

# FLO-PLUG® 2

**TANK FLOOR CHECK VALVE / PROTECT STRUCTURES FROM MECHANICAL DAMAGE IN THE EVENT OF RISING TABLES OR GAS**

## CALCULATING THE FLO-PLUG QUANTITIES

The number of **FLO-PLUG® 2** required is determined by :

1. The surface area
2. The rising velocity of the water table (metres per day)

The graph below will assist where the rising velocity is known.

Note that where **rising velocity are minor**, the calculation of 1 **FLO-PLUG® 2** per 150 m<sup>2</sup> will provide an adequate security.

Where **rising velocity are significant** (from 0,8 metres per day) use the graph below to determine the required number of units.

### Exemples

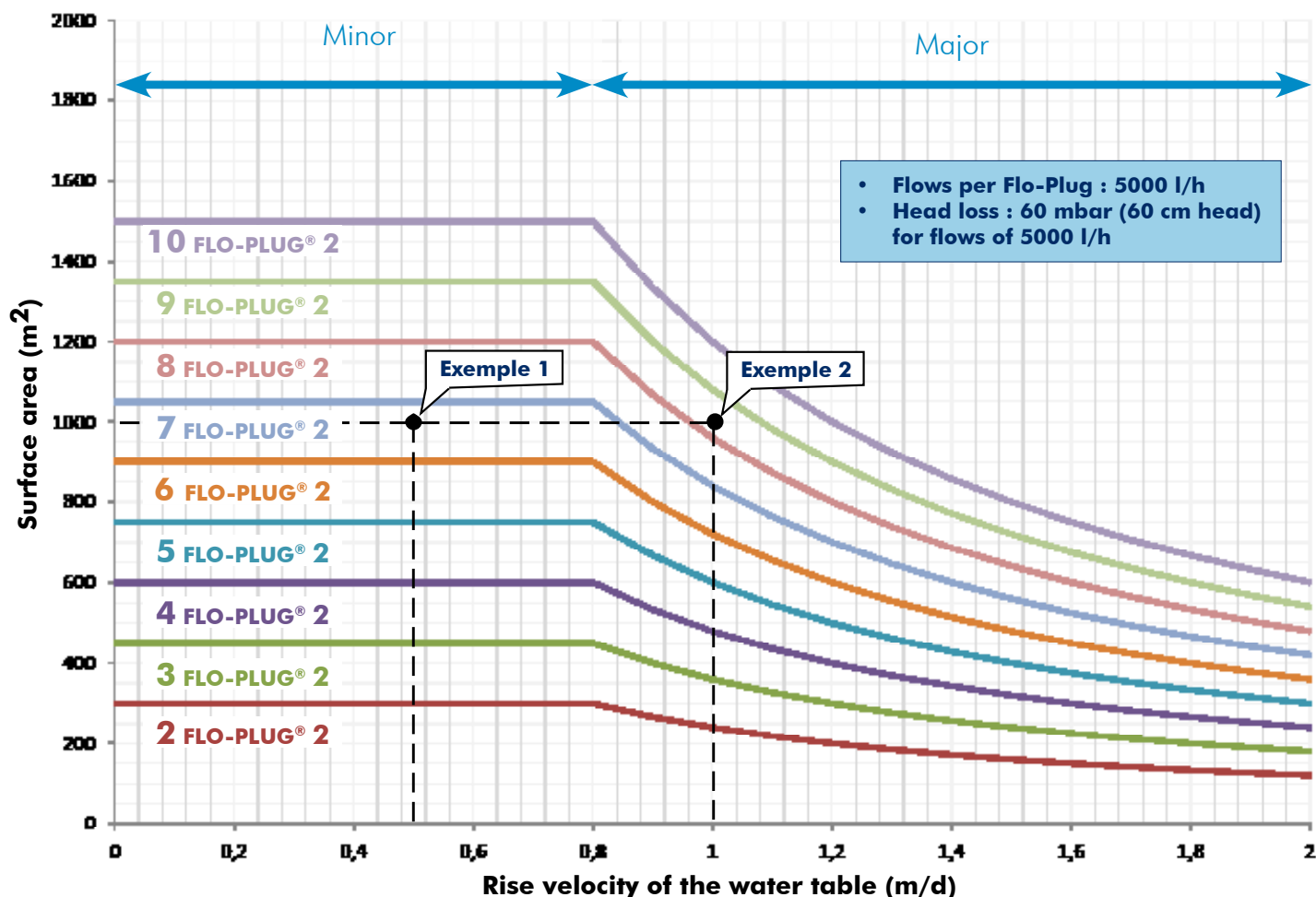
For a surface of **1000 m<sup>2</sup>**

**1.** For **0,5m/day** known maximum water rising table

Use → **7 FLO-PLUG® 2**

**2.** For **1m/day** known maximum water rising table

Use → **9 FLO-PLUG® 2**



! If you do not know water rising velocity, please contact us for assistance.



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YOUR DISTRIBUTOR :

# FLO-PLUG<sup>®</sup> 2

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## AVANTAGES PRODUIT

- **Innovative** : Patented product - No moving parts
- **High-performance** : 10 times the flow through rate compared to the FLO-PLUG 1
- **Watertight** : No backflow once the water table subsides
- **High resistance** : Backpressure, corrosion, mechanical compression, UV, sewerage,...
- **Light and compact** : Easy and quick installation
- **Reliable** : durable materials without moving parts

## PATENTED SOLUTION



DN 200

FLO-PLUG Mark 2

# NORHAM

DESIGNER AND SUPPLIER

Z.A DRUISIEUX — 26260 SAINT DONAT SUR L'HERBASSE - FRANCE

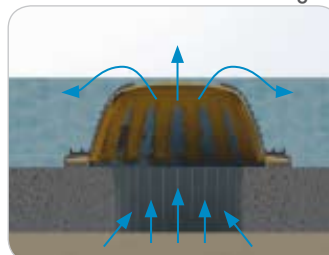
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Phase 0 : Empty basin



Position over DN 200 bore (or pipe insert) on concrete tank floor

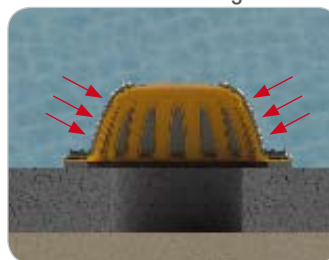
Phase 1 : Water table rising



5 000 l/h

Acts as a safety valve when tank is dry. It allows rising water to flow through

Phase 2 : Basin in charge, water table receding



watertight when the tank is filled



COUPLINGS & SEALS

PLUGS

NON-RETURN & FLAP VALVES

PENSTOCKS & REGULATORS

OTHERS SOLUTIONS

MARCH 2013

# FLO-PLUG® 2

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The 1<sup>st</sup> Flo-Plug® (Flo-Plug® 1) was developed and patented by Norham in 2007 in order to propose a **professional solution to protect structures** from mechanical damage in the event of **rising water tables or gas**.

**FLO-PLUG®2** is a **major evolution** of the 1<sup>st</sup> one.

Still no moving parts and with a rethought design, the self-contained safety unit **FLO-PLUG®2** can withstand **flows 10 times** Flo-Plug® 1.

**FLO-PLUG®2** takes the Flo-Plug concept to **a higher level**.

## USE

- **Protect structures** of empty tanks from mechanical damage in the event of rising tables or gas (i.e. during maintenance cleaning)
- Ideal for **tanks**, retention basins,...
- Can be fitted to **concrete structures or into flexible geomembrane liners\*** in catchment basins

## TECHNICAL DATAS

- Materials : Body and flange in **PP Homopolymer with anti UV protection**, Membrane in **EPDM**
- Dimensions : **DN 200 - Height 127 mm - Øext 360 mm**
- Weight : **1,52 kg**
- Backpressure : up to **1 bar** (10mCE)
- Head loss : **60 mbar** (60cmCE) for a maximum flow of 5000 l/h  
Head loss = The head required to open the valve **FLO-PLUG®2**

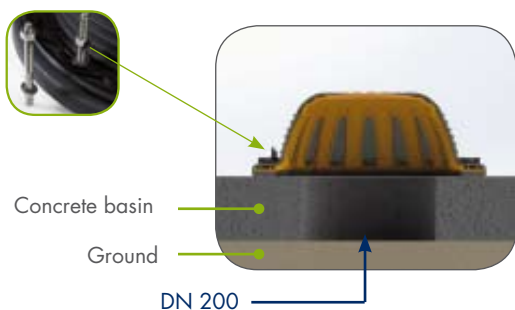
## INSTALLATION

Installation instructions with product

**NB** : Whatever the type of rising (gas or water table), it is important to take account of the pressure necessary for the opening of **FLO-PLUG®2** (60 mbar for a maximum flow of 5000 l/h) and to check that the structure is in adequation.

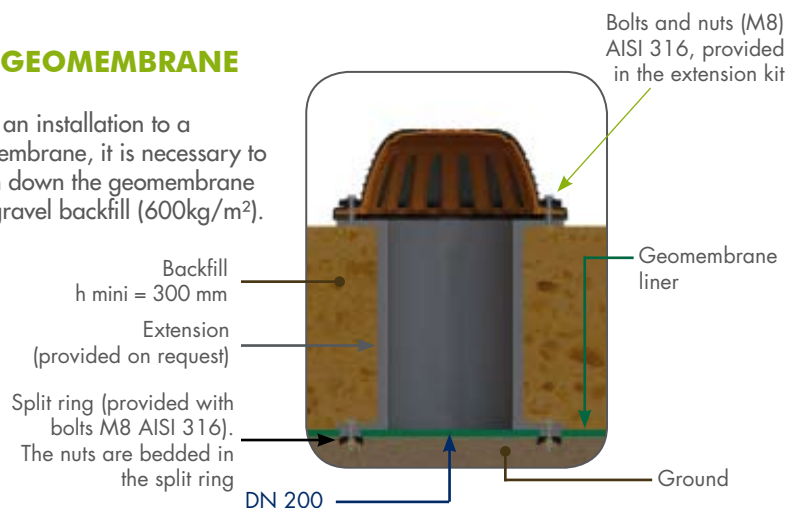
### FOR CONCRETE

Easy and quick installation with mechanical anchors (AISI 316) provided



### ON GEOMEMBRANE

\* For an installation to a geomembrane, it is necessary to weigh down the geomembrane with gravel backfill (600kg/m<sup>2</sup>).



**2007 FLO-PLUG®1**

**500 l/h**



**2013 FLO-PLUG®2**

**5 000 l/h**



# FLO-PLUG® 2

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## CONCEPTION

### PP Homopolymer with anti-UV protection+ EPDM

Materials chosen as its high resistance : Backpressure, corrosion, mechanical compression, UV, sewerage, temperatures (-40°C to + 95 °C)

### Self-cleaning

To minimise sticking of sediment

Bottom view



### Rethought and patented orifices opening

To allow maximum through flow

### New profiled membrane

Optimised to allow maximum through flow but to seal tight backflow

### PP Homopolymer with anti-UV protection

Material anti-adhesive to limit formation of deposits

### Membrane monobloc

In EPDM for high chemical resistance

### PP Homopolymer washer

To firmly retain membrane to body (DN 200 PN10 compliant)

Bottom view

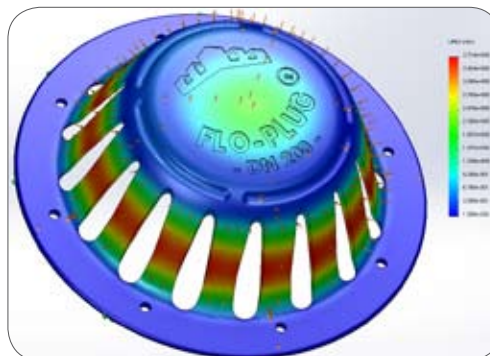


### Ribbed rubber under seal

To provide effective seal to floor

## FINITE ELEMENT ANALYSIS

The PP Homopolymer body was conceived with Finite Element Model confirmation that it will resist 10 mCE (10 meters water column) without any structural damage



Polyester split ring **FLO-PLUG200BV2** for geomembrane applications



## FULL PRODUCT RANGE

Ref	Description
<b>FLO-PLUG200V2</b>	Horizontal safety valve for <b>CONCRETE</b> basins/tanks
<b>FLO-PLUG200BV2</b>	Horizontal safety valve for <b>FLEXIBLE GEOMEMBRANE</b> basins with split ring
<b>FLO-PLUGR300</b>	Extension of 300 mm* for <b>FLO-PLUG200BV2</b>

\*For other dimensions, please contact us.



DN 200 Extension in polyester for installation of **FLO-PLUG200BV2** ON GEOMEMBRANE to allow 300 mm gravel backfill