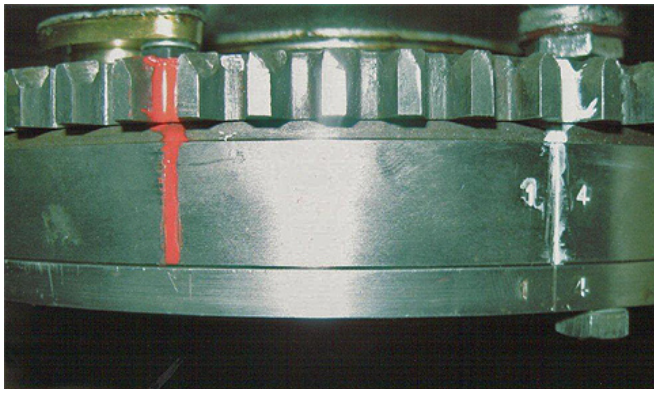
The majority of these tips have appeared in club newsletters over the years. Please note that you use them at your own risk as neither the Bristol Austin 7 Club nor the authors can be responsible for the results of trying to follow the instructions given.

Ignition timing and Bosch distributor - by Terry Griffin

Accurate ignition timing requires your timing marks to be correctly positioned and always checked at the flywheel, as this gives the most accurate readings. We are not expecting 100% readings as there are too many variables, called gears, between the crankshaft and the distributor - all we can do is try to eliminate as many as possible. On all distributors maximum advance will vary by a few degrees due to manufacturing tolerances and, as the Bosch 009 distributor was produced in several countries, the advance range does vary. However, this is not a problem as we intend to set the timing at the maximum centrifugal advance.

If you have checked ignition timing with a strobe timing light you will have noticed the timing mark jumps about to some degree. This is because we have five gears between the crankshaft and the distributor. The first two, the crank gear drives the cam gear, and should have a small amount of backlash. Anything excessive will also affect cam timing, so either find a better pair or replace with new gears. The dynamo is driven from the cam gear with a skew type gear. You can improve the mesh of these by surfacing off the base of the dynamo housing. At the distributor end of the dynamo a worm gear drives the distributor gear. If these are worn, new gears are obtainable.



Red mark at 6 teeth before TDC shows fully advanced position

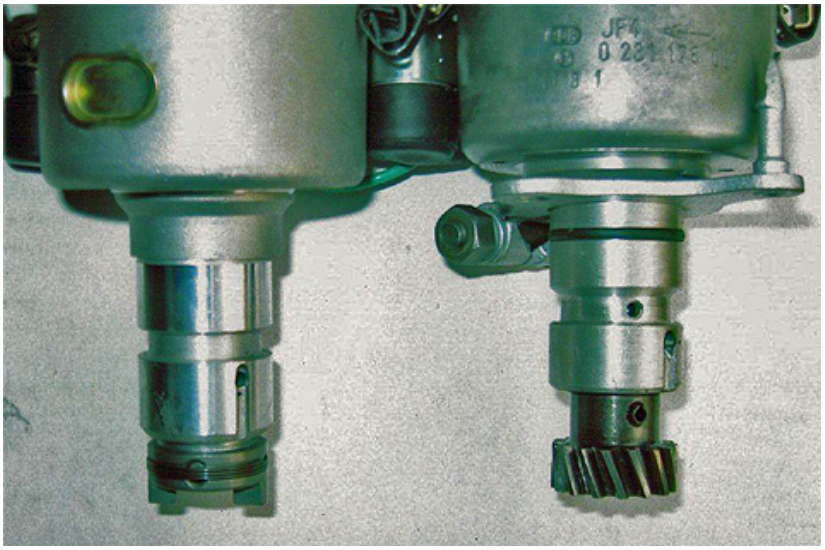
To set the timing you need a reference point. The TDC 1/4 mark on the flywheel will need to be checked and marked at actual TDC with either a pointer or a mark on the crankcase.

Why use an auto advance distributor? With fixed advance your timing will only be correct at one point in the rev range and will be over advanced at the start-up and low revs meaning excess loading on bearings and starter.

The Bosch 009 distributor is a modern alternative for the Lucas originally fitted and can replace any of the Lucas types. It will require some modification as the drive and fixing are different. You will also need to add lubrication as it was originally lubricated by a breather. You may be able to buy a ready-to-fit distributor from some Seven suppliers with body machined for fixing clamp and drive gear fitted but no provision for lubrication.

If your distributor is as Bosch supplied, this is what you need to modify:- Remove cap, rotor arm, spark shield, condenser and wiring, then remove screws retaining cap clips. This releases the points base plate. Removing the base plate reveals the centrifugal advance mechanism. Remove wire circlip from the offset drive peg and punch out the 4mm pin. There will be shims fitted under the drive peg. Now remove the shaft assembly from the distributor body. There are shims under the advance base plate - retain these.

To fit the Lucas distributor clamp you need to machine off 3/16” (5mm) from the shoulder of the distributor body stem. This is to ensure the new drive gear meshes properly. There is a groove on the body stem that normally takes a seal ring. This groove lines up with the screw peg on the dynamo end. Drill a 1/8” (3mm) in the centre of the groove and clean out any metal particles. This hole is between the drive shaft bushes and provides a point of lubrication when a grease nipple is fitted in the peg thread hole. While you are machining off the shoulder for the clamp, machine a new 2mm ‘O’ ring groove above the original groove to prevent the grease oozing out from under the clamp.



Unmodified (left) and modified Bosch distributors.

A new drive gear with a 4mm fixing hole can be obtained from your friendly Seven supplier but make sure it is a good fit on the shaft. Refit the shaft with base shims, oil bushes and shaft before fitting. Temporarily fit gear and pin. Measure gap between gear and body and fit appropriate number of shims. You might find a 4mm roll pin is easier to fit than the original solid pin. Re-assemble the points base plate, clips and condenser. Check points gap - .016/.018 thou. A smaller than recommended gap retards timing and shortens coil LT resulting in a poor HT spark. Too large a gap advances ignition and could result in a misfire.

Make sure the clamp fits square on the top of the dynamo and is not bent. Light grease distributor stem and ‘O’ ring, also grease drive gears before fitting to dynamo. Fit grease nipple to dynamo and give a couple of shots of grease - any excess will pass through original lower lubrication holes and on to the drive gears.

How do we arrive at this optimum advance setting? By a lot of testing on the road and rolling road tests, watching power and torque dials while advancing and retarding the timing?

No, you don’t have to do all this testing! The figure we arrived at was 27 degrees max advance. This is easy to measure on the flywheel ring gear as each tooth is 4.5 degrees apart so six teeth before TDC gives you 27 degrees of advance. This figure works with any state of engine tune from standard to full race spec.

To set up timing, set distributor at points just breaking TDC on No 1 cylinder, connect up strobe timing light, rev engine to about 3000 rpm. This fully advances the centrifugal weights. Turn distributor anti-clockwise until your advance mark lines up with the TDC pointer. That’s it! Don’t forget to tighten up your distributor clamp bolt.

The timing setting is not so critical at idle or low revs, correct carburation being more important to give smooth transition from idle. But retarded or over advanced ignition at high revs can cause piston or valve failure.

I hope this helps anyone contemplating fitting a Bosch distributor, or if you have been having problems with your ignition or timing. It is a worthwhile conversion especially if your engine is of the more sporting variety, as it will rev to 8000 rpm (not recommended!) without misfiring using a sports coil.