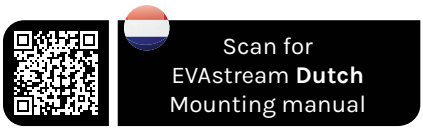
EVAstream

MOUNTING MANUAL

A step-by-step guide to mounting the EVAstream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EVAstream **Dutch**
Mounting manual


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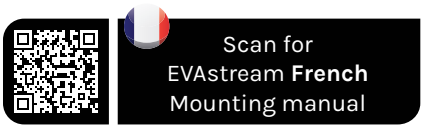
EVAstream **German**
Mounting manual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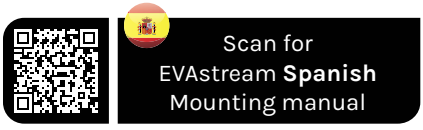
EVAstream **French**
Mounting manual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Mounting manual

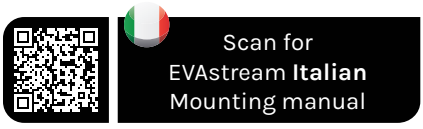

Scan for
EVAstream **Italian**
Mounting manual

TABLE OF CONTENTS

1. ABOUT THIS MANUAL

1.1 Language

This manual is meant for qualified installers. Read and understand the information in this manual before mounting and using this product. The original language of this manual is English. All versions of this manual in other languages are translations of the original manual.

1.2 Symbols used

This manual contains safety instructions. Ignoring these instructions may lead to injury or damage to the appliance. Each safety instruction is indicated with a signal word. The signal word corresponds with the level of risk of the described hazardous situation.

DANGER	This symbol indicates a hazardous situation which, if not avoided, will result in death or serious injury.
WARNING	This symbol indicates a hazardous situation which, if not avoided, could result in death or serious injury.
CAUTION	This symbol indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
NOTICE	Indicates a situation that, if not avoided, could result in damage to the product or to the environment.

2. SAFETY

2.1 Safety warnings and regulations

DANGER

Electrical shock hazard. Fatal injury will occur. Switch off all electricity near the pool before performing the electrical installation.

WARNING

Electrical shock hazard. Risk of electric shock and injury. The product must be installed by a certified electrician. Incorrect installation will cause electrical hazards.

WARNING

Electrical shock hazard. Risk of electric shock due to incorrect mounting.

- Make sure you read the enclosed documents carefully.
- Never connect the product to the mains before connecting all loose wires properly.
- Always disconnect the product from the mains before servicing.

WARNING

Electrical shock hazard. Risk of electric shock due to current leakage.

- Make sure to install the turbine with a PE-earthing.
- It's important to connect the installation niche to the pool earthing, never to the house earthing.

NOTICE

Risk of product damage. Prolonged disturbance of frequency may permanently damage the equipment.

- Never place control and power cables together in one conduit, according the Electrical Standards.

2.2 General safety instructions

Follow the NEN1010 guidelines. Follow the specific installation requirements of IEC 60364-7-702: 2010 (Electric low-voltage installations - Part 7-702: Requirements for special installations, spaces, and areas – Swimming pools and fountains). Install the controller in or outside of zone 2 (NOT in zones 0 or 1) according to IEC 60364-7-702: 2010. The power supply must be equipped with an earth leakage circuit breaker (ELCB) with a nominal differential current ≤ 30mA.

The EVAstream was developed as a counter-current swimming machine for use in a swimming pool. Use for any other purpose is not permitted. Requests for exceptions to this should be submitted to the manufacturer for technical analysis. Only after written approval by EVA Tech B.V. may the EVAstream be applied in any other way than as prescribed in this document.

The general terms and conditions of EVA Tech B.V. apply to all our offers and agreements. EVA Tech B.V. expressly rejects the applicability of the general (purchasing) conditions of counterparties. The warranty provisions of the EVAstream and the general terms and conditions of EVA Tech B.V. can be found at **www.evastream.nl**

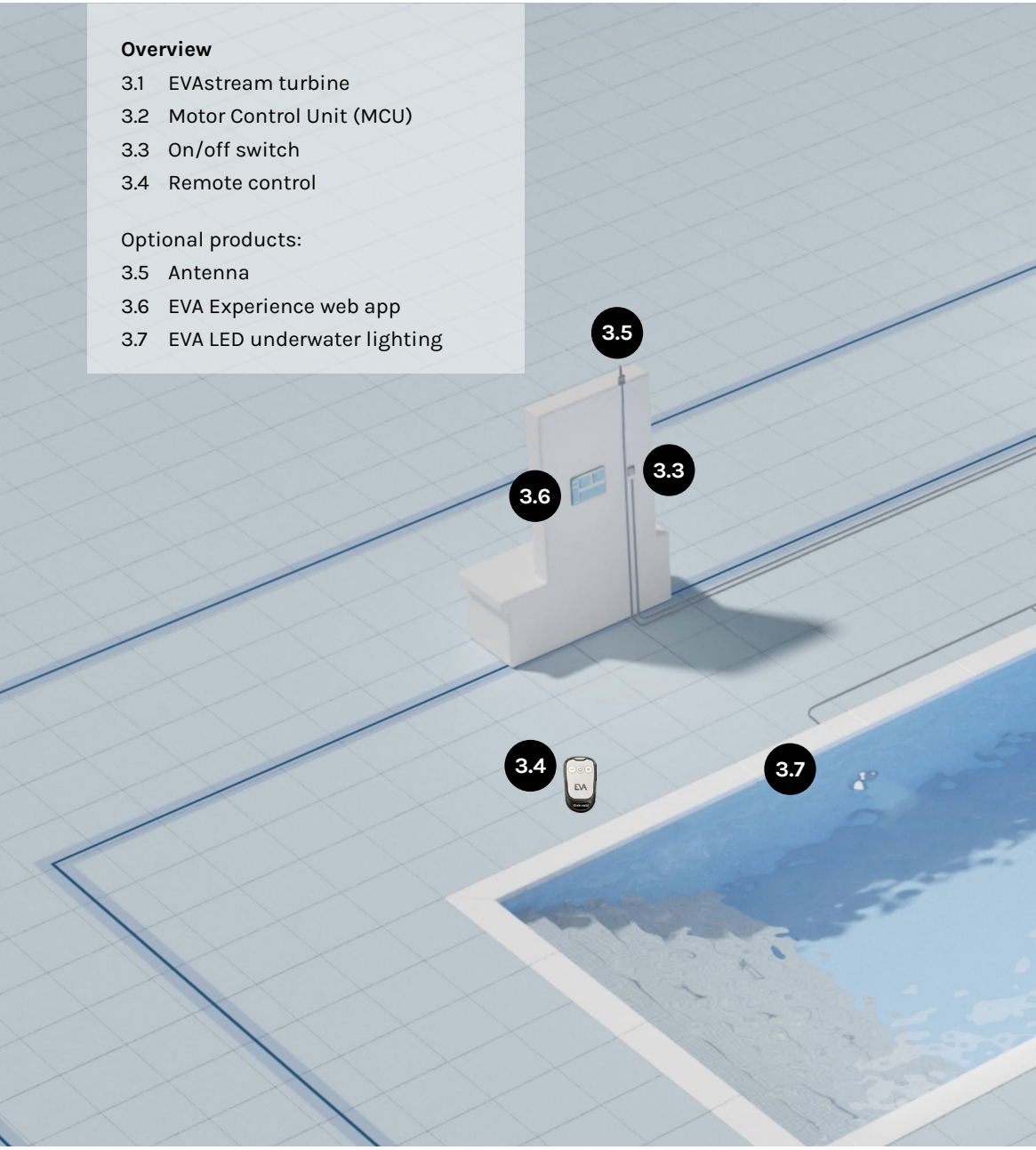
3. PRODUCT

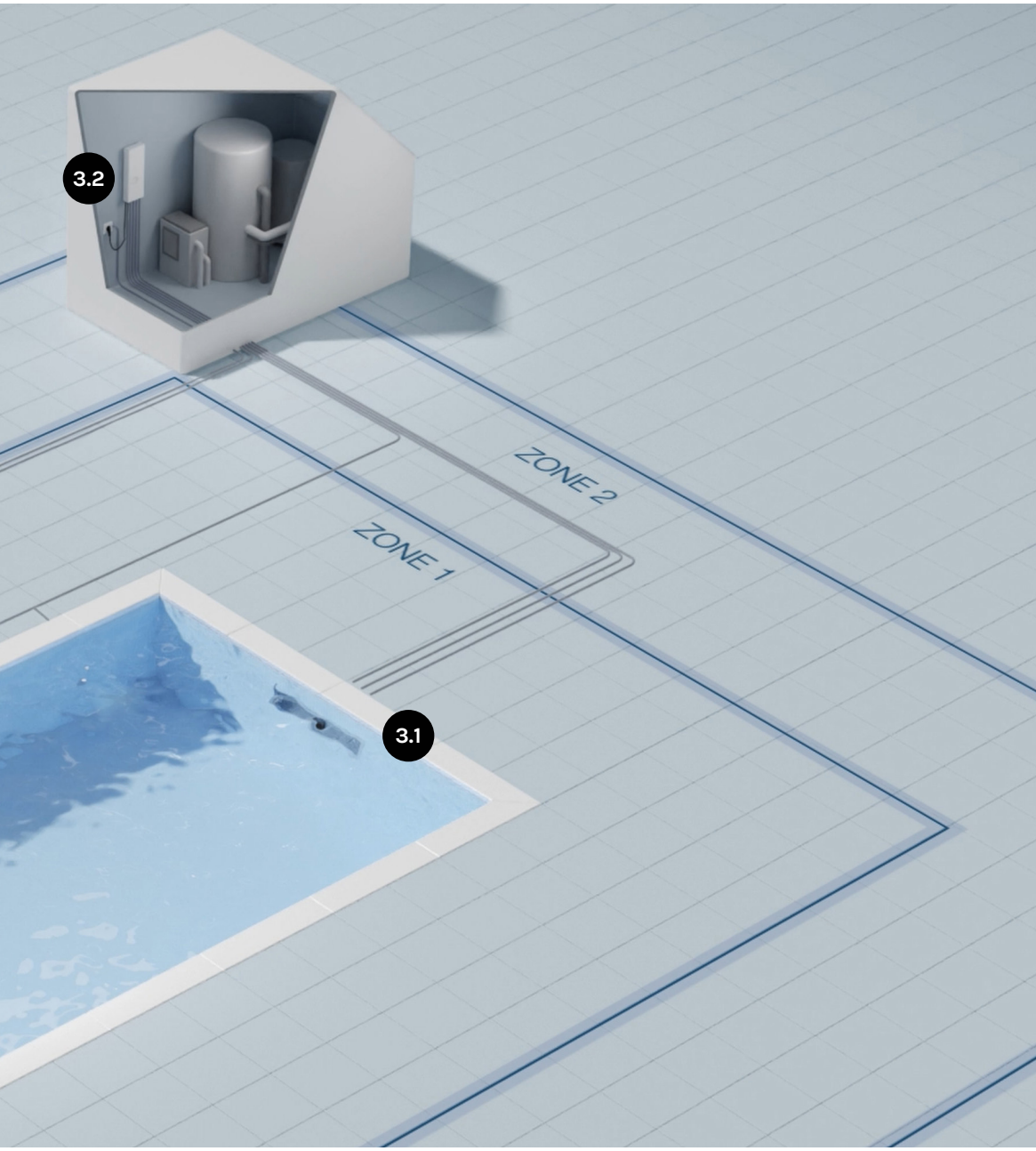
Overview

3.1 EVAstream turbine
3.2 Motor Control Unit (MCU)
3.3 On/off switch
3.4 Remote control

Optional products:

3.5 Antenna
3.6 EVA Experience web app
3.7 EVA LED underwater lighting




3.2
ZONE 2
ZONE 1
3.1

3.1 EVAstream Turbine

EVAstream FIT

EVAstream PRO

EVAstream MAX

The EVAstream is a counter-current machine. Water suction takes place through the grids around the machine. Always make sure that the suction parts are completely free of obstacles. These parts of the machine must not be closed or blocked in any way.

General specifications

Power input	230 VAC; 11A
Cable motor	5 m, 16 mm^2 • Extend with max 20m using 25mm^2 cable • Extend with max 25m using 35mm^2 cable (Flexible cable of fine copper wire strands)

• Never place control and power cables together in one conduit, according the Electrical Standards.

Electrical specifications - AC/DC Power Supply / INPUT

Voltage range	180-264 Vac 254-370VDC		
Frequency range	47-63Hz		
AC current (230VAC)	FIT: 5.5A	PRO: 9A	MAX: 11A
Nominal power	FIT: 1200VA	PRO: 2000VA	MAX: 2400VA
Power factor (type)	>0.9		

Electrical specifications - AC/DC Power Supply / OUTPUT

DC bus voltage (stabilized)	FIT: 26Vdc	PRO: 28Vdc	MAX: 28Vdc
DC current	FIT: 46A	PRO: 71A	MAX: 86A

Protections

Short circuit, overload, over voltage, over temperature.

Safety standards

SELV, UL62368-1, CSA C22.2 No. 62368-1, TUV EN62368-1 + A11, EAC TP TC 004, BSMI CNS14336-1 approved, EN55032 (CISPR32) Class A/B, EN61000-3-2/3, EN61000-4-2/3/4/5/6/8/11, EN55024, EN61204-3, EN61000-6-2, BSMI CNS13438.

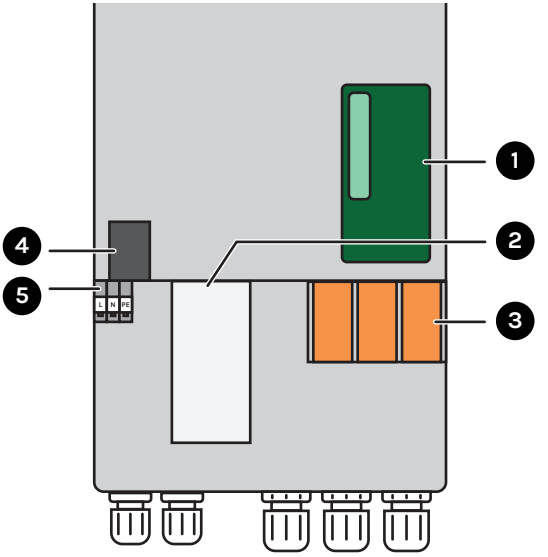
3.2 Motor Control Unit (MCU)

The motor control unit (MCU) of the EVAstream is placed in the technical area near the pool (a dry and condensation-free environment, zone 2). Ensure that the MCU is placed with the cable glands facing down.

Image: Motor Control Unit (MCU) >

Connections MCU

1. Control print (32 pins)
2. Remote receiver
3. EVAstream turbine connection
4. UTP connector
5. Power connection



Electrical specifications - MCU

Control input	DMX512
Motor PMSM 3xDC Output	RPM range - 10-100%
IP rating	IP20
EVAstream Max dimensions	660x224x116 mm (cable gland on bottom)
EVAstream Pro/Fit dimensions	660x186x116 mm (cable gland on bottom)

Working temperature

Max. 32°C, mount in a dry and condensation-free area. Provide space around the MCU for efficient heat management. Sides at least 5 cm and top bottom at least 10 cm.

Safety measures

EVA Torque control, Voltage/current control and Mosfet temperature control.

3.3 On/off switch

If the EVAstream is permanently connected to 230V mains, the installation must additionally be equipped with an on/off switch mounted near the swimming pool where the EVAstream is located.

After use, the power must be switched off.

3.4 Remote control

Electrical specifications - Receiver

Radio frequency band	433.92 MHz
Antenna	BNC connector, external antenna optional (preferably dipole antenna for DIN-receivers and 1/2 - or 1/4 antenna for wall mounting. The antenna is supplied as standard with a 10-metre cable.)

Electrical specifications - Remote control	
Radio frequency band	433.92 MHz
On/off switch	included
IP-rating	IP67
Environmental conditions	-20°C to +55°C / -4°F to +130°F (humidity 10–90%)
Moisture	10–90%
Dimensions	65x 112 x 35 mm / 2.6 x 4.4 x 1.4 inch

OPTIONAL PRODUCTS

3.5 Antenna

If the remote control has insufficient range, the supplied antenna can be installed.

General specifications	
Frequency	433.92 MHz
Weight	426 grams
Dimensions	33x195x33 mm
Range	50 m, in open field

3.6 EVA Experience web app

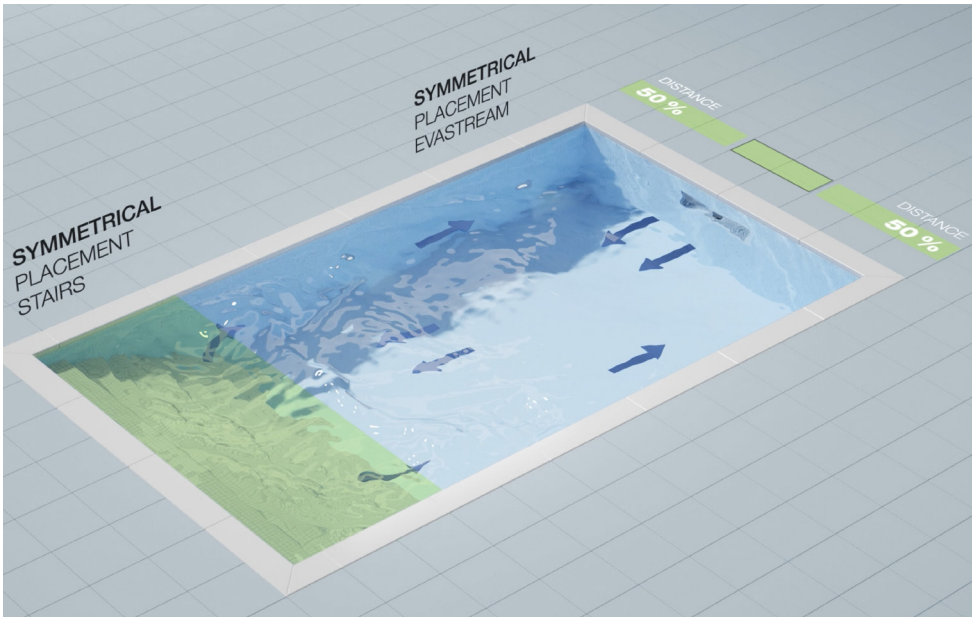
Use the EVA Experience web app to manage the EVAstream.
For instructions on how to set up the tablet environment, please refer to chapter 7.

3.7 EVA LED underwater lighting

The EVA RGBW LED underwater pool lighting completes the counter current pool experience. The underwater lighting guides you through the training. For instructions on how to set up the underwater lighting, please refer to the mounting & installation manual of the EVA LED underwater lighting.

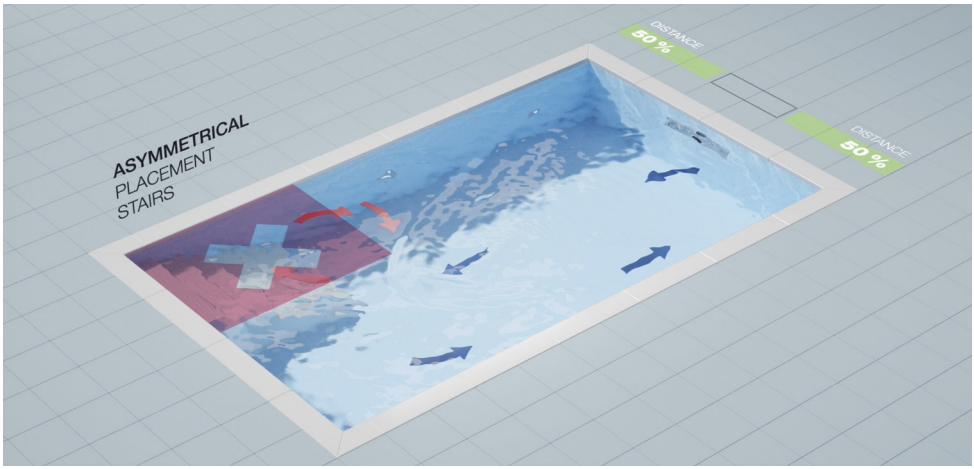
Scan the **QR-code** to go to the manual

4. SYMMETRICAL PLACEMENT OF THE EVASTREAM



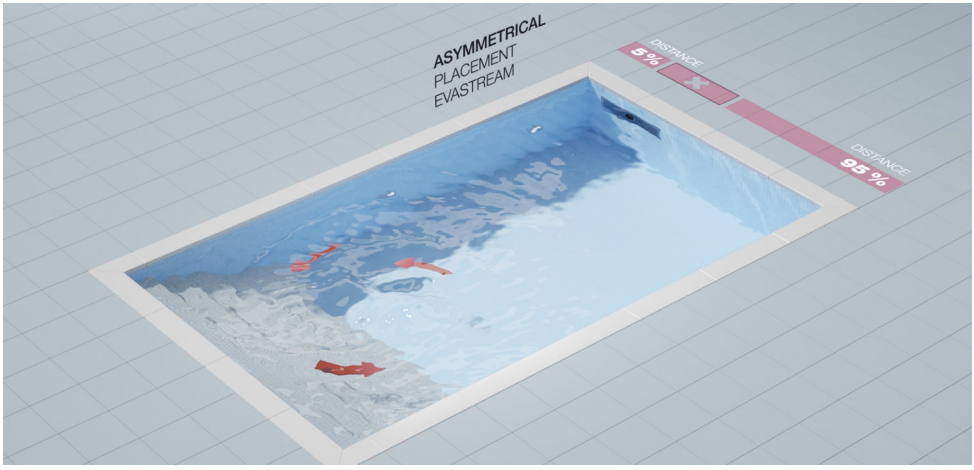
The importance of symmetrical placement of the EVAstream

To create the optimal swimming experience for the customer, it is important to think carefully about the positioning of the EVAstream in the design phase, for example in relation to elements such as stairs and platforms. Such 'obstacles' can cause a less pleasant swimming experience. For optimal water flow, the EVAstream should be placed in the middle of the pool wall in a symmetrically designed pool.



Blockages in the water circulation

Suppose you have placed a staircase in the corner of the pool. As a result, the circulation of the flow is not equal on both sides of the pool, because the staircase influences the flow. The flow of the EVAstream is still just as powerful, but the user experiences the current as if it were faltering.



Flow with asymmetrical placement

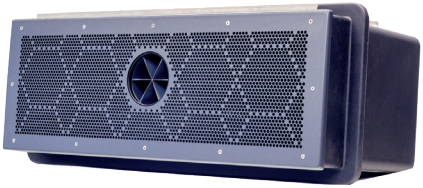
When a turbine is not placed symmetrically in the pool, the circulation of the current is not equal on both sides of the pool. The current of the EVAstream is still just as powerful, but it creates a kind of vortex in the middle of the pool.

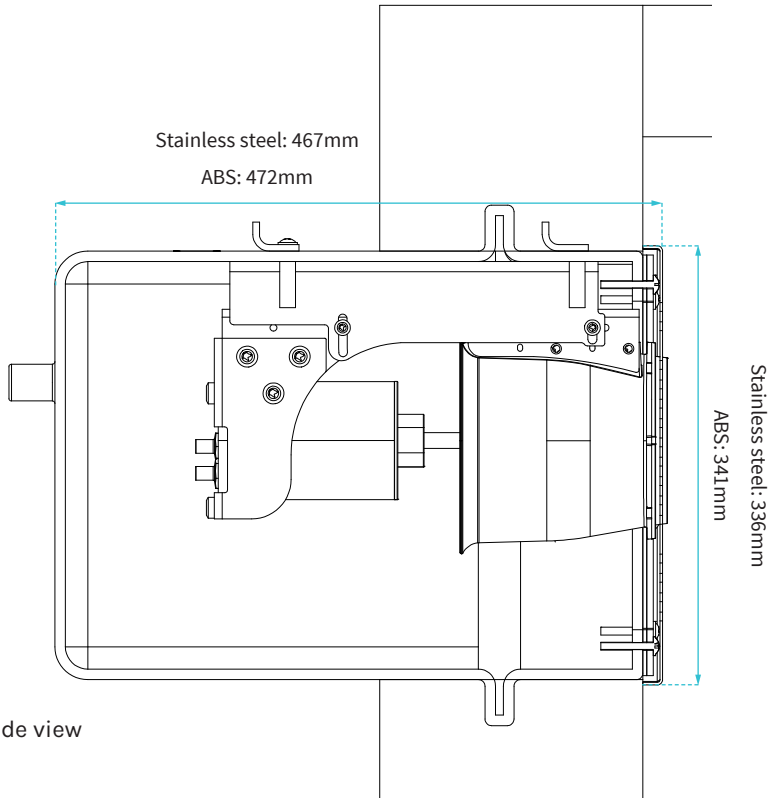
5. MOUNTING THE EVASTREAM

5.1 Mounting drawings

EVAstream installation niche PP

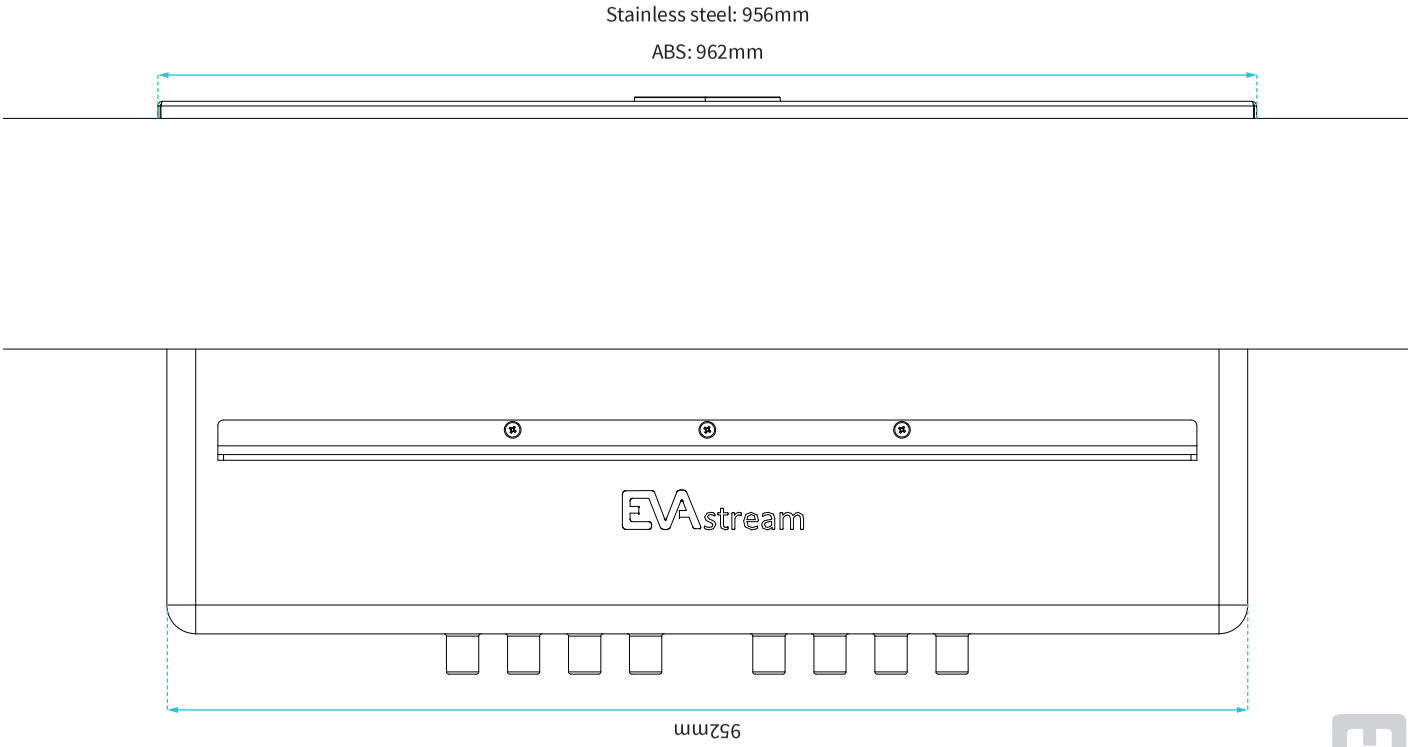
- Mounting depth: 250 mm below water level (centre of the turbine).
- Mount the EVAstream horizontally in the middle of the poolwall.





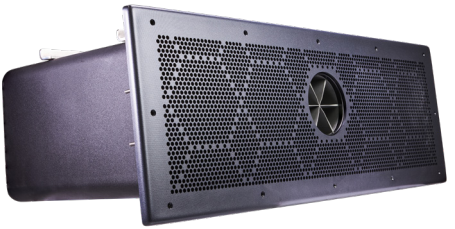
Side view

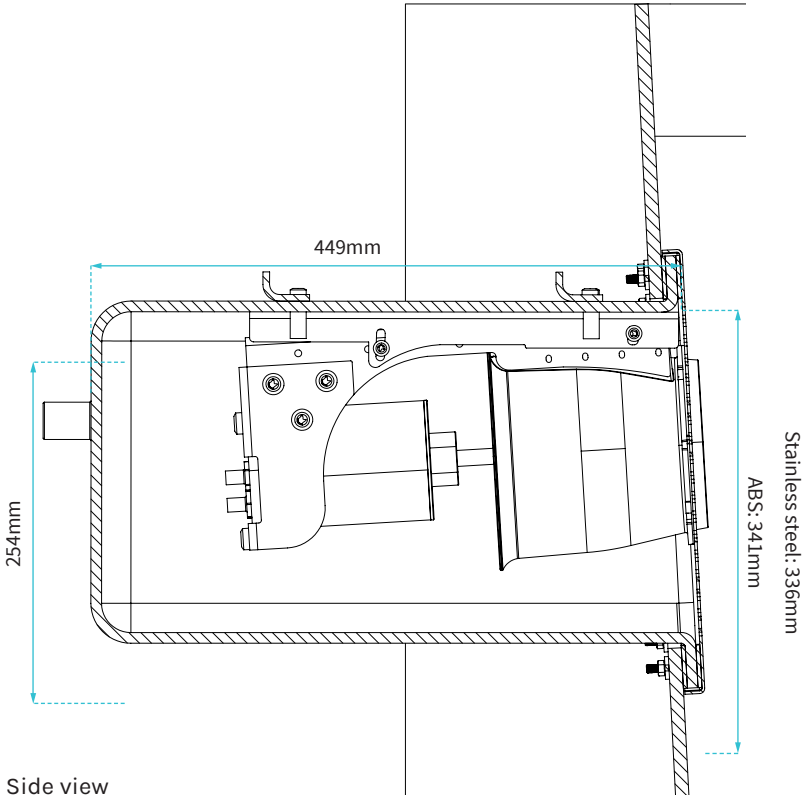
Top view



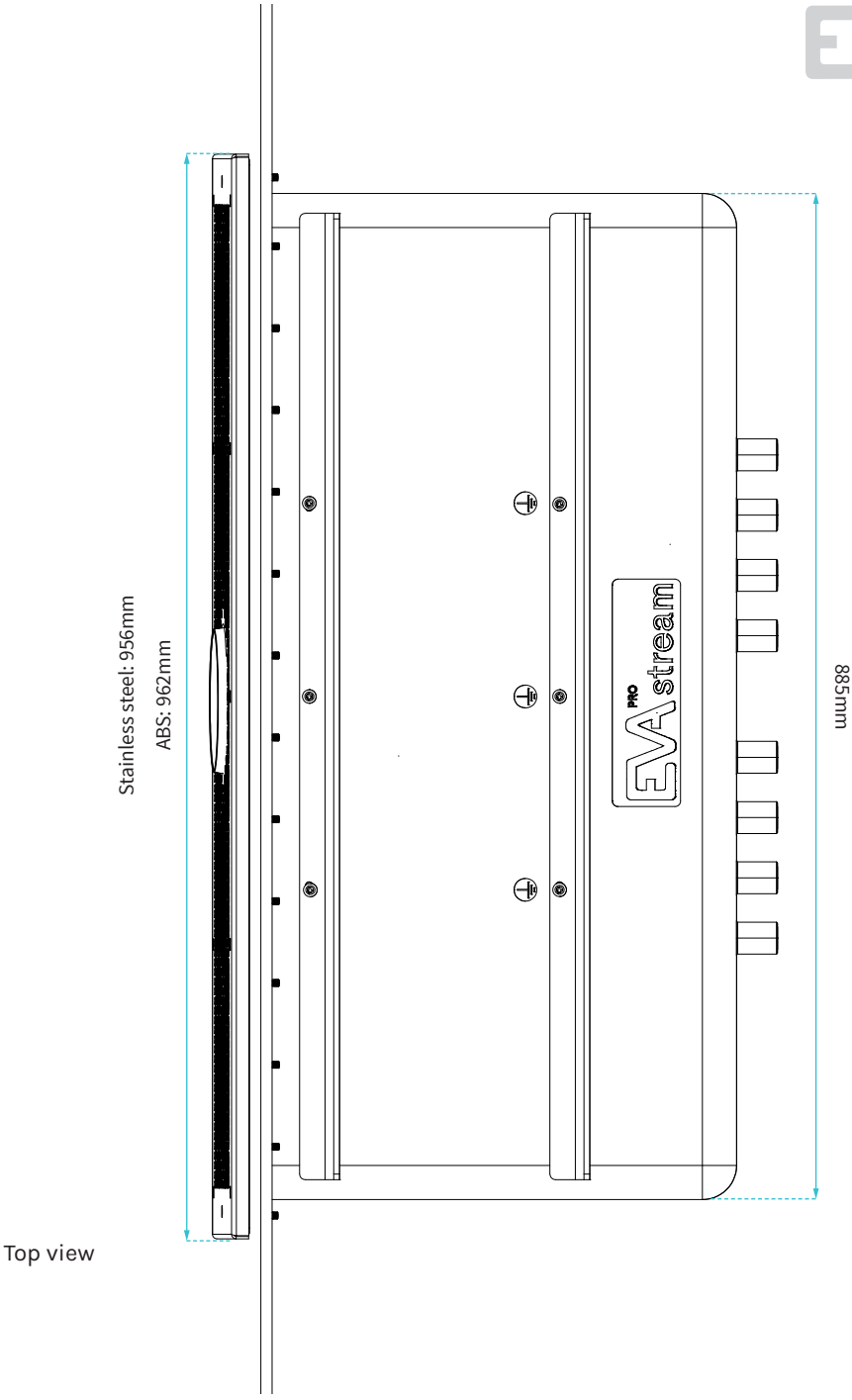
EVAstream installation niche POLY

- Mounting depth: 250 mm below water level (centre of the turbine).
- Mount the EVAstream horizontally in the middle of the poolwall.



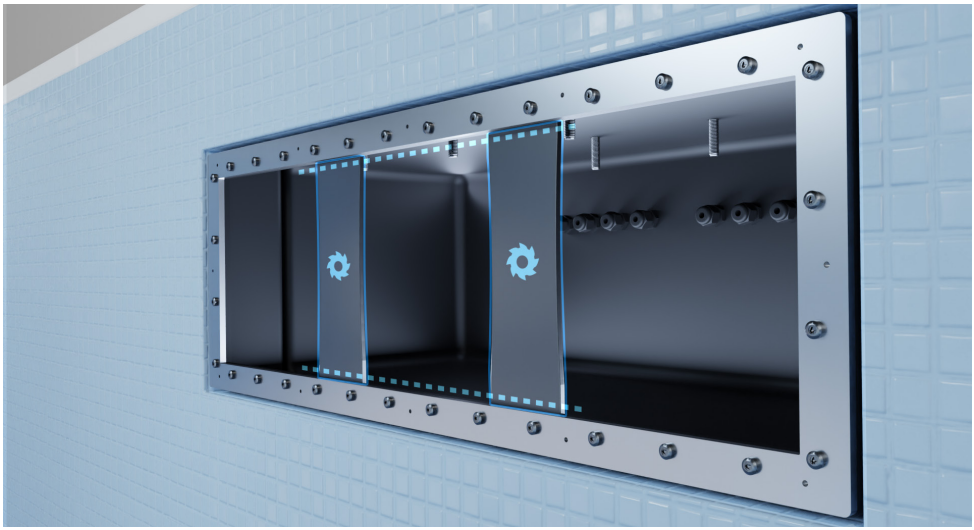


Side view



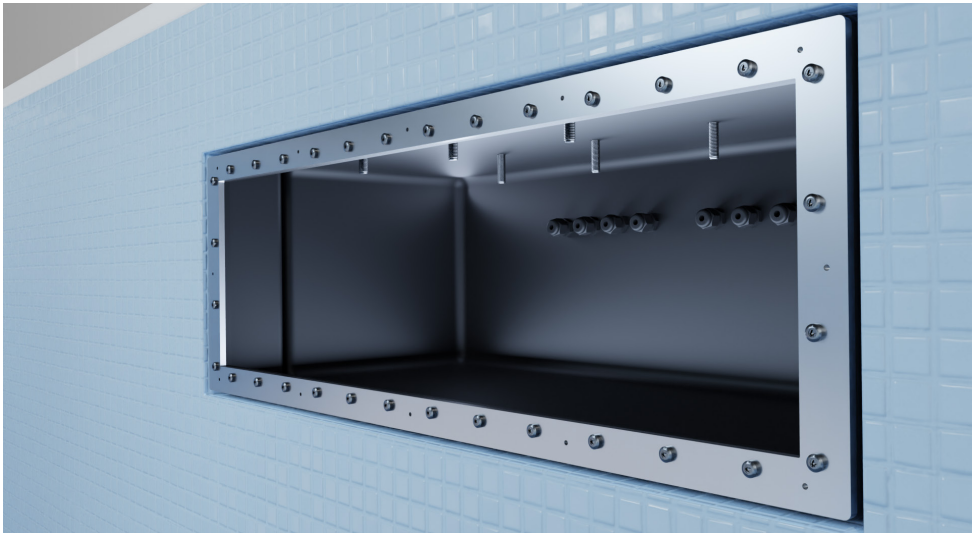
Top view

5.2 Remove the ribs



1. Remove the ribs with a saw suitable for plastic

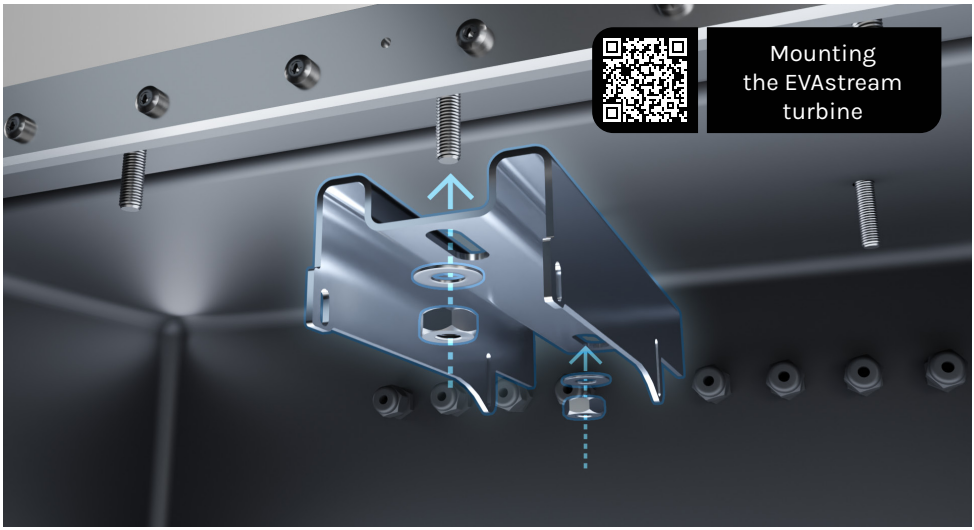
Use a saw suitable for plastic and saw off the ribs along the blue dotted line.



2. Empty installation niche

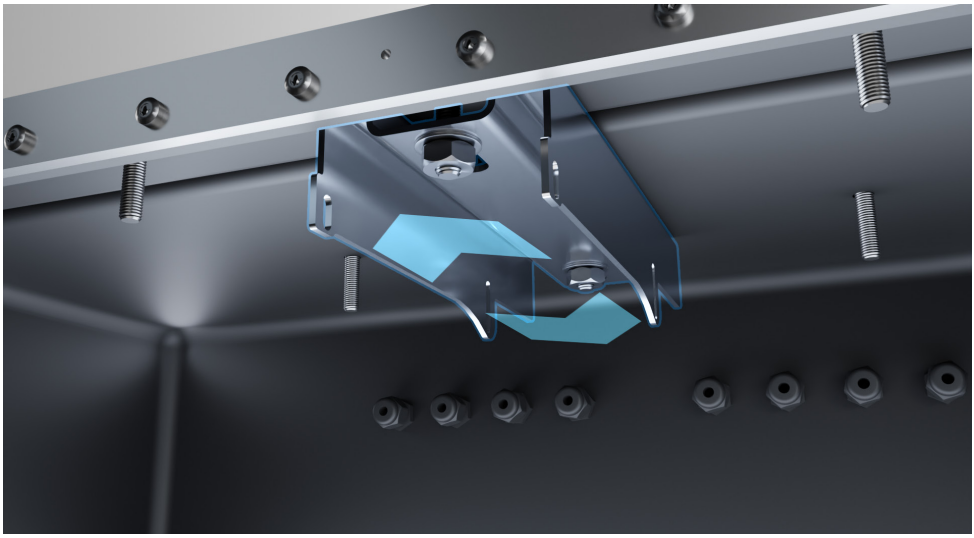
The installation niche is now completely empty and ready for mounting the turbine.

5.3 Mounting the EVAstream turbine



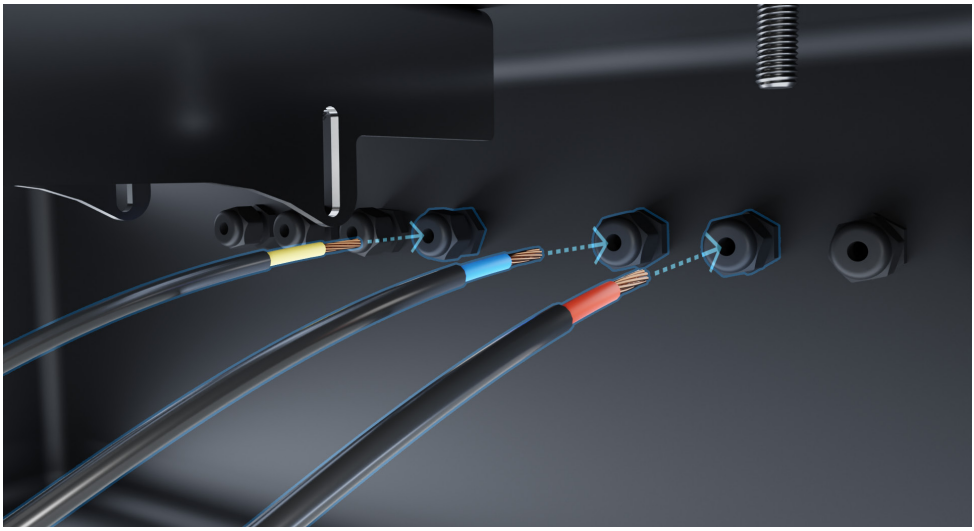
1. Mount the bracket in the niche

Use the washers and M12 nuts.



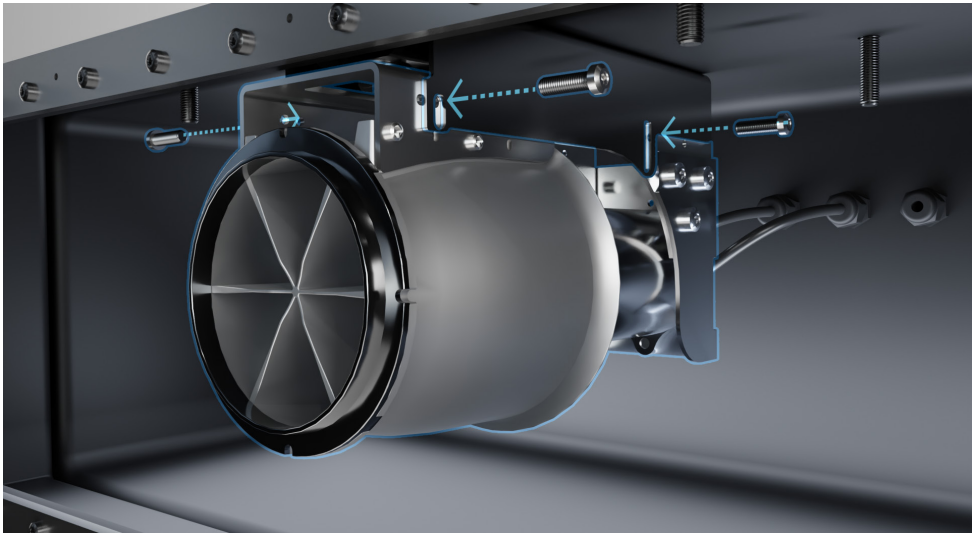
2. The bracket is still adjustable

Make sure the bracket can be moved forwards and backwards.



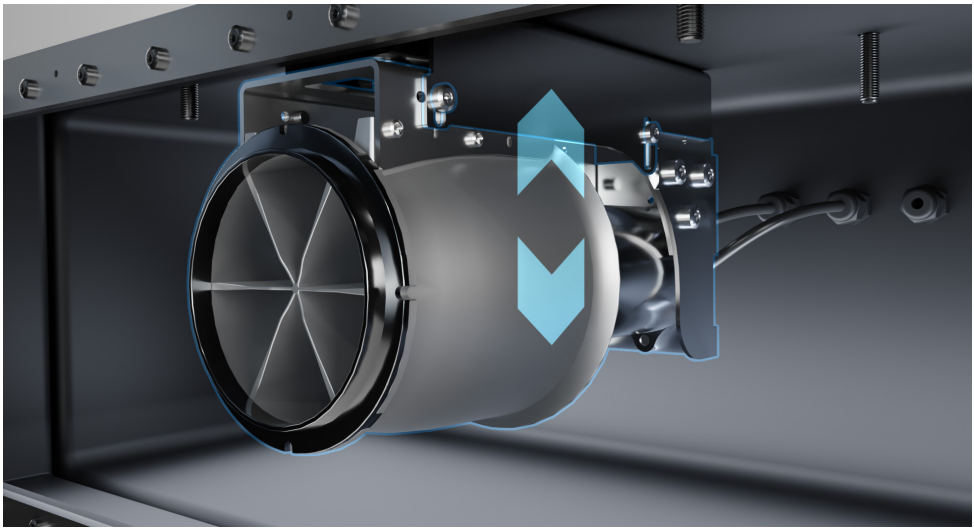
3. Put the turbine cables through cable glands

Use red, orange and black cables. Do not change the colours of the cables!



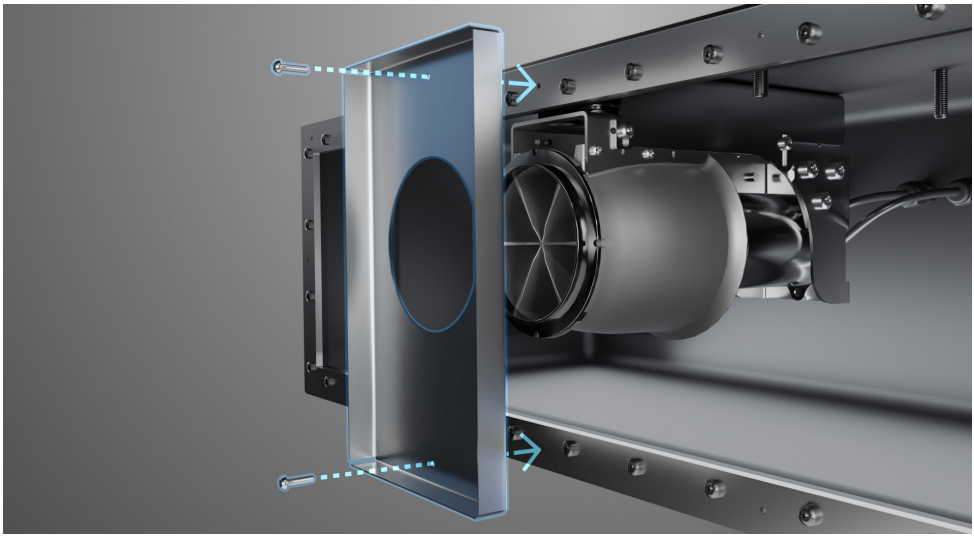
4. Mount the turbine to the bracket

Use the M6x10 screws.



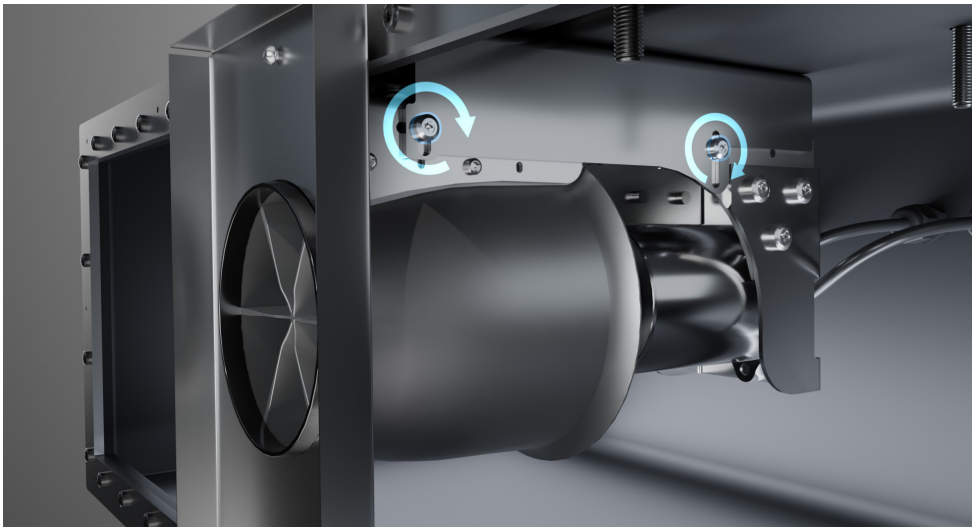
5. The turbine is still adjustable

Make sure the turbine can be moved up and down.



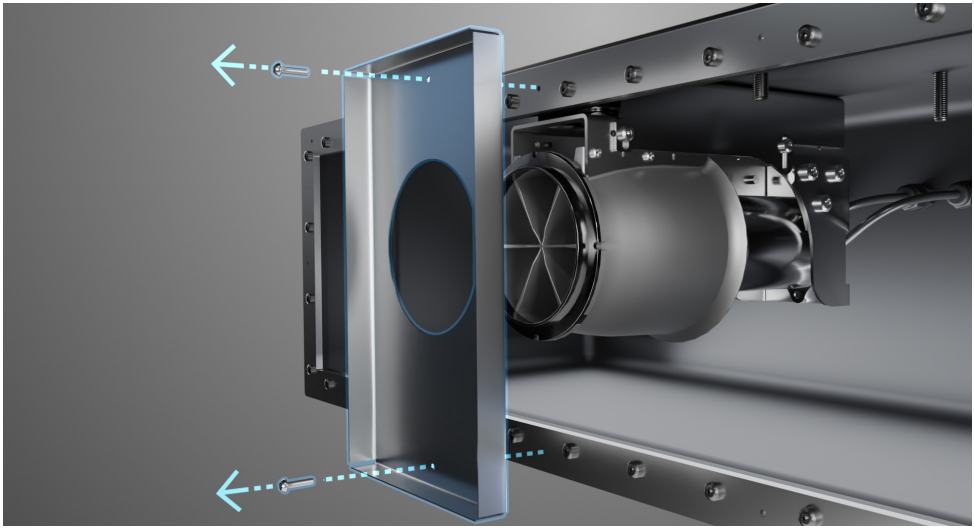
6. Mount the adjusting plate to the niche

To ensure the correct horizontal position of the turbine.



7. Tighten the turbine to the bracket

The front of the turbine must be pressed against the adjustment plate to ensure the correct position. Secure the turbine by tightening the screws.

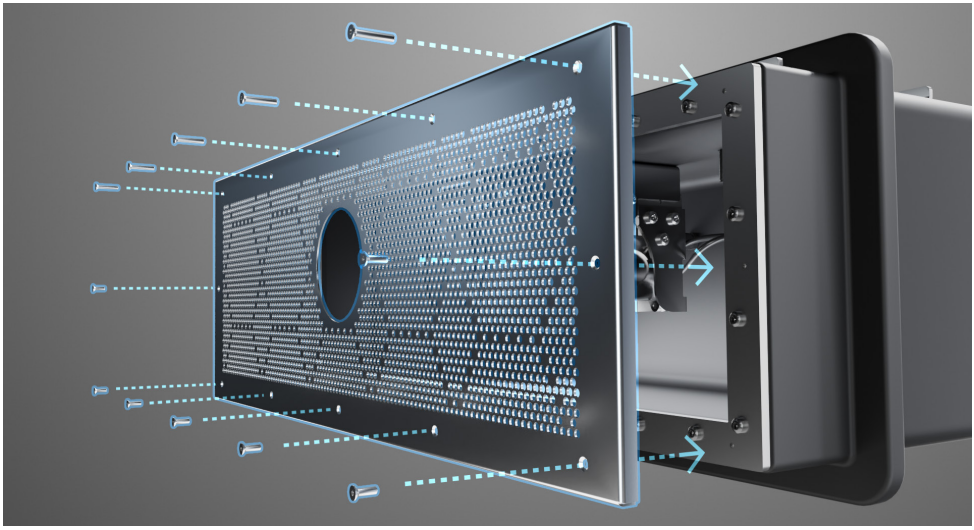


8. Remove the adjustment plate

This was only used to ensure the correct horizontal position of the turbine.

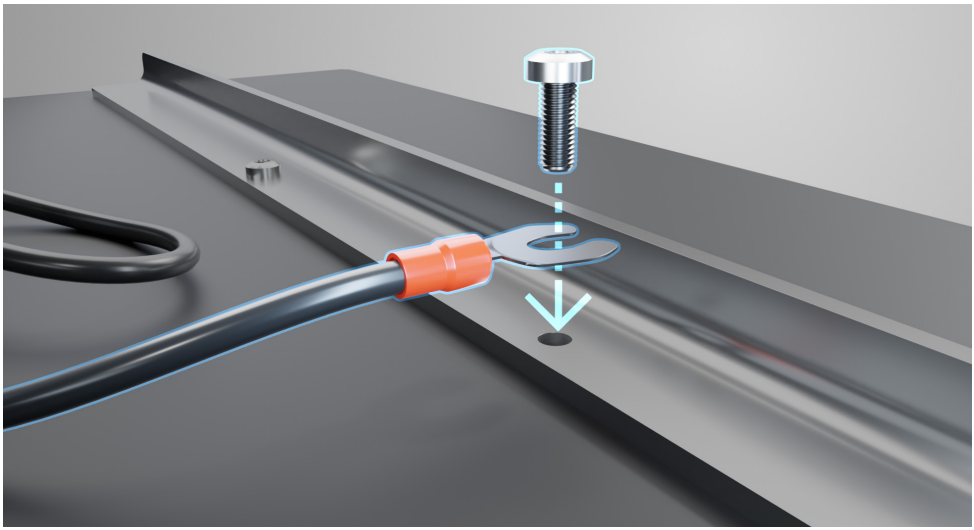
9. Tighten the bracket to the niche

Secure the bracket to the niche by tightening the nuts. The turbine is now set to the correct base height and completely fixed as mounted.



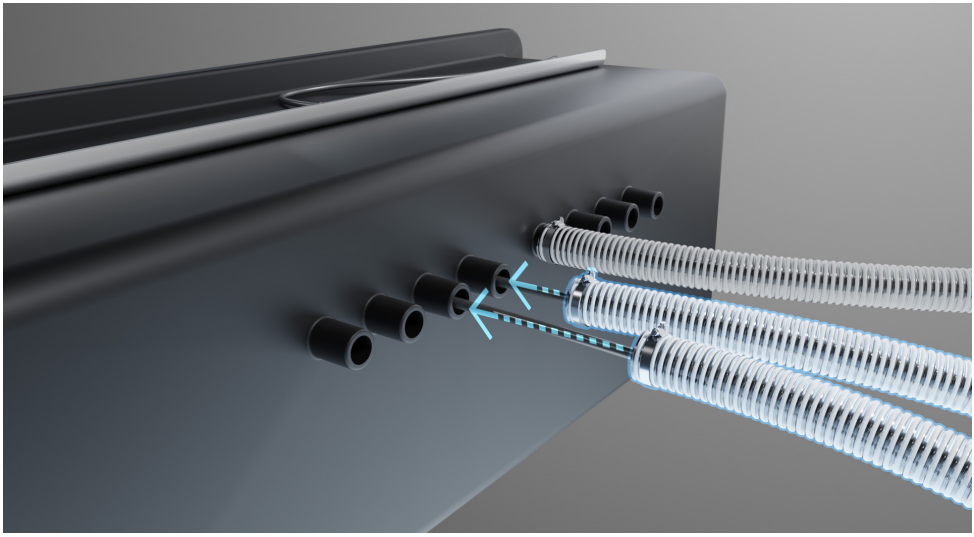
10. Mount the frontplate to the niche

Use the M5x12 screws with a stainless steel frontplate. Use the M5x16 screws with an ABS frontplate.



11. Earth the installation niche

The installation niche needs to be connected to the pool earthing on the top of the niche.



12. Mount the conduits

The cables need to be placed in separate conduits.

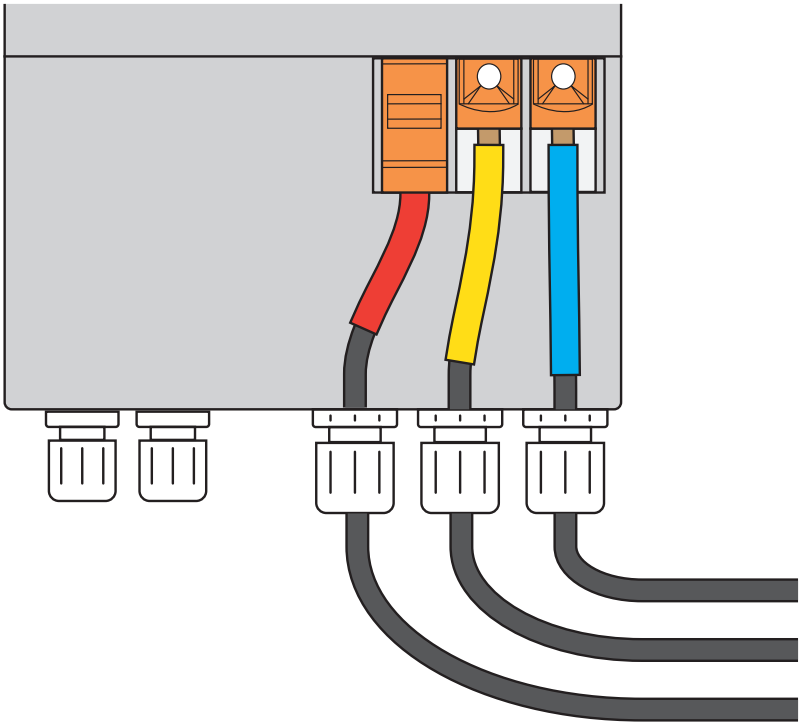
6. ELECTRICAL INSTALLATION

DANGER

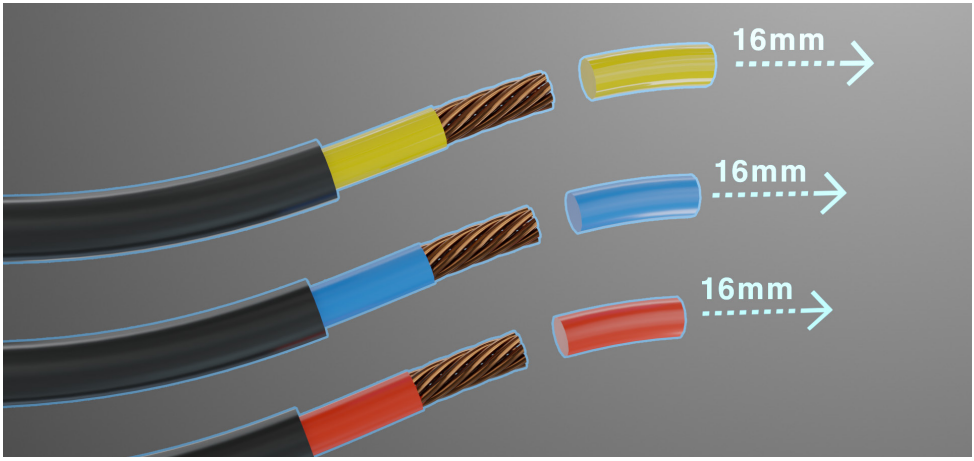
Electrical shock hazard. Fatal injury will occur. Switch off all electricity near the pool before performing the electrical installation.

Electrical installation

6.1 Connect the EVAstream turbine to the Motor Control Unit



Cable connections in the Motor Control Unit

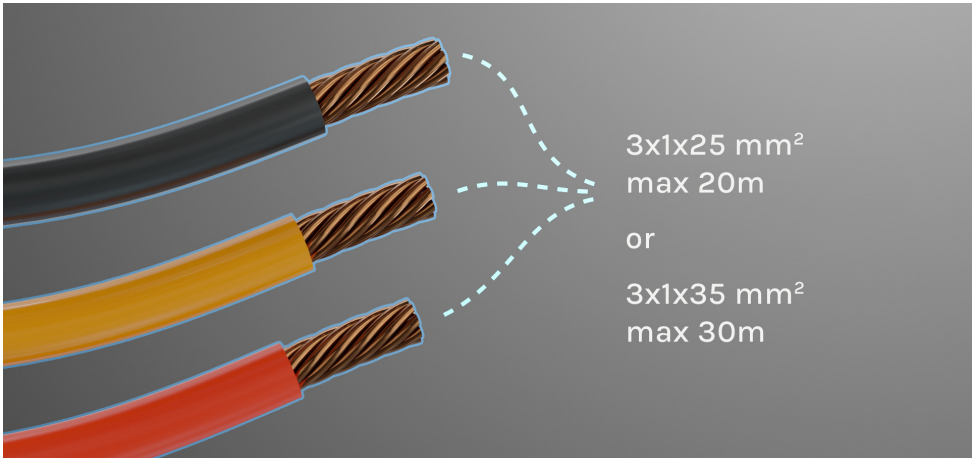


Connect the cables from the EVAstream Turbine to the Motor Control Unit:

- Make sure the cables are properly finished. Dismantling length should be 16 mm.
- Place the red, yellow and blue cable (do not change the colours of the cables) in the terminal block (like the yellow and blue cables in the drawing).
- Secure the cables by closing the orange clamps in the terminal block (with the T-LOX knee lever connection) with a standard screwdriver (like the red cable in the drawing).

6.2 Optional: EVAstream Cable connection box

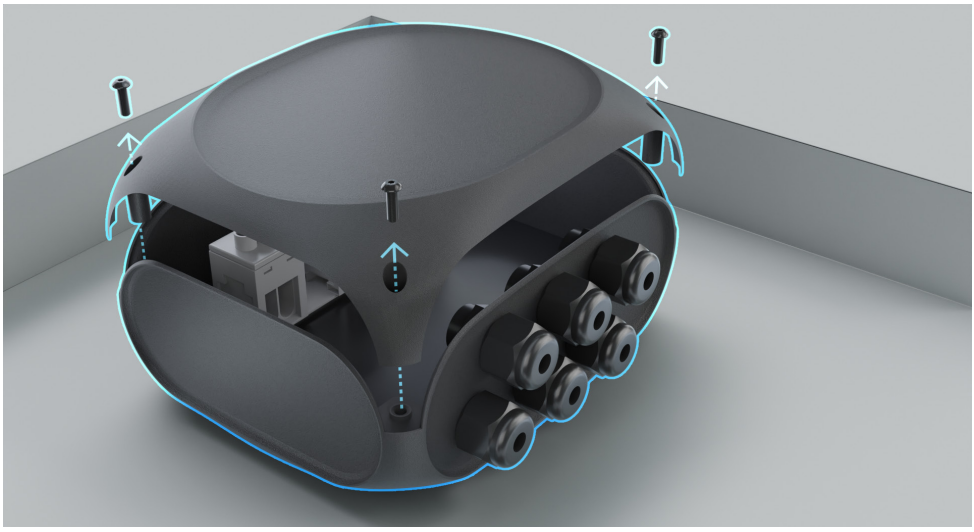
If the cables are not long enough, they can be extended. You can extend the cable from the Turbine to the Motor Control Unit using the EVA connection box.



1. Choose your cable (flexible cable of fine copper wire stands)

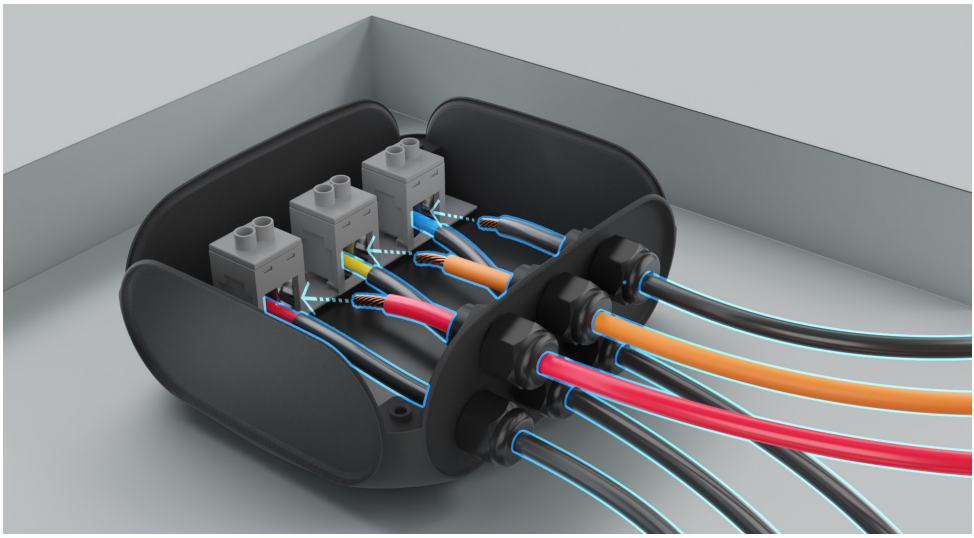
- Use 3x1x25mm^2 cable to a maximum cable length of 20 meters (total maximal 25 meters including the existing cable).

- Use 3x1x35mm^2 cable to a maximum cable length of 30 meters (total maximal 35 meters including the existing cable).



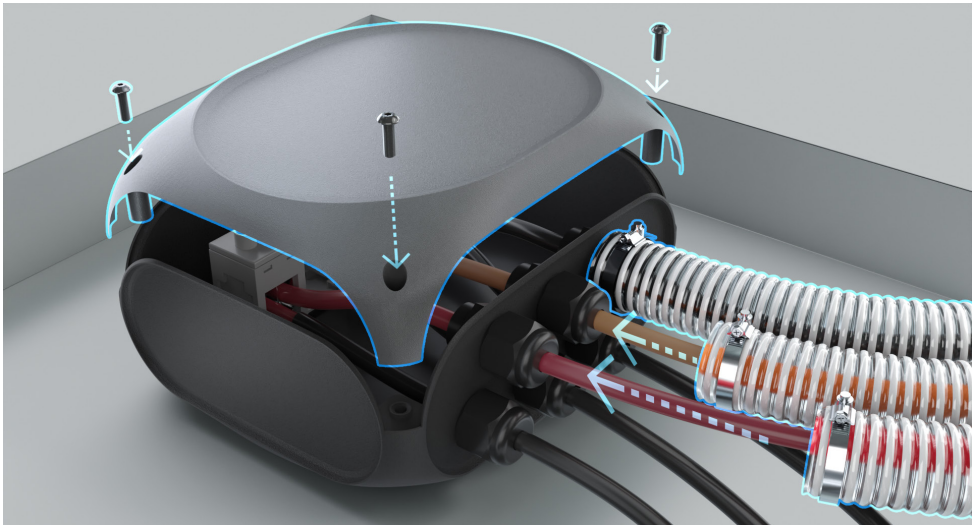
2. Place the EVA connection box

The cable connection box must be placed above the ground (accessible).



3. Connect the cables

Use red, orange and black cables. Do not change the colours of the cables!



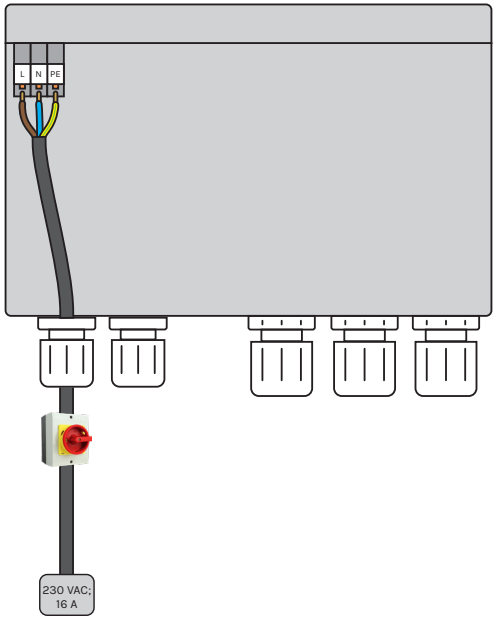
4. Mount the conduits

The cables need to be placed in separate conduits and the connection box closed.

6.3 Connect the Motor Control Unit to the mains

WARNING

Electrical shock hazard. Risk of electric shock and injury. The product must be installed by a certified electrician. Incorrect installation will cause electrical hazards.



Cable connection to the Motor Control Unit

Connect the Motor Control Unit to the mains (230 VAC; 16 A)

- Connect the 3 wired cable (230 VAC; 16 A) to the Motor Control Unit on the indicated L. N. and PE.
- Connect an on/off button (power switch) to the socket and install near to the pool.

6.4 The EVAstream is now ready to use

The remote control is now automatically connected to the EVAStream.

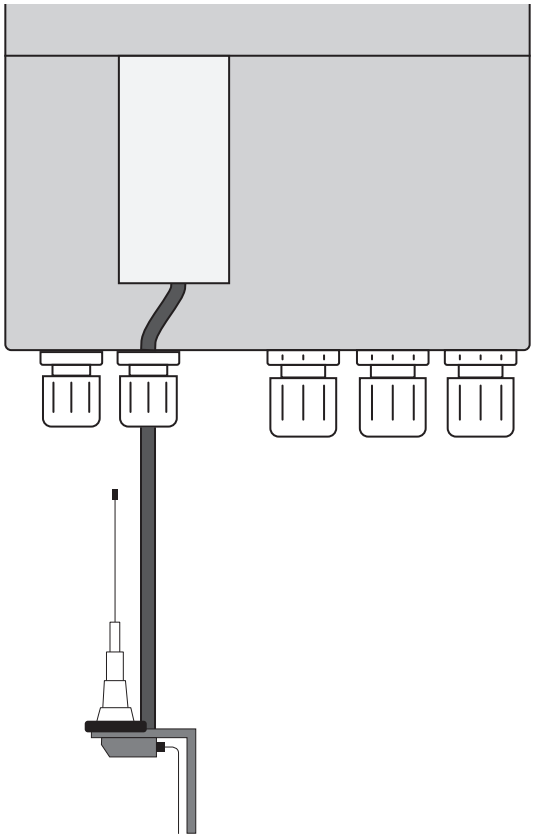
The EVA Remote control has the following functions:

ON/OFF button	EVAstream ON/OFF
Button +	
Short press:	increase intensity 5%
Long press:	increase intensity as long as you press for a stepless increase in speed
Button -	
Short press:	decrease intensity 5%
Long press:	decrease intensity as long as you press for a stepless decrease in speed

6.5 Optional: connect the antenna to the Motor Control Unit

WARNING

Electrical shock hazard. Risk of electric shock and injury. The product must be installed by a certified electrician. Incorrect installation will cause electrical hazards.



Cable connection to the Motor Control Unit

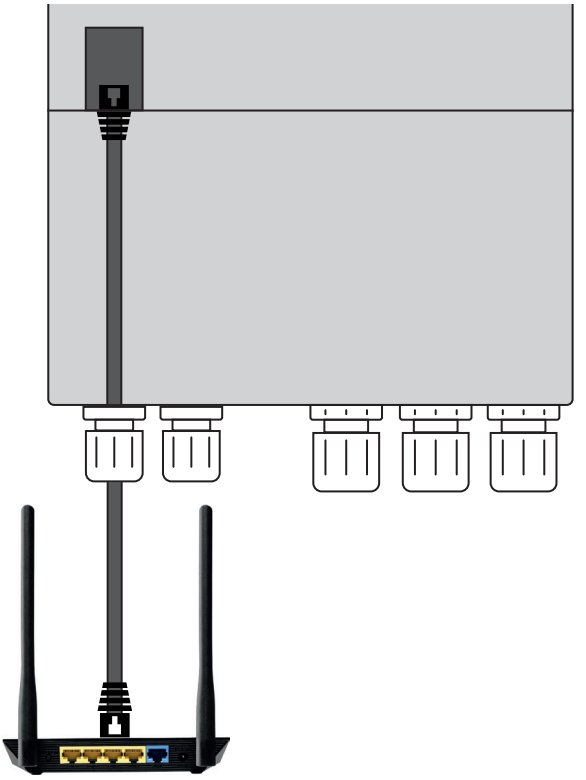
Connect the Antenna to the Motor Control Unit

- If the remote control has insufficient range, an antenna must be installed.
- Connect the cable to the Motor Control Unit.

6.6 Optional: connect the router to the Motor Control Unit

WARNING

Electrical shock hazard. Risk of electric shock and injury. The product must be installed by a certified electrician. Incorrect installation will cause electrical hazards.



Cable connection in Motor Control Unit

Connect the Motor Control Unit to the router

- If the wireless connection is too weak, a cable from the router can be placed in the MCU.
- Connect the UTP cable from the router to the Motor Control Unit.

7. CONTROL OPTIONS

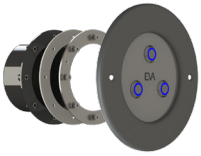
The EVAstream is usually controlled with the supplied remote control.
In addition, various control options can be added:

EVA Experience web app (recommended):
Especially for the EVAstream, we have developed a complete training program for swimmers of every age and every skill level. The workouts consist of interval, sprint and endurance elements and increase in duration and intensity. Use the EVA Experience web app to manage the training session.

To set up the
EVA Experience web app,
scan the **QR code**

To set up the
EVA Experience web app,
watch the video

EVA Piezo (optional):
With the EVA Piezo, the swimming machine can be controlled from within the pool.



For instructions on
how to install the EVA Piezo,
scan the **QR code**

8. DISPOSAL

8.1 Decommissioning

WARNING

Electrical shock hazard. Risk of electric shock and injury. Make sure to disconnect the product from the mains cable before decommissioning.

1. Switch off the power.
2. Switch off the power around the swimming pool.
3. Disconnect the mains cable.
4. Disconnect all other cables.

8.2 Disposal

Before disposing of the different materials, separate them into recyclables, normal waste and special waste. Comply with local legal regulations and provisions when disposing of the product and the individual components. A product marked with the WEEE symbol must be sent for separate collection of electrical and electronic devices. Contact your supplier for more information.

ATTACHMENT 1

NORM COMPLIANCE

EMC Directive: 2014/30/EU	Low-voltage LVD Directive: 2014/35/EU
EMI Electromagnetic Emission	EN 60364-4-41
EN 55032 (CISPR32) Class A, B	EN 62368-1
	EN 60364-7-702

EMC Electromagnetic Compatibility
EN 61000-3-2
EN 61000-3-3

EMC Immunity & Safety
EN 61000-4-2
EN 61000-4-3
EN 61000-4-4
EN 61000-4-5
EN 61000-4-6
EN 61000-4-8
EN 61000-4-11
EN 55024
EN 615204-3
EN 61000-6-2

Specific standards
EN 13451-1
EN 13451-3
EN 16582-1
EN 16582-2
EN 16582-3
EN 16713-2
EN 15288-1
EN 60204-1

ATTACHMENT 2

Environmental conditions and use of EVAstream

Ambient temperature of power supply box (mounting in a dry condensation-free room):
0ºC to 32ºC

Water temperature:

+1ºC to +35ºC

ATTACHMENT 3

Water Values

The user of the EVAstream is responsible for providing the right conditions for an optimal product life cycle. To fulfil the warranty conditions, the EVAstream should only be used in basins with a water composition within the following limits:

- Water temperature: +1°C to +35°C
- pH value: 6.8 – 7.8
- Maximum chlorine levels for water:
  - Indoor swimming pool – Free available chlorine (FAC): 0.5 ≤ VBC ≤ 1.5 mg/l
  - Open-air swimming pool >= 20 m^2 – Free available chlorine (FAC): 0.5 ≤ VBC ≤ 3.0 mg/l
  - Open-air swimming pool < 20 m^2 – Free available chlorine (FAC): 0.5 ≤ VBC ≤ 5.0 mg/L
  - All basins – Bound available chlorine: < 0.6 mg/l
- The basin and the available accessories must be free of electrolysis.
- Installation housing must be properly earthed to prevent electrolysis.
- Cyanuric acid: ≤ 100 mg/l
- Metals: ≈ 0 mg/l
- Carbonate hardness: ≥ 2°dH (°dH = mmol/l x 2.8); (°eH =mmol/l x 3.5); (°fH = mmol/l x 5.0)
- Ozone: 0 mg/l
- chlorite + chlorate: ≤ 30 mg/l
- Redox potential: ≥ 700 mV

ATTACHMENT 4

Unintended uses

- Not for use in potentially explosive areas.
- Not for use in an aggressive environment (gases, acids, vapours, substances, oils).
- Not for use in dirty water.
- The turbine should not be used above water.
- Depending on the type of concrete, the installation shaft must be protected. When using concrete with high chloride and sulphate constituents (e.g. Thermotec), the back of the installation shaft must be protected against these harmful substances with a PE film (building protection film).

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