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, or send via UPS to: 981 N. Burnt Hickory Rd., Douglasville, Georgia 30134, 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.

MA_RS-4LX_REV1

OMEGA®
RESEARCH AND DEVELOPMENT, INC.

OWNER'S MANUAL
&
INSTALLATION INSTRUCTIONS

RS-4LX
DELUXE MODULAR REMOTE CAR STARTER

FOR AUTOMATIC TRANSMISSION VEHICLES ONLY

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, or send via UPS to: 981 N. Burnt Hickory Rd., Douglasville, Georgia 30134, 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.

MA_RS-4LX_REV1

OMEGA®
RESEARCH AND DEVELOPMENT, INC.

OWNER'S MANUAL
&
INSTALLATION INSTRUCTIONS

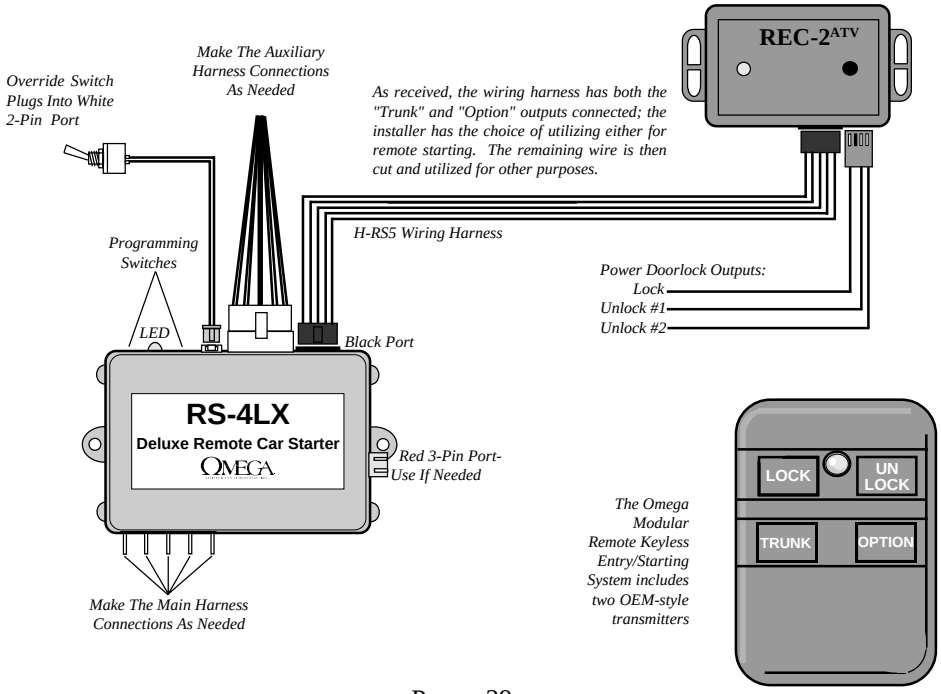
RS-4LX
DELUXE MODULAR REMOTE CAR STARTER

FOR AUTOMATIC TRANSMISSION VEHICLES ONLY

COPYRIGHT: OMEGA RESEARCH & DEVELOPMENT 1998

CONTENTS

The Omega Modular Remote Keyless Entry/Starting System:



CONTENTS

DAY - TO - DAY OPERATIONS

Introduction 3
Activating The Remote Car Starter 4-5
Safety Features, Deactivating The Remote Car Starter 5
Functions Of The Override Switch And Other Options 6-7

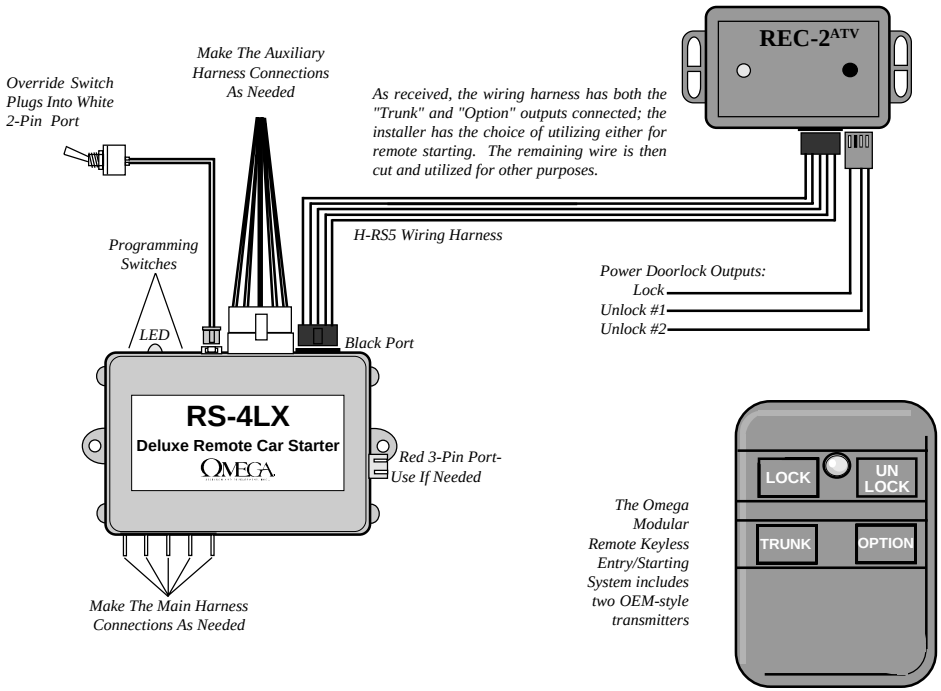
INSTALLATION INSTRUCTIONS

Warnings 8
Installation Considerations 9
Wiring - Main Harness 10-14
Wiring - Auxiliary Harness 14-22
DataLearn™ Procedure 17
Testing The Remote Car Starter 23
Using The Diagnostic LED Light 24
Programmable Options 24-27
Wiring, Control & Auxiliary Port Overview 20-21

SPECIAL INSTALLATION CONSIDERATIONS

Multiple Accessory Circuits 27-34
Multiple Ignition Or Starter Circuits 34-35
General Motors VATS Bypass 36
Other OEM Antitheft Systems 38
The RS-4LX And REC-2^{ATV} Modular Remote Keyless Entry/Starting System 38-39

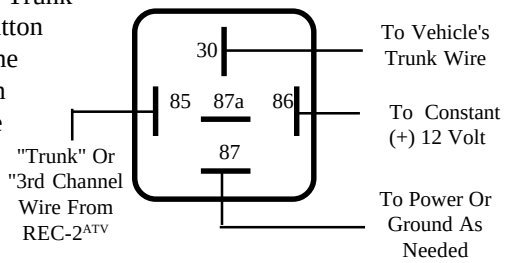
The Omega Modular Remote Keyless Entry/Starting System:



Other OEM Anti-Theft Systems: There are other OEM antitheft systems which will require attention when installing a remote starter. In General Motors vehicles, an advanced form of VATS known as PASSLOCK will require an optional bypass. In certain Ford vehicles, a transponder-based Passive Anti-Theft System (PATS) will also require an optional bypass. Both of these bypasses are available from Omega, and complete instructions are included with each.

The RS-4LX And REC-2^{ATV} Modular Remote Keyless Entry/Starting System: The RS-4LX can be used with the REC-2^{ATV} keyless entry receiver in an easy-to install modular fashion. The RS-4LX control module has a Black 5-pin port which supplies the necessary circuits for the REC-2^{ATV}'s operation, and also the return circuit which activates the RS-4LX. An optional wiring harness (H-RS5) is all that is required for the direct connection of the two control modules.

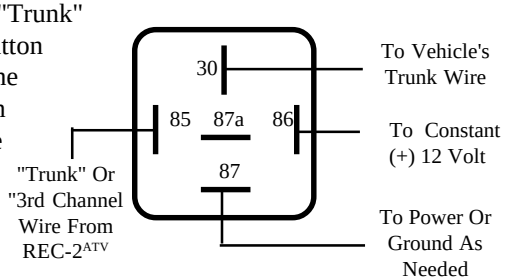
Please note that the operation of the "Trunk" and "3rd Channel" differ- "the "trunk" button must be pressed for 2 seconds to obtain the output while pressing the "Option" button produces an instant output. Both of these wires are connected on the H-RS5 wiring harness; this allows the installer to choose the timing for remote starting. Use this diagram to configure a relay for remote trunk release.



Other OEM Anti-Theft Systems: There are other OEM antitheft systems which will require attention when installing a remote starter. In General Motors vehicles, an advanced form of VATS known as PASSLOCK will require an optional bypass. In certain Ford vehicles, a transponder-based Passive Anti-Theft System (PATS) will also require an optional bypass. Both of these bypasses are available from Omega, and complete instructions are included with each.

The RS-4LX And REC-2^{ATV} Modular Remote Keyless Entry/Starting System: The RS-4LX can be used with the REC-2^{ATV} keyless entry receiver in an easy-to install modular fashion. The RS-4LX control module has a Black 5-pin port which supplies the necessary circuits for the REC-2^{ATV}'s operation, and also the return circuit which activates the RS-4LX. An optional wiring harness (H-RS5) is all that is required for the direct connection of the two control modules.

Please note that the operation of the "Trunk" and "3rd Channel" differ- "the "trunk" button must be pressed for 2 seconds to obtain the output while pressing the "Option" button produces an instant output. Both of these wires are connected on the H-RS5 wiring harness; this allows the installer to choose the timing for remote starting. Use this diagram to configure a relay for remote trunk release.



Page - 38

INTRODUCTION

Congratulations on your purchase of the RS-4LX Deluxe Modular Remote Car Starter. The RS-4LX 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.

Omega Research and Development, Inc. has been a leader in vehicle security and vehicle convenience products since 1970. Your RS-4LX is quality engineered, microprocessor controlled and manufactured in the U.S.A. It is an extremely sophisticated system with multiple built-in safety and security features. 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.

The RS-4LX is an "add on" unit designed to be used in conjunction with another remote control unit such as a remote vehicle security system, a keyless entry device or a remote receiver unit. Because the host activating unit will vary from application to application, the proper button or buttons to press to activate the remote starter can only be determined by the installer.

Please take time to review this manual, which is divided into two parts. The first section will explain the operation of your RS-4LX Deluxe Remote Car Starter, and the second section provides instructions for the installer.

 Continued Next Page

INTRODUCTION

Congratulations on your purchase of the RS-4LX Deluxe Modular Remote Car Starter. The RS-4LX 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.

Omega Research and Development, Inc. has been a leader in vehicle security and vehicle convenience products since 1970. Your RS-4LX is quality engineered, microprocessor controlled and manufactured in the U.S.A. It is an extremely sophisticated system with multiple built-in safety and security features. 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.

The RS-4LX is an "add on" unit designed to be used in conjunction with another remote control unit such as a remote vehicle security system, a keyless entry device or a remote receiver unit. Because the host activating unit will vary from application to application, the proper button or buttons to press to activate the remote starter can only be determined by the installer.

Please take time to review this manual, which is divided into two parts. The first section will explain the operation of your RS-4LX Deluxe Remote Car Starter, and the second section provides instructions for the installer.

Page - 3 *Continued Next Page*

There are several safety considerations with using and installing the RS-4LX Remote Car Starter. Among them are:

- This unit is for Automatic Transmission vehicles only. Attempting installation in a manual transmission equipped vehicle can result in property damage or personal injury.
- This unit is for fuel injected gasoline and diesel engines only.
- Children should not be left unattended in, or be allowed to play with the activating transmitters of a remote starter equipped vehicle.
- All installation safety features should be utilized and safety warnings heeded.

OPERATING INSTRUCTIONS

Activation: Your RS-4LX Remote Car Starter is activated by remote control. This is typically done from a small radio transmitter, usually attached to your key ring. As stated previously, the RS-4LX is an "add on" unit designed to be used in conjunction with another remote control unit such as a remote vehicle security system, keyless entry device or remote receiver unit. The exact activation method for your vehicle may vary. The normal activation involves pressing and releasing either a single or multiple button(s) on the transmitter. Please note that other reactions may occur, depending on the host receiver unit. For example, if a security system's auxiliary output is being utilized, it may also disarm or it may chirp its siren. As noted earlier, the installer can determine the exact remote start activation procedure, and also inform you of the total reactions of your particular system.

1) Using a Digital Multimeter (DMM) or a Volt-Ohm Meter (VOM) measure the resistor in the ignition key. This is the small black pellet in the shank of the key. If the meter is not auto-ranging, set it for the "100kW" scale. When measuring the key, do not touch the metal parts of the meter probes or erroneous readings can occur.
2) Select the proper value of the 15 included resistors. Use the meter or the following chart to make the proper selection:

Key Number	Value	2% Resistor Band Colors
1	392W	Orange, White, Red, Black
2	523W	Green, Red, Orange, Black
3	681W	Blue, Gray, Brown, Black
4	887W	Gray, Gray, Violet, Black
5	1130W	Brown, Brown, Orange, Brown
6	1470W	Brown, Yellow, Violet, Brown
7	1870W	Brown, Gray, Violet, Brown
8	2370W	Red, Orange, Violet, Brown
9	3010W	Orange, Black, Brown, Brown
10	3740W	Orange, Violet, Yellow, Brown
11	4750W	Yellow, Violet, Green, Brown
12	6040W	Blue, Black, Yellow, Brown
13	7500W	Violet, Green, Black, Brown
14	9530W	White, Green, Orange, Brown
15	11800W	Brown, Brown, Gray, Red

There are several safety considerations with using and installing the RS-4LX Remote Car Starter. Among them are:

- This unit is for Automatic Transmission vehicles only. Attempting installation in a manual transmission equipped vehicle can result in property damage or personal injury.
- This unit is for fuel injected gasoline and diesel engines only.
- Children should not be left unattended in, or be allowed to play with the activating transmitters of a remote starter equipped vehicle.
- All installation safety features should be utilized and safety warnings heeded.

OPERATING INSTRUCTIONS

Activation: Your RS-4LX Remote Car Starter is activated by remote control. This is typically done from a small radio transmitter, usually attached to your key ring. As stated previously, the RS-4LX is an "add on" unit designed to be used in conjunction with another remote control unit such as a remote vehicle security system, keyless entry device or remote receiver unit. The exact activation method for your vehicle may vary. The normal activation involves pressing and releasing either a single or multiple button(s) on the transmitter. Please note that other reactions may occur, depending on the host receiver unit. For example, if a security system's auxiliary output is being utilized, it may also disarm or it may chirp its siren. As noted earlier, the installer can determine the exact remote start activation procedure, and also inform you of the total reactions of your particular system.

Page - 4

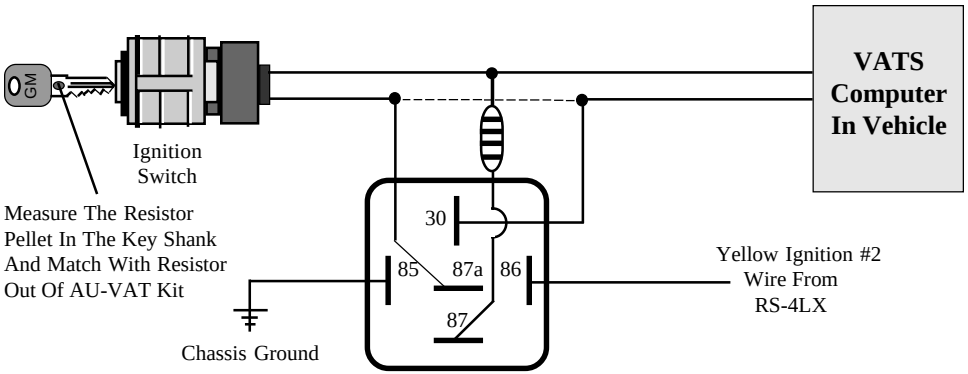
1) Using a Digital Multimeter (DMM) or a Volt-Ohm Meter (VOM) measure the resistor in the ignition key. This is the small black pellet in the shank of the key. If the meter is not auto-ranging, set it for the "100kW" scale. When measuring the key, do not touch the metal parts of the meter probes or erroneous readings can occur.
2) Select the proper value of the 15 included resistors. Use the meter or the following chart to make the proper selection:

Key Number	Value	2% Resistor Band Colors
1	392W	Orange, White, Red, Black
2	523W	Green, Red, Orange, Black
3	681W	Blue, Gray, Brown, Black
4	887W	Gray, Gray, Violet, Black
5	1130W	Brown, Brown, Orange, Brown
6	1470W	Brown, Yellow, Violet, Brown
7	1870W	Brown, Gray, Violet, Brown
8	2370W	Red, Orange, Violet, Brown
9	3010W	Orange, Black, Brown, Brown
10	3740W	Orange, Violet, Yellow, Brown
11	4750W	Yellow, Violet, Green, Brown
12	6040W	Blue, Black, Yellow, Brown
13	7500W	Violet, Green, Black, Brown
14	9530W	White, Green, Orange, Brown
15	11800W	Brown, Brown, Gray, Red

Page - 37

General Motors VATS: Commonly encountered in certain General Motors vehicles is the Vehicle Anti-Theft System (VATS). The VATS first appeared in the 1986 Corvette and has become very popular because of its ease of use and effectiveness.

The VATS consists of a pellet resistor in the shank of the ignition key, which is read by a decoder in the VATS control module. When the key is inserted into the ignition switch, if the decoder reads the correct resistance value, it will allow the starter to engage. In later model systems, the fuel pump is also controlled; in the latest versions the engine control system will not allow the engine to stay running. When installing a remote starter in a VATS equipped vehicle, an optional AU-VAT bypass kit is required:



When the exterior lights turn on (if connected), confirming the RS-4LX Remote Car Starter's activation, the following events will also occur:

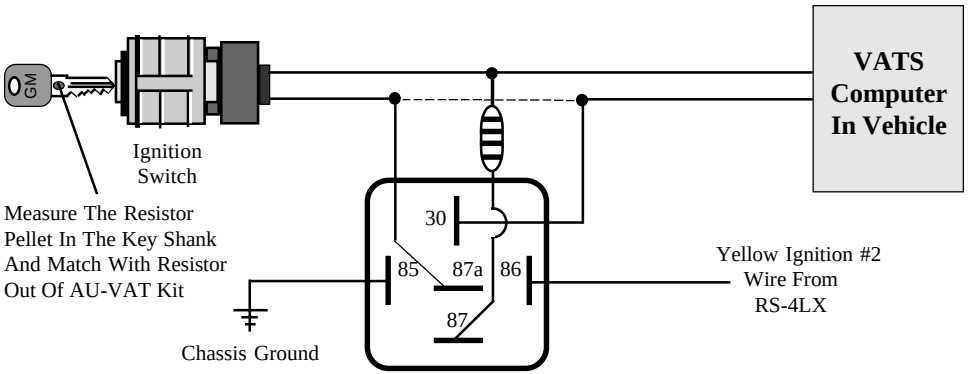
1) The vehicle's Ignition circuit will also turn on when the exterior lights turn on.
2) Two seconds after activation, the parking lights will turn off, and the Starter will engage. The Ignition circuit will remain on throughout this process.
3) The engine will start to run, which will be detected by the RS-4LX, and the Starter will automatically be disengaged.
4) Seven seconds later, the exterior lights (if connected) will turn back on, and stay on for the duration of the period that the engine is running by control of the RS-4LX.
5) If the engine stalls, the unit will make two attempts to restart it.
6) After ten (or fifteen) minutes the RS-4LX will automatically turn the engine off.

Safety Features And Deactivation: The RS-4LX includes multiple built-in safety features. The unit will not engage if the gear shift selector is in a forward or reverse gear position. The unit will not engage if the hood is opened. If the engine is running by remote control, either of these actions will cause the engine to stop running.

The RS-4LX may be deactivated by several methods. To stop the engine by remote control, you may simply press again the transmitter button(s) used to activate the unit. For normal operation, once you have entered the vehicle, stepping on the brake pedal will deactivate the unit. If you first used your vehicle's key to turn the ignition switch on (do not turn to the Start position), the engine will remain running after the RS-4LX is deactivated. The Override Switch may also be used to deactivate the unit while it is operating, in addition to preventing activation.

General Motors VATS: Commonly encountered in certain General Motors vehicles is the Vehicle Anti-Theft System (VATS). The VATS first appeared in the 1986 Corvette and has become very popular because of its ease of use and effectiveness.

The VATS consists of a pellet resistor in the shank of the ignition key, which is read by a decoder in the VATS control module. When the key is inserted into the ignition switch, if the decoder reads the correct resistance value, it will allow the starter to engage. In later model systems, the fuel pump is also controlled; in the latest versions the engine control system will not allow the engine to stay running. When installing a remote starter in a VATS equipped vehicle, an optional AU-VAT bypass kit is required:



When the exterior lights turn on (if connected), confirming the RS-4LX Remote Car Starter's activation, the following events will also occur:

1) The vehicle's Ignition circuit will also turn on when the exterior lights turn on.
2) Two seconds after activation, the parking lights will turn off, and the Starter will engage. The Ignition circuit will remain on throughout this process.
3) The engine will start to run, which will be detected by the RS-4LX, and the Starter will automatically be disengaged.
4) Seven seconds later, the exterior lights (if connected) will turn back on, and stay on for the duration of the period that the engine is running by control of the RS-4LX.
5) If the engine stalls, the unit will make two attempts to restart it.
6) After ten (or fifteen) minutes the RS-4LX will automatically turn the engine off.

Safety Features And Deactivation: The RS-4LX includes multiple built-in safety features. The unit will not engage if the gear shift selector is in a forward or reverse gear position. The unit will not engage if the hood is opened. If the engine is running by remote control, either of these actions will cause the engine to stop running.

The RS-4LX may be deactivated by several methods. To stop the engine by remote control, you may simply press again the transmitter button(s) used to activate the unit. For normal operation, once you have entered the vehicle, stepping on the brake pedal will deactivate the unit. If you first used your vehicle's key to turn the ignition switch on (do not turn to the Start position), the engine will remain running after the RS-4LX is deactivated. The Override Switch may also be used to deactivate the unit while it is operating, in addition to preventing activation.

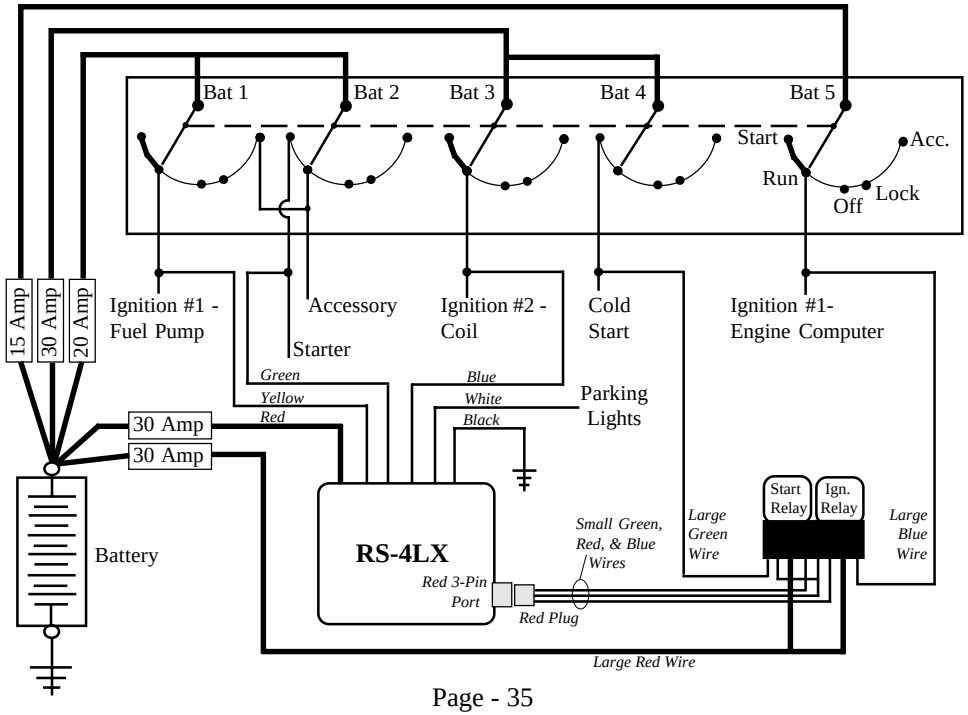
Functions Of The Override Switch And Other Options: Your RS-4LX Remote Car Starter includes an Override Switch which performs several functions. Some of these functions allow your installer to perform various operations necessary during the installation, and are discussed further in the Installation Instructions section. The uses of the Override Switch for everyday operations are:

1) **Valet Override:** The position of the Override allows or prevents the RS-4LX 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 or if you loan your car to another person. To engage the Valet Override mode, simply turn the Override Switch OFF. When leaving your vehicle with persons such as other users, garage or valet parking attendants, it is recommended to always turn the Override Switch OFF to prevent unintentional or unauthorized or unintentional use of the RS-4LX Remote Car Starter.

2) **Deactivation:** The Override Switch may be used to turn off the engine if it is running under remote control. To use the Override/Reactivate switch to turn off an engine running on remote control, turn the switch OFF.

3) **Pit-Stop™ Option:** This feature allows you to turn the ignition switch off, remove your keys, leave the vehicle and lock your doors while the RS-4LX keeps the engine running. To use this feature, have your foot off of the brake pedal and

Typical Installation Of The Optional Dual Socket And Relays:



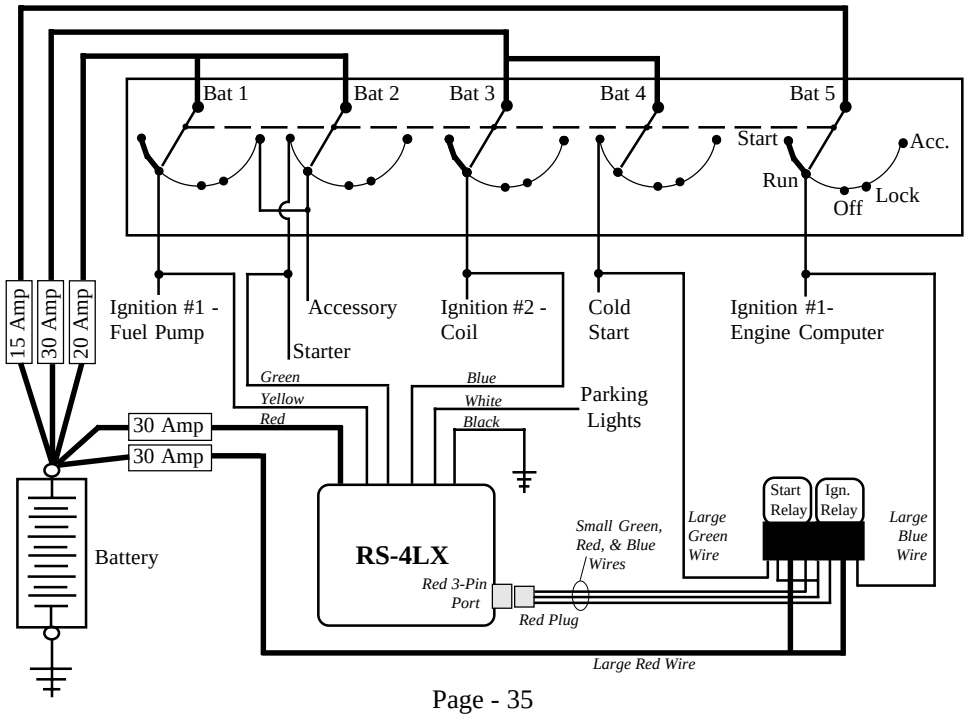
Functions Of The Override Switch And Other Options: Your RS-4LX Remote Car Starter includes an Override Switch which performs several functions. Some of these functions allow your installer to perform various operations necessary during the installation, and are discussed further in the Installation Instructions section. The uses of the Override Switch for everyday operations are:

1) **Valet Override:** The position of the Override allows or prevents the RS-4LX 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 or if you loan your car to another person. To engage the Valet Override mode, simply turn the Override Switch OFF. When leaving your vehicle with persons such as other users, garage or valet parking attendants, it is recommended to always turn the Override Switch OFF to prevent unintentional or unauthorized or unintentional use of the RS-4LX Remote Car Starter.

2) **Deactivation:** The Override Switch may be used to turn off the engine if it is running under remote control. To use the Override/Reactivate switch to turn off an engine running on remote control, turn the switch OFF.

3) **Pit-Stop™ Option:** This feature allows you to turn the ignition switch off, remove your keys, leave the vehicle and lock your doors while the RS-4LX keeps the engine running. To use this feature, have your foot off of the brake pedal and

Typical Installation Of The Optional Dual Socket And Relays:



Also remember that certain vehicles require considerable amounts of current for climate control circuits. In these cases, additional relays may be required.

Another unusual circumstance occurs in some imports. When the ignition switch is in the "Off" position, the start and ignition terminals overlap, which results in the ignition circuit powering the starter when the remote starter is engaged. Affected vehicles are the 1993 & up Nissan Altima, the 1990 & up Toyota Tercel and the 1994 & up Toyota Camry. In these cases a relay must be added to interrupt the ignition wire so that voltage does not backfeed the starter circuit through the ignition switch. Interrupt the Black/Red wire in the Tercel, the Black/Pink wire in the Altima and the Black/Orange wire in the Camry.

Multiple Ignition Or Starter Circuits: When more than two Ignition circuits or more than one Starter circuit is encountered, the optional dual relay socket and relays may be used. A new feature of the RS-4LX is the Red 3-pin port found on the side of the control module which contains activation circuits and a (+) 12 Volt supply for the optional relay's coils.

The dual socket's Red connector plugs directly into the matching Red port found on the RS-4LX control module. Its Red wire connects to a source of constant (+) Volts; if this source is not fused a fuse and holder must be added. The remaining Green wire is an additional Starter circuit and the Blue wire is an additional Ignition circuit.

In a situation where two additional Ignition circuits are desired but an additional Starter circuit is not, the small Green wire may cut and spliced to the small Blue wire; the large Blue and Green wires are now both Ignition circuits.

flip the Override Switch OFF, ON, OFF, ON just before you remove the key. The vehicle's engine will run for ten minutes (15 minutes optional), or until you press the transmitter button or step on the brake pedal. This feature is handy if you want to run into a store for a minute, but wish to leave the engine running while taking your keys with you.

4) **Optional Pre-Activation Enable:** This option can be programmed by the installer. Pre-Activation Enable requires that the Override Switch be switched OFF, then ON every time you remove the key and exit the vehicle if you plan on using the Remote Car Starter later. This option ensures that the Remote Car Starter cannot be engaged without predetermination of intended use and is a very desirable option for the safety-conscience person.

5) **ClimaSense™ Option:** This feature will automatically start your car's engine, if desired, under the following conditions: should the temperature drop below 0°F (-18°C) or rise above 140°F (78°C), or if the battery voltage drops below 11 volts. The engine will run for the normal 10 (or 15) minute period and turn off. To engage the ClimaSense™ option, turn off the engine and then within 5 seconds press the brake pedal twice. The exterior lights will flash (or the accessories will turn on) once to confirm that the ClimaSense™ has been activated. The ClimaSense™ will automatically start the engine no more than once every 3 hours and for a maximum of 5 separate times. Pressing the brake at any time after the ClimaSense™ has activated will disable this feature.

Also remember that certain vehicles require considerable amounts of current for climate control circuits. In these cases, additional relays may be required.

Another unusual circumstance occurs in some imports. When the ignition switch is in the "Off" position, the start and ignition terminals overlap, which results in the ignition circuit powering the starter when the remote starter is engaged. Affected vehicles are the 1993 & up Nissan Altima, the 1990 & up Toyota Tercel and the 1994 & up Toyota Camry. In these cases a relay must be added to interrupt the ignition wire so that voltage does not backfeed the starter circuit through the ignition switch. Interrupt the Black/Red wire in the Tercel, the Black/Pink wire in the Altima and the Black/Orange wire in the Camry.

Multiple Ignition Or Starter Circuits: When more than two Ignition circuits or more than one Starter circuit is encountered, the optional dual relay socket and relays may be used. A new feature of the RS-4LX is the Red 3-pin port found on the side of the control module which contains activation circuits and a (+) 12 Volt supply for the optional relay's coils.

The dual socket's Red connector plugs directly into the matching Red port found on the RS-4LX control module. Its Red wire connects to a source of constant (+) Volts; if this source is not fused a fuse and holder must be added. The remaining Green wire is an additional Starter circuit and the Blue wire is an additional Ignition circuit.

In a situation where two additional Ignition circuits are desired but an additional Starter circuit is not, the small Green wire may cut and spliced to the small Blue wire; the large Blue and Green wires are now both Ignition circuits.

Page - 34

flip the Override Switch OFF, ON, OFF, ON just before you remove the key. The vehicle's engine will run for ten minutes (15 minutes optional), or until you press the transmitter button or step on the brake pedal. This feature is handy if you want to run into a store for a minute, but wish to leave the engine running while taking your keys with you.

4) **Optional Pre-Activation Enable:** This option can be programmed by the installer. Pre-Activation Enable requires that the Override Switch be switched OFF, then ON every time you remove the key and exit the vehicle if you plan on using the Remote Car Starter later. This option ensures that the Remote Car Starter cannot be engaged without predetermination of intended use and is a very desirable option for the safety-conscience person.

5) **ClimaSense™ Option:** This feature will automatically start your car's engine, if desired, under the following conditions: should the temperature drop below 0°F (-18°C) or rise above 140°F (78°C), or if the battery voltage drops below 11 volts. The engine will run for the normal 10 (or 15) minute period and turn off. To engage the ClimaSense™ option, turn off the engine and then within 5 seconds press the brake pedal twice. The exterior lights will flash (or the accessories will turn on) once to confirm that the ClimaSense™ has been activated. The ClimaSense™ will automatically start the engine no more than once every 3 hours and for a maximum of 5 separate times. Pressing the brake at any time after the ClimaSense™ has activated will disable this feature.

Page - 7

INSTALLATION INSTRUCTIONS

!! WARNINGS !!

Do not attempt to install the RS-4LX Remote Car Starter into a manual transmission vehicle! Doing so could cause serious property damage, personal injury, and will void all warranties!

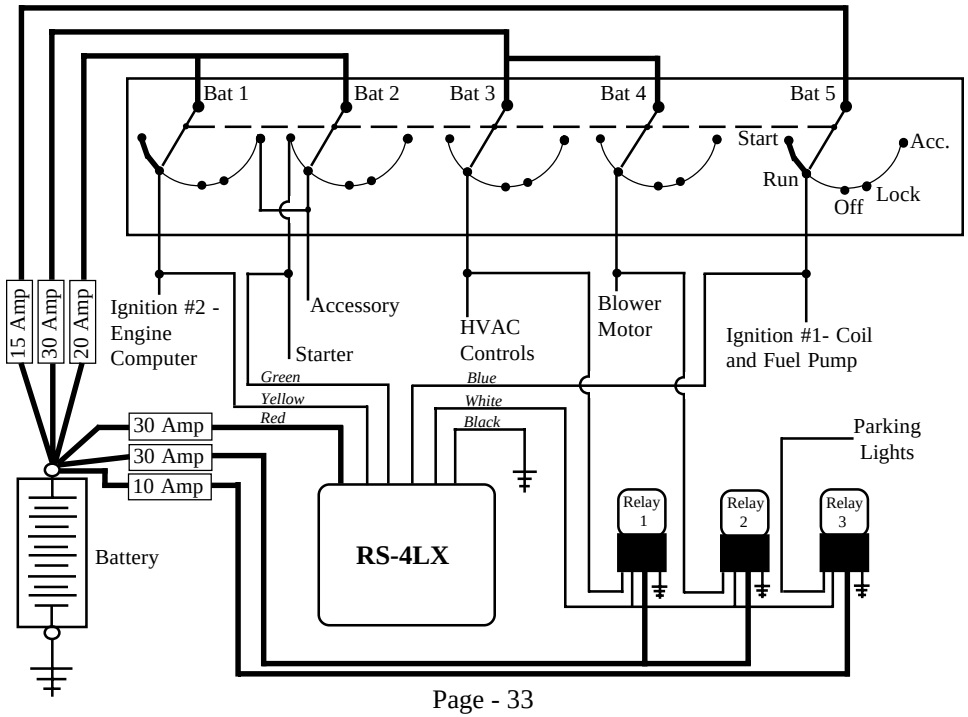
Be aware of, and avoid, any airbag circuitry! Due to the fact that an installer will not be in a normal, upright seated position, severe injury may occur in an accidental airbag deployment!

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!

Ignition Switch Schematic After Installing The RS-4LX:



INSTALLATION INSTRUCTIONS

!! WARNINGS !!

Do not attempt to install the RS-4LX 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!

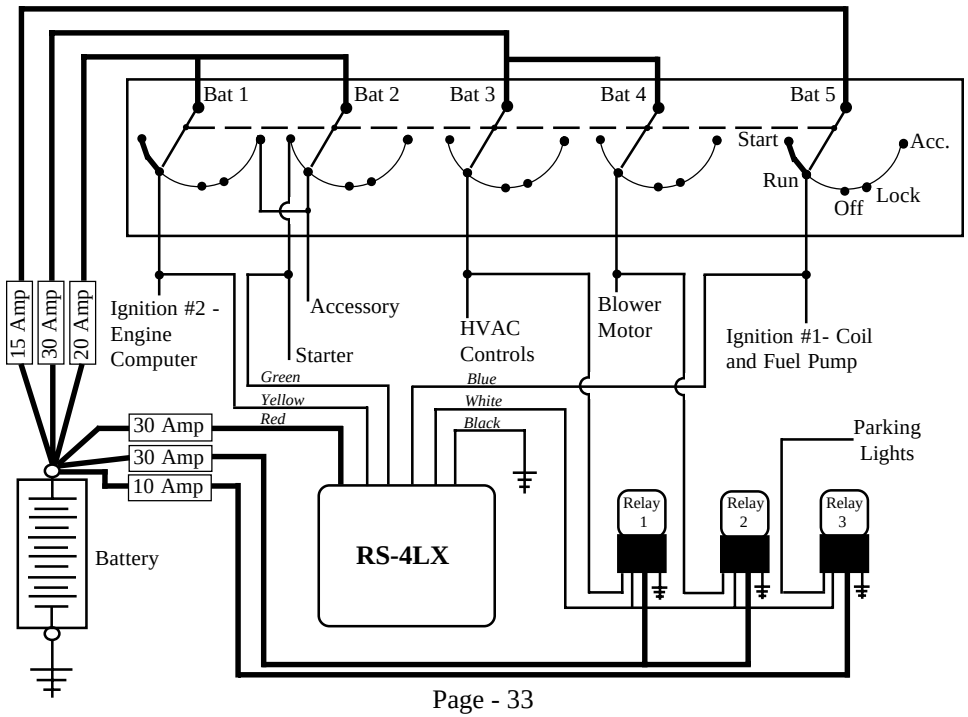
The use of a Digital Multimeter (DMM) or Volt-Ohm Meter (VOM) instead of a standard testlight is recommended. This can greatly reduce the risk of an accidental airbag deployment or on-board computer damage.

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!

Page - 8

Ignition Switch Schematic After Installing The RS-4LX:

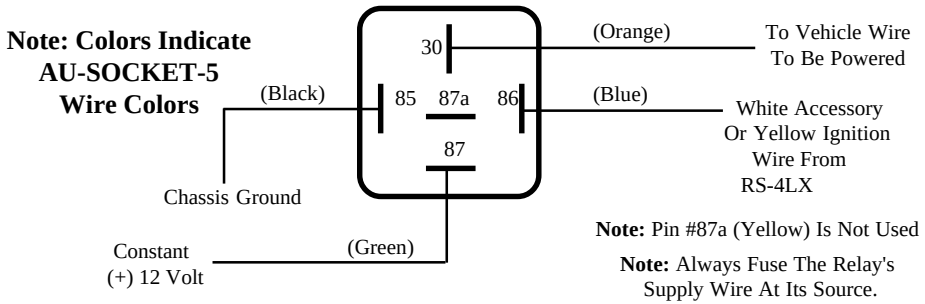


Page - 33

Accessory in "Run". The two circuits needed for the climate control system, HVAC Controls and Blower Motor, require considerable current as indicated by their much higher fuse rating.

Upon remote starting, since both Ignition #1 and Ignition #2 must be powered for the engine to run, the RS-4LX's Blue and Yellow Ignition wires will be utilized to accomplish this. However, two additional circuits are required to power the HVAC system, and Parking Light operation is also desired. In this situation, the RS-4LX's White Accessory wire will be used to trigger three additional optional SPDT relays. The three optional SPDT relays that will be added to this installation will all be configured the same way. We recommend also using an optional AU-SOCKET-5 with each relay to save time and simplify the installation. Use the diagrams on this and the following pages to configure the added relays.

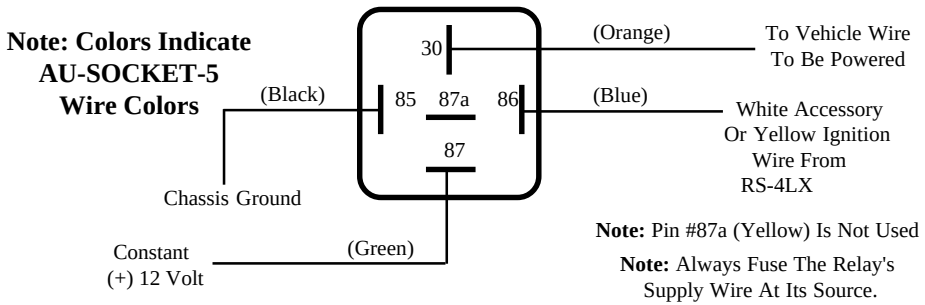
How To Configure Each Additional Relay Needed:



Accessory in "Run". The two circuits needed for the climate control system, HVAC Controls and Blower Motor, require considerable current as indicated by their much higher fuse rating.

Upon remote starting, since both Ignition #1 and Ignition #2 must be powered for the engine to run, the RS-4LX's Blue and Yellow Ignition wires will be utilized to accomplish this. However, two additional circuits are required to power the HVAC system, and Parking Light operation is also desired. In this situation, the RS-4LX's White Accessory wire will be used to trigger three additional optional SPDT relays. The three optional SPDT relays that will be added to this installation will all be configured the same way. We recommend also using an optional AU-SOCKET-5 with each relay to save time and simplify the installation. Use the diagrams on this and the following pages to configure the added relays.

How To Configure Each Additional Relay Needed:



IMPORTANT! After reading this manual, start the installation by affixing the WARNING DECAL to a readily 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-4LX control module, which is mounted upon completion of the installation.

The RS-4LX duplicates, with on-board control circuitry and relays, the actions that occur within the ignition switch when you use your car's key to start the engine. Because of this, most of the main wiring harness connections will be made at the ignition switch harness. This will be located around the steering column area. **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 if the wrong circuits are probed.

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. Some installers connect a battery charger to the vehicle's battery during the installation to prevent battery drain. While this is a good practice, the battery charger must be removed before attempting to use the RS-4LX to start the engine.

IMPORTANT! After reading this manual, start the installation by affixing the WARNING DECAL to a readily 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-4LX control module, which is mounted upon completion of the installation.

The RS-4LX duplicates, with on-board control circuitry and relays, the actions that occur within the ignition switch when you use your car's key to start the engine. Because of this, most of the main wiring harness connections will be made at the ignition switch harness. This will be located around the steering column area. **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 if the wrong circuits are probed.

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. Some installers connect a battery charger to the vehicle's battery during the installation to prevent battery drain. While this is a good practice, the battery charger must be removed before attempting to use the RS-4LX to start the engine.

WIRING - MAIN HARNESS

Make the following wiring connections and procedures in the following order. Remember, proper, high reliability connections must be made!

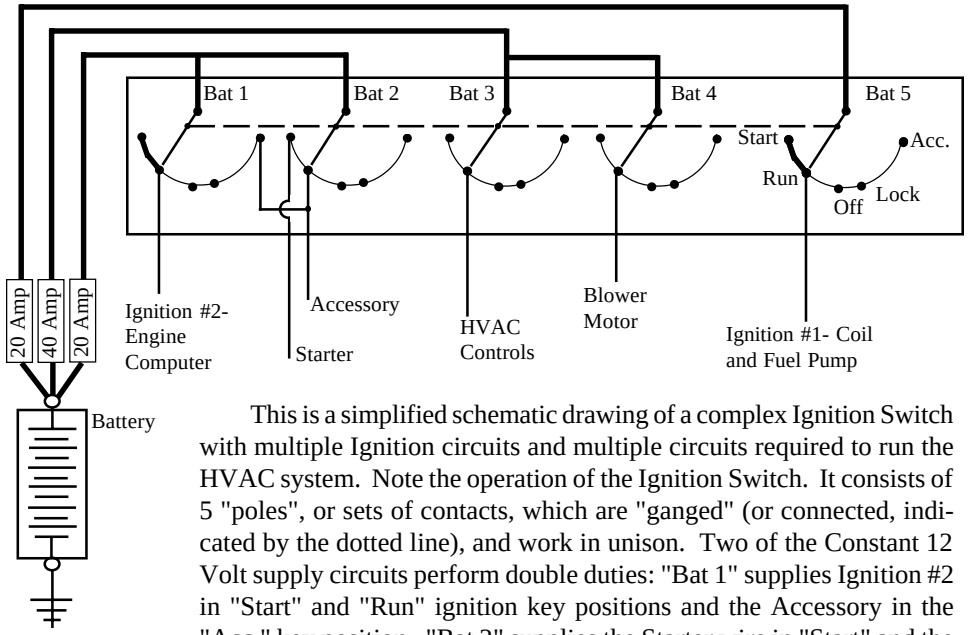
Black Wire: *Connection Required*

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. Using a sheet metal screw or grounding to sheet metal is inadequate.

Red Wire: *Connection Required*

Connect this wire to Positive battery voltage. The most common source is the battery's Positive terminal. Carefully route the long Red wire through the firewall, using an added or existing grommet. Avoid any hot or moving parts. The small bare terminal snaps into the fuse holder. Connect the ring terminal attached to the fuse holder to the battery's Positive terminal. Insert the Green 30 amp fuse into the fuse holder. **Note:** The RS-4LX will respond to being powered-up by flashing the Diagnostic LED Light once.

A Typical Complex Ignition Switch Schematic.



This is a simplified schematic drawing of a complex Ignition Switch with multiple Ignition circuits and multiple circuits required to run the HVAC system. Note the operation of the Ignition Switch. It consists of 5 "poles", or sets of contacts, which are "ganged" (or connected, indicated by the dotted line), and work in unison. Two of the Constant 12 Volt supply circuits perform double duties: "Bat 1" supplies Ignition #2 in "Start" and "Run" ignition key positions and the Accessory in the "Acc." key position. "Bat 2" supplies the Starter wire in "Start" and the

 Continued Next Page

WIRING - MAIN HARNESS

Make the following wiring connections and procedures in the following order. Remember, proper, high reliability connections must be made!

Black Wire: *Connection Required*

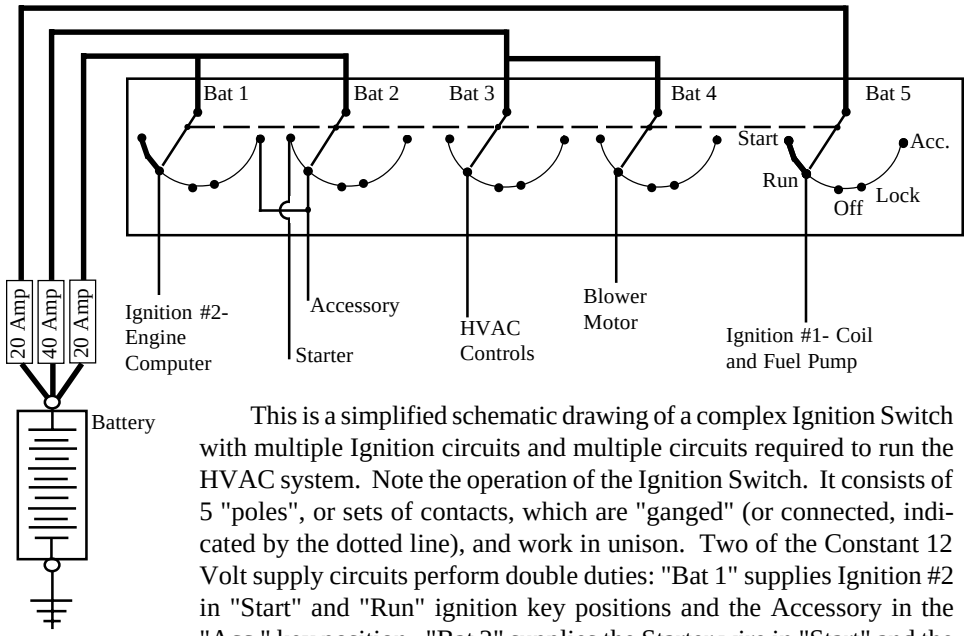
Connect the Black wire to a very good, clean chassis ground. Recommended areas are to an existing machine thread bolt, either in the driver's kick panel area or a major structural member behind the dash. Small dash braces are not adequate, and the area must be clean, bright metal. Use the largest existing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

Red Wire: *Connection Required*

Connect this wire to Positive battery voltage. The most common source is the battery's Positive terminal. Carefully route the long Red wire through the firewall, using an added or existing grommet. Avoid any hot or moving parts. The small bare terminal snaps into the fuse holder. Connect the ring terminal attached to the fuse holder to the battery's Positive terminal. Insert the Green 30 amp fuse into the fuse holder. **Note:** The RS-4LX will respond to being powered-up by flashing the Diagnostic LED Light once.

Page - 10

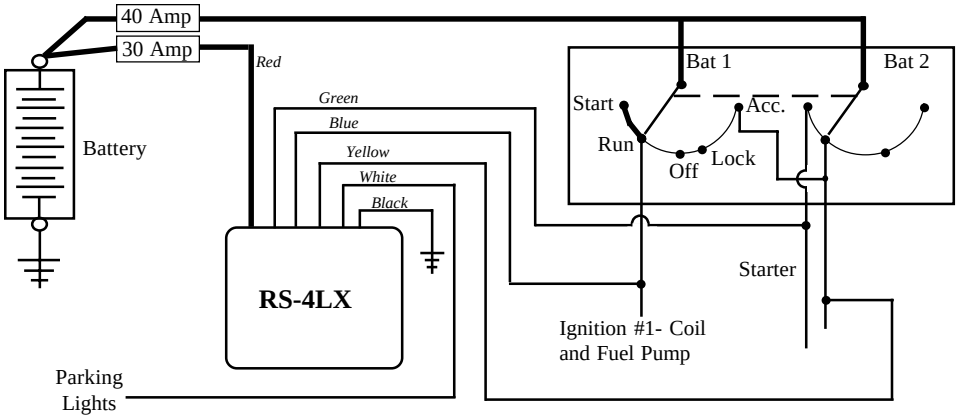
A Typical Complex Ignition Switch Schematic.



This is a simplified schematic drawing of a complex Ignition Switch with multiple Ignition circuits and multiple circuits required to run the HVAC system. Note the operation of the Ignition Switch. It consists of 5 "poles", or sets of contacts, which are "ganged" (or connected, indicated by the dotted line), and work in unison. Two of the Constant 12 Volt supply circuits perform double duties: "Bat 1" supplies Ignition #2 in "Start" and "Run" ignition key positions and the Accessory in the "Acc." key position. "Bat 2" supplies the Starter wire in "Start" and the

Page - 31 *Continued Next Page*

Installing an RS-4LX to this type of ignition switch is a strait-forward procedure, involving no additional relays or other parts, as shown by this diagram after installation.



Basic Ignition Switch Schematic <u>After</u> Installing The RS-4LX:

As automotive electrical systems increased in complexity, so have ignition switches. Many newer vehicles utilize a *complex* ignition switch to accommodate the increased circuitry. This type of ignition switch requires additional parts and installation considerations.

Some vehicles have a single Constant 12 Volt circuit supplying the ignition switch. A schematic of the car's electrical system will show if this is the case. If so, the Red wire may be connected at the ignition switch wiring harness, but the fuse holder and 30 amp fuse must also be used.

The use of the 30 amp fuse and the fuse holder is required! Failure to properly install the fuse holder and the 30 amp fuse will void all warranties.

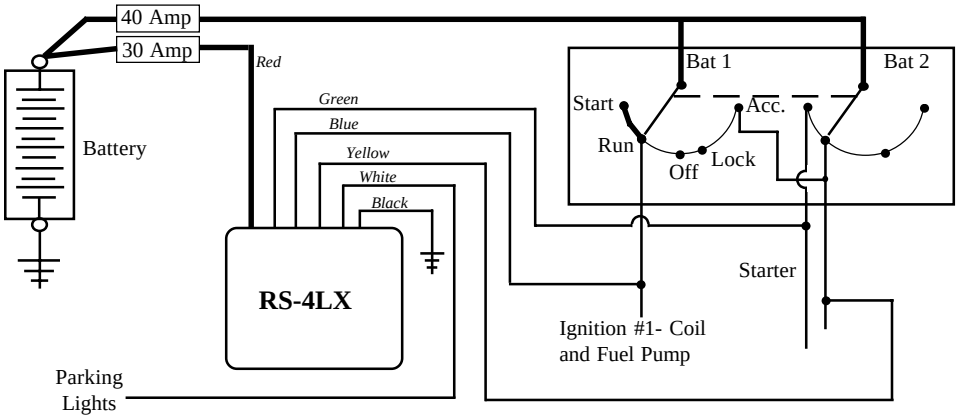
<u>Blue Wire:</u> *Connection Required*

This wire <u>must</u> be connected to the vehicle's Ignition #1 (also known as Primary Ignition) wire. This wire will measure Positive 12 Volts when the ignition key is in the "Run" <u>and</u> "Start" positions and no voltage in the "Off" and Accessory positions. This wire is found in the ignition switch wiring harness. If two Primary Ignition wires are present, the Yellow wire may be used on the second wire. If more than two Primary Ignition wires are present, you will also need an optional prewired dual relay socket and relays.

<u>Green Wire:</u> *Connection Required*

Connect this Green wire to the vehicle's Starter wire. This wire will show Positive 12 volts when the ignition key is in the "Start" position <u>only</u>. This wire is also found in the ignition switch wiring harness. 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

Installing an RS-4LX to this type of ignition switch is a strait-forward procedure, involving no additional relays or other parts, as shown by this diagram after installation.



Basic Ignition Switch Schematic <u>After</u> Installing The RS-4LX:

As automotive electrical systems increased in complexity, so have ignition switches. Many newer vehicles utilize a *complex* ignition switch to accommodate the increased circuitry. This type of ignition switch requires additional parts and installation considerations.

Page - 30

Some vehicles have a single Constant 12 Volt circuit supplying the ignition switch. A schematic of the car's electrical system will show if this is the case. If so, the Red wire may be connected at the ignition switch wiring harness, but the fuse holder and 30 amp fuse must also be used.

The use of the 30 amp fuse and the fuse holder is required! Failure to properly install the fuse holder and the 30 amp fuse will void all warranties.

<u>Blue Wire:</u> *Connection Required*

This wire <u>must</u> be connected to the vehicle's Ignition #1 (also known as Primary Ignition) wire. This wire will measure Positive 12 Volts when the ignition key is in the "Run" <u>and</u> "Start" positions and no voltage in the "Off" and Accessory positions. This wire is found in the ignition switch wiring harness. If two Primary Ignition wires are present, the Yellow wire may be used on the second wire. If more than two Primary Ignition wires are present, you will also need an optional prewired dual relay socket and relays.

<u>Green Wire:</u> *Connection Required*

Connect this Green wire to the vehicle's Starter wire. This wire will show Positive 12 volts when the ignition key is in the "Start" position <u>only</u>. This wire is also found in the ignition switch wiring harness. 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

Page - 11 *Continued Next Page*

separate circuits an optional prewired dual relay socket and relays is recommended. **Note:** If a security system is present which utilizes a starter interrupt circuit, the Green wire connection must be on the Starter side of the interrupt, not the Ignition Switch side.

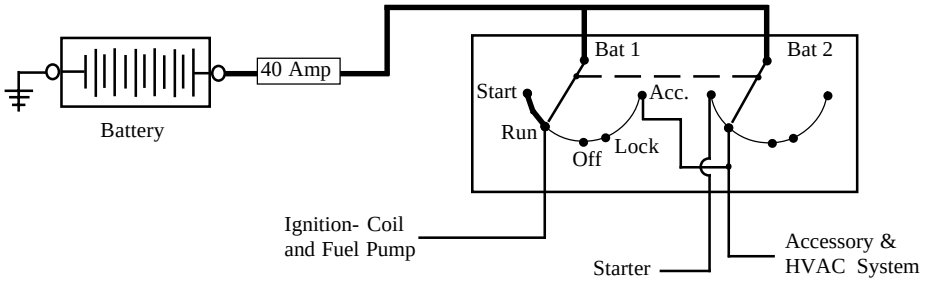
Yellow Wire: *Connection Required*

Connect this wire to the vehicle's Ignition #2 wire. This circuit, known as Secondary Ignition, varies in its function. In some vehicles, it is required to allow the engine to run, while in others, it supplies the Heat, Ventilation and Air Conditioning (HVAC) system. This output's operation is identical to the Blue wire Ignition #1's operation. The connection point for this wire is also found in the ignition switch wiring harness.

One of the primary reasons for adding a Remote Car Starter is to allow the vehicle to warm up in winter or cool down in summer. The Heating, Ventilation and Air Conditioning (HVAC) circuit varies from car to car in its operation. Usually, the Yellow Ignition #2 is connected to this circuit. Some vehicles, however, will require the HVAC circuit to be connected to the White Accessory wire. Once identified, test the wire powering the HVAC circuit; if it has Positive 12 Volts while starting, use the Yellow wire. If Positive 12 Volts is not present while starting, use the White wire.

The Yellow wire must be connected; if there is no use for this wire, connect to the Ignition #1 circuit along with the Blue wire. If the White wire is needed to power the HVAC circuit, the Yellow wire may be used instead to turn on the vehicle's exterior lights, but always connect it to the parking lights only and not the headlights.

"poles"), which are physically connected together (indicated by the dotted line connecting them) and move in unison with the ignition key. In this schematic, the ignition switch is in the "Run" position. The first item of interest is the fact that even though two Constant 12 Volt wires are present, they are one circuit (fused at the source). Now note which circuits are connected in the different switch positions (Remember: they move in unison). "Bat 1" and "Bat 2" are connected to nothing in the "Off" and "Lock" positions. In the "Accessory" position, "Bat 1" is connected to the "Accessory & HVAC" circuit. In "Run" position, "Bat 1" is connected to the "Ignition" circuit while "Bat 2" is connected to the "Accessory & HVAC" circuit. In the "Start" switch position, "Bat 1" keeps the "Ignition" circuit energized while "Bat 2" powers the "Starter" circuit. Also notice the efficiency of this switch - its configuration allows the "Bat 1" and "Bat 2" circuits to evenly share the electrical load among the different ignition switch positions.



Basic Ignition Switch Schematic.

 Continued Next Page

separate circuits an optional prewired dual relay socket and relays is recommended. **Note:** If a security system is present which utilizes a starter interrupt circuit, the Green wire connection must be on the Starter side of the interrupt, not the Ignition Switch side.

Yellow Wire: *Connection Required*

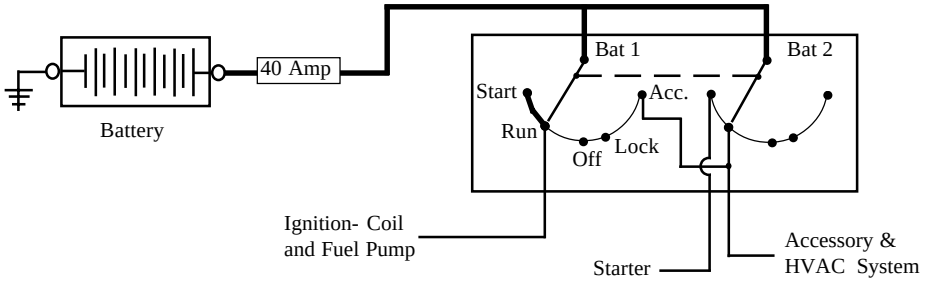
Connect this wire to the vehicle's Ignition #2 wire. This circuit, known as Secondary Ignition, varies in its function. In some vehicles, it is required to allow the engine to run, while in others, it supplies the Heat, Ventilation and Air Conditioning (HVAC) system. This output's operation is identical to the Blue wire Ignition #1's operation. The connection point for this wire is also found in the ignition switch wiring harness.

One of the primary reasons for adding a Remote Car Starter is to allow the vehicle to warm up in winter or cool down in summer. The Heating, Ventilation and Air Conditioning (HVAC) circuit varies from car to car in its operation. Usually, the Yellow Ignition #2 is connected to this circuit. Some vehicles, however, will require the HVAC circuit to be connected to the White Accessory wire. Once identified, test the wire powering the HVAC circuit; if it has Positive 12 Volts while starting, use the Yellow wire. If Positive 12 Volts is not present while starting, use the White wire.

The Yellow wire must be connected; if there is no use for this wire, connect to the Ignition #1 circuit along with the Blue wire. If the White wire is needed to power the HVAC circuit, the Yellow wire may be used instead to turn on the vehicle's exterior lights, but always connect it to the parking lights only and not the headlights.

Page - 12

"poles"), which are physically connected together (indicated by the dotted line connecting them) and move in unison with the ignition key. In this schematic, the ignition switch is in the "Run" position. The first item of interest is the fact that even though two Constant 12 Volt wires are present, they are one circuit (fused at the source). Now note which circuits are connected in the different switch positions (Remember: they move in unison). "Bat 1" and "Bat 2" are connected to nothing in the "Off" and "Lock" positions. In the "Accessory" position, "Bat 1" is connected to the "Accessory & HVAC" circuit. In "Run" position, "Bat 1" is connected to the "Ignition" circuit while "Bat 2" is connected to the "Accessory & HVAC" circuit. In the "Start" switch position, "Bat 1" keeps the "Ignition" circuit energized while "Bat 2" powers the "Starter" circuit. Also notice the efficiency of this switch - its configuration allows the "Bat 1" and "Bat 2" circuits to evenly share the electrical load among the different ignition switch positions.

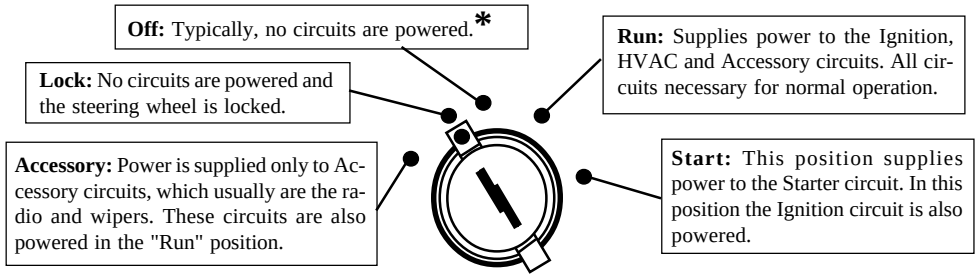


Basic Ignition Switch Schematic.

Page - 29 *Continued Next Page*

After calculating the required current draw, always fuse the added relays at their source.

Understanding Ignition Switch Operation: Since the RS-4LX duplicates the actions that occur within the ignition switch, understanding how an ignition switch operates is helpful in determining the proper installation parameters. This is especially true of newer vehicles, which are utilizing more and more multiple Ignition and Accessory circuits. The following are the ignition key positions of a typical ignition switch:



* An exception is power supply to the transmission control module in some late model G.M. vehicles.

Further understanding of ignition switch operation is to view it from a schematic level. The following schematic is of a *basic* ignition switch, such as those found in many older vehicles. Many early Asian imports had as little as four wires total at the ignition switch, although there were variations on ignition switch positions. Note that the operating parts of the Ignition Switch consists of two separate sets of electrical contacts (or

White Wire: *Connection If Desired*

This wire is used to turn on the vehicle's exterior lights if not needed for the HVAC system. It can be connected to either the parking lights or the headlights, but not both unless a pair of relays are used. The parking lights will allow for a 360^{O} field of view for a visual confirmation that RS-4LX has been activated. If connecting to the headlights, connect to the low beams. In addition to visual confirmation of activation, the headlights can be used to light the way to the car or house. The best place to access these wires is at the light switch, although in a small number of vehicles, notably Toyotas, these circuits are Negative Ground at the light switch. In Toyotas, the White wire may be connected directly to the Positive parking lights circuit by finding a Green wire in the driver's kick panel or at the fuse marked "Tail".

The parking light wire will show Positive 12 Volts when the light switch is in the "Parking" and "Headlight" positions. When such a wire is located, be sure to operate the dash light dimmer control. If your meter shows a change in voltage, the wire being tested is the dimmer circuit, which is the incorrect wire. Connecting the White wire to a dimmer circuit can damage the dimmer control.

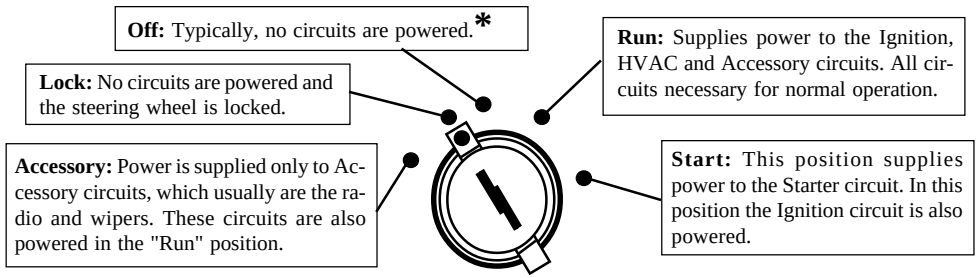
The headlight wire will show Positive 12 Volts when the light switch is in the "Headlight" position only. If the High/Low Beam switch is part of the light switch, there will be separate high beam and low beam wires.

In some cars the Accessory wire at the ignition switch may need powering; examples are to allow the HVAC system to operate or to keep dash warning lights off . If this need is encountered, the White wire may be used for this purpose instead of being applied to the

 Continued Next Page

After calculating the required current draw, always fuse the added relays at their source.

Understanding Ignition Switch Operation: Since the RS-4LX duplicates the actions that occur within the ignition switch, understanding how an ignition switch operates is helpful in determining the proper installation parameters. This is especially true of newer vehicles, which are utilizing more and more multiple Ignition and Accessory circuits. The following are the ignition key positions of a typical ignition switch:



* An exception is power supply to the transmission control module in some late model G.M. vehicles.

Further understanding of ignition switch operation is to view it from a schematic level. The following schematic is of a *basic* ignition switch, such as those found in many older vehicles. Many early Asian imports had as little as four wires total at the ignition switch, although there were variations on ignition switch positions. Note that the operating parts of the Ignition Switch consists of two separate sets of electrical contacts (or

Page - 28

White Wire: *Connection If Desired*

This wire is used to turn on the vehicle's exterior lights if not needed for the HVAC system. It can be connected to either the parking lights or the headlights, but not both unless a pair of relays are used. The parking lights will allow for a 360^{O} field of view for a visual confirmation that RS-4LX has been activated. If connecting to the headlights, connect to the low beams. In addition to visual confirmation of activation, the headlights can be used to light the way to the car or house. The best place to access these wires is at the light switch, although in a small number of vehicles, notably Toyotas, these circuits are Negative Ground at the light switch. In Toyotas, the White wire may be connected directly to the Positive parking lights circuit by finding a Green wire in the driver's kick panel or at the fuse marked "Tail".

The parking light wire will show Positive 12 Volts when the light switch is in the "Parking" and "Headlight" positions. When such a wire is located, be sure to operate the dash light dimmer control. If your meter shows a change in voltage, the wire being tested is the dimmer circuit, which is the incorrect wire. Connecting the White wire to a dimmer circuit can damage the dimmer control.

The headlight wire will show Positive 12 Volts when the light switch is in the "Headlight" position only. If the High/Low Beam switch is part of the light switch, there will be separate high beam and low beam wires.

In some cars the Accessory wire at the ignition switch may need powering; examples are to allow the HVAC system to operate or to keep dash warning lights off . If this need is encountered, the White wire may be used for this purpose instead of being applied to the

Page - 13 *Continued Next Page*

exterior lights. Do not connect the White wire to both the Accessory wire and the exterior lights wire. If the White wire is needed for more than one purpose, an optional AU-SOCKET-5 and a standard Single Pole Double Throw automotive relay must be used for each purpose.

WIRING - AUXILIARY HARNESS

Gray Wire: *Diesel Connection Optional*

In diesel engine applications, the Gray wire is connected the glow plug indicator light's wire. This circuit allows more accurate starter control than programming for diesel engine mode alone. The Gray wire can "learn" polarity; all it needs to detect is the change in the host wire's status when the glow plug light goes out.

Violet Wire: *Connection Required*

The Violet wire must be connected. It is part a critical safety feature which disables the RS-4LX whenever the brake pedal is pressed. Connect the Violet wire to the brake switch wire which shows Positive 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 Violet wire's connection, thoroughly test the operation of this circuit.

exterior lights. Do not connect the White wire to both the Accessory wire and the exterior lights wire. If the White wire is needed for more than one purpose, an optional AU-SOCKET-5 and a standard Single Pole Double Throw automotive relay must be used for each purpose.

WIRING - AUXILIARY HARNESS

Gray Wire: *Diesel Connection Optional*

In diesel engine applications, the Gray wire is connected the glow plug indicator light's wire. This circuit allows more accurate starter control than programming for diesel engine mode alone. The Gray wire can "learn" polarity; all it needs to detect is the change in the host wire's status when the glow plug light goes out.

Violet Wire: *Connection Required*

The Violet wire must be connected. It is part a critical safety feature which disables the RS-4LX whenever the brake pedal is pressed. Connect the Violet wire to the brake switch wire which shows Positive 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 Violet wire's connection, thoroughly test the operation of this circuit.

Page - 14

Certain Applications: The following chart outlines the Programmable Options that are either available (hard to start engines) or needed (diesel engine equipped vehicles- use the Chrysler settings for all other diesel equipped vehicles not listed in the following chart):

Option Number	**6** Diesel	**3** Extended Start	**4** Super Extended Start	**5** No Voltage Supervision
Chrysler	**X**	**X**		
Ford	**X**	**X**		**X**
Chevrolet	**X**	**X**	**X**	**X**

SPECIAL INSTALLATION CONSIDERATIONS
Additional Ignitions and Adding the Optional Socket and Relays

Multiple Accessory Circuits: As mentioned earlier, the RS-4LX, with on-board control circuitry and relays, duplicates the actions that occur within the ignition switch when the car's key is used to start the engine. The RS-4LX as is can power two Ignition circuits and one Accessory circuit, which is sufficient for most remote start installations. However, some vehicles will require that further circuits be powered to allow the engine to run the Heating, Ventilation and Air Conditioning (HVAC) system to operate or other subsystems to operate properly. The optional double relay socket and 30 Amp Single Pole Double Throw (SPDT) automotive relays are needed for additional circuits when multiple Ignition circuits are encountered.

 Continued Next Page

Certain Applications: The following chart outlines the Programmable Options that are either available (hard to start engines) or needed (diesel engine equipped vehicles- use the Chrysler settings for all other diesel equipped vehicles not listed in the following chart):

Option Number	**6** Diesel	**3** Extended Start	**4** Super Extended Start	**5** No Voltage Supervision
Chrysler	**X**	**X**		
Ford	**X**	**X**		**X**
Chevrolet	**X**	**X**	**X**	**X**

SPECIAL INSTALLATION CONSIDERATIONS
Additional Ignitions and Adding the Optional Socket and Relays

Multiple Accessory Circuits: As mentioned earlier, the RS-4LX, with on-board control circuitry and relays, duplicates the actions that occur within the ignition switch when the car's key is used to start the engine. The RS-4LX as is can power two Ignition circuits and one Accessory circuit, which is sufficient for most remote start installations. However, some vehicles will require that further circuits be powered to allow the engine to run the Heating, Ventilation and Air Conditioning (HVAC) system to operate or other subsystems to operate properly. The optional double relay socket and 30 Amp Single Pole Double Throw (SPDT) automotive relays are needed for additional circuits when multiple Ignition circuits are encountered.

Page - 27 *Continued Next Page*

#7 The Pre-Activation Enable requires that the Override Switch be switched ON, then OFF every time the key is removed for the Remote Car Starter to operate.
#8 Double Pulse Activation allows the RS-4LX to be activated by an existing Remote Keyless Entry system (the Lock-Lock-Start feature). This option changes remote start activation from a single (-) pulse on the Pink wire to two pulses within 5 seconds.

Changing Programmable Options: The majority of remote start installations will not require changing the Programmable Feature's factory settings. If an option needs to be changed, follow this procedure:

1) Turn the Override Switch OFF. Wait for the Diagnostic LED to stop flashing.
2) Press and release the Left Control Button. Each time the Left Control Button is pressed the Diagnostic LED Light will flash 1 to 8 times (pressing the first time will produce one flash, the second press will produce two flashes, the third press will produce three flashes, etc.). The number of flashes equals the option number.
3) When the unit reaches the option level to be changed, press the Right Control Button once and the Diagnostic LED Light will flash once or twice to indicate the status of the option (see the previous page).
4) When the option has been set as desired, repeat steps #2 and #3 for each additional option to be changed.
5) After 6 seconds of no programming activity, the unit will exit Programming Mode. This is indicated by the Diagnostic LED Light flashing 3 times. If more options are to be changed, start at the second step again.
6) Turn the Override Switch back to the ON position.

#7 The Pre-Activation Enable requires that the Override Switch be switched ON, then OFF every time the key is removed for the Remote Car Starter to operate.
#8 Double Pulse Activation allows the RS-4LX to be activated by an existing Remote Keyless Entry system (the Lock-Lock-Start feature). This option changes remote start activation from a single (-) pulse on the Pink wire to two pulses within 5 seconds.

Changing Programmable Options: The majority of remote start installations will not require changing the Programmable Feature's factory settings. If an option needs to be changed, follow this procedure:

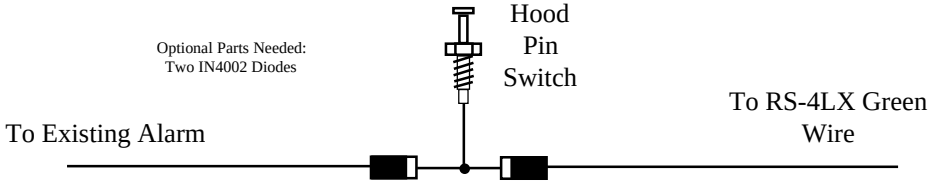
1) Turn the Override Switch OFF. Wait for the Diagnostic LED to stop flashing.
2) Press and release the Left Control Button. Each time the Left Control Button is pressed the Diagnostic LED Light will flash 1 to 8 times (pressing the first time will produce one flash, the second press will produce two flashes, the third press will produce three flashes, etc.). The number of flashes equals the option number.
3) When the unit reaches the option level to be changed, press the Right Control Button once and the Diagnostic LED Light will flash once or twice to indicate the status of the option (see the previous page).
4) When the option has been set as desired, repeat steps #2 and #3 for each additional option to be changed.
5) After 6 seconds of no programming activity, the unit will exit Programming Mode. This is indicated by the Diagnostic LED Light flashing 3 times. If more options are to be changed, start at the second step again.
6) Turn the Override Switch back to the ON position.

Page - 26

Green (18 Ga.) Wire: *Connection Required*

The hood pin switch must be installed with RS-4LX. It prevents operation of the RS-4LX if the hood is open. The Green wire connects to the hood pin switch. Carefully route the Green 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 Green wire connection; diode-isolation is recommended:

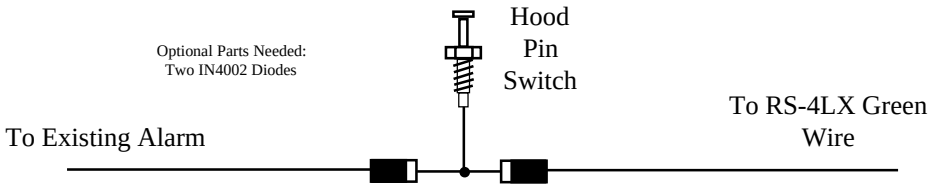


Instead of using a pin switch to monitor the hood's open or shut status, an Omega AU-46 Mercury Tilt Switch may used. Connect one of the AU-46's wires to Negative Chassis Ground and connect the remaining wire to the RS-4LX's Green wire.

Green (18 Ga.) Wire: *Connection Required*

The hood pin switch must be installed with RS-4LX. It prevents operation of the RS-4LX if the hood is open. The Green wire connects to the hood pin switch. Carefully route the Green 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 Green wire connection; diode-isolation is recommended:



Instead of using a pin switch to monitor the hood's open or shut status, an Omega AU-46 Mercury Tilt Switch may used. Connect one of the AU-46's wires to Negative Chassis Ground and connect the remaining wire to the RS-4LX's Green wire.

Page - 15

DataLearn™ Procedure: *Required For Operation*

Before the vehicle will start, you must follow the DataLearn™ Procedure.

This process allows the RS-4LX to determine the normal operating conditions of several key vehicle circuits. This procedure must be followed in the following steps:

1) Press and hold the brake pedal.
2) While holding the brake pedal, turn the ignition key to the "Run" (not "Start") position.
3) Move the gear shift selector from "Park" to any forward or reverse gear.
4) Move the gear shift selector back to the "Park" position, then release the brake pedal. Turn the ignition key "off".

To confirm the Data Learn Procedure, toggle the Override Switch OFF and ON once. The Diagnostic LED Light on the RS-4LX will flash once.

Orange Wire: *Connection Optional*

The Orange wire is an engine speed or tachometer sensing wire. The RS-4LX utilizes two different methods of monitoring the vehicle during the remote starting process. Consider both methods before deciding which one to use. Normally the Smart Tach™ method is used.

Smart Tach™ remote starting (factory setting):

This method does not require the connection of the Orange tach wire. This method uses a voltage sensing circuit which reads the vehicle's voltage before attempting to start, and

DataLearn™ Procedure: *Required For Operation*

Before the vehicle will start, you must follow the DataLearn™ Procedure.

This process allows the RS-4LX to determine the normal operating conditions of several key vehicle circuits. This procedure must be followed in the following steps:

1) Press and hold the brake pedal.
2) While holding the brake pedal, turn the ignition key to the "Run" (not "Start") position.
3) Move the gear shift selector from "Park" to any forward or reverse gear.
4) Move the gear shift selector back to the "Park" position, then release the brake pedal. Turn the ignition key "off".

To confirm the Data Learn Procedure, toggle the Override Switch OFF and ON once. The Diagnostic LED Light on the RS-4LX will flash once.

Orange Wire: *Connection Optional*

The Orange wire is an engine speed or tachometer sensing wire. The RS-4LX utilizes two different methods of monitoring the vehicle during the remote starting process. Consider both methods before deciding which one to use. Normally the Smart Tach™ method is used.

Smart Tach™ remote starting (factory setting):

This method does not require the connection of the Orange tach wire. This method uses a voltage sensing circuit which reads the vehicle's voltage before attempting to start, and

Factory Setting (2 LED flashes)	Option (1 LED flash)
#1 Smart Tach	Tach wire connection required
#2 10 minute run time	15 minute run time
#3 Normal Starter	Extended starter
#4 Normal Starter	Super extended starter
#5 Voltage supervision	No voltage supervision
#6 Gasoline engine	Diesel engine
#7 Pre-activation enable	No pre-activation enable
#8 Single Pulse Activation	Double Pulse Activation (Lock-Lock-Start)

Note: The number of LED flashes referred to are used when changing the factory settings.

#1 Determines how the RS-4LX will monitor engine speed. Smart Tach uses voltage level monitoring, while the option monitors AC voltage from the negative side of the coil.
#2 This option sets the run time before the unit automatically shuts off the engine.
#3 This option adds 50% more starter engagement time. This feature is useful on difficult-to-start engines.
#4 Adds 100% more starter engagement time. This option is necessary for some diesel applications and very difficult-to-start engines.
#5 This is used with the Smart Tach method of monitoring engine speed by measuring voltage from the alternator's output.
#6 This option is for diesel engine remote start applications, and requires connected of the Gray glow plug wire.

 Continued Next Page

Factory Setting (2 LED flashes)	Option (1 LED flash)
#1 Smart Tach	Tach wire connection required
#2 10 minute run time	15 minute run time
#3 Normal Starter	Extended starter
#4 Normal Starter	Super extended starter
#5 Voltage supervision	No voltage supervision
#6 Gasoline engine	Diesel engine
#7 Pre-activation enable	No pre-activation enable
#8 Single Pulse Activation	Double Pulse Activation (Lock-Lock-Start)

Note: The number of LED flashes referred to are used when changing the factory settings.

#1 Determines how the RS-4LX will monitor engine speed. Smart Tach uses voltage level monitoring, while the option monitors AC voltage from the negative side of the coil.
#2 This option sets the run time before the unit automatically shuts off the engine.
#3 This option adds 50% more starter engagement time. This feature is useful on difficult-to-start engines.
#4 Adds 100% more starter engagement time. This option is necessary for some diesel applications and very difficult-to-start engines.
#5 This is used with the Smart Tach method of monitoring engine speed by measuring voltage from the alternator's output.
#6 This option is for diesel engine remote start applications, and requires connected of the Gray glow plug wire.

 Continued Next Page

USING THE DIAGNOSTIC LED LIGHT

The RS-4LX features a built-in diagnostic routine which will indicate why the unit turned the engine off the last time the unit was used. To use the diagnostic mode, turn the Override Switch OFF. A few seconds later, the Diagnostic LED Light will flash in the following fashion to indicate what caused the engine to turn off:

1 flash - normal 10 or 15 minute time cycle expired.
2 flashes - brake was pressed or the hood was opened.
3 flashes - no tach signal or the engine stalled.
4 flashes - received another remote input from the transmitter.
5 flashes - transmission selector was removed from "Park".
6 flashes - low battery voltage or an additional ignition may be needed.
8 flashes - too high of a current draw one of the system's transistor outputs.
12 flashes - the Override Switch was turned off.

PROGRAMMABLE OPTIONS

The RS-4LX has 8 features which can be turned on or off to meet installation requirements or to enhance the unit's operation. The factory settings are adequate for most installations. The Left Control Button, Right Control Button and Diagnostic LED Light are used to change the settings of the programmable options. The Programmable Options are:

USING THE DIAGNOSTIC LED LIGHT

The RS-4LX features a built-in diagnostic routine which will indicate why the unit turned the engine off the last time the unit was used. To use the diagnostic mode, turn the Override Switch OFF. A few seconds later, the Diagnostic LED Light will flash in the following fashion to indicate what caused the engine to turn off:

1 flash - normal 10 or 15 minute time cycle expired.
2 flashes - brake was pressed or the hood was opened.
3 flashes - no tach signal or the engine stalled.
4 flashes - received another remote input from the transmitter.
5 flashes - transmission selector was removed from "Park".
6 flashes - low battery voltage or an additional ignition may be needed.
8 flashes - too high of a current draw one of the system's transistor outputs.
12 flashes - the Override Switch was turned off.

PROGRAMMABLE OPTIONS

The RS-4LX has 8 features which can be turned on or off to meet installation requirements or to enhance the unit's operation. The factory settings are adequate for most installations. The Left Control Button, Right Control Button and Diagnostic LED Light are used to change the settings of the programmable options. The Programmable Options are:

then monitors for a voltage increase which occurs when the alternator has output. This circuit automatically compensates for voltage, temperature and the amount of time since the vehicle was last operated. The Smart Tach™ feature is preset at the factory, and if utilized, the Orange wire is not used. Note that when using this method, if the engine is hard to start, Programmable Feature #3 will allow 50% more starter time.

Tachometer Sensing:

This method requires connection of the Orange wire. 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 wire reads the engine speed (tach) information from a wire in the vehicle. The Orange 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. Once the Orange wire connection has been made, this procedure must be followed:

1) Turn the Override Switch OFF. Wait 5 seconds for the Diagnostic LED Light to stop flashing. Press the Left Control Button once and the light will respond with one flash. Now push the Right Control Button once. The light will flash once again (If the light flashed twice, press the Right Control Button again until only one light flash is seen).
2) Wait 5 seconds for the Diagnostic LED Light to flash 3 times.
3) Turn the Override Switch back to the ON position.

 Continued Next Page

then monitors for a voltage increase which occurs when the alternator has output. This circuit automatically compensates for voltage, temperature and the amount of time since the vehicle was last operated. The Smart Tach™ feature is preset at the factory, and if utilized, the Orange wire is not used. Note that when using this method, if the engine is hard to start, Programmable Feature #3 will allow 50% more starter time.

Tachometer Sensing:

This method requires connection of the Orange wire. 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 wire reads the engine speed (tach) information from a wire in the vehicle. The Orange 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. Once the Orange wire connection has been made, this procedure must be followed:

1) Turn the Override Switch OFF. Wait 5 seconds for the Diagnostic LED Light to stop flashing. Press the Left Control Button once and the light will respond with one flash. Now push the Right Control Button once. The light will flash once again (If the light flashed twice, press the Right Control Button again until only one light flash is seen).
2) Wait 5 seconds for the Diagnostic LED Light to flash 3 times.
3) Turn the Override Switch back to the ON position.

 Continued Next Page

The RS-4LX is now in Tachometer Sensing instead of Smart Tach™ mode.

4) Start the engine and let it obtain a normal idle. Do not press the gas pedal.
5) Watch the Diagnostic LED Light. After several seconds, the light will turn on steady, indicating that the vehicle's idle rate has been recognized. **Note:** The light must be steady. A flickering light is showing an erratic or incorrect tach signal. Press and release the Right Control Button and ensure that the light turns back on steady.
6) Turn the ignition key to the "Off" position.

Note: When this step has been completed, the Diagnostic LED Light should turn on whenever the engine is running, until it reaches twice the learned idle rate. **This is critical!** Test this operation by starting the engine (using the key), then pressing and holding the gas pedal to raise the engine's speed to twice the normal idle rate; the light should turn off. If the light does not turn off, repeat the Tachometer Learning Procedure and check the Orange wire's connection.

Pink Wire: *Connection Required*

The Pink wire activates the RS-4LX. If the Pink wire receives a Negative pulse, the RS-4LX 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 off the RS-4LX, stopping the engine.

The Pink wire can be connected to an available auxiliary output of an existing Remote Security System, or a stand-alone Remote Receiver unit may be used to activate this unit.

The RS-4LX is now in Tachometer Sensing instead of Smart Tach™ mode.

4) Start the engine and let it obtain a normal idle. Do not press the gas pedal.
5) Watch the Diagnostic LED Light. After several seconds, the light will turn on steady, indicating that the vehicle's idle rate has been recognized. **Note:** The light must be steady. A flickering light is showing an erratic or incorrect tach signal. Press and release the Right Control Button and ensure that the light turns back on steady.
6) Turn the ignition key to the "Off" position.

Note: When this step has been completed, the Diagnostic LED Light should turn on whenever the engine is running, until it reaches twice the learned idle rate. **This is critical!** Test this operation by starting the engine (using the key), then pressing and holding the gas pedal to raise the engine's speed to twice the normal idle rate; the light should turn off. If the light does not turn off, repeat the Tachometer Learning Procedure and check the Orange wire's connection.

Pink Wire: *Connection Required*

The Pink wire activates the RS-4LX. If the Pink wire receives a Negative pulse, the RS-4LX 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 off the RS-4LX, stopping the engine.

The Pink wire can be connected to an available auxiliary output of an existing Remote Security System, or a stand-alone Remote Receiver unit may be used to activate this unit.

TESTING THE REMOTE CAR STARTER

Warning! Be prepared to apply the brake during this procedure. Close the hood, apply the parking brake and ensure that the gear shifter is in "Park". If a battery charger is connected to the vehicle, remove it.

1) Once all of the necessary wiring connections have been correctly made and checked, and the unit put through the Data Learn Procedure, it must be tested. Press the transmitter button of the host alarm, keyless entry unit or receiver assigned to operate the RS-4LX.

2) The exterior lights (if the White wire was used for this purpose) will turn on, then off. A few seconds later the vehicle's engine will start and the exterior lights will turn back on again.

3) Ten or fifteen minutes after starting, the engine will automatically shut off.

4) Restart and test the following (any fault in these functions must be corrected):
- the engine will shut off if the shifter is removed from the "Park" position.
- the engine will shut off if the hood is opened.
- the engine will shut off if the brake is pressed.
- the engine will shut off if the transmitter button(s) is pressed again.

TESTING THE REMOTE CAR STARTER

Warning! Be prepared to apply the brake during this procedure. Close the hood, apply the parking brake and ensure that the gear shifter is in "Park". If a battery charger is connected to the vehicle, remove it.

1) Once all of the necessary wiring connections have been correctly made and checked, and the unit put through the Data Learn Procedure, it must be tested. Press the transmitter button of the host alarm, keyless entry unit or receiver assigned to operate the RS-4LX.

2) The exterior lights (if the White wire was used for this purpose) will turn on, then off. A few seconds later the vehicle's engine will start and the exterior lights will turn back on again.

3) Ten or fifteen minutes after starting, the engine will automatically shut off.

4) Restart and test the following (any fault in these functions must be corrected):
- the engine will shut off if the shifter is removed from the "Park" position.
- the engine will shut off if the hood is opened.
- the engine will shut off if the brake is pressed.
- the engine will shut off if the transmitter button(s) is pressed again.

Yellow (18 Ga.) Wire:

The RS-4LX Yellow wire's operation has changed from the previous model! The Yellow wire now has (+) 12 Volts output.

The Yellow wire is a (+) 12V output which will directly supply the host remote keyless entry or security system's ignition input circuit. This circuit has voltage whenever the ignition switch is on, but not when the RS-4LX energizes the ignition circuit. Connection is needed on keyless entry systems and security systems which cannot be operated if the ignition switch is on. If this circuit is not used on such a system, the alarm's transmitter, after remote start activation, would not disarm the alarm or turn off the RS-4LX. Connect the RS-4LX Yellow directly to the host unit's ignition input wire.

Brown Wire:

The Brown wire is designed to disarm a factory installed security system. Some factory systems must be disarmed to allow remote starting. In most cases, the Brown wire may be connected directly to the factory alarm disarm wire. The correct vehicle wire will show Negative ground when the key is used to unlock the doors or trunk. This wire is usually found in the kick panel area in the wiring harness from the door into the cabin.

Yellow (18 Ga.) Wire:

The RS-4LX Yellow wire's operation has changed from the previous model! The Yellow wire now has (+) 12 Volts output.

The Yellow wire is a (+) 12V output which will directly supply the host remote keyless entry or security system's ignition input circuit. This circuit has voltage whenever the ignition switch is on, but not when the RS-4LX energizes the ignition circuit. Connection is needed on keyless entry systems and security systems which cannot be operated if the ignition switch is on. If this circuit is not used on such a system, the alarm's transmitter, after remote start activation, would not disarm the alarm or turn off the RS-4LX. Connect the RS-4LX Yellow directly to the host unit's ignition input wire.

Brown Wire:

The Brown wire is designed to disarm a factory installed security system. Some factory systems must be disarmed to allow remote starting. In most cases, the Brown wire may be connected directly to the factory alarm disarm wire. The correct vehicle wire will show Negative ground when the key is used to unlock the doors or trunk. This wire is usually found in the kick panel area in the wiring harness from the door into the cabin.

White (18 Ga.) Wire: *Connection Optional*

The White wire is an Accessory Pulse circuit, which upon the unit's activation, will have a Negative pulse just as the Main Harness White wire has output and then a 3 second output pulse after the engine starts. The function of this wire is to allow defroster operation in some vehicles and to control the Retained Accessory Power (RAP) system in some General Motors vehicles. If this circuit is needed, the White wire must be connected to an optional AU-SOCKET-5 and a standard Single Pole Double Throw automotive relay.

Additional Auxiliary Connections Which May Be Required

The RS-4LX may typically be installed with and activated by a Remote Vehicle Security System or the vehicle may have an existing factory security system. The remaining Auxiliary Harness connections may be necessary to allow compatibility between the security system and the Remote Car Starter.

Pair Of Blue (18 Ga.) Wires:

The Blue wires are used if remotely starting the vehicle causes a false alarm because the shock sensor is triggered. The Blue wires consist of a loop which is routed through a relay inside the RS-4LX. This loop is opened whenever the Remote Car Starter is activated, which allows a security system with a shock or motion sensor to remain armed.

White (18 Ga.) Wire: *Connection Optional*

The White wire is an Accessory Pulse circuit, which upon the unit's activation, will have a Negative pulse just as the Main Harness White wire has output and then a 3 second output pulse after the engine starts. The function of this wire is to allow defroster operation in some vehicles and to control the Retained Accessory Power (RAP) system in some General Motors vehicles. If this circuit is needed, the White wire must be connected to an optional AU-SOCKET-5 and a standard Single Pole Double Throw automotive relay.

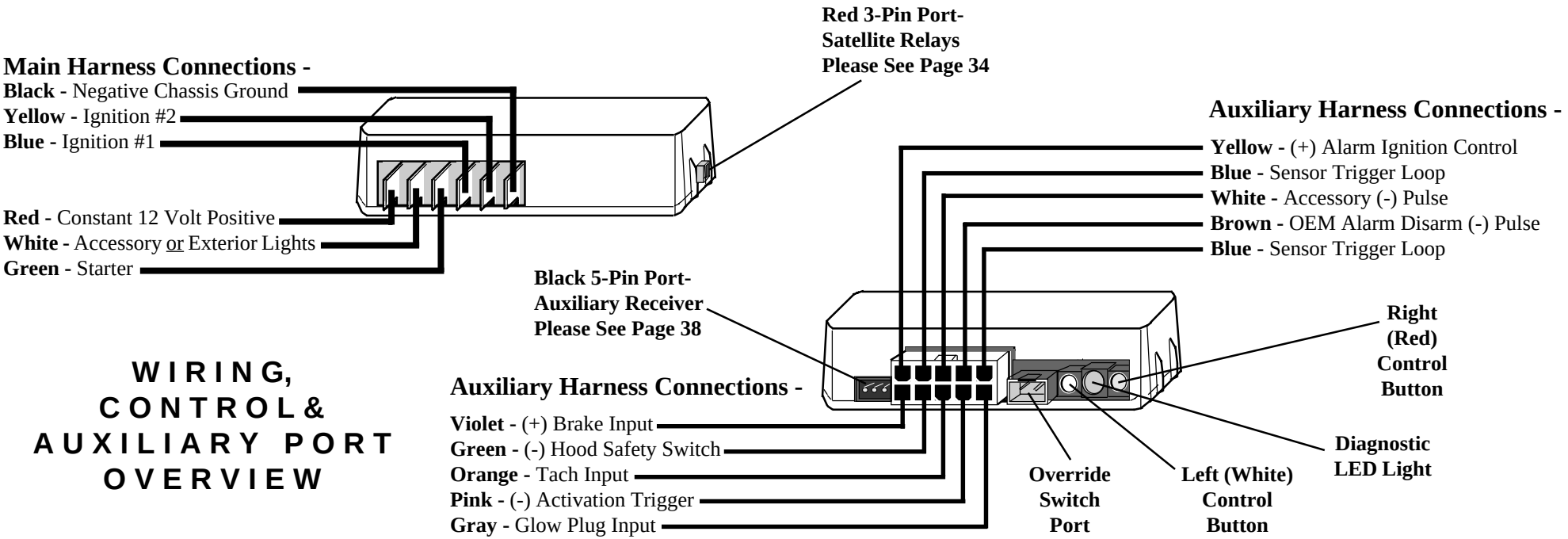
Additional Auxiliary Connections Which May Be Required

The RS-4LX may typically be installed with and activated by a Remote Vehicle Security System or the vehicle may have an existing factory security system. The remaining Auxiliary Harness connections may be necessary to allow compatibility between the security system and the Remote Car Starter.

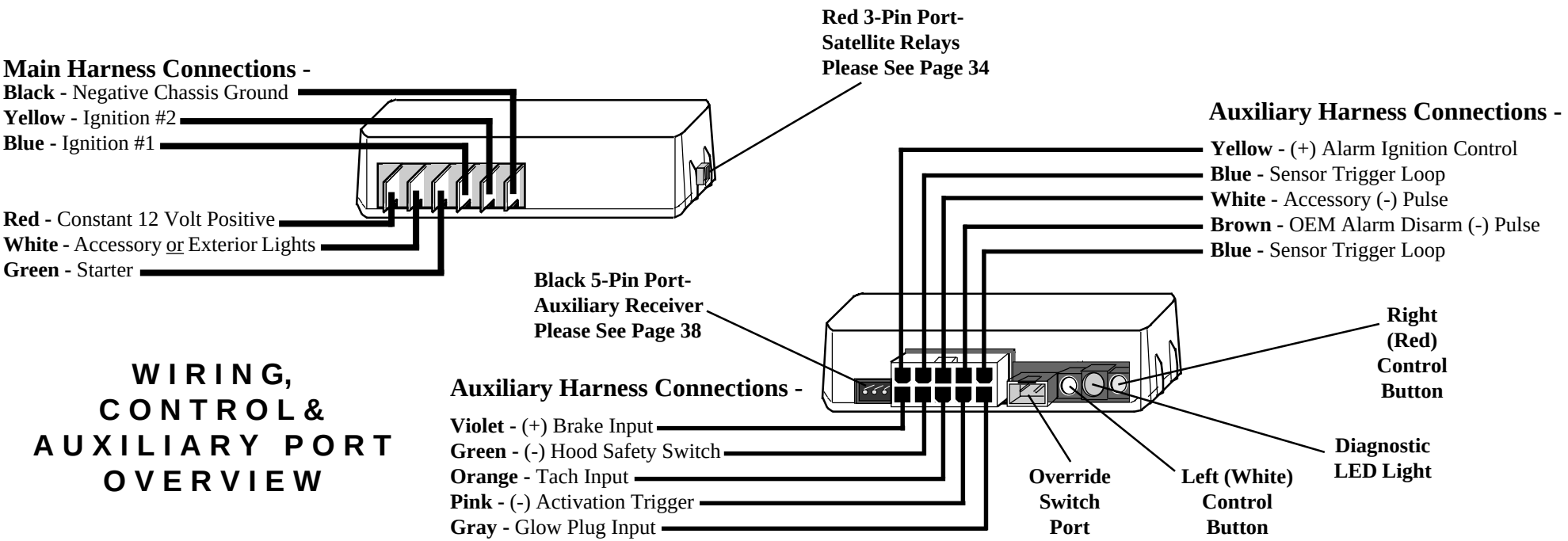
Pair Of Blue (18 Ga.) Wires:

The Blue wires are used if remotely starting the vehicle causes a false alarm because the shock sensor is triggered. The Blue wires consist of a loop which is routed through a relay inside the RS-4LX. This loop is opened whenever the Remote Car Starter is activated, which allows a security system with a shock or motion sensor to remain armed.

WIRING, CONTROL & AUXILIARY PORT OVERVIEW



WIRING, CONTROL & AUXILIARY PORT OVERVIEW



Page - 20

Page - 21