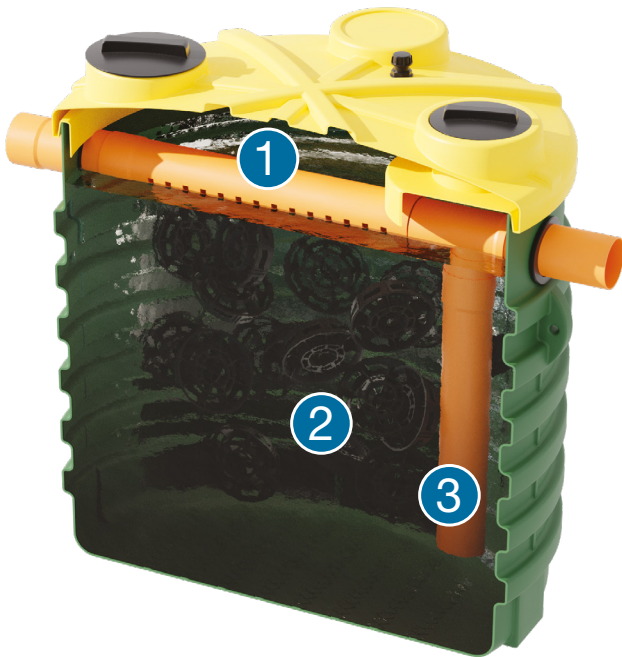


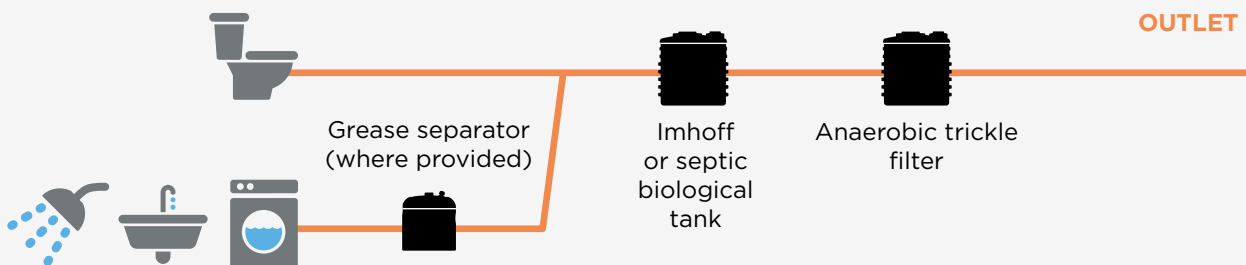
TRICKLE FILTERS

ANAEROBIC



- 1 DISTRIBUTION PIPE**
bored pipe for even distribution of the effluent on the surface of the filter.
- 2 FILTER MEDIA**
plastic filler elements with a large surface area that act as a support on which the aerobic bacteria that treat the effluent can develop.
- 3 COLLECTION PIPE**
pipe to draw off the treated effluent from the bottom and send it to the outlet

INSTALLATION DIAGRAM



SPECIFICATIONS

TECHNICAL CHARACTERISTICS

A trickle filter is a biological reactor, inside which the micro-organisms that purify the effluent develop on the surface of special bulk fill material (filter media). The uniform distribution of the effluent through the filter guarantees maximum contact between the organic material to purify and the biological film covering the spheres making up the fill material. More specifically, the bacteria that grows and develops inside the anaerobic trickle filter consumes the organic load in the effluent in the absence of dissolved oxygen.

USE

Secondary treatment of domestic sewage.

DAILY HYDRAULIC LOAD: 200 l/PE

Please note: it is possible to size the treatment plant according to different daily hydraulic loads.

SEWAGE TREATMENT EFFICIENCY

The wastewater treatment system made up of a grease separator, an Imhoff biological tank and an anaerobic trickle filter (installed as shown in the diagram at page 80) ensures that the concentrations of the final effluent are:

≤160 mg/l
COD

≤40 mg/l
BOD₅

≤80 mg/l
SS

These parameters are respected if the inlet wastewater have the following characteristics (typical concentrations of domestic sewage):

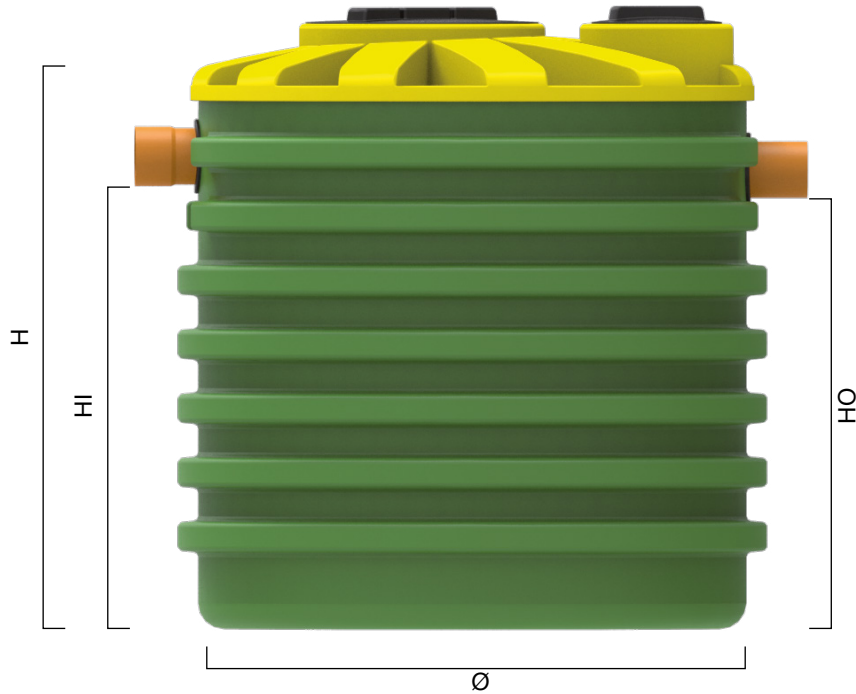
≤600 mg/l
COD

≤300 mg/l
BOD₅

≤400 mg/l
SS

ANAEROBIC TRICKLE FILTERS

MODEL



CORRUGATED



UNDERGROUND
TANK

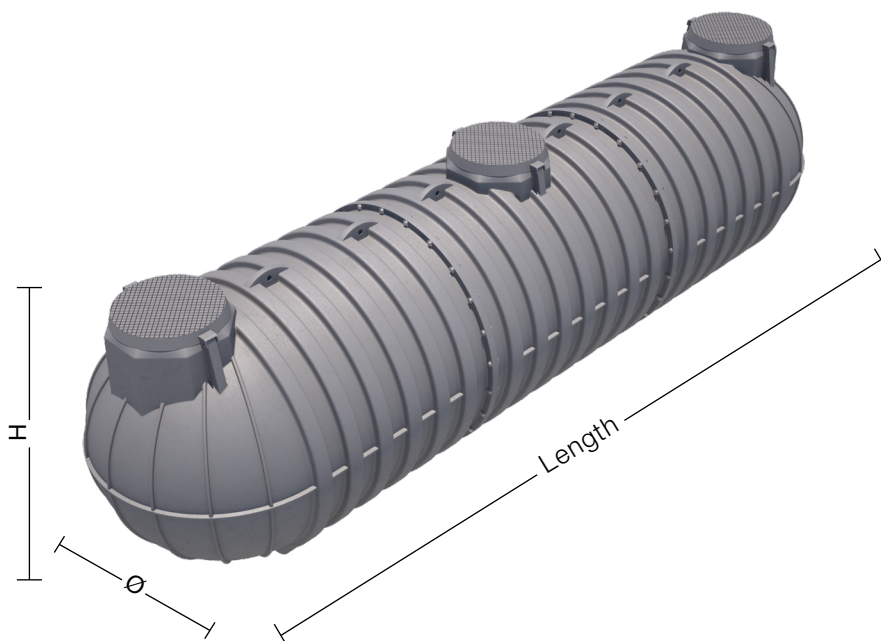


ELIPSE























ANAEROBIC TRICKLE FILTERS MODULAR

MODULAR



ANAEROBIC TRICKLE FILTER

Item	Mod.	Length mm	Width mm	Ø mm	H mm	HI mm	HO mm	Ø I/O mm	Covers 1	Covers 2	Extension 1 (optional)	Extension 2 (optional)	Filter surface m ²	Filter volume m ³	PE.
NAN700		-	-	1050	1030	760	740	110	CC400	CC200	PP45	PP30	0,63	0,58	3
NAN1000		-	-	1150	1220	880	860	110	CC400	CC200	PP45	PP30	1,04	0,85	6
NAN1200		1900	708	-	1630	1250	1230	110	CC300	CC300	PP35	PP35	1,35	1,20	7
NAN1250		-	-	1050	1250	970	950	110	CC400	CC200	PP45	PP30	0,63	1,15	7
NAN1500		-	-	1150	1720	1360	1340	110	CC400	CC200	PP45	PP30	1,04	1,26	9
NAN1700		1900	708	-	2140	1760	1740	110	CC300	CC300	PP35	PP35	1,35	1,77	10
NAN2100		-	-	1350	1975	1540	1520	110	CC400	CC300	PP45	PP35	1,39	1,80	11
NAN2600		-	-	1710	1450	1000	980	125	CC400	CC300	PP45	PP35	2,30	2,06	14
NAN3200		-	-	1710	1725	1240	1220	125	CC400	CC300	PP45	PP35	2,30	2,52	20
NAN3800		-	-	1710	1955	1490	1470	125	CC400	CC300	PP45	PP35	2,30	3,10	23
NAN4600		-	-	1710	2225	1710	1690	160	CC400	CC300	PP45	PP35	2,30	3,80	27
NAN5400		-	-	1950	2250	1660	1640	160	CC400	CC400	PP45	PP45	2,90	4,75	32
NAN6400		-	-	1950	2530	1970	1950	160	CC400	CC400	PP45	PP45	2,90	5,07	36
NAN7000		-	-	2250	2367	1850	1830	160	CC400	CC400	PP45	PP45	3,98	6,93	45
NAN9000		-	-	2250	2625	2070	2050	160	CC400	CC400	PP45	PP45	3,98	7,82	55
NAN10700		2780	2430	-	2660	2170	2130	160	TAP800	-	PP77	-	6,75	10,00	75
ITAN15000		5620	-	2100	2200	1830	1800	160	TAP800	-	PP77	-	10,20	14,15	100
ITAN22000		7880	-	2100	2200	1830	1800	160	TAP800	-	PP77	-	14,90	20,07	140
ITAN30000		10140	-	2100	2200	1810	1780	200	TAP800	-	PP77	-	19,16	27,25	200
ITAN36000		12400	-	2100	2200	1810	1780	200	TAP800	-	PP77	-	23,67	33,08	240

PE. = population equivalent: Ø = diameter; H = height; HI = inlet pipe height; HO = outlet pipe height; ØI/O = inlet/outlet pipe diameter.

TECHNICAL SECTION – TRICKLE FILTERS

TECHNICAL CHARACTERISTICS

A trickle filter is a biological reactor, inside which the micro-organisms that purify the effluent develop on the surface of **special bulk fill material (filter media)**. The uniform distribution of the effluent through the filter guarantees maximum contact between the organic material to purify and the biological film covering the spheres making up the fill material. The spheres making up the filter media are manufactured in polypropylene and are designed to provide a large surface area available for bacterial micro-organisms to take root. In particular, the spheres used provide a **surface area per unit volume of filter media of 140 m²/m³**, much higher than the traditional stone fill material, with **voids accounting for over 90%**. This solution minimises the risk of clogging the bed and also guarantees an improved circulation of air through the bed of the aerobic filter. Trickle filters allow good purification performance **without any energy overheads**, with management costs limited to the occasional cleaning of the plant.

The sizing of percolating filters for an average domestic effluent refers to the organic load factor kgBOD/m³d with which the filter is fed. This parameter is the ratio between the organic load at the inlet kg BOD₅d and the volume of the filter bed. Rototec trickle filters are designed to operate with medium-low organic load factors kg BOD₅ / m³d. This guarantees a good margin of safety, with respect to fluctuations in inlet flow, and a limited production of excess sludge.

USE AND MAINTENANCE

The filter is designed to ensure **minimum clogging risk**. However, the development of the films on the filter media can over time excessively dirty the filter, with the resulting risk of solids being discharged with the treated effluent.

Cleaning operations are normally carried out as part of the Imhoff tank inspection and emptying operations. It should be remembered that in order for the trickle filter to function correctly, the effluent must first be subjected to sedimentation treatment in an Imhoff tank or similar installed upstream of the filter. The use of Rototec Bio-Activators is recommended for rendering the starting of the biological processes more rapid.

MANAGEMENT

WHAT TO DO	WHEN	HOW
Inspect the trickle filter	Every 12 months	Unscrew the covers on the inspection holes and check the level of sediments
Extract the bottom sludge, clean the interior and the inlet and outlet pipes and backwash the filter media	Every 12 / 15 months	Contact a licensed waste disposal company

N.B. the frequency of operations will depend on the incoming organic load.

PROHIBITIONS

- **do not use toxic and/or poisonous substances** (bleach, solvents, insecticides, disinfectant substances, aggressive detergents); always use biodegradable products;
- **NEVER** drain rainwater into the system.

WARNINGS

- make sure that drains have a siphon;
- check that the pipes slope sufficiently (approximately 1% - 2%);
- connect the biogas vent pipe (**see installation method**).
- **when discharging to a surface watercourse**, install a septic tank (Imhoff or other septic tank) downstream of the trickle filter as the final effluent sedimentation and clarification phase;
- when discharging into the subsoil using a soil absorption system, provide a **dosing siphon chamber** downstream of the system, for better distribution of the effluent into the dispersion pipes;
- after pump-out, fill the tank again with **clean water**;
- in the event of a maintenance operation of any kind, always comply with the **safety regulations** regarding operations within closed waste water treatment areas, and with the general technical procedures applicable.