PREMIER TECH

Design guide | New Jersey

ECOFLO®

Ecoflo® compact biofilter

Design guide — New Jersey Ecoflo® compact biofilter

This guide contains the specific information needed to plan the installation of the Ecoflo compact biofilter in the state of New Jersey. For more information, please contact Premier Tech at 1 800 632-6356 or at *info.ptwe.na@premiertech.com*.

IMPORTANT

All treatment system designs/installations must comply with New Jersey Administration Code (N.J.A.C.) 7:9A. This means that:

- a valid service agreement between Premier Tech and the homeowner be in place at all times
- a system with a pump must be equipped with an Internet-based tank alarm or be connected to an active phone line equipped with an auto-dialer

All designers/installers/maintenance personnel must be trained and familiar with New Jersey Administration Code 7:9A and the Ecoflo compact biofilter New Jersey design guide.

Premier Tech strongly recommends for the system designer to review each of the Ecoflo compact biofilter installation guides in conjunction with this document. To find them, go to *PT-WaterEnvironment.com/ProSpace.*

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USA | NJ 664753 - 2024

1 GENERAL DESCRIPTION

The Ecoflo compact biofilter is a biofiltration system designed to treat domestic septic tank effluent to an extremely high level before final dispersal. A typical Ecoflo septic installation consists of:

- a primary/septic tank with an NSF-approved effluent filter connected to the tank outlet pipe
- the Ecoflo compact biofilter unit, where domestic wastewater is treated as it trickles through the natural filtering medium.
- the Ecoflo compact biofilter is housed in a concrete or polyethylene tank
- a site-specific effluent dispersal system

The Ecoflo compact biofilter system is based on simple, passive biofiltration principles. Once wastewater has passed through the primary/septic tank, it flows toward the Ecoflo compact biofilter. Inside the biofilter unit, a tipping bucket disperses the wastewater onto specially designed plates, which, in turn, evenly distributes the wastewater onto the filtering medium. The wastewater then trickles through the natural filtering medium, where treatment takes place. The treated effluent can either be discharged by gravity or pumped to final dispersal/infiltration into the ground (see Figure 1).

The Ecoflo compact biofilter has been tested, certified and listed by the National Sanitation Foundation International as meeting the requirements of NSF/ANSI Standard 40, Class 1. The Ecoflo compact biofilter EC7 is certified for a hydraulic loading rate (HLR) applicable to the surface of filtering media of 700 L/m^2-d (17.2 Gpd/ft^2).

2 TREATED EFFLUENT QUALITY

When treating domestic strength wastewater up to the design flows and loads, a properly maintained Ecoflo compact biofilter system will exceed the performance requirements of NSF Standard 40 Class 1. Actual test results established through analytical methods described in NSF/ANSI Standard 40 averaged 8 mg /L in $CBOD_5$ and 6 mg/L in TSS.

Table 1: Ecoflo compact biofilter treated effluent quality parameters

	Influent	ECF Effluent	Abatement	NSF Std 40 Avg, 30-day
TSS (mg/L)	180 ± 64	6 ± 4	97%	30
$CBOD_5$ (mg/L)	200 ± 88	8 ± 9	96 %	25
pH	7.3	7.0		6-9
D.O. (mg/L)	0.9 ± 0.7	3.7 ± 2.2		
Temperature (C)	28 ± 3	27 ± 5		

The Ecoflo compact biofilter has demonstrated its robustness over the years. The system does not require any acclimation/start-up period to consistently provide effluent quality demonstrated in Table 1, which makes it the perfect system for secondary or seasonal home applications or for any other intermittent use applications. The Ecoflo compact biofilter has also been specifically developed and tested for cold climate applications. Treatment efficiency is not subject to significant variations with ambient air temperature fluctuation.

3 WASTEWATER SYSTEM COMPONENT DESIGN AND SPECIFICATION

3.1 SYSTEM CONFIGURATION

The designer of an Ecoflo compact biofilter system will be responsible for the proper configuration and sizing of system components, pumps, and other peripheral component specifications. They will also be responsible for the final dispersal or disposal of treated effluent and for construction details. Design shall comply with all requirements of New Jersey rule N.J.A.C. 7:9A.

3.2 DESIGN FLOW

Applicable regulations usually define the daily flow based on the number of bedrooms.

3.3 PRIMARY/SEPTIC TANK

The size and configuration of the primary/septic tank shall be in accordance with the NSF listing (as applicable) or with state or local requirements. The primary/septic tank shall have a usable volumetric capacity of at least 24 hours retention. The septic tank, risers, and lids must be watertight.

Some polyethylene models of the Ecoflo compact biofilter are available in a monobloc Pack configuration that combines both the primary/septic tank and the Ecoflo compact biofilter into one unit. Go to *PT-WaterEnvironment.com/ProSpace* to consult technical datasheets and installation guides for more information on the Ecoflo compact biofilter Pack configuration.

Buoyancy calculation for primary/septic tank should be performed when necessary.

3.4 EFFLUENT FILTER

The effluent filter extends the life of any treatment system by keeping solids in the primary/septic tank.

The effluent filter is especially important if the household is equipped with a sewage pump or with any other appliance that may increase the amount of suspended solids found in wastewater. These appliances risk jeopardizing the long term operation of the system and affecting its performance.

In situations where an effluent pump is required as part of the septic system, an effluent filter will also prevent solids from reaching the pump. **No garbage disposal unit should be installed on your septic system**.

Effluent filters used with the Ecoflo compact biofilter shall be NSF-46 certified and have a minimal flow area of 9 in^2 and filter particles 1/16" and larger. While many different brands of effluent filters meet those specifications, Premier Tech Water and Environment highly recommends the use of the effluent filter PL-122 from Polylok.

Effluent filters are normally installed at the outlet of the primary/septic tank. *However, they may also be installed downstream of a primary/septic tank in Premier Tech Water and Environment's TLF-240 effluent filter container in accordance with local regulations. For more information, go to PT-WaterEnvironment.com/ProSpace*.

3.5 ECOFLO COMPACT BIOFILTER

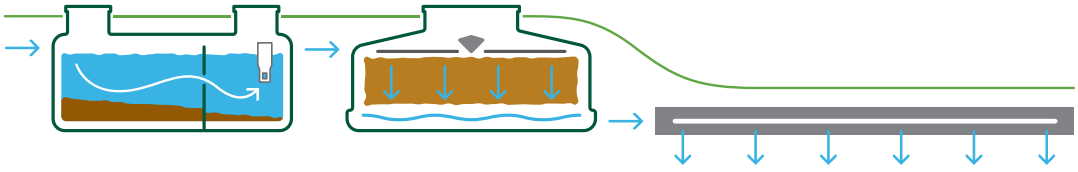
The Ecoflo compact biofilter is a biofiltration system designed to treat domestic wastewater. Once the wastewater has passed through the primary/septic tank, it then flows towards the Ecoflo compact biofilter. Inside the biofilter, a central tipping bucket equally distributes wastewater on both sides of the biofilter. Both sides are equipped with specially designed plates which evenly distribute wastewater over the filtering medium. Wastewater then trickles through the filtering medium as microorganisms in the filtering medium decompose pollutants.

Under the right conditions, a soil absorption system can return treated effluent into the environment by infiltration. Local regulations and site conditions may require an additional system to provide further treatment for treated effluent to be safely discharged. It is important to note that the final effluent dispersal method is specific to each site.

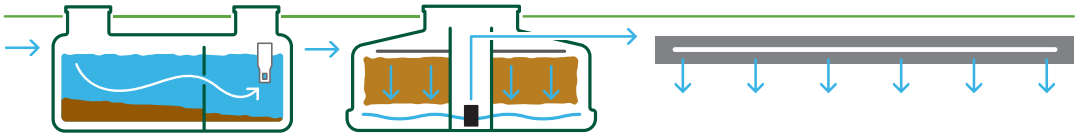
The site specific design will detail the final effluent dispersal method. Effluent may sent through a piped outlet for gravity discharge to a trench, pressurized system, or other applicable effluent dispersal method (Figure 1).

Figure 1 - Typical installation schemes

GRAVITY DISCHARGE

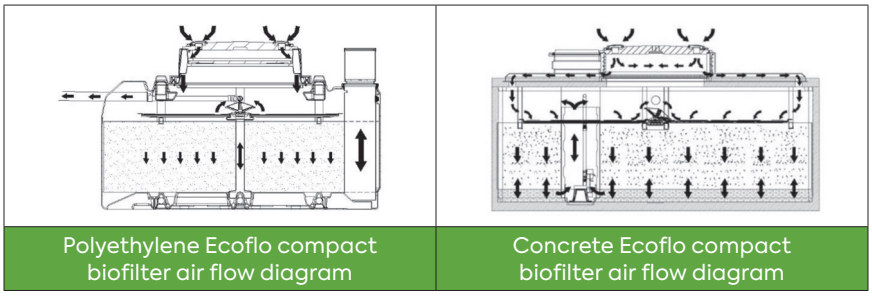


PUMPED DISCHARGE



3.5.1 Aeration principle in the Ecoflo compact biofilter

To perform efficiently, the system requires a sufficient amount of oxygen to feed the microorganisms in the filtering medium. The aeration principle of the system is based on gravity air flow, as illustrated in the air flow diagrams below. The air intake is located on the main access lid of the biofilter unit. An independent vent ensures consistent air flow through the system. Thus, air comes into the system through the lid and is deflected by a panel to the aeration channels, which distribute air throughout the tank. The central support and/or pumping vault provide a link between the bottom and the top of the filtering medium. Air also penetrates into the filtering medium through water infiltration. Air coming out of the filtering medium evacuates by passing through the opening located on top of the central support or on the access well. Finally, it is conducted by convection to the house's air vent via the septic tank.



Polyethylene Ecoflo compact biofilter air flow diagram

Concrete Ecoflo compact biofilter air flow diagram

3.6 DESIGN CRITERIA

Usually, the model and the number of Ecoflo compact biofilter units are determined either by the number of bedrooms in a home or by the total domestic wastewater flow per day. The selection of the model also depends (without limitation) on the available space, the topography of the lot, depth of seasonal high groundwater table, as well as the type, permeability, and depth of the natural soil on site.

There are many different models of the Ecoflo compact biofilter. Each has different characteristics. The letters and numbers associated with the Ecoflo compact biofilter specify the model's characteristics, as presented in the following table with model **EC7-600-P-P (PACK)** as a reference:

EC refers to the Ecoflo compact biofilter model	EC = Ecoflo compact biofilter		
7	Maximum applicable HLR 700 L/m²-d (for example, of **17.2 gal /ft²**)		
600 refers to the daily flow capacity	2.8 - 500 = Capacity of 500 US gallons per day **3.4 - 600** = Capacity of 600 US gallons per day 4.1 - 750 = Capacity of 750 US gallons per day 5.7 - 1050 = Capacity of 1050 US gallons per day 6.5 - 1200 = Capacity of 1200 US gallons per day 7.3 - 1350 = Capacity of 1350 US gallons per day		
P refers to the material of the shell	C = Concrete	**P** = Plastic (Polyethylene)	
P refers to disposal mode	G = Gravity	O = Open bottom (perforated)	**P** = Pumped
PACK refers to configuration of the primary/septic tank and biofilter	**PACK** = monobloc configuration	No mention = In line	

Therefore, according to this nomenclature, the EC7-600-P-P (PACK) model refers to the Ecoflo compact biofilter version EC7, with a daily flow capacity of 600 US gallons, in a polyethylene shell with a watertight bottom, and with an integrated pump. Both primary/septic tank and biofilter are integrated together in one unit. The following table displays all the Ecoflo compact biofilter models available on the market:

	 	
	Polyethylene shell	**Concrete shell**
Closed bottom - gravity discharge	EC7-500-P-G (standalone or PACK) EC7-600-P-G (standalone or PACK) EC7-750-P-G (standalone or PACK) EC7-1050-P-G EC7-1350-P-G	EC7-500-C-G EC7-750-C-G EC7-1200-C-G
Closed bottom - pumped discharge	EC7-500-P-P (stand alone or PACK) EC7-600-P-P (stand alone or PACK) EC7-750-P-P (stand alone or PACK) EC7-1050-P-P EC7-1350-P-P	EC7-500-C-P EC7-750-C-P EC7-1200-C-G

Consult the technical data sheets at *PT-WaterEnvironment.com/ProSpace* **for additional information on these models, such as built-in storage and dosing capacities, dimensions, weight, etc.**

Table 2 summarizes the principal design criteria for the Ecoflo compact biofilter.

Table 2: Ecoflo compact biofilter EC7 model series design criteria

HLR	17.2 US Gal/ft².d
OLR	85 g $CBOD_5$/m².d
Filtering Media height	26''
Loading rate per volume of FM	8.2 USG/ft³-d

Table 3 summarizes the system's capacity depending on the different Ecoflo compact biofilter models.

Table 3: Ecoflo compact biofilter system capacity

Ecoflo compact biofilter EC7	Ecoflo compact biofilter unit size	Filtering media surface (ft²)	Maximum flow rate capacity (USG/d)	Premier Tech Water and Environment's recommended application
500	2.8	30	Up to 500	Up to 3 bedrooms
600	3.4	37	Up to 600	Up to 4 bedrooms
750	4.1	44	Up to 750	Up to 5-6 bedrooms
1050	5.7	61	Up to 1050	6 or more bedrooms
1200	6.5	70	Up to 1200	
1350	7.3	79	Up to 1350	

NOTE: The model and number of Ecoflo compact biofilter units is determined either by the number of bedrooms in a home or by total domestic wastewater flow per day. The designs of the different Ecoflo compact biofilter models developed by Premier Tech Water and Environment are essentially based on the number of bedrooms, regardless of the design flow rate specification in a given area.

Please contact your local Premier Tech Water and Environment representative for model availability and approvals in your area.

Suggested uplift restraint configuration for each Ecoflo compact biofilter model is presented in their respective installation guides. An example, buoyancy calculation for Ecoflo compact biofilter models are summarized in the appendix. For Ecoflo compact biofilter units housed in locally provided concrete tanks, buoyancy calculation shall be performed by the designer to assure adequate tank uplift restraint when any part of the tank is below the estimated seasonal high water table.

3.7 INFLUENT PUMPING STATION (WHEN APPLICABLE)

A pumping station is needed whenever wastewater cannot be conveyed from the primary/septic tank to the Ecoflo compact biofilter. Like the primary/septic tank, the size and configuration of the pump tank shall be based on design flow and occupancy according to state or local requirements. The pump tank, risers, and lids must be watertight. Please note a pumping station is a different tank that does not serve the same purpose or function as the primary/setpic tank.

The dosing rate to the Ecoflo compact biofilter should be between 12 to 16 gallons of wastewater every pump cycle.

According to N.J.A.C. 7:9A-8.3(b)6 Code requirement, the pump shall be an Internet-based tank alarm or be connected to an active phone line equipped with an auto-dialer to notify the authorized service provider of alarm conditions, including if power to any of the system components are disconnected.

The pumping station unit must have adequate venting to avoid any buildup of harmful gases, air lock, and corrosion. This can be accomplished by using a separate vent pipe on the pump chamber or septic tank, by using a vented lid, or by connecting the pumping station to the main building vent stacks.

Buoyancy calculation for the pumping station tank should be performed when necessary.

Premier Tech Water and Environment offers several models of pumping stations (PSA-240, PSA-240L, PSA-240H, PSA-240NP, PSX-240). For more information, go to *PT-WaterEnvironment.com/ProSpace*.

It is the designer's responsibility to ensure that pumping stations configuration and sizing meet state and local requirements.

3.8 DISCHARGE PUMP (WHEN APPLICABLE)

As presented in table above, some concrete or polyethylene Ecoflo compact biofilter models come with a closed bottom configuration that includes a discharge pump vault. This allows the Ecoflo compact biofilter to pump treated effluent towards final dispersal. The integrated pump vault includes a pump, a float tree with an ON/OFF float and an alarm float, and an alarm box.

According to N.J.A.C. 7:9A-8.3(b)6 Code requirement, the pump tank alarm shall be Internet based or be connected to an active phone line equipped with an auto-dialer to notify the authorized service provider of alarm conditions, including if power to any of the system components are disconnected. WiFi enabled tank alarms are available at New Jersey Ecoflo depots.

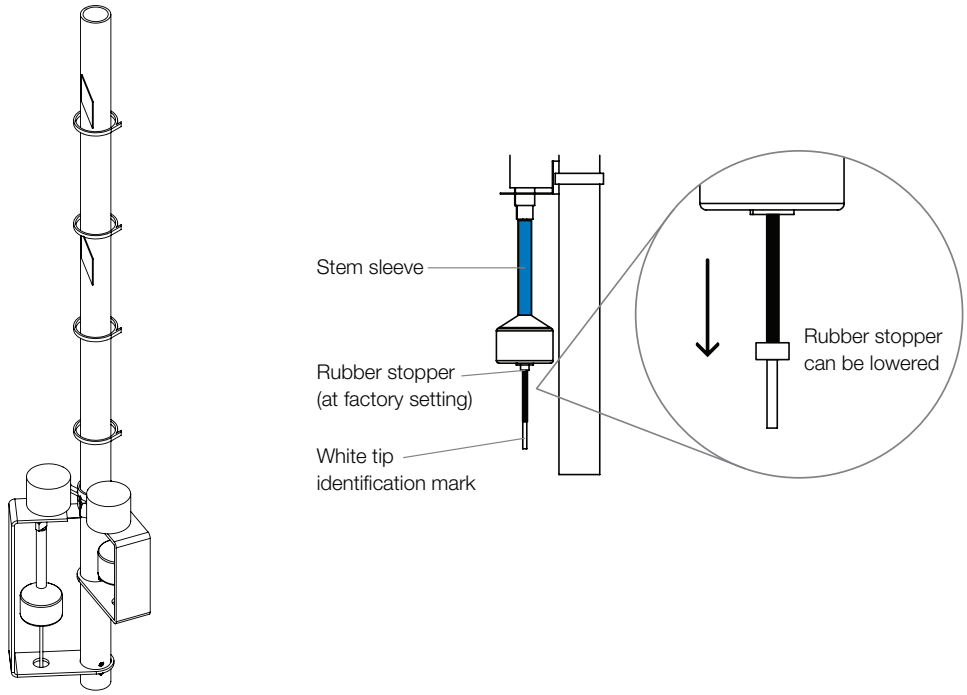
Each of the EC7-XXX-P-P models listed below offer a certain built-in capacity for dosing and storage in case of emergency. These are presented on each products' respective technical data sheets.

Table 4: Dosing volume available and float adjustments for polyethylene unit

	EC7-500	EC7-600	EC7-750	EC7-1050	EC7-1350
Unit Size	2.8	3.4	4.1	5.7	7.3
Maximum Applicable Flow Rate (USG/d)	500	600	750	1,050	1,350
Float adjustments (see Figure 2)	Dosing volume provided (USG)				
Fact. setting	21	24	26	20	20

See below for adjustments

Figure 2 - Float tree and float adjustment for EC7-XXX-C/P-P



Floats factory settings are set to provide 20 to 100 gallons per dose depending on models' capacities. However, floats can be adjusted on site according to information provided in Table 4 if bigger dose is required depending on specific site conditions and design. For gravity distribution we recommend, theoretically, a dose volume of ¼ of daily design flow, 4 times a day.

Otherwise, pressure dosing system can be design according to design procedure spelled out in section 7:9A-9.7 of N.J.C.A. Code.

Depending on application and site conditions, additional volume for dosing and/or emergency may be required and provided with an additional independent dosing tank.

Consult the Technical Data Sheets at *PT-WaterEnvironment.com/ProSpace* **for additional details on integrated pump vault for these models, such as built-in storage and dosing capacities, dimensions, etc.**

Table 5: Dosing Volume and Float Adjustment for poly/concrete models

POLYETHYLENE

Desired dose volume					Adjustment	Final sleeve length
2.8 – 500	3.4 – 600	4.1 – 750	5.7 – 1050	7.3 – 1350		
21 US gal	24 US gal	26 US gal	20 US gal		None (factory setting)	4-1/2"
22 US gal	30 US gal	35 US gal	30 US gal	40 US gal	Lower rubber stopper **1/4"** along stem	4-1/2"
80 US gal	95 US gal	100 US gal	85 US gal	115 US gal	Lower rubber stopper **2-1/2"** along stem*	4-1/2"
105 US gal	120 US gal	130 US gal	110 US gal	155 US gal	Make sleeve 3-1/2" long and lower rubber stopper **2-1/2**" along stem*	3-1/2"
130 US gal	150 US gal	165 US gal	140 US gal	195 US gal	Make sleeve 2-1/2" long and lower rubber stopper **2-1/2"** along stem*	2-1/2"
160 US gal	180 US gal	200 US gal	175 US gal	235 US gal	Make sleeve 1-1/2" long and lower rubber stopper **2-1/2"** along stem*	1-1/2"
			230 US gal	295 US gal	Remove sleeve and lower rubber stopper **2-1/2"** along stem*	0"

* Or until identification mark.

CONCRETE

Desired dose volume		Adjustment	Final sleeve length
2.8 – 500	4.1 – 750		
20 US gal	20 US gal	None (factory setting)	4-1/2"
70 US gal	95 US gal	Lower rubber stopper **2-1/4"** along stem	4-1/2"
90 US gal	120 US gal	Make sleeve 3-1/2" long and lower rubber stopper **2-1/4"** along stem*	3-1/2"
110 US gal	140 US gal	Make sleeve 2-1/2" long and lower rubber stopper **2-1/4"** along stem*	2-1/2"
125 US gal	170 US gal	Make sleeve 1-1/2" long and lower rubber stopper **2-1/4"** along stem*	1-1/2"
150 US gal	200 US gal	Remove sleeve and lower rubber stopper **2-1/4"** along stem*	0"

Desired dose volume	Adjustment	Final sleeve length
6.5 – 1200		
95 US gal	None (factory setting)	3-1/2"
130 US gal	Make sleeve 2-1/2" long and lower rubber stopper **2-1/2"** along stem*	2-1/2"
165 US gal	Make sleeve 1-1/2" long and lower rubber stopper **2-1/2"** along stem*	1-1/2"
200 US gal	Make sleeve 1/2" long and lower rubber stopper **2-1/2"** along stem*	1/2"
220 US gal	Remove sleeve and lower rubber stopper **2-1/2"** along stem*	0"

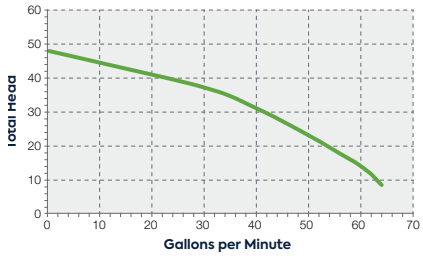
The pump provided with those models presents the following characteristics:

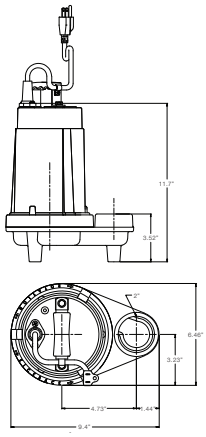
Champion 0.5 HP pump | 8.5 Amps | 1 phase, 60 Hz, 115 V

Electrical specification for floats

Float switches must be used with pumps that provide integral thermal overload protection.

	Single phase	
	Maximum pump running current	Maximum pump starting current
120 VAC 50/60 Hz	13 A	60 A
230 VAC 50/60 Hz	12 A	60 A





The performance curve above represents pump supplied with the polyethylene Ecoflo compact biofilter with integrated pump. Note that this curve was obtained with clear water and might not perform as well with wastewater. If you have questions about the interpretation of this curve, please do not hesitate to contact Premier Tech Water and Environment.

The pumping unit uses 0.25 kWh per day. Pumps that exceed the amperage in these specifications require a pump controller that will allow the stock floats to be used for signal rather than providing power. Refer to the technical data sheet for the vault dimensions. All electrical connections are to be made by a licensed electrician.

The maximum length of the pressurized pipe from the pump's outlet depends on the head (difference in elevation between the base of the pump and the end of the pressurized pipe). The maximum length of the pressurized pipe from the pump's outlet is limited by the volume of water that returns to the polyethylene Ecoflo compact biofilter once the pump has stopped running. **It is the designer's responsibility to make sure that pumping station configuration and sizing meet state and local requirements.**

3.9 FLOW DIVIDERS (WHEN APPLICABLE)

An installation with two Ecoflo compact biofilter units that cannot use gravity distribution or with three or more Ecoflo compact biofilter units must consider using a flow divider to create even distribution between components.

Premier Tech Water and Environment offers several pressurized flow dividers. For more information, go to *PT-WaterEnvironment.com/ProSpace*.

3.10 COMMERCIAL APPLICATIONS

The Ecoflo compact biofilter can also be used for commercial or municipal applications when the wastewater to be treated is comparable to domestic wastewater. Please contact Premier Tech at **1 800 632-6356** or at *info.ptwe.na@premiertech.com* for more information on these applications.

3.11 FILTERING MEDIUM LIFESPAN

The effective lifespan of the Ecoflo compact biofilter's filtering medium is estimated to last a minimum of 10 years under the following conditions:

- if the system has been operated at or under design flow and loadings
- if the system has been designed and installed in accordance with Premier Tech Water and Environment guidelines
- if the system has been maintained in accordance with Premier Tech Water and Environment guidelines by a Premier Tech Water and Environment trained service provider, been operated under an ongoing service contract, and is in compliance with all administrative authority permit conditions

After 10 years, the filtering medium is analyzed by one of Premier Tech Water and Environment's authorized agents. Under normal usage, if the filtering medium has not been abused and the operating guidelines have been respected, the filtering medium can still be used for some additional years. However, the Ecoflo compact biofilter's filtering medium must be renewed before the system's treatment capacity and performance starts to deteriorate. The filtering medium is easily removed by using a truck adapted to pump out septic tank sludge. The new filtering medium is then installed by the pumper or an authorized agent.

3.12 FINAL DISPERSAL

The final dispersal system must be designed in accordance with state or local regulations and Premier Tech Water and Environment guidelines.

4. LOCATION OF WASTEWATER SYSTEM COMPONENTS

4.1 PRIMARY/SEPTIC TANK INSTALLATION CONDITIONS

The septic /primary tank, equipped with an effluent filter, must be located:

- where there is no motorized vehicle traffic
- where it is accessible at all times for maintenance and emptying
- in an area that is not likely to be flooded and where it will not be submerged (depending on the situation, a drain may be required around the primary/septic tank to prevent installing it in groundwater)

The septic tank/primary must be installed according to the manufacturer's specifications. The primary/septic tank must be watertight and must only be used for the disposal of domestic wastewater (for instance, no roof water, surface water, or discharge from footing drains). The septic installation must be installed in accordance with the minimum clearance prescribed by state or local regulations.

4.2 ECOFLO COMPACT BIOFILTER INSTALLATION CONDITIONS

The Ecoflo compact biofilter must be installed according to the following recommendations:

- NEVER cover or bury the lid of the Ecoflo compact biofilter
- NEVER plant trees or bushes within 6.5' of the infiltration area
- NEVER connect a drainpipe, roof gutter, sump pump, or air conditioning drain to your septic system
- ensure the ground cover grows back quickly to prevent soil erosion
- use a sandy material free of rocks and stones as backfill for polyethylene models
- use a sandy material with rocks or stones no larger than 2'' as backfill for concrete models

In addition to those recommendations, some additional models' specific considerations are detailed in the Table 6:

Table 6: Minimum distances to respect for Ecoflo compact biofilter reference point

	Polyethylene 2.8 – 3.4 – 4.1	Polyethylene 5.7 – 7.3	Concrete 2.8 – 3.4	Concrete 6.5
Riser allowance	Maximum one additional 6" riser	No additional riser allowed	Maximum two additional 8" risers	Maximum one additional 8" riser
Base of excess backfill, slopes, or embankments vs. biofilter lid* (A)	13'		10'	
Parking area* (B)	13'		10'	
Vehicle or object weighting more than 500 lbs* (C)	13'		10'	
Retaining Wall* (D)	13'		10'	
Tree	N/A			
Finished landscaping vs. base of Ecoflo lid (E)	13''			
Groundwater vs. base of Ecoflo compact biofilter unit** (Fp)	Gravity: up to the base of the Ecoflo Pumped: 2' above the base of the Ecoflo	Up to the base of the Ecoflo compact biofilter	Gravity: up to the base of the Ecoflo. Pumped: to the inlet invert	

* See Figure 3
** See Figure 4

Figure 3 – Minimum distances to respect for Ecoflo Coco Filter

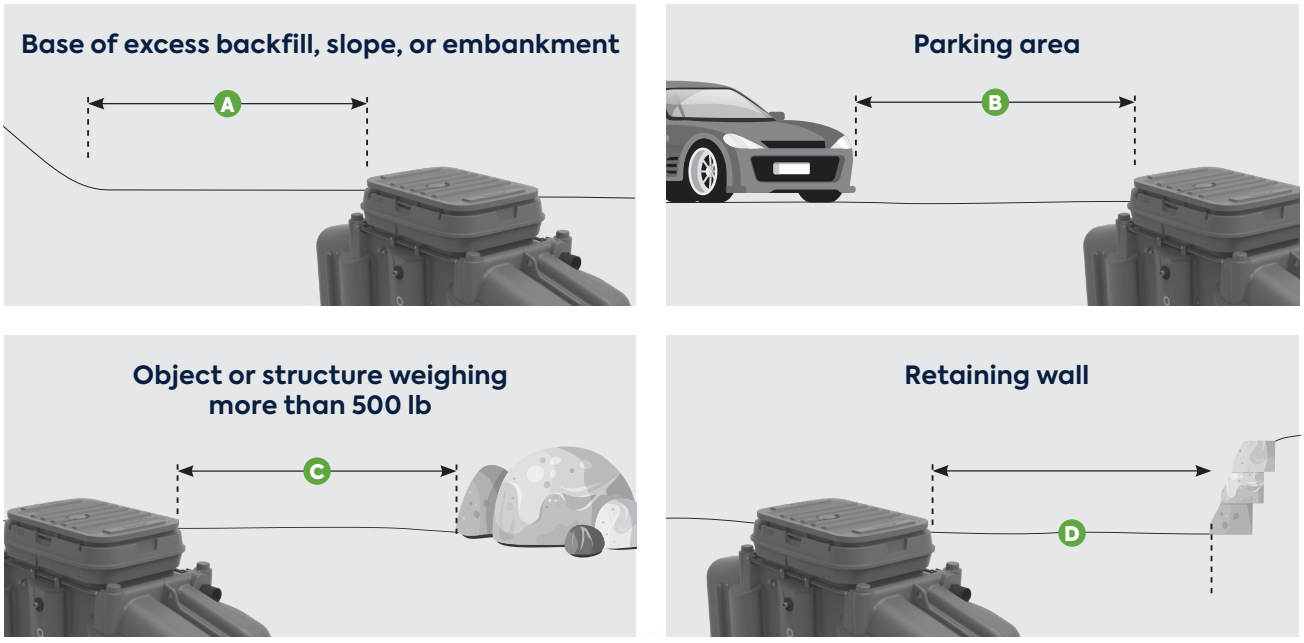
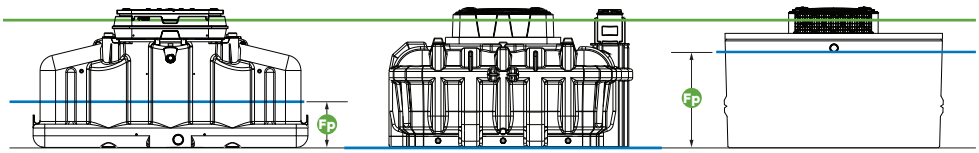


Figure 4 – Minimum distances to respect for Ecoflo compact biofilter



It is very important to advise everyone involved (installer, landscaper, owner, snow removal service, etc.) of the above recommendations so they do not damage the components of the wastewater treatment system.

By respecting these guidelines, you are contributing to the proper operation of your wastewater treatment system.

5. EFFLUENT DISCHARGE

5.1 FINAL POLISHING PROCESS

When required and if allowed by regulations, the Ecoflo compact biofilter can be combined with the Rewatec UV disinfection unit (DiUV) or another UV disinfection system to reduce the fecal coliforms concentration below 200 UFC/100 mL to allow direct surface or groundwater discharge. For more information on the Rewatec DiUV, go to *PT-WaterEnvironment.com/ProSpace*.

If you have any questions or comments, do not hesitate to contact Premier Tech Water and Environment at 1 800 632-6356.

ANNEX 1 | BUOYANCY CALCULATIONS FOR THE POLYETHYLENE UNITS

Ecoflo Coco Model Units		2.8			2.8 PACK			3.4			3.4 PACK			4.1			EC7-1050-P	EC7-1200-P	EC7-1350-P
Number of Risers		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3			
Total height of the unit	m	1.62	1.77	1.92	1.62	1.77	1.92	1.62	1.77	1.92	1.62	1.77	1.92	1.62	1.77	1.92			
Maximum tank volume under ground water table[1]	m³	3.13	3.13	3.13	5.78	5.78	5.78	3.5	3.5	3.5	6.5	6.5	6.5	4.23	4.23	4.23			
Buoyancy[2]	**kg**	**3,130**	**3,130**	**3,130**	**5,780**	**5,780**	**5,780**	**3,500**	**3,500**	**3,500**	**6,500**	**6,500**	**6,500**	**4,230**	**4,230**	**4,230**			
Uplift restraint calculation																			
Weight of the unit with internal components and filtering media[5]	kg	550	550	550	750	750	750	600	600	600	840	840	840	650	650	650			
Soil cover height	mm	461	607	761	416	570	728	280	430	578	280	430	578	380	527	675			
Weight of soil on the top of the unit[3]	kg	1,667	2,193	2,750	2,909	3,987	5,092	1,030	1,582	2,127	2,029	3,145	4,282	1,960	2,718	3,482			
Backfilling weight on the basal area of the unit																	**SHALL NOT BE INSTALLED IN FULLY SATURATED SOIL.** GWT shall not exceed 1 foot from the bottom of the unit.		
Unit basal area	m²	0.48	0.48	0.48	1.152	1.152	1.152	1.04	1.04	1.04	2.04	2.04	2.04	0.76	0.76	0.76			
Unsaturated soil weight	kg	476	591	707	1,143	1,419	1,696	1,032	1,281	1,531	2,024	2,513	3,003	754	936	1,119			
Saturated soil weight	kg	199	199	199	477	477	477	431	431	431	845	845	845	315	315	315			
Total uplift restraint	**kg**	**2,892**	**3,533**	**4,205**	**5,279**	**6,633**	**8,014**	**3,093**	**3,894**	**4,688**	**5,738**	**7,343**	**8,970**	**3,679**	**4,619**	**5,565**			
Additional anchoring proposed[4]																			
Anchoring area provided[6]	m²	2.1			2.1			2.1			2.1			2.1					
Unsaturated soil weight	kg	923			929			1,042			1,042			1,042					
Saturated soil weight	kg	558			562			630			630			630					
Total additional restraint provided by anchoring	kg	1,481			1,490			1,672			1,672			1,672					
Total additional restraint provided by anchoring	**kg**	**4,372**			**6,769**			**4,764**			**7,409**			**5,350**					

[1] Assuming a maximum high ground water level of 1 m from the bottom of the tank for poly unit and up the the inlet pipe for the concrete unit
[2] Buoyancy force is assuming saturated soil (worst case scenario)
[3] Assuming a soil density of 1600 kg/m³
[4] According to specification provided in the Intallation Guide
[5] Assuming dry filtering media for all models and empty primary tank for the pack configuration (worst case scenario)
[6] Assuming 50% of efficiency

ANNEX 2 | NEW JERSEY DESIGN GUIDE HIGHLIGHTS AND CHECKLIST FOR DESIGNS

POLYETHYLENE ECOFLO COMPACT BIOFILTER UNITS

PLEASE MAKE SURE THE BOLDED NOTES ARE ON YOUR PLANS

- **Backfill only with sand. Hose down as you backfill to bed the tank properly. DO NOT use pea gravel. Backfill material must be a sandy material free of rock and stone.**

- **The polyethylene units come with a 12” riser on the tank. Only one additional 6” riser is allowed to be added, or the warranty will be void.**

- **The contractor must set the floats on site. All units come with the floats set to a minimum dose. The specified dose MUST be adjusted according to your required dose volume. Please include a drawing of the float settings. Highlight the dose that the contractor should use (see “Float Adjustment Page”) and instructions for setting the dose.**

- **Electrical wiring: a licensed electirician must perform all electrical connections in accordance with the applicable local codes. Never wire the pumps and floats inside the unit.**

  The electrician must supply their own junction box (when needed).

- Pumps: the Ecoflo compact biofilter unit comes with a ½ HP Champion effluent pump. If using a pump other than the one supplied ensure it will meet the electrical specifications of the float tree as stated on page 10 of this guide.In the event the selected aftermarket pump does not fit within the listed parameters a secondary pump controller may be needed to power the pump. Please remember to take into consideration the runback of a supply line.

  The tank alarm must be on a separate circuit from the pump. The tank alarm does not get wired to the control panel.

- **All alarms must be Wi-Fi enabled to contact the service provider in the event of an alarm. Tri-State Pump & Septic Supply and Franklin Precast provide these alarms with the Ecoflo compact biofilter unit. If the unit is ordered from a depot outside of NJ ensure the installation contractor sources a Wi-Fi enabled alarm.**

  Please include a picture of the Wi-Fi alarm and model information in your plan.

- **Gravity outlet units: installation contractor shall verify the gravity outlet knockout has been removed prior to connecting the outlet pipe. When converting a pumped discharge unit to a gravity discharge unit the installer will need to remove the knockout prior to connecting the outlet pipe. Premier Tech recommends adding a cleanout outside of the unit, after the gravity outlet.**

- Please review the minimum distances allowed from heavy objects on page 12.

CONCRETE ECOFLO COMPACT BIOFILTER UNITS

PLEASE MAKE SURE THESE NOTES ARE ON YOUR PLANS

- **Backfill material for concrete units shall not have rocks or stones larger than 2" in diameter. Premier Tech recommends using a sandy material.**

- **Concrete unit models 2.8 and 3.4 come with a 10" cast in riser on the tank. Only two additional 8" risers are allowed to be added, or the warranty will be void.**

- **Concrete unit 6.5 models come with a 10” riser on the tank. Only one additional 8” riser is allowed to be added, or the warranty will be void.**

- **The contractor must set the floats on site. All units come with the floats set to a minimum dose. The specified dose MUST be adjusted according to your required dose volume. Please include a drawing of the float settings. Highlight the dose that the contractor should use (see “Float Adjustment Page”) and instructions for setting the dose.**

- **Electrical wiring: a licensed electirician must perform all electrical connections in accordance with the applicable local codes. Never wire the pumps and floats inside the unit.**

  The electrician must supply their own junction box (when needed).

- Pumps: the Ecoflo compact biofilter unit comes with a ½ HP Champion effluent pump. If using a pump other than the one supplied ensure it will meet the electrical specifications of the float tree as stated on page 10 of this guide.In the event the selected aftermarket pump does not fit within the listed parameters a secondary pump controller may be needed to power the pump. Please remember to take into consideration the runback of a supply line.

  The tank alarm must be on a separate circuit from the pump. The tank alarm does not get wired to the control panel.

- **All alarms must be Wi-Fi enabled to contact the service provider in the event of an alarm. Tri-State Pump & Septic Supply and Franklin Precast provide these alarms with the Ecoflo compact biofilter unit. If the unit is ordered from a depot outside of NJ ensure the installation contractor sources a Wi-Fi enabled alarm.**

  Please include a picture of the Wi-Fi alarm and model information in your plan.

- **Gravity outlet units: the contractor must remove the red cap and knock out the plastic inside to open the gravity outlet. This is NOT done by the distributor or manufacturer. Premier Tech recommends adding a cleanout outside of the unit, after the gravity outlet.**

- Please review the minimum distances allowed from heavy objects on page 12.

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