

List of things to do before supervised installation and START-UP of ECOBOX

1. Delivery and preparatory works before the installation of ECOBOX:

1.1. According to the specific configuration, on the site are delivered either one common sedimentation-buffer tank or one sedimentation and one buffer tank with a pre-installed by Pipelife Bulgaria piping from the Airlift system (for pumping the wastewater to the reactor tank). This piping is pre-installed either in the sedimentation-buffer tank (in case of a common sedimentation-buffer tank) or in the buffer tank (for separate sedimentation and buffer tanks). The tank (tanks) has an inlet and an outlet.

1.2. One reactor tank, which is delivered to the site with pre-installed by Pipelife Bulgaria in it - diffusers, piping of Airlift system (for pumping surplus activated sludge to the settling volume, treated water to the water receiver and air supply to the diffusers), air hoses from the Airlift system to the control panel and switch level (for treatment plants from 20 PE upwards). The air hoses and the switch level are led through opening from the reactor tank, waiting to be brought to the control panel.

1.3. The tanks are equipped with inspection openings and inspection risers in accordance with the elevation of the terrain and the supply pipe. The tanks have inlets and outlets prepared for connection to the supply sewer pipe of the property, intermediate connections between them and to the sewer pipe of the property, which leads the treated water to the water receiver. All elevations of inlets, outlets and height of the inspection openings and risers are set in advance by design and agreed with the client.

1.4. Control panel and compressor. For treatment plants up to 16 PE incl. they are for an indoor wall installation. For treatment plants from 20 to 50 PE, the control panel and the compressor are housed in a cabinet for indoor or outdoor wall installation. For 60 to 500 PE treatment plants, the control panel and the compressor are housed in a cabinet for an indoor or outdoor installation on a foundation.

1.5. Polyester belts for fixing the tanks to a reinforced concrete foundation slab, if required.

2. Storage

2.1. The tanks should be loaded and unloaded using suitable mechanical devices in order to avoid damages.

2.2. The tanks should be placed on even surface, clear of any sharp objects.

2.3. Tanks should be kept away from direct sunlight in order to prevent deformation caused by overheating.

2.4. The control board should be kept in a closed dry moisture-proof place away from direct sunlight until it is mounted in a protective cabinet adequately positioned in consideration of the characteristics of the place of installation.

2.5 When the compressor is separated from the control board, it should be protected from moisture until it is mounted by a Pipelife authorized technician.

3. Installation

3.1. Before the installation of the tanks, trench has to be made, according to the sizes and elevations specified in the drawing. 50 cm are needed between the trench walls and the tanks for easier installation and connection of the pipe system. When the trench is excavated the trench

bottom is compacted, 10cm rubble bedding is laid with grain sizes from 4 mm to 16 mm and above it 10cm bedding of b15 concrete is cast. On the concrete bedding a reinforced concrete slab is cast with a lower reinforcement grid by individual structural design project.

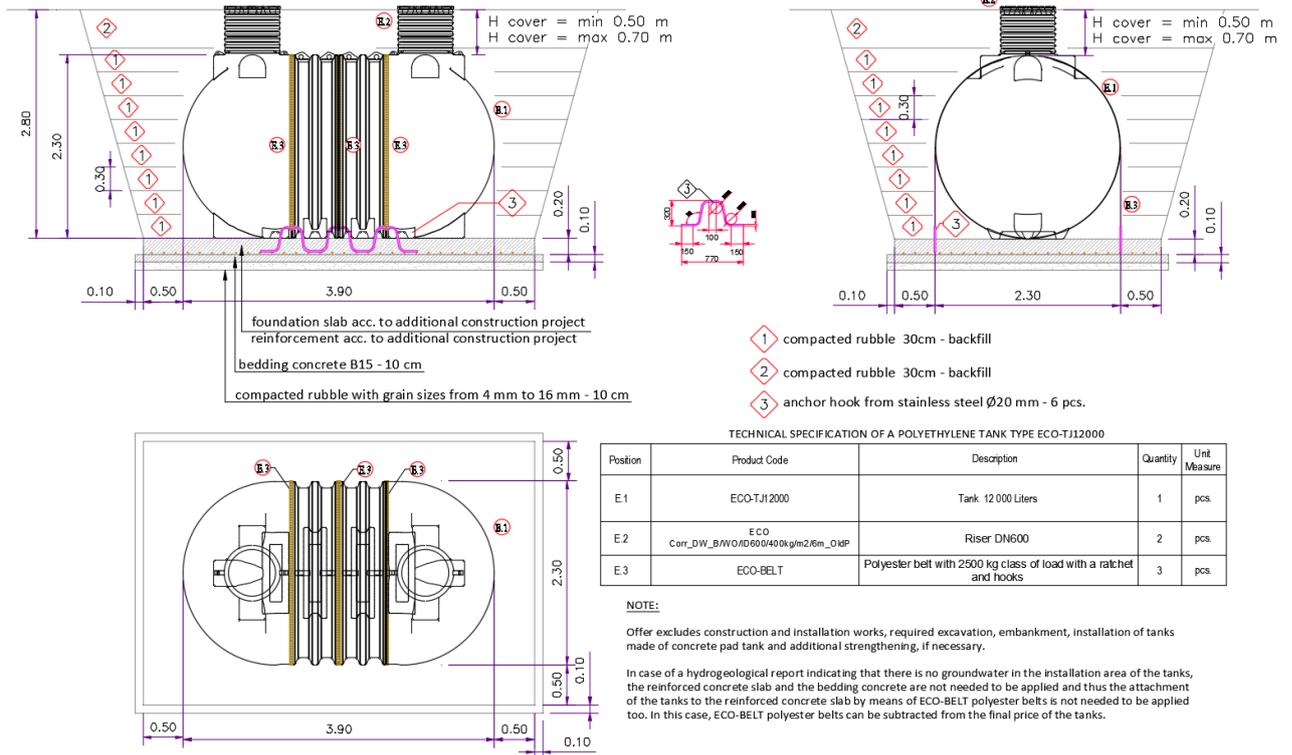
3.2. Before casting the concrete hooks should be embedded. Polyester belts which hold the tanks will be hooked up on these hooks. Places of the hooks are shown in assembly plan depending on the situation and the type of the treatment facility. The anchor hooks are made by stainless steel $\varnothing 20$ mm. Laying of the tank happens after the bedding is ready and reach the necessary strenght. The tank must be checked for factory damages or cracks as result of storage and transportation. After this check, the tank can be placed in the pit.

3.3. Dropping of the tank into the pit is being made by crane, lifting facility or via cables. Dropping should be done carefully and slowly, without impacting the tanks. If dropping the tank by crane - consider the center of the load to avoid any possible slipping or flattening of the tank. Minimum coverage above the tank is 0.50 m, and the maximum is 0.70 m. The tanks are equipped with telescopic riser dn600 for inspection and repair.

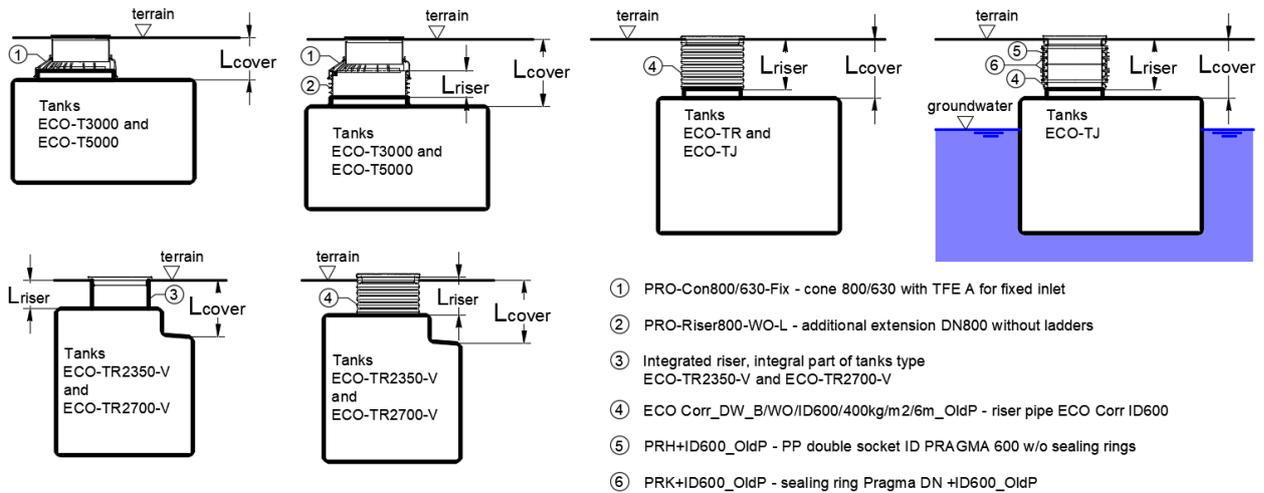
3.4. After laying the tank in the trench, on the finished bedding the tank should be backfilled in its bottom part carefully with compacted rubble with grain sizes from 4 mm to 16 mm. Special care should be given of compacting the sand and the rubble in the area below the middle part of the tank and around the sides, but mostly in the area under the tank. You should check the area near the tank to assure that there are not sharp objects near the tank that could damage it.

3.5. The tank must be fixed to the ground with polyester unstretched belts with nominal capacity of 2500kg, attached to pre-set hooks in the reinforced concrete slab or in the concrete bedding.

An exemplary installation drawing of a plastic tank is given in Fig.1.



CONFIGURATIONS OF RISERS AND/OR CONES FOR ECO-T, ECO-TR AND ECO-TJ TANKS



Configurations of risers and/or cones for ECO-T, ECO-TR and ECO-TJ tanks

Tank type	Configuration of riser and/or cone	Cone	Riser type	L riser [m]	L coverage [m]	Also applicable in the presence of groundwater	Additional elements in the presence of groundwater
ECO-T3000 ECO-T5000	standard	1	NO	NO	0.49 (ECO-T3000) 0.43 (ECO-T5000)	YES	NO
	with maximum coverage over the top of the tank	1	2	0.3	0.7	YES	NO
ECO-TR2350-V ECO-TR2700-V	standard	NO	3	0.31	0.63	YES	NO
	intermediate	NO	4	0.35	0.66	YES	NO
	with maximum coverage over the top of the tank	NO	4	0.42	0.7	YES	NO
ECO-TR3500 ECO-TR5000 ECO-TR6000	standard and with maximum coverage over the top of the tank	NO	4	0.56	0.7	YES	NO
from ECO-TJ8000 up to ECO-TJ50000	standard	NO	4	0.56	0.58	NO	5 (1 pcs.) and 6 (2 pcs.)
	intermediate	NO	4	0.63	0.65	NO	5 (1 pcs.) and 6 (2 pcs.)
	with maximum coverage over the top of the tank	NO	4	0.7	0.7	NO	5 (1 pcs.) and 6 (2 pcs.)

Fig. 1

3.6. In case of installation in traffic zone reinforced concrete cover slab must be made, which to bare the traffic loads.

3.7. During the installation, the tank must be filled partially with water i.e. the water level during the installation should always matches the height of the compacted backfill, as it is given in Fig. 2. This is required for the stabilization and correct positioning of the tank.

Note: In case of high level of groundwater, additional fortification has to be applied. Pipelife Bulgaria is not responsible in cases where the installation instructions are not observed!!!

The hydrogeological report is an integral part of the feasibility studies for the construction and installation of the facility. Its provision is necessary to ensure the operational characteristics and smooth operation of the ECOBOX treatment plant.

FILLING THE TANK WITH WATER

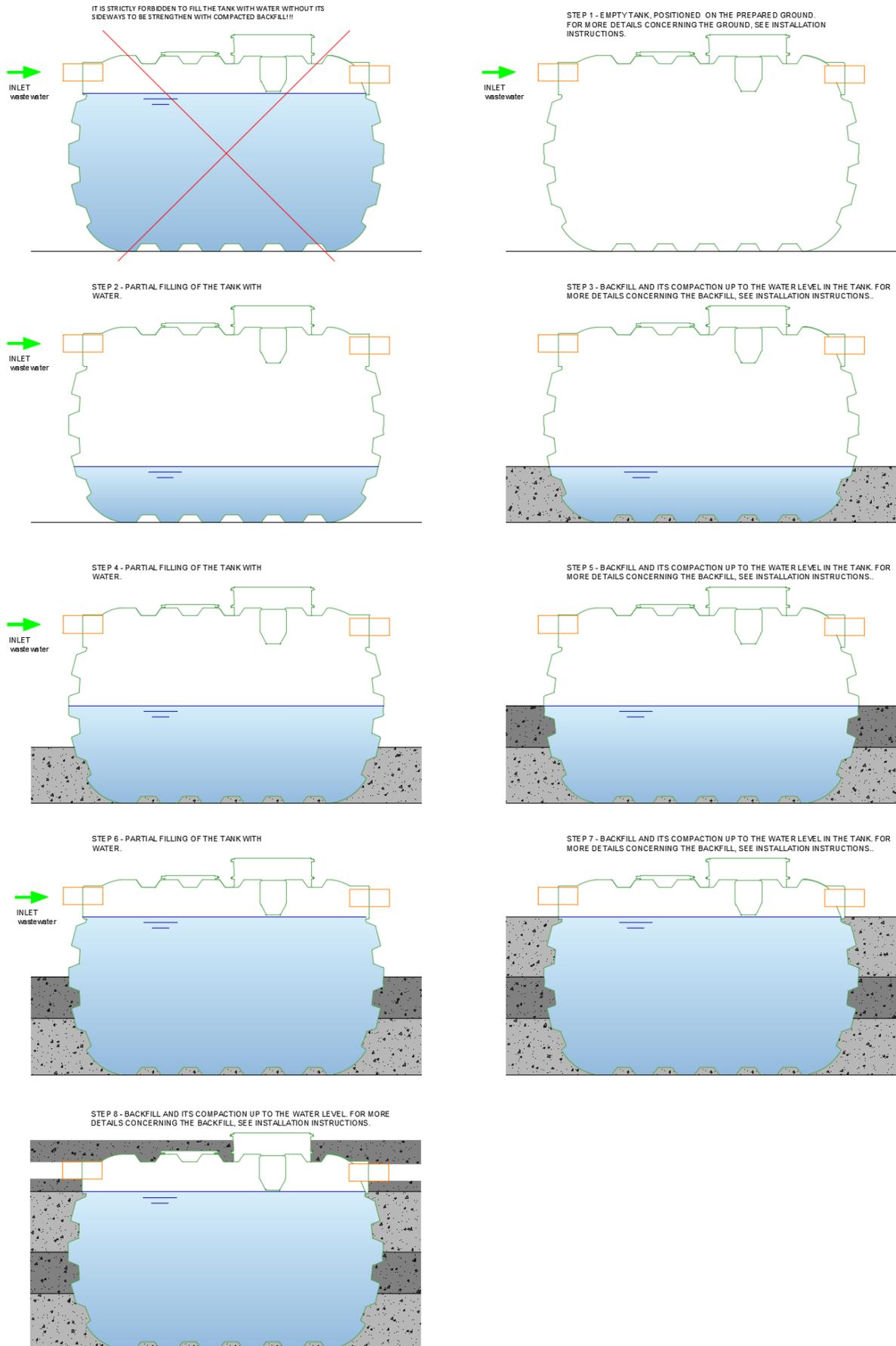


Fig. 2

4. Supervised installation

4.1. When the plant is designed to include only one tank or two tanks, the installer must perform the connection between the tanks in accordance with the designer's instructions.

4.2. When the plant is designed to include more than two tanks, the seaming and installation works must be performed by a Pipelife authorized technician. In this case the backfill surrounding the tanks must reach the medium line of the tank with the purpose to lay down piping assembly between the tanks.

4.3. There follows the performance of connections between the feed pipe, the tanks and the receptacle. Then proceed to backfilling and compacting up to the field level in compliance with the requirements specified in the design drawings. After that, proceed to START-UP.

5. START-UP

5.1. Checking the control board installation and settings – inspecting whether all cables have been properly connected in the control board and if not – the technician must connect them properly to the right places. Joining the hoses connecting the tank to the control board – the compressor.

5.2 Checking the phase correspondence between the control board and the AIRLIFT system installed in the tank.

5.3. Checking the level probe installation and further adjustment of the level probe.

5.4. Preparing the water levels in the tanks so that the first treatment cycle could start automatically by the next feeding with wastewater.

5.5. Signature of a delivery-and-acceptance record and instructions for operation.