

# EL Series Installation Instructions

## Important Safety Information

### ⚠ WARNING

Failure to follow these warnings and cautions could result in personal injury, damage to the vehicle or vessel, or poor product performance.

This device must be installed according to these instructions.

Disconnect the vehicle's or vessel's power supply before beginning to install this product.

### ⚠ CAUTION

Continuous exposure to sound pressure levels over 100 dBA may cause permanent hearing loss. The volume is typically too loud if you cannot hear people speaking around you. Limit the amount of time you listen at high volume. If you experience ringing in your ears or muffled speech, stop listening and have your hearing checked.

Always wear safety goggles, ear protection, and a dust mask when drilling, cutting, or sanding.

### NOTICE

When drilling or cutting, always check what is on the opposite side of the surface.

It is strongly recommended that you have your audio system installed by a professional installer to ensure optimum performance.

You must read all installation instructions before beginning the installation. If you experience difficulty during the installation, go to [www.fusionentertainment.com](http://www.fusionentertainment.com) for product support.

### Tools Needed

- Electric drill
- Drill bit (size varies based on surface material)
- Phillips screwdriver
- Wire strippers
- Crimping tool
- Electrical tape
- Appropriate saw or utility knife to cut surface material
- Marine sealant (optional)

**NOTE:** For customized installations, additional tools and materials may be needed.

### Mounting Considerations

Selecting the correct mounting location is critical to optimize the performance of each speaker. FUSION® speakers are designed to perform in the widest possible range of mounting locations, but the more you plan the installation, the better the speakers' sound will be.

- For the best performance, you should mount the speakers higher in the boat. Sound travels in the direction in which the speakers are facing, so if you mount them in a lower location, the sound quality and volume may not be ideal.
- If you intend to mount the speakers outside the boat, you must mount them in a location well above the waterline, where they are not submerged or damaged by docks, pilings, or other pieces of equipment. When mounted correctly, these

speakers are rated IP65 for protection from the front of the speaker. Water exposure and damage to the rear of the speaker voids the warranty. This includes situations when the speakers are mounted in a sealed enclosure, especially if they are exposed to wash down. On supported models, using an enclosure with a port or vent exposed to the outside environment may allow water to collect and damage the speaker.

- You should select mounting locations that enable you to hear sound from both speakers at the same time to achieve a sound stage effect. To achieve this effect, you should not mount the speakers side-by-side.
- When possible, you should select mounting locations where the area behind each speaker is enclosed.
- You must select mounting locations that provide sufficient clearance for the mounting depth of the speakers as specified in the product specifications.
- For better bass performance, you should select a mounting locations that provide the appropriate space behind the speaker according to the optimum enclosure design requirements in the specifications section. Too small an area restricts bass, and too large an area compromises bass performance. Also, mounting a speaker close to an open area (where sound from the back of the speaker has a very short path to compete with sound from the front of the speaker) produces the least bass.
- On supported models, when a speaker is not exposed to the outside environment, you can achieve a better bass performance using an enclosure with a ported design. For supported models, the optimum enclosure design recommendations in the specifications section include dimensions for the optimum port size and length.
- You should select a flat mounting surface for the best seal.
- You should protect the speaker wires from sharp objects and always use rubber grommets when wiring through panels.
- You should select mounting locations that avoid potential obstacles, such as fuel and hydraulic lines and wiring.
- You should protect all terminals and connections from grounding and from each other. Failure to do so could result in permanent damage to the audio system and void the product warranty.
- To avoid interference with a magnetic compass, you should not mount the speakers closer to a compass than the compass-safe distance value listed in the product specifications.
- You must turn off the audio system before making any connections to the source unit, amplifier, or speakers. Failure to do so could result in permanent damage to the audio system.

### Mounting the Speakers

Before mounting the speakers, you must choose a location following the guidelines above.

Before cutting the mounting surface you should verify that there is enough clearance for the speaker behind the surface. Refer to the specifications for clearance information.

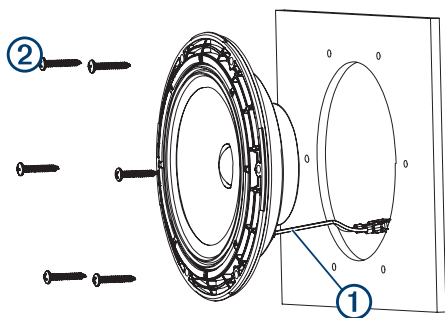
### NOTICE

Do not apply grease or lubricant to the screws when fastening the speakers to the mounting surface. Grease or other lubricants can cause damage to the speaker.

- 1 Route the wires from the source to the speaker location, away from sources of electrical interference.



- 2 Trim the template and make sure it fits in the selected location.
- 3 Orient the template so that the FUSION logo is right-side up on the template.
- 4 Secure the template to the selected location.
- 5 Using a rotary tool or jigsaw, cut the mounting surface along the inside of the line on the template.
- 6 Place the speaker in the cutout to test the fit.
- 7 If necessary, use a file and sandpaper to refine the size of the cutout.
- 8 After the speaker fits correctly in the cutout, ensure the mounting holes on the speaker line up with the pilot holes on the template.
- 9 If the mounting holes on the speaker do not line up, mark the new hole locations.
- 10 Using an appropriately sized drill bit for the mounting surface and screw type, drill the holes.
- 11 Remove the template from the mounting surface.
- 12 Connect the speaker wires ① while observing polarity.



- 13 If necessary, connect the LED wires ([LED Wiring, page 2](#)).
- 14 Place the speaker in the cutout.
- 15 Secure the speaker to the mounting surface using the included screws ②.
 

**NOTE:** Do not over tighten the screws, especially if the mounting surface is not flat.
- 16 With the speakers mounted, hold the grille with the FUSION logo at the bottom, or at the 6 o'clock position.
- 17 Turn the grille counter-clockwise about 30 degrees, so the FUSION logo is at the 5 o'clock position.
- 18 Place the grille on the speaker, and twist it clockwise to secure it.
 

**NOTE:** Instead of twisting to install the grille, you can line it up so the FUSION logo is at the 6 o'clock position and press to snap it into place.

## LED Wiring

### Connecting the LED Wires

Before you connect the LED wires, you should determine which speaker LED color you want to use, and identify the corresponding speaker wire colors.

Speaker LED Color	Speaker Wire Color
Red	Red
Green	Green
Blue	Blue
Yellow	Red and green
Magenta	Red and blue
Cyan	Blue and green
White	Red, green, and blue

**NOTE:** This feature is available only on the sports model speakers.

You can control the color of the speaker LEDs through the polarity of the LED wires. You can splice the ground wire to multiple wires on the LED cable to customize the LED color.

The black wire on the LED cable is terminated with a 4 mm female bullet connector, and the color wires are terminated with 4 mm male bullet connectors. You can connect these to 4 mm bullet connectors on your wires (not included), or remove the bullet connectors to connect to the bare wires instead.

- 1 Connect a positive wire to the black wire on the LED cable.
- 2 Connect a ground wire to the wire on the LED cable according to the preferred speaker LED color.
- 3 Route the positive and negative wires, and connect them to a power source ([Connecting the Sports Model Speakers LED Wires to Power, page 2](#)).

### Connecting the Sports Model Speakers LED Wires to Power

**NOTE:** This feature is available on only the Sports model speakers.

You must connect all 12 Vdc wiring to the LEDs to a 3 A fuse at the power-source end of the cable. You should connect the positive (+) power wire to a 12 Vdc power source through an isolator switch or circuit breaker to turn the speaker LEDs on and off. You can use the same isolator or circuit breaker controlling the power supply to your stereo, which allows you to turn the LEDs and the stereo on and off at the same time.

You should use 20 AWG (0.5 mm<sup>2</sup>) or thicker wire to connect the LEDs to the battery.

- 1 Route the positive power (+) and negative ground (-) wires from the speaker to the battery.
- 2 Connect the negative wire to the negative (-) battery terminal.
- 3 Connect the positive wire to the positive (+) terminal through a 3 A fuse and isolator switch or circuit breaker.

### Attaching the Grille

- 1 With the speakers mounted, hold the grille with the FUSION logo at the bottom, or at the 6 o'clock position.
- 2 Turn the grille counter-clockwise about 10 degrees, so the FUSION logo is at the 5 o'clock position.
- 3 Place the grille on the speaker, and twist it clockwise to secure it.

**NOTE:** You can press on the grille to snap it into place instead of twisting it.

## Speaker Information

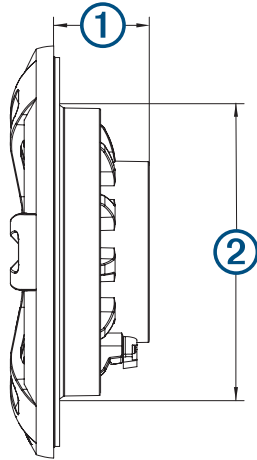
### Registering Your EL Series

Help us better support you by completing our online registration today.

- Go to [www.fusionentertainment.com](http://www.fusionentertainment.com).
- Keep the original sales receipt, or a photocopy, in a safe place.

## Dimension Drawings

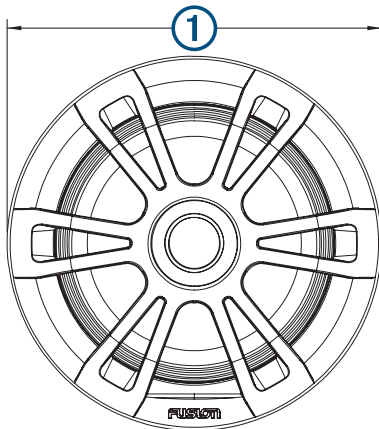
### Side View



①	40 mm (1 <sup>37</sup> / <sub>64</sub> in.)
②	127 mm (5 in.)

A Sports model speaker is shown, but the dimensions are the same for the Classic model.

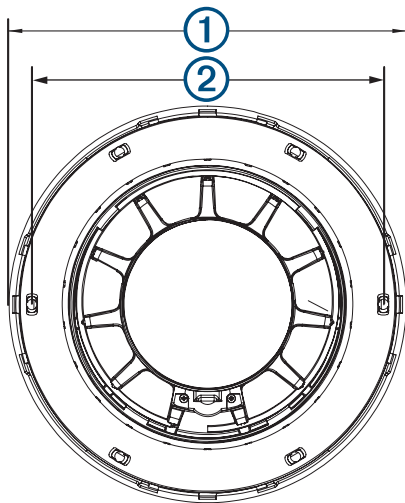
### Front View



①	176 mm (6 <sup>15</sup> / <sub>16</sub> in.)
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A Sports model speaker is shown, but the dimensions are the same for the Classic model.

### Back View



①	176 mm (6 <sup>15</sup> / <sub>16</sub> in.)
②	156 mm (6 <sup>1</sup> / <sub>8</sub> in.)

## Cleaning the Speakers

**NOTE:** When mounted correctly, these speakers are rated IP65 for protection in the harsh marine environment from the front of the speaker. They are not designed to withstand high pressure water spray, which may occur when you wash down your vessel. Failure to carefully spray-clean the vessel may damage the product and void the warranty.

### NOTICE

Do not use harsh or solvent-based cleaners on the speakers. Using such cleaners may damage the product and void the warranty.

- 1 Clean all salt water and salt residue from the speaker grille with a damp cloth soaked in fresh water.
- 2 Use a mild detergent to remove a heavy buildup of salt or stains.

## Troubleshooting

Before you contact your FUSION dealer or service center, you should perform a few simple troubleshooting steps to help diagnose the problem.

If the FUSION speaker has been installed by a professional installation company, you should contact the company so the technicians can assess the problem and advise you about possible solutions.

### There is no sound coming from the speakers

- Verify that all connections from the source device and/or the amplifier are connected correctly to the speaker terminals.

### The system lacks bass or high frequencies

- Verify that the correct wire polarity is observed between the source and speakers.  
The wires should be connected positive to positive and negative to negative.
- Verify that the speakers are attached firmly to the mounting surface.

### The audio is distorted

- Verify that the source volume is not too loud for the speaker, and reduce the volume if necessary.
- Verify that the panels surrounding the speaker on the vessel are not rattling.
- Verify that the source device and/or the amplifier are connected to the speaker terminals correctly.
- If the speaker is connected to an amplifier, verify that the input level of the amplifier is matched to the output level of the stereo. For more information, see the manual for the amplifier.

### The LED lights will not turn on

- Verify that all wiring connections are correct and tight.

## Specifications

Max. power (Watts)	80 W
RMS power (Watts)	20 W
Efficiency (1 W/1 m)	88 dB
Frequency response (+ 3 dB)	45 Hz to 16 kHz
Min. mounting depth (clearance)	43 mm (1 <sup>11</sup> / <sub>16</sub> in.)
Mounting diameter (clearance)	130 mm (5 <sup>1</sup> / <sub>8</sub> in.)
Impedance	4 ohm
Amplifier power-rating recommendation	From 20 to 40 W RMS, playing music

LED supply voltage (sports model speakers only)	From 10.8 to 16 Vdc
LED load current at 16 Vdc (sports model speakers only)	150 mA per color
Optimum enclosure volume recommendation <sup>1</sup>	8 L (0.3 ft. <sup>3</sup> )
Operating temperature range	From 0 to 50°C (from 32 to 122°F)
Storage temperature range	From -20 to 70°C (from -4 to 158°F)
Cone material	Polypropylene
Water and dust rating	IEC 60529 IP65

**NOTE:** This speaker is not intended to be installed in a vented or ported enclosure.

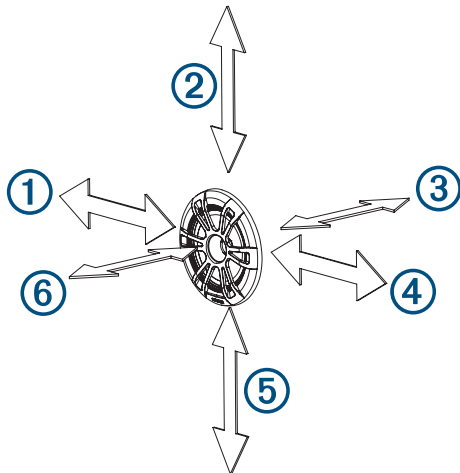
### Compass-Safe Distances

All speakers contain magnets which may cause interference with instruments on your boat. The size of the magnet used in the speaker affects how much interference the speaker may cause.

Interference can cause deviations and variations in the readings of sensitive navigational equipment, such as magnetic compasses. These deviations can cause inaccuracies or offsets in the readings, but will not harm the equipment. To alleviate the deviations, adjust the compass for the deviation following the manufacturer's instructions or move the speaker away from the navigational equipment. After moving a source of interference, you may need to recalibrate the compass.

If you are navigating solely by a magnetic compass, use extreme caution to place the speaker far enough away from the compass to avoid causing deviations in the readings.

To avoid deviations to navigational equipment, position the speakers so they are separated from the navigational equipment by at least the distance listed in the table below.



①	171 cm (5 ft. 8 in.)
②	171 cm (5 ft. 8 in.)
③	254 cm (8 ft 4 in.)
④	171 cm (5 ft. 8 in.)
⑤	171 cm (5 ft. 8 in.)
⑥	254 cm (8 ft 4 in.)

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<sup>1</sup> Sealed enclosure, fully filled with absorption material.