



OPERATING & INSTALLATION INSTRUCTIONS

RS-7K

**DELUXE KEYLESS ENTRY/REMOTE CAR STARTER
FOR AUTOMATIC TRANSMISSION VEHICLES ONLY**

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INTRODUCTION & WARNINGS

Congratulations on your purchase of the RS-7K Remote Car Starter. The RS-7K will allow you to start your vehicle's engine from the comfort of your home or office, allowing your vehicle to warm up in winter and cool down in summer. When you leave your vehicle, simply set the climate controls for what you desire to be operating upon remote start - heater, defroster or air conditioning.

The RS-7K is a keyless entry/remote start unit designed to be used by itself or in conjunction with another remote control unit such as a vehicle security system.

We highly recommend that this system be professionally installed, as the complexity of the modern automobile and the nature of circuits to be accessed is often beyond the abilities of most do-it-yourselfers.

There are several safety considerations with using and installing the RS-7K Remote Car Starter. Among them are:

- This unit is for Automatic Transmission vehicles only. Installation in a manual transmission equipped vehicle can result in property damage or personal injury.
- This unit is for fuel injected gasoline engines only.
- Children should not be left unattended in, or be allowed to play with the activating transmitters of a remote starter equipped vehicle.
- Do not use this unit in an enclosed structure or garage.

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TRANSMITTER FUNCTIONS

The RS-7K comes with two 4-button remote transmitters. Please familiarize yourself with the buttons and operations of the transmitters which are explained in the following pages.



LOCKING & UNLOCKING THE DOORS

To Lock The Vehicle's Doors: Press & Release Transmitter Button #1

- The parking-lights will flash once to confirm and the doors will lock.



To Unlock The Vehicle's Doors: Press & Release Transmitter Button #2

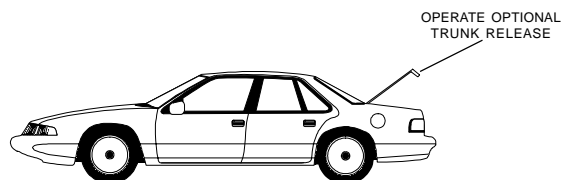
- The parking-lights will flash twice to confirm and the doors will unlock.



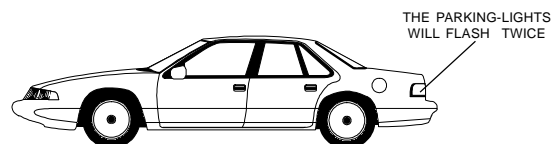
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REMOTE TRUNK RELEASE & CARFINDER

To Activate The Trunk Release: Press & Release Transmitter Button #4



To Activate Carfinder: Press & Hold Transmitter Button #1 For 3 Seconds



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REMOTE STARTING

To Remote Start The Vehicle: Press & Release Transmitter Button #3

- 1) The parking-lights will flash once then turn On to confirm Start process.
- 2) The ignition circuit will turn On.
- 3) Within 2 seconds the parking lights will turn Off and the starter will engage.
- 4) The engine will start to run and the starter will be disengaged.
- 5) The parking lights will stay On while the RS unit is controlling the engine.
- 6) If the engine stalls, the RS unit will make two attempts to restart it.
- 7) After 15/30 minutes (programmable) the RS unit will turn the engine off.

- Upon entering the vehicle place the ignition key in the switch and turn it to the "On" position. Do not turn the key to the "Start" position.

Safety Features

- The RS unit will only engage if the gear shift selector is in "Park".
- The unit will not engage if the hood is opened.

Deactivation

- To stop the engine by remote control, simply press transmitter button #3 again.
- Stepping on the brake pedal prior to inserting the key will deactivate the RS unit.
- Opening the hood will deactivate the RS unit.

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VALET OVERRIDE MODE

Valet Override: The position of the Override switch allows or prevents the RS unit from being activated. This feature is used when you do not wish the unit to be operated, such as when you leave it with a valet parking attendant, mechanic or if you loan your car to another person.

To engage the Valet Override mode, simply turn the Override Switch OFF. It is recommended to always turn the Override Switch OFF to prevent unintentional or unauthorized use of the Remote Car Starter.

Note: Do not confuse the toggle type Valet Override switch with the push button programming button.

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INSTALLATION INSTRUCTIONS

!! WARNINGS !!

Do not attempt to install this Remote Car Starter into a manual transmission vehicle! Doing so could cause serious property damage, personal injury, and will void all warranties!

Be aware of, and avoid, any airbag circuitry! Due to the fact that an installer will not be in a normal, upright seated position, severe injury may occur in an accidental airbag deployment!

The use of a Digital Multimeter (DMM) or Volt-Ohm Meter (VOM) instead of a standard testlight is recommended. This can greatly reduce the risk of an accidental airbag deployment or on-board computer damage.

Battery gases are explosive! Avoid sparks and do not smoke while working near the vehicle's battery!

Always protect wires ran through the firewall from sharp metal edges and hot parts of the engine! Always fuse positive wires at the battery or power source!

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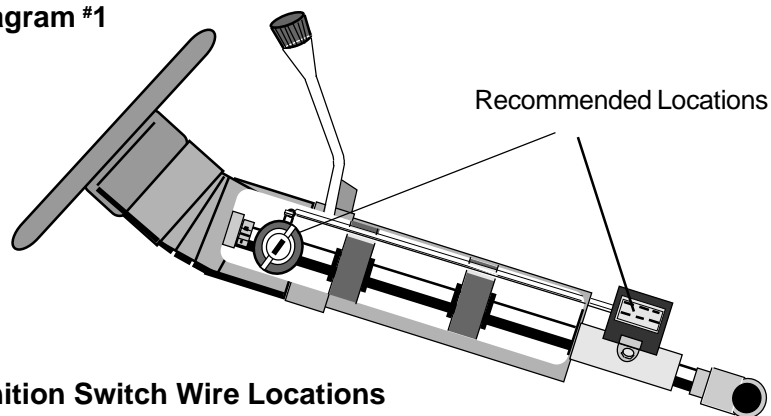
WIRING - 5 WIRE CONNECTOR

Red Wire: (Two 12-Gauge wires)

Connection Required

Connect both Red wires to constant 12 Volts. The most common sources are the battery's Positive terminal and the ignition switch wiring harness (See diagram #1).

Diagram #1



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IMPORTANT!

After reading this manual, start the installation by affixing the **WARNING DECAL** to a visible area in the engine compartment!

Installation Considerations: This entire booklet should be read before starting the installation. An understanding of which control module wires are to be used and their functions is essential. Installations will vary from car to car, as some control module wires are required, while others are optional. Before starting the installation, it should be determined which control module wires will be used. Most installers will list these wires, then "map out" the installation by locating and noting the target wires in the vehicle. This will also determine the best location for the RS control module, which is mounted upon completion of the installation.

This Remote Start Unit duplicates the actions that occur within the ignition switch when you use your key to start the engine. Because of this, most of the main wiring harness connections will be made at the ignition switch harness. The ignition switch wires usually are high amperage circuits, which means that high reliability connections must be made! We recommend proper soldering of all connections.

Caution! *Avoid the Airbag circuit!* Especially avoid any harness or wires encased in Yellow or Red tubing or sleeves. Do not use a standard test light, as it can deploy an airbag or damage on-board computers and sensors.

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Green Wire: 12-Gauge

Connection Required

Connect the Green wire to the vehicle's Starter Motor wire. This wire will show 12 volts only when the ignition key is in the "Start" position. This wire is also found in the ignition switch wiring harness (See diagram #1 on page 11). Some vehicles have a second Starter wire known as a "Cold Start" wire. When this is encountered, if the two Starter wires are the same circuit you may connect both of these wires to the Green wire. If the two Starter wires are separate circuits an optional prewired dual relay socket and relays are recommended.

Note: If a security system is present which utilizes a starter interrupt circuit, the Green wire must be connected to the Starter Motor side of the interrupt.

Blue Wire: 12-Gauge

Connection Required

Connect the Blue wire to the vehicle's Ignition #1 wire (also known as Primary Ignition). This wire will show 12 Volts when the ignition key is in the "Run" and "Start" positions and no voltage in the "Off" and "Accessory" positions. This wire is found in the ignition switch wiring harness (See diagram #1).

Note: If two or more Primary Ignition wires are present, you will need to connect an optional relay(s) to the thin Blue wire located in the 3-pin Blue connector (See diagram #2 on page 14).

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Yellow Wire: 12-Gauge

Connection Required

Connect the Yellow wire to the vehicle's Accessory wire. This circuit supplies power to the Heat, Ventilation and Air Conditioning (HVAC) system. This wire will show 12 Volts when the ignition key is in the "Run" and "Accessory" positions and No voltage in the "Start" and "Off" positions. The connection point for this wire is also found in the ignition switch wiring harness (See diagram #1).

Note: If two or more Accessory wires are present, you will need to connect an optional relay(s) to the thin Yellow wire located in the 3-pin Blue connector (See diagram #3 on page 14).

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Diagram #2

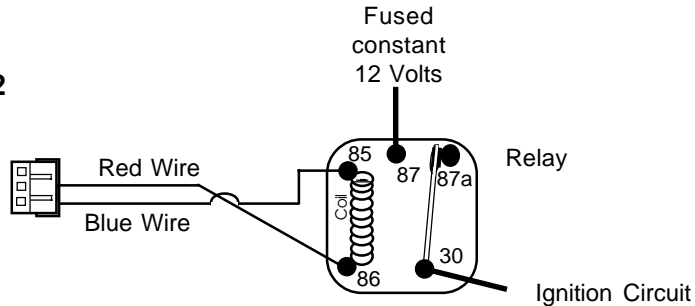
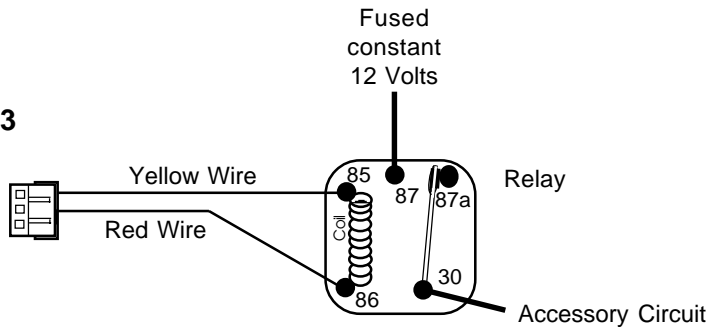


Diagram #3



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WIRING - 3 WIRE "BLUE" CONNECTOR

Blue Wire: (22 Gauge)

The Blue wire will supply a 500ma Negative Ignition output that can be used to operate an optional relay(s) if two or more Primary Ignition wires are present in the vehicle. If an optional relay(s) is needed, Connect the Blue wire to the Negative side of the relay's coil (See diagram #2 on page 14).

Red Wire: (22 Gauge)

The Red wire supplies constant 12 Volts that can be used to power the relay's coil.

Warning: DO NOT use the Red wire to power the Ignition or Accessory circuits.

Yellow Wire: (22 Gauge)

The Yellow wire will supply a 500ma Negative Accessory output that can be used to operate an optional relay(s) if two or more Accessory wires are present in the vehicle. If an optional relay(s) is needed, Connect the Yellow wire to the Negative side of the relay's coil (See diagram #3 on page 14).

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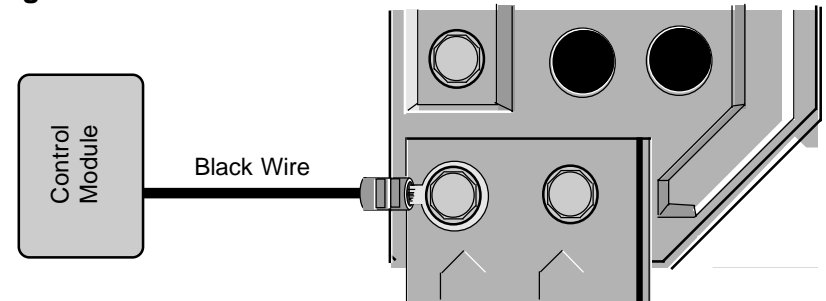
WIRING - 10 WIRE CONNECTOR

Black Wire:

Connection Required

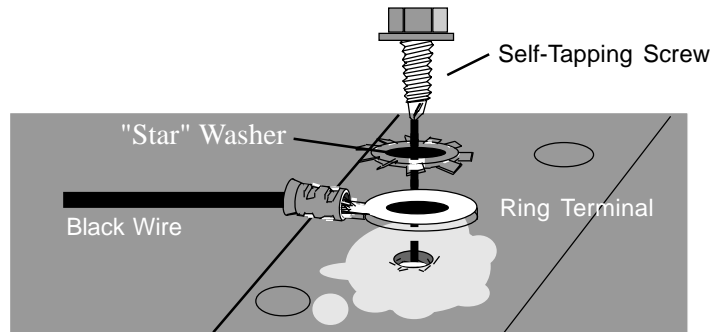
Connect the Black wire to a very good, clean chassis ground. Recommended areas are to an existing machine thread bolt, either in the driver's kick panel area or a major structural member behind the dash. Small dash braces are not adequate, and the area must be clean, bright metal. Use the largest existing machine threaded bolt available (see diagram #4). Using a sheet metal screw or grounding to sheet metal is inadequate (see diagram #5 on the page 17).

Diagram #4



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Diagram #5



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Diagram #6

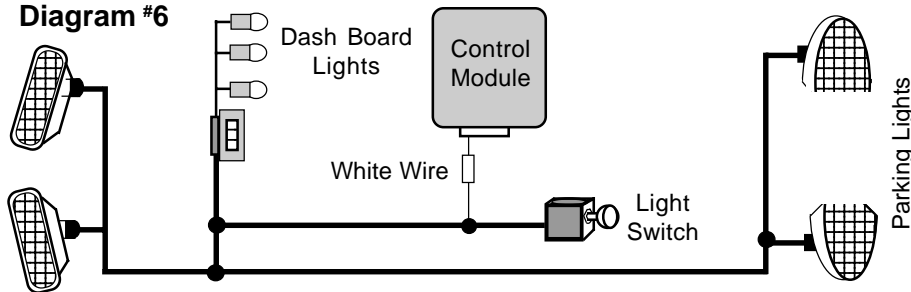
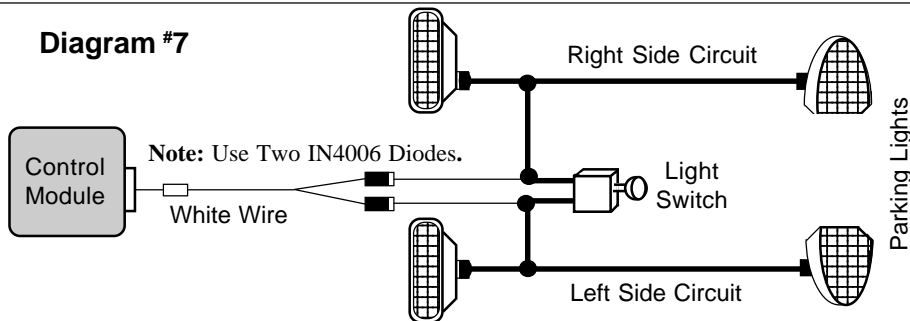


Diagram #7



Connecting Separate Left And Right Parking Lights Using Two Diodes.

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White Wire:

Connection If Desired

The function of the White wire is to supply a 12 Volt signal to the vehicle's exterior parking-lights in order to visually confirm system operations.

Connect the White wire to the vehicle's 12 Volt parking-light circuit (See diagram #6 on page 19).

-The correct wire will show 12 Volts only when the headlight switch is in the "Parking Light" and "Head Light" positions.

-This wire can usually be found at the headlight switch.

Note #1: When such a wire is located, be sure to also test that it is non-rheostated: While metering the wire, operate the dash light dimmer control. The correct wire will show no change in voltage when the dimmer is operated.

Note #2: Some vehicles have a parking-light relay which is triggered by a Negative signal from the headlight switch. In these vehicles, the White wire must be connected after the relay, usually at the Fuse/Junction Block.

Note #3: Some vehicles are equipped with a split parking light system. In these vehicles, the use of IN4006 diodes are required (see diagram #7 on page 19).

WARNING:

- Do NOT connect the white wire directly to the vehicle's headlights. An external relay is required.

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Dark Blue Wire:

Connection Required

The hood pin switch must be installed. It prevents operation of the RS unit if the hood is open.

Connect the Dark Blue wire to the hood pin switch. Carefully route the Dark Blue wire through the firewall, using an added or existing grommet. Avoid any hot or moving parts. Mount the switch so that it is open (pin down) when the hood is shut and closed (pin up) when the hood is open.

If there is an existing hood pin switch for an alarm system, you may use it for the Dark Blue wire connection; diode-isolation is recommended.

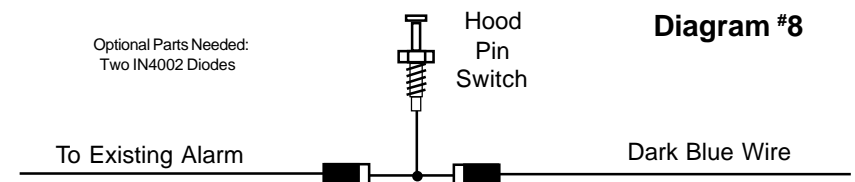


Diagram #8

Instead of using a pin switch to monitor the hood's open or shut status, an Omega AU-46 Mercury Tilt Switch may be used. Connect one of the AU-46's wires to Negative Chassis Ground and connect the remaining wire to the Dark Blue wire.

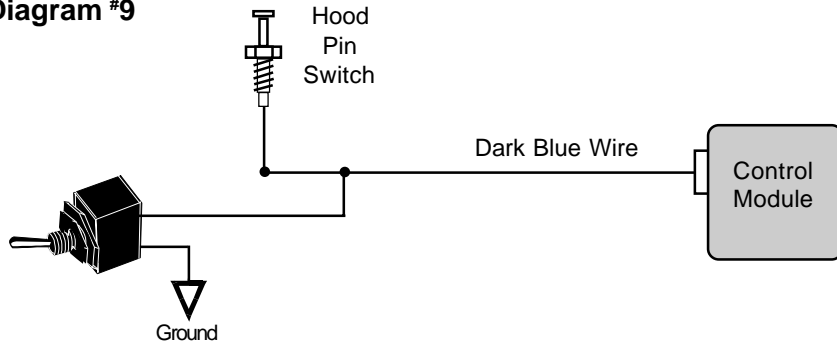
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Remote Start Override Mode:

The RS unit can be placed into an "Override" mode which will prevent it from starting the vehicle. This mode is for situations when it is not convenient or safe for the Remote Start feature to be operable. For example during extended stopovers for vehicle servicing, maintenance, valet parking, washing, etc.

Connect the Dark Blue wire to one of the included toggle switch's two wires. Connect the toggle switch's remaining wire to ground.

Diagram #9



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Gray Wire:

Connection If Desired

The function of the Gray wire is to provide a Negative 500ma auxiliary output which may be used to operate a trunk release or other interface.

Trunk Release Connection:

- 1) Connect the Gray wire to pin #85 of the external relay.
- 2) Connect Constant 12 Volts to pin #86 of the external relay. (Fused)
- 3) Connect pins #87, 87a & 30 as indicated in diagram #10 on page 24.

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Yellow/Black Wire:

Connection

Required

The Yellow/Black wire must be connected. It is part a critical safety feature which disables the RS unit whenever the brake pedal is pressed.

Connect the Yellow/Black wire to the brake switch wire which shows 12 Volts when the brake pedal is pressed. The brake switch is typically located above the brake pedal, and usually mounted to the brake pedal support bracket. Always make this connection in a fashion ensuring its long-term reliability; soldering is highly recommended. Upon completing the Yellow/Black wire's connection, thoroughly test the operation of this circuit.

Pink Wire:

Connection If Desired

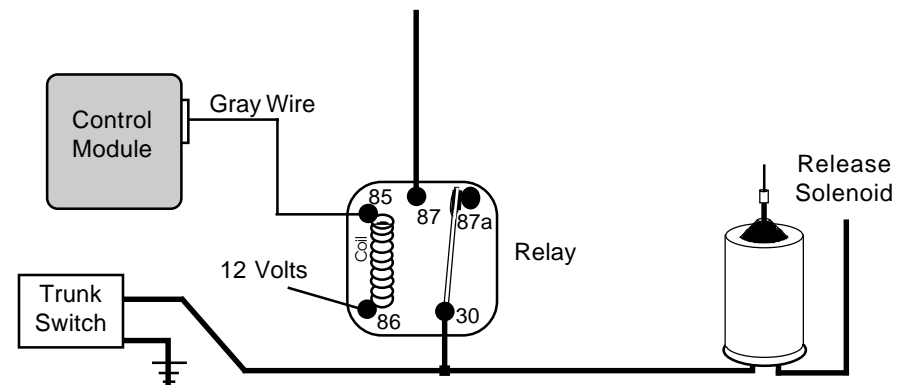
The Pink wire activates the RS Unit. If the Pink wire receives a Negative pulse, the RS unit will start the vehicle's engine, provided that all safety circuits are in the proper status. After the engine has been started by remote control, another Negative pulse on the Pink wire will turn the RS unit off, stopping the engine.

The Pink wire can be connected to an available auxiliary output of an existing Remote Security System, or the RS-7K's remote control may be used to activate the unit.

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Diagram #10

Connect to 12 Volts or Negative Ground as needed in the particular application. (In this case Negative is required)



Note: In some applications the solenoid wire will rest at ground. In these cases:

- Cut the solenoid wire:
- Connect the switch side to pin #87a of the external relay.
- Connect the solenoid side to pin #30 of the external relay.
- Connect 12 Volts to pin #87 of the external relay (Fused).

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Orange/Black Wire:

Connection Required

The Orange/Black wire is the engine detect wire. The RS unit utilizes three different methods of monitoring the vehicle during the remote starting process. Consider all methods before deciding which one to use. Normally the Smart Start method is used.

1) Vacuum Switch Sensing:

This method uses an optional Vacuum switch to verify that the vehicle's engine is running. The Orange/Black wire connects to one of the Vacuum switch's wires, the other wire is connected to chassis Ground. Connect the Vacuum switch using a "T" connector to a vacuum hose on the engine's intake manifold.

- 1) Position the 3-way selector switch for Vacuum switch operation (right position).
- 2) Locate the Smart Start & Tach Sense adjustment screws and LED indicators.
- 3) Turn BOTH adjustment screws completely counterclockwise.

Note: Using a multimeter set to Ohms, measure the resistance of the Vacuum switch. The switch should read Zero resistance when the engine is "Off" and read Maximum resistance (open circuit) when the engine is running. If this is not the case, relocate the vacuum connection.

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3) Tach Sense:

If the vehicle is generally hard to start (requiring the starter to be engaged for more than 1 second) this method will produce more consistent remote starting. With this method the Orange/Black wire reads the engine speed (tach) information from a wire in the vehicle. The Orange/Black wire connects to the vehicle's tach wire, which is found in the engine compartment, although in some cases it may also be located inside the vehicle. To use a multimeter to verify the correct tach wire, set it for AC Volts scale. The correct wire will read 1 to 6 volts AC with the engine idling, and will increase with engine speed.

Note: When using this method Programmable Jumper #1 will increase/decrease the unit's sensitivity.

- 1) Position the 3-way selector switch for Tach Sense (left position).
- 2) Locate the Tach Sense & Smart Start adjustment screws and LED indicators.
- 3) Turn BOTH adjustment screws completely counterclockwise.
- 4) Start the vehicle.
- 5) Begin tuning the Tach Sense adjustment screw slowly clockwise until the LED indicator illuminates solid, then turn the vehicle Off.
 - To increase the crank time, tune the adjustment screw counterclockwise.
 - To decrease the crank time, tune the adjustment screw clockwise.

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2) Smart Start:

This method uses a voltage sensing circuit which reads the vehicle's voltage before attempting to start, and then monitors for a voltage increase which occurs when the alternator has output. The Orange/Black wire connects to a constant 12 Volt source (i.e.: the vehicle's battery).

Note: When using this method Programmable Jumper #4 will increase/decrease the starter motor cranking time.

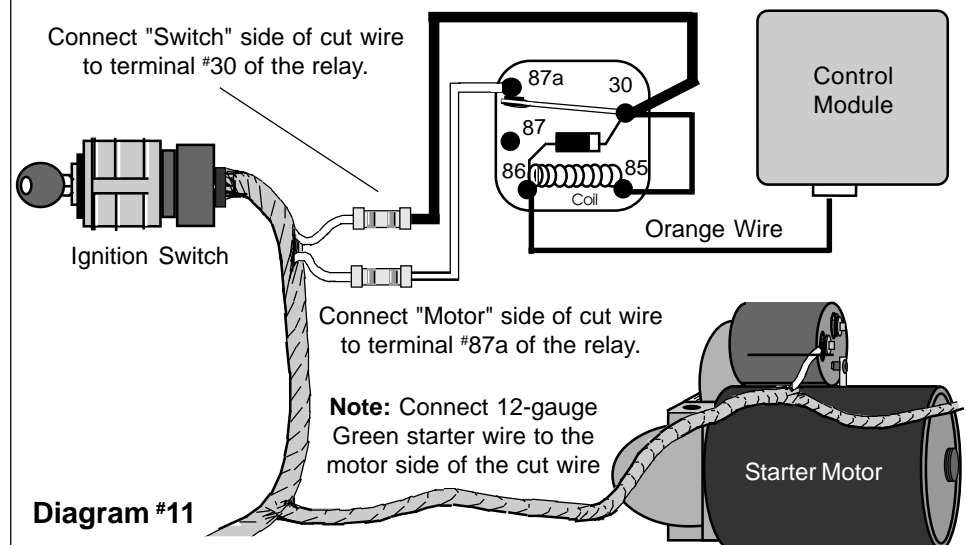
- 1) Position the 3-way selector switch for Smart Start (center position).
- 2) Locate the Smart Start & Tach Sense adjustment screws and LED indicators.
- 3) Turn BOTH adjustment screws completely counterclockwise.
- 4) Start the vehicle.
- 5) Begin tuning the Smart Start adjustment screw slowly clockwise until the LED indicator begins to flash. The flashes confirm that the unit is sensing the engine.
- 6) Turn the vehicle Off.
- 7) Confirm that the unit is not picking up noise from other vehicle circuits:
 - a. Without starting the engine, turn the ignition key to the "On" position.
 - b. If the LED indicator remains "Off" the unit has been properly tuned.
 - c. If the LED indicator flashes there is noise on the Orange/Black wire's connection and it will be necessary to relocate the connection.

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Orange Wire:

Connection If Desired

The function of the Orange wire is to provide a Negative 250ma auxiliary output which may be used to operate a starter motor "Anti-Grind" relay.



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Door Locks:

The doorlock interface needed will depend upon the type of power doorlocking system the vehicle is equipped with.

Note: The vehicle must have existing power doorlocks. The addition of a power doorlock interface to a vehicle without power locks will not allow the RS unit to operate the doorlocks. However, power doorlocks may be added to the vehicle in the form of adding a model DS-2 actuator to each of the doors, along with a doorlock interface.

Green Wire:

Connection If Desired

The Green wire supplies a negative pulse for locking the vehicle's doors.

Light Blue Wire:

Connection If Desired

The Light Blue wire supplies a negative pulse for unlocking the vehicle's doors.

Note: Programmable Jumper #2 will allow the RS unit to emit a single or double unlock pulse.

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Negative Pulse System Direct Connection

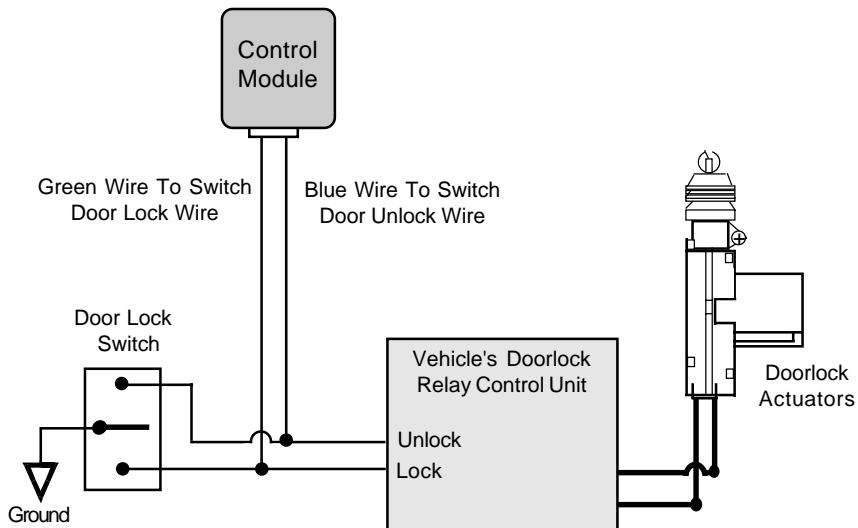


Diagram #12

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3 Wire Negative Pulse Systems

This power doorlock system is simplest of all doorlocking systems. A Negative pulse system will have only three wires at the doorlock switch.

Examine the wires on the back of the doorlock switch:

- 1) One wire will show Ground, regardless of the switch's position.
- 2) One wire will show Ground only when the switch is pushed to "Lock".
- 3) One wire will show Ground only when the switch is pushed to "Unlock".

Note: The lock & unlock wires coming out of the switch operate the vehicle's doorlock relays or a control unit with on-board relays, therefore the lock & unlock wires will read voltage, up to 12 Volts, when the switch is at rest. The correct connection point is between the switches and the relays.

The RS unit's Green & Light Blue wires can be connected directly to the vehicle's Negative pulse system since only a Negative pulse is required to operate the vehicle's on-board doorlocking relays.

Note: If the vehicle's Negative pulse doorlocking system requires more than 250ma Negative output, an optional interface must be used.

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3 Wire Positive Pulse Systems

This doorlock system is similar to the 3 wire negative pulse system except the doorlock switches provide 12 Volt pulses to operate the doorlock relays/control unit.

Examine the wires on the back of the doorlock switch:

- 1) One wire will show 12 volts, regardless of the switch's position.
- 2) One wire will show 12 volts only when the switch is pushed to "lock".
- 3) One wire will show 12 volts only when the switch is pushed to "unlock".

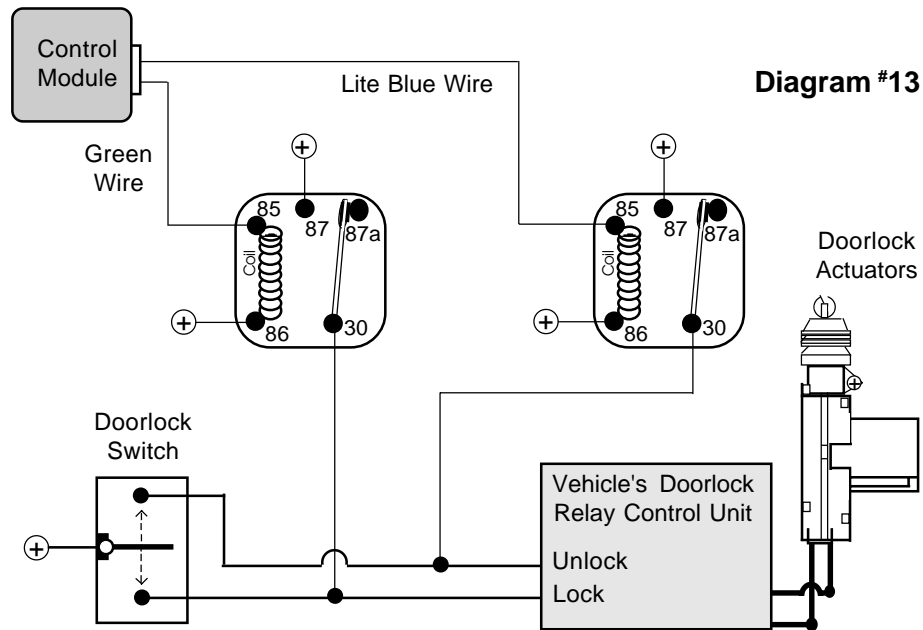
Warning: The Positive pulse system can be confused with the 5-wire Reversing Polarity system. This is because both systems emit 12 Volt pulses on the "Lock" & "Unlock" wires when the vehicle's switch is pressed respectively. It is critical to identify which system is present since if 12 Volts are pulsed into a Reversing polarity system, which rests at ground, a "Short" will occur.

3 main differences between a Positive pulse and a Reversing Polarity system:

- 1) In a Reversing system the Lock/Unlock wires *rest at ground*, while in a Positive system the wires *show partial ground* through the relay's coils.
- 2) The doorlock switch in a Reversing system will have 5 wires, while a Positive pulse system the switch will have 3 wires.
- 3) A *Positive pulse system* uses *factory relays or a control unit*, a Reversing system *does not*.

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Positive Pulse System Using External Relays



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5 Wire Reversing Polarity Systems

This power doorlock system differs from the negative and positive pulse systems in that there is no doorlock control unit or relays. In this type of system, the switches themselves supply the positive voltage directly to the doorlock actuators, and, more importantly, provide the return ground path. It is important to note that the lock & unlock wires in this system *actually rest at chassis ground*. This means that both the lock & unlock wires must be "opened", or cut, to make the proper connections.

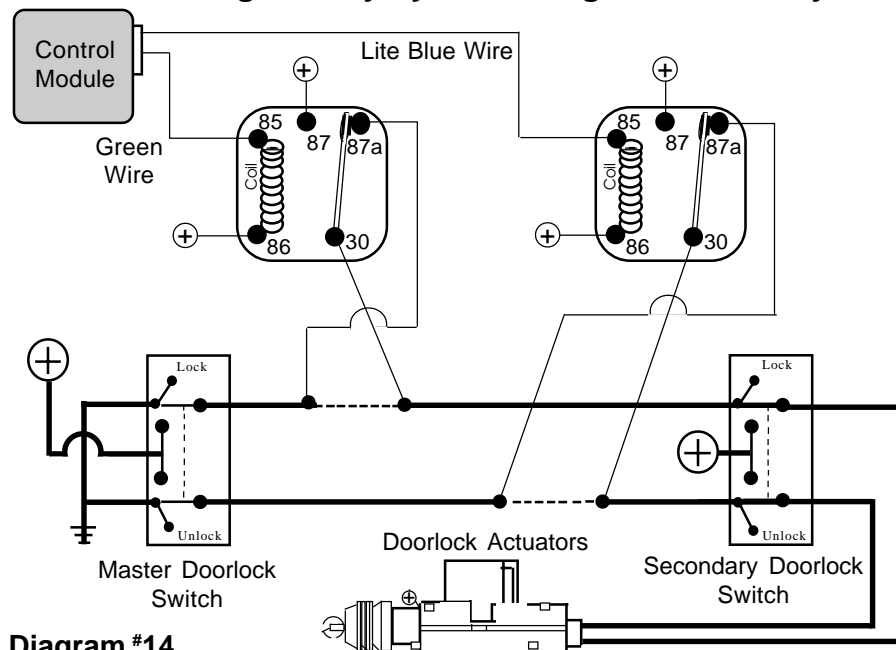
Examine the wires on the back of the switch. (Normally 5 wires will be found)

- 1) One wire will show 12 volts, regardless of the switch's position.
- 2) Two wires will be grounded regardless of the switch's position.
- 3) One wire will show 12 volts only when the switch is pushed to "Lock".
- 4) One wire will show 12 volts only when the switch is pushed to "Unlock".

- When the lock /unlock wires are found, they must be cut one at a time. If the correct wires are cut the door locking system should not operate from the primary switch.
- Notice that in diagram #14 the driver's switch is the primary or "Master" switch (in some vehicles, the primary switch is on the passenger's side). The half of the cut wires which come from this primary switch are referred to as the "Switch" side. The half of the cut wires which go to the secondary switch are referred to as the "Motor" side even though the cut is made between the switches.

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Reversing Polarity System Using External Relays



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Receiver Antenna / Programing Switch:

Receiver Antenna:

Connection Required

The RS unit comes equipped with a plug-in window mount Receiver Antenna. The unit will not operate unless this receiver antenna is plugged-in.

Select a desired mounting location for the antenna. Make sure the glass surface is clean and free of dust, grease, or debris. Peel the backing off of the adhesive tape and affix the antenna. Carefully route the antenna's cable toward the RS control module. Insert the antenna's Black 3-wire connector into the matching Black port located on the rear of the RS control module.

Programming Button:

Connection Required

The Program button is used in combination with the vehicle's ignition key to enter the RS unit into the Transmitter Programing mode. The Program button should be mounted in a hidden but accessible location. Route the wires to the RS unit's control module and insert the 2-wire connector into the matching 2-pin port on the control module.

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TRANSMITTER PROGRAMING

Up to 4 different transmitters may be programmed into the RS unit's memory. When a new transmitter code is programmed, all previous codes will be deleted. If a third or fourth transmitter is desired, all of the transmitters must be programmed.

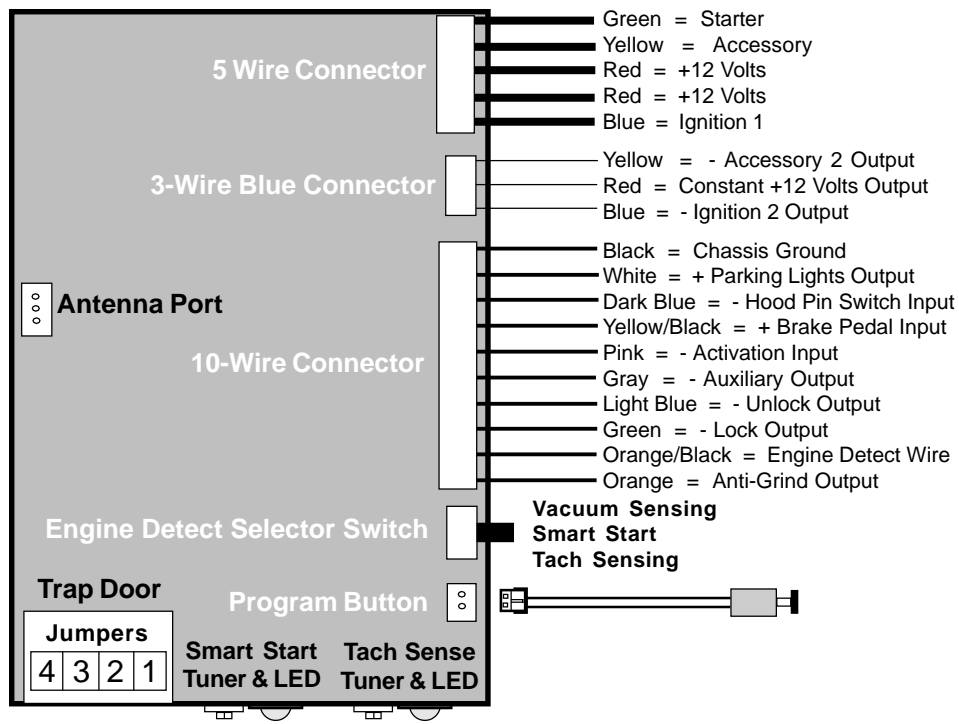
To Program Transmitters:

- 1) Turn ignition "On".
- 2) Press & Release Program button 5 times.
- The parking lights will flash 5 times to confirm entry into programing mode.
- 3) Press any button of new Transmitter to be programed.
- The parking lights will flash to confirm that the Transmitter has been learned.
- 4) To program additional transmitters, Repeat step #3.
- 5) Turn ignition "Off".

Note 1: It is recommended that all four transmitter memory slots be filled. For example: If you have two transmitters, program each one twice.

Note 2: The RS unit will automatically exit programing mode if 10 seconds elapse without receiving a signal from the transmitter(s).

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FEATURES PROGRAMING

The RS unit has four Jumper selectable programmable features. Whenever a jumper setting is changed, it is necessary to power down the RS unit for the change to be recognized.

	Feature	Jumper "In"	Jumper Removed
Jumper #1	Tach Sense Sensitivity	Normal	High
Jumper #2	Door Unlock Pulse	Single	Double
Jumper #3	Engine Running Time	15 Minutes	30 Minutes
Jumper #4	Starter Motor Cranking Time	1.2", 1.5", 2"	1", 1.5", 2"

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LIMITED LIFETIME WARRANTY

Products manufactured and sold by OMEGA RESEARCH & DEVELOPMENT, INC. (the Company), are warranted to be free from defects in materials and workmanship under normal use. If a product sold by the Company proves to be defective, the Company will repair or replace it free of charge within the first year and thereafter all parts to be repaired will be free with only a nominal charge for Omega Research and Development, Inc.'s labor and return shipping, to the original owner during the lifetime of the car in which it was originally installed.

All products for warranty repair must be sent postage prepaid to Omega Research & Development, Inc., P.O. Box 508, Douglasville, Georgia 30133, with bill of sale or other dated proof of purchase. This warranty is nontransferable and does not apply to any product damaged by accident, physical or electrical misuse or abuse, improper installation, alteration, any use contrary to its intended function, unauthorized service, fire, flood, lightning, or other acts of God.

This warranty limits the Company's liability to the repair or replacement of the product. The Company shall not be responsible for removal and/or reinstallation charges, damage to or theft of the vehicle or its contents, or any incidental or consequential damages caused by any failure or alleged failure of the product to function properly. Under No Circumstances Should This Warranty, Or The Product Covered By It, Be Construed As A Guarantee Or Insurance Policy Against Loss. The Company neither assumes nor authorizes any person or organization to make any Warranties or assume any liability in connection with the sale, installation, or use of this product.

This device complies with F.C.C Rules part 15. Operation is subject to the following two conditions: (1) This device may not cause harmful interference and, (2) This device must accept any interference that may be received, including interference that may cause undesired operation.

The manufacturer is not responsible for any radio TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.