My experiences with Sunbeam S8.

I am a fan of Sunbeam S8 motor cycles because I owned and used one for six years during 1950s. I immensely like it. I, being a mechanical engineer, have always attended to the service and repair of my Sunbeam myself. I was on the lookout for one to keep as a memoir and for occasional use by my children. I jumped at the opportunity when one was advertised on the eBay auction site. There was an article in one of the British motorcycle magazines with all praise about this very bike now offered for sale on eBay. The Machine had a British MOT until March 2009.

The machine looks recently done up probably with a view to sell it. It was not to my satisfaction when it arrived here. The sound was not like that of an original Sunbeam, and it was not starting easily etc.

The experiences of Wilhelm, Vienna/Austria as narrated in ClassicGlory digest number 1470 on Wed Oct 29, 2008 11:27 pm (PDT) prompted me to write this. He gives the name a "Gentleman-mechanic" for the person who repaired his Sunbeam and it may be appropriate to give the name "Gentleman-mechanic- 2" to the mechanic who has worked on my Sunbeam.

Immediately after receiving the machine, I topped up all the oils, fitted a new battery, filled the fuel tank, and tried to start it. Petrol started leaking from the taps and I had to repair them. This was due to long storage. After attending to these teething problems, I could start the machine.

Later I adjusted the CB points gap, sparkplugs gap and tappet clearances to the manufacturer's specifications. The performance improved but still not to my satisfaction. Then I wanted to service the machine from scratch and I found that the tappet clearance I had set a few days earlier had changed considerably. I investigated the cause of this change and found that the rocker shaft, rocker arms and the valve caps were all badly worn and unfit for use. The valve caps were worn to the level that they had developed through holes in them. A competent and honest mechanic would not assemble the machine with parts in this condition. I could not accept my Sunbeam to be in that condition so I have decided to restore the machine and keep a record and an account of the restoration so that it may help young restorers.

I have dealt in detail only to that extent of jobs that needed repairs and rectification and this was not a complete overhaul job. As such, I have discussed only some topics in detail that needed my particular attention. The routine jobs were not recorded at all, as I thought they would be unnecessary for people who are confident of venturing on a task like this independently. I have not kept a diary of events and as such, I request to be excused if any points are overlooked. I do not claim to be an expert or an authority on Sunbeam motorcycles. Being a mechanical engineering graduate, I have vast experience in repairs and overhauling of vehicles. If I am not clear at any point please feel free to email me for clarification and I shall do my best to explain.

I ordered all the required parts from Stewart Engineering only and they supplied everything promptly. I also wrote to Mr. David Holyoake (Stewart Engineering) for his advice particularly on the sound aspect of the machine being different. He asked me to check valve timing amongst other things and suggested that it is quite common that valve timing has been incorrectly set.

I pulled out the whole engine/gearbox assembly and shifted it to a worktable. I particularly wanted to see the condition of the kickstart quadrant as I had problems with it on my first Sunbeam. Firstly, I opened the side cover of the gearbox and found that the kickstart quadrant is in good condition. Visually I checked the other items in the gearbox and having been satisfied with their condition, I replaced the gearbox side plate.

Next step was to separate the gearbox from the engine. Earlier, during operation, I noticed that the clutch released and engaged suddenly however gently used and the motorcycle was taking off with a jerk. I examined carefully to see what caused this but could not find any valid reason even on examining the relevant parts in great detail. The clutch pressure plate and the clutch plate were in a good condition and required no attention.

After completing assembly of the machine, I found by chance, the reason for the abnormal behavior of the clutch. I found that, the clutch lever as fitted to the machine was not an original part for this Sunbeam. The distance between the fulcrum and the hitching point of the Bowden wire were different between the front brake lever and the clutch lever. You may observe this in the pictures below.

Incorrect lever fitted originally when the machine was received.

Correct clutch lever that I replaced the original with.

With the lever replaced with a correct part, the clutch problem was resolved. This and similar problems are uncommon but if ever it happens it is also difficult to locate the problem.

The next step was to dismantle the engine. I pulled out the flywheel and removed the rear cover plate. I closely examined the rear main oil seal and found it badly deteriorated; it had lost its flexibility and had developed minor cracks. Luckily, no oil was leaking from there. The front main oil seal was in a similar condition. I think no one has ever replaced them since assembly of the machine in the factory. I have decided to replace these and oil thrower rubber ring before reassembly. I recommend that every time that the engine is dismantled, it is advisable that all these parts are replaced with new ones lest there may be oil leakage causing extensive damage and other problems.

At this stage, I removed the Sump and cylinder head to examine the condition of internal components. I noticed a spacer between the sump and engine to increase oil sump capacity.

When loosening the cylinder head-bolts, the reverse order of the sequence recommended for tightening the cylinder head bolts should be followed.

Later I examined the bottom end of the engine and found it was not looking too bad except for omission of one or two split pins on the conrod big end bolts. Presumably, this was because the castle nuts slots were not coinciding with the holes on the bolt when the nuts were tightened to the correct torque. In such cases, it is not advisable to tighten further or loosen the nuts to match the split pinholes. The proper procedure is to take out the nuts that are not coinciding with the split pinholes, slightly file them down as required on the face of the nut touching the conrod and see that the holes match.

I had taken out the bottom shells of the big ends and put them back as the bearing shells looked good. The valves were also in good condition. I carefully checked the upper part of the sleeves to check for the ridge formation. This did not look bad so I did not pull out the pistons as there were no complaints of oil consumption or plugs fouling. If it is not proposed to fit new piston rings they better be left untouched as otherwise oil consumption problems may crop up in future. For the same reason I did not attempt to scrape the carbon deposit also. Even the carbon in this area should not be cleaned. Previously I experienced this phenomenon several times while attending to other engines.

Setting ignition and valve timing on a Sunbeam is relatively easy and straightforward. Fix the crankshaft gear, taking care that the woodruff key is sitting in the correct position. Next, the crankshaft should be rotated until the pistons are brought to TDC. Now that the cylinder head has already been removed, the position of the pistons could be observed easily and accurately. If the cylinder head has not been removed, there are several ways of locating the TDC. The simplest is to introduce a pencil or blunt screwdriver through the sparkplug hole so that the pencil or screwdriver touches the top of piston and the TDC position of the piston could be easily located and fixed by rotating the crankshaft back and forth slowly. It may be noted here that in the TDC position the woodruff key slot is in the12 o'clock position of the crankshaft. The tooth above the woodruff key is the reference tooth for timing. In some cases this tooth is marked with a punch mark and in others the punch mark was omitted. Therefore, if the punch mark does not exist, it can be presumed that the tooth just above the key is always the reference tooth. In the case of my Sunbeam, this mark doesn't exist.

Next comes meshing of half time gear with the crankshaft gear. The camshaft sprocket is on the rear side of this half time gear. Two adjacent teeth are marked on the front side with punch marks. The reference tooth on the crankshaft gear should mesh between the marked teeth of the half time gear for proper timing. Correct halftime gear thrust washer should be used while assembling the half time gear as it prevents lateral movement. Then the cylinder head can be fixed in position and tightened. The cylinder head bolts should always be tightened in the recommended sequence.

Next, the camshaft should go into position. The cam sprocket is bolted on to the cam. Rotate the camshaft to a position so that the hole meant to receive the distributor-drive dog in the sprocket is in the lowest position. (6 o'clock Position.). Take care that the pistons are exactly at TDC. Then the timing chain should be attached. This fixes valve and ignition timing as the distributor-drive dog can only go into this particular position. The ignition timing can be adjusted slightly as required in the slotted holes in the distributor-fixing flange. The valve timing is fixed and can not be changed. The mechanic who repaired my machine previously has completely failed to set the timing correctly.

On ClassicGlory, there were some discussions about checking and limiting the end float of the camshaft. I think the end float of the camshaft need not be interfered with, as the halftime gear and sprocket does not have any lateral movement and the camshaft is automatically aligned.

The next problem I faced was with ignition circuit. When the machine was delivered, it was not fitted with an original distributor cap. It had a hand made distributor cap and not of a good quality. In moist weather, I noticed high voltage passing from coil to plug wires through the distributor rotor was arcing between the distributor cap and wire clip holding the cap, as the wire clip is grounded through the distributor body and consequently the engine was missing. This used to become worse during rain. I provided insulation between the cap and the clip. This has reduced the problem but not cured it.

I could locate a Lucas distributor cap of a four-cylinder car engine readily available in the market. The cap-locating peg on distributor body and two of the plug wire take off positions were matching with that of the original cap and so I decided to make use of this cap. I faced another minor problem here. The car distributor cap was higher than the original one and the distributor rotor wasn't touching the carbon inside the centre of the cap. The high voltage from the coil passes to the plug wires through this carbon only. Fortunately, there was enough material on the bottom side of the car distributor cap that I could turn it down and reduce the height.

The following pictures will clearly explain the above alteration in detail.

Distributor in position with altered cap. (Notice the dummies used closing extra wire outlets)

Picture of distributor caps as seen from underneath

Picture of original distributor cap as seen from top side

Picture of altered cap as seen from top side

Picture showing relative heights of distributor caps

Picture of distributor with originally received cap. (Please note that I temporarily held the cap in position with a nylon string as the original wire clip holding the cap was grounding HT supply

Distributor with altered cap

Distributor with original type cap as fitted when the machine was received

Notice the dummies used in place of two wires

This alteration perfectly rectified the ignition problems. Later on, I installed a Rooster booster to improve the performance further and I found tremendous improvement on installation. The guidance provided by Martin Vincent of (Rooster Booster)**"info@roosterignitions.com"** was of immense help to me. Later on I purchased an "Ignition Coil 6 Volt Dual Output" from **ignition@pazon.com** to have a ready alternative and this made the ignition circuit perfect and foolproof. I could use the distributor cap or dual output coil. The system with distributor cap looks more original and with dual output coil, it was more reliable. In either cases I made use of the Rooster booster as it improves performance in both cases.

For the rectification, I purchased the following parts from M/s Stewart Engineering, THE SUNBEAM SPECIALISTS.

1) Camshaft
2) Rocker shaft
3) Set of rocker arms
4) Valve caps
5) Top sprocket
6) Timing chain linked
7) Oil seals front and rear
8) Front fork thrust bearings complete.

and a few other miscellaneous items like footrest rubbers etc. I also purchased a control box stiffener plate so that I can confidently say that my Sunbeam is all-original. Fortunately, I did not have to use 'helicoils' or 'recoils' anywhere on the machine and I feel I am lucky for this.

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