



OWNER'S MANUAL



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GENERAL INFORMATION

INTRODUCTION

C1-1

Electronic Mobility Controls, LLC (EMC) is pleased to provide you with AEVIT 2.0, the most advanced and sophisticated adaptive driving control ever produced. EMC has over 25 years of experience with high tech driving control systems. All products are designed with your safety as our primary concern.

AEVIT is the acronym for EMC's Advanced Electronic Vehicle Interface Technology. The AEVIT 2.0 Driving Control System features the latest advancements in EMC's "drive-by-wire" technology.

It is installed as a totally integrated system that incorporates both primary and secondary controls that communicate directly with the modified vehicle via a common high speed CAN bus.

Primary driving controls are:

- Gas/Brake
- Steering
- Auxiliary Battery Systems

Secondary controls are:

- | | | |
|----------------------------------|---------------------|-----------------------|
| Ignition | Auto Wipers | 4 Auxiliary Functions |
| Starting | Cruise On/Set | HVAC |
| Lights | Shift (P,R,N,D,D2) | Front Fan Speeds |
| Turn Signals/Hazards | Windows | Rear Fan Speeds |
| Horn/Dimmer | Locks | |
| Wipers | Electric Park Brake | |
| Voice Interactive Controls (VIC) | Power Mirrors | |

The main components of the AEVIT 2.0 system are:

- Control Module
- Vehicle Interface Module (VIM)
- Drive Module(s)
- AEVIT 2.0 Chassis
- Display unit
- Input devices
- Gas/Brake & Steering Servomotors
- Auxiliary Battery System (AUXBAT)

Your EMC Certified Dealer should have given you a detailed explanation of your AEVIT 2.0 system during the introduction and delivery of your vehicle. That explanation will include procedures on how the system will boot-up, boot-down, engaging and disengaging the steering servomotor (if applicable), as well as how to drive using the vehicle's original gas/brake and steering controls.

Please keep in mind that the information contained in this Owner's Manual is written for all AEVIT 2.0 systems; gas/brake, steering, and secondary options. Some of the information contained here may not apply to you depending on which AEVIT 2.0 system is installed in your vehicle.

WARNINGS, CAUTIONS, AND NOTES

Throughout this manual there will be three different colored boxes (Red, Yellow, and Gray) that will indicate different warning levels. These warnings are critical and should always be adhered to.

WARNING:

INDICATES A STRONG POSSIBILITY OF SEVERE PERSONAL INJURY OR LOSS OF LIFE IF INSTRUCTIONS ARE NOT FOLLOWED.

CAUTION:

INDICATES A STRONG POSSIBILITY OF EQUIPMENT OR VEHICLE DAMAGE IF INSTRUCTIONS ARE NOT FOLLOWED.

NOTE:

INDICATES A SUGGESTION OR TIP THAT SHOULD BE FOLLOWED.

The following WARNINGS and CAUTIONS should be observed:

Service, Installation, or Modification:

WARNING:

ONLY ALLOW EMC CERTIFIED TECHNICIANS TO INSTALL OR SERVICE YOUR SYSTEM. IF WEAR IS OBSERVED ON ANY PART IN THE SYSTEM, CONTACT YOUR NEAREST EMC CERTIFIED DEALER.

WARNING:

DO NOT ATTEMPT TO REPOSITION OR RELOCATE YOUR EMC EQUIPMENT YOURSELF. CONTACT AN EMC CERTIFIED DEALER FOR THIS. ANY MODIFICATION OR DISCONNECTION OF SYSTEM CABLING IS POTENTIALLY DANGEROUS AND SHOULD NOT BE PERFORMED.

WARNING:

DO NOT DISASSEMBLE OR MODIFY ANY PORTION OF YOUR EMC EQUIPMENT. DO NOT DRILL, RIVET, WELD, OR ATTACH ANYTHING DIRECTLY TO THE EMC COMPONENTS.

CAUTION:

WHEN ATTEMPTING TO JUMP START YOUR VEHICLE, NEVER ALLOW THE INPUT VOLTAGE TO EXCEED 15 VDC.

Operation:

WARNING:

DO NOT OPERATE THE SYSTEM WITHOUT RECEIVING PROFESSIONAL DRIVER TRAINING THAT IS APPROPRIATE FOR YOUR AEVIT 2.0 DRIVING SYSTEM.

WARNING:

NEVER OPERATE YOUR SYSTEM WHILE AN AUDIBLE OR VISUAL ALERT IS PRESENT.

Operation:

WARNING:

ALWAYS DISABLE THE AEVIT 2.0 SYSTEM AND MECHANICALLY DISENGAGE THE STEERING SERVO MOTOR (IF ONE IS INSTALLED IN YOUR SYSTEM) BEFORE OPERATING THE VEHICLE USING THE OEM CONTROLS.

WARNING:

ALWAYS KEEP BODY PARTS AND OTHER OBSTRUCTIONS CLEAR OF THE VEHICLE'S STEERING WHEEL, GAS AND BRAKE PEDALS, AND THEIR RESPECTIVE SERVO MOTORS WHILE OPERATING THE VEHICLE USING AN AEVIT 2.0 INPUT DEVICE.

Environmental:

WARNING:

DO NOT APPLY EXCESSIVE LOADS TO ANY INPUT DEVICE OR SUBJECT SYSTEM COMPONENTS TO EXCESSIVE ENVIRONMENTAL CONDITIONS AS DAMAGE MAY RESULT.

General Safety:

WARNING:

NEVER OPERATE YOUR VEHICLE IN AN IMPAIRED STATE (ALCOHOL, DRUGS, FATIGUE, ETC).

WARNING:

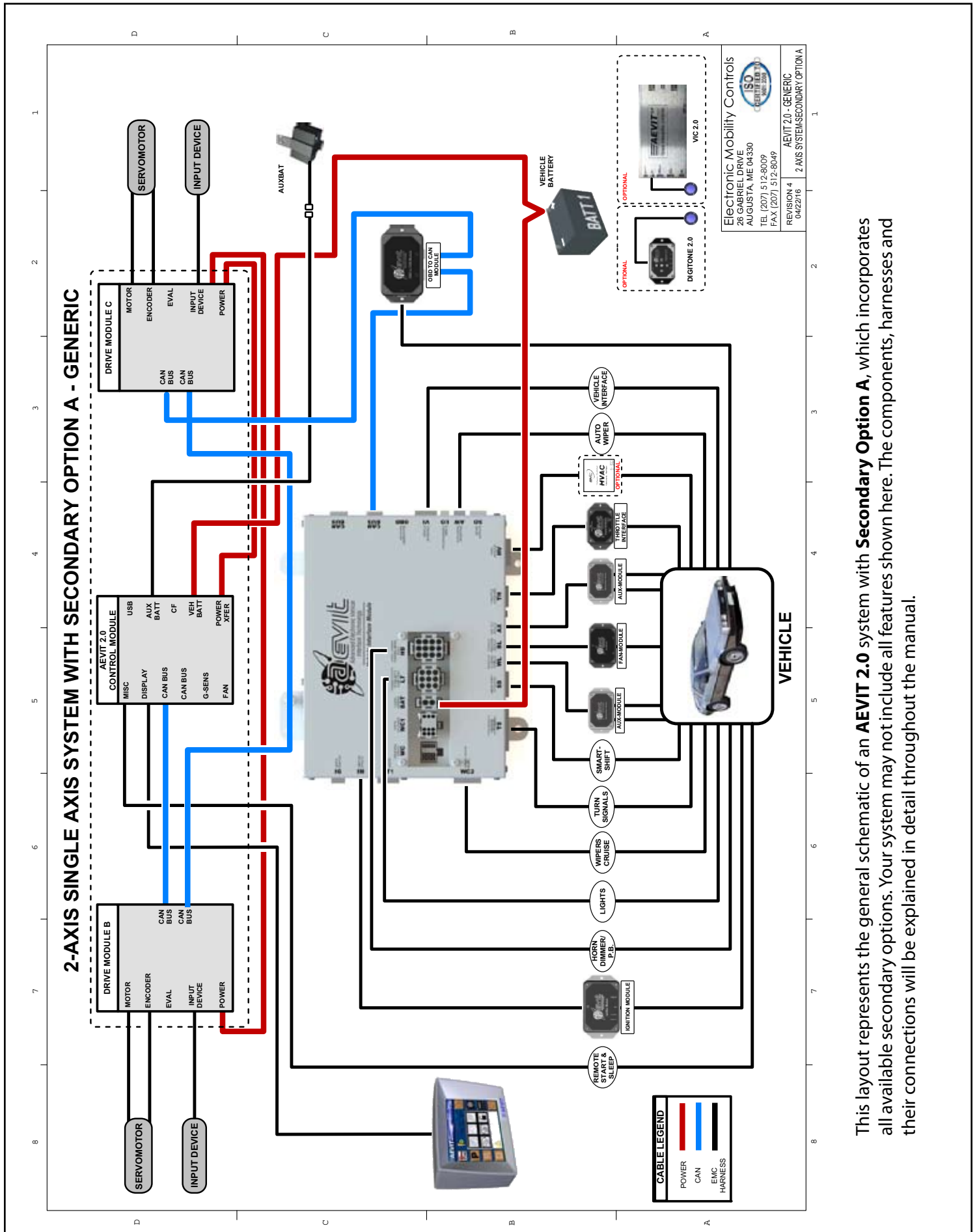
KEEP SMALL CHILDREN AWAY FROM ALL SYSTEM COMPONENTS.

WARNING:

NEVER OPERATE YOUR VEHICLE WITHOUT A VALID DRIVER'S LICENSE.

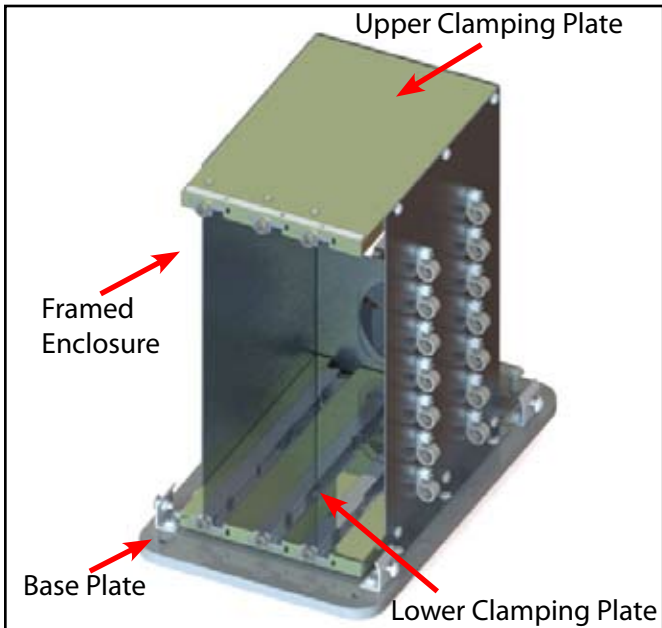
CAUTION:

IF YOU ARE UNCERTAIN ABOUT ANY OF THE WARNINGS OR CAUTIONS CONTAINED IN THIS MANUAL, CONTACT YOUR LOCAL EMC CERTIFIED DEALER OR EMC DIRECTLY AT (207) 512-8009 OR VISIT US ONLINE AT WWW.AEVIT.COM.



This layout represents the general schematic of an **AEVIT 2.0** system with **Secondary Option A**, which incorporates all available secondary options. Your system may not include all features shown here. The components, harnesses and their connections will be explained in detail throughout the manual.

AEVIT 2.0 CHASSIS

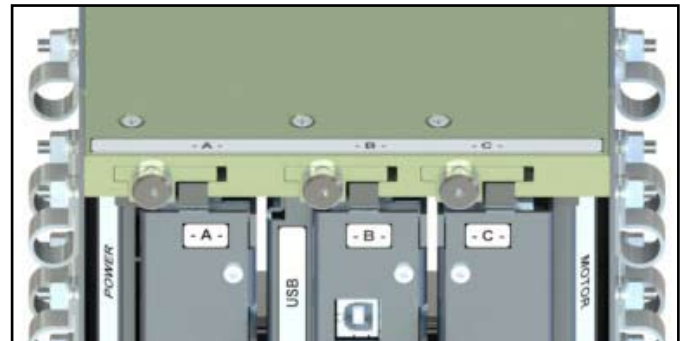
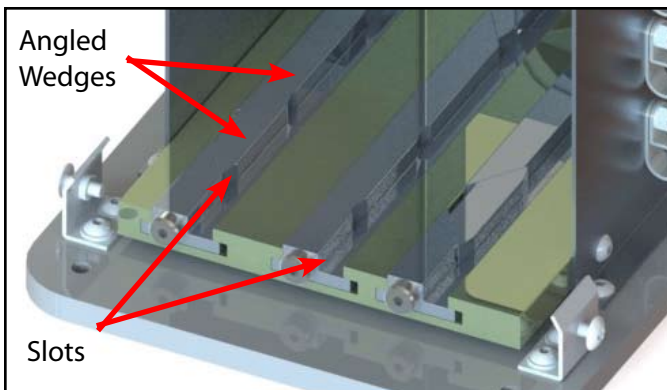


The AEVIT 2.0 Chassis is composed of an upper clamping plate, a lower clamping plate, the framed enclosure and a base plate.

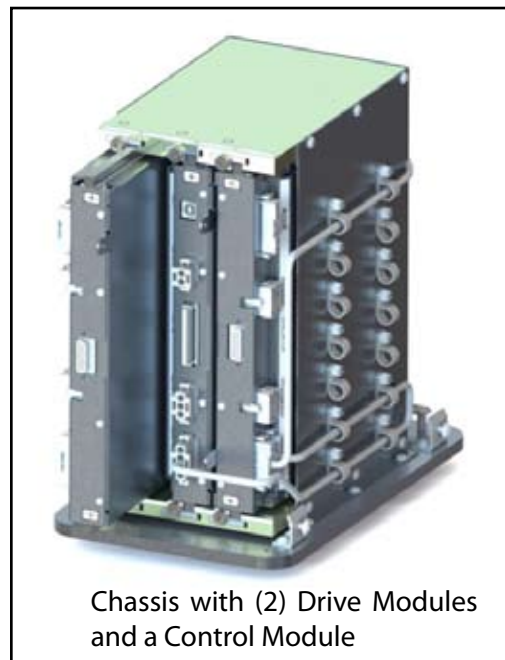
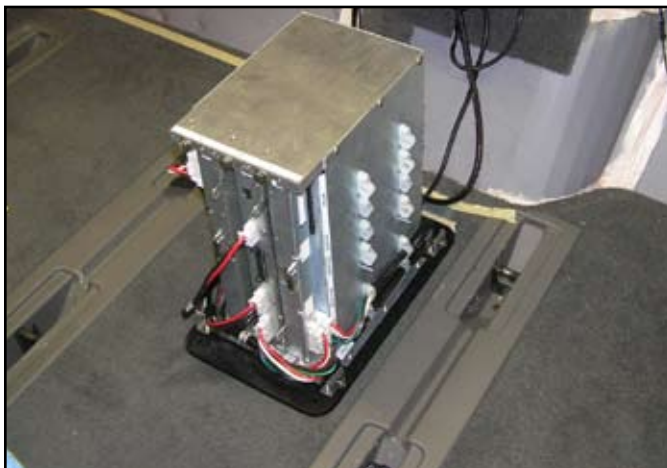
The chassis houses three of the main modules of an AEVIT 2.0 system: The **Control Module**, the **Gas/Brake Drive Module** and the **Steering Drive Module**. There are three slots on the top and bottom of the chassis that these modules slide into. These slots are marked as "A", "B", and "C". The three modules are also marked with the slot they occupy. The slots are made up of angled wedges that, when tightened with the socket head set screw, secure the modules in place.

Do not loosen these screws unless you intend to remove the module for replacement and/or service.

On the outside of the framed enclosure are a series of plastic stress relief cable clamps for guiding the cables around and out of the chassis.



The **AEVIT 2.0 chassis** will be mounted to the vehicle between the two front seats using the template provided.



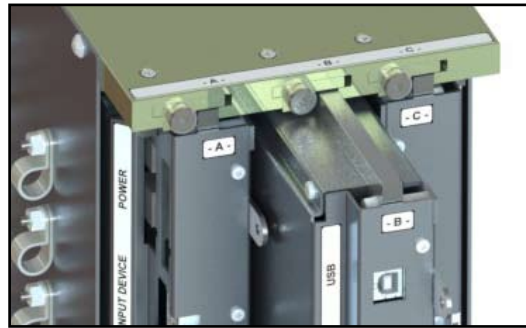
CONTROL MODULE



The **Control Module** always occupies the center “B” slot in the AEVIT 2.0 Chassis which is mounted in the center of the vehicle between the two front seats.

AEVIT 2.0 has a **Control Module** which performs several important functions.

- ▶ It is the main hub for main and auxiliary power distribution throughout the system.
- ▶ It functions as the download/upload center utilizing a generic compact flash (CF) card.
- ▶ It operates the Display unit which utilizes a user-friendly touch screen display to navigate through and operate the system.
- ▶ It features a Misc. Input port which can operate a remote start unit as well as controlling the **Sleep Mode**. While the system is asleep it has **ZERO** current draw from the vehicle battery.




DRIVE MODULE



If your system has only one **Drive Module**, it will be in the “C” slot in the AEVIT 2.0 Chassis. If you have a Gas/Brake and Steering system, you will have two **Drive Modules**. Although it doesn’t matter which slot, “A” or “C” they occupy, because they are pre-programmed, the conventional setup is for the **Gas/Brake** module to occupy the “C” slot. There will be a silver label denoting which module has been assigned which function. The “C” module is simply flipped 180° from the “A” module.

Each AEVIT 2.0 system has either one or two **Drive Modules**. They provide the required power and information to the servomotors that produce the mechanical outputs for gas/brake and steering functions. All **Drive Modules** are internally identical. Their specific function is defined by the input device, encoder and matching servomotor connected to them. For instance, when a Steering input device is plugged into a **Drive Module**, a Steering Servomotor must also be connected to the same **Drive Module** in order to successfully control the Steering function. The same rule applies to the **Gas/Brake** function. While a **Drive Module** can be used for either function, it cannot be used for both at the same time.



Flipped 180° 

VEHICLE INTERFACE MODULE



The AEVIT 2.0 Vehicle Interface Module (VIM) is the termination point for all secondary control wire harnesses (i.e. ignition, lights, wipers, etc.) as well as a direct connection to the vehicle's On Board Diagnostic (OBD) computer.

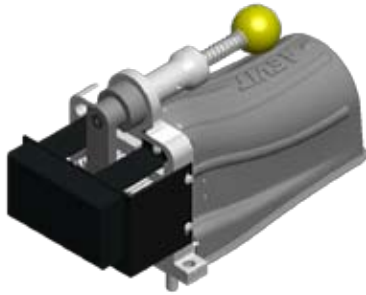
AEVIT 2.0 DISPLAY



Through this single touch screen display you can control all operation and programming functions for the AEVIT 2.0 system. All secondary functions are controlled and programmed through the display. It's location in the vehicle will vary, depending on the system set-up and mounting options for the driver.

GAS/BRAKE & STEERING SERVO MOTORS

Steering Servomotor: The EMC Steering Servomotor is attached to the OEM steering column to control the steering function.



Gas/Brake servomotor:

This servomotor uses an arm and roller to mechanically depress the OEM brake pedal, while directly controlling the OEM accelerator pedal with a cable connection.



These powerful servomotors have (3) safety critical feedback channels and are the main mechanical links between the AEVIT 2.0 driving control system and the OEM primary driving controls.

AUXBAT



The **Auxiliary Battery System** is included in all AEVIT 2.0 Driving Control Systems. This system provides emergency backup operating power to all EMC primary driving controls in the event of factory battery and alternator failure. The AEVIT 2.0 display provides visual and audible warnings when either the main or backup battery voltage is below a normal and safe operating level. The **Auxiliary Battery** has a two-piece bracket mounted to the radiator support in the front engine compartment.

INPUT DEVICES

Select from one or more of the following input devices to configure your AEVIT 2.0 Driving Control System. Each device has a communication port on the bottom which can connect up to three remote switches used to trigger secondary vehicle functions.

LEVER (L) - A gas/brake input with 4" of travel and requiring 4 lbs of force from the full gas to the full brake position. It is designed for customers that have a wider range of motion and a larger effort level.



JOYSTICK (J or SJ) - A joystick input that is available in a two-axis configuration for gas/brake and steering or a single axis for gas/brake or steering. It has a total range of motion of 60° and requires a maximum 3.2 oz of force to operate. It is designed for customers with a minimal range of motion and effort level.



WHEEL (W) - A steering input that has a 2:1 turn ratio between the AEVIT wheel and the vehicle's steering wheel. It requires 3.2 oz of force at the proper orthotic position of 3 3/8" from center. It is also designed for customers that have a wider range of motion.



ORTHOTICS

These are just a few of the orthotic devices available with an AEVIT 2.0 system. For more information, refer to the AEVIT 2.0 Product Guide.

T-Handle



Tri-Pin



Oval Knob



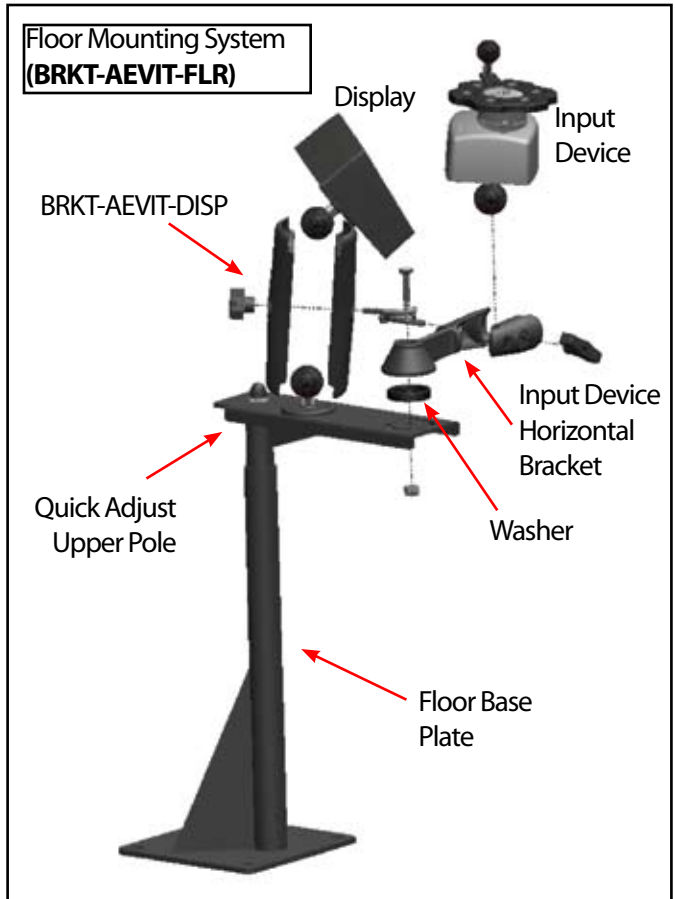
MOUNTING OPTIONS

EMC has incorporated “off the shelf” items along with custom brackets to provide an integrated mounting system for the AEVIT 2.0 Input Devices and Display.

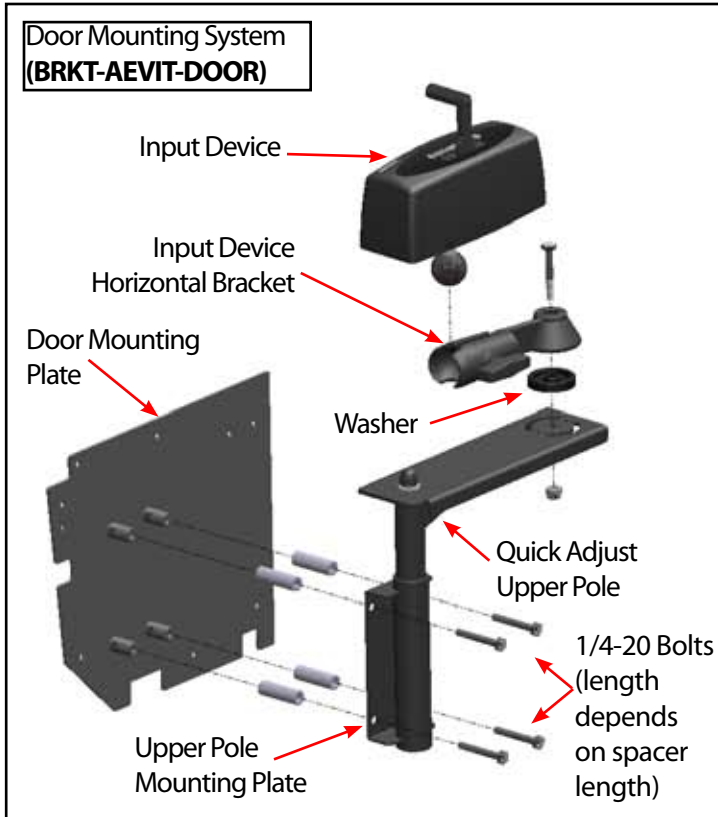
These “off the shelf” items have been used by law enforcement agencies to secure critical electronics inside the vehicle. These components allow the technician to easily adjust the position of the Input Device or Display.

This system features ball mounted brackets which easily attach to all input devices and offer an infinite number of mounting possibilities.

Also available is an Evaluator Console Extension Support and a Short Display Vertical Support.



The Floor Base Plate should be mounted near the center of the console area with consideration given to the client’s input device preferences.



The Door Mounting Plate as shown above will be mounted directly to the OEM door behind the door panel.



AEVIT DATALOGGER

All AEVIT 2.0 primary driving control systems are equipped with a computer that will monitor and store certain aspects of the AEVIT 2.0 system. The Datalogger will record the following information from the AEVIT system:

- The position of the steering input device (if installed)
- The position of the steering servomotor (if installed)
- The position of the gas/brake input device (if installed)
- The position of the gas/brake servomotor (if installed)
- Vehicle speed
- Whether or not the engine is running
- Whether or not the brake pedal was applied
- Whether or not the lights were on
- Whether or not the steering servomotor was mechanically engaged
- Battery voltages for battery 1 and battery 2
- Vehicle force diagnostic data

EMC will not disclose the data recorded in the Datalogger to a third party except when:

- An agreement from the vehicle's owner is obtained
- Officially requested by the police or other authorities
- Used as a defense for EMC in a law suit
- Ordered by the court

However, if necessary EMC will:

- Use the data for research on EMC product performance
- Disclose the data to a third party for research purposes without disclosing details of the vehicle's owner and only when deemed necessary

The AEVIT 2.0 display is the central communication point for the entire system. It is a touch screen which you can use to operate almost every secondary function in the vehicle depending on the option purchased. Simply touch the icon and it activates. It will also give you feedback and inform you of the status of the AEVIT 2.0 system. Depending on which icon is activated, only certain parts of the display will change while the entire display will change when other icons are pressed.

The starting point for all display screens is the Home Screen which is broken into three main parts: the BLUE Background, the BLACK Middle Section, and the WHITE Integrated Message Center (IMC) at the bottom.



Sample Home Screen




BLUE Background

BLACK Middle


ALERT IMC

The BLUE Background is fixed and all of the icons stay on the screen during normal operation except the two (2) BLACK icons for the HVAC Menu  and the Auxiliary Menu .

The BLACK Middle Section contains up to six (6) GRAY icons which change depending on which menu is active.

When either one of the BLACK icons are depressed the menu screen will change and the Home icon  will appear in its place. Depressing the Home icon will bring you back to the Home Screen. The Home Screen will also automatically re-appear if none of the icons from the HVAC or Auxiliary Menu are pressed for 15 seconds.

The WHITE IMC is used to communicate visual messages and instructions to the client. If a system event occurs, this area may turn RED and display the event number inside the IMC. This works in the same manner as the indicator lights on your vehicle's instrument cluster for battery, oil, or check engine.

Inside the IMC, to the left, you will see what EMC calls the ALERT icon . This icon is used as an ACCEPT or a YES button. Depending on the message displayed in the IMC, you may be required to push this icon to acknowledge the message. The most common use of this icon is to ACCEPT the command to disable the AEVIT primary systems in order to drive the vehicle in "able body" mode. See page C6-1 for complete details.

The number and type of icons that are present on the Home Screen will depend on which secondary option you purchased for your vehicle. Option "A" contains all functions that are available followed by Options "B" and "C" which contain a limited number. There are also two options that do not contain any additional secondary functions. They are for stand alone gas/brake and stand alone steering systems.

OPTION A

The most popular option contains most functions that would be required in a modified vehicle.
Home Screen



Press to Access HVAC Menu

Press to Access Auxiliary Menu

- Ignition
- Starting
- Lights
- Turn Signals/Hazards
- Horn/Dimmer
- Wipers
- Auto Wipers
- Cruise On/Set
- Shift (P, R, N, D, D2)
- Windows
- Locks
- Electric Park Brake

Plus...

Auxiliary Menu (set for AUX 1,2,3)



(4) Programmable Auxiliary Functions

Auxiliary Menu (set for mirrors)



Or

Left and Right Mirror Control and (1) Additional Auxiliary Function

And...

HVAC Menu



Front and Rear Fans

With Optional HVAC Module



Or

Front and Rear Fans
Vent and Temperature Selection

OPTION B

This option contains the standard secondary functions including:



Press for Auxiliary Menu

- Ignition
- Starting
- Lights
- Turn Signals/Hazards
- Horn/Dimmer
- Wipers
- Auto Wipers
- Cruise On/Set
- Electric Park Brake



(1) Auxiliary Function

OPTION C

This option contains a limited number of secondary functions including:



Press for Auxiliary Menu

- Turn Signals/Hazards
- Horn/Dimmer
- Wipers
- Auto Wipers
- Cruise On/Set
- Electric Park Brake



(1) Auxiliary Function

IGNITION AND STARTING



IGNITION ON



IGNITION OFF



START



RUN

IGNITION ON – This turns the vehicle’s ignition ON. This icon is only shown when the vehicle’s ignition is OFF. After this icon is pressed, other icons will appear that are only available when the ignition is ON i.e. Lights, Wipers, Turn Signals, etc.

IGNITION OFF – This turns the vehicle’s ignition OFF by pressing and holding the icon for one (1) second.

START – This engages the vehicle’s starter and is designed to engage it as long as the icon is held down. Typically this is only for a second or two.

CAUTION:

THE AEVIT 2.0 SYSTEM DOES NOT BYPASS ANY VEHICLE THEFT DETERRENT SYSTEMS TO START THE VEHICLE. ANY CONDITION(S) THAT IS (ARE) REQUIRED FOR THE VEHICLE TO START, I.E. KEY IN THE IMMOBILIZER RING OR OTHER SENSOR(S) FUNCTIONING, IS (ARE) ALSO REQUIRED FOR AEVIT 2.0 TO START THE VEHICLE.

RUN – This replaces the START icon when AEVIT detects a valid RPM signal from the vehicle. It is designed as a visual feedback to the operator that the engine is running. It does not perform any functions when it is pressed.

OPTIONAL REMOTE START

EMC offers an optional Remote Start that can start your AEVIT 2.0 equipped vehicle. If you are interested in this option contact your EMC Certified Dealer or EMC directly for additional information.

NOTE:

THERE ARE CERTAIN VEHICLES, USUALLY THOSE WITH PUSH-BUTTON START BUTTONS, THAT REQUIRE THE BRAKE TO BE PUSHED BEFORE ALLOWING THE ENGINE TO START. THE AEVIT 2.0 OPTIONAL REMOTE START PRODUCT WILL BE UNABLE TO START THOSE VEHICLES SINCE IT HAS NO WAY TO APPLY THE BRAKE REMOTELY.

SMART-SHIFT



PARK



REVERSE



NEUTRAL



DRIVE



DRIVE 2

These are used to activate the Smart-Shift actuator to the desired position. Each icon represents a different gear in the transmission. When the actuator is in a specific gear the icon turns BLACK. When it is not in that gear the letter is shown in GRAY (all icons above are shown in BLACK for clarity).

By looking at the display, you will see that there are only three icons: PARK, REVERSE, and DRIVE. This is because these are the most commonly used gears. To access NEUTRAL from PARK or DRIVE, simply press the REVERSE icon, wait for the icon to turn BLACK, then press the icon again. The icon will change from a BLACK "R" to a BLACK "N" indicating you are in NEUTRAL.

D2 is a gear that is programmed for use when the road conditions require low gear. It is typically programmed for the gear selection just below the normal driving gear. Depending on the vehicle, D2 is actually D4, D3, or D2 on the vehicle's shift indicator.

In the 2008 & newer Chrysler / Dodge Minivan the icon for D2 is removed. If access to the lower gears is required the OEM Auto Stick can be enabled. See page M3-16-1 in the AEVIT 2.0 2008 Chrysler Installation Manual for additional details.

The Smart-Shift actuator is limited in stroke and cannot reach the extreme low gear or L on certain vehicles. This actuator design has been used for over 10 years and has satisfied over 99.9% of the applications. If you fall into the 0.1% of the applications where the extreme low gear is required, contact your EMC Certified Dealer or EMC directly to discuss available extended shift range options.

CAUTION:

THE SMARTSHIFT ACTUATOR CANNOT REACH THE EXTREME LOW GEAR "L" IN CERTAIN VEHICLES.

The actuator uses electronic feedback to accurately position it within 1/32" and its full range of travel is accomplished in approximately 1.5 seconds. The actuator is also brake interlocked which means that the vehicle's brake pedal must be depressed before the system will allow the actuator to shift.

The visual feedback to the client that indicates whether or not the brake pedal is depressed is accomplished through the BRAKE icon located in the top center of the display. When the brake is not applied it shows:

 when it is applied, it turns RED: .

PARK AND HEADLIGHTS



LIGHTS OFF



PARK LIGHTS ON



HEAD LIGHTS ON

This manually turns ON the vehicle exterior light circuits and cancels any automatic light functions generated by the vehicle. With the LIGHTS OFF, pressing the icon will turn the PARK LIGHTS ON. Pressing the icon again will turn the HEAD LIGHTS ON. Pressing the icon a third time will turn the LIGHTS OFF.



HIGH BEAM INDICATOR

This display switch is typically controlled by the client using an external switch or the Voice Interactive Controls (VIC) system. The external switch may include an external Digitone module or another dedicated switch that is programmed for "Dimmer" control.

The display will remember the last state of the HIGH BEAM INDICATOR icon so if it is left in the ON position when the Lights are turned OFF, the indicator will come back ON when the HEAD LIGHTS are turned ON again.

There are three (3) programmable options for lights that your EMC Certified Dealer can assist you with:

1. OFF – Normal control of the lights using the icons.
2. WIPERS – The lights will automatically come on when the wipers are turned ON. Depending on which state you live in, there may be a law that the lights come ON with the wipers.
3. IGNITION – The lights will automatically come on when the ignition is turned ON.

NOTE:

IN BOTH OPTIONS #2 AND #3 THE LIGHTS WILL NEED TO BE TURNED OFF MANUALLY BY ACTIVATING THE LIGHT ICON WHEN EITHER THE WIPERS OR IGNITION ARE TURNED OFF.

NOTE:

CERTAIN VEHICLES HAVE DAYTIME RUNNING LIGHTS OR AUTOMATIC LIGHTS THAT TURN ON AT NIGHT. THE AEVIT 2.0 SYSTEM DOES NOT DISABLE ANY OF THE VEHICLE'S ORIGINAL FUNCTIONS. IT MERELY OPERATES THE LIGHTS IN THE SAME MANNER AS MANUALLY ROTATING THE VEHICLE'S LIGHT SWITCH.

TURN SIGNAL / HAZARDS



LEFT SIGNAL ON



RIGHT SIGNAL ON



HAZARDS ON

These are used to activate the vehicle's LEFT and RIGHT turn signals. Each time either icon is pressed and released it will toggle the turn signal ON and OFF. To activate the HAZARDS, start with both icons OFF and press and hold either icon for two (2) seconds. To turn OFF the Hazards, press and release either icon.

NOTE:

WHEN THE HAZARDS ARE ACTIVATED WITH THE IGNITION OFF, THE AEVIT 2.0 DISPLAY WILL FLASH A MESSAGE AND SOUND AN ALARM INDICATING THAT THE SYSTEM CANNOT ENTER SLEEP MODE AFTER FIVE (5) MINUTES OF IDLE TIME. THIS MEANS THAT THE SYSTEM WILL STAY ON AND KEEP THE HAZARDS ON UNTIL THE VEHICLE'S BATTERY IS DEAD OR THE HAZARDS ARE TURNED OFF.

These icons are smaller than the other AEVIT 2.0 icons because they are intended to be used only by the installing technician to test the installation. The client will control the turn signals using an external switch or the Voice Interactive Controls (VIC) system. The external switch may include a tri-pin orthotic, an external Digitone module, or another dedicated switch that is programmed for turn signal control.

Once either icon is turned on, indicating a LEFT or RIGHT turn, the systems starts a programmable countdown (in seconds) to turn OFF the icons automatically after the vehicle's brake pedal is released. In other words, if you are stopped at a stop light and have either of the icons ON with the vehicle's brake pedal depressed, the system will keep the icon ON and not start counting down to turn them OFF until the brake pedal is released. Once it is released, the system will start the countdown and turn OFF the icon when the countdown is over.

The selectable range for the countdown is from two (2) to thirty (30) seconds and it is setup by your EMC Certified Dealer and/or driving evaluator. The systems are shipped from EMC with a default value of ten (10) seconds.



ELECTRIC PARK BRAKE



DISENGAGED ENGAGED

This engages and disengages the EMC Electric Park Brake. By pressing the icon, the AEVIT 2.0 system will cycle between engaging and disengaging depending on the previous function. In other words, if the icon is shown in GRAY (disengaged) pressing the icon will engage it and turn it RED (engaged). Because the icon changes color it is also used for visual feedback to the client on the current state of the Electric Park Brake. The factory light on the instrument cluster can be also be used as well.

Background:

The purpose of the EMC Electric Park Brake is to replace the vehicle's original mechanical park brake. It can be operated through one of two methods:

1. By pressing the above icon.
2. By moving the AEVIT gas/brake input device (if one is installed) past the 90% full brake travel position.

The purpose of activating the electric park brake through the gas/brake input device is to allow the client to engage the rear brakes in the event of a failure of both hydraulic circuits in the vehicle's brake system.

The icons function differently depending on whether the vehicle's ignition is ON or OFF:

IGNITION ON:

To ENGAGE – press and hold the icon for two seconds to engage the actuator and the icon will turn RED. The two second hold time is to protect the client from inadvertent operation of the Electric Park Brake while the vehicle is under way.

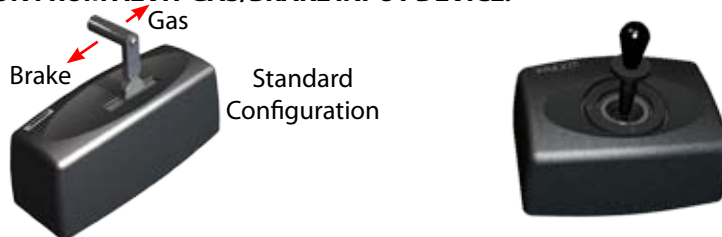
To DISENGAGE – press and release the icon (no hold is required) to disengage the actuator and the icon will turn GRAY.

IGNITION OFF:

To ENGAGE – press and release the icon to engage the actuator and the icon will turn RED.

To DISENGAGE – press and release the icon (no hold is required) to disengage the actuator and the icon will turn GRAY.

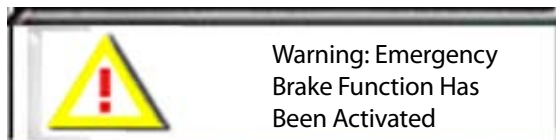
ELECTRIC PARK BRAKE ACTIVATION FROM AEVIT GAS/BRAKE INPUT DEVICE:



If you have an AEVIT 2.0 gas/brake system installed in your vehicle, the input device (lever or joystick) will automatically engage the Electric Park Brake when the input device reaches the position of 90% of full travel in the brake direction.



The activation of the park brake is momentary in this range which means that it is engaging ONLY when the 90% position is reached. The park brake will begin to disengage when the input device starts to return towards the center or null position and will not re-engage until it travels back past the 90% position. The AEVIT 2.0 display will show a message that the Electric Park Brake has been activated from the input device and will sound a beeping alarm to notify the client that the 90% position has been reached.



The beeping alarm and the message will disappear when the input device starts returning to the center or null position

ELECTRIC PARK BRAKE (continued)

The system is designed this way to allow the client to engage and disengage (or modulate) the Electric Park Brake in order to stop the vehicle if there is a complete failure of the vehicle's braking system. It is never a good idea to engage the park brake and leave it engaged while the vehicle is moving. This will lock up the vehicle's rear brakes which could result in serious injury or death if the vehicle is in an accident.

WARNING:

DO NOT ENGAGE THE ELECTRIC PARK BRAKE AND LEAVE IT ENGAGED WHILE THE VEHICLE IS MOVING. THIS WILL CAUSE THE VEHICLE'S REAR BRAKES TO OVERHEAT AND POSSIBLY LOCK UP WHICH COULD RESULT IN AN ACCIDENT CAUSING SERIOUS INJURY AND/OR DEATH.

It is important to use additional CAUTION when operating the AEVIT gas/brake input device in the brake direction. In almost all passenger vehicles, the brake pedal is capable of traveling several inches from the "null" position (no brake applied) to the full brake position (i.e. an emergency stop). In normal driving, it is required that the pedal move only 1-2 inches to bring the vehicle to a stop and remain stationary. This same distance equals between 25% and 50% of the full range of the AEVIT gas/brake input device for the brake direction.

This is important for two (2) reasons. The first is that the AEVIT system constantly monitors the force required to activate the servomotors. If the force is too high for five (5) seconds or longer, the system will record an "Excess Motor Force" event code (see Diagnostic Codes for additional information on this event). The most common cause for this event in the gas/brake portion is that the servomotor is placed in the 50% to 100% of full brake travel while the vehicle is at rest at a stop sign or stoplight. This would be equivalent to someone pushing as hard as they could with their foot on the vehicle's brake pedal simply to keep the vehicle from moving while in gear.

The second reason is to ensure proper operation of the EMC Electric Park Brake. Remember that the EMC Park Brake operates in momentary mode when activated by the AEVIT gas/brake input device. This means that it is possible to engage and disengage the park brake a number of times simply by moving the input device past the 90% brake position then releasing it slightly and moving it back above 90% again. The EMC Electric Park Brake is not designed for constant operation and may reach a thermal (temperature) limit which may cause it to remain engaged for a short period of time while it cools down.

CAUTION:

TO REDUCE THE NUMBER OF "EXCESSIVE MOTOR FORCE" EVENTS AND TO ENSURE PROPER OPERATION OF THE EMC ELECTRIC PARK BRAKE, BE SURE THAT THE AEVIT GAS/BRAKE INPUT DEVICE IS OPERATING BETWEEN THE "NULL" POSITION AND 25% TO 50% OF FULL BRAKE TRAVEL DURING NORMAL DRIVING.



CRUISE



CRUISE OFF



CRUISE ON



CRUISE SET

This engages the vehicles cruise system. With the CRUISE OFF, pressing the icon will turn the CRUISE ON. Pressing the icon again will SET the cruise and each subsequent pressing will RESET, then SET the cruise again. Pressing and holding the icon for two seconds will turn the CRUISE OFF.

NOTE:

THE AEVIT 2.0 SYSTEM DOES NOT INTERFERE WITH THE VEHICLE'S ABILITY TO TURN OFF THE CRUISE SYSTEM WHEN THE BRAKE PEDAL IS DEPRESSED OR ITS ABILITY TO ADJUST VEHICLE SPEED FROM OTHER SENSORS.

DOMELIGHT



DOMELIGHT OFF



DOMELIGHT ON

This toggles the vehicle's Dome Light ON and OFF.

NOTE:

IN THE 2008 CHRYSLER / DODGE MINIVAN THE DOME LIGHT WILL NOT FUNCTION WITH THE VEHICLE'S PARKLIGHTS OR HEADLIGHTS ON DUE TO AN INTERNAL COMMUNICATION ISSUE IN THE VEHICLE.

WINDOWS



DRIVER



PASSENGER

These raise and lower the driver and passenger's windows respectively. Each time either icon is pressed and released the window changes direction. These icons do NOT change color regardless of the direction the window is traveling.

LOCKS



LOCKS

This toggles the vehicle's door locks UP and DOWN each time either icon is pressed and released. This icon does NOT change color regardless of the state of the locks.

NOTE:

THE AEVIT 2.0 SYSTEM DOES NOT BYPASS ANY VEHICLE THEFT DETERRENT SYSTEMS TO ACTIVATE THE LOCK FUNCTION. ANY CONDITIONS THAT ARE REQUIRED FOR THE VEHICLE'S LOCKS TO FUNCTION ARE ALSO REQUIRED FOR AEVIT 2.0.

WIPERS



OFF



LOW



HIGH



WASH

These activate the vehicle's wiper motor and wiper wash pump. Each time the icon is pressed, it cycles between OFF, LOW, HIGH, and back to OFF again. The WASH function is accessed by depressing and holding the icon for one second. When this occurs, the vehicle's wiper wash pump will spray the windshield and the wipers will activate for a few seconds then turn off and park if the icon was previously in the OFF position. The WASH function can be accessed from ANY of the wiper states (OFF, LOW, or HIGH) and they will automatically revert to the previous wiper state when complete.

In the 2008 & newer Chrysler / Dodge Minivan the WASH function is accessed in the same manner but holding the icon for five seconds will activate the REAR WASH function. If you continue depressing the icon in excess of five seconds the WASH function will toggle between the front and the rear until you release the icon. The WASH function will automatically revert back to the previous wiper state when complete.

In the 2008 & newer Chrysler / Dodge Minivan you have an option of activating the REAR wiper at the same time as the FRONT wiper is activated. In other words the single WIPER icon will control both FRONT and REAR wipers. Because the REAR wiper only operates at LOW speed, the REAR wiper will stay at LOW speed when the FRONT is set to HIGH speed. Both FRONT and REAR wipers will turn OFF at the same when the WIPER icon is pressed for a third time. Please see your EMC Certified Dealer if you want to enable this option.

HVAC



HVAC MENU

This icon brings up the HVAC menu on the AEVIT 2.0 display. Each time the icon is pressed, the BLACK Middle Section of the display is replaced with new icons. The number of new icons shown will depend on whether or not you have installed the optional HVAC module that allows AEVIT 2.0 to control temperature, vent selection, and the A/C clutch.

All HVAC menus will have the following icons for fans:

FRONT



OFF



LOW



MED



HIGH

REAR



OFF



LOW



MED



HIGH



These activate the front and rear fan speeds in the vehicle. Each time the icon is pressed, it cycles through the speeds (OFF, LOW, MED, HIGH, then back to OFF).

NOTE:

AEVIT 2.0 CANNOT INTERFACE WITH THE FAN SPEEDS IN CERTAIN VEHICLES EQUIPPED WITH AN AUTOMATIC TEMPERATURE CONTROL (ATC) HVAC UNIT.

NOTE:

AEVIT 2.0 CANNOT INTERFACE WITH THE REAR FAN SPEEDS ON CERTAIN VEHICLES.

NOTE:

IN ORDER FOR AEVIT 2.0 TO PROPERLY ACTIVATE THE FANS SPEEDS, THE VEHICLE'S FAN CONTROLS (FOR FRONT AND REAR) SHOULD BE IN THE "OFF" POSITION FOR MOST VEHICLES.

FOR THE 2008 & NEWER CHRYSLER / DODGE MINIVANS WITH THE SUBTYPE SET TO 0 (SEE PG P7-7), THE FAN CONTROLS MUST BE IN THE LOWEST SETTING (NOT "OFF") FOR THE GATEWAY MODULE TO COMMUNICATE WITH THE OEM HVAC UNIT. OTHER SUBTYPES CAN BE LEFT IN THE "OFF" SETTING.



2008 & NEWER CHRYSLER / DODGE MINIVANS

OPTIONAL HVAC MODULE

If you have purchased the optional HVAC module, you will have these three additional icons in the HVAC menu. In order to start controlling and adjusting the HVAC through the AEVIT touchpad, first advance the fan speed to LO, MED or HI. When the AEVIT fans are OFF, the AEVIT HVAC is OFF, leaving the oem HVAC in control.



VENT SELECTION



TEMPERATURE SELECTION



A/C CLUTCH



Pressing the VENT SELECTION icon will cycle through the following directions for airflow:



DEFROST



FLOOR



FLOOR AND PANEL



PANEL



FLOOR AND DEFROST

NOTE:

IN SOME CASES YOU WILL HAVE TO LOOK AT THE AEVIT HVAC MENU, NOT THE OEM DASH, TO DETERMINE THE TEMP & VENT SELECTION.

Pressing and holding TEMPERATURE SELECTION will change the icon and increase or decrease the temperature setting. Each time you press and hold the icon, it changes temperature direction and when the icon changes to a new setting the display will beep.



FULL COLD



FULL HOT

NOTE:

FOR CHRYSLER / DODGE MINIVANS & TOYOTA SIENNAS EQUIPPED WITH CAN SOFTWARE TO CONTROL FANS & HVAC, THE FRONT OR REAR FANS MUST BE TURNED ON WITH THE AEVIT DISPLAY BEFORE TEMPERATURE, VENT SELECTIONS, AND A/C WILL TAKE EFFECT.

The temperature range is divided up into 10 equal segments and the longer you press and hold the icon, the greater the change in temperature. In other words, if it is on setting #1 or full cold (see above) and you press and hold the icon for approximately two seconds, the display will change to setting #10 full hot. Minor adjustments can be made by pressing and releasing the icon quickly.

NOTE:

FOR THE 2008 & NEWER CHRYSLER / DODGE MINIVAN & THE TOYOTA SIENNA IT IS POSSIBLE TO CONFIGURE THE AEVIT SYSTEM SO THAT WHEN YOU ADJUST THE TEMPERATURE IT WILL CHANGE BOTH THE DRIVER'S SIDE AND PASSENGER SIDE SETTINGS. SEE YOUR EMC CERTIFIED DEALER FOR DETAILS.



A/C OFF



A/C ON

NOTE:

IN SOME CASES YOU WILL HAVE TO LOOK AT THE VEHICLE'S HVAC PANEL TO DETERMINE IF THE A/C IS ON OR OFF.

Pressing and releasing the A/C CLUTCH icon will toggle the vehicle's A/C clutch for air conditioning. In certain vehicles this icon is momentary which means as soon as you release the icon it will switch back and you would have to look at the vehicle's HVAC panel for verification on the state of A/C clutch.


NOTE:

AEVIT 2.0 CANNOT INTERFACE WITH THE VENT SELECTION OR THE TEMPERATURE SELECTION IN A VEHICLE THAT IS EQUIPPED WITH AN AUTOMATIC TEMPERATURE CONTROL (ATC) HVAC UNIT.

EXITING THE HVAC MENU

There are two ways to exit from the HVAC menu:



1. Press the  icon.
2. Wait 15 seconds and the display will automatically revert back to the main screen.

AUXILIARY MENU



AUX MENU

This icon brings up the auxiliary menu on the AEVIT 2.0 display. Each time the icon is pressed, the center section of the display is replaced with new icons. Which icons appear will depend on how the dealer set up your auxiliary functions. There are two options: AUX1234 or Mirrors and AUX 4. This decision was probably made during your driving evaluation and once the functions are selected and wired in, the EMC Certified Dealer cannot change the selection.

NOTE:

EVEN THOUGH ICONS MAY APPEAR IN THIS SCREEN, THEY MAY NOT ACTIVATE ANY FUNCTIONS. BE SURE TO CHECK WITH YOUR DEALER ON WHAT THE ICONS ACTIVATE.

AUXILIARY FUNCTIONS

LATCHING



AUX 1 OFF

LATCHING



AUX 1 ON

OR

MOMENTARY



AUX 1 DPDT (DOUBLE-POLE-DOUBLE-THROW)



There are two main selections for configuring the output of the auxiliary functions: latching and momentary. With latching, the GRAY icon is OFF and darkened text with a √ is ON. Momentary is depicted by darkened text and arrows pointing up and down. The icons for auxiliaries 2, 3 and 4 are the same with different colored numbers.

In certain 2008 & newer Chrysler / Dodge Minivan REAR DEFROST is an available feature through auxiliary function 4. This is also available on certain Toyota Siennas that were installed with CAN software to control some secondary functions via the OBD connection.

OBD – ON BOARD DIAGNOSTICS



OBD

This accesses the User Screens which allow the client to monitor certain vehicle functions as well as program some of the available AEVIT 2.0 options. When the icon is pressed, the following WARNING screen will appear:



You must touch the ACCEPT icon on the WARNING screen to continue.

USER SCREENS

There are three (3) User Screens available: User Status, Time/Date, and Event Summary.

Sample User Screen



Before we jump right in and start changing things, let's take a quick look at how these screens function. The following page has a list of icons that you will use to navigate around the User Screens:

USER SCREENS (cont.)



UP ARROW – Moves the highlight bar UP to the selection above.



DOWN ARROW – Moves the highlight bar DOWN to the selection below.



PLUS – Advances to the next option of the highlighted selection, i.e. if the Control Volume is set at 3 it will increase to 4.



MINUS – Moves the option of the highlighted selection back one item, i.e. if the Control Volume is set at 4 it will decrease to 3.



ENTER – Used as an ACCEPT or YES icon.



BACK – Moves the User Screen to the previous page.



NEXT – Moves the User Screen to the next page.



HOME – Returns to the Home Screen.



BLACK IMC – This works in the same manner as the WHITE IMC on the Home Screen. It is used to communicate any required feedback from the highlighted selection to the client.

HOT KEYS



These do not perform any functions from the User Screens. They are used only by the EMC Certified Dealer for programming.

USER SCREENS

NOTE:

MAKE SURE YOU HAVE READ THE PREVIOUS SECTION ON THE OBD ICON AND HOW TO NAVIGATE THROUGH THE USER SCREENS.

Screen #1: User Status



Description of Selections:

Set Display Volume

The + and - icons are used to select the volume of the Display's speaker. One (1) is the lowest speaker volume and four (4) is the loudest.

Brightness Day & Night

The + and - icons are used to select the brightness level of the Display when the AEVIT headlights are Off (Day mode) or when the AEVIT headlights are On (Night mode). Zero (0) is the darkest and ten (10) is the brightest. Once a change has been made, press the ENTER key to confirm the setting before the three (3) second Timer expires. If the Timer does expire, it resets the value back to the previous level.

Export Operational Log

Pressing the ENTER key for 5 seconds exports the Operational Log to the compact flash (CF) card. The file created on the CF consists of a name containing the date, followed by an underscore, followed by the time, followed by an underscore, followed by olog.log (i.e. YYYY-MM-DD_HH-MM-SS_olog.log). If the file already exists, it is overwritten.

Automatic Wipers

Pressing the + and - icon will toggle the Automatic Wipers selection ON and OFF. Remember, you must have the Rain-Tracker™ installed in your vehicle for this selection to work. Turning the selection OFF will ignore the command from the Rain-Tracker™ module to activate the wipers. Turning the selection ON will allow the Rain-Tracker™ to activate the wipers through the AEVIT 2.0 system. This selection would most commonly be used to turn the Rain-Tracker™ OFF when going through a car wash.

CAUTION:

TO PREVENT DAMAGE TO THE WIPER MOTOR, BE SURE TO TURN THE AUTOMATIC WIPERS SELECTION TO THE OFF POSITION BEFORE ENTERING A CARWASH IF YOU HAVE RAIN-TRACKER™ INSTALLED IN CONJUNCTION WITH YOUR AEVIT 2.0 SYSTEM.

Screen #1: User Status (continued)



Description of Selections:

Service Time

When this line is highlighted, the IMC will show the Current Hours on the system and the hours for the next scheduled Service.

VIC Status

If the AEVIT 2.0 Voice Interactive Control (VIC) system is installed in your system, the VIC Status will automatically display "Installed".

Battery 1

This shows the voltage of the main vehicle battery. This value will typically be between 12.0 VDC when the vehicle is NOT started and 13.8 VDC when the vehicle IS started and the vehicle's alternator is working properly and charging the main battery.

Battery 2


This shows the voltage of the AEVIT 2.0 auxiliary battery (AUXBAT). All AEVIT 2.0 systems have a separate AUX-BAT that was installed during the initial modification of your vehicle. This AUXBAT provides emergency power to the AEVIT driving system in the unlikely event of a total failure and power loss of the main vehicle's battery and alternator.

RPM

This shows whether or not AEVIT is able to detect the vehicle's RPM of the engine.

Engaged (for AEVIT steering systems only)

This shows the status of the mechanical engagement of the AEVIT steering servomotor. YES indicates the steering servomotor is engaged so the client can operate the steering system using the AEVIT wheel or joystick input device. NO indicates it is not engaged and it is setup for use in "able-body" mode and can be driven using the vehicle's steering wheel.

Press the  icon to go to the Time and Date Setup.

Screen #2: Time and Date Setup

The AEVIT 2.0 system has a built in real time clock (RTC) which is used to log system events.



Description of Selections:

Month

Pressing the + and – icons change the value of the month.

Day

Pressing the + and – icons change the value of the day.

Year

Pressing the + and – icons change the value of the year. Eight (8) on the display is 2008.

Hour

Pressing the + and – icons change the value of the hour. AEVIT 2.0 uses the 24HR format i.e. 14:00 is 2:00 PM. This is the only format that is available.


Minute

Pressing the + and – icons change the value of the minute.

Second

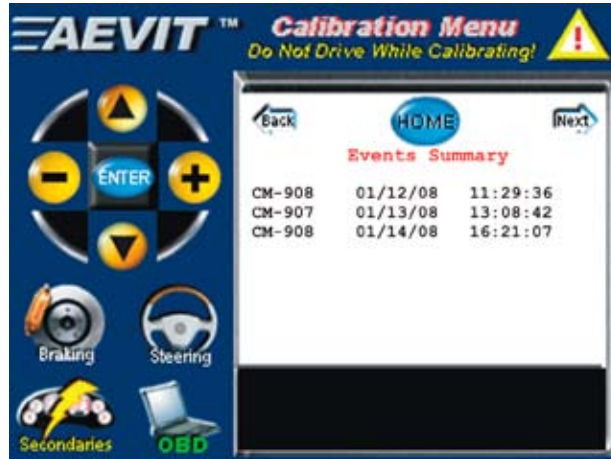
Pressing the + and – icons change the value of the second.

The current System Time and Date is shown at the bottom of the display in the BLACK IMC and updates automatically when any of the parameters are changed.

Press the  icon to go to the Time and Date Setup.


Screen #3: Event Summary

The AEVIT 2.0 system is capable of storing the last ten (10) Events that the system has detected. These Events can range from a detection of a low battery to an improper shutdown. Each event has a specific number and time/date stamp.



Every vehicle manufacturer uses a similar method to record problems or faults. Some manufacturers call them fault codes while other call them diagnostic trouble codes (DTC).

The main purpose of this screen is to allow the client the ability to communicate the Event number and date to the EMC Certified Dealer.

Press the  icon to return to the Home Screen.

AEVIT 2.0 SYSTEM OPERATION

Your EMC Certified Dealer should have given you a detailed explanation of your AEVIT 2.0 system during the introduction and delivery of your vehicle. That explanation will include procedures on how the system will boot-up and boot-down, engaging and disengaging the steering servomotor (if applicable), as well as how to drive using the vehicle's original gas/brake and steering controls.

All of the following information is designed to be a review and will assist you with your comfort level in operating the system.

WAKING THE SYSTEM UP

The AEVIT 2.0 system actually goes into sleep mode and completely shuts down ALL power drain from the vehicle's battery as well as the AEVIT 2.0 auxiliary battery (AUXBAT). This means that AEVIT 2.0 does not draw any current from any battery and will not deplete the main battery.

NOTE:

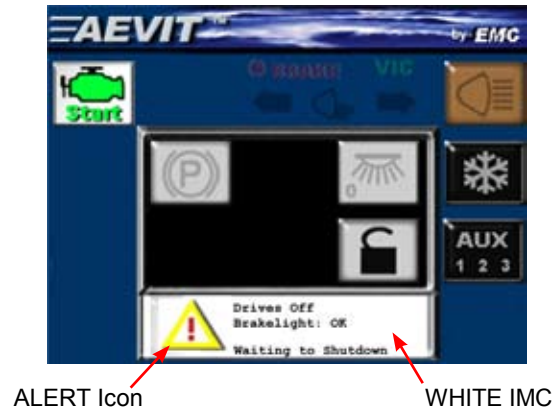
AEVIT 2.0 IS DESIGNED SO THAT IT WILL NOT DEplete THE MAIN VEHICLE BATTERY WHEN IT IS IN SLEEP MODE.

There are several ways to wake up the AEVIT 2.0 system. You will need to consult with your EMC Certified Dealer to determine how your vehicle was configured. It may be a small push button switch somewhere in the driver's area or it may be wired into your door locks so that every time you unlock your door using the remote it will wake up.


When the AEVIT 2.0 system wakes up, you will hear a soft beep and the following WARNING screen will appear:

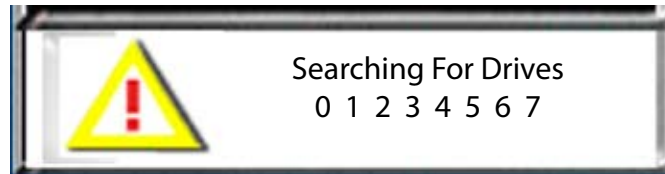


After you press the Accept key, the Home Screen appears and displays the icons which are visible when the ignition is OFF:



BOOTING THE SYSTEM UP

The WHITE IMC and the ALERT Icon are used to communicate the status of the AEVIT 2.0 system during the boot-up and boot-down procedures. As soon as you turn ON the ignition  the following screen appears:

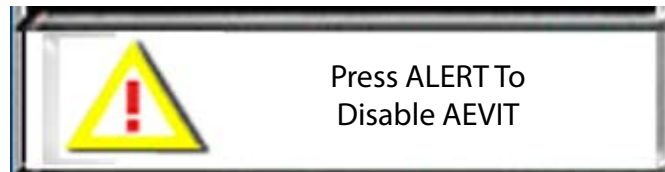


This will show:

- 0 1 2 3 (for steering only systems)
- 4 5 6 7 (for gas/brake only systems)
- 0 1 2 3 4 5 6 7 (for gas/brake & steering systems)

DISABLING THE SYSTEM

Next is the screen that will allow you to disable the AEVIT primary system:

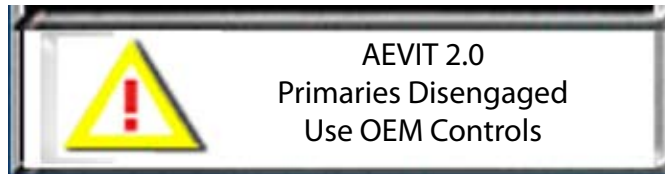


This screen will stay ON for five (5) seconds once the ignition is turned ON. This is to allow you enough time to disable the AEVIT primary system and operate the vehicle in able-body mode. By pressing the ALERT icon, the primary system will be disabled so the vehicle can be driven using the factory steering wheel along with the factory gas and brake pedals.

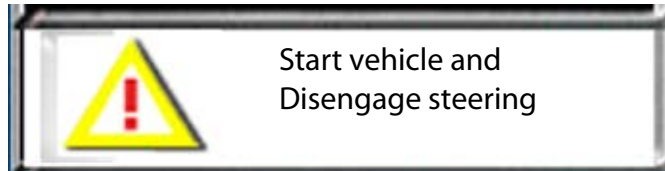
NOTE:

IF YOU WAIT LONGER THAN FIVE (5) SECONDS TO DISABLE THE AEVIT PRIMARY SYSTEM, IT WILL START THE BOOT-UP PROCESS AND YOU MUST TURN THE IGNITION BACK OFF, THEN ON AGAIN TO DISABLE AEVIT.

When you press the ALERT icon, the following message will appear that will notify you that the system is ready for operation in able-body mode:

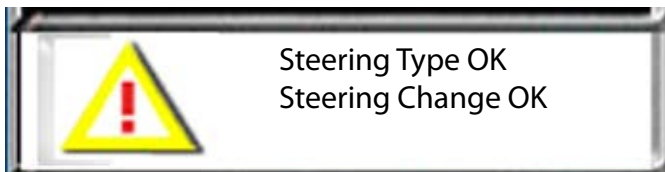
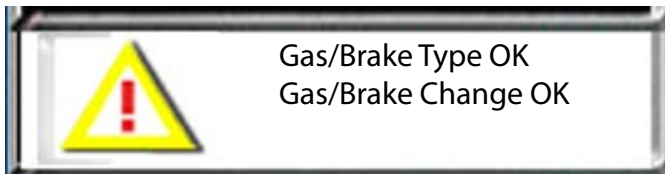


If the steering servomotor is still ENGAGED after you disable the system, the following screen will appear:



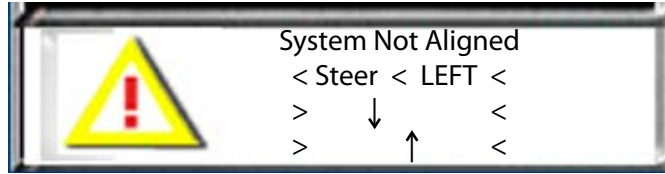
INPUT DEVICE DETECTION

If the AEVIT primary system is NOT disabled, the next two screens appear which verify which input devices are connected to the system. Both screens are only visible for a total of one (1) second.

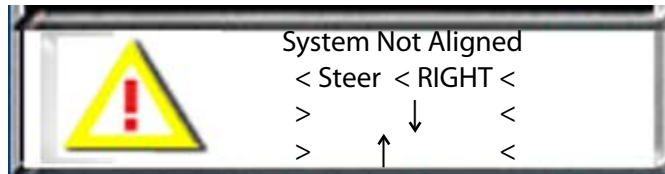


STEERING ALIGNMENT

If the AEVIT steering wheel is not properly aligned with the steering servomotor, one (1) of the following two (2) screens will appear. The top arrow indicates the position of the AEVIT steering servomotor and the bottom blinking arrow indicates the position of the AEVIT steering input:



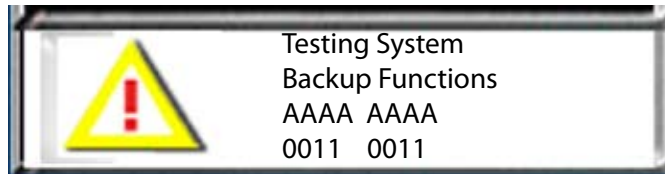
This indicates that the AEVIT steering wheel needs to be rotated to the LEFT.



This indicates that the AEVIT steering wheel needs to be rotated to the RIGHT.

BACKUP TESTING

The next screen will stay on for approximately ten (10) seconds. During this time, the system is performing a backup test:

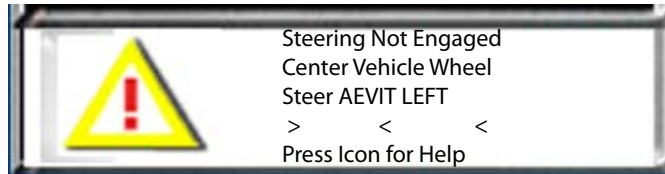


NOTE:

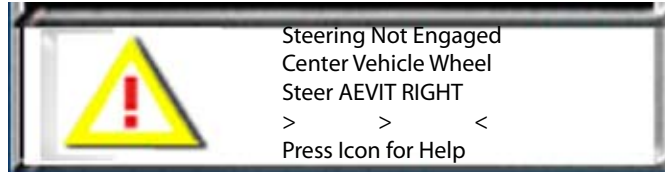
IT IS NORMAL FOR THE BOTTOM TWO (2) ROWS OF THE DISPLAY TO CHANGE LETTERS AND NUMBERS. IT IS ALSO NORMAL TO HEAR A CLICKING SOUND COMING FROM THE AEVIT CHASSIS.

STEERING SERVO MOTOR ENGAGEMENT

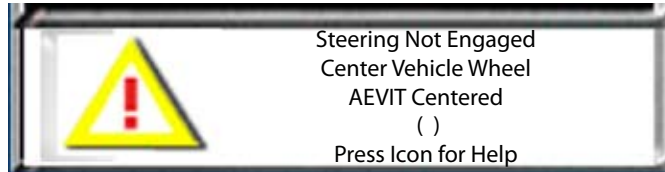
If the steering servomotor is not mechanically engaged, one (1) of the following three (3) screens will come up:



This indicates that the AEVIT steering wheel needs to be rotated to the LEFT to be in the center position.

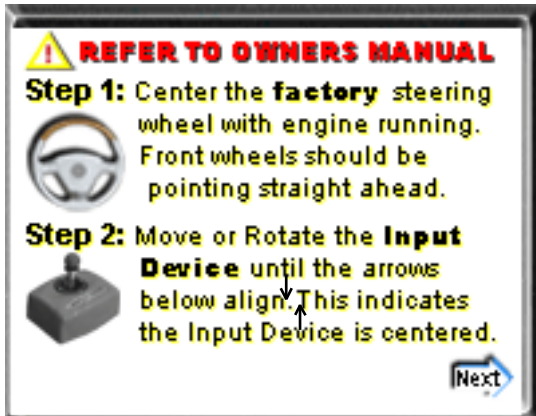


This indicates that the AEVIT steering wheel needs to be rotated to the RIGHT to be in the center position.

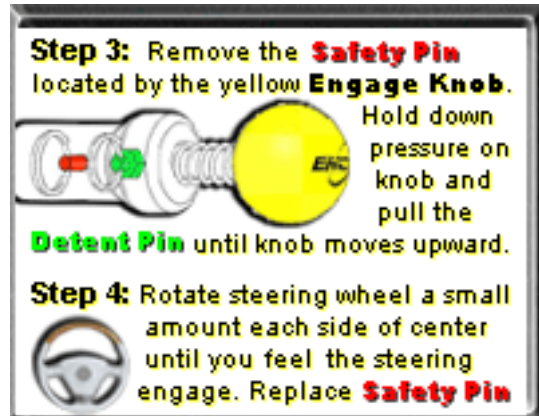


This indicates that the AEVIT steering wheel is in the center position.

At any time during any of the above screens you can push the ALERT icon for step-by-step instructions for engaging the steering system. These instructions will appear in the center of the display screen:



Engage Instructions – Screen 1



Engage Instructions – Screen 2

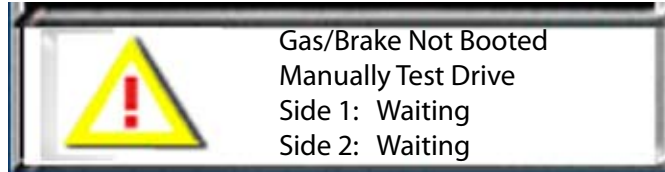
NOTE:

WHEN THE STEERING SERVO MOTOR IS ENGAGED, THE INSTRUCTION SCREENS WILL DISAPPEAR AND THE SYSTEM WILL RESUME THE BOOT-UP PROCESS.

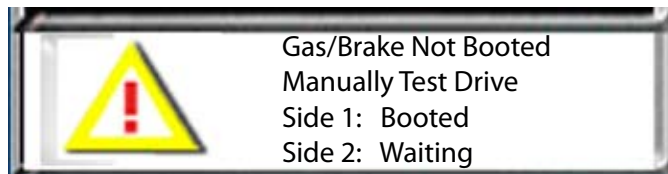
MANUAL BOOT-UP

The last step in the boot-up process is to manually operate the AEVIT gas/brake and/or steering input devices to ensure the inputs devices and servomotors are functioning properly.

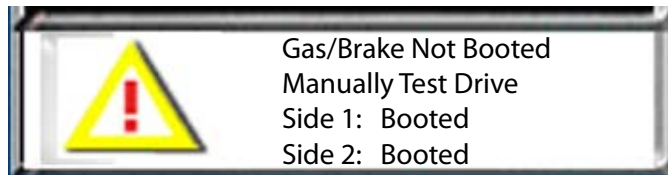
First is the gas/brake:



You will need to activate the gas/brake input device in both the gas and brake direction until Side 1 displays "Booted."



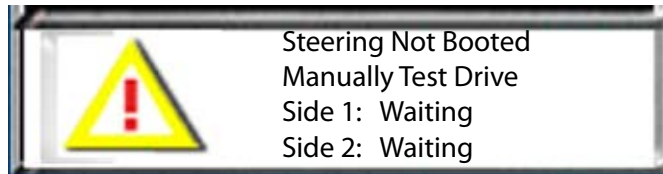
You will need to activate the gas/brake input device a second time in both the gas and brake direction until Side 2 displays "Booted."



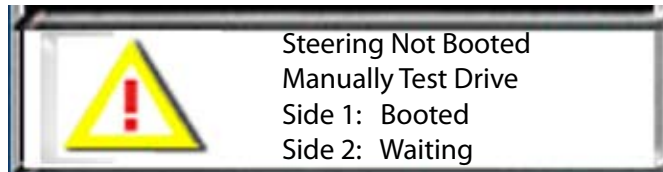
When completed, both sides will display "Booted" and the system will move on to the steering (if one is installed).

MANUAL BOOT-UP (continued)

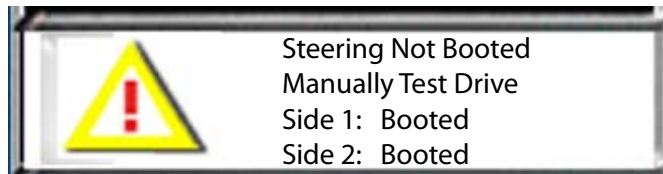
Next is the steering:



You will need to activate the steering input device so the vehicle's steering wheel rotates all the way to the RIGHT and the LEFT. When this is completed, Side 1 displays "Booted."



You will need to activate the steering input device a second time so the vehicle's steering wheel rotates all the way to the RIGHT and the LEFT. When this is completed, Side 2 displays "Booted."



When completed, both sides will display "Booted" and move on to the final boot-up screen.

SYSTEM BOOTED

When the system has successfully completed all required tests, it is ready for operation using the AEVIT input device(s) and display. The following message will appear on the screen:



AEVIT 2.0 SYSTEM OPERATION


BOOTING THE SYSTEM DOWN

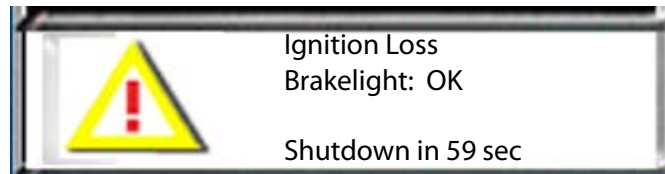
EMC **recommends** that the vehicle be in PARK and the vehicle's tires are pointing straight ahead before booting the AEVIT system down.

In order to successfully boot down AEVIT 2.0 the following conditions are **required**:

1. The vehicle is not moving.
2. The AEVIT input devices are in the center or "null" position and not moving.
3. The vehicle's brake pedal is NOT depressed.

The WHITE IMC and the ALERT Icon are used to communicate the status of the AEVIT 2.0 system during the boot-down procedures. When all above conditions are met, turn OFF the vehicle's engine by pressing and

releasing the  icon. The following screen will appear:



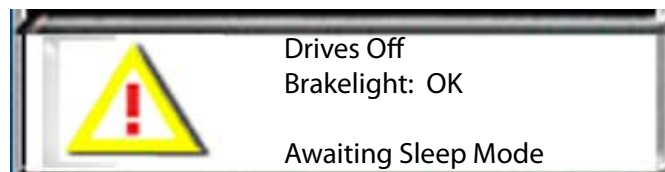
This indicates that the AEVIT primary system has begun its shutdown process. The timer starts at 60 seconds and counts down to 0. Any of the following items would cancel the shutdown routine if they were to occur:

1. The vehicle is moving. If the system detects that the vehicle is in motion, it will not allow a shutdown.
2. The AEVIT input device(s) were moved. If the system detects movement from any of the input devices, it will not allow a shutdown.
3. The vehicle's brake pedal is depressed. The system is expecting the brake pedal to be completely released so that the brake light won't remain ON when the system is shutdown. This could cause a drain on the vehicle's battery if the pedal was depressed.

As soon as all conditions are in agreement, a five minute timer will start a countdown to enter sleep mode. There are two (2) methods to enter sleep mode:

1. Wait five minutes.
2. Press and hold the ALERT icon for two (2) seconds.

When it shuts down the following screen appears:



This is the final screen before the AEVIT system goes into Sleep Mode and the display goes dark. After the system enters Sleep Mode, you must wake it up to operate the system. See page C4-1 for instructions on waking up the AEVIT system.

AEVIT 2.0 is designed to utilize several different “plug and play” input devices to control the gas/brake and/or steering functions:

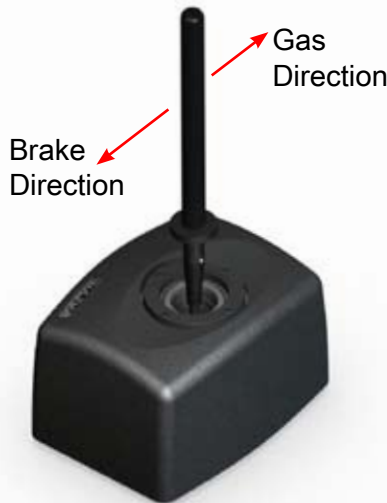
GAS/BRAKE

Lever – this device has 4” of travel (at the top of lever) and requires 4 lbs of force to operate it from the full gas to the full brake position. It rotates a total of 90° with 45° in the gas direction and 45° in the brake direction. The picture below is a side view of the lever. In the STANDARD setting for gas/brake orientation, the gas direction is to the right (or forward when the input device is mounted in the vehicle).



The mechanical force required to operate the lever can be adjusted. Please contact your EMC Certified Dealer for additional information.

Joystick – this device has a total range of motion of 60° and requires 3.2 oz of force to operate. It will move 30° in the gas direction and 30° in the brake direction.



NOTE:

ALL GAS/BRAKE INPUT DEVICES HAVE INDEPENDENTLY ADJUSTABLE SENSITIVITY SETTINGS FOR GAS AND BRAKE. PLEASE CONTACT YOUR DRIVING EVALUATOR OR YOUR EMC CERTIFIED DEALER FOR ADDITIONAL INFORMATION.

It is important to use additional CAUTION when operating the AEVIT gas/brake input device in the brake direction. In almost all passenger vehicles, the brake pedal is capable of traveling several inches from the "null" position (no brake applied) to the full brake position (i.e. an emergency stop). In normal driving, it is required that the pedal move only 1-2 inches to bring the vehicle to a stop and remain stationary. This same distance equals between 25% and 50% of the full range of the AEVIT gas/brake input device for the brake direction.

This is important for two (2) reasons. The first is that the AEVIT system constantly monitors the force required to activate the servomotors. If the force is too high for five (5) seconds or longer, the system will record an "Excess Motor Force" event code (see Diagnostic Codes for additional information on this event). The most common cause for this event in the gas/brake portion is that the servomotor is placed in the 50% to 100% of full brake travel while the vehicle is at rest at a stop sign or stoplight. This would be equivalent to someone pushing as hard as they could with their foot on the vehicle's brake pedal simply to keep the vehicle from moving while in gear.

The second reason is to ensure proper operation of the EMC Electric Park Brake. Remember that the EMC Park Brake operates in momentary mode when activated by the AEVIT gas/brake input device. This means that it is possible to engage and disengage the park brake a number of times simply by moving the input device past the 90% brake position then releasing it slightly and moving it back above 90% again. The EMC Electric Park Brake is not designed for constant operation and may reach a thermal (temperature) limit which may cause it to remain engaged for a short period of time while it cools down.

CAUTION:

TO REDUCE THE NUMBER OF "EXCESSIVE MOTOR FORCE" EVENTS AND TO ENSURE PROPER OPERATION OF THE EMC ELECTRIC PARK BRAKE, BE SURE THAT THE AEVIT GAS/BRAKE INPUT DEVICE IS OPERATING BETWEEN THE "NULL" POSITION AND 25% TO 50% OF FULL BRAKE TRAVEL DURING NORMAL DRIVING.



STEERING

Wheel – this device has 2:1 turn ratio to the factory steering wheel. That means that for every two revolutions of the AEVIT wheel, the factory wheel will rotate once. The AEVIT wheel requires only 3.2 oz of force at the proper orthotic position of 3 3/8" from center.



Wheel shown with optional Spinner Knob orthotic

NOTE:

THE TYPE AND LOCATION OF THE ORTHOTIC DEVICE SHOULD BE DETERMINED BY YOUR DRIVING EVALUATOR.

Joystick – this device has a total range of motion of 60° and requires 3.2 oz of force to operate. It will move maximum of 30° to the LEFT and 30° to the RIGHT.



JOYSTICK STEERING

The steering joystick will control the steering servomotor differently depending on how the Driving Evaluator and/or EMC Certified Dealer configured your system.

There are five (5) different sensitivity settings:

1. Hybrid 1
2. Hybrid 2
3. Hybrid 3
4. Original Band
5. Expanded Band

Hybrid

Using any of the Hybrid settings will allow for immediate movement of the vehicle’s steering wheel when the joystick is moved away from center. The settings are broken up into two (2) zones: Zone 1 and Zone 2. Zone 1 is considered “low gain” which means that a lot of movement of the joystick equals little movement of the steering wheel. Zone 2 is considered “high gain” which means a small movement of the joystick equals a large movement of the steering wheel.

Zone 1 starts with the vehicle’s steering wheel straight ahead in the 12 o’clock position and stops at 125° of rotation to the LEFT and to the RIGHT (Figure 1). In other words, Zone 1 is 250° of rotation around the straight ahead center position and is where 90% of the typical vehicle steering will occur at speeds above 10 MPH. Zone 2 starts at the 125° mark where Zone 1 stops and goes to the full LEFT and full RIGHT end stop. This is the remaining 10% of the steering which is utilized for low speed maneuvers (lower than 10 MPH), 90° turns and parking.

In the Hybrid settings the joystick is also broken up into two (2) zones. Zone 1 starts with the joystick in the center position and stops at 20° of movement to the LEFT and to the RIGHT of center. Zone 2 starts at the 20° mark where Zone 1 stops and goes the additional 10° to the LEFT and to the RIGHT until it reaches the mechanical end stop of the joystick (Figure 2).



Figure 1



Figure 2

The different Hybrid settings affect the sensitivity and the response of the steering servomotor from the joystick when it is in Zone 1 only. All settings have the same response when in Zone 2. The following are detailed descriptions of each Hybrid setting:

Hybrid 1 – this is the slowest response setting which means that the rate at which the motor follows the joystick position takes longer than other settings.

Hybrid 2 – **This is the default setting for all joystick steering systems that are shipped from EMC.** This is a medium response setting and twice the speed of Hybrid 1.

Hybrid 3 – this is the fastest response setting and three times the speed of Hybrid 1.

While operating with any of the Hybrid settings, you will notice that vehicle’s steering wheel and the steering servomotor do not fully return to the “straight ahead” position when the joystick is released to the center position . This is normal. The Hybrid settings were intended to emulate the way a vehicle’s steering system behaves when driven using the vehicle’s steering wheel.

For example, if you are driving using the vehicle’s steering wheel and you make a 90° turn at a stop sign or stoplight, if you let go of the steering wheel to straighten out, the wheel will begin to return to center on its own after it starts moving because of the natural dynamics of the vehicle. It will not return completely to center so it is up to the driver to make the final corrections to bring the wheel back to center. The same is true if you let go of the joystick while operating the vehicle using one of the Hybrid settings.

NOTE:

IT IS NORMAL THAT THE VEHICLE’S STEERING WHEEL AND THE STEERING SERVMOTOR NOT ROTATE ALL THE WAY BACK TO THE STRAIGHT AHEAD CENTER POSITION WHEN USING ANY OF THE HYBRID SETTINGS.

Original and Expanded Bands

For Original and Expanded Bands, the joystick is divided into three (3) separate input control bands: Centering Band, Holding Band, and Motion Band.



Centering Band – when the joystick is in this band, the steering servomotor begins to return to the “straight ahead” steering position. The speed of the motor is proportional to the distance that the joystick is away from the center. In other words, if the joystick is just inside the Centering Band, the servomotor will rotate slower than if the joystick is in the center. This band is 10° in Original Band and 8° in Expanded Band.

Holding Band – when the joystick is in this band, the steering servomotor will hold its current position and will not move. This band is just outside the Centering Band and its purpose is to hold the vehicle’s steering wheel in a fixed position during a turn. It is 5° in Original Band and 4° in Expanded Band.

Motion Band – when the joystick is in this band, the steering servomotor begins to rotate to the LEFT (or RIGHT) at a speed that is proportional to the position of the joystick within the band. For example, the steering servomotor will rotate slower when you first enter the Motion Band, and will increase proportionately as the stick is moved out towards the end stop. This band is 15° in Original Band and 18° in Expanded Band.

Drift Band

This is a feature of the steering servomotor regardless of the sensitivity setting for the joystick. In other words, consider this an output band as opposed to one of the five (5) input bands. To make it easier to understand, don’t think about the position of the joystick but rather the position of the steering wheel.

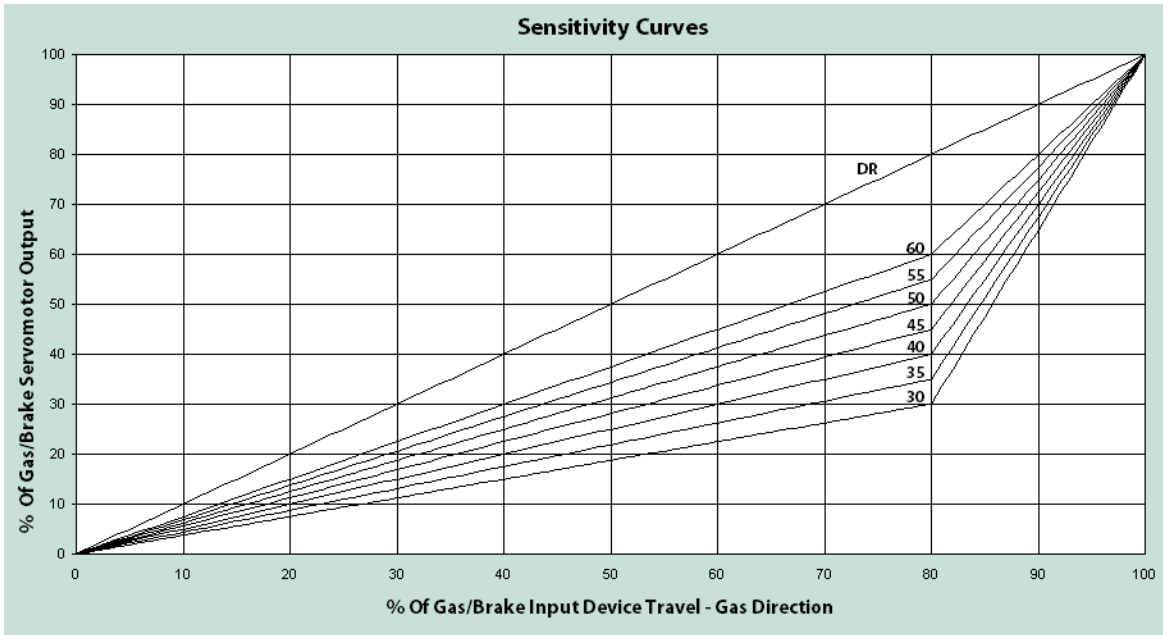
The Drift Band is the first 5° of rotation of the steering wheel to the LEFT and RIGHT of straight ahead center. When the joystick is moved and the steering wheel rotates but stays within the Drift Band, the steering wheel will remain at that position when the joystick returns to center.

The purpose is to allow the driver make small alignment corrections without the wheel returning to center. This helps to compensate for wind, a crown in the road, or other factors that might cause a temporary change in the straight ahead center position of the vehicle. The Drift Band is not retained in memory so as soon as the steering wheel rotates past the 5° mark in either direction, the steering wheel will return to its original center position when the joystick returns to center.



Gas and Brake Sensitivity Curves

AEVIT is designed to have independent adjustment of the Gas and Brake sensitivity so that when the input device travels from the null position to the full gas or brake position, the gas/brake servomotor will track the position of the input device. Direct Response is a linear relationship with the greatest sensitivity around the null position whereas the Hybrid 30 setting has the least amount of travel around the null position and sensitivity increases as the input device approaches the full gas or brake position. Refer to the following chart for relationships between the sensitivity settings:



Legend

- 30 - Hybrid 30
- 35 - Hybrid 35
- 40 - Hybrid 40
- 45 - Hybrid 45
- 50 - Hybrid 50
- 55 - Hybrid 55
- 60 - Hybrid 60
- DR - Direct Response

The default setting for Gas is Hybrid 60 and for Brake is hybrid 40. Please contact your driver trainer for information on how to change these settings.



Gas & Brake Systems

The EMC AEVIT Gas/Brake system is designed to allow for “able-bodied” individuals to operate the OEM controls without any change in the system’s mechanics. The only change that “able-bodied” individuals may notice is a smaller target to apply the brake. If your system is only utilizing the Gas/Brake controls of AEVIT, you will only need to disable the system by pressing the ALERT Icon on the Display when the vehicle’s ignition is turned on.

When operating the vehicle’s brake pedal with the AEVIT Gas/Brake controls disabled it is important to keep your foot from touching the AEVIT Gas/Brake drive arm (see figure 1). When AEVIT is disabled it is possible to “back drive” the servomotor if you put your foot on the roller to apply the vehicle’s brake pedal instead of putting it on the rubber pad (see figure 2). If the servomotor is back driven, the drive arm may remain in the brake position when your foot is removed. This would cause the vehicle’s brakes to remain applied. Continued operation of the vehicle with the brakes applied may cause premature wear of the brake pads and rotors.

If you were to accidentally “back drive” the servomotor, the AEVIT display will detect that the brakes are applied and change the BRAKE icon from BLUE to RED. When this occurs, simply put your foot behind the brake and pull towards you until the pedal and the AEVIT drive arm returns to the “null” position (no brakes applied).

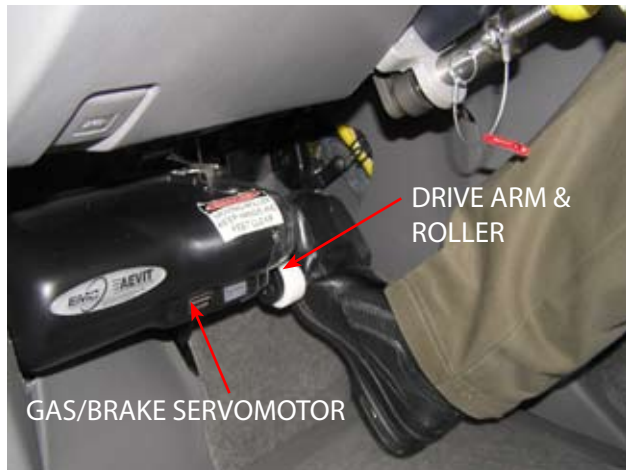


FIGURE 1: CORRECT



FIGURE 2: INCORRECT

CAUTION:

DO NOT APPLY THE VEHICLE’S BRAKES PEDAL BY PUSHING ON THE GAS/BRAKE DRIVE ARM. THIS MAY CAUSE THE VEHICLE’S BRAKES TO REMAIN APPLIED LEADING TO PREMATURE WEAR OF THE BRAKE PADS AND ROLLER.

Steering Systems

The AEVIT steering system was designed to allow the vehicle to be operated by multiple persons, not just the adaptive equipment driver. The following section covers both “Disengaging” and “Engaging” the entire AEVIT steering system.

In order to switch between the OEM steering controls and the AEVIT system, the vehicle’s tires must be pointing straight ahead and the factory steering wheel centered. If this was not done, the vehicle must be started and the tires & OEM steering wheel centered before proceeding.

WARNING:

THE ENGINE MUST BE RUNNING TO ENGAGE OR DISENGAGE THE STEERING SERVOMOTOR. WITHOUT POWER ASSIST, THE LEVER CAN BE DAMAGED DUE TO EXCESSIVE LOADING ON THE GEAR PAIR. IF THE LEVER BECOMES DIFFICULT TO MOVE, DO NOT FORCE IT. CONTACT THE EMC SERVICE DEPARTMENT FOR ASSISTANCE.

“Disengaging” AEVIT Steering Controls

“Disengaging” - Mechanically disconnecting the AEVIT steering servomotor gear from contact with the vehicle’s steering column, thus allowing the steering function of the vehicle to be operated by the OEM controls. This operation is performed when a person is preparing to drive the adapted vehicle using the OEM steering controls.

STEP 1: Ensure that the vehicle **tires and OEM steering wheel are centered**. If they are not, start the vehicle, boot-up the AEVIT system, center the tires and wheel, and then boot-down the system.

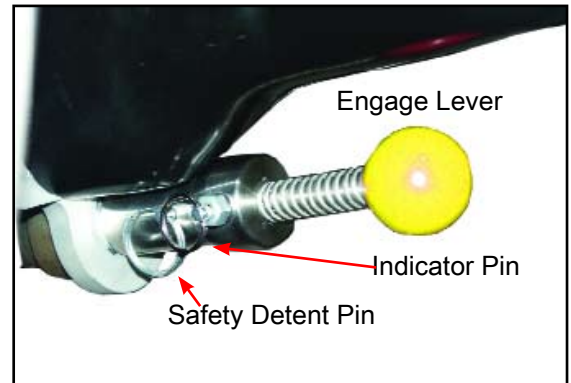
STEP 2: Turn ON the ignition.

STEP 3: Press the ALERT Icon on the AEVIT Display to disable the steering system and start the vehicle.

STEP 4: The engage lever has two pins. The larger pin is the Safety Detent Pin and can be completely removed. The smaller pin is the Indicator Pin which is spring-loaded and captive. Reach down and pull the Safety Detent Pin out of the Engage Lever.

STEP 5: Apply a very small amount of downward pressure to the engage knob and Pull out the Indicator Pin about a 1/4”. The knob is spring loaded, so you should feel some resistance. Continue to push in the engage knob until you feel the Indicator Pin lock in place.

STEP 6: Replace the Safety Detent pin in the Engage Lever. Do NOT operate the vehicle without the Safety Detent Pin installed. If this pin is removed and lost, contact EMC Service to get a replacement.



“Engaging” AEVIT Steering Controls

“Engaging” - Mechanically connecting the AEVIT servomotor gear to the vehicle’s steering column, thus allowing the steering function of the vehicle to be operated by the AEVIT input device. This operation is performed after a person has driven the vehicle using the OEM controls and is reactivating the AEVIT controls. It is always a good idea to have the vehicle returned to AEVIT control after an individual has used the vehicle with the OEM controls.

STEP 1: Turn the vehicle’s ignition ON and **start the engine**. Do not disable the system by pressing the ALERT Icon. The AEVIT system will be emitting an alarm to signify that the column is disengaged and will continue to do so until you have completed this procedure.

STEP 2: Using the factory steering wheel, **position the vehicle’s tires so that they are pointing straight ahead**.

STEP 3: (Wheel input devices only) The Display may indicate that you need to steer the EMC input device left or right. This is so that you can align the steering servomotor with the steering input device. When you are aligned, an“()” will be displayed and the Display will say “AEVIT CENTERED”.

STEP 4: Reach down and **pull the Safety Detent Pin** out of the Engage Lever.

STEP 5: Apply a very small amount of downward pressure to the engage knob and **pull on the Indicator Pin out about a 1/4”**. You will feel the knob release and spring up about a 1/4”.

STEP 6: **Rotate the OEM steering wheel left and right** (no more than 5°-10°) until you feel the Engage Lever lock in place. **Ensure that the Indicator Pin is also locked in place**.

STEP 7: **Replace the Safety Detent pin** in the Engage Lever. Do NOT operate AEVIT without the Safety Detent Pin installed. If this pin is removed and lost, contact EMC Service to get a replacement.

WARNING:

DO NOT OPERATE AEVIT WITHOUT THE STEERING SERVO MOTOR SAFETY PIN INSTALLED. IF THE ENGAGE LEVER BECOMES DISENGAGED WHILE DRIVING, THE DRIVER WILL HAVE COMPLETE LOSS OF STEERING CONTROLS WHICH COULD RESULT IN AN ACCIDENT, INJURY AND/OR DEATH.

Your AEVIT 2.0 system is designed to provide you with years of trouble free operation. To ensure your safety, EMC has outlined service requirements for your system. Your EMC dealer is familiar with this procedure and should have discussed routine maintenance and parts replacement with you prior to the delivery of your vehicle. If you have not discussed this with your EMC dealer, do so immediately.

As an owner, you must follow specific maintenance requirements to ensure that the system is maintained properly. The following sections provide details on the three types of service that must be performed: Routine Maintenance, OEM Equipment Maintenance, and Factory (EMC) Routine Maintenance.

WARNING:

FAILURE TO COMPLY WITH THIS MAINTENANCE PROGRAM MAY VOID YOUR WARRANTY AND PLACE YOUR VEHICLE IN AN UNSAFE CONDITION WHICH COULD RESULT IN INJURY AND/OR DEATH.

Routine Maintenance

An initial inspection must be performed no later than 6 months or 6,000 miles after delivery of your system. Routine inspection and service must be performed every 45,000 miles, 3 years, or 1500 hours, (whichever comes first) to inspect and replace serviceable items. During these inspections you should be communicating with your dealer about the performance of your EMC equipment.

The hours of operation are monitored internally by the AEVIT 2.0 system. The system will notify you on the AEVIT Display when the hours get within 50 hours of the scheduled maintenance. This will allow you to make the necessary arrangements to schedule a service appointment. This notification can be cleared by the pressing the ALERT icon.

EMC routinely upgrades the AEVIT operating software. Have your dealer check to see if any upgrades for your system are available. For more details on the Routine Maintenance, contact your EMC Certified Dealer.

OEM Equipment Maintenance

As part of the minimum service requirements for EMC equipment, we include the routine maintenance of your OEM equipment, (i.e. fluids, brakes, steering, etc.) as recommended by the vehicle manufacturer.

When servicing the OEM steering equipment (front end alignment or repairs), be sure that the AEVIT steering servomotor is disengaged and the system is disabled. This will eliminate the possibility of the AEVIT steering system interfering with the OEM steering controls. Once all repairs are complete, EMC recommends that you have your EMC Certified Dealer check the center steering position of your system. The alignment and/or repairs may have caused the steering system to require recalibration.

WARNING:

ONLY ALLOW PERSONS TRAINED IN THE OPERATION OF EMC PRIMARY DRIVING CONTROLS TO OPERATE YOUR VEHICLE WITH THE ADAPTIVE DRIVING EQUIPMENT. OPERATING THIS SYSTEM WITHOUT PROPER PROFESSIONAL TRAINING COULD RESULT IN INJURY AND/OR DEATH.

Factory (EMC) Routine Maintenance

To assure the AEVIT system remains in good working order, EMC recommends that routine maintenance be performed at predetermined intervals based on hours of use. This maintenance will be performed by visiting any EMC Dealer. The Dealer will inspect and / or adjust key components of the system and also send an Operation Log to EMC to determine if additional service is required.

The AEVIT system records the amount of time it has been used and uses these hours to determine when the next service is due. When the system is within 50 hours of each service interval, a reminder will be shown on the Display reminding the user that Dealer service approaching. This reminder will be reset by the Dealer during the service. Since every vehicle is used differently, each user has the option to schedule service with their Dealer more frequently than the EMC intervals.

When the 7500 hour service interval comes due, the reminder on the Display will show 'Factory Service Required'. At this interval the Dealer will coordinate with EMC to determine if certain components must be returned to EMC for service. If components do not need to be returned to EMC, it could happen at a later service interval.

The table below outlines the key service intervals and the key components the EMC Dealer will Inspect and/or Replace. The mileage and years listed are approximated based on average usage.

Factory (EMC) Maintenance Schedule

Service Items	Time	1500	3000	4500	6000	7500	9000
	Hours						
	Miles (x1000)	45	90	135	180	225	270
	Km (x1000)	72	144	216	288	360	432
Years	3	6	9	12	15	18	
Accelerator Cable		R	R	R	R	R	R
Backup Battery		R	R	R	R	R	R
Review Operation Log		I	I	I	I	I	I
Software Revisions		I	I	I	I	I	I
Servomotor(s) operation		I	I	I	I	I	I

I = Inspect, R = Replace



NOTE:

THE AEVIT SYSTEM WILL ALARM AND A RED SCREEN WILL COME UP THAT DISPLAYS "OBD COMMUNICATION". THIS IS NORMAL AND WILL CONTINUE TO OCCUR AS LONG THE AEVIT OBD WIRE HARNESS IS NOT CONNECTED TO THE VEHICLE'S OBD PORT.

OBD Module

The On Board Diagnostic (OBD) Module that was installed in conjunction with your AEVIT 2.0 system doesn't require any maintenance but the wire harness that was connected to the vehicle's OBD port will need to be removed if a technician needs to hook up a scan tool or any other diagnostic device that requires connection to the vehicle's computer through the OBD connector.

Typical vehicle OBD connectors are located on the lower left side of the driver's area.

Observe the following steps when you disconnect the AEVIT OBD wire harness to hook up a scan tool:

1. Turn the vehicle's ignition OFF.
2. Disconnect the AEVIT OBD wire harness from the vehicle's OBD port.
3. Connect the scan tool or other diagnostic equipment.
4. Turn the vehicle's ignition ON and perform required tasks.
5. Turn the vehicle's ignition OFF.
6. Reconnect the AEVIT OBD wire harness to the vehicle's OBD port.

Owner's Responsibilities

Accident Reporting

It is the policy of EMC that all owners of EMC equipment report any vehicle accident to EMC regardless of the severity or cause of the accident. The force of an impact could cause damage to the electronic or mechanical components within your system. For your safety, EMC requires that all primary driving controls be returned to EMC for inspection when involved in an accident, prior to being placed back in service.

EMC Customer Database

EMC does maintain a customer database aside from your Certified Dealer. If you move, please notify EMC of your new address so that we can contact you if necessary. Also, we ask that you notify EMC if you sell your equipment, or if it is no longer in service, so that we can update our records.

Selling your EMC equipment

In the event that you decide to sell your equipment to anyone other than an EMC Certified Dealer, please remember that great care was taken to ensure that you were properly trained when you first bought your EMC equipment. It is imperative that the buyer receives proper evaluation, training and fitting before operating a vehicle equipped with EMC driving controls. Operating this system without proper professional training could result in injury and/or death. We strongly advise you to refer any potential purchaser to a professional Driver Rehabilitation Specialist. For your convenience, a list of EMC Recommended Rehab Specialists is located on the EMC website, www.aevit.com.

EVENT MESSAGES

When the AEVIT system is powered up, it is constantly monitoring the status of the entire system. When an AEVIT Event Code (AEC) is detected, the right side of the WHITE IMC will turn **RED** and the event message will appear.



The **RED** screen serves the same purpose for the AEVIT system as the vehicle's instrument cluster or message center does for the vehicle. The vehicle will notify the driver using a series of lights and even a message written on a display for any number of things including:

1. Low Fuel
2. Low Battery Voltage
3. Low Tire Pressure
4. Seat Belt Not ON
5. Check Engine (a catch all for problems detected by the engine management system)

Some AEVIT system events will require you to turn OFF the ignition and reboot the system while others can be cleared easily by pressing and releasing the ALERT icon. The following is a list of events with possible causes and solutions:

AEVIT EVENT CODES (AEC) WHICH ARE LIKELY TO BE DISPLAYED:**Low Vehicle Battery**

Description: The main vehicle's battery has dropped below 11.5 VDC for more than one second.

Possible Causes:

- The main vehicle battery is bad.
- The vehicle's alternator is not functioning properly.
- The 50A AEVIT fuse is bad.
- The AEVIT power wire to the main vehicle battery is not connected.

Possible Solutions:

- Replace the main vehicle battery.
- Have the vehicle's alternator serviced.
- Inspect the 50A AEVIT fuse.
- Inspect the connection of the AEVIT power wire to the main vehicle battery.
- Inspect the connection of the AEVIT power wire to the AEVIT Control Module inside the AEVIT Chassis.

To Clear the AEC: Once the voltage is back above 11.5 VDC, the audible alarm will stop.

Low AUX Battery (AUXBAT)

Description: The AEVIT auxiliary battery has dropped below the acceptable threshold for more than one second. There are two different thresholds, one for when the AUXBAT is not being charged by the vehicle's alternator (11.5 VDC) and the other when it is charging the AUXBAT (12.5 VDC).

Possible Causes:

- The AUXBAT is bad.
- The vehicle's alternator is not functioning properly.
- The AUXBAT is not connected either under the hood or at the AEVIT Control Module inside the AEVIT Chassis.

Possible Solutions:

- Replace the AUXBAT.
- Have the vehicle's alternator serviced.
- Inspect the AUXBAT connection under the hood and at the AEVIT Control Module inside the AEVIT Chassis.

To Clear the AEC: Once the voltage is back above 11.5 VDC, the audible alarm will stop. Then press the ALERT icon to clear the screen or wait for it to clear itself.

Low Drive Battery

Description: The AEVIT Drive Module has detected that the vehicle or AUXBAT battery level has dropped to 10.5 VDC for over 10 seconds. If this AEC is present without "Low Vehicle Battery" or "Low AUX Battery" present, this would indicate the main power wire to the Drive Module has become disconnected.

Possible Cause:

- The Power Transfer Wire Harness from the Control Module to the Drive Module or between the two (2) Drive Modules is not connected inside the AEVIT Chassis.

Possible Solution:

- Inspect the Power Transfer Wire Harnesses inside the AEVIT Chassis.

To Clear the AEC: Once the voltage is back above 10.5 VDC, the audible alarm will stop. Then press the ALERT icon to clear the screen.

Throttle

Description: The AEVIT system has detected that the vehicle's throttle pedal is being applied without moving the AEVIT input device in the gas direction.

Background: The AEVIT system monitors the position of the vehicle's throttle pedal through the OBD module that was installed during the original modification of your vehicle. In order to prevent unintended acceleration, the AEVIT system will kill the engine if the position of the AEVIT input device does not agree with the position of the vehicle's throttle pedal. This can only happen when AEVIT is properly booted up. The event will not occur when the AEVIT system is disabled.

When this occurs, the AEVIT system will automatically turn ON the Hazards. In order to completely reset the system including turning the Hazards OFF perform the following steps:

- Put the AEVIT input device in the BRAKE position so the BRAKE icon lights up on the Display.
- Shift the vehicle to PARK.
- Turn OFF the vehicle's ignition.
- Turn OFF the Hazards.
- Turn ON the vehicle's ignition.
- Depress the START icon to start the vehicle.

Possible Causes:

- The system is booted up in AEVIT mode and the vehicle's throttle pedal is depressed.
- The vehicle's throttle pedal is stuck because of a kink in the accelerator cable due to incorrect installation.

Possible Solutions:

- Ensure that the vehicle's throttle pedal is not depressed while the AEVIT system is booted up.
- Have the throttle cable from the gas/brake servomotor to the vehicle's throttle pedal inspected.

DM-X00 Drive Motion

Description: The servomotor (gas/brake or steering) did not move to the position required by the input device. The X refers the processor number in the AEVIT Drive Module 0, 1, 2, & 3 are for steering and 4, 5, 6, & 7 are for gas/brake.

Possible Causes:

- The steering servomotor is not engaged correctly and the vehicle's steering wheel is hitting one of the mechanical end stops (either full LEFT or RIGHT).
- The vehicle's tires are up against a curb or some other impediment which is preventing the steering servomotor from rotating.
- The vehicle hit a pothole while driving and the steering wheel jerked which caused the motor to rotate unexpectedly.
- Something prevented the gas/brake servomotor from rotating properly.

Possible Solutions:

- Verify the steering servomotor is engaged correctly.
- Verify that the vehicle's tires are not against a curb or other object.
- Verify that nothing is preventing the gas/brake servomotor from rotating properly.

To Clear the AEC: The message and the alarm will remain until the ignition is turned OFF and AEVIT is rebooted.

Excess Motor Force

Description: The servomotor (gas/brake or steering) has been under excessive load for more than five (5) seconds.

Possible Causes:

- The vehicle's power steering pump or brake booster has failed.
- The gas/brake servomotor is being held too far in the brake direction for too long. This can be a common occurrence for new AEVIT drivers.

Possible Solutions:

- Have the vehicle's power steering and/or power brake system inspected.
- Ensure that the gas/brake servomotor is not being held too far in the brake direction. It should be in a position that will apply the brake enough to stop the vehicle and hold it stationary.

To Clear the AEC: Once the excessive load is removed from the servomotor, the alarm will stop. Then press the ALERT icon to clear the screen.

OBD Error

Description: The AEVIT system has lost communication with the vehicle's On Board Diagnostic port.

Background: Part of the AEVIT 2.0 system includes an external On Board Diagnostic (OBD) Module. This module communicates directly with the vehicle's OBD port found on the left side of vehicle's steering column at the bottom of the dash panels. The AEVIT system monitors the following vehicle functions:

- Engine RPM
- Vehicle Speed
- Vehicle Throttle Pedal Position

Possible Causes:

- The wire harness from the OBD Module to the vehicle's OBD port is not connected.
- The wire harness from the OBD Module to the VIM is not connected.

Possible Solutions:

- Ensure the wire harnesses from the OBD Module to the vehicle's OBD port and to the VIM have been properly connected.

To Clear the AEC: Once communication to the OBD Module has been re-established, the alarm will stop. Then press the ALERT icon to clear the screen.

RPM Expected

Description: The AEVIT system has not detected a valid RPM signal from the vehicle.

Possible Causes:

- The vehicle has not been started.
- The OBD Module is not connected to the vehicle.

Possible Solutions:

- Start the vehicle.
- Ensure the OBD Module is properly connected.

To Clear the AEC: Once a valid RPM is detected from the vehicle, the alarm will stop. Then press the ALERT icon to clear the screen.

Speed Expected

Description: The AEVIT system has not detected a valid Vehicle Speed signal from the vehicle. The event is generated when the vehicle's speed has been less than 10 mph and the brake light has been OFF for a period of 15 minutes after the ignition was turned on. After the first event is recorded, it occurs every 3 minutes until the system is rebooted.

Possible Causes:

- The vehicle is not moving while the engine is running and the vehicle's brake is NOT applied.
- The OBD Module is not connected to the vehicle.

Possible Solutions:

- Do not have the vehicle sit for extended periods of time with the engine running.
- Ensure the OBD Module is properly connected.

To Clear the AEC: Once a valid RPM is detected from the vehicle, the alarm will stop. Then press the ALERT icon to clear the screen.

AEC WHICH ARE NOT LIKELY TO BE DISPLAYED:**NOTE:**

IF ANY OF THE FOLLOWING AEC CONTINUE TO APPEAR ON THE AEVIT DISPLAY, CONTACT YOUR EMC CERTIFIED DEALER OR EMC DIRECTLY REGARDING THE STEPS TO TAKE TO CLEAR THE AEC.

Control Module Events (CM-XXX)**CM-900: Steering Type Change**

The steering input device has changed since the last bootup.

CM-901: GB Type Change

The gas/brake input device has changed since the last bootup.

CM-902: Steering Mismatch

One of the processors inside the Drive Module does not agree with the others on the type of steering input device that should be connected.

CM-903: GB Type Mismatch

One of the processors inside the Drive Module does not agree with the others on the type of gas/brake input device that should be connected.

CM-904: Control Shutdown

The AEVIT system is attempting to shutdown and goes into sleep mode but it cannot. This could be because the "Wake Up" switch is depressed or the "Remote Start" has been activated.

CM-905: Drive Timeout

The Control Module has lost contact with the Drive Module.

CM-906: Interface Timeout

The Control Module has lost contact with the VIM.

CM-907: Coil Pulses Expected

This will show up on the Display as 'RPM Expected' without reference to CM-907. See earlier explanation on P8-4.

CM-908: Speed Expected

This will show up on the Display as 'Speed Expected' without reference to CM-908. See earlier explanation on P8-4.

CM-909: RTC Battery Low

The AEVIT system has detected that the internal battery in the real time clock (RTC) in the Control Module is low. The battery has an expected life of 10 years. If this event continues the module must be sent in for service and the RTC chip must be replaced.

CM-910: Control Reset

The Control Module has been shutdown unexpectedly.

CM-911: Control Watchdog

The Control Module has an internal time-out issue.

CM-912: Control Bootdown

The Control Module has been shutdown unexpectedly.

CM-913: Software Update

The Control Module detected that new software was uploaded.

CM-914: Data Log Block Write

The Control Module has detected a problem with writing information from the G-sensor.

CM-915: Data Log Blocks Full

The Control Module has detected that all the information blocks are full. The AEVIT system will not bootup without an alarm until the system is returned to EMC for service.

CM-916: Low Vehicle Battery

This will show up on the Display as 'Low Vehicle Battery' without reference to CM-916. See earlier explanation on P8-1.

CM-917: Low AUX Battery

This will show up on the Display as 'Low AUX Battery' without reference to CM-917. See earlier explanation on P8-1.

CM-918: Control X Accl Limit

The AEVIT system has detected an unusually high force in the side direction. This could include a vehicle accident, a large pothole in the road, or an evasive maneuver to avoid an accident.

CM-919: Control Y Accl Limit

The AEVIT system has detected an unusually high force in the front or rear direction. This would include a vehicle accident or an aggressive braking maneuver to avoid an accident.

CM-920: Control Limit Event

The AEVIT system has detected a communication problem with information being transmitted from the Drive Module to the Control Module.

CM-921: Download Operational Log

The AEVIT system has downloaded the Operational Log to the compact flash (CF) card.

CM-922: Download Data Log

The AEVIT system has downloaded the Data Log to the compact flash (CF) card.

CM-923: Dealer Screens Entered

The AEVIT system has detected that the Dealer Screens have been entered.

CM-924: Evaluator Screen Entered

The "Evaluator Screen Entered" event is generated when the Evaluator Screen is entered.

CM-925: Control A2D Event

The Control Module has detected an event with the analog to digital (A2D) converter on its own board.

CM-926: Gateway Timeout

The Control Module has lost communication with the OBD Gateway Module.

Drive Module Events (DM-XXX)

The "X" in the Drive Module AEC denotes the specific processor within the Drive Module(s). Steering is represented by 0, 1, 2, & 3. Gas/Brake is represented by 4, 5, 6, & 7. In other words, DM-401 is an Encoder out of Range event for the Gas/Brake Drive Module.

DM-x01: Encoder out of Range

The Drive Module has detected that one of the analog feedback channels from the servomotor encoder is not within the normal operation range.

DM-x02: Encoder Mismatch

The Drive Module has detected that the analog and the digital feedback channels do not agree.

DM-x03: Input out of Range

The Drive Module has detected that one (1) of the three (3) input signals from the input device is not within the normal operating range.

DM-x04: Input Mismatch

The Drive Module has detected that one (1) of the three (3) input signals from the input device does not agree with the others.

DM-x05: Evaluator out of Range

The Drive Module has detected that one (1) of the three (3) input signals from the Evaluator Panel is not within the normal operating range.

DM-x06: Evaluator Mismatch

The Drive Module has detected that one (1) of the three (3) input signals from the Evaluator Panel does not agree with the others.

DM-x07: Drive Temperature

The Drive Module has detected a temperature above 50°C or below -20°C. This could be caused by a blocked fan or excessive operating current for extended periods of time.

DM-x08: Drive Reset

The Drive Module has been shutdown unexpectedly.

DM-x09: Drive Boot Down

The Drive Module has been shutdown unexpectedly.

DM-x10: Drive Watchdog

The Drive Module has an internal time-out issue.

DM-x11: Drive Reference

The Drive Module has detected a problem with the +5 VDC supply voltage for the input device and analog feedback device.

DM-x12: CAN Input Match

The Drive Module has detected that the value read off the analog input device does not match the value reported by the safety drive on the same side.

DM-x13: RESERVED 1

Unused

DM-x14: Winding Short Event

The Drive Module has detected a shorted winding or a winding shorted to ground.

DM-x15: Winding Open Event

The Drive Module has detected that the operating current in the servomotor was not within specification.

DM-x16: Low Battery

This will show up on the Display as 'Low Drive Battery' without reference to DM-x16. See earlier explanation on P8-2.

DM-x17: Drive Limit Mismatch

The Drive Module detects a disagreement between the stored values within the module.

DM-x18: Interface Timeout

The Drive Module detects a communication problem with the VIM.

DM-x19: Control Timeout

The Drive Module detects a communication problem with the Control Module.

DM-x20: Drive Timeout

The Drive Module detects a communication problem with the other processors in the Drive Module(s).

DM-x21: A2D Warning

The Drive Module has detected an event with the analog to digital (A2D) converter on its own board.

DM-x22: CAN Traffic

The Drive Module has detected an overflow of messages on the CAN.

DM-x23: Evaluator ID

The Drive Module has detected that the wire harness from the Evaluator Panel is connected to the wrong Drive Module, i.e. steering harness is connected to the Gas/Brake Drive Module.

DM-x24: Evaluator Disconnection

The Drive Module has detected that the wire harness from the Evaluator Panel has become disconnected while the AEVIT system was booted.

DM-x25: Info: Software Update

The Drive Module has detected that new software was uploaded.

DM-x26: Backup Test Failed

The Drive Module detected that it did not successfully pass the arbitration self-test portion of the boot up. This is most likely caused by another system event detected during boot up.

DM-x27: Vehicle System Fault

The Drive Module detected that the servomotor (gas/brake or steering) has been under excessive load for more than five (5) seconds while the vehicle speed is at 0mph. The vehicle's power steering pump or brake booster may have failed. Or, the gas/brake servomotor is being held too far in the brake direction for too long.

DM-x28: Can Bus Event

The Drive Module has detected a communication problem on the CAN bus subsystem.

DM-x29: Unexpected Boot

The Drive Module has detected an unexpected boot up because one of the servomotors was back driven fast enough to power up the Drive Module.

DM-x30: Info: Drive Calibration

The Drive Module is reporting that a calibration has been performed. This will only appear on the Operation Log to show EMC whether an 'Input Center', 'Motor Center' or 'Zero All' was performed and will not be seen during normal operation.

Vehicle Interface Module (VIM) Events (VM-XXX)

VM-800: Interface Reset

The VIM has been shutdown unexpectedly.

VM-801: Interface Watchdog

The VIM has an internal time-out issue.

VM-802: Interface Bootdown

The VIM has been shutdown unexpectedly.

VM-803: Info: Software Update

The VIM detected that new software was uploaded.

VM-805: RESERVED

Unused

VM-806: Interface A2D

Used for troubleshooting. This will not be seen during normal operation.

VM-807: NMI

Used for troubleshooting. This will not be seen during normal operation.

VM-808: Stack Overflow

Used for troubleshooting. This will not be seen during normal operation.

VM-809: Stack Underflow

Used for troubleshooting. This will not be seen during normal operation.

VM-810: Hardware Trap

Used for troubleshooting. This will not be seen during normal operation.

VM-811: CAN Interrupt

Used for troubleshooting. This will not be seen during normal operation.

VM-812: Throttle Error

This will show up on the Display as 'Throttle' without reference to VM-812. See earlier explanation on P8-2.

VM-813: OBD Error

This will show up on the Display as 'OBD Error' without reference to VM-813. See earlier explanation on P8-3.

OBD CAN Module Events (OM-XXX)**OM-A00: OBD Reset**

The OBD CAN Module has shutdown unexpectedly.

OM-A01: OBD Watchdog

The OBD CAN Module has an internal time-out issue

OM-A02: OBD Bootdown

The OBD CAN Module has been shutdown unexpectedly.

OM-A03: OBD Software

The OBD CAN Module has detected that new software was uploaded.

OM-A04: OBD Bus Timeout

The OBD CAN Module has developed a communication problem with the vehicle's OBD CAN Bus. This is most likely caused by removing the vehicle's key from the tumbler while the AEVIT 2.0 system is awake.

OM-A05: OBD Interior Bus Timeout

The OBD CAN Module has developed a communication problem with the vehicle's Interior CAN Bus. This is most likely caused by a disconnection of the wires from the CAN Module to the vehicle's interior CAN Bus.

OM-A06: OBD Control Timeout

The OBD CAN Module has lost communication with the Control Module.

OM-A07: OBD Queue Overrun

The OBD CAN Module has detected an overrun of the messages out of the CAN Module to the vehicle's CAN Bus.

NOTES:

LIMITED WARRANTY

ELECTRONIC MOBILITY CONTROLS, LLC (“EMC”) warrants the product against defects in materials or workmanship only as set forth below.

WARRANTY PERIOD

AEVIT 2.0

For a period of **5 years**, 2,500 hours of operation or 60,000 vehicle miles (whichever comes first) from the date of invoice to your EMC Dealer, EMC will repair or replace, at its option, any of the following components found to be defective in materials or workmanship:

- Servomotor(s), Display, Input Device(s), Vehicle Interface Module, Drive Module(s), Control Module, and Chassis.

For a period of **1 year** from the date of invoice to you EMC Certified Dealer all other components found to be defective in materials or workmanship will be replaced or repaired at the discretion of EMC.

WHAT IS NOT COVERED

EMC is responsible **ONLY** for repair or replacement of the covered product, at EMC’s option, by EMC, and is NOT responsible for any incidental costs or expenses incurred as a result of any defect in any EMC product. Items not covered by this warranty:

- Cost (including parts and labor) of: transporting your vehicle to an EMC Certified Dealer or Service Center, removing the product from your vehicle, shipping the product to EMC or reinstallation of the product in your vehicle.
- Cost (including parts and labor) of: roadside assistance, towing, replacement vehicles, and/or alternate transportation.
- Malfunction or damage caused by fire, accident, misuse, abuse, lack of proper maintenance, neglect, improper installation, improper adjustment, unauthorized modifications or alterations, repairs or attempted repairs by unauthorized persons, maintenance by unauthorized persons, the mechanical condition of your vehicle, road hazards, failure to follow operating instructions, and/or act of God or Nature (i.e., weather, lightning, floods, etc.).
- Normal wear and tear, including deterioration of trim and other appearance items from use or exposure to sunlight.

PURCHASER DUTIES

Purchaser must maintain and service the product and comply with all cautions, precautions and warnings as set forth in the AEVIT Owner’s Manuals. This warranty is void if the normal maintenance, cautions, precautions or warnings are not followed.

HOW TO OBTAIN WARRANTY PERFORMANCE

Transport the vehicle in which the product is installed to the nearest EMC Certified Dealer or Service Center. To find the location of the nearest EMC Certified Dealer or Service Center, please contact EMC’s Customer Service Department at (207) 512-8009. The EMC Certified Dealer or Service Center must then contact EMC to obtain Return Authorization before removing the product or component from your vehicle. Once EMC has issued Return Authorization, a technician trained to service EMC equipment must remove the product or component from your vehicle and ship it to EMC at your expense. EMC will not accept the return of any product or component unless EMC has issued prior Return Authorization.

To be effective, EMC or an authorized dealer must receive notice of any claimed defect within the applicable warranty period.

EXCLUSION OF CERTAIN DAMAGES

EMC’S LIABILITY FOR ANY DEFECTIVE PRODUCT OR COMPONENT IS LIMITED TO THE REPAIR OR REPLACEMENT OF SAID PRODUCT OR COMPONENT, AT OUR OPTION, AND SHALL NOT INCLUDE DAMAGES OF ANY KIND, WHETHER INCIDENTAL, CONSEQUENTIAL OR OTHERWISE. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

This warranty extends only to the original retail purchaser from the date of the initial retail purchase and is not transferable.

No EMC dealer or any other person is authorized to make any warranties other than those set forth in this limited warranty or to extend the duration of any warranties beyond the time periods set forth in this limited warranty on behalf of EMC.

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

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