



**Engine Warranty**

**Part I**

The standard limited warranty for our V8 engines, whether short or long block configuration, is 12 months unlimited miles to the original purchaser, limited to manufactured defects and applicable to the specific order. Cylinder heads are remanufactured for the long block and covered under same. Owner’s original reassembled engine parts, including but not limited to: carburetors, injectors, alternator, starter, oil pump, thermostat, water pump, radiator, exhaust manifolds, gaskets, valve covers, oil pan, connecting bolts are NOT covered under this warranty. All gaskets and seals are excluded and NOT covered by this warranty.

Failure to do any of the following items shall void this warranty:

- Recommended break-in procedure as described in Part 2 – Engine Assembly & Initial Startup and Break-in Procedure
- Race motors that are not dyno’d and broken in by TWS Motors
- Use of customer supplied parts on builds void all warranties
- Synthetic oils cannot NOT be used
- Evidence that the installed heat tabs have been tampered with or indication that the engine has overheated
- Flow-check the radiator and repair or replace as necessary
- Thoroughly clean out the oil pan and baffles, valve covers, and oil pick-up screen
- Remove and replace the plastic PCV insert with new
- Replace the front cover if there are any wear marks or scoring on gear retaining plate. If wear marks are found upon return it will void this warranty
- Lifters MUST be replaced with new using a high-pressure lubricant for cam break-in when purchasing a short block
- A rebuilt or new oil pump MUST be installed, or the original unit MUST be tested to insure it will operate within factory specs (PLEASE keep your paperwork for compliance with this warranty provision).
- Running engine without having adequate oil pressure and improper pre-lube as described in Part 2 shall void this warranty
- Proper and Best installation procedures MUST be followed for optimal engine life and performance

The V8 warranty covers normal on-road use only. If the vehicle is used primarily off-road or is ever raced, the warranty is voided. In that case, the only warranty made is proper operation at the time of installation. Failures of parts due to improper installation (i.e. not in accordance with OEM specifications), disassembly, misdiagnosis, accident, leaking oil seals or gaskets, misuse, overheating, flood, collision or improper maintenance are not covered by this warranty.

AS YOUR SOLE AND EXCLUSIVE REMEDY FOR A VERIFIED WARRANTY CLAIM AS DESCRIBED ABOVE. TWS Motors LLC WILL REPLACE ANY DEFECTIVE PART WITHOUT ADDITIONAL SHIPPING COST TO YOU OR PROVIDE ORIGINAL PURCHASER AN IN-STORE CREDIT TO BE USED FOR FUTURE PURCHASES. TWS Motors LLC SHALL NOT BE LIABLE FOR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES INCLUDING DAMAGE TO OR THE COST OF RELATED PARTS. You must call for a return authorization before returning engine or parts thereof, in order for the shipping costs to be paid. TWS Motors LLC reserves all rights applicable to this warranty coverage. The engine core must be securely packed back in original crate and made accessible to TWS Motors LLC for pickup by our carrier within 30 days of receiving the new engine to receive full core charge credit. This limited warranty is exclusive to the original purchaser of the engine and is NOT transferable.

LABOR costs associated with this purchase are NOT covered under this warranty unless purchaser used TWS Motors LLC to do the installation. If the purchaser has used such a facility to perform the work, and failure occurs during the term of this warranty, the purchaser must return the vehicle to said repair facility immediately for warranty diagnosis for the cost of repair/replacement labor to be approved.

TOWING AND CAR RENTALS ARE NOT COVERED UNDER THIS LIMITED WARRANTY. I, the original purchaser, have read, agree and accept the above limited warranty terms, conditions and provisions specific to this purchase of an engine and other parts from TWS Motors LLC. This document constitutes the limited warranty, expressed or implied, applicable coverages and remedies in its entirety.

Signature\_\_\_\_\_

Printed Name\_\_\_\_\_

Date\_\_\_\_\_

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Invoice # \_\_\_\_\_ Serial # \_\_\_\_\_

### **Part 2 Engine Assembly and Initial Start Procedure**

- Inspect and replace front cover if wear marks visible in oil pump housing or gear retaining plate, replace oil pump gear set. For distributor drive oil pumps, pack pump with petroleum grease before starting.
- For non-distributor motors, before installing front cover pour some oil into pump inlet on bottom side of front cover and spin inner pump gear until resistance felt. If you're motor comes from TWS with the front cover already installed, this step is not required
- Torque flywheel bolts to 58 ft. lbs. DO NOT USE AIR IMPACT GUN
- Put dab of RTV at corners of lower intake manifold cross seals to prevent leakage
- Install engine without spark plugs installed
- Fill oil filter 3/4 full and install
- Fill with recommended oil (15w-40 or 10w-40 in cold climates). We suggest a quality brand such as Joe Gibbs HR-5 Conventional oil. DO NOT USE SYNTHETIC OIL
- Fill Cooling system. For Land Rovers, use LR XLC or equivalent with OAT Technology
- For Land Rovers, pour 1/2 cup oil in upper oil cooler port (front cover above filter) to aid in oil pump priming
- Install spark plugs
- Crank over engine until it fires. If it takes more than 10-20 seconds, stop and resolve any issues.
  - Purge cooling system using vacuum tool (550000 Airlift Bleed System) to draw air from the system. An alternative method is to pressurize and release system several times with system pressure tester.
- Start vehicle and set climate control to full heat. You should have heat when vehicle reaches full operating temperature. If not repeat bleed procedures

### **Break-in Procedure**

It is important to maintain a fast idle (1800-2000 rpm) during the first 20-25 minutes of running to allow break-in of cam and lifters to take place. The lifters and cam lobes go through a work hardening process during this time. It is important to note the high friction point between the cam and lifters are only lubricated by "splash" which is why it needs to idle so high during this process. The vehicle should now be test driven to help in seating the rings. They break in better under moderate load rather than at idle. It is recommended that after 1 hour of operation the oil and filter should be changed to remove the harsh break-in grit out of the engine. It is also recommended that the oil and filter be changed again after 200-300 miles after which regular oil change intervals can resume.

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