Stopper Specialists
Pipe Testing & Flow Control

User Guide

Water - Gate™ Barrier

Category: WA

Important Notes:

All installation work must be thoroughly planned before work commences on site to identify hazards and assess risk.

These instructions form guidance for the operation and installation of the Water-Gate™ Barrier. Non-standard applications should be approved by a suitably qualified engineer.

Ensure all personnel engaged in installation operations are properly briefed and adequately supervised by a competent person.

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24 HOUR HELPLINE: 0370 850 5153

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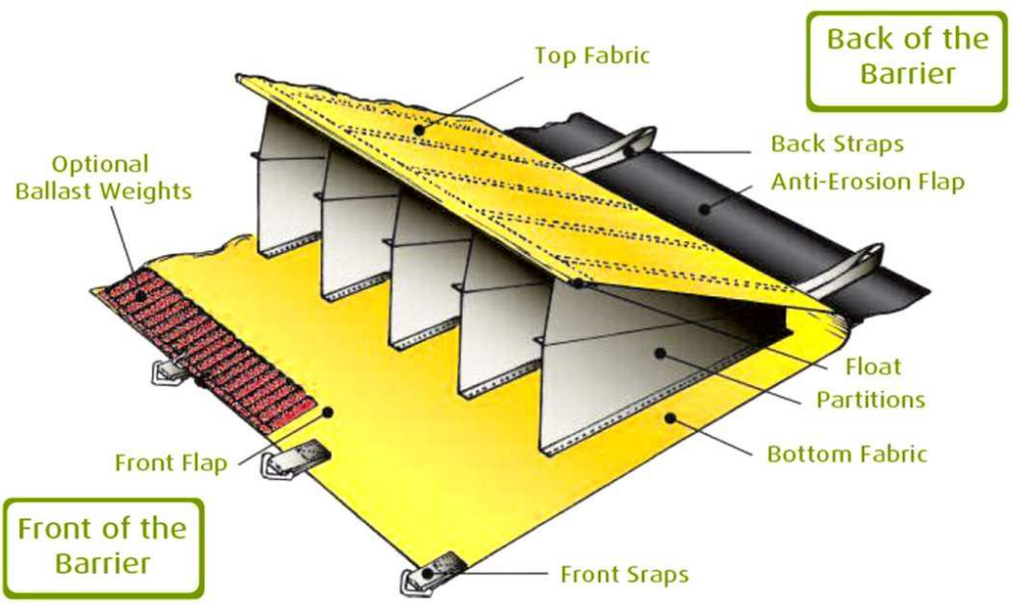
Introduction

The Water-Gate™ design is unique in the way that once it is in position, it self deploys and uses the weight of the water to actually hold the water back. The water then lifts the top of the barrier and weighs the base down to form a seal. This intelligently designed, self-opening method reduces the time, effort and number of people required to deploy the system, making it a truly rapid flood or water diversion barrier.

Equipment Identification



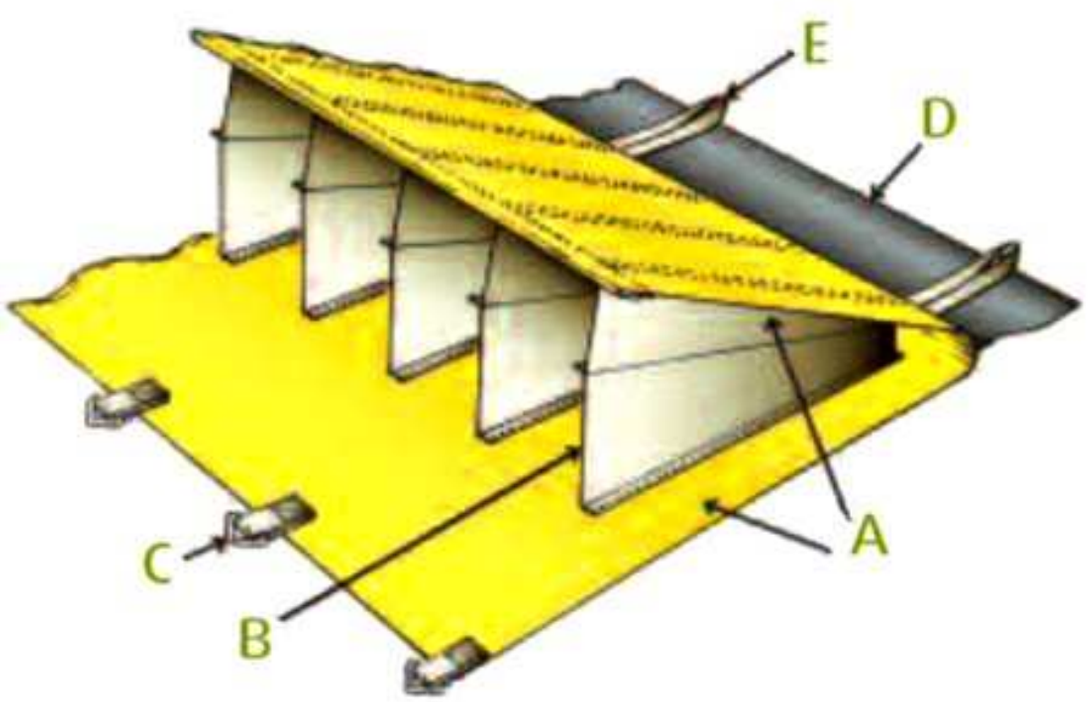
Responsibility and Warranty

Before using your Water-GateTM, it is essential to read the entire user guide and conduct at least one preliminary test. This is meant to ensure you master all the steps required for installing the barrier. The vendor and manufacturer shall in no way be responsible for faulty installation and/or faulty use of the barrier. Each barrier was manufactured and inspected according to strict quality standards. A registration number is printed on the ends of each Water-Gate™

Safety Standards and Resistance

Above all, the Water-Gate™ is a working tool that must be reliable, safe and durable. Based on the standards set by MegaSecur, the Water-Gate™ will remain 3 times more resistant than required for a minimum water retention period of 3 days. For example, if 2 out of 3 partitions of the barrier have come off when the barrier is filled to its fullest capacity, it will still retain its entire water volume for 3 or more days.

Main Features



A - Polyester fabric coated with super heavy-duty, abrasion-resistant PVC suitable for use in streams with doubtful bottoms.

B - Compact partitions leaving the front flap free to stand or walk on for pumping water and crossing the stream more safely.

C - Metallic rings or polypropylene front straps to facilitate installation in some situations.

D - Anti-erosion flap to keep the bottom of the stream from eroding if the water flows over the barrier.

E - Heavy duty polypropylene back straps to facilitate handling.

Two Principles

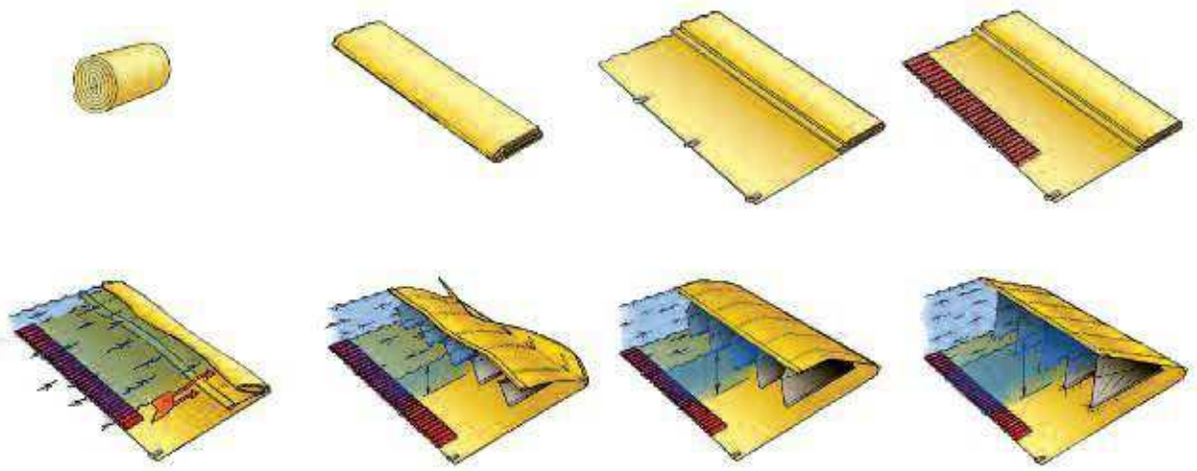
1st principle: The pressure of the water on the bottom fabric of the Water-Gate™ makes the barrier stick closely to the uneven bottom of the stream. It is as if there were studs holding down the bottom of the entire water filled surface of the Water-Gate™ . The more the bottom of the stream is uneven, the more the barrier adheres perfectly well.

2nd principle: The adhesion of the Water-Gate™ in a stream also depends on the following factors:

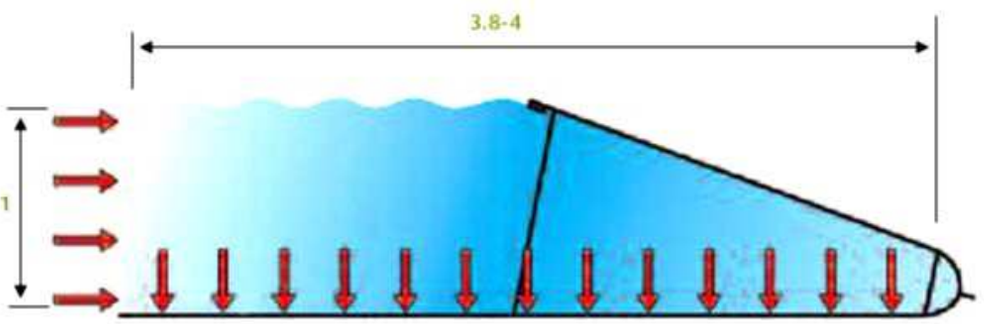
- Overflow of water over the barrier.
- Surplus of water at the back of the barrier.
- Overflow of water over the barrier with a surplus of water behind it.

How It Works

The principle is simple: water accumulates inside the Water-Gate™ and exerts pressure on the bottom of the fabric, which keeps the barrier in place. The speed or direction of the incoming water is not important, as it is the water pressure that causes the Water-Gate™ to open up.



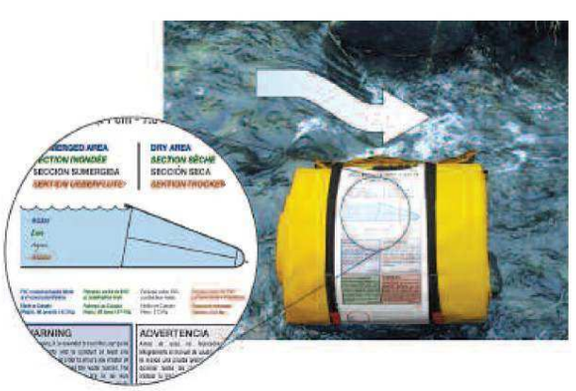
The surface of the water-Gate™ is 4 times greater than its water retention height, which means it has 4 times more vertical thrust (toward the ground) than horizontal thrust, allowing for good adherence. In order for water to be able to hold back water on most surfaces such as asphalt or grass, a ratio of 1 to $2^1/_2$ is generally sufficient to ensure safety. With a ratio of 1 to 4, the barrier is obviously very safe and the chances of it slipping are very slim. The wider the barrier is, the less likely it is to slip. To conclude, the Water–Gate™ is 33% safer than required.



Pre-Installation Advice

Make sure that the barrier is facing in the right direction based on the pictogram and instructions on the Water-Gate™

The speed of the current in a stream does not generally affect the installation of the barrier. The unwound Water-GateTM will float if the current is very weak; if it is strong, the barrier will sink to the bottom of the stream. There is little chance of the barrier drifting away with the current or being automatically deployed.



Stream Installation

1. Use at least one rock or set of weights for every foot or 30cm / 1 foot along the part of the front barrier flap that will be underneath the water.

2. After identifying the exact location for your installation, begin to deploy the front flap and make sure that no water enters the barrier by lifting up the front flap.

3. Quickly push the front flap of the barrier to the bottom of the stream. At the same time, place your feet on the front flap to weigh it down temporarily while you put your weight, rocks, or sandbags in place.

4. Continue to place other weights along the entire front flap. It is easier to use rocks already available in the stream to place them on the front part of the front flap.

5. To prevent water from seeping under the barrier, remove long pieces of grass, branches and any other objects that are likely to create infiltrations.

Note: The water tightness of the Water-Gate™ will mainly depend on how much water gets underneath it. No barrier installed in a stream can be completely watertight because the bottom of the stream is generally covered with rocks and gravel. However, if you make a groove at the bottom of the stream, you can use it to bury the front flap of the barrier and obtain very good water tightness

Uses for Front Straps

1. Dividing up the water in a lake or pond. In this situation, unwind the barrier on the water and attach the front straps of the barrier to the bottom of the lake or pond. Then add evenly distributed ballast weights along the entire length of the front flap and pump the water behind the barrier. Attaching the barrier with stakes at the bottom of the lake or pond will prove very helpful when you begin to install the barrier, as the posts will hold it in place until the back is almost dry.

2. Holding back the ends of the barriers when there are steep slopes on the side of the stream.

3. The front straps should never be used to attach the barrier with posts at the bottom of a stream to create a pool of water. Keeping the barrier down with posts can lead to water infiltrations under the barrier, as the posts will prevent the front of the fabric from being pressed tightly against the bottom of the stream. As time goes on, more and more water can seep under the barrier and cause it to slip

Removing The Barrier

1. After removing the weights, lift the corner of the front flap and let the water flow under the barrier.

2. Continue by lifting a wider part of the front flap until the barrier begins to slip.

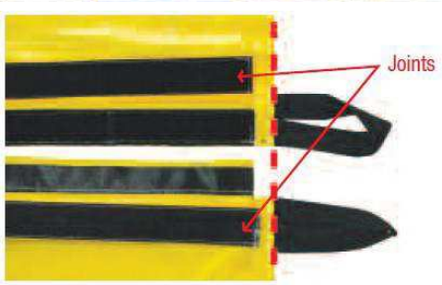
Removing The Barrier Cont...

3. Move forward with the slipping barrier and support the front flap to keep it out of the water. This precarious operation is recommended to prevent the barrier from rolling up and make it easier to take it out of the stream.

4. As soon as the barrier is stabilised, allow the water in the stream to flow normally.

5. To remove the water barrier, pull toward the back. Use the handles specially provided for this operation.

Tying Together Two Barriers



1. The first step consists in completely unrolling and unfolding the two barriers and laying them one next to the other.

2. Both barriers must be aligned at the back. Make sure the joints are open.

3. Open the top fabrics on each side to uncover the bottom joints and insert the barrier on the right into the one on the left.

4. Close up the velvet strips and hooks by laying them one on top of the other from the back. Good dexterity is required to close up the back.

5. Keep closing up the velvet strips and hooks from the back until you end at the front.

6. When you are done with the joint at the bottom, insert the partition of the barrier on the left in the partition of the barrier on the right and close off the top parts.

7. Close up the velvet strips and hooks by laying them one on top of the other, the same as you did for the bottom joint.

Important Rules

1. Pump the water at the back of the Water-Gate™. It is important to leave a reasonable amount of space between the building and the back of the barrier in order to install a water pump and be able to move freely. The water seeping underneath the barrier should not be left to accumulate behind the barrier. This is why the area should be kept dry using one or more water pumps.

2. Place an even amount of weight at the front. Do not tie the Water-Gate™ to the ground, as it uses the weight of the water to stop oncoming water. However, it is very important to place even weights along the entire length of the front flap to minimize water infiltrations underneath the barrier and keep it on the ground.

3. Prevent water from accumulating under the Water-Gate™ . Remove **all** objects likely to create water infiltrations under the barrier flap. The barrier is designed to stay in place on all surfaces such as asphalt, gravel, lawns, and concrete paving blocks, but if there is too much water under the flap, the Barrier will not adhere as well and may slip. It is thus important to make sure that the ground is free of objects that could cause water to accumulate under the barrier.

Never try to contain a leak at the back of the Water-Gate™. If there are leaks, stop the water from coming in at the front of the barrier. In most cases, such problems are caused by water infiltrations at the front. Trying to contain a leak at the back of the barrier **will** create a pool of water and make the Barrier unstable.

Resistance To Chemicals

The materials were tested by an independent professional chemist using commercial solvents. The table below shows the results of trials made with the materials constituting the Water-Gate™

	Solvent	Resistance
Inorganic Acids	Hydrochloric Acid / Aqueous Hydrogen Chloride	12 Hours
	Hydrofluoric Acid /Hydrogen Fluoride	12 Hours
	Anhydrous Hydrobromic Acid / Hydrogen Bromide	12 Hours
	Nitric Acid / Hydrogen Nitrate	Not Recommended
	Phosphoric Acid / Orthophosphoric Acid	12 Hours
	Sulphuric Acid	Not Recommended
Bases	Sodium Hydroxide / Caustic Soda	12 Hours
Hydrocarbons	Gasoline / Diesel / Oil	12 Flours
Non-polar Solvents	Petroleum Ether / Petroleum Benzine / Light Ligroin / Rubber Solvent / Naphtha	12 Hours
	n-Hexanes / Diprophyl	12 Hours
	p-Xylene / Thinner Fast Dry TY25635	12 Hours
	Toluene / Toluol	12 Hours
	Chloroform / Trichloromethane	Not Recommended
	Dichloromethane / Methylene Chloride	Not Recommended
Polar Solvents	Acetone / Methyl Ketone	Not Recommended
	Acetic Acid (Glacial)	12 Hours
	Ethanol / Ethyl Alcohol	12 Hours
	Methanol / Methyl Alcohol	12 Hours
	Formaldehyde / Formic Aldehyde	12 Hours
	Methyl Ether Ketone / Ethyl Methyl Ketone	Not Recommended
	Tetrahydrofuran / Butane	Not Recommended
Others	Ethyl Acetate / Acetic Acid Ethyl Ester	Not Recommended
	Acetic Anhydrous / Acetic Acid Anhydrive	12 Hours
	Paint Thinner	12 Hours
	Ammonium Hydroxide / Ammonia Solution	12 Hours
	Hydrogen Peroxide / Hydrogen Dioxide	12 Hours
	Calcium Hydroxide	12 Hours
	Ferric Chloride (Anhydrous) / Iron Trichloride	12 Hours
	Sodium Hypochlorite (5%) / Bleach	12 Hours