

Troubleshooting

No data.

This condition is easily detected with the “bouncing ball” icon on the main drive screen. If the icon in the top left corner does not move, then the VMS is not receiving data from the engine or transmission. The most likely culprit is an open circuit on either data link wire. A short circuit is also possible, or the data link pair may be switched.

If the icon moves, but no engine data shows, then the VMS is receiving transmission data but not engine data. This would indicate an open circuit between the engine and transmission. The reverse may also happen - the VMS may receive engine data but no transmission data.

Unit stays on full-time.

Although most chassis switch the chassis diagnostic power with the key and ECM, a few such as Monaco Roadmaster chassis power that circuit all the time. A switch must be installed on the power circuit to the VMS to let the user turn the VMS off.

No transmission status information.

Allison World Transmissions built before 1998 did not broadcast their shift status, and the VMS can only display the temperature and shaft speed for these transmissions. These units are easily identified - the shift console for these older units display both the gear selected and the gear attained. The newer units only show the gear selected.

Inaccurate Torque, Horsepower data.

The correct engine must be selected for the VMS to properly calculate the torque and horsepower output. Press [PROG] until the VMS Settings screen appears, and select the appropriate engine using the rotary selector. Also, note that at very low rpms the VMS will display zero horsepower and torque, since the output can't be accurately calculated at very low speeds.

Theft Deterrent, Engine Adjustments do not work.

First, make sure this is a Caterpillar engine - Cummins and Detroit Diesel do not currently support these features. These features require up-to-date ECM software from Caterpillar, and also must be enabled by a Caterpillar mechanic using a service tool. See the Engine Notes on page 7.

For more information, call SilverLeaf Electronics at (888) 741-0259.



VMS 200 EL™

Installation Guide



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Compatible Engines and Chassis

Most of the data the VMS 200 displays comes from the ECM present in an electronic diesel engine. The VMS 200 requires a link to an ECM to be useful. It is not possible to use the VMS 200 with a gasoline engine, a mechanical diesel, or the automotive diesel engines common in pickup trucks.

The VMS 200 supports all engines currently used for production motorhomes. This includes the following:

Caterpillar 3126, 3126B	250, 275, 300, and 330 hp
Caterpillar C-10	385 hp
Caterpillar C-12	425, 455 hp
Cummins ISB	275 hp
Cummins ISC	300, 330, 350 hp
Cummins ISM, M-11	450, 500 hp
Detroit Diesel Series 60	500 hp

This list is always expanding. Call SilverLeaf for more information on engines not covered.

The VMS 200 also supports the Allison MD3060 and HD4060 World Transmissions. Transmissions with the WTECIII/V8 (1998-present) support more functions than the older versions.

Note: There are a lot of late model Cummins C-8.3 engines built in 1997 and 1998 whose owners may have been led to believe are electronic. The engines seem identical to the newer ISC. Check for the presence of the diagnostic plug before beginning installation.

Installation Overview

Installing the VMS 200 EL is straightforward. Follow these steps for best success:

1. Check the engine and chassis notes for special instructions regarding your coach.
2. Locate the six- or nine- pin round engine diagnostic connector under the dash, or locate an alternative. Connect the VMS to the plug using the proper harness and verify that the plug works before continuing.
3. Follow the directions for an in-dash or under/over dash installation given in this guide. Make sure you have all necessary parts before beginning the physical installation.
4. Connect the wire harness to the VMS and the diagnostic plug under the dash. Connect the headlight lead to the headlight switch using a spade or other type of splice.
5. Start up the VMS and set the engine and chassis configuration and set the clock. Check for proper functioning.

Engine Notes

Caterpillar engines support additional functions that are not present in other engines. However, these features may have to be activated after the VMS is installed. The special features are the Idle Adjustments, Cruise Mode Selection, and AntiTheft Lock.

If after installation any of these features do not work properly, then the problem almost certainly is simply that they have not been enabled in the engine software. A Cat mechanic can enable these features using his diagnostic equipment, usually free or for a nominal charge.

The Cat mechanic should follow this procedure:

1. If the engine software has not been updated recently, download the latest software. The software should be at least as recent as October 1998. Earlier versions had bugs that may prevent the VMS from working.
 2. With the diagnostic tool, activate the Dash Display Access Parameters, and the Theft Deterrent.
 3. Set the Theft Deterrent Password to "0000" (all zeros).
- These features are not relevant to Cummins or Detroit Diesel engines.

Transmission Notes

In 1998, Allison Transmission introduced their WTECIII/V8 electronics package for the MD3060, MD3066, and HD 4060 World Transmissions. The earlier versions featured a keypad that displayed Gear Selected and Gear Attained. The new keypad shows only Gear Selected.

The VMS 200 properly displays Gear Selected and Gear Attained only on the *new* transmissions. On older transmissions the VMS will show "X", indicating that it does not know the current transmission status. Other status information will also be missing.

Chassis Notes

Monaco: Monaco does not wire the diagnostic plug power to the key-switched engine power. The line is always hot. You must install a switch on the power circuit between the diagnostic plug and the VMS.

Spartan: Spartan uses a nine-pin diagnostic plug instead of the more common six-pin plug. This harness is available from SilverLeaf.

1996 Beaver, Many Country Coach: These chassis do not have an engine diagnostic plug under the dash. These must be manually wired. Power and ground can be drawn from other sources in the dash area. The data wires can be tapped from the Transmission diagnostic plug under the dash. See the section on Wiring for details.

Setting Clock and Options

The final step in the installation is setting the clock and VMS options. The VMS requires the following information before it is fully functional:

1. The clock and calendar must be properly set.
2. The correct engine must be selected.
3. The appropriate chassis and OEM logo must be selected.

In addition, the trip and diagnostic data may need to be cleared, if during testing it has picked up inaccurate data.

To set the clock and calendar, press the [PROG] button until the Clock Set screen appears. Use the rotary selector to highlight the word "TIME", then press the knob to begin setting the time. Rotate the knob to set the hour, press it to go on to minutes, and repeat the process. The date is set in the same manner.

To set the engine, press the [PROG] button until the VMS Settings screen appears. Use the rotary selector to highlight the Engine Type, and again use the selector to set the engine.

To set the chassis and OEM logo, press and hold the [TRIP] and [SPEC] buttons simultaneously for three seconds. A "secret" screen will appear, which will include provisions for clearing the trip and diagnostic records, and selecting the chassis and OEM logo. Use the rotary selector to update these items as appropriate for the coach. After setting these items, turn the unit off and on to force the unit to reset.

Detailed instructions regarding the operation of the VMS 200 EL are included in the Operators Manual.

Parts Required

The following parts are generally required and are available from SilverLeaf:

- (1) VMS 200 EL.
 - (1) Wire Harness. For most chassis, the six-pin diagnostic plug is required. Spartan chassis and some others require a nine-pin plug.
 - (1) Mounting Kit. There are two kits - In-Dash and Over/Under Dash.
- In addition, screws or bolts may be required for securing the bracket in an over or under dash installation. And some method of splicing a wire to the headlight switch is also required.

In Dash Installation

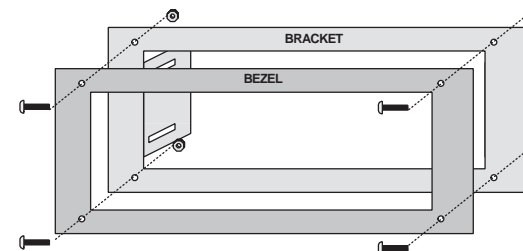
If sufficient room is available in the dash, an in-dash installation provides the best looking and most convenient installation. In-dash installation requires the following, which is available from SilverLeaf in a kit.

- (1) Aluminum mounting bracket.
- (1) Black textured faceplate.
- (4) Black mounting screws with locknuts.
- (4) Machine screws.
- (1) Wire harness (see Wiring).

In addition installation will require a drill, a marker, and an appropriate tool for cutting the dash material.

Follow these steps:

1. Use the plastic faceplate as a template to mark the mounting holes and dash cutout area.
2. Drill the four mounting holes.
3. Cut the main cutout area slightly larger than the area you marked with the faceplate. The bezel will cover the cut, so perfection is not required.
4. Place the aluminum mounting bracket *behind* the dash. Make sure the bracket is right-side up.
5. Place the faceplate in front of the dash, and bolt the bezel, dash, and mounting bracket together with the four screws and locknuts. The faceplate and bracket should sandwich the dash panel.



Sandwich the dash between the bracket and bezel.

6. Slide the VMS 200 into place, and secure it with the four machine screws to the slots in the bracket. The bracket slots allow some flexibility in position of the VMS.

7. Plug in the harness to the VMS and the diagnostic plug.

8. Continue with steps 4 and 5 on page 2.

Under/Over Installation

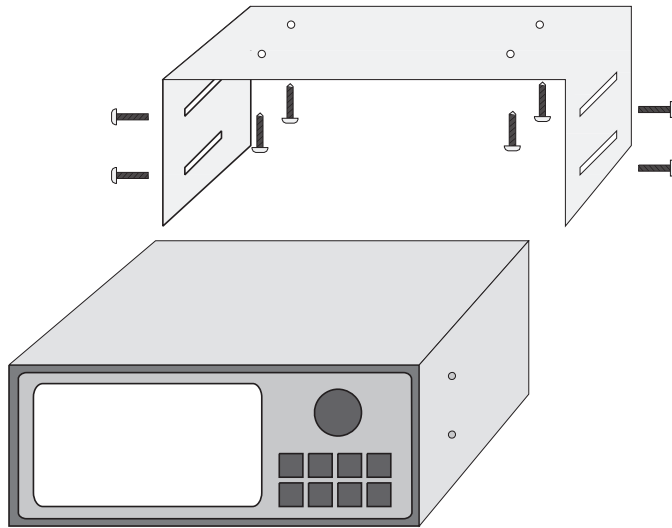
If sufficient room is not available in the dash, the VMS can be installed under or over the dash or nearby cabinet. The bracket for this type of installation is available from SilverLeaf in a kit, which contains the following items:

- (1) Aluminum mounting bracket.
- (4) Machine screws.
- (1) Wire harness (see Wiring).

In addition, mounting will require screws or bolts for fastening the bracket to the dash or cabinet.

Follow these steps:

- 1. Place the mounting bracket in the location desired.
- 2. Secure the bracket with appropriate screws or bolts. The type of fastener will depend on the type of material.
- 3. Insert the VMS into the bracket and secure with the machine screws.
- 4. Plug in the harness to the VMS and the diagnostic plug.
- 5. Continue with steps 4 and 5 on page 2.



Wiring

For almost all vehicles, wiring the VMS is straightforward. The VMS requires just five wires to function, and four are supplied by the diagnostic plug under the dash. For most coaches, wiring the VMS requires just three steps:

- 1. Use the VMS harness to connect the VMS to the diagnostic plug.
- 2. Find a lead or unused spade in the headlight switch that is active when the headlights are on. (Use a voltmeter or indicator light to find an appropriate lead.)
- 3. Splice or connect the Headlight lead on the wire harness to the lead you found on the headlight switch.

If a diagnostic plug is not available, the VMS can still be installed (assuming the engine is electronic.) Cut the diagnostic plug end off the wire harness, and manually connect the wires as follows:

- 1. The power lead must go to a source of 12VDC power, preferably switched to the key. If it is not switched on with the key, then a switch of some sort must also be installed to allow the VMS to be turned off. Note that the VMS does not require any power whatsoever when it is off.
- 2. The ground lead must go to an appropriate ground.
- 3. The data wires (the twisted pair) must go to the corresponding data link wires on the chassis. In most cases there will be a diagnostic plug for the transmission located near the steering column. The pinout for this plug is given in the diagram, and the VMS data wires can be spliced into the data wires on this plug.

