ZENIT

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lift BOX

POLYETHYLENE LIFTING STATIONS
FOR CIVIL AND INDUSTRIAL
INSTALLATIONS

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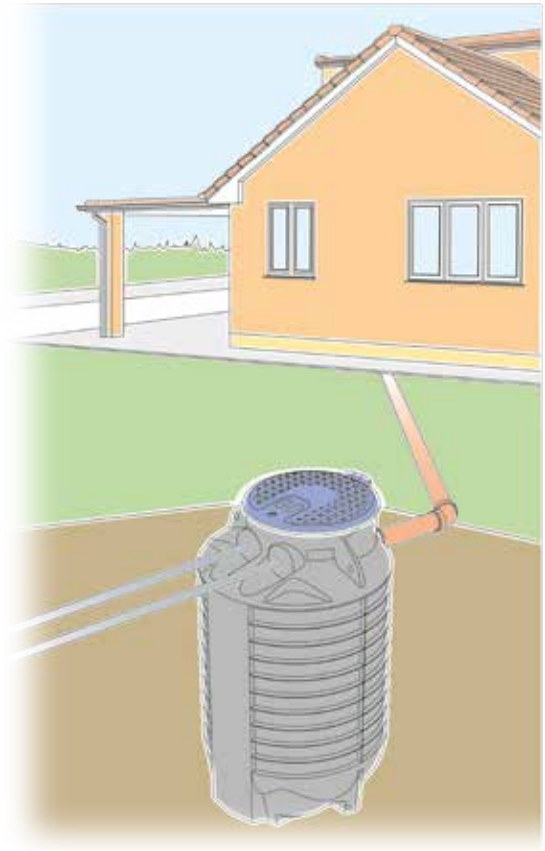
EN

Polyethylene lifting stations for civil and industrial installations

The increasing use of underground spaces, such as toilets, garages and car parks in new urbanisation or building re-development projects, often requires the use of systems to collect wastewater and lift it to a higher level.



The ***liftBOX*** lifting stations are designed to collect rainwater, wastewater or sewage and transfer it to a higher level, which would otherwise be unreachable due to the distance or by gravity, delivering it to the sewage line or the treatment plant.

The lifting stations consist of a polyethylene tank, an internal pumping system controlled by floats or level probes and an electrical panel.

They may be equipped with a pre-assembled valve operating chamber separated from the wastewater collection chamber for convenient and hygienic maintenance.

The ***liftBOX*** lifting stations, which are designed for underground installation, have a volume of 1000 to 19000 litres and can be connected to systems with pressure pipes of size from DN50 to DN150

Several parameters must be taken into account when choosing the most suitable solution for your needs. These include:

- **Flow rate to be handled**
The amount of inlet effluent with appropriate safety margins must be determined to define the volume of the storage tank and the flow rate of the pumping system and ensure optimal operating conditions (start/stop cycles, running times, etc.).

- **Target head**
The height to be lifted and the distance to be covered, taking into account the appropriate pressure drop, must be considered to identify the characteristic head of the pumping system.

- **Type of effluent to be lifted**
The type of effluent to be moved, its density and the presence of fibres or solids determine the hydraulic pump type and the sizing of the motor.

However, establishing the working point and selecting the correct hydraulic curve is often not enough, and experience can be a decisive factor in achieving the optimum configuration.
Zenit has been operating in the field of submersible pumps and water treatment for many years. The Pre-Sales Office provides customers with the skill and consolidated experience they need to assist technicians and engineers in correctly sizing the system and choosing the most suitable product for their needs.

Specifications

- Rotation-moulded polyethylene tank
- Constant, thick walls with horizontal reinforcing ribs
- Contoured bottom to prevent stagnation and facilitate positioning of the pump
- Rated volume from 1000 to 19000 litres
- Inlet pipe diameter from DN 125 to DN 400
- Delivery pipe diameter from DN 50 to DN 150
- Optional inlet effluent filter basket (models **M** and **L** only)
- Valve chamber separate from tank compartment (models **M** and **L** only)

Advantages over conventional lifting stations with concrete tanks

- **Lower weight and lower transport costs**
- **Faster installation**
- **Shorter settling and drying time**
- **No leakage of liquid even in case of minor landslides**

Applications

Civil dwellings and residential buildings — **1000 litres** — ***liftBOX* S**

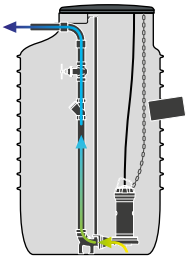
Commercial activities and industrial plants — **2200 - 4050 litres** / **5800 - 19000 litres** — ***liftBOX* M** / ***liftBOX* L**

Wastewater collection and relaunch
The ***liftBOX*** is used to collect and pump domestic and civil wastewater from basement storeys to sewers that would otherwise not be reachable by gravity.
This eliminates the need for costly construction works allowing the piping to be laid at a shallow depth to benefit from lower digging and installation costs.

Disposal of water from buildings far from the water supply network
In hilly or foothill areas, the ***liftBOX*** can be used to convey rainwater and sewage to the sewer system, even if the latter is located at a higher level or a considerable distance.
The large tank capacity also makes this solution suitable for residential buildings and hotels.

Constructive details

***liftBOX* S** (1000 litri)

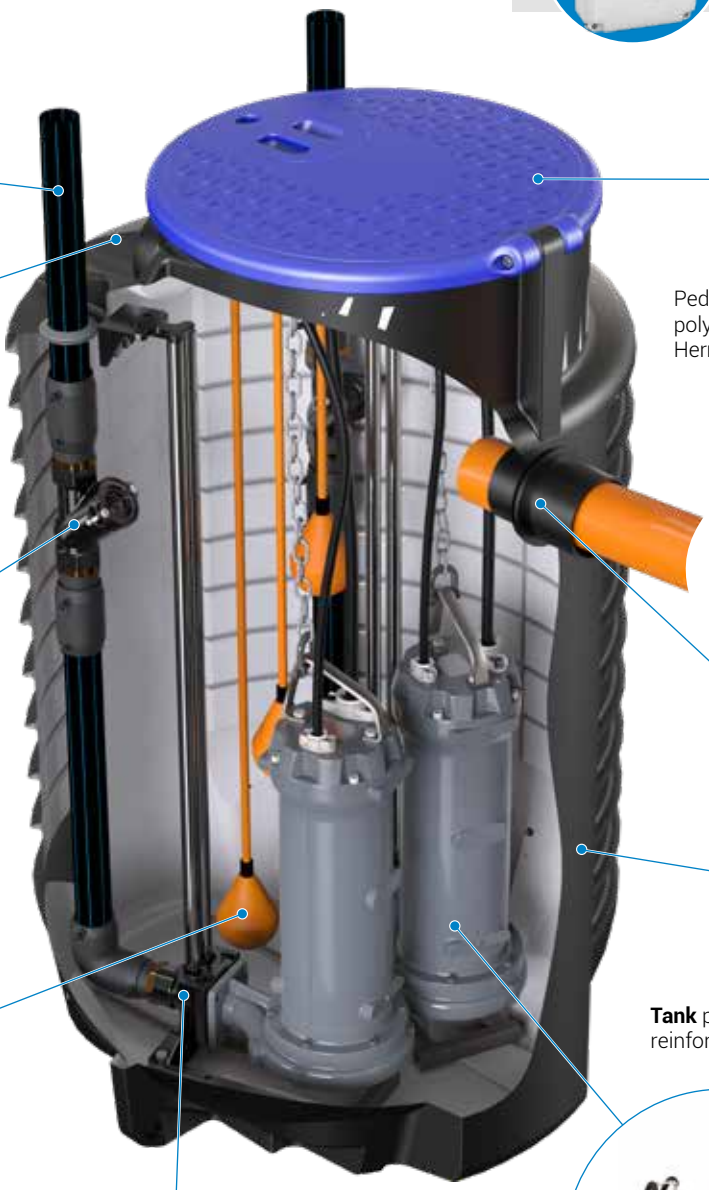


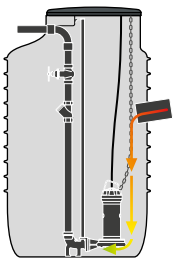
Polyethylene **outlet** pipe (effluent discharge)

Electrical control panel for managing the lifting station (available separately)

Eyelets integrated in the structure

Pedestrian **cover** made of polyethylene, Ø600 mm
Hermetically sealed with a gasket.





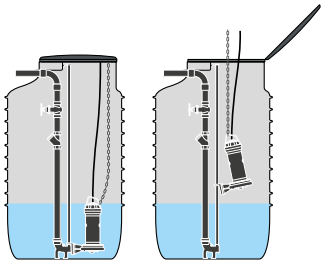
Provision for **inlet** pipe (effluent inlet)

Cast-iron **check valve** with NBR rubber sinking ball shutter.
Full free passage

Tank polyethylene with horizontal reinforcing ribs

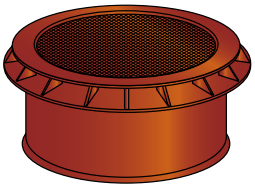
Starting and stopping **floats**

The bottom **coupling device** (DAC) is designed to allow the pump to be replaced quickly, even when the tank is full

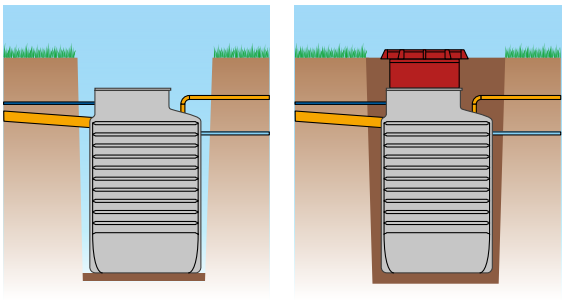


Lifting station consisting of 1 or 2 robust and reliable cast-iron submersible pumps.
Configurations with different types of hydraulics are possible, according to the nature of the liquid and the use for which they are intended.

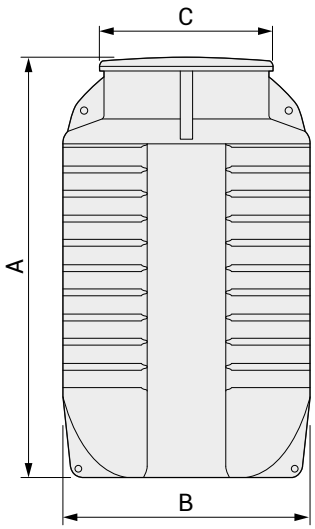
Optional accessories



Extension
Extension for easy connection of the tank to the ground level.
Pedestrian cover.
H300 mm - Ø620 mm

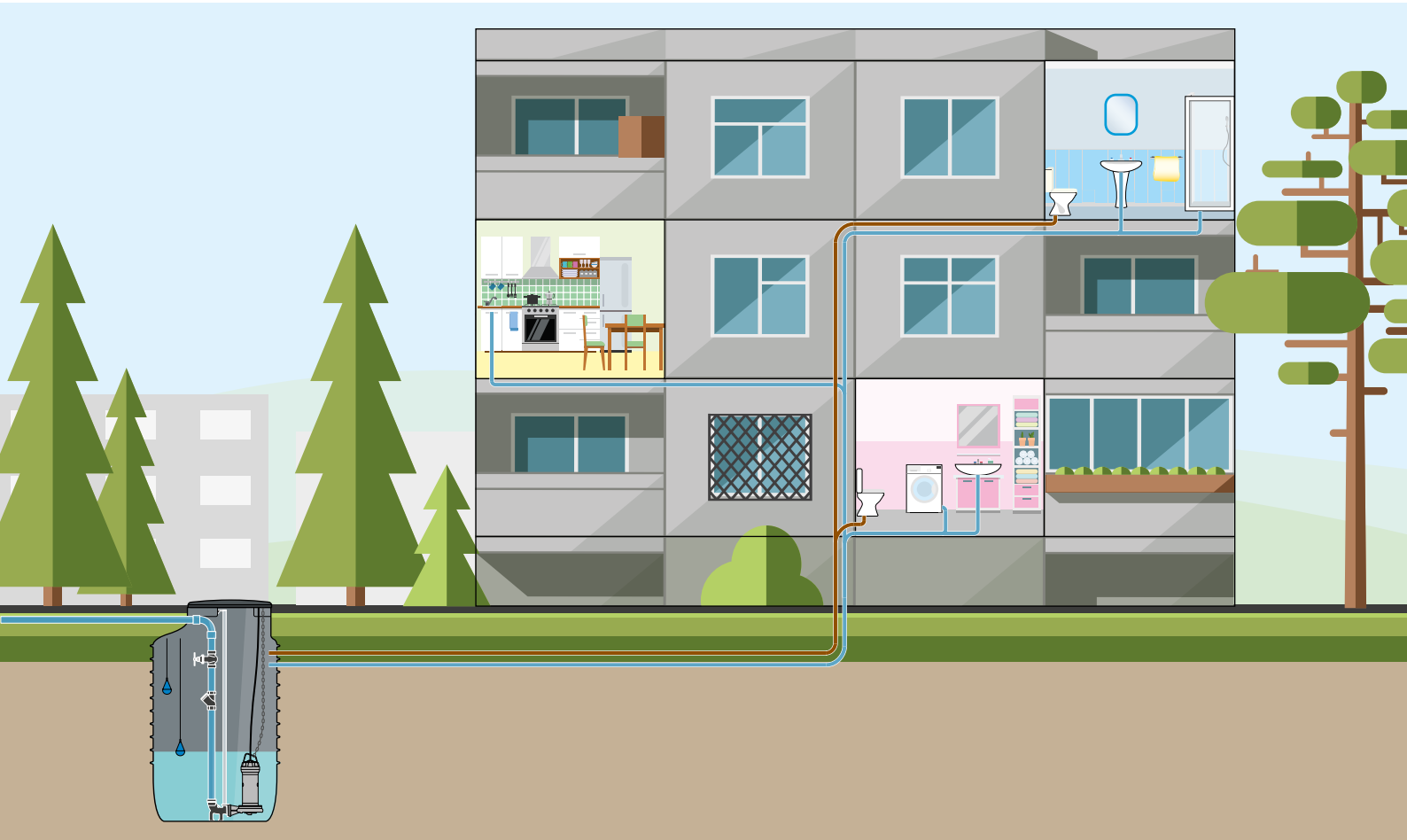


Range and dimensions



Model	RATED volume (litres)	nr DAC	Delivery DN (mm)	Inlet DN (mm)	Dimensions (mm)		
					A	B	C
***liftBOX* S** 1000	1000	1	50	125 160	1700	Ø1000	600
		2	50				

Rated dimensions with rounded values

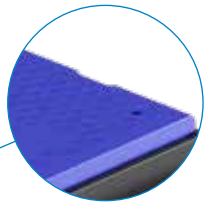


Constructive details

***liftBOX* M** (2200-4050 litri)
***liftBOX* L** (5800-19000 litri)

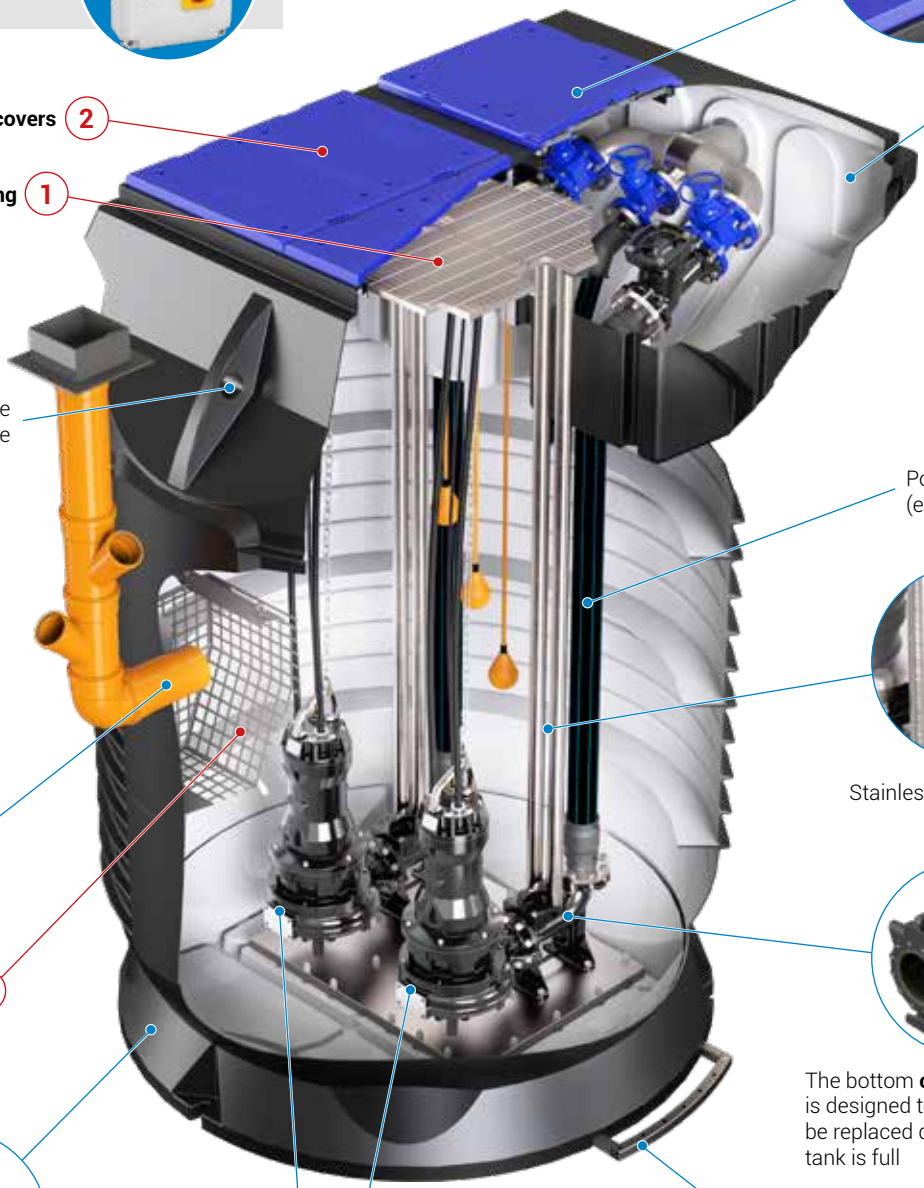
Electrical control panel for managing the lifting station (available separately)

Pedestrian **cover** with pressure closure
Dimensions 770x550 mm each.
Hermetically sealed with a gasket.

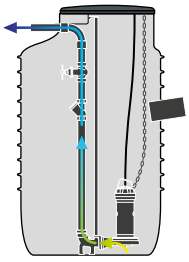


Manhole covers 2

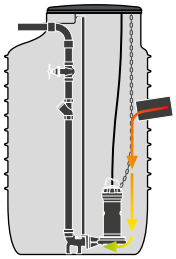
Fall protection grating 1



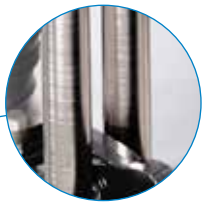
Eyelets integrated in the structure



Polyethylene **outlet** pipe (effluent discharge)



Provision for **inlet** pipe (effluent inlet)



Stainless steel **guide pipes**

Inlet effluent filter basket 3

The bottom **coupling device** (DAC) is designed to allow the pump to be replaced quickly, even when the tank is full

Frame steel for fixing to reinforced concrete slab

Tank made of thick polyethylene with horizontal reinforcing ribs

Lifting station consisting of 1 or 2 robust and reliable cast-iron submersible pumps.
Configurations with different types of hydraulics are possible, according to the nature of the liquid and the use for which they are intended.
(model L only available in 2-pump version)

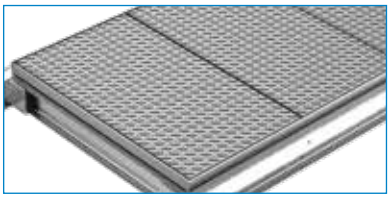
Separate valve operating chamber
Each lifting station can be equipped with a valve chamber with an independent, snap-closing cover.
This allows access to the valves without opening the main tank.
For each pressure line, the valve chamber comprises a cast-iron knife gate valve complete with handwheel control and a check valve with cast-iron body and full free passage NBR rubber sinking ball.
On model **L** versions, there is an additional knife gate valve for emptying the main manifold in case of maintenance work on the flow line.

Optional accessories

1

Fall protection grid
Fall protection system with metal grating, available in galvanised steel or stainless steel.

2



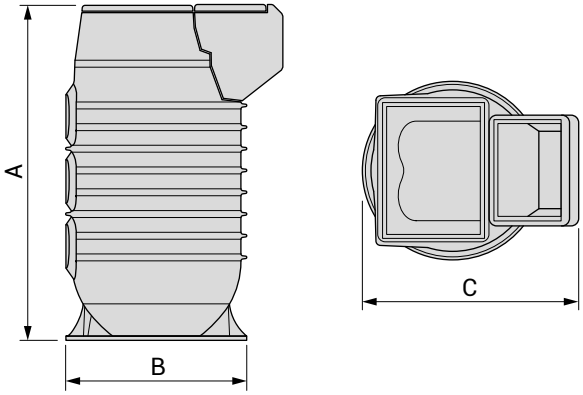
Manhole covers
Rugged manhole covers with anti-odour seal and key lock.
Galvanised steel support frame for anchoring to reinforced concrete slab class B125, C25 and D400.

3

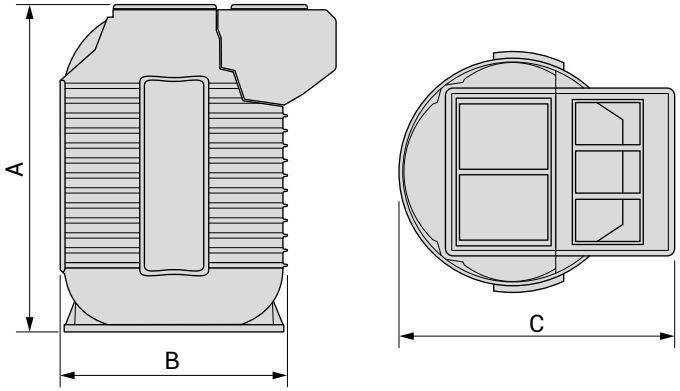
Inlet effluent filter basket
Stainless steel basket for coarse screening of inlet effluent.
This avoids the potential overloading of bulky material inside the tank that could cause clogging of the pipes, blockage of the pumps or interfere with the operation of the floats.
The stainless steel guides allow the quick and easy retrieval of the basket from the surface for emptying and cleaning.

Range and dimensions

***liftBOX* M**



***liftBOX* L**



Model	RATED volume (litres)	nr DAC	Delivery DN (mm)	Inlet DN (mm)	Dimensions (mm)		
					A	B	C
***liftBOX* M** 2200	2200	1	50	125 160 200 250	2300	1250	1500
		2	50				
		1	80				
***liftBOX* M** 4050	4050	2	50		4100	1250	1500
		2	80				

*Other **liftBOX** M models with intermediate capacities are available on request*

Model	RATED volume (litres)	nr DAC	Delivery DN (mm)	Inlet DN (mm)	Dimensions (mm)		
					A	B	C
***liftBOX* L** 5800	5800	2	50	250 315 400	2070	2280	2780
			80				
			100				
***liftBOX* L** 8000	8000	2	50		2670	2280	2780
			80				
			100				
***liftBOX* L** 10200	10200	2	50		3270	2280	2780
			80				
			100				
			150				
***liftBOX* L** 14600	14600	2	50		4470	2280	2780
			80				
			100				
			150				
***liftBOX* L** 16800	16800	2	50		5070	2280	2780
			80				
			100				
			150				
***liftBOX* L** 19000	19000	2	50		5670	2280	2780
			80				
			100				
			150				

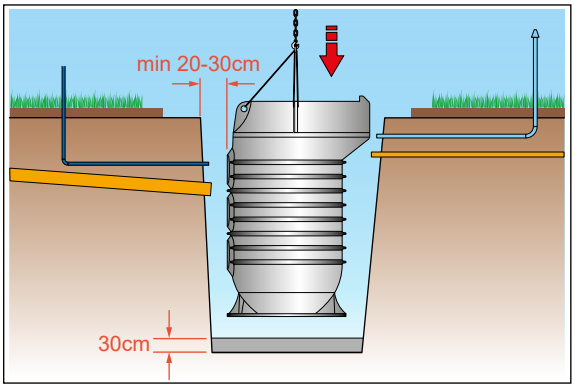
Rated dimensions with rounded values

Installation

The ***liftBOX*** lifting stations are designed for underground installation.
Installation and assembly are not critical but must be carried out professionally to ensure perfect operation and long-lasting use of the system.

Zenit technicians can provide advice and assistance during all phases of the process, from pre-sales to final testing.

Refer to the manual supplied with the product for laying and installation. Contact Zenit or experienced technicians, if necessary. The Works Management is responsible for execution.

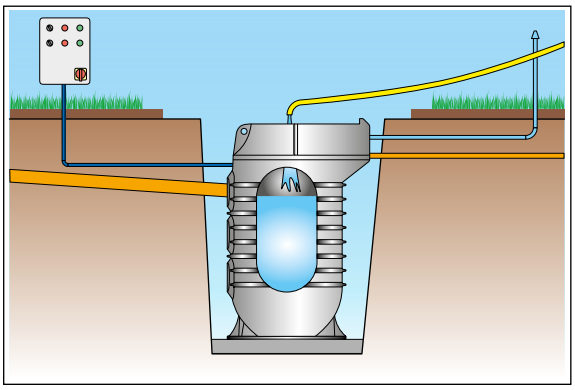


Site preparation and positioning

The installation site must be identified, away from the water table and slopes prone to landslides, before starting the dig. The dig must be large enough to leave a gap of 25-30 cm between the tank and the walls of the trench or formwork.

Then build a reinforced concrete slab at least 30 cm thick at the bottom of the trench.

Once the concrete has set, place the tank on the slab, taking care to place it correctly according to the position of the pipes.

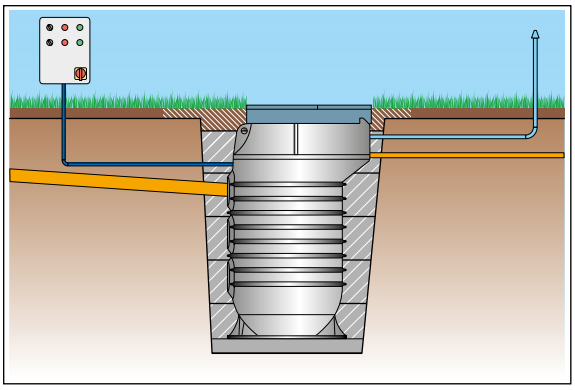


Electrical-hydraulic connection and filling

Connect the inlet, delivery and vent connections to the respective systems.
Insert the cable duct into the provision on the tank.

If the base is fitted with a steel frame, fasten it to the concrete slab using chemical or expansion anchors.

Fill the tank with clean water to check for leaks and provide the necessary stability during the anchoring phase that follows.

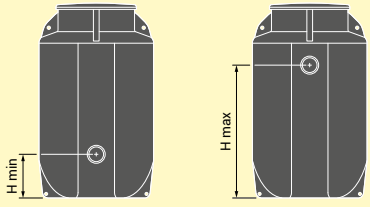


Anchoring and covering

After checking the correct operation, gradually fill the space between the ground and the tank with layers of cement, making sure that no air pockets are trapped inside the casting.

If necessary, the top of the trench can be covered with a layer of soil up to the walking surface.

The tank is provided with standard pedestrian covers.
Optional manhole covers can be installed at the top openings, for which a specific metal frame is available to be fixed to the concrete slab.



The inlet pipe dimension must be specified in the order to be correctly prepared by the manufacturer.