

# INTEWA



## **PURAIN 100**

PR100, PR100-M, PR100-oRS, PR100-oRS-M

## **PURAIN 150**

PR150, PR150-M, PR150-o.SK, PR150-o.SK.-M

## **PURAIN 200-400**

PR200, PR300, PR400

## **PURAIN 200-400-HD**

PR200-HD, PR300-HD, PR400-HD

Instruction and Installation Guide

**WATER, WE'RE in OUR ELEMENT**

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## Contents

<b>1. Introduction.....</b>	<b>2</b>
<b>2. Dimensioning.....</b>	<b>2</b>
2.1 <i>Dimensioning for rainwater harvesting systems (gravity drainage).....</i>	2
2.2 <i>Dimensioning for greywater treatment system.....</i>	3
<b>3. Features.....</b>	<b>3</b>
3.1 <i>Self-cleaning due to hydraulic jump.....</i>	3
3.2 <i>Weir function / flow rate.....</i>	4
3.3 <i>Non-return valve/small animal protection.....</i>	5
3.4 <i>Skimmer function.....</i>	6
3.5 <i>Guard grid for grey water application.....</i>	6
3.6 <i>PURAIN filter function overview.....</i>	7
<b>4. Technical data.....</b>	<b>7</b>
4.1. <i>Technical data PR100.....</i>	8
4.2. <i>Technical Data PR150.....</i>	10
4.3. <i>Technical Data PR200-400.....</i>	11
4.4. <i>Technical Data PR200-400-HD.....</i>	12
<b>5. Accessories.....</b>	<b>13</b>
<b>6. General installation instructions.....</b>	<b>17</b>
6.1. <i>Installation in Tank.....</i>	17
6.2. <i>Installation outside the tank.....</i>	18
6.3 <i>Underground installation PR150 o.SK. and PR200-HD – PR40-HD.....</i>	19
6.3.1 <i>General instructions for ground installation.....</i>	19
6.3.1.1 <i>Base layer and equalizing layer.....</i>	19
6.3.1.2 <i>Filter backfilling and materials.....</i>	19
6.3.1.3 <i>Overlay and load capacity of the system.....</i>	21
6.3.1.4 <i>Instructions for manhole and manhole lid.....</i>	22
6.3.2 <i>Installation instructions.....</i>	23
6.3.2.1 <i>Compacting machine.....</i>	23
6.3.2.2 <i>Installation steps.....</i>	24
<b>7. Maintenance and cleaning intervals.....</b>	<b>25</b>
7.1 <i>Application rainwater harvesting system.....</i>	25
7.2 <i>Application grey water recycling systems.....</i>	26
<b>8. Warranty/Contact.....</b>	<b>26</b>

## 1. Introduction

Thank you for your INTEWA PURAIN pre-filter purchase.

PURAIN filters are designed for filtering rainwater from roofs made of clay tiles, slate, bricks, metal, glass or concrete block. They are also used as pre-filtration for gray water treatment systems.

Die PURAIN Modelle bieten dabei folgende Vorteile:

- minimal height offset
- minimum maintenance intervals
- self-cleaning due to hydraulic jump (in the rainwater harvesting system)
- minimal tendency to block due to trapezoidal slotted screen
- immediate filtering (= no start-up losses)
- back flushing possibility

## 2. Dimensioning

### 2.1 Dimensioning for rainwater harvesting systems (gravity drainage)

The PURAIN rainwater filters are usually dimensioned simply on the basis of the diameter of the connected rainwater collection line.

If the diameter of the planned collection pipe is still unknown, the table 1 can be used as a guide. It gives an overview of the dimensioning of these rainwater connection pipes according to DIN 1986 at a design rainfall rate of  $r = 300$  l/sha and a gradient of 1.5 %. The runoff coefficient indicates the factor by which the rainfall runoff volume can be reduced as a result of the roof type.

- Runoff coefficient 1,0 = theoretical value
- Runoff coefficient 0.8 = sloped hard roof
- Runoff coefficient 0.5 = extensive green roof

Pipe size	Flow rate (l/s) at 1.5% slope*	Connectable roof areas at Runoff 1,0	Connectable roof areas at Runoff 0,8	Connectable roof areas at Runoff 0,5
DN100	5,1 l/s	170 m <sup>2</sup>	213 m <sup>2</sup>	340 m <sup>2</sup>
DN150	15,7 l/s	523 m <sup>2</sup>	654 m <sup>2</sup>	1047 m <sup>2</sup>
DN200	29,1 l/s	970 m <sup>2</sup>	1213 m <sup>2</sup>	1940 m <sup>2</sup>
DN300	97,0 l/s	3233 m <sup>2</sup>	4042 m <sup>2</sup>	6467 m <sup>2</sup>
DN400	226,8 l/s	7560 m <sup>2</sup>	9450 m <sup>2</sup>	15120 m <sup>2</sup>

\* Flow rates depending on the gradient

**Tab. 1: Flow rate / connectable roof areas according to DIN 1986-100 at a filling level of  $h/d=0.7$**

**Note:** Project-specific dimensioning is required for pressurized drainage of roof runoff water.

## 2.2 Dimensioning for greywater treatment system

The PURAIN filter "without weir" version is also used in gray water treatment plants. The filter size depends on the diameter of the collection pipe, the peak flow, the filter capacity and the discharge capacity.

Greywater system capacity	PURAIN Type*
300 – 900 l/d	PR100-M (without weir)
1.200 – 10.800 l/d	PR150-M (without weir)
16.200 – 32.400 l/d	PR200 (without weir)
48.600 l/d	PR300 (without weir)

\*Discharge calculation based on peak flow according to NSF/Ansi 350 (40% of daily water flow between 7 - 10 a.m. with safety factor (sf=2) and regular use.

**Tab. 2: PURAIN filter sizes/models for grey water treatment systems**

## 3. Features

### 3.1 Self-cleaning due to hydraulic jump



**Fig. 1: Filtration**



**Fig.2: Filtration with hydraulic jump**

The PURAIN-Filter 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", leaving only 3% of rainfall coming from "heavy events". As most other filters cannot adequately collect light events without wastage they end up with collection efficiencies of between only 60 - 70% – and waste large quantities of valuable rainwater.

Nature provides the constructive model for PURAIN rainwater filters: In almost any stream, you can see how the hydraulic alternating jump works. The water flows over the stones in the stream bed, which are smooth and rounded by the action of the water. Behind the stone, the flow changes suddenly, creating a turbulence called a "hydraulic jump." The resulting increase in water force is utilized in the PURAIN to flush debris from the filter collection area.

#### Note:

If the PURAIN filter is used in a grey water recycling system, a backwash nozzle must be used in any case, since in this application the inflow is continuous and consequently there is no hydraulic jump.

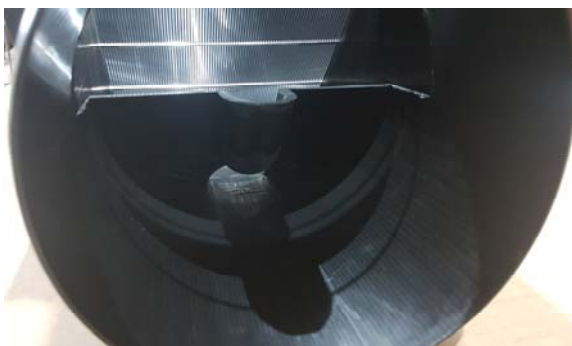
### 3.2 Weir function / flow rate

PURAIN filters have a weir (behind the filter screen) to optimize filtration performance in areas with moderate rainfall. In areas with heavy rainfall, filters without weirs are used to ensure high filtration throughput.

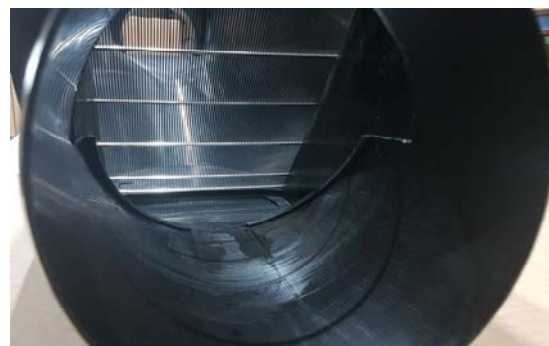
**Note:** Models PR200 and above have a removable weir design.

	Max. Filtration throughput (hydraulic jump point)	Application
PR 100 PR 100 o.Sk.	0,6 l/s with weir	- Rainwater filter in European countries
PR 100-M PR 100-M o.Sk.	1,2 l/s without weir	- Rainwater filters in countries with heavy rainfall events - Grey water prefiltration
PR 150 PR150 o.Sk.	2,7 l/s with weir	- Rainwater filter in European countries
PR 150-M PR 150-M o.Sk	5,4 l/s without weir	- Rainwater filters in countries with heavy rainfall events - Grey water prefiltration
PR 200 PR 200-HD	5,5 l/s with weir	- Rainwater filter in European countries
PR 200 PR 200-HD	11,0 l/s without weir	- Rainwater filters in countries with heavy rainfall events - Grey water prefiltration
PR 300 PR 300-HD	7,4 l/s with weir	- Rainwater filter in European countries
PR 300 PR 300-HD	14,8 l/s without weir	- Rainwater filters in countries with heavy rainfall events - Grey water prefiltration
PR 400 PR 400-HD	10,0 l/s with weir	- Rainwater filter in European countries
PR 400 PR 400-HD	20,0 l/s without weir	- Rainwater filters in countries with heavy rainfall events - Grey water prefiltration

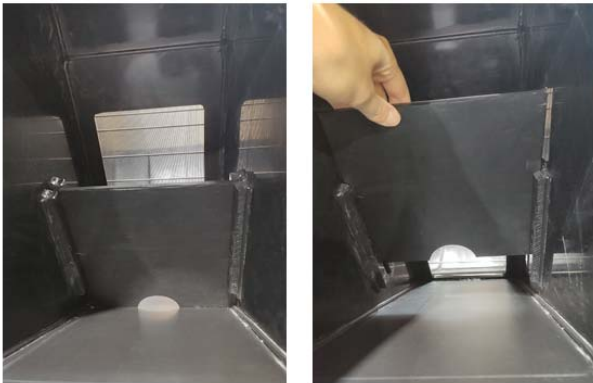
**Tab. 3: Application overview of the PURAIN type**



**Fig. 3: PR150 with weir**



**Fig. 4: PR150-M without weir**



**Fig. 5: PR200 with weir (removeable)**

### 3.3 Non-return valve/small animal protection

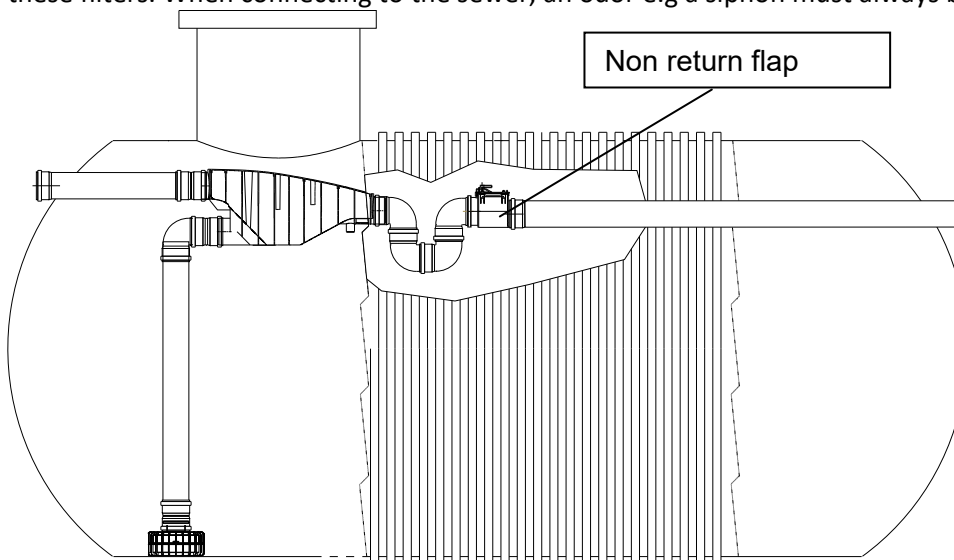
The PURAIN PR100 version already contains a non-return valve prescribed in the standard. This prevents water contaminated by the overflow from the sewer or small animals from entering the cistern.



**Fig. 6: PR100 with integrated non-return valve**

**Note:**

Type PR150 to PR400 do not have an integrated non-return flap. This must be provided separately behind these filters. When connecting to the sewer, an odor e.g a siphon must always be provided



**Fig. 7: Example system with PR150 filter and external non-return flap**

### 3.4 Skimmer function

Cleaning of the water surface in the tank is performed by an overflow skimmer integrated in the PURAIN filter and located on both sides (except PR-150-o.SK.). Floating debris, such as pollen (rainwater harvesting systems) or fats and oils (graywater application), are removed by the side skimmers from the water surface at maximum water level and discharged directly into the sewer connection. The overflow skimmer therefore has a cleaning function in the system.



**Fig. 8: Skimmer at PR100**



**Fig. 9: Skimmer at PR150**

**Note:**

If the PURAIN filter is installed outside tanks, the "o.SK." (without skimmer) variant must be used. Large filters PR200 - PR400 are not equipped with a skimmer. This must be installed separately in the tank.

### 3.5 Guard grid for grey water application

When using the filters in grey water applications, the connection of the filtered water is provided with a guard grid (see accessories) so that at maximum water level no growth bodies enter the filter housing and interfere with the filter backflushing.



**Fig. 10: PR150 with guard grid**

### 3.6 PURAIN filter function overview

	Non-return flap	Skimmer	Standard flow (with weir)	High flow (without weir)	Designed for backflushing nozzle
PR100	X	X	X	--	X
PR100-M	X	X	--	X	X
PR100-o.RS.	--*	X	X		X
PR100-o.RS.-M	--*	X		X	X
PR150	--**	X	X	--	--***
PR150-M	--**	X	--	X	--***
PR150-o.SK.	--**	--	X		--***
PR150-o.SK.-M	--**	--	--	X	--***
PR200 PR300 PR400	--*	--	X	X****	--***
PR200-HD PR300-HD PR400-HD	--**	--	X	X****	--***

\* Retrofitting of non-return flap possible, see accessories

\*\* Provide external non-return flap, see accessories

\*\*\* Drilling template and drill are included in the backflushing nozzle set

\*\*\*\* Weir removable

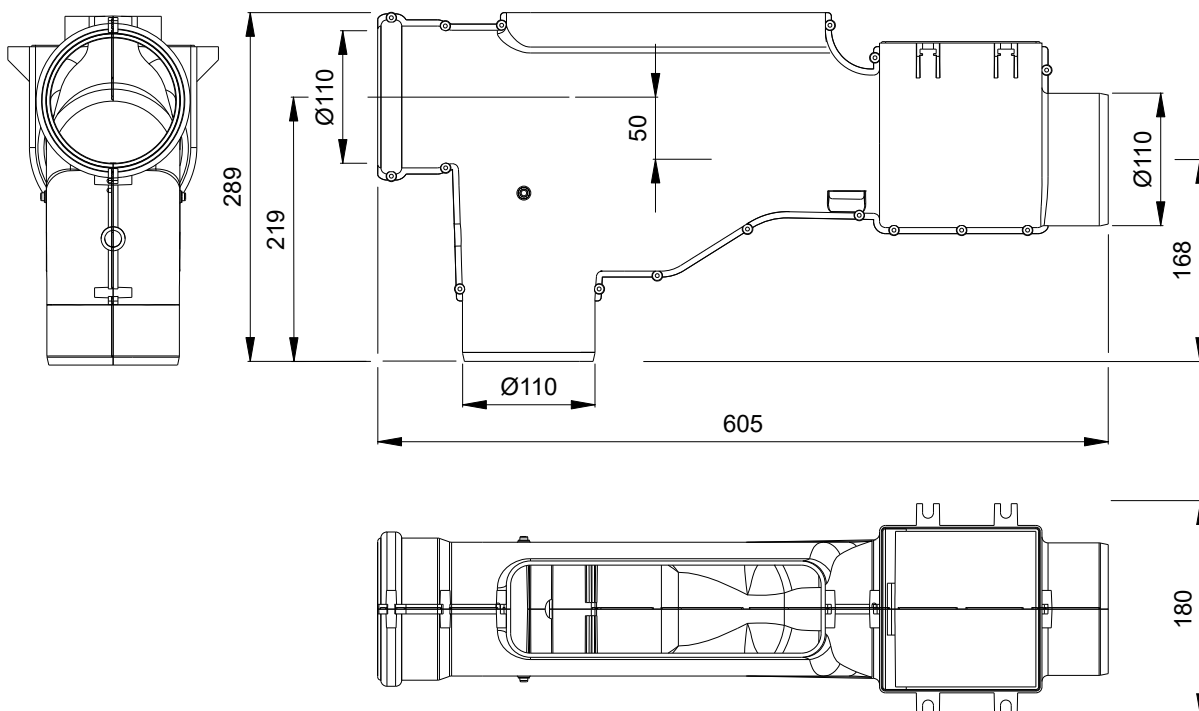
**Tab. 3: PURAIN filter function overview**



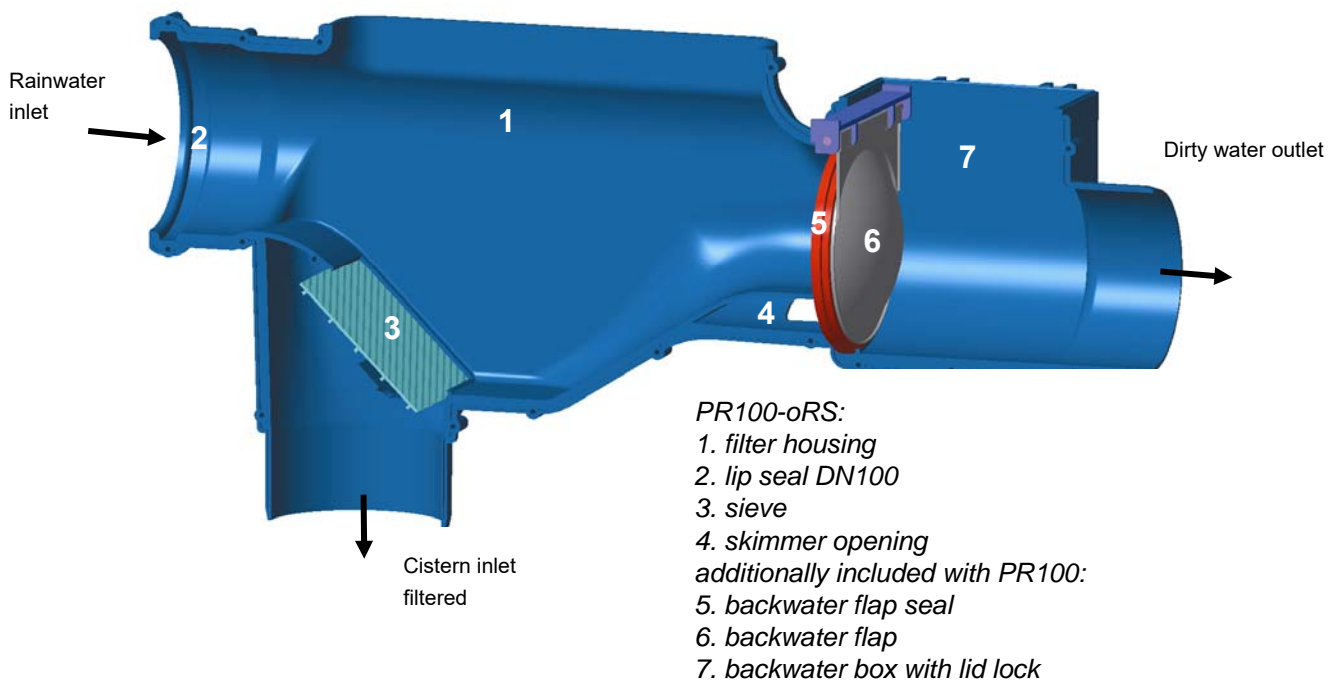
## 4. Technical data

### 4.1. Technical data PR100

	<b>PR100</b>
Length	605 mm
Width	180 mm
Height	288 mm
Net weight	1,95 kg
Sieve width	0,8 mm
Inlet height	164 mm
Height dirt water connection	114 mm
Height offset	50 mm
Dirty water inlet connection	DN 100
Cistern inlet connection	DN 100
Dirty water outlet connection	DN 100
Material	PP, Stainless steel, EPDM
Effective efficiency	98 %



**Fig. 11: Dimension PURAIN PR100**



**Fig. 12: Structure of the PURAIN filter DN100**

#### 4.2. Technical Data PR150

	PR150
Length	1018 mm
Width	243 mm
Height	458 mm
Net weight	7,4 kg
Sieve width	0,8 mm
Inlet height	277 mm
Length of connection end	69 mm
Height dirty water connection	128 mm
Height offset	149 mm
Dirty water inlet connection	DN 150
Connection cistern inlet	DN 150
Connection dirty water outlet	DN 150
Color	black
Load class	walkable
Material	PP, stainless stell, EPDM
Effective efficiency	98 %

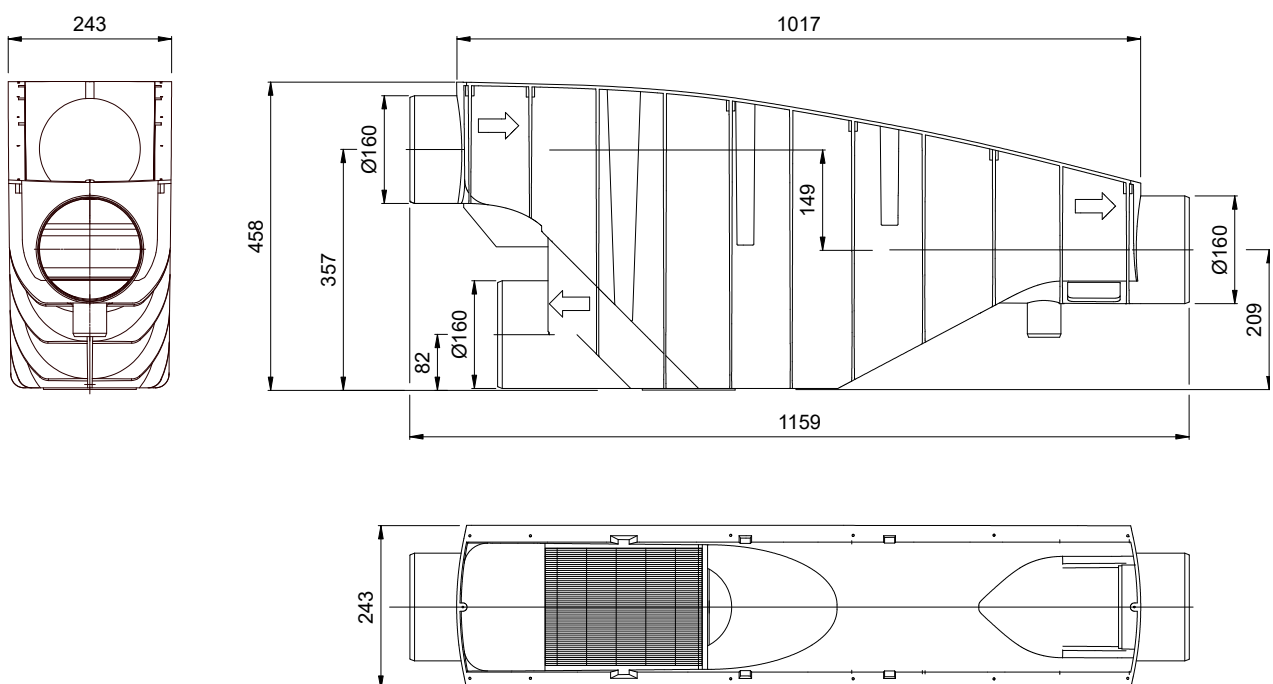


Fig. 13: Dimension PURAIN PR150

### 4.3. Technical Data PR200-400

	PR200	PR300	PR400
Length L	1495 mm	1786 mm	2043 mm
Width B	266 mm	385 mm	488 mm
Height H	660 mm	866 mm	1025 mm
Net weight	26 kg	48 kg	65 kg
Sieve width	0.8 mm	0.8 mm	0.8 mm
Height inlet H2	405 mm	499 mm	572 mm
Height dirty water connection H3	235 mm	228 mm	226 mm
Height clear water connection H1	32 mm	53 mm	54 mm
Height offset $\Delta h$	170 mm	271 mm	346 mm
Inlet connection D2	DN 200	DN 300	DN 400
Clear water connection D1	DN 200	DN 200	DN 300
Dirty water connection D3	DN 200	DN 300	DN 400
Sealing flange b	13 mm	13 mm	13 mm
Material	PP, stainless steel, NBR	PP, stainless steel, NBR	PP, stainless steel, NBR
Hydraulic jump	5.5 l/s	7.4 l/s	10 l/s
Effective efficiency	98 %	98 %	98 %

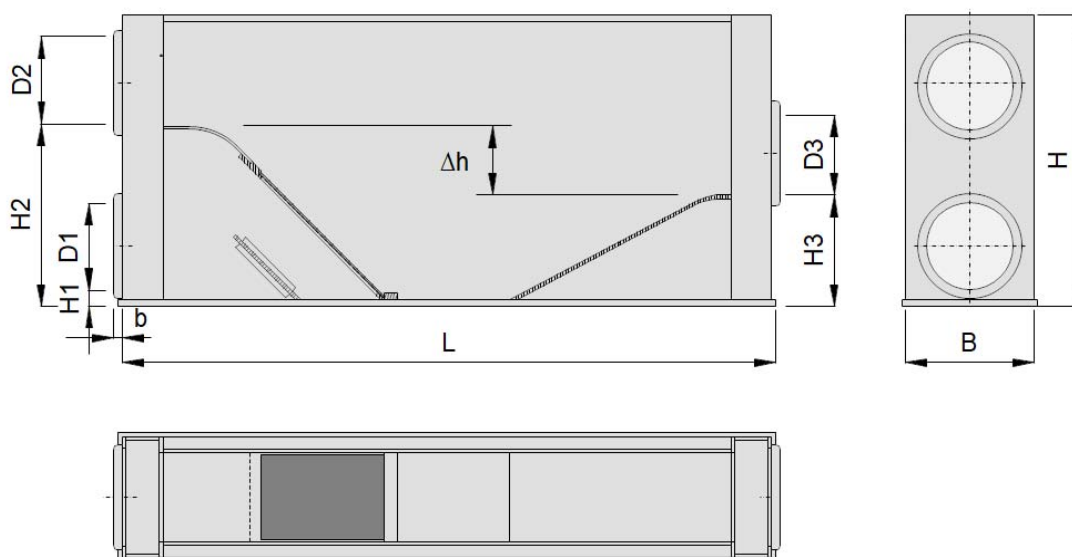


Fig. 14: Dimension PURAIN PR200-400

#### 4.4. Technical Data PR200-400-HD

	PR200-HD	PR300-HD	PR400-HD
Length L	1495 mm	1786 mm	2043 mm
Width B	393 mm	581 mm	670 mm
Height H	1075 mm	1281 mm	1440 mm
Net weight	78 kg	117 kg	188 kg
Sieve width	0.8 mm	0.8 mm	0.8 mm
Width B1	184 mm	295 mm	370 mm
Length L2	408 mm	460 mm	424 mm
Length L1	248 mm	363 mm	448 mm
Height inlet H2	426 mm	499 mm	572 mm
Height of dirty water connection H3	235 mm	228 mm	226 mm
Height clear water connection H1	40 mm	53 mm	54 mm
Shoulder height hs	675 mm	881 mm	1040 mm
Height offset $\Delta h$	190 mm	271 mm	346 mm
Inlet connection D2*	DN 200	DN 300	DN 400
Clear water connection D1*	DN 200	DN 200	DN 300
Dirty water connection D3*	DN 200	13 mm	13 mm
Sealing flange b	13 mm	DN 300	DN 400
Material	PP, Edelstahl, NBR	PP, Edelstahl, NBR	PP, Edelstahl, NBR
Hydraulic jump	5.5 l/s	7.4 l/s	10 l/s
Efficiency effective	98 %	98 %	98 %

\* Connection with lip seal

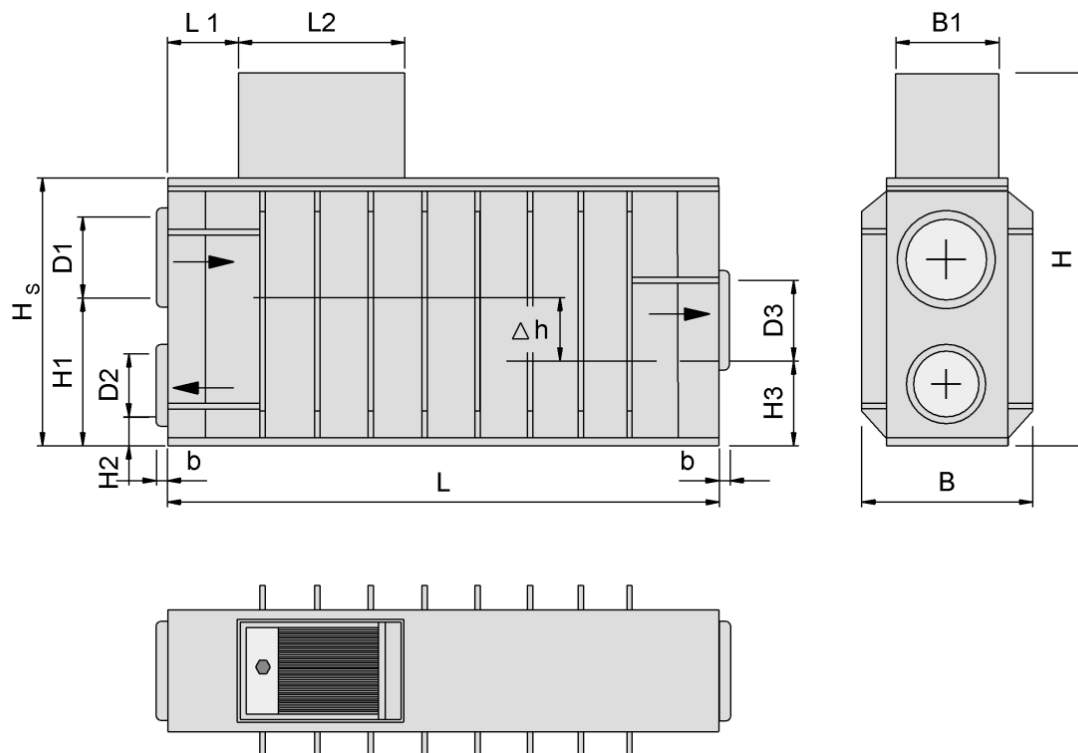









Fig. 15: Dimension PURAIN PR200- HD-400-HD

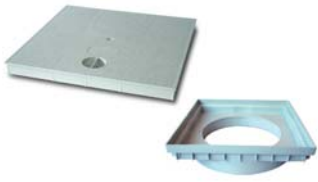




## 5. Accessories

<p><b>Backflush nozzle for PR100</b>  Code: PR-RSDS  Article number: 210138</p> <p>When installing filters in tanks that are difficult to access, we recommend backflushing nozzle, which can be done manually via a manual valve or automatically via a timer-controlled valve. For grey water applications, the backwash nozzle is mandatory. The solenoid valve for automated backflushing is activated via the AQUALOOP control.</p>	
<p><b>Solenoid valve ½", 24 V DC for the INTEWA backflush nozzle for PR100</b>  Code: AL-MV½/24  Article number: 230125</p> <p>The electrical connection is done at the AQUALOOP control unit. Here, the backflush interval and the backflush duration can be set separately.</p>	
<p><b>Solenoid valve ½", 230 V AC for the INTEWA backflush nozzle for PR100</b>  Code: MV-MS1/2½/230V AC  Article number: 600171</p> <p>The electrical connection is done to an automatic timer.</p>	
<p><b>Cover for PR100</b>  Code: PR100-C  Article number : 210152</p> <p>The PR100-C cover is used only when mounting outside the tanks. The cover is not required when mounting inside the tanks.</p>	
<p><b>Backwater flap installation kit for PR100-oRS</b>  Code:PR-RS  Article number: 210137</p> <p>Retrofit kit for later installation of a backflow flap in the PURAIN 100 o.RS. The backwater flap seal is inserted into the existing chamber using the flex lip in the direction of the chamber. The stainless steel cap with the plastic holder is pressed in flush from above and the cover is fastened with four knurled screws.</p>	

<p><b>Stainless steel pipe connector DN100</b>  Code: PIPE-CON100  Article number: 900528</p> <p>Pipe connector for DN100 pipes</p>	
<p><b>PLURAFIT Inlet calming DN100</b>  Code: PF300-100-Calm  Article number: 300080</p> <p>Over time, fine particles settle to the bottom of the tank and form a sediment layer over time. To prevent this sediment layer from being stirred up by incoming rainwater, the water must be delivered to the tank smoothly. With the inlet calming device, the rainwater is supplied close to the bottom without stirring up the sediment</p>	
<p><b>Backflush for PR150</b>  Code: PR-RSDS150  Article number: 210170</p> <p>We recommend the backflushing nozzles to minimize the intervals of manual maintenance. The required mounting parts are included in the scope of delivery of the backflush nozzle. The water required for backflushing can be supplied either manually via a water tap or automatically via a time-controlled solenoid valve.</p>	
<p><b>Backflush for PR200</b>  Code: PR-RSDS200  Article number: 210171</p> <p>We recommend the backflushing nozzles to minimize the intervals of manual maintenance. The required mounting parts are included in the scope of delivery of the backflush nozzle. The water required for backflushing can be supplied either manually via a water tap or automatically via a time-controlled solenoid valve.</p>	
<p><b>Backflush for PR300, PR400</b></p> <p><b>Available from approx. 03.2022</b></p>	
<p><b>Cover for PR-150 incl. manhole connection</b>  Code: PR150-C  Article number: 210148</p> <p>The PR-150-C cover is used for floor or wall mounting of the PR-150-S and PR-150-o.SK.. The shaft connector with quick-release fastener is suitable for the PF 300-S shaft extension or the PF 300-C cover.</p>	
<p><b>Cover for PR-200</b>  Code: PR200-C  Article number: 210160</p> <p>The PR-200-C cover is used when mounting outside a chamber. The scope of delivery also includes the fixing clamp.</p>	

<p><b>Cover for PR-200 with inspection hatch</b>  Code: PR200-C-IF  Article number: 210196</p> <p>The PR-200-C-IF cover is used when mounting outside a chamber. The scope of delivery also includes the fixing clamp.</p>	
<p><b>Cover for PR-300</b>  Code: PR300-C  Article number: 210192</p> <p>The PR-300-C cover is used when mounting outside a chamber. The scope of delivery also includes the fixing clamp.</p>	
<p><b>Cover for PR-300 with inspection hatch</b>  Code: PR300-C-IF  Article number: 210194</p> <p>The PR-300-C cover is used when mounting outside a chamber. The scope of delivery also includes the fixing clamp.</p>	
<p><b>Cover for PR-400</b>  Code: PR400-C  Article number: 210193</p> <p>The PR-400-C cover is used when mounting outside a chamber. The scope of delivery also includes the fixing clamp.</p>	
<p><b>Cover for PR-400 mit Inspektionsluke</b>  Code: PR400-C-IF  Article number: 210195</p> <p>The PR-400-C cover is used when mounting outside a chamber. The scope of delivery also includes the fixing clamp.</p>	
<p><b>PLURAFIT Manhole extension</b>  Code: PF300-S  Article number: 300005</p> <p>The PLURAFIT PF 300-S manhole extension is an attachable duct element. It can be extended in 220 mm increments and can be used as a collection chamber, filter chamber or for an extension.</p>	
<p><b>PLURAFIT cap, walkable</b>  Code: PF300-C  Article number: 300010</p> <p>The PLURAFIT PF 300-C is a closed cap that can be used as a ground cover or as a lightweight support cover for various product applications of the PLURAFIT range.</p>	



<p><b>PLURAFIT Cover, car passable</b>  Code: PF300-C111  Article number: 300050</p> <p>The PLURAFIT PF 300-C 111kN is a chamber cover for floating traffic loads into the ground and is passable by a 1.2 t car.</p>	
<p><b>PLURAFIT Calming inlet DN150</b>  Code: PF300-150-Calm  Article number: 300085</p> <p>With course of time, fine particles settle at the base of the tank and form a sediment layer. In order to avoid swirling of the sediment layer by inflowing rain water, the water must be steadily supplied to the tank. The inlet calmer leads the rainwater to the tank in the direction of flow created at the base of the tank - the sediment layer is not disturbed.</p>	
<p><b>Stainless steel pipe connector DN150</b>  Code: PIPE-CON150  Article number: 900707</p> <p>Pipe connector for DN150 pipes</p>	
<p><b>Protection grid for PR150</b>  Code: PR-150-GRID  Article number: 210210</p> <p>Protection grid for coupling inlet for grey water application.</p>	
<p><b>Protection grid for PR200</b>  Code: PR-200-GRID  Article number: 210215</p> <p>Protection grid for coupling inlet for grey water application.</p>	

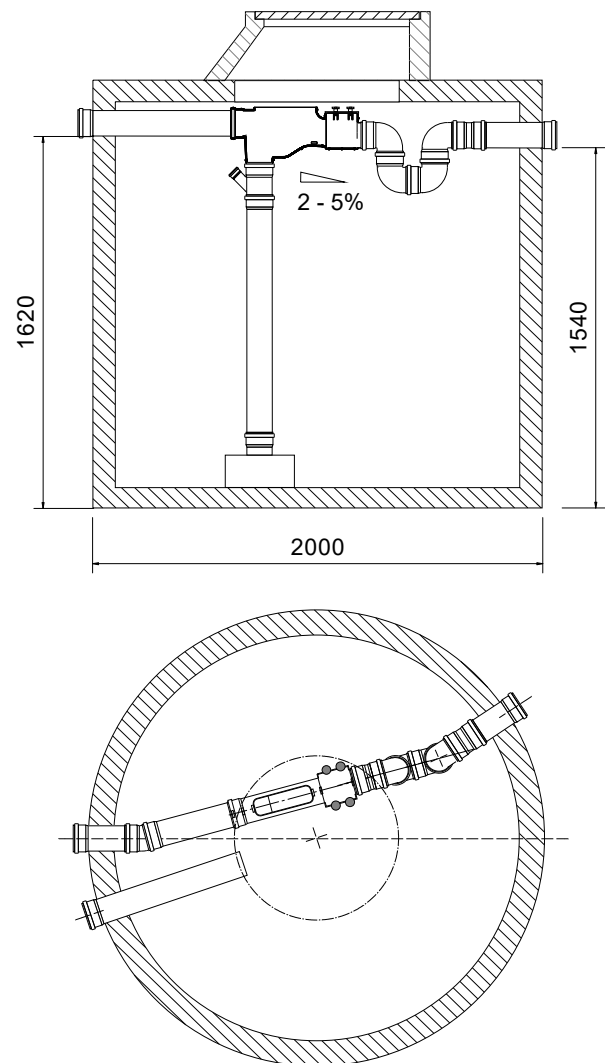
## 6. General installation instructions

### 6.1. Installation in Tank

The filter is installed in the tank on the underside of the entry zone to allow maintenance and cleaning from above and access to the tank.

It is important to follow the following steps while installing the filter:

- The filter must be installed with a slope of 2 – 5 % from inflow to outflow side.
- Pipe clamps should 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.
- During installation, a straight inlet at least 1 m long (with max. a 30° elbow) must be installed upstream of the filter. This serves to calm the water flow before it enters the filter and increases the efficiency of the filter.
- For proper function of the skimmer, the PR filter must be installed without lateral inclination.
- A separate tank overflow is not required to be installed, even if multiple tanks are used - the filter overflow provides this.
- The accessibility of the filter is important for cleaning and maintenance of the stainless steel filter screen and the check valve.
- A siphon must be installed on the overflow side of the filter to prevent odors/gases from entering the tank through the sewer connection.
- A backwash nozzle should be installed to further reduce maintenance (see "Accessories").
- An inlet calming element prevents the sediment layer from being disturbed by incoming water (see "Accessories").
- Note: In the grey water application, the inlet calming is not used.



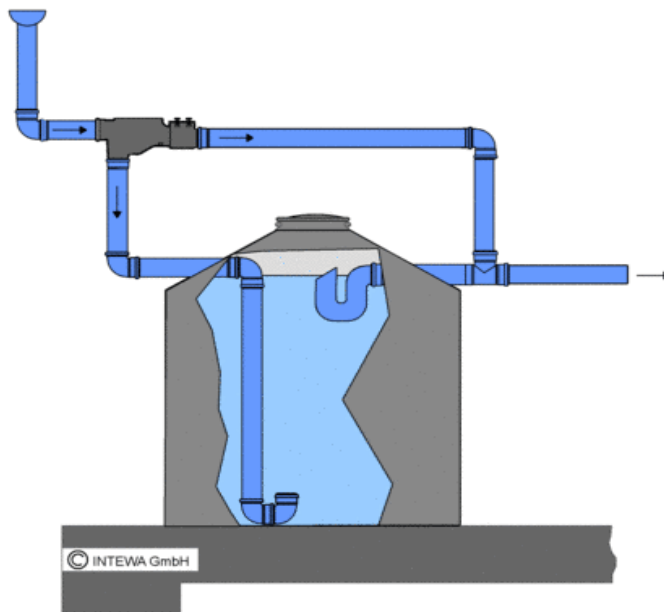
**Fig. 16: Example installation of a PR100. Installation in a concrete storage tank**

## 6.2. Installation outside the tank

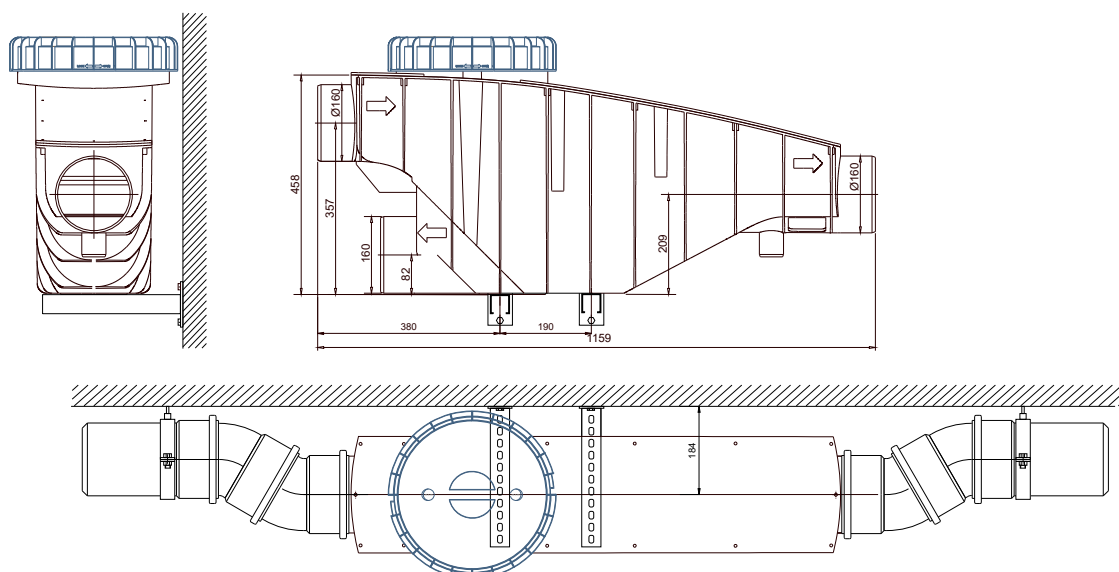
If it is not possible to mount the filter inside the tank, it can also be mounted above the tank. However, only filters without a skimmer are suitable for this purpose.

Installation outside the tank requires a filter cover to prevent dust and dirt from getting into the filter from outside (see accessories).

The overflow in the tank should, by means of a sloping overflow edge, increase the skimmer effect when overflowing, in order to remove debris from the water surface.



**Fig. 17: Installing the PR150 outside the tank**

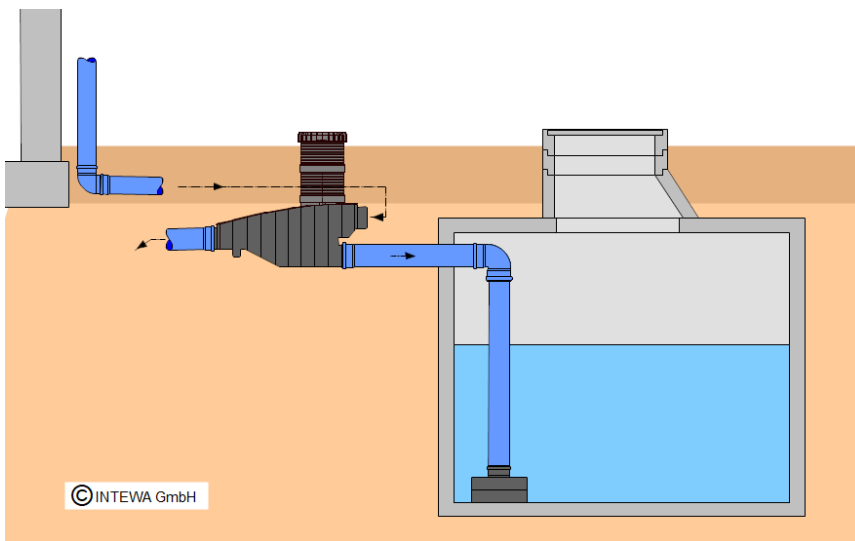


**Fig. 18: Example of a wall installation of the PR150**

## 6.3 Underground installation PR150 o.SK. and PR200-HD – PR40-HD

### 6.3.1 General instructions for ground installation

Proper installation of the PURAIN filter is a necessary part of ensuring its proper functioning and long service life. This applies to the entire construction phase from the preparation of the foundation and backfilling to the covering of the filter with the floating bedding of the manhole and manhole cover.



**Fig. 19: Application example PR150 rainwater filter for underground installation**

#### 6.3.1.1 Base layer and equalizing layer

The carrying capacity of the existing ground is essential for stability. If the carrying capacity of the natural ground is not enough, then the ground must be strengthened by further measures (such as by a gravel base layer, Geotextile insert etc.). Coarse, non binding, compressible backfilling material must be used as a base layer. The area where the filter will sit must hold a minimum carrying capacity of  $E_{v2} \geq 45 \text{ MN/m}^2$ .

#### 6.3.1.2 Filter backfilling and materials

The filter must be backfilled into place with coarse/non-binding and compactable backfilling material.

Backfilling and compacting can only be undertaken in layers of 20cm at a time. The base on which the filter sits must be compacted and this compacted area should overlap the filter dimensions by 400mm all around

The minimum compressed filling above the filter shoulder must be 35 cm. Thereby, the required carrying capacity of  $E_{V2} = 45\text{MN/m}^2$  specified for superstructure by ZTV E-StB 09 is ensured.

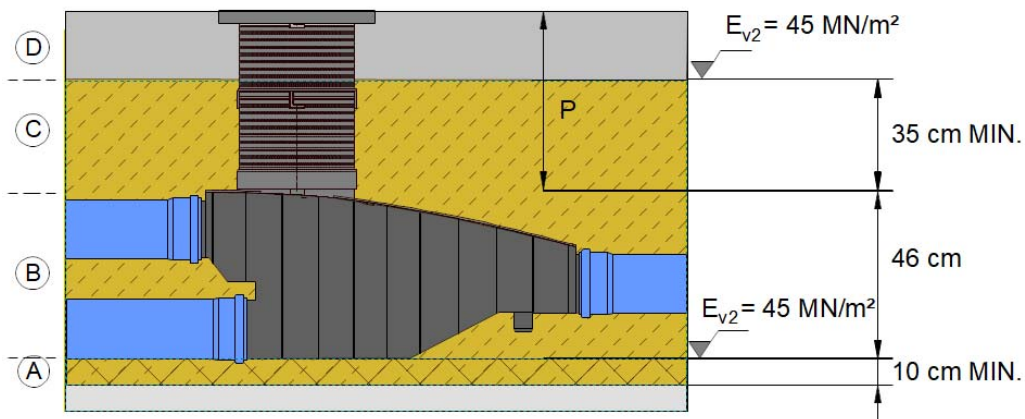


Fig. 20: Construction layers for backfilling with coarse/non-binding and compressible ground materials for PR150

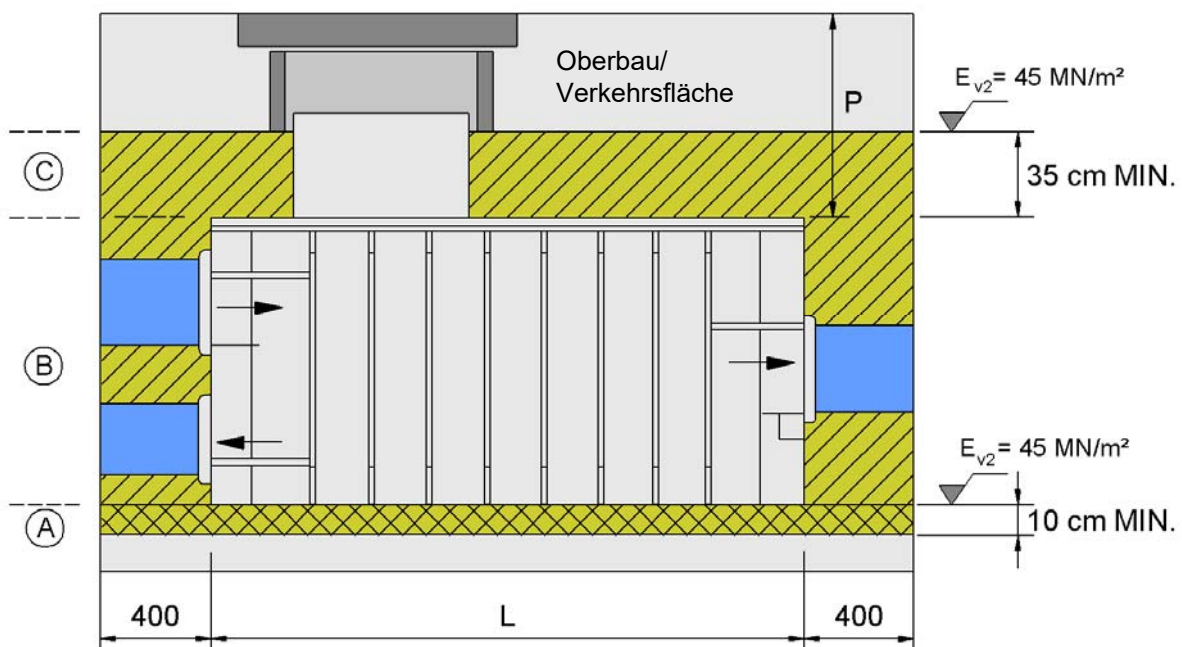


Fig. 21: Construction layers for backfilling with coarse/non-binding and compressible ground materials for PR200 HD-PR400 HD

The approved backfilling materials, as well as the required carrying capacity of are represented in the following table 4.

Construction layer		Material	Compacting / Carrying capacity
A, C	Base / equalizing layer and filter overlay	Coarse/non-binding, compressible material of soil classes 3 and 4 according to DIN18300	$D_{pr} \geq 97\%$ min. $E_{v2} = 45\text{MN/m}^2$
B	Lateral filling from all sides	Coarse/non-binding, compressible material of soil classes 3 and 4 according to DIN18300 (Layer compactness of max. 20 cm each) or graded single grain material Grain size 8/16 mm	$D_{pr} \geq 97\%$

C	Filter overlay (≥ 35 cm)	non-cohesive, compactable material from soil class 3 and 4 according to DIN18300, (layer compaction of 20 cm each)	$D_{pr} \geq 97\%$ min. $E_{v2} = 45\text{MN/m}^2$
D	Top structure/traffic surface	According to requirement	According to requirement

**Tab. 4: Construction layers and filling material for the backfilling of filters**

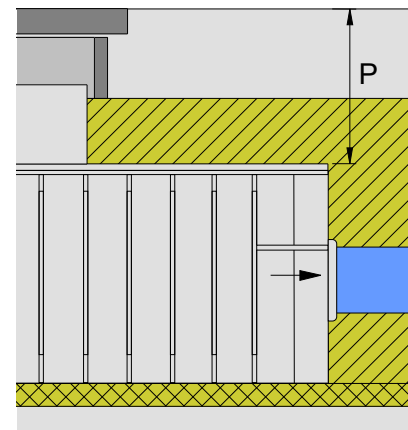
Note: The compacting requirement of ZTV E-StB 09 (Supplementary Technical Terms and Conditions of Contract and Guidelines for Earthworks in Road Construction) are to be observed for vehicular traffic areas.

### 6.3.1.3 Overlay and load capacity of the system

The load carrying capacity of the installed filter and the carrying capacity of the contact area are dependant on the overlay height above the filter shoulder.

The better the compactness, the higher the load transfer. The higher the traffic load, the more appropriate compacted construction height is needed.

The total overlay P measurements shown below must always be maintained above the shoulder of filter lid, irrespective of the kind of superstructure used and road surface material.



**Fig. 16: Total overlay P**

Installation situation / Traffic load	Overlay P for: PR150 o.SK.
Walkable Non paved surface	0,5 <sup>1</sup> – 1,20 m
Car pasable up to 600 kg Non paved surface	0,80 <sup>1,2</sup> – 1,00 m

<sup>1</sup> Minimum overlay

<sup>2</sup> In the case of non-paved surfaces, rutting must be taken into account. The minimum total overlay must never be allowed to fall below the minimum required measurement!

**Tab. 5: Overview of permitted total overlay P for the PR150-o.SK.**

Installation situation / Traffic load	Max. Axle load	Overlay P for PR-HD-200 to PR HD-400
Walkable gravel area	--	0.50 1 – 1.90 m
Truck 12 t / Equivalent distributed load = 6.7 kN/m <sup>2</sup> Paved / gravel area	8.0 t	0.50 1 - 1.70 m
Truck 30 t (Equivalent distributed load = 16.7 kN/m <sup>2</sup> ) Paved area	13.0 t	0.50 – 1.70 m
Truck 60 t (Equivalent distributed load = 33.3 kN/m <sup>2</sup> ) Paved area	30.0 t	0.60 – 1.50 m

<sup>1</sup> The formation of tire tracks must be taken into account with gravel roadways. The minimum total overlay must never be allowed to fall below the minimum required measurement! (Traffic loads as per DIN 1072)

**Tab. 6: Overview of the approved total overlap P for the PR-HD model series**

### 6.3.1.4 Instructions for manhole and manhole lid

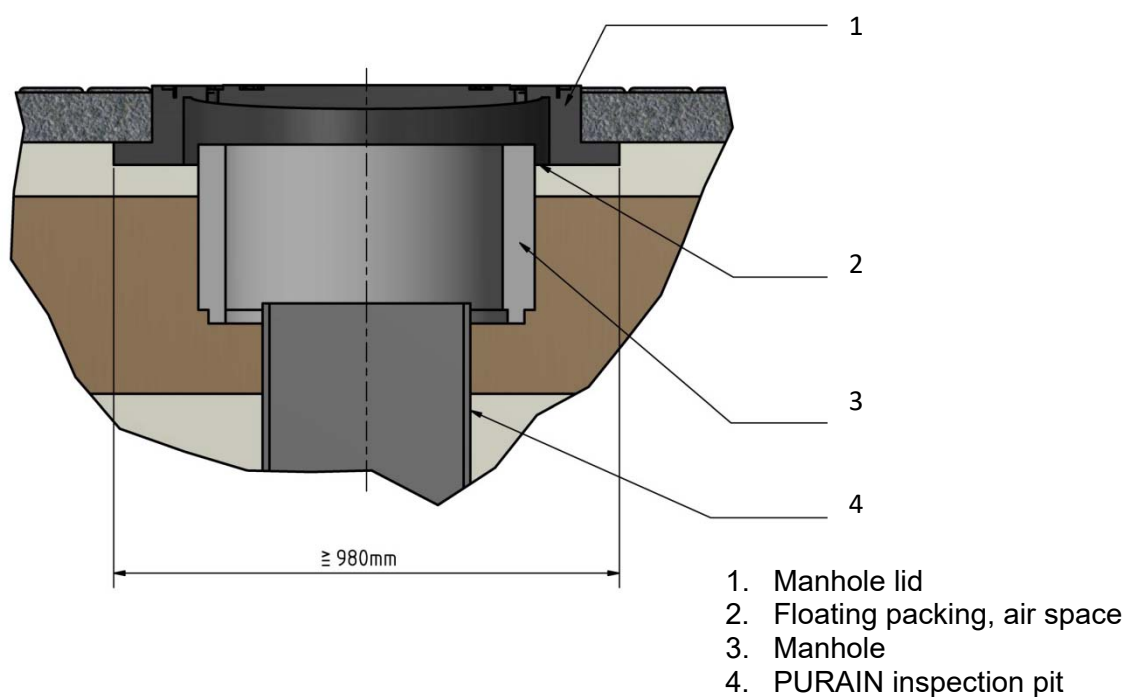
The manhole lid must be fitted so that any load on the lid is transferred directly to the surrounding ground and does not bear weight on the manhole itself.

This means that the load transfer from both the manhole lid and the manhole itself must be separated (floating).

**Note:**

The manhole contact area must be at least 980 x 800 mm (0,25m<sup>2</sup>).

Manhole and manhole lid must not be locked together!!








**Fig. 17: Floating manhole structure (if necessary, with additional lid plate for distribution of load)**

### 6.3.2 Installation instructions

#### 6.3.2.1 Compacting machine

Usually, the direct driving of the filters with construction vehicles or with consolidating devices is not allowed.

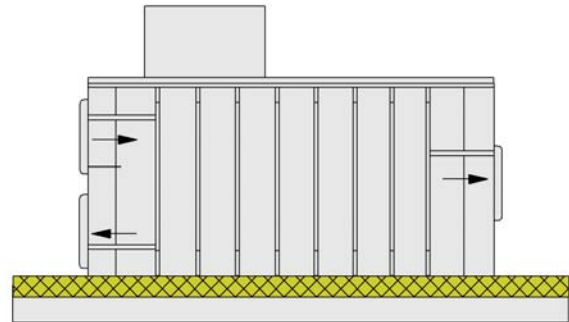
Lateral compacting	Vibrating plate: Operating weight: max. 255 kg Plate width: 600 mm x 800 mm Specific support pressure: 0.86 da N/cm <sup>2</sup> /vibration force: 35 kN Oscillating frequency: 80Hz	
0 to 20 cm height above filter shoulder	No compacting machine allowed	
from 20 cm height above filter shoulder	Vibrating plate, as described above	
from 40 cm height above filter shoulder	for instance, vibrating plate: Operating weight: ca. 400 kg Plate width: 450 mm /vibration force: 59 kN Oscillating frequency: 65Hz	
from 80 cm height above filter shoulder	for instance, vibrating plate: Operating weight: ca. 760 kg Plate width: 700 mm /vibration force: 100 kN Oscillating frequency: 56Hz	

Tab 7: Permitted compacting machinery specifications



### 6.3.2.2 Installation steps

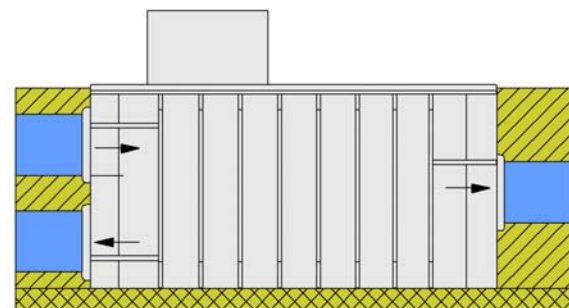
- 1.) Create compacted, level ground as a base for the filter.



**Fig. 18: Creating ground level**

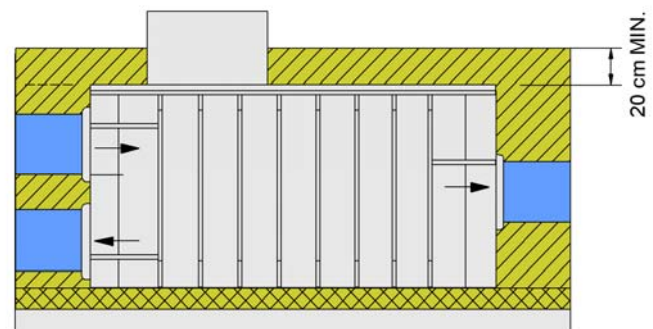
- 2.) Backfill the space and compact in layers of 20 cm at a time, until the required level is reached at the filter shoulder.

!!Attention!!: Make sure the filter lid is fitted before lateral backfilling is to be done as this supports the lateral load.



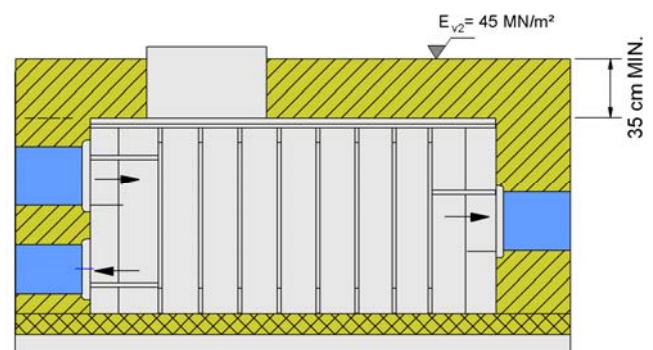
**Fig. 19: Layer-wise arrangement of compacting up to filter shoulder**

- 3.) Backfill and compact up to the filter lid level in layers of 20cm at a time..



**Fig. 20: Backfilling above tank shoulder (max 20 cm at a time)**

- 4.) Backfill and compact up to 35 cm above the filter shoulder (means filter tower protrude 5 cm above the compacted ground level).



**Fig. 21: Backfilling up to 35 cm above tank shoulder**

## 7. Maintenance and cleaning intervals

### 7.1 Application rainwater harvesting system

The filter should be checked every 3 months and cleaned every 6 months for contaminants that may become caught in the slotted wire strainer. Dirt and leaves found in the discharge area need not be removed because they will be flushed out through the overflow with the next heavy rainfall. If water has accumulated in the discharge area then the sieve may be blocked, but this is effectively cleaned in a few seconds by using a high pressure cleaner simply directed at the sieve. By doing this the deposits, between the 0.8mm stainless filter sieve, can also be safely removed.

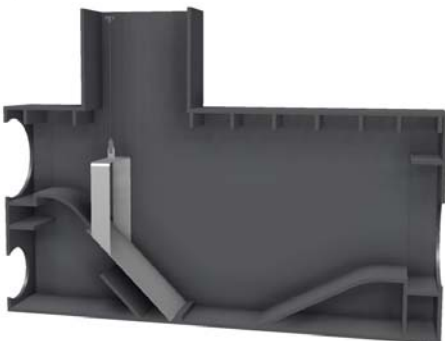
Alternatively, the sieve can be removed and cleaned manually. In doing so, it is important to clean the filter collection area with a high pressure cleaner to flush the dirt out through the emergency overflow before removing the sieve. In this way, the clean sieve can be re-installed without dirt and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



**Fig. 23: Cleaning the surface of sieve with high pressure cleaner**



**Fig. 22: Removing the PR150 sieve**



**Fig. 24: Removal of the sieves on the PR200-HD to PR400-HD via an extension rod**

## 7.2 Application grey water recycling systems

For grey water applications it is necessary to use the automatic filter cleaning with backwash nozzle and solenoid valve. The cleaning intervals and cleaning duration are set in the respective grey water control.

A check must be carried out every 3 months and cleaning every 6 months. The screen is cleaned manually or with the high-pressure cleaner. Dirt (especially hair) lying in the collection area of the filter must be removed beforehand!

## 8. Warranty/Contact

The warranty provisions are included in our sales conditions, and can be viewed at:

<https://www.intewa.com/de/agb/>

For any queries, orders for spare parts or service enquiries, please get in touch with your local dealer or visit the service domain at the INTEWA website of your country.

[www.intewa.com](http://www.intewa.com)

Always keep your purchase invoice handy.