

M E T R I C M E C H A N I C

BMW Drivetrain Specialists since 1976



ENGINE "BREAK-IN" INSTRUCTIONS

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Initial Break-In

OIL

- For breaking in an engine, we use a low quality detergent motor oil.
- During break-in, the rings must come into contact with the cross hatch hone marks on the cylinder wall in order to wear the rings into the shape of the cylinder wall and seal tightly.
- Over the years, we have used either Havoline 10-40 or Quaker State 10-40 Motor Oil.
- We DO NOT recommend synthetic oil, high quality motor oil or slipping additives. These products can keep the rings from making cylinder wall contact and wearing in correctly which in turn can cause lasting high oil consumption.
- Your engine is shipped dry (without oil added). Be sure to add an oil such as those recommended above, before starting the engine.

START-UP

- In your new engine, all moving parts and wear surfaces have been pre-lubed.
- When starting the engine for the first time, please avoid prolonged cranking. If the engine hasn't started after cranking for 20-30 seconds, stop and investigate.
- Once it starts, hold it at a fast idle 1200 -1500 RPM to insure good oil pressure and oil flow to all moving parts.
- Observe if the engine is running smoothly on all cylinders. If it is missing on a cylinder or not running properly, fix it immediately.
- If it seems to be running fine, then take it for a short drive - one mile or less to feel it out.
- You may give the engine a few short bursts of 2 to 3 seconds up to about 4000 RPM. If it seems to be making decent power and running smooth, then you are ready to "seat the rings"

Seat the Rings

The rings need to be “Seated In” very early within the first 5-10 miles of driving using the break-in oil we recommend or the rings won’t wear in. We install Moly rings (molybdenum) and hone the cylinders to a fine finish - 400 grit. this combination requires very little time to seal the rings against the cylinder wall. The following procedure for seating the rings is best done in little to light traffic. Two methods are described: depending on whether your location.

RURAL METHOD

- Using 2nd or 3rd gear, reach 2,000 RPM and accelerate the car under full load (floor the gas pedal) up to 4,000 RPM. Once you reach 4000, immediately accelerate the car
- Decelerate (take your foot completely off the gas pedal) and go back to 2000 RPM.
- Keep adding in 100 RPM to your upper RPM limit until you hit 4,500 RPMs
- Then shift up a gear and cruise the car for a mile or two at about 2,500 to 3,000 RPMs.
- Repeat the procedure going from 2,000 RPM under full load to 4,600 RPM..
- Keep moving the upper RPM limit up 100 RPM until you reach 5,000 RPMs.
- The rings are now seated.

CITY METHOD

- Avoid going out on highways. Instead, stay on street that have stop signs and traffic light with speed limits of about 45 mph.
- Accelerate briskly to hard - up through the gears giving the engine burst speeds (2 to 3 seconds) up to 4,000 to 4,500 RPMs for the first 2 to 3 miles.
- Then give the engine a breather by cruising at 2,500 to 3,000 RPM for a mile or two.
- Repeat the above using a burst speed of 4,500 to 5,000 RPM.
- Once you’ve accelerated the car 10 -15 times, the rings will be seated.

Oil Change

Once the rings are seated, change the oil and filter. This is usually in 50 miles or less. At this time the face of the ring will be 80% to 100% worn-in due to the extremely fine filing action created by the "cross hatched" honed cylinder (looks like a bastard file). Also by now, the cross hatch honing marks on the cylinder will almost totally be worn away. To totally ensure that the ring face is 100% worn-in, continue to use break-in oil (see page 1) for the 500 - 1000 miles.

AFTER 500 - 1000 MILES

- For engines that have mechanical valve trains, we recommend using mineral based oils or heavier weight synthetic oils.
- These engines use rocker arms (a mechanical valve train).

M10, M20, M30

Recommended Mineral Based Oil

1. Valvoline: 20 - 50 for Summer
2. Valvoline: 10 - 40 for Winter

- These engines have Lifter Buckets (hydraulic valve train)

M42, M44, M50, M50tu, M52, S50, S52

Recommended Synthetic Oil

1. Mobile 1: 15 - 50 Synthetic Oil