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Velocette Venom 500cc

Rebuild Project Part One

From December 2018

1959 Velocette Venom 500cc Motorcycle; "Bought As Seen - as a Basket Case". Well . . . That's what they call it, when one buys a load of dismantled mechanical bits'n'pieces, supplied in a variety of 'Boxes' (lots & lots of boxes) with the intention of identifying, reconditioning, rebuilding all of these spare-parts back into something that resembles a motorcycle that is fit for the road once more. [Well that's the 'Master Plan'.](#)



The following photographs represent the present state and condition of this 1959 Venom Classic Motorcycle (as of the 16th December 2018). The previous owner bought this bike in the early 1970's. In the late 1970's he dismantled it with the intention to restore it back to original showroom condition & wrapped it all up in readiness for the rebuild. He had the frame painted & fully reconditioned by Ralph Seymour's.

Once re-built this Venom will be exempt from Road Vehicle Licence Tax (i.e. 'Historic Tax Status') and should also be exempt from an MOT Test (just like my Velocette MAC project).



(Photo above Left) *The Disco* 'Loaded-Up'. "Thanks" to Debz for driving me there & back and helping me collect this treasure-trove-Venom. There are quite a few things missing such as the mudguards, handlebars, etc. The wheels are incomplete, with just the Drums (see photo above) and there are probably going to be loads more missing as I start to sort-out the parts necessary to put this giant 3D jigsaw together again.



The two photos below: Reconditioned & repainted Frame wrapped-up ready for the 'Re-Build'. New Trunnion Shaft & Bushes plus Frame re-alignment carried-out by Ralph Seymour's.

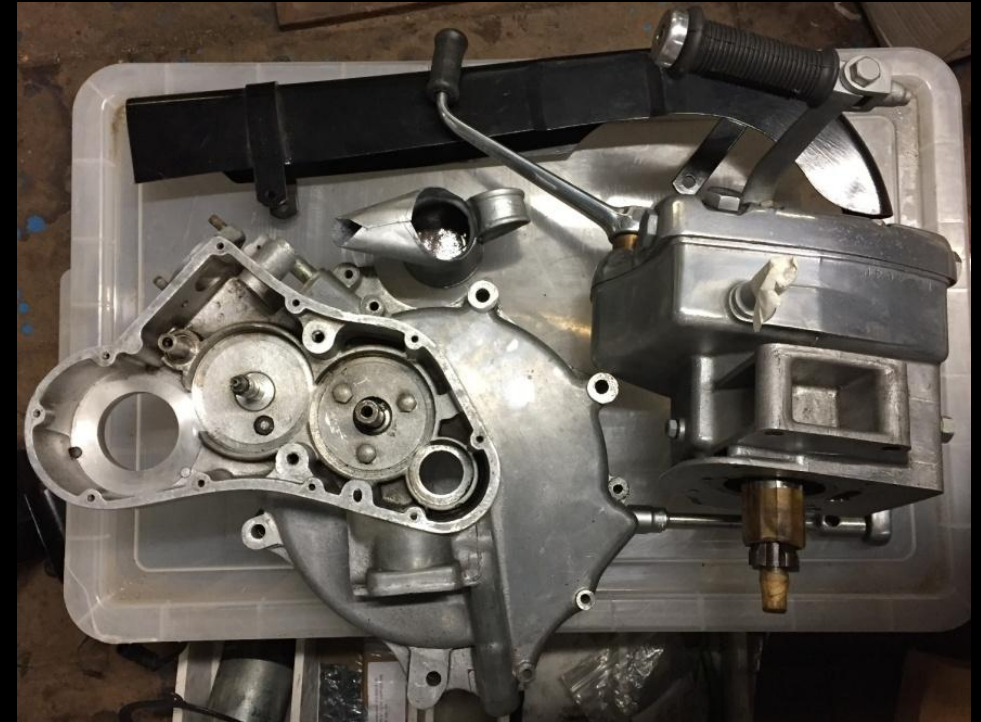
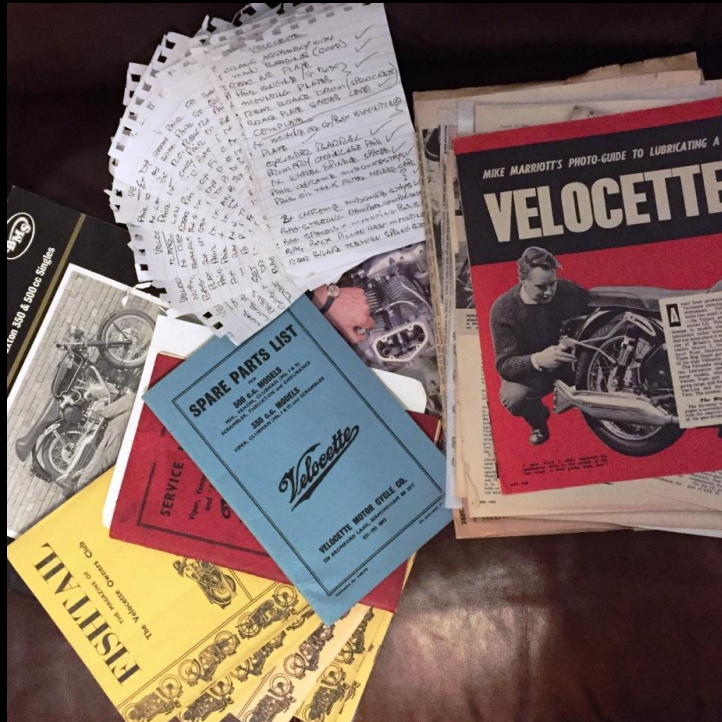


I was told that this very bike was owned and sold to the previous owner by Ted Davis, the renowned Chief Tester for HRD Vincent. Ted was one of the Team of Riders that rode the "52 Montlhéry Shadow" (a Vincent Black Shadow) around the famous 'Banked' French Race Track for their World Speed Record Attempt in 1952. Interestingly, one of the other Riders and Member of that Montlhéry Speed attempt was a young apprentice by the name of John Surtees. There were eleven Riders sharing this 'Task' and they managed to rack-up eight new world records (including six hours at 100.53mph).

Ted Davis was a close friend & colleague of Phil Irving (who incidentally designed Velo RS Frame – British Patent 511,875 by P.E. Irving & Veloce Ltd). Phil Irving was Chief Designer & Engineer for HRD Vincent before moving to Veloce Ltd. He finally moved back to Vincent where he designed & developed the Rapide, Black Lightning and the Black Shadow that was the basis for the Montlhéry Record attempt. Phil Irving's Books are ESSENTIAL Reading. Highly recommended.

I'm guessing that MOST Velocette Owners are well aware of the connection between *Velocette Venom 500 Clubman* and the *Monthéry Race Track*. Velocette being the first & only 500cc single cylinder motorcycle to achieve the 'World 500cc Twenty-four-Hour Speed Record' at over 100mph (100.05mph in the 1960's).

No other motorcycle has beaten this World Speed Record to date. This is just one of the reasons why I love the Velocette Venom. I'm really looking forward to working on this project in 2019. I'm Really, Really, Really, looking forward to getting this lovely classic bike back together again and back-on-the-Road again.



Above Photo:

Shows the collection of Veloce Books, i.e. Spare Parts & Service Manuals, as well as several old VOC 'Fishtail' magazines, Classic Bike magazine articles and hand-written 'Lists' of all of the Velocette parts above (in & out of the Boxes). Plus a Bruce Main-Smith Velo Reference Book, all supplied by the previous owner, to help me with my latest Bike Project rebuild.

Many Thanks to Michael.

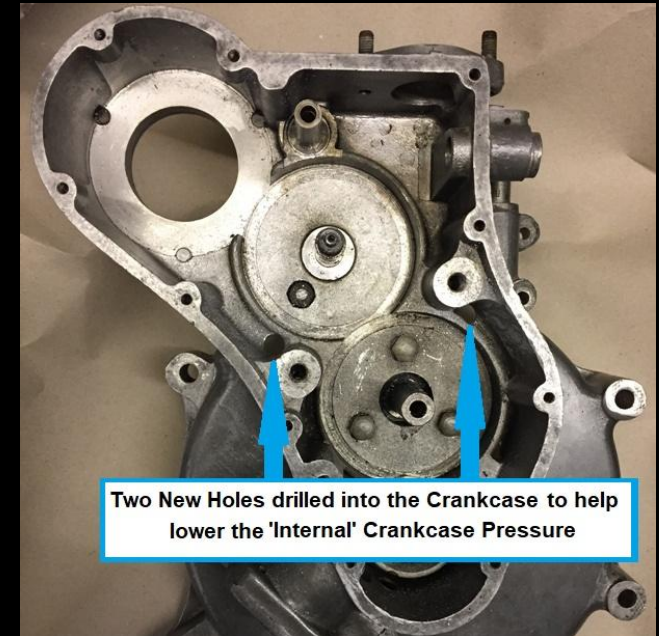
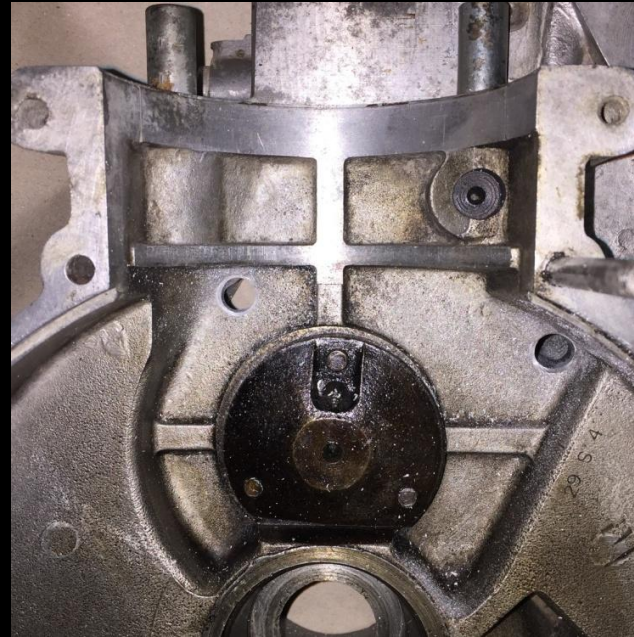
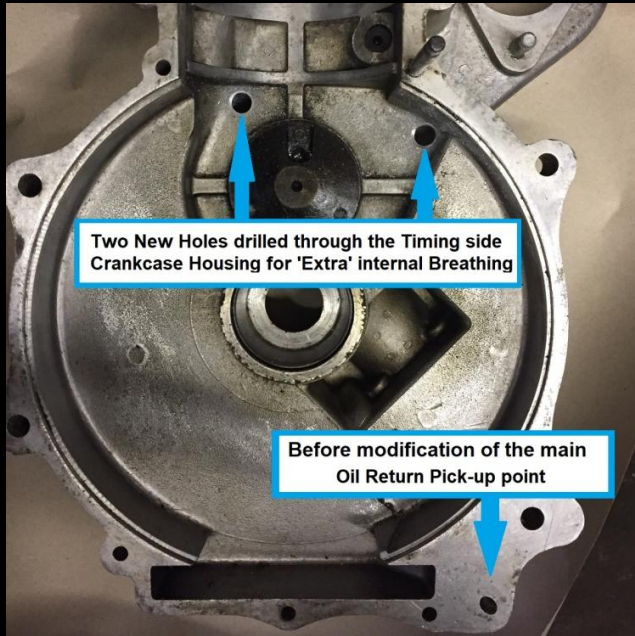
Day One:

Collected Boxes & Boxes of loose Velocette Engine & Gearbox parts, including the Frame (re-painted & wrapped) and most of the Ancillary equipment & fittings, nuts & bolts etc. = almost a complete Venom, albeit 'Disassembled' and in need of TLC and hours (& hours) of careful spanner-work to put it ALL back together again.

ALL OF THE ABOVE PARTS SAFELY STORED . . . in readiness for a 2019 New Year Project. I won't start on this project until my MAC is completed & back on the Road and 'ALL SORTED'.



First work carried-out on the Venom . . . 2nd January 2019.



Over the Christmas / New Year Holiday period, I managed to spend a bit of time working on the Venom Timing-side Crankcase 'half'.

I drilled a couple of new ventilation holes into the crankcase to aid internal crankcase pressure.

I drilled-out the main oil pick-up point from 1/4" to 7mm to improve oil scavenging.

I also did the same oil pick-up modification (that I did on the MAC), which should help get more 'Drained Engine Oil' back to the Oil Tank quicker by further improving oil scavenging.

I have not drilled-out or tapped a new thread for an 'External Breather Pipe' to be fitted . . . YET! But, will do.

This new '*Breather Drilling / Fitting*' position will be located in the usual '*Venom*' place – just below the Magneto Fixing Flange.

Well, that's the plan.

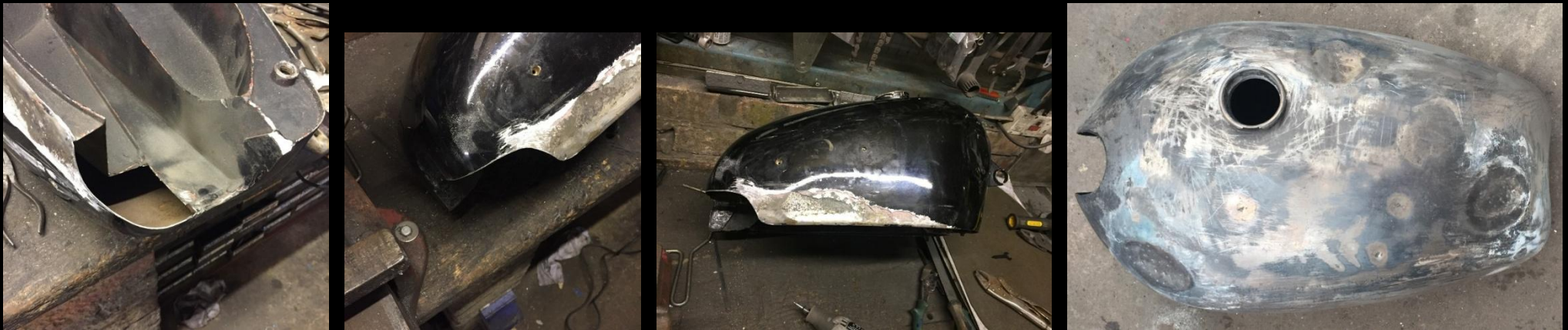
Finally, I have started to put back together again my 1959 Velocette Venom: September 2019.

As I used the Venom Oil Tank & Petrol Tank for my MAC 350cc project, I have now started work altering / modifying the original MAC Oil Tank & Petrol Tank to fit the Venom. See photos below; Have started to cut out the unwanted bits ready to 're-fabricate' the Oil Tank for the Venom. My intention is to remove the old antiquated Oil Filter system and convert it to a more modern and highly practical Remote Canister Oil Filtration system that I fitted & 'Tried' on the MAC. My MAC has become a research & development model for my Venom. I will finish both Oil & Petrol Tanks in exactly the same style and configuration as the MAC.

(Well, that's the plan).



Photos below: metal cut out of the Petrol Tank (exactly as I did to the Mac) to allow for a longer air-intake spacer to be fitted between the engine and the carburettor. Unfortunately, once I started cutting and banging the tank about, once more (just like I found with the Venom Tank) LOADS of Body Filler fell off the Tank. However, the MAC tank is in much worse condition than the Venom Tank. Once all of the paint was removed, I discovered no less than thirteen separate 'Dents' on this Tank (see end photo below right), some of them quite big and in difficult place(s) to 'Panel-Beat-Out'. Yet another 'Challenge' before me.



My attention has been distracted away from the 'Tanks' to assembling the Frame & Rear Mudguard. The reason for this approach is that before I start welding up the Oil Tank I need to identify exactly 'Where' the 'Cut-Away' is to be located (on the back of the Oil Tank) in relation to the Mudguard position and frame juxtaposition. I have decided to fit Aluminium Mudguards (Back & Front) to the frame using my own *home-made* Rubber Mounting. This will ensure that the mudguards are 'totally isolated' from the metal framework & fittings (see photos below). Velocette Mudguards (I've been told) are notoriously difficult to get right.



Not shown below; but I had to remove the first couple of rubber mounted spacers and fit 'thinner ones' to get the required clearance between tyre & mudguard.



Also not shown above: I had to 'Reshape' the Rear Mudguard Stay Brackets (with the help of Mr Oxygen & Miss Acetylene), so a bit more 'Fettling'. The first photo below shows the Rear Shock Absorbers being part dismantled in order to find the 'Range' of Shock Absorber movement. I need this information to know the fully compressed measurement and the fully extended measurement to help me set the correct height for the rear mudguard. I could NOT find (anywhere) a description of detail of the range of travel of said Rear Shockers. My findings for future reference = in the fully compressed state (without the spring connected) the distance between the top & bottom bushed eye is *ten and a quarter inches*. The measurement for the fully extended distance was *thirteen and a quarter inches*. So the total amount of Full Travel cannot exceed *three inches of travel*. Unless of course, should the top or bottom of the Shockers breaks OFF.

BUMMER!

There's a post script to the last bit above, because after I had dismantled and measured the Girling rear shock absorbers . . .



Whilst looking for something else, I actually came across the reference to the amount of shock absorber travel (typical).

It was listed in Rod Burris' Book "Velocette Motorcycles – MSS to Thruxton" (page 147).

Photo below right: shows me checking the run-out of the Rear Brake Drum as it is now, before having the Wheel rebuilt. Once built, I will recheck the run-out once more and if necessary, I will use my 'Wheel Jig' to true up the Brake Drum.



I took the advise of my good friend and Velo Mentor Rick Essex, who suggested it would be prudent – at this stage - to split the Crankshaft to check for Big End Crank Pin & Bearing wear, which has it turned out, was a very good 'call', because, although I could not feel any unwanted free play, or even any stiffness or signs of 'Bearing Click' or 'Feel' any signs of wear (when the Con Rod was rotated), it became very obvious upon disassembly that the Big End was totally 'Shot'.
(I may have miss-spelt that last word).

I entrusted the Crankshaft reconditioning work to Alpha Bearings Ltd of Netherton, Dudley, who agreed to machine & re-face the damaged Flywheels and fit the necessary *Hardened Ground Side Thrust Inserts*. The Crank Pin & reconditioned Flywheels had to be machined specifically to fit each other to get the correct and most important 'Taper' of the Crank Pin & Flywheel 'Interference Fit'. They also made & fitted a new Small End Bearing and finally assembled the whole lot back together again and '*Trued*' everything-up to an excellent standard. It is now ready to be assembled, as soon as I have cleaned up the Crankcase 'Halves'.



As usual (for me), you have probably noticed that I tend to '*Flit*' from one job to the next, as I get distracted by things 'quite easily' when working in my workshop.

So, quite often, I end-up working on several projects at a time, or even '*Flit*' between different jobs on the same project.

I must have one of those **RANDOM ACCESS** Brains?


A friend told me to get some of those Memory Foam Shoes (to help me in my work), so I bough a pair. However, they don't work! I still can't remember where I put things.

"Thanx Debz".

Velocette Owners Club 33

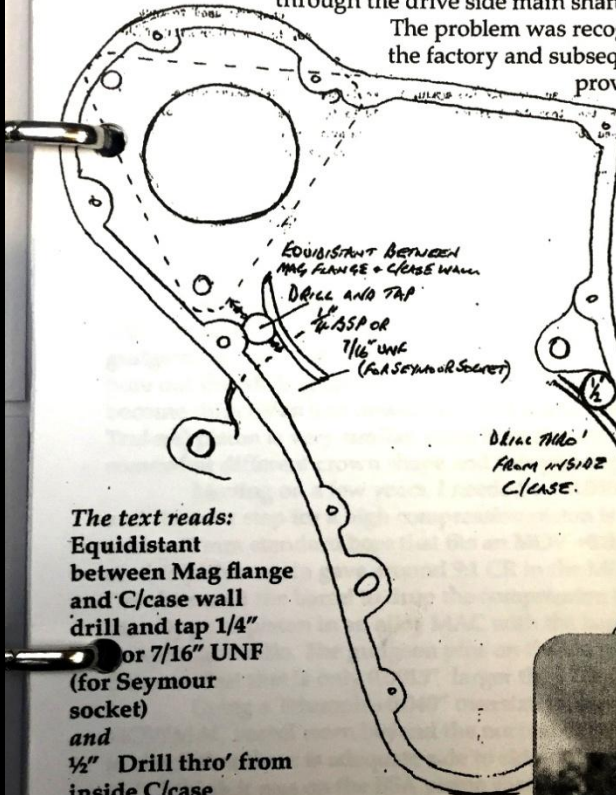
M SERIES CRANKCASE VENTILATION **Brian Hoy**

Most owners are aware of the oily drive side of their machines, in standard form, and it is largely attributed to the crankcase venting through the drive side main shaft.




The problem was recognised by the factory and subsequently extra venting was provided by introducing a vent hole in the timing side crankcase into the timing chest and another under the mag. to a plastic pipe and out to the rear of the machine. Many owners will have seen them on the sporting models and much has been written about them including debate about volume/size of the system and involvement of the oil tank venting.

What does not seem to have been published, for the benefit of owners of



The text reads:
 Equidistant between Mag flange and C/case wall drill and tap 1/4" or 7/16" UNF (for Seymour socket) and 1/2" Drill thro' from inside C/case

older engines, is where are these vent holes positioned.
 Many years ago - in 1984 - I asked Geoff Steele if he could help with this problem and above is a drawing that Geoff produced! I trust it is assistance to fellow oilers.



Geoff Steele - stellar (and 'Stellite'!) tipster...



Photos below: To make sure 'Drilling & Tapping' is 'Square', I used my little Mill / Drill.





That's another little job done, towards my 59' Venom rebuild!

27th September 2019 Gearbox stripped & inspected by Rick Essex (Velocette Gearbox Guru – “Thank You Rick”). Parts identified for replacement = BK7/2 Sleeve Gear Bush. B101 Sleeve Gear Peg. BK33 Sleeve Gear Oil Thrower (VSL improved version). BK85/2 Kickstart Bearing Bush. B31/2 Gearbox Oil Retaining Shims. Layshaft Drive Gear. B22/2 Gearbox Layshaft Ball Bearing. B23 Gearbox End Cover Bearing (RHP NLJ 1/2). B22 Gearbox Housing Bearing. BK95 Layshaft Washer. VSL Kickstart Return Spring (with extended coil). Kickstart Layshaft Thrust Washer & GC24/2 Gearbox Striking Pawl Spring. Plus; ALL of the fixing bolts for the Housing Cover to be replaced with BSF Cap Head (Allen) Screws, as well as a new Drain Plug and new VSL Magnetic Drain Plug too. The Gearbox to be thoroughly cleaned and ALL gasket ‘Faces’ to be surface ground (by hand – as previously done to the MAC Gearbox before re-assembly). Obviously, the Sleeve Gear Bush (BK7/2) will need ‘Boring-out’ on the Myford to the correct fitment size for ‘This’ Venom Main Shaft before assembly. I was told this gearbox was a reconditioned “Good-One”. But, what is ‘Good’ to one person is . . . Well! What can I say.

See photos on next page re: Dismantled Venom Gearbox



Photo Above shows the 'Parts' supplied by Nick Payton. The Fork Legs & other parts was ordered from Nick Payton on 3rd October and delivered on 'Next Day Delivery' (4th October). What a Fantastic and most Brilliant Service . . . "Thank You Nick" = Venom Legs GREAT ! All of the Parts to fix my Gearbox = GREAT ! Fork Gaiters = GREAT ! Other Engine parts = GREAT !



November 2019:
Photo Left: re-Tapped all of the 'Threads' on the Head.

Photos Right & on the next page (below) show my new Carburettor Manifold Spacer (similar to the one made & fitted to the MAC).

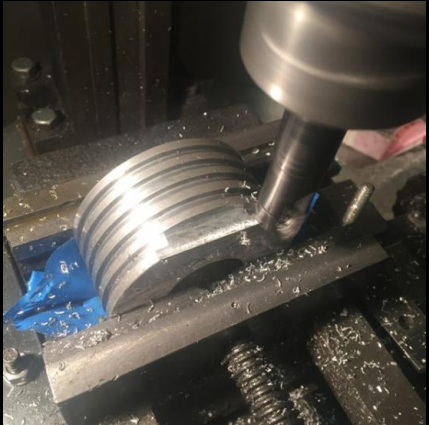
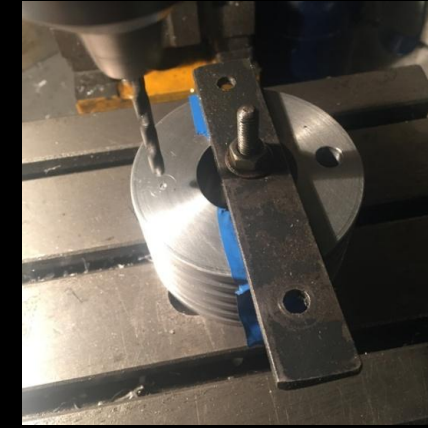
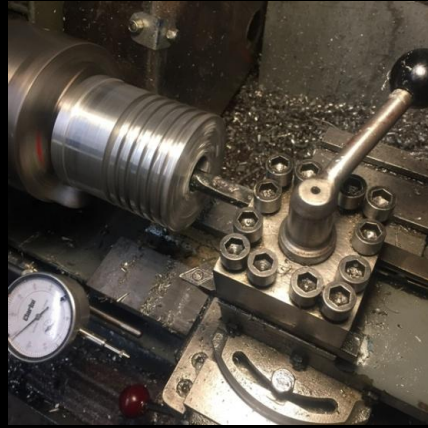
The Aluminium Stock Bar (in the Lathe Chuck on the Right) was purchased at Stafford Bike Show and this is what I am making my New Manifold Spacer from.



The finished 'Manifold Spacer' length is an inch & a half long (1.5"), and 'bored-out' to suit the Amal inch & three sixteenths Carburetter.

As you can see from the photographs below; the manifold spacer had to be 'Milled' on the end that fits onto the Cylinder Head to 'Clear' the Casting. The new Manifold Spacer was then bolted together and 'Ground' smooth to match the Head Inlet Port. The final step was to 'Gas-Flow' and polish the inside of the Manifold and Inlet port (see end photo - bottom right - next page below). I managed to get as good finish & shine on this one as I did for the MAC Head.

November 2019



New Valves & Helicoil fitted to the Spark Plug thread and New Amal 389/15 Carburetter & Filter purchased in readiness for the rebuild (photos below).



20th November 2019:

I know this is a bit Random, but I've started yet another diverse job on my Venom Re-build Project. I am flitting from one job to the next, to fit in with the limited time I have. And, it gives me a break from one particular job, whilst tackling yet another (usually quite different & diverse) job.

Venom Seat:

I've decided to 'make' my own Seat. I fitted a single seat onto my MAC (the original 1999 Harley Davidson Seat that was fitted to my Sportster), and I really like it. But . . . I also like the Venom Thruxton style Seat (with the so-called 'Ears' and the rear racing-style 'Hump'). However, I do not want a double seat. I want a single seat (similar to what I am using on the MAC at this present time).

So . . . the photos below, show the various stages of my home-made single seat (with ears & hump). As you can see, I have 'Masked-off' the Frame and have applied a Rough-Pattern-Base and added Polyester Body Filler to the base, and then shaped-it by sanding down the 'Filler' to get the desired effect. This method (although very messy) at least allows me to follow 'Exactly' the contours of the RS Frame, and get the shape that I want..



The next stage is to cover the whole lot with a couple of layers of Fibre Glass Matting & Resin and then remove the 'Seat Mould' from the Frame when it has 'set' before a final 'trim & fettle'. I have decided to having-a-go at making my own 'Leather' seat cover (to fit over my newly made fibre glass seat).

WELL! That's the Plan. See photos on next page.



The photos below: show a close-up of the newly fabricated Oil Tank Bracket (Rubber Mounting), made to hold & isolate the Oil Tank from any Frame vibrations. It's quite a sturdy bracket as it has to take the weight of a full tank of engine oil. That's why I have used the same type of Rubber Mounting Spool



13th December 2019: I managed to find a bit of time (in between paid work, volunteering, house decorating chores & obligatory Christmas shopping), to continue the work on my modified oil tank. A bit more re-shaping, a bit more panel beating and . . .



. . . a bit more cutting-out and marking-up, before welding a new section to the bottom of the oil tank. This new section has been added to the bottom of the tank to accommodate the 're-positioning' for the engine oil feed 'Fitting' / oil check valve seating. I am copying the work I did on the MAC Oil Tank, but, with experience gained welding up the MAC Oil Tank, I've now made a few adjustments, amendments and improvements to my Venom Oil Tank.



As you can see in the first photo left (above) I've added a gusset for extra strength. The photos above: show the new rubber mounting bracket (utilising the good-old-fashioned Austin Mini exhaust mounting rubbers). These have worked so well on the MAC (supporting my MAC Oil Tank), that I decided to use the same method on my Venom. The last two photos above show the rear-top rubber mounted oil tank bracket.

This next batch of photos below; show the latest fabricated bracket (a double rubber mounting stay). As usual, I have used CAD (Cardboard Aided Design) to help form the shapes required. The Cardboard template is then used – to transfer the shape & hole positions onto a sheet of mild steel. The rubber spool on the right is to support the top of the Oil Tank, and the other rubber mounting spool (on the left-hand-side) to support the remote Oil Filter assembly. As you can tell, I have bronze-welded this bracket together. I turned-down, drilled and tapped a piece of mild steel Bar (to accept the two Rubber mounting Spools) that will support *said items* to the frame.



Above photos show the Oil Suction Plug being Sawn down, just like I did for the MAC.

Magnets yet to be fitted.

22nd to 26th December 2019: I continued with the modifications to the Oil Tank, by 'extending' the rear of the oil tank by an inch & a quarter. This allows the modified oil tank to 'wrap' around half of the Frame Seat Post Downtube, which in turn will increase the oil capacity. I don't know, at this stage, by 'How Much' the oil capacity will be increased to (at least not yet), until all of the welding has been completed and the Tank has been tested for 'Leaks'. After which; I can then confirm the new Oil Tank Capacity. Also, rather than removing the back panel of the oil tank completely, I decided to leave it in (for added strength) and just 'Drill' holes into the original panel to act as a sort-of-baffel-plate (see photos on next page).

I have 'cut-away & recessed' the rear bottom part of the oil tank to allow a bit more clearance between the gearbox / engine Plates and the frame. My intention is to use this newly formed 'Gap' for a new 'route' for the return oil pipe (back to the oil tank). I have also 'built-in' a very slight 'slope' rearwards of this cut-away 'shelf' to aid oil drainage (when draining and cleaning-out the oil tank in the future).



As you can see in the 2nd photo above right; I've used my CAD technique again (Cardboard Aided Design) in the form of a Kellogg's Corn Flake Box, cut to fashion the shape of the frame (where the tank wraps-around). This 'cardboard pattern' then transferred to sheet-metal & welded into place. Also, New Filler Neck added.



[More Photos to Follow . . .](#)

Please visit again to see what my next mini-project work entails on my Venom rebuild.

A true 'Thoroughbred'.

Well, it will be when I have reconditioned everything and put the whole Bike back together again.

Just 'Click' onto the Photo-Link to go back to My Projects page



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Last updated on 27th December 2019

*Merry Christmas Everyone
& a Happy New 2020*

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↓

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IN NEAR-STANDARD TRIM RIDDEN BY THIS
ANGLO-FRENCH TEAM

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