

CA-420 Installation Instructions

PROFESSIONAL INSTALLATION STRONGLY RECOMMENDED

Installation Precautions:



Roll down window to avoid locking keys in vehicle during installation



Avoid mounting components or routing wires near hot surfaces



Avoid mounting components or routing wires near moving parts



Tape or loom wires under hood for protection and appearance



Use grommets when routing wires through metal surfaces



Use a voltmeter for testing and verifying circuits

Kit Contents

- (1) - Control Module
- (2) - 1 Button High Frequency Transmitters
- (1) - 1 Channel Code Learning Receiver
- (1) - Multi Pin Harness
- (1) - Six Pin Harness
- (1) - Four Pin Harness
- (2) - 30 Amp In-line Fuse Holders With Fuses
- (1) - Control Switch
- (1) - Programming Switch
- (1) - Ring Terminal
- (4) - 1/2" Long Screws
- (1) - Pin Switch
- (1) - Remote Start Warning Label
- (1) - Literature Package

Note: Do not install this system on a vehicle that is not equipped with the following:

- Automatic Transmission
- Fuel Injection
- Ignition / Shift Interlock



Technical Support

For Authorized Dealers (800) 421-3209

FCC COMPLIANCE

This device complies with Part 15 of the FCC rules and with RSS-210 of Industry Canada. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including any interference that may cause undesired operation.

Warning!

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

INSTALLATION OF THE MAJOR COMPONENTS

Control Module:

Select a mounting location inside the passenger compartment (behind the dashboard). The mounting location selected must be within 24" of the ignition switch wiring harness to allow connection of the 6-pin harness. Be certain that the chosen location will not interfere with the proper operation of the vehicle. Avoid mounting the module to or routing the wiring around the steering shaft/column, as the module or wiring may wrap around or block the steering wheel preventing proper control of the vehicle. Secure the module in the chosen location using cable ties or screws as necessary. Do not mount the module in the engine compartment, as it is not waterproof.

Hood Pin Switch:

The pin switch included in this package is required for the safety shut down of the Remote Start system. If the vehicle is being serviced, this hood switch prevents the remote start activation even if the transmitter is operated. This switch **MUST** be installed in all applications. Failure to do so may result in personal injury or property damage. Mount the switch in an area under the hood that is away from water drain paths. If necessary, the included brackets may be used to move the switch away from rain gutters or allow mounting to the firewall behind the hood seal. In either case the switch must be set to allow the hood door to depress the switch at least 1/4" when the hood is closed and fully extended when the hood is opened. For direct mounting, a 1/4" hole must be drilled. Carefully check behind the chosen location to insure the drill will not penetrate any existing factory wiring or fluid lines. Drill a 1/4" hole in the desired location and thread the pin switch into it. If using the mounting bracket, first secure the bracket to the desired location and secure the pin switch in the threaded mounting bracket hole.

PROGRAM SWITCH / SAFETY (Red Handled) CONTROL SWITCH:

Select a mounting location that is within reach of the ignition switch, as this switch, in combination with the ignition switch and brake, will be used to program the certain features of the system. It is suggested that the switch be mounted to the lower dash panel in the driver's area. Inspect behind the chosen location to insure that adequate clearance is allowed for the body of the switch, and also that the drill will not penetrate any existing factory wiring or fluid lines. Drill a 1/4" hole in the desired location and mount the switch by passing it through the panel from the underside. Secure the switch using the nut, star washer, and ON/OFF face plate. It is best to install the switch to allow the ON position to be up toward the driver and the OFF position to be down or away from the driver. Route the switch wires toward the control module.

The CA-420 is to be used in vehicles with **AUTOMATIC TRANSMISSIONS** only! Although this is a sophisticated system with many advanced features, **IT MUST NOT** be installed into a vehicle with a manually operated transmission. Doing so may result in serious personal injury and property damage.

IMPORTANT!

DO NOT PLUG THE SIX PIN OR THE MULTI PIN HARNESS INTO THE CONTROL MODULE UNTIL ALL CONNECTIONS TO THE VEHICLE HAVE BEEN MADE. AFTER SELECTING YOUR TARGET WIRES AS DEFINED BELOW, DISCONNECT THE NEGATIVE BATTERY CABLE FROM THE VEHICLE BATTERY PRIOR TO MAKING ANY CONNECTIONS.

THE RECEIVER/ANTENNA ASSEMBLY:

The Superheterodyne Receiver Antenna Assembly provided with this system allows routing from below the dashboard for maximum operating range. Choose a location above the belt line (dashboard) of the vehicle for best reception. Special considerations must be made for windshield glass as some newer vehicles utilize a metallic shielded window glass that will inhibit or restrict RF reception. In these vehicles, route the antenna toward a rear window location for best reception. Secure the antenna with double stick tape provided. After securing the antenna with tape, we advise also securing a section of the antenna cable to a fixed support. This will prevent the antenna from dropping down in case the double stick tape is exposed to extreme heat, which may loosen its gummed surface. Route the 3 pin connector toward the control module using caution not to pinch the cable as this will cause poor or no RF reception to the control module.

WIRING THE 6 PIN HARNESS:

RED w/ VIOLET: +12 volts

Connect this wire to a +12 Volt constant source found at the vehicle's ignition switch using the 30 Amp fuse and holder provided. This wire provides power for the control circuit as well as the ignition 1 and ignition 2 relays.

RED: +12 Volts

Connect this wire to a +12 Volt constant source found at the vehicle's ignition switch using the 30 Amp fuse and holder provided, but NOT the same vehicle wire as used by the Red/Violet wire above. Most vehicles have more than one battery source supplying power to the ignition switch. Separate feed wires must be used for the Red and Red/Violet wires. If your vehicle does not have two battery feed wires at the ignition switch then it is possible to connect both wires to the vehicle's battery. This wire provides power for the start relay and the accessory relay.

IMPORTANT!

It is the responsibility of the installing technician to determine the load factor of the vehicles electrical circuits when the vehicle is running and to adequately fuse the two power wires based on that load.

VIOLET: Starter Output

This wire will have +12 volts when the ignition switch is turned to the start (crank) position only. This wire will have 0 volts in all other ignition switch positions.

PINK: Ignition 1 Output

Connect this wire to the ignition 1 wire from the ignition switch. This wire will show +12 volts when the ignition key is turned to the ON, RUN and START positions, and will have 0 volts when the key is turned to the OFF and ACCESSORY positions. For Diesel Applications, this wire must be connected to the ignition circuit that powers the glow plugs if the vehicle requires glow plug pre-heating. (See selectable feature #8)

PINK w/ WHITE: Ignition 2 Output

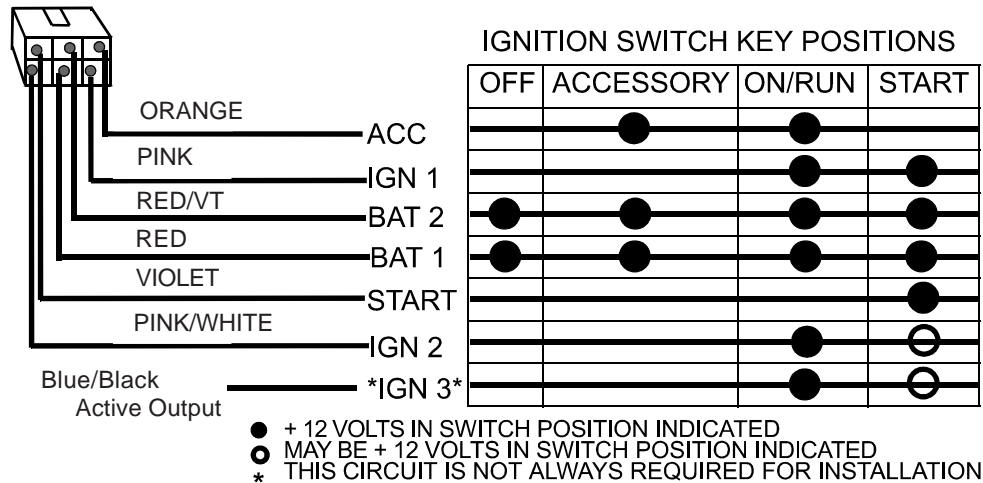
Connect this wire to the ignition 2 wire from the ignition switch. This wire will show + 12 volts when the ignition key is turned to the ON or RUN position and in some cases the START position. This wire will show 0 volts when the key is turned to the OFF and ACCESSORY positions.

NOTE: See programming information concerning this wire to function as a ACCESSORY wire.

ORANGE: Accessory Output

Connect this wire to the Accessory wire from the ignition switch. This wire will show + 12 volts when the ignition switch is turned to the ACCESSORY, ON and RUN positions, and will show 0 volts when the key is turned to the OFF and START positions.

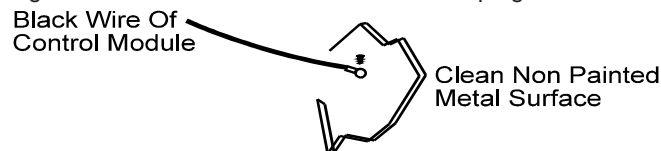
WIRING THE 6 PIN MAIN POWER HARNESS



WIRING THE 12 PIN HARNESS:

BLACK: Chassis Ground Source

Connect the Black wire to a known vehicle ground source or to a solid clean metal part of the chassis. Be certain to remove any paint or grease and secure this wire with a self tapping screw and ring terminal.



BLACK w/WHITE: Saftey (Red Handled) Control Switch

The Black w/ White tracer wire provides ON-OFF control of the Remote Starter. When the Black w/ White wire is switched to a full time ground, the CA -410 Remote Start Module is operative. When the Black w/ White wire is open, the remote starter is disabled. Connect the Black w/ White wire to one of the wires from the back of the previously mounted Safety (Red Handled) control switch. Connect the remaining wire of the control switch to chassis ground. Always try to mount the switch so that the ON position is in an upward or toward the driver direction.

GREY: Hood Pin Input (-)

Connect the GREY wire to the hood pin switch provided . This wire will be routed through the firewall into the engine compartment. It is necessary to use an existing grommet when passing wires through the firewall to prevent short circuiting. This is an important safety feature of CA-410, and failure to use this feature can result in serious injury. Route the wire to the pin switch and connect it using the bullet connector provided.

GREY w/ BLACK: Negative Shutdown Input 2

Any time the Grey w/Black wire is grounded, the Remote Start system will stop operating, even if the signal is received from the transmitter. If the brake light switch in the vehicle switches ground to the brake light circuit, connect the Grey w/ Black wire to the output of the brake light switch. If the brake light switch in the vehicle switches +12 Volts, do not use the Grey w/ Black wire; see Brown w/ Red wire.

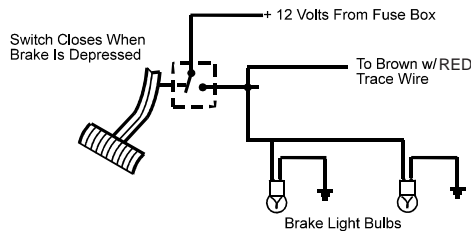
BROWN Wire: Positive Shutdown Input 1

Any time +12 Volts is applied to the Brown wire, the Remote Start system will stop operating, even if the signal is received from the transmitter. If the vehicle has a factory installed hood pin switch, and that switch provides +12 Volts to a light under the hood, the Brown wire can be connected to the existing pin switch.

BROWN w/ RED Wire: Positive Brake Input

Any time +12 Volts is applied to the Brown w/ Red wire, the Remote Starter system will stop operating, even if the signal is received from the transmitter. If the brake light switch in the vehicle switches +12 Volts to the brake light circuit, connect the Brown w/ Red wire to the output of the brake light switch. If the brake light switch in the vehicle switches ground, do not use the Brown w/ Red wire; see Grey w/ Black wire.

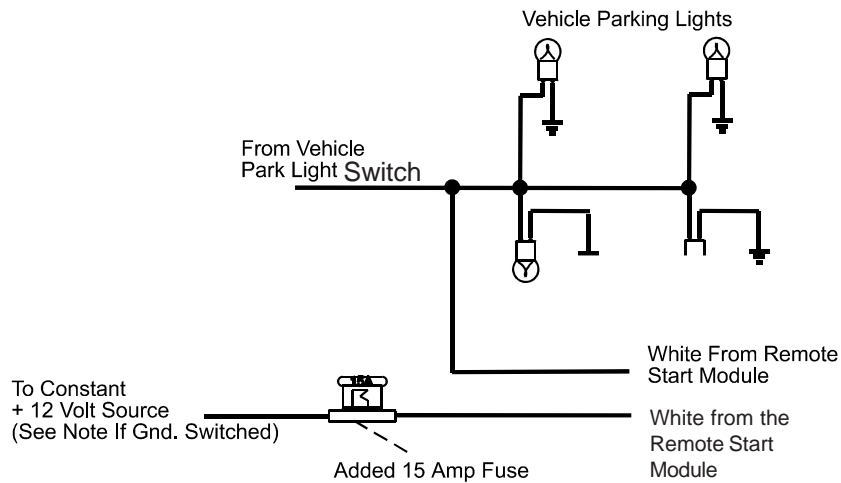
Note: The Brown/Red wire is used for programming, if the brake switch in the vehicle switches ground, a normally open push-button switch must be added. During the program sequence, when the brake pedal is pressed and released, this switch will be used in its place. If the installation of this switch is necessary, connect one end of the normally open push button switch to the Brown/Red wire, and connect the other end of the switch to a fused +12 volt source.

Brake Switch Positive Shutdown Detail**YELLOW w/ BLACK: + 12 Volt Alarm By - Pass Output**

This wire provides a 500mA +12 Volt transistorized output when the ignition key is turned to the ON position, and 0 Volts when the ignition key is OFF and when the vehicle is running under the control of the Remote Start. This wire should be connected to the ignition input of the alarm system. The Yellow w/ Black wire output will allow you to Remote Start the vehicle while leaving the alarm armed, and to lock/unlock the doors while running under control of the remote start system.

(2) WHITE Wires: Parking Light Output

These wires are the COMMON and NORMALLY OPEN contacts of the on-board parking light relay. If the vehicle's parking lights are a +12 volt switched system, connect (1) of the White wires to a fused (15A max.) +12 volt battery source, and connect the second White wire to the vehicle's parking light wire. If the vehicle's parking lights are a chassis ground switched system, connect (1) of the White wires to a chassis ground source, and connect the second White wire to the vehicle's parking light wire.



BLUE w/BLACK: Active output - Ignition 3 / Shock Disable Output

This wire provides a 300mA ground output that becomes active 3 seconds before the Remote Start system initializes, and remains grounded while running plus an additional 4 seconds after the Remote Start system turns off. In all of the applications described below, a relay will be required. The Blue/Black wire can be used to accommodate the following situations:

1. Shock Sensor Bypass:

If there is Shock Sensor used with an alarm system and it is not shunted during the Remote Start activation period, then vibration from the running vehicle can cause the alarm to trigger. In this case, connect the Blue/Black Wire to terminal #86 of an external relay. Connect terminal # 85 of the relay to a fused + 12 volt battery source. Cut the shock sensor trigger wire and connect one end of the cut wire to terminal #30 and the other end of the cut wire to terminal #87a. Just before the Remote Start system is activated, the relay contacts will open, preventing the shock sensor's operation until the Remote Start system shuts off.

2. Ignition 3 Output:

Some newer vehicles use a third ignition wire which is required to start and keep the vehicle's engine running. If this is the case, connect the Blue/Black wire to terminal #86 of an external relay. Connect terminal # 30 & # 85 to a fused + 12 volt battery source rated for a minimum of 25 Amp. Connect terminal # 87 to the third ignition wire in the vehicle.

3. Transponder Key Override:

To bypass the system while the vehicle is operating under the control of the Remote Start system. Connect the Blue/Black wire to the NEG trigger input of the accessory bypass.

BLACK/GRAY: Diesel Wait To Start

For Diesel glow plug preheat circuits, this Wait To Start input will allow the ignition to keep the glow plugs active for the vehicles automatic time out period before cranking the starter motor. If the BLK/GRY is connected to the glow plug wire, this will take precedence over the timing setting and the Gas/Diesel programming in the feature programming chart. Use this wire if you do not want to set the timing of the glow plug preheat circuit as shown in the feature programming chart.

VIOLET/WHITE: Tach Sensor Input

This wire will continually monitor the engine tach rate while the unit is under power of the Remote Start system. This wire will be routed to the vehicle ECM tach input or through the firewall into the engine compartment and connect to the negative side of the ignition coil. This Remote Start system learns the tach rate of the vehicle and in most cases will operate properly from one multi coil pack regardless of the number of cylinders. If the vehicle has a single coil system for each cylinder, it may be necessary to connect this wire to more than one coil for proper tach reference. shown in the feature programming chart.

WIRING THE 4 PIN HARNESS:

This harness provides low current outputs to control various functions in the vehicle during different stages of the Remote Start system's operation. Understanding these outputs and the time in which they occur will allow you to determine if they are needed for the particular vehicle you are working on, as well as how to use them.

Green w/Black: Pulsed Ground Output Before Start

The Green w/Black wire will provide a 1 second 300mA pulsed ground output 1.5 second before the Remote Start system activates as well as when the transmitter is used to unlock/disarm the system. Typical use for this output would be to disarm a factory theft deterrent system to prevent false triggering of the factory alarm when the Remote Start system engages.

Blue: Pulsed Ground Output After Start

The Bluewire will provide a 1 second 300ma pulsed ground output after the vehicle is started under control of the remote start system. Typically this wire will be used to re-lock the vehicle doors if the doors unlock automatically when the factory anti-theft system is disarmed.

Black w/ Red: Pulsed Ground Output After Shutdown

The Black w/ Red wire will provide a 1 second 300 mA pulsed ground output after the Remote Start system shuts down. This output will occur regardless of whether the circuit times out or is manually terminated. Typically this output will be used to re-lock the vehicle doors if the doors unlock automatically when the ignition circuit transitions to OFF.

Black w/ Yellow: Ground Output During Start (Crank)

The Black w/ Yellow wire will provide a 300mA ground output while the starter output of the Remote Start system is active. This output can be used to activate the Bulb Test wire found in some GM vehicles.

2 Pin Blue Connector : Programming Switch

Route the gray and black wires in the 2 pin connector from the previously installed programming switch to the control module and plug it into the mating blue connector on the side of the module.

3 Pin Antenna/Receiver Connector: (White Connector)

Plug the previously routed three pin connector from the antenna receiver assemble into the mating connector of the control module. This connector supplies 12 volts, ground and RF data from the antenna receiver to the remote start module. Be certain this connector is firmly seated making good contact to the control unit.

PROGRAMMABLE FEATURES:

<u>Feature</u>	<u>LtsFlash1X</u>	<u>Lts Flash 2X</u>	<u>Lts Flash 3X</u>	<u>Lts Flash 4X</u>	<u>Default</u>
1. Run Time	5 Min.	10 Min.	15 Min.	20 Min.	10 Min.
2. Ign. 2	Off during start	On during start			On
3. Parking Lights	ON	Flash			ON
4. Tach Mode	Tachless	Tach			Tach
5. Voltage Level	> 0.5V B4 Start	< 0.5V B4 Start			> 0.5V
6. Diagnostics	Off	On			Off
7. Start Time	0.8Sec	1.0 Sec	1.5 Sec	2.0 Sec	1.0
8. Gas/Diesel	Gas	Diesel 10	Diesel 15	Diesel 20	Gas

To Program Features:

1. Turn the ignition key to the ON position.
2. Press and release the program switch 3 times.
3. Immediately turn the ignition key OFF, then back to ON.
4. Press and release the program switch 2 times
5. Use the program switch to advance to the feature that you want to change. *EXAMPLE* - If you need to change programmable feature number 3, press and release the program switch 3 times in succession. The parking lights will flash 3 times confirming that selected feature 3 can now be programmed.
7. Press The Vehicle's Brake to change the selection of the programmable feature. If you are not sure what the setting for any feature is, press the brake one time, the parking lights will flash once or twice, etc... indicating the features setting.

NOTE: Once you enter the feature-programming mode, do not allow more that 15 seconds to pass between steps, or the programming will be terminated.

TACH PROGRAMMING:

The Remote Car Start will learn the tach rate of most vehicles single ignition coils, multiple coil packs, and or single injector. To learn tach:

1. Turn the ignition key to the ON position.
3. Press and release the program switch 3 times
.
4. Immediately turn the ignition key OFF.
5. Hold the program switch ON, then start the vehicle using the ignition key.
6. When the system senses the tach signal, the parking lights will begin to flash.
7. Release the program switch. The parking lights will turn on for 3 seconds to indicate that the tach signal is stored and the system is now out of the program mode.

DIAGNOSTICS:

1. Be sure that programmable feature number #6 is set to the "Diagnostics On" mode.
2. Press and hold the program switch on, then turn the ignition key to the ON position.
3. The lights will flash and the number of flashes will indicate the reason for shutdown on the last remote start attempt. The indications are as follows.

1 Flash	5, 10, 15, or 20, minute run timer expired.
2 Flashes	Low or No tach signal received.
3 Flashes	Positive or Negative input shut down.
4 Flashes	Control switch was moved to OFF position.
5 Flashes	RF Shutdown command received.
6 Flashes	High RPM signal over speed shut down.
7 Flashes	Tach has NOT learned.

TRANSMITTER PROGRAMMING:

This transmitter is designed for use with your upgrade remote start system and is programmed by using the remote start's program switch in combination with the transmitter button. To program this transmitter into the Ca 420 system:

1. Turn the ignition to the on position
 2. Press and release the programming switch 3 times
 3. Press and hold, for 3 seconds, the button of the transmitter you wish to add until the parking light flashes indicating the transmitter has been learned.
 4. Repeat step 3 for each transmitter up to a total of 4.
- Turn the ignition off to exit the program mode.

NOTE: Do not allow more than 15 seconds to lapse between steps or the program mode will be automatically exited and you will have to start over.

TESTING YOUR INSTALLATION:

CAUTION!! The following procedure must be performed after the installation of an Remote Start system. It is the responsibility of the installing technician to complete these tests. Failure to test the system in the following manner may result in personal injury, property damage, or both.

HOOD PIN SAFETY SHUT DOWN:

To test the integrity of this circuit:

1. With the drivers window in the down position, start the vehicle using the keychain transmitter.
2. Reach inside the car and pull the hood release.
3. Raise the hood and confirm that the Remote Start system shuts down.

If the system fails this test, recheck your hood pin switch connection to the Gray/Black wire of the Remote Start system.

DO NOT RELEASE THIS VEHICLE TO THE CONSUMER UNTIL YOU CONFIRM THE OPERATION OF THE HOOD PIN SAFETY SHUT DOWN FEATURE.

MANUAL SHUT DOWN / ENABLE CIRCUIT:

The intention of the manual shut down / enable circuit is to allow the vehicle operator to prevent operation of the Remote Start system regardless of the transmitter operation. To test the integrity of the manual shut down / enable circuit:

1. Place the control switch in the ON (Closed To Ground) position.
2. Start the vehicle using the transmitter.
3. The vehicle should start and run under the control of the remote start system.
4. Move the switch to the OFF (Open From Ground) position, the vehicle should shut off.

If the unit fails this test, recheck your switch connection to the Ground and the Black/White wire of the Remote Start system.

DO NOT RELEASE THIS VEHICLE TO THE CONSUMER UNTIL YOU CONFIRM THE OPERATION OF THE MANUAL SHUT DOWN / ENABLE FEATURE.

NEUTRAL START SAFETY TEST:

The intent of the neutral start switch is to prevent the vehicle from starting while the gear selector is in any position other than Park, or Neutral. When installing a Remote Start system, it is imperative that the Violet Starter wire be connected to the ignition switch side of the Neutral safety switch. To test the integrity of the Neutral Safety Circuit:

1. Set the vehicle parking brake.
2. Block the drive wheels to prevent vehicle movement.
3. Temporarily disconnect the Brown/Red positive shut down wire from the vehicle's brake switch.
4. Sitting in the vehicle, start the engine using the vehicle's ignition key.
5. Step on the brake pedal and shift the gear selector into reverse.
6. Do not move the gear selector just turn the ignition switch off. DO NOT attempt to remove the key.
7. Keeping the brake pedal depressed, activate the transmitter in an attempt to start the vehicle. The car should not start.

8. Repeat the above test, but this time move the gear selector to the drive position. If the system attempts to start, failing this test, check the Violet wire connection. This wire must be connected to the ignition switch side of the Neutral safety switch. If the vehicle you are working on does not have an electrical Neutral Safety switch, it will be necessary to reconfigure the Remote Start wiring to accommodate this vehicle.

COMPLETING THE INSTALLATION:

1. If you have not done so already, place the red rubber handle cover over the handle of the control switch for ease of identification. This will allow your customer to distinguish the Remote Start control switch from the program switch.

2. Mount the control module up and behind the dash securing it in place with cable ties or screws. Be certain that the mounting location will not inhibit any of the controls of the vehicle.

3. Securely tie all wiring up and away from all hot and moving parts that they may come in contact with under the dash board or in the engine compartment areas.

CAUTION: Avoid the area around the steering shaft and column, as wires can wrap around these mechanisms and inhibit the safe operation of the vehicle.

4. Apply the Caution labels supplied with this kit to a conspicuous area in the engine compartment. Make sure to clean the surface before affixing the label.

5. Check the vehicle's wipers, lights, horn, etc.... to insure proper operation.

6. Replace all panels that were removed during installation, and retest the system.

7. Explain all activated features and safety systems associated with Remote Start system installed to the customer.

8. Place the Remote Start Control Switch Tag on their respective switch and point these out to the customer.

