
VMS 120 LC

MultiCenter™

For Caterpillar or Cummins

Owner's Manual
Version 1.0


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Contents

Getting Started	3
Introducing the VMS 120 LC™ MultiCenter™	
Buttons and Dials	
Visibility	
Operating Modes	
Drive Information.....	5
Drive Mode	
Drive Status	
ETA Mode	
Clock/Calendar/Alarm	
Scanning	6
Using Scan and Watch Modes	
Parameters Scanned	
Trip Information.....	8
Main Trip Mode	
Alternate Trip Mode	
Trip History Mode	
Diagnostic Modes.....	9
Engine Diagnostic Mode	
Engine History Mode	
Information Modes	10
Engine Status Mode	
Maintenance Manager	
Pre-Drive Checklist	
Program Modes.....	12
Clock Set	
VMS Preferences	
Scan Preferences	
Engine Programming	
Special Modes.....	14
Theft Deterrent	
Limited Warranty.....	15

Getting Started

Introducing the VMS 120 LC™ MultiCenter™

Congratulations on your purchase of the VMS 120 LC™ MultiCenter™. You now have at your disposal the most sophisticated power train monitor available on the market today. The VMS 120 LC™ communicates with your engine and transmission to provide you with up-to-the-second performance and diagnostic information, and it allows you to access the special features of your engine previously reserved for mechanics with their expensive tools.

The VMS 120 LC™ accomplishes this using a single digital data link to the engine and transmission. Much of the information the VMS 120 LC™ displays is acquired through sensors attached to the engine and transmission Electronic Control Modules (ECMs). These ECMs pass the information along to the VMS 120 LC™ through this data link. In addition, the ECMs also provide data on their internal workings - data that you can't get from conventional sensors. Digital technology allows all this data to pass through a single pair of wires with absolute accuracy.

Some of the data displayed by the VMS 120 LC™ duplicates your dash gauges, and you may wonder which is more accurate. Analog gauges, such as your speedometer, are only accurate to within a few percent. This does not mean your gauge is faulty, since the discrepancy is common to all analog devices. Your VMS 120 LC™, however, will faithfully display the sensor readings exactly. Of course, it can only be as accurate as the sensor itself. If there is a discrepancy between the VMS 120 LC™ and your dash gauge, consider the VMS 120 LC™ to be the more accurate.

If your VMS 120 LC™ is properly wired, it should come on when you turn the ignition key to "run". It should then display a logo for a few seconds. During this time it is initiating communications with the engine and transmission. Finally, it will begin displaying performance information, cycling through a list of parameters every few seconds. All this happens automatically, and there is no need to turn the unit on, or touch a button.

Buttons and Dials

The face of the VMS 120 LC™ has eight buttons and a rotary dial. The buttons are labeled DRIVE, SCAN, TRIP, DIAG, INFO, PROG, SPEC, and CLEAR. The rotary dial can also be pressed, and this manual will refer to pressing the dial as pressing SELECT. The dial can be turned left or right an unlimited amount. You should feel a gentle clicking as you do so.

The DRIVE, SCAN, TRIP, INFO, PROG and SPEC keys are used to select "modes" or screens, and in almost every situation they accomplish the exact same feat. The CLEAR and SELECT keys, however, can have different effects depending on the operating mode of the VMS 120 LC™. Generally, CLEAR will reset values to zero, while you will press SELECT to indicate your choice from a list or to change a setting.

Lights

There are three LED's located below the dial. The green LED will turn on if the unit is receiving power and data from the engine. If it is flashing, the VMS 120 LC™ is not receiving data. The yellow LED will light up when the engine is in the locked state due to the theft deterrent feature. When the red LED is solid, one or more designated parameters has reached an alarm state. These parameters are Battery Voltage, Coolant Temperature, Oil Temperature, Oil Pressure and Transmission Oil Temperature. A flashing red light signifies that the VMS 120 LC™ has received a new diagnostic code from the engine. **Note:** *The flashing red diagnostic light will always override the solid red light.*

Operating Modes

The default mode: SCAN is just one mode in which the VMS 120 LC™ can operate. Each mode provides different functions. Some modes provide information, others allow you to change settings for the VMS 120 LC™, the engine, or both.

You can maneuver from mode to mode using the DRIVE, SCAN, TRIP, DIAG, INFO, PROG, and SPEC keys. The modes are divided into seven groups, one for each key. Pressing a key selects the first mode in that group. Pressing it again selects the next mode in the group, and so on. The different modes are as follows:

<i>Drive</i>	<i>Function</i>
Transmission	Displays transmission status.
ETA	Displays estimated trip information.
<i>Scan Group</i>	<i>Function</i>
Scan	Displays performance information, cycling through its list of parameters.
Watch	Displays performance information, staying on one parameter.
<i>Trip Group</i>	<i>Function</i>
Main Trip	Displays information for the main trip and sets destination, in miles.
Alternate Trip	Displays information for an alternate trip.
Trip History	Displays previous trips - distance, time and mpg data.
<i>Diagnostic Group</i>	<i>Function</i>
Engine Diagnostics	Displays current engine diagnostics information.
Engine History	Displays engine diagnostics history information.
<i>Information Group</i>	<i>Function</i>
Engine Status	Displays engine information.
Maintenance Manager	Tracks maintenance intervals.
Pre-Drive Checklist	Displays a list of items to check before driving the coach.
<i>Program Group</i>	<i>Function</i>
Clock Set	Allows setting of clock, calendar and alarm.
VMS Preferences	Allows setting of various VMS 120 LC™ options.
Scan Preferences	Allows selection of parameters for Scan mode.
Engine Programming	Allows setting of certain engine options. (CAT engines only)
<i>Special Group</i>	<i>Function</i>
Theft Deterrent	Accesses the engine theft deterrent.





Drive Information

Drive Mode

Pressing DRIVE will put the VMS 120 LC™ into the Drive Mode. This screen displays various transmission information. The information on this screen can not be changed nor is it affected by any other button, except the rotary knob. By turning the rotary knob from the Drive Status screen you will be able to dim the brightness of the display.

Drive Status

There are two numbers in the center of the screen that represent the transmission status. The first number is the selected gear and the second number is the attained gear. There are three other output readings from the transmission. Below the transmission status is the transmissions error status: inhibited, do not shift or shift ok.

In the upper left corner of the screen is an icon with the letter M denoting the transmission mode. The icons for mode off and mode on are  and , respectively. In the upper right corner is an icon representing the torque converter status. The icons for converter and lockup are  and , respectively.

ETA Mode

Pressing the DRIVE key again puts the VMS 120 LC™ into ETA mode. By turning the rotary knob, you may dial in a distance up to 9999 miles. Pressing SELECT quickly adds 100 to the number. The VMS 120 LC™ will calculate an Estimated Time of Arrival based on your average road speed during the current trip. (If you have traveled less than 10 miles, it assumes an average speed of 50 mph.) The VMS 120 LC™ will also calculate the estimated fuel needed to complete the trip. The gallons to go (GTG) calculation is based on the average fuel consumption for the trip (the VMS 120 LC™ assumes an average of 9.1 mpg for the first 20 miles).

Clock/Calendar/Alarm

The clock and calendar will be displayed as the last screen of most buttons. The Clock provides the current time, day and date. It also displays the alarm time and setting. There are no adjustments available in this mode, except the display brightness. Like the Drive Status screen, the clock screens allow you to manually change the brightness of the display by turning the rotary knob. However, this only changes the brightness of the display until the VMS is turned off. When it is turned on again the VMS 120 LC™ will reset to its brightest mode.

Scanning

Using Scan and Watch Modes

After initializing itself, the VMS 120 LC™ enters Scan mode automatically. The VMS 120 LC™ will cycle through a group of parameters - mostly engine information and some transmission data. It will display the parameter, wait a few seconds, then go to the next parameter in the cycle.

Each item can be displayed in one of two ways. It can display either just a very large number, or a graphic display in which the number is smaller. In the latter case on the right side of the screen will be a moving graph that shows how the parameter has varied over time. This is useful for monitoring changing parameters, such as temperatures while climbing difficult terrain, or horsepower while shifting gears. By pressing the SELECT button (i.e. the rotary knob), you can toggle from one display to the other. The VMS 120 LC™ will remember your preferences for that parameter.

Pressing the SCAN button toggles from Scan to Watch mode. In Watch mode, the display stays on one parameter instead of cycling every few seconds. This is useful for watching an important item, for example, coolant temperature on a hot day in the hills. In Watch mode, turning the rotary knob lets you select the parameter to watch. (The parameters are arranged in alphabetical order.) When in Scan mode, turning the knob automatically switches the VMS 120 LC™ to Watch mode.

A small icon in the upper right corner of the screen indicates which mode the VMS 120 LC™ is in. A *stop sign* indicates Watch mode, an *arrow* indicates Scan mode. Remember, pressing the SCAN key lets you change from one to the other.

Parameters Scanned

The following is a list of parameters displayed by the VMS 120 LC™, and notes regarding the source of the data. By default, not all of these items are displayed in Scan mode. You can select parameters to display or hide in the Scan Setup mode in the Program group.

<i>Accelerator Position:</i>	The position of the driver's foot on the accelerator pedal. This is the raw information used by the engine to determine the fuel rate, and is provided for troubleshooting purposes. Note: When the cruise control is in use, the accelerator position is ignored and this parameter may read incorrectly.
<i>Battery Volts:</i>	The DC power available on the chassis bus. Sent by the engine ECM.
<i>Cruise Set Speed:</i>	The speed for which the cruise control is set. Determined by the engine ECM software.
<i>Engine Coolant Temperature:</i>	The temperature of the engine coolant. Provided by the engine ECM from a sensor. Note that this is the value used by the engine to determine whether it should derate or shut down on a hot day.
<i>Engine Load:</i>	The percent of the capability of the engine being used at the moment. This is an internal engine parameter, and is not based on a sensor but on the engine ECM's analysis of current performance.

<i>Fuel Injection Pressure:</i>	The pressure of the HEUI fuel injection system, controlled by the engine ECM.
<i>Horsepower:</i>	A unique feature of the VMS 120 LC™. Calculated based on known performance characteristics of the engine and the current values of certain parameters. This is a calculated value, accurate within a few percent under normal conditions, but engine or sensor problems will throw this calculation off. It is not intended to replace a true dynamometer test. Note that for this function to work properly, the correct engine must be selected in the VMS Preferences mode, in the Program group.
<i>Instantaneous MPG:</i>	Reported by the engine ECM, and calculated from its internal fuel rate and road speed. This tends to over-react to changes in engine load and accelerator position, and does not provide an accurate gauge of fuel usage over an entire trip.
<i>Intake Manifold Temperature:</i>	The intake temperature reported by the engine ECM from a sensor. This is an important item to watch on a hot day.
<i>Rolling MPG:</i>	Another unique feature of the VMS 120 LC™. The VMS 120 LC™ calculates a moving average based on your fuel efficiency over the past minute. This makes it much more accurate for estimating fuel economy over the course of a trip, and lets you quickly determine your best operating range. It takes about a minute to collect enough data to be accurate. It does not include fuel used at very low speeds, and thus will overestimate mpg in stop-and-go driving. A worthwhile experiment is to use this feature along with your cruise control to determine your best traveling speed. Remember to maintain your speed for at least one minute to get the most accurate results.
<i>Speed:</i>	Provided by the engine ECM, and also more accurate than the analog gauge in your dash.
<i>Tachometer:</i>	Provided by the engine ECM, and also more accurate than the analog gauge in your dash.
<i>Torque:</i>	Like Horsepower, this is calculated by the VMS 120 LC™ based on its knowledge of engine performance and the values of certain other parameters. Under normal conditions this is an accurate gauge of engine performance, although it can be thrown off by certain engine and sensor problems.
<i>Transmission Oil Temperature:</i>	The temperature of the transmission oil, provided by the transmission ECM from a sensor.
<i>Turbo Boost Pressure:</i>	Provided by the engine ECM from a sensor.

Trip Information

Main Trip Mode

Pressing TRIP puts the VMS 120 LC™ into Trip mode. This displays the distance traveled, average speed, elapsed time and fuel used since the last time the trip data was cleared. (In a new unit, this will mean the life of the engine.) The VMS 120 LC™ calculates the miles per gallon during the trip, as well. The elapsed time does not include idle time, but the fuel used does. Therefore idling the engine will affect the mpg, but not the average speed. Pressing CLEAR resets the trip values all to zero, and saves the trip information in the trip history.

The trip time, fuel, and distance information are all rounded off, and therefore for very short trips the results can be very inaccurate. Because of this rounding, do not pay much attention to the data until at least 100 miles have been traveled.

Alternate Trip Mode

Pressing TRIP again puts the VMS 120 LC™ into the Cumulative Trip mode. This mode allows you to track a “total” trip, as well as the trip already mentioned. This trip is completely independent of the main trip. You can reset it at any time by pressing CLEAR. A typical use of this feature is to use the standard Trip function to track mileage for each tank of fuel, and use this function to track mileage over an extended trip or season.

Trip History Mode

Pressing TRIP one more time puts the VMS 120 LC™ into Trip History mode. It displays the performance of all your trips - miles traveled, fuel used, average speed, and miles per gallon. Each time you clear a trip, it puts that trip in the top slot and pushes the rest down the screen. Note that on short trips there may be some apparent inaccuracies because of rounding.

Turning the rotary knob allows you to scroll through the list of trips in the history. Pressing CLEAR or SELECT has no effect in this mode. Go back to the Trip mode to reset the current trip and add it to the history.

Diagnostic Modes

Engine Diagnostic Mode

One of the most powerful features of the modern electronic engines is their self-diagnostic capabilities. The engine ECM is capable of detecting a myriad of problems, both potential and actual, and it can report them to a service computer or the VMS 120 LC™. This mode allows you to view these codes and read what they mean in plain English.

After pressing the DIAG button, if all is well with your engine you will see “No Active Faults” displayed. This screen displays all new faults sent by the engine since the engine has been running (with a maximum of six). These faults are sent in the form of numerical codes. The VMS 120 LC™ displays the codes in conjunction with the number of times the fault has occurred (an X indicates the code has occurred ten or more times) and an English translation of the codes. Pressing CLEAR will clear the codes from this section and this section only. Clearing the engine diagnostics will also turn off the flashing red LED.

Engine History Mode

Pressing the DIAG key again allows you to view the reported diagnostic history. For an engine with no history of faults you will see “No Faults Recorded”. If the VMS 120 LC™ has recorded some faults, the information shown on the first line is the date, engine miles and code at time of fault. The second line records the English translation of the fault code. As a new fault is recorded in the history, it then becomes the first set in the list.

Information Modes

Engine Status Mode

Pressing INFO selects the Engine Information mode. This displays certain pieces of engine and VMS 120 LC™ data that were not necessary to view in the Scan and Watch modes. Use the rotary knob to scan through the list of items in this mode. The items displayed are:

<i>Total Hours and Fuel</i>	This indicates the total engine hours and fuel used since the engine was built.
<i>Total Miles</i>	This indicates the total engine miles since the engine was built. Note that this feature can take the place of your regular odometer if it has been replaced or is malfunctioning.
<i>Net MPG</i>	The net mpg is a calculation of the mpg without accounting for fuel used while idling.
<i>Hours and Fuel Idle</i>	This feature indicates the total hours and fuel spent while idling since the engine was built.
<i>Engine Version</i>	This is how the engine identifies itself. This will be a string of characters of no particular meaning to anyone but a mechanic who knows the code. However, if you have to call the engine service hot-line, have this data handy.
<i>Cruise Status</i>	This indicates the current status of your cruise control. This will show whether the cruise control is active, and whether the various switches (set, resume, brake) are currently on. This can be used for troubleshooting a malfunctioning cruise control. The following are codes that may appear: AC - Accelerator CL - Clutch DE - Decelerator ST - Set BR - Brake CR - Cruise RE - Resume
<i>Cold Mode, Speed Limit, RPM Limit and Idle Shutdown</i>	All four of these features are preset by the engine manufacturer, but can be changed by a mechanic.

Maintenance Manager

Pressing INFO again allows you to monitor your maintenance status. The VMS 120 LC™ tracks ten sets of maintenance procedures, helping you keep track of what services need to be done on your coach. By default, the first interval that appears is the Key Inspections, due every 3 months or 2500 miles. For each set of service procedures, the VMS 120 LC™ tracks the last time you indicated the procedures were performed and automatically calculates the next due

service. The VMS 120 LC™ then displays a list of recommended procedures for that maintenance interval.

Turning the rotary knob navigates you through each set, one by one. Notice that there are multiple screens for maintenance sets due every 12, 18 and 24 months. This was done so you can track these procedures separately. For example, due every 12 months or 10,000 miles are annual inspections, annual lube/filter, engine maintenance and tire rotation.

To indicate that you have performed a maintenance interval, press CLEAR with the service interval highlighted. Pressing CLEAR will automatically insert the current date and engine miles. The date and mileage of the next due service will be calculated for you. To adjust the date or mileage of the actual service, press SELECT to move from the month, to date, to year, to mileage. Dial in the corrected numbers by turning the rotary knob.

Pressing SELECT once you have View List highlighted will allow you to view the list of recommended service items. To exit the list, simply press SELECT once more.

The maintenance lists provided are from Magnum. If you do not have a Magnum chassis, you may still use the interval tracker, but the service item lists will not necessarily be valid. For Magnum chassis owners, there may be some discrepancies between your chassis and the list, due to product changes over the years. Always consult your chassis manuals when servicing your chassis.

Pre-Drive Checklist

Pressing INFO a third time selects the Pre-Drive Checklist. The VMS 120 LC™ will display a list of important items you should check before driving your coach. Use the rotary knob to scan through the list, which includes items to check both inside and outside of your coach. Press SELECT when you have inspected the highlighted item to add a check mark at the right (this list will be reset when the unit is turned off). The VMS 120 LC™ also allows you to customize the checklist by removing unwanted list items. To do this, highlight the unwanted item and press CLEAR. The list can be reset by removing all of the items. Do not assume the default list covers everything: you still need to exercise your own powers of observation before driving your coach.

Program Modes

Clock Set Mode

Pressing PROG puts the VMS 120 LC™ into the Clock Set Mode. This screen allows you to set the clock, calendar, and alarm. Use the rotary knob to select the item you wish to set, then press SELECT to begin adjusting the value. For each part, use the rotary knob to adjust the value up or down, then SELECT to move to the next part.

If the alarm is set, at its appointed time the alarm will cause the VMS 120 LC™ to emit a loud tone. The tone will continue for about thirty seconds, or until you press any key. Note: the alarm will automatically turn off and will not repeat the following day unless it is set again.

VMS Preferences Mode

Pressing PROG again allows you to set certain features of the VMS 120 LC™. Use the rotary knob to highlight the feature you wish to adjust, then press SELECT. Then use the rotary knob to dial in the value you desire and press SELECT again. The features accessed here are:

- | | |
|---------------------------|---|
| <i>Scanning Speed</i> | The length of time the VMS 120 LC™ displays each item in Scan mode. This is measured in seconds, therefore a value of 3 will set the VMS 120 LC™ to display each item for three seconds. |
| <i>Automatic Dim</i> | By default, the VMS 120 LC™ dims its display when it detects the headlights are on. However, you may wish to override this feature. There are two settings for the Automatic Dim, on and off. |
| <i>Engine Type</i> | This information is necessary for accurate calculations of horsepower and torque. |
| <i>Anti-Theft Enabled</i> | Maintaining the anti-theft feature in the disabled state prevents anyone from locking up your coach accidentally. Once you enable the anti-theft you can lock the coach from the Theft Deterrent screen in the Special Modes. |

Scan Preferences Mode

As mentioned before, you can set the Scan mode to display any of the parameters you desire. This mode allows you to select the items you want to be included in the cycle, and also to determine the format in which they are displayed. The VMS 120 LC™ will remember these settings until you wish to change them again.

Enter this mode by pressing the PROG key. You may then use the rotary knob to select the parameter you wish to change, the SELECT to cycle through the options for the highlighted parameter. There are four choices for each parameter: SKIP, GRAPHIC, NUMERIC and N/A. Selecting SKIP will cause the VMS 120 LC™ to skip past that item and not display it in Scan mode (although it can still be viewed in Watch mode). GRAPHIC will display the parameter with the small number and a graph, while NUMERIC will display the parameter as a large number. If N/A appears, this means that your engine does not support that parameter.

Engine Programming (CAT Engines Only)

Pressing PROG one more time allows you to set certain features of the engine. Use the rotary knob to highlight the feature you wish to adjust, then press SELECT. Then use the rotary knob to adjust the parameter and press SELECT again.

The VMS 120 LC™ displays two numbers for each item. The RQST column indicates the value you have requested for that parameter. The RSPD indicates the value the engine has reported. When you press SELECT the second time, the VMS 120 LC™ sends a *request* to the engine to set the indicated parameter to the value you have chosen. However, there may be a delay before the engine acknowledges the request, or the request may be ignored or get lost in transmission. Therefore the *response* value may not change immediately, or possibly at all. If the value in the RSPD column does not change within a couple seconds, press SELECT twice again to resend the request. If the RSPD value is zero, it indicates the engine is not transmitting the parameter at all.

The *Low Idle* and *High Idle* values are set in this manner, but the *Softcruise*™ function operates slightly differently. The VMS 120 LC™ will display a value of HARD, SOFT, or CHECKING. Pressing SELECT will *request* a change from Hard to Soft or vice-versa. If the VMS 120 LC™ displays CHECKING, it means it is waiting for confirmation from the engine of its current status. Pressing SELECT in this case will only earn you a beep from the VMS 120 LC™.

Note: These features may be disabled in your engine. If they are not functional in your coach, ask a Cat dealer to “flash” your engine with the most recent software, and to “enable the customer parameters”. The mechanic will hook up his computer to the engine and in a few minutes have these features working.

Notification of Limitation of Liability

SilverLeaf Electronics accepts no liability for damage to your coach or injury to any person due to the use or misuse of any feature of the VMS 120 LC™. The VMS 120 LC™ is intended for recreational purposes only. SilverLeaf Electronics will not reimburse any party for damage to the coach, engine, or transmission that may occur while using the VMS 120 LC™.

Special Modes

Theft Deterrent (CAT Engines Only)

Pressing the SPEC key activates the Theft Deterrent feature of the VMS 120 LC™. You may dial in a code of your choice (make sure it is something you will remember!) and *lock* the engine with that code. Once locked, the engine can not be started, period, until it is unlocked again. Even if your engine was removed from the coach, it will remain a lifeless hunk of iron.

At the top of the screen will appear the current VMS status, either VMS OK or DISABLED. To enable this feature go to the VMS Preferences mode through the PROG key. The engine status is displayed at the bottom of the screen and its modes are either LOCKED, UNLOCKED, DISABLED, or CHECKING. If DISABLED appears, it means that this feature is not available on your engine and you should consult a mechanic to have it enabled. CHECKING indicates that the VMS 120 LC™ has asked the engine for its status, but has not yet received a reply. After locking or unlocking the engine, the VMS 120 LC™ should briefly display the CHECKING indication, then display the engine's response. If the CHECKING indicator remains on, then communications with the engine are not functioning correctly.

To enter the code, dial a number of your choice using the rotary knob. Press SELECT to move to the next number. Repeat the process until you have entered in all three codes. Press SELECT after entering the third number to send your request to the engine. If the engine status is UNLOCKED then SELECT will *lock* your engine and vice versa.

The engine will not lock if the vehicle is moving. Of course it will not unlock if the wrong password is given. If you lock the engine and forget your password, you may call SilverLeaf Electronics (888-741-0259) or the SMC Service hotline (800-344-6332) for instructions on how to override the password protection. If your engine is locked and your VMS 120 LC™ will not function (e.g. it was vandalized), an engine mechanic with the appropriate tool (or another VMS) can unlock the engine. Consult SilverLeaf for more information.

The Secret Diagnostics Modes

Congratulations! You have read to the last paragraph of the manual. You are to be commended for your thoroughness and willingness to learn. As a reward, you will learn how to activate the *Secret Diagnostics Modes* of the VMS 120 LC™. These modes will let you access hidden features of the VMS 120 LC™, and is invaluable for troubleshooting your unit.

To enter the VMS Diagnostics screen, simultaneously hold down the DRIVE and SCAN keys. This screen is invaluable for troubleshooting a bad data link, since it reports the number of good and bad transmissions and receptions. If the data link is functioning properly there will be a few bad transactions, but they will be greatly outnumbered by good messages. Watch the numbers count up. If you see only bad transactions then something is wrong on the data line - probably a ground-out or bad connection, maybe EMI (Electro Magnetic Interference). If you see a large number of bad transactions, but some good ones, then the data line is functioning but something is interfering with it.

To enter the VMS Options screen, press and hold the INFO and PROG keys. You can clear the trip and engine histories, clear all trips, clear the maintenance log and reset the VMS 120 LC™ to its factory defaults.

There may be other diagnostic modes available on your VMS 120 LC™, but these are intended only for use by trained personnel.

Limited Warranty

The obligation of SilverLeaf Electronics under this warranty shall be limited to repair or replacement (at our option) during the warranty period of any part which proves defective in material or workmanship under normal installation, use, and service, provided the product is returned to SilverLeaf Electronics. The warranty period shall be one year from date of purchase of the VMS 120 LC™, or purchase of the finished coach with the VMS 120 LC™ installed.

This warranty shall be invalid if the product is damaged as a result of defacement, misuse, abuse, neglect, accident, destruction, alteration, improper electrical voltages or currents, repair or maintenance by any party other than SilverLeaf Electronics or an authorized service facility, or any use violative of instructions furnished by us.

This one-year warranty is in lieu of all other expressed warranties, obligations, or liabilities. Any implied warranties, obligations, or liabilities, including but not limited to the implied warranties of merchantability and fitness for a particular purpose, shall be limited in duration to the one-year duration of this written limited warranty.

In no event shall SilverLeaf Electronics be liable for any special, incidental, or consequential damages for breach of this or any other warranty, expressed or implied, whatsoever.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.



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