



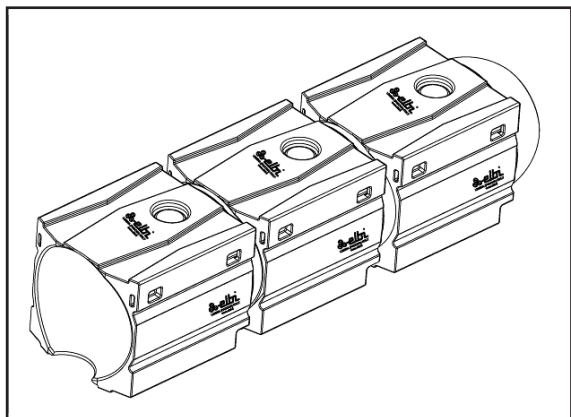
AQUADIKE®
PATENT PENDING



Flood Barrier System

About the system

AQUADIKE® is a patented system that makes it possible to deviate flows of water due to river flooding or temporary overflowing of natural or artificial lakes. The system is designed to enable quick installation of a temporary barrier, limiting the damage caused by the uncontrolled water flow.



AQUADIKE® is composed of a series of elements that are quickly and easily interconnected. Installation is fast and simple, requiring less labour than traditional barrier systems using sandbags. It does not require any on-site infrastructure, as it only requires a pump to inflate the system modules. The barrier erected at the onset of an emergency can be extended sideways by adding additional modules or it can be raised by placing new modules on top of an existing barrier.

AQUADIKE® has a pleasant appearance and offers the maximum flexibility of application on various types of ground surfaces. The single elements are sturdy and tough, and can be repaired if necessary during use. **AQUADIKE®** has a low maintenance cost, requires only simple washing, and is totally reusable for numerous emergencies without added costs other than those for moving the barrier itself. It is also available in a version with a ground sheath to further limit the outflow of water in applications on flat or paved surfaces.



The system

The **AQUADIKE®** system is composed of a series of rotational-moulded polyethylene containers for a total length of 20.5 metres.

Each individual element has an opening at the top for filling the container with water or other liquids, and two side openings that enable quick emptying.

The barrier is constructed by connecting the containers end to end with spherical joints, making it possible to create flexible barriers that can be adapted to the widest variety of needs. Dual tracks on the top and bottom allow the modules to be stacked to form barriers of various heights. Each element also has side hooks for restraining belts that prevent the barrier from being dismantled by the force of the water.



Single element specifications

Length: 1060 mm

Width: 700 mm

Height: 700 mm

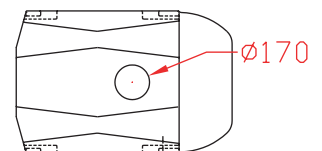
Weight empty: 16 kg

Theoretical volume (maximum fillable): 330 litres

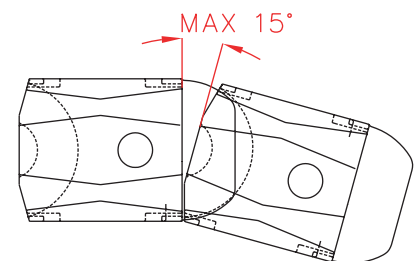
Construction material: Linear polyethylene

Production technology: Rotational moulding

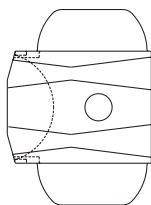
BASE ELEMENT



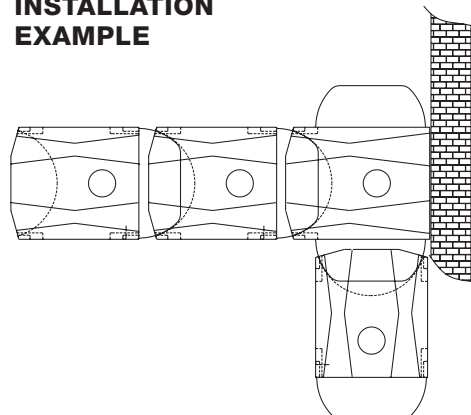
CURVATURE EXAMPLE



TERMINAL ELEMENT



INSTALLATION EXAMPLE



Specifications of the ground sheath system

Lower sheet material: Polyethylene

Rubbery material: mousse rubber

Sheath length: 20 m

Spare parts

Emptying plug 7089400

Upper plug 7081092

Adjustable side belt N640000

Elastic cord with hooks N640010

Sheet complete with rubber N660000

Product characteristics

- ✓ Monolithic product with no welded joints or internal stretchers
- ✓ Lightweight and manageable
- ✓ Excellent mechanical resistance to impact, falling, rough handling
- ✓ Excellent resistance to thermal shock (from -40°C to +60°C)
- ✓ Made of non-toxic recyclable material
- ✓ Long-lasting because the product is not subject to deformation or deterioration over time

Applications

The **AQUADIKE**® system is the ideal solution for flood containment, for circumscribing areas subject to flooding, plugging leaks, making flood dams for riverbank improvement, protecting entranceways, keeping river bed work sites dry, and creating branches to the normal flow of a waterway.

AQUADIKE® is designed to act as a temporary barrier that is easy to move and handle, but where necessary the modules can also be filled with sand, gravel, or other suitable material and left permanently on site. The modules can be produced in any colour to ensure low environmental impact.

Barrier without undersheath: used when it is necessary to limit overflows in rural areas, to deviate waterways, where it is necessary to create sturdy, effective, convenient and fast-erecting barriers to oppose and guide sudden outflows of water without necessarily requiring the maximum impermeability.

Barrier with sheath: in situations requiring all the functions described above but where it is also necessary to obtain a good seal on a paved surface, as in the case of public squares or roads along lake shores, near homes, to circumscribe areas subject to flooding, protection of entranceways and so on.

Permanent and semi-permanent installations

AQUADIKE® can be used as a permanent or semi-permanent barrier in places subject to frequent flooding (zones that are low-lying with respect to the nearby bodies of water, etc.). In these cases, the barrier can be installed in the optimum conditions; that is, without the need to protect from an imminent flood. The modules can be positioned and then filled with sand, gravel, or other material to obtain a more solid barrier. The layout of the barrier can be planned calmly in advance and then built to provide the best results.



Important characteristics for a good temporary flood barrier

Time required for installation and removal

The speed of installation is without a doubt one of the crucial factors in evaluating a solution for temporary flood protection. In emergency situations, the time considered to be acceptable for erecting a valid protective barrier is maximum 24 hours, and the time required for dismantling them after the emergency is more or less the same. Naturally, this parameter is based on the fact that in an emergency situation you need to be able to intervene simply, quickly, and effectively.

Simplicity of construction

Experience has taught us that the barrier must be as simple as possible to build; it must not require specialised personnel to set it up; it must be intuitive and allow anyone to be able to use it without supervision, because in emergency situations everyone must be able to make their own contribution to protecting their homes and help others to do the same.

Labour required

The availability of labourers is another particularly important factor. Normally, given the laborious nature of constructing protective barriers using sandbags, there are never enough civil defence workers in service to confront the emergency, so it is always necessary to recruit a large number of volunteers. Instead, the possibility of having structures that are quick and easy to erect drastically reduces the demand for volunteer labour, and this means that each person can contribute more effectively to preparing for the emergency.

Transport and installation

The ideal system is composed of single pieces that enable the maximum freedom in construction wherever there is need, from the countryside to the city, without the need for pre-existing infrastructures on site, and the barrier should be able to be moved and assembled easily by only two people.

Preparation and work space on site

The preparation of the site where it is necessary to erect a flood barrier should be reduced to the minimum, both in rural areas, where it is sometimes difficult to reach the site with work vehicles, and in the city because of limited space due to the vicinity of buildings and roads congested with traffic. In the vast majority of emergencies, it is thus necessary to use a great deal of labour. There are also other obstacles to consider: trees, rocks, sidewalks, poles, etc.. The best solution is therefore to employ single modules to build, without any laborious preparation of the terrain, a barrier that can conform to the terrain and skirt any obstacles.

Cost of the structure

AQUADIKE[®] is much less costly than a barrier made with sandbags and, differently from the traditional barrier, the system is completely reusable, an aspect which further reduces the operating costs.

Recyclability

The **AQUADIKE**[®] system is made up of modules in recyclable polyethylene, a foldable sheet and other elements that are easy to move and store. In addition to the advantage of being able to be used many times, the modules do not present any environmental problems in relation to disposal.

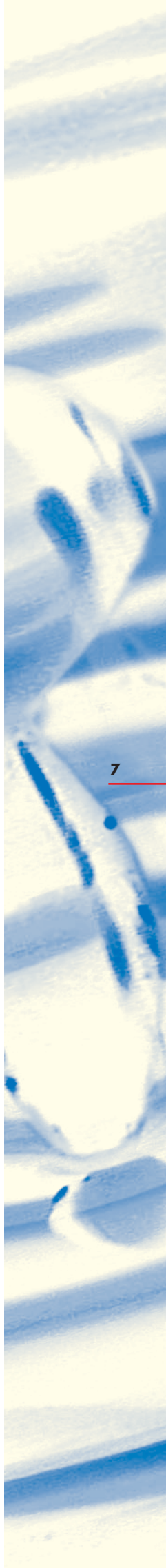
Storage

Differently from sandbags, **AQUADIKE**[®] modules can be stored outdoors, and in any case their shape makes it possible to reduce the occupied space to the minimum when the modules are not being used.

Sturdiness

The sturdiness of the single components used is vital for the effectiveness of the barrier. **AQUADIKE**[®], modules, made of sturdy polyethylene, greatly reduce the possibility of breakage caused by branches, debris, and other objects thrust against them by the force of the water.

In conclusion, **AQUADIKE**[®] fully satisfies all the above-mentioned characteristics required for creating an excellent barrier against flooding.



Method of installation

1. Unroll the sheet provided and position it with the placket containing the seal facing upwards and the eyelets towards the zone to be isolated (Fig. 1). Connect the sheets to each other using the velcro. Position the series of sheets along the perimeter where you want to install the barrier, making as few folds as possible.
2. Position the first module by inserting the hollow of the base on the placket.
3. Position the subsequent modules by fitting the front convex semi-sphere into the concave semi-sphere of the last module positioned (Fig. 2).
4. Proceed in this way for the entire length desired for the barrier (Fig. 3).
5. Hook the modules on both sides using the belts provided (Fig. 4).
6. Lift the sheet on the inside part of the structure and, keeping it tensed, hook it to the barrier using the elastic cords provided (Fig. 5 and Fig. 6).
7. Fill the modules with water, sand, or other suitable material up to the level of the belts (Fig. 7 and Fig. 8).



Fig. 1



Fig. 2



Fig. 3



Fig. 4



Fig. 5



Fig. 6



Fig. 7



Fig. 8

Caution:

The **AQUADIKE**[®] elements filled with water are stable against overturning if they are subject to the thrust of the water in static conditions. Pay attention in the case of dynamic thrusts caused by the movement of masses of water.

Cost comparison

Compared to traditional temporary barriers made using sandbags, **AQUADIKE**[®] barriers have many economic advantages.

Before setting up a traditional barrier, you have to fill the bags with sand, an operation that requires a considerable amount of time. On the contrary, the components of the **AQUADIKE**[®] system can be stored easily and quickly, as they are lightweight and not subject to deterioration due to moisture.

Installing the **AQUADIKE**[®] barrier requires considerably fewer resources compared to a sandbag barrier. It only takes 4 people, 1 pump, and 12 hours to set up a 300-metre **AQUADIKE**[®] barrier, while it takes 100 people and 20 hours for an equivalent barrier made with sandbags. Likewise, the removal of an **AQUADIKE**[®] barrier requires much less time and personnel than one made with sandbags.

AQUADIKE[®] is composed of modules that can be re-used numerous times, contrary to sandbags that in large part are lost after a single use. The savings increase each time the **AQUADIKE**[®] barriers are used again.

Table comparing **AQUADIKE**[®] and Sandbags

	Sandbags	AQUADIKE [®] System
Need for infrastructure on site	YES (sand)	NO
Possibility to re-use	NO	YES
Weight (barrier 70 cm wide, 70 cm tall, and 100 cm long)	750 kg	16 kg
Easy dismantling after emergency	NO	YES
System with quick installation in case of need	NO	YES
Appearance	Irregular	Homogeneous and orderly

In addition:

- With two people assigned, for each minute required for erecting a barrier with **AQUADIKE**[®] you need more than 40 minutes of work with sandbags.
- The volume to be transported in the event of emergency is the same but the weight is much lower, thus requiring much less effort and lighter vehicles can be used, limiting damage to the terrain, road paving, and any underlying piping.
- The fast setup of **AQUADIKE**[®] and the reduced labour requirements make it possible to use the barrier also as a preventive measure.

Images of flooding and sandbag barriers



Flooding



Flooding



Overflow

Flooding causes damage and inconvenience to people and things, sometimes serious. If, however, you can confront similar emergencies in a shorter amount of time, the damage can be prevented or considerably reduced.



Filling sandbags

In order to prepare a traditional barrier, you have to fill a considerable quantity of bags with sand, an operation that requires an enormous expenditure of time and personnel.



Positioning a sandbag barrier



Positioning a sandbag barrier



Positioning a sandbag barrier

Installing a traditional barrier using sandbags requires a great deal of time and a large number of workers. Moreover, once the emergency is over, it is necessary to dismantle and dispose of the entire barrier, as it is not reusable. This operation, too, requires time and personnel.



Barrier made of sandbags

A barrier made of sandbags is irregular and may allow water overflows, which can increase over time.

