

# Diluvio™ Underwater Loudspeaker

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## Installation Guide

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**CLARKSYNTHESIS**

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[www.clarksynthesis.com](http://www.clarksynthesis.com)



# IMPORTANT PRODUCT INFORMATION

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- DO NOT DROP SPEAKER-** The speaker can be damaged both internally and externally if dropped. Damage caused by dropping the speaker is not covered by the warranty.
- DO NOT EXPOSE SPEAKER TO HIGH DISTORTION LEVELS-** Exposing the speaker to high levels of distortion may damage the speaker. This type of damage is not covered by the warranty. If the speaker stops playing, it is likely that the built-in protection circuit has activated. In the event this happens, turn the amplifier off for approximately 60 seconds to allow the circuit to reset. Turn down the volume on the stereo system and amplifier. Operate the system at lower volume levels to avoid overloading the speaker.
- USE A GROUND FAULT INTERRUPTER (GFI)-** A GFI outlet or extension cable on the stereo system will help prevent electrical shock in the event of a malfunction. The audio amplifier that powers this speaker **MUST** be plugged into a GFI outlet. GFI outlets are available at most hardware or home improvement stores. GFI outlets are easy to install, provide a safer operating environment for your pool users, and help protect your electronic equipment.
- PLACE SPEAKER AWAY FROM HIGH TRAFFIC AREAS-** If using this speaker as a drop-in speaker, ensure the speaker is located away from diving or high-activity areas. Severe personal injury may result if a swimmer/diver makes contact with the speaker when diving/jumping into the water.
- CABLE PLACEMENT-** Use caution when running the cable from the speaker to the amplifier. Do not lay the cable in high-traffic areas where tripping or entanglement may occur. When used as a drop-in speaker, remove as much slack as possible from the speaker wire that runs through the water to avoid entanglement. Avoid laying the cable in areas where pets may possibly become tangled in, or damage, the cable. If pulling the cable through conduit, do not attempt to pull splices through the conduit. Utilize junction boxes if splices are required.
- DO NOT HANG SPEAKER BY SPEAKER CABLE-** If using the speaker as a drop-in speaker, do not raise and lower the speaker into the water using the speaker wire. Instead, tie a rope (not included) to the eyelet on the speaker's rubber ring and use the rope to raise and lower the speaker. Never carry or lift the speaker by the cable.
- IN WALL INSTALLATION - AVOID CABLE DAMAGE-** Use caution when pulling the speaker cable through the conduit to avoid pinching the cable, removing wanted excess cable from the niche, or damaging the strain relief on the speaker. Failure to follow these instructions can result in damage to the speaker which are not covered by the warranty.
- DO NOT DRAG SPEAKER ON POOL DECK, BOTTOM OR SIDE OF POOL-** Dragging the speaker along any surface can cause internal and external damage. This type of damage is not covered by the warranty.
- DO NOT REMOVE STRAIN RELIEF-** Removing or altering the strain relief fitting connecting the cable to the speaker will permanently damage the speaker. This fitting is carefully installed at the factory and is designed to provide a watertight seal. Any alteration or adjustment of this fitting will void the warranty.
- WINTER STORAGE-** Do not allow the speaker(s) to become encased in ice. Always install speaker below the freeze line. If speaker is installed above freeze line, take the speaker out of the niche and allow it to rest on the bottom of the pool before freezing occurs. If there is not enough speaker cable to do this, place a crate on the bottom of the pool and allow the speaker to rest on the crate; do not let the speaker hang by the speaker cable, in water or out.
- VOLUME CONTROLS-** Do not use with external volume controls rated at less than 150 watts.
- MAGNETS-** This speaker contains magnets. Persons with implantable devices, such as pacemakers, should consult with their physician before putting this speaker near the device.

# WARRANTY

## United States Warranty and Return Policy

### THE DILUVIO™ WARRANTY

For Speakers purchased before January 1, 2020, Clark Synthesis, Inc. warranties the AQ339 Diluvio™ Underwater Loudspeaker to be free from defects and workmanship under normal use for a period of one year from date of original purchase.

For Speakers purchased after January 1, 2020, Clark Synthesis, Inc. warranties the AQ339 Diluvio™ Underwater Loudspeaker to be free from defects and workmanship under normal use for a period of six years from date of original purchase.

Should warranty service be necessary, Clark Synthesis, Inc. will (at its discretion) repair or replace the defective merchandise with equivalent merchandise at no charge.

This warranty is valid for the original purchaser and is not extended to subsequent owners. Any applicable implied warranties are limited in duration to a period of the express warranty as provided herein beginning with the date of the original purchase at retail, and no warranties, whether expressed 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; however, you may have other rights that vary from state to state.

### WHAT IS NOT COVERED

This warranty is valid only if the product is used for the purpose for which it was designed. It does not cover the following:

- Damage caused by excessive heat
- Damage through negligence, misuse, accident, or abuse
- Damage caused by incorrectly mounting the speaker
- Damage due to not using an appropriate amplifier
- Freight damage
- Items repaired by an unauthorized repair facility
- Items damaged due to amplifier clipping and/or distortion
- Items purchased from unauthorized individuals or dealers
- Cost of shipping product to Clark Synthesis, Inc.
- Return shipping on non-defective items

### RETURN POLICY

New, unused items purchased from us may be returned within 7 days of the purchase date. Please note: Clark Synthesis will only accept returns for items that are received in their original packaging, in undamaged and re-sellable (new) condition. Manuals, accessories, warranty cards, and everything else that came with the unit must be included as well. If your return does not meet these conditions, you will be charged a 15% restocking fee or have the merchandise returned to you at your expense. Non-defective merchandise can also be returned for a 15% restocking fee. Shipping charges for all non-defective returns or exchanges are not refundable.

### WHAT TO DO IF YOU NEED WARRANTY OR SERVICE

If it becomes necessary for you to return defective merchandise, email Clark Synthesis at [info@clarksynthesis.com](mailto:info@clarksynthesis.com) or call Clark Synthesis Customer Service at (303) 797-7500 and you will be given a Return Authorization Number and shipping instructions. Follow the instructions provided by our customer service staff, use suitable packing materials (preferably the original shipping boxes), and make sure to write your Return Authorization Number on the outside of your box when sending your return to us. Orders that are returned without an Return Authorization Number may be refused by our returns department. Remember to include a dated proof of purchase from an authorized dealer. Return freight must be prepaid by the customer: items received freight collect will be refused. If the returned product is found to contain a manufacturing defect not caused by the customer and a replacement product is sent to the customer, Clark Synthesis, Inc. will pay to ship the replacement product to a domestic location (within the USA) via ground shipping methods. Costs associated with a) shipping replacement products intended to replace defective merchandise not caused by a manufacturing defect, b) replacement products shipped outside the USA, or c) replacement products shipped via shipping methods other than ground shipping will be paid for by the customer.

Make sure the following is included in your package:

- Product to be returned (repacked in original shipping containers)
- Return Authorization Number printed on the outside of the box
- Copy of original invoice with Return Authorization Number printed on it

### INTERNATIONAL WARRANTY

Contact your International Clark Synthesis dealer or distributor concerning specific procedures for your country's warranty policies.

# PRODUCT OVERVIEW

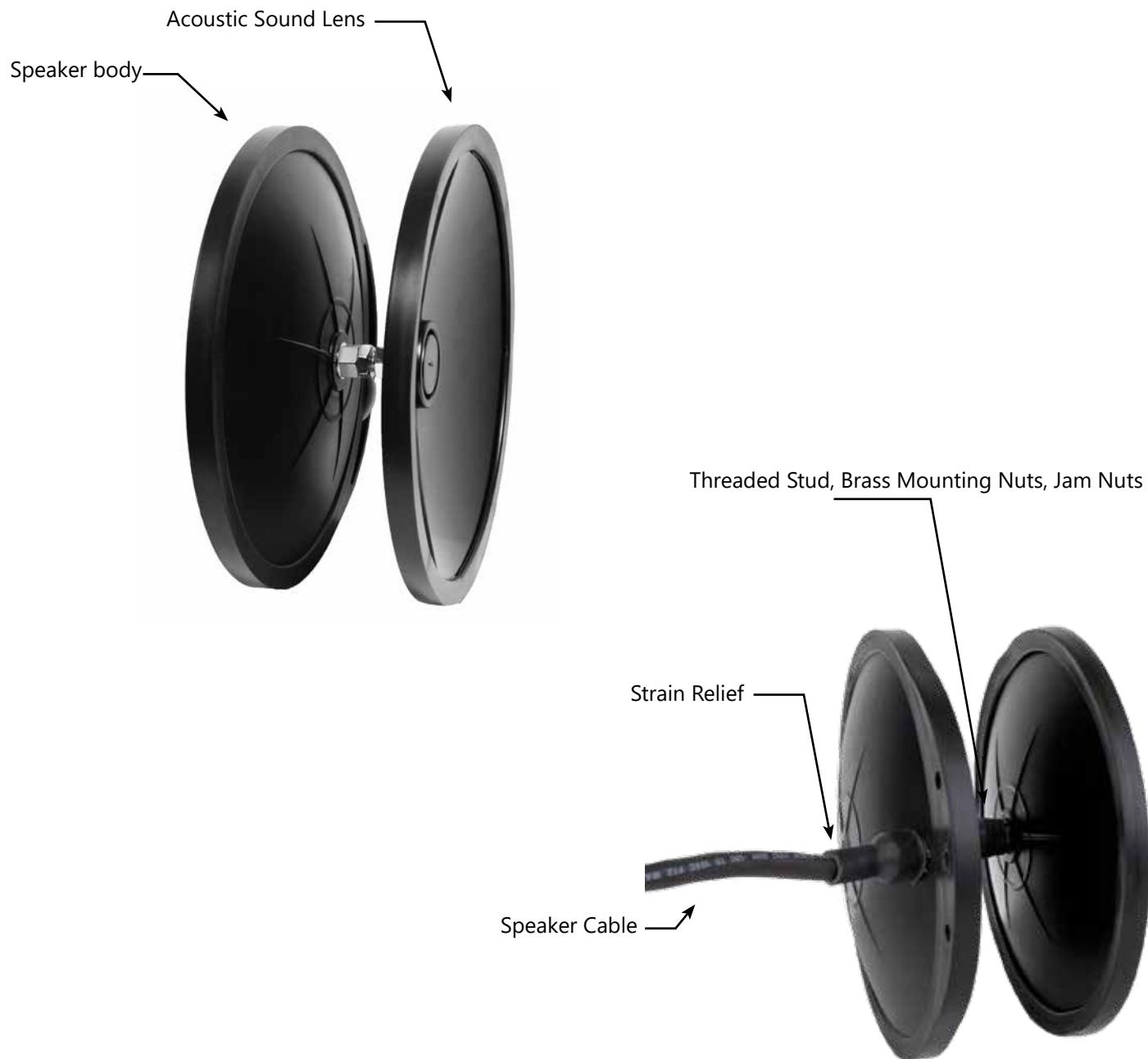
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The Diluvio™ Underwater Loudspeaker requires an amplifier for operation. Clark Synthesis recommends an amplifier stable at 4 ohms that can deliver 125-150 watts @ 4 ohms (per speaker).

## Product Specifications

- Continuous Power Handling: 135 watts
- Impedance: 4 ohms
- Overload Protection: Polyswitch
- Frequency Response: 20 Hz to 17 kHz
- Electrical Connection: 16/2 Underwater Cable, Tinned Wires
- Dimensions: 8 in (20.3 cm) Diameter; 4.5 in (11.5 cm) Depth
- Recommended Amplification: 125 – 150 Watts at 4 Ohms
- Additional speakers will change amplification requirements, see page 18 for links to wiring diagrams.
- Polyswitch overload protection will shut down the speaker when overpowered. Please note that continued activation of the polyswitch will cause the circuit to fail, resulting in permanent speaker damage. Also, the polyswitch cannot protect the speaker from sudden power surges.
- Most people do not hear stereo sound underwater. We recommend converting all underwater audio to mono. Note: Mono audio is not the same as Bridge Mono on an audio Amplifier. Using Bridge Mono may deliver too much power and damage the speaker.
- One speaker, wall mounted in a light niche, will cover approximately 20 ft x 20 ft (6 m x 6 m). Please see page 7 for speaker placement information.
- One speaker, dropped into the swimming pool, will cover approximately 40 ft x 40 ft (12 m x 12 m).
- For marine applications, please contact Clark Synthesis. We can review your application and help determine if any Clark Synthesis product is suitable.
- In-wall mounting hardware is available through Clark Synthesis, Inc.

## Diluvio™ Underwater Loudspeaker



# INSTALLATION OVERVIEW DIAGRAMS

Figure 1. Side view of in-wall installation.

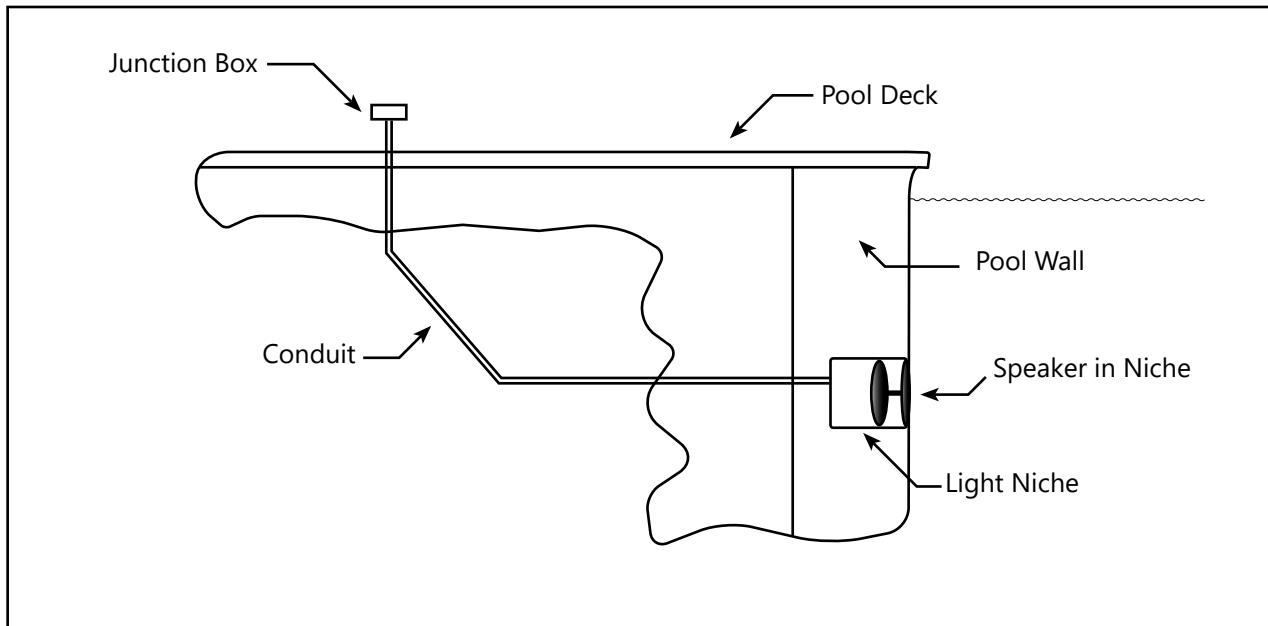
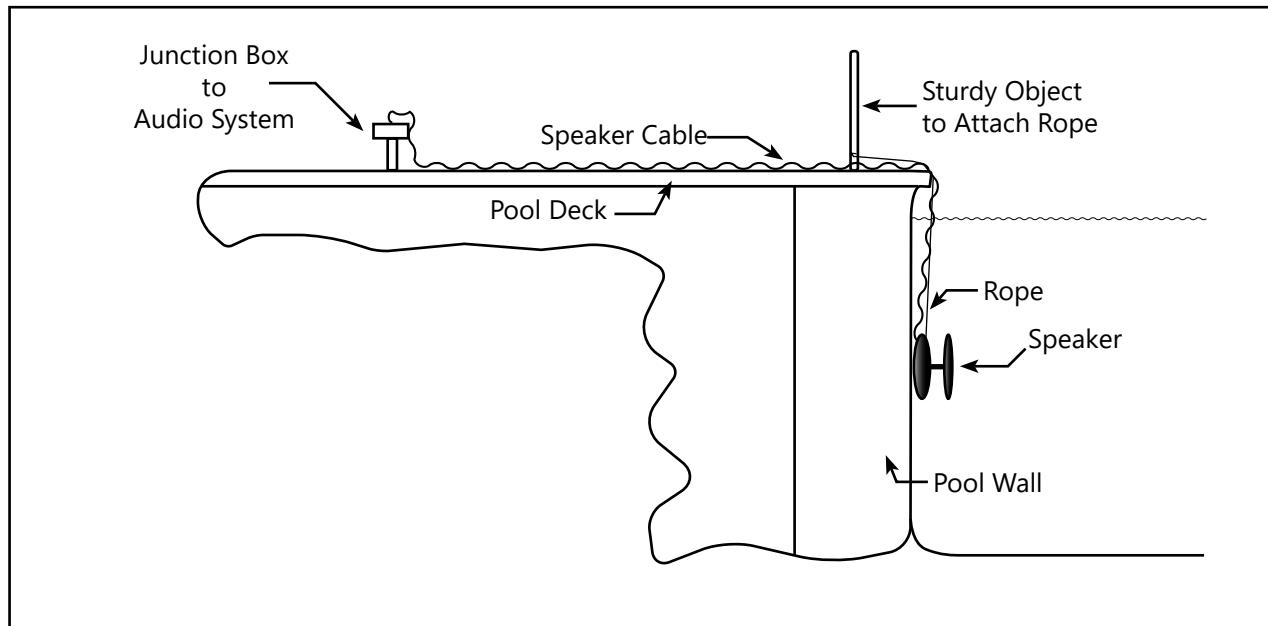


Figure 2. Side view of drop-in installation.



# SPEAKER PLACEMENT – IN-WALL

When planning the placement of your Diluvio™ Underwater Loudspeakers, there are a few key points to consider. The following suggestions are intended to help you maximize the performance and enjoyment of your underwater speakers.

First, you will want to determine the number of speakers needed to provide sound coverage throughout the pool. One Diluvio™ will provide sufficient sound coverage for a 20 ft x 20 ft (6 m x 6 m) area. For example, if you have a 20 ft x 40 ft (6 m x 12 m) pool, you will need a minimum of two Diluvio™ speakers to properly cover the pool with music (see diagram A).

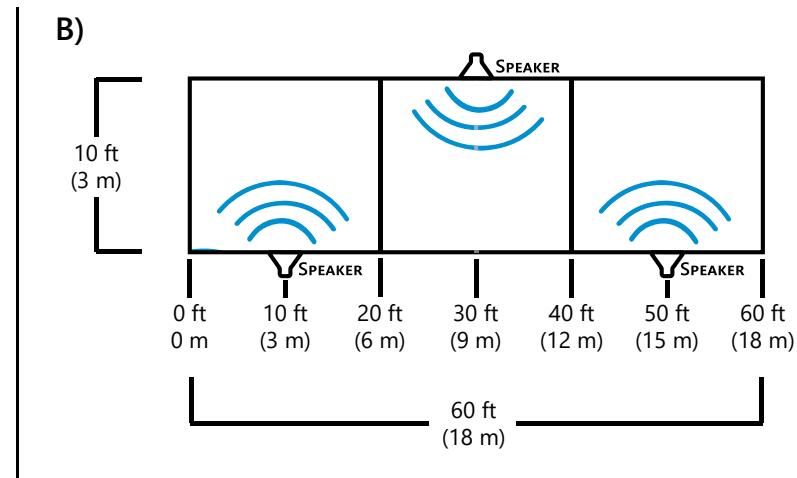
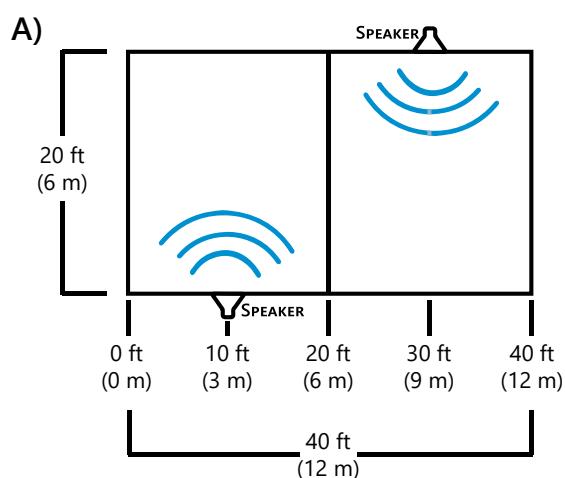
However, for lap pools, or pools with long, narrow segments, it is better to place one speaker every 20 linear feet (6 linear meters). For example, for a lap pool that is 10 ft x 60 ft (3 m x 18 m), it would be best to install three speakers along the length of the pool (see diagram B).

Second, place speakers to allow for the greatest area to be covered (see the diagrams below). Much like pool lighting, you want to place each speaker in a location that directs the audio across the largest area possible. When possible, we recommend staggering speakers on opposing walls. Avoid placing speakers where swimmers perform flip turns, such as the short walls of lap pools.

Third, there are no minimum depth requirements for the Diluvio™. However, the speaker must be completely submerged. A depth of 18 inches (45 cm) below the water's surface is common. If possible, the speakers should be installed below the freeze line. If the speakers cannot be installed below the freeze line, the speakers should be relocated so they will not be encased in ice.

Water features and swim jets add noise to the water. Additional speakers need to be considered when these items are present in a pool design.

If you have any questions about speaker placement, the professionals at Clark Synthesis are happy to assist. Simply email a PDF of the pool design to [Info@clarksynthesis.com](mailto:Info@clarksynthesis.com) and our staff will work with you to pinpoint the best speaker locations.



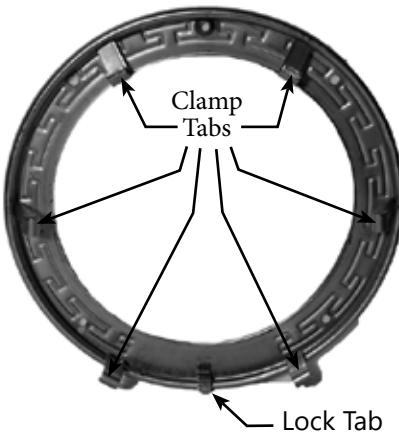
# MOUNTING HARDWARE

## In-Wall Mounting Hardware (Purchased Separately)

Mounting Gasket



Face Ring  
Back View



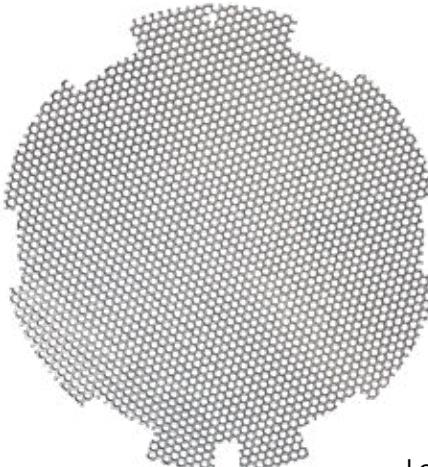
Face View



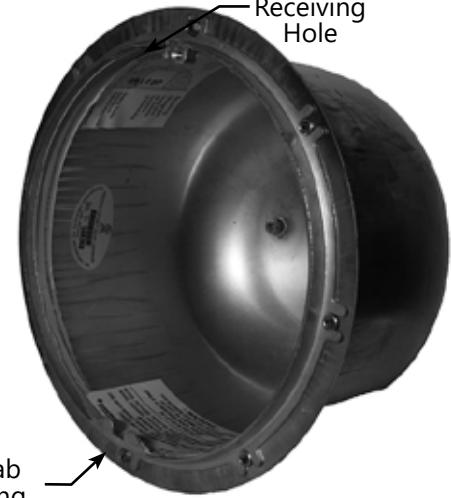
Wire Clamp



Diluvio™ Screen



Large Light Niche



# IN-WALL INSTALLATION

**NOTE:** The Face Ring Kit, Stainless Steel Screen, Niche and Isolation Transformer are not included and may be purchased from Clark Synthesis.

- 1) Carefully remove the speaker from its box and set aside. Remove the black o-ring from inside the red gasket and dispose.



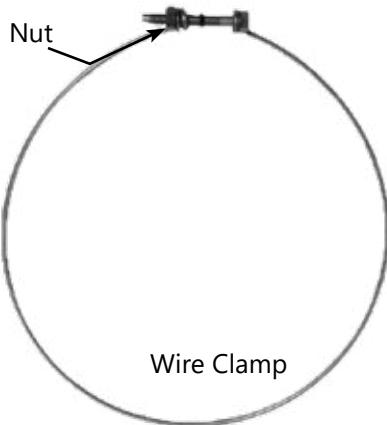
- 2) Install the mounting gasket around the rubber ring of the sound lens. The gasket's flat side will go towards the face ring. The grooved side faces the speaker body. Ensure the mounting gasket is installed evenly and is firmly seated against the entire circumference of the sound lens.



# IN-WALL INSTALLATION

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3) Loosen the nut on the wire clamp. With the mounting gasket facing up, place the wire clamp over the speaker. The screw & nut should be facing down towards the speaker not the sound lens.



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**NOTE: If using the Stainless Steel Screen, install now. See page 14 for Screen Installation.**

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4) Place the speaker on a non-abrasive surface with the sound lens facing up. Hold the face ring above the sound lens, allowing the clamp tabs to fall open. Set the face ring against the mounting gasket, insuring each clamp tab is on the outside of the mounting gasket. While placing the face ring on the gasket tuck the gasket in so no red shows. Hold the entire assembly together and flip it over, place it on the non-abrasive surface as shown in the third picture below. Carefully position the face ring so it is centered over the sound lens.



# IN-WALL INSTALLATION

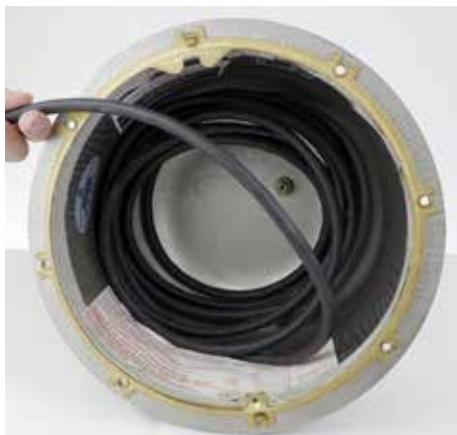
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5) Place the wire clamp under each clamp tab, verifying the nut and bolt adjuster is accessible when the clamp is placed under the tabs. Ensure the mounting gasket and face ring are still evenly centered. Use a wrench and a Phillips screwdriver to tighten the wire clamp. When fully tightened, the wire clamp should be firmly seated in each clamp tab and the speaker should be secure. Pick up the assembly and ensure it is still properly centered in the face ring. If not, loosen the wire clamp and adjust.



6) Take the end of the speaker wire and pull it through the conduit hole in the back of the niche. For future speaker servicing, leave enough speaker wire in the niche to allow the speaker to be placed on the pool deck.

Note: In actual applications, the niche will already be mounted in the wall of the pool.



# IN-WALL INSTALLATION

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- 7) Carefully set the lock tab located on the bottom of the face ring behind the receiving plate located on the bottom of the niche. Align the bolt/rubber washer on the face ring with the threaded receiving hole on the niche. Attach the trim ring securely to the niche by gently tightening the bolt. You are now ready to connect the speaker to your audio system.



# DROP-IN INSTALLATION

- 1) Find a length of 1/4 in (6 mm) rope that will allow you to place the speaker in the area of the pool where you would like sound (see General Information section at the beginning of this manual for precautions when using this type of application). Carefully remove the speaker from its box. Locate the open hole on the speaker's rubber ring (next to the interlaced speaker wire). Thread the rope through the hole. Tie a knot that will not come undone or slip through the hole.



- 2) Connect the speaker to your audio system with the attached speaker wire. Carry the speaker to the pool using the rope (**NEVER CARRY THE SPEAKER BY THE SPEAKER WIRE! THIS WILL DAMAGE THE SPEAKER!**). Gently lower the speaker into the pool, insuring the speaker and wire are not scratching along the wall of the pool (**NEVER THROW THE SPEAKER INTO THE WATER. THIS WILL DAMAGE THE SPEAKER AND MAY CAUSE PERSONAL INJURY**). When the speaker is under the water at the desired depth, ensure the sound lens is facing away from the wall and allow the speaker to rest against the wall. Tie the rope to a sturdy object (noting the precautions listed in the front of this manual).



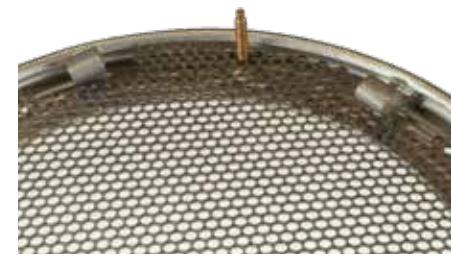
- 3) When you are ready to remove the speaker from the water, slowly raise the speaker to the surface of the water using the rope (ensure the speaker does not rub against the wall of the pool). Use caution when the speaker reaches the water's surface because the surface tension of the water increases the drag on the speaker and could cause the rubber ring to pull free from the speaker. Roll up the speaker wire and rope. Use the rope to carry the speaker to its storage location (**NEVER CARRY THE SPEAKER BY THE SPEAKER WIRE! THIS WILL DAMAGE THE SPEAKER!**).

# STAINLESS STEEL SCREEN INSTALLATION

- 1) Carefully remove the rubber ring from face ring screw. Save the rubber ring.
- 2) Remove the screw from the face ring. Save the screw.
- 3) Put on a pair of work gloves to avoid being cut by the screen's sharp edges.



- 4) Place the bottom of the screen into the face ring aligning the feet around the tab. Note that the smooth beveled side of the screen should face outward toward the front of the face ring.
- 5) Push the screen all the way into the face ring. You may need to flex the screen in a little to ensure a secure fit.
- 6) Insert the screw through the face ring. There is a small hole cut out for the screw in the screen.



- 7) Carefully place the rubber ring onto the face ring screw.



# (OPTIONAL) ISOLATION TRANSFORMER INSTALLATION

- 1) Place the Isolation Transformer in a dry, indoor, location. The transformer is not designed to be mounted outdoors.
- 2) Transformer may be mounted to a wall using mounting tabs. (The transformer is heavy and must be securely mounted to the wall.)
- 3) Locate the Neutrik Speakon connector. Remove the connector from the bag.



- 4) Locate the speaker cable from the amplifier. Remove .75 in. (20 mm) of the cable's outer jacket.
- 5) Remove .3 in. (8 mm) of insulation from each wire.
- 6) Place the Speakon connector's blue bushing on the amplifier cable.



- 7) Insert the positive wire (usually white or red) to the 1+ terminal, and the negative wire (usually black) to the 1- connection. Tighten the 1+ and 1- screws.
- 8) Push the gray ring down until it locks on the connector's body.
- 9) Screw the blue bushing onto the connector's body. The connector is now assembled.



# (OPTIONAL) ISOLATION TRANSFORMER INSTALLATION

- 10) Plug the amplifier cable connector into the transformer input. Make sure to turn the connector until it locks in place.
- 11) Repeat steps 3 - 9 to attach the Speakon connector to the Diluvio Speaker cable. Connect the positive wire (white) to the 1+ connection, and the negative wire (black) to the 1- connection.
- 12) Plug the Diluvio Speaker cable connector into the transformer output. Make sure to turn the connector until it locks in place.



# TROUBLESHOOTING

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## POOR SOUND QUALITY

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### Distorted Sound

- Distortion can occur when speakers are not properly powered. We recommend amplification of 125 – 150 watts at 4 Ohms per speaker. This requirement may change when wiring multiple speakers, details and wiring diagrams are available at [clarksynthesis.com](http://clarksynthesis.com).
- Speakers are designed to produce sound while underwater, speakers may sound distorted above water.

### Humming

- Speakers will only produce sound sent from the amplifier. Humming can occur if a ground loop is present, or if the amplifier is defective.

### Stereo vs. Mono Sound

- Stereo sound does not work well underwater, music should be mixed to mono.

## RATTLING

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### Loose Face Ring or Screen

- Vibration from the speaker can cause loose pieces to rattle. The niche, face ring kit assembly, and screen should be evaluated to ensure all pieces are secure.

### Speaker Damage

- Damage to internal components of the speaker caused by overpowering can result in rattling. This damage cannot be repaired, please contact Clark Synthesis for replacement options.

## DISCOLORATION BELOW THE FACE RING

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### Saltwater Pools

- Minerals in saltwater pools may coalesce around the speaker and run down the swimming pool wall. A sacrificial anode should be installed within the niche to prevent mineral deposits.

## ADDITIONAL SUPPORT

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- Videos, FAQs, and Installation Guides can be accessed at [www.clarksynthesis.com](http://www.clarksynthesis.com). Our support team is also available via email or phone during business hours.
- Phone: 303-797-7500
- Email: [Info@clarksynthesis.com](mailto:Info@clarksynthesis.com)

# WIRING DIAGRAMS & VIDEOS

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## One Diluvio to One Amplifier Channel

Wiring Diagram  
and Amplifier  
Recommendations



Video



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## Two Diluvios to One Amplifier Channel

Wiring Diagram  
and Amplifier  
Recommendations



Video



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## Four Diluvios to One Amplifier Channel

Wiring Diagram  
and Amplifier  
Recommendations



Video



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## One Diluvio & Isolation Transformer to One Amplifier Channel

Wiring Diagram  
and Amplifier  
Recommendations



Video



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## Two Diluvios & Isolation Transformers to One Amplifier Channel

Wiring Diagram  
and Amplifier  
Recommendations



Video



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## Four Diluvios & Isolation Transformers to One Amplifier Channel

Wiring Diagram  
and Amplifier  
Recommendations



Video



# MORE AMAZING CLARK SYNTHESIS PRODUCTS

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## TST429 Platinum Transducer

This professional transducer is the most powerful audio transducer on the market today. Providing ultimate performance and output of full-frequency sound, this premium transducer is designed to meet the demands of audio applications such as high-end home theater furniture, risers, platforms, dance floors, simulators, and gaming systems.



## TST329 Gold Transducer

Our professional transducer with a proven record of superb performance, sound fidelity, and efficiency. This transducer is a great choice for audio applications, including home theater furniture and commercial/military simulators.



## TST239 Silver Transducer

An excellent choice for most entry-level applications. This product is widely used in the gaming market, providing solid performance at an affordable price.



## AW339 All-Weather™ Pro

A weather-resistant version of the TST329 Gold, specifically designed to withstand rain and humidity. The AW329 can turn a deck, hot tub, or boat hull into a full-frequency speaker that produces full-fidelity sound in a variety of climates and environments.



## AW439 All-Weather™ Pro 2X

The weather-resistant version of the TST429 Platinum, specifically designed to withstand rain and humidity. This transducer is the best choice for outdoor staging.



## ProSound429 Platinum Thumper

The most powerful thumper available from Clark Synthesis. It is the first choice for many professional touring musicians.



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There is more helpful information at  
[www.clarksynthesis.com](http://www.clarksynthesis.com)

## VIDEOS

Underwater Speaker Placement Essentials Video

How do Underwater Loudspeakers Work?

Diluvio Install, Pentair Face Ring, with screen

Diluvio Install, Pentair Face Ring, without screen

## FAQs

## PHOTOS

& MORE!



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