

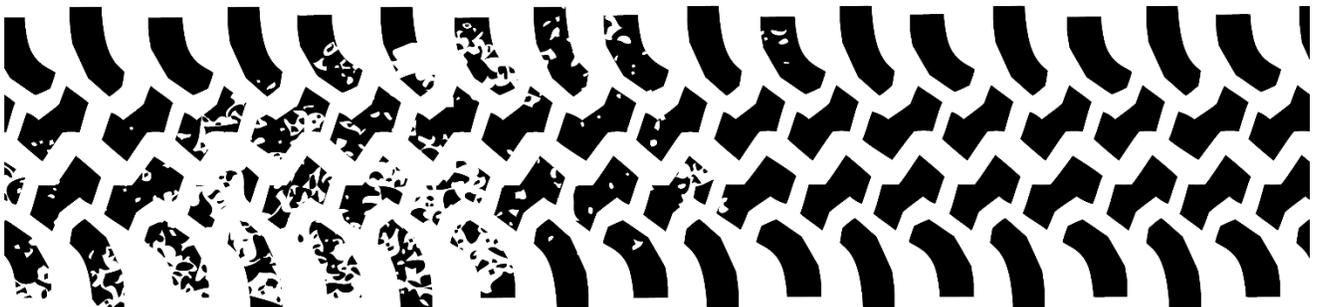
THE HUMMER NETWORK

Hummer H1 New Owner Advice/Common Issues

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1 Overview

This document is a collection of many years of knowledge shared by members via the **H1 and HMMWV Forum** on HummerNetworkForums.com. Please support the forums each year by purchasing a calendar from HummerCalendar.com or donating via the link: [Donate](#).

2 Body

Items related to the body of the truck.

2.1 Composition

The tub of the body of an H1 is aluminum in composition. This includes also the front windshield frame. The driver side and passenger side doors are steel. On a Wagon the roof and rear panels containing the side and opera windows are steel. The barn doors are aluminum. The hood/grill are made of a fiberglass/SMC composite.

2.2 Door Seals

Issue: Doors are freezing shut due to ice forming between the body and the door seals.

Remedy: Clean door seals and wipe down with a dry silicone lubricant before winter operation.

2.3 Foggy Windows

Issue: Foggy windshields, and your truck lacks heated glass.

Remedy: Apply a coat of Rain-X on the inside and outside.

2.4 Hood - Closing

To close the hood follow these steps:

Holding hood up, pull hood prop towards the left drivers tire.

Slowly lower the hood.

Lock handles on each side of the hood.

Raise brush guard and insert locking pins.

Press in handle in driver's foot well in to lock.

2.5 Hood - Opening

To open the hood follow these steps:

Pull out handle in driver's foot well to open lock.

Open handles on each side of the hood.

Remove pins and lower brush guard.

Lift from the rear driver's side of the hood until hood prop clicks in locked position.

2.6 Mirrors

The mirrors should swing IN and OUT. Keep the joints lubricated in a preventative maintenance program. If frozen, you can take out the single long bolt (pop off the plastic covers), disassemble, clean it up and fix the problem. About 1/2 hour per mirror and maybe \$0.10 in consumables. I cannot comment on the newer elephant mirrors, I have never had them freeze up as I oil them regularly.

2.7 Noises

Issue: Clunk under the driver's feet when making a turn.

Remedy: Tighten the body mount bolt directly under the foot well under driver's feet.

2.8 Rattle

Issue: You have a rattle in the front of the truck over bumps and just cannot find it.

Remedy:

- (A) Consider that the OEM hood snubbers (hard plastic) should be replaced with a noise reducing aftermarket set (soft rubber).
- (B) The rubber dog bone on the hood latch may be stretched.
- (C) The D-Rings are slapping against the bumpers.
- (D) Loose/bad body mounts (usually a thud beneath your seat)

2.9 Water Leak - Drivers Footwell

Issue: Water leak on the driver's side foot well. The most likely point of entry is the hole on the body where the hood latch cable enters the engine compartment.

Remedy: Seal hood latch cable with a tube of [RTV](#).

2.10 Windows – Slow Operation

Issue: Windows raise/lower slowly.

Remedy: Lubricate the window tracks with a silicone dry lube regularly. Do not use a petroleum based lubricant as it will collect dirt and eventually harden which will lead to bigger issues.

2.11 Windows - Switches on Passenger Doors Do Not Work

Issue: Window switches on the passenger doors do no work.

Remedy: On the center console bank of window switches there is one unlabeled switch. This is the safety lockout switch. If changing that switches position does not work it is possible the plug on the back of the switch has become disconnected or a fuse has blown.

3 Brakes/ABS/TT4

Items related to the brakes, anti-lock braking and TT4 traction control systems.

3.1 ABS - Light

Issue: [ABS/TT4](#) problem code reported via ABS and/or TT4 trouble lights on the dash.

Remedy: These lights indicate there are problems with a component of the ABS system. Use the ABS Blink Code Procedure to read the actual error. **Repair immediately.**

3.2 ABS - Modulator Code 2-6

Issue: [ABS/TT4](#) problem code reported via ABS and/or TT4 trouble lights on the dash. Error code read using ABS Blink Code Procedure is 2-6.

Remedy: This indicates the shuttle valve within the ABS modulator is malfunctioning. The ABS modulator is a very expensive part which is also used on Land Rover products. If the shuttle valve is the only problem there are services (cheapabs.com) which can repair the ABS modulator. **Repair immediately.**

3.3 ABS - Modulator Stuck On

Issue: [ABS/TT4](#) problem where the ABS modulator will not turn OFF. This applies the brakes at maximum force to all rotors. Obviously the truck would not move.

Remedy: Pull out the ABS relay in the external fuse box and deactivated the system. **Repair immediately.**

3.4 Brakes - Drag

Issue: Truck requires too much pedal at a given RPM/MPH, you detect a smell of hot metal.

Remedy: Suspect a frozen rear brake caliper. Take your IR thermometer and shoot the rotors, do NOT touch them. Temperature between the 2 rear rotors should be very close. Normal would probably be around 200F. **Repair immediately.**

3.5 Brakes - Emergency Brake Problems

Issue: You do not periodically use your emergency brake, it will seize due to rusting.

Remedy: Free it up temporarily by pulling the parking brake actuator arm back with a crowbar until it touches the caliper rest. **Repair immediately.**

3.6 Brakes – Halfshaft Failure

Having an inboard braking system means that the loss of a halfshaft results in no braking applied to the affected wheel. For this reason halfshafts must be inspected regularly and replaced at any sign of failure.

3.7 Brakes - Hydroboost System Test

Periodically check to see if the power brake system works. With the truck OFF, pump and hold the brake pedal until it goes down toward the floor. Do this 5 times. Now with the pedal pushed toward the floor, start the truck. If the hydro boost works, it will pressure up as soon as the engine starts and push your foot up.

3.8 Brakes - Parking Brake Adjustment

Issue: Parking brake does not hold the truck.

Remedy: The knob on the end of the parking brake lever in the cab is an adjuster. Rotate it couple of times to tighten it to account for say a stretched cable. Do this just enough until the brake will hold the truck. **Do not over tighten.**

3.9 Brakes - Parking Brake Seized

Issue: Parking brake is binding causing it to stay on.

Remedy: Exercise the parking brake routinely (monthly) to ensure the mechanism does not corrode and seize. **Repair immediately.**

3.10 Drivetrain Clicking

Issue: A clicking noise when you first accelerate, brake or while driving.

Remedy: Could be loose half shaft bolts, or a brake caliper bracket bolts. **Repair immediately.**

3.11 Rocking at Stop

Issue: Truck appears to “rock” forward and backward when stopping.

Remedy: Initial thought maybe shock absorbers need replaced but in reality it is most likely the gear backlash in the geared hubs which is usually normal.

Items related to the engine cooling system.

4.1 Air Pockets

Issue: During cooling system maintenance, H1s tend to get air pockets in the engine block. This will cause large temperature gauge swings as you drive around.

Remedy: After draining the radiator you must properly “burp” the truck, like a newborn. Open the bleeder valves (one on top right of the rad and one on top of the engine thermostat housing) initially when filling it with cold coolant until coolant runs out. Start the engine, let it reach normal operating temperature and then open the bleeder valves to let the air out. Drive the hot truck (thermostats have already opened) up a steep incline, turn on the front and rear heaters. Allow the engine to idle for a minute or two. Return to a flat surface and open up the relief valves. This incline maneuver tends to move the air pocket out of the engine block and various lines. Repeat the run/bleed process after a couple of drive cycles to ensure all air is out of the system. Monitor the engine temperature closely during this process to ensure an air pocket reaching the water pump does not cause overheating.

4.2 Belts

If you have older Hummer that has multiple V belts on it, check them often and keep them tightened.

4.3 Coolant Sensor

Issue: Coolant sensor reporting low coolant, or sensor was found disconnected so it cannot report level.

Remedy: Sensor is prone to buildup and false reporting of low coolant. Many owners disconnected them due to this issue. It has been reported that a week or two of the sensor itself in 12 parts water to 1 part molasses works to clean the buildup rendering the sensor functional again.

4.4 Fan Clutch

Issue: Engine fan is engaged 100% of the time rather than just when engine is hot. This will burn excess fuel and increase warmup time.

Remedy: Ensure fan rotates freely when the engine is off. If not replace fan clutch with appropriate part.

4.5 Overheating

Issue: The 6.5TD should not be run at temperatures above 220F. Over this temperature the engine will quickly fail due to overheating. There are two temperature sensors on the engine.

For 1995 and older or N/A engines with the DB2 injection pump there is a 1 wire sensor in the front left head for the dash gauge and 2 wire sensor in the right rear for the IP regarding cold starting.

For 1996 and newer with the 6.5TD there is one sensor at the front, which feeds the dash temperature gauge, one on the rear which feeds the [ECU](#).

Remedy: Obtain an [OBD2](#) Scanner or OBD2 Bluetooth interface with the Torque app to monitor this ECU temperature sensor as it is more accurate. Due to coolant circulation problems at the rear of the engine it is best to keep this rear engine temperature reading below 220F as the temperature reported to the gauge is often lower. Consider installing Leroy Diesel’s Bypass Restrictor Fitting (BRF) and flush the system replacing coolant with a proper 50/50 mix of coolant and distilled water. Also consider

adding 2 bottles (24 oz total) of standard Red Line WATERWETTER (NOT the diesel version). It is best to keep the temperature below 210F or even 205F to be safe.

4.6 Repair Kit

At a truck stop buy a coolant hose repair kit which has various sized plastic inserts with corresponding clamps. If you get a hole in a hose, cut the hose at the hole, put in the insert, clamp it, add fluid.

5 Driveline/Suspension/Steering

Items related to the driveline, suspension and steering systems.

5.1 Burning Rubber Smell

Issue: After driving for some time a burning rubber smell is experienced.

Remedy: Check front drive shaft center bearing for wear. Replace bearing, and potentially U-Joints depending on age. Drive shafts may need to be balanced as off balance shafts may accelerate these components wearing. **Repair immediately.**

5.2 Geared Hubs – Cover Corrosion

Issue: Covers corrode in areas using salt on winter roads

Remedy: Check covers for corrosion regularly if driving on salted winter roads

5.3 Geared Hubs – Whine during Deceleration

Issue: Whining noise during deceleration.

Remedy: May be the bearings in the hub. Drain oil and check for traces of bearing materials. Replace bearings as required.

5.4 Half Shaft Boots

Issue: Half shaft boot is torn

Remedy: Order a new half shaft boot kit + grease and replace the failed boot quickly. Failure to do so will result in the grease escaping and dirt contaminating the half shaft joint leading to failure.

5.5 Half Shaft Breakage

Issue: Half Shaft breaking

Remedy: Refrain from braking hard while a wheel is spinning (ie. tire in the air).

5.6 Power Steering Difficulty

Issue: Power steering appears to be more difficult in one or both directions.

Remedy: Before replacing steering components ensure drive belt is correctly tensioned.

5.7 Power Steering Pump Failure

Issue: Power steering pump breaking if you get the front wheels really stuck and try to turn the wheels into an immovable object. Pump may shear off the shaft just behind the pulley.

Remedy: Replace pump and pulley.

5.8 Spindle Nuts

Issue: Factory system of securing spindles in the hubs is inadequate and dangerous. Failure of this system sees the spindle and tire fall off the vehicle without warning. There have been many reported incidents of wheels falling off on the highway and also owners finding the factory spindle nuts loose enough to remove with their fingers when inspected.

Remedy: Invest and install immediately without delay the Blue Hummer locking spindle nuts for all four wheels. **Repair immediately.**

5.9 Towing - On 4 Wheels

Issue: Hummer is disabled and only option for towing is behind another vehicle.

Remedy: Emergency brake off. Shift transfer case to Neutral. Leave transmission in Park. As long as rear wheels are moving transfer case pump will circulate fluid. See owner's manual for complete details.

5.10 Towing - Securing

Issue: Hummer is disabled and towing will happen on a flatbed.

Remedy: Ensure the towing operator fastens the vehicle to the flatbed using only the frame loops or the bumper shackles. Do not allow them to fasten the vehicle to the bed with the control arms.

6 Engine

Items related to the engine.

6.1 Air Intake - Snow

During winter operation ensure that snow and ice is kept clear from the air intake mushroom.

6.2 Belt Tensioner

The belt tensioner component can occasionally fail. The problem with this failure is the now loose belt will no longer power the power steering/brakes, vacuum pump or alternator. Carry a replacement tensioner, belt and the appropriate tools to replace it should it brake on the road or trail.

6.3 Engine Oil

When changing engine oil ensure you utilize an oil designed specifically for diesel engines. Additives are present in these oils which are key for the soot that enters the diesel engines oil during operation. Do not attempt to use a non-diesel oil of the same viscosity. 15W40 is the recommended viscosity.

6.4 Harmonic Balancer

Issue: Vibration coming from the engine due to a failed or failing harmonic balancer and/or lower pulley. Prolonged running of the engine with a bad balancer or pulley can cause severe irreparable damage to the engine.

Remedy: Replace the failed balancer as soon as possible, as well as the lower pulley. Consider the *Fluidampr* balancers which do not suffer from the same design deficiencies as the factory units. Replacement of the front crank seal is recommended when a new balancer is installed due to ease of replacement when the balancer is removed. **Repair immediately.**

6.5 Starting Fluid

Your truck will not start despite turning over. Do not attempt to start the truck using starting fluid or ether. This can irreparably damage the engine.

6.6 Upper Radiator Hose

Issue: Upper radiator hose, as it passes through the [AC](#)/power steering reservoir bracket, may rub to the point of causing a hole in the hose.

Remedy: Protect the hose by wrapping it with an old piece of hose or some other protection.

6.7 Vacuum Pump

The vacuum pump operates the turbo wastegate as well as the HVAC flaps which control airflow direction. Leaks in the hoses for any of these components can impact the operation of the other.

7 Electrical

Items related to the electrical system and components.

Warning: Before starting any electrical work disconnect both batteries. The starter positive and negative cables are connected directly to the battery and a short circuit of these high gauge cables can be deadly.

7.1 Aftermarket - Add-ons

You should have a printout of all aftermarket electrical circuits that are installed in your truck, including fuse locations, fuse amperages. If these are plumbed into the spare openings in the main fuse panel, then what is the fuse location on the fuse panel?

7.2 Aftermarket - Lights

Do not put so many lights on the truck that your alternator can not keep up with the amperage load on the battery. As your battery loses power, strange items begin to happen as you drive with the lights still on. The more modern solution is use high intensity LED lights which draw very little amperage.

7.3 Barn Door Locks

Issue: Barn door locks are not locking/unlocking with fob or door switches.

Remedy: Could be the contacts are corroded or not making contact. See contacts in top right door near hinge. If removed for cleaning ensure wiring is not reversed or locks will operate the opposite of what is desired.

7.4 Battery Cables

Regularly check and clean battery cable connections on each battery and the starter. A large amount of current is required to run the starter and clean cable connections are essential for this process.

7.5 Battery Charger – Boost Mode

Issue: Batteries are dead and you want to start your truck.

Remedy: Use a battery charger to charge the batteries. Do not use boost mode on the charger to start it as the higher voltage/amperage can damage glow plugs and possibly the [PMD](#).

7.6 Battery Charger – Connection

Issue: Batteries are dead and you want to connect a charger.

Remedy: Connect a 12V battery charger to the + / - posts on either battery. Both batteries will be charged. Ensure truck is turned off and all lights are off during this charging process.

7.7 Check Engine/Code Reading Fails

Issue: Code reader will not connect to read the code causing the [CEL/MIL](#) light to illuminate. No power is present on the port.

Remedy: Check the 5A fuse labelled [DLC](#) or ALDI - RKE on the interior fuse panel.

7.8 Clearance/Footwell Lights

Remove clearance or side marker or interior lights by placing a small flat blade screw driver at the edge of the plastic central light fixture and popping it out of the black plastic holder. Do not break off the peripheral black tabs of the holder or it won't hold the central light fixture. Various forum vendors offer LED replacements with BlueHummer offering very bright LED footwell replacements.

7.9 Door Wire Harness

The wire harness for the doors leaves the body and enters the doors at the hinge side of the doors. This harness is encased in a Teflon tube to protect it. If the tube collapses or folds then it will bind during the door closing. This binding can cause the internal wires of the harness to stretch or break. Ensure these tubes are rigid and lubricate with silicone spray lube at each B service.

7.10 Fuse Labelling Inaccurate

Anytime anything electrical does not work on your truck or the problem could be something electrical, check ALL the fuses. In early model years, the [AMG](#) manual DID NOT accurately describe the circuits or what the circuit fed. You get a test light, ground the test light wire to the ground block beneath the left front kick panel and then quickly go from blade fuse to blade fuse touching the metal post on the right side. There is a small hole on the top of each fuse (next to the fuse amperage embossment) that allows you to probe it with a tester so it is UNNECESSARY to actually pull the fuse. I had a speedometer and cruise control not work with the truck in limp mode. It was not the usual speed sensor problem. It was a fuse blown to the [DRAC](#) (normally gets the signal from the speed sensor) that was not listed in the manual. After spending in excess of \$1,000.00 at a dealership with the truck there 3 weeks a more knowledgeable person fixed it for \$0.50 in 10 minutes.

7.11 Fuse Panel Locations

Issue: Where are the fuses and relays?

Remedy: Two locations.

One behind the kick plate in the driver's foot well. Look for small access cover on the left side.

One inside the engine bay. Drivers side, normally under the cover that says "No Step" between the washer fluid reservoir and the firewall. Remove the black cover to expose.

7.12 Gauges

Issue: The dash gauges are very inaccurate.

Remedy: Obtain a ScanGauge (aftermarket OBD2/[DLC](#) reader) or a Bluetooth OBD2 interface and use the Torque app on Android/iOS and see what the [PCM](#) is reading. Ensure you pick a Bluetooth adapter that supports the protocol: "SAE J1850-VPW (10.4 baud)". The sensors tend to be accurate but the gauges are not.

7.13 Grounding Aftermarket Add-Ons

Never ground any aftermarket electronics to the aluminum body itself. Always run new ground connections to existing ground blocks when working within the cabin or to established grounding points when working in the engine compartment. Grounding to the body/frame is unreliable due to the design of the vehicle and can cause galvanic corrosion.

7.14 Grounds

Always check the ground connection at each light, ground bars and other points of ground for corrosion. Clean each connector and coat with dielectric grease. Anytime something electrical does not work, or

works unexpectedly (wipers turn on with the headlight switch), suspect an improper ground causing an unexpected circuit. Always check the ground block under the dash for corrosion or loose locknuts.

7.15 Ignition Key Cannot Be Removed

Issue: Ignition switch will not turn completely to the off position and key cannot be removed.

Remedy: The problem is the interlock which allows key removal once the vehicle is in Park is misadjusted or broken. With your foot on the brake move the gear selector from Park to 1 and back again. This may allow the key to be removed. Have the interlock repaired or adjusted.

7.16 Jump Start Procedure

Precautions: Please review the following warnings prior to jump starting:

- If using another vehicle to provide the boost do not allow the two vehicles to touch.
- Always connect negative (-) to ground and positive (+) to positive.
- Never jump start a vehicle with a battery that has been discharged and has subsequently frozen due to cold weather.
- Never jump start if the battery electrolyte is below the cell level.
- Do not allow jumper cable clamps to touch.
- Never allow open flame near batteries.
- Never use 24 volt booster equipment.
- Never use booster equipment that is not negative ground.
- Remove all jewelry from hands/wrists to prevent accidental contact with power sources.

Procedure:

- A) Put transmission in Park, and set parking brake, on both vehicles.
- B) Review and confirm the above list of precautions before proceeding with the procedure..
- C) Connect red jumper cable clamp to positive battery terminal (+) on boosting vehicle.
- D) Connect black negative jumper cable clamp to a negative (-)/ground point on boosting vehicle.
- E) Connect red jumper cable clamp to positive battery terminal (+) on Hummer.
- F) Connect black jumper cable clamp to alternator bracket on Hummer.
- G) Start the Hummer.
- H) Disconnect all jumper cables immediately.

7.17 LED Lights

LED lighting conversion is possible but there are problems that arise when replacing brake and turn signal bulbs. Do your research before replacing these as a new flasher and resistor are required for proper operation of things like cruise control.

7.18 OBD Ports

OBD ports based on models:

92-93 - Mechanical	- No OBD port
94-95 - NA Diesel	- OBD1 with OBD2 style physical interface port
Gasoline	- OBD1 with OBD2 style physical interface port
96-06	- OBD2

7.19 Parasitic Draw

Issue: Markedly reduced life expectancy of dual battery. Lasting less than 3-5 years.

Remedy: There is a high probability of a parasitic draw. Most of my problems were with aftermarket products; stereo amplifiers, powered CB amplified speakers; laptops etc. Always replace batteries with a matching pair.

7.20 Remote Entry

Issue: Remote entry (key fobs) stops working

Remedy: First check the fuse labelled [DLC](#) to ensure it is not blown. It should be a 5A fuse. If that fuse is not blown then attempt the reprogramming steps to pair the fobs with the onboard receiver.

7.21 Shifter LED

There is a LED light in the shifter mechanism. Since parts in the shifter move around, a poorly secured wire harness to the LED inside the shifter can get pinched and short to ground. This will short out the entire panel light system and blow the fuse. If you keep blowing this fuse, disconnect the shifter wire beneath the truck and see if it cures the problem.

7.22 Side Markers - LED Conversion

The side marker lights (See LED Lights above) can be replaced with LEDs easily and are more dependable.

7.23 Trailer Plug

1996 and earlier trucks are equipped with 7-pin round trailer plug.

1997 and later trucks are equipped with 7-pin flat (RV style) trailer plug.

7.24 Under Hood Light

This light will illuminate with the hood open and the headlight switch in the parking light, or headlight position.

7.25 Wire Routing

Hood latch cable is a good route for aftermarket accessory wires.

Items related to the fuel delivery system.

8.1 Fuel - Drain Water Light

Issue: Water in fuel light illuminated on dash.

Remedy: The [FFM](#) contains a water collector and water sensor. If water is detected open the petcock valve in the left front wheel well while holding the hose below it in a clear glass collection container. Turn on the ignition switch to drain water and fuel into container. Close the petcock valve. Dispose of container contents responsibly.

Note: If water is found in the collection container it may be wise to change the fuel filter as well. Ensure you are using a [Fuel Treatment](#) with demulsifiers which assist the water collection in the FFM.

8.2 Fuel - Filter

Issue: A dirty fuel filter restricts flow. Restricting flow will quickly cause the lift pump to fail. The truck will most likely still run with a failed lift pump but the injection pump life will be quickly reduced.

Remedy: Replace your fuel filters frequently (2500 - 3000 miles) and drain the water petcock valve in the front wheel well. Filters are cheap, lift pumps are relatively cheap but injection pumps are expensive and water in the fuel will damage them. Recommended lift pumps for 6.5TD are AC Delco EP158 or EP1000. **Repair immediately.**

8.3 Fuel - Gasoline in Tank

Issue: Someone, probably not you, put some gasoline in one or more of your diesel tanks.

Remedy: Do not run the engine on the problem tank. If only one tank was impacted switch the selector to the other tank until you can have the problem tank drained. If both, or a single tank truck, you can use the petcock drain valve in the drivers front wheel well and by using jumper wires to connect the Lift Pump directly to the battery pump the problem tank out into jerry cans. Refill that tank completely with fresh diesel and all should be fine. Obviously bad fuel should be drained into a proper container and disposed of in an environmentally friendly manner. **Repair immediately.**

8.4 Fuel - Tank Pressure or Vacuum

Issue: Opening tank cap you hear pressure release or vacuum filling with air.

Remedy: Most likely what you are hearing is a vacuum in the tank filling with air. If so check tank vent as the truck will be starved of fuel as the vacuum increases. This condition is very hard on the injection pump. **Repair immediately.**

8.5 Fuel - Treatments

Issue: Hummer engines were built prior to Ultra Low Sulfur/Sulphur Diesel ([ULSD](#)) becoming the standard diesel available. Without the Sulfur/Sulphur assisting in lubrication premature injection pump failure will occur.

Remedy: Use of treatments, such as Stanadyne Diesel Fuel Additive or Power Service Diesel Fuel Supplement with each tank of fuel will quieten the injection pump and extend its life. During winter months utilize the winter formulas to prevent fuel system freeze-up.

8.6 Leak - Fuel Filter Manager (FFM)

Issue: Fuel leaks is occurring somewhere near the [FFM](#) assembly (housing for the fuel filter). Smell of fuel in the cabin when the window is open.

Remedy: Order the two o-rings for the heater and water sensor. Heater module may also be leaking via its wire harness so that may need replaced as well. Remove the FFM, disassemble, clean, replace o-rings and heater if required. **Repair immediately.**

8.7 Lift Pump - At Startup

Issue: Truck has become difficult to start and/or lacks power. No lift pump noise is heard when the key is in the On (pre-start) position.

Remedy: Replace the lift pump and/or oil pressure sender switch. Ensure fuel filter is clean as a dirty filter can cause the lift pump to prematurely fail. Also check the small screen under the fuel filter is present and clean. While the truck may run without a functioning lift pump this will eventually cause Injection Pump failure which is very expensive to fix in comparison. **Repair immediately.**

8.8 Lift Pump - Failure

Issue: Lift pump is not heard when turning the key to the on position.

Remedy: Check fuse/relay and if required replace lift pump. **Repair immediately.**

Note: If lift pump is not working do not remove the fuel filter as this will introduce air into the system and prevent starting as the lift pump cannot be used to purge off the air. Adding a fuel pressure gauge is the best method of ensure Lift Pump operation. Expected pressures are 13 PSI when on, 9 PSI at idle, 3 PSI at [WOT](#). For 1995 models maximum pressure is 5 PSI and 3 PSI on the lower end. Recommended lift pumps for 6.5TD are AC Delco EP158 or EP1000.

8.9 Lift Pump - Test

There is a petcock valve in the front fender well on the driver's side. If you think you may have a lift pump problem, put a jar beneath the black hose, open the petcock in the driver's fender well and turn key to the on position. It should pump out a pint or two in under a minute. Look at the fuel for color/colour, debris, water. If the fuel is dirty change the fuel filter, ASAP.

8.10 PMD - Relocation

From the factory the [PMD](#) (or [FSD](#)) is attached to the side of the Injection Pump (located in the valley between the two banks of cylinders on top of the engine). This component can overheat in this location but more importantly can be heat damaged due to excessive heat after engine shutdown. Relocate this component using an extension cable and a heat sync/pad to an area with good airflow. Always carry a spare PMD in-case of failure, even after relocation.

8.11 PMD - Replacement

Selecting a replacement [PMD](#) it is recommended that a genuine Flight Systems PMD, made in the USA be used. These units have higher reliability than Chinese knockoffs or Dorman units. If you have a remotely mounted PMD (See [PMD Relocation](#)) test the new PMD on receipt to ensure your backup unit is actually functioning.

8.12 PMD - Resistor

Inside the connector of the [PMD](#) you can install a resistor which will change fuel delivery rate. This feature was implemented to allow Stanadyne to make minute changes to the fuel rate to bring IPs into specification after testing. Normally a #5 resistor is installed which makes no change. Resistors less than 5 reduce fuel rate. Resistors above 5, to a maximum of 9 increase fuel rate. The rate increase is miniscule and will not improve performance.

8.13 Tank Selector - Not working

Issue: Changing the position of the tank selection switch does not appear to switch tanks.

Remedy: Tank selection switch controls both the valve connecting the selected tank to the fuel system as well as which sender is feeding the fuel gauge. Both are controlled via fuse 2-D on the internal panel. You can also try turning off the truck, changing the switch, then turning the truck back on.

Note: As a guideline if the 2-D fuse is blown, then there was a short somewhere in this circuit around the undercarriage. If the 2-D fuse was not blown, then it could have been a bad fuel selector switch or a bad fuel selector valve.

9 HVAC

Items related to the heating, ventilation and air conditioning system.

9.1 Front Blower Motor - High Speed Only

Issue: Fan in front [AC](#) will only operate when in the High speed position.

Remedy: Most likely a dead resistor on the engine side of the firewall. Part < \$ 25.00 and replaceable with a screwdriver.

9.2 Front Blower Motor - Replacement

The front [HVAC](#) blower motor is used in many car models. It was manufactured in a clockwise and counterclockwise version. If you have a weak air flow when turned to the maximum; reverse the wires and see if it improves the flow.

9.3 Front Blower Motor - Squeal

Issue: Squeal when you turn on the front heater.

Remedy: The front motor losing its bearing (water gets into the motor because it is the lowest part of the [HVAC](#) system and moisture accumulates).

1/2 hour fix at less than \$70 dollars in parts. Do not pay \$350 at a dealership. You will replace a motor around every 3 years in MI climates. Ensure 3 AC condensate drain lines are connected and clear. Ensure final drain line behind body grommet is clear and not stuck closed.

9.4 Loud Crack Selecting Defrost

Issue: Loud cracking noise heard when selecting defrost heat setting.

Remedy: Foam on air direction door is sticking and releasing aggressively. Disassembly and replacement or removal of foam will correct the problem but repair is quite time intensive.

9.5 Poor Heating

Issue: Very poor heat from the front or rear vents.

Remedy: Front heater core may be plugged. Disconnect it (and the rear if applicable) and fill each with CLR or equivalent de-scaler. Flush out the each with fresh water, reconnect and refill with water/anti-freeze mixture.

9.6 Water Leak - Passenger Footwell

Issue: Water, usually clear, appears in passenger footwell, when using [AC](#).

Remedy: AC condensate drain is plugged and/or one of the 3 connections to the [HVAC](#) cover is broken/cracked. Purchase a repair kit (< \$ 15.00) from a forum sponsor if nipples are broken. This can also be related to the engine intake mushroom seal missing or damaged if it leaks after a rain storm.

10 Maintenance

Items related to preventative maintenance.

10.1 Brush Guard Pins Freezing

Issue: Brush Guard Pins frozen in winter months, unable to open hood for maintenance or repair.

Remedy: Lubricate prior to winter temperatures. Carry a small butane torch to thaw if they freeze.

10.2 Grease

Grease your truck, a lot. There are 30+ grease points per the manual.

10.3 Oil

Oil your truck regularly. Hinges, bumper shackles, locks, hood pins etc.

10.4 Regular Maintenance

Follow the maintenance steps in the ***Blue Hummer Maintenance Manual***.

If you don't have one, order a copy from Blue Hummer today.

11 Miscellaneous

Miscellaneous items.

11.1 Alternative Parts

If your local parts store doesn't list your part and you suspect it is a common part have them look up a year or two older GM Suburban, or like truck w/same engine you have and compare the part. Works sometimes and saves both money and time if you get lucky.

If parts store does not find the part you are looking for ask them to look under American General/AM General Instead of Hummer.

Reference and contribute new findings to:

H1: <http://www.hummerknowledgebase.com/parts/list/index.html>

11.2 Arm Rests

Don't screw your armrests too far up, the screw can come undone inside the armrest and it is difficult to repair.

11.3 Bluetooth Hands Free / Streaming

If you wish to retain your stock audio system, but desire Bluetooth streaming and hands free calling, then look at the iSimple - TranzIt BLU HF - P/N: ISFM2351. This unit has in and out antenna connections which will allow you to unplug the antenna from the back of the radio and plug it into this unit. Then plug this unit's antenna into the radio. It may be hidden under the cup holder on the doghouse cover. Provide 12V power, set the radio to the FM station it broadcasts on (98.1 by default) and mount the microphone. You may now pair your device to the unit and stream audio and receive phone calls. Since this unit blocks incoming antenna signals during streaming the audio quality is that of a strong local FM station.

11.4 CARC Paint Handling

CARC Paint, often found on military HMMWV components, produces toxic dust when sanded or fumes when welding. Do not attempt to remove CARC paint or weld metal coated in it without a proper respirator (not a dust mask) and other safety precautions. Dispose of any removed paint/dust properly.

11.5 Cold Weather Operation

Issue: Truck needs to be operated during cold winter temperatures.

Remedy: To prevent lengthy warmup periods, and engine wear from extreme cold start, use the block heater and consider a 250W oil pan pad heater as well. In extreme cases consider blocking off part of the radiator grill to allow proper engine warmup. Ensure to closely monitor engine temperature when employing this method to ensure adequate cooling is still taking place. Keeping engine temperature at 210F or below is advised.

11.6 Drive Regularly

At least weekly drive your truck to keep seals from drying up and leaking. Ensure this drive is long enough to fully warmup the engine, circulate all fluids to operating temperature and charge the batteries.

11.7 Education

- A) Your truck is not a boat - don't use it like a boat.
- B) Your truck is also not an airplane - you can fly it, but only once.
- C) Learn how to drive your specific truck. [BTM](#), [TT4](#) and lockers all work differently.
- D) Learn how your truck works and how to drive it properly.

11.8 Foggy Gauges

Issue: One or more dash gauges fogged up with moisture

Remedy: Clear them using a hairdryer.

11.9 Just Ask

Always ask questions on the Forum! Seems there is always a veteran HML member on line that can answer your question quickly.....The best tool you can have is this forum!!!

11.10 Less Is More

The less you alter the original design of a H1, the more reliable it will tend to be.

11.11 Lose Some Weight

Don't run a huge bush guard and don't put on a roof rack unless needed on an adventure.

Reduced truck weight will lower the probability of suspension or steering component breakage.

Not including the spare tire and rack, try to keep recovery gear, spares and tool weight to that of a passenger, so 200 lbs or less.

If you bolt something really cool to your truck, know that it adds weight and weight is rarely a good thing.

Be prepared, but don't bring everything you own, if it's heavy, leave it at home or in the hotel room.

I tend to bring allot of tools and parts when I go off-roading (including a MIG welder).

I leave them in the hotel room in nicely packed and labeled plastic boxes so I have them available. I do not have them flying around the truck as I conquer obstacles.

11.12 Manuals

Download and carry on a flash drive the Service Manual and Parts manual for your truck. If on the trip away from your normal mechanic this will be helpful for whoever looks at your problem. You may also wish to carry printed versions of some more common information such as [ABS/MIL](#) light codes, fuse charts, torque specifications etc.

11.13 Owner's Manual

Read the owner's manual, if your truck did not come with one buy the appropriate one for your year truck and read it. If something doesn't make sense, ask about it here on the forum.

The Owner's Manual covers everything from basic operation and controls, to driving off-road, to the full maintenance and servicing requirements, including types and quantities of fluids.

11.14 [Repair Kits](#)

Blue Hummer Field Repair Kits, they're light, small and very well thought out.

11.15 [Seat Covers](#)

Wet Okole makes seat covers specifically for the H1 seats, including for the arm rests.

11.16 [Torque Wrench](#)

Use a good quality torque wrench and follow the Service Manual specifications.

11.17 [VIN Location](#)

VINs may be found in the following locations:

- Front side of frame rail, passenger's side

- Dash/window frame, driver's side

- B-Pillar upright, driver's side

12 No Start/Stall

Items related to the inability to start the truck or random stalling.

12.1 No Start - Headlights/Starter Activity

Issue: No start or stalls or bogs down or momentary engine shut down. 90% is due to bad [PMD](#) on the injection pump.

Remedy: Carry a spare PMD with resistor, mounted on a heat sync with a bypass electrical connector. Disconnect the OEM PMD, plug in the remote PMD and drive away.

12.2 No Start - Headlights/Starter Solenoid Clicks/No Starter Activity

Issue: Bad starter contacts.

Remedy: Hit starter body with a hammer to jar the contact, retry starting. If this resolves the issue replace starter with PowerMaster 9052 as the factory unit is prone to failure. During this replacement you must add the GM 23502557 starter support bracket or you risk cracking the starter mounts on the engine block. Prior to installing the new PowerMaster start check that all bolts are tightened properly on the new starters housing. Disconnect battery cables at batteries before starting replacement and be careful as the factory starter is **extremely heavy**.

12.3 No Start - No Headlights

Issue: Bad battery connection usually.

Remedy: Clean connections on the battery and retry. If still a problem check the starter end of the battery cables as well. Ensure when working around the starter cable connections you have disconnected the battery as it is easy to short a wrench against the frame or [UCP](#).

12.4 No Start - No Headlights/Lift pump/No Starter Activity

Issue: Most likely broken Neutral Safety Switch ([NSS](#)).

Remedy: Pull transmission shifter lever toward leg, hold it there and try to start again. If this does not work double checking first that the truck is in Park, turn the key to on and hold a jumper on the small wires stud on the starter solenoid to the main positive wire stud on the starter.

12.5 Stall

If your truck suddenly stalls. Try to switch fuel tanks. This will help determine if your fuel gauge is wrong (common), or if there is a blocked vent to the tank causing a vacuum. The check for a vacuum in the fuel tank is to open the tank cap and listen for a hiss. Try starting with the cap opened slightly. Fuel tank vents are located on front passenger side firewall and in rear passenger wheel well for auxiliary tank. May also be related to a failing or bad [PMD](#).

13 Off-Roading

Items relating to driving off-road.

13.1 Finesse

When off-roading on the trails: Finesse gets you there, not "upgrades" or "aggressive driving".

13.2 Floor Drains

Issue: Deep water traversal ended up filling foot wells with water.

Remedy: In the front seat foot wells there are floor drain plugs. Pop-up the release and pull the drains upward. It is an expanding rubber plug that is removable with the handle pulled up.

13.3 Travel in Pairs

Issue: Things can happen when off-roading.

Remedy: Always travel in pairs.

13.4 Wagon - Weight Shift

Issue: Wagons shift weight differently than open-tops, [HMC4s](#) or two doors.

Remedy: Pay attention to this when off-roading.

14 Tires/Wheels/CTIS

Items related to the tires, wheels or Central Tire Inflation system. Do not give up if your CTIS leaks, it is part of the mobility tool. In cold weather it's normal to see a bit more air leakage.

14.1 Centramatics

Round 12 inch plates with a peripheral tube around the circumference that you place on the hubs spindle just behind the wheel. The peripheral tube has either liquid mercury or lead pellets. As the wheels spin, the mercury or pellets redistribute and balance an out of balance wheel. Smoother ride, less tire balancing issues. Less wear and tear on all components.

14.2 Chains

To use chains for snow or other loose surfaces the following seems to work well. Air down using [CTIS](#) approximately five pounds below your desired operating pressure. Install chains per the manufacturer's directions. Add rubber chain tensioner to the outside. Drive back and forth a couple of tire rotations. Retighten as required. Air up to the operating pressure desired.

After this you will find the chains fairly tight and less likely to come loose during use. Recheck them periodically during use to ensure they have not loosened. Loose chains can catch on things like the CTIS lines or [ABS](#) sensors. Ensure any loose ends are secured so they will not interfere with these components.

14.3 CTIS - Airing Down

Airing down with [CTIS](#) to drive on surfaces like sand provides more footprint for flotation on the loose material. It is recommended that you not air down below 23 psi without beadlocks installed.

14.4 CTIS - Alarm/Buzzer

If you end up having to isolate both tires on one axle using the [CTIS](#) quick disconnects at the wheels the CTIS alarm will be warning you the pressure is below a safe level. If you have isolated both tires on purpose due to a CTIS component issue that prevents them from holding air (leaking CTIS seal for example) you can pull the CTIS fuse that controls this until the problem can be repaired.

14.5 CTIS - Auxiliary Hose

On the side of the [CTIS](#) compressor, under the hood, there is a schrader valve which you can connect the auxiliary hose too. If you set the tire selector to the middle position the compressor will inflate whatever the hose is connected to too a maximum of 50 PSI. At 50 PSI the CTIS manifold overpressure valve will vent. If the tire selector is set to a tire position then the selected tires will act as a reservoir, at the expense of tire pressure loss, as the pressure equalizes with the external item to be inflated.

14.6 CTIS - Clicking Noise

Issue: [CTIS](#) cover plates on the 17" single piece wheels can make a clicking noise most noticeable when driving by a wall or building where the sound will echo back to the truck.

Remedy: Sometimes this happens when the bolts for the covers are secured too tightly or sometimes removing and rotating covers 180 degrees will help.

14.7 CTIS - Deflate will not stop

Issue: CTIS deflation is selected but once started will not stop.

Remedy: Dirt in the CTIS system may become stuck in the deflate valve preventing it from closing. Valve can be cleaned but care must be taken not to attempt to remove the 4 bolts on each of the valve bases. Differing metal composition causes those bolts to seize and break off if removal is attempted. Remove valves with a large deep well socket.

14.8 CTIS - Diagnosing Axle Leak Down

Issue: A pair of tires on the same axle are losing air.

Remedy:

- A) Pump up axle with CTIS compressor.
- B) Isolate one tire by pressing the CTIS quick disconnect release tab.
- C) If CTIS gauge shows no leak down isolated tire is probably the issue.
- D) If CTIS gauge shows leak down then proceed with additional steps below.
- E) Bring previously isolated tire on-line by depressing CTIS quick disconnect inward until it clicks.
- F) Refill axle with CTIS compressor
- G) Isolate opposite tire by releasing CTIS quick disconnect on that tire
- H) If leak still occurs probably a CTIS component issue.
- I) If leak stops then most likely the recently isolated tire has the leak.
- J) Repair as appropriate.

If CTIS components are the finding of the above diagnosis then it could be one of many parts. Refer to the service manual for details of components which are involved.

14.9 CTIS - Hose Leaks

CTIS hoses on the front wheels will most likely wear out and leak first as they are subject to both the up and down motion of the suspension, and the left right steering action. Expect these hoses to leak due to wear before the rear hoses.

14.10 CTIS - Hose Removal

CTIS hoses can be difficult to remove from the steering arm cover. It is often easier to remove the steering arm cover and then disconnect the line.

14.11 CTIS - Inner Seal

For CTIS leaks which are not externally obvious (tires, hoses etc.) the inner seal behind the CTIS input on the geared hub often leaks. This can be tested by inserting the vent tube for each geared hub into a glass of water looking for bubbles. The required seal is fairly cheap and the repair easy to perform.

14.12 CTIS – Manual Deflate Valve

Adding a manual valve between the manifold and the deflate filter will enable easy recovery from a stuck deflate valve. If the deflate valve sticks open by closing the manual valve tires may be re-inflated until the automated valve can be cleaned or repaired.

14.13 CTIS - Overpressure Valve Popping During Inflation

Issue: Overpressure valve is popping during inflation.

Remedy: Clean the valves. Clean all the electrical connections. Issue may be a bad inflate/deflate switch.

14.14 CTIS - Pressure Loss/Failure to Inflate

On the [CTIS](#) manifold, under the engine cowl covering the fuse block, there are 3 solenoids which control the inflation and deflate valves. If the deflate valve is dirty it may fail to close after selecting deflate and leak all the air from the selected tire set. Selecting inflate does not compensate as the system deflate rate is faster than the compressor. A simple cleaning of the valves is required.

14.15 CTIS - Spindle Removal

Remove the [CTIS](#) valve from the spindle, clean out the spindle threads of old Teflon paste or tape. This paste or tape can work itself back to the manifold and block the deflate valve or cause it to stick open. Use a small metal brush like a gun cleaning brush.

14.16 CTIS - Tire Air Loss

A properly functioning [CTIS](#) system should not lose much air (maybe 1 or 2 pounds a week). If you are constantly losing many PSI you have a problem. By order of most common problems I have encountered.

- A) Tire puncture
- B) O-Ring leak in a split rim
- C) Leak at CTIS valve at a tire
- D) Spindle seal
- E) CTIS line from T-connector to geared hub spindle
- F) CTIS line from manifold to T-connector
- G) CTIS manifold problem.

14.17 CTIS - Tire Change

To change a tire on a [CTIS](#) equipped truck you must first isolate the tire on the opposite side of the same axle. To do this remove the two screws holding on the CTIS cover on the good tire and press the small metal tab on the CTIS valve. You should feel the valve pop out about ¼". At this point that good tire is isolated from the CTIS system and the other may be removed without deflating the good tire.

Now use a wrench to remove the CTIS valve on the flat tire from the center of the spindle (not the rim). Ensure no dirt enters the spindle hole during the tire removal/install.

On the spare tire connect the new CTIS valve to the spindle (if the spare is equipped with one). Once installed depress the CTIS valve on both tires (it should stay depressed) and inflate as required using CTIS compressor. If spare tire/rim does not have a CTIS valve just replace the cover leaving the opposite tire isolated until the original tire can be repaired or replaced.

14.18 CTIS - Tire Pair Deflates

Carry the yellow hose that fits to the [CTIS](#) compressor so you can air up. Open both wheel CTIS covers, press the small metal tab to release each CTIS valve (should pop out about ¼"), use the schrader valve on each wheels CTIS valve to inflate with the yellow hose off the compressor.

14.19 CTIS - Valve Maintenance

Regularly maintain the [CTIS](#) valves on rims by spraying it with silicon spray lubricant and engaging and disengaging the valve repeatedly to ensure lubricant reaches the o-ring. Don't forget the one(s) on your spare(s) if you have them.

- 14.20 [Jack & Tools](#)
Ensure your onboard jack contains the jack and handle, lug wrench, wrench to remove [CTIS](#) fittings from spindles and screwdriver to remove CTIS cover plates.
- 14.21 [Jack Stands](#)
At a minimum 6 ton jack stands should be used to support the Hummers weight. Due to the Hummers height to get stands capable of holding up the truck safely, without having the jack stands extended to their maximum height, will require 12 ton jack stands.
- 14.22 [Jack Too Tall](#)
Issue: Factory supplied jack is too tall to fit under the control arm into the receiver hole properly with a totally flat tire.
Remedy: In this case place an object in front of or behind the flat tire and drive the truck up onto it. A small pile of rocks or dirt will work. It can be difficult with the bulge of the deflated tire to get the jack close enough to securely fit in the mounting point.
- 14.23 [Larger Tires](#)
Issue: After installing larger than stock tires speedometer reading is incorrect.
Remedy: Installation of a new [DRAC](#) module, and/or adjusting settings of the current or new module, is required to correct the [ECU](#) speed input/speedometer readout.
- 14.24 [Mounting a tire](#)
Issue: Bead breaks away from the rim.
Remedy: 2 quick squirts of ether, with tire jacked up and held by lug nuts, add flame and stand back. Investing in beadlock rims will prevent the problem in the future.
- 14.25 [Run Flats Installed?](#)
Issue: Unsure if run flats are installed in the wheels
Remedy:
 - 1) Let the air out of one tire to see if the rim stops about 3"+ above the ground. If it does you have run flats.
 - 2) Weigh the tire/wheel/run flat/beadlock approx. 155 lbs.
- 14.26 [Shaking/Thumping Tire](#)
Issue: A tire appears to be shaking noticeably.
Remedy: A shaking tire is likely mud or snow buildup in the wheel. May also be a broken run flat.
- 14.27 [Sidewall Damage](#)
Sidewall injuries to tires far exceed injuries to the tread. Watch out for sharp rocks, jagged stumps that could cut the wall. Also a deflated tire is more at risk for injury than a fully pressured one. Do not air down to less than 23 pounds or so unless you have bead locks.
- 14.28 [Tire - Selection](#)
Tires should be Load Range D or E. Tires for the 16.5" wheels are quite hard to find and there is little selection. Consider finding a set of 17" wheels which greatly opens up the available options.

14.29 Wheel Installation

If a tire change is required in the field the lug nuts should be tightened with a torque wrench as soon as possible. Standard wheels with the tapered nuts should be torqued to 110 lbft. 1 piece steel wheels used flanged lug nuts and they should be torqued to 140 lbft.

14.30 Wheel Removal

Whenever you pull off a wheel: use a backup to the jack, a 6ton+ jack stand. At a minimum, put the taken off wheel under the rocker panel protection immediately.

15 Transmission/Transfer Case

Items relating to the transmission and transfer case.

15.1 3L80 Ratios

The [3L80](#) transmission stock ratios are as follows:

Gear	Ratio
Reverse	2.08:1
Neutral	---
Drive	1.00:1
2 nd	1.48:1
1 st	2.48:1

15.2 4L80-E Ratios

The [4L80E](#) transmission stock ratios are as follows:

Gear	Ratio
Reverse	2.07:1
Neutral	---
Over Drive	0.75:1
Drive	1.00:1
2 nd	1.48:1
1 st	2.48:1

15.3 Maximum Speed

The following table lists the maximum speeds based on transmission and transfer case selections.

Note: If tire inflation pressure has been lowered via [CTIS](#) (or manually) then appropriately reduce the maximum speeds.

Transmission Range Selection	Transfer Case Range Selection		
	"L" (Low Range)	"H" (High Range)	"H/L" (High Lock Range)
"R" (Reverse)	11 mph (18 km/h)	29 mph (47 km/h)	29 mph (47 km/h)
"OD" (Over-drive)	31 mph (50 km/h)	Legal Limit	Legal Limit
"D" (Third)	23 mph (37 km/h)	Legal Limit	Legal Limit
"2" (Second)	16 mph (26 km/h)	43 mph (69 km/h)	43 mph (69 km/h)
"1" (First)	9 mph (14 km/h)	26 mph (42 km/h)	26 mph (42 km/h)

While the manual lists Legal Limit in most cases highway speeds of 65 mph (105 kph) or less are best.

15.4 NP242 Ratios

The [NP242](#) transmission stock ratios for the Hummer versions are as follows:

Gear	Ratio
High	1.00:1
Low	2.72:1

15.5 Options

HL - High Lock - Off road only or on low traction surface

- Dash light should indicated Locked
- Front and rear axle are locked 50/50
- Low traction conditions: snow, ice, sand, water etc.
- **Do not drive on dry pavement or concrete**
- Normal speeds allowed

H - High - All around driving

- Front and rear axle are locked 50/50
- Low traction conditions: snow, ice, sand, water etc.

N - Neutral - Transmission disconnected from driveline

- Truck will roll without alternative restrictions like wheel chocks
- Proper position for flat towing

L - Low Lock - Off road only

- Dash light should indicate Locked
- Slow speeds
- **Do not drive on dry pavement or concrete**
- Difficult off-road conditions: steep climbs, boulders, fallen trees

15.6 Rumble Strip Feeling During 35 - 55 MPH Acceleration

Issue: Truck feels like it is driving over a rumble strip for a moment during acceleration through the above range. Especially noticeable uphill.

Remedy: Torque Converter lockup solenoid may have failed or be sticking. Torque Converter clutch may also be worn out. **Repair immediately.**

15.7 Transfer Case - Shifting

To engage the transfer case quickly push that lever like you hate it. It takes some effort to move the transfer case into and out of LOCK. Once in LOCK, it may not want to come out of LOCK. Put the truck in reverse drive a few feet, then forward drive a few feet then repeat until it does disengage with the LOCK light turning off and the tires no longer barking when driving on a traction surface.

15.8 Transfer Case - Testing

To ensure the transfer case shift mechanism does not seize up engage the HL and L options periodically driving for at least short periods. This regular use will ensure when required it will function. See [Transfer Case Shifting](#) for details with difficult shifting.

15.9 Transmission - Fluid Low

Issue: Transmission fluid appears to be low but no external leak has been observed.

Remedy: Check for transfer case fluid level being too full or transmission fluid present in the air filter housing. These items are signs the internal cooling loop inside the transfer case, which circulates through the transmission, has broken away and fluid is being transferred from the transmission to the transfer case. **Repair immediately.**

15.10 Transmission - Slip

Issue: You are driving down the street and feel a brief transmission slip. DANGER! You may have shot off an [ATF](#) hose beneath the truck, or at the radiator stack, and are bleeding out all your transmission fluid.

Remedy: Stop immediately and check. **Repair immediately.**

See: [Transmission Fluid Low](#)

15.11 Transmission - Unplanned Downshift

Issue: You are driving along, truck downshifts to 2nd gear and stays there (aka: limp mode).

Remedy: Usually a lost signal from the transfer-case speed sensor. Remove the sensor, wipe off the metal filings and drive away in all gears. **Repair immediately.**

15.12 Vampire

See: [Transmission Fluid Low](#)

16 Winch

Items related to the electric or hydraulic winches.

16.1 Cable Maintenance

Periodically the winch cable should be unspooled and re-spooled while wrapping the cable in an oil soaked rag to coat it for rust prevention.

16.2 Hand Controller Water Damage

The hand controller connection on the Warn winch can be ruined by water with road salt. The aluminum pins can oxidize and dissolve. Some of these pins are always energized with 12 volts which further speeds up the corrosion. Keep the supplied cover on that plug and better yet apply a thin layer of [RTV](#) on the black plug base so it really seals the unit. Do not get the RTV on the top of the connector or in the pin area.

16.3 Synthetic Winch Cable

Replace the steel winch cable with synthetic. Synthetic is inherently safer as upon breakage it falls to the ground rather than recoiling which can potentially be lethal.

16.4 Testing

Check your winch for proper operation at every oil change ensuring the motor runs correctly in both directions.

17 Acronyms/Terms

Acronyms are short forms used within this document or on the web forums.

17.1 3L80

A 3 speed Hydramatic transmission manufactured by General Motors. This transmission was used in H1's from 1992 - 1993.

17.2 4L80E

A 4 speed Hydramatic transmission manufactured by General Motors. This transmission was used in H1's from 1994 - 2004.

17.3 4WD

Four Wheel Drive

17.4 ABS

Anti-lock Braking System

17.5 AC

Air Conditioning

17.6 ALPHA

2006 model year of H1.
Equipped with Duramax engine.

17.7 AMG

AM General
Manufacturer of the Hummer H1 and HMMWV.

17.8 ATF

Automatic Transmission Fluid

17.9 AWD

All Wheel Drive

17.10 BH

Blue Hummer
Hummer parts supplier.
Website: www.bluehummer.net
Dave retired. See www.modmafia.com

17.11 BL

Bead Lock

Bead lock wheels have bolts around the circumference of the wheel which clamps the tire bead to the rim which can be required during low pressure operation such as [CTIS](#) air down.

17.12 BRF

Bypass Restrictor Fitting

Leroy Diesel product that restricts the flow of coolant through the bypass in dual thermostat configurations reducing the coolant returning directly to the engine through this path rather than passing through the radiator.

17.13 BTM

Brake Throttle Modulation

17.14 CARC

Chemical Agent Resistant Coating

Paint often found on HMMVW body panels and other components. Dust from sanding of this paint or vapors from welding metal coated in it are extremely toxic and requires specialized equipment to sand or weld.

17.15 CDR

Crankcase Depression Regulator

Valve regulating vacuum in crankcase.

17.16 CEL

Check Engine Light

Indicates there is an active or recorded issue with the vehicle that needs diagnosis. See [MIL](#).

17.17 CPS

Crank Position Sensor

An electronic sensor which monitors the position or rotational speed of the engines crankshaft.

17.18 CTIS

Central Tire Inflation System

Optional tire deflation/inflation system to adjust tire pressure while driving.

17.19 DB2

Mechanically controlled injection pump

Used primarily on the 6.2L diesel engine.

17.20 DIFF

Differential

17.21 DLC

Data Link Connector

Multi-pin diagnostic connector for the OBD2 connection port.

17.22 DOGHOUSE

Doghouse

Cover located directly over the engine/transmission. It provides sound and heat protection of the cabin area. This cover is not visible from inside the truck as it is covered by the [Doghouse Cover](#).

17.23 DOGHOUSE COVER

Doghouse Cover

Cover located overtop of the [Doghouse](#) which covers the engine/transmission. The Doghouse Cover is the outer cover of the Doghouse which has the cup holders and glove box installed within it.

17.24 DRAC

Digital Ratio Adapter Controller

17.25 DS4

Electronically controlled injection pump.
Used primarily on the 6.5L diesel engine.

17.26 DTC

Diagnostic Trouble Code

17.27 ECT

Engine Coolant Temperature

17.28 ECU

Engine Control Unit

17.29 EGT

Exhaust Gas Temperature

17.30 FFM

Fuel Filter Manager

Integrated housing for water detection/separation, fuel heating and filter housing.

17.31 FSD

Fuel System Driver (See [PMD](#))

17.32 FSS

Fuel Shutoff Solenoid

A safety component on an injection pump which closes upon engine shutdown to ensure fuel flow is stopped.

17.33 FSV

Fuel Selector Valve

Electrically operated valve to select fuel tank to be utilized.

17.34 FTB

Feed The Beast

Modification of FFM and lift pump replacement to provide additional fuel flow with consistent PSI at a level required by the DS4 pump. Fuel path is increased from 1/4" to 3/8".

17.35 GASSER

Gasoline engine powered version of the H1.

17.36 GAWR

Gross Axle Weight Rating

The maximum distributed weight that may be supported by an axle of a road vehicle.

17.37 GEP

General Engine Products

A wholly owned subsidiary of AM General which produces the OPTIMIZER 6500 V-8 6.5L diesel engine.

17.38 GFD

Geared Fan Drive

17.39 GP

Glow plug.

A glow plug is a heating element extended into each combustion chamber that heats the cylinder prior to starting a diesel engine. Glow plugs are activated only prior to startup and potentially for a few seconds after initial startup.

17.40 GTP

General Transmission Products

A wholly owned subsidiary of AM General which produces automatic transmissions.

17.41 GVW

Gross Vehicle Weight

17.42 GVWR

Gross Vehicle Weight Rating

The maximum operating weight of the vehicle including chassis, body, engine, fluids, fuel, accessories, driver, passengers and cargo. It does not include trailers.

17.43 HL

High lock

Transfer case gear for high speeds on slippery/loose surfaces.

17.44 HMCO

Hummer model designation: 4 passenger, open top, hard doors.
Commonly known as an Open Top.

17.45 HMC4

Hummer model designation: 4 passenger, hard top.

17.46 HMCS

Hummer model designation: 4 passenger, enclosed.
Commonly known as a Wagon.

17.47 HMDO

Hummer model designation: 4 passenger, open top, Duramax (2006).
Commonly known as an Alpha Open Top.

17.48 HMDS

Hummer model designation: 4 passenger, enclosed, Duramax (2006).
Commonly known as an Alpha Wagon.

17.49 HMMWV

High Mobility Multipurpose Wheeled Vehicle.
Also known as Humvee. Military version of H1.

17.50 HPG

Hummer Parts Guy
Hummer parts supplier.
Website: www.hummerpartsguy.com

17.51 HVAC

Heating, Ventilation and Air Conditioning

17.52 IP

Injection Pump
Mounted on the top of the engine provides timed fuel delivery to injectors.

17.53 KSC2

Hummer model designation: 2 passenger, fleet.

17.54 KSC4

Hummer model designation: 4 passenger, fleet.

17.55 KSCO

Hummer model designation: open top, fleet.

17.56 KSCS

Hummer model designation: wagon, fleet.

17.57 LP

Lift Pump
Electrical pump that pulls fuel from tank and pushes it to the Injection pump.

17.58 MAF

Mass Air Flow Sensor

Provides air flow rate to the [ECU](#) to enable fuel rate to be adjusted.

17.59 MIL

Malfunction indicator lamp

Indicates there is an active or recorded issue with the vehicle that needs diagnosis. See [CEL](#).

17.60 MM

Mod Mafia

Hummer parts supplier.

Website: www.modmafia.com

17.61 NA

Naturally Aspirated

Engine which is not turbo charged or super charged.

17.62 NP242

Full time chain driven transfer case with an open differential between the front and rear drive shafts. It is manufactured by New Process Gear. Note that this transfer case is also utilized in other vehicles but the models used in the Hummer are different than for example the ones used in a Jeep.

17.63 NSS

Neutral Safety Switch

Switch located in the transmission shifter mechanism that prevents the engine from being started unless the transmission is in Park or Neutral.

17.64 OBD

On Board Diagnostics

17.65 OPS

Oil Pressure Sender

Sensor that detects the internal oil pressure of an engine. The signal from the sender can be used to control the oil pressure gauge/light or shutdown the engine when low pressure is present.

17.66 P400

Improved/stronger version of the 6.5 TD engine. No longer produced as of 2018.

17.67 PCM

Powertrain Control Module

17.68 PM

Preventative Maintenance

17.69 PMD

Pump mounted driver (See [FSD](#))
Fuel solenoid control electronics for the injection pump on the 6.5L Turbo diesel engine.

17.70 PO

Previous owner

17.71 PS

Power steering

17.72 RD

Rubber Duck
Hummer parts supplier.
Website: www.rubberduck4x4.com

17.73 RF

Run flat
Insert installed around the inside of the wheel rim to provide support for the tire during air pressure loss.

17.74 RPP

Rocker Panel Protection
Additional protective panels overtop of the rocker panels protecting the body tub from damage when sliding over obstacles.

17.75 RTV

Room-Temperature-Vulcanizing Silicone
Silicone rubber 2 part compound used to form gaskets to seal two mated surfaces.

17.76 TC

Transfer Case – See [TCASE](#)

or

Torque Converter

17.77 TCC

Torque Converter Clutch

17.78 TCASE

Transfer case
Drivetrain component which transfers power from the transmission to both the forward and rear axles.
The Transfer Case also synchronizes any difference in the rotation speed of the front and rear wheels.

17.79 TCM

Transmission Control Module

- 17.80 TD
Turbo Diesel
- 17.81 TISS
Transmission Input Speed Sensor
- 17.82 TOSS
Transmission Output Speed Sensor
- 17.83 TPS
Throttle Position Sensor
- 17.84 TTY
Torque to Yield
Fastener which stretches during usage providing a consistent torque. These fasteners are usually an integral aspect of the component they retain and the fastener cannot be reused when removing the component.
- 17.85 TT4
TorqTrac 4
Traction control system.
- 17.86 VIN
Vehicle Identification Number
- 17.87 VSS
Vehicle Speed Sensor
Located in the transfer case it measures road speed for the speedometer.
- 17.88 UCP
Under carriage protection.
- 17.89 ULSD
Ultra-Low Sulphur Diesel
- 17.90 WG
Wastegate
Valve that diverts exhaust gases away from the turbo charger turbine to regulate the speed of the compressor. The wastegate regulates the amount of boost pressure in turbo charged engines.
- 17.91 WOT
Wide Open Throttle
- 17.92 WP
Water pump

17.93 XLC2

Hummer model designation: 2 passenger, hard top, enlarged cab.

18 Pre-Purchase Inspection

Pre-purchase inspection checklist for those looking to purchase a truck.

Prior to purchasing a truck obviously a pre-purchase inspection by a qualified diesel truck mechanic is advisable. Some issues can be exposed at this point that will be extremely expensive to repair and depending on your budget it is wise to know these in advance of purchasing the truck. Remember some of these trucks are 25 years old so bringing them to roadworthy condition can be expensive if the prior owner has not kept up on maintenance/repairs.

In addition to the standard pre-purchase inspection your mechanic will perform these are the items that should be given a thorough examination which are either known to be problematic specifically on the H1 platform, or that are not obvious to a mechanic not previously exposed to the platform. If comparing between two trucks and one has a complete maintenance history that truck should be given higher consideration if the history appears to show it to be highly maintained.

18.1 AC/Heat - General Operation

Ensure, after the truck has been driven and is fully warmed up, that heat is produced from all vents, including both front and rear if equipped. Perform the same test for the AC system. Various issues can occur with this sub-system and repairs such as replacing the heater core can be expensive due to extensive dismantling of the interior/dash is required to replace. Other issues such as a noisy blower motor are common and cheap to repair.

18.2 Body - Door Windows

Ensure the window regulators are working correctly.

18.3 Body - Heated Windshields

Various H1s were equipped with electrically heated windshields. These windshields are extremely costly and can be difficult to obtain. Test for proper operation. The windshield may be replaced with a standard clear glass model, or one with an overhead tint but the heating capability will be lost. For many vehicle registrations windshields may not have chips or cracks in the path of the windshield wipers and they will have to be replaced to pass the safety inspection prior to licensing.

18.4 Body - Wagon Body Joint

Check for corrosion where the wagon sides join to the main truck body.

18.5 Body - Wagon Rear Wheel Wells

Pull up the carpet and inspect for rust on the seams.

18.6 Body - Wagon Roof Line

The wagon roof is made with steel. The wagon body sides are aluminum. The adhesive used to join the two together can crack and allow water leakage. This facilitates corrosion which can be very expensive to fix correctly. Ensure the seam is inspected around the entire perimeter of the truck to look for issues. If issues are suspected removing the interior roof trim is really the only way to get a look at it. A small inspection camera may assist with this.

18.7 Brakes - ABS Light

For [ABS](#) equipped vehicles (1999 and newer) is there an ABS or [TT4](#) light present on the dash. If yes read the coding using a jumper on the [OBD2](#) pins as indicated in this document.

18.8 Brakes - Emergency Brake

Ensure the emergency brakes on the rear rotors are engaging and releasing properly. Note that the emergency brake cable can be adjusted by rotating the knob on the top of the emergency brake handle. Integrated with the rear calipers the emergency brake can be expensive to repair.

18.9 Brakes - Pad/Rotors

Look for excessive wear or leaking as repairing of the brakes, being an inboard design requiring the half-shaft removal, can be expensive.

18.10 CTIS - Operation

If the current owner/seller is indicating that [CTIS](#) is fully operational it should be tested fully. Using the Front/Rear switch select each axle and attempt to at least partially deflate the tires (23 psi) on that axle. Note: that both tires should deflate on that axle if they are actively connected to the CTIS system. After deflating ensure the compressor is operational to inflate the tires back to normal operating pressure.

18.11 CTIS - Retrofit

If the truck is not [CTIS](#) equipped it is impractical to add CTIS to a non-CTIS truck due to the cost of all components required.

18.12 Drivetrain - Component Wear

The drivetrain on the H1 can wear excessively when driven primarily on pavement. Detailed inspection of the following components should be undertaken: half shafts, half shaft boots, geared hubs, u-joints, center bearing.

18.13 Drivetrain - Differential Fluid Condition

Check fluid for contamination such as water. Investigate any fluid leaks on or around the differentials.

18.14 Electrical - Aftermarket Audio/Video

If an aftermarket audio / video system has been added ensure that it is properly grounded back to a factory ground point and not to the body of the truck. Hummer electrical systems are not body grounded but have a separate ground wiring system to which all electrical devices should be connected. Grounding to the body can cause severe corrosion issues around the connection point and poor performance.

18.15 Electrical - Door Wire Harness

Each door has a wire harness that leaves the body and enters the door at the hinge side of the door. This wire harness is encased in a Teflon tube designed to slide in and out of the door as it is opened and closed. Ensure these tubes are rigid and not folding when the door is closing. If folding the wires will be pinched and cause short or open circuits in the harness. If damaged these will need to be replaced and any wire damage repaired.

18.16 Engine - Block Heater

Engine block heaters are standard on all models. Have the block heater tested for proper operation.

18.17 Engine - Blowby

Check the engine after full warmup for excessive blow by. This could indicate a problem with the CDR valve or a severely worn engine (worn rings, cracked piston/block etc.). Pull the dip stick while the engine is running looking for vapor/smoke. Also open the oil fill cap and look for the same. A compression test can help diagnose the issue. Minimum acceptable compression is 380 psi. Lowest cylinder compression should be at least 80% of the highest.

18.18 Engine - Check Engine Light

If the check engine light is on when started read any codes with a standard [OBD2](#) code reader. If the code reader cannot establish a connection on the OBD2 port check the interior fuse block under the dash for a fuse labelled DLC. For older trucks, produced 1994 or earlier, a special OBD1 reader is required.

18.19 Engine - Coolant Pressure When Cold

Ask the owner not to start the truck prior to your visit. It should sit for 10-12 hours prior to this un-started. Prior to starting open the coolant reservoir cap and see if there is pressure present. Pressure may indicate a head gasket leak or worse a cracked engine block. After this start the truck and run it for 2 minutes then shutdown. Remove the coolant reservoir cap and there should be no pressure still as the engine is still cold. Perform a coolant test to look for exhaust gases.

18.20 Engine - Cylinder 8 Crack

Trucks produced prior to 2001, and potentially even a few in 2001, can suffer from cylinder #8 block/sleeve cracking/failure due to insufficient cooling in that area of the engine. A design revision resolves this for later vehicles. Even if the truck is produced in 2001 the engine should be checked for this issue. Have the mechanic perform an extended length pressure test and a coolant test for exhaust gases. For trucks prior to 2001 look for documentation on the engines replacement.

18.21 Engine - Exhaust

Pay attention to exhaust color during startup and runtime. Look for black smoke or white smoke during startup. Most diesel mechanics will know what to look for WRT exhaust color.

18.22 Engine - Fluid Conditions

Due to the cylinder #8 issue carefully check the oil and coolant after driving the truck to check for coolant entering the oil or oil entering the coolant. Obviously do not remove the coolant reservoir cap on a hot engine. Are there any fluid leak marks under where the truck is normally parked?

18.23 Engine - Glow Plugs

The glow plugs in 6.2L/6.5L trucks can become swollen and potentially break off inside the cylinder. Consult with the current owner/seller on proof the plugs have been changed and replaced with self-limiting models such as the AC Delco 60G. A broken off glow plug can damage the cylinder, piston and valves. A swollen plug can be difficult to remove or break off during removal (a special tool is available to assist with this).

18.24 Engine - Mounts

Have the engine mounts carefully inspected. A broken mount can result in many other components breaking or being damaged.

18.25 Engine - Starter

If the starter is a gear reduction unit (standard starter from [AMG](#) is direct drive) ensure the optional bracket is in place and that the start mount ear is not cracked or broken off. A broken starter mount ear is not really fixable so engine replacement will be required.

18.26 Engine – Vacuum Pump

The vacuum pump operates the turbocharger wastegate as well as the HVAC damper actuators. Test the operation of the HVAC to ensure you can redirect air flow from defrost at the dash windshield vents, to dash vents to floor output. If the flow does not change to a flow other than defrost the vacuum pump or hoses may be the culprit.

18.27 Fuel - Tank Selector

Many trucks have dual fuel tanks. Ensure the fuel tank selector switch successfully switches between tanks. The fuel level gauge should change with the switch selection showing the level of the currently selected tank. The selector valve is an expensive part.

18.28 Geared Hubs - Fluid Condition

Open the geared hub fill plug and ensure oil is present just below the bottom of the fill plug. Inspect the fluid condition for any contamination of water etc. Operation of the geared hubs with water contaminating the fluid can damage the gears and seals.

18.29 Geared Hubs - Seal Leak

Look for a radial pattern of oil on the inside of the tires. If present this indicates a geared hub seal is leaking. Carefully check that geared hub to make sure it has not been run dry/low in fluid. Plan on having to rebuild that hubs seals at a minimum. Seal kits are available that contain all required parts.

18.30 Halfshafts - Leaks

Check each end of all four halfshafts for any signs of leaking as well as the condition of the rubber boots. Leaks here could indicate differential seal issues, geared hub seal issues or poorly lubricated halfshaft joints.

18.31 Halfshafts - Wear

Inspect each halfshaft carefully for wear. The halfshaft component on an H1 are equally as important as the brakes. Since the brakes are inboard they connect to the wheels via the halfshaft. If a halfshaft breaks then you have no brakes for that wheel. A broken halfshaft means the remaining three have to stop the truck. More load on the three may break another etc. etc.

18.32 Interior - Plastic Components

Interior plastic components are no longer produced and hard to find. Ensure there is no excessive cracking of interior plastic trim components.

18.33 Steering - Component Wear

The steering system on the H1 can wear excessively, especially when driven primarily on pavement. Detailed inspection of the following components should be undertaken: steering gears, center link, idler arm, pitman arm, tie rod ends. Ensure the steering box bolts are all present and fastened tightly. Look for frame cracks near where the steering gearbox is mounted.

18.34 Suspension - Component Wear

The suspension system on the H1 can wear excessively when driven primarily on pavement. Detailed inspection of the following components should be undertaken: ball joints (8), spring sag (does the truck sit level), spring cracks, shocks (work/leaking).

18.35 Tires - 16.5"

If the truck is equipped with 16.5" wheels be aware that there are very few tire options available that will work with these wheels. When the tires require replacement you may have to invest time and expense in locating 17" wheels.

18.36 Tires - Jack

Ensure there is a jack and lug wrench included with the truck. Also ensure there is a wrench and screwdriver for removing CTIS components during a tire change.

18.37 Tires - Wear

Tire wear, especially uneven wear, can obviously be a sign of bad suspension and/or steering components, or frame damage from an accident. Note that trucks equipped with 16.5" wheels have few tire options available. It may be desirable to purchase factory 17" rims or aftermarket wheels to improve selection.

18.38 Transfer Case - Fluid Condition

The transfer case is cooled via a loop extending the transmission fluid into the transfer case to a sealed heat exchanger loop. In some cases on earlier trucks it is possible for the heat exchanger to separate allowing the transmission fluid to be pumped into the transfer case. Look for an overfill condition on the transfer case and/or a low condition on the transmission fluid. Investigate any fluid leaks on or around the transfer case.

18.39 Transfer Case - Operation

Ensure the transfer case can be shifted, and the truck can drive, in each gear. This test should be performed on a loose gravel/dirt surface. For lock gears ensure appropriate dash indicators illuminate.

18.40 Transmission - Cooler Lines

Inspect transmission cooler lines to ensure there are no problems. The transmission cooler cools both the transmission and the transfer case by way of an internal heat exchanger.

18.41 Transmission - Fluid Condition

Check the transmission to ensure the fluid is clean, not burnt or contaminated with water etc. Investigate any fluid leaks on or around the transmission.

18.42 Transmission - Operation

Ensure the transmission can be shifted, and the truck can drive, in each gear.

18.43 Winch - Operation

Ensure the winch, if equipped, operates correctly and inspect the cable or line.

19 Post-Purchase Maintenance

Post-purchase inspection checklist for those who have just purchased a truck.

After purchasing your H1 it is advisable to have a mechanic perform the following items prior to any significant driving or off-roading. These items are especially important if the previous owner maintenance records are unavailable or show insufficient maintenance history. These should be performed in addition to a full 'C' service.

Read any related items in this document to educate yourself on the below listed items.

19.1 Body – Brush Guard Pins

If the truck will be driven in freezing temperatures lubricate the brush guard release pins.

19.2 Body - Door Locks

Lubricate the door locks with a high quality lock lubricant.

19.3 Body - Door Seals

If the truck will be driven in freezing temperatures wipe the door seals with a silicon spray lube sprayed on a clean rag to prevent wet seals from freezing the door shut.

19.4 Body - Hood Snubbers

Replace the factory rubber hood snubbers (rubber stops the hood closes against) with the newer urethane composite snubbers and keep them greased. This will drastically reduce rattling from the hood.

19.5 Body - Window Switch Mounts

The plastic mounts which hold the electric window switches and door lock switches are brittle and crack. Various forum vendors carry aluminum replacements which are far superior.

19.6 Body - Window Tracks

Lubricate the window tracks using a silicon spray lubricant to reduce wear on the window regulators which can be expensive to replace.

19.7 CTIS - Lubricate Quick Disconnects

Lubricate the quick disconnect valves with a silicone spray lubricant actuating the quick disconnect numerous times to work the lubricant into the valve mechanism seals.

19.8 CTIS - Tools

Ensure your tire jack kit includes a screwdriver capable of removing the CTIS covers and a wrench capable of removing the CTIS fitting from the spindle.

19.9 Differential - Vent Lines

Ensure the different vent lines are intact to ensure no contaminants such as water enter the differentials.

19.10 Drive Shafts - Carrier Bearing

Carrier bearing should be carefully inspected and replaced if required. It is not possible to grease this component.

19.11 Drive Shafts - U-Joints

U-Joints should be carefully inspected, greased, and replaced if required.

19.12 Electrical - Battery Cables

The amperage draw to operate the glow plugs and starter is very high. Ensure the cable connections are clean on all battery cables including both the battery and starter end. In some circumstances battery cables can become corroded inside the cable/lug assemblies such that the corrosion is not visible. In this instance replacement of the battery interconnect cables and cables running to the starter is advised.

19.13 Electrical - Door Wire Harness

Ensure the Teflon tubes containing the door wire harnesses on the hinge side of the door are rigid and intact. Lubricate these with silicon spray.

19.14 Electrical - Fuses

The Hummer H1 has two factory fuse panels. One under the hood and one above the drivers foot well. It is advisable to pull and inspect all fuses after purchase. This serves two purposes. The first being that if the previous owner put a fuse in which is above the specified amperage a fire can occur as that circuits wiring was not designed to handle the higher draw the larger fuse will allow. The second benefit is the reseating of the fuse for removal and inspection will provide a good new contact if the truck is older and the connections corroded.

19.15 Electrical - Grounds

The electrical system is not grounded to the frame and body as with traditional automotive design. In these trucks a separate ground conductor is run to each electrical component. Due to this design there are various ground bus locations that should be cleaned and maintained. Strange issues will occur with electrical operation if grounds are not properly maintained. Dielectric grease may be useful to prevent the ground connections from corroding.

19.16 Electrical – Under Hood Light

Check that this is operational. The light should illuminate when the hood is open and the headlight switch is in the parking light or headlight position. Consider replacing with a bright LED bulb.

19.17 Engine - Air Cleaner Drain

The bottom of the air cleaner has a small water drain. On the exterior drain hole there is a small rubber duck bill/dust boot/dust unloader designed to allow water to escape from inside the air cleaner housing but prevent water intrusion. Ensure this rubber duck bill is present on the bottom of the air cleaner housing.

19.18 Engine - Belt

The serpentine belt drives the alternator, vacuum pump and power steering/brakes. If an unknown age it should probably be replaced as a preventative measure. If the replaced belt is in reasonable shape consider it for a trail spare.

19.19 Engine - CDR

The [CDR](#) valve on the 6.5 turbo diesel engine provides a slight vacuum within the crankcase. This vacuum is key to maintaining oil seals and reducing oil leaks. Failure to regularly replace the CDR valve can result in various engine oil leaks. Replace the part if it has not been replaced recently.

19.20 Engine - Cooling Stack

The cooling stack consists of the oil cooler, AC condenser and radiator. This stacked configuration, combined with the flat orientation and grill on top of the hood can result in clogging of the fins in these components. Bugs, small tree debris, leaves and mud all may settle between one of the components blocking airflow. It may be advisable to closely inspect this configuration even separating the three slightly to look for this potential issue. The cooling system design is already marginal so additional blockage such as this can pose a big problem to efficient cooling.

19.21 Engine - Glow Plugs

Properly operating glow plugs are critical to the starting of a diesel engine, especially during winter operation. If the glow plugs are of an unknown type change them to self-regulating glow plugs such as the ACDelco 60G. The use of non-self-regulating glow plugs can see the glow plug tips swollen over time and changing them may then require a special tool or potentially cylinder head removal if a tip breaks off. Glow plugs are inexpensive and easy to change.

19.22 Engine - Harmonic Balancer

The harmonic balancer on the 6.5 turbo diesel engine is a balancing component that is installed on the front of the crank shaft. It is composed of metal and rubber like the lower pulley. Failure of this component can contribute to the crank shaft failing. Replace this part, along with the lower pulley, if it has not been replaced recently. Failure of these two components can lead to a catastrophic failure of the crank. When replacing these components the bolt and washer which holds them on the crank shaft maybe should replaced as well. It is not a [TTY](#) bolt but it is cheap to replace. If the front crank seal is leaking this is the best time to replace that while the crank is exposed.

19.23 Engine - Hoses

Due to the age of the H1 platform consider replacing all cooling system and heater hoses proactively if found to be dry, cracked or rotten. Check the upper radiator hose, where it passes through the AC compressor bracket that it is not wearing at this point.

19.24 Engine - Lower Pulley

The lower pulley on the 6.5 turbo diesel engine is composed of both metal and rubber. Deterioration of this rubber can lead to pulley failure. The pulley should be replaced along with the harmonic balancer if the last replacement is unknown. Failure of these two components can lead to a catastrophic failure of the crankshaft. When replacing these components the bolt and washer which holds them on the crankshaft needs to be replaced as well as it is a [TTY](#) bolt. If the front crank oil seal is leaking this is the best time to replace that while the crank is exposed.

19.25 Engine - Oil Filter Housing

If there is oil around the oil filter housing and/or on the filter replace the 3 o-rings within it filter housing. This may require dropping the front drive shaft to access it.

19.26 Engine - PMD

If not already relocated off the [IP](#) purchase a high quality extension cable, heat sync and new [PMD](#). Relocate it to an area away from the engine. Do not use cheap E-Bay or Amazon relocation cables as they are of inferior quality and will potentially cause intermittent problems which are difficult to track down.

19.27 Engine - Vacuum Pump

The vacuum pump can be problematic as it ages including seizing. The pump operates both the turbo waste gate and the HVAC doors. A seized pump will lock its pulley and cause the serpentine belt to burn up. In addition to the pump the rubber hoses that connect the vacuum pump to the waste gate actuator and the HVAC system can become brittle and crack causing vacuum leaks. These leaks will cause problems with the operation of the turbo and HVAC system.

19.28 Fuel - FFM Leaks

Carefully inspect around the [FFM](#) for leaks. If leaking remove and clean the FFM, replace all o-rings and potentially the heater. Re-install with a new filter. The FFM Heater element often can leak around the wires as they enter the bottom of the heater.

19.29 Fuel - FFM Screen

In the base of the [FFM](#), under the fuel filter, there should be a small screen. This screen is the last ditch effort to catch any contaminants which may be sent to the injection pump. In some instances this filter screen has been removed or lost. It should be replaced as soon as possible.

19.30 Fuel - Lift Pump

The Lift Pump pulls from the selected fuel tank and sends it to the Injection Pump. This pump runs as soon as the key is turned to the on position and should be audible inside the truck from the driver's seat. In some instances while the pump may sound like it is operational it may not be performing properly. This pump should be tested and/or replaced. Testing can be performed by opening the petcock valve in the front driver's wheel well and turning on the key to observe fuel flow into a container. While the truck may run with a non-operational Lift Pump it is very hard on the Injection Pump which is a much more expensive component to replace. Recommended lift pumps for 6.5TD are AC Delco EP158 or EP1000.

19.31 Fuel - PMD

The stock [PMD](#) location, affixed to the side of the [IP](#), has been proven problematic due to the heat soak of this electronic component after the engine has been shut down. Originally the design allowed for cooling during the flow of diesel while the engine is running. The engineers did not take into account the heat exposure after engine shutdown. Invest in a high quality relocation cable, heat sync/pad and new PMD. Always carry a spare PMD as well.

19.32 Fuel - Treatments

Begin using a quality diesel fuel treatment such as Stanadyne Advanced Formula in every fill-up. All H1s were built prior to the new 2007 Ultra-Low-Sulphur-Diesel specifications. Sulphur in diesel was a key lubricant for the injection pump and injector design prior to 2007. Without proper lubrication the injectors and injection pump can fail prematurely. Consider using a winter version of the treatments during colder months and an injector cleaner version once every 3 - 6 months.

19.33 Fuel - Vent Filters and Lines

Each fuel tank has an external vent. The tank caps are not vented. This configuration ensures water does not enter the tank. If the vent filters are clogged this can make it difficult for the lift pump to pull fuel from the tanks for the injection pump increasing wear on those items. The main fuel tank vent is located on the engine side of the firewall on the passenger side. For trucks equipped with an auxiliary tank this vent is located on a hose tied to the outside of the auxiliary tank fill tube. Ensure all lines are intact so that contaminants may not enter the fuel system.

19.34 Geared Hubs - Spindle Nuts

The factory spindle nuts which hold the spindle in the geared hub are of a defective design. There are many cases where the spindle nut retaining washer fails and the nut loosens until the wheel and spindle separate from the truck while driving. This is obviously an extremely dangerous situation. Replace all 4 spindle nuts with the Blue Hummer locking spindle nuts. Leaking gear hub oil on the inside of your tires could be an indication of an impending spindle nut failure. **Repair immediately.**

19.35 Geared Hubs - Vent Lines

The geared hubs have vent lines. Ensure these lines are present and intact so no contaminants such as water may enter the hubs.

19.36 Halfshafts - Hub Bolts

On the outer top of the geared hubs, behind the tire, there is an access plug. Removing this plug you will find a bolt behind it inside the hub itself. This bolt holds the halfshaft in position. The torque on these bolts should be checked regularly.

19.37 Halfshafts - Rotor Bolts

The Hummer H1 inboard brake rotors are bolted to the halfshafts directly beside the differentials. These 6 bolts on each rotor can become loose and should be checked regularly. These bolts should be checked immediately.

19.38 Starter - Bolts

Starter bolts should be checked regularly for tightness. In addition, if using a gear reduction style starter, ensure that the optional bracket is in place, and both bolts are tight. This bracket is key to ensuring that the high torque of these starters does not shear off the starter bolts or break the mounting ear on the engine block. The latter is a worst case scenario almost certainly requiring an engine replacement.

19.39 Starter - Cables

The starter must turn the engine over to a certain RPM for it to start successfully. Ensure the cables connecting the starter to the batteries are clean and secure. Disconnect the batteries before attempting this cleaning.

19.40 Starter - Replacement

The stock starter on the Hummer H1 is extremely heavy and prone to failure. While somewhat waterproof the starter can be problematic. Replacement of this starter with a gear reduction unit, such as a PowerMaster, saves approximately 50 lbs. in weight and provides a faster and more reliable start. If using this new style of starter ensure the optional bracket is in place or there is risk of starter mounts on the block cracking or breaking off.

19.41 Steering - Column Lubrication

The steering column requires regular greasing and is often overlooked. The steering column may contain grease points at the two u-joints and one slip shaft. Inspect carefully as grease points are often overlooked here.

19.42 Transfer Case - Linkage Lubrication

The transfer case linkage should be lubricated to ensure smooth operation. Ensure that the linkage is exercised regularly, for example once a month, to prevent seizing if the truck is not used off-road very often.

19.43 Winch - Cable

If equipped with a winch, and the winch does not have synthetic line but traditional steel cable, unroll and lubricate the cable to prevent corrosion. Consider replacing wire rope with a synthetic line for safety and weight reasons.

20 Spare Parts/Tools

The following list of tools and parts should be considered for carrying in the truck.

After purchasing your H1 it is advisable to review these lists and carry the appropriate items in your truck depending on what you are using it for. Remember to secure these items properly so they do not become projectiles during an accident or rough off-road session.

20.1 Spares - Basic

The following spare parts should be considered to be carried at all times in the truck.

- 1 x Fuel Filter
- 1 x Lift Pump
- ? x Light Bulbs
- 1 x Maxi Circuit Breaker (30A)
- 1 x Maxi Fuses (20A, 30A, 40A)
- 1 x Mini Fuses (5A, 7.5A, 10A, 15A, 20A, 25A, 30A)
- 1 x [PMD](#)
- 1 x PMD Extension Cable
- 1 x Power Service Diesel 911 (Winter operation)
- ? x Relays
- 2 x Serpentine Belt
- 1 x Spare Wheel & Tire

20.2 Spares - Advanced

The following spare parts should be considered to carry in the truck for off-road travel.

- 1 x Brake Fluid
- 1 x Cotter Pins - Various
- 2 x [CTIS](#) Plugs
- 1 x CTIS Tire Valve
- 1 x Engine Oil
- 1 x Can of Ether (Tire mounting)
- 1 x Fuel - Full Jerry Can
- 1 x Gear Oil
- 1 x Hose Clamp Kit
- 1 x Hub Oil (if not using Gear Oil)
- 1 x Oil Filter
- 1 x Plastic Food Wrap Roll
- 1 x Power Steering Fluid
- 1 x [RTV](#) Silicone
- 1 x Shrink Fit Tubing Kit
- 1 x Steering Box Bolt Set (AMG: 5745684 (1 x 7/16-14 x 4", 2 x 7/16-14 x 5 1/4"))
- 1 x Transmission/Transfer Case Fluid
- 4 x Valve Stem Caps

- 4 x Valve Stem Cores
- 1 x Water/Anti-freeze premix
- 1 x WD40

20.3 Spares - Extreme

The following spare parts should be considered to carry in the truck for extreme remote off-road travel.

- 1 x [AC](#) Bypass Pulley + Bolts + Washers
- 1 x Alternator
- 1 x Ball Joint - Lower + Bolts + Washers
- 1 x Ball Joint - Upper + Bolts + Washers
- 1 x Belt Tensioner
- 2 x Castle Nuts
- 1 x [FFM](#) Filter Ring
- 1 x [FFM](#) Screen
- 1 x Fuel Line - 6 ft + Clamps
- 1 x Grease Gun - Mini + Grease
- 2 x Half Shaft - Bolt + Washer kits
- 1 x Half Shaft - Left Front
- 1 x Half Shaft - Rear
- 1 x Half Shaft - Right Front
- 1 x Idler Arm
- 2 x Injector Return Caps + Clips
- 2 x Injector Return Lines + Clips
- 1 x Motor Mount
- 1 x Pitman Arm + Lockwasher + Nut
- 1 x Radius Rod
- 2 x Tie Rod Ends
- 2 x U Joints + Straps + Bolts + Washers
- 1 x Vacuum Pump

20.4 Tools - Basic

The following basic tools should be considered to be carried at all times in the truck.

- 1 x 12" Adjustable Wrench
- 1 x Air Compressor Hose
- 1 x Allen/Hex Keys - Metric
- 1 x Allen/Hex Keys - SAE
- 4 x Bungee Cords
- 1 x Fire Extinguisher
- 1 x First Aid Kit
- 1 x Flash Light + Extra Batteries
- 1 x Jack + Lug Wrench
- 1 x Jumper Cables
- 1 x Key - Spare Ignition/Door
- 1 x Leather Gloves or Mechanics Gloves
- 1 x Loctite - Blue (242)
- 1 x Loctite - Red (271)

- 1 x Loctite - Red High Temp (272)
- 1 x Marker
- 1 x [OBD2](#) Scanner (or Bluetooth OBD2 Adapter)
- 1 x Owner's Manual
- 2 x Pencil
- 1 x Pliers - Needle Nose
- 1 x Pliers - Standard
- 1 x Screwdriver - Phillips - Large
- 1 x Screwdriver - Phillips - Medium
- 1 x Screwdriver - Slot - Large
- 1 x Screwdriver - Slot - Medium
- 1 x Service Manual (pdf)
- 1 x Side Cutter - Medium
- 1 x Side Cutter - Small
- 1 x Signal Flare Kit
- 1 x Tape - Duct Roll
- 2 x Tape - Electrical Roll
- 1 x Tape - Teflon Roll
- 1 x Tire Pressure Gauge
- 5 x Towels/Rags
- 1 x Valve Stem Core Removal Tool
- 1 x Velcro Straps - Assorted
- 1 x Wrench Set - Metric - 4mm - 19mm
- 1 x Wrench Set - SAE - 5/16" - 1 1/16"
- 1 x Zip Ties - Various Small/Medium/Large

20.5 Tools - Advanced

The following tools should be considered to carry in the truck for off-road travel.

- 1 x 1/2" Breaker Bar
- 1 x 1/2" Ratchet Set + ??? Sockets
- 1 x 3/8" Ratchet Set (Standard and Metric)
- 1 x Bucket – Collapsible
- 1 x Compass
- 1 x Coveralls - Disposable
- 1 x Hacksaw + Blades
- 1 x Hammer
- 1 x Hatchet
- 2 x Knife
- 1 x Lighter
- 1 x Magnet - Extendable
- 1 x Mirror - Extendable
- 1 x Rad and Heater Hose Repair Kit
- 1 x Ratchet Strap Set
- 1 x Saw - Bow or Camp
- 4 x Shackles (20K lbs)
- 1 x Shovel - Folding
- 1 x Snatch Block
- 1 x Tape Measure - Small

- 1 x Tarp
- 1 x Tire Chains (Winter travel)
- 1 x Tire Gauge
- 1 x Tire Puncture Kit
- 2 x Tow Strap (20K lbs)
- 1 x Traction Ramps
- 1 x Tree Saver
- 1 x Vice-Grips - Medium
- 1 x Wood Matches

20.6 Tools - Extreme

The following tools should be considered to carry in the truck for extreme off-road travel.

- 1 x 10' 12/14 AWG insulated wire
- 1 x Ball Joint Fork
- 1 x Multimeter
- 1 x Pitman Puller
- 1 x Tie Rod Fork

21 Maintenance Schedules

The following items are the suggested maintenance schedules.

The following lists are the suggested maintenance schedule based on original AM General Maintenance Inspection Groups and then augmented with this groups experience based on years of history in operating these trucks. It is highly suggested you purchase the Blue Hummer's Hummer Maintenance Manual which contains detailed information on maintenance procedures. Italicized items are recommended items in addition to standard AM General procedures.

In addition to the suggested regular maintenance a Post Severe Operation schedule is also provided.

21.1 Schedule - A - 3000 Miles

The following are the suggested maintenance items to be performed every 3,000 miles. Note: Clean dirt from around all caps and surrounding areas prior to opening.

Check

Air Cleaner - Condition

Ball Joints - Wear

CDR Valve - Oil Saturation

CTIS

Operation - Inflation / Deflation

Fluids - Condition / Level

Axle Oil - ¼" from fill plug, cold

Brake Fluid - ½" of max

Engine Coolant - at or slightly above cold fill line when cold.

Geared Hub Oil - ½" of fill plug, cold, at fill plug hot

Power Steering Fluid - See hot/cold marks

Transfer Case Fluid - ½" of fill plug, not burnt

Transmission Fluid - Check fluid hot, transmission in park, engine idling at normal speed

Fuel Filter

Clean housing / Drain Water

Half Nuts - Torque (two piece wheels)

Lift Pump - Operation

Lighting - All exterior including headlights, tail lights, brake lights, turn signals, 4 way & clearance lights

Lug Nuts - Torque

Starter Bracket - Secure

Tire - Wear / Condition

Wheel - Bolt torque and CTIS cover bolt tightness

Winch

Cable condition

Operation - Free-spool out, pay-in at least 30 feet

Inspect

Axles

Leaks / Damage

Joint Wear

Vent Lines - Condition

- Brakes
 - Service - Condition / Wear
 - Parking - Condition
- Control Arms - Condition
- Engine Mounts/Isolators - Condition
- Fuel Tank*
 - Vent Lines - Condition*
- Geared Hubs
 - Cover corrosion
 - Leaks / Damage
 - Vent Lines - Condition
- Shock Absorbers - Condition
- Springs - Condition
- Transfer Case
 - Linkage - Wear / Binding / Distortion
 - Vent line - Condition
- Transmission
 - Linkage - Wear / Binding / Distortion
 - Vent Line - Condition
- U-Joints
 - Grease fittings missing
 - Wear

Lubricate

- Body Lubrication points
- Grease fittings
- Winch cable
- Winch levers

Replace

- Fuel Filter*
- Engine Oil & Filter*

Test Drive

- Test basic operation

21.2 Schedule - B - 6000 Miles

The following are the suggested maintenance items to be performed every 6,000 miles. These items should be performed in addition to the items in Schedule - A.

Check

- AC - System Operation
- Battery - Voltage / Condition
- Fuel Tank Vent Line Filter - Condition
- Wheels - Alignment

Inspect

- Ball Joints & Seals - Condition
- Center Link - Condition

- Exhaust System / Shields - Condition
- Fuel Injection Pump, Lines & Fittings - Leaks / Damage
- Frame Rails / Cross Members - Condition
- Halfshaft Boots - Condition
- Idler Arm - Condition
- Pitman Arm - Condition
- Serpentine Belt - Condition
- Steering Arm - Condition
- Steering Column - Condition
- Tie Rods - Condition
- Tires - Condition / Rotate Tires

Replace

- Air filter

21.3 Schedule - C - 12000 Miles

The following are the suggested maintenance items to be performed every 12,000 miles. These items should be performed in addition to the items in Schedule - B.

Inspect

- AC Condenser, Hoses, Fittings - Condition
- Fuel Tank, Lines, Cap - Condition
- Power Steering:
 - Cooler - Condition
 - Hoses, Fittings, Lines - Condition
 - Pump - Condition
 - Gear Box - Condition
- Radiator, Hoses, Fittings - Condition
- Radiator Shroud, Hoses, Fittings - Condition
- Surge Tank, Hoses, Fittings - Condition
- Transmission Cooler, Hoses, Fittings - Condition
- Wiring Harnesses - Frays, Splits, Missing Insulation, Connections

Replace

- Change axle oil
- Change engine coolant
- Change geared hub oil
- Change transfer case fluid
- Change transmission filter
- Change transmission fluid

Rotate

- Tires

21.4 Schedule - D - 48000 Miles

The following are the suggested maintenance items to be performed every 48,000 miles. These items should be performed in addition to the items in Schedule - C. These items are not specified by AM General but recommended by long term owners.

Inspect

- Coolant/heater hoses
- Differential mounting bolts
- Fuel lines
- Oil lines

Replace

- [CDR](#) valve
- [FFM](#) inner screen under filter element
- Fuel tank vent filters
 - Note: Main on firewall. Aux tank vent attached to filler neck
- Glow plugs
 - Note: Rear glow plugs reachable from below without engine cover removal
- Lift pump and o-rings
- Serpentine belt

21.5 Schedule - E - 96000 Miles

The following are the suggested maintenance items to be performed every 96,000 miles. These items should be performed in addition to the items in Schedule - D. These items are not specified by AM General but recommended by long term owners.

Clean

- Transfer case speed sensor

Replace

- Belt tensioner
- Fan clutch
- Front drive shaft center bearing
- Fuel injectors
- Harmonic balancer & pulley
- Timing chain
- Transfer case chain
- U-Joints (5)

21.6 Schedule - Post Severe Off-Road Operation

The following are the suggested maintenance items to be performed after severe operation of the vehicle in an off-road environment.

Change

- Engine Oil - Change

Check

- Air filter condition - Replace/clean housing & dust unloader as required

Brake fluid level/condition - Flush or fill as required
Brake pads condition - Clean if contaminated
Power Steering fluid level/condition - Flush or fill as required

Lubricate

Ball joints
Body lubrication points.
Propeller shafts
Steering linkage

Wash (Using low pressure fresh water)

Brake Components
Driveline
Steering Linkage
Suspension Components
Underbody

Deep Water

Inspect (Water contamination, damage)

Axle
Geared hub
Vents
Transfer case fluid level/condition - Flush/replace fluid if contaminated with water
Transmission fluid level/condition - Flush/replace fluid/filter if contaminated with water

Rough Terrain

Inspect (Impact damage, leaks and loose parts)

Driveline Components
Underbody

21.7 Body Lubrication

The following are the body lubrication points:

Handles

Barn door	Oil
Front doors	Oil
Rear doors	Oil

Hinges

Barn doors	Oil
Front Bumper Shackles	Oil
Front doors	Oil
Hood	Oil
Mirror bases	Oil
Rear Bumper Shackles	Oil
Rear doors	Oil

Latches

Barn doors	White grease or LPS #3
Front doors	White grease or LPS #3

Hood	White grease or LPS #3
Rear doors	White grease or LPS #3
Linkages	
Brake pedal	LPS Brand Silicone Spray Lube
Parking brake	LPS Brand Silicone Spray Lube
Transfer case	LPS Brand Silicone Spray Lube
Transmission	LPS Brand Silicone Spray Lube
Locks	
Barn door	LPS Brand Silicone Spray Lube or Graphite lube
Front/Rear doors	LPS Brand Silicone Spray Lube or Graphite lube
Hood	LPS Brand Silicone Spray Lube or Graphite lube
Miscellaneous	
Brush guard pins	Oil (drop into open end, work button repeatedly)
CTIS valves (including spare)	LPS Brand Silicone Spray Lube
Door wire harness tubes	LPS Brand Silicone Spray Lube
Tire carrier	Oil
Tracks	
Front seat tracks	Chassis Grease
Windows	
Regulator	Spray white grease
Slides	Silicone spray lube

21.8 Grease Points

The following are the grease points:

Ball-type Joints:

- 8 Ball joints
- 2 Idler arm
- 1 Pitman arm
- 2 Radius arm ends
- 1 Steering arm
- 6 Tie rod ends

General:

- 1 Air filter clamp threads
- 3 Hood snubbers mating surface

Pivot / Hinge Joints:

- 1 Idler arm (near frame)

Slip / Expansion Joints:

- 2 Front drive shaft
- 1 Steering column (Under dash) (Not all models have this)

Tire Carrier:

- 1 Hinge on bumper
- 1 Tire drop down point

U-Joints:

- 3 Front drive shaft
- 2 Rear drive shaft
- 1 Steering column (Under dash)
- 1 Steering column (Under hood)

22 Appendix - Specifications

The following is a list of specifications for the H1.

22.1 VIN Breakdown

The following table will indicate the options embedded in the [VIN](#).

Engines

VIN Digit	Engine	Notes
D	5.7 Liter Gasoline	190 HP, 300 LBFT
F	6.5 Liter Turbo Diesel	195-205 HP, 430-440 LBFT, GEP manufacturer
X	6.2 Liter Naturally Aspirated	150 HP, 250 LBFT
Y	6.5 Liter Naturally Aspirated	170 HP, 290 LBFT
Z	6.5 Liter Turbo Diesel	190-195 HP, 385-430 LBFT
P	6.6 Liter Duramax Turbo Diesel	300 HP, 520 LBFT

Transmissions

VIN Digit	Transmission	Notes
E	3L80	Transfer case is a NP242 (AMG Edition)
A	4L80E	Transfer case is a NP242 (AMG Edition)
H	Allison Electronic 5 Speed	Transfer case is a NP242 (AMG Edition)

VIN Decoding

Year	10 th Digit (Year)	4 th Digit (Engine)	5 th Digit (Trans)	Production Count	Notes
1992	N	X	E	316	
1993	P	X	E	612	
1994	R	Y	A	718	
1995	S	Y/D	A	1432	Highest production year.
1996	T	Y/D/Z	A	1374	
1997	V	Y/Z	A	1209	Mid-year changes known as 1997-2 or 1997.5.
1998	W	Y/Z	A	945	
1999	X	Z	A	831	First year with TT4, Torsen II diffs, and anti-lock brakes.
2000	Y	Z	A	1333	
2001	1	Z/F	A	869	Mid-year change to new stronger 6.5 block (F).
2002	2	F	A	703	
2003	3	F	A	494	112 of the total sent to US Border patrol.
2004	4	F	A	252	New Optimizer 6.5 engine, Caterpillar engine control unit.
2005	n/a	n/a	n/a	n/a	No models produced.
2006	6	P	H	729	Duramax engine. 9 of the total sent to US Border patrol.

23 Appendix – ABS Fault Codes

The following is a list of the fault costs for the ABS system on 1999 and newer trucks.

Blink Code Procedure

To read the [ABS](#) codes perform the following steps.

1. Jumper pins pin 4 to pin 15 on the OBD2 connector with a paperclip or wire.
 2. Switch on the ignition, the ABS warning light will illuminate and extinguish if there are no active faults.
 3. Five seconds after connecting the switch jumper, the ABS warning light will extinguish, indicating the start of the blink code cycle.
 4. The above steps have been performed properly when the ABS light blinks in this start phase pattern:
 - Pause = 2.5 seconds (long)
 - Flash = 2.5 seconds (long)
 - Pause = 2.5 seconds (long)
 - Flash = 0.5 seconds (short)
 5. Following the start phase pattern the first part of the code number: A pause of 2.5 seconds precedes a series of short flashes. Count the flashes until the next long pause occurs. The number of short flashes obtained is the first part of the code number.
 6. The second part of the code number: A pause of 2.5 seconds occurs between the first and second parts, before a series of short flashes occurs. The number of short flashes forms the second part of the code number.
 7. The sequence of the start phase, first and second parts will continue until the jumper is removed.
- NOTE:** If you are unsure of the code, do not deactivate the switch jumper from the DLC because the code for that fault will be cleared from the memory.
8. The memory is capable of storing more than one fault. To search the memory, reconnect the switch jumper and await the next start phase.
 9. Repeat the procedure until no further faults are stored in the memory. The memory is cleared when a long pause of 7.5 seconds occurs after the start phase.

23.1 Clearing Codes

At the end of a fault code cycle, deactivate the blink code jumper. The fault code will cycle one more time before the lamp remains on solid. Turn off the ignition and the fault code will be cleared from memory.

23.2 2-x ABS Codes

The following table contains a list of the 2-x ABS fault codes, their meaning and test/repair guidance.

Fault Code	Problem Area	Test Pin Locations	Values	Check/Repair
2-0	ECU internal failure.	-	-	Replace ECU.
2-1	ECU internal failure.	-	-	Replace ECU.
2-2	Recirculating Pump (RCP) operates continuously.	11 and 27 30 and 27	0 volts	Check the RCP wiring, the pump relay and the wiring connections. Repair or replace as required.
2-2	RCP does not operate.	9 and 11 27 and 30	Ignition "ON" approximate battery + voltage.	Check the RCP wiring, the pump relay and fuse and pump connections. Repair or replace as required.
2-4	RCP failure (motor locked).	9, 11 and 12	Ignition "ON" motor running.	Excessive current failure. If pump does not run with pins linked, replace modulator.
2-6	Shuttle valve switch failure.	25 and 27	Brake pedal at rest 3 kΩ Brake pedal ½ down 2 kΩ Brake pedal full down 1 kΩ	If wiring and connections OK, replace modulator.
2-7	Continuous power to ECU with ignition "OFF".	9 and 27	0 volts - Less than 0.2 Ω to chassis ground.	Check for proper wiring connections, repair as necessary.
2-8	No voltage to ABS solenoid valves.	19 and 27 1 and 27 9 and 27 Link 8 and 9	Ignition "ON" approximate battery + voltage.	Check the valve relay, fuse and wiring. Repair as necessary.
2-9	Inlet valve supervision time exceeded.	-	-	Check voltage for normal function. Clear fault.
2-10	Reference ground interrupted.	31	Less than 0.2 Ω to chassis ground.	Repair wiring or connection as necessary.
2-11	Excessive recirculation pump cycle time.	Ignition "ON" Link 9, 11 and 12	-	Check RCP function. Clear fault.
2-12	RF sensor weak	17 and 34	Greater than 0.9 volts AC at one tire revolution per second.	Check sensor adjustment. Check geared hub bearing play
2-13	LR sensor weak	18 and 35	Greater than 0.9 volts AC at one tire revolution per second.	Check sensor adjustment. Check geared hub bearing play
2-14	LF sensor weak	15 and 32	Greater than 0.9 volts AC at one tire revolution per second.	Check sensor adjustment. Check geared hub bearing play
2-15	RR sensor weak	16 and 33	Greater than 0.9 volts AC at one tire revolution per second.	Check sensor adjustment. Check geared hub bearing play

23.3 3-x ABS Codes

The following table contains a list of the 3-x ABS fault codes, their meaning and test/repair guidance.

Fault Code	Problem Area	Test Pin Locations	Values	Check/Repair
3-0	Open circuit between ECU and right front inlet solenoid valve or wiring.	6 and 27	5.0-7.5 Ω	Check electrical resistance of affected valve wiring to ground at the ECU connector and at the modulator connector. Repair wiring or replace modulator as necessary.
3-1	Open circuit between ECU and right front outlet solenoid valve or wiring.	7 and 27	3.0-5.0 Ω	Check electrical resistance of affected valve wiring to ground at the ECU connector and at the modulator connector. Repair wiring or replace modulator as necessary.
3-2	Open circuit between ECU and left front inlet solenoid valve or wiring.	23 and 27	5.0-7.5 Ω	Check electrical resistance of affected valve wiring to ground at the ECU connector and at the modulator connector. Repair wiring or replace modulator as necessary.
3-3	Open circuit between ECU and left front outlet solenoid valve or wiring.	24 and 27	3.0-5.0 Ω	Check electrical resistance of affected valve wiring to ground at the ECU connector and at the modulator connector. Repair wiring or replace modulator as necessary.
3-4	Open circuit between ECU and right rear inlet solenoid valve or wiring.	4 and 27	5.0-7.5 Ω	Check electrical resistance of affected valve wiring to ground at the ECU connector and at the modulator connector. Repair wiring or replace modulator as necessary.
3-5	Open circuit between ECU and right rear outlet solenoid valve or wiring.	5 and 27	3.0-5.0 Ω	Check electrical resistance of affected valve wiring to ground at the ECU connector and at the modulator connector. Repair wiring or replace modulator as necessary.
3-6	Open circuit between ECU and left rear inlet solenoid valve or wiring.	21 and 27	5.0-7.5 Ω	Check electrical resistance of affected valve wiring to ground at the ECU connector and at the modulator connector. Repair wiring or replace modulator as necessary.
3-7	Open circuit between ECU and left rear outlet solenoid valve or wiring.	22 and 27	3.0-5.0 Ω	Check electrical resistance of affected valve wiring to ground at the ECU connector and at the modulator connector. Repair wiring or replace modulator as necessary.
3-8	Open circuit between ECU and RCP relay 1.	11 and 27 30 and 27	Ignition "ON" approximate battery + voltage.	If pump does not run, check wiring from pin 11.
3-9	Open circuit between ECU and RCP relay 2.	12 and 27	Ignition "ON" approximate battery + voltage.	If pump does not run, check wiring from pin 12.

23.4 4-x ABS Codes

The following table contains a list of the 4-x ABS fault codes, their meaning and test/repair guidance.

Fault Code	Problem Area	Test Pin Locations	Values	Check/Repair
4-0	Short circuit to ground between ECU and right front inlet solenoid valve.	6 and 27	5.0-7.5 Ω	Check electrical resistance of affected valve wiring to ground at ECU connector and at modulator assembly as necessary.
4-1	Short circuit to ground between ECU and right front outlet solenoid valve.	7 and 27	3.0-5.0 Ω	Check electrical resistance of affected valve wiring to ground at ECU connector and at modulator assembly as necessary.
4-2	Short circuit to ground between ECU and left front inlet solenoid valve.	23 and 27	5.0-7.5 Ω	Check electrical resistance of affected valve wiring to ground at ECU connector and at modulator assembly as necessary.
4-3	Short circuit to ground between ECU and left front outlet solenoid valve.	24 and 27	3.0-5.0 Ω	Check electrical resistance of affected valve wiring to ground at ECU connector and at modulator assembly as necessary.
4-4	Short circuit to ground between ECU and right rear inlet solenoid valve.	4 and 27	5.0-7.5 Ω	Check electrical resistance of affected valve wiring to ground at ECU connector and at modulator assembly as necessary.
4-5	Short circuit to ground between ECU and right rear outlet solenoid valve.	5 and 27	3.0-5.0 Ω	Check electrical resistance of affected valve wiring to ground at ECU connector and at modulator assembly as necessary.
4-6	Short circuit to ground between ECU and left rear inlet solenoid valve.	21 and 27	5.0-7.5 Ω	Check electrical resistance of affected valve wiring to ground at ECU connector and at modulator assembly as necessary.
4-7	Short circuit to ground between ECU and left rear outlet solenoid valve.	22 and 27	3.0-5.0 Ω	Check electrical resistance of affected valve wiring to ground at ECU connector and at modulator assembly as necessary.
4-8	Short circuit to ground between ECU and RCP relay 1.	11 or 30 and 27	Open circuit	Check wiring to pump relay and pump connector through pump. Repair wiring or replace modulator as necessary.
4-9	Short circuit to ground between ECU and RCP relay 2.	12 and 27	Open circuit	Check wiring to pump relay and pump connector through pump. Repair wiring or replace modulator as necessary.
4-12	Right front wheel speed sensor open circuit.	17 and 34	500-2000 Ω	Check electrical resistance of affected sensor and wiring at ECU connector and at harness plugs. Repair wiring or replace sensor as necessary.
4-13	Left rear wheel speed sensor open circuit.	18 and 35	500-2000 Ω	Check electrical resistance of affected sensor and wiring at ECU connector and at harness plugs. Repair wiring or replace sensor as necessary.
4-14	Left front wheel speed sensor open circuit.	15 and 32	500-2000 Ω	Check electrical resistance of affected sensor and wiring at ECU connector and at harness plugs. Repair wiring or replace sensor as necessary.
4-15	Right rear wheel speed sensor open circuit.	16 and 33	500-2000 Ω	Check electrical resistance of affected sensor and wiring at ECU connector and at harness plugs. Repair wiring or replace sensor as necessary.

23.5 5-x ABS Codes

The following table contains a list of the 5-x ABS fault codes, their meaning and test/repair guidance.

Fault Code	Problem Area	Test Pin Locations	Values	Check/Repair
5-0	Short circuit to battery between ECU and right front inlet valve solenoid or wiring.	6 and 27	0 volts 5.0-7.5 Ω	Check voltages at wiring harness including connectors. Check electrical resistance of affected valve wiring to ground at ECU connector and at modulator assembly plug. Repair wiring or replace as necessary.
5-1	Short circuit to battery between ECU and right front outlet valve solenoid or wiring.	7 and 27	0 volts 3.0-5.0 Ω	Check voltages at wiring harness including connectors. Check electrical resistance of affected valve wiring to ground at ECU connector and at modulator assembly plug. Repair wiring or replace as necessary.
5-2	Short circuit to battery between ECU and left front inlet valve solenoid or wiring.	23 and 27	0 volts 5.0-7.5 Ω	Check voltages at wiring harness including connectors. Check electrical resistance of affected valve wiring to ground at ECU connector and at modulator assembly plug. Repair wiring or replace as necessary.
5-3	Short circuit to battery between ECU and left front outlet valve solenoid or wiring.	24 and 27	0 volts 3.0-5.0 Ω	Check voltages at wiring harness including connectors. Check electrical resistance of affected valve wiring to ground at ECU connector and at modulator assembly plug. Repair wiring or replace as necessary.
5-4	Short circuit to battery between ECU and right rear inlet valve solenoid or wiring.	4 and 27	0 volts 5.0-7.5 Ω	Check voltages at wiring harness including connectors. Check electrical resistance of affected valve wiring to ground at ECU connector and at modulator assembly plug. Repair wiring or replace as necessary.
5-5	Short circuit to battery between ECU and right rear outlet valve solenoid or wiring.	5 and 27	0 volts 3.0-5.0 Ω	Check voltages at wiring harness including connectors. Check electrical resistance of affected valve wiring to ground at ECU connector and at modulator assembly plug. Repair wiring or replace as necessary.
5-6	Short circuit to battery between ECU and left rear inlet valve solenoid or wiring.	21 and 27	0 volts 5.0-7.5 Ω	Check voltages at wiring harness including connectors. Check electrical resistance of affected valve wiring to ground at ECU connector and at modulator assembly plug. Repair wiring or replace as necessary.
5-7	Short circuit to battery between ECU and left rear outlet valve solenoid or wiring.	22 and 27	0 volts 3.0-5.0 Ω	Check voltages at wiring harness including connectors. Check electrical resistance of affected valve wiring to ground at ECU connector and at modulator assembly plug. Repair wiring or replace as necessary.
5-8	Short circuit to battery + between ECU and RCP relay 1.	11 and 27	0 volts	Check wiring harness between ECU and relay and pump ground connections. Repair wiring as necessary.
5-9	Short circuit to battery + between ECU and RCP relay 2.	12 and 27	0 volts	Check wiring harness between ECU and relay and pump ground connections. Repair wiring as necessary.
5-12	Right front wheel speed signal is erratic.	17 and 34	Greater than 0.9 volts AC at one tire	Check for damaged tone wheel, incorrect sensor adjustment, excessive tone wheel

			revolution per second.	runout (> .041"), excessive geared hub input bearing play and tire size mismatch. Repair or replace as necessary.
5-13	Left rear wheel speed signal is erratic.	18 and 35	Greater than 0.9 volts AC at one tire revolution per second.	Check for damaged tone wheel, incorrect sensor adjustment, excessive tone wheel runout (> .041"), excessive geared hub input bearing play and tire size mismatch. Repair or replace as necessary.
5-14	Left front wheel speed signal is erratic.	15 and 32	Greater than 0.9 volts AC at one tire revolution per second.	Check for damaged tone wheel, incorrect sensor adjustment, excessive tone wheel runout (> .041"), excessive geared hub input bearing play and tire size mismatch. Repair or replace as necessary.
5-15	Right rear wheel speed signal is erratic.	16 and 33	Greater than 0.9 volts AC at one tire revolution per second	Check for damaged tone wheel, incorrect sensor adjustment, excessive tone wheel runout (> .041"), excessive geared hub input bearing play and tire size mismatch. Repair or replace as necessary.

23.6 6-x ABS Codes

The following table contains a list of the 6-x ABS fault codes, their meaning and test/repair guidance.

Fault Code	Problem Area	Test Pin Locations	Values	Check/Repair
6-0	Short circuit between two solenoid valve leads of right front inlet solenoid valve.	6 and 4, 5, 7, 21, 22, 23, 24	5.0-7.5 Ω	Check electrical resistance of affected valves and wiring at ECU connector and at modulator assembly plug. Repair or replace wiring as necessary and replace modulator if short is internal. Note: Fault code for both affected valves will be stored in memory.
6-1	Short circuit between two solenoid valve leads of right front outlet solenoid valve.	7 and 4, 5, 6, 21, 22, 23, 24	3.0-5.0 Ω	Check electrical resistance of affected valves and wiring at ECU connector and at modulator assembly plug. Repair or replace wiring as necessary and replace modulator if short is internal. Note: Fault code for both affected valves will be stored in memory.
6-2	Short circuit between two solenoid valve leads of left front inlet solenoid valve.	23 and 4, 5, 6, 7, 21, 22, 24	5.0-7.5 Ω	Check electrical resistance of affected valves and wiring at ECU connector and at modulator assembly plug. Repair or replace wiring as necessary and replace modulator if short is internal. Note: Fault code for both affected valves will be stored in memory.
6-3	Short circuit between two solenoid valve leads of right front outlet solenoid valve.	24 and 4, 5, 6, 7, 21, 22, 23	3.0-5.0 Ω	Check electrical resistance of affected valves and wiring at ECU connector and at modulator assembly plug. Repair or replace wiring as necessary and replace modulator if short is internal. Note: Fault code for both affected valves will be stored in memory.
6-4	Short circuit between two solenoid valve leads of right rear inlet solenoid valve.	4 and 5, 6, 7, 21, 22, 23, 24	5.0-7.5 Ω	Check electrical resistance of affected valves and wiring at ECU connector and at modulator assembly plug. Repair or replace wiring as necessary and replace modulator if short is internal. Note: Fault code for both affected valves will be stored in memory.
6-5	Short circuit between two solenoid valve leads of right rear outlet solenoid valve.	5 and 4, 6, 7, 21, 22, 23, 24	3.0-5.0 Ω	Check electrical resistance of affected valves and wiring at ECU connector and at modulator assembly plug. Repair or replace wiring as necessary and replace modulator if short is internal. Note: Fault code for both affected valves will be stored in memory.
6-6	Short circuit between two solenoid valve leads of left rear inlet solenoid valve.	21 and 4, 5, 6, 7, 22, 23, 24	5.0-7.5 Ω	Check electrical resistance of affected valves and wiring at ECU connector and at modulator assembly plug. Repair or replace wiring as necessary and replace modulator if short is internal. Note: Fault code for both affected valves will be stored in memory.
6-7	Short circuit between two solenoid valve leads of left rear outlet solenoid valve.	22 and 4, 5, 6, 7, 21, 23, 24	3.0-5.0 Ω	Check electrical resistance of affected valves and wiring at ECU connector and at modulator assembly plug. Repair or replace wiring as necessary and replace modulator if short is internal. Note: Fault code for both affected valves will be stored in memory.

6-8	Short circuit between solenoid valve and RCP relay 1.	11 and 4, 5, 6, 7, 21, 22, 23, 24	Open circuit	Check wiring harness at ECU connector to pump relay. Repair or replace as necessary.
6-9	Short circuit between solenoid valve and RCP relay 2.	12 and 4, 5, 6, 7, 21, 22, 23, 24	Open circuit	Check wiring harness at ECU connector to pump relay. Repair or replace as necessary.
6-12	Right front wheel speed signal missing.	17 and 34	Greater than 0.9 volts AC at one tire revolution per second.	Check for damaged tone wheel, incorrect sensor adjustment, excessive tone wheel runout (> .041"), excessive geared hub input bearing play and tire size mismatch. Repair or replace as necessary.
6-13	Left rear wheel speed signal missing.	18 and 35	Greater than 0.9 volts AC at one tire revolution per second.	Check for damaged tone wheel, incorrect sensor adjustment, excessive tone wheel runout (> .041"), excessive geared hub input bearing play and tire size mismatch. Repair or replace as necessary.
6-14	Left front wheel speed signal missing.	15 and 32	Greater than 0.9 volts AC at one tire revolution per second.	Check for damaged tone wheel, incorrect sensor adjustment, excessive tone wheel runout (> .041"), excessive geared hub input bearing play and tire size mismatch. Repair or replace as necessary.
6-15	Right rear wheel speed signal missing.	16 and 33	Greater than 0.9 volts AC at one tire revolution per second.	Check for damaged tone wheel, incorrect sensor adjustment, excessive tone wheel runout (> .041"), excessive geared hub input bearing play and tire size mismatch. Repair or replace as necessary.

24 Appendix – 6.5 TD MIL Fault Codes

The following is a list of the fault codes for the MIL on 1996 and newer trucks, excluding Alpha. **(Draft 2)**

24.1 Code Reading

Any standard OBD-II code reader will work to read these codes. The Torque app on Android or iOS with a Bluetooth or Wi-Fi OBD-II adapter can also read these codes.

24.2 Clearing Codes

Codes may also be cleared with standard OBD-II code readers or the Torque app.

24.3 MIL Codes

The following table contains a list of the [MIL](#) fault codes, their meaning and test/repair guidance.

Fault Code	Problem Area	Check/Repair
P0101	Mass Air Flow (MAF) System Performance	Check MAF connection and clean (do not touch the wire). MAF may require replacement. Over oiled K&N style filters can cause MAF problems.
P0102	MAF Sensor Circuit Low Frequency	Check MAF connection and clean (do not touch the wire). MAF may require replacement. Over oiled K&N style filters can cause MAF problems.
P0103	MAF Sensor Circuit High Frequency	Check MAF connection and clean (do not touch the wire). MAF may require replacement. Over oiled K&N style filters can cause MAF problems.
P0112	Intake Air Temperature (IAT) Sensor Circuit Low Voltage	
P0113	IAT Sensor Circuit High Voltage	
P0117	Engine Coolant Temperature (ECT) Sensor Circuit Low Voltage	
P0118	ECT Sensor Circuit High Voltage	
P0123	Accelerator Pedal Position (APP) Sensor 1 Circuit Performance	
P0122	APP Sensor 1 Circuit Low Voltage	
P0123	APP Sensor 1 Circuit High Voltage	
P0126	Insufficient ECT for Stable Operation	
P0182	Fuel Temperature Sensor Circuit Low Voltage	Fuel temperature has exceeded 102C/215F. Check sensor wiring is not shorted to ground.
P0183	Fuel Temperature Sensor Circuit High Voltage	Fuel temperature less than 18C/64F. Check sensor wiring is not open.
P0215	Engine Shut-Off Control Circuit	Potential failure of the fuel shutoff solenoid.
P0216	Injection Timing Control Circuit	
P0219	Engine Over-speed Condition	
P0220	APP Sensor 2 Circuit	
P0221	APP Sensor 2 Circuit Performance	
P0222	APP Sensor 2 Circuit Low Voltage	
P0223	APP Sensor 2 Circuit High Voltage	
P0225	APP Sensor 3 Circuit	
P0226	APP Sensor 3 Circuit Performance	
P0227	APP Sensor 3 Circuit Low Voltage	
P0228	APP Sensor 3 Circuit High Voltage	

P0231	Fuel Pump Feedback Circuit Low Voltage	
P0236	Turbocharger Boost System	Check wastegate solenoid operation. Check vacuum line for leaks. Check vacuum pump operating normally.
P0237	Turbo Boost Sensor Circuit Low Voltage	
P0238	Turbo Boost Sensor Circuit High Voltage	
P0251	Injection Pump Cam System	
P0263	Cylinder 1 Balance System	
P0266	Cylinder 2 Balance System	
P0269	Cylinder 3 Balance System	
P0272	Cylinder 4 Balance System	
P0275	Cylinder 5 Balance System	
P0278	Cylinder 6 Balance System	
P0281	Cylinder 7 Balance System	
P0284	Cylinder 8 Balance System	
P0300	Engine Misfire Detected	
P0301	Cylinder 1 Misfire Detected	
P0302	Cylinder 2 Misfire Detected	
P0303	Cylinder 3 Misfire Detected	
P0304	Cylinder 4 Misfire Detected	
P0305	Cylinder 5 Misfire Detected	
P0306	Cylinder 6 Misfire Detected	
P0307	Cylinder 7 Misfire Detected	
P0308	Cylinder 8 Misfire Detected	
P0335	Crankshaft Position (CKP) Sensor Circuit	
P0370	Timing Reference High Resolution	
P0380	Glow Plug Circuit Performance	This can sometimes be caused by a bad battery, a dead battery, loose battery connectors, or bad battery cables
P0400	Exhaust Gas Recirculation (EGR) Flow Malfunction	
P0401	EGR Flow Insufficient	
P0402	EGR Flow Excessive	
P0404	EGR System Performance	
P0405	EGR Sensor Circuit Low Voltage	
P0406	EGR Sensor Circuit High Voltage	
P0501	Vehicle Speed Sensor Circuit (VSS)	
P0567	Cruise Resume Circuit	
P0568	Cruise Set Circuit	
P0571	Cruise Brake Switch Circuit	
P0601	Internal Control Module Memory	
P0602	Control Module Programming	
P0604	Control Module RAM Check Sum	
P0606	PCM Internal Communications Interrupted	
P1125	Accelerator Pedal Position System	
P1191	Intake Air Duct Leak	
P1214	Injection Pump Timing Offset	
P1216	Fuel Solenoid Response Time Short	
P1217	Fuel Solenoid Response Time Long	
P1218	Injection Pump Calibration Circuit	
P1406	EGR Valve Position	

P1409	EGR Vacuum System Leak	
P1621	EEPROM Write	
P1626	Vehicle Theft Deterrent (VTD) Controller Serial Data Circuit	
P1627	A/D Performance	
P1630	Theft Deterrent PCM in Learn Mode	
P1631	Theft Deterrent Password Incorrect	
P1635	5 Volt Reference Low	
P1641	Malfunction Indicator Lamp (MIL) Control Circuit	
P1643	Wait To Start Lamp Control Circuit	
P1653	EGR Vent Solenoid Control Circuit	
P1654	Service Throttle Soon Lamp Control Circuit	
P1655	EGR Solenoid Control Circuit	
P1656	Wastegate Solenoid Control Circuit	
U1026	Loss of ATC Class 2 Co	

25 Appendix – 6.5 TD / 4L80E OBD2 PIDs

The following is a list of the PIDs available for the 6.5 TD / 4L80E

25.1 Overview

PIDs are the various locations within the ECU's to reference specific values. While some PIDs are writable this appendix will focus on reading the PID values to monitor additional engine/transmission states not available via dash gauges.

25.2 Reading PIDs

Reading the PIDs can be accomplished via a wired device such as a ScanGauge or via a Bluetooth or Wi-Fi OBD2 adapter and an application like Torque on a smartphone or tablet.

25.3 PID Values – 6.5 TD / 4L80E

The following table contains a list of currently known PID values for the 6.5 TD engine/ 4L80E transmission. PID values are listed in HEX per the "0x" prefix.

Name	Short Name	Mode & PID	Torque Equation	Min Value	Max Value	Units	Header	Notes
1-2 Shift Error	1-2 Shift Err	0x221997	A/40	0	70	secs	Auto	
1-2 Shift Time	1-2 Shift	0x221993	A/40	0	70	secs	Auto	
2-3 Shift Error	2-3 Shift Err	0x221998	A/40	0	70	secs	Auto	
2-3 Shift Time	2-3 Shift	0x221994	A/40	0	70	secs	Auto	
3-4 Shift Error	3-4 Shift Err	0x221999	A/40	0	70	secs	Auto	
3-4 Shift Time	3-4 Shift	0x221995	A/40	0	70	secs	Auto	
ABS Front Left Wheel Speed	ABS F-LW	0x224051	A*0.62137119	0	100	mph	ABS	
ABS Front Right Wheel Speed	ABS F-RW	0x224052	A*0.62137119	0	100	mph	ABS	
ABS Rear Left Wheel Speed	ABS R-LW	0x224053	A*0.62137119	0	100	mph	ABS	
ABS Rear Right Wheel Speed	ABS R-RW	0x224054	A*0.62137119	0	100	mph	ABS	
AC State	AC State	0x221100	LOOKUP(A:A:0='OFF':16='OFF':32='ON':48='ON')	0	255	AC State	Auto	
AC State Raw	AC State	0x221100	A	0	255	AC State	Auto	
Active Gear	Active Gear	0x2219f5	LOOKUP(A:A:0='1st':1='2nd':2='D':3='OD')	-5	8	gear	Auto	
Active Gear Raw	Active Gear	0x2219f5	A	-5	8	gear	Auto	
Barometric Pressure	Baro Pres	0x22119d	A*0.29529980164712	0	200	inHg	Auto	
Boost	Boost	0x22116d	((A)*(29/200)-12.8)	-5	20	psi	Auto	
Brake State	Brakes	0x221100	LOOKUP(A:A:0='ON':16='OFF':32='ON':48='OFF')	0	255	State	Auto	
Desired Idle Speed	Des Idle	0x221192	A*12.5	0	10000	rpm	Auto	
Desired Injection Timing	Des Inj Tim	0x2211d0	A/10	0	25	Degrees	Auto	
EGR Duty Cycle	EGR Duty	0x221171	A/2.55	0	100	%	Auto	
EGR Voltage	EGR Volt	0x22114b	A/51	0	70	volts	Auto	

Engine Load	Load	0x220004	$(A/255)*100$	0	255	%	Auto	
Engine RPM	RPM	0x22000c	$(A*256+B)/4$	0	8192	rpm	Auto	
Engine Run Time	Run Time	0x2211a1	$((A*256)+B)/60$	0	999	mins	Auto	
Engine Temperature	Eng Temp	0x220005	$((A-40)*(9/5))+32$	0	200	°F	Auto	
Engine Temperature at Start	Start Temp	0x22116f	$((A-40)*(9/5))+32$	0	255	°F	Auto	
Fuel Rate	Fuel Rate	0x221222	$(A*(10/32))$	0	200	mm3	Auto	
Fuel Temp	Fuel Temp	0x22114c	A	-40	304	°F	Auto	
Ignition Voltage	Ign Voltage	0x221141	A/10	0	20	Volts	Auto	
Injection Timing	Inj Timing	0x2211d3	A/10	0	25	Degrees	Auto	
Intake Air Temperature	Intake Temp	0x22000f	$((A-40)/2)*(9/5)+32$	-40	150	°F	Auto	
Latest Shift Time	Latest Shift	0x221992	A/40	0	70	secs	Auto	
Latest Time Error	Latest Shift Err	0x221996	A/40	0	70	secs	Auto	
TDC Offset	TDC Offset	0x221223	$(A*(44/5))$	0	360	Degrees	Auto	
Throttle at Idle	Idle Throt	0x221107	$(A&128)/128$	0	1	Bit	Auto	
Torque Converter Slip Speed	TCC Slip	0x221991	$((signed(A)*256)+B)/8$	0	10000	rpm	Auto	
Transmission Input Speed	Trans Inp	0x221941	$((A<8)+B)*.125$	0	8000	rpm	Auto	
Transmission Output Speed	Trans Out	0x221942	$((A<8)+B)*.125$	0	8000	rpm	Auto	
Transmission Temperature	Trans Temp	0x221940	$((A-40)*(9/5))+32$	0	250	°F	Auto	
Vehicle Speed	Speed	0x22000d	$(A*0.62137119)$	0	255	mph	Auto	
VTD Fuel Dis on/off	VTD On Off	0x221106	LOOKUP(A&1:A&1:0='of f':1='on')	0	1	Bit	Auto	
VTD Fuel Disable	VTD Fuel Dis	0x221106	A&1	0	1	Bit	Auto	
Waste Gate Open	WGate Open	0x221174	$(A/255)*100$	0	100	%	Auto	

26 Appendix – Supplier Contacts

The following is a list of companies which can supply parts and accessories for Hummers.

26.1 Adventure Accessories

Company: Adventure Accessories / Lynch Hummer
Contact: Jim

Address: 736 Goddard Ave
Chesterfield, MO 63005
United States of America

Website: <http://adventureaccessories.com>

E-Mail: sales@adventureaccessories.com

Voice: [+1.800-486-6379](tel:+18004866379)
Voice: [+1.636.777.7600](tel:+16367777600)
Text: n/a
Fax: n/a

26.2 American Outfitters

Company: American Outfitters
Contact:

Address: 11659 Riverside Drive Ste 171
Lakeside, CA 92040
United States of America

Website: <http://4x4hummer.com/>

E-Mail: *n/a*

Voice: [+1.619.390.4268](tel:+16193904268)
Text: n/a
Fax: n/a

26.3 Crazy Canucks 4x4

Company: Crazy Canucks 4x4
Contact: Roy Selvey

Address: 97 Monteith Avenue
Stratford, Ontario, Canada
N5A 2P6

Website: <http://www.crazycanucks4x4.com/>

E-Mail: sales@crazycanucks4x4.com

Voice: [+1.519.272.1761](tel:+15192721761)
Text: n/a
Fax: n/a

26.4 DC Auto

Company: DC Auto
Contact: Darrell

Address: Denver
United States of America

Website: <http://www.dcautoshop.com/>

E-Mail: n/a

Voice: [+1.303.351.1987](tel:+13033511987)
Text: n/a
Fax: n/a

26.5 Eastern Surplus

Company: Eastern Surplus & Equipment Company
Contact: Steve

Address: 5825 Tacony St,
Philadelphia, PA 19135
United States of America

Website: <https://www.easternsurplus.net/>

E-Mail: steve@easternsurplus.net

Voice: [+1.855.332.0500](tel:+18553320500)
Text: n/a
Fax: n/a

26.6 GT Custom Automotive Products

Company: GT Custom Automotive Products
Contact: Tom

Address: P.O. Box 370548
Las Vegas, NV 89137
United States of America

Website: <http://www.hummerproducts.com/>

E-Mail: hummerproducts@cox.net

Voice: [+1.949.394.1578](tel:+19493941578)
Text: +1.949.394.1578
Fax: +1.702.804.9921

26.7 HLine Conversions

Company: HLine Conversions
Contact: Johnathan Goodwin

Address: 6767 N. Meridian Ave.,
Wichita, KS 67204-1105
United States of America

Website: <https://hlineconversions.com/>

E-Mail: n/a

Voice: [+1.316.650.8516](tel:+13166508516)
Text: n/a
Fax: n/a

26.8 HummerCore

Company: Hummer Core
Contact:

Address: 33012 Calle Perfecto
San Juan Capistrano CA 92675
United States of America

Website: <https://www.hummercore.com/>

E-Mail: Hummercore@cox.net

Voice: [+1.949.422.5113](tel:+19494225113)
Text: n/a
Fax: n/a

26.9 Hummer Glass

Company: Hummer Glass
Contact: Pavel

Address: Russia

Website: <https://hummerglass.com/>

E-Mail: hummer.glass.h1@gmail.com

Voice: n/a
Text: n/a
Fax: n/a

26.10 Hummer Parts Club

Company: Hummer Parts Club

Contact:

Address: 700 Park Center Drive
Hollister, CA 95023
United States of America

Website: <https://www.hummerpartsclub.com/>

E-Mail: n/a

Voice: [+1.831.630.5730](tel:+18316305730)

Text: n/a

Fax: n/a

26.11 Hummer Parts Guy

Company: Hummer Parts Guy

Contact: David Oberer

Address: 1359 Planeview Drive
Suite 1
Oshkosh, Wisconsin 54904
United States of America

Website: <https://HummerPartsGuy.Com>

E-Mail: Sales@HummerPartsGuy.Com

Voice: [+1.920-216-6898](tel:+19202166898)

Text: n/a

Fax: +1.866-378-5375

26.12 Hummer Parts Pro

Company: Hummer Parts Pro / SAX Express

Contact:

Address: 1975 Rabbit Branch Road,
Cropwell, AL 35054
United States of America

Website: <https://hummerpartspro.com/>

E-Mail: sales@hummerpartspro.com

Voice: [+1.205.863.0314](tel:+12058630314)

Text: n/a

Fax: n/a

26.13 KasCar

Company: KasCar Real4wd

Contact:

Address: One Kascar Plaza
Greenville, South Carolina, 29605-6307
United States of America

Website: <https://real4wd.com/>

E-Mail: sales@kascar.com

Voice: [+1.864.422.0370](tel:+1.864.422.0370)

Text: n/a

Fax: +1.864.422.1707

26.14 Leroy Diesel

Company: Leroy Diesel

Contact: Leroy

Address: Houston, Texas
United States of America

Website: <http://leroydiesel.com>

E-Mail: info@leroydiesel.com

Voice: [+1.713.408.0423](tel:+1.713.408.0423)

Text: n/a

Fax: n/a

26.15 Plan B Supply

Company: Plan B Supply

Contact:

Address:
United States of America

Website: <https://www.planbsupply.com/>

E-Mail: n/a

Voice: [+1.801.675.4321](tel:+1.801.675.4321)

Text: n/a

Fax: n/a

26.16 Rubber Duck 4x4

Company: Rubber Duck 4x4

Contact: Travis

Address: 1622 Smith Road
Hamilton, OH 45013
United States of America

Website: <http://rubberduck4x4.com>

E-Mail: sales@rubberduck4x4.com

Voice: [+1.513.889.1735](tel:+1.513.889.1735)

Text: n/a

Fax: n/a

26.17 Spartan Offroad

Company: Spartan Offroad

Contact:

Address: 13712 66th Street N
Largo, FL 33771
United States of America

Website: <https://www.spartanoffroad.net/>

E-Mail: SpartanOffroad@aol.com

Voice: [+1.727.244.9235](tel:+1.727.244.9235)

Text: n/a

Fax: n/a

26.18 Tustin GMC

Company: Tustin GMC

Contact:

Address: 1 Auto Center Dr
Tustin CA 92782
United States of America

Website: <https://www.tustingmc.com/>

E-Mail: n/a

Voice: [+1.866.362.9967](tel:+1.866.362.9967)

Text: n/a

Fax: n/a

26.19 Used H1

Company: Used H1

Contact: Blair Outlan

Address:

Website: <https://usedh1.com/>

E-Mail: blair@usedh1.com

Voice: [+1.901-378-8877](tel:+19013788877)

Text: n/a

Fax: n/a

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