

INTEWA

INTEWA PRODUCTS



Hydraulic Jump RAINWATER FILTERS

Models

PR100

PR100oRS

Instruction & Installation guide

WATER IS OUR ELEMENT

www.intewa.com

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1. Note

Updated technical data, scope of application and basic dimensioning are available at:

<http://za.intewa.net/products/purain/technik/>

Various filter tests and reports are available for download at:

<http://za.intewa.net/products/purain/downloads/>

2. Features

Thank you for your INTEWA product purchase.

Your PURAIN Rainwater filter provides optimum rainwater quality in your tank.

PURAIN rainwater filters (also known as hydraulic jump filters) deliver high performance in the filtering of rainwater and this hydraulic jump technology means that the filter cleans itself automatically. The design incorporates a height drop, which, from a sub-critical to a super-critical flow, creates a vortex in the incoming water flow. This change in flow is a process now commonly referred to as a hydraulic jump. The resulting increase in water power is similar to a strong eddy and forces any impurities, collected in the filter chamber, over the next level to be washed away to waste.



PURAIN rainwater filters are designed to filter rainwater coming off roofing made from clay brick, shales, tiles, metal, glass or concrete stone. Different model sizes filter water from roof areas of 60 m² to over 15,000 m².

Independently tested, the PR100 is rated as one of the most efficient rainwater filters in the world - at 98% collection efficiency (this means that for every 100 litres of rain falling on your roof, your filter will collect 98 litres). It has been designed to collect rainwater especially from 'light' rainfall events and uses the 'heavy' events for self-cleaning.

This efficient design is very important, as studies have shown that 97% of all world rainfall comes from 'light events' (measured at less than .6mm over 5 minutes), leaving only 3% of rainfall coming from 'heavy events' (measured at

more than .6mm over 5 minutes). As most other filters are not designed along this scientific principal, they cannot adequately collect light events without wastage, with the result that they end up with collection efficiencies of between only 60 - 70% - meaning they waste large quantities of valuable rainwater.

PR100 and PR100oRS models offer the following features:

- High collection efficiency - collecting 98% of all rainfall falling on your roof;
- Built-in overflow skimmers to constantly clean debris floating on the tank water surface;
- Built-in non-return valve and chamber cover for both rodent and backflow protection (PR100 only);
- Hydraulic jump design - self-cleaning;
- Minimal maintenance needed;
- Only one filter needed for each installation - even if multiple tanks are used;
- Indestructible .8mm removable stainless steel filter strainer;
- European manufacture - sturdy injection moulding that will outlast the life of your tank;
- Long service life (will generally outlast the life of your LDPE tank)

PR100 (110mm) Models & Dimensions

PR100 filter



Features:

A non-return valve and (red) chamber top cover

NB: Ideal for installation in both above ground and below ground tanks

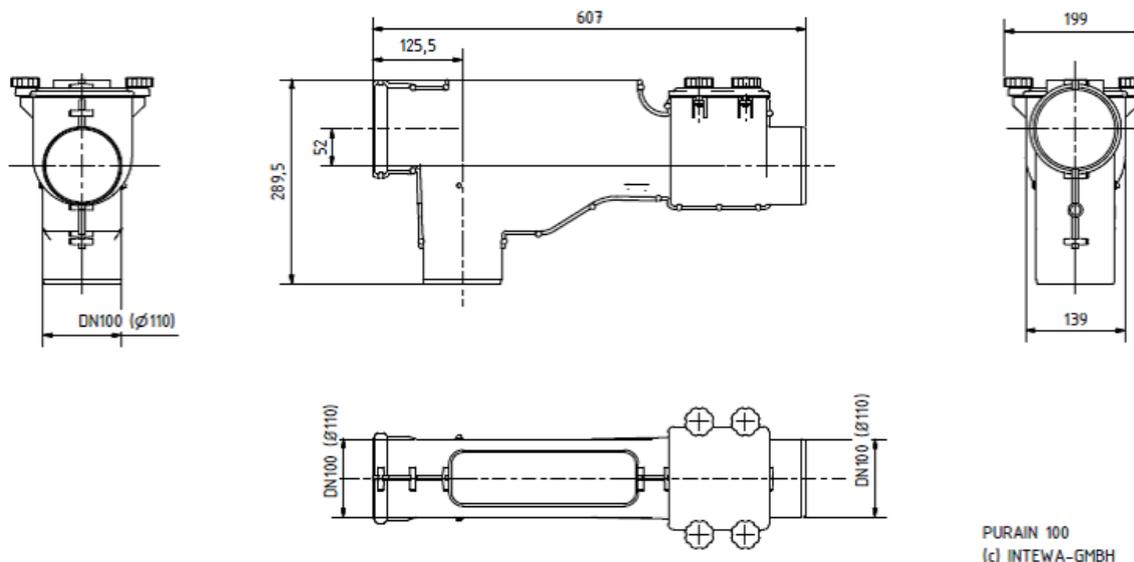
PR100-oRS filter



oRS version without non-return valve and (red) chamber top cover

NB: Ideal for installation in above ground tanks only

DIMENSIONS



3. Sizing guidelines

As a general rule, PURAIN rainwater filters are selected based on the diameter of the rainwater collecting pipe stipulated by the buildings architect or engineer e.g. DN100 (110mm) = PR100.

Usually, in a residential installation, a number of 75/80mm downpipes are connected (without gully's) into a 110mm carry pipe running underground which then connects directly to the PR100 filter located inside the storage tank.

IMPORTANT: This type of closed (or "wet") piping system will only transfer water efficiently if the entry point for the pipework into the tank is positioned 300mm+ lower than the lowest collection gutter on the building.

Filter flow specifications

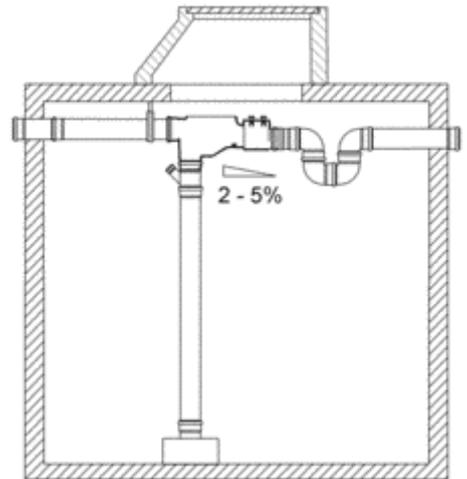
model	pipe size	flow rate (with 1.5% slope)		Roof size m ²	
				discharge co-efficient = .8	discharge co-efficient = .5
PR100	DN100	5.7	1/s	238m ²	380m ²
PR100oRS	DN100	5.7	1/s	238m ²	380m ²
some larger filters					
PR150-S	DN150	16.9	1/s	705m ²	1130m ²
PR150/200	DN200	36.6	1/s	1515m ²	2420m ²

View larger filters at za.intewa.net

4. Installation instructions

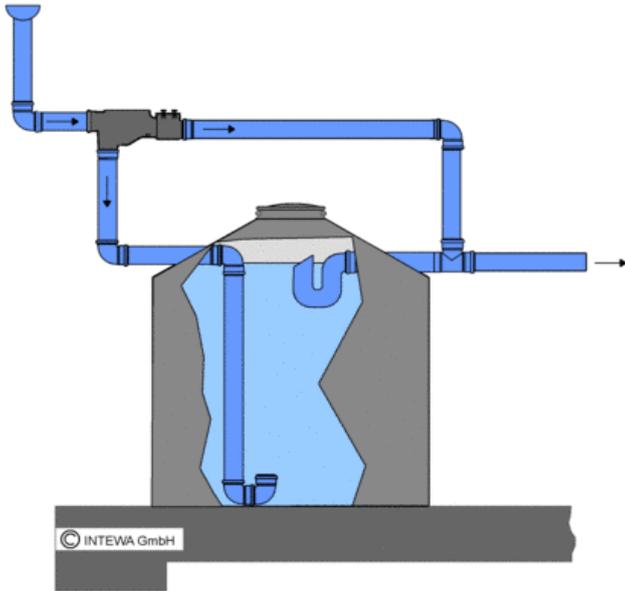
In Tank Installation

- The filter is best installed inside the tank, under the inspection lid, for most efficient functioning;
- The filter must be installed with a slope of 2 - 5 % from inflow to outflow side;
- Take care to note the offset in the filter design between inlet & outlet (see DIMENSIONS diagram page 4) when drilling the holes;
- Tank Seals should be used (ACCESSORIES page 7) to stop leakage around the inflow and overflow pipework. Using INTEWA **SEAL-100** the cutting diameter is 122-125mm;
- 110mm pipe clamps must be used (attached to the roof of the tank) in order to support long sections of pipe from sagging due to the filter's weight;
- In below ground installations, at least 100 cm of horizontal pipe should be inserted on the inflow side of the filter to calm the water flow before it enters the filter, as water gains much velocity as it falls from the roof height to the underground tank and this speed may reduce the filter's efficiency;
- For proper skimming of the surface water the PR-100 must be installed without any lateral tilt (filter sides must be level);
- A separate tank overflow does not need to be installed, even if multiple tanks are utilised - the 110mm filter overflow handles this;
- Accessibility to the filter is important for cleaning and maintenance of the stainless steel filter strainer and the non-return valve;
- A 'P' trap can be installed on the overflow side of the filter to prevent possible smells entering the tank from the storm water connection or the possibility that mosquito or other insects may enter the tank via the overflow;
- Back-flush kit PR-RSDS should be installed to reduce maintenance further (see "accessories");
- A water intake calmer (Accessory PF-300-100 Pg 9) is attached to a length of 110mm pipe from the bottom of the filter running to the floor of the tank preventing the sediment layer from being disturbed by incoming water;
- It is best practise to use a floating suction filter (SAUGSAGF accessory P8) on the pump intake line rather than draw water from the outlet fitting at the bottom of the tank as this stirs up sediment and will eventually lead to the fouling of internal flush valves and sprinkler heads.



Out Of Tank Installation

Should it not be possible to mount the PR100 inside the tank, it can be mounted above the tank (see below illustration).



NOTE: In an out-of-tank installation of this nature, a Perspex cover should be installed over the filter opening to keep additional dust and debris from entering the collection chamber (not available as an accessory).

NOTE: Both skimmers on each side of the filter must be plugged with silicon if the filter is to operate correctly in this type of installation.

NOTE: Ensure the overflow is installed as per the diagram. A separate skimmer can also be installed inside the tank (made from a 110mm pipe cut at an oblique angle) to help filter debris off the top of the water and to act as a correct size tank overflow.

5. Filter Maintenance

Your filter requires much less maintenance than other types of rainwater filters due to the hydraulic jump design and the stainless steel filter strainer.

The filter should be checked 2-3 times a year for contaminants that may become caught in the slotted wire strainer. Dirt and leaves found in the collection area need not be removed because they will be flushed out through the overflow with the next heavy rainfall. However, if water has accumulated in the discharge area and has not drained away, then this is a sign that the stainless steel strainer may be blocked with small particles or pollen/seeds. This can be effectively cleaned in a few seconds by using a hose or a high pressure sprayer directed at the strainer.



Alternatively, the filter strainer can be removed and cleaned manually. In doing so, it is important to clean the filter collection area with a high pressure cleaner or hose, to flush all dirt out through the emergency overflow before removing the strainer. In this way, the clean strainer can be re-installed without dirt and sludge fouling the lateral support guides to ensure a perfect re-insertion.

If you install accessory PR-RSDS back-flushing kit, external cleaning, can be achieved remotely, either at the change of seasons or before heavier rain periods are expected. This accessory means the owner does not have to access the tank.



6. Safety instructions

- Never enter the tank without supervision or without safety measures.
- Never lean into the tank from the top!
- Always leave the tank inspection cover closed after working on it.
- Keep children away from the top of the tank!

7. Accessories

Tank Seals (recommended)

When installing the **PR100** filter inside the tank, two holes must be cut into the tank to take the 110mm (DN100) pipework. Use **SEAL-100 2-5mm** on the in-flow and over-flow sides to ensure no leakage occurs when the tank is full.

The inlet and overflow holes are cut to **122-125mm** diameter (when installing DN100 piping) and the rubber seals can be secured easily into place allowing the pipe to be mounted into the tank without the possibility of leakage occurring.



NB:

When cutting holes in the tank to install the PURAIN PR100 filter remember the offset height difference between the inflow and outflow levels (see DIMENSIONS diagram page 5)

SAUGSAGF - Floating suction filter (recommended)

The floating suction filter ensures that the cleanest tank water, from just below the surface, is always drawn from just below the water surface for pumping, never from the bottom of the tank, where sediment, which can block household water consumer flush valves or irrigation heads, often collects.

SAUGSAGF floating suction filters come in 15mm, 25mm and 40mm sizing. Floating suction filters are industry best practise because they lower the chance of blockages and reduce maintenance schedules.



PR-RSDS Back-flushing kit (recommended)

We recommend the installation of **PR-RSDS** back flushing nozzle for PURAIN filters installed in hard to reach tanks.

The back flushing nozzle is installed in the **PR100** and **PR100ORS** rainwater filters and sits behind the filter strainer.

When connected, via a hose and plug-in coupling to a tap, the filter strainer can be easily sprayed clean by the home owner remotely, at any time, by turning on the tap - and without actually having to open the tank lid.

In this way, manual filter cleaning becomes semi-automated.



PF 300-100 - inlet water calmer (recommended)

PF 300-DN100 is a 110mm size fitting that sits on the tank bottom and is joined by a pipe to the PURAIN filter inlet.

All tanks develop sediment on the bottom over time. This is because a water tank is an eco-system and the by-product of a healthy tank eco-system is sediment. While good rainwater filtering will restrict the amount of sediment forming, it will always occur to some extent. To ensure the bottom sediment is never stirred up (which will block sprinkler heads, toilet and washing machine flush valves) the **PR 300-DN100** inlet calmer is installed.



The incoming water falls straight down the inlet pipe and is turned 180 degrees upwards exiting out the small holes in the top of the calmer. In this way, even if the tank is empty, upward pressurised water cannot stir up sediment on the bottom of the tank. If not disturbed, the sediment compacts on the tank bottom and does not cause future fouling problems.

When used in conjunction with a **SAUGSAGF** floating suction filter (above), pumped water quality is sediment free and will not block toilet valves or irrigation heads. This means longer water consumer service life with lower maintenance intervals.

RAINMASTER D24 remote LED tank water indicator

The **RAINMASTER D 24** is an LED tank level indicator for water tanks to a depth up to 3 m. It operates by way of capacitance with the wired array mounted in the

tank while the LED display can be mounted in a convenient viewing place inside the house. The unit plugs into 230V via a 12 volt adaptor and is an excellent accessory for any rainwater system. It fits any make of tank and can also be installed in concrete cisterns.



For rainwater systems using a submersible pump, the Rainmaster D24 can also automatically operate a solenoid valve, controlling the supply of mains water top-up to the tank, should the rainwater level in the tank run low. On activation, the mains water is passed through a so-called "air gap", as per DIN EN1717 regulations (European potable water safety regulations), and from there to the tank via a pipe.



8. Warranty/Contact

All INTEWA products carry a German backed 24 month warranty against faulty product manufacture.

The Warranty start date corresponds with the product invoice sale date.

INTEWA reserves the right to repair or replace faulty product at their discretion.

INTEWA or its agents will not be responsible for damage or poor performance of the products due to faulty or poor installation.

Any changes to design, modification or addition of non-specified parts, will void this warranty.

Always retain your purchase invoice during the warranty period.

For any queries, spare parts or orders please contact your local INTEWA dealer, or this office in South Africa, at [purerrain@iafrica.com](mailto:purerain@iafrica.com) or by telephone at Pure Rain Technologies Pty Ltd on 086 111 4307.