

## SBD Motorsport Running in Procedure For Car Engines only (not motorbike engines)

SBD do not recommend running in your engine on synthetic engine oils, most of the modern synthetic engine oils are so good that they can prevent the rings from bedding in to the bores. We recommend either the use of a good quality running in oil or a good quality mineral oil. Due to the accuracy and high quality of the components that we supply and modern machining processes, we recommend that running in oil is only used for a shorter period as possible as it is only there to bed the rings into the bores, which is vitally important, it is recommended that this is done on a dyno or rolling road under controlled conditions.

It can normally be carried out in about 1 hour, by varying the speed and load of the engine. By applying load to the engine on the dyno, this forces the rings into the bores so proper bedding in occurs. If the engine is not loaded sufficiently, this breaking in may not correctly take place. The bores become glazed and your engine will smoke, because of the oil bypassing the rings, which can then create further damage if not rectified.

The other reason for carrying out running in on the dyno is that the oil can be changed as quickly as possible, because a breaking in oil is not as good as protecting the bearings and journals within the engine as they do not need running in. Also the act of bedding in the engine produces small particles within the oil so it is suggested that after the hour of running in, that the engine is leak down checked and if possible inspected with an endoscope. The leak down check will confirm how well the rings have bedded in and whether any further running in is required before converting to a fully synthetic oil.

Prime Drysump pump with drill to get oil pressure up - typically 30 psi - prior to first firing.  
Initial fire up is to bed the cams in, see procedure below;

When fitting new camshaft it is important to follow the running in schedule as follows:

One minute - 2000 RPM

One minute - 1500 RPM

One minute - 3000 RPM

One minute - 2000 RPM

If this schedule is not followed then damage to your camshafts will occur, maybe not now but in the near future.

If Cams are being run in on a new build, it is extremely important to get the engine started, and the revs increased to the first stage listed above, do not attempt to balance the butterflies first, a visual balance of the butterflies before fitting is the best that can be done at this time, if the engine is allowed to idle on new cams damage will occur.

Take the revs up to 2000 rpm using the throttle stop screw, if the mixture seems particularly bad at this point, rotate the throttle pot slightly until the engine sounds "happier", follow the rest of the procedure listed above.

Once complete the idle can be set, but again do not concentrate on this for too long, it is more important to get the engine under some gradual load as soon as possible, rather than getting the idle perfect at this point. The idle can be set last.

The reason for varying the load is to allow the rings to bed into the bores.

In garage running, no more than 3k rpm initially, keep the engine changing RPM - don't let idle or sit at any constant revs. Once happy and if all seems ok and the engine has some temperature, increase the throttle blips, going to half max rpm under no load is safe and better to bed the engine in at; ideally the engine should now be put under load by controlled driving or rolling road work.

Under load work;

Once oil temp begins to come up use more revs, let the engine accelerate through rather than hold the load for too long at any one point, the technique is to run the engine through the peak of the torque curve without either over revving or allowing the engine to labour, use all gears 'squeeze' of throttle, try to do about 20 mins worth of running with RPM limit of half max revs, however once oil is up to temp continue same process but holding the lower gears to build up to 3/4 max revs at the end of the running in session, total time 45mins to 1hr 15mins.

When complete drain all oil, fit new filter and fill tank with fully Synthetic oil (Type as per our data sheet).

Build the engine load while fine tuning the mapping, use 7/8 of max revs initially, once the map is being optimised and temperatures/pressures are good increase through to max revs.

This procedure can only be used as a guide, we will not take responsibility for any damage caused, it must be remembered that under certain conditions the procedure may need to be altered, and ultimately the responsibility lies with the engine operator.