



Timing the V8 engine in the RV8 and MGBGTV8

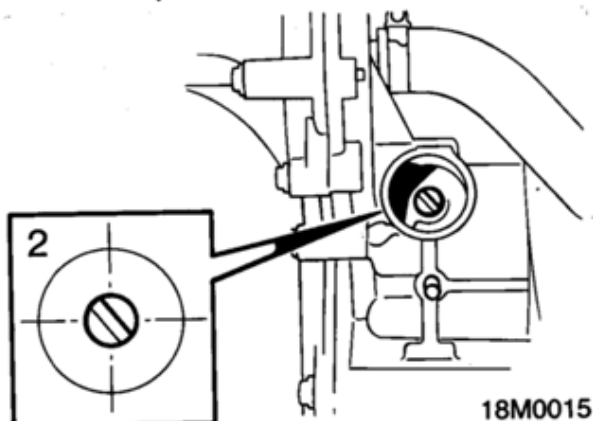
Nic Houslip explains how to set the timing on an MG V8.

I will start from the point where the engine has been rebuilt, or perhaps has just had the distributor removed for repair or replacement. If you have just rebuilt the engine, now is the time to use the special tool to engage with oil pump shaft and using an electric drill rotate the oil pump to prime the system with oil. You did remember to pack the oil pump with Vaseline, didn't you? This will ensure that on first start up the engine will not be starved of oil. If the engine has been standing for a long time it may be worth priming like this anyway, but of course omitting the Vaseline packing stage.

The instructions for fitting the distributor are detailed and must be followed exactly. It is slightly tricky but if you; as my science master used to say "read, learn and inwardly digest", it is within the capability of competent DIYers. First let's look at the position that the oil pump drive must be set to.

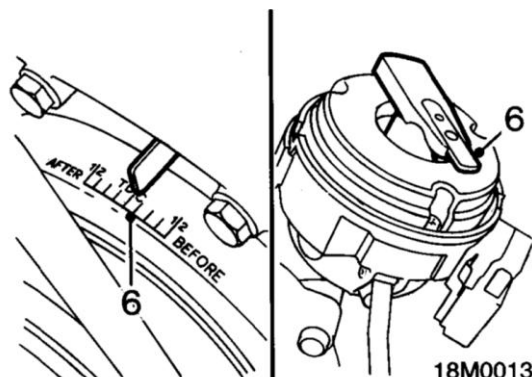
Refit

1. Ensure timing pointer is aligned with 3° mark on crankshaft pulley with No 1 cylinder on the compression stroke.

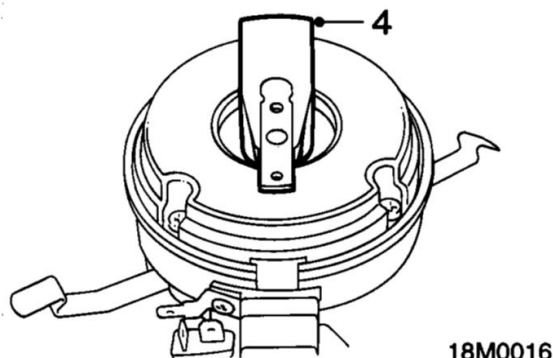


2. Position oil pump drive shaft tongue at the ten to four position.
3. Fit new 'O' ring to distributor, lubricate with engine oil.

You must be sure that you have obtained the correct TDC for No 1 cylinder, on the compression stroke as directed, because as there are two revolutions of the crankshaft for every power stroke there are two TDCs. If you remember the sequence, Suck, Squeeze, Bang and Blow, you can visual that the correct TDC for the spark is with BOTH inlet and exhaust valves closed.



6. Rotate crankshaft until timing pointer is aligned with 3° B.T.D.C. mark on crankshaft pulley with No 1 cylinder on the compression stroke, and the rotor arm points towards No 1 spark plug segment in distributor cap.



4. Turn distributor drive until rotor arm is approximately 30° anti-clockwise from No 1 spark plug segment in distributor cap.
5. Insert distributor into timing cover, engage drive gear and push distributor down until 'O' ring enters bore. Locate slotted adapter to oil pump drive shaft tongue.
6. Check that centre line of rotor arm is aligned with No 1 spark plug segment in distributor cap. Reposition distributor if necessary.
7. Remove rotor arm.
8. Rotate distributor to position pick-up opposite nearest reluctor tooth.
9. Position clamp, fit nut and lightly tighten.
10. Fit rotor arm.
11. Connect amplifier multiplug.
12. Fit distributor cap, secure clips.
13. Connect vacuum hose.

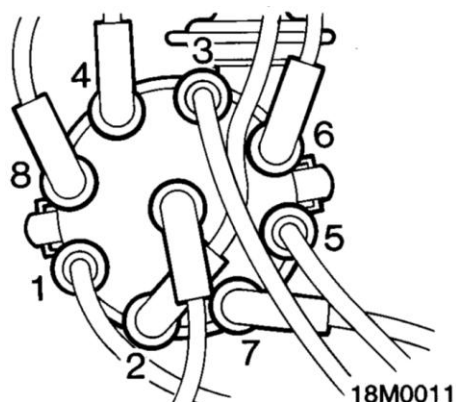
If you are on the wrong TDC, one or both of the valves for that cylinder will be slightly open because the piston has just completed the exhaust [piston rising with exhaust valve closing] and about to descend on the intake stroke [piston falling with inlet valve opening].

Because there is valve overlap in this position you can see both rockers moving if you remove the rocker cover. It might be possible to see through the oil filler cap, but I wouldn't rely on that. Now back to the workshop manual and follow the instructions for positioning the distributor shaft.

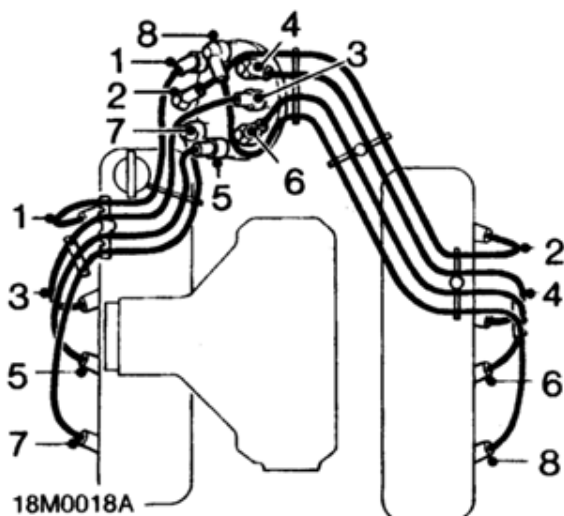
At this point an explanation is necessary to help you understand what happens. The gear on the end of the distributor shaft is of the helical type and as it slides into engagement with the gear on the camshaft it has to rotate slightly, as it does so the shaft moves downwards and the slot in the oil pump shaft aligns with the key on the end of the distributor shaft and the two mate together.

As the distributor slides home [hence the instruction earlier to fit a new O ring and lubricate it] you will see the rotor arm shaft move slightly as it engages the gear on the camshaft. If the distributor doesn't seat down to the collar it may be misaligned with oil pump drive. If it doesn't, DO NOT force it. Take it out and recheck positions of the parts.

Once you have the distributor seated correctly then:



14. Identify and connect h.t. leads in the sequence shown.



5. Connect h.t. leads

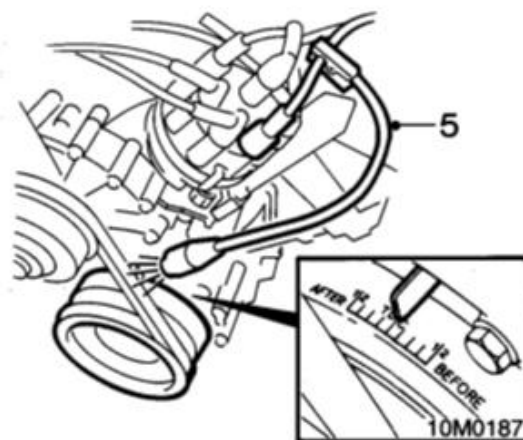
The installation, position and condition of the HT leads is important and should be routed as shown below. The plastic clips should all be in place, holding the wires away from metal contact

and contact with each other. If you are missing any of these clips they are available as spares. There are slight variances between

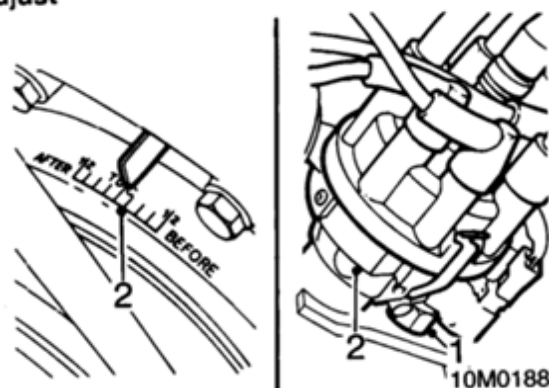
IGNITION TIMING

Check and Adjust

1. Connect stroboscopic light and tachometer, ensuring that stroboscopic lead is connected to No. 1 plug h.t. lead.
2. Clean timing marks on crankshaft pulley. Marks each side of TDC are $\pm 3^\circ$ tolerance.
3. Start and run engine until normal temperature is achieved; cooling fan starts to operate.
4. Disconnect vacuum pipe from distributor.



Adjust



1. Slacken distributor clamp nut.
2. Carefully rotate distributor body to achieve correct timing. Rotate clockwise to advance or anti-clockwise to retard.
3. Tighten distributor clamp nut to correct torque and recheck timing.
4. Connect vacuum pipe.
5. Switch off engine, disconnect tachometer and stroboscopic light.

the various cars that use the Rover V8 so be careful if offered Land Rover or Range Rover parts. The HT leads are under considerable

electric stress, the spark produced is in the region of 35,000 Volts and because of the way it is produced is what engineers call spiky and is difficult to keep it inside the wires. Misfires can be caused by wires touching each other and if the plug in the cylinder concerned is hard to spark the energy may jump to the easier path through another plug or to earth. If in doubt, invest in a new set of leads. As you have had the plugs out make sure they are gapped properly and that the ceramic insulator is clean before putting them back. The plug leads slide most of the way down the insulator, the part that isn't covered needs to be clean to prevent leakage of the spark under wet conditions.

Setting the timing accurately

Now the timing needs to be set accurately, the best way is as described in the workshop manual for the RV8. Note that the manual doesn't give any figures other than the timing at 800 RPM with the vacuum pipe disconnected. This is deliberate since the amount of advance is determined initially by the bob weight and springs inside the distributor and then by the vacuum advance device which sense manifold pressure and adjusts the amount accordingly. These are only adjustable by changing the bob weights and springs and the advance diaphragm canister and this should not be under taken unless you have a dynamometer available to check your results. If all the various parts are to the correct specification and in good order, the static timing of 3 degrees BTDC will usually give you the correct figure of 5 degrees plus or minus 1 degree. This means that anywhere between 4 or 6 degrees is satisfactory.

The only way that the correct advance figure can be determined is on a dynamometer, when the operator will adjust the advance for maximum power, but if you have any doubts about this, have your distributor serviced by a specialist like the [Distributor Doctor](#) near Taunton in Somerset. It will come back with the correct specification as long as you tell them the car model details. If set to the correct static timing it will produce the correct figures at all RPM.

Some points to finish on

1. If you are working on a V8 that was from an older car (prior to the MGBGV8's introduction), be aware that the gender of the oil pump drive and distributor drive key was changed. I cannot find a date for this. The oil pump drive and distributor key must match and mesh correctly. Check the manual for the donor car. The Rover workshop manuals are particularly good.
2. The distributor installation instructions for the MGBGV8 are similar, but the numbers vary slightly. Best that you check the workshop manual for the car you have.
3. If working on a car with a non-electronic distributor do not confuse the Dwell angle with the timing angle. Both are in degrees, Dwell angle is a measure of how long the points are closed between each spark and this materially affects how much energy is stored in the coil. Too short a dwell angle can lead to poor sparks.

And lastly

If you do remove the rocker cover(s) please don't try to save cost by reusing the gasket(s) unless they have only recently been renewed. You will get oil leaks that run down the back of the engine and make it look like the main shaft oil seal may have failed. Clean all the mating surfaces and use a thin film of **Hylomar Universal compound** to hold the gasket in place in the rocker cover prior to fitting it.

Some RV8s have a curious BiHex bolt that has 12 points on its head holding the rocker boxes on [mine does] you will need to track down a 5/16" AF BiHex socket preferably one that uses a 1/4" square drive so it will fit down into the space allowed for the bolt. These are comparatively rare; if you wish I can loan you mine as long as you return it.

The bolts are UNC 1/4" 20 TPI x 1 1/4" long. If you wish you can replace them with four nice stainless steel Socket head bolts of the correct length. They are NOT metric. Torque for these is 7 nm (5.2 ft. lbs.f). Do not overtighten them in an attempt to get oil tightness, it doesn't work and you might strip the thread in the head.