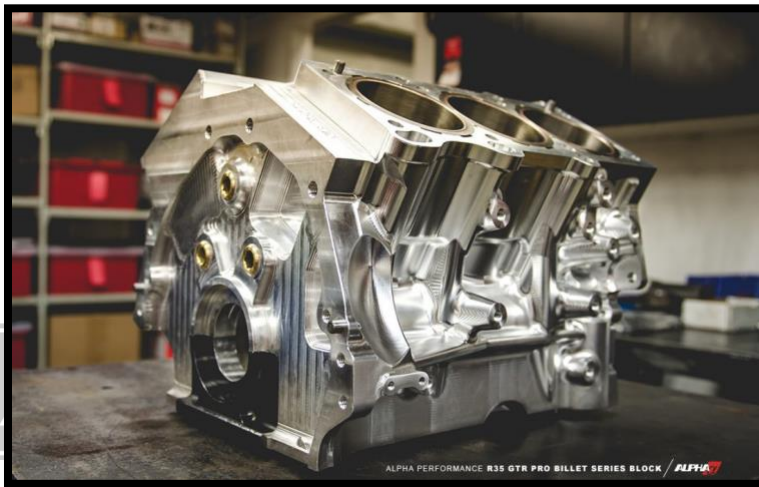


# AMS Performance Engine Break In and Warranty Information



***Congratulations on your brand new AMS Performance built engine!***

“We take great pride in each of the thousands of engines we have produced since opening our doors in 2001, and I and the rest of the AMS Performance team thank you for choosing us as your preferred engine builder. This document will outline the proper steps to take in order to safeguard your investment with the best methods possible.”

Scott Priebe  
AMS Engine Program Director



# Engine Break-In Procedure

High performance engines are built to handle more power than factory engines but without proper supporting parts, break-in, tuning, and lubrication they can be damaged just as easily as a factory engine.

## Break-In General Recommendations

- Use Amsoil Break-In Oil (SAE 30) during entire break-in process.
- After break-in use Amsoil Dominator 15W-50 for 200+ horsepower per cylinder and Amsoil 10W-40 for less than 200 horsepower per cylinder.
- During break-in do not run at the same speed for extended periods during break-in, also make certain the engine is operating at proper coolant temperature and oil pressure.
- If your tuning software allows it, datalog the entirety of your break-in mileage. This may be necessary to diagnose potential issues.

## 4G63 Specific Notes:

- After your engine is fully broken in but before any final tuning, re-torque the head studs. The spec is 100 ft/lb for CA625 ARP studs or 80 ft/lb for standard ARP studs.

## VR38 Specific Notes:

- Proper oil filtration is a must for a new engine. AMS manufactures an adapter kit to use a significantly larger WIX oil filter, which is recommended for all our VR38 engine builds. If this style filter is not used, we will be unable to offer any warranty support for our engine assembly.
  - WIX 51060R for Racing Applications
  - WIX 57202XP for Street Applications
  - WIX 57099XP for all Applications with Alpha Cooling Kit



## Step by Step Engine Break-In Procedure

1. Before installing the oil filter fill it completely with Amsoil SAE 30 Break-In oil.
2. Fill engine with Amsoil SAE 30 Break-In oil to the appropriate level.
3. Disable the vehicle's fuel system and crank engine to prime oiling system.
4. If your vehicle requires the clutch to be pressed to crank engine bypass the system so you do not have to press the clutch while priming the oiling system.
5. After the oiling system has been primed and oil pressure has been seen, start the engine and immediately monitor oil pressure. If it is too low either the oiling system is not completely primed or there is a problem that needs to be addressed before continuing.
6. Confirm that the vehicle has a proper base tune in it so it will not run too rich or too lean.
7. Drive car for 20 miles carefully, no full throttle at this point. Vary the RPM.
8. Remove oil filter, cut open and inspect for metal contamination.
9. Drive car for 200-300 miles carefully, still no full throttle. Vary the RPM (do not get on the highway and set the cruise control).
10. Remove oil filter, cut open and inspect for metal contamination.
11. At this point you can also replace the break-in oil with synthetic Amsoil of the appropriate weight.
12. Your new engine should now be ready for final tuning and full throttle operation.

**ALPHA**  $\alpha$



# Best Practices for Engine Longevity

## Ancillary Parts Cleaning and Replacement during New Engine Installation

**If your last engine showed any signs of metal contamination these steps MUST be taken!**

- Replace the engine oil cooler. Oil coolers CANNOT be flushed out completely. AMS/Alpha sells reasonably priced replacement oil coolers for both the Nissan GTR and Mitsubishi EVO.
- If you are re-using your old cylinder head(s) have a reputable machine shop clean them out thoroughly.
- Clean **EVERY** part of the oil system. Everything that comes into contact with oil must be visibly cleaned.
- Flush out the turbo(s) or have them professionally cleaned and inspected by the manufacturer.

## Post Break-in Oil Change Intervals

- Engine oil changes are an important part of your regular maintenance routine to ensure your investment has the best chance of long-term reliability. It is important to remember, there is no such thing as changing your oil too often. Many of our customers change their oil every 1000 miles or less.
- Once your engine is broken in fully and switched to normal synthetic Amsoil Oil, we recommend changing oil after the first 500 miles, and then every 2500 miles thereafter.
- If your vehicle is used for racing events such as drag racing, half mile racing, or circuit course/track days, we recommend changing the oil after every event.
- For further monitoring of your engine's health, we recommend collecting oil samples after each oil change and having them analyzed by a reputable laboratory such as Blackstone Labs ([blackstone-labs.com](http://blackstone-labs.com))

## General Practices

- Always let your engine warm up to normal operating temperatures before allowing the car to enter positive boost pressure, or go to high RPM. If your vehicle does not have an engine oil temperature gauge, please remember that oil temperatures can take much longer than coolant temps to reach normal operating temperature. You will need to use your best judgment on when engine oil is at normal levels.
- Adjust your clutch to factory spec so that it is not always pre-loaded. Also it is a good idea not to disengage the clutch unless the engine is already running with proper oil pressure or accelerated thrust bearing wear can occur.



# AMS Performance Warranty Information

Unfortunately, even when adhering to the industry's best practices, problems can arise. As part of our standard quality control procedure below are some of the tests we perform before every AMS engine is cleared to be installed in a customer vehicle:

- Every crate engine is leak down tested before leaving the engine build room.
- Every VR38 engine is coolant pressure tested to 40 psi.
- In addition to recording measurements, clearances, and test data on our archived build sheets, many photos are taken during and after the build of all AMS engines.

In the unlikely event you experience an issue with your AMS engine the following steps can be taken to submit a request for warranty repair. AMS Performance offers a limited warranty on AMS built engine assemblies that applies to AMS manufactured parts and assembly labor and begins on the invoice date of part purchase and ends twelve (12) months or 12,000 miles from that date, whichever occurs first. AMS' obligation under this warranty extends solely to the repair or replacement of parts manufactured by AMS.

## Warranty Repair Procedure

- If a problem with the engine such as an abnormal noise or knock, or excessive metal debris accumulated in the oil filter is found, document these findings and contact an AMS representative.
- If possible, a datalog or the unlocked calibration file must be sent to AMS for peer review.
- Do not disassemble the engine in anyway unless specifically requested by an AMS representative. AMS requires that a fully assembled engine is returned for inspection and final determination of warranty claim eligibility.
- All warranty returns must be pre-authorized by contacting AMS at (847) 709-0530 or via email at [sales@amsperformance.com](mailto:sales@amsperformance.com).
- Upon arrival, the engine will be disassembled and inspected to determine the cause of failure and determine warranty eligibility.
- Only errors in AMS engine assembly or machining will be eligible for warranty.
- Parts deemed under warranty will be repaired or replaced by AMS at no cost to the customer.
- For vehicles serviced at the AMS facility, payment of the cost of labor related to said warranty repair/replacement is at the sole discretion of AMS and will only be covered if the AMS engine was originally installed at the AMS facility located at 1760 Metoyer Court, West Chicago, Illinois, 60185.



## The AMS Limited Warranty explicitly does not cover the following:

- Labor/service performed at any other facility.
- Inbound and outbound shipping costs.
- Engines with undocumented oil changes, mileage, or other service history.
- Failures of internal engine components not manufactured by AMS (i.e. pistons, rods, bearings, etc.), unless determined to be an error in AMS machining or assembly.
- Failures determined to be caused by improper break-in, improper tuning, maintenance negligence, over-rev, foreign object ingestion, overheating, oil starvation, or normal wear and tear.

## Warranty Claim Examples

Upon installation of a new AMS Stage 1 VR38 short block, a bearing knock is audibly heard during the first start up. The proper break in procedure has been used up until this point. The noise has been documented, debris has been found and photographed in the oil filter, and an oil sample has been taken. The engine block is sent to AMS and during inspection it is determined to be a tolerance error during assembly. The shortblock is repaired and the necessary parts are replaced under warranty at no cost to the customer.

An AMS 2.3rr 4G63 crate motor has been installed and tuned and has run for 3000 miles. All break in procedures were followed and oil changes have been completed as per our recommendations. The engine suffers a catastrophic failure and cylinder number two has zero compression. The engine is returned and upon inspection, it is found that the piston has been melted straight through, consistent with detonation caused by lack of fuel or aggressive tuning. The engine is not eligible for warranty repair, however a discounted rate of repair is offered.

