

Sadler Vampire SV2 - SU023 Flies Again!

By Jack Kormas

Having purchased my vampire SU023 in late November 2002, I was really "hanging out" to go flying but couldn't do it immediately as it required a few minor repairs to get airworthy. As my house was not really conducive for performing aircraft repairs - as it can't accommodate the aircraft with the wings extended - I decided to take SU023 to Latrobe Valley airfield, where I made contact with a L.A.M.E who would help (his name is Brian and I would recommend him to anyone - his work is second to none).

Firstly, a new windscreen was required. The old windscreen was scratched and very badly crazed due to internal stresses that are built up when it was originally rolled over it's frame. (A point to note to future buyers: you need to view through the windscreen looking out as when you view from the outside looking in, the windscreen appears perfect). The old windscreen was removed and used as a template for the manufacture of the new windscreen. But before we could do this, a decision was needed as to whether or not to fit a clear or tinted windscreen. After talking with a number of Vampire owners it was suggested that it would be better to fit a clear windscreen as on some of the darker days or

approaching dusk, it does get very hard to see out through the tinted windscreen. A clear windscreen was manufactured and some of the internal stresses were relieved by applying heat to the windscreen whilst it was over a mould of similar shape. But yet, another decision. Do



we install it with rivets or bolts to enable it to be removable, therefore allowing easier access into the instrument panel and nose cone area for rudder pedal adjustments/maintenance? Obviously, bolts were selected. We used 1/8" stainless steel bolts, washers (1/8" x 3/8") and nylock nut combination. It may appear a bit strange, but I now have a clear windscreen and a tinted canopy, but very practical!

Another item requiring attention was the front brake. Again, every Vampire owner I spoke to, said that they are not worth the trouble and was told to "get rid of it". We removed the old brake and disassembled it. What a nightmare! It was welded on unevenly and was causing a binding condition. It definitely had to go! Seeing Graham King's (SU002) new brake assembly from the Vampire Support Group website, I decided to go the same way. After a few phone calls to Graham and the retailer, I placed an order and a



few days later I was in possession of a neat little wheel/tyre and brake disc assembly. My L.A.M.E friend helped weld on a small plate to the front fork and then fitted it to the aircraft. It looks good and works great. It is much better than the original.

During this time I also met, Chris and David, the most helpful people I have ever had the pleasure of meeting. They have taken time out of their busy schedules - like flying their ultralight, Buft, which they designed and



manufactured - and have been helping me do some of the really fiddly items. Without their help this whole project would have probably taken an additional 6 months.

The next item that got the treatment was the little Rotax 447. It has now received the correct spark plugs (BR8ES), proper Bakerlite caps and non-suppressed leads. The exhaust gas temperature probe was also not working (which I am told is not surprising), and was rectified by Chris

with a spare probe that he had lying around. The two little Bing 84 Carburettors received new jets, needles, airfilters and some TLC from David. New fuel hoses were also fitted throughout the entire fuel system, ie. from the fuel tanks to the selector valve to a new fuel filter to a new Mikuni diaphragm pump and finally to the carburettors.

Next on the list requiring attention were the fuel gauges (or that's what I thought at the time). When the Master was switched on, both needles on the gauges would go to an overfull condition. I thought maybe there was a bad earth or a short circuit somewhere. Well, lucky for me, Chris is an instrumentation/electronics technician (Engineer as far as I am concerned). He used his skills and

trusty multimeter, to find that there was nothing wrong with the gauges and the problem lay within the fuel senders. Many tests later, we were left with only 1 option. Remove and replace the fuel senders as it was felt they were not working. Easy you may think, but you need to de-rivet the top skin to gain access. This was



one of the bigger jobs to have been undertaken. You can't believe how many rivets there are holding this skin in place. Chris used his trusty instruments and calculated the correct resistance for the fuel senders, and these were promptly ordered from VDO. These were then re-fitted, a good vacuum for FOD was performed and the skins re-assembled with brush alodine and correct grip length fasteners.

Finally, it was time to do some fine-tuning to the alignment of all the control surfaces. We readjusted the flaps to line up with the centre section. These were adjusted by removing the flap control assembly in the cockpit. More derivetting and unbolting 3 bolts from the inside of the pod. A reasonably easy process but time consuming! Next, the ailerons. Aileron adjustments are the easiest - right behind the firewall. The ailerons were adjusted in line with the flaps. Finally the rudders were checked and needed some fine-tuning. You would think this would be relatively easy but you need to be a contortionist to get in. Lucky for us we had the dash and windscreen off at this stage, but still a hell of a job. It really is quite tight down there in the pointy end! I have a home video of a Vampire with a removable nose cone. Now I understand why they did this. It sure makes things more accessible and easier to work on.

Now it was time for SU023 to be pushed out of the hangar and to see the light of day after 2 months of work. With a family, the only time I could devote to the project was on a Saturday.



First thing to do was to run-up the engine. We filled up the left-hand tank with a mix of unleaded and Penrite TS40C 2 stroke oil in a ratio of 50:1 as per the manufacturers instructions. Then, Chris primed the system with the on-board electric fuel pump, he set both chokes on, and after the second attempt of the pull-cord, SU023 breathed life again. We let the engine warm up for a few minutes and then increased the revs to about 3500rpm for about 1 minute. The engine was then shut off and checked. All appeared to be satisfactory.



Time for a small taxi, to see if everything is working okay. Now with the engine warm, it starts first time. I get strapped in, put the radio on, and make an "all stations" call on the CTAF frequency, letting whoever's listening know that I am performing a

taxi trial. I move the throttle forward and I am now slowly taxiing! I taxi to an apron about 400 metres away. As I approach the apron I throttle back to idle and apply the front brake. It definitely works as it brought SU023 to a stop. One thing I did notice though is it didn't lock up the front tyre no matter how hard you would apply the brake. Moving off again, I get back up to taxi speed and put SU023 into a 180-degree turn. I was pleasantly surprised to find that the turn was quite tight. The direct connection links from the rudder pedals to the front wheel worked quite well and were very responsive. I then proceeded back to my original

starting point where I shut down the engine, jumped out of the cockpit and checked over the aircraft. Everything again, seemed okay.

Time to increase the stakes - get out onto the runway and perform a high-speed taxi. With all types of testing, you need to assume that you are going flying (this little piece of advice may come back and save me). Therefore, we performed a pre-flight per the "Pilots operating handbook". The only item missing was zero fuel in the right tank but all else checked out all right. Again, the engine fired up first time. I strapped in, made the necessary radio calls and proceeded to the runway. With an easterly wind, I decided to use runway 03, a sealed runway and 1400 metres in length. I also made the necessary pre-takeoff checks and then taxied to the runway, making a "backtracking" announcement to get myself to the beginning of 03. I turned SU023 through 180 degrees and lined up on the centre-line. Time to do it! I pushed the throttle slowly forward and we are rolling. The throttle was now fully forward and the little Rotax 447 was revving out to just over 6000 RPM. SU023 was now accelerating quite quickly (to my surprise - I didn't think a little 2 stroke had so much acceleration) and the airspeed was increasing. We were going down the centre-line, which was quite easy to maintain, and I didn't feel any need to apply rudder to compensate for engine propeller torque effect. We were now doing about 40 knots and at that moment I had a crazy thought to try and lift the nose to see at what speed it would lift. Well, by the time I brought the stick back, SU023 was now approaching 50 knots and what do you think happened? You probably guessed it! Not only did the nose lift off but, we were now airborne flying down the runway at about 10 feet. I had a small panic attack and tried to land but began porpoising along the runway. The large elevator in the back is quite sensitive and works quite effectively. Time to calm down, I reduced the power back to idle and SU023 began to lose height. I applied some back-pressure on the control column and SU023 began to rotate nose up and I flared about 3 feet above the runway and SU023 settled relatively gently back on the runway and de-accelerated quite rapidly without any application of brake. I turned off at the next exit and slowly taxied back to the hangar. I shut down the engine and I remembered to breathe again. Lucky for that little rule that says assume you are going flying as you can see it was easy to do! Phew what an experience! After I calmed down, I looked back at the short flight and realised that whilst up in the air, SU023 didn't behave abnormally. It flew straight and level, with no tendency to drop a wing and pitch control was quite normal also (other than my over zealous use of the elevator). The take off and landing process was also conventional.

With that small step behind us it was time to go and do it again but with a small change; fly to about 40 feet and for about 1/3 of the runway. I proceeded as per normal to runway 03. I lined up and applied full power. SU023 accelerated quickly to 50 knots and I applied back pressure to the control column and as before the nose came up and we were airborne. I levelled off at around 40 feet and flew straight and level along the centreline of the runway. SU023 was behaving normally. Small inputs of aileron were only required to keep level, small amounts of rudder were also working effectively, and from my practise of the first flight, I used small amounts of elevator. Again everything appeared normal and working according to plan. I then reduced power and SU023 began to lose height. Similarly to the first landing, SU023 settled gently back on the runway and I exited the runway. Back at the hangar, I shut down the engine, breathed a sigh of relief knowing that everything was still okay.

After talking about the two flights with David and Chris, I decided that it was time to take the next step and perform a single circuit. The Sadler Vampire is not an experimental aircraft and SU023 has previously flown 77 hours, therefore I was confident that it would comfortably fly the circuit without any problem. A few deep breaths and I strapped in to perform the circuit. David pulled the starter cord and the engine fired up. I performed the pre-takeoff checks and headed for runway 03. I backtracked to the beginning of 03, turned 180 degrees (still impressed how responsive that little wheel is in a turn), lined up on the centreline, gave a "rolling" call, and without messing around applied full power. SU023 accelerated quickly and we were airborne again. I climbed out at 60 knots which gives about 700 feet per minute climb rate. We quickly reached 500 feet where I commenced a left bank of no more than 10 degrees onto the crosswind leg. I purposely kept the bank angle small to ensure that no adverse effects were experienced. Approaching 1000 feet, I turned onto downwind, levelled out and reduced power to 5800 rpm. This was giving about 70-75 knots cruise on the downwind leg. I performed my landing checks (good old BUMFTH) and I was quickly approaching the base turn. As I was turning base, I gave the -base leg call, reduced power and set-up a descent cruise of about 65 knots. For some reason, the base leg felt like it had been completed rather quickly and I was now turning final and line up for the landing approach. I finished the turn at about 750 feet and felt that I would over shoot the threshold. I therefore put on 20 degrees of flap and brought the speed back to 60 knots. Descent rate increased to 700 fpm. Now instead of overshooting the threshold, I was going to end up short. The flaps are definitely very effective (lucky I didn't use the full 30 degrees)! I applied some power to stop the high descent rate but was still going to be short. More power and now I was

going to make it. As I got over the threshold, I got the power back to idle and levelled out about 5 feet above the runway. As the speed came back, I heard for the first time the stall warning coming on at about 40 knots although not in a stalled condition. As per my earlier landings, I flared out and SU023 settled back onto the runway, de-accelerated quickly (with no use of brake) and I got off the runway at the first available exit. It was time to breathe again! I put the flaps up and switched the fuel pump off. Then I proceeded back to the hangar and shut down the engine. See, no problem, all went exceptionally well for a first circuit in a Sadler Vampire. A quick walk around the aircraft and everything appeared okay. All the hard work we put in was beginning to pay off and quickly forgotten.

By now it was getting late in the day, so it was time to put SU023 back in the hangar.

I would also like to take this opportunity to thank Chris, David and Brian. Without their help, I would still be stuck on the ground and be getting more frustrated and hoping one day to go flying. Thank you.



Now for the next phase, do some test flying over the airfield and shake SU023 down to ensure that nothing else reveals itself. This will be another story - coming to you soon.