

Ecoflo[®] Biofilter

Installation Guide – Canada & USA

Polyethylene Shell

Models:

ST-570P	ST-650P	ST-730P
STB-570P	STB-650P	STB-730P
STB-570PR	STB-650PR	STB-730PR



For more information, please consult the following documents:

Design Guide

- Design Flow
- Dispersal/disposal method
- Specific to local regulations

Technical Data Sheet

- Polyethylene Installation Guide
- Concrete Installation Guide
- Fibreglass Installation Guide

Treatment Process

- Operating principle of the Ecoflo[®]
- Aeration principle of the Ecoflo[®]

Typical Installation

- CAD drawings
- PDF drawings

These documents are available at ptzone.premiertechaqua.com.



☎ 1 800 632-6356
📠 418 862-6642
✉ pta@premiertech.com
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*This guide contains the information required to install a **Polyethylene Ecoflo® Biofilter**. The installation must be performed by an authorized installer. A list of installers can be provided by contacting our customer service at 1 800 632-6356.*

1. Polyethylene Ecoflo® Biofilter Component Description

PLEASE CONSULT THE ILLUSTRATION ON FOLLOWING PAGE

Lids

- Access port for maintenance and inspection – main and secondary access;
- Air intake from the main lid provides proper air flow through the system;
- Secure both openings with bolted assemblies.

Insulating boards

- Thermally insulate the system;
- Guides airflow into the shell's air ducts (main access);
- Seals the system (main access).

Shell

- Encloses the system's components;
- Allows connection of water and air pipes;
- Collects the treated effluent (STB models).

Central support

- Supports the tipping bucket and one end of the distribution plates;
- Allows air circulation between bottom and top of the filtering media.

Support rails

- Support the other end of the distribution plates.

Tipping bucket

- Evenly distributes the wastewater on both sides of the filtering media;
- Creates hydraulic events required for proper distribution of the wastewater on the distribution plates and, at the same time, contributes to the self-cleaning of the plates.

Distribution plates

- Allow even distribution of the influent on the surface of the filtering media.

Filtering media

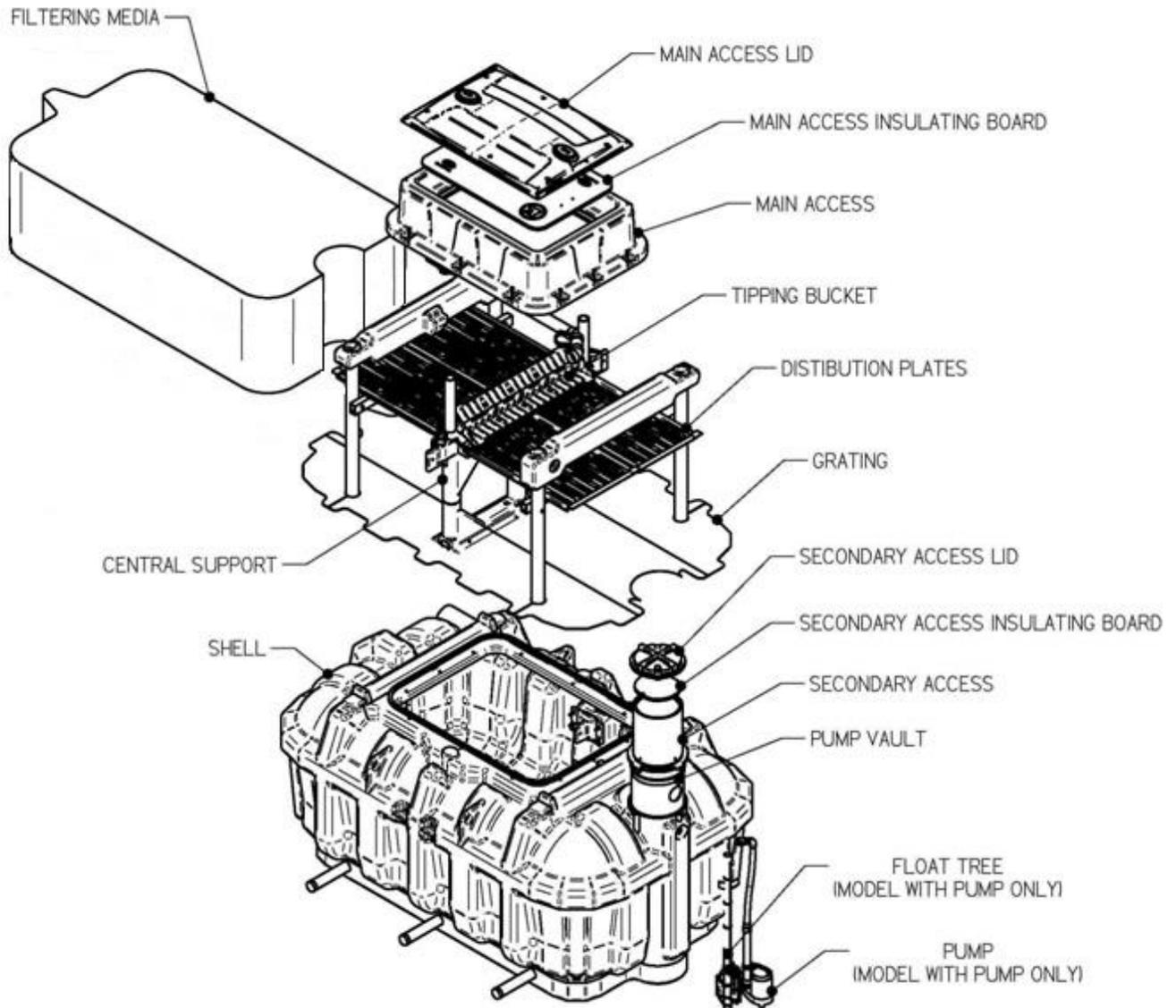
- Consists of a natural fibre-based filtering media;
- Promotes good biomass growth which is essential to biological treatment of the wastewater;
- Physically filters the solids contained in the influent;
- Maintains adequate humidity level required for biomass viability when there is no water going through the system for a certain amount of time.

Treated effluent collection area

- Allows proper drainage of the treated effluent;
- Allows air to circulate under the filtering media.

Pump vault / secondary access (if applicable)

- Allows air circulation between bottom and top of the filtering media;
- Allows access to the base of the system to collect a sample of the treated effluent;
- Encloses the following pumping equipment: pump, On/Off float and alarm float (models with integrated pump);
- Allows treated effluent to be sent towards the available disposal method (models with integrated pump).



Exploded view of the Polyethylene Ecoflo® Biofilter

if you have a problem, or a part is defective or missing, do not hesitate to contact our customer service department at 1 800 632-6356.

2. Installation Sequence

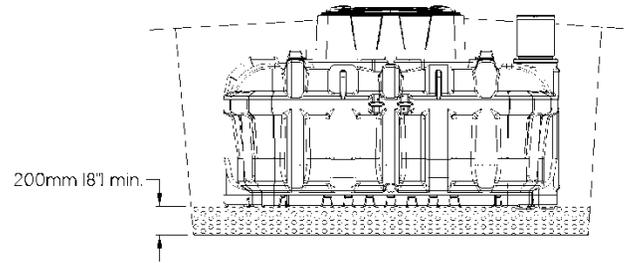
NOTE: The installer is responsible for the implementation of safety measures throughout the installation (i.e. wearing a hard hat, gloves, boots, safety glasses, a mask, etc).

2.1a Excavation, bedding and placing of the perforated bottom Ecoflo® Biofilter (ST models)

- Excavate and prepare the absorption bed according to the standards specified in the applicable Design Guide.
- Use clean 15 to 60 mm (½" to 2") diameter gravel. It is highly recommended to use a 20 mm (¾") diameter clean crushed stone.
- Minimum thickness of the bed: 200 mm (8").

NOTE:

- Never install the absorption bed of the Ecoflo® Biofilter within 2 m (6,5') of a tree.
- **There are no risers available for polyethylene Ecoflo® Biofilter models**, this is important to take into consideration when determining the absorption bed's depth.



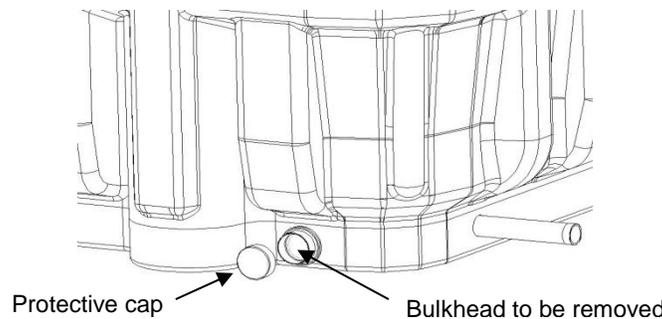
Center the shell onto the absorption bed area. Make sure the shell is levelled and rests on all points of the previously levelled bed.

Place a geotextile (material permeable to air and water) on top of the crushed stone **around the shell only** to protect the crushed stone from contamination or obstruction by objects or particles. **There should not be any geotextile on the crushed stone under the Ecoflo® Biofilter.**

2.1b Excavation, bedding and placing of the watertight bottom Ecoflo® Biofilter (STB models)

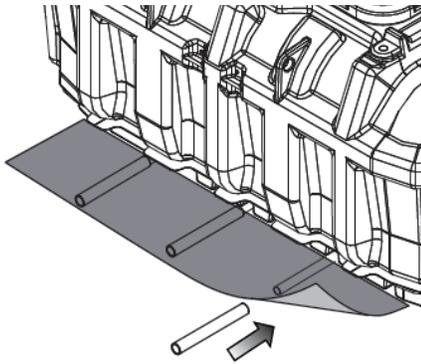
Excavate an area of approximately 3.0 m x 4.5 m (10' x 15'). Depending on soil conditions, it might be necessary to add a layer of 150 mm (6") of either 0 to 20 mm (0 to ¾") diameter gravel void of any plant material or clean 20 mm (¾") diameter gravel surrounded by geotextile (over the excavated area). Place the shell in the center of the excavated area. Check that the height of the installation is adequate. **There are no risers available for polyethylene Ecoflo® Biofilter models.** Make sure the shell is levelled and rests on all points of the previously levelled and compacted bed.

If you are installing a gravity discharge watertight bottom Ecoflo® Biofilter model, before going any further with the installation, connect the effluent discharge pipe using a flexible, watertight outlet adaptor. Remove the protective cap and punch the bulkhead of the outlet adaptor. No debris resulting from that operation must be left in the Ecoflo® Biofilter.



Connect the pipe to the Ecoflo® Biofilter. The pipe must have a constant downward slope until it reaches the disposal area. The soil under the pipes must be properly compacted.

2.2 Extension pipe and membrane installation (STB models)



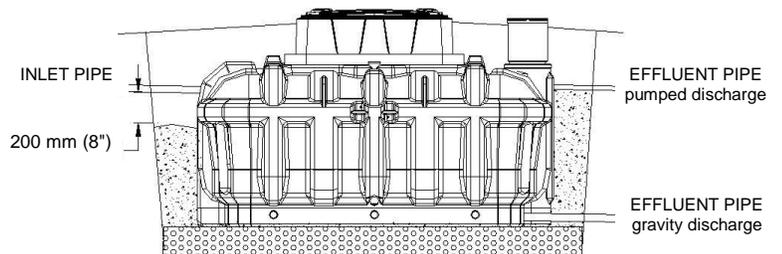
To ensure a maximum of stability, install the six (6) pipe extensions on the existing pipes assembled on the shell. Lay the membrane on the extension pipes on both sides of the shell. Spread and level the fill material over and under the membranes.

2.3 Initial backfill of the shell

Place backfill material around the shell up to 200 mm (8") underneath the invert of the inlet pipe. Start with the long sides and finish with the short sides. The backfill material must be placed with care and not dumped (do not compact with bulldozer).

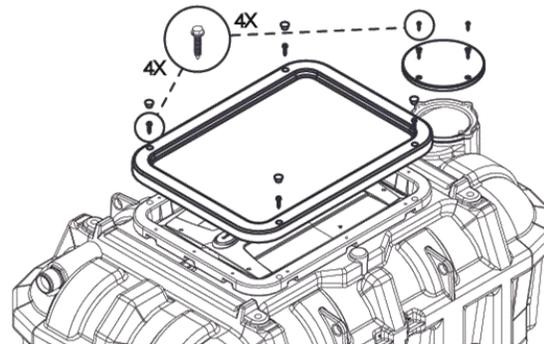
The backfill material must be sandy, with no rocks or stones.

CAUTION: Make sure the backfill material stays out of the shell during the backfill operation.

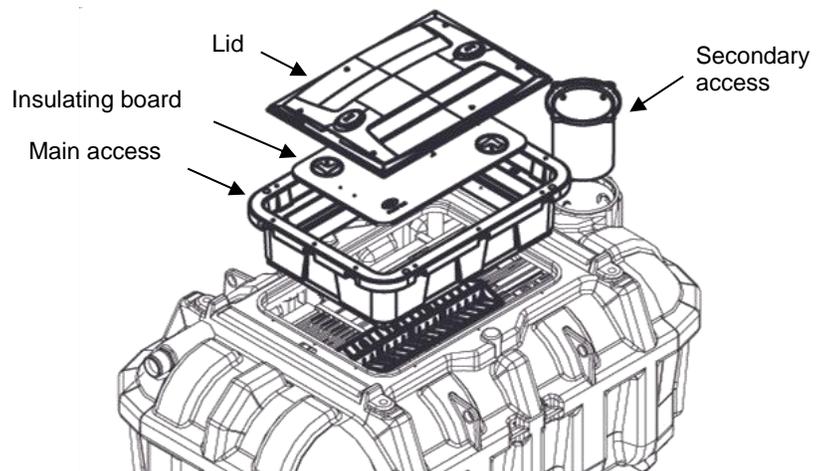
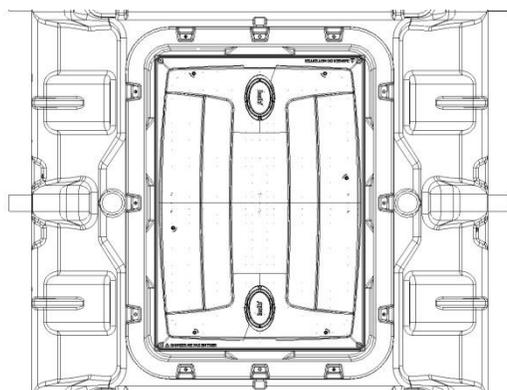


2.4 On site assembly

- Unscrew and remove the protective shipping material found on the main and secondary access.

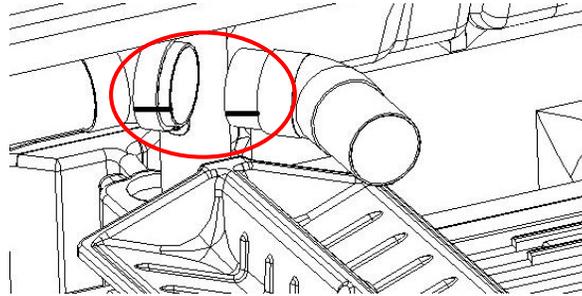


- Remove the main and the secondary access. The main access assembly includes the lid and the insulating board. To remove the lid, unscrew the four lag screws in the four corners of the lid.

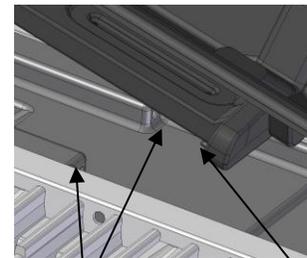
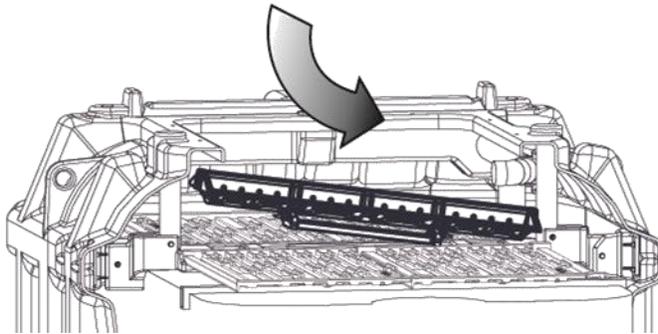


- Glue in place the elbow assembly on the water inlet pipe. Align marks to ensure that the elbow assembly is correctly positioned. Once in place the inlet pipe must be centered with the tipping bucket. The elbow assembly is packaged in the components box. This box is shipped with the biofilter and is located in the main access.

CAUTION: Do not reverse the elbow. The water inlet would then be off center.



- Attach the tipping bucket to the central support by inserting the two (2) locking catches into the central support's anchor slots. Bring down the opposite end to make sure the tipping bucket stays in place. Check the state of the tipping bucket by moving it from left to right to make sure nothing is blocking its movement.



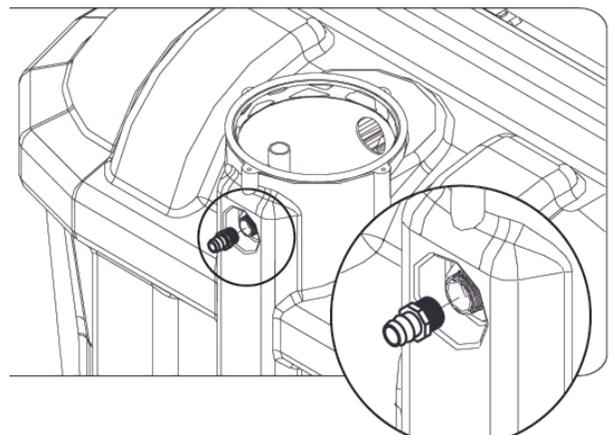
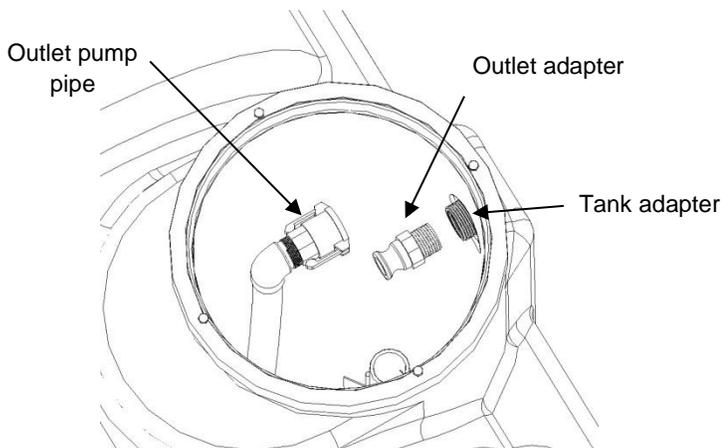
Anchor slots

Locking catch

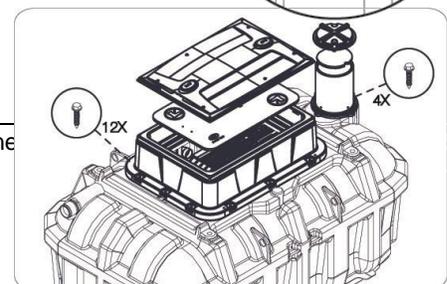
• **Make sure that:**

- The distribution plates are properly installed;
- The float tree and the pump are correctly positioned (models with integrated pump);
- The tipping bucket tilts correctly on both sides.

- Screw in the pump outlet adapters (models with integrated pump). These adapters can be found in the components box (shipped within the main access of the biofilter).



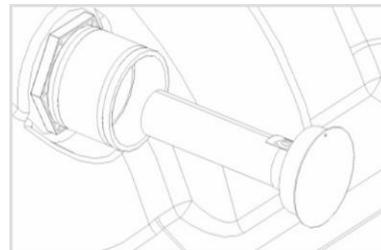
- Screw in place the main and the secondary access with the supplied lag screws and place the insulating boards and lids. Secure the lid of



the main access with the four lag screws and the lid of the secondary access with the two quarter turns. The secondary access lid and insulating board are packaged in the components box (shipped within the main access of the biofilter).

2.5 Connecting the water inlet pipe

Connect the supply line from the septic tank to the water intake of the Ecoflo[®] Biofilter, making sure that the entire length of the pipe is on a constant downwards slope that slants towards the Ecoflo[®] Biofilter. Note that the soil under the pipe must be properly compacted. The Ecoflo[®] Biofilter is equipped with a standard flexible intake adaptor. Use a regular pipe clamp to make the connection. Remove the protective cap before connecting the inlet pipe. Do not discard the documents wrapped under the cap: they must be handed over to the owner.

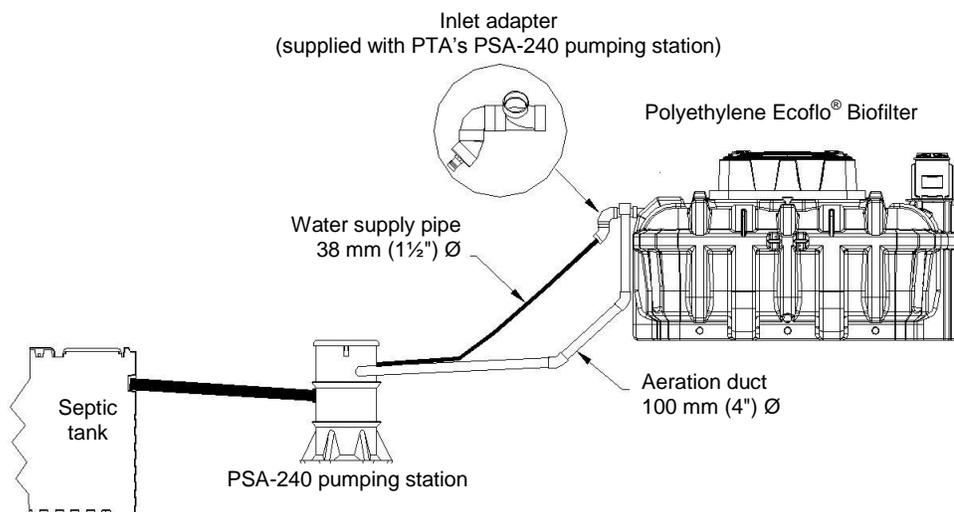


2.5.1 Connecting the water supply pipe when a pumping station is required to feed the Ecoflo[®] Biofilter

When a pumping station is required upstream of an Ecoflo[®] Biofilter, the following instructions must be taken into account:

- When a pumping station is required Premier Tech Aqua recommends sending approximately 30 to 40 L (8 to 10 US gallons) of wastewater to the Ecoflo[®] Biofilter every pump dosing cycle (10 tipping bucket events);
- The pumping station must be watertight (infiltration and exfiltration);
- The water supply pipe (flexible 38 mm (1½") Ø pipe) is connected to an inlet adapter (supplied with Premier Tech Aqua's PSA-240 pumping station) which allows the connection to the Ecoflo[®] Biofilter's 100 mm (4") Ø inlet pipe. **Note that the adapter is mandatory to break the stream of water coming from the pumping station;**
- An air duct must connect the pumping station to the Ecoflo[®] Biofilter to ensure air circulation. This air duct is connected to the adapter, which is equipped with a tee-Y;
- Depending on site conditions, a forced air vent may be required;
- The pumping station must be accessible at all times.

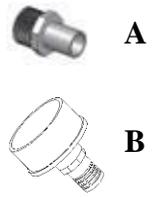
The figure below illustrates the guidelines mentioned above. Consult the Premier Tech Aqua's Pumping Station Installation Guide which can be found at ptzone.premiertechaqua.com for more information.



When an installation consists either of two Ecoflo[®] Biofilters which cannot be fed by gravity or of three Ecoflo[®] Biofilters, a pumping station combined with a pressurized flow divider is required. Premier Tech Aqua offers several pressurized flow dividers. For more information on Premier Tech Aqua's pressurized flow divider, consult the Peripherals Section at ptzone.premiertechaqua.com.

2.6 Connecting the pumped discharge (models with integrated pump)

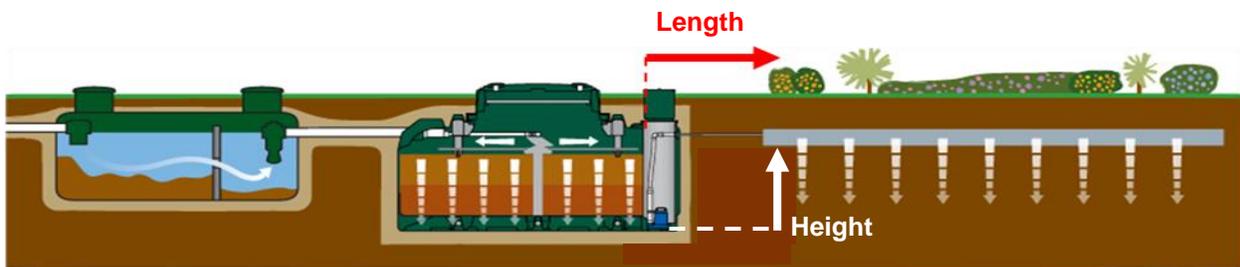
The effluent pipe from the integrated pump model must be connected to the treated effluent disposal method (absorption disposal, watercourse, etc.) using a flexible Ø 25 mm or 38 mm (1" or 1½") pipe. This pipe must be capable to withstand a minimal pressure of 700 kPa (100 PSI) and must also be compatible with underground applications. A barbed Ø 25 mm (1") coupling (**Item A**) links this flexible pipe to the biofilter's outlet. If necessary, the other end of the pipe is connected to the pipes of the treated effluent disposal method via the coupling supplied for this purpose (**Item B**). Precautionary measures against freezing must be taken if the effluent is discharged into a watercourse. Both items can be found in the components box (shipped within the main access of the biofilter).



What you should know if you use PTA's integrated pump:

- The **maximum length of the pressurized pipe** (flexible pipe) from the pump's outlet, **using a 25 mm (1") Ø pipe**, 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** (flexible pipe) from the pump's outlet, **using a 38 mm (1½") Ø pipe**, is limited by the volume of water that returns to the Ecoflo® Biofilter once the pump has stopped running. The following table presents the different allowable pipe lengths:

Head (height)	7,5 m (25')	6 m (20')	4,5 m (15')	3 m (10')	1,5 m (5')
Maximum length of the Ø 25 mm (1") pipe	---	18 m (60')	21 m (70')	24 m (80')	27 m (90')
Maximum length of the Ø 38 mm (1½") pipe	30 m (100')				



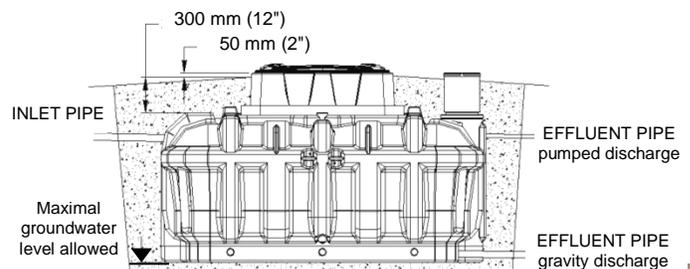
NOTE: The pipes must be installed in a way that they can drain properly.

WARNING: When there is a possibility of surface water accumulating on the lot, a drain pipe must be installed to evacuate the excess water and prevent any risk of infiltration.

2.7 Final backfill of the shell

Complete the backfill. The backfill material must be placed with care and not dumped (do not compact with bulldozer). The backfill material must be sandy with little or no rocks or stones. Allow space for ground cover and make sure the lids are at least 50 mm (2") above the surface of the landscaped lot.

Before the final backfill of the model with integrated pump, do not forget the electrical wiring (consult next section of the guide).



2.8 Pump verification and electrical wiring (models with integrated pump)

Step 1 Pump verification

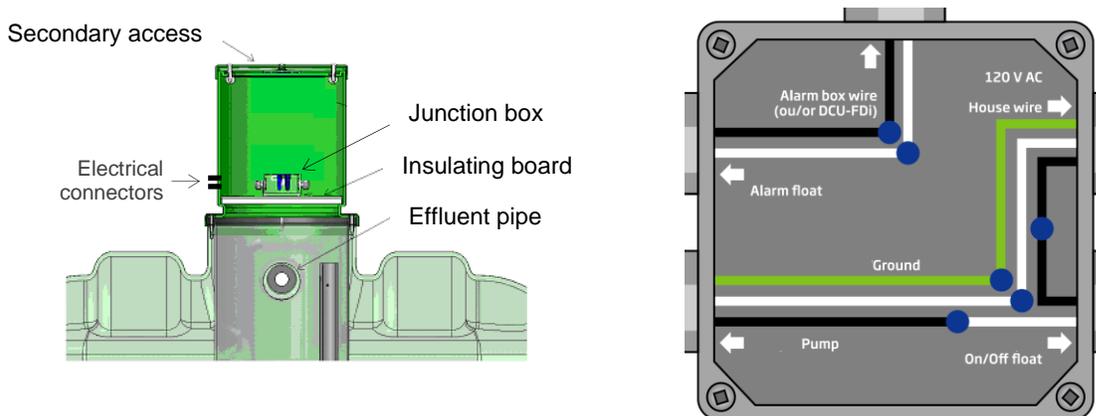
Make sure there is no debris (sand, stone, gravel, tie-wrap, electrical components, tape, etc.) in the access well when the electrical wiring is complete. Visually inspect the components inside the access well (float tree, floats, pump) to make sure they are properly installed and will work as they should.



Step 2 Electrical wiring

The electrical wiring should be executed by an electrician. To wire the system to the residence, two (2) in-ground double strand supply cables are required. It is preferable to protect the wires with the appropriate piping before burying them. The wire rating must also be done by an electrician. One of the wires will be used for the power supply line while the other one will send the alarm float signal to the alarm box (Item C) or control panel (when required).

Waterproof electrical connectors (Item E) must be used to go through the secondary access.



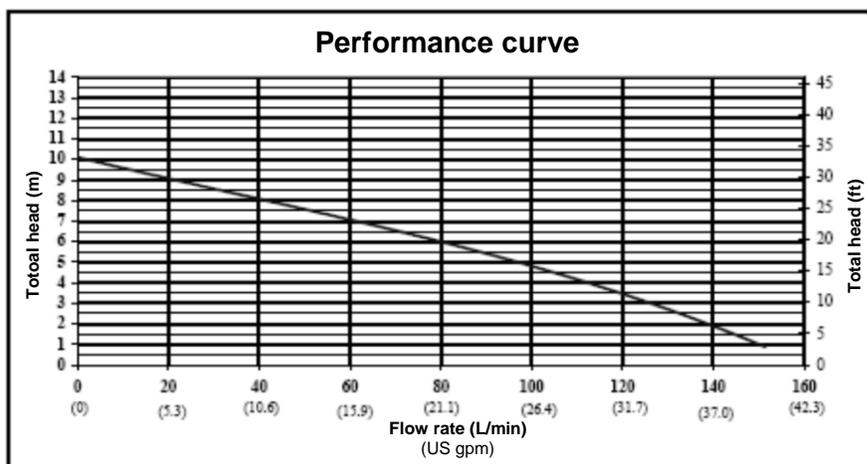
IF YOUR LOCAL ELECTRIC CODE ALLOWS IT make the appropriate electrical connections using the supplied parts (junction box (Item D), waterproof screw-thread wire connectors and electrical connectors (Item E)) located in the components box. First, remove the connector plugs from the float and pump wires by cutting 5 cm (2") from the end. Make 2 holes of 2 cm (13/16") in diameter in one side of the secondary access well to pass the connectors through to the other side. Insert the wiring into the system through the 2 holes. The junction box is located in the secondary access on the insulating board. Identify and insert the wires into the junction box as shown in the diagram above. Use waterproof screw-thread wire connectors for the connections to ensure the water does not affect the electrical circuit. Follow the diagram's colour code. Since the white wire of the On/Off float is connected to the pump's black wire (live wire), wrapping the white wire in black electrical tape is strongly recommended. Close the junction box. Pass the electrical wires from the pumping unit through the groove in the insulating board. Place the insulating board inside the access, install the junction box on top and close the lid of the secondary access.

NOTE: Use two (2) separate circuit-breakers, one for the electrical power of the pump and the other for the alarm box connection. Do not connect anything else on these circuit-breakers (for example: household appliance). They must be used for the pump and the alarm box only.

The pumping unit uses 0.25 kWh per day.

The figure on the right represents the performance curve of the pump supplied with the Ecoflo® Biofilter with integrated pump. Note that this curve was obtained with clear water, the pump might not

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perform as well with wastewater. If you have questions about the interpretation of this curve, please do not hesitate to contact Premier Tech Aqua.

Pump characteristics:

- 0.3 HP
- 6.2 Amps
- 1 phase, 60 Hz, 115 V

2.9 System operation verification and warranty seals



After making sure the tipping bucket is fully operational and that the distribution plates are installed properly, install the insulating board inside the main access. Seal it shut by attaching the handle of the insulating board to the access of the **Ecoflo® Biofilter** using the two plastic fasteners. Finally, close the lid of the **Ecoflo® Biofilter**.

Do not forget the inspection permit, where applicable.

CHECK POINTS FOLLOWING INSTALLATION:

- NEVER cover or bury the lids of your septic system with mulch, soil or a permanent structure. Always keep the lids accessible.
- The lids of you septic system must be at least 50 mm (2") above the surface of the landscaped lot.
- NEVER install a riser on the access of a polyethylene Ecoflo® Biofilter.**
- NEVER plant a tree within 6 m (20') of the Ecoflo® Biofilter lid and within 2 m (6.5') of the absorption bed.
- NEVER open the lids or go inside the septic tank or biofilter.
- NEVER connect a drain pipe, roof gutter, sump pump or air conditioning drain to your septic system.

- ❑ NEVER operate a vehicle or place objects weighing over 225 kg (500 lbs) within 5 m (16.5') of the lid. Pass on this information to all those who have access to your system (landscaper, snow blower, etc.).
- ❑ NEVER let anything accumulate on top of your septic system (for example: compacted snow). The overload could damage the system.
- ❑ NEVER empty the backwash of a spa or pool into your septic system.
- ❑ NEVER empty wastewater of a recreational vehicle (camping trailer, caravan, etc.) into your septic system.
- ❑ NEVER use automatic toilet cleaners.
- ❑ If there is a delay in finishing the landscape after the initial installation of the system, place reference posts and protective fences to identify the location of the Ecoflo® Biofilter. This will prevent any circulation on the unit and help indicate the system's final level.
- ❑ If a pumping station is installed upstream of the Ecoflo® Biofilter, an airflow duct must be connected from the pumping station to the Ecoflo® Biofilter.
- ❑ Households must be equipped with an air vent that is in proper working condition and complies with the applicable standards. Premier Tech Aqua strongly recommends using a 100 mm (4") Ø pipe.
- ❑ Hand over the package containing the Owner's Manual and the Maintenance Agreement to the customer. This package is located inside the water intake protective cap.
- ❑ Remind the customer to fill out and sign the Maintenance Agreement. The customer must keep the white copy, give the yellow copy to the local regulatory body and send the pink copy to Premier Tech Aqua.

**If you have any problems, questions or comments, do not hesitate
to contact Premier Tech Aqua at 1 800 632-6356.**



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 pta@premiertech.com
 PREMIERTECHAQUA.COM

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