

SmedSpeed new cam installation guide

The new billet cams available from SmedSpeed are made here in the UK, and are a quality product made by a long established cam manufacturer on state of the art cam grinding machines.

The installation of these cams is relatively straightforward and I will detail the method I use, however if you are in any doubt as to how the installation of a performance cam is conducted, and the measurements required, then seek professional help.

Refer to relevant pictures

1) The cam should be inspected for any damage that may have occurred during transit. I have inspected them when they arrived to me. During the nitride hardening process the 7mm threads have been filled with a carbon type filler to stop the threads become too hard, and hence brittle. The threads will require cleaning out. I use a M7 tap, these are widely available from including ebay, the Chinese made items whilst cheap will perform perfectly, as they only need to do the job once. However careful picking out of the soft carbon will also work.



2) The sprockets that are provided for use with the SmedSpeed billet cams are sourced from Mikes XS in the USA. The sprockets provide the facility to dial the cam timing in very accurately, something a fixed sprocket cannot provide for. They seem to have a small amount of “flashing” on the inside face of the slots, which can be very easily removed with a die grinder (Photo 2a) only a very small amount needs to be removed, approx 0.25 mm.



Photo 2a

Photo (2b) shows the sprocket once this has been done. To check that enough material has been removed, place the sprocket on the cam, and put the bolts in finger tight, then rotate the sprocket to ensure that it will move freely



Photo 2b

3) Put the sprocket onto the cam with the dot marks facing towards the advance and retard (RHS) of the engine. Insert the bolts with the washers' through the slots, and do up finger tight. Measure from the edge of the sprocket to the edge of the washer (Photo 3) adjust the sprocket so that the distance is between **5.6-6.0mm**



Photo 3

4) (Photo 4) The picture shows the sprocket bolted to the cam in the approximate position for checking

The cam timing will be very close once this has been done, but to get it spot on, the cam will need fitting to the assembled engine.



Photo 4

Once the cam has been fitted to the head, and the cam chain connected, (I assemble the soft link, but do not pen the ends over in case I need to disassemble) the rocker cover can be bolted on, ideally the whole assembly should be torque up the normal head bolt torque(I use 32lbs/ft)

I have constructed some very simple tools for checking the cam timing, and they are pictured in (Photo 5)



Photo 5

I check the cam timing at 0.040" lift; this prevents the opening and closing ramps of the cams affecting the measurements. The ideal cam timing for the SmedSpeed cam is

Inlet 21/49 104 lobe centres @ 0.040" lift. Measured with NIL tappet clearance

Exhaust 47/19 104 lobe centres @ 0.040" lift. Measured with NIL tappet clearance

Rather than try to get the opening and shutting points dead on, it is easier to set the lobe centre line measurements. A point that is worth considering, is a new cam chain will stretch a little when installed, this will retard the cam timing, so a small amount of additional advance will compensate for this phenomenon, I usually aim for 102-103 degree centre line

From experience I have found that the smallest amount of wear on the rocker arms causes a degree or two from specification, on a road bike this will not make any noticeable difference, on a race bike where every pooftenth of a HP is a fight, maybe. Typically cam timing will be one or two degrees less than the advertised ideal, Megacycles advertised values for lift are more than the cam supplied. Installation of the specially made spring lower collars will give the correct top collar to valve seal clearance, I suggest that you measure this, it needs 0.020" which is the stock measurement on a late model cam

I check TDC position with a dial gauge mounted on a fixture, rather than rely on the marks on the alternator rotor, it is worth the effort, as the rotor has a small diameter, and hence there is some visual error.

Once the cam timing is finished, I spread cam running in lube liberally all over the cam and top end parts, it is made by Kent cams and is around £9.00, a worthwhile investment.

