S. in 1988 as a CAT scanner service engineer. Now retired and living in Wilmington, DE, Terry's first restoration 25 years ago was a TR250. He then rebuilt and turbocharged a Mini, and a 1967 MGB. In retirement, he wanted a car that was a bit more civilised that would allow him to take his grandkids along. The Stag was the obvious choice, especially now that he had honed his skills on the others! He picked up skills along the way and has always done his own welding, painting and all mechanical work, as that is where he gets the most satisfaction from the hobby - Ed. 🐾



Rear seat panel before/after



V8 ready for reinstallation

