ECONAD, Ukraine 65005, Odessa, st. Melnitskaya, 26/2. Tel.: +38(048)737-37-51

ECONAD

MARINE SECURITY BARRIERS "BARRACUDA"

PRODUCTS DESCRIPTION - FLOATING SECURITY BARRIER

Marine Security Barriers are a versatile structure designed to safeguard critical maritime facilities against waterborne attacks. Featuring a modular design with identical, interchangeable components, these water security barriers allow for easy replacement in the event of damage or routine maintenance.

Our marine protection barriers serve a wide range of applications, including:

- Port security solutions
- Shipyard perimeter protection
- Maritime security fencing
- Oil terminal security barriers
- Nuclear power plant water barriers
- LNG facility security water barriers
- Hydropower plant defense
- Coastal security barriers
- Bridge protection barriers
- Military-grade maritime barriers+

ECONAD
E-mail: econadin@ukr.net
contact@econadin.com
Skype: econad.sie
Web: www.econadin.com, www.econad.com.ua

ECONAD, Ukraine 65005, Odessa, st. Melnitskaya, 26/2. Tel.: +38(048)737-37-51

ECONAD

MARINE SECURITY BARRIERS "BARRACUDA"

All of our floating security barriers are equipped with a vessel intrusion prevention system, enhancing the protection of critical marine infrastructure.

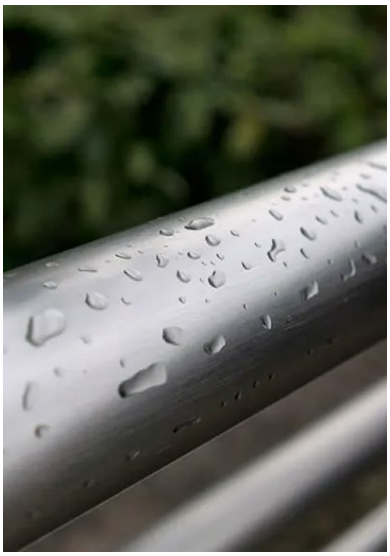
THE DESIGN OF MARITIME SECURITY BARRIERS CONSISTS OF:

1. Robust outer frame.

Constructed using H-beams, the outer frame offers exceptional rigidity to wave forces and sudden wind gusts. To enhance durability, critical connection points that experience bending loads are reinforces with stiffeners and, in some cases additional spacers, ensuring greater stability at attachment points of our water-based security systems.

The outer frame is exceptionally strong, making it an effective boat deterrent barrier capable of stopping not only water drones but also small vessels.

All connections between the frame components and floats of our high-security barriers are secured using high-strength bolted fasteners. The metal construction incorporates corrosion-resistant **stainless steel hardware of Class A2**, ensuring long term durability in marine environment.



The central steel I-beam is designed to withstand significant torsional and bending loads, ensuring uniform distribution of tensile forces along the entire length of each barrier section for maximum structural integrity.

ECONAD
E-mail: econadin@ukr.net
contact@econadin.com
Skype: econad.sie
Web: www.econadin.com, www.econad.com.ua

ECONAD, Ukraine 65005, Odessa, st. Melnitskaya, 26/2. Tel.: +38(048)737-37-51

ECONAD

MARINE SECURITY BARRIERS "BARRACUDA"

2. Two floating elements of the marine security barriers.

Attached to both sides of the outer frame, they maintain the buoyancy of the structure and serve as an anti-terrorism marine barriers effectively against marine drones and small crafts.

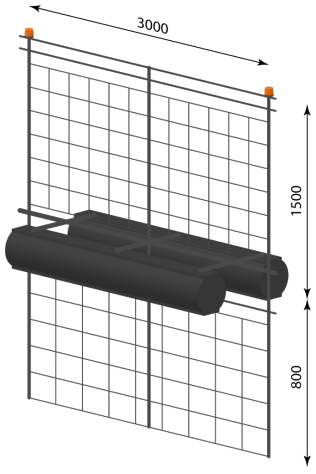
Each floating element is constructed from thick-waled, impact-resistant, and water-resistant polyethylene, offering maximum resistance to ultraviolet radiation for long-term durability.

Inside the polyethylene float, reinforcement in the form of steel is used, which evenly distributes the load in the places where the floats are attached to the frame. This reinforcement also reduces horizontal and vertical loads from wave action on the metal structure of the frame, allowing it to withstand variable loads.

The internal volume of the floating elements is filled with polyurethane foam with a density of 30 kg/m^3 with a low water absorption coefficient.

Thanks to this, even in the event of mechanical damage to the outer shell of the float, the element retains buoyancy. That makes our fencing as a perfect part of harbour defense solution.

The floating elements are made of polyethylene material for general use in rotational moulding processes and are suitable for applications that require a combination of rigidity and impact strength, as well as low deformation and excellent processability.



Polyethylene filling material is fully thermally and UV-stabilized, ensuring a wide processing range, good colour retention and a long service life.

ECONAD
E-mail: econadin@ukr.net
contact@econadin.com
Skype: econad.sie
Web: www.econadin.com, www.econad.com.ua

ECONAD, Ukraine 65005, Odessa, st. Melnitskaya, 26/2. Tel.: +38(048)737-37-51

ECONAD

MARINE SECURITY BARRIERS "BARRACUDA"

EACH FLOATING ELEMENT OF OUR HARBOR OFFSHORE BARRIERS HAS SEVERAL LEVELS OF PROTECTION:

1. Main protection: the floating element itself

The floating element is reinforced internally with a steel channel, which ensures uniform load distribution in the places where the floats are attached to the frame. This reinforcement also reduces horizontal and vertical loads from wave action on the frame's metal structure, allowing it to withstand variable loads and collisions with hostile marine objects.

The internal volume of the floating elements is filled with polyurethane foam with a density of 30 kg/m^3 and a low water absorption coefficient. This ensures that even if the outer shell sustains mechanical damage, the float maintains its buoyancy.

2. Additional protection: external frame

The outer frame is made of H-beams of smaller sizes which provide high rigidity and resistance to wave loads, sharp gusts of wind and collisions with floating vehicles at speeds up to 90 km/h.

3. Maximum efficiency: Anti-terrorism and anti-intrusion elements

A metal mesh with a cell size of 250×250 mm and two cables (ropes) with a diameter of 20 mm (3/4 inch) are installed on top.

From below, under the floating elements, a rope with a diameter of 20 mm (3/4 inch) is stretched and a nylon mesh, thick with a cell size of 350×350 mm, is installed along the entire length of the barriers.

The height of the mesh is adjustable depending on the depth of the installation site.

ECONAD
E-mail: econadin@ukr.net
contact@econadin.com
Skype: econad.sie
Web: www.econadin.com, www.econad.com.ua

ECONAD, Ukraine 65005, Odessa, st. Melnitskaya, 26/2. Tel.: +38(048)737-37-51

ECONAD

MARINE SECURITY BARRIERS "BARRACUDA"

TO CONNECT SECTIONS OF MARINE PROTECTION BARRIERS THE FOLLOWING COMPONENTS ARE USED:

1. Certified links with additional ovals.
With a safety factor of 4:1, manufactured in accordance with the DSTU EN 1677-4:2017 standard. The quality of the product is confirmed by a quality certificate.

2. Load chains for securing sections together.
With a safety factor of 4:1, manufactured in accordance with the standard DSTU EN 818-2:2017 (DIN 5687). The chain material is thermally hardened alloy steel with an oil phosphate coating. The quality of the product is confirmed by a quality certificate.

3. Rigging brackets are used to connect Marine Protection Barrier sections and secure them in place. These include black staples and omega staples, which are manufactured in compliance with the DSTU EN 13889:2014 standard.

4. Rope clamps
Rope clamps DIN 1142 or DIN 741 are used.
The quality of the product is confirmed by a quality certificate.

Length of floating module 3760mm
The total length of the floating module including connecting devices is 4275mm.

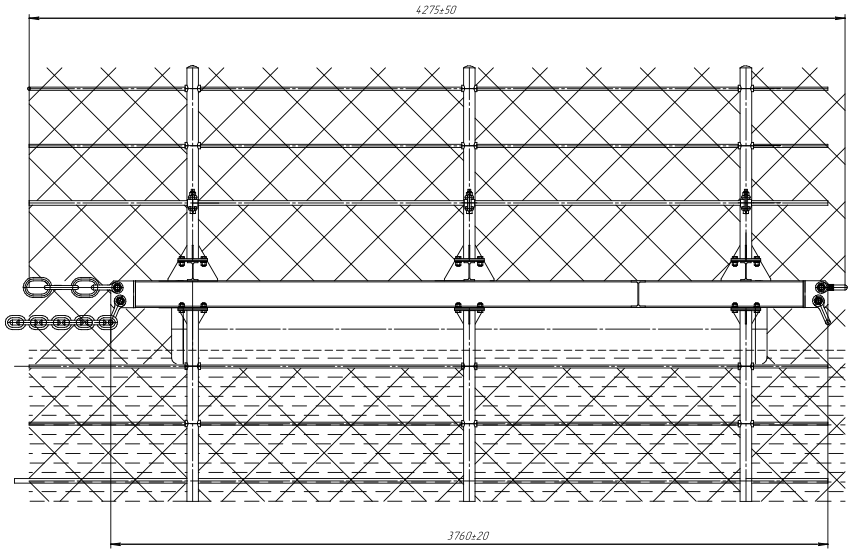
Underwater height 800mm
Total height of floating floating module 2275mm

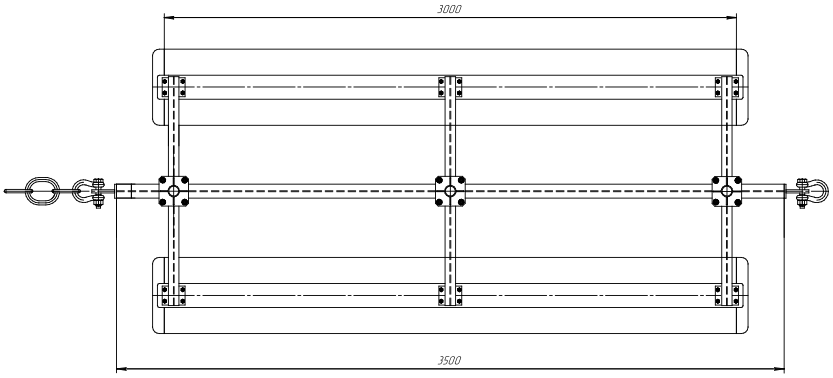
ECONAD
E-mail: econadin@ukr.net
contact@econadin.com
Skype: econad.sie
Web: www.econadin.com, www.econad.com.ua

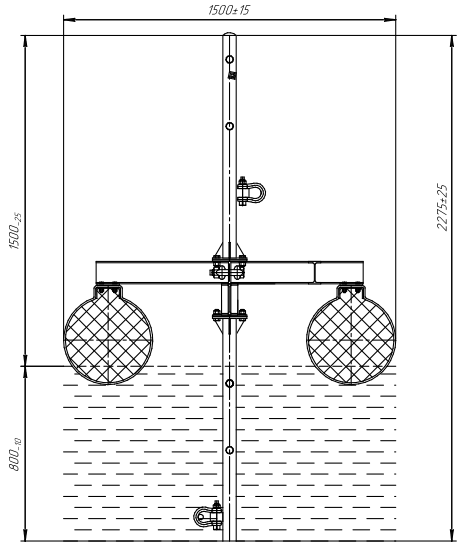
ECONAD, Ukraine 65005, Odessa, st. Melnitskaya, 26/2. Tel.: +38(048)737-37-51

ECONAD

MARINE SECURITY BARRIERS "BARRACUDA"







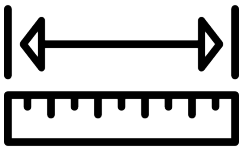
ECONAD
E-mail: econadin@ukr.net
contact@econadin.com
Skype: econad.sie
Web: www.econadin.com, www.econad.com.ua

ECONAD, Ukraine 65005, Odessa, st. Melnitskaya, 26/2. Tel.: +38(048)737-37-51

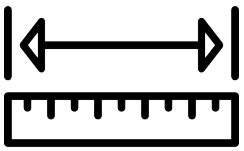
ECONAD

MARINE SECURITY BARRIERS "BARRACUDA"

The diameter of the float part of the module is 400mm.
Height of the above-water part 1500mm



Surface net made of rope and impact-resistant metal wire,
1m high with the following characteristics:
Rope diameter, mm 8.0
Wire diameter, mm 2.2
Cell size, mm 250x250 + 60x80
Card size, mm 1200x4000
Map area, m^2 4.8
Breaking force of the supporting rope, kN 37
Energy absorption capacity from impact loads, J 26000
Card weight, kg 56.0
Weight 1 m^2, kg 3.5



Underwater net made of rope and impact-resistant metal wire,
1m high with the following characteristics:
Rope diameter, mm 8.0
Wire diameter, mm 2.2
Cell size, mm 300x300
Map size, mm 10000 x4500
Map area, m^2 45
Breaking force of the supporting rope, kN 37
Energy absorption capacity from impact loads, J 26000
Card weight, kg 56.0
Weight 1 m^2, kg 3.5

The barrier withstands a pulling force of 45 tons

ECONAD
E-mail: econadin@ukr.net
contact@econadin.com
Skype: econad.sie
Web: www.econadin.com, www.econad.com.ua

ECONAD, Ukraine 65005, Odessa, st. Melnitskaya, 26/2. Tel.: +38(048)737-37-51

ECONAD

MARINE SECURITY BARRIERS "BARRACUDA"

The alarm and lighting system is triggered in the event of an unexpected (unauthorized) intrusion and activates a visual and audible alarm.

Floating elements color - black
The equipment can withstand wind gusts of up to 30 m/s and wave heights of up to 2.5 m.
Towing speed 2-4 knots.
Temperature conditions - from 30 C to + 60 C
The equipment is operational around the clock, year-round.

Each barrier section included in the assembled structure is manufactured by the supplier as a technological solution for strategic floating protective barriers in accordance with ISO 9001:2018 and ISO 9001:2015 standards.
In addition, all products manufactured using welding are manufactured in strict accordance with the requirements of the quality standard for the production of welded products in accordance with EN ISO 3834.
All connecting elements are manufactured in accordance with the standards DSTU EN 1677-4:2017 and DSTU EN 13889:2014.

The technical solution for ensuring the safety of marine facilities in the form of strategic floating protective barriers is supplied with an operating manual and a maintenance and repair manual.

ECONAD
E-mail: econadin@ukr.net
contact@econadin.com
Skype: econad.sie
Web: www.econadin.com, www.econad.com.ua