

# SUPPLIED COMPONENTS:



**REQUIRED TOOLS:** 



# **INSTALLATION PRECAUTIONS / NOTES:**

- This installation instruction guide is generic and is only intended to show you the basic installation steps. Images and steps may differ from your application.
- There are several mirror combinations that will work with this kit. The mirror that you have may not have all of the available features shown in the images of the instructions.
- Do not place wire harness against objects with sharp edges that may cause electrical shorting.
- Verify that power harness path will not interfere with brake, clutch, emergency brake or air bag operation.
  Use wire ties or foam tape to hold the wiring away from critical locations.
- Always wear appropriate safety gear when required.
- The required tool list is a generic list for most applications, additional tools may be required.

# A Install Overview

# 1. EC Harness Routing.

- a) This manual covers the typical wire routing. (Fig. A-1)
- b) EC mirror harness is routed from EC Mirror across headliner to driverside A-pillar.
- c) Harness is dropped down to the foot well area, where the power and ground connections are made.
- d) The remaining portion of the EC mirror harness (video cable and reverse wire) is routed along the floor and up through the rear quarter panel to the lift gate or trunk area.
- e) The reverse signal connection is made at the connector for the reverse light.
- f) The video harness must be routed through a grommet to the lift gate or along an OEM harness in a trunk.
- g) The video harness goes out through a grommet or other hole to the camera location, which is mounted on a license place bracket.

**NOTE:** There are several ways to route EC harness to rear of vehicle. Choose the best method for your installation, using this manual as a template to guide you through the install.

**FOR PICKUP TRUCKS:** Follow the above steps a - c, and then route the video harness towards the front of the vehicle through a grommet in the firewall. Drop harness down and follow the frame rails to the rear of the vehicle. Route the video harness to the license plate area. The reverse connection may need to be made in the foot well area. *Connector between video harness and camera harness are NOT water proof. You will need to protect this connection from the elements.* 

- 2. Wire Tapping.
  - a) Use Caution when tapping into power wires. Verify that you are tapping into an acceptable wire that will not impair safety or mechanical items in the vehicle.
  - b) Kit includes IDC wire taps for connecting to wires. See instructions below for proper tapping procedure. (Fig. A-2)



# Revision Date: 3/27/2011



# 1 Disassembly

# 1. Remove OEM mirror.

 a) Loosen T20 Torx screw on mirror mount and slide mirror upwards, parallel to windshield. (Fig. 1-1)

Do NOT use excessive force; damage to windshield could occur.

- - - OR - - -



**NOTE:** Gently wiggling mirror while sliding upwards will assist removal. <u>CAUTION</u>



c) Insert Panel Removal Tool under tab at bottom of mirror mount to disengage locking tab. Lift tab away from windshield and slide mirror upwards, parallel to windshield. (Fig. 1-3)

**NOTE:** Gently wiggling mirror while sliding upwards will assist removal.

Do NOT use excessive force; damage to windshield could occur.

# 2. Partially remove driver-side door seal.

a) Pull back door seal past top of A-pillar trim and down past kick-plate and scuff plate. (Fig. 1-4)









# 3. Remove driver-side sun visor hook.

a) Remove screw in sun visor hook. Sun visor may also be removed if more flex in headliner is desired. (Fig. 1-5)



# 4. Remove driver-side A-pillar trim.

- a) Remove screws or grab handles if equipped.
- b) Pull top of A-pillar trim towards passenger-side of vehicle. Once clips are released, pull trim upwards towards roof of vehicle to remove trim. (Fig. 1-6)

**NOTE:** Many vehicles are equipped with an A-pillar tether clip. All applications are different and may require Needle-nose pliers to get in and twist the tether clip, additional force to remove clip, or an additional screw removed, etc.

# Fig. 1-6





# 5. Remove driver-side scuff plate trim.

a) Using Panel Removal Tool, release clips and pull scuff plate upwards to remove. (Fig. 1-7)

# 6. Remove driver-side kick plate trim.

- a) Remove screws or hood release levers, if equipped.
- b) Pull trim panel out towards passenger side of vehicle. (Fig. 1-8)

# 7. Remove side dash trim.

- a) Insert panel removal tool in between side dash trim panel and lower dash panel to release clips.
- b) Once clips are partially released, pull trim panel outwards to remove. (Fig. 1-9)

# 8. Remove lower dash trim.

- a) Remove screws in lower portion of trim.
- b) Pull panel outwards, toward the rear of the vehicle in order to release the clips.
- c) Remove all connectors that are clipped into the lower dash trim panel before completely removing.
- d) Finish removing trim panel by continuing to pull outwards. (Fig. 1-10)

**NOTE:** For SUV's you may be able to route the video portion of the EC mirror harness through the headliner. In this case, skip to step 11.

- 9. Remove rear scuff plate trim on the driver-side of vehicle.
  - a) Using Panel Removal Tool, release clips and pull scuff plate upwards to remove. (Fig. 1-11)





# 10. Partially remove rear door seal on the driver-side of vehicle.

a) Pull door seal back past scuff plate, bottom of B-pillar, and rear quarter panel trim. (Fig. 1-12)



### 11. Partially remove rear hatch seal.

a) Pull down, past headliner and down past rear quarter panel trim. (Fig. 1-13)

NOTE: For Cars, this step is not applicable.



### 12. Remove rear quarter panel trim.

a) In order to access quarter panel trim, seat base, rear kick-plate trim, and other components may need to be removed. (Fig. 1-14)

**NOTE:** For cars, you may be able to route the EC mirror harness into the trunk without removing the rear guarter panel trim. Removing the base of the rear seats may be required to gain access to the trunk.

NOTE: The rear guarter panel trim is often difficult to remove. You may be able to carefully bend the trim down enough to reach in and use the foam tape to tape the EC mirror harness to the trim panel without completely removing the trim.

### Remove D-pillar trim panel. 13.

a) Pull top of D-pillar trim towards passenger-side of vehicle to release clips. Continue pulling to remove trim panel. (Fig. 1-15)

NOTE: For cars, this step in not applicable.



14.

Remove lift gate trim panels.

a) With lift gate open, pull trim panels down to release clips. Generally the lift gate trim is made up of multiple pieces. The top most trim piece usually needs to be removed first proceeding down to the base trim panel. (Fig. 1-16)

NOTE: For cars, the lift gate does not exist. Pull back the carpet lining in the trunk to gain access to OEM harnesses. Remove the liner from the trunk lid, unless license plate is located below the trunk lid. In that case you will not need to remove the trunk lid liner.







# 15. Remove boot from headliner to lift gate (or trunk to trunk lid).

a) In order to route video harness to the rear hatch or trunk lid, an existing wire harness boot will need to be removed. (Fig. 1-17)

**NOTE:** Not all vehicles have a boot and other vehicles have a very narrow boot that will not allow the EC mirror harness to pass through. In either of these cases, you may have to route the wire along side of the boot or with the OEM wires.



# 2 Installation

# 1. Attach EC mirror.

- a) Hold the mirror mount and slide downwards as far as possible over the windshield button, until fully seated. (Fig. 2-1)
- b) Using a T20 Torx, tighten the mirror mounting bracket screw to 15 lb-in.



2. Plug EC mirror harness connector into back of mirror. (Fig. 2-2)









# 3. Route EC mirror harness from mirror to headliner.

- a) Route EC mirror harness into groove of wire cover and attach wire cover to mirror base.
- b) Partially route EC mirror harness into headliner.
- c) Slide upper portion of wire cover up to headliner so the "forks" are held by the headliner. (Fig. 2-3)

# 4. Route EC mirror harness through headliner to driver-side A-pillar.

a) Reach in between the headliner and the vehicle roof to feel the gap, or channel, between the two. Route the EC mirror harness into this channel over to the A-pillar. (Fig. 2-4)

# 5. Route EC mirror harness down driver-side A-pillar.

- a) Route EC mirror harness along OEM harness down A-pillar into dash.
- b) Secure harness to OEM wire harness with included wire ties. (Fig. 2-5)

**NOTE:** If no OEM wire harness is available, foam tape may be used to secure the EC mirror harness to the A-pillar.

CAUTION Do NOT secure EC mirror harness to Airbag or drain tubes.

6. Route EC mirror harness through dash to fuse panel area.

Route EC mirror harness into fuse panel area.

a) Route EC mirror harness through dash from A-pillar down to fuse panel area. (Fig. 2-6)



7.

Ensure EC mirror harness is away from sharp edges and pinch points. Use wire ties or foam tape to protect harness if necessary.

a) Route EC mirror harness from dash over to the fuse panel area in preparation of connecting to power and ground. (Fig. 2-7)







# 8. Connect EC mirror harness to power.

 a) You will need to find a supply wire in your vehicle that provides +12 Volts when the vehicle ignition is in the ACC or ON position (<u>RED wire</u> <u>on EC mirror harness</u>). For HomeLink<sup>®</sup> controls you may choose to use the same switched ignition circuit or a constant +12 Volt circuit (<u>BLUE wire on EC mirror harness</u>). If choosing to use a constant +12 Volt circuit, you will need to find a wire supply in your vehicle that provides +12 Volts when the vehicle is in the ON and OFF position. (Fig. 2-8)

**NOTE:** Your automotive repair shop may be able to advise readily available locations for connecting to these power sources.



- b) Using multi-meter, locate a wire exiting the junction block that tests +12 Volts and is controlled by the ignition switch. Operate the vehicles accessories (power windows, door locks, power mirrors, etc.) to ensure the voltage does not drop on this wire. (Fig. 2-9)
- c) Ensure power in this wire is off when vehicle ignition is OFF.

**NOTE:** Suggested circuits include cigarette lighter, power port, mirror, power outside mirrors, sunroof, clock, radio, audio, etc. (Cigarette lighter and power ports may be switched or constant +12 Volts, depending on vehicle make).



- d) Using IDC wire tap, connect <u>**RED** wire</u> of the EC mirror harness to the located switched +12 Volt circuit in the vehicle. (Fig. 2-10)
- e) See "IDC Wire Tap Procedure" on Page 2, for detailed instructions on tapping into OEM harness with IDC connector.



Ensure Red wire is connected to a switched +12 Volts circuit. Verify that the power in the located wire is OFF when vehicle ignition is OFF.





**NOTE:** If desired option is to have HomeLink<sup>®</sup> on switched ignition circuit, secure Blue wire of EC mirror harness to the RED wire of the EC mirror harness using an IDC Wire Tap, instead of finding and connecting to constant +12 Volt circuit shown below.

- f) Using multi-meter, locate a wire exiting the junction block that tests +12 Volts and is always on. Operate the vehicles accessories (power windows, door locks, power mirrors, etc.) to ensure the voltage does not drop on this wire. (Fig. 2-11)
- g) Ensure power in this wire is on when vehicle ignition is ON and OFF.

**NOTE:** Suggested circuits include cigarette lighter, power port, dome light, etc. (Cigarette lighter and power ports may be switched or constant +12 Volts, depending on vehicle make).



Do NOT connect to any driving controls or safety circuits such as airbags.

- h) Using IDC Wire Tap, connect <u>**BLUE wire**</u> of the EC mirror harness to the located constant +12 Volt circuit in the vehicle. (Fig. 2-12)
- i) See "IDC Wire Tap Procedure" on Page 2, for detailed instructions on tapping into OEM harness with IDC connector.





# 9. Connect EC mirror harness to ground.

a) You will need to locate an accessible ground wire. Find a ground bolt that goes into the frame with an OEM wire attached. (Fig. 2-13)

**NOTE:** Your automotive repair shop may be able to advise readily available locations for connecting to an appropriate ground.

- b) Using IDC Wire Tap, connect <u>**BLACK wire**</u> of the EC mirror harness to the located ground wire in the vehicle. (Fig. 2-14)
- c) See "IDC Wire Tap Procedure" on Page 2, for detailed instructions on tapping into OEM harness with IDC connector.









Fig. 2-16

a) Route remaining EC mirror harness down to kick panel and along

Continue routing remaining EC mirror harness to rear of vehicle

driver-side scuff plate.

(green wire and video harness).

10.

 b) Use wire ties or foam tape where appropriate to ensure harness won't rattle. Secure harness away from pinch points, sharp edges, and trim panel clips. (Fig. 2-15)

- c) Route EC mirror harness behind B-pillar trim and back to rear quarter panel or trunk area.
- d) Use wire ties or foam tape where appropriate to ensure harness won't rattle. Secure harness away from pinch points, sharp edges, and trim panel clips. (Fig. 2-16)

**NOTE:** If possible, route the EC mirror harness behind the B-pillar trim without removing. B-pillar generally contains seatbelt, which makes it hard to remove.

- e) Route EC mirror harness from rear quarter panel trim to the reverse signal at the reverse light.
- f) Use wire ties or foam tape where appropriate to ensure harness won't rattle. Secure harness away from pinch points, sharp edges, and trim panel clips. (Fig. 2-17)

**NOTE:** If rear quarter panel trim was not removed, carefully bend the trim down enough to reach in and use the foam tape to tape the EC mirror harness to the trim panel.



Fig. 2-19

# 11. Connect EC mirror harness to reverse signal.

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- a) Gain access to connector at back of reverse light, in order to find reverse signal.
- b) Using multi-meter, locate a wire exiting the reverse light connector that tests +12 Volts and is controlled by placing the vehicle in reverse. (Fig. 2-18)
- c) Ensure power in this wire is off when vehicle is not in reverse.

Ensure parking brake is set. Test reverse line with vehicle in Accessory mode so that the vehicle doesn't drive off while testing.

- d) Using IDC Wire Tap, connect <u>GREEN wire</u> of the EC mirror harness to the located reverse circuit. (Fig. 2-19)
- e) See "IDC Wire Tap Procedure" on Page 2, for detailed instructions on tapping into OEM harness with IDC connector.

# 3 Test Preparation and Testing

# 1. Test the Auto-Dimming feature.

- a) With the vehicle in a fairly well-lit area, cover the forward looking photocell on the back of the mirror with your hand or a dark cloth.
- b) Turn the ignition to the "ON" position.
- c) To make sure the auto-dimming feature is on, verify that the GREEN LED to the left of the center button is on. If it is not on, press the "也" button to turn the GREEN LED on.
- d) At this time, the mirror will begin to darken.
- e) Remove your hand or the cloth from the forward looking photo cell and the mirror will begin to clear.

# 2. Test the Compass feature (Not applicable for all models).

a) Verify that either a direction, such as NE, or "C" is displayed in the display window. If not, ensure the compass feature is turned on by pressing the "+" button.

Note: If your mirror is a single button mirror, press the " $\mathcal{O}$ " button once to disable the auto-dimming. Press and hold the " $\mathcal{O}$ " button for 3 seconds to disable the compass, if applicable.

Note: If your mirror has HomeLink<sup>®</sup> buttons, press the " $\oplus$ " button once to disable the auto-dimming. Press the "- $\hat{+}$ " button once to disable the compass.

# 3. Test the HomeLink<sup>®</sup> feature (Not applicable for all models).

- a) Turn the ignition to the "OFF" position (unless you connected the BLUE wire to a switched +12 Volt circuit, in which case the ignition must remain in the "ON" position).
- b) Ensure that the Compass display is no longer visible and the Green LED is no longer on (unless you connected the BLUE wire to a switched +12 Volt circuit).
- c) Press each HomeLink<sup>®</sup> button ("�," "�," & "♠"), one at a time, and verify that the LED indicator to the left of the center button illuminates with a **RED** LED when buttons are pressed.
- d) Testing is now complete.
- 4. Reinstall in reverse order, all trim pieces removed during installation.

# 5. Verify each reinstalled component for proper fit and function.

WARNING: <u>DO NOT</u> spray glass cleaner or other cleaning liquid directly onto the mirror as it may damage the electronics.







# 4 Calibration & Programming

- 1. Adjust compass zone (Not applicable for all models).
  - a) The zone setting is factory preset to zone 8. Refer to the Compass Calibration Zone Map (Fig. 4-1) to find the correct compass zone setting for your geographical location.
  - b) To change the zone setting, press and hold the "-<sup>\*</sup>," button until a number appears in the display. Press the "-<sup>\*</sup>," button repeatedly until desired compass zone number is reached. Within 5 seconds the display will show a compass heading again.

NOTE: Replace "", with "-+-" for single button compass mirror.

c) The Compass zone is now set.

# 2. Calibrate compass (Not applicable for all models).

- a) Drive to an open, level area, away from large metallic objects or structures.
- b) If the display reads "C," the mirror is ready to be calibrated. If it isn't, press and hold the "-♣-" button between 9 and 12 seconds. Release the button when a "C" appears in the display.

- c) Drive slowly in a circle until the "C" disappears and a directional heading is displayed.
- d) The compass is now calibrated.

# 3. Program the HomeLink<sup>®</sup> feature (Not applicable for all models).

a) For best results and step by step directions, visit the HomeLink<sup>®</sup> web site at <u>www.homelink.com</u>. If required, you may call HomeLink<sup>®</sup> customer support at 1-800-355-3515.



Before programming HomeLink<sup>®</sup> to a garage door opener or gate operator, make sure that people and objects are out of the way of the device to prevent potential harm or damage. Your motorized garage door or gate will open and close while you are programming HomeLink<sup>®</sup>. Do not program HomeLink<sup>®</sup> if people or pets are in the path of the door or gate. A moving garage door or gate can cause serious injury or death to people and pets or damage to objects.

Vehicle exhaust contains carbon monoxide, a dangerous gas. Do not run the vehicle's engine while programming HomeLink<sup>®</sup>. Exhaust gas can cause serious injury or death. When programming a garage door opener, it is advised to park outside of the garage.

Do not use HomeLink<sup>®</sup> with any garage door opener that lacks safety stop and reverse features as required by U.S. federal safety standards (this includes any garage door opener model manufactured before April 1, 1982). A garage door that cannot detect an object signaling the door to stop and reverse - does not meet current U.S. federal safety standards. It is also recommended that a new battery be replaced in the hand held transmitter of the device being trained to HomeLink<sup>®</sup> for quicker training and accurate transmission of the radio frequency.



b) For first time training, begin programming by clearing memory. Press and hold the two outer HomeLink<sup>®</sup> buttons ("<sup>\*</sup>?" & "<sup>\*</sup>?"), releasing only when the HomeLink<sup>®</sup> indicator light begins to flash after 10 seconds. Do not hold buttons for more than 20 seconds. (Fig. 4-2)

**NOTE:** Do not repeat this step when programming additional devices to remaining buttons.

**NOTE:** It is also suggested that upon the sale of the vehicle, the programmed HomeLink<sup>®</sup> buttons be erased for security purposes. To erase the programmed buttons, perform the procedure shown in step "b).' **(Fig. 4-2)** 

- c) Position the hand-held transmitter 1-3 inches away from the HomeLink<sup>®</sup> button, keeping the HomeLink<sup>®</sup> indicator light in view.
- d) Using both hands, simultaneously press and hold both the desired HomeLink<sup>®</sup> button and hand held transmitter button. DO NOT release until the HomeLink<sup>®</sup> indicator light flashes slowly and then rapidly.
- e) When the indicator light flashes rapidly, both buttons may be released. (The rapid flashing indicates successful training.) (Fig 4-3)

NOTE: Canadian radio-frequency laws require transmitter signals to "time-out" or quit after several seconds of transmission - which may not be long enough for HomeLink® to pick up the signal during programming. Similar to this Canadian law, some U.S. gate operators are designed to "time-out" in the same manner. If you live in Canada or you have difficulties programming a gate operator by using the "Programming" procedures (regardless of where you live), replace the above Programming HomeLink® step "d)" with the following:

Using both hands, simultaneously press and hold both the desired HomeLink® button and hand held transmitter button. During programming, your hand-held transmitter may automatically stop transmitting. Continue to press and hold the desired HomeLink® button while you press and re-press ("cycle") your hand-held transmitter every two seconds until the frequency signal has been learned. The indicator light will flash slowly and then rapidly after several seconds upon successful training. DO NOT release until the HomeLink® indicator light flashes slowly and then rapidly. When the indicator light flashes rapidly, both buttons may be released. (The rapid flashing indicates successful training.)

**NOTE:** If programming a Canadian garage door opener or gate, it is advised to unplug the device during the HomeLink<sup>®</sup> programming and also if performing the "cycling" process to prevent possible motor burn-up.

- f) Press and hold the trained HomeLink<sup>®</sup> button and observe the indicator light. (Fig 4-4)
- g) If the indicator light is solid/continuous, training is complete and your device should activate when the HomeLink<sup>®</sup> button is pressed and released.
- h) If the indicator light blinks rapidly for 2 seconds and then turns to a solid/continuous light, proceed with the following training instructions for a rolling code device.







**NOTE:** A second person may make the following steps quicker and easier. Please use a ladder or other device. Do not stand on your vehicle to perform the next steps.

- i) At the garage door opener receiver (motorhead unit) in the garage, locate the "learn" or "smart" button (usually near where the hanging antenna wire is attached to the unit). If there is difficulty locating the training button, reference the garage door opener's manual or contact HomeLink<sup>®</sup> customer support at 1-800-355-3515.
- j) Press and release the "learn" or "smart" button (the name and color of the button may vary by manufacturer). (Fig 4-5)

**NOTE:** Once the button is pressed, there are 30 seconds in which to initiate the next step.

 k) Return to the vehicle and firmly press and hold the SAME partially trained HomeLink<sup>®</sup> button for two seconds and release. Repeat the "press/hold/release" sequence up to 3 times, if necessary, to complete the training process. (Fig 4-6)





- After the 30 seconds are up from pressing the garage door opener receiver (motorhead unit) in the garage, press and hold the trained HomeLink<sup>®</sup> button and observe the indicator light. (Fig 4-7)
- m) If the indicator light is solid/continuous, training is complete and your device should activate when the HomeLink<sup>®</sup> button is pressed and released.
- n) To train additional HomeLink® buttons, begin with step "c)."

**NOTE:** Retain the original hand-held transmitter of the RF device you are programming for use in other vehicles, as well as for future HomeLink<sup>®</sup> programming.

FCC ID: NZLGHSHL4. IC: 4112A-GHSHL4





## EC Mirror Harness to Mirror Connector Pin-Out

NO.	GAUGE	COLOR	FUNCTION	
1	24	Black	Video (-) Signal	
2	24	Red	Video (+) Signal	
3	22	Black	Ground	
4				
5	22	Green	Reverse	
6	22	Red	Ignition	
7	24	Green	Camera (+) Power	
8	24	White	Camera (-) Ground	
9				
10	22	Blue	HomeLink (Ignition or Battery)	
11				
12				

# Camera to EC Mirror Harness Connector Pin-Out

NO.	GAUGE	COLOR	FUNCTION	COLOR OF MATING WIRE ON EC MIRROR HARNESS
1	24	Red	Camera (+) Power	Green
2	24	Black	Camera (-) Ground	White
3	24	Brown	Drain	Yellow
4	24	White	Video (-) Signal	Black
5	24	Yellow	Video (+) Signal	Red









For customer or technical support please call VOXX support:

# 1-800-300-4550

9am – 9pm (Eastern) Mon – Friday 10am – 2pm (Eastern) Sat

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