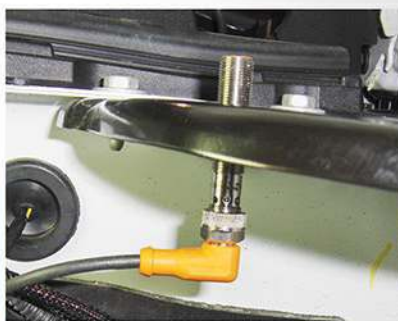


INSTALLATION MANUAL





INSTALLATION MANUAL

This manual will provide the installer with the necessary information to install the GRIP system and all of its optional equipment on most vehicle configurations. This book also contains information on the basic tools needed to install the GRIP system in most vehicles.



The following information is subject to change without notice and there may be slight differences in how the system is installed on different types of vehicles. To access the latest version of this manual and any vehicle specific supplemental manual, please refer to www.gripidlemanagement.com or the contact info located on the back cover of this manual.

10-18- REV 1

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INTRODUCTION

The GRIP Installation Guide will direct you in the step by step method of installing the GRIP system into a vehicle. Please read through the getting started section of this manual before starting any work on the vehicle. Be sure to fully understand the safety precautions of working on the vehicle and refer to the manufacturer's commercial website for information on vehicle safety systems such as air bags. Manufacturers provide the necessary information on their commercial websites to safely work on the vehicle. Mind all of the installation guidelines provided by the manufacturer for connection of wiring to ensure not to affect the vehicles warranty and integrity. The installation should be performed by trained technicians aware of the safety precautions required to install this system.

GETTING STARTED

To install the GRIP system, first you must have a laptop with the latest version of GRIP 3.0 Service Tool installed, along with the Service Tool Adaptor Kit **PN (89140201)**

Lay out all of the components on a clean bench. The basic GRIP kit will contain a check list of all of the major components that are to be installed. Any optional equipment should also be laid out and identified.

GRIP **Ignition Detail Sheet** is available via the GRIP website, www.gripidlemanagement.com. Using your Customer Login, enter the vehicle VIN and click “start shopping”, under the product category Literature, you will be able to locate the specific **Ignition Detail Sheet**. This sheet explains the required connections specific to the vehicle. Be sure to keep this sheet available when the ignition needs to be connected.

If your installation includes the anti-theft option it is required that two vehicle keys are available to complete the “teach key” portion. The teach key instructions can be found in the service tool under teach key tab. If your vehicle has a push start ignition, you must have an extra Key Fob available to be added to the anti-theft module that will be installed in the vehicle.



BASIC TOOL REQUIREMENTS

The basic equipment required to install the GRIP system is as follows:

Weather Pack Crimpers

These are designed to fit the terminals used for the ignition connections. It is critical that these are used as they will provide the optimal crimp. Note: Weather pack crimpers are available through

Snap On Stock # PWC47, Mac tools TCT 1028, Digikey.com, Matco Tools item #MC93150 Fastenal # 0716602



Cordless Drill

Screw Drivers

Including Phillips, Robertson, Torx, and Straight

Terminal Removal Tool

Delphi #12094429

Wire Cutters

Wire Strippers

Utility Knife

Socket Set

Including Metric and Standard sockets

Drill Bit Set

1/2" Drill Bit

For temperature sensor hole

Cable Ties and Electrical Tape

Multi Meter

Trouble Light or Flash Light

Hose Cutters

Wurth Bond and Seal - Part Number 890.1001

Hole Saw Kit

Hose Pinch-Off Pliers

Service Tool Adaptor Kit - Part Number 89140201

Laptop with the latest version of GRIP 3.0 Service Tool installed



PLANNING THE INSTALLATION

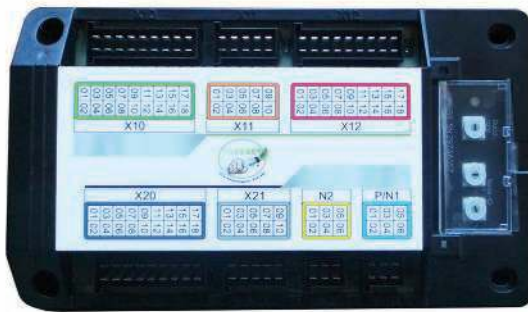
It is best to plan your installation before mounting any component onto the vehicle. The following is a step by step approach to installing the standard GRIP kit onto the vehicle.

1. Disconnect the vehicle battery negative post.
2. Find suitable locations for all of the components to be mounted. Make sure you select mounting locations for ease of access and avoid any safety equipment in the vehicle.
3. Mount all of the major components such as the operator screen, controller and hood pin. Follow the guidelines explained in this manual under each component.
4. Run all of the electrical wire harnesses through the vehicle and connect them to the major components paying close attention to sharp edges and hot surfaces. When connecting the **Main Power Harness**, do not install the fuses until the installation is fully completed. Also, do not tie up the harnesses until the last step.
5. Connect the wiring harness to the ignition harness as described in the wiring section and pay close attention to the Ignition Detail Sheet provided Online.
6. Once all the harnesses have been run and connected to the main components and the ignition has been connected and verified, install the battery negative cable and install the fuses.
7. Start the vehicle to make sure everything is operational.
8. Tie up all harnesses and install any panels that had been removed

INSTALLING THE COMPONENTS

First identify the best locations for mounting the following components.

Controller



The controller is the “brain” of the system which is responsible for making decisions based on the inputs received by the vehicle status through the CAN bus, sensors, and operator input. All equipment installed has its wiring harnesses connected to the controller.

1. Find a location where the controller can be securely fastened but accessible. The controller cannot be mounted in a location exposed to the elements. Typically, the controller is mounted under the dash or console of the vehicle. (see opposite)
2. Be sure to allow enough room to access the controller if necessary and allow enough room for connecting the harnesses to it easily without stressing the harnesses.
3. It is important to ensure the controller is not exposed to any torsion or mechanical stress. If a flat surface is not available find a location where vibration and torsion are at a minimum.
4. When using screws or bolts to mount, tighten the hardware to a torque of 1.5Nm.

Controller continued...

Examples shown of acceptable mounting locations:



Operator's Screen



The screen is where all interaction between the operator and controller takes place, therefore the screen must be mounted within reach of the operator and in clear view. It is typically mounted on the dash of the vehicle using screws or bolts. A cable will run from the controller to the screen, so it is important when picking a location to consider whether cables can be run neatly with accessibility if needed. It does not need to be in direct sight on the dash but needs to be within reach of the operator. The screen can be mounted using four different methods.

1. Flex Mount: Attach the adjustable arm to the back of the screen holder using the mounting bolts provided. The opposite end of the arm can be mounted to the location chosen for the screen. This method of mounting offers the most flexibility as the screen can be easily adjusted using the arm (as shown in figure 1).

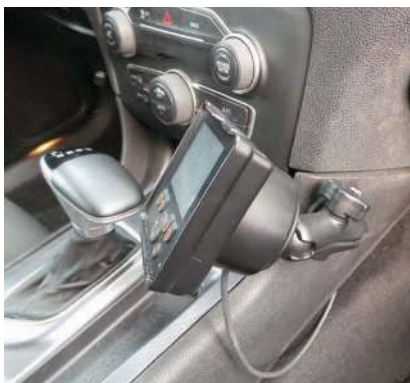


Figure 1

2. Bottom Mount: The screen holder offers two mounting holes at its outer edge to allow the screen to be directly mounted. This method provides a secure fixed position of the screen.

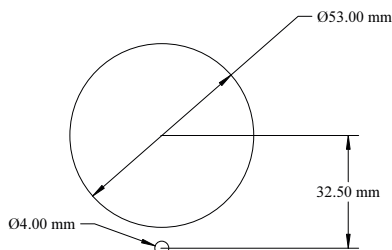


Operator's Screen continued...

3. Flush Mount: A 3" hole can be cut out to allow the plastic screen mount to protrude into a flat surface and secured by four screws in the corners of the mount. This mounting option will allow the screen to be removed without accessing the rear of the panel if necessary.



4. Panel Mount: By drilling a 2" hole in a flat panel and a 3/16" hole 1 5/16" from the center of the 2" hole for the alignment pin at the bottom, the screen can be mounted using the threaded nut on the back of the screen..



Full size template can be found on page 46.

Hood Sensor and Magnet



The hood sensor is a safety device that allows work to be performed in the engine compartment, safely without the concern of the GRIP starting the engine unexpectedly.

1. The hood sensor must be mounted in a location where the magnet can be mounted directly above, and must be within 3/8" from the top of the sensor when the hood is closed. It should be mounted near the hinge area of the hood for the least amount of movement while the vehicle is being driven, to ensure it stays in line with the magnet. Connect the three-pin hood sensor cable to the J2 connector on the main harness.

2. The magnet is adhered to the hood using Wurth bond and seal (see Figure 1). An equivalent adhesive may be used but is not recommended. The part number for Wurth bond and seal is included in the recommended tools section.





Figure 1

3. There is a mounting kit provided which allows the sensor to be adjusted up and down. Once the proper height is established the two nuts that hold the sensor in the mounting kit need to be tightened, locking it into place.

The hood sensor has a yellow indicator light which will illuminate when a proper connection is established between the magnet and the sensor once the GRIP controller is powered up. The screen also has an icon indicating when the hood is open. .

NOTE: Keep the hood sensor away from areas where mechanics may lay tools as some tools are magnetic and will trick the sensor to think that hood is closed and may allow the vehicle to start.

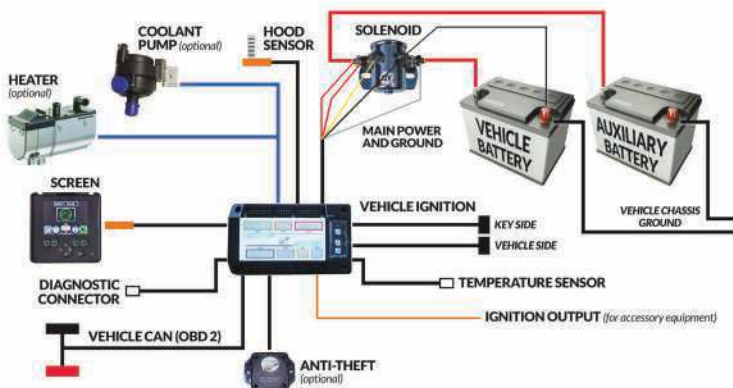
Wiring

If the vehicle battery is not already disconnected, you must disconnect the ground cable from any power source. This will ensure there is no potential chance of shorting or unexpected voltage draws from circuitry.

It is very important when considering locations for harnesses to avoid all excessive heat sources, sharp objects, areas of excessive wear, environmental elements, and moving vehicle components.

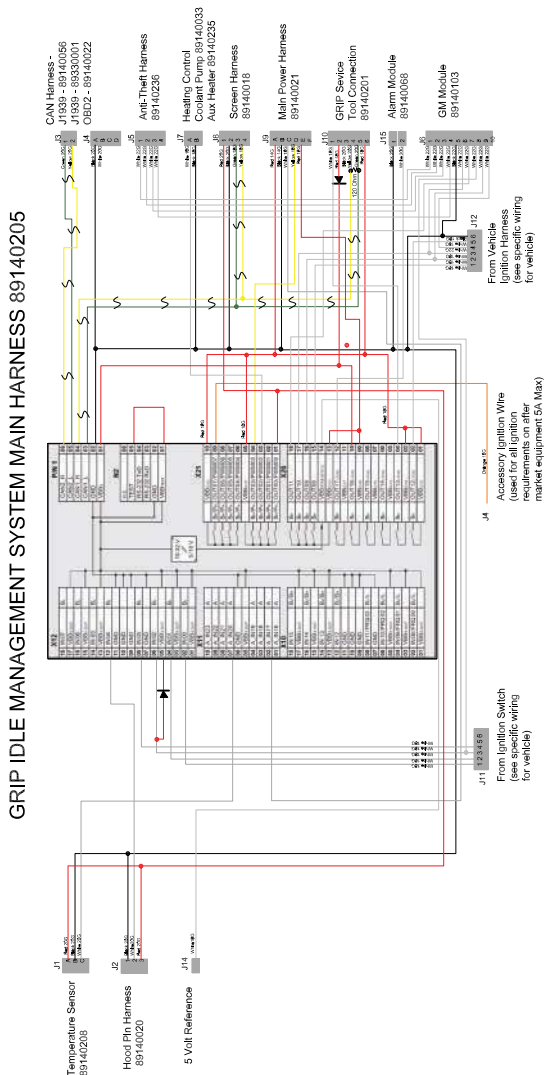
Identify the harnesses which are required to pass through the firewall noting the size of the connectors on the either end of the harnesses. A hole will need to be drilled in the firewall to allow harnesses to pass through to the engine compartment. Ensure the hole is large enough to pass through connectors and accommodate all wires as well as a grommet. This hole will need to be sealed when installation is complete and vehicle is tested; using Wurth Bond and Seal or some type of flexible sealant. All wiring harnesses are tested for continuity as well as pull tested for quality purposes. Alterations of any harness not authorized by Canadian Extreme Climate Systems will void warranty.

Electrical Connections with GRIP 3.0 System



Main Wiring Harness

The following diagram illustrates the main harness and the orientation in which the harness connect to the controller.



Main Wiring Harness



The main wiring harness attaches to the controller and is the location where all of the additional components connect to. All of the wires within the harness are marked with their function as well as designated location. For ease of installation as well as troubleshooting, the connectors can only be plugged into their corresponding component connector identified using a J# label. Refer to Page 13. When connecting the harness to the controller it is important to note that wire markings indicate where they plug into the controller, for example the X21 plug will have wires indicating they are X21. Look for the location marked on the controller as well. Be sure the connectors are locked into place correctly. Do not tie up the harness completely until all auxiliary harnesses are connected.

Ignition



The ignition is one part of the installation in which the original wires from the vehicle need to be modified. This is illustrated using the GRIP ***Ignition Detail Sheet***, available via the GRIP Customer Portal (refer to pg. 2 of the manual). The connectors which are used allow the disconnection from the GRIP controller harness and plugged into each other essentially returning the vehicle back to normal when the vehicle is to be decommissioned.

1. Remove any panels that surround the ignition to expose vehicle's ignition harness. Typically, this is done by removing the top and bottom covers on the steering column. Some ignitions are located in the dash and may require panels to be removed in order to access the ignition. (If your installation has the optional anti-theft feature that requires the mounting of the antenna and transponder leave the vehicle apart)

Ignition continued...

2. Locate the vehicles ignition harness and expose as much of it as possible by removing tie straps and loom.
3. From the main wire harness select and run the ignition wire connections from the main harness to the rear of the ignition switch. (These are the two longest runs coming off the main wiring harness marked ignition J 11 and J 12).
4. Use the GRIP ***Ignition Detail Sheet*** to establish which wires will need to be cut. Leave plenty of wire at the ignition switch when cutting the wires. Do not cut them too short. Strip the jacket from cut end to exposing 1/8" of the wire.
5. Using the crimping tool described in the recommended tools section and crimp terminals onto wires. Check for a good solid connection by pulling on each terminal. Use the GRIP ***Ignition Detail Sheet*** to ensure the proper terminals are being used on either side of cut ignition wires.



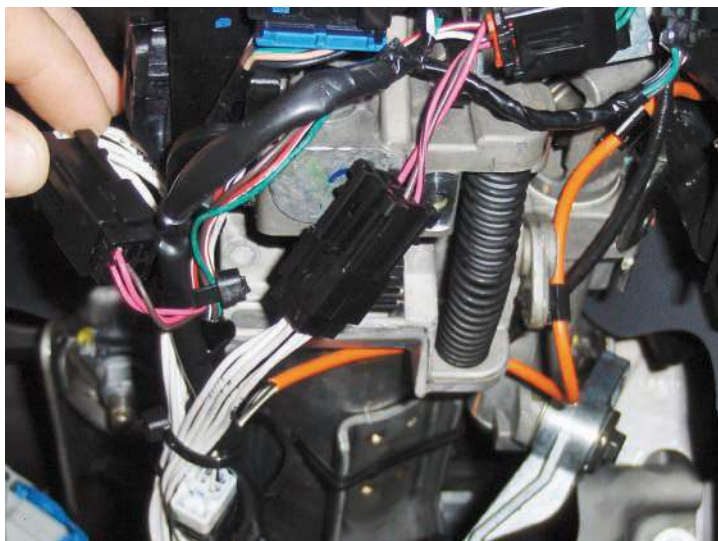
Strip Wire



Crimp Wire

Ignition continued...

6. Using the GRIP ***Ignition Detail Sheet*** available online, connect the crimped vehicle ignition wires to the pin location on the proper connector. The pin numbers are formed into the electrical connectors. Push the terminal into proper location in connector and again, pull on wire to make sure it is secure. Double check the pin location to make sure the pins are in the proper location or damage to the vehicles computer may occur. Be sure that the proper connector is placed on the ignition switch side of the vehicle or the system will not work correctly and the vehicle will not start when completed.



7. Join the installed connectors to their mating connectors which were ran to the rear of the ignition switch.

8. Be sure to allow enough room in the harness when the tilt and/or telescopic steering is used. Before strapping harnesses move the tilt steering up and down to ensure the connectors cannot be pulled apart or strained in any position the steering wheel may be in.

Communication Port

When installing the harness, it is important to have the GRIP Diagnostics Port accessible, as this is where the GRIP system's adaptor will connect to give you access to the GRIP 3.0 **Service Tool**. Allowing the fleet to access the system settings and customize them for the specific application. See **Service Tool Guide** for details.



Main Power Harness

The power harness is used to supply power to the GRIP system, control solenoid, and monitor the auxiliary battery. This harness will pass through the firewall, and connects to the battery or solenoid (if equipped) under the hood of the vehicle.



For installations that do not have an auxiliary battery.

1. The red power wires must always be connected to the vehicle's battery positive post.
2. The black power wire must be connected to the battery ground post. The white and yellow wires in the harness are not used in this application and should be covered with shrink tubing to reduce contact with other wires.

Main Power Harness continued...

3. Connect the main power harness to the main harness connector J9.

For installations that have the auxiliary battery.



Refer to the solenoid mounting instructions found in the Solenoid kit.

Screen Harness



The screen harness is a 2 meter (6.5 feet) long harness with a 4 pin connector on one end. This harness is not to be confused with the hood pin harness since it has the same sealed connector on one end. The harnesses are clearly identified with a label to reduce the risk of installing the wrong cable.

- 1.** Before installing the screen into the plastic screen mount, the cable must be ran into the hole located in the bottom of the mount and then connect the harness to the screen. Then push the bottom of the screen in first and snap the top of the screen into the holder.
- 2.** When the screen base is mounted be sure to move the screen in all directions to ensure enough harness is exposed for all screen positions.
- 3.** The screen harness connector can now be connected to the main harness using the corresponding four pin J8 connector at the main harness.

Hood Sensor Harness



The hood sensor harness is labelled and has a three-pin connector on the end. This harness is not to be confused with the screen harness since it has the same sealed connector on one end. The hood sensor harness is the longer of the two at 5 meters (16.4 feet). It is important to identify the exact harness you need as the hood sensor will not operate with the wrong harness.

1. The cable will pass through the firewall and connect to the hood sensor using the threaded connection.
2. The hood sensor harness can be connected using the corresponding three pin J2 connector at the main harness.

Ignition Output



Any auxiliary equipment such as lighting, radios, and computers must have their ignition wire connected to the single orange wire found on the main harness. This orange wire will provide a battery signal up to 5 amps even while the engine is shutting off from the GRIP system. Any other ignition supply wire is required to be disconnected to prevent back feed to the ignition.

Note: If this wire is not used as the ignition signal for the auxiliary equipment every time the GRIP shuts down the vehicle the auxiliary equipment will shut down as well.

CAN/OBD Connection



The CAN (controller area network) connection is how the GRIP controller requests information from the vehicle computer. This harness is designed to fit in series with the existing connector of the vehicle.

1. Unmount the vehicle's OBD (on board diagnostic) connectors from the vehicle and plug the supplied GRIP CAN harness mating connector to each other.



CAN/OBD Connection continued...

- 2.** Mount the other end of the GRIP CAN harness in place of the vehicles' OBD plug. Tie the excess harness up neatly and out of the way.
- 3.** Plug the two-pin connector from harness to the mating plug found on the main wire harness. Connector on harness is identified as J3.



Temperature Sensor



The temperature sensor is used to provide the GRIP controller with the inside temperature reading of the vehicle cabin. When installing the temperature sensor, it is crucial in picking a location where the sensor is not near any air vents or areas in which direct sun can influence the temperature reading. The sensor should be typically mounted center of dash and midway from floor and top of dash.



Rear View



Front View

Temperature Sensor continued...

1. Drill a hole using 1/2" drill bit slightly smaller than the tip of the sensor. When drilling in plastic it is recommended to use a step drill bit for accurate drilling.

2. Pull the temperature sensor through the hole starting with connector until the sensor is locked in place with the large surface against the dash.

The harness can now be connected to the corresponding three pin connector identified as J1 on the main harness.

COMPLETION OF INSTALL

1. Reconnect the battery cables and install the 10 amp and 5 amp fuses left out earlier so the vehicle may be started.
2. After completing the install it is recommended that the vehicle is started and tested before reassembling all interior body panels that have been removed..
3. If you have installed the optional anti-theft, the Transponder needs to be taught by following the “Teach Key” process found on the GRIP **Service Tool**.
4. Once testing is complete and has passed all criteria. check to ensure all cables are tied neatly and are away from excessive rubbing or heat sources.
5. Now that the system installation is complete, refer to the Service Tool Guide (available on-line) to configure the desired system setting. Contact the appropriate person to ensure that the settings have been discussed based on the application the vehicle will be used for. The system settings must be completed and the options selected before testing the vehicle to ensure proper operation.
6. All components must function properly before the vehicle is released. It is best practice to test the GRIP install outside as the vehicle will be starting and shutting down producing harmful emissions. If the vehicle is tested indoors all exhaust should be ventilated outdoors. If your vehicle has an auxiliary heater it also produces harmful emissions and should be ventilated outdoors. Return all panels to their original positions making sure they are secure. Before testing the vehicle review the following Safety Warnings. (See Safety Warnings).

SAFETY WARNINGS

It is important to take note of the safety features built into the GRIP system as they will protect you from potential injury.

Working in the Engine Compartment

Once the hood for the engine compartment is lifted, the magnet and the hood pin will no longer make contact. This will stop the GRIP system from monitoring the vehicle and will not start or shut down the engine automatically. The engine can be started or stopped manually with the keys if necessary. It is important to have the hood up when servicing any other function of the vehicle where unnecessary starting of the vehicle could put a technician in danger. **Be aware of the position of the hood pin as some tools are magnetic and placing them close to the hood pin may cause the GRIP system to indicate the hood is closed.** In order for the GRIP system to begin monitoring the vehicle again the hood will need to be closed, the engine started manually and shut down by the GRIP system.

Auxiliary Battery

In situations which the battery needs to be disconnected, the auxiliary battery cables will need be disconnected or the yellow wire from the Main Power Harness disconnected from the solenoid.

Anti-Theft

A vehicle that is stored inside should never be left in anti-theft mode. While the vehicle is in anti-theft mode (Monitored by the GRIP system), the vehicle engine may start. This can be dangerous as the vehicle emissions may be trapped in the building.

Auxiliary Heater

A vehicle that is stored inside should never have the Fleet Scheduler or the seven Day Scheduler active. The auxiliary heater is fuel fired and will produce emissions that will become trapped in the building.

Safe Mode

A vehicle that is stored inside should never have **Safe Mode** engaged. The vehicle is being monitored by the GRIP in **Safe Mode**, and may start up or shut down the engine. This can be dangerous as the vehicle emissions can be trapped in the building.

TESTING THE VEHICLE

Idle Shut Down

Start the vehicle and allow the GRIP to shut the vehicle down when the Max Idle time is reached. The keys should remain in the run position.

Anti Theft

Vehicle with Keyed Ignition

Start the vehicle.

1. Press the anti-theft button on the screen, the anti theft icon will turn green, and remove keys. The vehicle should remain running unless the Max Idle Time has been reached.
2. Place the vehicle into Drive and the vehicle should stall.
3. Return keys into the ignition and move them to run position. The green anti-theft icon will turn white.
4. If an auxiliary anti -theft is used, be sure that the anti-theft engages when the button is pressed on the auxiliary keypad.

Vehicle with Push Start Ignition

Start the vehicle.

1. Press the anti-theft button on the screen, the anti-theft icon will turn green. Within 10 seconds, open the driver door and exit with the Key FOB in hand, close door. The vehicle should remain running unless the Max Idle Time has been reached..

2. The vehicles shifter should be locked at this point
3. Open door and step back into the vehicle with the key FOB, close door to allow vehicle to sense key FOB has returned. Press the anti-theft icon on the screen or press the brake pedal to disengage. The icon should turn back to white.
4. If an auxiliary anti-theft is used be sure that the anti-theft engages when the button is pressed on the auxiliary keypad.

Testing For Heat

Engine Only

Start the vehicle and allow the GRIP system to shut down the engine when it reaches the Max Idle Time. Raise the temperature set point to the maximum using the arrow buttons on the screen. If the vehicle is equipped with automatic climate control then you may raise the temperature using the vehicle's own temperature dial.

1. The heat icon will appear on the screen.
2. The vehicles engine should start within a couple of second to provide heat to the cab. Be certain that the climate controls are set for heat.

Coolant Pump Only

Start the vehicle and allow it to shut down when it reaches the Max Idle Time. Raise the temperature set point to maximum using the arrow buttons on the screen. If the vehicle is equipped with Automatic climate control then you may raise the temperature using the Vehicles own temperature dial.

1. The heat icon will appear on the screen.

2. If the coolant temperature is less than the **Low Engine Coolant Temp Set Point**, the vehicle will start to heat the coolant. (The coolant temperature can be found by pressing the button below the white information icon on the screen and scrolling down to **Vehicle Status**)

3. If the coolant temperature is above **High Engine Coolant Temp Set Point**, the coolant pump will run to circulate coolant through the vehicles heat exchanger. With the vehicles climate fan on you will feel warm air coming from the heating system. Be certain that the climate controls are set for heat.

Auxiliary Coolant Heater

For the purpose of testing the heater, using the Service tool, activate the Manual Auxiliary Heater Option in the Operator Control settings page. You may leave this option activated if you wish to give the operator manual control of the auxiliary coolant heater.

1. Start the vehicle, and navigate to the operator control settings page, turn ON the **Manual Auxiliary Heater** value, using the back Button, scroll back to the main screen, you should see the heat (Flame) Icon in the bottom right corner of the screen, press the button underneath to manually start the heater..

2. If the temperature of the coolant is less than 149°F the heater will start and continue to run to heat the coolant. The auxiliary heater can take up to 120 seconds to start. After installation, the auxiliary heater may take several attempts to start as the fuel lines will be empty and need to be primed. Once the coolant is above 158°F the heater will shut down and the coolant pump will continue to circulate the coolant through the vehicles heat exchanger.

Solenoid

1. Insert the key into the ignition and before turning to the run position wait for the GRIP main screen to populate.
2. Navigate the screen to the **System Status** screen by pressing the button below the white information icon.
3. There will likely be a notable difference in the voltage between battery 1 and battery 2.
4. Turn the key to the run position and watch the screen to see if the voltages change and become closer (within 0.2 of a volt). Depending on the mounting position of the solenoid you may hear the solenoid “click” as it latches.
5. Start the vehicle and monitor the voltages on **System Status** screen to see that both batteries are charging at the same rate within 0.2 volts.

Ignition Signal Wire

1. Start the vehicle and operate auxiliary lighting, sirens, etc.
2. Allow the vehicle to reach the Max Idle Time and allow the vehicle to shut down.
3. Auxiliary lighting, sirens, or computers should function normal after the GRIP has shut down the engine.

Alarm

Start the vehicle and allow the vehicle to reach the Max Idle Time and allow the vehicle to shut down. If the alarm is installed correctly, the alarm will beep to warn the operator in conjunction with the start/stop counter that the vehicle is about to shut down, the alarm frequency can be set via the service tool.

Current Sensor

Refer to the Current Sensor installation manual for detailed instructions.

REGISTERING GRIP SYSTEM AND VEHICLE FOR WARRANTY

The vehicle and GRIP system will need to be registered for warranty online. Go to www.gripidlemanagement.com.

1. Select the support tab.
2. Select the warranty registration tab.
3. Fill out all the required fields.

TROUBLESHOOTING AFTER INSTALL

GRIP Service Tool

The service tool is available online at www.gripidlemanagement.com and can assist in any troubleshooting when required. The Service Tool Adaptor Kit (Part# 89140201).

The Service Tool is available under the support section at www.gripidlemanagement.com simply download and install the program. Follow the step by step installation walkthrough that is included in the Service Tool Adaptor Kit.

No Power to GRIP Screen

1. Check battery voltage to ensure it is above 9 volts or there may not be enough power to turn the screen on. Charge the battery as necessary.
2. Open the fuse holders for the main power harness at the solenoid and check to see if they are present. If they are, check the fuses and make sure they are good.
3. Make sure that the main power harness is connected securely to the main harness connector.
4. Make sure that the main harness connectors are securely placed into the controller.
5. Check to make sure that the screen harness is connected properly on the back of the screen and at the main harness.
6. The connections at the ignition need to be verified. All pin locations must be correct. Verify this using GRIP ***Ignition Detail Sheet***.

Vehicle will not start

1. Check the battery to make sure there is enough voltage at the battery to start the vehicle.
2. Check all connections to make sure they are secure, clean and complete. This includes battery connections, connections to solenoid (if equipped), connections of equipment made to the main GRIP harness and the main harness connection to the controller.
3. The connections at the ignition need to be verified. All pin locations must be correct. Verify this using GRIP ***Ignition Detail Sheet***.
4. Unplug ignition connectors from GRIP harness and plug them into each other bypassing GRIP. If the vehicle starts, check the wiring of the main harness. Verify that the correct program has been installed on the controller for the vehicle being installed into.
5. Check ignition fuses from vehicle if vehicle does not start after bypassing GRIP.

Anti-theft feature will not work.

1. Ensure that you have two keys that will both start the vehicle manually.
2. If the transponder cannot be taught it is possible that the antennae or ring around the key socket may need to be repositioned. Once repositioned the Service tool 'Teach Key' process can be tried again.
3. Ensure the 'Anti-Theft Option' is selected 'ENABLE' in the Service Tool. This is Found on the 'Options Settings' tab.
4. Check all connections at the anti-theft module as well as at the main GRIP harness.

GRIP is not monitoring interior temperature correctly.

- 1.** Ensure the temperature sensor is connected to the main GRIP harness
- 2.** Ensure the temperature sensor is open to the cabin air and not blocked or covered.
- 3.** The sensor is not pinched or obstructed on the back of the sensor when installed in the dash.
- 4.** If the sensor reads 0°C (32°F) continuously the sensor may be unplugged, damaged, or defective..
- 5.** Make sure the sensor is not in direct sunlight, for the sun rays through the glass will cause the sensor to heat and not give an accurate reading.

Coolant pump is not working

If the auxiliary heater is installed, the coolant pump is controlled by the heater. Refer to the heater trouble shooting guide for the further diagnostics.

- 1.** Make sure the 'Heating Option Selector' is set to 'Coolant Pump'. This can be found under 'Heating' on the 'System Settings 2' tab.
- 2.** Make sure that the heat icon is displayed on the screen while in Monitoring Mode.
- 3.** Check harness connections at pump and main wiring harness.
- 4.** Ensure coolant pump is installed properly in conjunction with coolant flow.

5. Raise the hood and place a magnet on the hood pin to make the controller think the hood is closed. Start the engine and use the engine stop button to shut down the vehicle allowing the GRIP to go into monitoring mode. Use caution when working in the engine compartment as the GRIP may start or shut down the vehicle with the magnet in place.
6. Using a multi meter check the voltage at the coolant pump by pushing the leads into the back of the connector. Ensure the connector is plugged into the pump while doing this test. White is positive and black negative. You should see battery voltage at the pump when it is running.



7. If there is voltage at the pump but it is not running, the pump is defective.
8. Note that the coolant pump will not operate when the vehicle is running.
9. Remove magnet after trouble shooting is complete.

Hood Pin Icon is on screen

1. Verify that hood is down and verify that LED light is illuminated on the hood pin.
2. Verify the position of the magnet. If this LED is not illuminated on the hood pin adjust the height of the hood pin to ensure the magnet and pin is making contact. The hood pin and the magnet should be within 3/8" away.
3. Check the harness to ensure connections are made at both the hood pin and the main wiring harness.

Functions Requiring Ignition Input Wire Not Working

1. Ensure orange ignition input wire is connected to ignition circuits for additional equipment. This signal wire has a maximum of 5 amps so it must be used only as a signal wire.
2. With auxiliary functions turned on check for voltage using a multi meter at ignition input on orange. Voltage should read battery voltage. Check with auxiliary equipment manufacturer if the equipment still does not function.

Solenoid not Working

- 1.** Inspect all connections from batteries to solenoid, power harness, and ensure solenoid is grounded.
- 2.** Check Voltage of main battery at the solenoid to ensure it is above 9 VDC.
- 3.** Turn the ignition of the vehicle to the run position and check voltage by placing the positive lead on the positive signal post and place the negative lead on the negative signal post of the solenoid. If battery voltage exists and the solenoid does not engage the solenoid is defective.



GRIP is not monitoring the auxiliary battery.

1. Make sure the 'Auxiliary Battery' is selected to ENABLE under 'Battery Options' on 'Options Settings' tab. Make sure the 'Battery Option Selector' is selected to 'Aux Battery Extend' or 'Aux Battery Either'.
2. Check all battery connections are made properly and secure
3. Check the white sensing wire connection from the main power harness at the solenoid connected to the positive battery cable from the auxiliary battery.

Auxiliary heater will not come on

1. Make sure the 'Heating Option Selector' is set to 'Auxiliary Heater'. This can be found under 'Heating' on the 'System Settings 2' tab
2. To test the heater, The 'Manual Auxiliary Heater' can be used to turn On/off the heater. This can be found under 'Climate Info' or 'Real Time Information' tab.
3. After installation, the auxiliary heater will take several attempts before it will start and run as it will need to prime with fuel as the lines will be empty when installed. You will hear a clicking sound which is the fuel pump. When the heater starts the sound resembles a jet engine.
4. Check the 20amp fuse in auxiliary heater harness, replace if necessary.
5. Using a multi meter check for voltage at the heater connections. Pin 1 should have battery voltage; pin7 is the signal wire and should have battery voltage on it when the heater is requested. Pin2 is ground.



Communications icon is on the screen

1. Check Connections:

- A. Check connections at OBD connector to ensure the plug is properly Secured to OBD plug.
- B. Check connections from installed OBD connector to main GRIP harness.

Alarm not Functioning

- 1.** Check Service Tool 'Alarm Options' on 'System Settings 1' tab. Ensure the start and stop warning alarm is set to ENABLE according to your specifications.
- 2.** Check connections from main wiring harness to alarm. Ensure the white wire goes to the '+' of the alarm, while the black wire goes to the other terminal
- 3.** Using multi-meter check voltage on alarm when the start/stop counter is on the screen. Should read battery voltage.
- 4.** Remove alarm and apply battery voltage to terminals. If alarm does not sound it is defective and needs to be replaced. (Alarm volume can be adjusted by turning top of alarm)

Screen Flush Mounting Template

