

# AQUARMONY Technical Sheet

## DESCRIPTION

AQUARMONY is an underwater loudspeaker devised for swimming pools. It is manufactured with high quality components, innovative technologies and special assembling methodologies, which allow to function properly also when it's plunged into saline water or water with high chloride content.



## USE

This underwater loudspeaker allow to listen to music and voice clearly.

Aquarmony helps every sports session to get more interesting and motivating, encourages and supports the game, the animation as well as the relaxation in your swimming-pool.

It can be used for: synchronized swimming, relaxing activities, prenatal swimming classes, swim lessons for kids, and any sorts of game in swimming-pool.

It's particularly suitable for the water relaxing activities and for all the therapies with the patient relaxed in the water.

## TECHNICAL CHARACTERISTICS

Max power 60 W

Impedance 4 ohm

Frequency response 200 – 12.000 Hz

Dispersion underwater omnidirectional

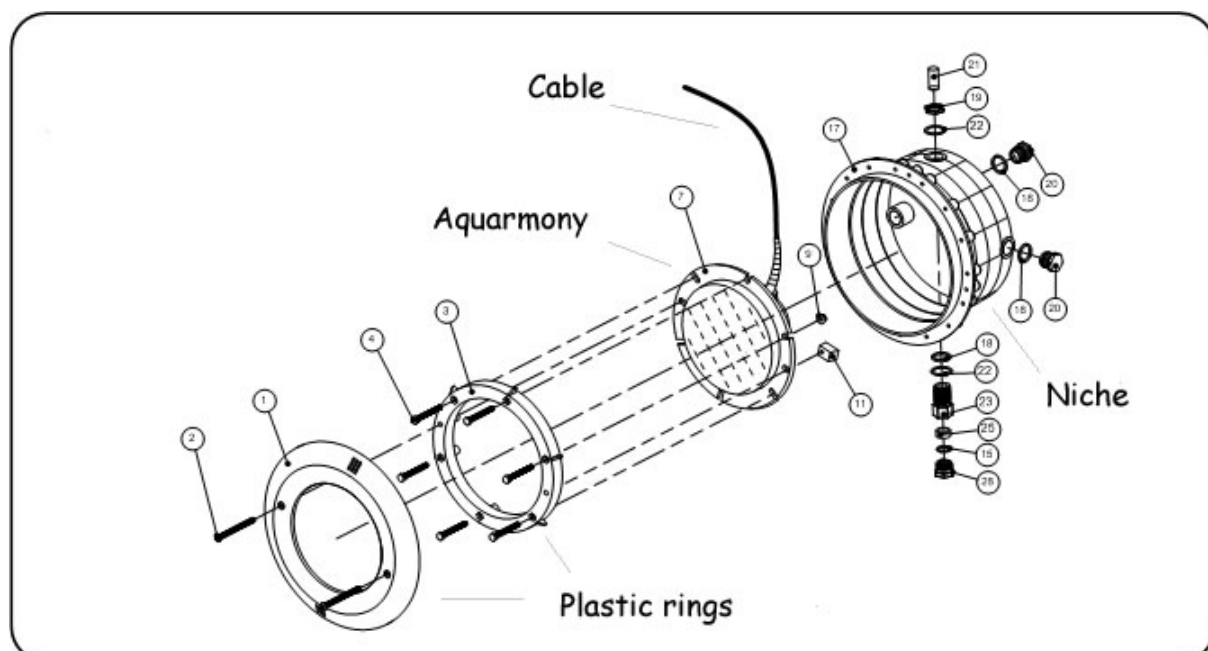
Optional area 80 m<sup>2</sup>

Installation depth see table

Weight 6 Kg

Cable Lenght 5 m\* type:H07NR-F

\* cable lenght on demand

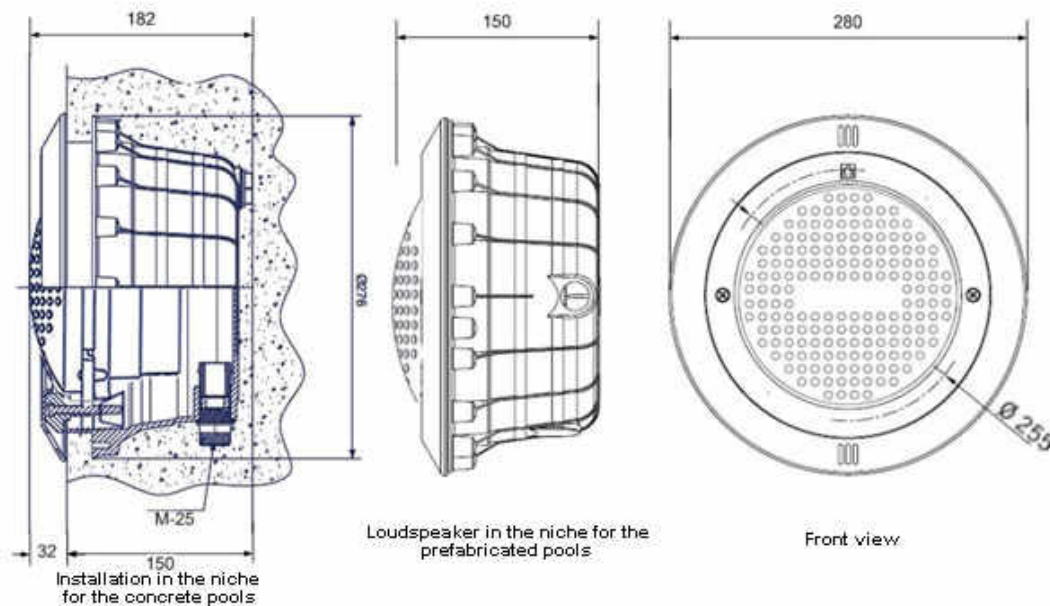


## INSTALLATION

About its installation, it is very simple to install Aquarmony as it is available in two versions: for the swimming pools that are already operating and for the swimming pools under construction.

About the first version, it does not require any intervention as the underwater loudspeaker is plunged into water by a cable and connected to the amplifier system. It is pulled out of the water after its utilization.

Concerning the fixed installation for the swimming pools under construction, Aquarmony is set in the lamp niches. The loudspeaker can be supplied with the assembling kit in order to make its installation very easy. Moreover, Aquarmony is provided with the plastic rings to be fixed better in the niche.

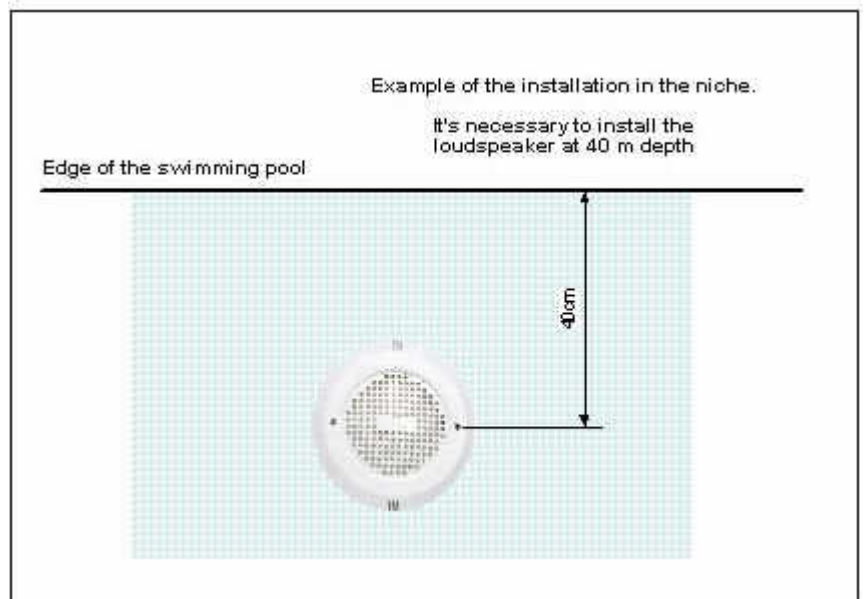


Aquarmony loudspeaker works at best if the middle of the niche is at 40 m depth from the water surface.

In any case, it's advisable not to install the loudspeaker at more than 60m depth.

Aquarmony must be completely plunged into water, it doesn't spread music outside water.

To spread music outside water it's necessary to install loudspeakers appropriate to the environment and to the specific requirements.



### Instructions for the installation in the niche.

Put on the neoprene cable in the flexible pipe up to reach the junction box, giving attention that the cable gland and the gasket are well embedded.

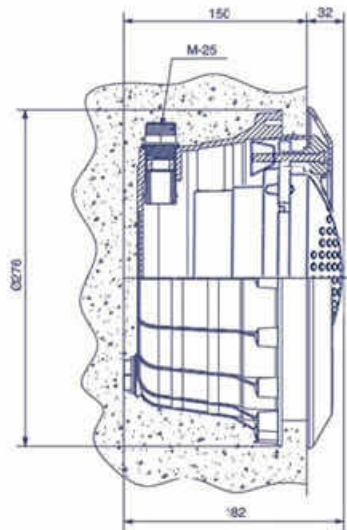
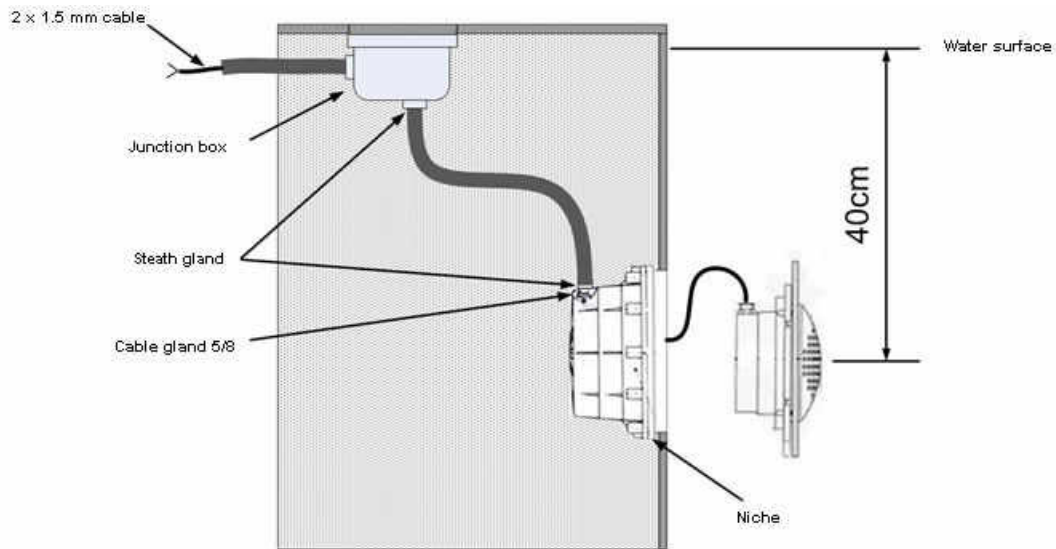
Be sure to have at least 1 m cable length wrapped in the niche in order to be able to carry the loudspeaker on the edge of the pool.

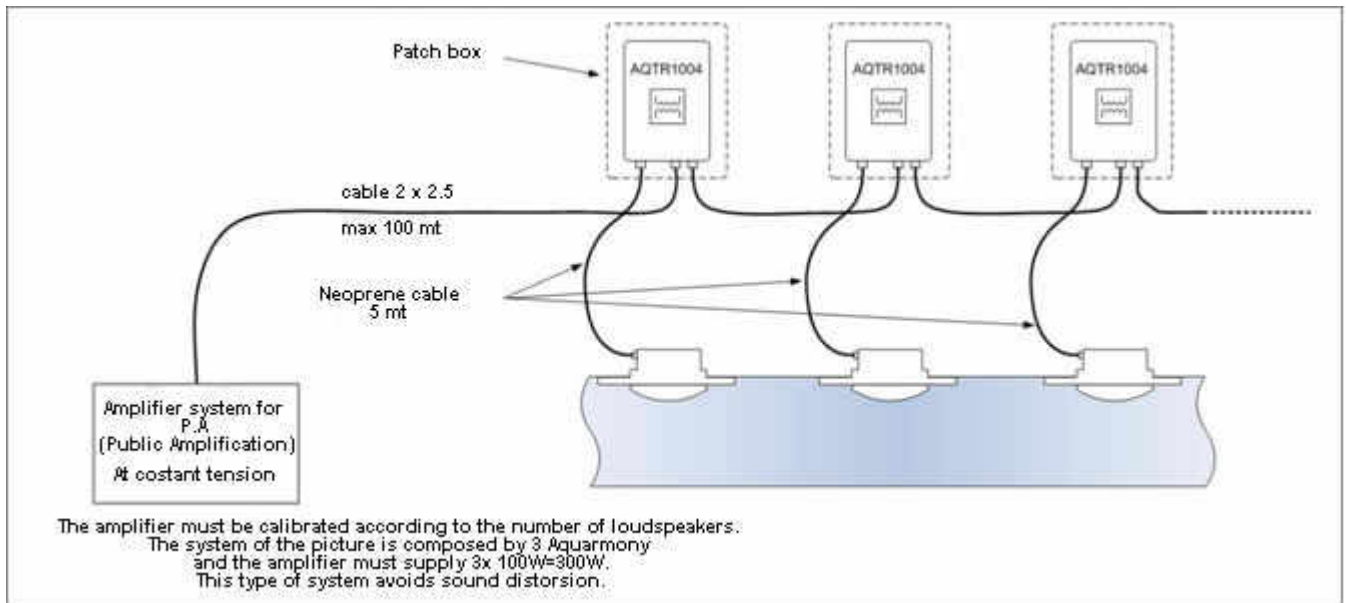
Screw the cable gland inside the niche by using the provided gasket, screw the cable gland of the junction box too.

Insert Aquarmony in the niche and be sure that the plastic ring is perfectly adhered to the wall.

Finally, screw tighter the plastic ring to the wall so that the loudspeaker is perfectly fixed in the niche.

The electric wire joining the junction box to the amplifier system must not be smaller than  $\text{mm}^2 2 \times 2,5$  size.





## SYSTEM PLANNING

For an excellent sound diffusion it's necessary to install the loudspeaker as indicated in the following table regardless of the pool depth.

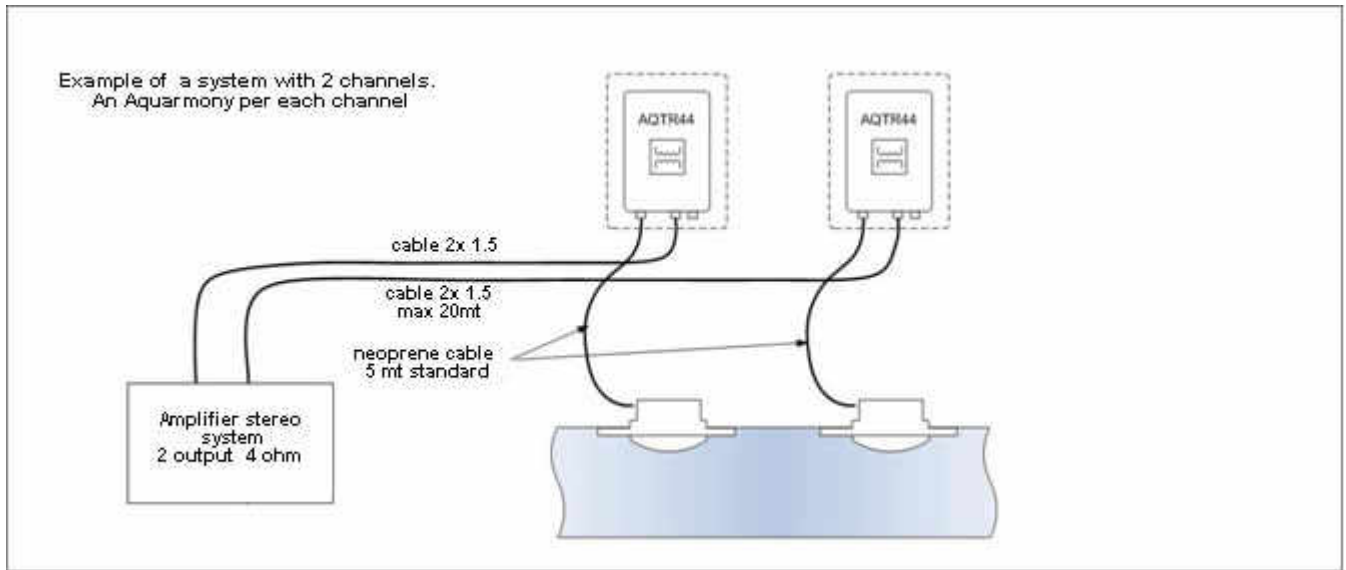
POOL'S SIZE		QUANTITY OF UNDERWATER LOUDSPEAKER		POWER AMPLIFIER
	up to	25 m <sup>2</sup>	N.2 LOUDSPEAKER	200 W R.M.S.
From	25 m <sup>2</sup> to	50 m <sup>2</sup>	N.3 LOUDSPEAKERS	300 W R.M.S.
From	50 m <sup>2</sup> to	120 m <sup>2</sup>	N.4 LOUDSPEAKERS	400 W R.M.S.
From	120 m <sup>2</sup> to	300 m <sup>2</sup>	N.6 LOUDSPEAKERS	500 W R.M.S.
From	300 m <sup>2</sup> to	500 m <sup>2</sup>	N.8 LOUDSPEAKERS	800 W R.M.S.
From	500 m <sup>2</sup> to	800 m <sup>2</sup>	N.10 LOUDSPEAKERS	1000 W R.M.S.
From	800 m <sup>2</sup> to	1.250 m <sup>2</sup>	N.16 LOUDSPEAKERS	1600 W R.M.S.

**N.B. If the swimming pool is prefabricated with PVC lining or manufactured with other soundproof materials it's required to double the number of the loudspeakers and consequently the amplifier system too.**

The electric wire joining the junction box to the amplifier system must not be smaller than mm<sup>2</sup> 2 x 2,5 size.

*For an accurate system it's obligatory to respect all the devices provided by the law: electrical insulation, max 12 V cc power supply on the pool surface.*

Aquarmony loudspeakers must be connected to the amplifier system by the isolating transformers (see the picture) : AQTR1004 for the audio systems with fixed voltage , AQTR44 for 4 ohm audio systems.



It's very important that the amplifier system has an equalizer and a limiter or compressor in order to protect the loudspeaker from excessive power.

In particular, all frequencies under 300Hz must be attenuated by at least 12 dB to reduce distortion and to prevent the voice coil from overheating, and frequencies above 2000 Hz should be amplified by at least 10 dB.

It's important to calibrate the limiter in order to prevent saturation of the amplifier and prevent the loudspeakers from passing 60w RMS.

As you cannot listen to music outside water if you haven't a limiter you cannot control the sound volume, so the loudspeakers may be damaged.

### **Normative reference**

- EN 60529-97 Protection (IPX8) for continuous immersion
- CEI 64-8/7 Sez. 702 (update.06/2003) - Electrical system for swimming pools and water fountain
- EN 60598 Parte 2 Sez.18 Lighting equipment for swimming pools
- EN 61558 -1 Safety transformers
- EN 60065 (Agg 01/2003) Safety requisition for audio-video equipment
- EN 61000 - 6 - 1 Electromagnetic Immunity