Engine Break In Procedure

Re-using old parts on your new engine:

Re-using old components is ok but they need to be thoroughly checked and cleaned. If you are installing parts from a previous engine that had a failure, every part of that component must be cleaned thoroughly. This is extremely important for cylinder heads. The cylinder heads have many different oil galleries that can hold contaminants. Heads need to be taken apart, oil plugs removed and cleaned. Lash adjusters should be removed, cleaned and inspected for any type of metallic debris.
Timing Cover, Oil Pan and Valve Covers should also be cleaned thoroughly to remove any dirt, dust or other types of contaminats.
If you had a previous bearing failure, and you have an oil cooler, it must be replaced.
There is no good way to clean out the oil cooler assemblies.

Priming the Engine:

The best way to prime your new engine is to use some type of external pump the pressurize the oil system using the 1/8” NPT port on the Oil Filter Adapter. This can be done with a small fluid transfer pump for transmission fluids or a lawn style spray pump with a modified tip. You will want to prime the engine enough that you can see oil coming up to the top end through the oil fill hole in the valve covers. Failure to properly prime the engine can result in bearing damage.

Oil Pump Pickup Tube to Pan Clearance:

This is extremely important. Oil Pickup clearance can easily change with the use of ARP Main Studs, which all of our engines come with. Oil Pump Pickup to Pan Clearance needs to be between **.320” and .370”.** Too close and the pickup will have issues with picking up the oil. Too far, and you are simply cheating yourself out of oil capacity.

To measure, mock up the pan gasket you will be using, install the pickup tube with the OEM stand off. Next you can simply put a piece of masking tape over the screen portion, and then use a piece of clay or play dough on top of the pickup. Next, mock up the pan in its correct position, push down firmly and then remove to measure the clearance.

If additional clearance is needed, you can trim down the stand off. If you need less clearance, you can simply shim the pickup tube up, using small washers between the top of the stand off and the bottom of the tube bracket.

Break In Oil / Filters:

For Break in Oil, we recommend Driven BR30, PN 01806. We recommend using this oil for the first 2 oil cycles. 250-300 Miles, One dyno session or 5-6 hours of street driving per oil cycle. **It is extremely important the oil pressure be monitored during the break in process**. The break in oil will get watery and lose viscosity if it is ran too long, resulting in lower oil pressure. After the 2 cycles of break in oil, you can switch to synthetic if you would like. Do NOT use synthetic oil to break in the engine initially or the rings will have issues sealing.

For synthetic oils, we recommend the Driven Racing products as well. If you need a recommendation on viscosity, please call or email us for a recommendation.

For Oil Filter, we recommend K&N or Motorcraft only! Oil Filters must be changed with every oil change, including the short break in cycles. Failure to do so can result in engine damage.

Break in Procedure:

Once the engine is primed and all fluids have been checked, go ahead and start the engine. You will want to check for any leaks or issues at this point. Let the engine warm up to operating temperature, make sure the thermostat opens and the fans come on at the proper time. If the engine is idling excessively rich, or your tune is way off, you need to turn the vehicle off and consult with your tuner.

DO NOT start a new engine up with a tune that has not been calibrated for a different size MAF sensor or Fuel Injectors. Overly rich fueling at idle will cause the fuel to wash oil off the cylinder walls, causing the piston rings to glaze the cylinders. This will result in less than adequate ring seal. Seating the piston rings is the #1 goal of the break in procedure.

The absolute best way to break in the engine after the initial startup is on a chassis dyno. Mid RPM Range, High Load pulls will seat the rings very quickly. Plus, your tuner will be able to monitor everything so there should be no issues with fueling or ignition timing.

On the street, mid range RPM and high load pulls are also recommended. Start around 2500 RPM and with 50-75% throttle take it up to 5000-6000. 10-15 good pulls like this should seat the rings properly. After that, as long as the tune up is good, go ahead and beat on it like it was intended.