

# OWNER'S MANUAL

## C1-690

6 x 9-inch (150 x 230 mm) 2-Way Component System

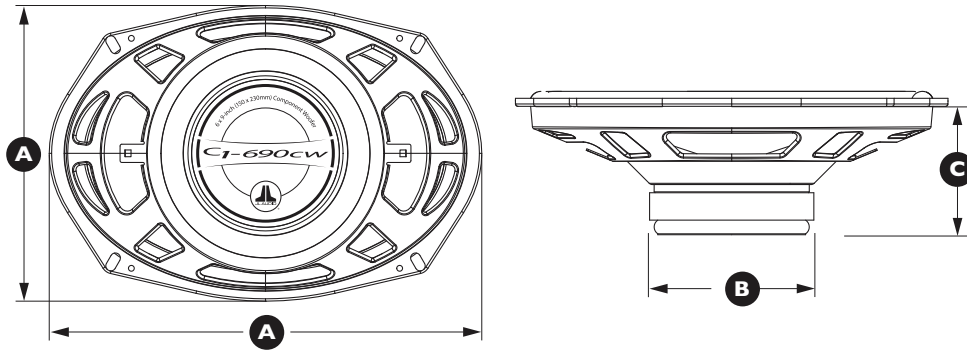
*Thank you for choosing JL Audio loudspeakers for  
your automotive sound system.*

*We strongly recommend that you have your new loudspeakers installed by  
an authorized JL Audio dealer. Your authorized dealer has the training,  
expertise and installation equipment to ensure  
optimum performance of these loudspeakers in your vehicle.*

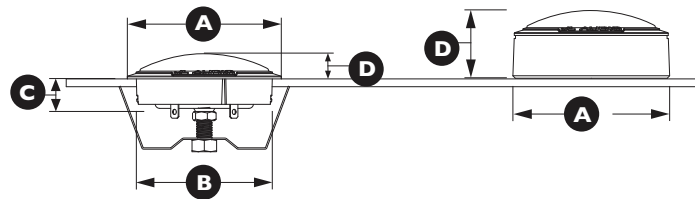
*If you decide to install the loudspeakers yourself, please read this manual  
thoroughly to familiarize yourself with their installation  
requirements and setup procedures.*

*Should you have any questions regarding the instructions in this manual,  
please contact your authorized JL Audio dealer for assistance, or call the  
JL Audio Technical Support Department at (954) 443-1100  
during business hours (USA - Eastern Time Zone).*

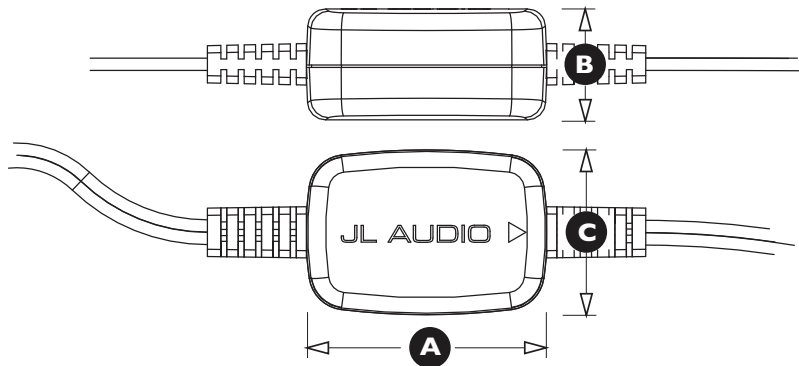




Woofer Physical Dimensions	
<b>Frame Outer Diameter (A)</b>	6.38 x 9.33 in. / 162 x 237 mm
<b>Motor Outer Diameter (B)</b>	3.54 in. / 90 mm
<b>Mounting Depth (C)</b>	2.75 in. / 70 mm



Tweeter Fixture Physical Dimensions	Flush-Mount	Surface-Mount
<b>Fixture Outer Diameter (A)</b>	1.97 in / 50 mm	2.01 in / 51 mm
<b>Fixture Mounting Hole Diameter (B)</b>	1.75 in / 45 mm	N/A
<b>Fixture Mounting Depth (C)</b>	0.40 in / 10 mm	N/A
<b>Tweeter Frontal Protrusion (D)</b>	0.32 in / 8 mm	0.87 in / 22 mm



Crossover Network Physical Dimensions	
<b>Width (A)</b>	1.96 in / 50 mm
<b>Height (B)</b>	0.90 in / 23 mm
<b>Depth (C)</b>	1.34 in / 34 mm

Due to ongoing product development, all specifications are subject to change without notice.

## C1-690 SPECIFICATIONS:

**Continuous Power Handling:** 60 Watts

**Recommended Amp Power:** 10-100 Watts per channel (RMS)

**Efficiency:** 91.5 dB @ 1W / 1m | 97.5 dB @ 1W / 0.5m

**Sensitivity:** 94.0 dB @ 2.83V / 1m

**Nominal Impedance:** 4 ohm

**Frequency Response:** 39Hz - 22 KHz  $\pm$  3 dB

### Woofers:

Injection-molded, mineral-filled, polypropylene cone

Rubber, positive roll surround

1.2 in. (30 mm) diameter voice coil

Flat, Conex® spider with integrated lead wires

Ferrite Magnet

### Tweeter:

Edge-driven, silk-suspended aluminum dome

1.0 in. (25 mm) diameter diaphragm / voice coil

Ferrofluid cooling / damping

Neodymium magnet

### Crossover:

Natural roll-off, low-pass

2nd order, high-pass filter with inductor and

electrolytic capacitor

### Included Components and Parts:

- Two (2) C1-690cw 6 x 9-inch (150 x 230 mm) woofers
- Two (2) C1-100ct 1.0-inch (25 mm) tweeters
- Two (2) surface-mount tweeter fixtures
- Two (2) C1-100cthp in-line, high-pass filters on 4 ft. (1.2 m) wire harnesses
- Two (2) metal spring clips (for tweeter flush-mounting)
- Eight (8) #8 x 1.50-inch (38mm) sheet metal screws
- Four (4) #6 x .625-inch (22 mm) sheet metal screws
- Eight (8) mounting clips
- Two (2) 4.7 mm female crimpable connectors
- Two (2) 2.8 mm female crimpable connectors
- Two (2) 10mm stud bolts with fixed M4 nut
- Two (2) 25mm stud bolts with fixed M4 nut
- Two (2) M5 nuts
- Two (2) bottom-mount spacer adaptor rings

## GETTING STARTED

- Turn off the audio system. It is also advisable to disconnect the negative (-) terminal of your vehicle's battery whenever performing installation work.
- Before cutting, drilling or inserting any screw, check clearances on both sides of the planned mounting surface. Also check for any potential obstacles, such as window tracks and motors, wiring harnesses, etc. Check both sides of the vehicle, many vehicles are not symmetrical!
- Always wear protective eyewear.

## SPEAKER PLACEMENT CONSIDERATIONS

Grilles are not included with C1 speakers, as they are designed for installation into OEM (factory) speaker locations, located behind factory grilles. Should you need grilles, you will need to purchase aftermarket grilles separately.

### **!! WARNING**

**Prolonged exposure to sound pressure levels in excess of 100dB can cause permanent hearing loss. These high-performance loudspeakers can exceed this level. Please exercise restraint in their operation in order to preserve your ability to enjoy their fidelity.**

## SPEAKER PLACEMENT CONSIDERATIONS

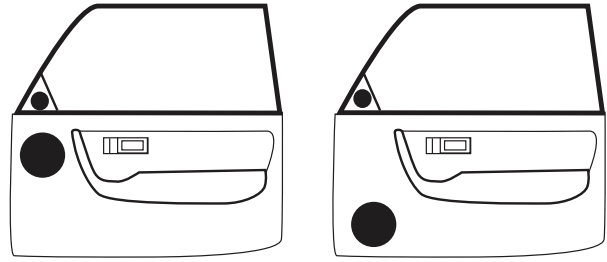
A component system gives you the ability to place the woofer and tweeter separately in your vehicle interior. This can be good or bad, depending on how it's done. As a general rule, the tweeters should be placed relatively close to the woofers for best tonal balance and most coherent imaging (the closer, the better). Any separation greater than 8 inches (20 cm) is likely to result in degraded sound quality.

Avoid placing tweeters where they will be blocked by objects in the interior of the car (including seated occupants). When selecting a mounting location, look at both sides of the car to make sure that this location is clear on both sides.

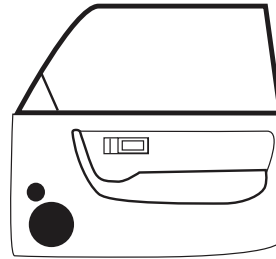
You can always experiment with tweeter placement before committing to a final mounting location. Simply connect the rest of the system and allow plenty of wire length for the tweeters. Using hook and loop or similar material, attach the tweeters in different locations until you find the one where they perform best.

Woofers will usually be placed into factory speaker locations. If you have some woofer mounting flexibility, keep the following in mind: Lower mounting locations, such as the lower front corner of a door or a kick-panel provide the greatest path length distances for the sound emitted by the woofer. For this reason, they are generally more desirable than higher mounting locations. Higher mounting locations often result in extreme near-side soundstage bias which compromises the stereo listening experience.

**DIAGRAM A:**  
**Less Desirable Speaker Placement**



**DIAGRAM B:**  
**More Desirable Speaker Placement**



### **!! WARNING**

**Double check the clearance for both speakers before proceeding. Many cars are different from one side to the other!**

## TWEETER INSTALLATION

C1 tweeters have been designed for surface or flush-mounting. Before choosing a method, carefully inspect the desired mounting location to determine which method will work best.

**Surface-Mount:** uses the supplied surface-mount fixture and requires the drilling of three holes (one for the wires and two for the mounting screws). This application is useful when mounting the tweeters to a panel that has insufficient clearance behind it for the tweeter's magnet structure.

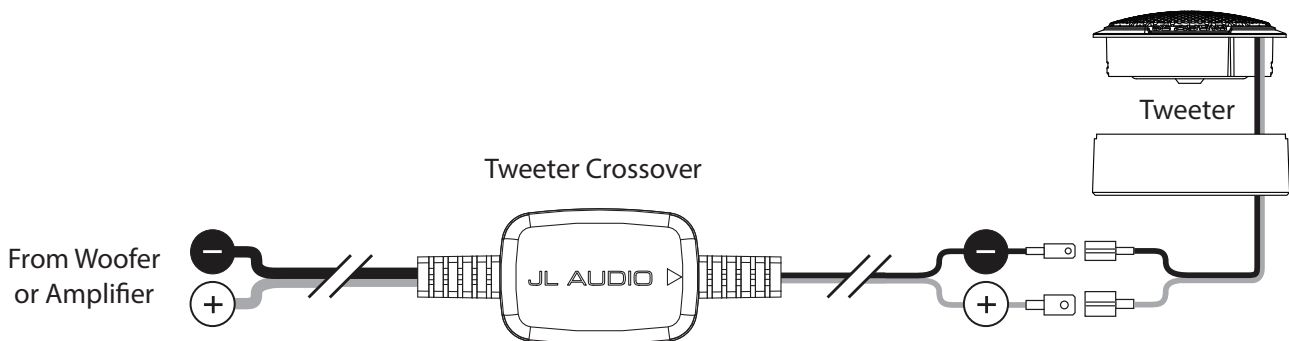
**Flush-Mount:** yields a custom-installed appearance and requires a 1-1/2-inch (38 mm) diameter hole to be cut in the vehicle panel, with at least 0.40-inch (10 mm) of clearance behind the mounting surface for the tweeter and up to 1.45-inch (37 mm) for the stud bolts used to mount each tweeter.

## TWEETER PROTECTION

The C1 crossover networks are equipped with an advanced electronic tweeter protection circuit designed to minimize the possibility of tweeter failure. This electronic device monitors current going to the tweeter and will disconnect the tweeter from the signal when it senses overload. Should this occur while listening to the audio system, simply reduce the volume for a few seconds and the protection circuit will reset itself automatically.

## DIAGRAM C:

### Tweeter / Crossover Wiring



## CROSSOVER NETWORK INSTALLATION

The crossover networks supplied with your C1 System should be installed in a dry location inside your vehicle. **DO NOT INSTALL THEM INSIDE OF A DOOR!** Doors often get wet on the inside, which can damage your crossover networks and could potentially damage your entire sound system. Use plastic cable ties or a similar fastener to securely mount each crossover to avoid coming loose in the event of a collision, sudden jolt or repeated vibrations during normal use. Make sure that your mounting location will not cause damage to wiring or any other vital component of your vehicle.

## TWEETER CONNECTIONS

Run the wire leads from the crossovers to the tweeter mounting locations and to the speaker/amplifier outputs. Then connect the harness wire leads to the speaker/amplifier outputs and tweeters, observing correct polarity. See Diagram C below for details.

### !! WARNING

**It is absolutely vital that your component tweeter is connected, as shown in Diagram C. Failure to connect the tweeter as shown will result in damage which is NOT covered under warranty. Only use in-line filters clearly marked "C1-100cthp".**

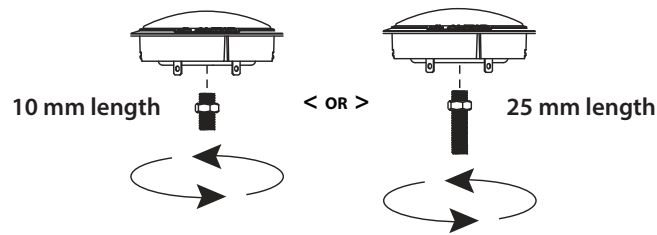
**DIAGRAM D:**  
**Surface-Mount Tweeter Installation**



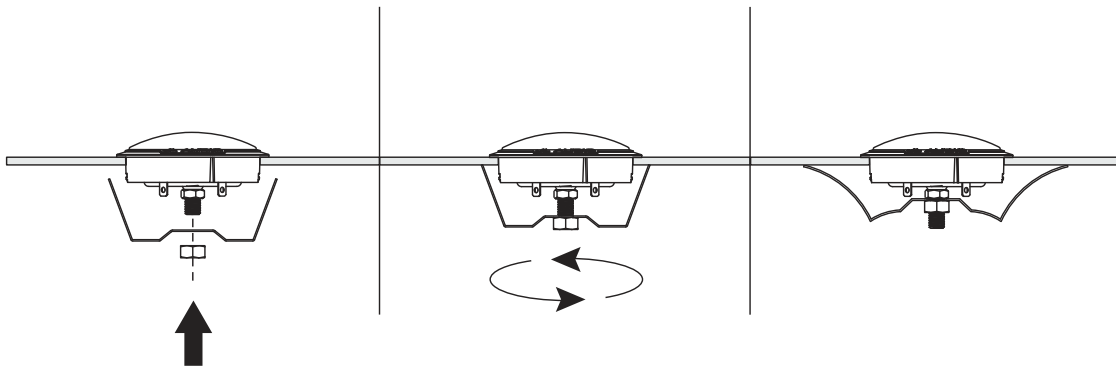
**SURFACE-MOUNT INSTALLATION**

- 1) Remove the vehicle panel and check to ensure that the mounting screws will have adequate clearance.
- 2) Place the surface-mount fixture on the vehicle panel at the desired mounting location with the mounting screw holes positioned vertically, at twelve and six o'clock.
- 3) Mark the location of the two mounting screw holes and the approximate center of the right rectangular cutout (for the wires).
- 4) Using a 1/16-inch (1.5 mm) drill bit, drill a pilot hole through the panel at the two screw locations.
- 5) Using a 1/4-inch (6 mm) drill bit, drill the hole for the tweeter's wires at the location you marked in step 3.
- 6) Screw the surface-mount fixture to the vehicle panel using the supplied #6 sheet metal screws (hand-tighten).
- 7) Feed the tweeter wires through the rectangular hole in the mounting fixture and the 1/4-inch hole you drilled in the panel. Then, snap the tweeter into the surface-mount fixture.
- 8) Connect the tweeter's wires to the wire leads from the crossover, observing correct polarity.
- 9) Re-install the vehicle panel, taking care to route the new wiring so as not to interfere with any vehicle mechanisms (window mechanisms, for example).

**DIAGRAM E:**  
**Flush-Mount Tweeter Installation**



Stud bolts are provided in two lengths to accommodate different panel thicknesses.



**FLUSH-MOUNT INSTALLATION**

- 1) Detach the preinstalled surface-mount fixture by inserting a small flat screwdriver into the slots behind the tweeter flange and carefully pry open to release.
- 2) Remove the vehicle panel and check the desired mounting location to ensure that there is adequate clearance behind the panel for the tweeter's magnet structure and mounting hardware.
- 3) Carefully cut a 1-3/4-inch (44 mm) diameter hole in the vehicle panel. This will achieve a snug fit and allow the tweeter flange to conceal the cut line.
- 4) Select a suitable length stud bolt for your panel's thickness and screw its short end into the rear of the tweeter using the fixed M4 nut to tighten.
- 5) Insert the tweeter from the front of the panel (do not attach the spring clip at this time).
- 6) Attach the spring clip from behind the panel using the supplied M5 nut and tighten by hand until the tweeter is tight on the panel. Do not overtighten.
- 8) Connect the tweeter's wires to the wire leads from the crossover, observing correct polarity.
- 9) Re-install the vehicle panel, taking care to route the new wiring so as not to interfere with any vehicle mechanisms (window mechanisms, for example).

### **Speaker Wiring:**

If you will be using the factory speaker wires, it may be necessary to change the terminations. This may be accomplished by using an adaptor plug or simply by cutting the factory connector off and using the supplied crimp connectors to terminate the speaker wires. The larger connector is for the positive terminal and the smaller connector is for the negative terminal of each C1-690cw.

If you choose to run new speaker wires, protect all wiring from sharp edges by carefully routing them, securing them and using grommets and loom where appropriate. If you are running wires into a door, use existing factory wiring boots whenever possible. If you are drilling new holes, file their edges and install rubber grommets into each hole. Wires running into car doors should be covered with a protective, flexible PVC sleeve. Make sure that the wires will clear door hinges and other structures in the door.

#### **!! WARNING**

**Double check the clearance for both speakers before proceeding. Many cars are different from one side to the other!**

### **Speaker Installation in Factory Locations:**

Your new speakers have been designed to install, without modifications, into most vehicles with OEM speaker locations that accept a 6 x 9-inch (150 x 230 mm) speaker. Many factory 6 x 9-inch speakers use four mounting screws, which will line up with the mounting holes on your C1-690cw woofers.

Spacer adaptor rings are included to fit, bottom-mount applications. Each spacer ring can be placed on the front of the mounting flange, in between the speaker and mounting panel, as shown in Diagram F (page 9).

It is absolutely vital that the speaker frame fits into the mounting hole cleanly. This must be checked prior to tightening the screws. Never force the frame into a hole that is too small, and do not attempt to tighten the speaker onto an uneven surface. This will damage your speakers.

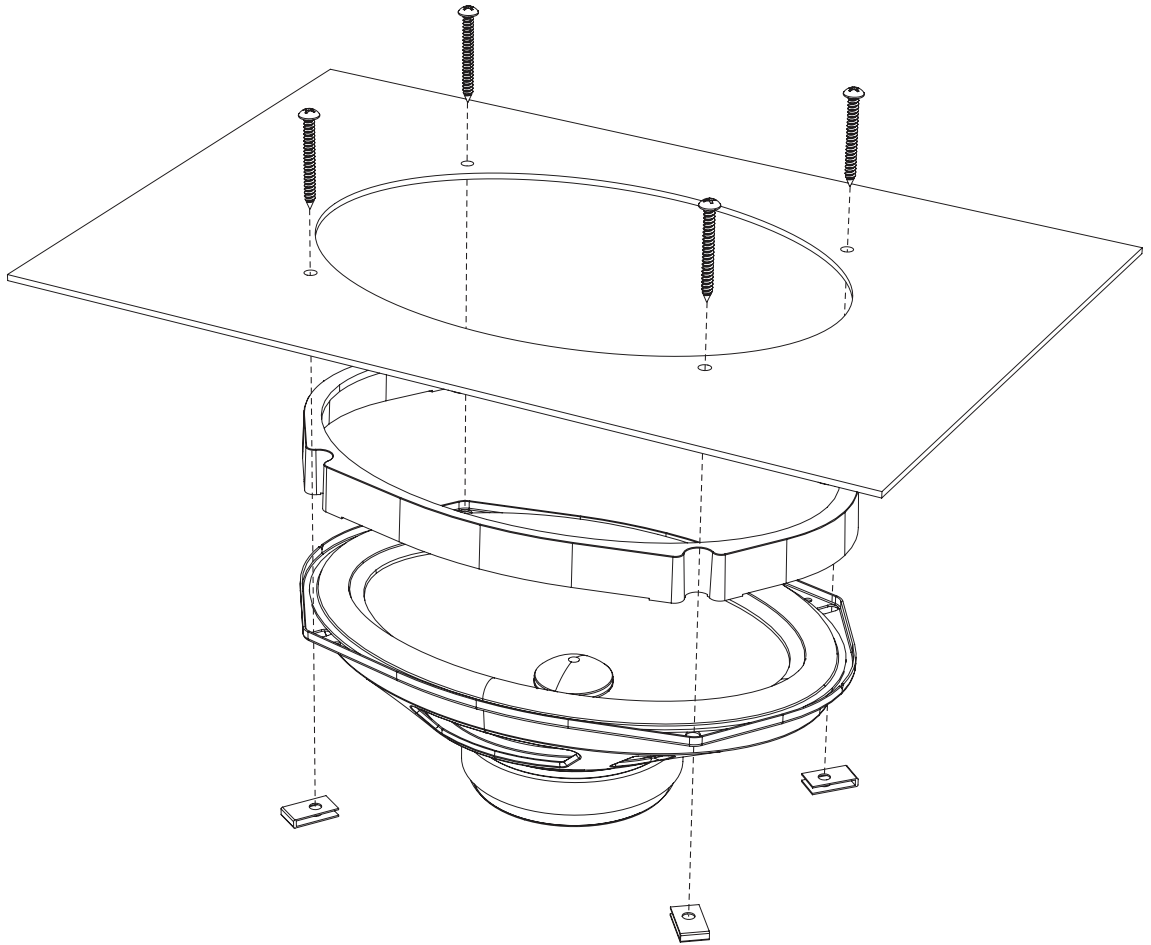
The speaker should fit so that air does not leak around the mounting flange. Air leaks will cause a severe degradation in sound quality. Seal any air leaks with an automotive-grade sealant material.

#### **!! WARNING**

**Hand-tighten the screws evenly in a criss-cross pattern to avoid bending the speaker frame or stripping the mounting screws.**



**DIAGRAM F:**  
**Speaker Installation with Spacer Ring**



## LIMITED WARRANTY - AUTOMOTIVE SPEAKER SYSTEMS (USA)

JL AUDIO warrants these speakers (and crossover networks, where applicable) to be free of defects in materials and workmanship for a period of **one (1) year**.

This warranty is not transferable and applies only to the original purchaser from an authorized JL AUDIO dealer. Should service be necessary under this warranty for any reason due to manufacturing defect or malfunction, JL AUDIO will (at its discretion), repair or replace the defective product with new or remanufactured product at no charge. Damage caused by the following is not covered under warranty: accident, misuse, abuse, product modification or neglect, failure to follow installation instructions, unauthorized repair attempts, misrepresentations by the seller. This warranty does not cover incidental or consequential damages and does not cover the cost of removing or reinstalling the unit(s). Cosmetic damage due to accident or normal wear and tear is not covered under warranty.

Any applicable implied warranties are limited in duration to the period of the express warranty as provided herein beginning with the date of the original purchase at retail, and no warranties, whether express or implied, shall apply to this product thereafter. Some states do not allow limitations on implied warranties, therefore these exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

### **If you need service on your JL AUDIO product:**

All warranty returns should be sent to JL AUDIO freight prepaid through an authorized JL AUDIO dealer and must be accompanied by proof of purchase (a copy of the original sales receipt.) Direct returns from consumers or non-authorized dealers will be refused unless specifically authorized by JL AUDIO with a valid return authorization number. Warranty expiration on products returned without proof of purchase will be determined from the manufacturing date code. Coverage may be invalidated as this date is previous to purchase date. Return only defective components. If one speaker fails in a system, return only that speaker component, not the entire system. Non-defective items received will be returned freight-collect. Customer is responsible for shipping charges and insurance in sending the product to JL AUDIO. Freight damage on returns is not covered under warranty.

### **For Service Information in the U.S.A. please call**

**JL Audio Customer Service:** (954) 443-1100

9:00 AM – 5:30 PM (Eastern Time Zone)

### **JL Audio, Inc**

10369 North Commerce Pkwy.

Miramar, FL 33025

### **International Warranties:**

Products purchased outside the United States of America are covered only by that country's distributor and not by JL Audio, Inc.