

OWNER'S  
MANUAL

# *Directed* **AUDIO**<sup>®</sup>

model | CSX650

## **CONGRATULATIONS**

Congratulations for choosing a Directed SX series neodymium component speaker system from Directed Electronics.

Directed Electronics has been the industry leader in high-quality automotive security and audio equipment since 1990, and with the introduction of the SX line of high-quality loudspeakers for the automobile, Directed continues to set new standards of performance, reliability, and affordability in the mobile electronics industry.

Featuring a shallow injection molded basket with metallized polypropylene

vacuum-formed cones and neodymium motors, the Directed SX line of automotive speakers will excite and delight the auto sound enthusiast with years of high quality audio reproduction.

Directed SX speakers are covered by a two-year limited warranty. Be sure to retain your original sales receipt, and refer to the warranty section of this guide for full details about your coverage.

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## **LIMITED TWO-YEAR CONSUMER WARRANTY**

Directed Electronics, Inc. promises to the original purchaser, to replace this product should it prove to be defective in workmanship or material under normal use, for a period of two years from the date of purchase from the dealer as indicated by the date code marking of the product PROVIDED the product was installed by an authorized Directed dealer. During this two-year period, there will be no charge for this replacement PROVIDED the unit is returned to DIRECTED ELECTRONICS, INC., shipping pre-paid. If the unit is installed by anyone other than an authorized Directed dealer, the warranty period will be one year from the date of purchase by the dealer as indicated by the date code marking of the product. This warranty is non-transferable 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 damage to the unit caused by installation or removal of the unit. During this one-year period, there will be no charge for this replacement PROVIDED the unit is returned to DIRECTED ELECTRONICS, INC., shipping pre-paid. This warranty is void if the product has been damaged by accident or unreasonable use, neglect, improper service or other causes not arising out of defects in materials or construction. Units which are found to be damaged by abuse resulting in thermally damaged voice coils are not covered by this warranty but may be replaced at the absolute/sole discretion of DIRECTED ELECTRONICS, INC. ALL WARRANTIES INCLUDING BUT NOT LIMITED TO EXPRESS WARRANTY, IMPLIED WARRANTY, WARRANTY OF MERCHANTABILITY, FITNESS

FOR PARTICULAR PURPOSE, AND WARRANTY OF NON-INFRINGEMENT OF INTELLECTUAL PROPERTY ARE EXPRESSLY EXCLUDED TO THE MAXIMUM EXTENT ALLOWED BY LAW, AND DIRECTED ELECTRONICS, INC. NEITHER ASSUMES NOR AUTHORIZES ANY PERSON TO ASSUME FOR IT ANY LIABILITY IN CONNECTION WITH THE SALE OF THE PRODUCT. DIRECTED ELECTRONICS, INC. HAS ABSOLUTELY NO LIABILITY FOR ANY AND ALL ACTS OF THIRD PARTIES INCLUDING ITS AUTHORIZED DEALERS OR INSTALLERS. Unit must be returned to DIRECTED ELECTRONICS, INC., postage pre-paid, with bill of sale or other dated proof of purchase bearing the following information: consumer's name, telephone number, and address, authorized dealer's name and address, and product description. Note: This warranty does not cover labor costs for the removal and reinstallation of the unit. IN ORDER FOR THIS WARRANTY TO BE VALID, YOUR UNIT MUST BE SHIPPED WITH PROOF OF INSTALLATION BY AN AUTHORIZED DIRECTED ELECTRONICS, INC. DEALER. ALL UNITS RECEIVED BY DIRECTED ELECTRONICS, INC. FOR WARRANTY REPAIR WITHOUT PROOF OF DIRECTED ELECTRONICS, INC. DEALER INSTALLATION WILL BE COVERED BY THE LIMITED 1 YEAR PARTS AND LABOR WARRANTY. Note: This warranty does not cover labor costs for the removal and reinstallation of the unit. BY PURCHASING THIS PRODUCT, THE CONSUMER AGREES AND CONSENTS THAT ALL DISPUTES BETWEEN THE CONSUMER AND Directed SHALL BE RESOLVED IN ACCORDANCE WITH CALIFORNIA LAWS IN SAN DIEGO COUNTY, CALIFORNIA.

## **FEATURES**

### **Woofers**

- Thin shallow mount light-weight speaker.
- Shallow injection-molded basket.
- Vented spider area for higher power handling.
- Metallized polypropylene vacuum-formed woofer cone.
- Rubber surround for better low frequency linearity.
- 25mm four-layer voice coil with Kapton polyimide former.

### **Tweeters**

- New hotter 19mm ferrofluid cooled silk dome tweeter with neodymium magnet.
- Angled 19mm flush and surface mount tweeter housings provided.

### **Crossover**

- Outboard 6/12 dB per octave crossovers with Zobel compensation, and dual tweeter protection elements.
- Glass epoxy PCB for better system power handling.

## **WARNING**



High-powered car audio systems may produce sound pressure levels that exceed the threshold at which hearing loss may result.

They may also impair a driver's ability to hear traffic sounds or emergency vehicles. Use common sense and practice safe listening habits when listening to or adjusting your audio system.

## **SOUND QUALITY**

Obtaining the highest quality sound reproduction in the mobile environment requires installation techniques and knowledge of vehicle interiors that go far beyond simple replacement of stock speakers. Speaker location, orientation, phasing, and the vehicles interior materials are important considerations when

designing and installing an auto sound system.

To achieve the best sound quality possible from your Directed SX loudspeakers, Directed recommends the installation be performed by an MECP certified technician.

## **INSTALLATION PRECAUTIONS**

The Directed CSX series neodymium separates are designed for installation into factory speaker locations, custom mounting enclosures or any flat mounting surface inside the vehicle. The following precautions and instructions cover the basic and most common types of installation.

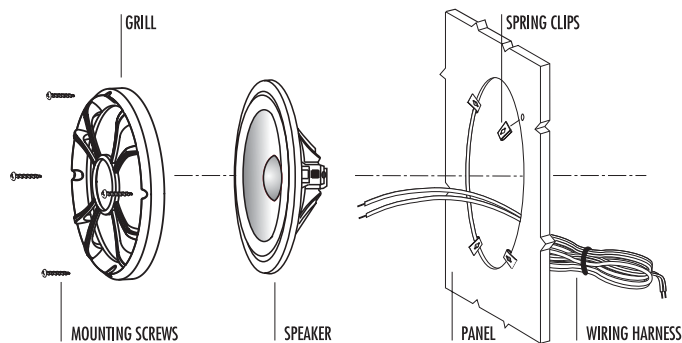
- Check behind panels for clearance of metal brackets, hoses, and wire harnesses before making any cuts.
- When mounting speakers into doors, roll the window up and down to check clearance of the glass and window regulator.
- Make sure the mounting holes are the correct size for the speaker. Undersized holes can cause speaker distortion or shorting of the speaker leads to the chassis ground. Oversized holes will not allow the mounting screws to make sufficient contact with the panel, allowing the speaker to become loose.
- Always protect the wires when routing by avoiding sharp metal edges, moving parts such as heater or vent controls, clutch pedals, brake pedals, steering columns, and power window motors and gears.
- When routing wires through metal panels and doorjamb always use vinyl tubing and grommets for protection and a professional-looking installation.

## WOOFER INSTALLATION

Review the *Installation Precautions* section of this guide before proceeding.

1. Place the cutout template against the mounting surface in the desired location for the woofer.
2. Draw the speaker hole and mounting screw locations on the panel with a marker.
  - The CSX650 woofer requires a 5-1/2" hole.
3. Remove the cutout template and carefully cut the speaker hole to the proper size. If there is a pre-existing hole that is undersize, mark it and cut it to the proper size. If the hole is oversize, it is recommended that a spacer be built to compensate.
4. Pre-drill the holes for the mounting screws using a 1/8" drill bit.
5. Route the supplied wires through the speaker location to the crossover.
6. Install the screw speed clips if not installing into a metal panel.
7. Connect the speaker wire to the woofer taking care to observe proper speaker polarity.
8. Place the woofer into the hole and attach woofer and grill as shown below using the supplied screws. Take care at this time not to slip with a tool while mounting or the speaker could be damaged.

FIGURE 1—WOOFER INSTALLATION



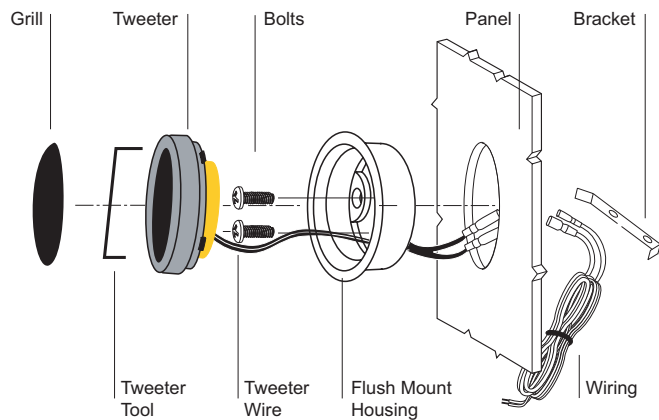
## TWEETER INSTALLATION

Review the *Installation Precautions* section of this guide before proceeding.

### Flush Mounting into Mounted Panels

1. Determine the tweeter mounting location, then route the wires from the crossover to the tweeter location.
2. Mark the center point of the tweeter location.
3. If using a hole saw, first drill a pilot hole, then cut out the hole using a standard 1-3/4" hole saw.
4. If not using a hole saw, use either the cardboard packaging for the tweeters or the surface mount trim ring as a template to mark the proper size hole. Cut out the hole.
5. Remove the tweeter grill, and the tweeter from the surface mount housing using the tweeter tool (turn CW). Insert the proper length machine bolt through the housing and connect to the metal mounting bracket. (See Figure 2.)
6. Connect the speaker wires observing the correct polarity.
7. Press the metal bracket portion of the assembly through the hole.
8. Screw the bolts in until the tweeter housing is firmly mounted to the panel.
9. Insert the tweeter into the housing and use the tweeter tool and rotate the tweeter CCW till locked. Attach the tweeter grill.

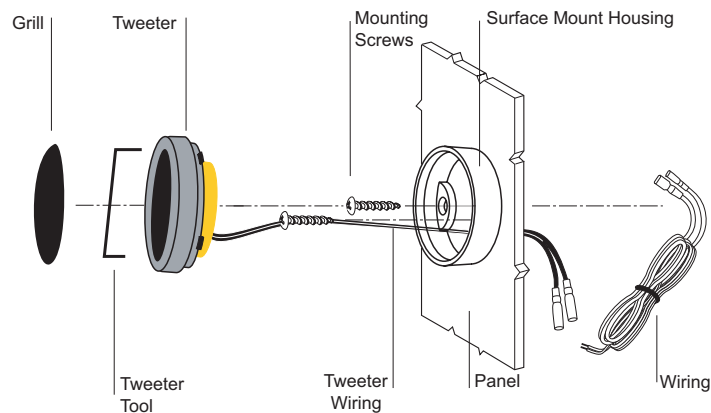
FIGURE 2—FLUSH MOUNTING REMOVED PANELS



### Tweeter Surface Mounting

1. Determine the tweeter mounting location, then route the wires from the crossover to the tweeter location.
2. Remove the tweeter grill, and then remove the tweeter from the surface mount housing using the tweeter tool (turn CW). Place the surface mount housing against the panel and mark the two holes at the rear of the housing.
3. Drill the smaller off-center holes using a 1/8" drill bit. These are the mounting screw holes.
4. Drill a larger center hole using a 3/8" drill bit, insert a grommet and route the speaker wire from the crossover through the grommet.
5. After removing the surface mount tweeter assembly, route the tweeter wires through the larger center hole to the speaker wires from the crossover. (See Figure 4.)
6. Insert the excess speaker wire into the hole and position the housing so the housing will not pinch the wires after final mounting.
7. Attach the housing using the supplied screws of the correct length for a solid mount.
8. Insert the tweeter into the housing and use the tweeter tool and rotate the tweeter CCW till locked. Attach the tweeter grill.

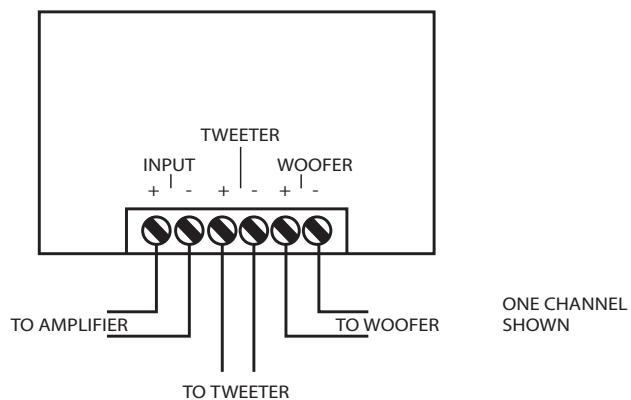
FIGURE 3—TWEETER SURFACE MOUNTING



## **CROSSOVER INSTALLATION**

Review the *Installation Precautions* section of this guide before proceeding.

**FIGURE 5—CONNECTING THE CROSSOVERS**



## **SPECIFICATIONS**

<b>Model</b>	<b>CSX650</b>
<b>System</b>	
Frequency response	40Hz-21kHz
Power handling RMS	50W
Power handling Peak	100W
Impedance	3.6 Ohms
Efficiency (1W/1M)	89
Magnet type	Neodymium
<b>Woofers</b>	
Mounting depth	1.772"
Mounting hole diameter	5.5"
Vas	6.45L
Fs	78.91 Hz
Qts	0.58
Magnet weight	30.2 g
Magnet diameter	1"
Voice coil former	Kapton
Voice coil diameter	1"
Voice coil layers	4
<b>Tweeter</b>	
Fs	1.9 kHz
Efficiency (1W/1M)	91dB
Magnet diameter	3/4"
Voice coil diameter	3/4"
Mounting hole diameter	1-3/4"
<b>Crossover</b>	
	High pass 12 dB per octave with tweeter protection 6 dB low pass with Zobel network and dual stage tweeter

# Directed AUDIO

Directed Electronics, Inc.  
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The company behind this system is Directed Electronics, Inc. Since its inception, Directed has had one purpose, to provide customers with the finest vehicle security, car stereo products, rear seat entertainment, and accessories available. The recipient of more than 20 patents in the field of advanced electronic technology, Directed is ISO 9001 registered.

Directed® is committed to delivering world-class quality products and services that excite and delight our customers.

Quality Directed products are sold and serviced throughout North America and around the world  
Call 800 274 0200 for more information about our products and services

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