



VIRUSCAST 3 – Third issue

Being the Northumbria Nortons Bananavirus Newsletter,

Well, did you get into your sheds and Fettle! Fettle! Fettle???– then please write all about it and send it to your scribe!!! (Don't stop fettling. Fettling is good for you)

But first: FAKE NEWS!!

The news that reached Simon, that Stuart Heslop had been attacked in his home by a burglar was **"FAKE"**. Simon got a phone call from an un-injured Stuart, assuring him that he was absolutely fine. Which goes to show you cannot believe everything you read in Viruscasts!! Try believing this: -

Bob's been fettling like crazy!

*Its about a "backfire preventer". I had no idea you could get such a thing. At my age I badly need one. But then I realised it is actually a backfire **damage** preventer – and so far, my trousers have held out-over to Bob -----*

Mk3 Commando Electric start - - - - - ?

Well, Recognise this?



My guess is that not

many of you will. It's

the anti-backfire device from a Mk3 Commando. Here's a photo of it in context.



As many of you may know I bought my Mk3 new in 1976. For many years the electric start worked quite well and then I had a spate of sprag clutches failing (some of them only lasting half a dozen starts) so I removed the electric start, fitted a blanking plate and for many years I settled for just kicking the bike over.

About 8 years ago I pulled a muscle my right knee and although I could use my left foot (once I'd sorted out my technique) I decided it was time to reinstall my electric start.

In the 20 odd years since I'd given up on the electric start, I'd learned a few things about the reasons for sprag clutch failures. When new the Commando was fitted with a points based ignition system. You probably know that Commandos had 6 volt coils and these were fed through a ballast resistor so they could operate in a 12 volt system. The Mk3 was fitted with a wire from the starter solenoid designed to feed 12 volts to the coils when the starter button was pressed. Of course the reality was that once the starter was turning the engine over, the battery voltage was knocked back below 12 volts, perhaps to 9 or 10 volts for a good battery, but this didn't matter because if the coils received 9 volts directly instead of 6 through the ballast resistor, they would still function well and generate good sparks. However in the late 70s and early 80s electronic ignition came on the scene and the make fitted by most people (including me) was Boyer.

The fitting was straight forward. Timing was a bit of an issue because Boyer wanted you to use a timing light at 5,000 rpm which would have the bike dancing around the workshop and some very annoyed neighbours. However, once fitted, the bike ran smoother and owners were freed of the chore of checking the timing on a regular basis, so the experience was mostly positive.

There was however a downside. Unlike the original points based system which had a mechanical advance/retard mechanism, the Boyer system had built in electronic advance/retard system. This was ok for bikes that were kick started, but if the voltage was reduced to about 10v, the Boyer system did not retard the timing but instead remained at full advance. This led to the bikes kicking back and would lead to damaged sprag clutches and then a non functioning electric start!

The other problem not initially realised was that when the sprag clutch failed, it often damaged the insides of the engine sprocket of the boss and sometimes the boss on the starter gear wheel. This damage often led to premature failure of replacement sprag clutches which were fitted to the damaged components, as I found to my cost.

By the time I decided to reinstate my electric start, I was aware of these problems and also that a better starter motor was available from various sources (I bought mine from Holland Norton but I suspect that Brexit leads to import duty on goods from there). I also made sure I bought heavier duty starter motor cables and a new engine sprocket and starter gear wheel from Andover Norton. To complete the set up I bought a new Pazon Altair ignition system (which is supposed to behave properly down to about 7 or 8 volts) and a new sealed battery (a Wesco 12v16-A2 which is supposed to produce 230 CCA).

Finally to protect against the consequences of backfires, I dismantled and carefully reassembled the anti backfire device. I'm not going to explain in detail how this was done. It's hardly described in the official workshop manual (or the Haynes one) but I used the really useful information at http://www.oldbritts.com/e_start_backfire.html

After I set up the slip torque at 50 ft lbs, The whole electric start system worked from about 8 years until last year, just before the Morpeth rally, I found the starter motor spinning but nothing happening to the engine!

I was unable to investigate at the time due to the rally and didn't get around to checking until January this year. I had assumed that the sprag clutch had failed. Instead found that the nut on the end of the backfire device had shattered, the 6 ball bearings were at the bottom of the primary chaincase along with the fragments of the nut. It's not clear why the nut had shattered. Richard thought it was over hardened, but it was also over 40 years old. Ashley at Andover Norton (who is their electric start guru) reckoned he'd never heard of this nut failing, whilst sprag clutch failings are well known.

I got a new nut and put it all together but I was unable to set it up properly. I simply couldn't get the device to slip at the torque required. Having had difficulties holding the toothed gear wheel in a soft jawed vice in order to measure the torque, I created a much better mechanism to hold it. I also filed a splined thrust washer (06-5652) to a 1 inch AF hexagon so that I could use my torque wrench.

However when held properly I found the device slipping at an indicated 45 ft lbs using my bendy bar type torque wrench but if I tightened the adjusting nut by say 15 degrees, the whole device locked up and wouldn't slip at any torque I could manage. In the end I concluded that the Belleville washers (which are a kind of spring) had become tired. I invested in 3 new Belleville washers (06-4740) at £1.45 plus vat each from Andover Norton.



Then for accuracy I decided that I should check my torque wrench. I clamped the 1/2" square drive into my vice leaving the wrench horizontal. Then I put a full bag of slightly wetted rock salt in a bucket and weighed it on my bathroom scales. 26.8 kg or 59.084 lbs.

The only place I could hang this on the torque wrench was next to the handle 13.75" from the fulcrum. This gave a reading of 56 ft lbs but should have read 67.7 ft lbs. The reading was 11.7 ft lbs too low (an error of 20%). With the new Belleville washers I adjusted the load on the Belleville washers to get a slip at an indicated 61 ft lbs. Since the adjusting nut slips every time you test the slip torque you need to mark it some way, but once I was certain of the correct position I applied Loctite to the nut the nut and left it for a couple of days then tested it a few times before assembling the bike.

Then I found the sprag clutch was slipping intermittently, although it would turn over the engine easily with the spark plugs out. If I got the engine nice and hot it would start it sometimes, but that's hardly a solution!

The problem is that the sprag device is very intolerant of wear. It is supposed to sit inside the engine sprocket in a diameter of 57.935mm (+/- 0.013mm) and around a boss in the starter gear wheel of

41.275mm ((+0.008/-0.005mm). Richard smoothed off the rough surface in my original sprocket a few years ago but that left a diameter of 58.14mm (as near as I could measure it with my vernier caliper). The sprocket I took out had a diameter of 58.08mm but that was no longer smooth. In the end I got a new sprocket and sprag from Andover Norton. I think I measured that at 59.93mm. However it made a tremendous difference to the fit, so much so that I had to fit the gear wheel into the sprocket off the bike (which I've never needed to do before). After reassembly of the primary drive, the bike started easily on the electric starter!

Time for a beer!

Bob

(That's Commando's for you - On a Dommi 500 I just jump on a lever thingy. It is on the right, where God intended. The ignition is also very simple – I have a mouse who bangs two flints together 30 degrees before top dead centre).

And here is a tragic story from Clive about a “Fettle” that got out of hand - - -

The Norton 19S Engine Saga

The trip to the Isle of Man in 2011 went well with "Old Clunker" doing a stalwart job to and from the Island with little protest. The old sidecar pressed into service carrying a couple of tents and sundry other camping stuff. There was an oil leak though from somewhere up top (Rocker box joint) that irritated rather than causing any real problem. Not even worthy of a top up really but irritate it did so the decision was made to treat it to a rebuild during the following Spring.

Now the last time the engine was stripped was about 18 years ago when it was treated to new main bearings and a few other odds and sods. This time a couple of new valves and guides and a bit of machining work on the rocker box and whilst we are at it how about some new piston rings. They were certainly worn but the piston was ok as was the bore.

My friend Richard honed the bore and did the machining for me. I had taken all the bits to him in the top box of the Enfield and ho hum! But what's that nasty mark right across the sealing face of the head. Must have been clanking about in that top box then. Do we never learn ?

Ah well it's not too deep we'll sort it later.

After establishing that a standard guide was loose in the exhaust port, a sleeve was made to sort that problem and re-assembly commenced. I had decided to fill the small groove in the head with industrial high temperature filler after all it was only very shallow. (Why do people do these things)

All went well and the whole thing was re-assembled ready for testing. Imagine my gross annoyance when there was a hissing noise when standing on the kick start lever. No doubt about it, the head joint was leaking, presumably where the damage was. So much for the industrial filler ! (I still don't know what came over me to try such a dodgy repair. Must have been the time of life or something, I feel rather ashamed to admit it now).

Off it all came again and away went the head to have 20 thou skimmed off it. A good job was made of it too. I blagged some 35 thou thick aluminium plate to make a new head gasket with extra thickness to compensate for the skimming. (Don't want to end up with a high compression 19S do we). A new rocker box gasket (again) was made as the ones in the gasket set are always pants. The stud holes are never in the correct place. Bolted it all up and stood on the kick start lever and, Hurrah etc. no leak at the cylinder head joint.

Started it and all appeared fine. Now for a test spin a day or so later. Off we went and all was well.....for a couple of miles. I looked in the rear view mirror and a cloud of white smoke was pouring from the exhaust.

I stopped to take a look and the oil tank was nearly empty with oil coming out of the breather.

Only a mile or so from home so managed to start it and looked in the oil tank again to discover no return from the engine.

As I motored serenely home followed by clouds of smoke I had time to cogitate on what the problem might be !

At this point we need to back track to when the engine was stripped first time around. I remember taking off the head and barrel and scraping the cylinder base gasket off the crank case mouth. I also remember noticing that only three quarters of it was there. I sort of remember thinking "where's that bit gone, must have broken off somewhere and fallen on the floor. Can't have dropped in the crankcase – can it – of course not" Maybe I should have put a rag in the crank case !

Well you can guess the rest. The engine was stripped, pulled out of the frame and the crankcases split. (It takes an hour or two !) There inside were several pieces of hard paper gasket all clustered round the pump suction pipe inlet. I don't know about two cylinder Nortons but the proper one lungers have the pipe cast in to the bottom of the crankcase half which is then just drilled during manufacture. Not a separate tube. I pulled the oil pump apart completely as it felt a bit rough (Ha Ha!) and sure enough there was quite a bit of chewed up gasket paper rolling around between the teeth of the gears. No harm done so cleaned it all out and shoved a rod down the oilways in the crank case. Bits in there too. What a surprise.

All went back together without any further problems. Started it up and motored serenely down the road with not a whiff of smoke. No damage was done as most of the oil had dumped itself into the crankcase so everything was well lubed.

The moral of this tale is :-
Don't take a Norton to pieces just for a poxy oil leak.

Things that went wrong on the road - or maybe a confessional.

(Simon said I should write about things that went wrong on the road. It's called "on the road maintenance". And it's a long list - – here's a start ---)

Its 1998. Dommi bought the previous winter and a vast amount not yet learned, so the bike sounds like a mechanical scrap-yard. I got a bike? - Will I get divorced? - but Lizzie climbed onto the back. Living then in the Wirral – and with a son in Dublin, we had to make a Spring tour in Ireland – so off to the Holyhead ferry. And then the bike died near Queensferry. Coil ignition needs a battery, but if you have stuffed tools into the battery box wrapped in a rag and one vibrates out of its rag and shorts the battery, goodbye ignition. Luckily just up the hill was a shop that did old bike bits. Could he recharge a 6v battery? – no, but he could sell me a new one. Definitely over a barrel – but we made it to the ferry (just) and completed the tour accompanied by appalling rattles and clatters. Major restoration work that winter. Especially as a hole appeared in the frame and water ran out.

After which a short local test ride found that I was stuck in gear, only one gear. Got home with mighty clutch slipping. Found one of the nuts inside the gearbox cover had vibrated off, and tried to go through the space above the quadrant thing that changes the gears, into the inner gear box. It was balanced on top of the quadrant thing. If it had managed to go any further - ---???? Moral: Locktite all internal gearbox fastenings.

2000, and a tour of the Loire region accompanied by friends and Lizzie on the back. Miraculously everything worked,

2001, down to Portsmouth from Newcastle for the ferry to Bilbao. Lizzie going to Portsmouth by train. Stopped at the "firm" in Queensferry, overnighted, and somewhere near Shrewsbury noted no charge on the ammeter. Consultations with Les Emery on mobile phone. Tested alternator OK. Chasing around suggested something amiss somewhere around the ignition switch. Which means removing the fairing. Vibration had snapped a wire off at the switch. (moral: the idea of dipping the wire ends in solder before attaching them is BAD – whole thing fractures in one go). All back together. (In winter, bound up the underside to the switch and all its wires in self-amalgamating tape, in a big, black blob. Death to

vibration). But rode on hundreds of miles, riding like an idiot, and found Lizzie at the station and made the ferry. No other failures, except the speedo packed up..

Yes, speedo packed up. Heading North through a small French town, unable to read speed, and stopping at a red light, suddenly 2 gendarmes on big, black BMW's, staring at us, one on each side. Oh no! A speeding ticket! Then they start pointing at the bike and making "thumbs up" signs. "C'est jolie!! C'est magnifique!", and off they roared ahead. Further up the road they were involved in setting up a speed trap, but as we passed, they came out of hiding, and waved happily. I am not going to tell you how many more times the speedo has failed. I fit a bicycle speedo as back-up. It reads km.

2002 The Norway rally and a week's tour. No failures. ("Phew!").

2003 Western Ireland rally and tour. In Killarney the clutch cable decided to part company. The "bobble" had come off the end inside the gear box. Happily I had remembered from my youth to keep a spare clutch cable threaded into position so it was just a matter of connecting the ends.

2003 again, a bad year it would seem – to Ardfert to our boat with Bob Tym. Descending to the west from Rest and be Thankful, sudden noise like a chain graunching on something. Stopped, examined, restarted and seemed OK. Repeat of the event on motorway after Sterling, but louder. After this the bike NOT happy. But held 60 going home via Wooler. Stripped and found broken piston ring had bashed through the lands and exited through the exhaust valve without doing damage on the way! Bores with only minor scratches. Talked to Pete Lovell, and made various measurements – bores, pistons etc. All Bores seemed within spec. He said to send the lot to him – barrels, cranks, pistons, con-rods. Conclusion that the pistons were of a type that had been getting sold around the place years ago and were inferior. Bores also may not be perfectly aligned to the cranks. First stage rebore done with proper centering of the bores, new pistons and rings. No seizures from then on until 15 years later.

2003 Autumn. To Normandy to share a "gite" with friends. Approaching friends home in Somerset, on dual A303, handling seemed a bit weird on roundabouts, but cruising 65-70 ok. Peeled off dual to enter village where steering went to hell. Stopped. Flat front tyre. Had been doing 65-70 with touring baggage and Lizzie on the back, AND a flat front tyre! Featherbeds take care of you.

2005 S.W. France, Albi, Gorges du Tarn, back – TROUBLE FREE!

So I think I will pause there until next time.

(For historic reasons, Pete Lovell does pistons, bores, and everything at the bottom end. Richard gets stuck with the rest).

Re. Donnington Nortons:

Most of you will have heard that the company, or its remains, have been bought by an Indian firm called TVS. TVS makes vast numbers of bikes, but it seems most at the smaller end of the range. Reading whatever I find on the web, and nobody is asking you to believe this, they plan to expand operations and production in the UK. I wonder if that is really a tenable policy these days – Triumph and others have production in the Far East. Which must be for a reason.

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