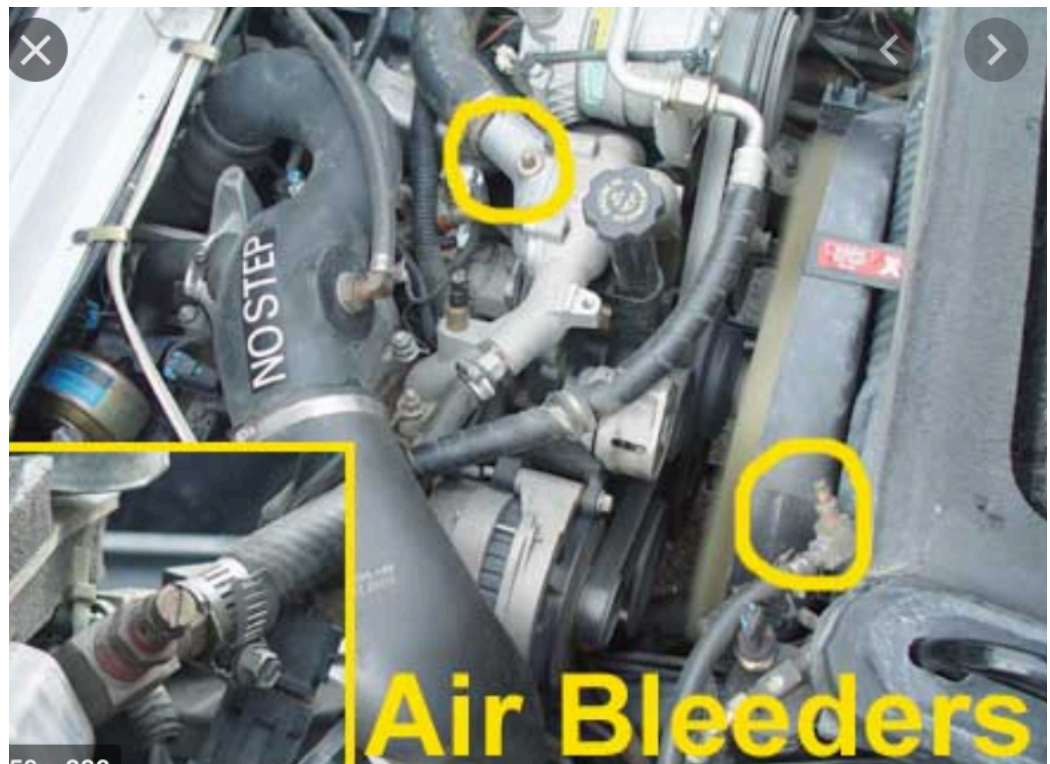


The HUMMER Cooling Thread

12 Step Program to a Cooler Running Truck

1. Perform routine maintenance on the factory cooling system.
 - a. Flush & refill coolant. The Hummer calls for Dexcool coolant – usually Prestone Antifreeze mixed 50/50 with water. When flushing and replacing coolant, it's necessary to “burp” the system of air afterwards. There are two small bleed screws on the coolant hoses near the top of the radiator. Slightly open both bleeders once the engine temp is up (and thermostats are fully open) to bleed the air out of the system. Leaving air pockets in the coolant system can lead to higher and spiking temperatures.



- b. Replace BOTH Thermostats (180 degree thermostats are available, although 195 is oem). Autozone Thermostat part #4399 is the 195 degree version \$16.99 or SS Diesel Supply has 180 degree thermostats model SSD-0154 for \$29.99). The 180 degree thermostats will kick in the additional cooling capacity of the coolant radiator at 180 instead of 195 – so if your truck only overheats on hills, this will give you a few more minutes of lower temperatures and hard pulling until the engine heat exceeds the cooling of coolant flow through the radiator and the temp starts to rise. The lower temp thermostats will create higher emissions if you're in an area where an annual emissions test is required for licensing.



- c. Replace radiator cap and any coolant hoses that are soft (if you can squeeze a hose together with 2 fingers, I replace it) . The radiator cap on the Hummer should be 16psi (Autozone cap 7616 for \$6.99 or equal – any auto parts store will carry the cap.)



- d. Recalibrate your PMD. The PMD controls fuel delivery in the injection pump. Most trucks have replaced the PMD several times by now (and likely used a #9 resistor, the highest value resistor). The air/fuel ratio has a lot to do with heat and also fuel mileage. You'll have to do this by trial and error. In my 97.5 truck, the #9 resistor yielded a cooler temperature, but on my 2001 Hummer the #5 yielded lower operating temps under the same conditions. I ran a test by changing resistors on the same day and running the truck up Lookout Mountain (8% grade for 20 miles) while observing temperatures. Resistors are about \$16/ea so I'd have all of them on hand and run a test when you have time (remembering to disconnect batteries each time to reset the ECM) The resistor fits inside of the plug for the PMD and you can remove it with a paper clip or snap ring pliers.



2. Shift down into 3rd gear & travel at lower speeds up steep grades that cause higher temperatures. The higher engine RPM's will turn the water pump faster, putting more coolant flow through the radiator; and the slower speed will reduce the power output of the engine, further cooling things down. 50mph seems to be a sweet spot for pulling a hill reasonably and keeping temps reasonable.



3. Put your truck on a diet. Some trucks weigh a ton or two more than how they left the factory with bolted on accessories such as roof racks, brush guards, steel rocker panel protections plates, spare tire carriers, larger tires, etc. all of which are big, beefy and steel to match the look and duty of the Hummer. They also add a lot of weight when combined with carrying spare parts, etc... The extra weight requires more power from the engine, thus creating more heat. A light truck won't heat up as much as a heavy one pulling the same grade. It may be a good idea to run your truck across a highway semi truck scale next time you see one along the interstate or at your nearest big rig truck stop and see where you are compared to when the truck left the factory.

Wagon curb weight: 7,154 lbs

4 Door Hard Top curb weight: 6,964 lbs.

Open Top curb weight: 6,814 lbs.



My 6.5L open top weighed in at 4,240 per axle (or 8,480 lbs total weight, while my HMMWV weighed in at 5,500 lbs and the alpha open top comes in near 9,500 lbs).

4. Coolant additives. Redline water wetter seems to be the standard, although any auto parts store will have a coolant additive that lowers the surface tension of water (lessening the amount of bubbles as it flows), so it makes better contact with the inside of the radiator and increases heat transfer. For a few bucks, why not add this at every flush/refill.



5. Run the heater when engine/coolant temp rises. The heater is a heat exchanger, just like the radiator. If you roll down the windows and crank the front and rear heat on, it will take some of the heat out of the coolant (and maybe make you sweat inside the cab), but the engine will run slightly cooler. This may help on a road trip with a few hills where you can crank the heat while climbing to add a little extra cooling capacity.

6. Clean the radiator stack. The H1 radiators are all bolted together – The radiator is at the bottom, then the trans cooler, oil cooler, A/C and power steering cooler. They unbolt by removing the bolts along side of the radiator. You can simply lift up each radiator in the stack without unhooking the supply/return hoses and reach down and clean out any debris (or blow air/water/etc., to clear any leaves, mud etc. that would block air from flowing between the radiators in the stack.



7. Upgrade to AM General's high Output Water Pump (part 5745093) and newer plastic 8 blade fan. Newer trucks came with the higher flow pump, although turbo diesel versions 1996-about 1999 had the older water pump and different fan. Count the blades on your fan to see if you have the new/old version.



5745093

WATER PUMP, ENGINE COOLANT (HIGH OUTPUT)

On Sale \$250.00

~~MSRP: \$664.10~~

Your Savings: \$414.10

Unit of Measure: EACH

Availability: In Stock @ HPG (WI Warehouse)

Qty in Stock: 1

Backorders Allowed, More on Order and Arriving Soon

Quantity

1

ADD TO CART

8. Irrigate the radiator stack. This is by far the least costly and most effective way to add cooling capacity to a HUMMER. I did this modification years ago with \$10 in parts from my local hardware store. Go to the drip irrigation aisle and buy two 1/4" irrigation T's, two 1/4" valves, two spray nozzles and about 10' of 1/4" pipe and two spray nozzles. Plumb the "T" into your main window washer line, then downstream from the "t" install one valve on each side. One side then goes toward the radiator to "irrigate" it with the sprayers, and the other side goes to the windshield washers. You can adjust the valves so you spray only the windshield, only the radiator, or both depending on your trip.

When the temp starts to rise, hit the washer button from inside the cab and the sprayers will douse the radiator stack with washer fluid (liquid has a much higher heat capacity to wash away heat from the radiator stack than air flowing across the fins, so you can cool down the radiator stack for several minutes (usually only a few seconds at a time are necessary when pulling a steep hill as temperatures start to rise). I fastened my sprayer nozzles onto the top of the radiator stack with zip ties. This mod is under \$10 and highly effective.



9. Make the Fan Clutch Engage at a Lower Temperature: There are two ways to accomplish this.
 - a. Buy a new fan clutch calibrated to kick on at 180 degrees instead of the factory setting (about 220 degrees). Available from Kennedy Diesel for \$195 (<https://www.kennedydiesel.com/detail.cfm?ID=33>)
 - b. Modify the fan clutch by simply bending the spring on the front of the fan clutch. You remove the fan clutch, pop out the spring that activates the clutch, and bend the 90 degree angle nearly 180 degrees, then pop the spring back into the slot on the fan clutch. Modifying the spring makes the fan clutch engage around 190 degrees (not an exact science) rather than 220 giving the cooling system more capacity at a lower temperature so your truck will heat up much slower than without the fan clutch engaged. This has been discussed on the HML (see this thread) <http://www.hummernetworkforums.com/viewtopic.php?t=248224&highlight=s+pin+fan+clutch+hack> This modification is essentially free. Worst case, you break the spring (which isn't all that likely) and a new fan clutch is \$80 for the OEM version or \$195 for the Kennedy Diesel fan clutch that is calibrated to come on at 180 degrees.

Before After



10. Restrict coolant flow through the coolant bypass of (more coolant goes through the radiator rather than bypassing it). Leroy diesel sells a fitting that puts more flow through the radiator and less coolant flow through the bypass valve. The valve is \$75 and installation is fairly easy – remove the coolant hose, replace the fitting with some pipe thread sealer or Teflon tape on the threads, and re-install the coolant hose. Here's a link to the fitting – the cost is \$75. <http://leroydiesel.com/products/bypass-restrictor-fitting-brf/> I can vouch for this modification – I'm pulling a 3,200lb trailer with my 2001 and after this modification on the same route as before installation, the truck did seem to run cooler, even on a warmer day. For \$75 it was worth a shot.

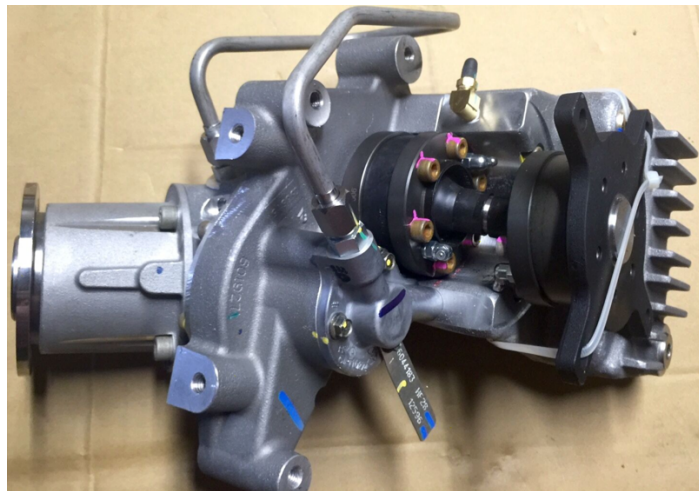


11. Install a 6.5L Diesel Head Cooling Kit. You really shouldn't see a "head cooling kit" on this thread because it doesn't add any cooling capacity, it does however circulate coolant to the rear of the engine water jacket to make cooling more even over the

entire engine block. Cooling kits were originally touted to keep the #8 cylinder from cracking, but by this time most of the defective engines have been replaced. Head cooling kits still don't hurt anything, although I wouldn't install one unless you were planning on removing the doghouse anyway. The least costly one I've found that does the job is \$280 on ebay <https://www.ebay.com/itm/Paradox-By-Design-Cooling-System-Upgrade-Kit-Humvee-HMMWV-6-2-6-5-Diesel-/324046373147>



12. Install a geared fan drive. The M1151 armored HMMWV's being put out by AM General have a geared fan drive, similar to the 2006 Duramax Alpha Hummers. The geared fan drive is fitted to a 6.5L turbo diesel in the military application, so it can be made to fit an earlier 6.5L diesel civilian truck. The cost is very, requiring new frame crossmembers, the geared fan drive itself, crankshaft pulley, belt, fan, clutch, water pump, shroud, hardware and a few other odds and ends (estimated cost is \$15-\$20k in parts if you do the work yourself). Parts are available from any HUMMER dealer such as Adventure Accessories or HummerPartsGuy.com.



Last Resort if you haven't solved your cooling woes by the time you've read to the end of this thread: Buy a tow rig and trailer! Your truck definitely won't heat up while it's being towed, and you wouldn't believe what great gas mileage it gets on a flatbed or trailer!

