

110D

➤ *Owner's/Installation Guide*

limited lifetime consumer warranty

For a period of one calendar year from the date of purchase of this auto-security device, Directed Electronics, Inc. promises to the ORIGINAL PURCHASER to repair or replace (with a comparable reconditioned model), free of cost, any electronic control module which proves to be defective in workmanship or material under normal use, SO LONG AS THE SYSTEM WAS SOLD, INSTALLED, AND SERVICED BY A PROFESSIONAL AUTO INSTALLER, AND REMAINS IN THE CAR IN WHICH THE SYSTEM WAS ORIGINALLY INSTALLED. If warranty service is necessary you must have a clear copy of your sales receipt containing all of the information shown on the following page.

After the first calendar year, from the date of purchase of this auto-security device, Directed Electronics, Inc., promises to the ORIGINAL PURCHASER to repair or replace (with a comparable reconditioned model) any electronic control module which proves to be defective in workmanship or material under normal use FOR A CHARGE OF \$45.00, SO LONG AS THE SYSTEM WAS SOLD, INSTALLED, AND SERVICED BY A PROFESSIONAL AUTO INSTALLER, AND REMAINS IN THE CAR IN WHICH THE SYSTEM WAS ORIGINALLY INSTALLED. If warranty service is necessary you must have a clear copy of your sales receipt containing all of the information shown on the following page.

This warranty contains the entire agreement relating to warranty and supersedes all previous and contemporaneous representations or understandings, whether written or oral. IN ANY EVENT, DIRECTED ELECTRONICS, INC. IS NOT LIABLE FOR THE THEFT OF THE VEHICLE AND/OR ITS CONTENTS.

This warranty is void if the product has been damaged by accident, unreasonable use, neglect, improper service or other causes not arising out of defects in materials or construction. This warranty is nontransferable and does not apply to any unit that has been modified or used in a manner contrary to its intended purpose and does not cover batteries. The unit in question must be returned to the manufacturer, postage prepaid. This warranty does not cover labor costs for the removal, diagnosis, troubleshooting or reinstallation of the unit. For service on an out-of-warranty product a flat rate fee by model is charged. Contact your authorized dealer to obtain the service charge for your unit.

These systems are a deterrent against possible theft. Directed Electronics, Inc. is not offering a guarantee or insuring against the theft of the automobile or its contents and disclaims any liability for the theft of the vehicle and/or its contents. Directed Electronics does not authorize any person to create for it any other obligation or liability in connection with this security system.

TO THE MAXIMUM EXTENT ALLOWED BY LAW, ANY AND ALL WARRANTIES ARE EXCLUDED BY THE MANUFACTURER AND EACH ENTITY PARTICIPATING IN THE STREAM OF COMMERCE THEREWITH. THIS EXCLUSION INCLUDES BUT IS NOT LIMITED TO THE EXCLUSION OF ANY AND ALL WARRANTY OF MERCHANTABILITY AND/OR ANY AND ALL WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE AND/OR ANY AND ALL WARRANTY OF NON-INFRINGEMENT OF PATENTS, IN THE UNITED STATES OF AMERICA AND/OR ABROAD. NEITHER THE MANUFACTURER OR ANY ENTITIES CONNECTED THEREWITH SHALL BE RESPONSIBLE OR LIABLE FOR ANY DAMAGES WHATSOEVER, INCLUDING BUT NOT LIMITED TO ANY CONSEQUENTIAL DAMAGES, INCIDENTAL DAMAGES, TOWING, REPAIR, REPLACEMENT, DAMAGES FOR LOSS OF TIME, LOSS OF EARNINGS, COMMERCIAL LOSS, LOSS OF ECONOMIC OPPORTUNITY AND THE LIKE. NOTWITHSTANDING THE ABOVE, MANUFACTURER DOES OFFER A LIMITED WARRANTY TO REPLACE OR REPAIR THE CONTROL MODULE AS DESCRIBED ABOVE. Some states do not allow limitations on how long an implied warranty will last or the exclusion or limitation of incidental or consequential damages. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

IMPORTANT NOTE:

This product warranty is automatically void if its date code or serial number is defaced, missing, or altered. This warranty will not be valid unless you have completed the warranty card and mailed it to Directed Electronics, Inc. within 10 days after purchase to the address listed on the warranty registration card.

Make sure you have all of the following information from your dealer:

A clear copy of the sales receipt, showing the following:

- > Date of purchase
- > Your full name and address
- > Authorized dealer's company name and address
- > Type of keyless entry installed
- > Year, make, model and color of the automobile
- > Automobile license number
- > Vehicle identification number
- > All security options installed on automobile
- > Installation receipts

table of contents

limited lifetime consumer warranty	i
what is included	2
installation tools	2
important information	3
system maintenance	3
your warranty	4
fcc/id notice	4
primary harness (H1), 12-pin connector	5
relay harness (H2), 6-pin connector	6
installation	7
step 1	8
step 2	9
step 3	10
step 4	12
step 5	13
step 6	14
step 7	30
step 8	30
step 9	31
step 10	32
transmitter functions	32
standard configuration	33
transmitter/receiver learn routine	34
operating settings learn routine	37
to access another feature	38
to exit the learn routine	38
features menu	39
feature descriptions	40
using your system	42
locking with transmitter	42
unlocking without transmitter	42
ignition-controlled door locks	42
turn-off system with Valet/Program switch	42
panic mode	43
silent mode	43
code hopping™ re-synchronize	43
system expansion items	44
glossary of terms	45
wiring quick reference diagram	46
notes	47

what is included

- Control Module
- Two 3-Button Transmitters
- 12-Pin H/1 Main Harness
- 6-Pin H/2 Secondary Harness
- Plug-in Status LED
- Plug-in Valet®/Program Button

installation tools

- Digital Multi-Meter
- Drill
- $\frac{1}{32}$ and $\frac{5}{16}$ Drill Bits
- Screwdrivers
(Phillips and Flathead)
- Wire Stripper
- Solder Iron
- Electrical Tape
- Pliers
- Crimping Tool



note: The installation tools required will vary depending on your vehicle.

important information

Congratulations on the purchase of your keyless entry with security features. This system will allow convenient access to your vehicle with the push of a button, as well as other optional features. Properly installed, this system will provide years of trouble-free operation.

Please take the time to carefully read this Owner's/Install Guide in its entirety and watch the Rattler Do-It-Yourself Installation Video prior to installing your system.

You can print additional or replacement copies of this manual by accessing the Directed web site at www.diyrattler.com.

important! If you are not comfortable working with electronics or unfamiliar with the tools required, please contact your local dealer for advice or ask to have the system professionally installed to avoid costly damages. Failure to properly install the system may result in property damage, personal injury, or both.

system maintenance

The system requires no specific maintenance. Your transmitter is powered by a miniature 3-volt battery (type CR2032) that will last approximately one year under normal use. When the battery begins to weaken, operating range will be reduced.

→ your warranty

Your warranty registration must be completely filled out and returned within 10 days of purchase. Your product warranty will not be validated if your warranty registration is not returned. Please note that it is necessary to keep your proof of purchase.

→ fcc/id notice

This device complies with Part 15 of FCC rules. Operation is subject to the following conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesirable operation.

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

primary harness (H1), 12-pin connector

H1/1	ORANGE	(-) 500 mA Ground-When-Armed Output
H1/2	WHITE	(+) Light Flash Output
H1/3	WHITE/BLUE	(-) 200 mA Channel 3 Validity Output
H1/4	BLACK/WHITE	(-) 200 mA Dome light Supervision Output
H1/5	NOT USED	
H1/6	BLUE	(-) 2 nd Unlock
H1/7	NOT USED	
H1/8	BLACK	(-) Chassis Ground Input
H1/9	YELLOW	(+) Ignition Input, Zone 5
H1/10	BROWN	(-) Horn Output
H1/11	RED	(+) 12V Constant Power Input
H1/12	RED/WHITE	(-) 200mA Channel 2 Validity Output

relay harness (H2), 6-pin connector

H2/1	WHITE/BLACK	Lock #87A Normally Closed
H2/2	GREEN/BLACK	Lock #30 Common-Output
H2/3	VIOLET/BLACK*	Lock #87A Normally Open-Input
H2/4	BROWN/BLACK	Unlock #87A Normally Closed
H2/5	BLUE/BLACK	Unlock #30 Common-Output
H2/6	VIOLET	Unlock #87 Normally Open-Input

***note:** VIOLET and VIOLET/BLACK are common at the fuse holder.

installation

Be sure to read this section thoroughly and view the Rattler Do-It-Yourself Installation Video in its entirety before starting the installation. Pay special attention to all warnings to prevent personal injury or damage to your vehicle.

Visit our 24-hour technical Web site (www.diyrattler.com) to get a vehicle-specific wiring guide prior to starting this installation. If at any time during the installation you are unable to answer your questions on the Web site, call **1-800-873-1314** for live technical assistance.



warning! On vehicles with air bags or supplemental restraint systems (SRS) you may notice a bright yellow tube with small wires in it marked SRS underneath the steering column near the key cylinder. **DO NOT** tamper or unplug these for any reason to prevent costly damages to your vehicle or personal injury. Tampering may cause unintended deployment of airbags.



warning! **DO NOT** use any testing tool other than a digital multi-meter to prevent costly damages to your vehicle. Use of a test light may cause grounding of sensitive electrical components that can damage the on-board vehicle computer and processors resulting in substantial cost for replacement.



warning! Verify that the vehicle transmission is set to park and that the parking brake is set before beginning installation.

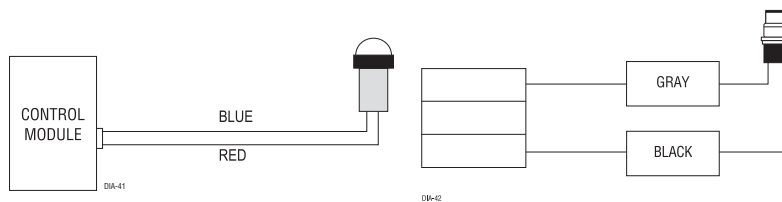
→ **step 1**

Plug-in LED and Valet/Program switch

The LED and the Valet®/Program switch both plug into the control module. The status LED plugs into the white two-pin port, while the Valet®/Program switch should be plugged into the blue two-pin port. The status LED and Valet®/Program switch each fit into $\frac{9}{32}$ -inch holes.

Status LED

Valet/Program Switch



note: The security features consist only of ignition watch where the horn will honk if the keyless system sees ignition when locked and the security feature is turned on in the features learned routine.

When mounting the LED it will be necessary to locate an area on the dash that is visible from all sides of the vehicle, and has at least 1 inch of clearance behind the mounting area. It is recommended that a factory "pop-out" be used for the LED mounting, using a $\frac{9}{32}$ drill bit drill a hole in the location selected, feed the LED through the hole, press the LED firmly until it snaps into place. Run the wires to the selected control module mounting

location using caution to NOT run the wires near any moving objects or excessive heat.

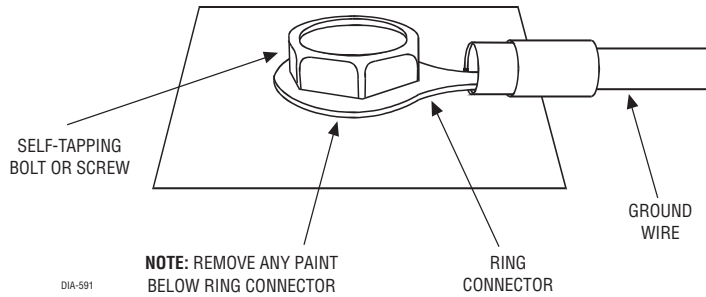
The Valet®/Program switch is usually mounted under the dash or in the glove box, the same precautions used for the LED should be followed. Once a location has been selected drill a 9/32 hole, feed the wires through the hole and press the switch firmly until it snaps into place. Run the wires to the same location as the LED using caution to NOT run the wires near any moving objects or excessive heat.

→ step 2

Ground Wire

The BLACK (H1/8) wire on the main 8-pin harness is ground. This wire should be connected to a clean, paint-free area of metal in the drivers kick panel area. First strip back a 3/4-inch section of the insulation off the BLACK wire and crimp a ring terminal (not provided) to that wire. Locate a clean, paint-free metal surface in the drivers kick panel. Using a self-tapping screw, drill the screw with the ring terminal to the metal area. Once screwed down, pull on the wire to ensure a good connection.

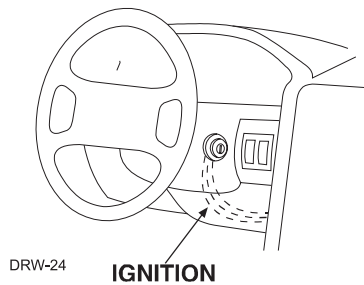
note: More problems are attributed to poor ground connections than any other cause. Take extra care to ensure the ground is clean and secure.



→ step 3

Constant Power and Ignition wires

Almost all power and ignition wires can be found behind the key cylinder under the lower drivers side dash panel. Using the appropriate hand tools, remove the lower dash panel using care not to break any parts. If the panel does not come off easily check for any additional screws you may have missed.



Once the lower dash panel has been removed, locate the ignition harness at the back of the key cylinder. This is usually a group of

thicker wires. With the ignition harness exposed, use your digital multi-meter to find your power and ignition wires.

Place the black lead of the meter to a clean metal surface in the kick panel area and secure it. Put the meter in the DC voltage position, then take the red lead of the meter and probe one of the thicker gauge wires. The color and identity of your specific vehicle wiring can be obtained at www.diyrattler.com. With the key in the OFF position, test the suspect wire. The constant power wire will read between 11.00 volts and 13.00 volts.

Once the constant power wire has been identified, solder the RED (H1/11) wire from the 12-pin harness to it and cover the connection with electrical tape to ensure a safe connection.

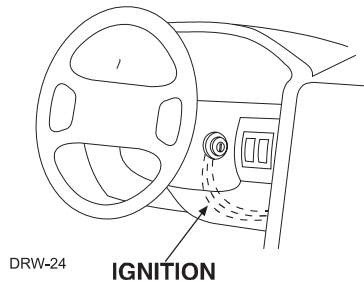
With the meter black lead still in the kick panel, locate the ignition wire harness in the same location. It will test differently than constant (+)12 volts. Locate the suspected wire using the www.diyrattler.com Web site and place the red lead of the meter on the suspected wire. With the key in the off position the meter will read 0.00 volts. Turn the key to the on position and the meter should read between 11.00 volts and 13.00 volts. Now watching the meter, turn the key to the crank position and the voltage should drop a small amount but not disappear. If the voltage disappears this is not an ignition wire but an accessory wire. If the wire meters correctly, solder the YELLOW (H1/9) wire from the 12-pin harness to it and cover the connection with electrical tape.

→ **step 4**

Starter wire

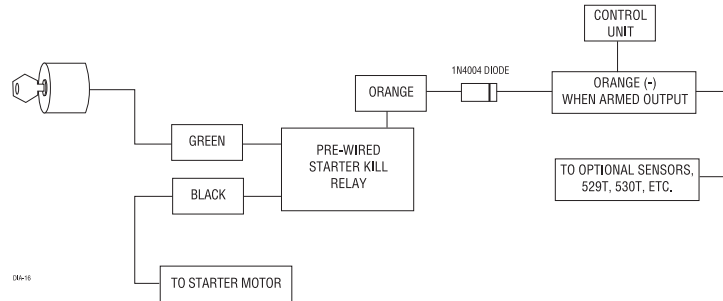
note: Optional 8618 starter kill relay is required.

The starter wire will be located in the same harness as the ignition and constant power. Leaving the meter black lead connected to the metal ground.



Find the wire suspected to be the starter wire according to the web information on your vehicle. Place the red lead of your meter on the wire. With the key in the off position the meter should read 0.00 volts and will stay at 0.00 volts in all key positions except the crank position. In the crank position your meter should read between 10.00 volts and 13.00 volts, and will drop back to 0.00 volts when the starter disengages. Once you locate the starter wire, cut the wire in half and try to crank (start) the vehicle. (Always check the Web site information on your vehicle for warnings regarding the starter wire and check engine lights. Some vehicles will trip a check engine light if the starter wire is cut.) If the vehicle does not crank, the correct wire has been

identified.



→ step 5

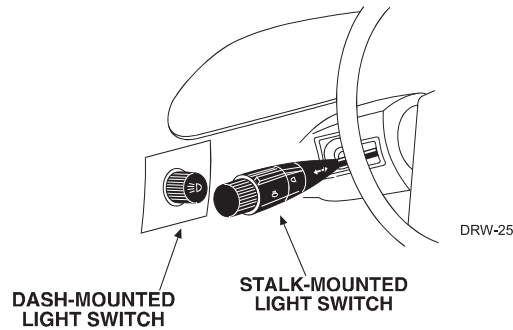
Parking light flash

There are several different types of parking light circuits. The following description is for a standard positive-triggered parking light circuit, usually located at the light switch. If the web vehicle information suggests a different type of parking light circuit, please contact Rattler Technical Support.

Using the web information on the vehicle, locate the suspected wire and place the BLACK lead of the meter to a ground and secure it. Place the multi-meter in the DC position. Using the RED lead of the meter, probe the wire. With the light switch in the off position the meter will read 0.00 volts. While watching the meter, turn the switch to the parking light position. The meter will read between 10.00 volts and 13.00 volts.

important: While reading the meter turn (adjust) the dash dimmer control switch. The voltage should not vary on the meter. If the voltage does vary the incorrect suspected wire has been tested. Find the correct wire and retest.

Once you have identified the correct wire, solder the WHITE (H1/2) wire on the main connector to it and cover the connection with electrical tape.



→ step 6

Door locks

The system comes with a built in relay pack for door lock operation. When attempting to interface the power door locks with your system it is important to understand that there are multiple types of door locking systems in today's vehicles. To determine your vehicle's power door lock system, check the web information on your vehicle.

If your door lock system is a different type than described in this guide, go to www.diyrattler.com to download the door lock

guide. The door lock guide identifies the type of system for your vehicle. With the built in door lock relays you can properly interface the power locks with your security system. If you are unable to identify your door lock system with the web information please contact Rattler Technical Support.

Although there are numerous types of door lock circuits, the most common is the negative triggered door lock system. If your vehicle has a negative triggered door lock system, follow the steps below. If your vehicle has any other type of door lock system then, the easiest way to determine which type of door lock system you are working with is to remove the master locking switch itself, which is usually on the driver's door or on the center console. Once you have determined which type of factory door lock circuit you are working with, and the color codes of the switch wires to be used, you can usually simplify the installation by locating the same wires in the vehicle's kick panel. If no central locking switch is found, the installation may require a door lock actuator.

note: Always retest the wires in the kick panel to be sure they function the same way as the wires on the switch.

There are eight common types of door lock circuits (some vehicles use more unusual systems):

- **Type A:** Three-wire (+) pulse controlling factory lock relays. Most GM, some Ford and Chrysler, 1995 Saturn, some new VW, newer BMW.
- **Type B:** Three-wire (-) pulse controlling factory lock relays. Most Asian vehicles, early Saturn, some BMW and Porsche.
- **Type C:** Direct-wired reversing-polarity switches. The switches are wired directly to the motors. This type of system has no factory relays. Most Fords, many GM two-doors cars and trucks, many Chryslers.
- **Type D:** Adding one or more aftermarket actuators. These include slave systems without an actuator in the driver's door, but with factory actuators in all the other doors. Type D also includes cars without power locks, which will have actuators added. All Saabs before 1994, all Volvo except 850i, all Subaru, most Isuzu, and many Mazdas. Some mid-eighties Nissans, pre-1985 Mercedes-Benz and Audi.
- **Type E:** Electrically-activated vacuum systems. The vehicle must have a vacuum actuator in each door. Make sure that locking the doors from the driver's or passenger side using the key activates all the actuators in the vehicle. This requires a slight modification to the door lock harness. Mercedes-Benz and Audi 1985 and newer.
- **Type F:** One-wire system - cut to lock, ground to unlock. This system is found in late-model Nissan Sentras, some Nissan 240SX, and Nissan 300ZX 1992 and later. It is also found in older Mitsubishi's, and some early Mazda MPV's.
- **Type G:** Positive (+) multiplex. This system is most common-

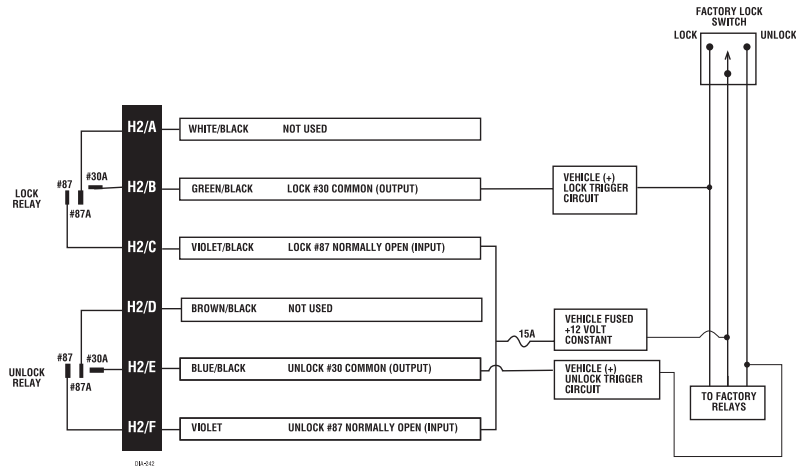
ly found in Ford, Mazda, Chrysler and GM vehicles. The door lock switch or door key cylinder may contain either one or two resistors.

- **Type H:** Negative (-) multiplex. The system is most commonly found in Ford, Mazda, Chrysler and GM vehicles. The door lock switch or door key cylinder may contain either one or two resistors.

at the switch

- Three-wire switches will have either a constant ground input or a constant (+)12V input, along with the pulsed lock and unlock outputs to the factory relays.
- Many BMW's and VW's have no external switch. The switches are inside the actuator, and instead of pulsing, the proper wires will flip-flop from (+)12V to (-) ground as the door locks are operated.
- Direct-wired switches will have a (+)12V constant input and one or two (-) ground inputs, along with two output leads going directly to the lock motors.

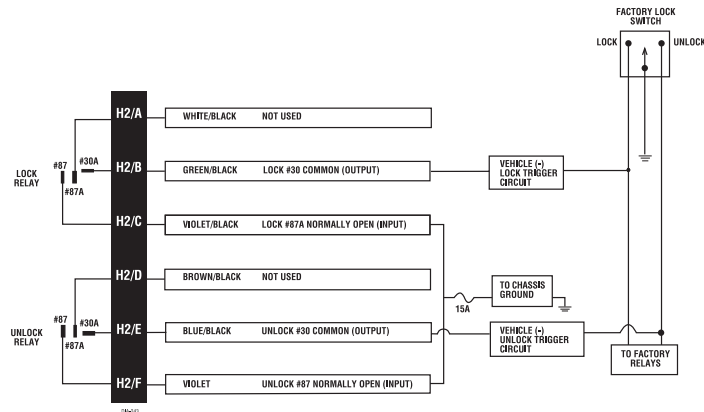
type A: positive-triggered, relay-driven system



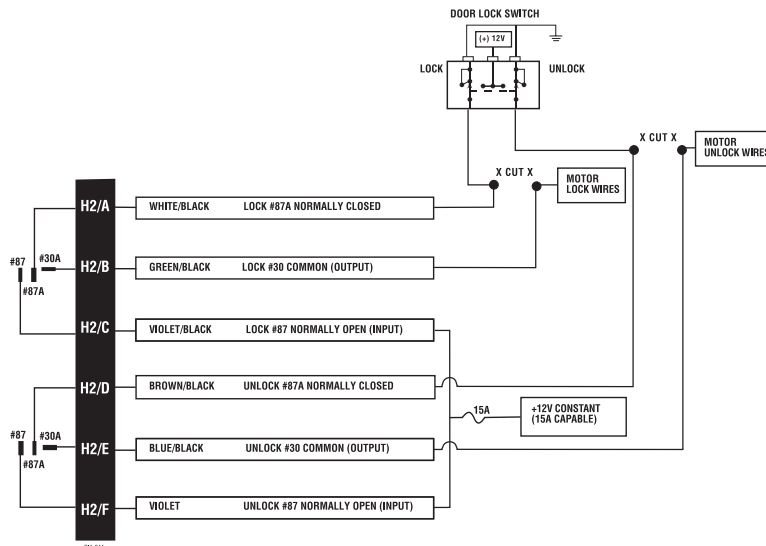
type B: negative-triggered, relay-driven system

This system is common in many Toyota, Nissan, Honda, and Saturn models, as well as Fords with the keyless-entry system (some other Fords also use Type B).

The switch will have three wires on it, and one wire will test ground all the time. One wire will pulse (-) when the switch locks the doors, and the other wire will pulse (-) when the switch unlocks the doors. This type of system is difficult to mistake for any other type.



type C: direct-wired, reversing-polarity system



testing reversing polarity systems

Use these instructions if the power door lock switch has four or five heavy-gauge wires. This type of switch has two outputs that rest at (-) ground.

important: To interface with these systems, you must cut two switch leads. The relays must duplicate the factory door lock switches' operation. The master switch will have one or two ground inputs, one (+)12V input, and two switch outputs going directly to the slave switch and through to the motors. These outputs rest at (-) ground. The lock or unlock wire is switched to (+)12V, while the other wire is still grounded, thus completing the circuit and powering the motor. This will disconnect the switch from the motor before supplying the motor with (+)12V, avoiding sending (+)12V directly to (-) ground.

It is critical to identify the proper wires and locate the master switch to interface properly. Locate wires that show voltage when the switch is moved to the lock or unlock position. Cut one of the suspect wires and check operation of the locks from both switches. If one switch loses all operation in both directions then you have cut one of the correct wires and the switch that is entirely dead is the master switch. If both switches still operate in any way and one or more door motors have stopped responding entirely, you have cut a motor lead. Reconnect it and continue to test for another wire. Once both wires have been located and the master switch identified, cut both wires and interface as described in the following paragraphs.

caution: If these wires are not connected properly, you will send (+)12V directly to (-) ground, possibly damaging the alarm or the factory switch.

- **H2/A WHITE/BLACK:** Once both door lock wires are located and cut, connect the white/black wire to the master switch side of the lock wire. The master switch side will show (+)12V when the master switch is operated to the lock position and (-) ground when the master switch is in the middle position.
- **H2/B GREEN/BLACK:** Connect the green/black wire to the other side of the lock wire. This is the motor side of the lock wire and it goes to the lock motor through the slave switch.
- **H2/C VIOLET/BLACK:** This wire must be connected to a constant (+)12 volts. The best connection point for this wire is the constant (+)12V supply for the door lock switch*, or directly to the positive (+) battery post with a fuse at the battery post.

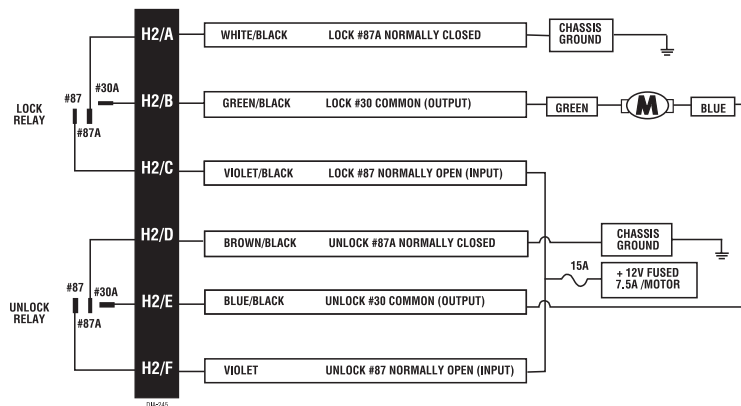
***note:** Except in GM cars with retained accessory power (RAP). In these vehicles, the (+)12V feed to the door lock switches is turned off if the doors are closed for any length of time.

note: Most direct-wired power lock systems require 20-30 amps of current to operate. Connecting the violet/black wire to a poor source of voltage will keep the door locks from operating properly.

- **H2/D BROWN/BLACK:** Connect the brown/black wire to the master switch side of the unlock wire. The master switch side will show (+)12V when the master switch is in the unlock position and (-) ground when the master switch is in the middle position.
- **H2/E BLUE/BLACK:** Connect the blue/black wire to the other side of the unlock wire.

type D: adding one or more after-market actuators

Vehicles without factory power door locks require the installation of one actuator per door. This requires mounting the door lock actuator inside the door. Other vehicles may only require one actuator installed in the driver's door if all door locks are operated when the driver's lock is used.

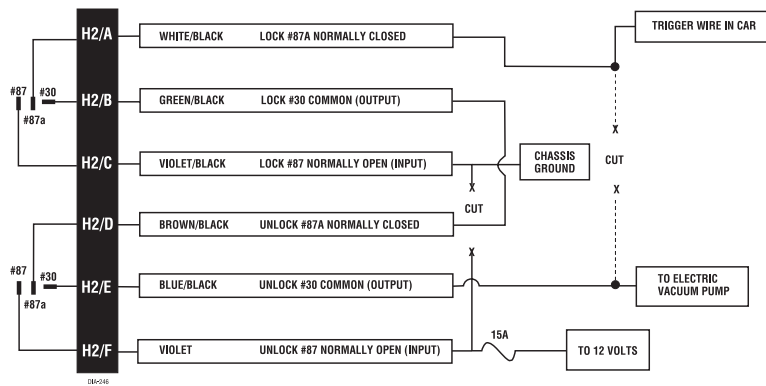


note: Adding door lock actuators can be complicated. Please contact Rattler technical support prior to attempting the addition of actuators.

type E: electrically-activated vacuum

This system is found in Mercedes-Benz and Audi 1985 and newer. The door locks are controlled by an electrically activated vacuum pump. The control wire will show (+)12V when doors are unlocked and (-) ground when locked.

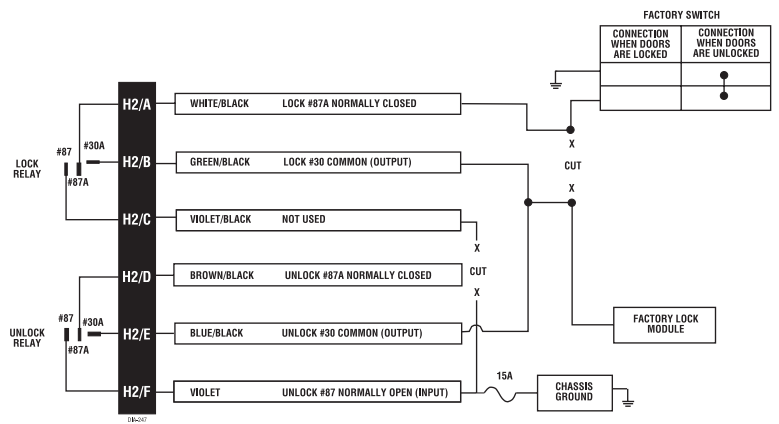
note: The system must be programmed for 3.5-second door lock pulses, and the violet jumper between the #87 lock terminal and the #87 unlock terminal must be cut. Contact Rattler technical support.



type F: one-wire system (cut to lock, ground to unlock)

This type of door lock system usually requires a negative pulse to unlock, and cutting the wire to lock the door. (With some vehicles, these are reversed.) It is found in the late-model Nissan Sentras, some Nissan 240SX, Nissan 300ZX 1992 and later. It is also found in some Mazda MPV's.

note: The violet jumper between the #87 lock terminal and the #87 unlock terminal must be cut.



type G: positive (+) multiplex

This system is most commonly found in Ford, Mazda, Chrysler and GM vehicles. The door lock switch or door key cylinder may contain either one or two resistors.

SINGLE-RESISTOR TYPE: If one resistor is used in the door lock switch/key cylinder, the wire will pulse (+)12V in one direction and less than (+)12V when operated in the opposite direction.

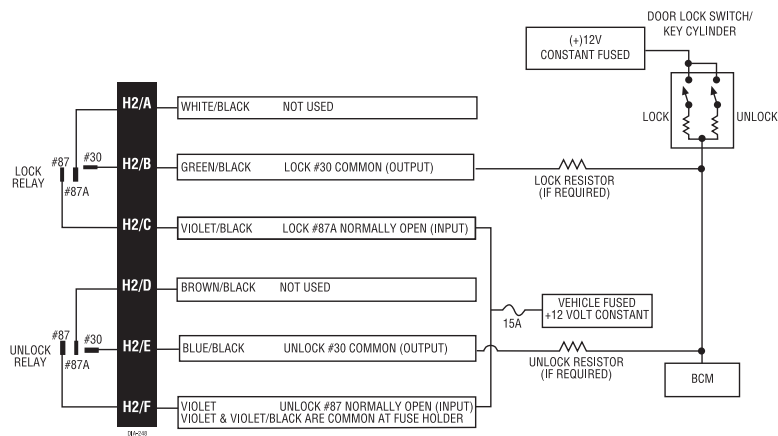
TWO-RESISTOR TYPE: If two resistors are used in the factory door lock switch/key cylinder, the switch/key cylinder will read less than (+)12V in both directions.

DETERMINING THE PROPER RESISTOR VALUES: To determine the resistor values, the door lock switch/key cylinder must be isolated from the factory door lock system. For testing, use a calibrated digital multimeter that is set to ohms.

IMPORTANT: To ensure an accurate resistance reading, do not touch the resistor or leads during testing.

1. Cut the output wire from the door lock switch/key cylinder in half.
2. Test with the meter from the switch side of the cut door lock switch/key cylinder wire to a reliable constant (+)12V source. Some good constant (+)12V references are the power input source to the door lock switch/key cylinder, the ignition switch power wire, or the (+) terminal of the battery.

3. Operate the door lock switch/key cylinder in both directions to determine the resistor values. If the multimeter displays zero resistance in one direction, no resistor is needed for that direction.
4. Once the resistor value(s) is determined, refer to the wiring diagram for proper wiring.



type H: negative (+) multiplex

The system is most commonly found in Ford, Mazda, Chrysler and GM vehicles. The door lock switch or door key cylinder may contain either one or two resistors.

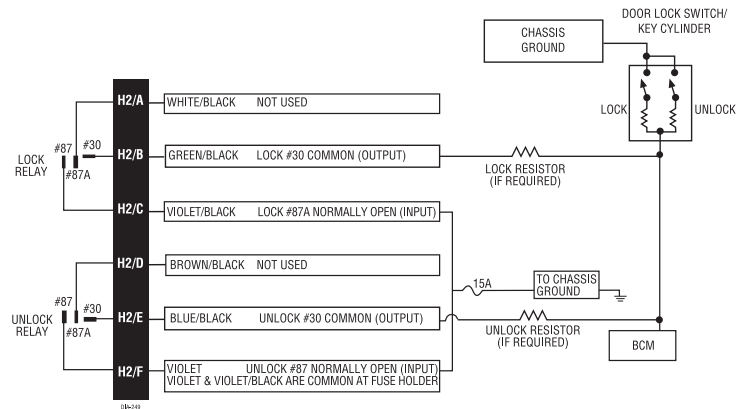
SINGLE-RESISTOR TYPE: If one resistor is used in the door lock switch/key cylinder, the wire will pulse ground in one direction and resistance to ground when operated in the opposite direction.

TWO-RESISTOR TYPE: If two resistors are used in the factory door lock switch/key cylinder, the door lock switch/key cylinder will read resistance to ground in both directions.

DETERMINING THE PROPER RESISTOR VALUES: To determine the resistor values, the door lock switch/key cylinder must be isolated from the factory door lock system. For testing, use a calibrated digital multimeter that is set to ohms.

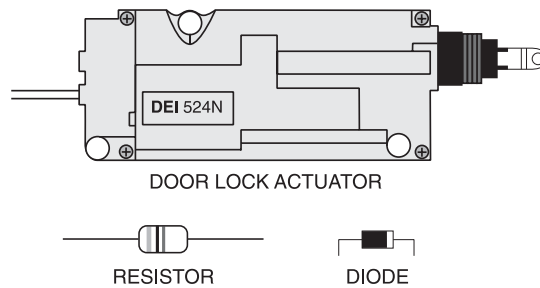
IMPORTANT: To ensure an accurate resistance reading, do not touch the resistor or leads during testing.

1. Cut the output wire from the door lock switch/key cylinder in half.
2. Test with the meter from the switch side of the cut door lock switch/key cylinder wire to a reliable ground source. Some good ground references are the ground input source to the door lock switch/key cylinder or the battery ground.
3. Operate the door lock switch/key cylinder in both directions to determine the resistor values. If the multimeter displays zero resistance in one direction, no resistor is needed for that direction.
4. Once the resistor value(s) is determined, refer to the wiring diagram for proper wiring.



Locate the suspected lock wire, and with the red meter lead still secured to a (+)12 volt source, probe the suspect wire with the black lead of the meter. Press the door lock switch to the lock position and watch the meter display. The correct wire will show a 10.00 to 12.00 volt pulse when the switch is pressed.

note: Additional parts may be required to interface with certain door lock types.



The Rattler Do-It-Yourself system comes with on board relays.

→ **step 7**

Horn Honk

This wire provides a negative pulsed output for audible confirmation of the door locks through the horn. Locate the suspected horn wire using the information sheet for your specific vehicle. With the red lead of the meter attached to a 12-volt constant source, connect the black lead to the suspect horn wire and honk the horn. The meter should read between 11.00 and 12.00 volts. Once the horn wire has been identified, strip off enough insulation off this wire to solder the BROWN (H1/10) wire from the 12-pin main harness to the horn wire and cover the solder connection with black tape.

note: The BROWN (H1/10) wire is a low current output. It is intended only to drive a relay which controls the horn. Connecting this wire directly to the horn **will** result in damage to the keyless entry system.

→ **step 8**

Dome light supervision (optional)

The dome light wire is optional and not required for normal operation, however if desired you can have the security system turn on the dome light when the system is disarmed. If you would like this feature please refer to the web site or call technical support.

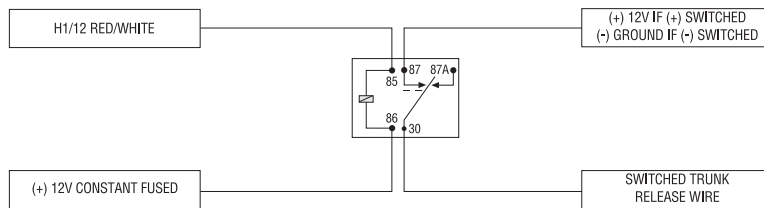
→ **step 9**

Optional connections (channels 2 and 3)

When the system receives the code controlling channel 2, for longer than 1.5 seconds, the RED/WHITE wire (H1/12-channel 2) will supply an output as long as the transmission continues. This is often used to operate a trunk/hatch release or other relay-driven function.

When the system receives the code controlling channel 3, the output is instantaneous, and the WHITE/BLUE wire (H1/3-channel 3) will supply an output as long as the transmission continues. This is used to operate an accessory function.

important: Never use these wires to drive anything but a relay or a low-current input! The transistorized output can only supply 200 mA of current. Connecting directly to a solenoid, motor, or other high-current device will cause it to fail.





104-4

→ step 10

Testing the system

With all the previous steps completed, the operation of the system can now be tested.

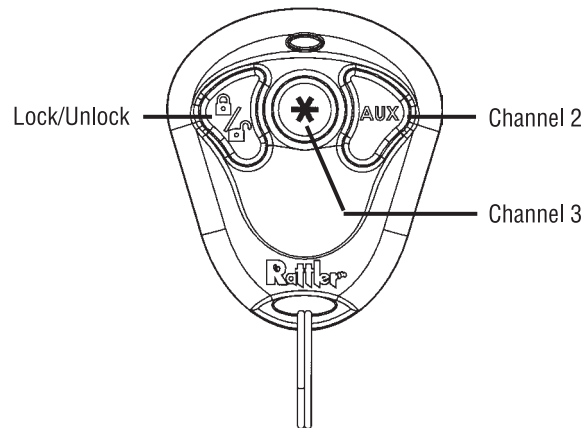
Close all the doors and press the  button on the transmitter to lock the doors, the system should honk the horn once and the parking lights should flash once. Press the  button on the transmitter to unlock the doors. The horn should honk twice and the parking lights should flash twice.

This completes the testing, if all functions do not work correctly check your wiring against the manual and verify all connections. If you still are experiencing problems contact Rattler technical support.


transmitter functions

The receiver uses a computer-based learn routine to learn the transmitter buttons. This makes it possible to assign any specific transmitter button, or combination of buttons, to any receiver function. The transmitter initially comes programmed in the Standard Configuration, but may also be customized by an authorized dealer. Unless otherwise specified, the buttons used in all of the instructions in this manual correspond to a Standard Configured transmitter.

→ **standard configuration**




Button 

The door locking and unlocking function are controlled by pressing .

Button **AUX**

This channel 2 accessory **AUX** is used for trunk release.

Button 

This channel 3 accessory  is an additional channel for optional accessory functions such as remote start.

transmitter/receiver learn routine

The system comes with 2 transmitters that have been taught to the receiver. The receiver can store up to 4 different transmitter codes in memory. Use the following learn routine to add transmitters to the system or to change button assignments if desired.

The Disarm/Program switch, plugged into the blue port, is used for programming. There is a basic sequence of steps to remember whenever programming this unit: Key, Choose, Transmit and Release.

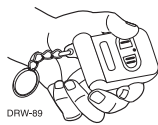


1. **Key.** Turn the ignition to the ON position.



2. **Choose.** Within 10 seconds, press and release the Disarm/Program switch the number of times for the desired function (see chart below). Then press the switch once more and hold it. The horn will honk and the LED will flash to confirm the selected channel. Do not release the Disarm/Program switch.

Channel number	Function
1	Auto Learn—all buttons
2	Lock/Unlock
3	Channel 2 Output (1.5 sec delay)
4	Channel 3/Instant output
5	Delete all Transmitters






3. **Transmit.** While holding the Disarm/Program switch, press the desired button to be programmed on the transmitter.



4. **Release.** Once the button is learned, the horn will honk, confirming transmitter programming. The Valet/Program switch can now be released.

Auto Learn function

This function provides a 1-step programming of the transmitter to the following factory default settings:

- Button —Lock/Unlock
- Button —Channel 2 output
- Button —Channel 3/Instant output

note: All programmable features will be reset to factory default settings.

Delete all Transmitters

In case the transmitter(s) is lost or stolen, this function provides removal of all transmitter(s) access from the system memory.

Learn Routine will be exited if:

- Ignition is turned off.
- Program switch is pressed too many times.
- More than 15 seconds elapses between programming steps.

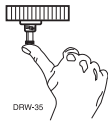
operating settings learn routine

Many of the operating settings of this unit are programmable. They can be changed whenever necessary through the Operating Settings Learn Routine™. The Valet/Program push-button switch, plugged into the blue port, is used together with a programmed transmitter to change the settings.

To enter the System Features Learn Routine™:



1. **Ignition.** Turn the ignition on, then back off. (The H1/9 YELLOW switched ignition input must be connected.)





2. **Choose.** Within 10 seconds, press and release the Disarm/Program switch the number of times for the desired feature (see chart below). Then press the switch once more and

hold it. The horn will honk and the LED will flash to confirm the selected feature. Do not release the Disarm/Program switch.



3. **Transmit.** While **HOLDING** the Valet/Program switch, you can select the desired feature settings using the transmitter.

Pressing Button  while **HOLDING** down the Valet/Program switch will program the feature to the LED ON settings. The siren will chirp once to indicate the one-chirp setting has been selected. Pressing Button  while **HOLDING** down the Valet/Program switch will change the setting to

the LED OFF setting. The siren will chirp twice indicating that the LED OFF setting has been selected.



4. **Release.** Release the Valet/Program switch.



→ to access another feature

You can advance from feature to feature by pressing and releasing the Valet/Program switch the number of times necessary to get from the feature you just programmed to the feature you wish to access. For example, if you just programmed Feature 1 and you want to program Feature 2:

1. Release the Valet/Program switch.
2. Press and release the Valet/Program switch **ONCE** to advance from Feature 1 to Feature 2.
3. Press the Valet/Program switch once more and **HOLD** it.
4. The horn will honk and the LED will flash two times to confirm that you have accessed the door lock pulse duration (feature 2).

→ to exit the learn routine

To exit the learn routine, do one of the following:

1. Turn the ignition on.

2. No activity for longer than 15 seconds.
3. Press the Valet/Program switch at least 7 times.

features menu

The factory defaults are indicated in bold text in the table below.

Feature Number	Default LED On Setting (press transmitter button 1)	LED Off Setting (press transmitter button 2)
1	Ignition-controlled door locks ON	Ignition-controlled door locks OFF
2	0.8-second Door Lock Pulse Duration	3.5-second Door Lock Pulse Duration
3	Double Pulse Unlock OFF	Double Pulse Unlock ON
4	Security Features ON	Security Features OFF
5	Code Hopping ON	Code Hopping OFF

note: The feature number indicates the number of times the LED will flash. The Factory defaults are indicated in **bold** type.

feature descriptions


- 1 **IGNITION CONTROLLED DOOR LOCKS ON/OFF:** When turned on, the doors will lock three seconds after the ignition is turned on and unlock when the ignition is turned off.
- 2 **DOOR LOCK PULSE DURATION:** Some European vehicles, such as Mercedes-Benz and Audi, require longer lock and unlock pulses to operate the vacuum pump. Programming the system to provide 3.5 second pulses will accommodate door lock interface in these vehicles. The default setting is 0.8 second door lock pulses. See *Mercedes-Benz and Audi - 1985 and Newer (Type E Door Locks section)* diagram.
- 3 **DOUBLE PULSE UNLOCK OFF/ON:** Some vehicles require two pulses on a single wire to unlock the doors. When the double pulse unlock feature is turned on, the H2/E BLUE/BLACK wire will supply two negative pulses instead of a single pulse. This makes it possible to directly interface with double pulse vehicles without any extra parts.
- 4 **SECURITY FEATURES ON/OFF:** In the ON setting, if the ignition key is turned ON, the unit will trigger a 30-second triggered sequence (horn and lights). The H1/1 ORANGE ground-when-armed output will remain active.

In the OFF setting, if the ignition key is turned ON, the trigger sequence will be disabled. Also, the ground-when-armed output is turned OFF.


- 5 **CODE HOPPING™ ON/OFF:** This system features Code Hopping™ as an option. Code Hopping™ is a feature that uses a mathematical formula to change the system's code each time the transmitter and receiver communicate. This makes the group of bits or "word" from the transmitter very long. The longer the word is, the easier it is to block its transmission to the unit. Disabling the Code Hopping™ feature lets the receiver ignore the Code Hopping™ part of the transmitted word. As a result, the unit may have better range with Code Hopping™ off.

using your system

→ **locking with transmitter**

To lock the doors press  for one second. The parking lights will flash once and the horn will honk once to confirm that the doors are locked.

→ **unlocking without transmitter**

To unlock the doors press  for one second. The parking lights will flash twice and the horn will honk twice to confirm that the doors are unlocked.

→ **ignition-controlled door locks**



If power door locks have been connected to your system and the ignition-controlled door locks are programmed on, the vehicle's door will lock three seconds after the ignition has been turned on and unlock when the ignition is turned off.

→ **turn-off system with Valet/Program switch**


Turn the ignition key to the ON position. The press and release the Valet/Program switch within 15-seconds.

note: The above only functions with security features programmed ON.


→ **panic mode**

If you are threatened in or near your vehicle, you can press  for 1.5 seconds to trigger Panic Mode on your keyless entry system and attract attention. The horn will honk and the parking lights will flash for 30-seconds. To stop the Panic Mode at any time, press  again.

→ **silent mode**

Use the Silent Mode to temporarily turn off the lock or unlock horn honks by briefly pressing **AUX** before pressing  to lock/unlock. The confirmation horn honk will then be eliminated for that one operation only.

code hopping™ re-synchronize

If the transmitter is pressed many times out of range, or the battery is removed, the transmitter may get temporarily out of sync and fail to operate the system. To synchronize the transmitter, simply press  several times within range of the vehicle. The system will automatically synchronize and the transmitter will respond normally.

system expansion items

The following items can be added to the system:

- Dome light control
- Remote start
- Window control
- Trunk release
- 2nd unlock

glossary of terms

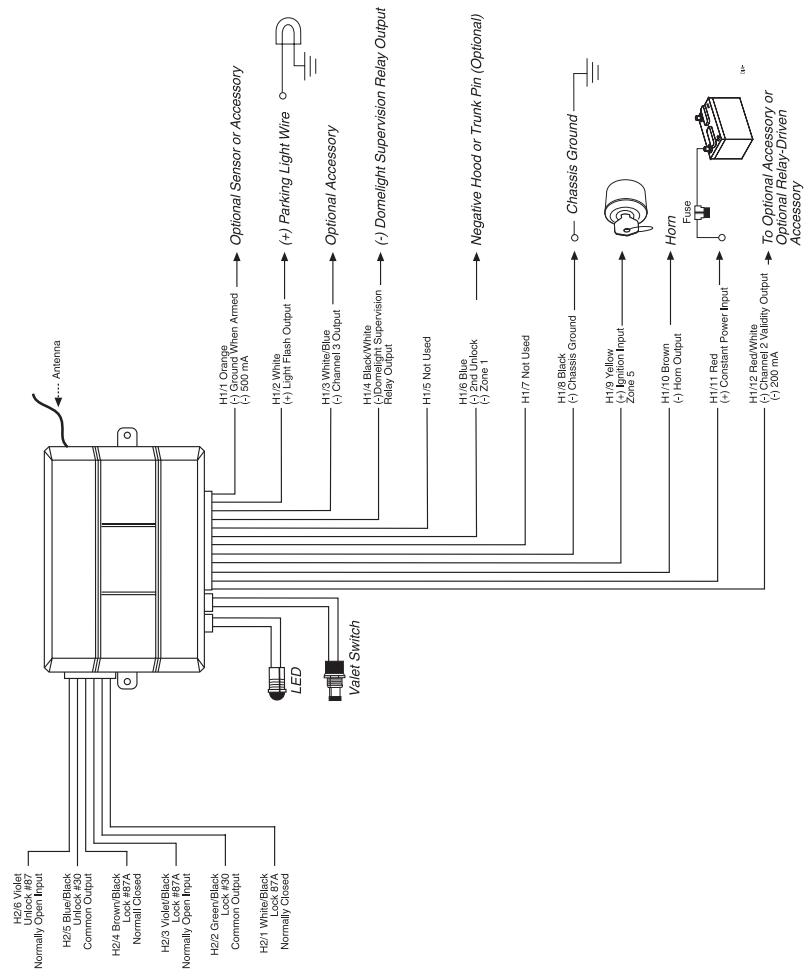
Control Module: The "brain" of your keyless entry system. Usually hidden underneath the dash area of the vehicle.

LED: A red light mounted inside the vehicle. The LED indicates the status of your system.

Transmitter: A hand-held, remote control that operates the various functions of the security system.

Valet/Program Switch: A small, push-button switch mounted inside the vehicle. This switch is used to override the security features when a transmitter is lost or damaged. It is also used to change the system features and program the transmitters.


wiring quick reference diagram




Cut along dotted line and fold for a quick and easy reference to keep in your purse or wallet.

QUICK REFERENCE GUIDE:

To lock the doors using your transmitter

- Pressing  for one second will lock the doors. The parking lights will flash once and the horn honks once to confirm the doors are locked.

To unlock the doors using your transmitter


- To unlock the doors, press  for one second. The parking lights will flash twice and the horn honks twice to confirm the doors are unlocked.

To disarm the system using the Valet/Program switch


- Turn the ignition key to the ON position. The press and release the Valet/Program switch within 15-seconds.

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- Turn the ignition key to the ON position. The press and release the Valet/Program switch within 15-seconds.

The company behind this system is Directed Electronics, Inc.

Since its inception, Directed Electronics has had one purpose, to provide consumers with the finest vehicle security and car stereo products and accessories available. The recipient of nearly 100 patents and Innovations Awards in the field of advanced electronic technology, DIRECTED is ISO 9001 registered.

Quality Directed Electronics products are sold and serviced throughout North America and around the world.

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Directed Electronics, Inc.

Vista, CA 92081

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