



Basic Operation of a Remote Car Starter

All remote car starters operate in the same basic manner. By pressing a button on the remote control supplied with the unit, a signal is sent to the remote car starter. In most cases, the parking lights will flash on the vehicle to confirm the unit has received the signal from the transmitter. After a few seconds, the vehicle will start and parking lights will stay on while the vehicle is running. All remote car starters have a preset run time, in most cases this is a programmable feature that can be adjusted during the installation process. On average, a remote car starter will keep the vehicle running ten to fifteen minutes. If the vehicle does not start on the first attempt, the system will shut down, wait a few seconds, and try to start the engine again. Most remote car starters will attempt to start the vehicle up to three times. The remote starter will shut off after the programmed run time has elapsed. When ready to drive the vehicle, place the key into the ignition and turn it to the "on" position. Be careful not to turn the key to the "crank" position as the vehicle is already running. When the brake pedal is pressed (as if to put the vehicle into gear), the remote starter will disengage. If you hit the brake pedal before the key is turned to the "on" position, the vehicle will shut off. This is a safety feature built into an automatic car starter. It is important to set the climate controls in the vehicle to the desired settings prior to your next remote start (so the vehicle will be warm or cool after it has been remote started). We suggest the blower motor for the climate control set to a "medium" rather than the maximum setting.

Components of a Remote Car Starter

There are three basic components to a remote car starter: the brain, the antenna, and the remote control. The brain is where the circuit board for the remote car starter is housed. It has all the necessary inputs and outputs that are required for the installation of the remote car starter into your vehicle. They allow for serviceability of the unit in the rare instance it must be removed from the vehicle. All remote starters come with an antenna to receive signals from the remote control. Some antennas are built into the brain of the unit; however, most are external and mounted to the inside of the front windshield (allowing for greater range of operation). The final component to the system is the remote transmitter. These vary greatly and depend on the make and model of the remote starter purchased. Some systems include one remote while other systems may include two as a standard option. Remotes may be as simple as a single button to start/stop the vehicle or include multiple buttons for a wide variety of functions (i.e. to lock and unlock the doors).

Installation of a Remote Car Starter

The proper installation of a remote car starter is key to its reliability. When shopping for an automatic car starter, please understand different levels of product quality are available. This applies to the installation of the unit as well. A remote car starter duplicates the action of starting your car with an ignition key. If your vehicle does not start properly with the key, it will not start properly with the remote car starter. The quality of relays, connectors, cable ties, electrical tape etc. used in the installation of a remote car starter effect its reliability. Great Scot! Car Stereo uses 3M brand connectors for the installation of their remote car starters. In most cases, the brain of the unit is installed under the driver side dash panel with 3M "t-tap" connectors. This connection eliminates the need to cut the factory wires during the installation process and allows for greater ease of removing the unit when it is time to sell or trade the vehicle. Some wire connections should be soldered for maximum reliability. A large portion of the installation takes place inside the car but some wires are installed under the hood of the vehicle. Finally, the antenna for the unit is mounted on the inside of the windshield, usually behind the rear view mirror. Price is definitely an important consideration when shopping for a remote car starter;

however, there is a cheaper way and a right way to do things. To offer a lower price, many retailers use lower quality parts for installation. We suggest purchasing a unit from a reputable mobile electronics specialist with an established history of installing remote car starters. Please understand we have been in business for almost sixteen years. If you ever experience an issue with your remote car starter, we will be here to stand behind our products and our installation.



Estimating Installation Time

Estimating the time required for the proper installation of a remote car starter is very difficult. Many people have the impression the installation of a remote car starter is a simple "plug in" procedure. This is not the case. In fact, the installation of a remote car starter is different for each year, make, and model vehicle. Average installation time for an automatic car starter is two to three hours. Some cars will take less time for installation and some will take more. Great Scot! Car Stereo asks its customers to drop their vehicle off for the day when having a remote car starter installed. If you will be waiting for the installation of a car starter, please be patient with our technicians. We will not apologize for taking the necessary time to do the job right the first time.

Vehicle Anti-Theft Systems (VATS)

Many vehicles are equipped with passive anti-theft systems that must be bypassed for the proper installation of a remote car starter. These are not traditional "alarm" systems, but are anti-theft systems built into the ignition of the vehicle. Additional parts are required to bypass these systems during the remote start process. The most common form of VATS is the transponder key (i.e. a computer chip key) which communicates with the ignition system of the vehicle. If a valid key is not recognized by the cars computer, the vehicle will not start. Please understand many styles of VATS exist and will vary according to vehicle manufacturer.

The Universal Bypass Module

The universal bypass module is needed for vehicles equipped with a transponder key. This module requires a valid transponder key be mounted inside the bypass for installation. You will not have access to this key once the unit is installed. If you do not have a spare key which can be used for the installation of the remote starter, please have one made by your car dealer prior to your scheduled appointment. In most cases, the dealer will need all valid ignition keys from the vehicle to cut and program a new one. Great Scot! Car Stereo has a limited selection of transponder keys available for purchase. Although this module bypasses the transponder system in your vehicle, it only does so during the remote start activation. Some manufacturers offer vehicle specific bypass modules which do not require an ignition key for installation. Our experience has shown these modules are much more expensive and do not function as reliably as the universal bypass module.

"Secure" Transponder Keys

Great Scot! Car Stereo offers "Secure" transponder keys for many domestic vehicles (Chrysler, Dodge, Ford, General Motors, Lincoln, Mercury, etc.). A "secure" transponder key is an uncut programmed ignition key that can be used for the installation of a remote car starter. It eliminates the need to use your spare ignition key for installation and is far more secure than having a cut key installed into your vehicle. Keys are available at the time of installation and tend to be less expensive than buying one at the dealer. Note: for us to program a "secure" transponder key, you must have at least two valid ignition keys for the vehicle. For those customers who feel nervous about installing a cut key into their vehicle, we can grind the metal portion of the key so it no longer operates the key cylinder. This service is available at no additional charge but will only be performed upon request.

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Databus Modules

Some vehicles require additional parts other than a bypass module for the installation of a remote car starter. These particular vehicles often require a databus module to integrate a remote car starter properly. These modules interface a remote car starter with existing OEM security systems, databus door lock systems, etc. They communicate directly with the car's computer system and are a necessary component for certain vehicles. Please inquire with a sales associate for further details.

Shop Cost

A remote car starter does not include all parts required for installation in the box. Various relays, relay sockets, connectors, electrical tape, wire loom etc. are used in the course of every installation. Most mass merchants charge for all the supplies used once the installation is completed. These costs can be considerable. Great Scot! applies a shop cost to each invoice to help cover the cost of materials used during the installation. The shop cost is based on our low average cost due to the high volume of car starters we install.

Will My Factory Remotes Still Work?

Many vehicles come standard with factory installed remotes to control various functions such as power door locks. If a remote car starter is added to a vehicle, these systems are not affected or removed. In some instances however, it is common for these remotes not to operate while the vehicle is remote started. This is a safety feature built into many factory installed systems. There are two basic ways to purchase a remote car starter - install a system that starts and stops the vehicle only (still will need to carry factory remote for keyless entry etc.) or install a system that includes these features as well. With these systems, the factory remote will no longer be needed to lock/unlock the doors etc. Please understand we may not be able to duplicate the functions of your remote *exactly*. A remote car starter is a universal piece adapted to specific vehicles. (Example: Many new Toyota vehicles will sound a soft chirp when locking the vehicle. Our system will lock the doors and flash the parking lights only.) If you are unsure whether your existing remote will work with the ignition on, there is a simple test you can perform. Try starting your vehicle with your ignition key. While the vehicle is running, try to unlock your doors with the remote control. If they do not unlock, these remotes will not function when the vehicle is remote started. Please inquire with a sales associate if you have specific questions about your vehicle.

Will A Remote Starter Void My Factory Warranty?

We have received a high volume of calls from customers concerning warranty issues and the addition of aftermarket accessories to their vehicles. Many customers claim their car dealers and/or service departments have warned installation of aftermarket equipment, predominantly remote car starters, will void the manufacturer's warranty on their vehicle. As a local business in the Norwich area for over ten years, we specialize in the sale and installation of car audio and electronics. When *properly* installed, these aftermarket accessories (including a remote car starter), will function reliably and **not** void your manufacturer's warranty.

In the late 1970's, Congress passed the *Magnuson-Moss Warranty Act* to regulate warranties for the protection of consumers. A vehicle manufacturer may not condition a warranty on consumers using parts or services identified by brand, trade, or corporate name (such as the vehicle maker's brand) unless the parts and/or services are provided free of charge. If you have been informed the installation of aftermarket equipment will void your manufacturer's warranty, this is illegal. We have full documentation available for your review at both our retail locations.



Should I Have a Remote Car Starter Installed By My Dealer?

Many automobile manufacturers and car dealers have recognized the increased consumer demand for remote car starters. Some manufacturers and dealers have begun to offer remote car starters to their customers. Although these products are reliable, they offer less features and come with a much higher price tag. In many cases, a car dealer will bring their vehicles to a mobile electronics retailer for the installation of a remote car starter. We suggest eliminating the "middleman" and contacting us directly (as we perform installations for most local car dealers). Please understand, when it comes to a remote car starter, we are the specialists. We install thousands of remote car starters each year whereas dealership technicians do not. As we have discussed earlier, the installation of an aftermarket remote start will not void any factory warranties. In fact, the aftermarket remote car starters often come with a better warranty those provided by car manufacturers. Other than a higher price, there is little or no real incentive to have a remote car starter installed by a car dealer.

Remote Car Starter Warranties

All the remote car starters available at Great Scot! Car Stereo come standard with a limited lifetime warranty (this is not true of all the remote car starters on the market today). This warranty does not cover physical damage to the unit and applies only to the original owner of the system. Great Scot! proudly offers a lifetime warranty on their installation labor as well. Specific warranty information is available at both retail locations.

Manual Transmission Vehicles

Can a remote car starter be installed into a manual transmission vehicle? Absolutely. Most mobile electronic retailers will only install a remote car starter in an automatic transmission vehicle. Some remote start manufacturers offer products designed for manual transmission applications. Great Scot! Car Stereo proudly offers both Autostart and Viper products, making an installation of a remote car starter safe in a manual transmission vehicle.

Push-to-Start Vehicles

A remote car starter can be installed into a push-to-start vehicle and those equipped with a wireless transponder key pad. To install a remote car starter properly in these vehicles, extra parts and labor are required. Please contact a sales associate for further details.

Diesel Engines

A remote car starter can be installed into a diesel vehicle. In fact, some units have a diesel option built into them. With these systems, no additional parts or labor is required for installation. All the remote car starters sold by Great Scot! are diesel capable. When our remote car starters receive the signal to start your diesel engine, they will wait a preprogrammed time before cranking the

motor. This allows time for the glow plugs to warm properly before the engine starts. The wait time is adjustable and varies by the manufacturer of the remote car starter. Please note, in some instances the vehicle may wait longer than necessary before cranking the engine. On occasion we are able to tap into the "wait to start" indicator in your instrument cluster; however, most of these indicators are now a data signal. These can no longer be interfaced directly with a remote car starter.

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Anti-Grind

When your vehicle is running under remote control and you are ready to drive, you must place the key into the ignition and turn it to the "on" position. Many people accidentally turn the key to the "crank" position while the engine is running. This will cause the starter motor to re-engage, unless your vehicle is equipped with anti-grind. We highly recommend this feature as most people are used to turning their ignition key to the "crank" position on a daily basis. In fact, anti-grind is a standard feature on most of our packages.

Range of Operation

The range of a remote car starter will differ from model to model. Great Scot! offers many packages with varying ranges (our basic package operates up to 500 feet). Bear in mind, the range of a remote starter is an estimate provided from the manufacturer. Many factors can affect the range of a unit. Some examples are as follows: vehicles with tinted windows get less range, range will be significantly lower in crowded parking lots, condition of the battery in the remote affects the range of your unit, etc. When in doubt, extra range is always better. You will want to remote start your vehicle in more places than just your driveway (i.e. when at work, at restaurants, or shopping malls).

Two Way Technology

Two way operation is one of the greatest advancements in remote start technology. Traditional remote starters are "one way", meaning the remote control from a car starter can send a signal to your vehicle but not receive them. There are many advantages of installing a remote start with two-way operation. When you remote start your vehicle, you will have confirmation on your remote control that your vehicle has been started. With traditional car starters, you must see the vehicle to know whether or not it has been remotely started. In addition to successful confirmation of the remote start process, these units offer a much larger range of operation. There are two styles of remotes available when you purchase a two way remote car starter (LCD or LED based). With an LCD remote, a small screen is incorporated into the remote transmitter displaying visual icons on vehicle status (lock/unlock, remote start status of the vehicle, etc.). The drawback of an LCD display is they are susceptible to damage and are traditionally more expensive. The alternative to an LCD remote is an LED remote. This style allows for two way operation but does not use an actual display to confirm successful remote start of the vehicle (the remotes will beep and buttons often glow to confirm vehicle status).

Priority Door Locks

Many factory keyless entry systems come standard with priority door locks. This feature allows you to unlock the driver's door only with a single press of the unlock button on your remote control. Upon the second press of the unlock button, all remaining doors will unlock. When keyless entry is installed in conjunction with an automatic car starter, our systems will lock/unlock all the doors unless otherwise specified (i.e. all doors will unlock upon the first press

of the unlock button on your remote). If you would like to have the priority door lock feature installed, additional parts and labor are required.

Horn Honk Confirmation

When keyless entry is installed into your vehicle, the parking lights will flash when you lock/unlock the vehicle. When the vehicle is locked, the unit will flash the parking lights once. When the vehicle is unlocked, the unit will flash the parking lights twice. In addition to parking light confirmation, we can configure the remote starter to honk the vehicles horn when the vehicle is locked or unlocked. Some of our remote car starters will flash the parking lights upon the first press of the lock button and honk the horn with the second press of the lock button. Please note, some factory installed systems use unique sirens to indicate when the vehicle is locked/unlocked. We can not always duplicate these tones with an aftermarket system.

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Vehicle Run Time

All remote car starters have a preset run time, in most cases this is a programmable feature that can be adjusted during the installation process. The run time on a remote starter varies according to manufacturer and model purchased. On average, a remote starter will keep the vehicle running ten to fifteen minutes. If a key is not placed into the ignition within this programmed run time, the remote starter will "time out".

Pit Stop Mode

Many remote car starters include a feature known as "Pit Stop Mode" or "Idle Mode." This allows the user to engage the remote car starter while the vehicle is already running. The vehicle will keep running for the preprogrammed run time, or until it is shut down by the remote. Many people find this a convenient feature when running into a store or making a quick "pit stop." To activate this mode, press and hold the remote start button on your transmitter while the vehicle is already running. The parking lights will flash to confirm this mode has been entered. When you remove your key from the ignition, the vehicle will remain running.

Tach Modes

There are two ways a remote car starters knows how long to crank your engine during the remote start process. Some units have a "tachless" mode while others require a direct tach connection. A remote car starter installed in tachless mode will engage the starter for a pre-programmed duration. This can be problematic with changes in temperature: on cold days the remote start may not crank long enough and on warm days may crank your engine too long. The second option is with a direct tach connection. With this method, the remote starter knows when to stop cranking the motor through a direct connection with the vehicle. Unfortunately, this adds

extra time to a remote start installation as it often requires a connection be run into the engine compartment. Many shops installing remote car starters prefer using the "tachless" mode as it shortens the installation process. Nearly all remote car starters installed by Great Scot! require a direct tach connection be used (we solder this connection as it is exposed to the elements).

Secure Lock

Many vehicles come standard with factory installed alarm systems. The majority of systems disarm upon unlock of the vehicle and arm upon lock of the vehicle. In order for a remote car starter to work, the factory alarm must be disarmed. Because of this, keyless entry must be purchased with the remote car starter to disarm the factory alarm system. The majority of car starters install by Great Scot! have a "secure lock" mode that works as follows. Upon activation of the remote car starter, the unit will unlock the doors to disarm the factory alarm system. The car will start and proceed to relock your doors for security purposes. Please inquire with a sales associate for information regarding your vehicles security system.

Windshield Wipers, Radio, and Headlights

When a vehicle is remote started, certain accessories in the vehicle will receive power as well. The remote car starter duplicates the action of starting your vehicle with the ignition key. The accessories that receive power when you start the car normally will turn on with the remote starter as well. Some common examples are windshield wipers, car radios, and/or vehicle headlights. Many new car radios have a retained accessory system. These radios do not turn off when a key is removed from the cars ignition but rather wait to see the driver exit the vehicle before cutting off the power to the radio (the radio is wired to the door triggers of the vehicle). This feature will not be defeated with the installation of a remote car starter. Therefore if the vehicle is remote started "times out," the radio will remain on until this retained accessory feature shuts down or the vehicles door is opened. We suggest turning off non-essential systems when "setting up" the vehicle for remote start. This includes turning off your car radio, setting the windshield wipers and/or headlight switch to the "off" position, etc.



Heated Seats and Rear Defrosters

When leaving the vehicle, it is recommended to preset the accessory controls in preparation for your next remote start. Nearly all remote car starters will not activate the rear defroster of the vehicle. Most cars must be started before the rear defroster can be activated. Heated seats may not be activated upon the remote start of the vehicle as well. If your vehicle is equipped with heated seats, please inquire with a sales associate for further details.

Door Lock Actuators and Trunk Solenoids

If you choose to have a remote car starter installed and do not have power door locks and/or a power trunk release, these options may be added to the majority of vehicles. Door lock actuators may be installed into one or all of your doors to add the keyless entry feature to your remote car starter. If you have a manual cable trunk release (such as a pull lever on the floor to open your trunk) you will need a trunk solenoid installed to open your trunk via the remote control. These features may be added to a remote car starter at any point. Many of the packages installed by Great Scot! will include keyless entry and trunk release if the vehicle is *already equipped* with these power accessories. These options may be included if no other parts other than relays are required. Actuators, solenoids, and vehicle specific modules are additional. The options installed will vary according to the package you select.

"F-Type" Door Locks

Some cars are equipped with an "F Type" lock system. In these vehicles, an electronic switch is not used to lock/unlock the doors. With these vehicles, pressing down on the driver door lock will cause the remaining doors to lock. This system is often referred to as a "follow me" lock system.

Unlocking the driver door will cause the remaining doors to open. If you would like to have keyless entry installed into a vehicle with "F Type" locks, a driver door lock actuator is required (as there is not an lock/unlock switch installed from the factory). This electronic motor will lock/unlock the driver door once it has received the signal from the remote car starter. As a result, the remaining doors will lock/unlock as well. Keyless entry may be included with your remote starter as long as no other parts than relays are required. Actuators and vehicle specific modules are additional.

Can A Remote Starter Be Removed if I Sell or Trade My Car?

A remote car starter can be removed when you sell or trade your vehicle. There are a few considerations when debating to remove a remote car starter. A large portion of the total cost of a remote car starter is installation labor. These charges will have to be paid when the remote car starter is reinstalled into your new vehicle. In addition, there are charges for the removal of the system from your existing vehicle. This typically takes less than an hour to completely remove a remote car starter from a vehicle (an hour of labor at Great Scot! is currently \$70/hr). Bear in mind the remote starter may require additional parts for installation into the new vehicle. It typically takes longer to reinstall a used remote car starter as the harnesses are wired or "prepped" for another year, make, and model vehicle.

Where Should I buy My Remote Starter?

The installation of a remote car starter should be performed by an experienced specialist. Please consider the reputation of a retailer who only uses price as a consideration. Price is always a consideration but a few extra dollars spent is worth it in the end. Of course, find a retailer who has been established in the area for several years and specializes in the sale and installation of remote car starters. The more experience, the better.